AGENDA FOR THE REGULAR MEETING OF THE BRENTWOOD MUNICIPAL PLANNING COMMISSION AUGUST 3, 2020 -- 7:00 P.M. BRENTWOOD CITY HALL

In the interest of the health, safety, and welfare of the public, this meeting will be held electronically pursuant to Governor Lee's Executive Orders No. 16, 34 & 51. Physical presence of the public will be limited, but the meeting may be viewed online at www.brentwoodtn.gov/livestream.

Agenda Item Location Map

Call to Order
Roll Call
Pledge of Allegiance to the Flag
Approval or correction of the minutes from the July 6, 2020 regular meeting

DRAFT -- Regular Meeting Minutes -- July 6, 2020

Comments from Citizens -- *Any citizen who wishes to make a comment for all regular agenda items and items removed from the consent agenda may have access to do so via webcam at City Hall. The comments shall be limited to the agenda item being discussed.*

CONSENT AGENDA

1. **BPC2007-001 Minor Site Plan Alteration – Virginia Springs Office Building, Phase II, 5501 Virginia Springs, Zoning C-1/SR –** *Applicant: Ms. Heather Grimes, Ragan Smith Associates, 315 Woodland Street, Nashville, TN 37216*

2. **BPC2007-002 Minor Site Plan Alteration, Canopy and Drive addition – Tennessee Baptist Children's Home, 1310 Franklin Road, Zoning SI-2/SR –** *Mr. Phillip Piercy, Catalyst Design Group, 5100 Tennessee Avenue, Nashville, TN 37209*

3. **BPC2007-003 Revised Final Plat – Cromwell Subdivision, Section One, Lot 37, 1876 Burland Crescent, Zoning OSRD –** *Applicant: Mr. William Huffman, CESO, Inc., 216 Centerview Drive, Suite 150, Brentwood, TN 37027*

4. **BPC2007-008 Minor Site Plan Alteration – Bell Self Storage, 263 Wilson Pike Circle, Zoning C-3 –** *Applicant: Mr. Darek Bell, BBDB Investments, LLC, 1000 Health Park Drive, Suite 150, Brentwood, TN 372027*

5. **BPC2007-005 Revised Preliminary Plan – Brentwood Country Club Subdivision, Zoning OSRD –** *Applicant: Mr. Chris Mabery, Ragan Smith Associates, 100 East Vine Street, Suite 402, Murfreesboro, TN 37130*

6. **BPC2007-004 Revised Final Plat – Brentwood Country Club Subdivision, Lot 116, 5101 Country Club Drive, Zoning OSRD -** *Applicant: Mr. Chris Mabery, Ragan Smith Associates, 100 East Vine Street, Suite 402, Murfreesboro, TN 37130*

NOTE: All matters listed under the consent agenda are considered to be routine, and will be enacted upon one motion. There will be no separate discussion of these items unless a Planning Commission member so requests, in which case it will be removed from the Consent Agenda and considered separately. Additionally, any citizen or agenda applicant present may request that consideration be given by the Planning Commission to remove an item from the Consent Agenda so that discussion may be held on that item.

REGULAR AGENDA

1. **Ordinance 2020-08 - An Ordinance Rezoning Property Located in the Southeast Quadrant of the Intersection of Wilson Pike and Old Smyrna Road from SI-3 to R-2**

2. **BPC2007-011 Preliminary Plan, Allen Property, 9520 Split Log Road, Zoning OSRD –** *Applicant: Mr. Nicky Wells, Turnberry Homes, LLC, 210 Jamestown Park Drive, Suite 102, Brentwood, TN 37027*

3. **BPC2007-009 Revised Final Plat, Mockingbird Hill Subdivision, Section 1-A, Lot Three 5018 Mountview Place and Section 1-B, Lots Four and Five, 5014 and 5019 Mountview Place, Zoning R-2 –** *Applicant: Mr. Joey Wilson, Wilson & Associates, P.C., 108 Beasley Drive, Franklin, TN 37064*

OTHER BUSINESS

1. Monthly Security Report -- July 2020

2. Appointment of replacement for John Magyar as the Planning Commission's representative to the Tree Board

ADMINISTRATIVE INFORMATION

1. Planning and Codes Department Monthly Report -- June 2020

2. City Calendar -- August 2020

Donald J. Dodson, Secretary

Anyone requesting accommodations due to disabilities, please contact Mr. Mike Worsham, ADA Coordinator, before the meeting at 615.371.0060.

BRENTWOOD PLANNING COMMISSION

Meeting Date: 08/03/2020

Information

PROJECT NUMBER

PROJECT DESCRIPTION

ZONING OF PROPERTY

APPLICANT NAME/ADDRESS

Attachments

Draft Minutes

MINUTES OF MEETING OF THE BRENTWOOD PLANNING COMMISSION

BRENTWOOD, TENNESSEE

The regular meeting of the Brentwood Planning Commission met on Monday, June 1, 2020 at 7:00 p.m. at Brentwood City Hall.

Electronically present at roll call were Chairman Janet Donahue, Commissioner Ken Travis, Preston Bain, Chris Clark, Carol Crigger, Michael Kaplan, John Magyar, Brandon Oliver, Stevan Pippin and Sonna Robinson. Staff present electronically were Jeff Dobson, Kirk Bednar, Jay Evans, Kristen Corn, Holly Earls, Mike Harris, Darek Baskin, Lori Lange, Todd Petrowski, and Allison Henry.

In the interest of the health, safety, and welfare of the public, this meeting was held electronically pursuant to Governor Lee's Executive Order No. 16. Physical presence of the public was limited, but the meeting was able to be viewed online at www.brentwoodtn.gov/livestream.

Mr. Pippin moved for approval of the minutes from the May 4, 2020 meeting as written; seconded by Commissioner Travis. Motion was approved unanimously.

PUBLIC HEARING

Proposed Revisions to the Brentwood Subdivision Regulations

A comprehensive review and update of the City's Subdivision Regulations was included as part of the non-routine work plan for Fiscal Year 2020 for both the Planning and Codes and Engineering Departments.

The effort constituted the first comprehensive review and re-write of the document since late 2009.

The proposed final document was better organized, and easier to read and understand. Additionally, its design better followed our established development process.

The significant proposed revisions to the Subdivision Regulations included:

1. Correction of grammatical, punctuation and syntax errors throughout the document.
2. Rearranged and revised existing language to better reflect the development process flow and staff actions.
3. Updated requirements for submittal of electronic drawings.
4. Included appropriate language that references the State Vesting requirements, in several sections as included in the zoning ordinance (Zoning Ordinance Section 78-43); also added the plat vesting note as in the zoning ordinance to the Subdivision Regulations;
5. Added Section 5.6 which deals with subdivision amenities and entrance features.
6. Added Section 6.7 which modifies sidewalk requirements.
7. Revised Section 6.13 regarding Historic Rural Development standards to require a project area of 25 acres instead of 50 acres (note that the only project that currently employs this standard is Liberty Farm Subdivision, which includes an area of 32 acres).
8. Added Section 6.14(4), dealing with substantial rebuild lots, which are lots where an existing structure is demolished and a new structure is constructed or an existing structure is expanded or partially rebuilt having an area of > 800 sf including residential, commercial, pools or remodels will require a grading permit designed by a TN licensed engineer or landscape architect.
9. Added Section 6.14(5) details the permitting requirements for substantial rebuild lots.
10. A definition of "Substantial Rebuild Lots" was also added in Appendix One.
11. Added Section 6.15 defining requirements for Flag Lots.
12. Added Section 7.4 regarding specifications for vertical and pre-split rock walls.

13. Completely re-wrote the performance agreement for subdivision improvements and added a new performance agreement for amenity improvements -- Appendices Five and Six.
14. Added a new Appendix Seven that codifies street addressing requirements.
15. The definitions in Appendix One have been reviewed to ensure that they are used in the text. Definitions that were not used were deleted. Several new ones were added.

State law provided for the approval of subdivision regulations by the Planning Commission.

If approved on June 1st, the effective date of the regulations would be July 1, 2020.

No one spoke for or against the proposed revisions to the Brentwood subdivision regulations; therefore, the public hearing was closed.

Mr. Pippin moved for approval of the proposed amendments to the Brentwood Subdivision Regulations with an effective date of July 1, 2020. Commissioner Travis seconded; motion was approved unanimously.

CONSENT AGENDA

Item 1: BPC2004-006 Minor Revisions to previously Approved Site Plan – Brentwood Doctor's Office, 343 Franklin Road, Zoning C-2

Batson & Associates requested approval to add 11 parking spaces to the project. The new parking spaces will be installed along the north side of the project, using pervious pavers.

Staff recommended approval of the proposed minor revisions to the previously approved site plan subject to the following conditions:

1. An as-built certification signed by a licensed engineer will be required. The certification shall verify the infiltration rate of the pavers including recommendations to the property owner for future maintenance.

2. A site plan shall be vested for a period of three years from the date of the original approval.

3. Add the following note to the site plan:

   This site plan is subject to a three-year vesting period, during which the development standards in effect on the date of approval will remain the standards applicable to this plan. If construction is not completed during the first three years, the original site plan is considered a preliminary site plan and the applicant must obtain approval of a final site plan. Development of the property shown on this plan may be subject to standards other than those that were applicable during the vesting period. The Initial vesting period for this plan expires on June 1, 2023, unless extended by the City of Brentwood. Persons relying on this plan after said date should contact the City of Brentwood to determine if development may continue as depicted on the plan.

4. When the construction authorized pursuant to a site plan is not completed within three years from the date of initial approval, but the applicant desires to complete the project proposed for the site, the plan as initially approved for the project or as amended shall be considered a preliminary site plan. If the applicant secures all necessary permits, commences site preparation and obtains approval of a final site plan within the three-year vesting period following approval of the preliminary site plan, then the vesting period shall be extended an additional two years beyond the expiration of the initial three-year vesting period. During the two-year extension, the applicant must commence construction and maintain any necessary permits to remain vested.

5. If necessary permits are maintained and construction, as defined by Section 78-43, has commenced by the end of the two-year extension, then the vesting period shall remain in effect until the Planning and Codes Department has certified final completion of the project, provided the total vesting period shall not exceed ten years from the date of approval of the preliminary site plan.

6. If the construction authorized pursuant to a site plan is completed within three years from the date of approval, the site plan shall then be considered the final site plan for the project.

7. Complete plans shall be submitted to the Planning and Codes Department for review, approval and issuance of the required permits before any work is begun. Additionally, all required electrical permits, issued by the State of Tennessee must be received before any work is begun.

8. The property owner is responsible for all development fees including water and sewer service and tap fees, building permit fees and Public Works Project Fees. The required fees shall be used for future infrastructure related improvements required by the proposed development.

9. Deviations from the approved plan in the development of a project or the failure to satisfy any standard requirements or special conditions of approval imposed by the planning commission will be considered a violation of the provisions of the Zoning Ordinance, which shall be subject to punishment as provided in Section 1-9 of the Brentwood Municipal Code. The City may also require the applicant to appear before the Planning Commission to address any deficiencies or unapproved modifications. The project may also be subject to delays in issuance of permits, certificates of occupancy, recordation of plats or other project approvals.

10. Any changes to plans approved by the Planning Commission will require staff review and re-approval by the Planning Commission.

11. Development of this project shall comply with all applicable codes and ordinances of the City of Brentwood.

12. Approval of the proposed plan shall be limited to the illustrations and plans presented to the Planning Commission for review and approval on June 1, 2020. Any changes to Planning Commission approved plans and specifications will require staff review and re-approval by the Planning Commission.

Item 2: BPC2005-001 Revised Final Plat – 412 Wilson Pike, Zoning R-2

H & H Land Surveying, Inc., requested approval of a revised final plat that established setbacks, easements and dedicates 0.06 acres of right-of-way. Only one lot is proposed.

The proposed final plat approved by the Planning Commission on October 2, 2017 was never recorded. With the approval of this plat, the previous approval will be void.

The property included the historic Mayfield Cemetery, which will be restored and preserved as part of the property. Upon completion of construction permanent fencing will be installed around the cemetery.

The rock wall has already been moved outside of the right-of-way, except for a small portion south of the driveway.

Staff recommended approval of the proposed final plat subject to the following conditions:

1. All work within the Wilson Pike right-of-way for service line bores or modifications of the driveway or its location will require a TDOT permit.

2. The existing cemetery shall remain undisturbed per Plat Note 19. Any disturbance of the driveway near the cemetery would require an update to the archaeological study.

3. Approval of a final plat by the Planning Commission shall become effective upon the date of the last signature required on the plat for recording. The initial vesting period shall be for five years after approval.

4. Add the following note to all pages of the final plat:

   This final plat is subject to a vesting period, during which the development standards in effect on the date of approval will remain the standards applicable to this plan. Upon expiration of the vesting period, development of the property shown on this plat may be subject to standards other than those that were applicable during the vesting period. The vesting period for this plat expires on _____, unless extended by the City of Brentwood. Persons relying on this plat after said date should contact the City of Brentwood to determine if development may continue as depicted on the plan.

   (Planning and Codes Department staff will insert the expiration year for the plat at the time the plat is ready for recording and may also make changes to the wording of the above note as necessary to carry out the intent of Standard Requirements 1, 2 and 3 below.)

5. Provide the Planning staff with a digital copy of the proposed subdivision. This request is consistent with Article 2.3 of the Brentwood Subdivision Regulations. The file should be in AutoCAD .DWG or .DXF compatible format and CD-ROM. The file shall use the Tennessee State Plane coordinate system, FIPS Zone 4100, NAD 83 datum. The digital copies must be received before the plat may be recorded.

6. The property owner is responsible for all development fees including water and sewer service and tap fees, building permit fees and Public Works Project Fees. The required fees shall be used for future infrastructure related improvements required by the proposed development.

7. Deviations from the approved plan in the development of a project or the failure to satisfy any standard requirements or special conditions of approval imposed by the planning commission will be considered a violation of the provisions of the Zoning Ordinance, which shall be subject to punishment as provided in Section 1-9 of the Brentwood Municipal Code. The City may also require the applicant to appear before the Planning Commission to address any deficiencies or unapproved modifications. The project may also be subject to delays in issuance of permits, certificates of occupancy, recordation of plats or other project approvals.

8. Any changes to plans approved by the Planning Commission will require staff review and re-approval by the Planning Commission.

9. Development of this project shall comply with all applicable codes and ordinances of the City of Brentwood.

10. Approval of the proposed plan shall be limited to the illustrations and plans presented to the Planning Commission for review and approval on June 1, 2020. Any changes to Planning Commission approved plans and specifications will require staff review and re-approval by the Planning Commission.

Item 3: BPC2005-002 Hillside Protection Overlay Site Plan Review - Stonehendge Subdivision, Section Three, Lot 84, 5120 Dogwood Point, Zoning OSRD

Smoky Mountain Builders requested approval of a Hillside Protection Overlay Site plan that added an addition having an area of 336 square feet onto the back of the home. The proposed addition will be painted a color to match the existing home.

Staff recommended approval of the proposed revised hillside protection overlay site plan subject to the following conditions:

1. A Hillside Protection site plan shall be vested for a period of three years from the date of the original approval.

2. Add the following note to the Hillside Protection Overlay site plan;

   This hillside protection overlay site plan is subject to a three-year vesting period, during which the development standards in effect on the date of approval will remain the standards applicable to this plan. If construction is not completed during the first three years, the original site plan is considered a preliminary site plan and the applicant must obtain approval of a final site plan. Development of the property shown on this plan may be subject to standards other than those that were applicable during the vesting period. The Initial vesting period for this plan expires on June 1, 2023, unless extended by the City of Brentwood. Persons relying on this plan after said date should contact the City of Brentwood to determine if development may continue as depicted on the plan.

3. When the construction authorized pursuant to a site plan is not completed within three years from the date of initial approval, but the applicant desires to complete the project proposed for the site, the plan as initially approved for the project or as amended shall be considered a preliminary site plan. If the applicant secures all necessary permits, commences site preparation and obtains approval of a final site plan within the three-year vesting period following approval of the

preliminary site plan, then the vesting period shall be extended an additional two years beyond the expiration of the initial three-year vesting period. During the two-year extension, the applicant must commence construction and maintain any necessary permits to remain vested.

4. If necessary permits are maintained and construction, as defined by Section 78-43, has commenced by the end of the two-year extension, then the vesting period shall remain in effect until the Planning and Codes Department has certified final completion of the project, provided the total vesting period shall not exceed ten years from the date of approval of the preliminary site plan.

5. If the construction authorized pursuant to a site plan is completed within three years from the date of approval, the site plan shall then be considered the final site plan for the project.

6. The property owner is responsible for all development fees including water and sewer service and tap fees, building permit fees and Public Works Project Fees.

7. Deviations from the approved plan/plat in the development of a project or the failure to satisfy any standard requirements or special conditions of approval imposed by the planning commission will be considered a violation of the provisions of the Zoning Ordinance, which shall be subject to punishment as provided in Section 1-9 of the Brentwood Municipal Code. The City may also require the applicant to appear before the Planning Commission to address any deficiencies or unapproved modifications. The project may also be subject to delays in issuance of permits, certificates of occupancy, recordation of plats or other project approvals.

8. Complete plans shall be submitted to the Planning and Codes Department for review, approval and issuance of the required permits before any work is begun. Additionally, all required electrical permits, issued by the State of Tennessee must be received before any work is begun.

9. Development of this project shall comply with all applicable codes and ordinances of the City of Brentwood.

10. Approval of the proposed plan shall be limited to the illustrations and plans presented to the Planning Commission for review and approval on June 1, 2020. Any changes to Planning Commission approved plans and specifications will require staff review and re-approval by the Planning Commission.

The Consent Agenda was approved unanimously.

REGULAR AGENDA

Item 1: ORDINANCE 2020-01 - AN ORDINANCE REZONING PROPERTY LOCATED AT 9520 SPLIT LOG ROAD FROM R-2 (SUBURBAN RESIDENTIAL) TO OSRD (OPEN SPACE RESIDENTIAL DEVELOPMENT

Ordinance 2020-01 requested the rezoning of approximately 28 acres of land located on the north side of Split Log Road, 0.35 miles west of its intersection with Ragsdale Road. Specifically, the property is located at 9520 Split Log Road.

The requested change is from R-2 to OSRD.

The subject property presently included rolling pastureland used for raising cattle. Tree cover is minimal. There was a 180-foot-wide Columbia Gulf Gas Transmission Line easement that encumbered the northwestern corner of the property.

The proposed subdivision design included the existing Allen residence, which will remain and be incorporated into the project. The house will sit on a 6.23-acre tract (Lot 18). The Allen's will continue to live on and own the property. According to the Williamson County Property Assessor, the house was built in 1991 and included an area of

approximately 3,428 square feet. There are also several accessory structures on the tract.

The proposed rezoning plan was originally scheduled for first reading on February 10, 2020 but was deferred from consideration by the applicant to the March 9th meeting. The reason for the deferral primarily related to the size of the large lot and its potential to be further subdivided in the future once OSRD zoning was in place. Since the deferral, the developers' attorney has prepared restrictive covenants that would apply to the large lot.

On March 17, 2020 the developer was notified that staff recommended that the required community meeting be postponed due to the COVID-19 pandemic, which was originally scheduled for April 2nd. Postponement of the community meeting temporarily delayed the rezoning process.

The Allen's have agreed to sell their entire 28 +/- acre property to Turnberry Homes LLC. If the proposed Development Plan is approved, and at the time the final plat for the property is recorded, Turnberry will convey the 6.23-acre property, back to the Allen's, including the existing residential structure in the anticipated shape and configuration shown on the proposed plan. The proposed subdivision restrictive covenants will require that the lot on which the Allen residence is located shall not be further subdivided but shall remain as currently configured. The restrictive covenants will be recorded at the Williamson County Register of Deeds Office along with the final plat and will run with the land. The restriction would also be added as a note to the final plat.

Adjacent to the property to the north and west is the Glen Abbey subdivision, also zoned OSRD. To the east are two larger single-family tracts having approximate areas of nine to 11 acres, zoned R-2. Across Split Log Road to the south lies the Taramore and Morgan Farms subdivisions, which are almost completely developed and also zoned OSRD.

The developer provided an R-2 concept plan that envisioned how the property might be developed in accordance with the underlying zoning district. The plan estimated that a total of 20 lots could be obtained if a divided Lot 18 were used as part of the subdivision design, even though it is shown as one lot on the proposed development plan.

Access to the development is provided by a single street from Split Log Road that winds through the subdivision and connects to the north to Glenfiddich Trace in Section Two of Glen Abbey. A stub was provided to the property line in anticipation of this future connection. At the intersection with Split Log Road, the plan proposed a divided street with a median section separating the flow of traffic that aligned with Ivy Crest Drive in the Taramore Subdivision.

The plan also shown the proposed location of the Cluster Box Units (CBUs), required for mail delivery by the USPS in an area east of Borrow Lane and south of proposed Lot 17.

The specifics of the proposed development plan are shown in the following tables:

FEATURE	AREA (SF)	AREA (AC)
Average Lot Area	22,014	0.51
Smallest Lot area	17,600	0.40
Largest Lot area	271,276*	6.23
Open Space Required	138,573	3.18
Open Space Provided	495,137	8.19

*The calculation of the average lot size does not include the area of Lot 18 (6.23 acres) because the average areas of the smaller lots would be skewed showing larger areas.

ALLEN PROPERTY REZONING
OPEN SPACE CALCULATIONS 2-26-2020

Total Site Area (AC)	27.99
Less R.O.W. dedication -- Internal streets	1.80
TOTAL	26.19
Less Areas in 25% Slopes	0.15
Plus 25% of slopes over 25%	0.04
Less Area in Electrical & Gas Easements	3.51
Plus 25% of Area in Electrical & Gas Line Easements	0.88
Total Usable Land Area (AC)	23.45
Less area in lots >1 acre	5.23
TOTAL LAND AREA AVAILABLE	18.22
Total Land Area Required @ 1 DUPA (AC)	18
Land Area in Lots	14.82
Open Space Required	3.18
Open Space Provided	11.37
Excess Open Space	8.19

The plan provided the required arterial road buffer (150' wide). The buffer extended to the east across Lot 18. Plantings, within the buffer will consistent with those existing in the Glen Abbey, buffer. If the plan is approved, and upon submittal of the preliminary plan for Planning Commission review, the developer will request that 70 trees be permitted to relocated from the buffer to a planting strip between the sidewalk and the back of the curb to serve as street trees. The reason for this request is related to the encumbrance of a jurisdictional wetland area and overhead utility lines along Split Log Road. This request is consistent with Section 78-512(b)5c of the Municipal Code.

Finally, the plan showed a perpetual scenic easement, as permitted by Section 78-186(c)2 of the Municipal Code, around a jurisdictional wetland and a stream at the front of the subdivision. The perpetual scenic easement will be left undisturbed and in its natural state. The City becomes a party to the easement once it is recorded.

WATER AND SEWER

The proposed project lies within the Owl Creek Drainage Basin. However, because all lots will be required to provide grinder pump sewer, the effluent will be pumped over to a gravity line in Glen Abbey and through Northumberland, which is in the Little Harpeth River Drainage Basin. The subject property was originally included in the Little Harpeth River drainage basin for modeling and master planning purposes. The existing house will be required to tie to sewer via grinder pump. All lots will be required to participate in the City's Grinder Pump Maintenance Program and will be properly labeled as grinder pump lots. If the rezoning proposal is approved and before a final plat for the property can be recorded the developer will be required to pay a grinder pump installation fee of $1,900.00 per lot ($34,200).

SCHOOLS

Williamson County Schools (WCS) provided an assessment of the impact of the proposed development on the schools in the area.

Jordan Elementary -- 7 students – (890 capacity/494 Students projected)
Sunset Middle -- 2 students -- (869 capacity/578 students projected)
Ravenwood High -- 2 students -- (1,649 capacity/1,635 students projected).

Capacity and enrollment numbers are for the 2019/2020 school year, as of April 2019.

The projected figures are for the first month of the 2019/2020 school year before the outbreak of the COVID-19 pandemic.

The community meeting was conducted on May 28th at the Library. A total of 12 citizens attended the meeting. Concerns expressed included:

- Drainage from Glen Abbey and the new development onto the neighboring properties – 9510 & 9528 Split Log Road;
- The existing temporary dead end of Barrow in Glen Abbey – residents not aware that the road would be extended;
- The new entrance aligning with Ivy Crest Drive in Taramore;
- Additional traffic on Split Log Road;
- Future subdivision of the 6.23 acre tract;
- The elevation of the stub road in Glen Abbey – road cut through the hill and grading;
- Removal of the perimeter fence – it will remain.
- Maintenance of the gas line easement – which is open space and will be maintained by the future HOA

The public hearing before the Board of Commissioners is scheduled for June 8, 2020. Second and final reading is scheduled for June 22, 2020.

Citizen Comment

Larry Tomczak, 1761 Macallan Drive

Mr. Pippin moved to forward a recommendation of approval of Ordinance 2020-01 to the Board of Commissioners. Commissioner Travis seconded; motion was approved unanimously.

Item 2: BPC2005-003 Revised Preliminary Plan/Site Plan -- Brentwood Country Club, 5123 Country Club Drive, Zoning OSRD

Ingram Civil Engineering requested approval of a revised preliminary / site plan for the amenity area at the Brentwood Country Club. The proposed changes included:

1. Construction of a small splash pad located northeasterly of the existing kiddie pool, and
2. Replacement of approximately 400 feet of the existing chain link fence along the rear project boundary to the rear of the existing maintenance area with an eight foot tall wooden privacy fence

Because the proposal involved changes to the improvements within the permanent open space, the corresponding changes to the OSRD Development Plan must be approved by the Board of Commissioners.

Mr. Pippin moved for approval of the proposed revisions to the preliminary plan and to forward a recommendation of approval of the corresponding revisions of the OSRD Development Plan to the Board of Commissioners subject to the following conditions being met to the satisfaction of staff:

1. Since this is an improvement within the open space, the proposal will also require City Commission review and approval.

2. A preliminary site plan shall be vested for a period of three years from the date of the original approval.

3. Approval of the preliminary plan shall be contingent upon the approval of the corresponding modifications to the OSRD Development Plan by the Board of Commissioners.

4. Permits cannot be issued for the improvements until the Board of Commissioners approves the revised OSRD Development Plan.

5. Add the following note to the site plan:

   This site plan is subject to a three-year vesting period, during which the development standards in effect on the date of approval will remain the standards applicable to this plan. If construction is not completed during the first three years, the original site plan is considered a preliminary site plan and the applicant must obtain approval of a final site plan. Development of the property shown on this plan may be subject to standards other than those that were applicable during the vesting period. The Initial vesting period for this plan expires on December 2, 2022, unless extended by the City of Brentwood. Persons relying on this plan after said date should contact the City of Brentwood to determine if development may continue as depicted on the plan.

6. When the construction authorized pursuant to a site plan is not completed within three years from the date of initial approval, but the applicant desires to complete the project proposed for the site, the plan as initially approved for the project or as amended shall be considered a preliminary site plan. If the applicant secures all necessary permits, commences site preparation and obtains approval of a final site plan within the three-year vesting period following approval of the preliminary site plan, then the vesting period shall be extended an additional two years beyond the expiration of the initial three-year vesting period. During the two-year extension, the applicant must commence construction and maintain any necessary permits to remain vested.

7. If necessary permits are maintained and construction, as defined by Section 78-43, has commenced by the end of the two-year extension, then the vesting period shall remain in effect until the Planning and Codes Department has certified final completion of the project, provided the total vesting period shall not exceed ten years from the date of approval of the preliminary site plan.

8. If the construction authorized pursuant to a site plan is completed within three years from the date of approval, the site plan shall then be considered the final site plan for the project.

9. The property owner is responsible for all development fees including water and sewer service and tap fees, building permit fees and Public Works Project Fees. The required fees shall be used for future infrastructure related improvements required by the proposed development.

10. Deviations from the approved plan in the development of a project or the failure to satisfy any standard requirements or special conditions of approval imposed by the planning commission will be considered a violation of the provisions of the Zoning Ordinance, which shall be subject to punishment as provided in Section 1-9 of the Brentwood Municipal Code. The City may also require the applicant to appear before the Planning Commission to address any deficiencies or unapproved modifications. The project may also be subject to delays in issuance of permits, certificates of occupancy, recordation of plats or other project approvals.

11. Any changes to plans approved by the Planning Commission will require staff review and re-approval by the Planning Commission.

12. Development of this project shall comply with all applicable codes and ordinances of the City of Brentwood.

13. Approval of the proposed plan shall be limited to the illustrations and plans presented to the Planning Commission for review and approval on June 1, 2020. Any changes to Planning Commission approved plans and specifications will require staff review and re-approval by the Planning Commission.

Commissioner Travis seconded; motion was approved unanimously.

OTHER BUSINESS

Monthly Security Report

Mr. Pippin moved for approval of the monthly security report; seconded by Commissioner Travis. Approval was unanimous.

ADMINISTRATIVE INFORMATION

The Planning and Codes monthly report was presented to the Commissioners.

Being no further business, the meeting adjourned at 7:56 pm.

APPROVED: JULY 6, 2020 *Holly Earls*

Holly Earls, City Recorder

BRENTWOOD PLANNING COMMISSION **1.**

Meeting Date: 08/03/2020

Information

PROJECT NUMBER

BPC2007-001

PROJECT DESCRIPTION

Minor Site Plan Alteration – Virginia Springs Office Building, Phase II, 5501 Virginia Springs

Ragan Smith Associates requests approval to add two shade sails behind the building, which is under construction. The sails are made of commercial grade materials in a "Sky Blue" color and suspended from metal poles painted to match the darker colors on the building. Tables and chairs are also proposed as part of the improvements.

The sails are installed so that one side is approximately 12' above the patio surface and the other side approximately 7'10" above the patio.

The proposal is similar to one approved by the Planning Commission in June 2019 for Building One.

ZONING OF PROPERTY

Zoning C-1/SR

APPLICANT NAME/ADDRESS

Ms. Heather Grimes, Ragan Smith Associates, 315 Woodland Street, Nashville, TN 37216

Attachments

Final Staff Report
Master Plan
Amenity Layout
Exhibit
Shop Drawings

CITY OF BRENTWOOD
MUNICIPAL PLANNING COMMISSION
PLANNING DEPARTMENT STAFF REPORT
MONDAY, AUGUST 3, 2020 -- 7:00 P.M.
FINAL

CONSENT AGENDA -- ITEM 1:

REQUEST:	***MINOR SITE PLAN ALTERATION – VIRGINIA SPRINGS OFFICE BUILDING, PHASE II, 5511 VIRGINIA WAY***
PROJECT NUMBER:	***BPC2007-001***
CURRENT ZONING:	***C-1/SR -- COMMERCIAL OFFICE / SPECIAL RESTRICTIONS***

GENERAL INFORMATION:

Ragan Smith Associates requests approval to add two shade sails behind the building, which is under construction. The sails are made of commercial grade materials in a "Sky Blue" color and suspended from metal poles painted to match the darker colors on the building. Tables and chairs are also proposed as part of the improvements.

The sails are installed so that one side is approximately 12' above the patio surface and the other side approximately 7'10" above the patio.

The proposal is similar to one approved by the Planning Commission in June 2019 for Building One.

PROJECT LOCATION:

The subject property is located at 5511 Virginia Springs.

APPROVAL HISTORY:

At its January 8, 2019 meeting, the Brentwood Planning Commission voted to approve a site plan for Phase Two of the Virginia Springs Office Development. The proposal includes construction of a second four-story, office building, having an area of 106,000 square feet (leasable) with 396 parking spaces. The building height is labeled as being 59' 8" tall. The previously proposed parking garage and future building connector have been eliminated from the plan.

BUILDING/IMPROVEMENT	LOT #	LOT AREA (AC)	BUILDING AREA (SF)	COMMENTS
POWELL PARK	ONE	24.02		Parkland / Open Space Area
TRACTOR SUPPLY	TWO	17.20	260,000	Two Connected Buildings & Parking Garage
VIRGINIA SPRINGS, PH. ONE	THREE	13.76	106,000	Under Construction
VIRGINIA SPRINGS, PH. TWO			106,000	Proposed
TOTAL BUILDING AREA – ENTIRE PROJECT			**472,000**	

The materials used on the exterior of the new building will mirror those used on Phase One, which is currently under construction.

The southerly side of the new office building is designated as a "Dark Zone" per the Special Restrictions placed on the project pursuant to Ordinance 2007-26, which rezoned the property to C-1/SR. Additionally, parking lot lights in the designated "Dark Zones" as shown on the plan shall be turned off from 10:00 PM to 6:00 AM, except for those lights needed for the safety of tenants around the perimeter of the building.

At its October 3, 2016 regular meeting, the Brentwood Planning Commission approved a revised site plan for Lot 3 of the PLC Property Plat (Virginia Springs), located at 55601 Virginia Way.

The plan proposes:

1. *Construction of two office buildings having a combined leasable area of 212,000 sf (106,000 sf each);*
2. *Construction of a two-level parking structure, the first level will be underground, having a total of 374 parking spaces, which will be constructed as part of Phase II of the project, and*
3. *Demolition of the existing Godwin Home.*

The special restrictions attached to ordinance 2007-26 permit the construction of four buildings with a total area of 472,000 sf. The tractor supply buildings, as approved by the Planning Commission include an area of 260,000 sf.

At its September 6, 2016 regular meeting the Planning Commission approved a revised Master Plan for Lot 3 of the Virginia Springs project (PLC Property). The existing lot includes an area of 13.76 acres.

The revised master plan proposes:

1. *Demolition of the Godwin Home, Building E, which includes an area of 6,000 sf;*
2. *Construction of two new buildings on Lot 3 having a total area of 212,000 sf, 106,000 sf each;*
3. *A two-level parking structure, the first level will be underground, having a total of 374 parking spaces.*

The proposed project will be developed in two phases and plan also shows a possible future building connector.

CONDITIONS OF APPROVAL

*Staff recommends that the following **two** conditions be attached to the approval of the request.*

1. Development of the project shall comply with all Special Restrictions included as part of Ordinance 2007-26 and Ordinance 2007-27.

2. A site plan shall be vested for a period of three years from the date of the original approval.

STANDARD REQUIREMENTS:

*Staff recommends that the following **ten** standard requirements be attached to the approval of the request.*

1. Add the following note to the site plan;

   *This site plan is subject to a three-year vesting period, during which the development standards in effect on the date of approval will remain the standards applicable to this plan. If construction is not completed during the first three years, the original site plan is considered a preliminary site plan and the applicant must obtain approval of a final site plan. Development of the property shown on this plan may be subject to standards other than those that were applicable during the vesting period. The Initial vesting period for this plan expires on **January 8, 2022**, unless extended by the City of Brentwood. Persons relying on this plan after said date should contact the City of Brentwood to determine if development may continue as depicted on the plan.*

2. When the construction authorized pursuant to a site plan is not completed within three years from the date of initial approval, but the applicant desires to complete the project proposed for the site, the plan as initially approved for the project or as amended shall be considered a preliminary site plan. If the applicant secures all necessary permits, commences site preparation and obtains approval of a final site plan within the three-year vesting period following approval of the preliminary site plan, then the vesting period shall be extended an additional two years beyond the expiration of the initial three-year vesting period. During the two-year extension, the applicant must commence construction and maintain any necessary permits to remain vested.

3. If necessary permits are maintained and construction, as defined by Section 78-43, has commenced by the end of the two-year extension, then the vesting period shall remain in effect until the Planning and Codes Department has certified final completion of the project, provided the total vesting period shall not exceed ten years from the date of approval of the preliminary site plan.

4. If the construction authorized pursuant to a site plan is completed within three years from the date of approval, the site plan shall then be considered the final site plan for the project.

5. The property owner is responsible for all development fees including water and sewer service and tap fees, building permit fees and Public Works Project Fees. The required fees shall be used for future infrastructure related improvements required by the proposed development.

6. The appropriate permits shall be obtained before the start of construction.

7. Deviations from the approved plan in the development of a project or the failure to satisfy any standard requirements or special conditions of approval imposed by the planning commission will be considered a violation of the provisions of the Zoning Ordinance, which shall be subject to punishment as provided in Section 1-9 of the Brentwood Municipal Code. The City may also require the applicant to appear before the Planning

Commission to address any deficiencies or unapproved modifications. The project may also be subject to delays in issuance of permits, certificates of occupancy, recordation of plats or other project approvals.

8. Any changes to plans approved by the Planning Commission will require staff review and re-approval by the Planning Commission.

9. Development of this project shall comply with all applicable codes and ordinances of the City of Brentwood.

10. Approval of the proposed plan shall be limited to the illustrations and plans presented to the Planning Commission for review and approval on **August 3, 2020**. Any changes to Planning Commission approved plans and specifications will require staff review and re-approval by the Planning Commission.

RECOMMENDATION:

Staff requests that the Planning Commission vote to approve the proposed minor site plan revisions, subject to the requirements of the staff report.

RAGAN+SMITH

LAND PLANNERS • CIVIL ENGINEERS
LANDSCAPE ARCHITECTS • SURVEYORS

Highwoods PROPERTIES

HASTINGS
ARCHITECTURE ASSOCIATES, LLC

MASTER PLAN
FOR
VIRGINIA SPRINGS

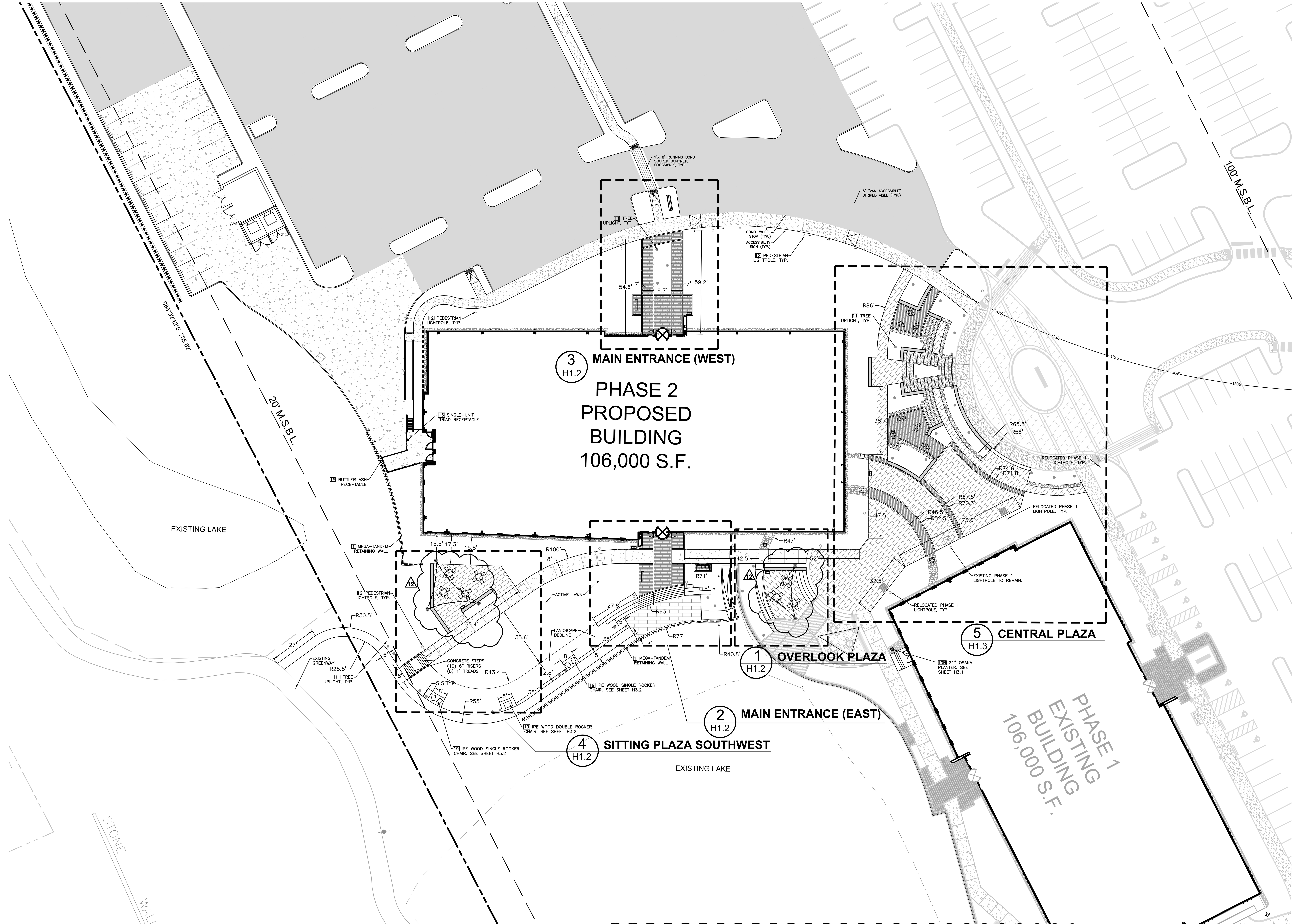
CITY OF BRENTWOOD, WILLIAMSON COUNTY, TENNESSEE

DATE:	AUG 2019
DESIGNED:	N. GRAY
DRAWN:	N. GRAY
SCALE:	NOT TO SCALE
JOB NO.	85141

0	08/16/19	SPR SUBMITTAL
1	11/01/19	SPR REVISIONS
2	12/04/19	SPR REVISIONS
NO.	DESCRIPTION	

SITE RENDERING PLAN

R-1



NOTE:
THIS SITE PLAN IS SUBJECT TO A THREE YEAR VESTING PERIOD, DURING WHICH THE DEVELOPMENT STANDARDS IN EFFECT ON THE DATE OF APPROVAL WILL REMAIN THE STANDARDS APPLICABLE TO THIS PLAN. IF CONSTRUCTION IS NOT COMPLETED DURING THE FIRST THREE YEARS, THE ORIGINAL SITE PLAN IS CONSIDERED A PRELIMINARY SITE PLAN AND THE APPLICANT MUST OBTAIN APPROVAL OF A FINAL SITE PLAN. DEVELOPMENT OF THE PROPERTY SHOWN ON THIS PLAN MAY BE SUBJECT TO STANDARDS OTHER THAN THOSE THAT WERE APPLICABLE DURING THE VESTING PERIOD. THE INITIAL VESTING PERIOD FOR THIS PLAN EXPIRES ON JANUARY 8, 2022, UNLESS EXTENDED BY THE CITY OF BRENTWOOD. PERSONS RELYING ON THIS PLAN AFTER SAID DATE SHOULD CONTACT THE CITY OF BRENTWOOD TO DETERMINE IF DEVELOPMENT MAY CONTINUE AS DEPICTED ON THE PLAN.

811 Know what's below. Call before you dig.

0 20 40 60
SCALE: 1"=20'

HASTINGS
ARCHITECTURE ASSOCIATES, LLC
ARCHITECTURE • INTERIORS
PLANNING • SUSTAINABILITY
127 THIRD AVENUE SOUTH
NASHVILLE, TN 37201
p 615.329.1399
www.haa.us

© 2019

HEATHER HOUSER GRIMES · REGISTERED · AGRICULTURE · COMMERCE · TENNESSEE NO. 1079 · LANDSCAPE ARCHITECT · 7/17/20

CONSTRUCTION DOCUMENTS

RAGAN•SMITH
LAND PLANNERS • CIVIL ENGINEERS
LANDSCAPE ARCHITECTS • SURVEYORS
85141 0491

Highwoods PROPERTIES

VIRGINIA SPRINGS - PHASE II

5501 VIRGINIA WAY | BRENTWOOD | TENNESSEE | 37027

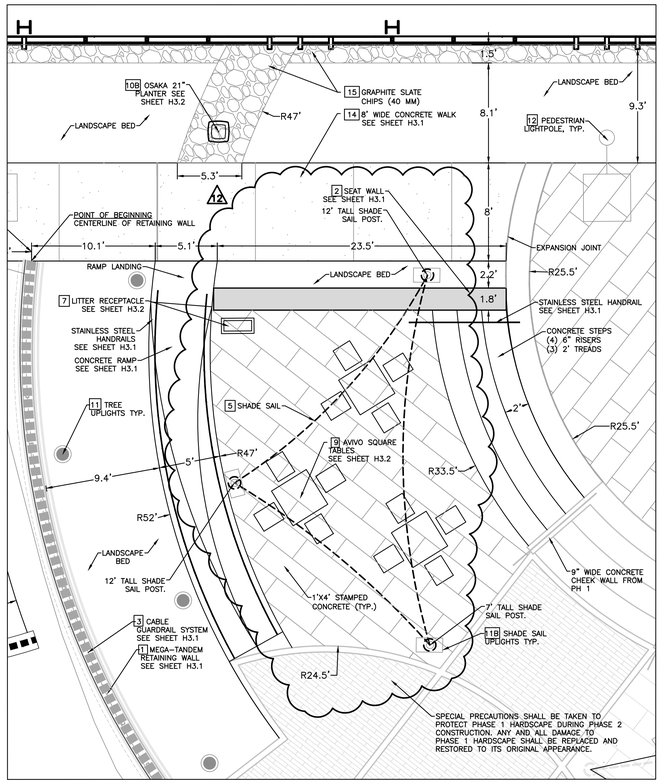
REVISION INFORMATION

6	ASI 01	07/03/19
9	ASI 02	09/27/19
12	SHADE SAIL CONDITIONS OF APPROVAL	07/16/20

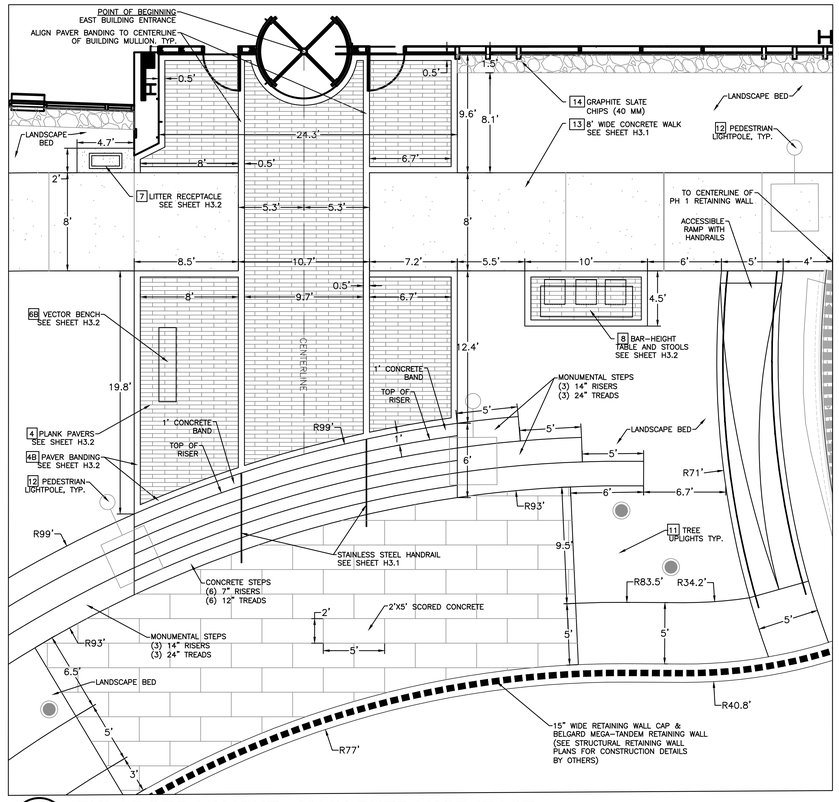
17080 2019.03.22

PHASE 2
HARDSCAPE
OVERALL LAYOUT
PLAN

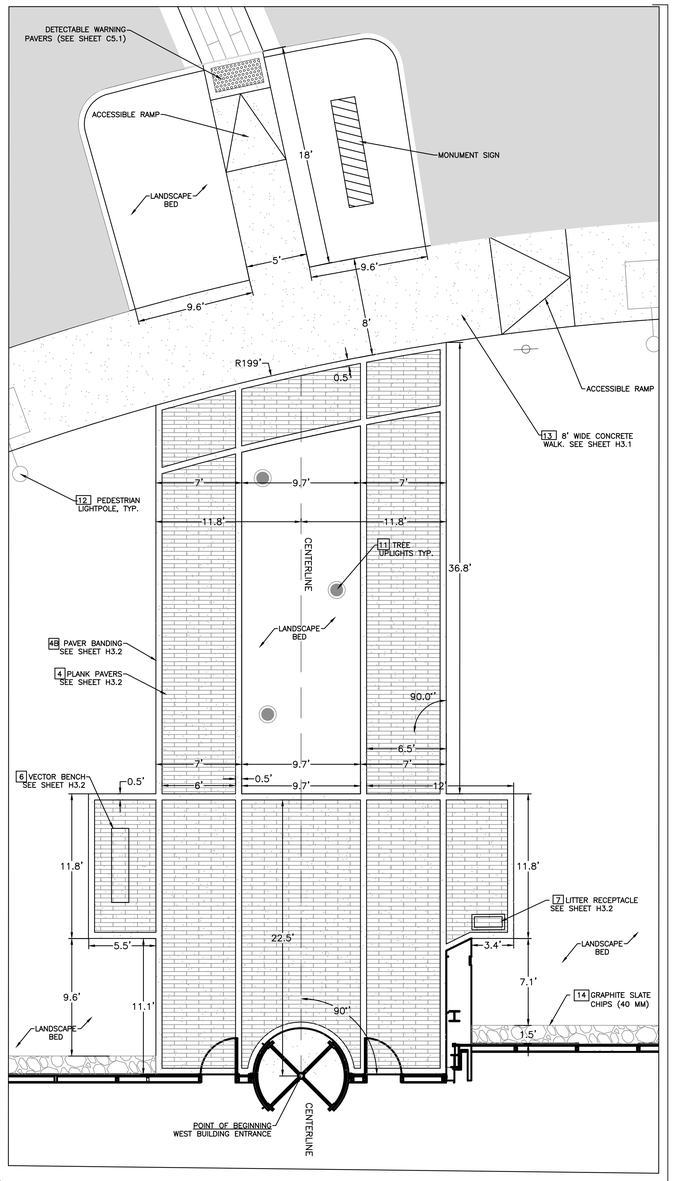
H1.1



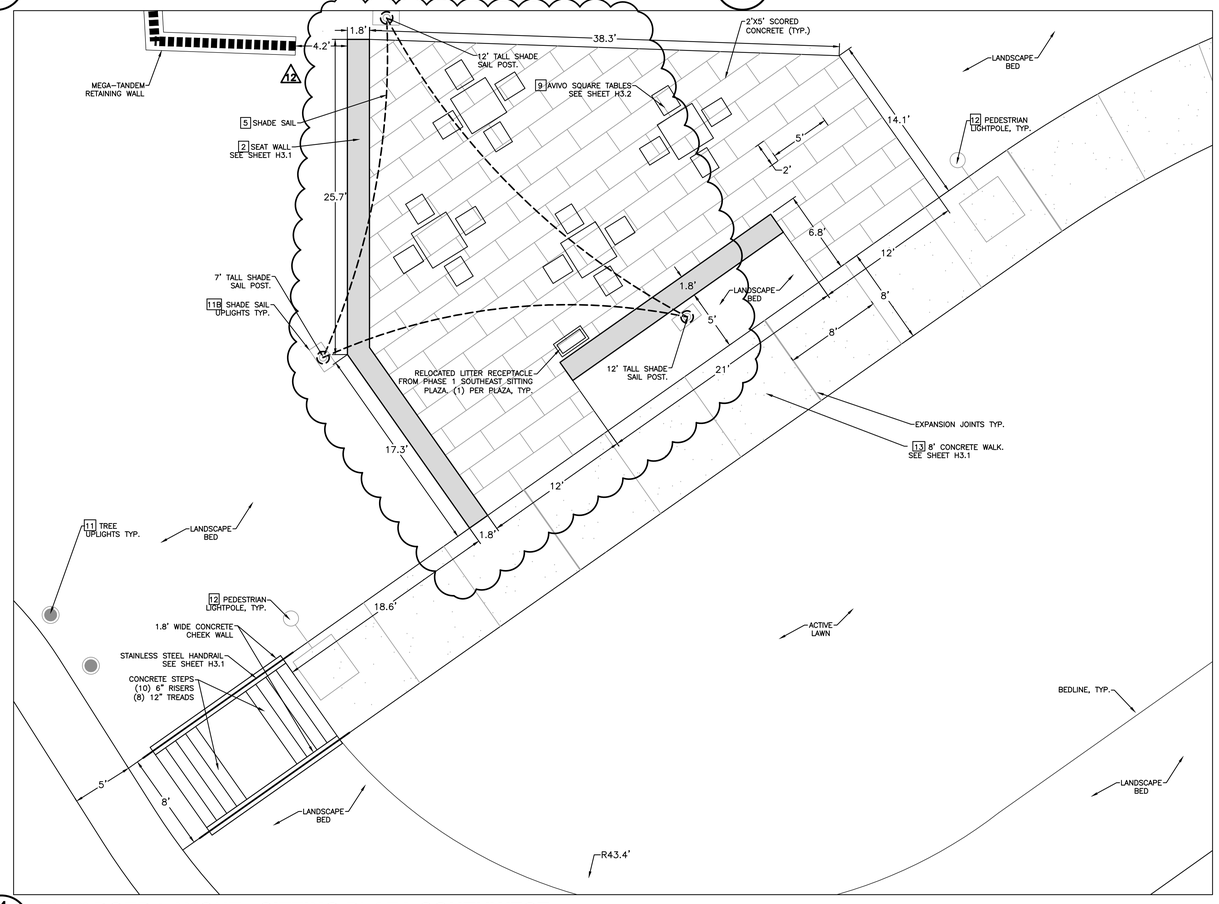
1 H1.2 **ENLARGED LAYOUT: OVERLOOK PLAZA** SCALE: 1"=5'



2 H1.2 **ENLARGED LAYOUT: MAIN ENTRANCE (EAST)** SCALE: 1"=5'



3 H1.2 **ENLARGED LAYOUT: MAIN ENTRANCE (WEST)** SCALE: 1"=5'



4 H1.2 **ENLARGED LAYOUT: SITTING PLAZA SOUTHWEST** SCALE: 1"=5'

811 Know what's **below.** **Call** before you dig.

0 5' 10' 15'
SCALE: 1"=5'

HASTINGS
ARCHITECTURE ASSOCIATES, LLC
ARCHITECTURE • INTERIORS
PLANNING • SUSTAINABILITY
127 THIRD AVENUE SOUTH
NASHVILLE, TN 37201
p 615.329.1399
www.haa.us
© 2019

HEATHER HOUSER GAMES REGISTERED LANDSCAPE ARCHITECT AGRICULTURE 7/17/2020 TENNESSEE NO. 1070 COMMISSION EXPIRES: 06/30/2021

CONSTRUCTION DOCUMENTS

RAGAN SMITH
LAND PLANNERS • CIVIL ENGINEERS
LANDSCAPE ARCHITECTS • SURVEYORS
NASHVILLE CHATTANOOGA
85141 0491

Highwoods PROPERTIES

VIRGINIA SPRINGS - PHASE II

5501 VIRGINIA WAY | BRENTWOOD | TENNESSEE | 37027

REVISION INFORMATION

1	ASI 01	07/03/19
2	ASI 02	09/27/19
3	SHADE SAIL CONDITIONS OF APPROVAL	07/16/20

17080 2019.03.22

PHASE 2 HARDSCAPE ENLARGED LAYOUT PLAN

H1.2

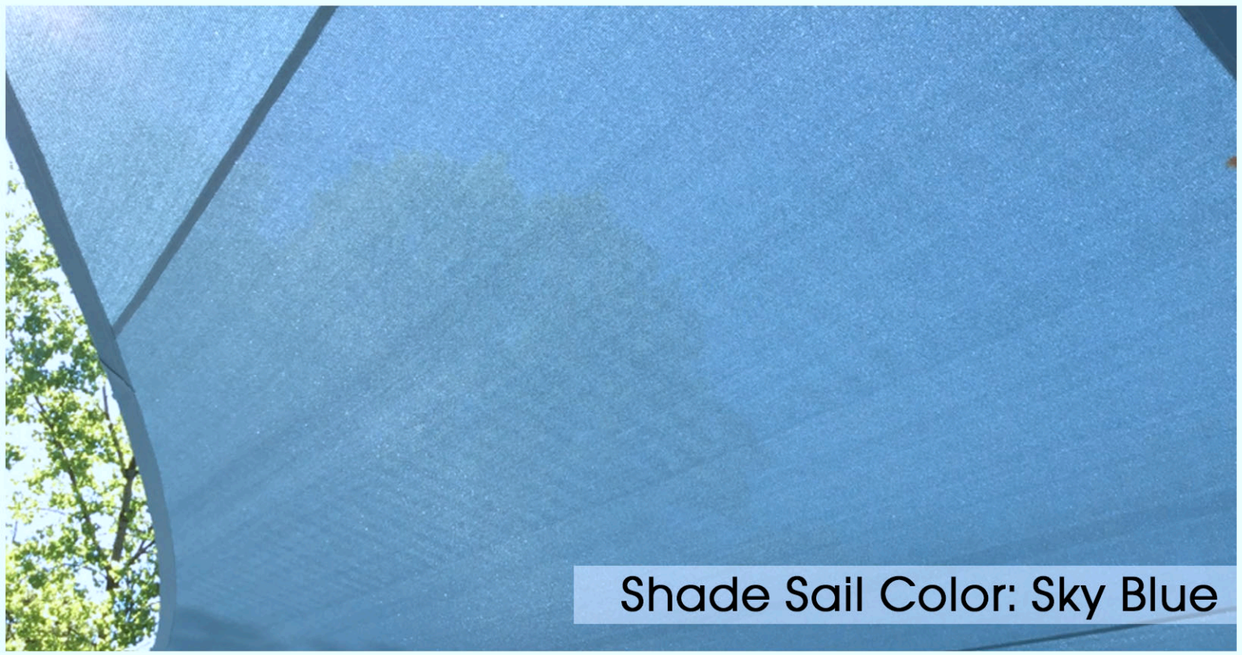
G:\2019\17080-VIRGINIA SPRINGS\PHASE 2\CDS\H1 SHEETS_HARDSCAPE PLANS\H1.2 PHASE 2 HARDSCAPE ENLARGED LAYOUT PLAN.DWG
XREF: C:\USERS\JMCMAHAN\DESKTOP\17080 H1.2 PHASE 2 HARDSCAPE ENLARGED LAYOUT PLAN_JMCMAHAN.DWG



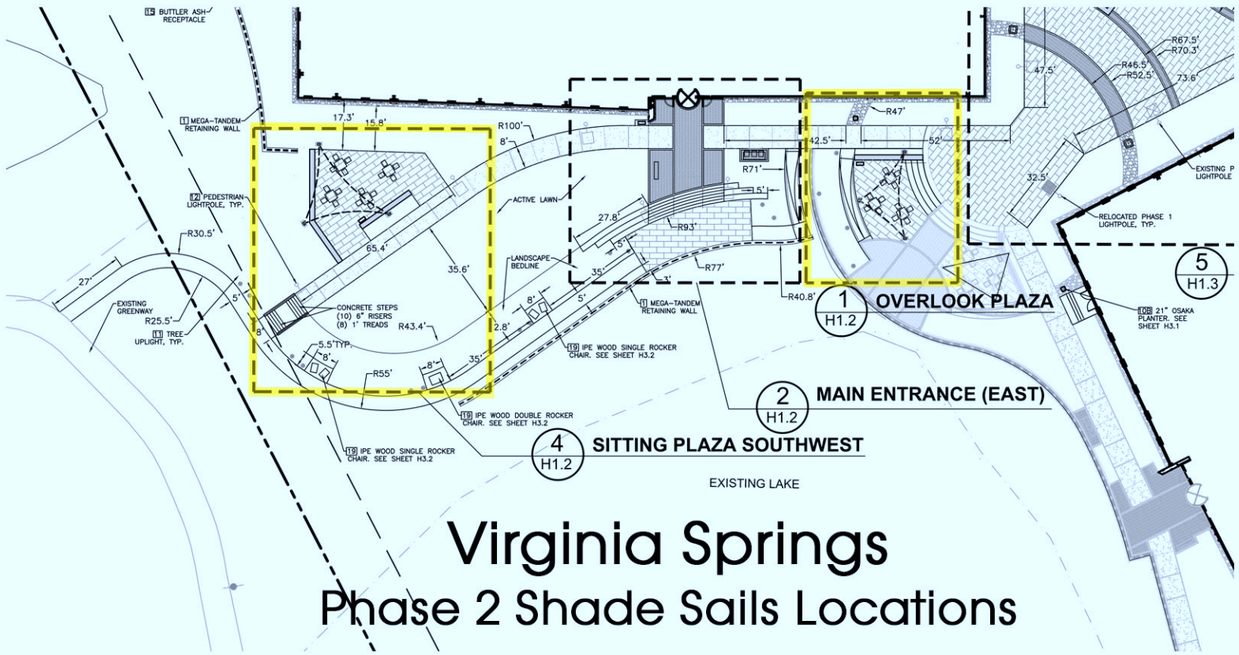
Shade Structure at Overlook Plaza



Shade Structure at Sitting Plaza

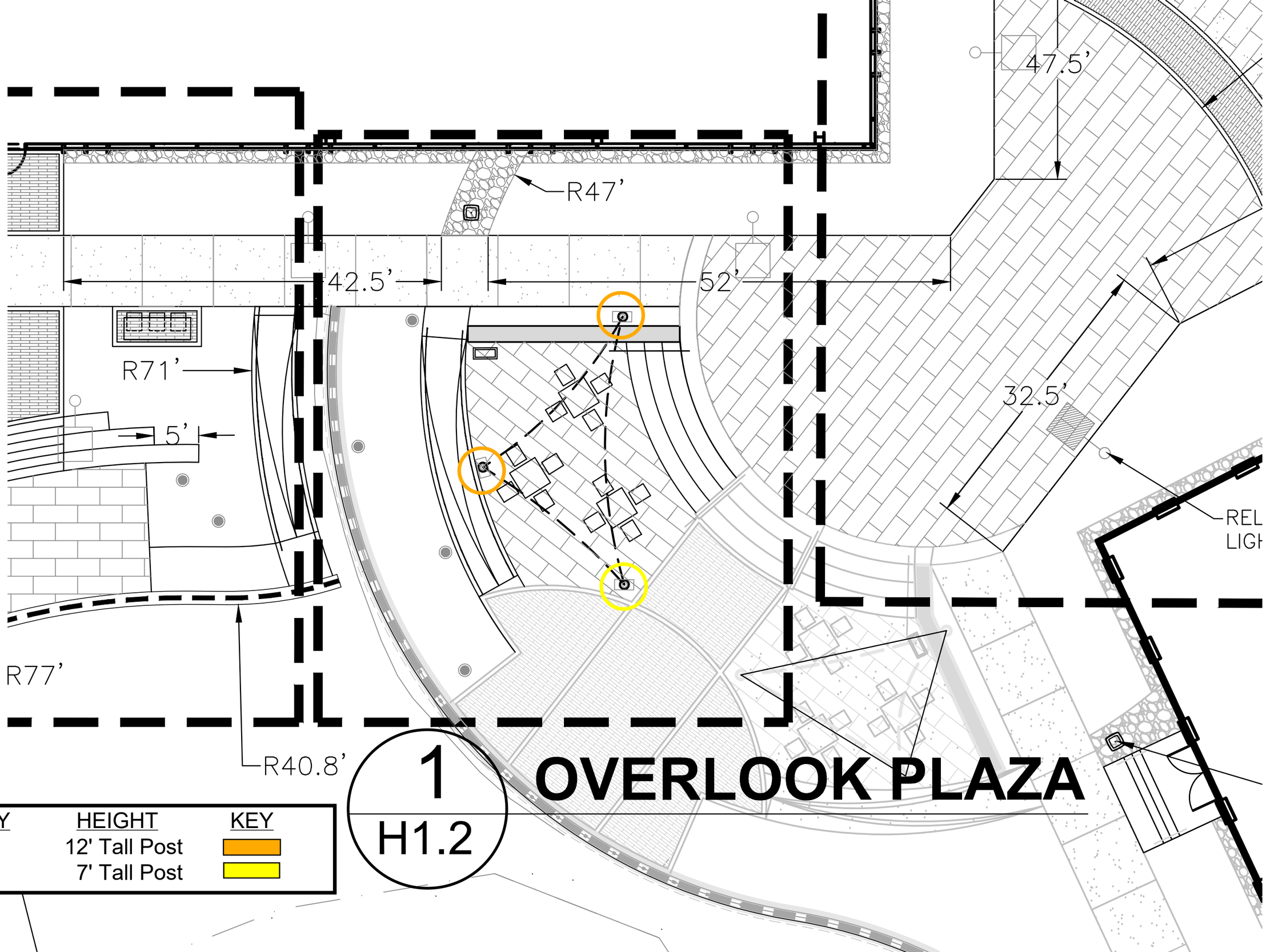


Shade Sail Color: Sky Blue



Virginia Springs

Phase 2 Shade Sails Locations


R47’
42.5’
52’
47.5’
R71’
5’
32.5’
R77’
R40.8’
REL
LIGH
1
H1.2
OVERLOOK PLAZA
QTY HEIGHT KEY
(2) 12' Tall Post
(1) 7' Tall Post

poligon® FABRIC

A Division of PORTERCORP 4240 N. 136th AVE HOLLAND, MI 49424 (616) 399-1963
Designs and calculations of Poligon buildings are protected under copyright laws and patents
and may not be used in the construction or design of a building that is not supplied by Poligon.
Copyright laws protect the style and visual appearance of the structure while patents may protect other parts of the design.
PATENTED AND/OR PATENTS PENDING COPYRIGHT 2013 PORTERCORP HOLLAND, MI 49424

PROJECT NAME: VIRGINIA SPRINGS PHASE 2- OVERLOOK PLAZA

PROJECT LOCATION: BRENTWOOD, TN

BUILDING TYPE: FSL 20X30

FABRIC TYPE: HDPE

JOB NUMBER: P11205

ORDER NUMBER: 67390

REVISIONS			
REV.	DESCRIPTION	BY	DATE
A	REORIENTED PLAN OF STRUCTURE TO MATCH SITE PLAN AND UPDATED COLUMN LENGTHS	DS	5-27-20
B	REVISED COLUMN SPACING	JS	6/4/2020

DRAWING LIST:

SHEET NUMBER	DRAWING DESCRIPTION
CS	COVER SHEET
1	ARCHITECTURAL ELEVATIONS
2	ANCHOR LAYOUT
2.1	ANCHOR AND FOOTING DETAILS
3	STRUCTURAL FRAMING PLAN
4	SAIL LAYOUT
5	FABRIC CONNECTION DETAILS

1 H1.2 OVERLOOK PLAZA

MANUFACTURER NOTES:

MATERIALS:

DESCRIPTION	ASTM DESIGNATION
TUBE STEEL	A500 (GRADE B)
SCHEDULE PIPE	A53 (GRADE B)
RMT PIPE	A519
LIGHT GAGE COLD FORMED	A1003 (GRADE 50)
STRUCTURAL STEEL PLATE	A36
ROOF PANELS (STEEL)	A653
ANCHOR BOLTS	SEE SHEET 2.1

GENERAL NOTES:

UNLESS NOTED OTHERWISE, THIS STRUCTURE WAS DESIGNED TO ONLY SUPPORT WHAT IS SHOWN ON THESE DRAWINGS. POLIGON MUST BE CONTACTED IF ANYTHING ELSE IS TO BE ATTACHED TO THIS STRUCTURE (WALLS, COLUMN WRAPS, RAILINGS, ETC.) SO THE DESIGN OF THIS STRUCTURE CAN BE REVIEWED AND POSSIBLY REVISED.

UNLESS NOTED OTHERWISE, THIS STRUCTURE WAS DESIGNED ASSUMING A 20' SEPARATION BETWEEN ANY ADJACENT STRUCTURE WITH AN EAVE HEIGHT EQUAL TO OR GREATER THAN THE EAVE HEIGHT OF THIS STRUCTURE. IF THAT SEPARATION DOES NOT EXIST, POLIGON MUST BE CONTACTED SO THE DESIGN OF THIS STRUCTURE CAN BE REVIEWED AND POSSIBLY REVISED.

STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) SPECIFICATION MANUAL.

ALL WELDING IS PERFORMED BY AMERICAN WELDING SOCIETY CERTIFIED WELDERS AND CONFORMS TO THE LATEST EDITION OF AWS D1.1 OR D1.3 AS REQUIRED.

PARTS SHOWN MAY BE UPGRADED DUE TO STANDARDIZED FABRICATION.
REFER TO THE SHIPPING BILL OF MATERIALS AND FINAL INSTALLATION INSTRUCTIONS INCLUDED WITH THE STRUCTURE FOR POSSIBLE SUBSTITUTIONS AND IMPROVEMENTS.

FOR PROPER FIELD INSTALLATION OF THE BUILDING IT IS RECOMMENDED THAT THE PRIMARY FRAME INSTALLER AND THE ROOF INSTALLER HAVE A MINIMUM FIVE (5) YEARS DOCUMENTED EXPERIENCE INSTALLING THIS TYPE OF PRODUCT.

FOR PROPER FIELD INSTALLATION OF THE BUILDING IT IS RECOMMENDED THAT ELECTRIC WIRING, IF REQUIRED, BE RUN THROUGH THE STRUCTURAL MEMBERS BEFORE THE BUILDING IS ERECTED.

FABRICATOR APPROVALS:

CITY OF PHOENIX, AZ APPROVED FABRICATOR #C08-2010
CITY OF LOS ANGELES, CA APPROVED FABRICATOR #1596
CITY OF RIVERSIDE, CA APPROVED FABRICATOR #SP06-0033
CITY OF HOUSTON, TX APPROVED FABRICATOR #470
CLARK COUNTY, NV APPROVED FABRICATOR #264
STATE OF UTAH APPROVED FABRICATOR 02008-14

CERTIFICATES:

MIAMI-DADE COUNTY CERTIFICATE OF COMPETENCY NO. 19-0806.05
PCI (POWDER COATING INSTITUTE) 4000 CERTIFIED

DESIGN CRITERIA:

GENERAL:
2012 INTERNATIONAL BUILDING CODE
RISK CATEGORY: I

DEAD LOAD:
FABRIC DEAD LOAD: 1 PSF
FRAME DEAD LOAD: SELF WEIGHT

LIVE LOAD:
ROOF LIVE LOAD: 5 PSF

SNOW DESIGN DATA:
GROUND SNOW LOAD (Pg): 10 PSF
FLAT ROOF SNOW LOAD (Pf): 10 PSF
SNOW EXPOSURE FACTOR (Ce): 1.0
SNOW LOAD IMPORTANCE FACTOR (Is): 0.8
THERMAL FACTOR (Ct): 1.2

WIND DESIGN DATA:
BASIC WIND SPEED (V): 115 MPH
GUST EFFECT FACTOR (G): 0.85
INTERNAL PRESSURE COEFFICIENT (GCpi): 0
WIND EXPOSURE: C

SEISMIC DESIGN DATA:
WILL NOT CONTROL DESIGN
SEISMIC IMPORTANCE FACTOR (Ie): 1.0
SEISMIC DESIGN CATEGORY: C
SEISMIC SITE CLASS: D

FABRIC DESIGN CONSIDERATIONS:
FABRIC SNOW LOAD (Pg): 0 psf
FABRIC BASIC WIND SPEED (V): 90 MPH

WARNINGS:
FABRIC TOP MUST BE REMOVED BEFORE ANY SNOW ACCUMULATION.
FABRIC TOP MUST BE REMOVED IN EVENT OF WINDS EXCEEDING 90 MPH.

APPROVED FOR SUBMITTAL

BY: ANDREW BOWLING

06/04/2020

The Parent Company
Contractors • Managers • Consultants

IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO BUILDING COMPONENTS (AND FOUNDATION DESIGN IF APPLICABLE) DETAILED WITHIN THESE DRAWINGS.

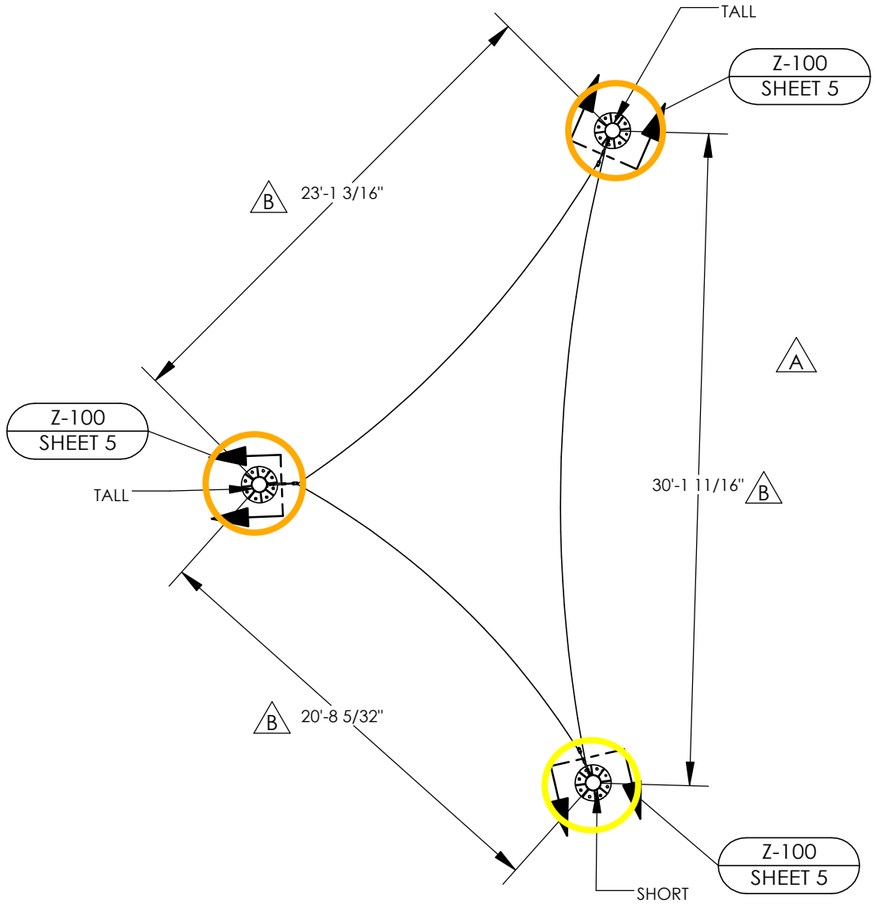
poligon® (616)399-1963 www.poligon.com
byPORTERCORP
COPYRIGHT 2013
PATENTED OR PATENTS PENDING
PORTERCORP 4240 N. 136th AVE HOLLAND, MI 49424

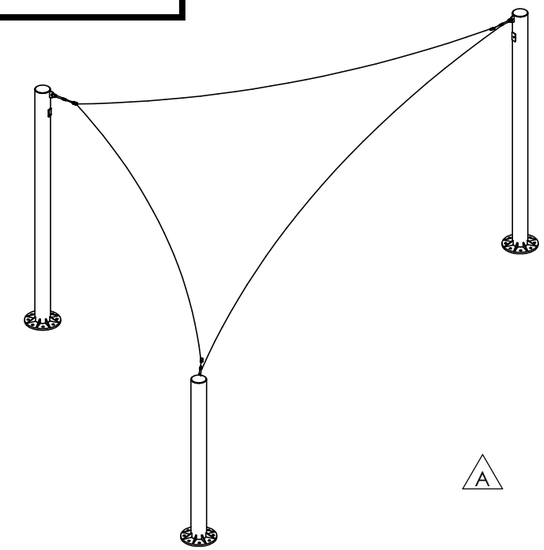
PRINT DATE: 6/4/2020
SCALE: 1:84
DRAWN BY: haryke
REV LEVEL: B
CREATION DATE: 3/8/2017
JOB NO: P11205
CAD MODEL: ~P11205

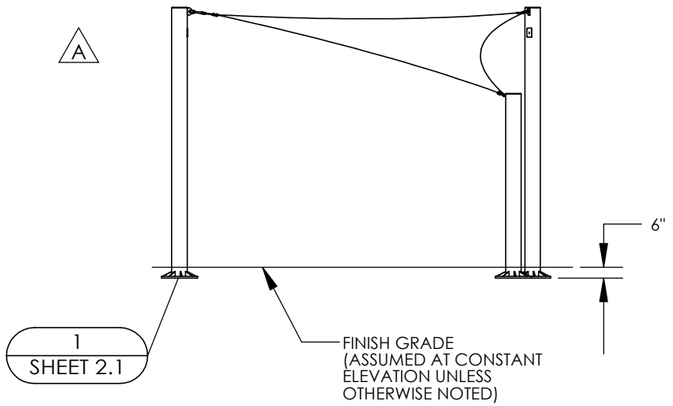
PROJECT: VIRGINIA SPRINGS PHASE 2- OVERLOOK PLAZA
PROJECT LOCATION: BRENTWOOD, TN
DRAWING: COVER SHEET

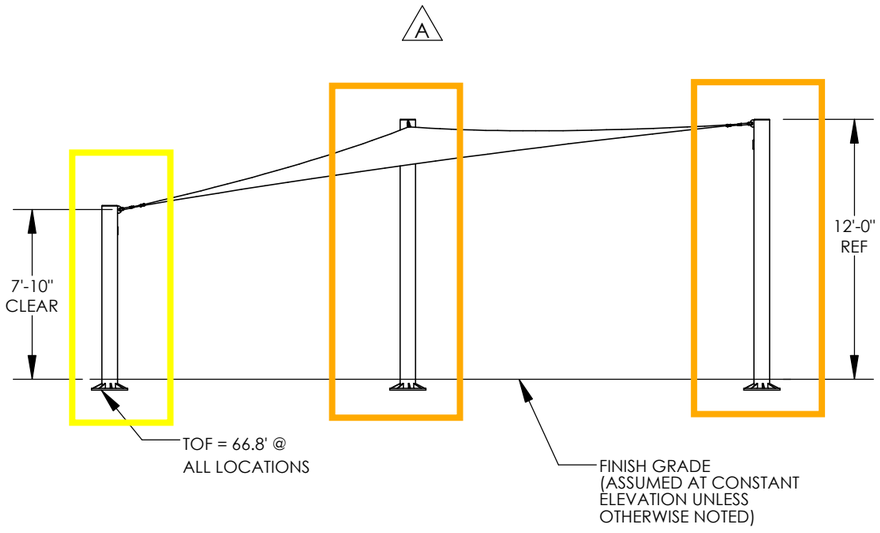
SHEET
CS

QTY	HEIGHT	KEY
(2)	12' Tall Post	
(1)	7' Tall Post	









IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO BUILDING COMPONENTS (AND FOUNDATION DESIGN IF APPLICABLE) DETAILED WITHIN THESE DRAWINGS.

poligon©
(616)399-1963
www.poligon.com
byPORTERCORP

COPYRIGHT 2013
PATENTED OR PATENTS PENDING
PORTERCORP 4240 N. 136th AVE HOLLAND, MI 49424

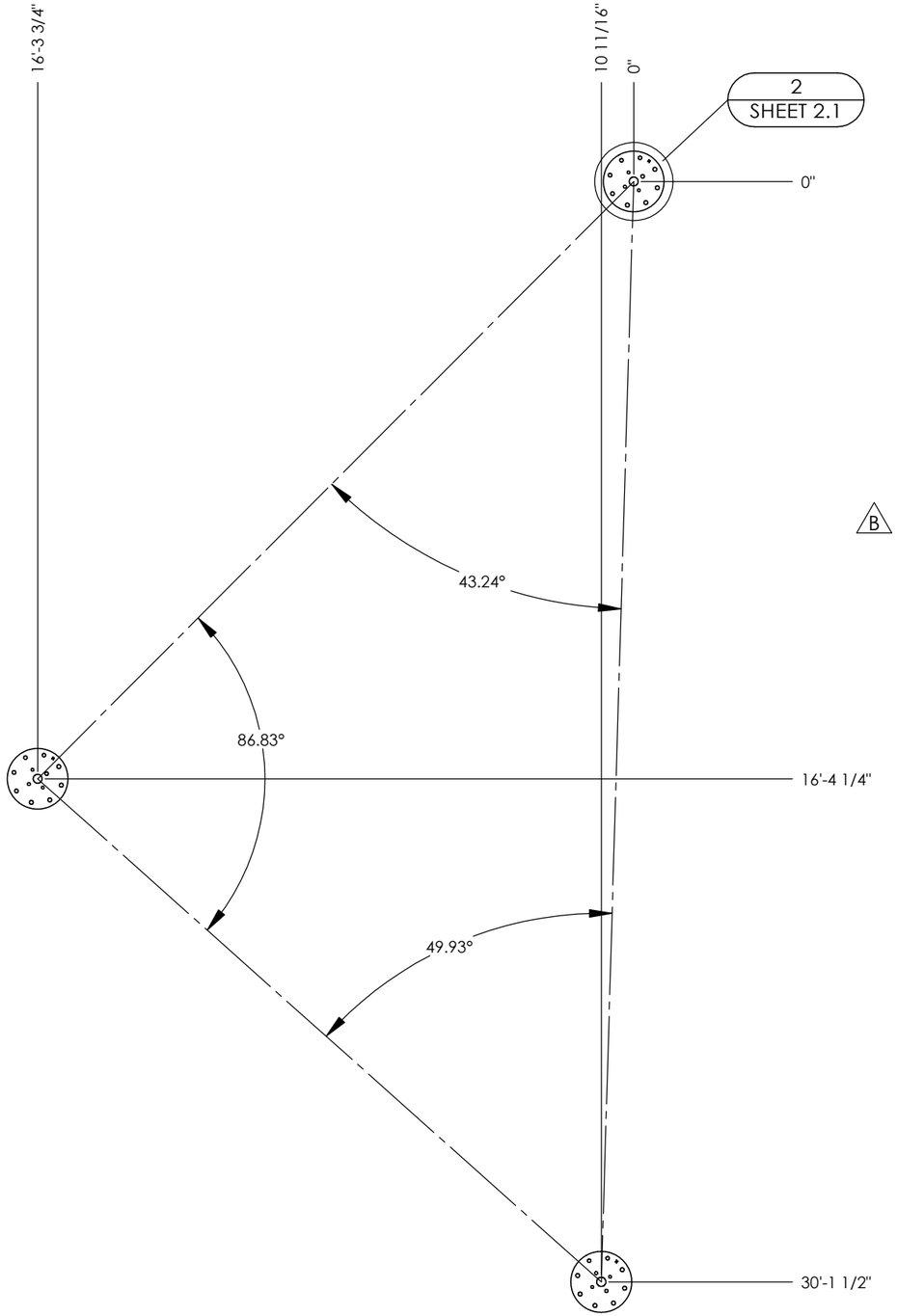
PRINT DATE: 6/4/2020
SCALE: 1:84
DRAWN BY: haryke
REV LEVEL: B
CREATION DATE: 3/8/2017
JOB NO: P11205
CAD MODEL: ~P11205

PROJECT: VIRGINIA SPRINGS PHASE 2- OVERLOOK PLAZA
PROJECT LOCATION: BRENTWOOD, TN
DRAWING: ARCHITECTURAL ELEVATIONS

SHEET 1

N

FOR TRUE NORTH,
SEE CUSTOMER
SITE DRAWINGS



ANCHOR AND FOOTING LAYOUT NOTES:

1. ANCHORS MUST BE CENTERED IN FOOTINGS
2. ANCHOR BOLT GROUP TO BE ALIGNED WITH PLAN NORTH AS SHOWN (TWO ANCHORS IN EACH GROUP POINTING DUE NORTH).

IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO BUILDING COMPONENTS (AND FOUNDATION DESIGN IF APPLICABLE) DETAILED WITHIN THESE DRAWINGS.

poligon © (616)399-1963 www.poligon.com
by PORTERCORP
COPYRIGHT 2013
PATENTED OR PATENTS PENDING
PORTERCORP 4240 N. 136th AVE HOLLAND, MI 49424

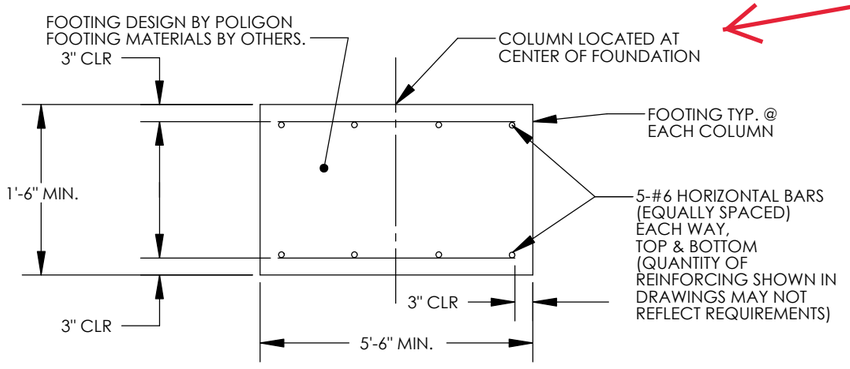
PRINT DATE: 6/4/2020
SCALE: 1:48
DRAWN BY: haryke
REV LEVEL: B
CREATION DATE: 3/8/2017
JOB NO: P11205
CAD MODEL: ~P11205
PROJECT: VIRGINIA SPRINGS PHASE 2- OVERLOOK PLAZA
PROJECT LOCATION: BRENTWOOD, TN
DRAWING: ANCHOR LAYOUT
SHEET 2

FOUNDATION NOTES:

1. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE REQUIREMENTS OF THE BUILDING CODE, AMERICAN CONCRETE INSTITUTE, AND ALL APPLICABLE STATE AND LOCAL ORDINANCES AND REQUIREMENTS.
2. THE CONCRETE DESIGN IS BASED ON THE FOLLOWING PROPERTIES:
   - 28 DAY STRENGTH OF 4500 psi.
   - SLUMP OF 4" (+/-1").
3. THE FOOTING SHALL BEAR ON COMPETENT UNDISTURBED SOIL OR 95% COMPACTED FILL. IF SIGNS OF ORGANIC MATERIAL, UNCONTROLLED FILL, CLAY OR SILT, HIGH WATER TABLE OR OTHER POSSIBLE DETRIMENTAL CONDITIONS ARE FOUND, INSTALLATION OF THE FOUNDATION MUST BE DISCONTINUED AND A SOILS ENGINEER CONTACTED.
4. THE REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615, GRADE 60.
5. IF FOOTING DEPTH SHOWN DOES NOT MEET LOCAL FROST REQUIREMENTS, THE DRILLED PIER FOOTING MAY BE EXTENDED. EXTEND VERTICAL BARS AS REQUIRED AND PROVIDE ADDITIONAL TIES TO MEET SPACING REQUIREMENTS AS SHOWN. IF LOCAL FROST DEPTH REQUIREMENTS ARE NOT MET AND NO DRILLED PIER FOOTING OPTION IS GIVEN, CONTACT ENGINEERING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCAL FROST LINE DEPTH BELOW GRADE PRIOR TO CONSTRUCTION.

THE FOUNDATION DESIGN CONTAINED HEREIN IS SITE SPECIFIC, AND IS BASED ON REPORT OF GEOTECHNICAL INVESTIGATION, VIRGINIA WAY AND GRANNY WHITE PIKE, BY PSI, Inc.. DATED JUNE 30, 2016. REPORT NO. 3581074. PROPER CARE MUST BE TAKEN TO ENSURE ANY AND ALL RECOMMENDATIONS, OF THE ABOVE-MENTIONED REPORT, FOR SITE PREPARATION, SOIL PERFORMANCE AND FOUNDATION DESIGN ARE MET. IF CONDITIONS ARE PRESENT THAT DO NOT ALLOW FOR THESE RECOMMENDATIONS TO BE MET, THE GEOTECHNICAL ENGINEER MUST BE CONTACTED.

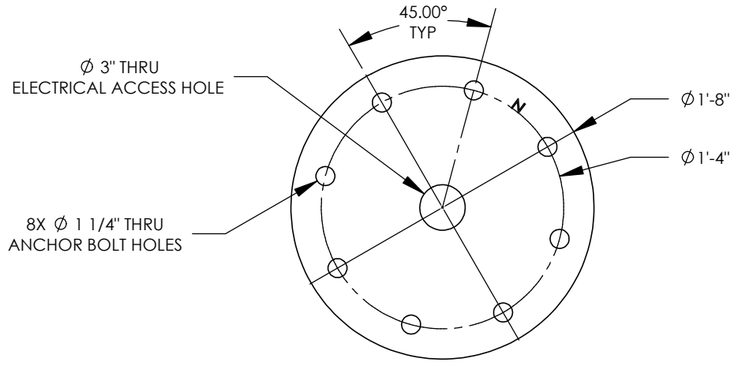
SQUARE FOOTING OPTION



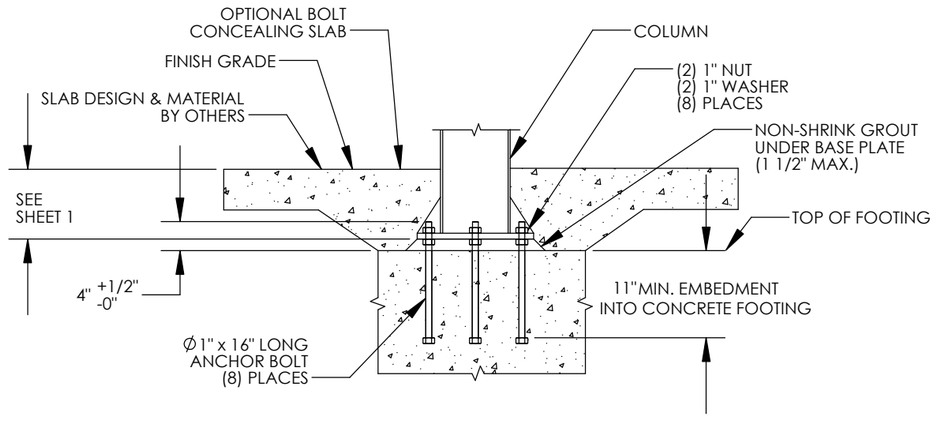
FOOTER OPTION APPLIED

ANCHOR BOLT NOTES - EXTERNAL (ANCHOR BOLTS LOCATED OUTSIDE COLUMN):

1. ANCHOR BOLTS SHALL BE ASTM F1554 (GRADE 55) MATERIAL UNLESS OTHERWISE NOTED.
2. ANCHOR BOLTS SHALL BE EITHER "HEADED" OR "THREADED WITH NUT" AS DEFINED IN THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL.
3. HOOKED ANCHOR BOLTS ARE NOT ACCEPTABLE.
4. ACCURATE ANCHOR BOLT PLACEMENT IS CRITICAL. TO ENSURE THE ANCHOR BOLT LAYOUT MEETS THE DIMENSIONS REQUIRED ON THE DRAWINGS, SURVEY (OR MEASURE) THE LOCATION OF ALL ANCHOR BOLTS PRIOR TO POURING THE FOOTINGS. AN ADDITIONAL SURVEY (OR MEASUREMENT) SHOULD BE MADE AFTER THE FOOTINGS ARE POURED TO CONFIRM THE ANCHOR BOLTS DID NOT SHIFT DURING THE CONCRETE POUR.
5. THE MANUFACTURER STRONGLY RECOMMENDS USING ANCHOR BOLT TEMPLATES BECAUSE THEY SIGNIFICANTLY IMPROVE THE ACCURACY OF ANCHOR BOLT PLACEMENT. AN ANCHOR BOLT TEMPLATE IS PROVIDED WITH ANY ANCHOR BOLT KIT PURCHASED.
6. IF OUTSIDE CONSULTING ENGINEERS ARE DESIGNING THE FOUNDATIONS FOR THIS STRUCTURE, THEY MUST REFER TO THE MANUFACTURER'S CALCULATIONS FOR MINIMUM CONCRETE PROPERTIES (COMPRESSIVE STRENGTH, EDGE DISTANCE, ETC.) REQUIRED FOR THE ANCHOR BOLT DESIGN.
7. ELECTRICAL ACCESS HOLE IS ALWAYS LOCATED IN THE COLUMN BASE PLATE AS SHOWN.
8. GROUT UNDER BASEPLATES SHALL BE NON-METALLIC, NON-SHRINK GROUT WITH MINIMUM f'c=6500 PSI.
9. THE CALCULATIONS FOR THIS STRUCTURE ASSUME A FIXED COLUMN BASE.



2 / 2.1 ANCHOR BOLT PATTERN_1 / BASE PLATE THICKNESS: 1"



NOTE: QUANITY OF ANCHORS SHOWN IN DRAWINGS MAY NOT REFLECT REQUIREMENTS.

1 / 1 ANCHOR BOLT DETAIL

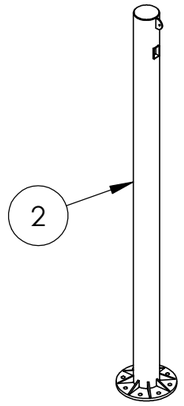
IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO BUILDING COMPONENTS (AND FOUNDATION DESIGN IF APPLICABLE) DETAILED WITHIN THESE DRAWINGS.

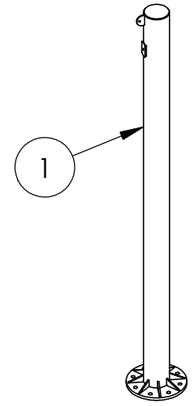
poligon © (616)399-1963 www.poligon.com
by PORTERCORP
COPYRIGHT 2013
PATENTED OR PATENTS PENDING
PORTERCORP 4240 N. 136th AVE HOLLAND, MI 49424

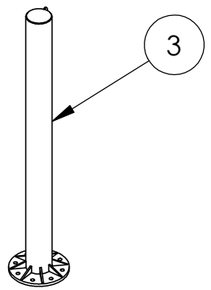
PRINT DATE: 6/4/2020
DRAWN BY: haryke
SCALE: 1:1
REV LEVEL: B
CREATION DATE: 3/8/2017
JOB NO: P11205
CAD MODEL: ~P11205
PROJECT: VIRGINIA SPRINGS PHASE 2- OVERLOOK PLAZA
PROJECT LOCATION: BRENTWOOD, TN
DRAWING: ANCHOR AND FOOTING DETAILS
SHEET 2.1

N

FOR TRUE NORTH,
SEE CUSTOMER
SITE DRAWINGS







ITEM	FRAME/QTY.	PART NO.	DESCRIPTION	MATERIAL	WEIGHT
3	1	-	COLUMN 3 ASM	SCH40X8	333.60
2	1	-	COLUMN 2 ASM	SCH40X8	446.62
1	1	-	COLUMN 1 ASM	SCH40X8	446.62

IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO BUILDING COMPONENTS (AND FOUNDATION DESIGN IF APPLICABLE) DETAILED WITHIN THESE DRAWINGS.

poligon© (616)399-1963
www.poligon.com
byPORTERCORP

COPYRIGHT 2013
PATENTED OR PATENTS PENDING
PORTERCORP 4240 N. 136th AVE HOLLAND, MI 49424

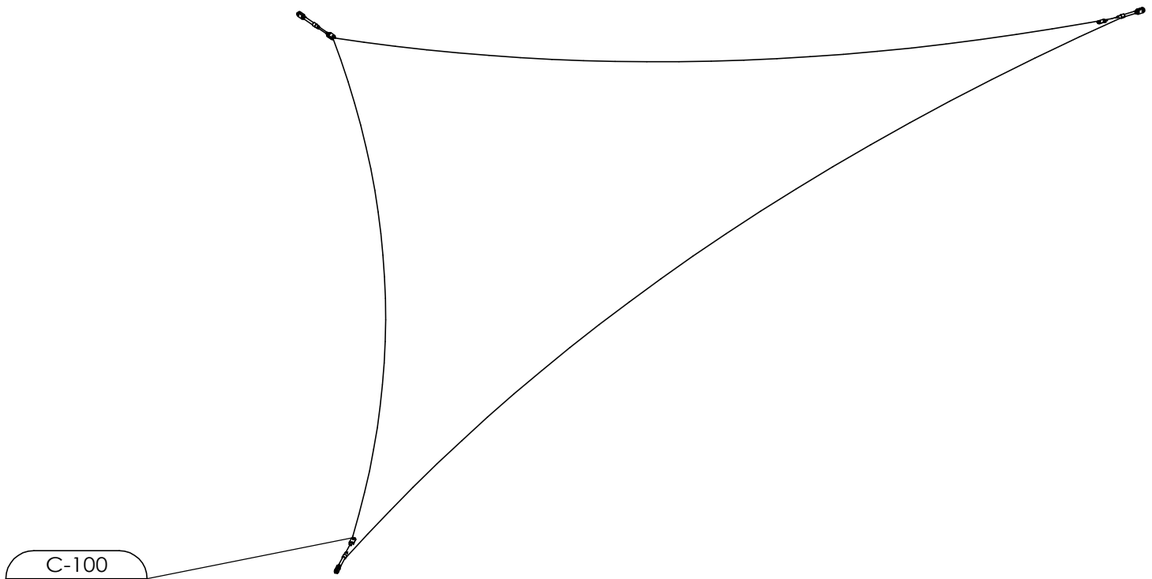
PRINT DATE: 6/4/2020
DRAWN BY: haryke
SCALE: 1:50
REV LEVEL: B
CREATION DATE: 3/8/2017
JOB NO: P11205
CAD MODEL: ~P11205

PROJECT: VIRGINIA SPRINGS PHASE 2- OVERLOOK PLAZA
PROJECT LOCATION: BRENTWOOD, TN
DRAWING: STRUCTURAL FRAMING PLAN

SHEET
3

FABRIC SPECIFICATIONS

1. HEAVY DUTY PROFESSIONAL GRADE ARCHITECTURAL SHADE FABRIC 100% LEAD AND PHTHALATE FREE MADE FROM UV STABILIZED HDPE MONOFILAMENT AND TAPE YARNS
2. SPECIALIZED LOCK STITCH KNIT FOR MORE MOVEMENT AND BETTER CHANNELING OF COOLING BREEZEWAYS
3. CONSTRUCTED TO BLOCK UP TO 98.8% OF HARMFUL UV SUN RAYS
4. HEAT SET FOR EASE OF FABRICATION AND TO LIMIT SHRINKAGE
5. RECYCLABLE, TEAR RESISTANT AND WILL NOT CRACK, ROT OR FADE
6. (10) YEAR MANUFACTURERS LIMITED WARRANTY AGAINST UV DEGRADATION
7. ALL SEAMS AND HEMS ARE DOUBLE ROW LOCK STITCHED, SEWN TOGETHER USING GORE® TENARA® THREAD WHICH DOES NOT DETERIORATE OR BLEACH
8. ALL SEAMS AND HEMS ARE DOUBLE ROW LOCK STITCHED SEWN TOGETHER USING GORE® TENARA® THREAD WHICH DOES NOT DETERIORATE FROM EXPOSURE TO THE ELEMENTS OR UV RADIATION.
9. ALSO AVAILABLE WITH FLAME RETARDANT. COLOR OPTIONS AND WARRANTY MAY VARY.



C-100
SHEET 5
S-100
SHEET 5

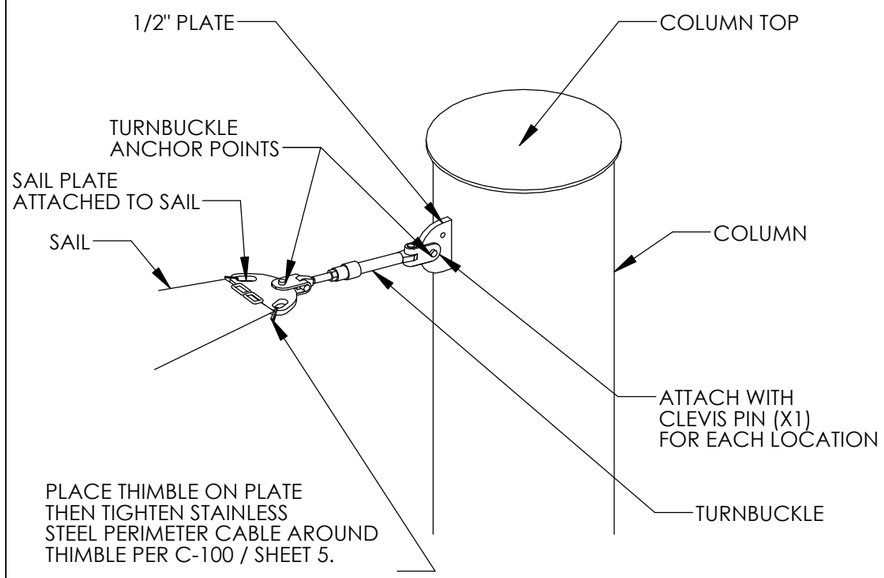
IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO BUILDING COMPONENTS (AND FOUNDATION DESIGN IF APPLICABLE) DETAILED WITHIN THESE DRAWINGS.

poligon ©
(616)399-1963
www.poligon.com
by PORTERCORP
4240 N. 136th AVE HOLLAND, MI 49424

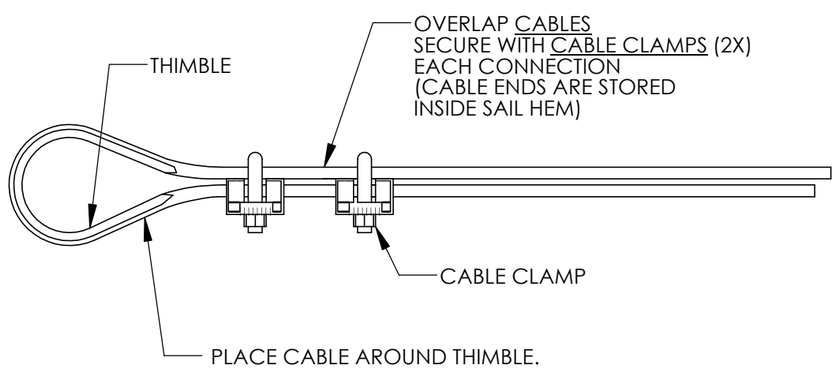
COPYRIGHT 2013
PATENTED OR PATENTS PENDING
PORTERCORP

PRINT DATE: 6/4/2020
DRAWN BY: haryke
SCALE: 1:48
REV LEVEL: B
CREATION DATE: 3/8/2017
JOB NO: P11205
CAD MODEL: ~P11205
PROJECT: VIRGINIA SPRINGS PHASE 2- OVERLOOK PLAZA
PROJECT LOCATION: BRENTWOOD, TN
DRAWING: SAIL LAYOUT

SHEET
4

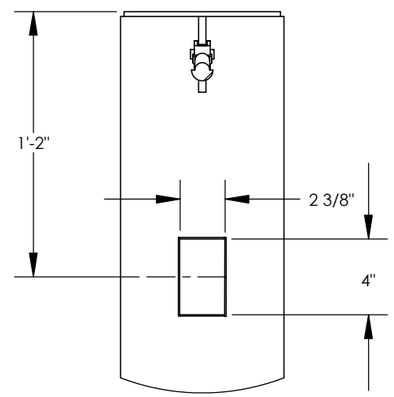


SAIL CONNECTION @ COLUMN | S-100



CABLE CONNECTION | C-100

NOTE: COVER PLATES PROVIDED FOR ALL ELECTRICAL CUTOUTS



NOTE: CUTOUT TYPICAL IN ALL COLUMNS

ELECTRICAL CUTOUT LOCATION | Z-100

FABRIC CONNECTION NOTES:

1. LOCAL JURISDICTIONS MAY REQUIRE AN INSPECTOR TO BE PRESENT TO WITNESS HARDWARE INSTALLATION AND INDEPENDENT TESTING. INSPECTION REQUIREMENTS SHOULD BE VERIFIED PRIOR TO STEEL ERECTION.
2. SEE FABRIC CONNECTION CABLE LENGTH LIST ON SHEET 4 FOR CABLE INSTALLATION PROCEDURE.

IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO BUILDING COMPONENTS (AND FOUNDATION DESIGN IF APPLICABLE) DETAILED WITHIN THESE DRAWINGS.

poligon© (616)399-1963 www.poligon.com
byPORTERCORP
COPYRIGHT 2013
PATENTED OR PATENTS PENDING
PORTERCORP 4240 N. 136th AVE HOLLAND, MI 49424

PROJECT: VIRGINIA SPRINGS PHASE 2- OVERLOOK PLAZA
PROJECT LOCATION: BRENTWOOD, TN
DRAWING: FABRIC CONNECTION DETAILS
CREATION DATE: 3/8/2017
JOB NO: P11205
CAD MODEL: ~P11205
DRAWN BY: haryke
REV LEVEL: B
PRINT DATE: 6/4/2020
SCALE: 1:60
SHEET 5

DISTANCE FROM BUILDING

15.5'

17.3'

15.8'

1 MEGA–TANDEM RETAINING WALL

12 PEDESTRIAN LIGHTPOLE, TYP.

R100'

8'

R7

ACTIVE LAWN

27.8'

R93'

5'

LANDSCAPE BEDLINE

35'

R77'

3'

R30.5'

65.4'

35.6'

EXISTING GREENWAY

R25.5'

11 TREE UPLIGHT, TYP.

5'

CONCRETE STEPS
(10) 6" RISERS
(8) 1' TREADS

R43.4'

8'

2.8'

8'

5'

1 MEGA–TANDEM RETAINING WALL

19 IPE WOOD SINGLE ROCKER CHAIR. SEE SHEET H3.2

5.5'TYP.

8'

35'

8'

R55'

19 IPE WOOD DOUBLE ROCKER CHAIR. SEE SHEET H3.2

QTY	HEIGHT	KEY
(2)	12' Tall Post	
(1)	7' Tall Post	

19 IPE WOOD SINGLE ROCKER CHAIR. SEE SHEET H3.2

4
H1.2

SITTING PLAZA S

EXISTIN

poligon® FABRIC

A Division of PORTERCORP 4240 N. 136th AVE HOLLAND, MI 49424 (616) 399-1963
Designs and calculations of Poligon buildings are protected under copyright laws and patents
and may not be used in the construction or design of a building that is not supplied by Poligon.
Copyright laws protect the style and visual appearance of the structure while patents may protect other parts of the design.
PATENTED AND/OR PATENTS PENDING COPYRIGHT 2013 PORTERCORP HOLLAND, MI 49424

PROJECT NAME: VIRGINIA SPRINGS PHASE 2- SITTING PLAZA

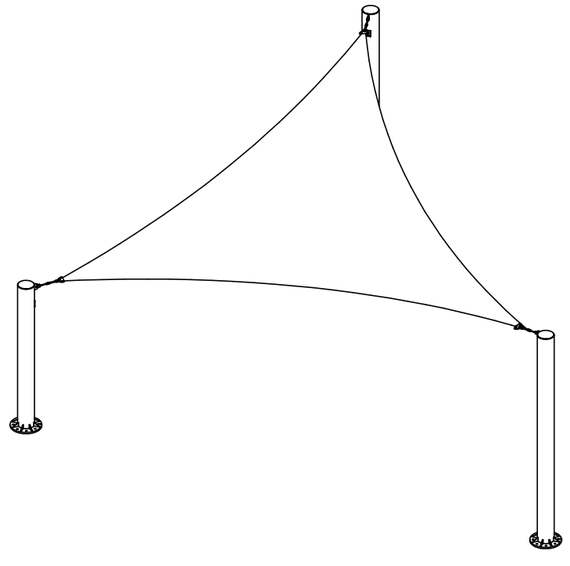
PROJECT LOCATION: BRENTWOOD, TN

BUILDING TYPE: FSL 28X34.5

FABRIC TYPE: HDPE

JOB NUMBER: P11203

ORDER NUMBER: 67389



REVISIONS			
REV.	DESCRIPTION	BY	DATE
A	REORIENTED PLAN OF STRUCTURE TO MATCH SITE PLAN	DS	5-27-20
B	REVISED COLUMN SPACING	JS	6/4/2020

DRAWING LIST:

SHEET NUMBER	DRAWING DESCRIPTION
CS	COVER SHEET
1	ARCHITECTURAL ELEVATIONS
2	ANCHOR LAYOUT
2.1	ANCHOR AND FOOTING DETAILS
3	STRUCTURAL FRAMING PLAN
4	SAIL LAYOUT
5	FABRIC CONNECTION DETAILS

4 / H1.2 SITTING PLAZA SOUTHWEST

MANUFACTURER NOTES:

MATERIALS:

DESCRIPTION	ASTM DESIGNATION
TUBE STEEL	A500 (GRADE B)
SCHEDULE PIPE	A53 (GRADE B)
RMT PIPE	A519
LIGHT GAGE COLD FORMED	A1003 (GRADE 50)
STRUCTURAL STEEL PLATE	A36
ROOF PANELS (STEEL)	A653
ANCHOR BOLTS	SEE SHEET 2.1

GENERAL NOTES:
UNLESS NOTED OTHERWISE, THIS STRUCTURE WAS DESIGNED TO ONLY SUPPORT WHAT IS SHOWN ON THESE DRAWINGS. POLIGON MUST BE CONTACTED IF ANYTHING ELSE IS TO BE ATTACHED TO THIS STRUCTURE (WALLS, COLUMN WRAPS, RAILINGS, ETC.) SO THE DESIGN OF THIS STRUCTURE CAN BE REVIEWED AND POSSIBLY REVISED.

UNLESS NOTED OTHERWISE, THIS STRUCTURE WAS DESIGNED ASSUMING A 20' SEPARATION BETWEEN ANY ADJACENT STRUCTURE WITH AN EAVE HEIGHT EQUAL TO OR GREATER THAN THE EAVE HEIGHT OF THIS STRUCTURE. IF THAT SEPARATION DOES NOT EXIST, POLIGON MUST BE CONTACTED SO THE DESIGN OF THIS STRUCTURE CAN BE REVIEWED AND POSSIBLY REVISED.

STRUCTURAL STEEL SHALL BE DETAILED, FABRICATED, AND ERECTED IN ACCORDANCE WITH THE LATEST EDITION OF THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) SPECIFICATION MANUAL.

ALL WELDING IS PERFORMED BY AMERICAN WELDING SOCIETY CERTIFIED WELDERS AND CONFORMS TO THE LATEST EDITION OF AWS D1.1 OR D1.3 AS REQUIRED.

PARTS SHOWN MAY BE UPGRADED DUE TO STANDARDIZED FABRICATION.
REFER TO THE SHIPPING BILL OF MATERIALS AND FINAL INSTALLATION INSTRUCTIONS INCLUDED WITH THE STRUCTURE FOR POSSIBLE SUBSTITUTIONS AND IMPROVEMENTS.

FOR PROPER FIELD INSTALLATION OF THE BUILDING IT IS RECOMMENDED THAT THE PRIMARY FRAME INSTALLER AND THE ROOF INSTALLER HAVE A MINIMUM FIVE (5) YEARS DOCUMENTED EXPERIENCE INSTALLING THIS TYPE OF PRODUCT.

FOR PROPER FIELD INSTALLATION OF THE BUILDING IT IS RECOMMENDED THAT ELECTRIC WIRING, IF REQUIRED, BE RUN THROUGH THE STRUCTURAL MEMBERS BEFORE THE BUILDING IS ERECTED.

FABRICATOR APPROVALS:
CITY OF PHOENIX, AZ APPROVED FABRICATOR #C08-2010
CITY OF LOS ANGELES, CA APPROVED FABRICATOR #1596
CITY OF RIVERSIDE, CA APPROVED FABRICATOR #SP06-0033
CITY OF HOUSTON, TX APPROVED FABRICATOR #470
CLARK COUNTY, NV APPROVED FABRICATOR #264
STATE OF UTAH APPROVED FABRICATOR 02008-14

CERTIFICATES:
MIAMI-DADE COUNTY CERTIFICATE OF COMPETENCY NO. 19-0806.05
PCI (POWDER COATING INSTITUTE) 4000 CERTIFIED

DESIGN CRITERIA:

GENERAL:
2012 INTERNATIONAL BUILDING CODE
RISK CATEGORY: I

DEAD LOAD:
FABRIC DEAD LOAD: 10 PSF
FRAME DEAD LOAD: SELF WEIGHT

LIVE LOAD:
ROOF LIVE LOAD: 5 PSF

SNOW DESIGN DATA:
GROUND SNOW LOAD (Pg): 10 PSF
FLAT ROOF SNOW LOAD (Pf): 10 PSF
SNOW EXPOSURE FACTOR (Ce): 1.0
SNOW LOAD IMPORTANCE FACTOR (Is): 0.8
THERMAL FACTOR (Ct): 1.2

WIND DESIGN DATA:
BASIC WIND SPEED (V): 90 MPH
GUST EFFECT FACTOR (G): 0.85
INTERNAL PRESSURE COEFFICIENT (GCpi): 0
WIND EXPOSURE: C

SEISMIC DESIGN DATA:
WILL NOT CONTROL DESIGN
SEISMIC IMPORTANCE FACTOR (Ie): 1.0
SEISMIC DESIGN CATEGORY: C
SEISMIC SITE CLASS: D

FABRIC DESIGN CONSIDERATIONS:
FABRIC SNOW LOAD (Pg): 0 psf
FABRIC BASIC WIND SPEED (V): 90 MPH

WARNINGS:
FABRIC TOP MUST BE REMOVED BEFORE ANY SNOW ACCUMULATION.
FABRIC TOP MUST BE REMOVED IN EVENT OF WINDS EXCEEDING 90 MPH.

APPROVED FOR SUBMITTAL

BY: ANDREW BOWLING

06/04/2020

The Parent Company
Contractors • Managers • Consultants

IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO BUILDING COMPONENTS (AND FOUNDATION DESIGN IF APPLICABLE) DETAILED WITHIN THESE DRAWINGS.

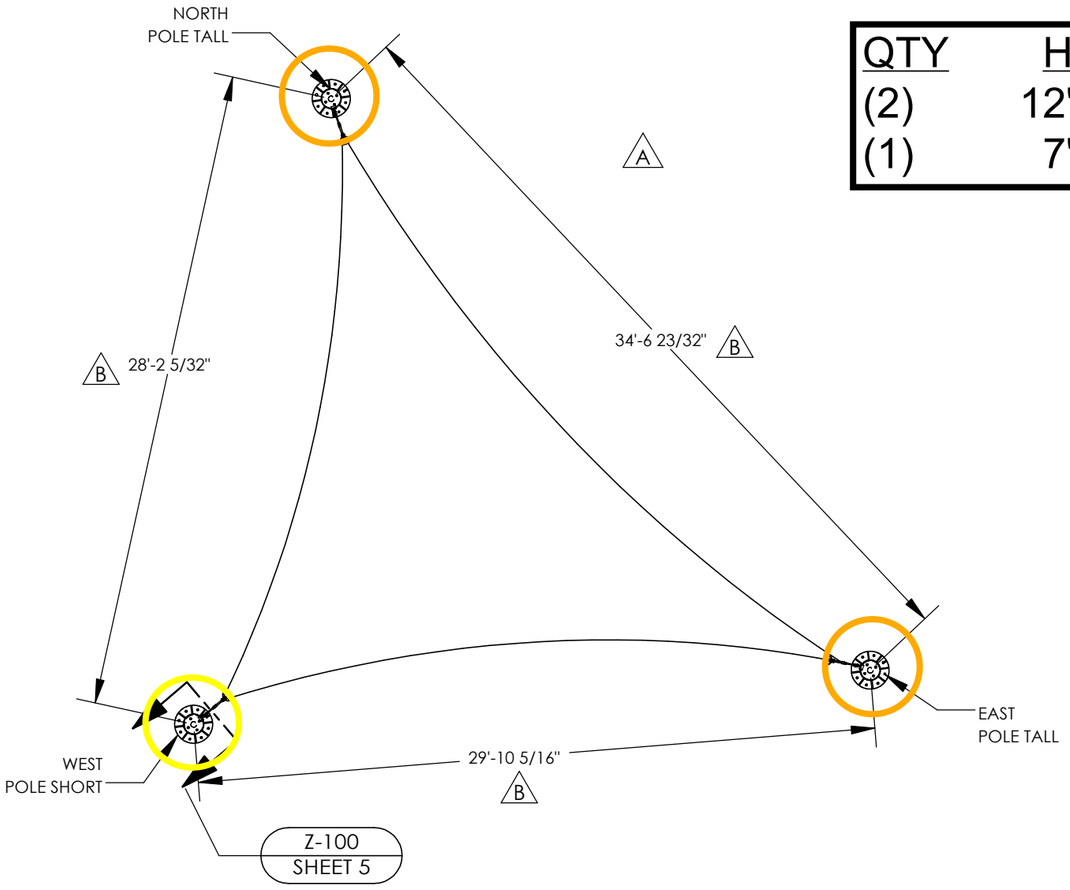
poligon © COPYRIGHT 2013 PATENTED OR PATENTS PENDING PORTERCORP 4240 N. 136th AVE HOLLAND, MI 49424
(616)399-1963 www.poligon.com
by PORTERCORP

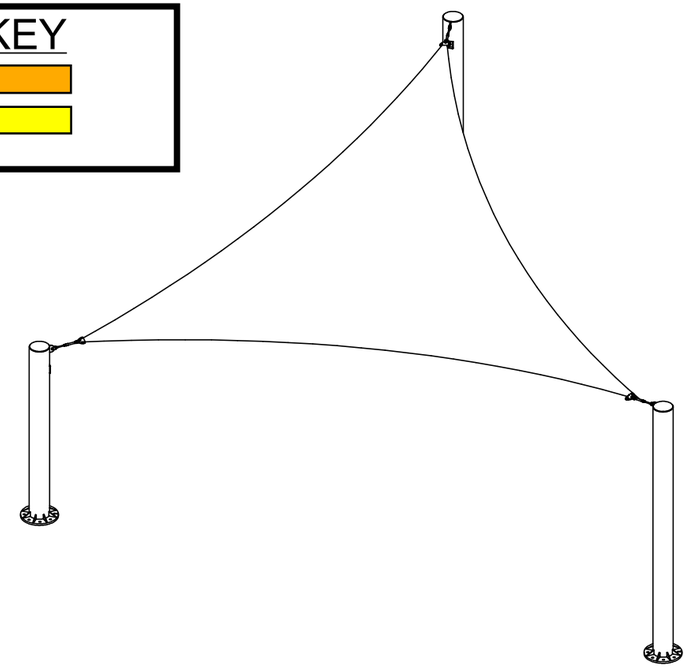
PRINT DATE: 6/4/2020
SCALE: 1:96
DRAWN BY: haryke
REV LEVEL: B
CREATION DATE: 3/8/2017
JOB NO: P11203
CAD MODEL: P11203

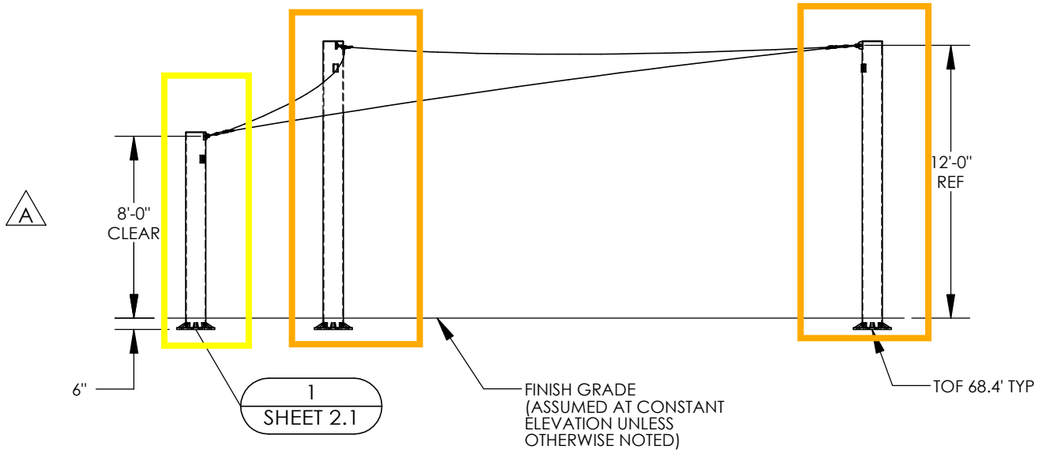
PROJECT: VIRGINIA SPRINGS PHASE 2- SITTING PLAZA
PROJECT LOCATION: BRENTWOOD, TN
DRAWING: COVER SHEET

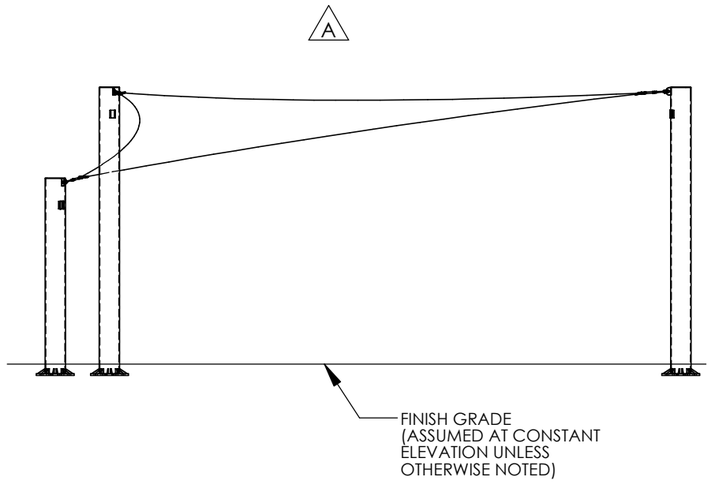
SHEET
CS

QTY	HEIGHT	KEY
(2)	12' Tall Post	
(1)	7' Tall Post	









IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO BUILDING COMPONENTS (AND FOUNDATION DESIGN IF APPLICABLE) DETAILED WITHIN THESE DRAWINGS.

poligon©
(616)399-1963
www.poligon.com
byPORTERCORP
4240 N. 136th AVE HOLLAND, MI 49424
COPYRIGHT 2013
PATENTED OR PATENTS PENDING
PORTERCORP

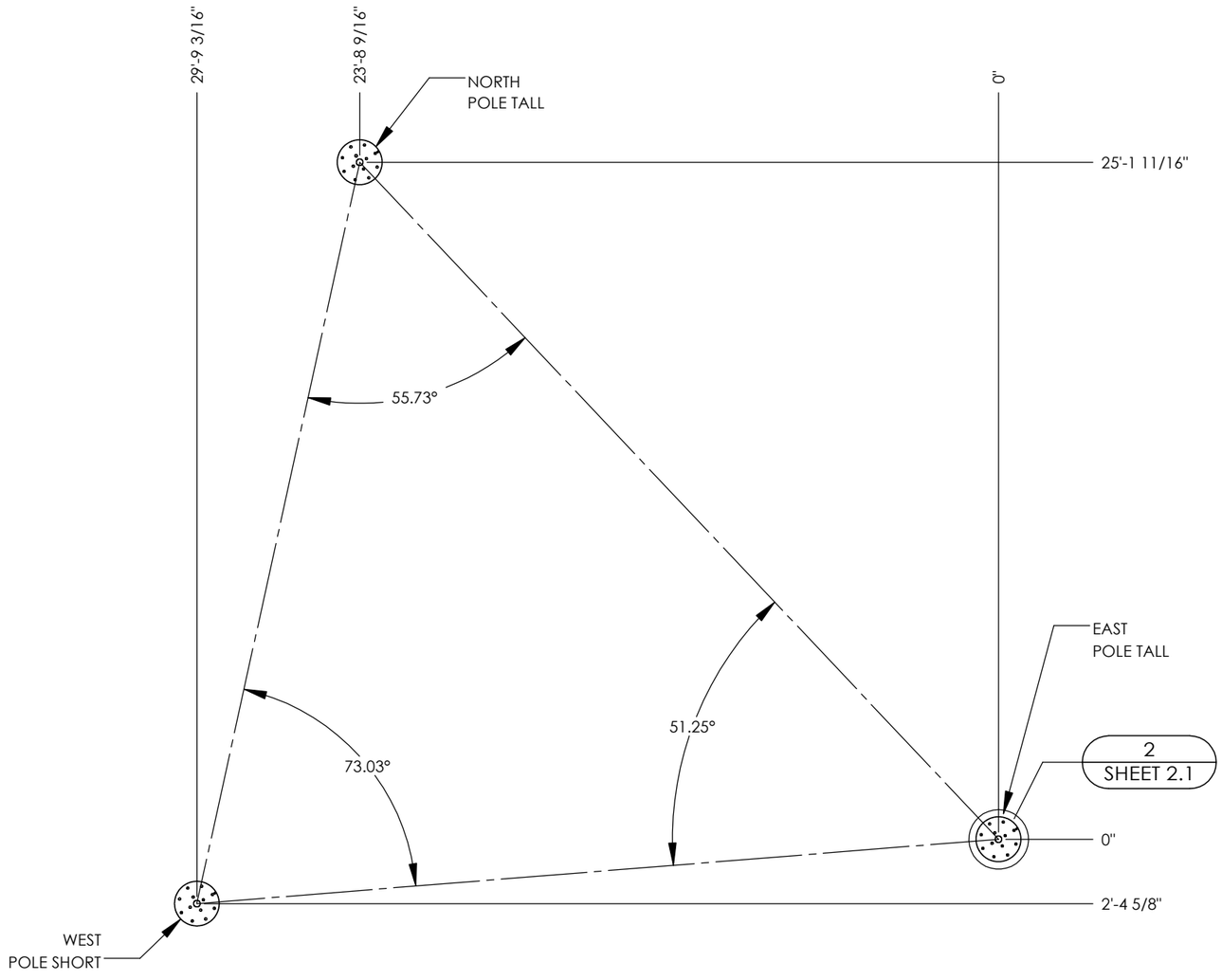
PRINT DATE: 6/4/2020
SCALE: 1:80
DRAWN BY: haryke
REV LEVEL: B
CREATION DATE: 3/8/2017
JOB NO: P11203
CAD MODEL: P11203

PROJECT: VIRGINIA SPRINGS PHASE 2- SITTING PLAZA
PROJECT LOCATION: BRENTWOOD, TN
DRAWING: ARCHITECTURAL ELEVATIONS

SHEET
1

N

FOR TRUE NORTH,
SEE CUSTOMER
SITE DRAWINGS



ANCHOR AND FOOTING LAYOUT NOTES:

1. ANCHORS MUST BE CENTERED IN FOOTINGS
2. ANCHOR BOLT GROUP TO BE ALIGNED WITH PLAN NORTH AS SHOWN (TWO ANCHORS IN EACH GROUP POINTING DUE NORTH).

A B

IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO BUILDING COMPONENTS (AND FOUNDATION DESIGN IF APPLICABLE) DETAILED WITHIN THESE DRAWINGS.

poligon©
(616)399-1963
www.poligon.com
byPORTERCORP

COPYRIGHT 2013
PATENTED OR PATENTS PENDING
PORTERCORP 4240 N. 136th AVE HOLLAND, MI 49424

PRINT DATE: 6/4/2020
SCALE: 1:64
DRAWN BY: haryke
REV LEVEL: B
CREATION DATE: 3/8/2017
JOB NO: P11203
CAD MODEL: P11203
PROJECT: VIRGINIA SPRINGS PHASE 2- SITTING PLAZA
PROJECT LOCATION: BRENTWOOD, TN
DRAWING: ANCHOR LAYOUT

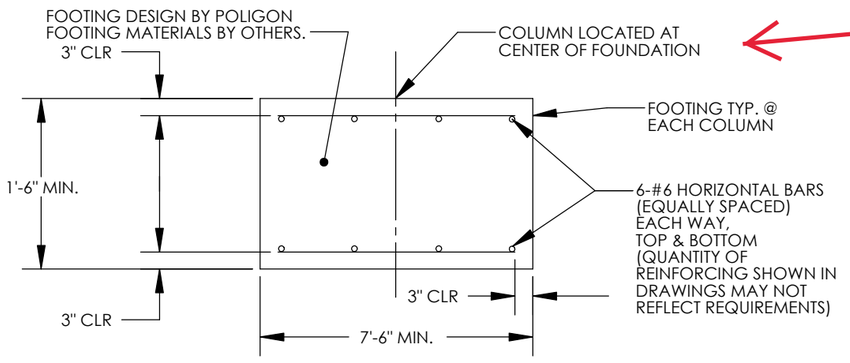
SHEET
2

FOUNDATION NOTES:

1. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE REQUIREMENTS OF THE BUILDING CODE, AMERICAN CONCRETE INSTITUTE, AND ALL APPLICABLE STATE AND LOCAL ORDINANCES AND REQUIREMENTS.
2. THE CONCRETE DESIGN IS BASED ON THE FOLLOWING PROPERTIES:
   - 28 DAY STRENGTH OF 4500 psi.
   - SLUMP OF 4" (+/-1").
3. THE FOOTING SHALL BEAR ON COMPETENT UNDISTURBED SOIL OR 95% COMPACTED FILL. IF SIGNS OF ORGANIC MATERIAL, UNCONTROLLED FILL, CLAY OR SILT, HIGH WATER TABLE OR OTHER POSSIBLE DETRIMENTAL CONDITIONS ARE FOUND, INSTALLATION OF THE FOUNDATION MUST BE DISCONTINUED AND A SOILS ENGINEER CONTACTED.
4. THE REINFORCING STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A615, GRADE 60.
5. IF FOOTING DEPTH SHOWN DOES NOT MEET LOCAL FROST REQUIREMENTS, THE DRILLED PIER FOOTING MAY BE EXTENDED. EXTEND VERTICAL BARS AS REQUIRED AND PROVIDE ADDITIONAL TIES TO MEET SPACING REQUIREMENTS AS SHOWN. IF LOCAL FROST DEPTH REQUIREMENTS ARE NOT MET AND NO DRILLED PIER FOOTING OPTION IS GIVEN, CONTACT ENGINEERING. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY THE LOCAL FROST LINE DEPTH BELOW GRADE PRIOR TO CONSTRUCTION.

THE FOUNDATION DESIGN CONTAINED HEREIN IS SITE SPECIFIC, AND IS BASED ON REPORT OF GEOTECHNICAL INVESTIGATION, VIRGINIA WAY AND GRANNY WHITE PIKE, BY PSI, Inc.. DATED JUNE 30, 2016. REPORT NO. 3581074. PROPER CARE MUST BE TAKEN TO ENSURE ANY AND ALL RECOMMENDATIONS, OF THE ABOVE-MENTIONED REPORT, FOR SITE PREPARATION, SOIL PERFORMANCE AND FOUNDATION DESIGN ARE MET. IF CONDITIONS ARE PRESENT THAT DO NOT ALLOW FOR THESE RECOMMENDATIONS TO BE MET, THE GEOTECHNICAL ENGINEER MUST BE CONTACTED.

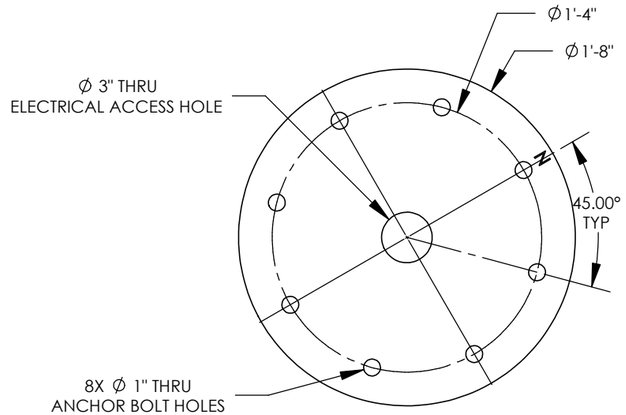
SQUARE FOOTING OPTION



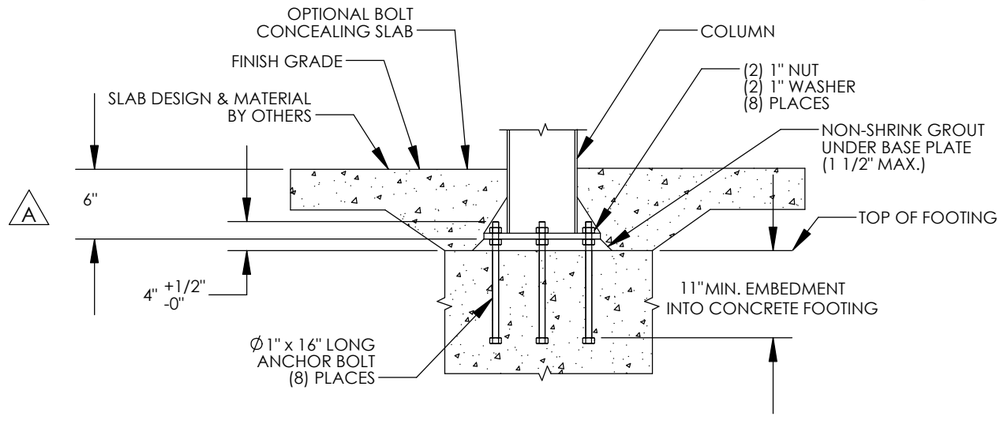
FOOTER OPTION APPLIED

ANCHOR BOLT NOTES - EXTERNAL (ANCHOR BOLTS LOCATED OUTSIDE COLUMN):

1. ANCHOR BOLTS SHALL BE ASTM F1554 (GRADE 55) MATERIAL UNLESS OTHERWISE NOTED.
2. ANCHOR BOLTS SHALL BE EITHER "HEADED" OR "THREADED WITH NUT" AS DEFINED IN THE AMERICAN INSTITUTE OF STEEL CONSTRUCTION MANUAL.
3. HOOKED ANCHOR BOLTS ARE NOT ACCEPTABLE.
4. ACCURATE ANCHOR BOLT PLACEMENT IS CRITICAL. TO ENSURE THE ANCHOR BOLT LAYOUT MEETS THE DIMENSIONS REQUIRED ON THE DRAWINGS, SURVEY (OR MEASURE) THE LOCATION OF ALL ANCHOR BOLTS PRIOR TO POURING THE FOOTINGS. AN ADDITIONAL SURVEY (OR MEASUREMENT) SHOULD BE MADE AFTER THE FOOTINGS ARE POURED TO CONFIRM THE ANCHOR BOLTS DID NOT SHIFT DURING THE CONCRETE POUR.
5. THE MANUFACTURER STRONGLY RECOMMENDS USING ANCHOR BOLT TEMPLATES BECAUSE THEY SIGNIFICANTLY IMPROVE THE ACCURACY OF ANCHOR BOLT PLACEMENT. AN ANCHOR BOLT TEMPLATE IS PROVIDED WITH ANY ANCHOR BOLT KIT PURCHASED.
6. IF OUTSIDE CONSULTING ENGINEERS ARE DESIGNING THE FOUNDATIONS FOR THIS STRUCTURE, THEY MUST REFER TO THE MANUFACTURER'S CALCULATIONS FOR MINIMUM CONCRETE PROPERTIES (COMPRESSIVE STRENGTH, EDGE DISTANCE, ETC.) REQUIRED FOR THE ANCHOR BOLT DESIGN.
7. ELECTRICAL ACCESS HOLE IS ALWAYS LOCATED IN THE COLUMN BASE PLATE AS SHOWN.
8. GROUT UNDER BASEPLATES SHALL BE NON-METALLIC, NON-SHRINK GROUT WITH MINIMUM f'c=6500 PSI.
9. THE CALCULATIONS FOR THIS STRUCTURE ASSUME A FIXED COLUMN BASE.



2 / 2.1 ANCHOR BOLT PATTERN
BASE PLATE THICKNESS: 1"



NOTE: QUANITY OF ANCHORS SHOWN IN DRAWINGS MAY NOT REFLECT REQUIREMENTS.

1 / 1 ANCHOR BOLT DETAIL

IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO BUILDING COMPONENTS (AND FOUNDATION DESIGN IF APPLICABLE) DETAILED WITHIN THESE DRAWINGS.

poligon © (616)399-1963 www.poligon.com
by PORTERCORP
COPYRIGHT 2013
PATENTED OR PATENTS PENDING
PORTERCORP 4240 N. 136th AVE HOLLAND, MI 49424

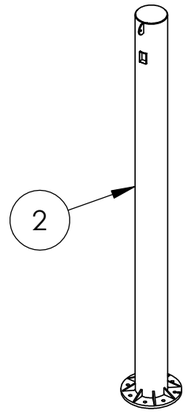
PRINT DATE: 6/4/2020
SCALE: 1:1
DRAWN BY: haryke
REV LEVEL: B
CREATION DATE: 3/8/2017
JOB NO: P11203
CAD MODEL: P11203

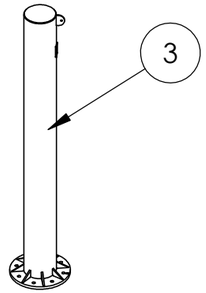
PROJECT: VIRGINIA SPRINGS PHASE 2- SITTING PLAZA
PROJECT LOCATION: BRENTWOOD, TN
DRAWING: ANCHOR AND FOOTING DETAILS

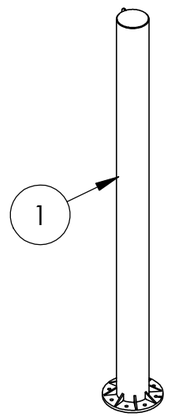
SHEET
2.1

N

FOR TRUE NORTH,
SEE CUSTOMER
SITE DRAWINGS







A

ITEM	FRAME/QTY.	PART NO.	DESCRIPTION	MATERIAL	WEIGHT
3	1	-	COLUMN 3 ASM	SCH40X10	441.69
2	1	-	COLUMN 2 ASM	SCH40X10	602.77
1	1	-	COLUMN 1 ASM	SCH40X10	602.77

IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO BUILDING COMPONENTS (AND FOUNDATION DESIGN IF APPLICABLE) DETAILED WITHIN THESE DRAWINGS.

poligon©
(616)399-1963
www.poligon.com
byPORTERCORP

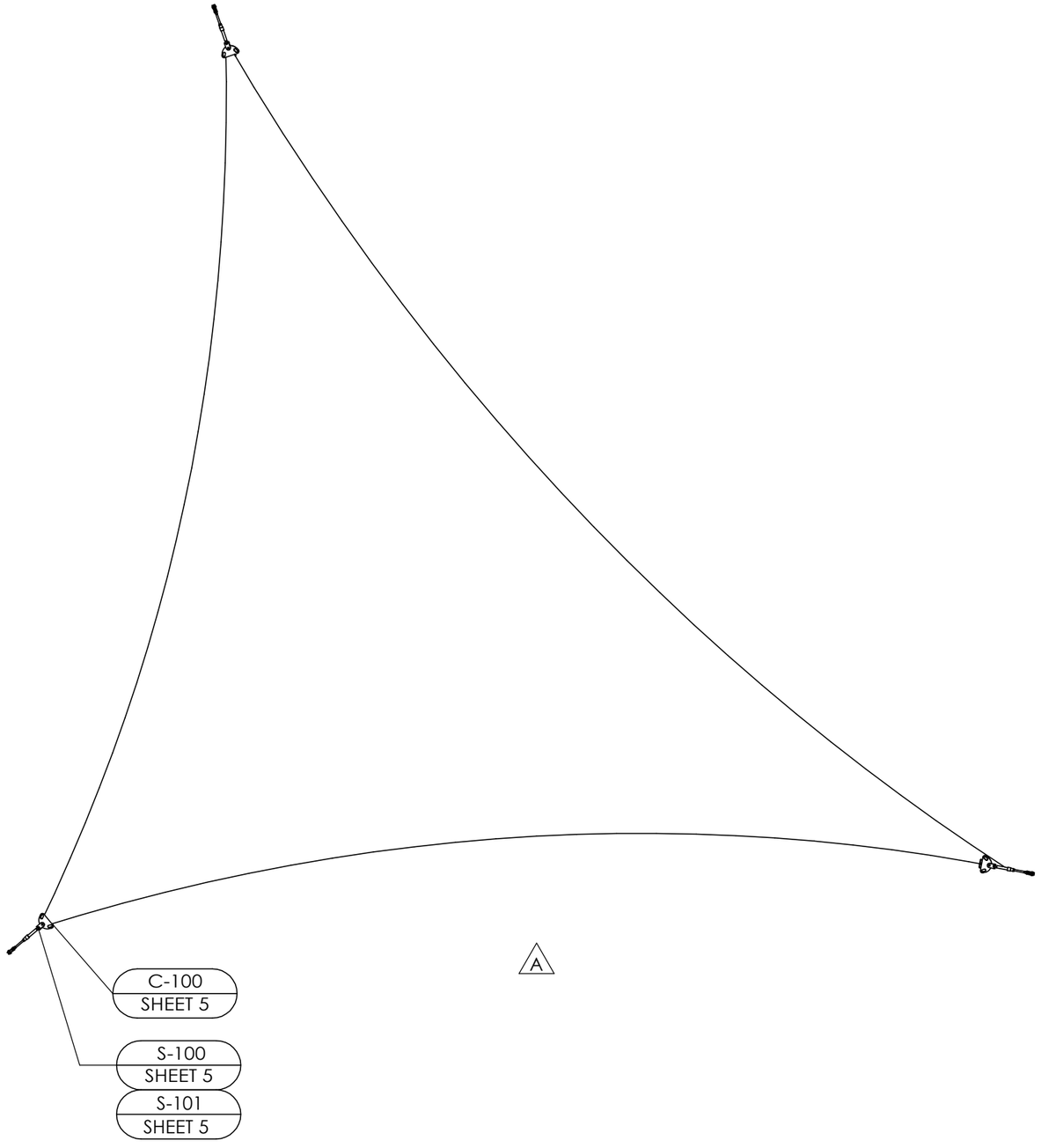
COPYRIGHT 2013
PATENTED OR PATENTS PENDING
PORTERCORP 4240 N. 136th AVE HOLLAND, MI 49424

PRINT DATE: 6/4/2020
DRAWN BY: haryke
SCALE: 1:50
REV LEVEL: B

CREATION DATE: 3/8/2017
JOB NO: P11203
CAD MODEL: P11203

PROJECT: VIRGINIA SPRINGS PHASE 2- SITTING PLAZA
PROJECT LOCATION: BRENTWOOD, TN
DRAWING: STRUCTURAL FRAMING PLAN

SHEET
3



FABRIC SPECIFICATIONS

1. HEAVY DUTY PROFESSIONAL GRADE ARCHITECTURAL SHADE FABRIC 100% LEAD AND PHTHALATE FREE MADE FROM UV STABILIZED HDPE MONOFILAMENT AND TAPE YARNS
2. SPECIALIZED LOCK STITCH KNIT FOR MORE MOVEMENT AND BETTER CHANNELING OF COOLING BREEZEWAYS
3. CONSTRUCTED TO BLOCK UP TO 98.8% OF HARMFUL UV SUN RAYS
4. HEAT SET FOR EASE OF FABRICATION AND TO LIMIT SHRINKAGE
5. RECYCLABLE, TEAR RESISTANT AND WILL NOT CRACK, ROT OR FADE
6. (10) YEAR MANUFACTURERS LIMITED WARRANTY AGAINST UV DEGRADATION
7. ALL SEAMS AND HEMS ARE DOUBLE ROW LOCK STITCHED, SEWN TOGETHER USING GORE® TENARA® THREAD WHICH DOES NOT DETERIORATE OR BLEACH
8. ALL SEAMS AND HEMS ARE DOUBLE ROW LOCK STITCHED SEWN TOGETHER USING GORE® TENARA® THREAD WHICH DOES NOT DETERIORATE FROM EXPOSURE TO THE ELEMENTS OR UV RADIATION.
9. ALSO AVAILABLE WITH FLAME RETARDANT. COLOR OPTIONS AND WARRANTY MAY VARY.

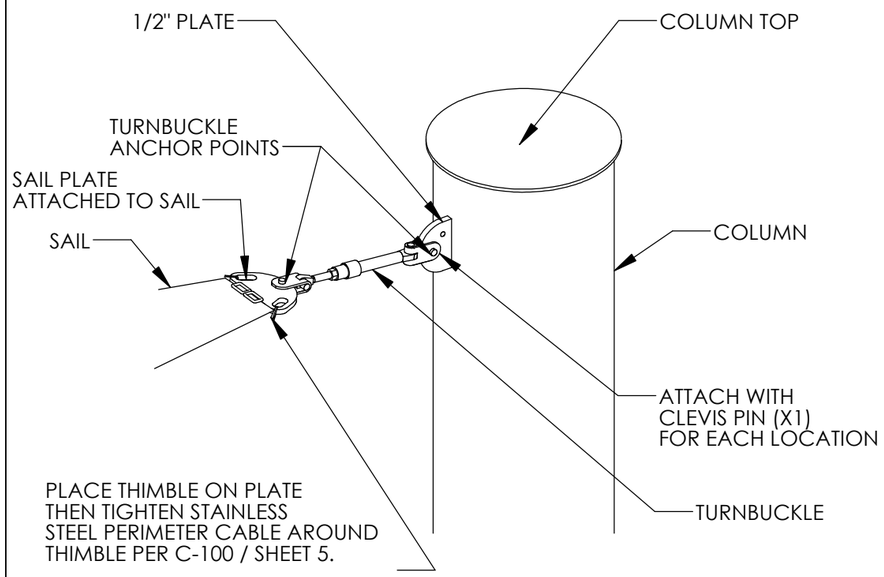
IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO BUILDING COMPONENTS (AND FOUNDATION DESIGN IF APPLICABLE) DETAILED WITHIN THESE DRAWINGS.

poligon©
(616)399-1963
www.poligon.com
byPORTERCORP
COPYRIGHT 2013
PATENTED OR PATENTS PENDING
PORTERCORP 4240 N. 136th AVE HOLLAND, MI 49424

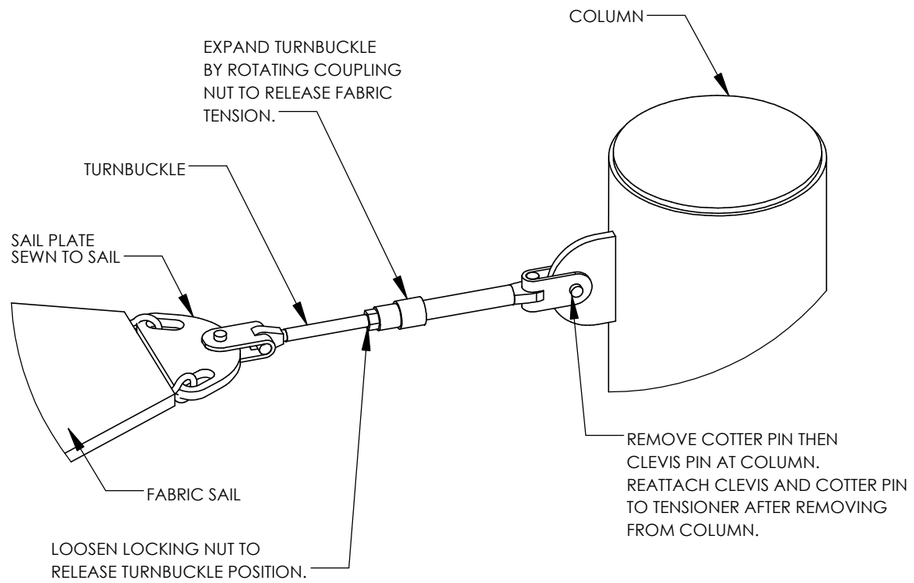
CREATION DATE: 3/8/2017
DRAWN BY: haryke
PRINT DATE: 6/4/2020
JOB NO: P11203
REV LEVEL: B
SCALE: 1:4
CAD MODEL: P11203

PROJECT: VIRGINIA SPRINGS PHASE 2- SITTING PLAZA
PROJECT LOCATION: BRENTWOOD, TN
DRAWING: SAIL LAYOUT

SHEET
4



SAIL CONNECTION @ COLUMN | S-100

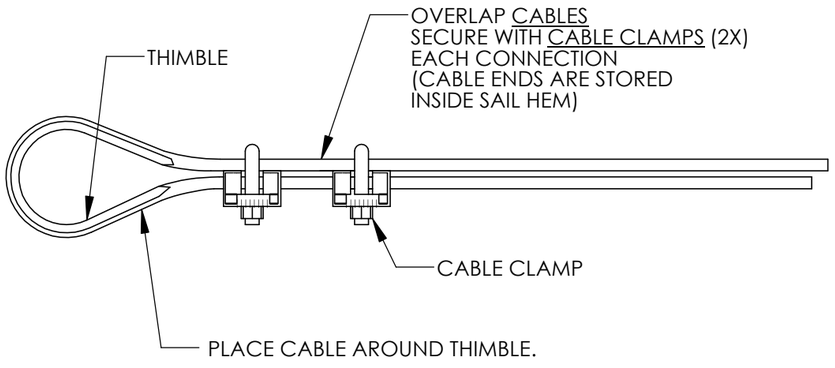


FABRIC TOP AND HARDWARE SHOULD BE
STORED IN STORAGE BAG IN A COOL DRY LOCATION.

SAIL REMOVAL CONNECTION @ COLUMN | S-101

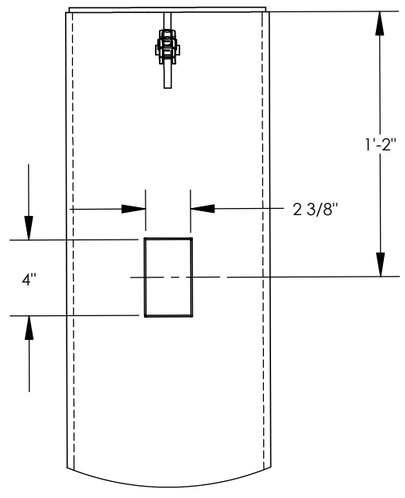
FABRIC CONNECTION NOTES:

1. LOCAL JURISDICTIONS MAY REQUIRE AN INSPECTOR TO BE PRESENT TO WITNESS HARDWARE INSTALLATION AND INDEPENDENT TESTING. INSPECTION REQUIREMENTS SHOULD BE VERIFIED PRIOR TO STEEL ERECTION.
2. SEE FABRIC CONNECTION CABLE LENGTH LIST ON SHEET 4 FOR CABLE INSTALLATION PROCEDURE.



CABLE CONNECTION | C-100

NOTE: COVER PLATES PROVIDED FOR ALL ELECTRICAL CUTOUTS



NOTE: CUTOUT TYPICAL IN ALL COLUMNS
CUSTOMER TO VERIFY CUTOUT SIZE AND LOCATION

ELECTRICAL CUTOUT LOCATION | Z-100

IF THESE DRAWINGS ARE SEALED, THE SEAL APPLIES ONLY TO BUILDING COMPONENTS (AND FOUNDATION DESIGN IF APPLICABLE) DETAILED WITHIN THESE DRAWINGS.

(616)399-1963
www.poligon.com
poligon© byPORTERCORP
COPYRIGHT 2013
PATENTED OR PATENTS PENDING
PORTERCORP 4240 N. 136th AVE HOLLAND, MI 49424

PRINT DATE: 6/4/2020
SCALE: 1:60
DRAWN BY: haryke
REV LEVEL: B
CREATION DATE: 3/8/2017
JOB NO: P11203
CAD MODEL: P11203

PROJECT: VIRGINIA SPRINGS PHASE 2- SITTING PLAZA
PROJECT LOCATION: BRENTWOOD, TN
DRAWING: FABRIC CONNECTION DETAILS

SHEET
5

BRENTWOOD PLANNING COMMISSION **2.**

Meeting Date: 08/03/2020

Information

PROJECT NUMBER

BPC2007-002

PROJECT DESCRIPTION

Minor Site Plan Alteration, Canopy and Drive addition – Tennessee Baptist Children's Home, 1310 Franklin Road

Catalyst Design Group requests approval to add a canopy over the entrance to the existing activities building. The proposal also includes a new circular drive and drop-off area, a sidewalk, two ADA parking spaces and reconfiguration the parking spaces at front of the building. No parking spaces will be lost due to the improvements.

ZONING OF PROPERTY

Zoning SI-/SR

APPLICANT NAME/ADDRESS

Mr. Phillip Piercy, Catalyst Design Group, 5100 Tennessee Avenue, Nashville, TN 37209

Attachments

Final Staff Report
Aerial Exhibit
Proposed Site Plan
Color Rendering
Materials Board

CITY OF BRENTWOOD
MUNICIPAL PLANNING COMMISSION
PLANNING DEPARTMENT STAFF REPORT
MONDAY, AUGUST 3, 2020 -- 7:00 P.M.
FINAL

CONSENT AGENDA -- ITEM 2:

REQUEST:	***MINOR SITE PLAN ALTERATION, CANOPY AND DRIVE ADDITION – TENNESSEE BAPTIST CHILDREN'S HOME, 1310 FRANKLIN ROAD***
PROJECT NUMBER:	***BPC2007-002***
CURRENT ZONING:	***SI-2 -- SERVICE INSTITUTION -- (EDUCATIONAL)***

GENERAL INFORMATION:

Catalyst Design Group requests approval to add a canopy over the entrance to the existing activities building. The proposal also includes a new circular drive and drop-off area, a sidewalk, two ADA parking spaces and reconfiguration the parking spaces at front of the building. No parking spaces will be lost due to the improvements.

PROJECT LOCATION:

The subject property is located at 1310 Franklin Road.

APPROVAL HISTORY:

There has been no recent Planning Commission action related to the subject property.

CONDITIONS OF APPROVAL

Staff recommends that the following condition be attached to the approval of the request.

1. A site plan shall be vested for a period of three years from the date of the original approval.

STANDARD REQUIREMENTS:

*Staff recommends that the following **nine** standard requirements be attached to the approval of the request.*

1. Add the following note to the site plan;

   This site plan is subject to a three-year vesting period, during which the development standards in effect on the date of approval will remain the standards applicable to this

plan. If construction is not completed during the first three years, the original site plan is considered a preliminary site plan and the applicant must obtain approval of a final site plan. Development of the property shown on this plan may be subject to standards other than those that were applicable during the vesting period. The Initial vesting period for this plan expires on ***August 3, 2023***, *unless extended by the City of Brentwood. Persons relying on this plan after said date should contact the City of Brentwood to determine if development may continue as depicted on the plan.*

2. When the construction authorized pursuant to a site plan is not completed within three years from the date of initial approval, but the applicant desires to complete the project proposed for the site, the plan as initially approved for the project or as amended shall be considered a preliminary site plan. If the applicant secures all necessary permits, commences site preparation and obtains approval of a final site plan within the three-year vesting period following approval of the preliminary site plan, then the vesting period shall be extended an additional two years beyond the expiration of the initial three-year vesting period. During the two-year extension, the applicant must commence construction and maintain any necessary permits to remain vested.

3. If necessary permits are maintained and construction, as defined by Section 78-43, has commenced by the end of the two-year extension, then the vesting period shall remain in effect until the Planning and Codes Department has certified final completion of the project, provided the total vesting period shall not exceed ten years from the date of approval of the preliminary site plan.

4. If the construction authorized pursuant to a site plan is completed within three years from the date of approval, the site plan shall then be considered the final site plan for the project.

5. The property owner is responsible for all development fees including water and sewer service and tap fees, building permit fees and Public Works Project Fees. The required fees shall be used for future infrastructure related improvements required by the proposed development.

6. Deviations from the approved plan in the development of a project or the failure to satisfy any standard requirements or special conditions of approval imposed by the planning commission will be considered a violation of the provisions of the Zoning Ordinance, which shall be subject to punishment as provided in Section 1-9 of the Brentwood Municipal Code. The City may also require the applicant to appear before the Planning Commission to address any deficiencies or unapproved modifications. The project may also be subject to delays in issuance of permits, certificates of occupancy, recordation of plats or other project approvals.

7. Any changes to plans approved by the Planning Commission will require staff review and re-approval by the Planning Commission.

8. Development of this project shall comply with all applicable codes and ordinances of the City of Brentwood.

9. Approval of the proposed plan shall be limited to the illustrations and plans presented to the Planning Commission for review and approval on **August 3, 2020**. Any changes to Planning Commission approved plans and specifications will require staff review and re-approval by the Planning Commission.

RECOMMENDATION:

Staff requests that the Planning Commission vote to approve the proposed minor site plan revisions, subject to the requirements of the staff report.

P:\2020\20200002\Engineering\dwg\20200002_Green Space.dwg-Layout1 Jul 21, 2020 hfaust



EX-A

DRAWING NUMBER

PROJECT NUMBER
20200002

DRAWING TITLE
AERIAL EXHIBIT

NO.	DATE	DESCRIPTION

TENNESSEE BAPTIST
CHILDREN'S HOME

1310 FRANKLIN ROAD
BRENTWOOD, TENNESSEE 37027
WILLIAMSON COUNTY

TENNESSEE BAPTIST
CHILDREN'S HOME
P.O. BOX 2206
BRENTWOOD, TN 37024
615-376-3140

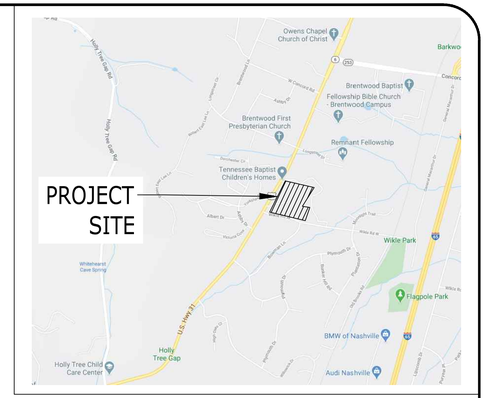
Catalyst DESIGN GROUP
5100 TENNESSEE AVENUE, NASHVILLE, TN 37209
(615) 622-7200 | WWW.CATALYST-DG.COM

CONSTRUCTION DOCUMENTS

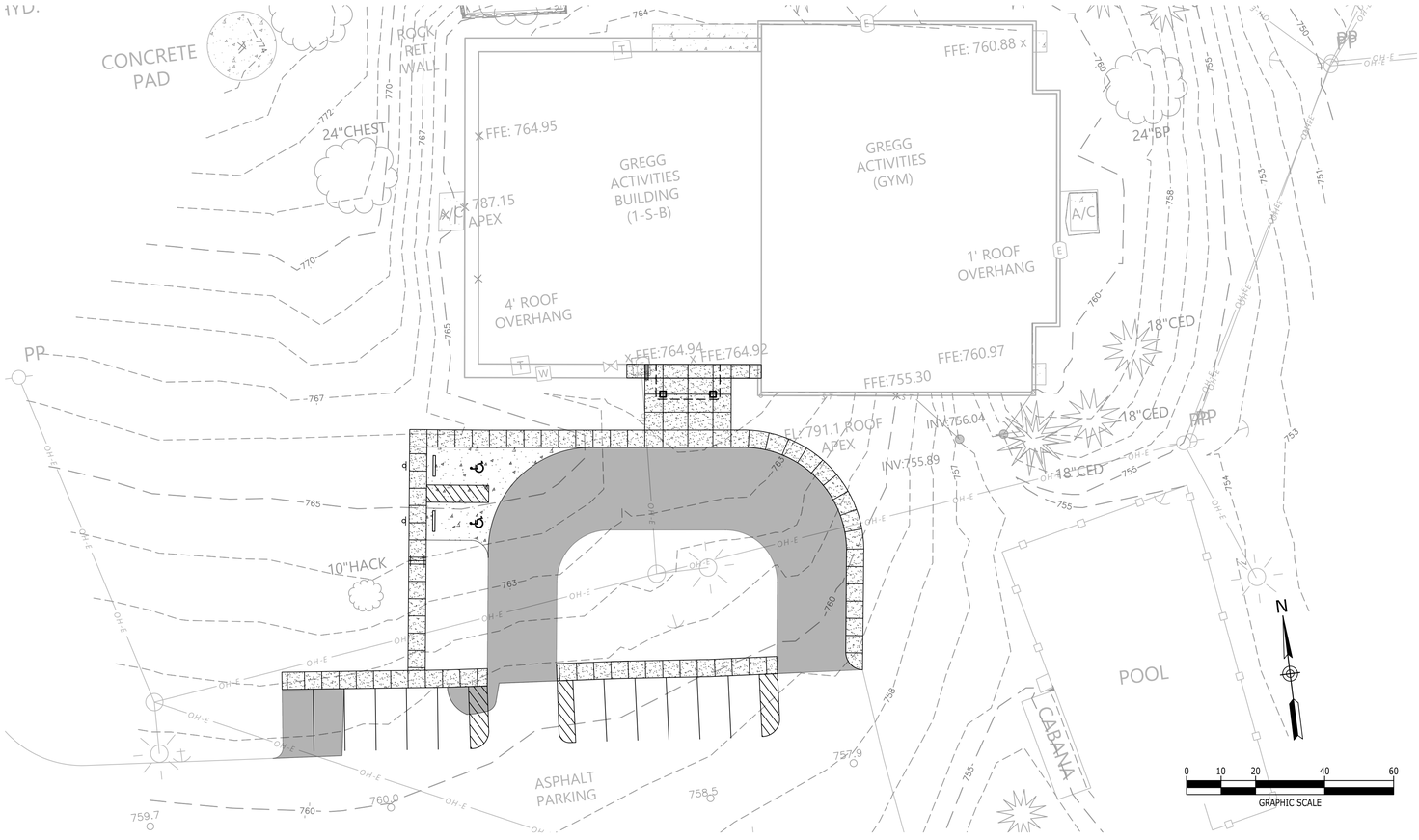
TENNESSEE BAPTIST CHILDREN'S HOME

BRENTWOOD, WILLIAMSON COUNTY, TENNESSEE

CATALYST PROJECT NO. 20200002
JUNE 22, 2020; REVISED JULY 21,2020



VICINITY MAP
NOT TO SCALE



SITE DATA

TAX MAP:	36
PARCEL ID.:	03610100
SITE ADDRESS:	1310 FRANKLIN ROAD BRENTWOOD, TENNESSEE, 37027
SITE ACREAGE:	55.85 AC. (2,432,826 FT²)
EXISTING ZONING:	SI-2/SR
EXISTING USE:	CHILD CARE AGENCY

IMPERVIOUS SURFACE AREA

BUILDINGS:	NO CHANGE
DRIVES/SIDEWALKS:	0.17 AC. (7,414 FT²)
TOTAL PROPOSED IMPERVIOUS AREA:	0.17 AC. (7,414 FT²)
REQUIRED GREEN SPACE:	30%
PROVIDED GREEN SPACE*:	84.3%

*AREA CALCULATED FROM AERIAL. NOT FIELD VERIFIED.

PARKING SUMMARY

PARKING REQUIRED:	NO COMPARABLE USE CATEGORY IN ORDINANCE	
PARKING PROVIDED*:	EXISTING	111 SPACES
	REMOVED FOR CONSTRUCTION	14 SPACES
	ADDED WITH CONSTRUCTION	14 SPACES
	TOTAL	111 SPACES

*PARKING PROVIDED REPRESENTS STRIPED PARKING VISIBLE FROM AERIAL. ADDITIONAL UNSTRIPED PARKING IS AVAILABLE.

OWNER:	TENNESSEE BAPTIST CHILDREN'S HOME
ADDRESS:	P.O. BOX 2206 BRENTWOOD, TENNESSEE, 37024
PHONE NO.:	615.376.3140
CONTACT NAME:	DARREN ANDRUS
CONTACT E-MAIL ADDRESS:	dandus@tennesseechildren.org
PROJECT REPRESENTATIVE:	CATALYST DESIGN GROUP
ADDRESS:	5100 TENNESSEE AVENUE NASHVILLE, TENNESSEE, 37209
PHONE NO.:	615.622.7200
CONTACT NAME:	PHILLIP PIERCY
CONTACT E-MAIL ADDRESS:	ppiercy@catalyst-dg.com

RECORDED DOCUMENTS: DEED BOOK 1700 PAGE 387

APPROXIMATE CONSTRUCTION TIME TABLE:
BEGIN CONSTRUCTION - [SEPTEMBER 2020]
COMPLETE CONSTRUCTION - [SEPTEMBER 2021]

FEMA PANEL:
THE SUBJECT PROPERTY DOES NOT LIE WITHIN A SPECIAL FLOOD HAZARD ZONE ACCORDING TO COMMUNITY PANEL NO. 47187C0205F, 09/29/2006, COMMUNITY NAME: CITY OF BRENTWOOD.

Sheet List Table	
Sheet Number	Sheet Title
C0.0	COVER SHEET
C1.0	EXISTING CONDITIONS
C2.0	GENERAL NOTES
C3.0	INITIAL EROSION CONTROL PLAN
C3.1	FINAL EROSION CONTROL PLAN
C3.2	SEDIMENT AND EROSION CONTROL DETAILS
C4.0	DEMOLITION PLAN
C5.0	OVERALL LAYOUT PLAN
C5.1	DETAILED LAYOUT PLAN
C6.0	GRADING & DRAINAGE PLAN
C7.0	SITE DETAILS

DEVELOPMENT NOTES:

THIS SITE PLAN IS SUBJECT TO A THREE-YEAR VESTING PERIOD. DURING WHICH THE DEVELOPMENT STANDARDS IN EFFECT ON THE DATE OF APPROVAL WILL REMAIN THE STANDARDS APPLICABLE TO THIS PLAN. IF CONSTRUCTION IS NOT COMPLETED DURING THE FIRST THREE YEARS, THE ORIGINAL SITE PLAN IS CONSIDERED A PRELIMINARY SITE PLAN AND THE APPLICANT MUST OBTAIN APPROVAL OF A FINAL SITE PLAN. DEVELOPMENT OF THE PROPERTY SHOWN ON THIS PLAN MAY BE SUBJECT TO STANDARDS OTHER THAN THOSE THAT WERE APPLICABLE DURING THE VESTING PERIOD. THE INITIAL VESTING PERIOD FOR THIS PLAN EXPIRES ON **AUGUST 3, 2023**, UNLESS EXTENDED BY THE CITY OF BRENTWOOD. PERSONS RELYING ON THIS PLAN AFTER SAID DATE SHOULD CONTACT THE CITY OF BRENTWOOD TO DETERMINE IF DEVELOPMENT MAY CONTINUE AS DEPICTED ON THE PLAN.

ARCHITECT
HMK ARCHITECTS PLLC
5300 MARYLAND WAY, SUITE 109
BRENTWOOD, TENNESSEE, 37207
615.369.6020

PREPARED FOR
TENNESSEE BAPTIST CHILDREN'S HOME
P.O. BOX 2206
BRENTWOOD, TENNESSEE, 37024
615.376.3140

DONALD P. PIERCY JR. REGISTERED ENGINEER No. 022206 STATE OF TENNESSEE

CIVIL ENGINEER/LANDSCAPE ARCHITECT
Catalyst DESIGN GROUP
5100 TENNESSEE AVENUE
NASHVILLE, TN 37209
(615) 622-7200

COVER SHEET

C0.0

24"CHES

x FFE: 764.9

GREGG ACTIVITIES BUILDING (1-S-B)

GREGG ACTIVITIES (GYM)

24"BP

A/C

x 787.15 APEX

A/C

4' ROOF OVERHANG

1' ROOF OVERHANG

E

T

W

x FFE:764.94

x FFE:764.92

FFE:760.97

FFE:755.30

18"CED

18"CED

18"CED

SIDEWALK

EL: 791.1 ROOF APEX

INV:756.04

INV:755.89

30"OAK

10"HACK

ASPHALT PARKING

760.0

758.5

757.9

POOL

CABANA

15"CE

12

BASE INFORMATION WAS TAKEN FROM A SURVEY PREPARED BY OHM ADVISORS, DATED 12/17/2019. CATALYST DESIGN GROUP AND ANY OF THEIR CONSULTANTS SHALL NOT BE HELD RESPONSIBLE FOR THE ACCURACY AND/OR COMPLETENESS OF THAT INFORMATION SHOWN HEREON OR ANY ERRORS OR OMISSIONS RESULTING FROM SUCH.

N

0 5 10 20 30

GRAPHIC SCALE

P:\2020\20200002\dwg\Construction\20200002_C1.0_EXI.dwg=C1.0 EXISTING CONDITIONS Jul 20, 2020 hfaust

Catalyst DESIGN GROUP
5100 TENNESSEE AVENUE, NASHVILLE, TN 37209
(615) 622-7200 | WWW.CATALYST-DG.COM

TENNESSEE BAPTIST CHILDREN'S HOME
P.O. BOX 2206
BRENTWOOD, TENNESSEE, 37024
615.376.3140

DONALD P. PIERCY JR. REGISTERED ENGINEER No. 022887 STATE OF TENNESSEE

CONSTRUCTION DOCUMENTS

TENNESSEE BAPTIST CHILDREN'S HOME

1310 FRANKLIN ROAD
BRENTWOOD, TENNESSEE, 37027
WILLIAMSON COUNTY

NO.	DATE	DESCRIPTION

DRAWING TITLE

EXISTING CONDITIONS

PROJECT NUMBER
20200002

DRAWING NUMBER
C1.0

EROSION CONTROL NOTES

1. EROSION PREVENTION AND SEDIMENT CONTROL (EPSC) MEASURES SHALL BE INSTALLED PER LOCAL AND STATE REQUIREMENTS PRIOR TO ANY EARTH MOVING ACTIVITIES.
2. PROVIDE CONSTRUCTION ENTRANCE/EXIT AS DETAILED ON THE PLANS AND PER LOCAL REQUIREMENTS. MAINTAIN ENTRANCE/EXIT THROUGHOUT CONSTRUCTION AND MAINTAIN THE PUBLIC ROADWAY FREE OF TRACKED MUD AND DIRT.
3. EPSC MEASURES SHALL BE INSTALLED AND INSPECTED BY LOCAL OFFICIALS (IF REQUIRED) PRIOR TO BEGINNING EARTH MOVING OPERATIONS. EPSC MEASURES SHALL BE MAINTAINED THROUGHOUT THE CONSTRUCTION PROCESS.
4. THE CONTRACTOR IS RESPONSIBLE FOR ADHERING TO THE REQUIREMENT OUTLINED IN THE EROSION CONTROL PLAN DEVELOPED FOR THE SITE, AS WELL AS LOCAL AND STATE REQUIREMENTS. THE CONTRACTOR SHALL ALSO PROVIDE THE CERTIFIED EROSION CONTROL INSPECTOR AND CONTINUAL MAINTENANCE OF THE EPSC MEASURES.
5. AS THE WORK PROGRESSES THE LOCATION AND TYPE OF MEASURES MAY REQUIRE ADJUSTMENTS. TEMPORARY MEASURES MAY BE REQUIRED IN CERTAIN AREAS THAT CAN BE REMOVED DURING THE WORK DAY AND RE-ESTABLISHED WHEN WORK CEASES FOR THE DAY OR PRIOR TO A DAYTIME RAIN EVENT.
6. SEDIMENT SHALL BE REMOVED FROM EROSION CONTROL MEASURES WHEN THE DESIGN CAPACITIES HAVE BEEN REDUCED BY 50% OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE OR GOVERNING AGENCY. PROPERLY DISPOSE OF ACCUMULATED SEDIMENT.
7. THE CONTRACTOR SHALL PROVIDE A RAIN GAUGE AT THE SITE AND DOCUMENT RAINFALL EVENTS DURING THE CONSTRUCTION PERIOD.
8. THE CONTRACTOR SHALL MAINTAIN THE FOLLOWING RECORDS AT THE SITE: DATE WHEN MAJOR GRADING ACTIVITIES OCCUR, THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON PORTIONS OF THE SITE, THE DATES WHEN STABILIZATION MEASURES ARE INITIATED, INSPECTION RECORDS AND RAINFALL EVENTS.
9. EXISTING SITE VEGETATION SHALL REMAIN IN PLACE AS LONG AS POSSIBLE AND SHALL NOT BE REMOVED MORE THAN 10 DAYS PRIOR TO THE DATE AT WHICH EARTHMOVING OPERATIONS ARE TO BEGIN UNLESS TEMPORARY COVER IS INSTALLED. DO NOT REMOVE VEGETATION OR TREES UNLESS NECESSARY FOR GRADING OR OTHER PROJECT PURPOSES.
10. THE CONSTRUCTION SHALL BE SEQUENCED TO MINIMIZE THE LENGTH OF TIME THE SITE SOILS ARE EXPOSED TO EROSION. PROVIDE TEMPORARY COVER AS NECESSARY.
11. EPSC MEASURES SHALL BE REMOVED ONCE PERMANENT VEGETATION IS ESTABLISHED AND WHEN DEEMED NO LONGER NEEDED BY THE OWNER'S REPRESENTATIVE OR GOVERNING AGENCY.

DEMOLITION NOTES

1. THE CONTRACTOR SHALL REQUEST UTILITY LOCATION (811) AND VERIFY LOCATION OF ALL OTHER PRIVATE UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROTECT EXISTING UTILITIES FROM DAMAGE AND REPAIR IF DAMAGED PER PROVIDER REQUIREMENTS AT THE CONTRACTOR'S EXPENSE. COORDINATE ALL WORK AROUND EXISTING UTILITIES WITH CORRESPONDING PROVIDER.
2. THE CONTRACTOR SHALL PROTECT PROPERTY BOUNDARY PINS AND SURVEY CONTROL POINTS FROM DAMAGE.
3. THE CONTRACTOR SHALL COMPLY WITH EROSION CONTROL REQUIREMENTS AND INSTALL NECESSARY EPSC MEASURES AND CONSTRUCTION ENTRANCE/ EXIT PRIOR TO DISTURBING EXISTING VEGETATION. THE CONTRACTOR SHALL ALSO USE WATER SPRINKLING OR OTHER MEASURES TO CONTROL DUST AND OTHER AIRBORNE DEBRIS RESULTING FROM DEMOLITION.
4. TREE PROTECTION MEASURES SPECIFIED IN THESE PLANS SHALL BE INSTALLED PRIOR TO BEGINNING DEMOLITION OPERATIONS.
5. THE CONTRACTOR SHALL OBTAIN ALL REQUIRED PERMITS FOR DEMOLITION AND TREE REMOVAL.
6. THE CONTRACTOR MAY BE REQUIRED TO PHASE THE DEMOLITION TO MAINTAIN EXISTING UTILITY SERVICES, PROPER DRAINAGE OR ACCESS TO THE SITE OR ADJOINING SITES. THE CONTRACTOR SHALL MINIMIZE THE DISRUPTION OF EXISTING ACTIVE UTILITIES AND TRAFFIC PATTERNS. THE CONTRACTOR SHALL COORDINATE WITH THE OWNER'S REPRESENTATIVE AND PROVIDE A DEMOLITION PHASING SCHEDULE WHERE REQUESTED.
7. UTILITY AND STORM SEWER LINES SHOULD NOT BE DEMOLISHED UNTIL NEW OR RELOCATED LINES HAVE BEEN INSTALLED AND OPERATIONAL.
8. THE CONTRACTOR SHALL INCLUDE IN HIS COST ANY ISOLATION VALVES OR TEMPORARY MEASURES REQUIRED TO ACCOMPLISH RELOCATIONS AND DEMOLITION OF UTILITIES.
9. THE CONTRACTOR IS RESPONSIBLE FOR ALL DEMOLITION REQUIRED TO ACCOMPLISH THE PROPOSED WORK.
10. PAVEMENTS, SIDEWALKS, CURBS AND OTHER HARD SURFACES SHALL BE EVENLY SAW CUT AT THE LIMITS OF REMOVAL TO PROVIDE A CLEAN EDGE. COORDINATE LIMITS OF REMOVAL WITH PROPOSED CONSTRUCTION INCLUDING GRADING, UTILITY INSTALLATION, PROPOSED LAYOUT, ETC.
11. EXISTING SITE FEATURES NOTED AS BEING ABANDONED, MAY BE ABANDONED IF MORE OF THE ITEMS ARE LOCATED MORE THAN 24" BELOW FINAL SUBGRADES (TO TOP OF PIPE OR OTHER FEATURE) AND NOT LOCATED WITHIN THE PROPOSED OR PLAN FUTURE BUILDING FOOTPRINTS. ENDS OF PIPES SHALL BE SEALED WITH CONCRETE.
12. ALL DEMOLISHED MATERIALS SHALL BE REMOVED FROM THE SITE AT THE CONTRACTORS COST UNLESS NOTED TO BE PROVIDED TO THE OWNER.
13. CAVITIES LEFT BY DEMOLITION SHALL BE PROPERLY BACKFILLED AND COMPACTED IN ACCORDANCE WITH THESE PLANS AND SPECIFICATIONS.
14. WHERE EXISTING IRRIGATION LINES ARE LOCATED WITHIN THE AREA OF CONSTRUCTION, THEY SHALL BE PROTECTED OR RE-ROUTED AND CONNECTED TO MAINTAIN OPERATION OF LANDSCAPE AREAS WHICH REMAIN DURING CONSTRUCTION. COORDINATE TEMPORARY MEASURES WITH DESIGN OF NEW SYSTEM AND REMOVE TEMPORARY MEASURES WHEN NO LONGER NEEDED.

TREE PROTECTION NOTES

1. INSTALL TREE PROTECTION PRIOR TO DEMOLITION OR EARTH MOVING OPERATIONS ON SITE IN ACCORDANCE WITH THE DETAIL AND NOTES PROVIDED IN THESE PLANS AND SPECIFICATIONS.
2. THE CONTRACTOR SHALL STAKE THE LIMITS OF CONSTRUCTION TO ENSURE THE TREE PROTECTION MEASURES ARE INSTALLED IN THE PROPER LOCATIONS.
3. THE TREE PROTECTION MEASURES SHALL CONSIST OF 48" TALL CHAIN LINK FENCE WITH STEEL TEE POST. PRIOR TO CONSTRUCTION OPERATIONS, TREE PROTECTION FENCE INSTALLATION SHALL BE INSPECTED BY THE OWNER'S REPRESENTATIVE AND GOVERNING AUTHORITY IF REQUIRED.
4. ANY GRADING OR EXCAVATION WITHIN THE PROTECTED ROOT ZONE SHALL BE ACCOMPLISHED BY HAND OR WITH SMALL EQUIPMENT TO MINIMIZE DAMAGE.
5. ROOTS EXPOSED DURING CONSTRUCTION OPERATIONS SHALL BE PRUNED FLUSH WIT THE GROUND AND COVERED WITH BACKFILL AS SOON AS POSSIBLE. IF CONSTRUCTION OPERATIONS WILL DELAY THE PLACEMENT OF BACK FILL THE ROOTS SHALL BE TEMPORALLY COVERED WITH MULCH AND WATERED UNTIL BACKFILL OPERATIONS CAN BE ACCOMPLISHED.
6. DO NOT STORE EQUIPMENT OR MATERIALS WITHIN THE DRIP LINE OF TREES TO BE PRESERVED.
7. WHEN GRADING OR TRENCHING OPERATIONS ARE DIRECTED WITHIN THE DRIP LINE OF A TREE TO BE PRESERVED THE ROOTS SHALL FIRST BE CUT USING A "DITCH WITCH" OR SIMILAR EQUIPMENT TO PROVIDE A CLEAN CUT OF THE ROOTS AT THE LIMIT OF DISTURBANCE, PRIOR TO USE OF OTHER GRADING MACHINERY. ONCE THE ROOTS HAVE BEEN CUT AS NOTED ALL EQUIPMENT SHALL BE RESTRICTED FROM ENTERING THE AREA BETWEEN THE CUT LINE AND TREE TRUNK. TRENCHES SHALL BE BACKFILLED AND TAMPED TO MINIMIZE SETTLEMENT.
8. BARRICADES SHALL BE INSTALLED WITHIN THE LIMITS OF PROPOSED PAVEMENTS WHEN EXTENDING UNDER THE DRIP LINE OF TREES TO BE PRESERVED UNTIL OPERATIONS TO CONSTRUCT THE PAVED AREAS ARE INITIATED. THEN THE BARRICADES CAN BE RELOCATED TO PROVIDE THE MINIMUM AREA NECESSARY FOR CONSTRUCTION OF THE PROPOSED WORK AND SHALL REMAIN IN PLACE UNTIL ALL WORK IS COMPLETE.
9. PROVIDE WATERING OF SPECIMEN TREES DURING CONSTRUCTION DURING PERIODS OF DROUGHT EXCEED SEVEN DAYS. EVENLY DISTRIBUTE WATER OVER THE ENTIRE ROOT ZONE.
10. ROOT ZONE AREAS OF TREES THAT HAVE BEEN COMPACTED DUE TO CONSTRUCTION ACTIVITIES SHALL BE AERATED AT THE DIRECTION OF A QUALIFIED ARBORIST.
11. HOSE DOWN FOLIAGE OF SPECIMEN TREES SUBJECT TO HEAVY ACCUMULATION OF DUST FROM CONSTRUCTION ACTIVITIES.
12. THE CONTRACTOR SHALL BE RESPONSIBLE FROM MAINTAINING THE GRASS TO LESS THAN 12" IN HEIGHT WITHIN THE AREAS OF TREE PROTECTION DURING THE CONSTRUCTION PERIOD. DO NOT USE PESTICIDES TO CONTROL VEGETATION WITH IN THE TREE PROTECTION AREA.
13. REMOVAL OF TREE PROTECTION FENCING SHALL NOT OCCUR UNTIL APPROVED BY THE GOVERNING AUTHORITY WHERE REQUIRED OR THE OWNER'S REPRESENTATIVE. ALL REMNANTS OF THE FENCING SHALL BE REMOVED, AND RESTORATION OF THE AREAS SHALL BE COMPLETED.

GENERAL NOTES

1. SUBJECT PROPERTY SHOWN AS TAX MAP 36, PARCEL 03610100 OF THE WILLIAMSON COUNTY TAX MAPS.
2. SITE EXISTING CONDITIONS TAKEN FROM SURVEY BY OHM ADVISORS DATED 12/17/2019. CATALYST DESIGN GROUP SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR OMISSIONS OF THE EXISTING CONDITIONS OR ERRORS RESULTING FROM THESE ITEMS.
3. THE CONTRACTOR SHALL REVIEW THE SITE CONDITIONS PRIOR TO CONSTRUCTION AND MAKE THE ENGINEER AWARE OF ANY INCONSISTENCIES BETWEEN THE SITE CONDITIONS AND EXISTING CONDITION PLAN.
4. DIMENSIONS PROVIDED ON THE PLAN ARE TAKEN TO THE FACE OF CURBS, EDGE OF CONCRETE OR EDGE OF BUILDING.
5. SITE CONTROL SHALL BE BASED OFF THE REFERENCE POINTS PROVIDED. SEE THE ARCHITECTURAL PLANS FOR LAYOUT CONTROL OF BUILDING ADDITIONS.
6. CATALYST DESIGN GROUP RECOMMENDS THAT CONSTRUCTION STAKING BE PROVIDED BY A SURVEYOR LICENSED IN THE STATE OF TENNESSEE.
7. THE CONTRACTOR SHALL SUBMIT A REQUEST FOR UTILITIES LOCATIONS (CALL 811) AND HAVE THE UTILITIES MARKED BEFORE BEGINNING CONSTRUCTION. CONTRACTOR SHALL BE FAMILIAR WITH THE UTILITY LOCATIONS, PROTECT UTILITIES WHICH REMAIN IN SERVICE AND REPAIR ANY DAMAGE TO UTILITY SYSTEMS PER THE UTILITY PROVIDER REQUIREMENTS.
8. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY APPROVALS AND PERMITS PRIOR TO INITIATING CONSTRUCTION. THE CONTRACTOR SHALL ADHERE TO PERMIT REQUIREMENTS AS WORK PROCEEDS.
9. THE CONTRACTOR SHALL REPAIR ANY DAMAGE TO PUBLIC ROADWAYS, CURBS AND SIDEWALKS IN ACCORDANCE WITH THE LOCAL REQUIREMENTS AT CONTRACTOR'S EXPENSE.
10. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY WORK UNACCEPTABLE TO THE OWNER REPRESENTATIVE OR GOVERNING AGENCIES AT CONTRACTOR'S EXPENSE.
11. ACCESSIBLE PATHS SHALL HAVE A MAXIMUM RUNNING SLOPE OF 5%, CROSS SLOPE OF 2% AND MAXIMUM 2% SLOPE IN ANY DIRECTION WITHIN TURNING MOVEMENTS AND THE ACCESSIBLE PARKING SPACES / ACCESS AISLES. RAMPS SHALL HAVE A MAXIMUM SLOPE OF 1:12 AND CROSS SLOPES AT 2% MAXIMUM. CURB RAMPS SHALL HAVE A LANDING AT THE TOP MATCHING THE WIDTH OF THE RAMP AND A DEPTH OF 36". RAMPS SHALL HAVE A 5' X 5' LANDING AT THE TOP AND BOTTOM OF THE RAMP.
12. WORK WITHIN THE PUBLIC RIGHT OF WAY SHALL BE CONSTRUCTED IN COMPLIANCE WITH THE LOCAL AND STATE REQUIREMENTS.
13. ON SITE ASPHALT PAVEMENT MATERIALS SHALL BE PER LOCAL AND STATE SPECIFICATIONS.
14. THE CONTRACTOR SHALL ADHERE TO ALL LOCAL, STATE AND FEDERAL SAFETY REGULATIONS AND PRECAUTIONS.

SITE GRADING & EROSION CONTROL NOTES

1. THE DISTURBED AREA FOR THIS PROJECT IS ESTIMATED TO BE ±0.36 ACRES.
2. THE SUBJECT PROPERTY DOES NOT LIE LIE WITHIN A SPECIAL FLOOD HAZARD ZONE ACCORDING TO COMMUNITY PANEL NO. 47187C0205F OF THE FEMA FLOOD INSURANCE MAPS FOR WILLIAMSON COUNTY, TENNESSEE DATED 09/29/2006.
3. FOLLOW THE DIRECTIVES OF THE EROSION CONTROL AND TREE PROTECTION NOTES INCLUDED ELSEWHERE IN THESE DOCUMENTS.
4. THE CONTRACTOR SHALL REQUEST UTILITY RELOCATION (811) AND VERIFY LOCATION OF ALL OTHER PRIVATE UTILITIES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL PROTECT EXISTING UTILITIES FROM DAMAGE AND REPAIR IF DAMAGED PER PROVIDER REQUIREMENTS AT THE CONTRACTOR'S EXPENSE. COORDINATE ALL WORK AROUND EXISTING UTILITIES WITH CORRESPONDING PROVIDER.
5. THE CONTRACTOR SHALL CHECK EXISTING GRADES AND DIMENSIONS IN THE FIELD PRIOR TO CONSTRUCTION AND CONTACT THE ENGINEER WITH ANY DISCREPANCIES.
6. THE CONTRACTOR SHALL OBTAIN ALL APPROVALS AND PERMITS PRIOR TO INITIATING GRADING OPERATIONS.
7. POSITIVE DRAINAGE SHALL BE ESTABLISHED INITIALLY AND MAINTAINED THROUGHOUT CONSTRUCTION.
8. LOCATION OF DIVERSION DITCHES SHALL BE ADJUSTED IN THE FIELD TO AVOID TREES AND OTHER EXISTING FEATURES.
9. STRIP TOPSOIL FROM PROPOSED GRADING AREAS AND STOCKPILE FOR REUSE. PROVIDE TEMPORARY SEEDING FOR STOCKPILE AREAS DURING CONSTRUCTION. REDISTRIBUTE TOPSOIL AT A MINIMUM DEPTH OF 6" IN LAWN AREAS AND 18" IN LANDSCAPE BEDS. PROVIDE ADDITIONAL TOPSOIL WHEN ONSITE QUANTITIES ARE INSUFFICIENT.
10. ALL FILL MATERIAL SHALL BE APPROVED BY THE GEOTECHNICAL REPRESENTATIVE PRIOR TO BEING HAULED TO THE SITE. MATERIAL SHALL BE PLACED AND COMPACTED IN LIFT DEPTHS AS NOTED IN THE SPECIFICATIONS AND INSPECTED BY THE GEOTECHNICAL REPRESENTATIVE. SUBGRADES SHALL BE PROOF ROLLED IN ACCORDANCE WITH THE GEOTECHNICAL REPORT AND GEOTECHNICAL REPRESENTATIVES DIRECTIONS. SOFT AREAS SHALL BE REMOVED AND RECOMPACTED AS DIRECTED.
11. THE CONTRACTOR SHALL AT HIS COST, PROVIDE OFFSITE MATERIAL MEETING THE GEOTECHNICAL REQUIREMENTS WHERE ONSITE SOIL QUANTITIES ARE NOT SUFFICIENT, AND REMOVE ONSITE MATERIALS WHEN EXCESSIVE QUANTITIES EXISTS. SITES USED TO OBTAIN OR WASTE THIS MATERIAL SHALL BE PROPERLY PERMITTED AS REQUIRED BY THE GOVERNING AUTHORITY.
12. REINFORCED CONCRETE PIPE (RCP) SHALL BE CLASS III WALL B. HDPE PIPE SHALL BE TYPE N-12, SMOOTH INTERIOR, CORRUGATED EXTERIOR. ALL PIPES SHALL BE PROVIDED WITH SOIL TIGHT JOINTS.
13. PIPES UNDER EXISTING PAVEMENT AREAS SHALL BE COMPLETELY BACKFILLED WITH CRUSHED STONE.
14. TOP OF GRATE ELEVATIONS AND COORDINATE LOCATIONS FOR DRAINAGE STRUCTURES SHALL BE PROVIDED PER THE DETAILS AND DRAINAGE TABLES.
15. COORDINATE THE LOCATION OF SITE DRAINAGE SYSTEMS WITH THE BUILDING ARCHITECTURE AND PLUMBING PLANS FOR COLLECTION OF ROOF DRAINS AND DOWNSPOUTS.
16. ADJUST THE CASTINGS OF ALL EXISTING AND NEW STRUCTURES TO MATCH PROPOSED FINISH GRADE.
17. THE CONTRACTOR SHALL REVIEW THE PROPOSED GRADING PLAN AND SPOT ELEVATIONS AND REQUEST INFORMATION FROM THE ENGINEER FOR SPOTS OR CONTOURS THAT DO NOT APPEAR TO CORRESPOND WITH OTHER SURROUNDING GRADING. PROPOSED GRADES REFLECT AN INTENT FOR THE SLOPES AND DIRECTION OF DRAINAGE. THE CONTRACTOR SHALL REQUEST DIRECTION FOR AREAS WHERE THE INTENT IS NOT CLEAR.
18. MAXIMUM CUT AND FILL SLOPES SHALL BE 3 HORIZONTAL TO 1 VERTICAL UNLESS DIRECTLY NOTED OTHERWISE ON THE PLAN. FILL SLOPES SHALL BE CONSTRUCTED BY FILLING BEYOND THE DESIRED GRADES TO OBTAIN COMPACTION AND THEN CUT BACK TO THE DESIRED GRADES.
19. MINIMUM GRADES ON PAVEMENT AREAS SHALL BE 1%, AND MINIMUM 2% IN LAWN AREAS UNLESS DIRECTLY SPECIFIED.
20. MAXIMUM GRADES WITHIN ACCESSIBLE PARKING AND ACCESS AISLES SHALL BE 2% IN ANY DIRECTION. WITHIN ACCESSIBLE PATHS MAXIMUM SLOPES FOR SIDEWALKS SHALL BE 5%, FOR RAMPS SHALL BE 1:12, AND CROSS SLOPES SHALL BE 2%. TURNING MOVEMENTS SHALL BE 5'X5' MAXIMUM 2% IN ANY DIRECTION.
21. THE CONTRACTOR SHALL TAKE CARE TO PROPERLY COMPACT FILL WITHIN UTILITY TRENCHES AND AROUND OTHER PROJECT FEATURES TO AVOID SETTLEMENT. SETTLEMENT OCCURRING WITHIN 12 MONTHS OF COMPLETION SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE.
22. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 14 DAYS AFTER FINAL GRADING IS ACHIEVED.

Catalyst DESIGN GROUP
5100 TENNESSEE AVENUE, NASHVILLE, TN 37209
(615) 622-7200 | WWW.CATALYST-DG.COM

TENNESSEE BAPTIST CHILDREN'S HOME
P.O. BOX 2206
BRENTWOOD, TENNESSEE, 37024
615.376.3140

DONALD P. PIERCY JR. REGISTERED ENGINEER — 2/21/2020 — No. 022205 — STATE OF TENNESSEE

CONSTRUCTION DOCUMENTS

TENNESSEE BAPTIST CHILDREN'S HOME

1310 FRANKLIN ROAD
BRENTWOOD, TENNESSEE, 37027
WILLIAMSON COUNTY

NO.	DATE	DESCRIPTION

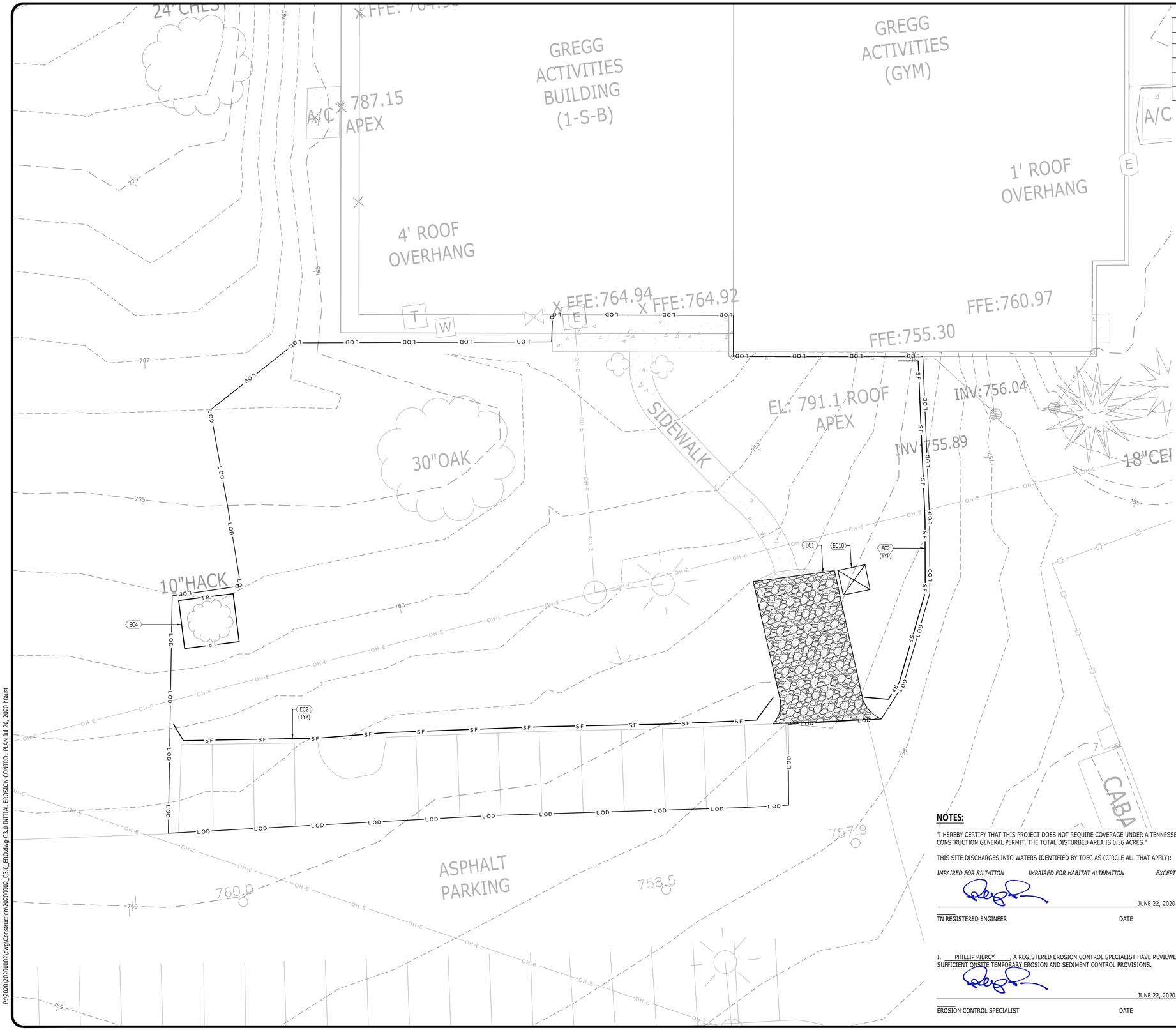
DRAWING TITLE

GENERAL NOTES

PROJECT NUMBER
20200002

DRAWING NUMBER
C2.0

P:\2020\20200002\dwg\Construction\20200002_C2.0_NOT.dwg-C2.0 GENERAL NOTES Jul 20, 2020 hfaust



EROSION CONTROL KEYNOTES		
CODE	DESCRIPTION	DET #/SHT #
EC1	TEMPORARY CONSTRUCTION ENTRANCE	1 / C3.2
EC2	SILT FENCE	3 / C3.2
EC4	TREE PROTECTION	-
EC10	CONCRETE WASH-OUT	-

SITE DESCRIPTION AND NOTES:

THE SITE IS LOCATED ON TAX MAP 36, PARCEL 03610100 IN BRENTWOOD, WILLIAMSON COUNTY, TENNESSEE. CONSTRUCTION ACTIVITY ON THIS SITE WILL CONSIST OF DISTURBING APPROXIMATELY 0.36± ACRES TO CONSTRUCT A DROP OFF DRIVE AND ADA PARKING FOR THE TENNESSEE BAPTIST CHILDREN'S HOME.

1. APPROXIMATE CONSTRUCTION TIME TABLE:
   BEGIN CONSTRUCTION - [SEPTEMBER 2020]
   COMPLETE CONSTRUCTION - [SEPTEMBER 2021]

2. CONSTRUCTION SEQUENCE:
   A. ATTEND CITY OF BRENTWOOD ENGINEERING DEPARTMENT PRE-CONSTRUCTION MEETING.
   B. INSTALL CONSTRUCTION ENTRANCE AND SILT FENCE
   C. CONTACT CITY OF BRENTWOOD ENGINEERING DEPARTMENT - EROSION CONTROL INSPECTOR FOR INSPECTION OF EROSION CONTROL DEVICES TO OBTAIN GRADING PERMIT.
   D. CLEAR AND GRUB THE REMAINING SITE.
   E. CONSTRUCT REMAINING SITE ACCORDING TO APPROVED PLANS, INCLUDING ALL ADDITIONAL EROSION CONTROL DEVICES.
   F. UPON PERMANENT SITE STABILIZATION SEED AND STRAW.
   G. REMOVE ALL OTHER EROSION TEMPORARY CONTROL DEVICES PRIOR TO AS-BUILT APPROVALS.

3. TOTAL PROJECT AREA = 2,432,826 SF (55.85± AC.)
   DISTURBED AREA = 15,845 S.F. (0.36± AC.)

EROSION CONTROL NOTES:

1. EROSION PREVENTION AND SEDIMENT CONTROL MEASURES MUST BE IN PLACE AND FUNCTIONAL BEFORE EARTH MOVING OPERATION BEGINS AND MUST BE CONSTRUCTED AND MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD. TEMPORARY MEASURES MAY BE REMOVED AT THE BEGINNING OF THE WORKDAY BUT MUST BE REPLACED AT THE END OF THE WORKDAY.
2. THE FOLLOWING RECORDS SHALL BE MAINTAINED ON OR NEAR SITE: THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR; THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE; THE DATES WHEN STABILIZATION MEASURES ARE INITIATED; INSPECTION RECORDS AND RAINFALL RECORDS.
3. THE CONTRACTOR SHALL MAINTAIN A RAIN GAUGE AND DAILY RAINFALL RECORDS AT THE SITE OR USE A REFERENCE SITE FOR A RECORD OF DAILY AMOUNT OF PRECIPITATION.
4. PRE-CONSTRUCTION VEGETATIVE GROUND COVER SHALL NOT BE DESTROYED, REMOVED OR DISTURBED MORE THAN 10 DAYS PRIOR TO GRADING OR EARTH MOVING UNLESS THE AREA IS SEEDED AND/OR MULCHED OR OTHER TEMPORARY COVER IS INSTALLED.
5. CONSTRUCTION MUST BE SEQUENCED TO MINIMIZE THE EXPOSURE TIME OF GRADED OR DENUDED AREAS.
6. SEDIMENT SHOULD BE REMOVED FROM SEDIMENT TRAPS, SILT FENCES, SEDIMENTATION PONDS AND OTHER SEDIMENT CONTROLS AS NECESSARY AND MUST BE REMOVED WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50% OR AS DIRECTED BY OWNERS REPRESENTATIVE.
7. THE CONTRACTOR SHALL REMOVE SEDIMENT FROM ALL DRAINAGE STRUCTURES BEFORE ACCEPTANCE BY LOCAL GOVERNING AGENCY OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
8. THE CONTRACTOR SHALL REMOVE THE TEMPORARY EROSION AND WATER POLLUTION CONTROL DEVICES ONLY AFTER A SOLID STAND OF GRASS HAS BEEN ESTABLISHED ON GRADED AREAS AND WHEN IN THE OPINION OF THE OWNER'S REPRESENTATIVE, THEY ARE NO LONGER NEEDED.
9. DISTURBED AREAS SHALL BE STABILIZED WITHIN 14 DAYS OF THE COMPLETION OF GRADING ACTIVITIES. SLOPES 3:1 OR STEEPER SHALL BE STABILIZED WITHIN 7 DAYS.

NOTES:

"I HEREBY CERTIFY THAT THIS PROJECT DOES NOT REQUIRE COVERAGE UNDER A TENNESSEE CONSTRUCTION GENERAL PERMIT. THE TOTAL DISTURBED AREA IS 0.36 ACRES."

THIS SITE DISCHARGES INTO WATERS IDENTIFIED BY TDEC AS (CIRCLE ALL THAT APPLY):

IMPAIRED FOR SILTATION *IMPAIRED FOR HABITAT ALTERATION* *EXCEPTIONAL*

JUNE 22, 2020

TN REGISTERED ENGINEER DATE

I, PHILLIP PIERCY, A REGISTERED EROSION CONTROL SPECIALIST HAVE REVIEWED THE PLAN FOR SUFFICIENT ONSITE TEMPORARY EROSION AND SEDIMENT CONTROL PROVISIONS.

JUNE 22, 2020

EROSION CONTROL SPECIALIST DATE

N

0 5 10 20 30

GRAPHIC SCALE

Catalyst DESIGN GROUP
5100 TENNESSEE AVENUE, NASHVILLE, TN 37209
(615) 622-7200 | WWW.CATALYST-DG.COM

TENNESSEE BAPTIST CHILDREN'S HOME
P.O. BOX 2206
BRENTWOOD, TENNESSEE, 37024
615.376.3140

DONALD P. PIERCY JR. REGISTERED ENGINEER STATE OF TENNESSEE No. 102205 7/1/21

CONSTRUCTION DOCUMENTS
TENNESSEE BAPTIST CHILDREN'S HOME
1310 FRANKLIN ROAD
BRENTWOOD, TENNESSEE, 37027
WILLIAMSON COUNTY

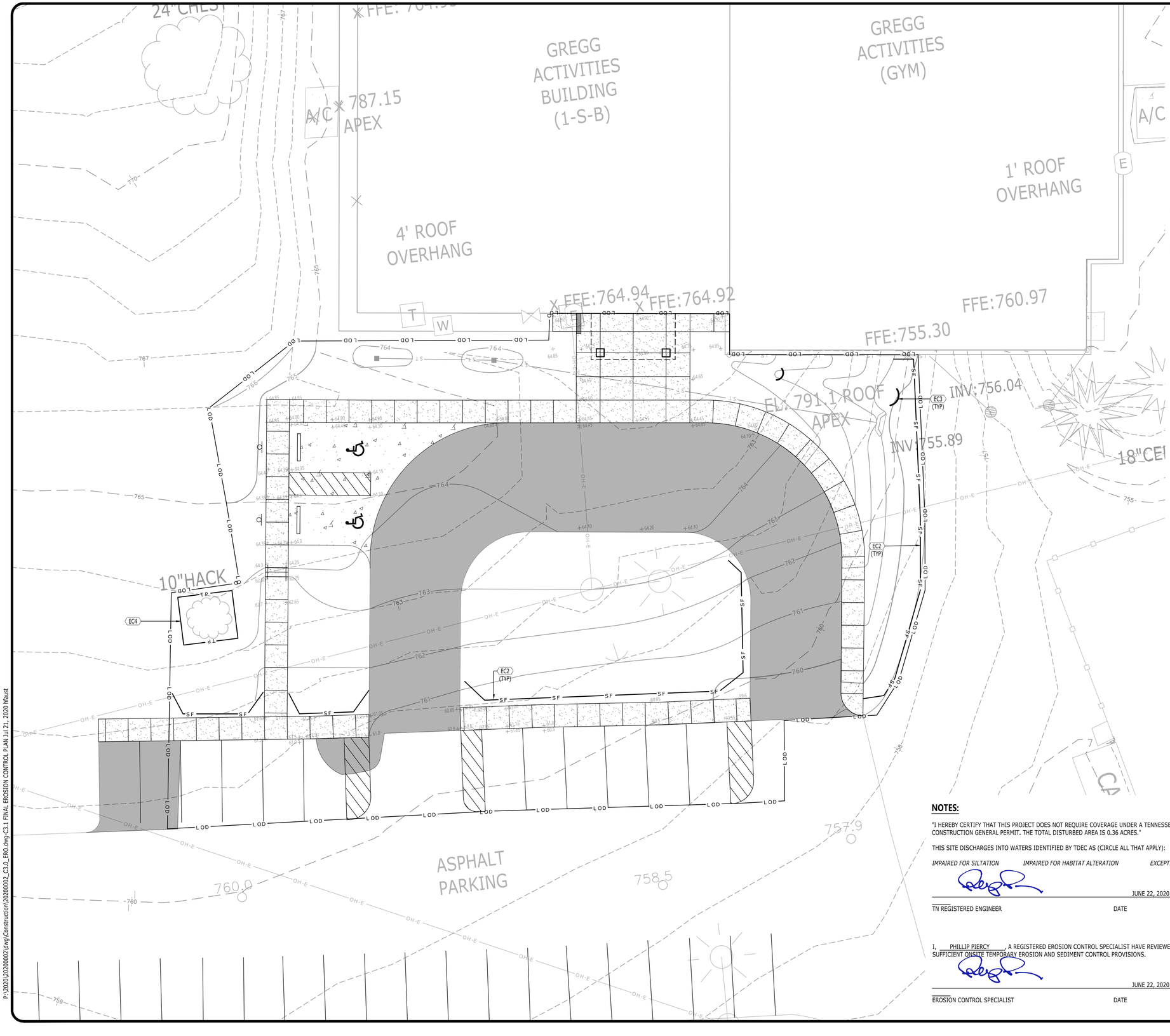
NO.	DATE	DESCRIPTION

DRAWING TITLE
INITIAL EROSION CONTROL PLAN

PROJECT NUMBER
20200002

DRAWING NUMBER
C3.0

P:\2020\20200002\dwg\Construction\20200002_C3.0_ERO.dwg-C3.0 INITIAL EROSION CONTROL PLAN Jul 20, 2020 hfeast



EROSION CONTROL KEYNOTES

CODE	DESCRIPTION	DET # /SHT #
EC2	SILT FENCE	3 / C3.2
EC3	WEIGHTED SEDIMENT TUBE	4 / C3.2
EC4	TREE PROTECTION	-

SITE DESCRIPTION AND NOTES:

THE SITE IS LOCATED ON TAX MAP 36, PARCEL 03610100 IN BRENTWOOD, WILLIAMSON COUNTY, TENNESSEE. CONSTRUCTION ACTIVITY ON THIS SITE WILL CONSIST OF DISTURBING APPROXIMATELY 0.36± ACRES TO CONSTRUCT A DROP OFF DRIVE AND ADA PARKING FOR THE TENNESSEE BAPTIST CHILDREN'S HOME.

1. APPROXIMATE CONSTRUCTION TIME TABLE:
   BEGIN CONSTRUCTION - [SEPTEMBER 2020]
   COMPLETE CONSTRUCTION - [SEPTEMBER 2021]

2. CONSTRUCTION SEQUENCE:
   A. ATTEND CITY OF BRENTWOOD ENGINEERING DEPARTMENT PRE-CONSTRUCTION MEETING.
   B. INSTALL CONSTRUCTION ENTRANCE AND SILT FENCE
   C. CONTACT CITY OF BRENTWOOD ENGINEERING DEPARTMENT - EROSION CONTROL INSPECTOR FOR INSPECTION OF EROSION CONTROL DEVICES TO OBTAIN GRADING PERMIT.
   D. CLEAR AND GRUB THE REMAINING SITE.
   E. CONSTRUCT REMAINING SITE ACCORDING TO APPROVED PLANS, INCLUDING ALL ADDITIONAL EROSION CONTROL DEVICES.
   F. UPON PERMANENT SITE STABILIZATION SEED AND STRAW.
   G. REMOVE ALL OTHER EROSION TEMPORARY CONTROL DEVICES PRIOR TO AS-BUILT APPROVALS.

3. TOTAL PROJECT AREA = 2,432,826 SF (55.85± AC.)
   DISTURBED AREA = 15,845 S.F. (0.36± AC.)

EROSION CONTROL NOTES:

1. EROSION PREVENTION AND SEDIMENT CONTROL MEASURES MUST BE IN PLACE AND FUNCTIONAL BEFORE EARTH MOVING OPERATION BEGINS AND MUST BE CONSTRUCTED AND MAINTAINED THROUGHOUT THE CONSTRUCTION PERIOD. TEMPORARY MEASURES MAY BE REMOVED AT THE BEGINNING OF THE WORKDAY BUT MUST BE REPLACED AT THE END OF THE WORKDAY.
2. THE FOLLOWING RECORDS SHALL BE MAINTAINED ON OR NEAR SITE: THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR; THE DATES WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE; THE DATES WHEN STABILIZATION MEASURES ARE INITIATED; INSPECTION RECORDS AND RAINFALL RECORDS.
3. THE CONTRACTOR SHALL MAINTAIN A RAIN GAUGE AND DAILY RAINFALL RECORDS AT THE SITE OR USE A REFERENCE SITE FOR A RECORD OF DAILY AMOUNT OF PRECIPITATION.
4. PRE-CONSTRUCTION VEGETATIVE GROUND COVER SHALL NOT BE DESTROYED, REMOVED OR DISTURBED MORE THAN 10 DAYS PRIOR TO GRADING OR EARTH MOVING UNLESS THE AREA IS SEEDED AND/OR MULCHED OR OTHER TEMPORARY COVER IS INSTALLED.
5. CONSTRUCTION MUST BE SEQUENCED TO MINIMIZE THE EXPOSURE TIME OF GRADED OR DENUDED AREAS.
6. SEDIMENT SHOULD BE REMOVED FROM SEDIMENT TRAPS, SILT FENCES, SEDIMENTATION PONDS AND OTHER SEDIMENT CONTROLS AS NECESSARY AND MUST BE REMOVED WHEN DESIGN CAPACITY HAS BEEN REDUCED BY 50% OR AS DIRECTED BY OWNERS REPRESENTATIVE.
7. THE CONTRACTOR SHALL REMOVE SEDIMENT FROM ALL DRAINAGE STRUCTURES BEFORE ACCEPTANCE BY LOCAL GOVERNING AGENCY OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
8. THE CONTRACTOR SHALL REMOVE THE TEMPORARY EROSION AND WATER POLLUTION CONTROL DEVICES ONLY AFTER A SOLID STAND OF GRASS HAS BEEN ESTABLISHED ON GRADED AREAS AND WHEN IN THE OPINION OF THE OWNER'S REPRESENTATIVE, THEY ARE NO LONGER NEEDED.
9. DISTURBED AREAS SHALL BE STABILIZED WITHIN 14 DAYS OF THE COMPLETION OF GRADING ACTIVITIES. SLOPES 3:1 OR STEEPER SHALL BE STABILIZED WITHIN 7 DAYS.

NOTES:

"I HEREBY CERTIFY THAT THIS PROJECT DOES NOT REQUIRE COVERAGE UNDER A TENNESSEE CONSTRUCTION GENERAL PERMIT. THE TOTAL DISTURBED AREA IS 0.36 ACRES."

THIS SITE DISCHARGES INTO WATERS IDENTIFIED BY TDEC AS (CIRCLE ALL THAT APPLY):

IMPAIRED FOR SILTATION *IMPAIRED FOR HABITAT ALTERATION* *EXCEPTIONAL*

JUNE 22, 2020

TN REGISTERED ENGINEER DATE

I, PHILLIP PIERCY, A REGISTERED EROSION CONTROL SPECIALIST HAVE REVIEWED THE PLAN FOR SUFFICIENT ONSITE TEMPORARY EROSION AND SEDIMENT CONTROL PROVISIONS.

JUNE 22, 2020

EROSION CONTROL SPECIALIST DATE

N

0 5 10 20 30

GRAPHIC SCALE

Catalyst DESIGN GROUP
5100 TENNESSEE AVENUE, NASHVILLE, TN 37209
(615) 622-7200 | WWW.CATALYST-DG.COM

TENNESSEE BAPTIST CHILDREN'S HOME
P.O. BOX 2206
BRENTWOOD, TENNESSEE, 37024
615.376.3140

DONALD P. PIERCY JR. REGISTERED ENGINEER No. 022207 STATE OF TENNESSEE

CONSTRUCTION DOCUMENTS
TENNESSEE BAPTIST CHILDREN'S HOME
1310 FRANKLIN ROAD
BRENTWOOD, TENNESSEE, 37027
WILLIAMSON COUNTY

NO.	DATE	DESCRIPTION

DRAWING TITLE
FINAL EROSION CONTROL PLAN

PROJECT NUMBER
20200002

DRAWING NUMBER
C3.1

P:\2020\20200002\dwg\Construction\20200002_C3.0_ERO.dwg-C3.1 FINAL EROSION CONTROL PLAN Jul 21, 2020 hfaust

SCHEDULE OF INSPECTIONS AND MAINTENANCE NOTES

1. INSPECTIONS DESCRIBED IN PARAGRAPHS 2, 3 AND 4 BELOW, SHALL BE PERFORMED AT LEAST TWICE EVERY CALENDAR WEEK. INSPECTIONS SHALL BE PERFORMED AT LEAST 72 HOURS APART. WHERE SITES OR PORTION(S) OF CONSTRUCTION SITES HAVE BEEN TEMPORARILY STABILIZED, OR RUNOFF IS UNLIKELY DUE TO WINTER CONDITIONS (E.G., SITE COVERED WITH SNOW OR ICE) OR DUE TO EXTREME DROUGHT, SUCH INSPECTION ONLY HAS TO BE CONDUCTED ONCE PER MONTH UNTIL THAWING OR PRECIPITATION RESULTS IN RUNOFF OR CONSTRUCTION ACTIVITY RESUMES. INSPECTION REQUIREMENTS DO NOT APPLY TO DEFINABLE AREAS THAT HAVE BEEN FINALLY STABILIZED. WRITTEN NOTIFICATION OF THE INTENT TO CHANGE THE INSPECTION FREQUENCY AND THE JUSTIFICATION FOR SUCH REQUEST MUST BE SUBMITTED TO THE LOCAL ENVIRONMENTAL FIELD OFFICE, OR THE DIVISION'S NASHVILLE CENTRAL OFFICE FOR PROJECTS OF THE TENNESSEE DEPARTMENT OF TRANSPORTATION (TDOT) AND THE TENNESSEE VALLEY AUTHORITY (TVA). SHOULD TDEC DISCOVER THAT MONTHLY INSPECTIONS OF THE SITE ARE NOT APPROPRIATE DUE TO INSUFFICIENT STABILIZATION MEASURES OR OTHERWISE, TWICE WEEKLY INSPECTIONS SHALL RESUME. TDEC MAY INSPECT THE SITE TO CONFIRM OR DENY THE NOTIFICATION TO CONDUCT MONTHLY INSPECTIONS.

2. QUALIFIED PERSONNEL (PROVIDED BY THE PERMITTEE OR COOPERATIVELY BY MULTIPLE PERMITTEES) SHALL INSPECT DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT BEEN FINALLY STABILIZED, AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION, STRUCTURAL CONTROL MEASURES, LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE, AND EACH OUTFALL.

3. DISTURBED AREAS AND AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION SHALL BE INSPECTED FOR EVIDENCE OF, OR THE POTENTIAL FOR, POLLUTANTS ENTERING THE SITE'S DRAINAGE SYSTEM. EROSION PREVENTION AND SEDIMENT CONTROL MEASURES SHALL BE OBSERVED TO ENSURE THAT THEY ARE OPERATING CORRECTLY.

4. OUTFALL POINTS (WHERE DISCHARGES LEAVE THE SITE AND/OR ENTER WATERS OF THE STATE) SHALL BE INSPECTED TO DETERMINE WHETHER EROSION PREVENTION AND SEDIMENT CONTROL MEASURES ARE EFFECTIVE IN PREVENTING SIGNIFICANT IMPACTS TO RECEIVING WATERS. WHERE DISCHARGE LOCATIONS ARE INACCESSIBLE, NEARBY DOWNSTREAM LOCATIONS SHALL BE INSPECTED. LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE SHALL BE INSPECTED FOR EVIDENCE OF OFFSITE SEDIMENT TRACKING.

5. BASED ON THE RESULTS OF THE INSPECTION, ANY INADEQUATE CONTROL MEASURES OR CONTROL MEASURES IN DISREPAIR SHALL BE REPLACED OR MODIFIED, OR REPAIRED AS NECESSARY, BEFORE THE NEXT RAIN EVENT, BUT IN NO CASE MORE THAN 7 DAYS AFTER THE NEED IS IDENTIFIED.

6. BASED ON THE RESULTS OF THE INSPECTION, THE SITE DESCRIPTION AND POLLUTION PREVENTION MEASURES IDENTIFIED IN THIS SWPPP SHALL BE REVISED AS APPROPRIATE, BUT IN NO CASE LATER THAN 7 DAYS FOLLOWING THE INSPECTION. SUCH MODIFICATIONS SHALL PROVIDE FOR TIMELY IMPLEMENTATION OF ANY CHANGES TO THE SWPPP, BUT IN NO CASE LATER THAN 14 DAYS FOLLOWING THE INSPECTION.

7. ALL INSPECTIONS SHALL BE DOCUMENTED ON THE CONSTRUCTION STORMWATER INSPECTION CERTIFICATION FORM PROVIDED IN APPENDIX D OF THE SWPPP REPORT FOR ALL CONSTRUCTION SITES. INSPECTION DOCUMENTATION WILL BE MAINTAINED ON SITE AND MADE AVAILABLE TO TDEC UPON REQUEST. INSPECTION REPORTS MUST BE SUBMITTED TO TDEC WITHIN 10 DAYS OF THE REQUEST. IF TDEC REQUESTS THE CONSTRUCTION STORMWATER INSPECTION CERTIFICATION FORM TO BE SUBMITTED, THE SUBMITTED FORM MUST CONTAIN THE PRINTED NAME AND SIGNATURE OF THE TRAINED CERTIFIED INSPECTOR AND THE PERSON WHO MEETS THE SIGNATORY REQUIREMENTS OF SECTION 7.7.2 OF THE NPDES GENERAL PERMIT.

8. TRAINED CERTIFIED INSPECTORS SHALL COMPLETE INSPECTION DOCUMENTATION TO THE BEST OF THEIR ABILITY. FALSIFYING INSPECTION RECORDS OR OTHER DOCUMENTATION OR FAILURE TO COMPLETE INSPECTION DOCUMENTATION SHALL RESULT IN A VIOLATION OF THIS PERMIT AND ANY OTHER APPLICABLE ACTS OR RULES.

9. SUBSEQUENT OPERATOR(S) (PRIMARY PERMITTEES) WHO HAVE OBTAINED COVERAGE UNDER THE NPDES GENERAL PERMIT SHOULD CONDUCT TWICE WEEKLY INSPECTIONS, UNLESS THEIR PORTION(S) OF THE SITE HAS BEEN TEMPORARILY STABILIZED, OR RUNOFF IS UNLIKELY DUE TO WINTER CONDITIONS OR DUE TO EXTREME DROUGHT AS STATED IN PARAGRAPH A) ABOVE. THE PRIMARY PERMITTEE (SUCH AS A DEVELOPER) IS NO LONGER REQUIRED TO CONDUCT INSPECTIONS OF PORTIONS OF THE SITE THAT ARE COVERED BY A SUBSEQUENT PRIMARY PERMITTEE (SUCH AS A HOME BUILDER).

SITE ASSESSMENT NOTES

1. THE SITE ASSESSMENT SHALL BE PERFORMED BY INDIVIDUALS WITH THE FOLLOWING QUALIFICATIONS:
   - A LICENSED PROFESSIONAL ENGINEER OR LANDSCAPE ARCHITECT
   - A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL (CPESC) OR
   - A PERSON THAT SUCCESSFULLY COMPLETED THE "LEVEL II DESIGN PRINCIPLES FOR EROSION PREVENTION AND SEDIMENT CONTROL FOR CONSTRUCTION SITES" COURSE.

2. QUALITY ASSURANCE OF EROSION PREVENTION AND SEDIMENT CONTROLS SHALL BE DONE BY PERFORMING SITE ASSESSMENT AT A CONSTRUCTION SITE. THE SITE ASSESSMENT SHALL BE CONDUCTED AT EACH OUTFALL INVOLVING DRAINAGE TOTALING 10 OR MORE ACRES OR 5 OR MORE ACRES IF DRAINING TO AN IMPAIRED OR EXCEPTIONAL QUALITY WATERS, WITHIN A MONTH OF CONSTRUCTION COMMENCING AT EACH PORTION OF THE SITE THAT DRAINS THE QUALIFYING ACREAGE OF SUCH PORTION OF THE SITE.

3. AS A MINIMUM, SITE ASSESSMENT SHOULD BE PERFORMED TO VERIFY THE INSTALLATION, FUNCTIONALITY AND PERFORMANCE OF THE EPSC MEASURES DESCRIBED IN THE SWPPP REPORT. THE SITE ASSESSMENT SHOULD BE PERFORMED WITH THE INSPECTOR, AND SHOULD INCLUDE A REVIEW AND UPDATE (IF APPLICABLE) OF THE SWPPP REPORT. MODIFICATIONS OF PLANS AND SPECIFICATIONS FOR ANY BUILDING OR STRUCTURE, INCLUDING THE DESIGN OF SEDIMENT BASINS OR OTHER SEDIMENT CONTROLS INVOLVING STRUCTURAL, HYDRAULIC, HYDROLOGIC OR OTHER ENGINEERING CALCULATIONS SHALL BE PREPARED BY A LICENSED PROFESSIONAL ENGINEER OR LANDSCAPE ARCHITECT AND STAMPED AND CERTIFIED IN ACCORDANCE WITH THE TENNESSEE CODE ANNOTATED, TITLE 62, CHAPTER 2 AND THE RULES OF THE TENNESSEE BOARD OF ARCHITECTURAL AND ENGINEERING EXAMINERS.

4. THE SITE ASSESSMENT FINDINGS SHALL BE DOCUMENTED AND THE DOCUMENTATION KEPT WITH THE SWPPP REPORT AT THE SITE. AT A MINIMUM, THE DOCUMENTATION SHALL INCLUDE INFORMATION INCLUDED IN THE INSPECTION FORM PROVIDED IN APPENDIX D OF THE SWPPP REPORT. THE DOCUMENTATION MUST CONTAIN THE PRINTED NAME AND SIGNATURE OF THE INDIVIDUAL PERFORMING THE SITE ASSESSMENT AND THE FOLLOWING CERTIFICATION:

   "I CERTIFY UNDER PENALTY OF LAW THAT THIS REPORT AND ALL ATTACHMENTS ARE, TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE, AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS."

5. THE SITE ASSESSMENT CAN TAKE THE PLACE OF ONE OF THE TWICE WEEKLY INSPECTIONS REQUIREMENT.

6. TDEC MAY REQUIRE ADDITIONAL SITE ASSESSMENT(S) TO BE PERFORMED IF SITE INSPECTION BY TDEC'S PERSONNEL REVEALS SITE CONDITIONS THAT HAVE POTENTIAL OF CAUSING POLLUTION TO THE WATERS OF THE STATE.

NOTE:

CONTRACTOR SHALL INSTALL A 4'X4' WEATHER PROOF SIGN (6' HEIGHT) AT THE MAIN CONSTRUCTION ENTRANCE. THE SIGN SHALL HAVE THE FOLLOWING INFORMATION:

1. A COPY OF THE NOTICE OF COVERAGE WITH THE NPDES PERMIT NUMBER (FURNISHED BY ENGINEER), IF APPLICABLE.
2. THE NAME AND TELEPHONE NUMBER OF A LOCAL CONTACT PERSON (FURNISHED BY CONSTRUCTION MANAGER).
3. DESCRIPTION OF PROJECT (FURNISHED BY CONSTRUCTION MANAGER).

ACTIVITY: Weighted Sediment Tube | TCP – 14

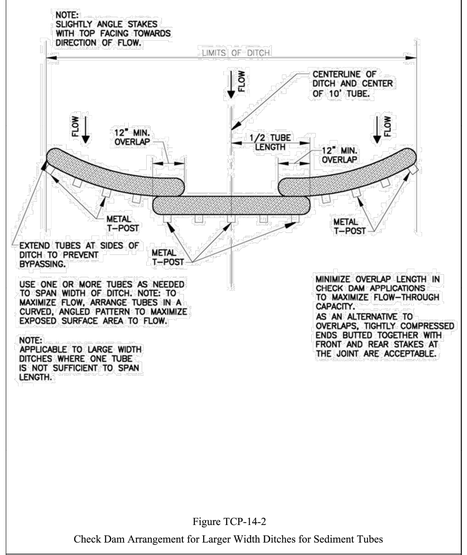
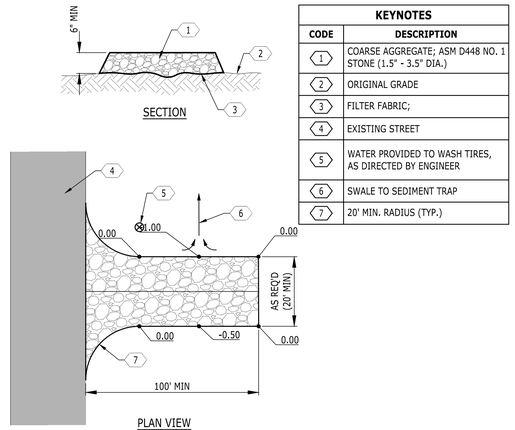


Figure TCP-14-2
Check Dam Arrangement for Larger Width Ditches for Sediment Tubes

Volume 4: Stormwater Best Management Practices – Temp. Construction Management Practices | TCP-14-7 | August 2009

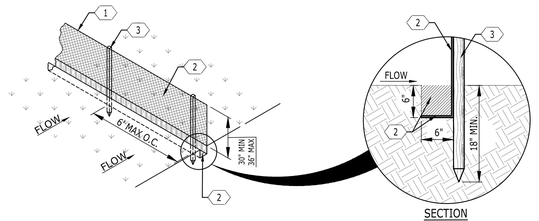
4 **WEIGHTED SEDIMENT TUBES (METRO TCP-14)**



KEYNOTES	
CODE	DESCRIPTION
1	COARSE AGGREGATE; ASM D448 NO. 1 STONE (1.5" - 3.5" DIA.)
2	ORIGINAL GRADE
3	FILTER FABRIC;
4	EXISTING STREET
5	WATER PROVIDED TO WASH TIRES, AS DIRECTED BY ENGINEER
6	SWALE TO SEDIMENT TRAP
7	20' MIN. RADIUS (TYP.)

1 **TEMPORARY CONSTRUCTION ENTRANCE**
NOT TO SCALE

2 **RESERVED**
NOT TO SCALE



KEYNOTES	
CODE	DESCRIPTION
1	WOVEN WIRE FENCE BACKING FOR TYPE "B" SILT FENCE ONLY
2	ENGINEERING FILTER FABRIC*; BURY BOTTOM OF FABRIC IN 6"x6" TRENCH; BACKFILL TRENCH WITH SOIL AND COMPACT
3	POST; WOOD (2"x2" MIN.) OR STEEL T-POST (1.3 LB./FT. MIN.)
4	98' MAXIMUM RECOMMENDED SLOPE LENGTH
5	LEVEL CONTOUR; INSTALL SILT FENCE ALONG A LEVEL CONTOUR
6	MAX. TRIBUTARY AREA: 0.25 Ac. / 100 FT. OF FENCE
7	TURN LAST 6' OF FENCE UP SLOPE

SPECIFICATIONS		
Tensile Strength (Lbs. Min.) (1) (ASTM D-4632)	Warp-120 Fill -100	Warp-120 Fill -100
Elongation (%Max.) (ASTM D-4632)	40	40
AOS (Apparent Opening Size) (Max. Sieve Size) (ASTM D-4751)	#30	#30
Flow Rate (Gal/Min/Sq. Ft.) (GDT-87)	25	25
Ultraciolet Stability (2) (ASTM D-4632 after 300 hours weathering in accordance with ASTM D-4355)	80	80
Bursting Strength (PSI Min.) (ASTM D-3786 Diaphram Bursting Strength Tester)	175	175
Minimum Fabric Width (Inches)	36	22

3 **SILT FENCE - TYPES A & B**
NOT TO SCALE

Catalyst DESIGN GROUP
5100 TENNESSEE AVENUE, NASHVILLE, TN 37209
(615) 622-7200 | WWW.CATALYST-DG.COM

TENNESSEE BAPTIST CHILDREN'S HOME
P.O. BOX 2206
BRENTWOOD, TENNESSEE, 37024
615.376.3140



CONSTRUCTION DOCUMENTS
TENNESSEE BAPTIST CHILDREN'S HOME
1310 FRANKLIN ROAD
BRENTWOOD, TENNESSEE, 37027
WILLIAMSON COUNTY

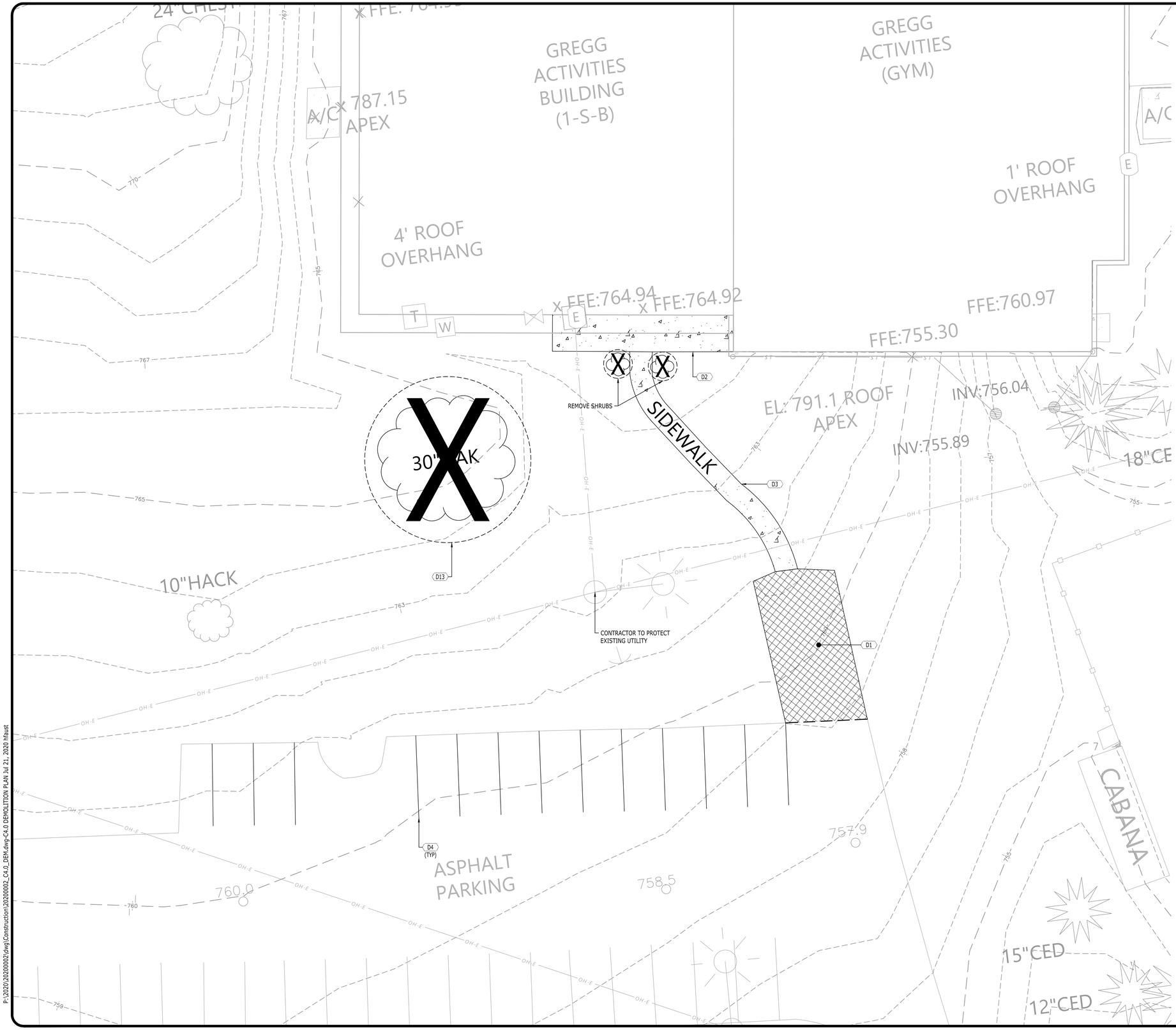
NO.	DATE	DESCRIPTION

DRAWING TITLE
SEDIMENT AND EROSION CONTROL DETAILS

PROJECT NUMBER
20200002

DRAWING NUMBER
C3.2

P:\2020\20200002\dwg\Construction\20200002_C3.0_ERO.dwg-C3.2 SEDIMENT AND EROSION CONTROL DETAILS Jul 20, 2020 hfaust



DEMOLITION KEYNOTES	
CODE	DESCRIPTION
D1	REMOVE EXISTING ASPHALT PAVEMENT
D3	REMOVE EXISTING CONCRETE SIDEWALK
D4	REMOVE EXISTING PARKING STRIPING
D13	REMOVE EXISTING TREE

LEGEND	
BUILDING TO BE REMOVED	
CONCRETE TO REMOVE	
ASPHALT PAVEMENT TO REMOVE	
TREES TO BE REMOVED	X

N

0 5 10 20 30

GRAPHIC SCALE

P:\2020\20200002\dwg\Construction\20200002_C4.0_DEM.dwg-C4.0 DEMOLITION PLAN Jul 21, 2020 hfaust

Catalyst DESIGN GROUP
5100 TENNESSEE AVENUE, NASHVILLE, TN 37209
(615) 622-7200 | WWW.CATALYST-DG.COM

TENNESSEE BAPTIST CHILDREN'S HOME
P.O. BOX 2206
BRENTWOOD, TENNESSEE, 37024
615.376.3140

DONALD P. PIERCY JR. REGISTERED ENGINEER No. 102337 STATE OF TENNESSEE 7/21/20

CONSTRUCTION DOCUMENTS

TENNESSEE BAPTIST CHILDREN'S HOME

1310 FRANKLIN ROAD
BRENTWOOD, TENNESSEE, 37027
WILLIAMSON COUNTY

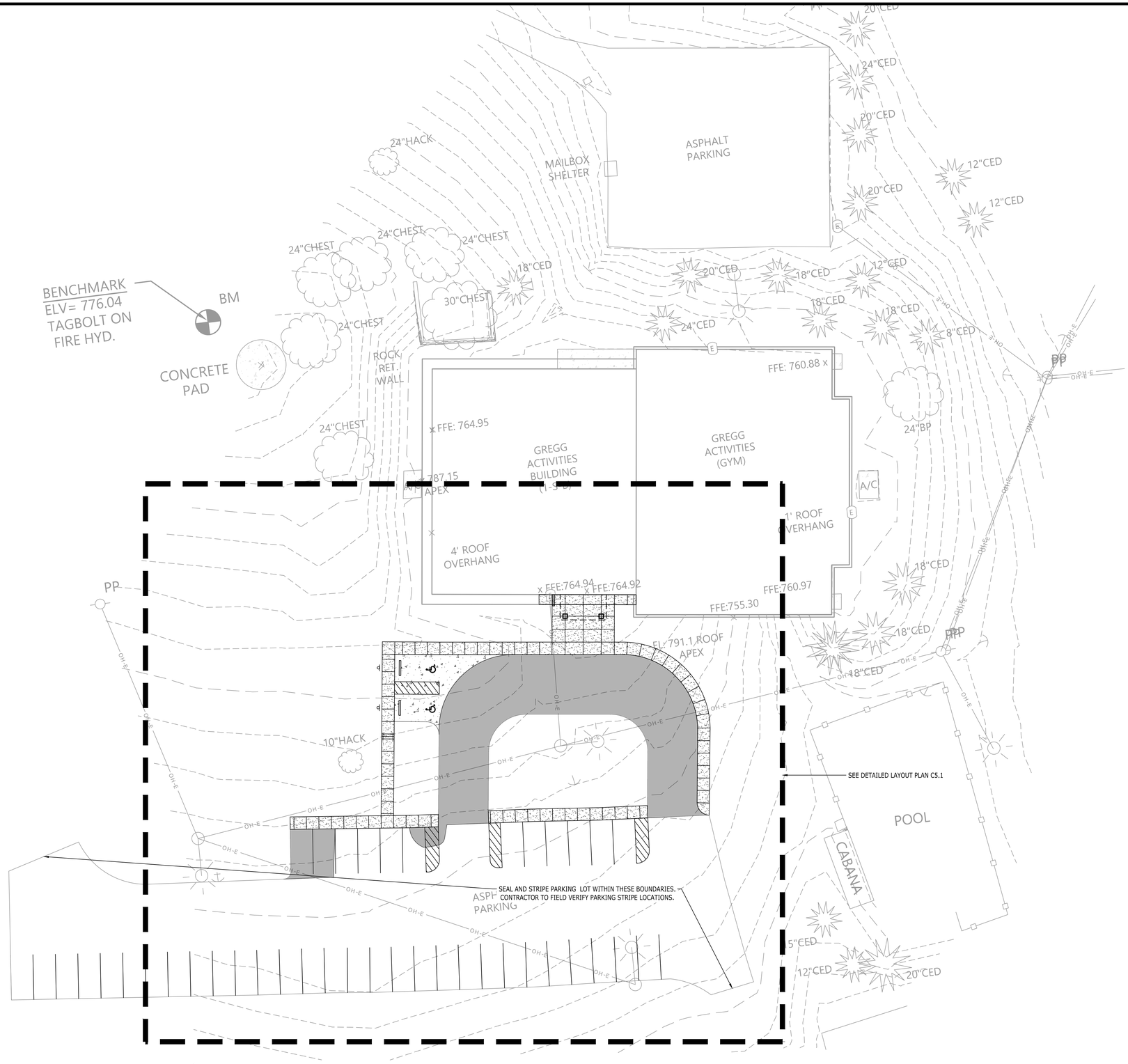
NO.	DATE	DESCRIPTION

DRAWING TITLE

DEMOLITION PLAN

PROJECT NUMBER
20200002

DRAWING NUMBER
C4.0



SITE LAYOUT KEYNOTES

CODE	DESCRIPTION	DET #/SHT #
S1B	ASPHALT PAVEMENT - HEAVY DUTY	1 / C8.0
S2	CONCRETE PAVEMENT	3 / C8.0
S4A	CONCRETE SIDEWALK	4 / C8.0
S5	SIDEWALK JOINTS	5 / C8.0
S6A	CONCRETE STAIRS WITH HANDRAIL	6 / C8.0
S8	ACCESSIBLE SYMBOL	7 / C8.0
S9	ACCESSIBLE PARKING SPACE	8 / C8.0
S12	CONCRETE WHEELSTOP	9 / C8.0
S14	BOLLARD	10 / C8.0
S15	ACCESSIBLE PARKING SIGN	2 / C8.0

LEGEND

BUILDING	
CONCRETE PAVEMENT	
CONCRETE SIDEWALK	
HEAVY DUTY PAVEMENT	
PAINTED STRIPE	

N

0 10 20 40 60

GRAPHIC SCALE

Catalyst DESIGN GROUP
5100 TENNESSEE AVENUE, NASHVILLE, TN 37209
(615) 622-7200 | WWW.CATALYST-DG.COM

TENNESSEE BAPTIST CHILDREN'S HOME
P.O. BOX 2206
BRENTWOOD, TENNESSEE, 37024
615.376.3140

DONALD P. PIERCY JR. REGISTERED ENGINEER
CALIFORNIA
No. 022207
STATE OF TENNESSEE

CONSTRUCTION DOCUMENTS
TENNESSEE BAPTIST CHILDREN'S HOME
1310 FRANKLIN ROAD
BRENTWOOD, TENNESSEE, 37027
WILLIAMSON COUNTY

NO.	DATE	DESCRIPTION

DRAWING TITLE
OVERALL LAYOUT PLAN

PROJECT NUMBER
20200002

DRAWING NUMBER
C5.0

P:\2020\20200002\dwg\Construction\20200002_C5.0_LAY.dwg-C5.0 OVERALL LAYOUT PLAN Jul 21, 2020 hfaust

SITE LAYOUT KEYNOTES

CODE	DESCRIPTION	DET #/SHT #
S1B	ASPHALT PAVEMENT - HEAVY DUTY	1 / C8.0
S2	CONCRETE PAVEMENT	3 / C8.0
S4A	CONCRETE SIDEWALK	4 / C8.0
S5	SIDEWALK JOINTS	5 / C8.0
S6A	CONCRETE STAIRS WITH HANDRAIL	6 / C8.0
S8	ACCESSIBLE SYMBOL	7 / C8.0
S9	ACCESSIBLE PARKING SPACE	8 / C8.0
S12	CONCRETE WHEELSTOP	9 / C8.0
S14	BOLLARD	10 / C8.0
S15	ACCESSIBLE PARKING SIGN	2 / C8.0

LEGEND

BUILDING	
CONCRETE PAVEMENT	
CONCRETE SIDEWALK	
HEAVY DUTY PAVEMENT	
PAINTED STRIPE	

Catalyst DESIGN GROUP
5100 TENNESSEE AVENUE, NASHVILLE, TN 37209
(615) 622-7200 | WWW.CATALYST-DG.COM

TENNESSEE BAPTIST CHILDREN'S HOME
P.O. BOX 2206
BRENTWOOD, TENNESSEE, 37024
615.376.3140

DONALD P. PIERCY JR. REGISTERED ENGINEER — STATE OF TENNESSEE — No. 022297 — 07/21/2021

CONSTRUCTION DOCUMENTS
TENNESSEE BAPTIST CHILDREN'S HOME
1310 FRANKLIN ROAD
BRENTWOOD, TENNESSEE, 37027
WILLIAMSON COUNTY

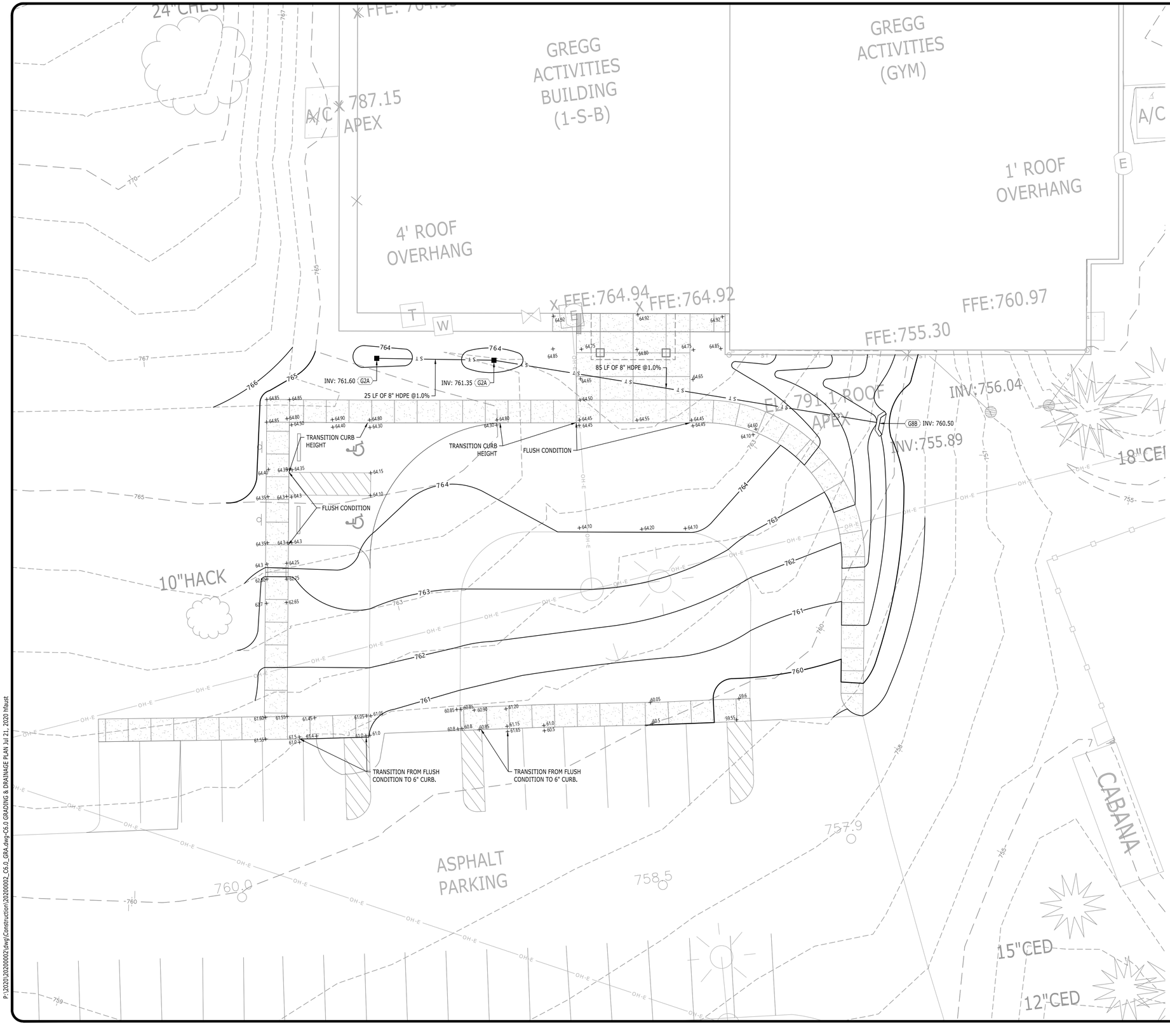
NO.	DATE	DESCRIPTION

DRAWING TITLE
DETAILED LAYOUT PLAN

PROJECT NUMBER
20200002

DRAWING NUMBER
C5.1

P:\2020\20200002\dwg\Construction\20200002_CS.0_LAY.dwg-C5.1 DETAILED LAYOUT PLAN Jul 21, 2020 hfaust



GRADING & DRAINAGE KEYNOTES

CODE	DESCRIPTION	DET #/SHT #
G2A	CATCH BASIN	11 / C7.0
G8B	CONCRETE HEADWALL - WINGED	12 / C7.0

LEGEND

SPOT ELEVATION	+0.00
PROPOSED CONTOUR ELEV.	90

Know what's below. Call before you dig.

0 5 10 20 30
GRAPHIC SCALE

Catalyst DESIGN GROUP
5100 TENNESSEE AVENUE, NASHVILLE, TN 37209
(615) 622-7200 | WWW.CATALYST-DG.COM

TENNESSEE BAPTIST CHILDREN'S HOME
P.O. BOX 2206
BRENTWOOD, TENNESSEE, 37024
615.376.3140

DONALD P. PIERCY JR. REGISTERED ENGINEER STATE OF TENNESSEE No. 122287 7/21/2021

CONSTRUCTION DOCUMENTS
TENNESSEE BAPTIST CHILDREN'S HOME
1310 FRANKLIN ROAD
BRENTWOOD, TENNESSEE, 37027
WILLIAMSON COUNTY

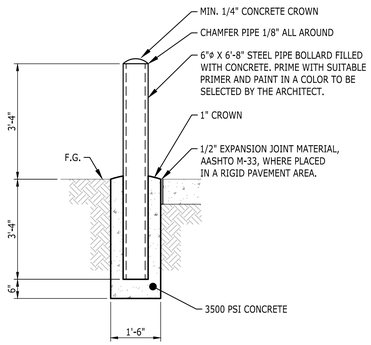
NO.	DATE	DESCRIPTION

DRAWING TITLE
GRADING & DRAINAGE PLAN

PROJECT NUMBER
20200002

DRAWING NUMBER
C6.0

P:\2020\20200002\dwg\Construction\20200002_C6.0_GRA.dwg-C6.0 GRADING & DRAINAGE PLAN Jul 21, 2020 1:feast



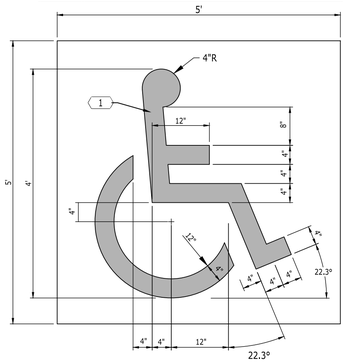
NOTE:

THE PRIMER AND FIRST COAT OF PAINT SHALL BE APPLIED BEFORE INSTALLATION. A SECOND COAT OF PAINT SHALL BE APPLIED AFTER INSTALLATION.

10 **STEEL BOLLARD**

NO SCALE

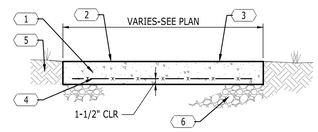
KEYNOTES	
CODE	DESCRIPTION
1	ACCESSIBLE SYMBOL; PAINT ON ALL ACCESSIBLE SPACES; SYMBOL SHALL BE PAINTED WHITE ON A BLUE BACKGROUND



7 **HANDICAP SYMBOL**

NOT TO SCALE

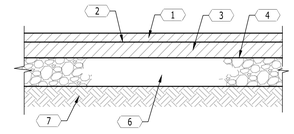
KEYNOTES	
CODE	DESCRIPTION
1	CONCRETE SIDEWALK; 4" THICK; 3500 PSI CONCRETE; SLOPE 2% MAX., 1% MIN.
2	BROOM FINISH
3	CONTROL JOINTS 5' O.C.; EXPANSION JOINTS 25' O.C. AND WHERE SIDEWALKS ABUT RIGID MATERIALS.
4	CONCRETE REINFORCEMENT; 6"x6"xW2.9x22.9 W.W.F.; GRADE 60 STEEL
5	TOPSOIL; PLACE WITHIN ½" OF WALKWAY SURFACE
6	4" MINERAL AGGREGATE BASE



4 **CONCRETE SIDEWALK**

NOT TO SCALE

KEYNOTES	
CODE	DESCRIPTION
1	1.5" ASPHALTIC SURFACE COURSE
2	TACK COAT AT 0.10 GAL./S.Y.
3	3" ASPHALTIC SURFACE COURSE
4	PRIME COAT AT 0.30 GAL./S.Y.
5	2" ASPHALTIC SURFACE COURSE
6	8" COMPACTED MINERAL AGGREGATE BASE
7	COMPACTED SUBGRADE
	NOTE: ON ALL EXISTING PAVEMENT REPAIR OR REPLACEMENT, USE THE PAVEMENT SECTIONS SHOWN OR MATCH THE EXISTING SECTION, WHICHEVER IS GREATER.

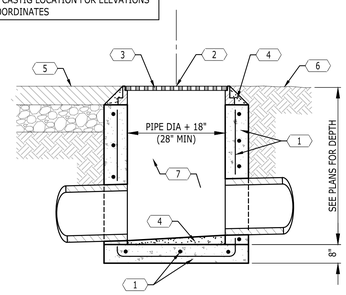


HEAVY DUTY PAVEMENT

1 **ASPHALT PAVEMENT**

NOT TO SCALE

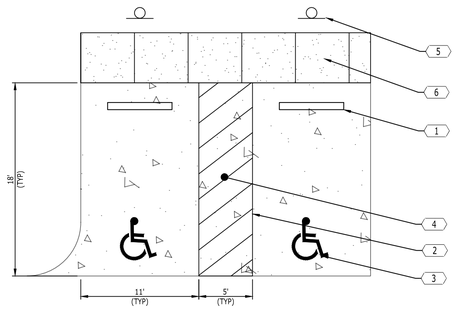
KEYNOTES	
CODE	DESCRIPTION
1	CONCRETE INLET; CONCRETE SHALL DEVELOP A COMPRESSIVE STRENGTH OF 3500 PSI AT 28 DAYS CURE; REINFORCE WITH NO. 4 BARS, GRADE 60 STEEL, SPACED 8" O.C. EACH WAY (TYP. FOR WALLS AND FLOOR); A CAST-IN-PLACE BOX OF EQUAL DIMENSIONS IS ACCEPTABLE; ADJUST STRUCTURE DIMENSIONS AS REQUIRED TO RECEIVE STORM PIPE AT OBLIQUE ANGLES
2	TOP OF CASTIG LOCATION FOR ELEVATIONS AND COORDINATES
3	CAST IRON FRAME AND GRATE; NEENAH MODEL NO. R-3561 OR APPROVED EQUAL; PROVIDE REDUCER RING TO ACCOMMODAE THE PROPOSED CASTING AS NECESSARY
4	GROUT
5	PAVEMENT
6	FINISH GRADE
7	NO HUB



11 **CATCH BASIN**

NOT TO SCALE

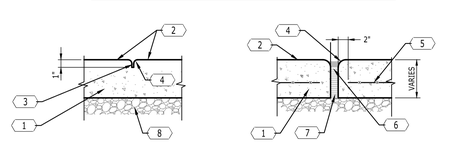
KEYNOTES	
CODE	DESCRIPTION
1	PRECAST CONCRETE WHEELSTOP; REFER TO DETAIL
2	PAINTED SPACE LINES TO BE SOLID WHITE LINES, 4" WIDE; MAX. 2% SLOPE IN ANY DIRECTION FOR PARKING SPACES AND ACCESS ISLES
3	PAINTED SCCESSIBLE SYMBOL; REFER TO DETAIL
4	8' WIDE VAN ACCESSIBLE ACCESS AISLE; REFER TO PLAN FOR LOCATIONS
5	ACCESSIBLE PARKING SIGN (TYP.); ADD VAN ACCESS SIGNS FOR SPACES EACH SIDE OF 8" ACCESS AISLES; REFER TO DETAIL
6	CONCRETE SIDEWALK; REFER TO DETAIL



8 **ACCESSIBLE PARKING AREA**

NOT TO SCALE

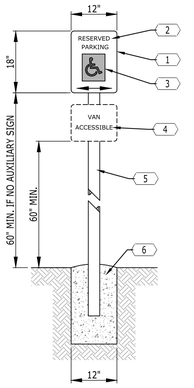
KEYNOTES	
CODE	DESCRIPTION
1	CONCRETE SIDEWALK
2	BROOM FINISH
3	½" HAND-GROOVED JOINT
4	TOOLED EDGE; ½" RADIUS (TYP.)
5	CONCRETE REINFORCEMENT; 6"x6"xW2.9x22.9 W.W.F.; GRADE 60 STEEL
6	POLYURETHANE SELANT
7	½" PREMOLDED EXPANSION JOINT MATERIAL
8	MINERAL AGGREGATE BASE (TYP.)



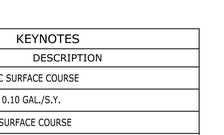
CONTROL JOINT EXPANSION JOINT

5 **SIDEWALK JOINTS**

NOT TO SCALE



KEYNOTES	
CODE	DESCRIPTION
1	9 GA. SIGN BLANK WITH WITE BACKGROUND; ATTACH WITH THREE STAINLESS STEEL TAMPER-RESISTANT SCREWS
2	LEGEND (EXCEPT H.C. SYMBOL) AND BORDER SHALL BE GREEN
3	SILK-SCREENED INTERNATIONAL HANDICAP SYMBOL; WHITE ON BLUE BACKGROUND
4	ADDITIONAL SIGNAGE FOR "VAN ACCESSIBLE PARKING" SHALL BE PROVIDED WHERE ADJACENT TO 8' ACCESS AISLE
5	2"x2" STEEL TUBE; CLOSE TUBE END AND GRIND SMOOTH; PAINT BLACK
6	3000 PSI CONCRETE BASE; CENTERED ON THE ACCESSIBLE PARKING SPACE
7	WHITE BACKGROUND WITH GREEN LEGEND AND BORDER
	NOTE: SIGNAGE SHALL COMPLY WITH THE MOST CURRENT AMERICANS WITH DSABILITIES ACT (A.D.A.) SIGNAGE GUIDELINES



VAN ACCESS PLATE

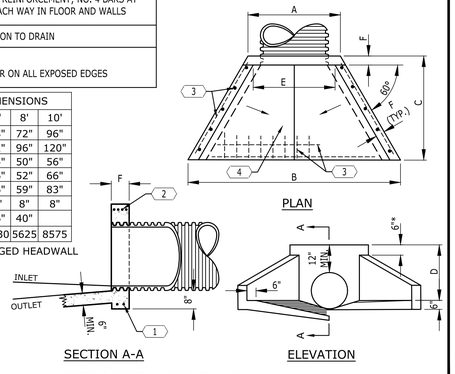
2 **ACCESSIBLE PARKING SIGN**

NOT TO SCALE

KEYNOTES	
CODE	DESCRIPTION
1	CONCRETE REINFORCEMENT; TWO, NO. 2 BARS
2	CONCRETE REINFORCEMENT; FOUR, NO. 4 BARS
3	CONCRETE REINFORCEMENT; NO. 4 BARS AT 12" O.C. EACH WAY IN FLOOR AND WALLS
4	SLOPE APRON TO DRAIN
	NOTE: 1" CHAMFER ON ALL EXPOSED EDGES

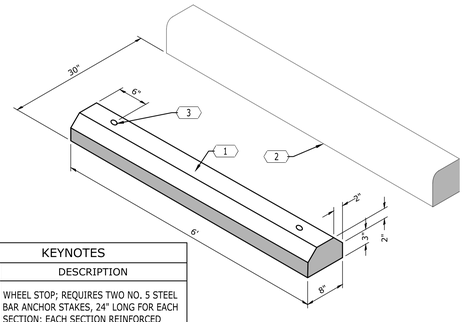
TABLE OF DIMENSIONS				
SIZE	4'	6'	8'	10'
A	32"	48"	72"	96"
B	48"	72"	96"	120"
C	30"	44"	50"	56"
D	25"	36"	52"	66"
E	24"	36"	59"	83"
F	N/A	8"	8"	8"
MAX. OPG.	18"	26"	40"	
WT. (LB)	1090	3130	5625	8575

* 0" ON 4' WINGED HEADWALL



12 **WINGED HEADWALL**

NOT TO SCALE



KEYNOTES	
CODE	DESCRIPTION
1	WHEEL STOP; REQUIRES TWO NO. 5 STEEL BAR ANCHOR STAKES, 24" LONG FOR EACH SECTION; EACH SECTION REINFORCED WITH TWO NO. 3 DEFORMED BARS
2	FACE OF CURB OR EDGE OF PAVEMENT
3	1" DIA. HOLE (TYP.)

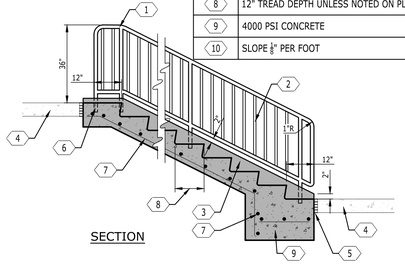
9 **PRECAST CONCRETE WHEEL STOP**

NOT TO SCALE



DETAIL AT NOSING

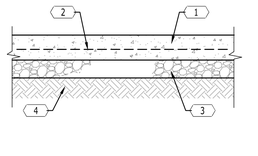
KEYNOTES	
CODE	DESCRIPTION
1	1.5" DIA. TUBULAR STEEL HANDRAIL; PRIME WITH SUITABLE PRIMER AND PAINT WITH TWO COATS OF EXTERIOR ENAMEL; COORDINATE PAINT COLOR WITH ARCHITECT
2	14 GAUGE, ¼" SQUALRE TUBULAR STEEL PICKETS; PLACE 4" O.C.
3	CHEEKWALL WITH TWO NO. 3 BARS
4	SIDEWALK
5	½" EXPANSION JOINT
6	2" SLEEVE
7	NO. 4 BARS; 12" O.C. EACH WAY
8	12" TREAD DEPTH UNLESS NOTED ON PLANS
9	4000 PSI CONCRETE
10	SLOPE ⅛" PER FOOT



SECTION

6 **CONCRETE STAIRS WITH HANDRAIL**

NOT TO SCALE



KEYNOTES	
CODE	DESCRIPTION
1	CONCRETE PAVEMENT; 4000 PSI
2	6"x6", W2.9xW2.9 W.W.F.; ASTM GRADE 60 STEEL
3	6" COMPACTED MINERAL AGGREGETE BASE
4	COMPACTED SUBGRADE

3 **CONCRETE PAVEMENT**

NOT TO SCALE

Catalyst DESIGN GROUP
5100 TENNESSEE AVENUE, NASHVILLE, TN 37209
(615) 622-7200 | WWW.CATALYST-DG.COM

TENNESSEE BAPTIST CHILDREN'S HOME
P.O. BOX 2206
BRENTWOOD, TENNESSEE, 37024
615.376.3140

DONALD P. PIERCY JR. REGISTERED ENGINEER
STATE OF TENNESSEE
No. 102207
CATALYST DESIGN GROUP

CONSTRUCTION DOCUMENTS
TENNESSEE BAPTIST CHILDREN'S HOME
1310 FRANKLIN ROAD
BRENTWOOD, TENNESSEE, 37027
WILLIAMSON COUNTY

NO.	DATE	DESCRIPTION

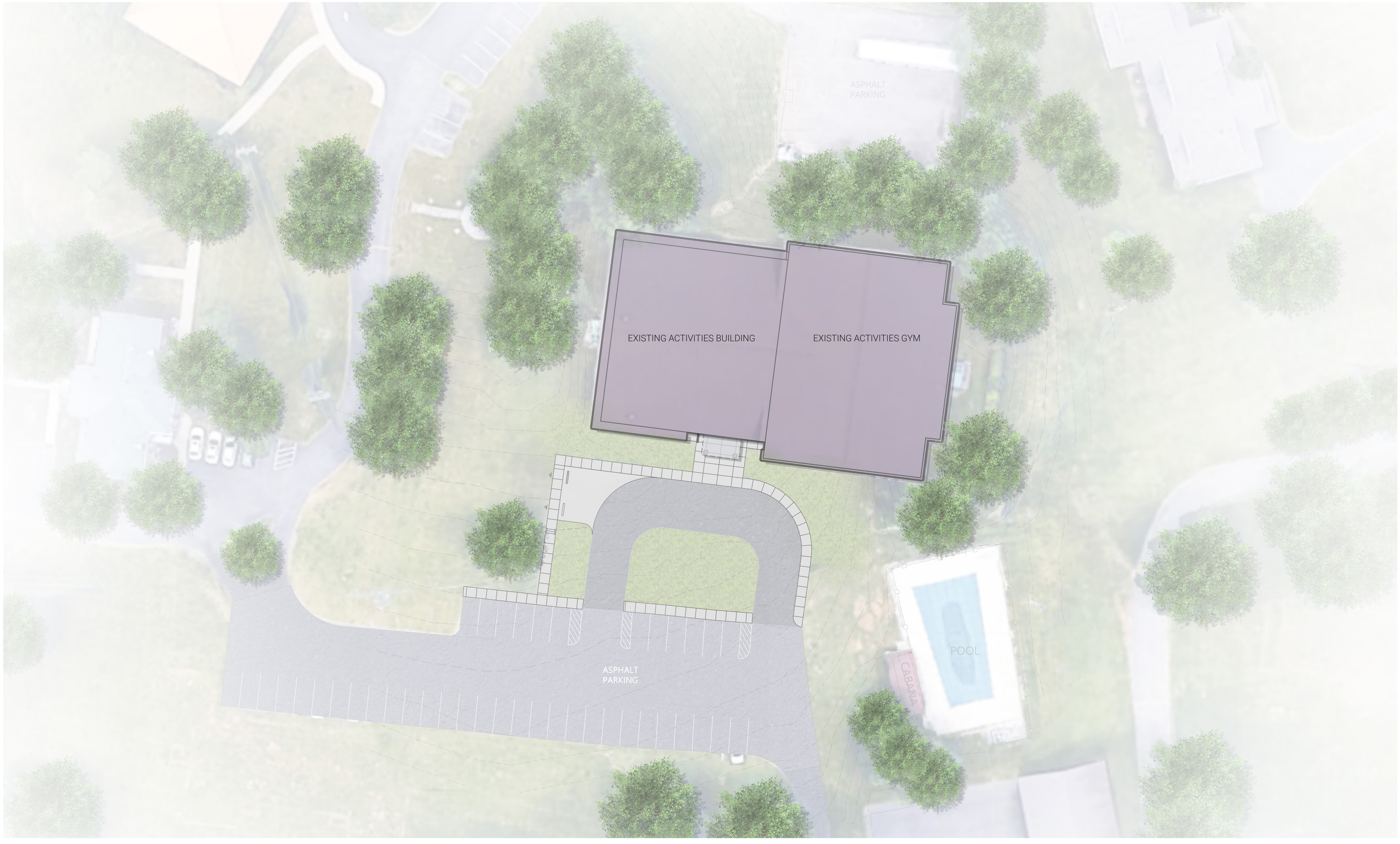
DRAWING TITLE

SITE DETAILS

PROJECT NUMBER
20200002

DRAWING NUMBER
C7.0

P:\2020\20200002\dwg\Construction\20200002_C7.0_DET.dwg-C7.0 SITE DETAILS Jul 21, 2020 hfeast

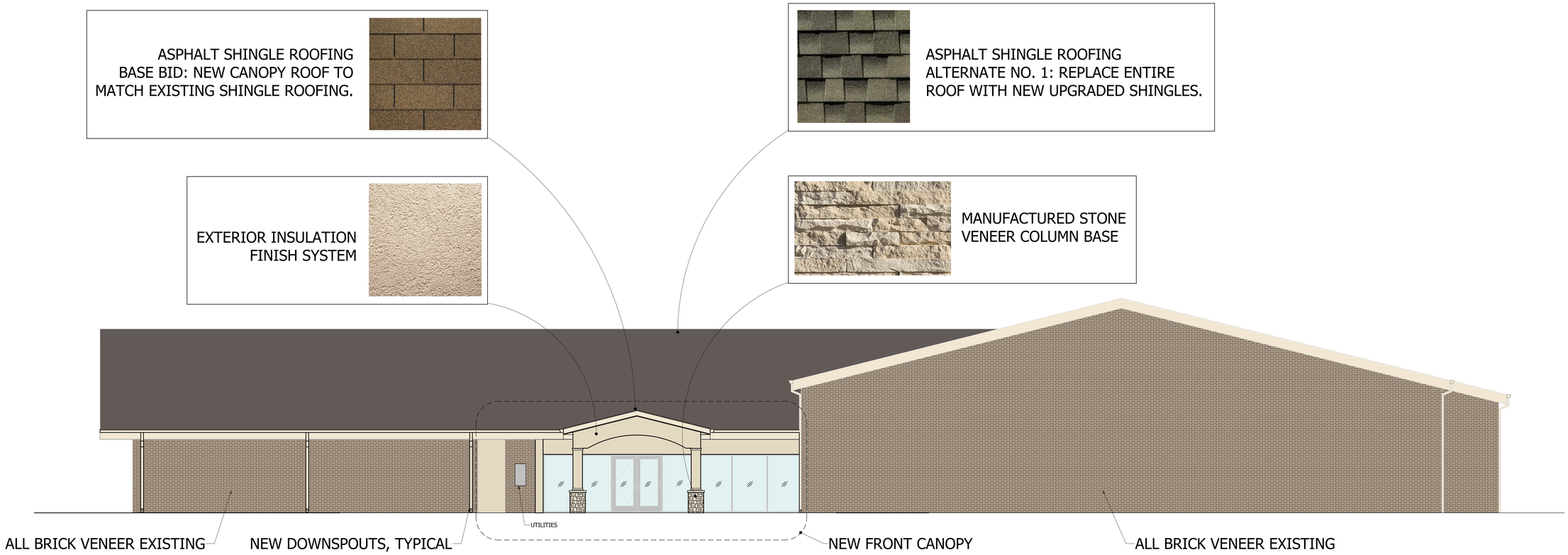


TENNESSEE BAPTIST CHILDREN'S HOME | Site Plan

1310 FRANKLIN ROAD,BRENTWOOD, TN, 37027 | JULY 2020

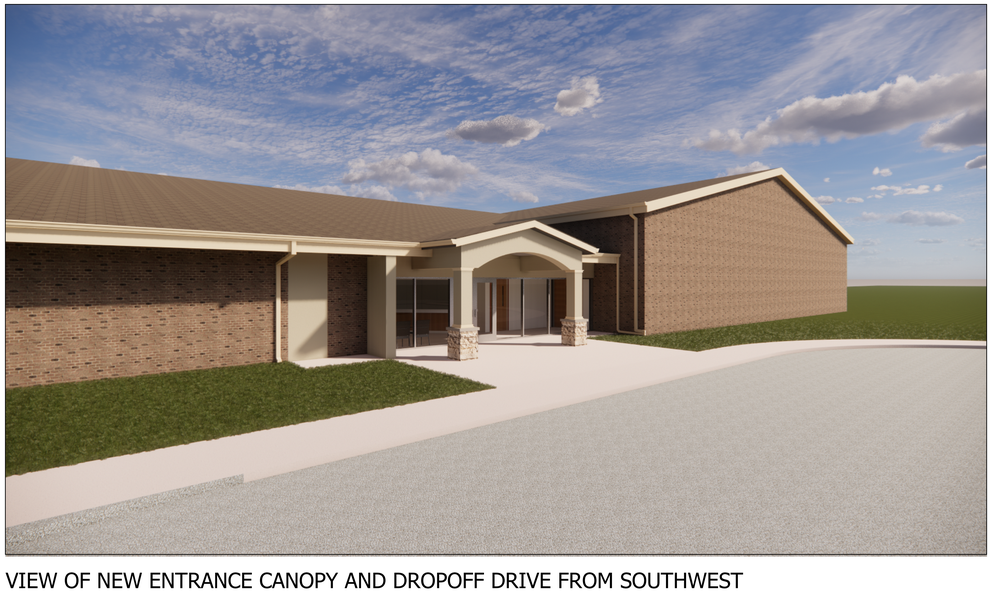
0 20 40

Catalyst DESIGN GROUP



1 Z0.1 NEW FRONT CANOPY ELEVATION

0' 1' 2' 4' 8'



VIEW OF NEW ENTRANCE CANOPY AND DROPOFF DRIVE FROM SOUTHWEST



VIEW OF NEW ENTRANCE CANOPY AND DROPOFF DRIVE FROM SOUTHEAST

HMK ARCHITECTS PLLC
5300 Maryland Way, Suite 109
Brentwood, Tennessee
37027
615.369.6020 FAX 615.369.6021

PHASE 2
EXTERIOR
IMPROVEMENTS
ACTIVITIES
BUILDING
RENOVATION for

TENNESSEE
BAPTIST
CHILDREN'S
HOMES

1310 Franklin Road
Brentwood, TN
37027

PROJECT NUMBER: 18248.00

DATE: JUNE 22, 2020

SHEET NUMBER:

Z0.1

DESCRIPTION:
BOARD FOR CITY REVIEW

This drawing shall not be reproduced, published, stored in an electronic retrieval system, or used in any way, without permission of the Architect. Copyright © 2020 HMK Architects PLLC

BRENTWOOD PLANNING COMMISSION **3.**

Meeting Date: 08/03/2020

Information

PROJECT NUMBER

BPC2007-003

PROJECT DESCRIPTION

Revised Final Plat – Cromwell Subdivision, Section One, Lot 37, 1876 Burland Crescent

CESO, Inc. requests approval of a revised final plat that adjust the side setback line from 50 feet to 30 feet. The reduction is consistent with the OSRD technical standards.

ZONING OF PROPERTY

Zoning OSRD

APPLICANT NAME/ADDRESS

Mr. William Huffman, CESO, Inc., 216 Centerview Drive, Suite 150, Brentwood, TN 37027

Attachments

Final Staff Report
Vicinity Map
Proposed Revised Final Plat

CITY OF BRENTWOOD
MUNICIPAL PLANNING COMMISSION
PLANNING DEPARTMENT STAFF REPORT
MONDAY, AUGUST 3, 2020 -- 7:00 P.M.
FINAL

CONSENT AGENDA -- ITEM 3:

REQUEST:	***REVISED FINAL PLAT – CROMWELL SUBDIVISION, SECTION ONE, LOT 37, 1876 BURLAND CRESCENT***
PROJECT NUMBER:	***BPC2006-003***
CURRENT ZONING:	***OSRD -- OPEN SPACE RESIDENTIAL DEVELOPMENT***

GENERAL INFORMATION:

CESO, Inc. requests approval of a revised final plat that adjust the side setback line from 50 feet to 30 feet. The reduction is consistent with the OSRD technical standards.

PROJECT LOCATION:

The subject property is located at 1876 Burland Crescent.

APPROVAL HISTORY:

There has been no recent Planning Commission action related to the subject property.

CONDITIONS OF APPROVAL:

*Staff recommends that the following **five** conditions be attached to the approval of the request.*

1. Add a star indicating that the lot is transitional to the legend.

2. Show the location of the water meter on the lot.

3. Show the location of existing sewer stub.

4. Add the label “To be Removed” to the 50’ setback to be abandoned.

5. Approval of a final plat by the Planning Commission shall become effective upon the date of the last signature required on the plat for recording. The initial vesting period shall be for five years after approval.

STANDARD REQUIREMENTS:

*Staff recommends that the following **seven** standard requirements be attached to the approval of the request.*

1. Add the following note to all pages of the final plat:

   This final plat is subject to a vesting period, during which the development standards in effect on the date of approval will remain the standards applicable to this plan. Upon expiration of the vesting period, development of the property shown on this plat may be subject to standards other than those that were applicable during the vesting period. The vesting period for this plat expires on _____, unless extended by the City of Brentwood. Persons relying on this plat after said date should contact the City of Brentwood to determine if development may continue as depicted on the plan.

   (Planning and Codes Department staff will insert the expiration year for the plat at the time the plat is ready for recording and may also make changes to the wording of the above note as necessary to carry out the intent of Standard Requirements 1, 2 and 3 below.)

2. Provide the Planning staff with a digital copy of the proposed subdivision. This request is consistent with Article 2.3 of the Brentwood Subdivision Regulations. The file should be in AutoCAD .DWG or .DXF compatible format and CD-ROM. The file shall use the Tennessee State Plane coordinate system, FIPS Zone 4100, NAD 83 datum. The digital copies must be received before the plat may be recorded.

3. The property owner is responsible for all development fees including water and sewer service and tap fees, building permit fees and Public Works Project Fees. The required fees shall be used for future infrastructure related improvements required by the proposed development.

4. Deviations from the approved plan in the development of a project or the failure to satisfy any standard requirements or special conditions of approval imposed by the planning commission will be considered a violation of the provisions of the Zoning Ordinance, which shall be subject to punishment as provided in Section 1-9 of the Brentwood Municipal Code. The City may also require the applicant to appear before the Planning Commission to address any deficiencies or unapproved modifications. The project may also be subject to delays in issuance of permits, certificates of occupancy, recordation of plats or other project approvals.

5. Any changes to plans approved by the Planning Commission will require staff review and re-approval by the Planning Commission.

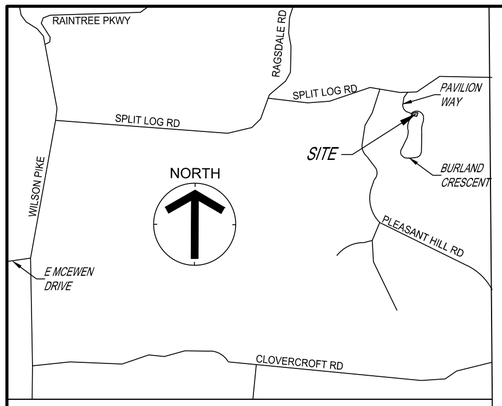
6. Development of this project shall comply with all applicable codes and ordinances of the City of Brentwood.

7. Approval of the proposed plan shall be limited to the illustrations and plans presented to the Planning Commission for review and approval on **August 3, 2020 .** Any changes to Planning Commission approved plans and specifications will require staff review and re-approval by the Planning Commission.

RECOMMENDATION:

Staff requests that the Planning Commission vote to approve the proposed revised final plat, subject to the requirements of the staff report.


SPLIT LOG RD
SPLIT LOG RD
SPLIT LOG RD
SPLIT LOG RD
TUSCANY WAY
TERRABROOKE CT
SONOMA TRCE
SONOMA TRCE
STRYKER PL
STRYKER PL
PAVILION WAY
BURLAND CRES



VICINITY MAP - NOT TO SCALE

Certificate of Ownership and Dedication
I (we) hereby certify that I am (we are) the owner(s) of the property shown and described hereon and that I (we) hereby adopt this plan of subdivision with my (our) free consent, establish the minimum building restriction lines, and dedicate all streets, alleys, walks, parks and other open spaces to public or private use as noted.

Owner Name: _____

Title: _____ Date: _____

Certificate of Approval of Street Names
I hereby certify that the Williamson County Department of Emergency Communications has approved the street name(s).

_____ Date: _____
Williamson County Department
of Emergency Communications

Certificate of Approval of Subdivision Name
I hereby certify that the City of Brentwood Planning Department has approved the subdivision name.

_____ Date: _____
Secretary, Planning Commission
or Planning and Codes Director

Certificate of Approval of Sewer System
I hereby certify that the following utility systems outlined or indicated on the final subdivision plat entitled Revised Final Plat - Cromwell Subdivision, Lot 37 - Section One have been installed in accordance with current applicable regulations.

Sewer System: _____ Date: _____
City of Brentwood Water Services

Certificate of Approval of Water Systems
I hereby certify that the following water system outlined or indicated on the final subdivision plat entitled Revised Final Plat - Cromwell Subdivision, Lot 37 - Section One have been installed in accordance with current applicable regulations.

Water System: _____ Date: _____
City of Brentwood Sewer Services

Certificate of Provision of Electrical Service
I herby certify that all of the _____ regulations, checklists and guidelines have been met. Any approval is at all times contingent upon continuing compliance with _____ requirements.

_____ Date: _____
Electric Provider

Certificate of Approval of Streets
I hereby certify that all streets designated on the final subdivision plat have been constructed in accordance with current applicable regulations.

_____ Date: _____
Director of Engineering

Certificate of Approval for Recording
I hereby certify that the subdivision plat shown hereon has been found to comply with the subdivision regulations of the City of Brentwood, with the exception of such variances and/or modifications, if any, as are noted in the minutes of the Planning Commission.

_____ Date: _____
Secretary, Planning Commission or
Planning and Codes Director

Certificate of Accuracy
I hereby certify that the plan shown and described hereon is a true and correct survey to the accuracy required by the specifications of the Brentwood Planning Commission.

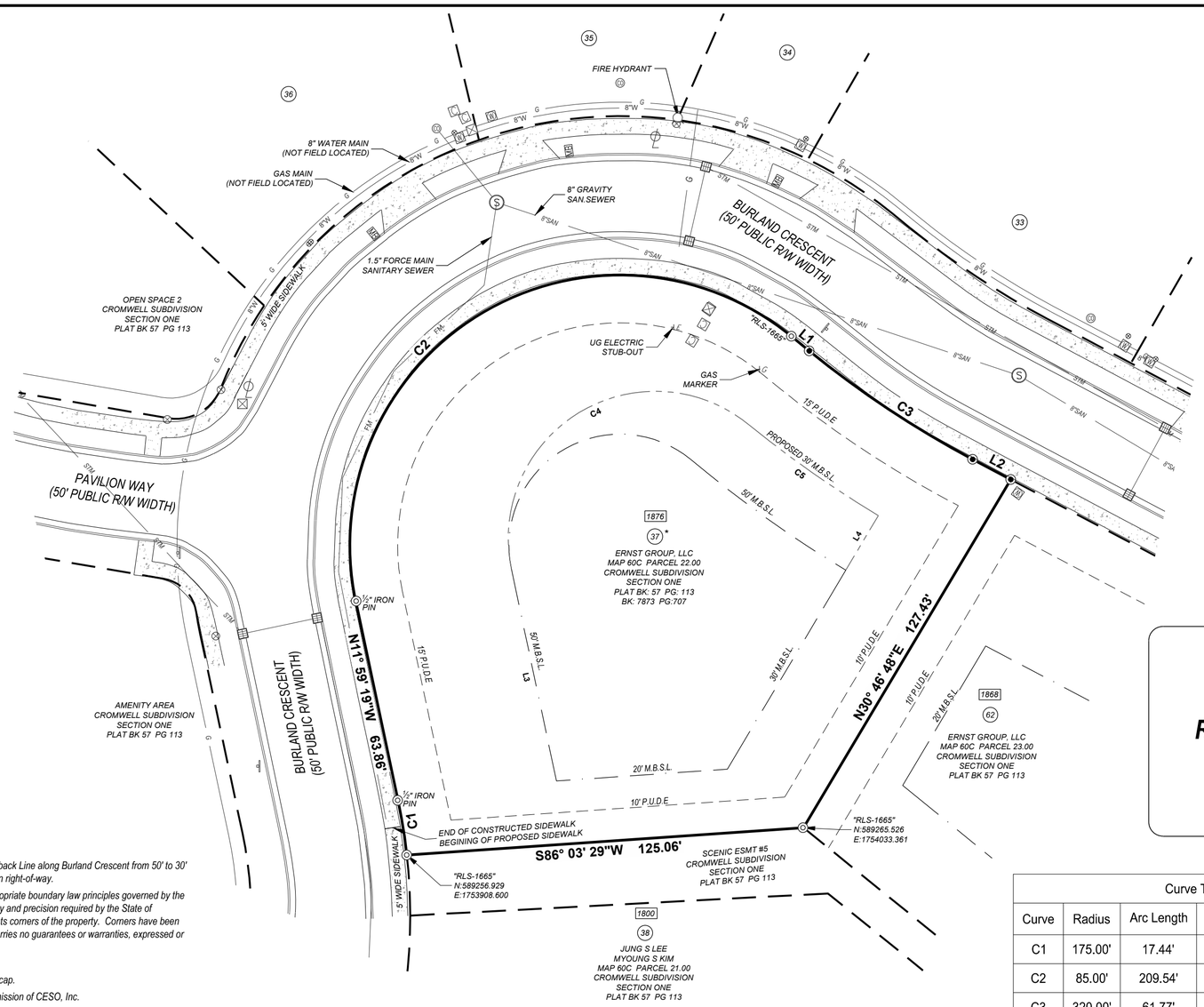
The fieldwork was completed in June, 2020.

Date of Plat: July 2, 2020 (Revised 7/20/2020)

Surveyor of Record
William J. Huffman, TN RLS 1754
Sr. Survey Manager, CESO, Inc.
216 Centerview Drive, Suite 150
Brentwood, Tennessee, 37027
Office: 615-238-0690
Mobile: 423-676-3977
Email: huffman@cesoinc.com

WILLIAM J. HUFFMAN
REGISTERED LAND SURVEYOR
AGRICULTURE COMMERCE
TENNESSEE No. 1754

7/20/2020



R.O.W.C. RECORDING STAMP

Curve Table				
Curve	Radius	Arc Length	Chord Bearing	Chord Length
C1	175.00'	17.44'	N9° 08' 01"W	17.43'
C2	85.00'	209.54'	N58° 38' 13"E	160.37'
C3	320.00'	61.77'	S56° 26' 45"E	61.67'
C4	46.29'	114.14'	N58° 50' 51"E	87.35'
C5	350.00'	49.71'	S54° 58' 36"E	49.67'

Line Table		
Line #	Direction	Length
L1	S50° 43' 36"E	7.33
L2	S62° 09' 15"E	13.57
L3	N11° 59' 19"W	68.26
L4	S30° 46' 48"W	20.00

GENERAL SURVEYOR NOTES:

1. *The purpose of this plat is to reduce a portion of the Minimum Building Setback Line along Burland Crescent from 50' to 30' in order to create a Side Minimum Building Setback Line along the northern right-of-way.*
2. *The location of the property boundaries depicted heron, based on the appropriate boundary law principles governed by the facts and evidence gathered during the course of this survey. Per accuracy and precision required by the State of Tennessee, in the opinion of this surveyor the monuments shown represents corners of the property. Corners have been found or set as indicated hereon. As a professional opinion, this survey carries no guarantees or warranties, expressed or implied.*
3. *Survey not final without Seal and Signature of Surveyor.*
4. *All set property corners are marked with 1/2" diameter rebar with a CESO cap.*
5. *This survey may not be reproduced, altered, or copied without written permission of CESO, Inc.*
6. *This property has direct access to Burland Crescent Road, a dedicated public right-of-way..*
7. *This property is currently zoned as OSRD - Open Space Residential Development.*
8. *Setbacks per City of Brentwood Zoning Regulations:*
   - *Front Yard: 50 ft.*
   - *Rear Yard: 30 ft.*
   - *Side Yard: 20 ft.*
   - *Side Adjacent Street: 30 ft.*
9. *The front of the proposed house must squarely face the 50' front setback.*
10. *All electric service for the proposed development shall be underground. All public utilities shall be subject to the approval of the applicable utility provider.*
11. *The following pertains to a transitional lot designated with an "*": prior to the issuance of a building permit for a residential lot with a slope of 15% or greater, a plan shall be prepared by a licensed professional engineer for approval by the city engineer showing existing topographic information from field run survey data, boundary and setback lines, utility and drainage easements, existing and proposed drainage pipes, ditches and swales to be connected to public drainage lines and/or to direct or re-direct storm water run-off, the proposed finished floor elevation and finished grades of pavement and ground lines, identification of existing trees in excess of four inch caliper and trees to be preserved, and the location and timing of installation of erosion control features. No clear cutting of trees or grading of the lot shall be permitted until approval of the site plan by the city engineer.*
12. *Development on all lots within the project shall comply with the requirements of Section 58-5 of the Brentwood Municipal Code, which requires prior written approval of construction and/or addition of any obstruction within a platted public utility and drainage easement.*
13. *All open areas identified as scenic easements shall be undisturbed and remain in their natural state.*
14. *The entire Cromwell Subdivision is within the Brentwood city limits.*
15. *The maintenance of the detention ponds will be the responsibility of the Homeowners Association.*
16. *As shown on survey, there are no gaps or gores between tracts*
17. *This final plat is subject to a vesting period, during which the development standards in effect on the date of approval will remain the standards applicable to this plan. Upon expiration of the vesting period, development of the property shown on this plat may be subject to standards other than those that were applicable during the vesting period. The vesting period for this plat expires on _____, unless extended by the City of Brentwood. Persons relying on this plat after said date should contact the City of Brentwood to determine if development may continue as depicted on the plan.*

UTILITY DISCLAIMER

THE UTILITIES SHOWN HEREON HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND/OR EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARENTEE THAT THE UTILITIES LOCATED HEREON COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UTILITIES LOCATED ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE.

Tennessee811 Know what's below. Call before you dig.

IN TENNESSEE, IT IS A REQUIREMENT, PER "THE UNDERGROUND UTILITY DAMAGE PREVENTION ACT", THAT ANYONE WHO ENGAGES IN EXCAVATION MUST NOTIFY ALL KNOWN UNDERGROUND UTILITY OWNERS, NO LESS THAN THREE (3) OR MORE THAN (10) WORKING DAYS PRIOR TO THE DATE OF THEIR INTENT TO EXCAVATE AND ALSO TO AVOID ANY POSSIBLE HAZARD OR CONFLICT. TENNESSEE ONE CALL 811.

LEGEND

◎	IRON PIN (FOUND)	WM	WATER METER
◉	IRON PIN (SET)	WV	WATER VALVE
S	SEWER MANHOLE		FIRE HYDRANT
CB	CATCH BASIN		ELECTRIC LINE MARKER
CO	COMMUNICATION BOX		GAS LINE MARKER
EB	ELECTRIC BOX		LIGHT POLE
	SIGN		CLEAN OUT
MB	MAILBOX	XXXX	ADDRESS

P.U.D.E. PUBLIC UTILITY & DRAINAGE ESMT.
M.B.S.L. MINIMUM BUILDING SETBACK LINE
PROPERTY LINE
ADJACENT PROPERTY LINE
EASEMENT LINE
SETBACK LINE

PROPERTY INFORMATION

Tax Map: 60C Parcel 22.00

Address: 1876 Burland Crescent Road

Owner(s): Ernst Group LLC
133 Indian Lake Road #201
Hendersonville, TN 37075

Recorded Documents for Property:
Final Plat Cromwell Subdivision Section One
Plat Book: 57 Page: 113 (Lot 37)
Book: 7873 Page: 707

Area: 27,510 SF (+/-) 0.631 AC (+/-)

FEMA FIRM Map No: 47187C0230F Dated: September 29, 2006
No portion of the subdivision lies within the 100 - Year Floodplain

Current Zone: OSRD - Open Space Residential Development

30 0 30 60
GRAPHIC SCALE

REVISIONS

NO.	DATE	DESCRIPTION
1	7/20/2020	REVISIONS PER COB PLANNING DEPT. STAFF REPORT (7/15/2020)

REVISED FINAL PLAT

CROMWELL SUBDIVISION
LOT 37 - SECTION ONE

1876 BURLAND CRESCENT — TAX MAP 60C PARCEL 22.00
BRENTWOOD 16TH CIVIL DISTRICT — WILLIAMSON COUNTY, TENNESSEE

SCALE: 1" = 30' | DATE: JULY 2, 2020 (REV 7/20/2020)

DESIGN: N/A
DRAWN: PMK
CHECKED: WJH

CESO
WWW.CESOINC.COM

JOB NO.: 757470
SHEET NO.: 1 OF 1

BRENTWOOD PLANNING COMMISSION **4.**

Meeting Date: 08/03/2020

Information

PROJECT NUMBER

BPC2007-008

PROJECT DESCRIPTION

Minor Site Plan Alteration – Bell Self Storage, 263 Wilson Pike Circle

BBDB Investments, LLC requests approval to add a generator, generator enclosure, a backup pump and a backup pump enclosure off of the SW corner of the building. The enclosures will be faced with brick veneer to match the exterior of the building. The access gates will be constructed of wood slats affixed to a steel frame.

ENCLOSURE DETAILS	
Generator Enclosure	*12'2" x 17' 7" x 8'*
Backup Pump Enclosure	*15' x 15' x 8'*

- *4-Cylinder Diesel engine;*
- *Measures 93.8" x 34" x 45.5" (L, W, H);*
- *Noise Level ranges from 52.8 to 92.7 dB(A);*
- *Fuel tank volume 276 gallons, and*
- *Fuel tank height 42"*

The building is currently under construction and includes an area of 100,632 sq. ft.

ZONING OF PROPERTY

Zoning C-3

APPLICANT NAME/ADDRESS

Mr. Darek Bell, BBDB Investments, LLC, 1000 Health Park Drive, Suite 150, Brentwood, TN 372027

Attachments

Final Staff Report

Cover Page

Layout
Site Plan
Survey
Drainage Maps
Stormwater Details
Stormwater Mgmt.
Enclosure Deatils
Generator Specs

CITY OF BRENTWOOD
MUNICIPAL PLANNING COMMISSION
PLANNING DEPARTMENT STAFF REPORT
MONDAY, AUGUST 3, 2020 -- 7:00 P.M.
FINAL

CONSENT AGENDA -- ITEM 4:

REQUEST:	***MINOR SITE PLAN ALTERATION – BELL SELF-STORAGE, 263 WILSON PIKE CIRCLE***
PROJECT NUMBER:	***BPC2007-008***
CURRENT ZONING:	***C-3 -- COMMERCIAL SERVICE - WAREHOUSING***

GENERAL INFORMATION:

BBDB Investments, LLC requests approval to add a generator, generator enclosure, a backup pump and a backup pump enclosure off of the SW corner of the building. The enclosures will be faced with brick veneer to match the exterior of the building. The access gates will be constructed of wood slats affixed to a steel frame.

ENCLOSURE DETAILS	
Generator Enclosure	*12'2" x 17' 7" x 8'*
Backup Pump Enclosure	*15' x 15' x 8'*

- *4-Cylinder Diesel engine;*
- *Measures 93.8" x 34" x 45.5" (L, W, H);*
- *Noise Level ranges from 52.8 to 92.7 dB(A);*
- *Fuel tank volume 276 gallons, and*
- *Fuel tank height 42"*

The building is currently under construction and includes an area of 100,632 sq. ft.

PROJECT LOCATION:

The subject property is located at 263 Wilson Pike Circle.

APPROVAL HISTORY:

At its January 2, 2018, regular meeting, the Brentwood Planning Commission voted to approve a final plat for the property located at 263 Wilson Pike Circle and rezoned by Ordinance 2017-14. The lot includes an area of 2.0 acres. The plat provides a ROW dedication for Wilson Pike Circle of 10 feet or 0.05 acres, as recommended by the traffic impact study, which was included as part of the rezoning application.

At its January 2, 2018, regular meeting, the Brentwood Planning Commission voted to approve a site plan for a self-storage facility to be located at 263 Wilson Pike Circle. The proposed building will include an area of 100,632 square feet and will provide 22 parking spaces. The exterior of the building will be faced in brick, smooth metal panels and aluminum storefront.

The first floor will be completely underground, the second floor provides an access point to the building on the western side of the site, while the third floor provides an access point to the building on the eastern side of the site. The fourth floor is completely above ground.

CONDITIONS OF APPROVAL

*Staff recommends that the following **four** conditions be attached to the approval of the request.*

1. A revised final plat showing all improvements on the lot is required that includes the sump pump storm system shown on the plan. Add a note to the plat stating that the sump pump storm system is privately maintained. The plat must be reviewed, approved, and recorded before a final certificate of occupancy will be issued for the building.

2. An updated drainage analysis / pond calculations shall be required based on the revised layout / construction.

3. The generator screen walls and gates must be tall enough to completely screen the generator.

4. A site plan shall be vested for a period of three years from the date of the original approval.

STANDARD REQUIREMENTS:

*Staff recommends that the following **ten** standard requirements be attached to the approval of the request.*

1. Add the following note to the site plan;

   *This site plan is subject to a three-year vesting period, during which the development standards in effect on the date of approval will remain the standards applicable to this plan. If construction is not completed during the first three years, the original site plan is considered a preliminary site plan and the applicant must obtain approval of a final site plan. Development of the property shown on this plan may be subject to standards other than those that were applicable during the vesting period. The Initial vesting period for this plan expires on **January 2, 2021**, unless extended by the City of Brentwood. Persons relying on this plan after said date should contact the City of Brentwood to determine if development may continue as depicted on the plan.*

2. When the construction authorized pursuant to a site plan is not completed within three years from the date of initial approval, but the applicant desires to complete the project proposed for the site, the plan as initially approved for the project or as amended shall be considered a preliminary site plan. If the applicant secures all necessary permits, commences site preparation and obtains approval of a final site plan within the three-year

vesting period following approval of the preliminary site plan, then the vesting period shall be extended an additional two years beyond the expiration of the initial three-year vesting period. During the two-year extension, the applicant must commence construction and maintain any necessary permits to remain vested.

3. If necessary permits are maintained and construction, as defined by Section 78-43, has commenced by the end of the two-year extension, then the vesting period shall remain in effect until the Planning and Codes Department has certified final completion of the project, provided the total vesting period shall not exceed ten years from the date of approval of the preliminary site plan.

4. If the construction authorized pursuant to a site plan is completed within three years from the date of approval, the site plan shall then be considered the final site plan for the project.

5. The property owner is responsible for all development fees including water and sewer service and tap fees, building permit fees and Public Works Project Fees. The required fees shall be used for future infrastructure related improvements required by the proposed development.

6. A Maintenance Agreement and Stormwater System Long-Term Operation and Maintenance Plan for all storm water structures and facilities must be prepared, submitted and approved per Section 56-43 of the Brentwood Code.

7. Deviations from the approved plan in the development of a project or the failure to satisfy any standard requirements or special conditions of approval imposed by the planning commission will be considered a violation of the provisions of the Zoning Ordinance, which shall be subject to punishment as provided in Section 1-9 of the Brentwood Municipal Code. The City may also require the applicant to appear before the Planning Commission to address any deficiencies or unapproved modifications. The project may also be subject to delays in issuance of permits, certificates of occupancy, recordation of plats or other project approvals.

8. Any changes to plans approved by the Planning Commission will require staff review and re-approval by the Planning Commission.

9. Development of this project shall comply with all applicable codes and ordinances of the City of Brentwood.

10. Approval of the proposed plan shall be limited to the illustrations and plans presented to the Planning Commission for review and approval on **August 3, 2020**. Any changes to Planning Commission approved plans and specifications will require staff review and re-approval by the Planning Commission.

RECOMMENDATION:

Staff requests that the Planning Commission vote to approve the proposed minor site plan revisions, subject to the requirements of the staff report.

SITE CIVIL PLANS FOR

BELL SELF-STORAGE

263 WILSON PIKE CIRCLE
BRENTWOOD, TN 37027

MARCH 7, 2018
JULY 21, 2020

SITE DATA TABLE		
SITE ADDRESS	263 WILSON PIKE CIRCLE BRENTWOOD, TN	
TAX MAP/PARCEL ID	MAP #011B/PARCEL 01000	
EXISTING LAND USE	RETAIL	
EXISTING ZONING	C3 WITH SPECIAL RESTRICTIONS	
U.S. FEMA FIRM PANEL	47187V0093G DATED 12/22/2017	
OVERALL AREA	EXISTING	PROPOSED
PARCEL AREA	2.00 ACRES	1.95 ACRES
DISTURBED AREA	N/A	2.00 ACRES
SETBACKS AND BUFFERS	REQUIRED	PROVIDED
FRONT SETBACK	50 FT	50 FT
REAR SETBACK	20 FT	20 FT
SIDE SETBACK	20 FT	20 - 30 FT
LANDSCAPE BUFFER	N/A	N/A
PARKING	REQUIRED	PROVIDED
STANDARD SPACES PER PARKING STUDY	N/A	18
COMPACT SPACES	4 ALLOWED	2
ACCESSIBLE (INCL. VAN ACCESSIBLE)	1	2
LOADING SPACES (IN ADDITION TO STANDARD SPACES)	N/A	2
TOTAL PARKING	22	22
AREAS	EXISTING	PROPOSED
IMPERVIOUS AREA	0.82 AC	1.20 AC
PERVIOUS AREA	1.18 AC	0.80 AC

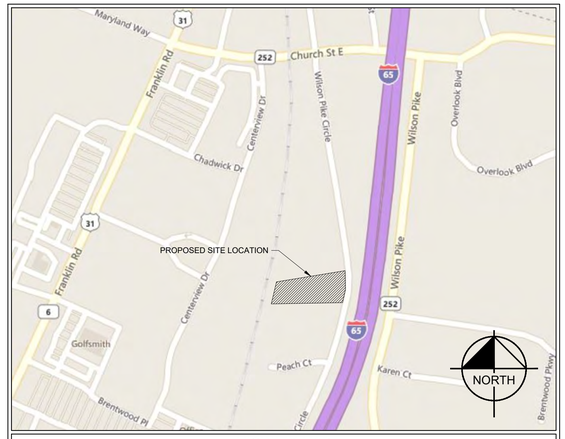
2 THIS SITE PLAN IS SUBJECT TO A THREE YEAR VESTING PERIOD, DURING WHICH THE DEVELOPMENT STANDARDS IN EFFECT ON THE DATE OF APPROVAL WILL REMAIN THE STANDARDS APPLICABLE TO THIS PLAN. IF CONSTRUCTION IS NOT COMPLETED DURING THE FIRST THREE YEARS, THE ORIGINAL SITE PLAN IS CONSIDERED A PRELIMINARY SITE PLAN AND THE APPLICANT MUST OBTAIN APPROVAL OF A FINAL SITE PLAN. DEVELOPMENT OF THE PROPERTY SHOWN ON THIS PLAN MAY BE SUBJECT TO STANDARDS OTHER THAN THOSE THAT WERE APPLICABLE DURING THE VESTING PERIOD. THE INITIAL VESTING PERIOD FOR THIS PLAN EXPIRES ON **AUGUST 3, 2023,** UNLESS EXTENDED BY THE CITY OF BRENTWOOD. PERSONS RELYING ON THIS PLAN AFTER SAID DATE SHOULD CONTACT THE CITY OF BRENTWOOD TO DETERMINE IF DEVELOPMENT MAY CONTINUE AS DEPICTED ON THE PLAN.

GENERAL DEVELOPMENT NOTES

1. THIS PARCEL DOES NOT LIE WITHIN THE FLOOD HAZARD AREAS IN ACCORDANCE WITH FEMA INSURANCE RATE MAP PANEL NUMBER 47187V0093G.
2. BASE INFORMATION WAS TAKEN FROM A BOUNDARY & TOPOGRAPHIC SURVEY PREPARED BY YOUNG HOBBS AND ASSOCIATES, DATED NOVEMBER 2, 2017.
3. THIS PARCEL WAS ZONED C3 BY CITY OF BRENTWOOD ZONING ORDINANCE 2017-14.

SPECIAL CONDITIONS

1. THE BUILDING SHALL BE DESIGNED TO PREVENT VISIBILITY OF ITS INTERIOR AND INTERIOR LIGHTING AT NIGHT FROM THE ADJACENT STREETS AND PROPERTIES.
2. AFTER-HOURS ADMITTANCE TO THE UNITS SHALL BE PROVIDED VIA A CONTROLLED ACCESS.
3. VISIBLE ROLL-UP GARAGE DOORS AND OUTSIDE ACCESS TO THE INDIVIDUAL UNITS SHALL COME FROM THE INTERIOR OF THE BUILDING.
4. OUTSIDE STORAGE OF BOATS, CAMPERS, TRAILERS, RENTAL TRUCKS AND OTHER VEHICLES SHALL BE PROHIBITED ON THE SITE.



VICINITY MAP
NOT TO SCALE

CITY OF BRENTWOOD
WILLIAMSON COUNTY, TENNESSEE
BRENTWOOD PROJECT #: BPC1711-007

PROJECT DESIGN TEAM

ARCHITECT
SMITH GEE STUDIO
209 10TH AVE S, SUITE 425
NASHVILLE, TN 37203
PHONE: (615) 739-5555
CONTACT: JASON GIBSON

CIVIL ENGINEER
KIMLEY-HORN AND ASSOCIATES, INC.
214 OCEANSIDE DRIVE
NASHVILLE, TENNESSEE 37204
PHONE: (615) 564-2701
CONTACT: ZAC DUFOUR, P.E.

SURVEY
YOUNG HOBBS & ASSOCIATES
1202 CROSSLAND AVENUE
CLARKSVILLE, TN 37040
PHONE: (931) 645-2524
CONTACT: CLINT HEAD, PE, PLS

PERMITTING / UTILITY CONTACTS

BUILDING DEPT.
BRENTWOOD PLANNING & CODES
JEFF DOBSON
5211 MARYLAND WAY
BRENTWOOD, TN 37024
PHONE: (615) 371-2204

STORMWATER
BRENTWOOD ENGINEERING
STEVE FOSTER
1750 GENERAL GEORGE PATTON DRIVE
BRENTWOOD, TN 37027
PHONE: (615) 371-0080

WATER/SANITARY SEWER
BRENTWOOD WATER SERVICES
CHRIS MILTON
1750 GENERAL GEORGE PATTON DRIVE
BRENTWOOD, TN 37027
PHONE: (615) 371-0080

ZONING
BRENTWOOD PLANNING & CODES
JEFF DOBSON
5211 MARYLAND WAY
BRENTWOOD, TN 37024
PHONE: (615) 371-2204

FIRE CHIEF
BRENWTOOD FIRE CHIEF
BRIAN GOSS
5211 MARYLAND WAY
BRENTWOOD, TN 37027
PHONE: (615) 371-0170

TDOT
TENNESSEE DEPARTMENT OF TRANSPORTATION
PHIL TRAMMELL
REGION 3 TRAFFIC ENGINEER
660 CENTENNIAL BLVD
NASHVILLE, TN 37243
PHONE: (615) 350-4300

NATURAL GAS
PIEDMONT NATURAL GAS
CRAIG OWEN
83 CENTURY BOULEVARD
NASHVILLE, TENNESSEE 37214
PHONE: 615-872-8034

TELEPHONE
AT&T
LOGAN EAKES
6405 CENTENNIAL BOULEVARD
NASHVILLE, TENNESSEE 37209
PHONE: 615-350-9375

ELECTRIC
NASHVILLE ELECTRIC SERVICE
LARRY KELLY
1214 CHURCH STREET
NASHVILLE, TN 37246
PHONE: (615) 747-3688

CABLE
COMCAST
KEVIN VIA
660 MAINSTREAM DRIVE
NASHVILLE, TENNESSEE 37228
PHONE: 615-405-5563

Know what's **below.**
Call before you dig.

SHEET INDEX	
SHEET NUMBER	SHEET TITLE
C0-00	COVER
C0-01	GENERAL NOTES
----	SURVEY
C1-00	DEMOLITION PLAN
C2-00	LAYOUT PLAN
C3-00	EPSC PLAN - PHASE I
C3-10	EPSC PLAN - PHASE II
C4-00	GRADING AND DRAINAGE PLAN
C4-10	STORMWATER MANAGEMENT PLAN
C4-20	DRAINAGE MAPS
C4-30	STORMWATER DETAILS
C5-00	UTILITY PLAN
C6-00	DETAILS
C6-01	DETAILS
C6-02	DETAILS
C6-03	DETAILS
C6-04	DETAILS
L0-0	EXISTING TREE PLAN
L1-0	OVERALL MINIMUM LANDSCAPE PLAN
L1-1	BIORETENTION ENLARGEMENT
L2-0	LANDSCAPE NOTES & DETAILS
L3-0	IRRIGATED AREAS PLAN
L3-1	IRRIGATION DETAILS AND NOTES
E1-0	SITE LIGHTING PLAN

OWNER / DEVELOPER

BELL & ASSOCIATES CONSTRUCTION LP
100 HEALTH PARK DRIVE SUITE 150
BRENTWOOD, TN 37027
PHONE: (615) 373-4343
CONTACT: DAREK BELL

PLANS PREPARED BY

Kimley»Horn

214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com
© 2017 Kimley-Horn and Associates, Inc.

ENGINEER'S SEAL

ZACHARY J. DUFOUR
REGISTERED ENGINEER
STATE OF TENNESSEE
No. 112501
7/21/2020

PLAN STATUS		
DESCRIPTION	INITIAL	DATE
1ST SUBMITTAL TO CITY	ZJD	11/06/2017
RESUBMITTAL TO CITY	ZJD	11/21/2017
RESUBMITTAL TO CITY	ZJD	12/18/2017
GRADING/DEMO PERMIT SUBMITTAL TO CITY	ZJD	01/16/2018
ISSUED FOR CONSTRUCTION	ZJD	03/07/2018

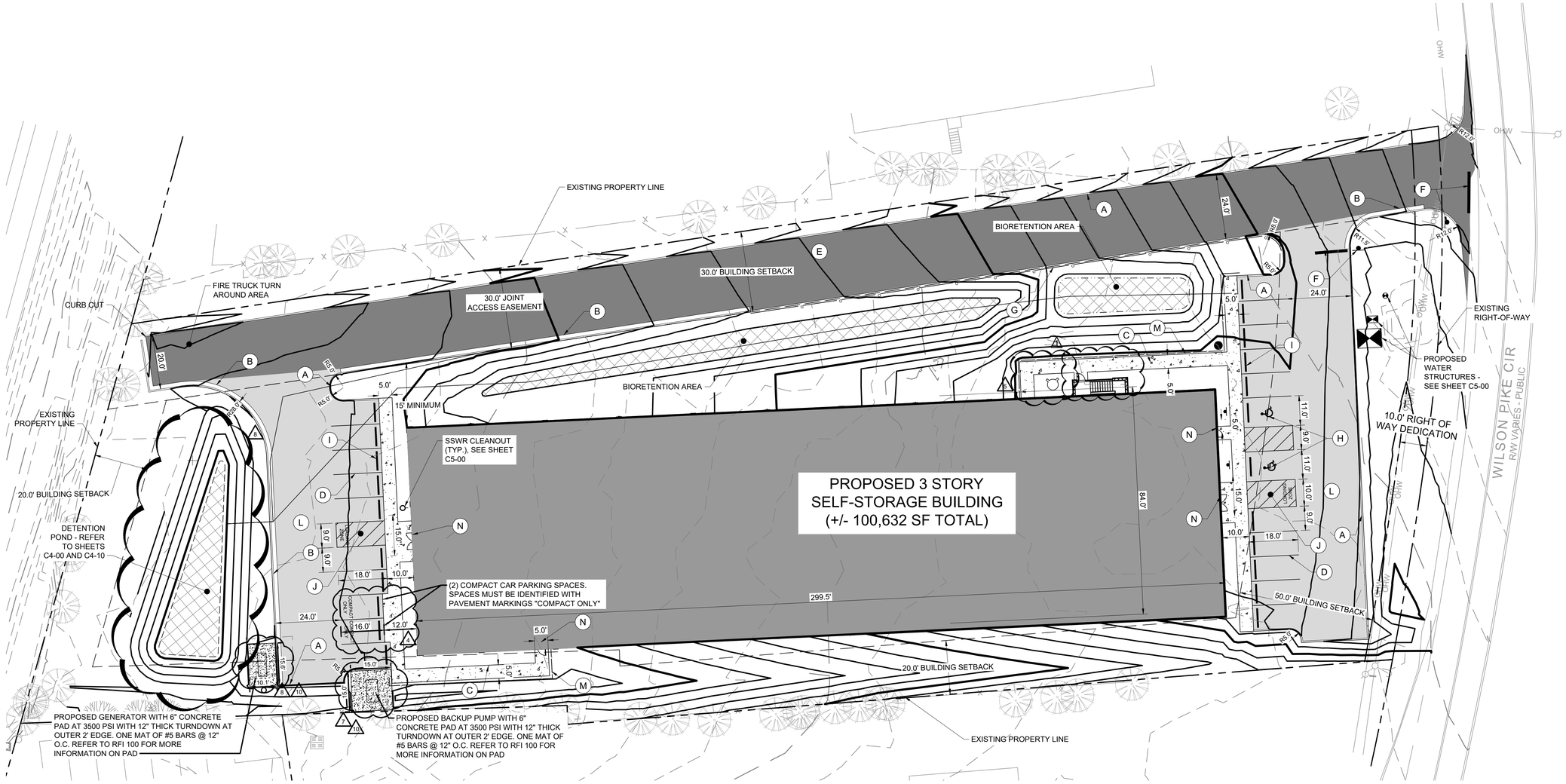
PLAN REVISIONS		
REVISION NO.	DATE	REMARKS
1	5/1/18	BUILDING FOOTPRINT AND SIDEWALK
2	8/28/18	UTILITY REVISIONS/VESTING PERIOD REVISION

FILE NUMBER	SHEET NUMBER	TOTAL SHEETS
118230000	C0-00	24

BELL SELF-STORAGE - SITE CIVIL PLANS

Drawing name: K:\NSH_LDEV\118230000 - Bell Storage\4-CADD\PlanSheets\C0-00-Cover-118230000.dwg C0-00 COVER Jul 20, 2020 11:42am by: rachel.robinson

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



THIS SITE PLAN IS SUBJECT TO A THREE YEAR VESTING PERIOD, DURING WHICH THE DEVELOPMENT STANDARDS IN EFFECT ON THE DATE OF APPROVAL WILL REMAIN THE STANDARDS APPLICABLE TO THIS PLAN. IF CONSTRUCTION IS NOT COMPLETED DURING THE FIRST THREE YEARS, THE ORIGINAL SITE PLAN IS CONSIDERED A PRELIMINARY SITE PLAN AND THE APPLICANT MUST OBTAIN APPROVAL OF A FINAL SITE PLAN. DEVELOPMENT OF THE PROPERTY SHOWN ON THIS PLAN MAY BE SUBJECT TO STANDARDS OTHER THAN THOSE THAT WERE APPLICABLE DURING THE VESTING PERIOD. THE INITIAL VESTING PERIOD FOR THIS PLAN EXPIRES ON **AUGUST 3, 2023** UNLESS EXTENDED BY THE CITY OF BRENTWOOD. PERSONS RELYING ON THIS PLAN AFTER SAID DATE SHOULD CONTACT THE CITY OF BRENTWOOD TO DETERMINE IF DEVELOPMENT MAY CONTINUE AS DEPICTED ON THE PLAN.

SITE LAYOUT NOTES

1. INSTALL CONCRETE JOINTS WHERE SHOWN ON PLANS AND DETAILS. ALIGN ON WALLS, BUILDINGS, RADII, ETC. EVENLY SPACE BETWEEN ELEMENTS AS SHOWN. PROVIDE EXPANSION JOINTS BETWEEN CONCRETE PAVEMENT AND ALL VERTICAL ELEMENTS (WALLS, CURBS, ETC.).
2. ALL DIMENSIONS AND CURB RADII ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
3. LAYOUT ALL ELEMENTS IN FIELD AND CONTACT OWNER'S REPRESENTATIVE FOR APPROVAL BEFORE BEGINNING ANY CONSTRUCTION.
4. ALL LANDSCAPE ISLANDS SHALL BE MOUNDED WITH TOPSOIL 4" ABOVE THE CURB LINE TO PROMOTE POSITIVE DRAINAGE.
5. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC UNLESS OTHERWISE NOTED.
6. ALL PAVEMENT MARKINGS AND SIGNAGE SHALL BE INSTALLED PER THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
7. THE SITE PLAN DRAWINGS ARE INTENDED TO SHOW THE HORIZONTAL CONTROL OF THE SITE. KEY DIMENSIONS HAVE BEEN PROVIDED ON THE PLAN AND MUST BE VERIFIED PRIOR TO ACTUAL CONSTRUCTION.
8. CONTRACTOR SHALL INSTALL ACCESSIBLE RAMPS PER ADA STANDARDS AT ALL DRIVE AND BUILDING LOCATIONS.

PAVEMENT LEGEND

	LIGHT DUTY ASPHALT PAVEMENT
	HEAVY DUTY ASPHALT PAVEMENT
	SIDEWALK CONCRETE PAVEMENT
	BUILDING

PARKING SPACES

REQUIRED PER PARKING STUDY:	22
PROVIDED PARKING SPACES:	22
LOADING SPACES PROVIDED:	2

KEYNOTE LEGEND

A	6" TALL 6" WIDE CURB (TYP.) - SEE DETAIL 5 SHEET C6-01
B	18" CURB AND GUTTER (TYP.) - SEE DETAIL 6 SHEET C6-01
C	CONCRETE SIDEWALK (TYP.) - SEE DETAIL 1 SHEET C6-02
D	4" WHITE PARKING STRIPE (TYP.)
E	HEAVY DUTY ASPHALT PAVEMENT - SEE DETAIL 1 SHEET C6-01
F	R1-1 STOP SIGN AND 24" STOP BAR PER MUTCD STANDARDS - SEE DETAIL 9 SHEET C6-01
G	GUARDRAIL - SEE DETAILS ON SHEET C6-03
H	ADA VAN PARKING SPACE W/ STRIPING AND SIGNAGE - SEE DETAILS 3, 4, 7 AND 8 SHEET C6-01 AND C6-02
I	6" CONCRETE WHEEL STOP - SEE DETAIL 8 SHEET C6-01
J	LOADING SPACE
L	LIGHT DUTY ASPHALT PAVEMENT - SEE DETAIL 1 SHEET C6-01
M	PEDESTRIAN RAILING - REFER TO ARCHITECTURAL PLANS
N	OVERHEAD CANOPY - REFER TO ARCHITECTURAL PLANS

GRAPHIC SCALE IN FEET
0 10 20 40

NORTH

Kimley»Horn
214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com
© 2018 Kimley-Horn and Associates, Inc.

BELL SELF-STORAGE
BELL & ASSOCIATES CONSTRUCTION
BRENTWOOD, TENNESSEE

ZACHARY J. DUFOUR
REGISTERED ENGINEER
COMMERCE
No. 112581
STATE OF TENNESSEE
07/21/2020

No.	REVISIONS	DATE	BY
1	BUILDING FOOTPRINT AND SIDEWALK	05/01/2018	KBB
2	VESTING PERIOD REVISION	08/28/2018	ZJD
3			
4			
5			
6			
7	GENERATOR PAD BACKUP PUMP REVISION	04/20/2020	ZJD
8	GENERATOR / DETENTION POND REVISION	05/01/2020	ZJD
9			
10	EQUIPMENT PAD FENCING	06/22/2020	ZJD

DESIGNED BY:	KBB
DRAWN BY:	KBB
CHECKED BY:	KBB
DATE:	03/07/2018
KIMLEY-HORN PROJECT NO.	118230000

LAYOUT PLAN

SHEET NUMBER
C2-00

SITE CIVIL PLANS FOR

BELL SELF-STORAGE

263 WILSON PIKE CIRCLE
BRENTWOOD, TN 37027

MARCH 7, 2018
JULY 21, 2020

SITE DATA TABLE		
SITE ADDRESS	263 WILSON PIKE CIRCLE BRENTWOOD, TN	
TAX MAP/PARCEL ID	MAP #011B/PARCEL 01000	
EXISTING LAND USE	RETAIL	
EXISTING ZONING	C3 WITH SPECIAL RESTRICTIONS	
U.S. FEMA FIRM PANEL	47187V0093G DATED 12/22/2017	
OVERALL AREA	EXISTING	PROPOSED
PARCEL AREA	2.00 ACRES	1.95 ACRES
DISTURBED AREA	N/A	2.00 ACRES
SETBACKS AND BUFFERS	REQUIRED	PROVIDED
FRONT SETBACK	50 FT	50 FT
REAR SETBACK	20 FT	20 FT
SIDE SETBACK	20 FT	20 - 30 FT
LANDSCAPE BUFFER	N/A	N/A
PARKING	REQUIRED	PROVIDED
STANDARD SPACES PER PARKING STUDY	N/A	18
COMPACT SPACES	4 ALLOWED	2
ACCESSIBLE (INCL. VAN ACCESSIBLE)	1	2
LOADING SPACES (IN ADDITION TO STANDARD SPACES)	N/A	2
TOTAL PARKING	22	22
AREAS	EXISTING	PROPOSED
IMPERVIOUS AREA	0.82 AC	1.20 AC
PERVIOUS AREA	1.18 AC	0.80 AC

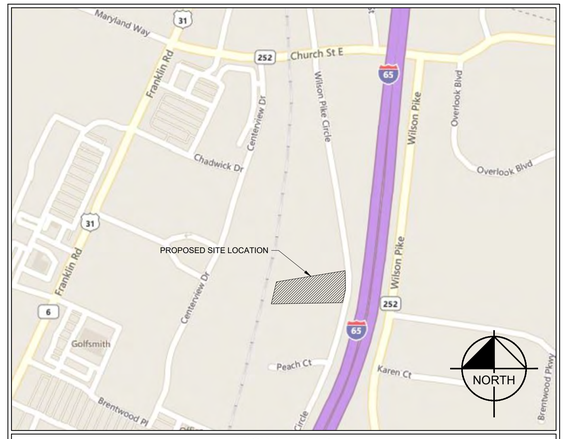
2 THIS SITE PLAN IS SUBJECT TO A THREE YEAR VESTING PERIOD, DURING WHICH THE DEVELOPMENT STANDARDS IN EFFECT ON THE DATE OF APPROVAL WILL REMAIN THE STANDARDS APPLICABLE TO THIS PLAN. IF CONSTRUCTION IS NOT COMPLETED DURING THE FIRST THREE YEARS, THE ORIGINAL SITE PLAN IS CONSIDERED A PRELIMINARY SITE PLAN AND THE APPLICANT MUST OBTAIN APPROVAL OF A FINAL SITE PLAN. DEVELOPMENT OF THE PROPERTY SHOWN ON THIS PLAN MAY BE SUBJECT TO STANDARDS OTHER THAN THOSE THAT WERE APPLICABLE DURING THE VESTING PERIOD. THE INITIAL VESTING PERIOD FOR THIS PLAN EXPIRES ON **AUGUST 3, 2023,** UNLESS EXTENDED BY THE CITY OF BRENTWOOD. PERSONS RELYING ON THIS PLAN AFTER SAID DATE SHOULD CONTACT THE CITY OF BRENTWOOD TO DETERMINE IF DEVELOPMENT MAY CONTINUE AS DEPICTED ON THE PLAN.

GENERAL DEVELOPMENT NOTES

1. THIS PARCEL DOES NOT LIE WITHIN THE FLOOD HAZARD AREAS IN ACCORDANCE WITH FEMA INSURANCE RATE MAP PANEL NUMBER 47187V0093G.
2. BASE INFORMATION WAS TAKEN FROM A BOUNDARY & TOPOGRAPHIC SURVEY PREPARED BY YOUNG HOBBS AND ASSOCIATES, DATED NOVEMBER 2, 2017.
3. THIS PARCEL WAS ZONED C3 BY CITY OF BRENTWOOD ZONING ORDINANCE 2017-14.

SPECIAL CONDITIONS

1. THE BUILDING SHALL BE DESIGNED TO PREVENT VISIBILITY OF ITS INTERIOR AND INTERIOR LIGHTING AT NIGHT FROM THE ADJACENT STREETS AND PROPERTIES.
2. AFTER-HOURS ADMITTANCE TO THE UNITS SHALL BE PROVIDED VIA A CONTROLLED ACCESS.
3. VISIBLE ROLL-UP GARAGE DOORS AND OUTSIDE ACCESS TO THE INDIVIDUAL UNITS SHALL COME FROM THE INTERIOR OF THE BUILDING.
4. OUTSIDE STORAGE OF BOATS, CAMPERS, TRAILERS, RENTAL TRUCKS AND OTHER VEHICLES SHALL BE PROHIBITED ON THE SITE.



VICINITY MAP
NOT TO SCALE

CITY OF BRENTWOOD
WILLIAMSON COUNTY, TENNESSEE
BRENTWOOD PROJECT #: BPC1711-007

PROJECT DESIGN TEAM

ARCHITECT
SMITH GEE STUDIO
209 10TH AVE S, SUITE 425
NASHVILLE, TN 37203
PHONE: (615) 739-5555
CONTACT: JASON GIBSON

CIVIL ENGINEER
KIMLEY-HORN AND ASSOCIATES, INC.
214 OCEANSIDE DRIVE
NASHVILLE, TENNESSEE 37204
PHONE: (615) 564-2701
CONTACT: ZAC DUFOUR, P.E.

SURVEY
YOUNG HOBBS & ASSOCIATES
1202 CROSSLAND AVENUE
CLARKSVILLE, TN 37040
PHONE: (931) 645-2524
CONTACT: CLINT HEAD, PE, PLS

PERMITTING / UTILITY CONTACTS

BUILDING DEPT.
BRENTWOOD PLANNING & CODES
JEFF DOBSON
5211 MARYLAND WAY
BRENTWOOD, TN 37024
PHONE: (615) 371-2204

STORMWATER
BRENTWOOD ENGINEERING
STEVE FOSTER
1750 GENERAL GEORGE PATTON DRIVE
BRENTWOOD, TN 37027
PHONE: (615) 371-0080

WATER/SANITARY SEWER
BRENTWOOD WATER SERVICES
CHRIS MILTON
1750 GENERAL GEORGE PATTON DRIVE
BRENTWOOD, TN 37027
PHONE: (615) 371-0080

ZONING
BRENTWOOD PLANNING & CODES
JEFF DOBSON
5211 MARYLAND WAY
BRENTWOOD, TN 37024
PHONE: (615) 371-2204

FIRE CHIEF
BRENWTOOD FIRE CHIEF
BRIAN GOSS
5211 MARYLAND WAY
BRENTWOOD, TN 37027
PHONE: (615) 371-0170

TDOT
TENNESSEE DEPARTMENT OF TRANSPORTATION
PHIL TRAMMELL
REGION 3 TRAFFIC ENGINEER
660 CENTENNIAL BLVD
NASHVILLE, TN 37243
PHONE: (615) 350-4300

NATURAL GAS
PIEDMONT NATURAL GAS
CRAIG OWEN
83 CENTURY BOULEVARD
NASHVILLE, TENNESSEE 37214
PHONE: 615-872-8034

TELEPHONE
AT&T
LOGAN EAKES
6405 CENTENNIAL BOULEVARD
NASHVILLE, TENNESSEE 37209
PHONE: 615-350-9375

ELECTRIC
NASHVILLE ELECTRIC SERVICE
LARRY KELLY
1214 CHURCH STREET
NASHVILLE, TN 37246
PHONE: (615) 747-3688

CABLE
COMCAST
KEVIN VIA
660 MAINSTREAM DRIVE
NASHVILLE, TENNESSEE 37228
PHONE: 615-405-5563

Know what's **below.**
Call before you dig.

SHEET INDEX	
SHEET NUMBER	SHEET TITLE
C0-00	COVER
C0-01	GENERAL NOTES
----	SURVEY
C1-00	DEMOLITION PLAN
C2-00	LAYOUT PLAN
C3-00	EPSC PLAN - PHASE I
C3-10	EPSC PLAN - PHASE II
C4-00	GRADING AND DRAINAGE PLAN
C4-10	STORMWATER MANAGEMENT PLAN
C4-20	DRAINAGE MAPS
C4-30	STORMWATER DETAILS
C5-00	UTILITY PLAN
C6-00	DETAILS
C6-01	DETAILS
C6-02	DETAILS
C6-03	DETAILS
C6-04	DETAILS
L0-0	EXISTING TREE PLAN
L1-0	OVERALL MINIMUM LANDSCAPE PLAN
L1-1	BIORETENTION ENLARGEMENT
L2-0	LANDSCAPE NOTES & DETAILS
L3-0	IRRIGATED AREAS PLAN
L3-1	IRRIGATION DETAILS AND NOTES
E1-0	SITE LIGHTING PLAN

OWNER / DEVELOPER

BELL & ASSOCIATES CONSTRUCTION LP
100 HEALTH PARK DRIVE SUITE 150
BRENTWOOD, TN 37027
PHONE: (615) 373-4343
CONTACT: DAREK BELL

PLANS PREPARED BY

Kimley»Horn

214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com
© 2017 Kimley-Horn and Associates, Inc.

ENGINEER'S SEAL

ZACHARY J. DUFOUR
REGISTERED ENGINEER
STATE OF TENNESSEE
No. 112501
7/21/2020

PLAN STATUS		
DESCRIPTION	INITIAL	DATE
1ST SUBMITTAL TO CITY	ZJD	11/06/2017
RESUBMITTAL TO CITY	ZJD	11/21/2017
RESUBMITTAL TO CITY	ZJD	12/18/2017
GRADING/DEMO PERMIT SUBMITTAL TO CITY	ZJD	01/16/2018
ISSUED FOR CONSTRUCTION	ZJD	03/07/2018

PLAN REVISIONS		
REVISION NO.	DATE	REMARKS
1	5/1/18	BUILDING FOOTPRINT AND SIDEWALK
2	8/28/18	UTILITY REVISIONS/VESTING PERIOD REVISION

FILE NUMBER	SHEET NUMBER	TOTAL SHEETS
118230000	C0-00	24

BELL SELF-STORAGE - SITE CIVIL PLANS

Drawing name: K:\NSH_LDEV\118230000 - Bell Storage\4-CADD\PlanSheets\C0-00-Cover-118230000.dwg C0-00 COVER Jul 20, 2020 11:42am by: rachel.robinson

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

CONTRACTOR RESPONSIBILITIES:

1. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE FOR:
   - A. THE CONTRACTOR SHALL VERIFY ALL PROPOSED AND EXISTING CONDITIONS INCLUDING UTILITIES (INVERTS, CONNECTIONS, MATERIALS, ETC.) AND DIMENSIONS WITHIN THE LIMITS OF WORK PRIOR TO THE START OF CONSTRUCTION.
   - B. THE CONTRACTOR IS RESPONSIBLE FOR ALL NOTIFICATIONS AND LIAISONS WITH UTILITY COMPANIES DURING THE PROCESS OF LOCATING, RELOCATING, AND TYING INTO PUBLIC UTILITIES.
   - C. PRIOR TO COMMENCING LAND DISTURBANCE ACTIVITY, THE LIMITS OF LAND DISTURBANCE SHALL BE CLEARLY AND ACCURATELY DEMARCATED WITH STAKES, RIBBONS, OR OTHER APPROPRIATE MEANS. THE LOCATION AND EXTENT OF ALL AUTHORIZED LAND DISTURBANCE SHALL OCCUR INSIDE THE APPROVED LIMITS INDICATED ON THE APPROVED PLANS.
2. DURING CONSTRUCTION:
   - A. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEVIATIONS FROM THESE PLANS AND SPECIFICATIONS WITHOUT PRIOR WRITTEN CONSENT OF THE ENGINEER MAY CAUSE THE WORK TO BE UNACCEPTABLE.
   - B. THE CONTRACTOR SHALL USE MATERIALS AND EMPLOY CONSTRUCTION METHODS IN ORDER TO COMPLY WITH THE DRAWINGS AND SPECIFICATIONS. WHERE A CONFLICT OCCURS, THE STRICTEST DESIGN SHALL GOVERN. THE ENGINEER'S REVIEW OF SHOP DRAWINGS, PRODUCT DATA, ETC., DOES NOT RELIEVE THE CONTRACTOR FROM COMPLYING WITH THE CONTRACT DOCUMENTS. THE CONTRACTOR SHALL INFORM THE ENGINEER IN WRITING OF ANY SPECIFIC DEVIATIONS AND OBTAIN ENGINEER'S WRITTEN APPROVAL OF THE SPECIFIC DEVIATION.
   - C. IT IS SOLELY THE CONTRACTOR'S RESPONSIBILITY TO FOLLOW ALL APPLICABLE SAFETY CODES AND REGULATIONS DURING ALL PHASES OF CONSTRUCTION.
   - D. ALL CONSTRUCTION MUST CONFORM TO THE STANDARDS, SPECIFICATIONS, AND CODES OF THE GOVERNING MUNICIPALITIES.
   - E. CONSTRUCTION SHALL MEET ALL STANDARDS SET FORTH IN THE AMERICANS WITH DISABILITIES ACT.
   - F. IF THE CONTRACTOR DAMAGES ANY EXISTING UTILITIES DURING CONSTRUCTION, HE SHALL, AT HIS OWN EXPENSE, REPLACE OR REPAIR THE UTILITIES TO ORIGINAL CONDITION AND QUALITY AS APPROVED BY THE OWNER AND REPRESENTATIVE OF THE APPROPRIATE UTILITY COMPANY.
   - G. SUFFICIENT BARRICADES, LIGHTS, SIGNS, AND OTHER TRAFFIC CONTROL METHODS IN ACCORDANCE WITH GOVERNING ORDINANCES MAY BE NECESSARY FOR THE PROTECTION AND SAFETY OF THE PUBLIC. SAID CONTROL DEVICES SHALL BE PER THE MANUAL OF TRAFFIC CONTROL DEVICES, M.U.T.C.D., CURRENT EDITION, AND SHALL BE PROVIDED AND MAINTAINED THROUGHOUT CONSTRUCTION.
   - H. TRAFFIC CONTROLS AND OTHER WARNING DEVICES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF ANY WORK ON CITY, COUNTY, OR TENNESSEE DEPARTMENT OF TRANSPORTATION ROADS. THEY SHALL BE MAINTAINED THROUGHOUT CONSTRUCTION AND SHALL REMAIN IN PLACE UNTIL THE CONCLUSION OF ALL WORK.
   - I. ALL WARNING DEVICES SHALL BE EITHER TYPE I BARRICADES OR DRUMS WITH WARNING LIGHTS ON EVERY OTHER DEVICE. THEY SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), CURRENT EDITION, AND CITY OF BRENTWOOD STANDARDS FOR COLOR, SIZE, REFLECTIVITY, HEIGHT, AND PLACEMENT.
   - J. FIRE DEPARTMENT ACCESS SHALL BE MAINTAINED AT ALL TIMES.
   - K. CONTRACTOR SHALL SHORE AND BRACE ALL EARTH, FORMS, CONCRETE, STEEL, WOOD, AND MASONRY TO RESIST GRAVITY, EARTH, WIND, THERMAL, CONSTRUCTION, AND MISCELLANEOUS LOADS DURING CONSTRUCTION.
   - L. ON-SITE BURIAL OF DEBRIS IS PROHIBITED.
   - M. UNLESS OTHERWISE NOTED THE CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL FABRICATED MATERIALS TO THE ENGINEER. DESIGN DOCUMENTS SHALL NOT BE REPRODUCED AS SHOP DRAWINGS.
   - N. IN CASE OF UNFORESEEN CONSTRUCTION COMPLICATIONS OR DISCREPANCIES, THE CONTRACTOR IS TO IMMEDIATELY NOTIFY THE ENGINEER IN WRITING.
   - O. ALL REQUIRED TESTING REPORTS SHALL BE AVAILABLE AT THE JOB SITE.
   - P. AS-BUILT DRAWINGS OF ROADWAYS, STORM DRAINS, SANITARY SEWER AND WATER LINES, FIELD APPROVAL BY THE ENGINEER, AND ALL APPLICABLE BONDS ARE REQUIRED PRIOR TO FINAL ACCEPTANCE BY THE OWNER.
   - Q. UNLESS OTHERWISE NOTED ON THE DRAWINGS OR SPECIFICATIONS, ALL FILL AREAS MUST BE COMPACTED TO MINIMUM 95% STANDARD PROCTOR.
   - R. CONTRACTOR SHALL MAINTAIN CONTINUOUS UTILITY SERVICE TO ALL EXISTING BUILDINGS THROUGHOUT CONSTRUCTION UNLESS APPROVAL FOR SERVICE INTERRUPTION IS OBTAINED FROM THE OWNERS IN ADVANCE.
   - S. CUT AND FILL SLOPES SHALL NOT EXCEED 3:1 H:V.

DEMOLITION INFORMATION:

1. NOTIFICATIONS:

   THE CONTRACTOR SHALL NOTIFY THE OWNER AND CITY INSPECTOR(S) 24 HOURS PRIOR TO ANY DEMOLITION OR CONSTRUCTION.
2. DISPOSAL GUIDELINES:
   - A. ONLY ITEMS SPECIFICALLY NOTED TO BE DEMOLISHED SHALL BE REMOVED FROM THE SITE.
   - B. REMOVE EXISTING PAVED AREAS AS SHOWN INCLUDING DRIVEWAYS, SIDEWALKS, PARKING AREAS, SERVICE AREAS, EQUIPMENT PADS, AND ALL MISCELLANEOUS PAVING.
   - C. ALL DEBRIS RESULTING FROM DEMOLITION SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY BY THE CONTRACTOR IN ACCORDANCE WITH LOCAL STATE AND FEDERAL REGULATIONS. BACKFILL ALL TRENCHES AND EXCAVATIONS RESULTING FROM DEMOLITION.
   - D. ALL DEMOLISHED MATERIAL BECOMES THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE NOTED.
3. TREE PROTECTION GUIDELINES:

   PROTECT ALL EXISTING TREES NOTED "TO REMAIN" AND ALL ITEMS TO BE TURNED OVER TO THE OWNER DURING DEMOLITION. TAKE ALL NECESSARY PRECAUTIONS AND PROTECTIVE MEASURES. ANY EXISTING ITEMS TO BE TURNED OVER TO THE OWNER WHICH ARE DAMAGED DURING DEMOLITION SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER. TREES WHICH ARE DAMAGED WILL BE REPLACED OR REIMBURSED AT A RATE TO BE DETERMINED BY THE OWNER.
4. UTILITIES:
   - A. PRIOR TO REMOVING OR ABANDONING ANY UTILITY THE CONTRACTOR SHALL VERIFY THAT NO UPSTREAM SERVICE WILL BE TERMINATED. THE CONTRACTOR SHALL INFORM THE ENGINEER IN WRITING OF ANY TERMINATION NOT SHOWN ON THE PLANS.
   - B. ALL ABANDONED WATER LINES, STORM SEWER PIPE, SANITARY SEWER PIPES, GAS LINES, OR ANY OTHER ABANDONED UNDERGROUND UTILITY SHALL BE ABANDONED IN PLACE UNLESS NOTED OTHERWISE.

SITE INFORMATION:

1. THE FOLLOWING ARE APPLICABLE TO ALL CIVIL DOCUMENTS:
   - A. WHERE A DETAIL SECTION, TYPICAL SECTION, OR A NOTE IS SHOWN FOR ONE CONDITION, IT SHALL APPLY FOR ALL LIKE OR SIMILAR CONDITIONS, UNLESS OTHERWISE NOTED ON THE PLANS.
   - B. EXISTING AND PROPOSED CONTOURS ARE AT ONE (1) FOOT INTERVALS.
   - C. ALL DIMENSIONS ARE TO FACE OF CURB UNLESS OTHERWISE NOTED.
   - D. ALL PIPE LENGTHS SPECIFIED IN THESE PLANS ARE THE HORIZONTAL DISTANCE AND ARE SHOWN FOR REFERENE ONLY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO DETERMINE ACTUAL LENGTHS BASED ON PROPOSED PIPE SLOPE.
   - E. PIPE LENGTHS IN PLANS ARE MEASURED FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE UNLESS OTHERWISE NOTED.

EROSION AND SEDIMENT CONTROL INFORMATION:

1. COMPREHENSIVE:
   - A. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO OR CONCURRENT WITH LAND-DISTURBING ACTIVITIES.
   - B. PROVISIONS TO PREVENT EROSION OF SOIL FROM THE SITE SHALL BE AT A MINIMUM IN CONFORMANCE WITH THE REQUIREMENTS OF THE TENNESSEE EROSION AND SEDIMENT CONTROL HANDBOOKS. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.
   - C. FAILURE TO INSTALL, OPERATE, OR MAINTAIN ALL EROSION CONTROL MEASURES WILL RESULT IN ALL CONSTRUCTION BEING STOPPED ON THE JOB SITE UNTIL SUCH MEASURES ARE CORRECTED BACK TO THE STANDARDS SPECIFIED IN THE TENNESSEE EROSION AND SEDIMENT CONTROL HANDBOOKS, CURRENT EDITION.
   - D. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE APPROVED PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.
   - E. EROSION CONTROL DEVICES SHALL BE INSTALLED PRIOR TO LAND DISTURBANCE. THE LOCATION OF SOME OF THE EROSION CONTROL DEVICES MAY HAVE TO BE ALTERED FROM THAT SHOWN ON THE APPROVED PLANS IF DRAINAGE PATTERNS DURING CONSTRUCTION ARE DIFFERENT FROM THE FINAL PROPOSED DRAINAGE PATTERNS. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ACCOMPLISH EROSION CONTROL FOR ALL DRAINAGE PATTERNS CREATED AT VARIOUS STAGES DURING CONSTRUCTION. ANY DIFFICULTY IN CONTROLLING EROSION DURING ANY PHASE OF CONSTRUCTION SHALL BE REPORTED TO THE ENGINEER IMMEDIATELY.
   - F. THE CONSTRUCTION OF THE SITE WILL COMMENCE WITH THE INSTALLATION OF EROSION CONTROL MEASURES SUFFICIENT TO CONTROL SEDIMENT DEPOSITS AND EROSION. ALL SEDIMENT CONTROL WILL BE MAINTAINED UNTIL ALL UPSTREAM GROUND WITHIN THE CONSTRUCTION AREA HAS BEEN COMPLETELY STABILIZED WITH PERMANENT VEGETATION AND ALL ROADS/DRIVEWAYS HAVE BEEN PAVED.
   - G. CONSTRUCTION EXITS SHALL BE CONSTRUCTED AT EACH POINT OF ENTRY OR EXIT FROM THE SITE AND SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOW OF MUD ONTO PUBLIC RIGHTS-OF-WAY. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH STONE AS CONDITIONS DEMAND, REPAIR, AND/OR CLEANOUT OF ANY STRUCTURES USED TO TRAP SEDIMENT. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED FROM VEHICLES OFF SITE ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY. ACCESS POINTS PROTECTED WITH A CONSTRUCTION EXIT SHALL BE OTHERWISE BARRICADED UNTIL THE SITE IS STABILIZED.

CONCRETE INFORMATION (SITE WORK ONLY):

1. PRODUCT CRITERIA:
   - A. UNLESS OTHERWISE NOTED CEMENT SHALL BE TYPE I OR III CONFORMING TO ASTM C150. AGGREGATES SHALL BE NORMAL WEIGHT CONFORMING TO ASTM C33.
   - B. CONCRETE SHALL CONFORM TO ACI BUILDING CODE (318-89). UNLESS NOTED CONCRETE SHALL BE NORMAL WEIGHT AND HAVE A 28 DAY COMPRESSIVE STRENGTH OF 3,500 P.S.I.
   - C. SLUMP SHALL BE 3" TO 5" FOR REGULAR MIX. LARGER SLUMP SHALL BE PERMITTED WITH WATER REDUCING ADMIXTURES AND WRITTEN CONSENT OF THE ENGINEER.
   - D. THE RELATIONSHIP BETWEEN MAXIMUM AGGREGATE SIZE TO MINIMUM AMOUNT OF CEMENT IN CONCRETE PAVEMENT (LB. PER C.Y. OR MIX) SHALL BE AS FOLLOWS: 1" - 520, 3/4" - 540, 1/2" - 590, 3/8" - 610.
2. CURING CRITERIA:
   - A. CONCRETE CURING SHALL COMPLY WITH ACI 308. CURING PROCESS SHALL START IMMEDIATELY FOLLOWING INITIAL SET. CURING SHALL BE BY CURING COMPOUND.
   - B. CONCRETE EXPOSED TO THE WEATHER SHALL BE AIR-ENTRAINED IN ACCORDANCE WITH ACI 318-89 TABLE 4.1.1. NORMAL WEIGHT CONCRETE SLABS SHALL HAVE AIR CONTENT IN ACCORDANCE WITH ACI 302.IR-89 TABLE 5.2.7A.
   - C. HOT WEATHER CONCRETING SHALL COMPLY WITH ACI 305. NO CONCRETE ABOVE 90 DEGREES FAHRENHEIT SHALL BE POURED. LOWER CONCRETE TEMPERATURE BY COOLING WATER AND AGGREGATE. FORMS, STEEL, AND SUBGRADE SHALL BE SPRINKLED WITH COLD WATER. AFTER FINISHING CONCRETE USE LIGHT FOG SPRAY UNTIL CURING COMPOUND IS USED.
   - D. COLD WEATHER CONCRETING SHALL COMPLY WITH ACI 306. SPECIAL MATERIAL PROCEDURES SHALL BE PROVIDED DURING PLACING AND CURING OF CONCRETE BELOW 40 DEGREES FAHRENHEIT.
   - E. CURING, HOT, AND COLD WEATHER CONCRETING PROCEDURES ARE ONLY GIVEN AS A GUIDE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO PREVENT CONCRETE DAMAGE AND CRACKS. DAMAGED OR CRACKED CONCRETE WILL NOT BE ACCEPTED.

REINFORCING STEEL INFORMATION (SITE WORK ONLY):

1. PRODUCT CRITERIA:
   - A. REINFORCING STEEL SHALL CONFORM TO ASTM A-615, GRADE 60 AND GRADE 40 FOR #3 AND SMALLER BARS. MINIMUM LAP 48" DIAMETER.
   - B. WELDED WIRE FABRIC SHALL CONFORM TO ASTM A-185, MINIMUM LAP SHALL BE 8".
   - C. REINFORCING THAT IS WELDED SHALL BE WELDABLE TYPE AND CONFORM TO ASTM A-706.

PAVEMENT INFORMATION:

1. PAVEMENT:
   - A. ALL MATERIALS, EQUIPMENT, METHODS OF CONSTRUCTION, AND WORKMANSHIP SHALL CONFORM TO THE TENNESSEE DEPARTMENT OF TRANSPORTATION, TDOT, STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, CURRENT EDITION.
   - B. SEE PAVEMENT DETAILS ON CONSTRUCTION DOCUMENTS FOR SPECIFIC DESIGN INFORMATION AND REQUIREMENTS.
   - C. ALL CURB AND GUTTER TO BE 18" AND CONSTRUCTED OF 3000 P.S.I. CONCRETE UNLESS OTHERWISE NOTED.
2. SIGNING AND STRIPING:
   - A. SIGNING AND STRIPING TO BE PROVIDED BY THE CONTRACTOR ACCORDING TO THE DRAWINGS AND SPECIFICATIONS.
   - B. ALL STRIPING TO BE THERMOPLASTIC UNLESS OTHERWISE NOTED.

STORM SEWER NOTES:

1. REINFORCED CONCRETE PIPE SHALL BE RCP CLASS III UNLESS OTHERWISE NOTED WITH BELL-AND-SPIGOT AND GASKETED JOINTS WITH ASTM C 443 RUBBER GASKETS.
2. FILL HEIGHTS OVER 13' REQUIRE CLASS IV RCP STORM PIPE.
3. STORM INLETS SHALL BE PRECAST IN ACCORDANCE WITH BRENTWOOD PUBLIC WORKS SPECIFICATIONS WHICH MEET OR EXCEED ASTM C 478.
4. ALL MANHOLE FRAMES AND COVERS ARE TO BE PER BRENTWOOD PUBLIC WORKS STANDARD DETAIL FOR DIMENSIONS AND MATERIALS AND AS BELOW IF NOT OTHERWISE INDICATED. FERROUS; 24-INCH (610-MM) ID BY 7- TO 9-INCH (175- TO 225-MM) RISER WITH 4-INCH- (102-MM-) MINIMUM WIDTH FLANGE AND 26-INCH- (660-MM-) DIAMETER COVER. INCLUDE INDENTED TOP DESIGN WITH LETTERING CAST INTO COVER, USING WORDING EQUIVALENT TO "STORM SEWER."
5. MATERIAL: GRAY IRON ASTM A48 CLASS 30 UNLESS OTHERWISE INDICATED.
6. ALL HDPE PIPE SHALL BE CORRUGATED HIGH DENSITY POLYETHYLENE SMOOTH INTERIOR PIPE. HDPE PIPE SHALL CONFORM TO ASTM D3350 WITH SOIL TIGHT JOINTS.
7. ALL HDPE SHALL BE INSTALLED PER MANUFACTURER'S RECOMMENDATIONS AND AASHTO SECTION 30.
8. CONTRACTOR TO PROVIDE AND INSTALL MANUFACTURER RECOMMENDED FITTINGS ON RCP CONNECTIONS TO HDPE STRUCTURES.
9. REFER TO PIPE CHART FOR CASTING TYPES. INSTALL REDUCERS AS NECESSARY PER MANUFACTURER'S SPECIFICATIONS TO ACCOMMODATE LARGER INLET SIZES.
10. FOLLOW CONSTRUCTION PLANS AND MANUFACTURER DETAILS, SPECIFICATIONS, AND INSTALLATION INSTRUCTION AS INCLUDED WITHIN THE PLANS AND PROVIDED BY MANUFACTURER FOR THE INSTALLATION OF WATER QUALITY AND DETENTION SYSTEMS.
11. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL STORM SEWER PIPE, STRUCTURES, WATER QUALITY STRUCTURES, AND DETENTION STRUCTURES FOR ENGINEER AND OWNER APPROVAL PRIOR TO ORDERING MATERIALS.

CLEARING AND GRUBBING:

- A. DO NOT EXCEED CLEARING AND GRUBBING LIMITS OF CONSTRUCTION LINES INDICATED ON THE PLANS.
- B. ALL AREAS OUTSIDE THE LIMITS OF CONSTRUCTION LINE SHALL NOT BE CROSSED BY HEAVY EQUIPMENT OR USED FOR STORING HEAVY EQUIPMENT OR MATERIALS.
- C. NO EQUIPMENT SHALL BE STORED UNDER THE DRIP LINE OF TREES TO REMAIN.
- D. DO NOT FALL ANY TREES OR PUSH PILES OF DEBRIS AGAINST ANY TREES TO REMAIN.
- E. REMOVE ALL STUMPS, ROCKS, ASPHALT & CONCRETE DEBRIS, ETC. AND DISPOSE OFF SITE IN ACCORDANCE WITH LOCAL, STATE & FEDERAL REGULATIONS.
- F. CONTACT ALL UTILITY AUTHORITIES WHO HAVE LINES WITHIN THE CLEARING AND GRUBBING LIMITS BEFORE STARTING WORK
- E. ALL EROSION CONTROL SEDIMENT BARRIERS, SILT FENCES, AND TREE PROTECTION DEVICES SHALL BE INSTALLED PRIOR TO STARTING CLEARING AND GRUBBING.
- F. AFTER STAKING IS COMPLETED, TREES WITHIN GRADING LIMITS TO BE SAVED WILL BE IDENTIFIED BY THE OWNER'S REPRESENTATIVE. FIELD CHANGES TO GRADING PLANS SHALL BE MADE FOR SMOOTH TRANSITION OF GRADES AROUND ALL TREES WHICH REQUITE TREE WELLS WITHIN THE GRADING LIMITS.
- G. ALL CLEARING SHALL BE LIMITED TO AREAS TO BE GRADED WITHIN 15 CALENDAR DAYS.

GRADING NOTES:

- A. TOPSOIL SHALL BE STORED ON SITE IN LOCATIONS APPROVED BY THE OWNER'S REPRESENTATIVE. DRAINAGE SHALL ROUT AROUND THESE TOPSOIL STOCKPILES FOR THE DURATION OF THE GRADING OPERATIONS. EROSION CONTROL MEASURES SHALL PREVENT THE LOSS OF TOPSOIL MATERIAL.
- B. UNSUITABLE SOILS SHALL BE UNIFORMLY SPREAD ACROSS NON-STRUCTURAL FILL AREAS AND COVERED WITH TOPSOIL AND SEEDED.
- C. FILL AREA SHALL BE PROOF-ROLLED WITH RUBBER-TIRED EQUIPMENT WITH A MINIMUM WEIGHT OF FIFTEEN TONS PRIOR TO BEGINNING FILL OPERATION. AREAS WHICH ARE SOFT OR UNSTABLE SHALL BE UNDERCUT UNTIL STABLE SOILS ARE FOUND. RE-COMPACTION OF THESE SOIL TO 98% MAXIMUM DRY DENSITY AS PER ASTM D698 (STANDARD PROCTOR).
- D. CUT AREA SHALL BE PROOF-ROLLED AFTER FINAL SUBGRADE IS ACHIEVED IN THE SAME MANNER AS FILLED AREAS. SOFT OR UNSTABLE SOILS SHALL BE SCARIFIED TO A DEPTH OF 12" AND RE-COMPACTED TO 98% MAXIMUM DRY DENSITY AS PER ASTM D698 (STANDARD PROCTOR).
- E. ALL GRADING SHALL BE COMPLETED TO THE LEVEL INDICATED BY THE SCOPE OF WORK LISTED IN THE BID DOCUMENTS.
- F. ELEVATIONS SHOWN ON THE PLANS IS THE FINISH GRADE ELEVATION.
- G. GRADING SHALL BE SEQUENCED SO THAT BASE STONE IS PLACED WITHIN 10 CALENDAR DAYS PF ACHIEVING OPTIMUM SUBGRADE COMPACTION.
- H. SOILS TESTING LABORATORY/ SOILS ENGINEER. CONTRACTOR WILL EMPLOY A QUALIFIED SOILS TESTING LABORATORY/ ENGINEER TO OBSERVE THIS WORK AND MAKE TESTS.
- I. HAVE EARTH BORROW FILL, AGGREGATE, AND TOPSOIL, AND STRUCTURAL FILL TESTED AND APPROVED BY DESIGNATED TESTING LABORATORY BEFORE MOVING IT TO THE JOB SITE.
- J. CONTRACTOR SHALL OBSERVE PROOF-ROLLING OF AREAS WHERE BUILDING AND PAVING WILL BE LOCATED TO DETERMINE ADEQUACY OF SOIL COMPACTION AND IN-PLACE SOILS. OTHER AREAS WILL BE INSPECTED BY SOILS ENGINEER TO DETERMINE ADEQUACY IN THOSE AREAS. IF SOILS ARE NOT ADEQUATE TO BEAR WEIGHTS THAT WILL BE IMPOSED, TESTING LABORATORY WILL OBSERVE AND REPORT CORRECTIVE ACTION TAKEN.
- K. TEST IN-PLACE SOIL AND FILLED AND COMPACTED AREAS. IF THESE ARE NOT ADEQUATE TO BEAR WEIGHTS IMPOSED, TESTING LABORATORY WILL ADVICE THE OWNER'S REPRESENTATIVE OF THEIR RECOMMENDATIONS. HE WILL DIRECT ANY CORRECTIVE MEASURES THAT ARE NECESSARY.
- L. SOILS COMPACTION TESTING OF IN-PLACE AND FILLED AND COMPACTED AREAS WILL BE PERFORMED BY TESTING LABORATORY IN ACCORDANCE WITH THEIR REQUIREMENTS.
- M. THE SOILS ENGINEER'S AND TESTING LABORATORY'S FEES WILL BE PAID BY THE CONTRACTOR.
- N. APPLICABLE SPECIFICATIONS FOR COMPACTED FILL: THE FOLLOWING CURRENT AMERICAN SOCIETY OF TESTING MATERIALS (ASTM) STANDARDS ARE HEREBY MADE PART OF THIS SPECIFICATION:
  - D421-58, DRY PREPARATION OF SOIL SAMPLES FOR GRAIN-SIZE ANALYSIS AND DETERMINATION OF SOIL CONSTANTS.
  - D422-63, STANDARD METHOD OF PARTICLE SIZE ANALYSIS OF SOILS.
  - D1140-54, METHOD OF TEST FOR AMOUNT OF MATERIAL IN SOILS FINER THAN NO.200 SIEVE.
  - D698, METHOD FOR LABORATORY COMPACTION CHARACTERISTICS OF SOIL USING STANDARD EFFORT
  - D1557-78, STANDARD TEST METHODS FOR MOISTURE-DENSITY RELATIONS OF SOILS AND SOIL-AGGREGATE MIXTURES USING 10 LB. (4.54-KG) RAMMER AND 18-INCH (457 MM) DROP
  - CONTRACTOR TO REVIEW SITE GEOTECHNICAL REPORT PROVIDED BY UNITED CONSULTING BEFORE COMMENCING WORK AND ABIDE BY ALL GRADING REQUIREMENTS DETAILED IN REPORT.
- O. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS AT ALL LOCATIONS UNLESS OTHERWISE NOTED.
- P. CONTRACTOR SHALL REVIEW THE SITE SPECIFIC GEOTECHNICAL REPORT PRIOR TO COMMENCING WITH GRADING OPERATIONS. WHERE CONFLICTS BETWEEN THE GRADING NOTES AND GEOTECHNICAL REPORT EXIST, THE MORE STRINGENT REQUIREMENT SHALL APPLY.
- Q. CONTRACTOR IS RESPONSIBLE FOR DOCUMENTING WITH LOAD TICKETS, PHOTOGRAPHS, LOG BOOK, VIDEO RECORDING AND OTHER MEANS AS NECESSARY TO VERIFY THE INSTALLATION OF STORMWATER BEST MANAGEMENT PRACTICES REQUIRED BY THE LOCAL MUNICIPALITY HAVING PREPARED BY A QUALIFIED LAND SURVEYOR AND JURISDICTION. AS-BUILT TOPOGRAPHY AND UTILITY PLANS ARE REQUIRED TO BE SUBMITTED TO KIMLEY-HORN AT THE CONCLUSION OF THE PROJECT FOR VERIFICATION OF DESIGN INTENT. ANY MODIFICATIONS TO THE GRADING AND UTILITY SYSTEMS REQUIRED, NOT PREVIOUSLY APPROVED BY THE OWNER ARE THE RESPONSIBILITY OF THE CONTRACTOR.

Kimley»Horn
214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com
© 2018 Kimley-Horn and Associates, Inc.

BELL SELF-STORAGE
BELL & ASSOCIATES CONSTRUCTION
BRENTWOOD, TENNESSEE

ZACHARY J. DUFOUR, REGISTERED ENGINEER, No. 112501, STATE OF TENNESSEE, COMMERCE, 07/21/2020

No.	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DESIGNED BY:	LEB
DRAWN BY:	LEB
CHECKED BY:	KBB
DATE:	03/07/2018

KIMLEY-HORN PROJECT NO. 118230000

GENERAL NOTES

SHEET NUMBER
C0-01

SURVEY NOTES:

—INFORMATION REGARDING THE PRESENCE, SIZE AND LOCATION OF UNDERGROUND UTILITIES IS SHOWN HEREON. THIS INFORMATION HAS BEEN SHOWN BASED ON THE LOCATION OF ABOVE GROUND APPURTENANCES, AVAILABLE DESIGN PLANS, AND FLAGS AND PAINT PLACED BY THE UNDERGROUND PROTECTION SERVICE. NO CERTIFICATION IS MADE AS TO THE ACCURACY OF THOROUGHNESS OF THE INFORMATION CONCERNING UNDERGROUND UTILITIES AND STRUCTURES SHOWN HEREON. (TN ONE CALL SYSTEM, INC. 1-800-351-111 OR 811).

ALL SUBSTANTIAL, VISIBLE IMPROVEMENTS UPON THE PROPERTY ARE SHOWN.

NO PRIVATE UTILITY LOCATE WAS PERFORMED ON THIS SITE AT THE TIME OF THIS SURVEY.

CONTACT PROPER AUTHORITIES BEFORE BUILDING NEAR UTILITY LINES, FOR EASEMENT WIDTH AND RESTRICTIONS. UTILITIES ARE APPROXIMATE AND SHOULD BE VERIFIED PRIOR TO ANY CONSTRUCTION.

THIS PROPERTY IS LOCATED WITHIN AN AREA HAVING ZONE DESIGNATIONS OF "X" BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, ON FLOOD INSURANCE RATE MAP NO. 47187C0093G, WITH AN EFFECTIVE DATE OF DECEMBER 22, 2016, IN WILLIAMSON COUNTY, STATE OF TENNESSEE, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR THE COMMUNITY IN WHICH SAID PROPERTY IS SITUATED."

THE SUBJECT PROPERTY HAS DIRECT ACCESS TO AND FROM A DULY DEDICATED AND ACCEPTED PUBLIC STREET OR HIGHWAY AS SHOWN HEREON AND IDENTIFIED AS WILSON PIKE CIRCLE.

LIST OF ENCROACHMENTS: AS SHOWN ALONG THE NORTH AND SOUTH PROPERTY LINES.

AT THE TIME OF THIS SURVEY THERE WAS NO OBSERVED EVIDENCE ON SITE OF USE AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDFILL.

AT THE TIME OF THIS SURVEY THERE WAS NO DELINEATION OF WETLANDS ON THIS SITE.

AT THE TIME OF THIS SURVEY THERE WAS NO OBSERVED EVIDENCE OF RECENT STREET OR SIDEWALK CONSTRUCTION REPAIRS.

GROUND MEASUREMENTS ARE USED AS THE BASIS FOR LOCATION OF ALL FEATURES OF THE SUBJECT PROPERTY.

AT THE TIME OF THIS SURVEY THERE WAS NO OBSERVED EVIDENCE OF CURRENT EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS.

CONTOURS WERE DERIVED FROM RANDOM SHOTS AND CROSS SECTIONS AND ARE SHOWN AT ONE FOOT INTERVALS. ELEVATIONS SHOWN HEREON ARE BASED ON AN OPUS SOLUTION, ELEVATION 714.83, DATED 9/30/2017 (NAVD88, GEOID12A).

UNLESS STATED OTHERWISE, ANY MONUMENT REFERRED TO HEREIN AS AN "IRON PIN SET" IS A SET 1/2" DIAMETER REBAR, 18" IN LENGTH, WITH A YELLOW PLASTIC CAP STAMPED "YOUNG HOBBS"

THE SURVEY SHOWN HEREON WAS MADE IN ACCORDANCE WITH CHAPTER 0820-3, STANDARDS OF PRACTICE AS ADOPTED BY THE TENNESSEE STATE BOARD OF EXAMINERS FOR LAND SURVEYORS.

I HEREBY CERTIFY THAT THIS SURVEY HAS BEEN MADE USING THE RECORDED INFORMATION SHOWN, AND THAT THIS SURVEY IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I HEREBY CERTIFY THAT THIS IS A CATEGORY 1 SURVEY AND THAT THE RATIO OF PRECISION OF THE UNADJUSTED TRAVERSE IS BETTER THAN 1:10,000 AS SHOWN HEREON.

LEGEND

- BENCHMARK, AS NOTED
- IRON PIN SET (IPS)
- IRON PIN FOUND, AS NOTED
- CONCRETE MONUMENT FOUND
- UTILITY POLE
- WATER METER
- ELECTRIC METER
- SIGN, AS NOTED
- YARD HYDRANT
- SEWER CLEAN OUT
- SEWER MANHOLE
- BOLLARD
- SATELLITE DISH
- GUY WIRE
- GRATE INLET
- FIRE HYDRANT
- PROPERTY LINE
- SS — SS — SANITARY SEWER, AS NOTED
- W — W — WATER LINE, AS NOTED
- OHW — OHW — OVERHEAD WIRE
- ST — ST — STORM SEWER PIPE, AS NOTED

811 Know what's **below.** **Call** before you dig.

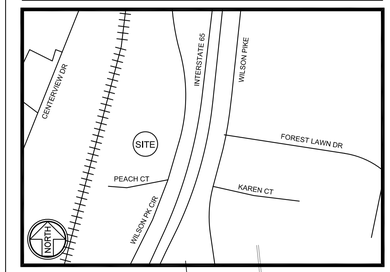
SITE ADDRESS:

263 WILSON PIKE CIR
BRENTOOD, TN 37027

PARKING:

REGULAR SPACES:	6
HANDICAP SPACES:	1
TOTAL SPACES:	7

LOCATION MAP NTS



BBDB INVESTMENTS LLC PROPERTY
TM: 011B C 9.00
DB 5922, PG 82

BUILDING

BUILDING ENCROACHMENT

WALL ENCROACHMENT

BUILDING ENCROACHMENT

N 81°23'32" E 489.93' (M)
N 78°" E 491.3' (R CAL)

313.43' (M)

CANOPY

BUILDING PUMP

TANK

CRUSHED STONE ENCROACHMENT

OPEN AIR SHED

CONEX BUILDING

176.50' (M-R)

OVERHANG

BRICK PAVER

GRAVEL AREA

ACCESS

1/2" IPS

ROCK

WATER LINE AS PER MAPS

WATERLINE 8" PVC

WILSON PIKE CIR
R/W VARIES - PUBLIC

S 00°49'34" W 100.27' (M)
S 03° W 100' (R)

S 08°19'34" W 100.27' (M)
S 04°30' W 100' (R)

S 07°44'39" W 10.72' (M)

TBM PK NAIL
EL=713.84

TOTAL AREA
2.00 ACRES±
87,115 SF±

HC/SIGN

BUILDING
FFE=713.16

LANDSCAPING LAYDOWN AREA

SIDEWALK/PAVER

STEPS/STOOP

GATE

GRAVEL / LANDSCAPING LAYDOWN AREA

TRACT 2
DB 5922, PG 79

BBDB INVESTMENTS LLC PROPERTY
TM: 011B C 10.00
DB 5922, PG 79

N 04°25'56" E 168.42' (M)
N 00°15' E 169' (R TOTAL)

S 00°15' W 162' (R)
S 04°25'56" W 168.42' (M)

TRACT 1
DB 5922, PG 79

GRAVEL / LANDSCAPING LAYDOWN AREA

SAN SEWER
10" CLAY PIPE

CSX RAILWAY

N 15°29'57" E 153.70' (M)
N 11°45' E 153.7' (R)

6-6" GROUP

6" OPEN AIR SHED

POSSIBLE FENCE ENCROACHMENT

S 88°07'10" W 97.01' (M)

S 84° W 203' (R)

S 88°08'37" W 105.67' (M)

PROPANE TANK

1/2" IPF
NO ID

IE=698.50

1/2" IPF
ID:2315

1/2" IPS

N 01°43'26" W 7.00' (M)

18" RCP

SS MH
TOP=700.62
IE=696.92

GRATE
TOP=702.56
IE=698.96

N 08°22'14" W 250.20' (M)

OUTFALL STRUCTURE

KERRY E. COUCH
PROPERTY
TM: 011B C 11.00
DB 2538, PG 670

GRATE
TOP=

1/2" IPF
NO ID

GREEN HOUSE

OPEN AIR SHED
0.5'
ENCROACHMENT

OPEN AIR SHED

GREEN HOUSE

BRICK PAVER

1/2" PIPE FOUND

S 85°30'29" W 306.70' (M)
S 83°15' W 304' (R CAL)

ENVIROTEST SYSTEMS CORP
PROPERTY
TM: 011B C 12.00
DB 5894, PG 915

BUILDING

~ASPHALT~

~ASPHALT~

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1 M	545.89'	113.53'	113.33'	S 01°47'10" W	11°54'59"
C2 M	1475.89'	74.88'	74.88'	S 09°11'52" W	2°54'25"

BASIS OF BEARINGS
TN STATE PLANE
COORDINATE SYSTEM
NAD 83

0 20 40 60
SCALE 1" = 20'

YOUNG - HOBBS AND ASSOCIATES

1202 CROSSLAND AVE.
CLARKSVILLE, TN 37040
PHONE 931-645-2524
FAX 931-645-2768
dave@younghobbs.com

KENNETH A. BAU
REGISTERED LAND SURVEYOR
AGRICULTURE
ENGINEERING
SURVEYING
TENNESSEE No. 2019
12/1/17
KENNETH A. BAU, RLS
kenny@younghobbs.com

No.	Date	Revision
1	11/20/17	Changed rail road name

Kimley»Horn

Kimley Horn and Associates, Inc.
214 Oceanside Drive
Nashville, TN

BOUNDARY & TOPOGRAPHIC SURVEY

OWNER INFORMATION

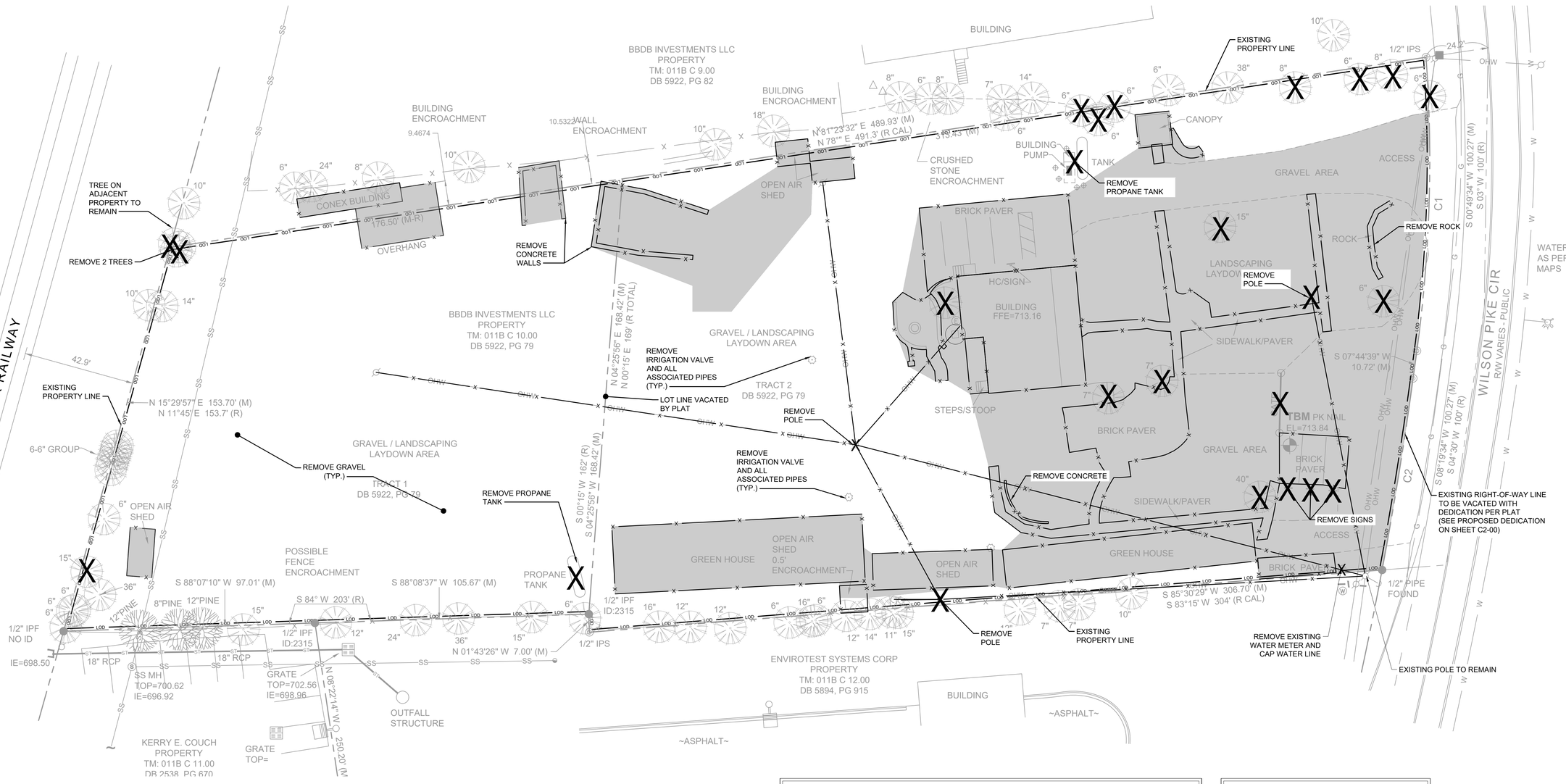
BBDB INVESTMENTS LLC PROPERTY
TM: 011B C 10.00
DB 5922, PG 79

BRENTWOOD STATION
WILLIAMSON COUNTY, TENNESSEE

DRAWN BY:	KAB
APPROVED BY:	KAB
DATE: (FIELD)	9/30/2017
DATE: (OFFICE)	10/3/2017
YHA PRO. #	134-17

SHEET 1 OF 1

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



DEMOLITION NOTES

1. CONSTRUCTION AND DEMOLITION WORK SHALL BE PERFORMED PER CITY OF BRENTWOOD AND GOVERNING AGENCY STANDARDS.
2. HATCHED AREA TO BE DEMOLISHED COMPLETELY- ALL EXISTING FEATURES TO BE REMOVED, GRAVEL AND CONCRETE TO BE REMOVED FULL DEPTH, EXISTING WATER, SANITARY SEWER, AND STORM SEWER PIPES SHALL REMAIN UNLESS OTHERWISE NOTED ON THE PLANS.
3. THE CONTRACTOR IS RESPONSIBLE FOR MAINTAINING UTILITY SERVICE TO ALL ADJACENT PROPERTIES AND PROTECTION OF ALL UTILITIES TO REMAIN IN PLACE.
4. CONTRACTOR SHALL COORDINATE WITH BRENTWOOD WATER SERVICES AND PUBLIC WORKS FOR UTILITY SERVICES TO EXISTING BUILDINGS PRIOR TO COMMENCING WITH WORK.
5. ALL EXISTING ITEMS TO REMAIN WHICH ARE DAMAGED DURING CONSTRUCTION SHALL BE RESTORED TO ITS ORIGINAL CONDITION AT THE SOLE EXPENSE OF THE CONTRACTOR
6. IF STOCKPILING OF TOPSOIL OR OTHER EARTHEN MATERIALS IS NECESSARY, THE CONTRACTOR SHALL SURROUND THE STOCKPILE WITH A DOUBLE ROW OF SILT FENCE AND THE LOCATION SHALL BE APPROVED BY THE EROSION AND SEDIMENT CONTROL INSPECTOR PRIOR TO ESTABLISHMENT.
7. CONTRACTOR IS REQUIRED TO OBTAIN ALL DEMOLITION AND UTILITY RELOCATION PERMITS AND COORDINATE WITH UTILITY COMPANIES PRIOR TO START OF CONSTRUCTION.
8. CONTRACTOR SHALL COORDINATE WITH NASHVILLE ELECTRIC SERVICE PRIOR TO COMMENCING WITH DEMOLITION ACTIVITIES TO ESTABLISH PLAN FOR TEMPORARY SERVICE, NEW SERVICE, AND UTILITY RELOCATIONS.
9. CONTRACTOR TO LOCATE AND VERIFY EXISTING UTILITY SIZES, DEPTHS, PIPE MATERIAL, LOCATION, AND PIPE CONDITION PRIOR TO DEMOLITION. REPORT OBSERVATIONS BACK TO KIMLEY-HORN & ASSOCIATES.
10. CONTRACTOR SHALL REVIEW THE SITE GEOTECHNICAL REPORTS PREPARED FOR THE SITE PRIOR TO COMMENCING WITH WORK INCLUDING DEMOLITION BACKFILL REQUIREMENTS.
11. THE CONTRACTOR SHALL NOTIFY THE OWNER AND CITY INSPECTOR(S) 24 HOURS PRIOR TO ANY DEMOLITION OR CONSTRUCTION.
12. ONLY ITEMS INDICATED TO BE DEMOLISHED SHALL BE REMOVED FROM THE SITE.
13. ALL DEBRIS RESULTING FROM DEMOLITION SHALL BE REMOVED FROM THE SITE AND DISPOSED OF LEGALLY ACCORDING TO LOCAL, STATE, & FEDERAL REGULATIONS BY THE CONTRACTOR. BACKFILL ALL TRENCHES AND EXCAVATIONS RESULTING FROM DEMOLITION.
14. PROTECT ALL EXISTING TREES AND ALL ITEMS TO BE TURNED OVER TO THE OWNER DURING DEMOLITION. TAKE ALL NECESSARY PRECAUTIONS AND PROTECTIVE MEASURES. ANY EXISTING ITEMS TO BE TURNED OVER TO THE OWNER WHICH ARE DAMAGED DURING DEMOLITION SHALL BE REPAIRED AT NO ADDITIONAL COST TO THE OWNER. TREES WHICH ARE DAMAGED WILL BE REPLACED OR REIMBURSED AT A RATE TO BE DETERMINED BY THE OWNER.
15. PRIOR TO REMOVING OR ABANDONING ANY UTILITY THE CONTRACTOR SHALL VERIFY THAT NO UPSTREAM SERVICE WILL BE TERMINATED. THE CONTRACTOR SHALL INFORM THE ENGINEER IN WRITING OF ANY TERMINATION NOT SHOWN ON THE PLANS.
16. ALL ABANDONED WATER LINES, STORM SEWER PIPE, SANITARY SEWER PIPES, GAS LINES, OR ANY OTHER ABANDONED UNDERGROUND UTILITY SHALL BE ABANDONED IN PLACE UNLESS NOTED OTHERWISE.
17. COMPACT AND ROUGH GRADE THE ENTIRE SITE IN ACCORDANCE WITH THE CONTRACT DOCUMENTS. ANY EXCAVATIONS IN THESE AREAS SHALL BE BACKFILLED, BUT DO NOT RAISE OR LOWER EXISTING GRADES.

LEGEND

LOD	LIMITS OF DISTURBANCE
X	REMOVE EXISTING
TP	TREE PROTECTION
	EXISTING IMPERVIOUS AREA TO REMOVED
X	TO BE REMOVED

TO BE REMOVED

16	TREES
892 LF	OHW
+/- 0.82 ACRES	IMPERVIOUS AREA

GRAPHIC SCALE IN FEET
0 10 20 40

NORTH

Kimley»Horn
214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com
© 2018 Kimley-Horn and Associates, Inc.

BELL SELF-STORAGE
BELL & ASSOCIATES CONSTRUCTION
BRENTWOOD, TENNESSEE

ZACHARY J. DUBOIS
REGISTERED ENGINEER
07/21/2020
COMMERCE
No. 112501
STATE OF TENNESSEE

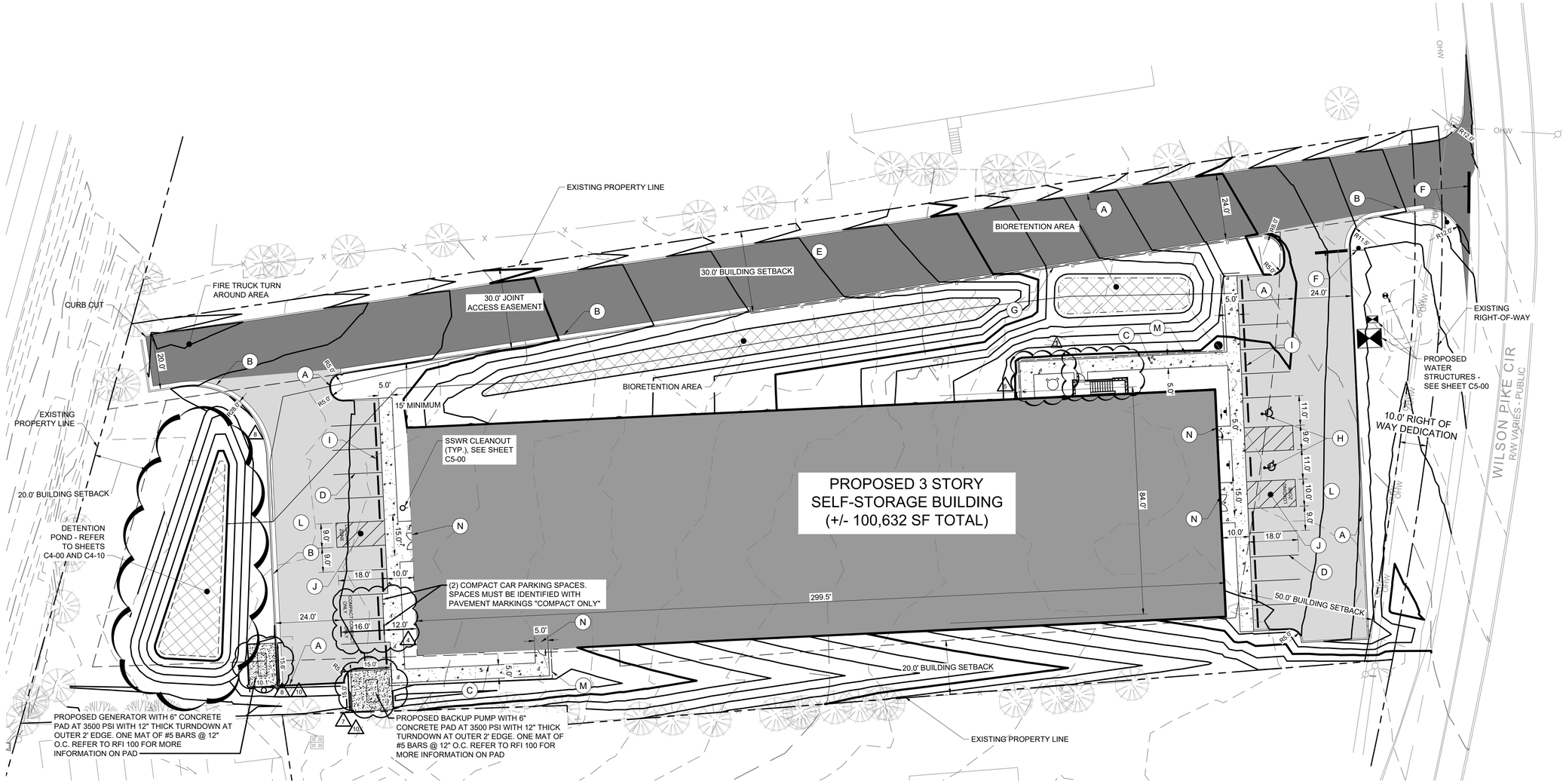
No.	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DESIGNED BY:	LEB
DRAWN BY:	LEB
CHECKED BY:	KBB
DATE:	03/07/2018
KIMLEY-HORN PROJECT NO.	118230000

DEMOLITION PLAN

SHEET NUMBER
C1-00

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



THIS SITE PLAN IS SUBJECT TO A THREE YEAR VESTING PERIOD, DURING WHICH THE DEVELOPMENT STANDARDS IN EFFECT ON THE DATE OF APPROVAL WILL REMAIN THE STANDARDS APPLICABLE TO THIS PLAN. IF CONSTRUCTION IS NOT COMPLETED DURING THE FIRST THREE YEARS, THE ORIGINAL SITE PLAN IS CONSIDERED A PRELIMINARY SITE PLAN AND THE APPLICANT MUST OBTAIN APPROVAL OF A FINAL SITE PLAN. DEVELOPMENT OF THE PROPERTY SHOWN ON THIS PLAN MAY BE SUBJECT TO STANDARDS OTHER THAN THOSE THAT WERE APPLICABLE DURING THE VESTING PERIOD. THE INITIAL VESTING PERIOD FOR THIS PLAN EXPIRES ON **AUGUST 3, 2023** UNLESS EXTENDED BY THE CITY OF BRENTWOOD. PERSONS RELYING ON THIS PLAN AFTER SAID DATE SHOULD CONTACT THE CITY OF BRENTWOOD TO DETERMINE IF DEVELOPMENT MAY CONTINUE AS DEPICTED ON THE PLAN.

SITE LAYOUT NOTES

1. INSTALL CONCRETE JOINTS WHERE SHOWN ON PLANS AND DETAILS. ALIGN ON WALLS, BUILDINGS, RADII, ETC. EVENLY SPACE BETWEEN ELEMENTS AS SHOWN. PROVIDE EXPANSION JOINTS BETWEEN CONCRETE PAVEMENT AND ALL VERTICAL ELEMENTS (WALLS, CURBS, ETC.).
2. ALL DIMENSIONS AND CURB RADII ARE TO THE FACE OF CURB UNLESS OTHERWISE NOTED.
3. LAYOUT ALL ELEMENTS IN FIELD AND CONTACT OWNER'S REPRESENTATIVE FOR APPROVAL BEFORE BEGINNING ANY CONSTRUCTION.
4. ALL LANDSCAPE ISLANDS SHALL BE MOUNDED WITH TOPSOIL 4" ABOVE THE CURB LINE TO PROMOTE POSITIVE DRAINAGE.
5. ALL PAVEMENT MARKINGS SHALL BE THERMOPLASTIC UNLESS OTHERWISE NOTED.
6. ALL PAVEMENT MARKINGS AND SIGNAGE SHALL BE INSTALLED PER THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES, LATEST EDITION.
7. THE SITE PLAN DRAWINGS ARE INTENDED TO SHOW THE HORIZONTAL CONTROL OF THE SITE. KEY DIMENSIONS HAVE BEEN PROVIDED ON THE PLAN AND MUST BE VERIFIED PRIOR TO ACTUAL CONSTRUCTION.
8. CONTRACTOR SHALL INSTALL ACCESSIBLE RAMPS PER ADA STANDARDS AT ALL DRIVE AND BUILDING LOCATIONS.

PAVEMENT LEGEND

	LIGHT DUTY ASPHALT PAVEMENT
	HEAVY DUTY ASPHALT PAVEMENT
	SIDEWALK CONCRETE PAVEMENT
	BUILDING

PARKING SPACES

REQUIRED PER PARKING STUDY:	22
PROVIDED PARKING SPACES:	22
LOADING SPACES PROVIDED:	2

KEYNOTE LEGEND

A	6" TALL 6" WIDE CURB (TYP.) - SEE DETAIL 5 SHEET C6-01
B	18" CURB AND GUTTER (TYP.) - SEE DETAIL 6 SHEET C6-01
C	CONCRETE SIDEWALK (TYP.) - SEE DETAIL 1 SHEET C6-02
D	4" WHITE PARKING STRIPE (TYP.)
E	HEAVY DUTY ASPHALT PAVEMENT - SEE DETAIL 1 SHEET C6-01
F	R1-1 STOP SIGN AND 24" STOP BAR PER MUTCD STANDARDS - SEE DETAIL 9 SHEET C6-01
G	GUARDRAIL - SEE DETAILS ON SHEET C6-03
H	ADA VAN PARKING SPACE W/ STRIPING AND SIGNAGE - SEE DETAILS 3, 4, 7 AND 8 SHEET C6-01 AND C6-02
I	6" CONCRETE WHEEL STOP - SEE DETAIL 8 SHEET C6-01
J	LOADING SPACE
L	LIGHT DUTY ASPHALT PAVEMENT - SEE DETAIL 1 SHEET C6-01
M	PEDESTRIAN RAILING - REFER TO ARCHITECTURAL PLANS
N	OVERHEAD CANOPY - REFER TO ARCHITECTURAL PLANS

GRAPHIC SCALE IN FEET
0 10 20 40

NORTH

Kimley»Horn
214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com
© 2018 Kimley-Horn and Associates, Inc.

BELL SELF-STORAGE
BELL & ASSOCIATES CONSTRUCTION
BRENTWOOD, TENNESSEE

ZACHARY J. DUFOUR
REGISTERED ENGINEER
COMMERCE
No. 112581
STATE OF TENNESSEE
07/21/2020

No.	REVISIONS	DATE	BY
1	BUILDING FOOTPRINT AND SIDEWALK	05/01/2018	KBB
2	VESTING PERIOD REVISION	08/28/2018	ZJD
3			
4			
5			
6			
7	GENERATOR PAD BACKUP PUMP REVISION	04/20/2020	ZJD
8	GENERATOR / DETENTION POND REVISION	05/01/2020	ZJD
9			
10	EQUIPMENT PAD FENCING	06/22/2020	ZJD

DESIGNED BY:	KBB
DRAWN BY:	KBB
CHECKED BY:	KBB
DATE:	03/07/2018
KIMLEY-HORN PROJECT NO.	118230000

LAYOUT PLAN

SHEET NUMBER
C2-00



STORMWATER NOTES

TDEC NOTICE OF COVERAGE NOTE:
THIS PROJECT DISTURBS MORE THAN 1 ACRE AND HAS APPLIED FOR A NOTICE OF COVERAGE UNDER THE TENNESSEE GENERAL CONSTRUCTION PERMIT FROM TDEC.

THIS PROJECT DISCHARGES TO LITTLE HARPETH RIVER.

THE TOTAL DISTURBED AREA IS +/- 2.00 ACRES.

FLOODPLAIN AND WETLAND INFORMATION

FLOODPLAIN NOTE:
THIS SITE DOES NOT LIE WITHIN A FEMA REGULATED FLOODPLAIN ACCORDING TO THE FOLLOWING FLOOD INSURANCE RATE MAPS:

MAP NUMBER: 47187V0093G
EFFECTIVE DATE: DECEMBER 22, 2016

WETLAND NOTE:
THERE ARE NO MAPPED WETLANDS ON SITE ACCORDING TO THE NATIONAL WETLANDS INVENTORY MAP.

DISTURBED AREA

TOTAL SITE AREA: 2.00 ACRES
DISTURBED AREA: +/- 2.00 ACRES

EROSION CONTROL NOTES

1. STOCKPILED TOPSOIL OR FILL MATERIAL IS TO BE TREATED SO THE SEDIMENT RUN-OFF WILL NOT CONTAMINATE SURROUNDING AREAS OR ENTER NEARBY STREAMS. STOCK PILE LOCATIONS SHALL BE COORDINATED WITH THE ENGINEER PRIOR TO GRADING ACTIVITIES. EROSION & SEDIMENT CONTROL PRACTICE SHALL BE INSTALLED PRIOR TO STOCKPILE OPERATIONS.
2. ANY SITE USED FOR DISPOSAL AND/OR STOCKPILE OF ANY MATERIAL SHALL BE PROPERLY PERMITTED FOR SUCH ACTIVITY. IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO SEE THAT ALL REQUIRED PERMITS ARE SECURED FOR EACH PROPERTY UTILIZED. A COPY OF THE APPROVED PERMIT MUST BE PROVIDED TO THE INSPECTOR PRIOR TO COMMENCEMENT OF WORK ON ANY PROPERTY. FAILURE TO DO SO MAY RESULT IN THE CONTRACTOR REMOVING ANY ILLEGALLY PLACED MATERIAL AT HIS OWN EXPENSE.
3. CONSTRUCT SILT BARRIERS AND CONSTRUCTION EXITS BEFORE BEGINNING GRADING OPERATIONS. ALL OTHER PHASE 1 EPSC MEASURES TO BE INSTALLED AFTER PERIMETER CONTROLS ARE INSTALLED.
4. MULCH AND SEED ALL DISTURBED AREAS AS SOON AS POSSIBLE AFTER FINAL GRADING IS COMPLETED (WITHIN 14 DAYS OF ACHIEVED FINAL GRADES) UNLESS OTHERWISE INDICATED. CONTRACTOR SHALL TAKE WHATEVER MEANS NECESSARY TO ESTABLISH PERMANENT SOIL STABILIZATION. STEEP SLOPES (GREATER THAN 3:1) SHALL BE STABILIZED WITH PERMANENT VEGETATION AND EROSION CONTROL MATTING WITHIN 7 DAYS OF FINAL GRADING.
5. REMOVE SEDIMENT FROM ALL DRAINAGE STRUCTURES BEFORE ACCEPTANCE BY LOCAL GOVERNING AGENCY OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
6. CLEAN SILT BARRIERS WHEN THEY ARE APPROXIMATELY 50% FILLED WITH SEDIMENT OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE. SILT BARRIERS SHALL BE REPLACED AS EFFECTIVENESS IS SIGNIFICANTLY REDUCED OR AS DIRECTED BY THE OWNER'S REPRESENTATIVE.
7. REMOVE THE TEMPORARY EROSION AND WATER POLLUTION CONTROL DEVICES ONLY AFTER A SOLID STAND OF GRASS HAS BEEN ESTABLISHED ON GRADED AREAS AND, WHEN IN THE OPINION OF THE OWNER'S REPRESENTATIVE, THEY ARE NO LONGER NEEDED.
8. PROVIDE TEMPORARY CONSTRUCTION ACCESS(ES) AT THE POINT(S) WHERE CONSTRUCTION VEHICLES EXIT THE CONSTRUCTION AREA. MAINTAIN PUBLIC ROADWAYS FREE OF TRACKED MUD AND DIRT.
9. DO NOT DISTURB VEGETATION OR REMOVE TREES EXCEPT WHEN NECESSARY FOR GRADING PURPOSES.
10. STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED, EXCEPT IN THE FOLLOWING TWO CASES. ALL DISTURBED AREAS SHALL BE STABILIZED WITHIN 14-DAYS OF CEASING WORK.
12. CONTRACTOR TO PROVIDE AN AREA FOR CONCRETE WASH DOWN AND EQUIPMENT REFUELING. CONTRACTOR TO COORDINATE EXACT LOCATION WITH OWNER'S REP.

EROSION CONTROL LEGEND

	DD	DIVERSION DITCH - REFER TO DETAIL SHEET C6-00
	IP	INLET PROTECTION - REFER TO DETAIL SHEET C6-00
SF	SF	SILT FENCE - REFER TO DETAIL SHEET C6-00
	CD	ROCK CHECK DAM - REFER TO DETAIL SHEET C6-00
	CW	CONCRETE WASHOUT AREA - REFER TO DETAIL SHEET C6-00
	CE	CONSTRUCTION EXIT - REFER TO DETAIL SHEET C6-00
	TS	TEMPORARY STABILIZATION - REFER TO DETAIL SHEET C6-00
	PS	PERMANENT STABILIZATION - REFER TO DETAIL SHEET C6-00
TP	TP	TREE PROTECTION FENCE / HIGH VISIBILITY FENCE - REFER TO DETAIL SHEET C6-00
LOD		LIMITS OF DISTURBANCE
		CONSTRUCTION SIGN WITH SWPPP BOX AND RAIN GAUGE
	RR	RIPRAP OUTLET PROTECTION - REFER TO DETAIL SHEET C6-00

GRAPHIC SCALE IN FEET
0 10 20 40

NORTH

Kimley»Horn
214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com
© 2018 Kimley-Horn and Associates, Inc.

BELL SELF-STORAGE
BELL & ASSOCIATES CONSTRUCTION
BRENTWOOD, TENNESSEE

ZACHARY J. DUFOUR
REGISTERED ENGINEER
No. 112501
STATE OF TENNESSEE
07/21/2020

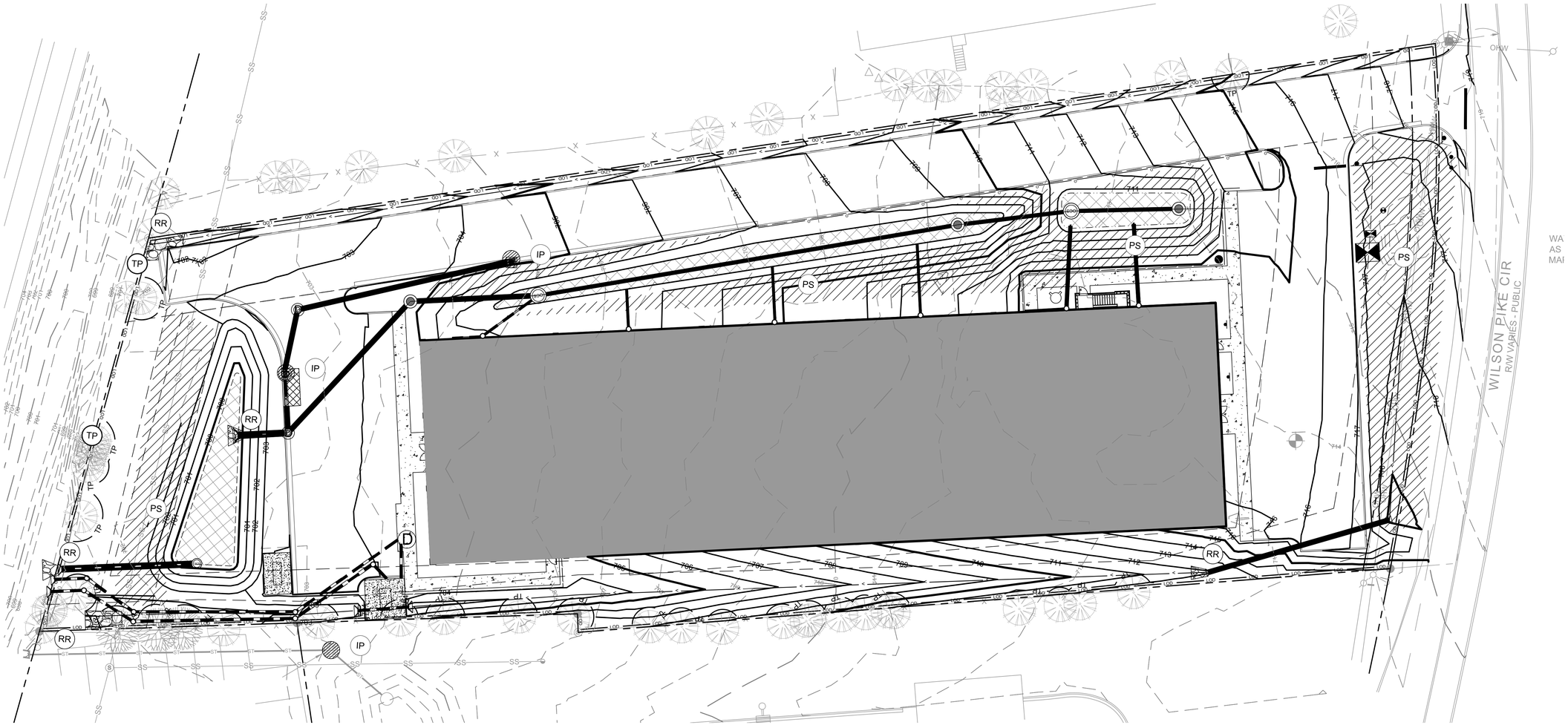
No.	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DESIGNED BY:	LEB
DRAWN BY:	LEB
CHECKED BY:	KBB
DATE:	03/07/2018
KIMLEY-HORN PROJECT NO.	118230000

EPSC PLAN - PHASE I

SHEET NUMBER
C3-00

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



EROSION CONTROL LEGEND

DD	DIVERSION DITCH - REFER TO DETAIL SHEET C6-00
IP	INLET PROTECTION - REFER TO DETAIL SHEET C6-00
SF	SILT FENCE - REFER TO DETAIL SHEET C6-00
CD	ROCK CHECK DAM - REFER TO DETAIL SHEET C6-00
CW	CONCRETE WASHOUT AREA - REFER TO DETAIL SHEET C6-00
CE	CONSTRUCTION EXIT - REFER TO DETAIL SHEET C6-00
TS	TEMPORARY STABILIZATION - REFER TO DETAIL SHEET C6-00
PS	PERMANENT STABILIZATION - REFER TO DETAIL SHEET C6-00
TP	TREE PROTECTION FENCE / HIGH VISIBILITY FENCE - REFER TO DETAIL SHEET C6-00
LOD	LIMITS OF DISTURBANCE
	CONSTRUCTION SIGN WITH SWPPP BOX AND RAIN GAUGE
RR	RIPRAP OUTLET PROTECTION - REFER TO DETAIL SHEET C6-00

GRAPHIC SCALE IN FEET
0 10 20 40

NORTH

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Kimley»Horn
214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com
© 2018 Kimley-Horn and Associates, Inc.

BELL SELF-STORAGE
BELL & ASSOCIATES CONSTRUCTION
BRENTWOOD, TENNESSEE

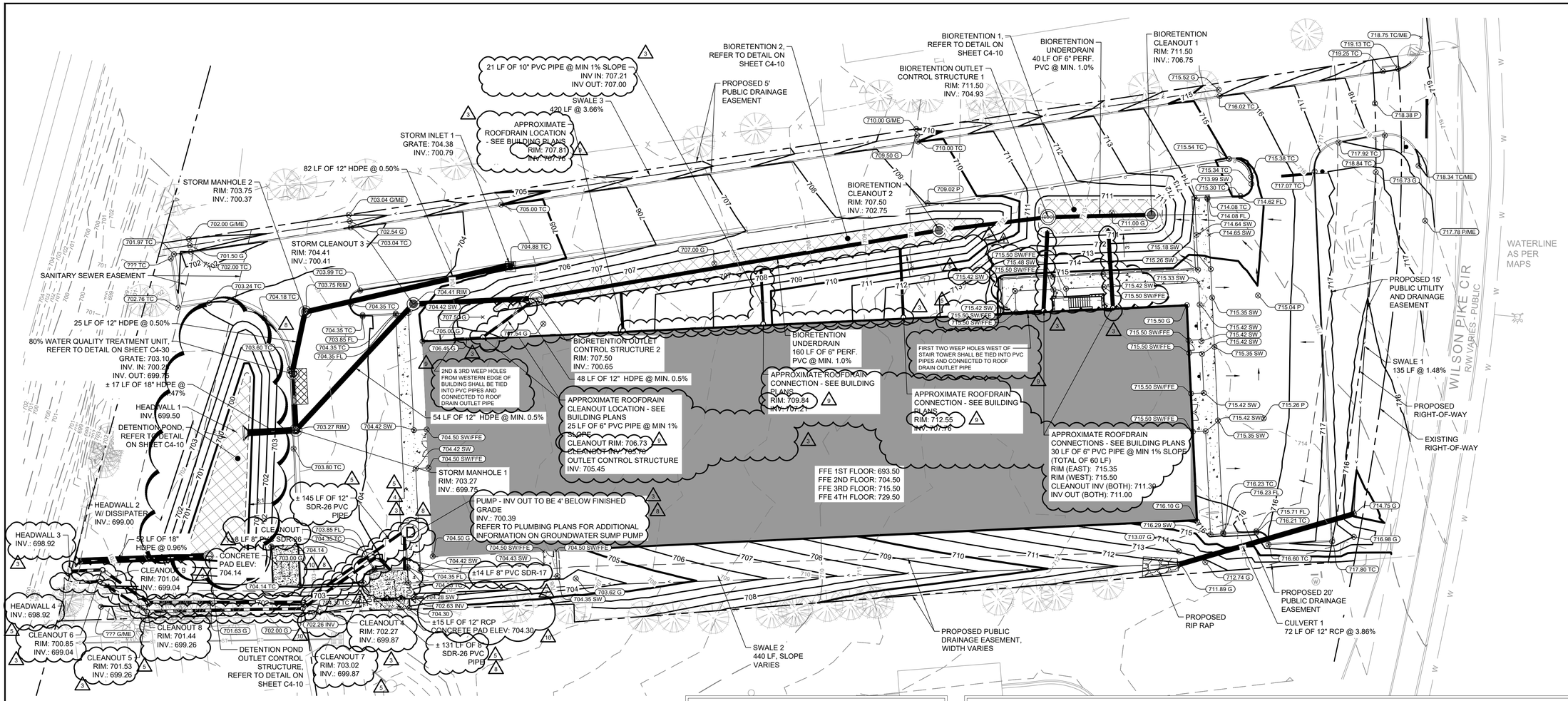
ZACHARY J. DUBOUR
REGISTERED ENGINEER
07/21/2020
COMMERCE
No. 112561
STATE OF TENNESSEE

No.	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DESIGNED BY:	LEB
DRAWN BY:	LEB
CHECKED BY:	KBB
DATE:	03/07/2018
KIMLEY-HORN PROJECT NO.	118230000

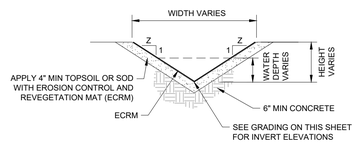
EPSC PLAN - PHASE II

SHEET NUMBER
C3-10



GRASS SWALE CROSS SECTION INFORMATION

CHANNEL	WIDTH (FT)	HEIGHT (FT)	LEFT SLOPE (Z:1)	RIGHT SLOPE (Z:1)	SLOPE (%)	WATER DEPTH (FT)
1	25	0.63	3	15	1.48%	0.50
2	8	1.33	3	3	2.89%	0.99
3	5	0.83	3	3	3.66%	0.71



NOTES:
1. CHANNEL DIMENSIONS ARE FOR THE COMPLETED CHANNEL FINISH SURFACE GRADE.
2. CHANNEL SHALL BE CONSTRUCTED TO CONVEY POSITIVE DRAINAGE TO THE BASIN OUTLET STRUCTURES.
3. INSTALL EROSION CONTROL BLANKET LINING TO TOP OF CHANNEL.
4. INSTALL LINING PER MANUFACTURERS SPECIFICATIONS AND RECOMMENDATIONS. SEED SLOPES PRIOR TO INSTALLATION PER MANUFACTURERS RECOMMENDATIONS.
4. CHANNELS SHALL BE CONSTRUCTED FREE OF ROCKS, TREE ROOTS, STUMPS, OR OTHER PROJECTIONS THAT WILL IMPEDE NORMAL CHANNEL FLOW AND/OR PREVENT GOOD LINING TO SOIL CONTACT. THE CHANNEL SHALL BE INITIALLY OVER-EXCAVATED TO ALLOW FOR THE PLACEMENT OF TOPSOIL.
5. REFER TO THE STORMWATER REPORT FOR DETAILED CALCULATIONS.

1 GRASS SWALE CROSS SECTION
NOT TO SCALE

GRADING LEGEND

	PROPOSED STORM PIPE
	PROPOSED STORM STRUCTURE
660	PROPOSED ELEVATION CONTOUR
660	EXISTING ELEVATION CONTOUR
660.00 TC	PROPOSED ELEVATION LABEL
P	PAVEMENT ELEVATION
TC	TOP OF CURB ELEVATION
FL	FLOWLINE ELEVATION
SW	SIDEWALK ELEVATION
G	GROUND ELEVATION
RIM	RIM ELEVATION
ME	MATCH EXISTING ELEVATION

GRADING NOTES

1. ALL EXCAVATION IS UNCLASSIFIED.
2. WITHIN EASEMENTS CONTRACTOR SHALL PROTECT AND RESTORE SAID PROPERTY TO A CONDITION SIMILAR OR EQUAL TO THAT EXISTING AT THE COMMENCEMENT OF CONSTRUCTION, EXCEPT AS NOTED.
3. ALL STORM SEWER CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT SPECIFICATIONS OF THE LOCAL MUNICIPALITY.
4. CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES AND OBTAIN ALL PERMITS.
5. ALL PIPES UNDER PAVED AREAS SHALL BE BACKFILLED TO TOP OF SUBGRADE WITH CRUSHED STONE OR AS DIRECTED BY ON-SITE GEOTECH OR ENGINEER.
6. IN THE EVENT OF ANY DISCREPANCIES AND/OR ERRORS FOUND IN DRAWINGS, OR IF PROBLEMS ARE ENCOUNTERED DURING CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER BEFORE PROCEEDING WITH WORK.
7. THIS GRADING PLAN IS NOT A GUARANTEE NOR AN INDICATION THAT THE SUBSURFACE CONDITIONS ARE SUITABLE FOR THE WORK DEPICTED HEREON.
8. UNDERGROUND SPRINGS OR SUBSURFACE WATER MAY BE ENCOUNTERED DURING CONSTRUCTION. THE CONTRACTOR SHALL TAKE MEASURES TO ADDRESS SUBSURFACE WATER BY CONSTRUCTION OF UNDERGROUND DRAINS OR OTHER METHODS TO DISCHARGE SUBSURFACE WATER INTO THE DRAINAGE WAYS OF THIS SECTION OR AS DIRECTED BY ON-SITE GEOTECHNICAL ENGINEER.
9. THE CONTRACTOR SHALL OBTAIN A LAND DISTURBANCE PERMIT FROM THE LOCAL MUNICIPALITY PRIOR TO THE COMMENCEMENT OF ANY GRADING OPERATIONS.
10. THE DEVELOPER SHALL REQUEST AN INSPECTION OF INFRASTRUCTURE PRIOR TO RELEASE FOR BUILDING PERMITS. INFRASTRUCTURE MUST MEET THE REQUIREMENTS SET FORTH IN THE LOCAL MUNICIPALITY'S REGULATIONS.
11. CONTRACTOR RESPONSIBLE FOR VERIFYING EXISTING ELEVATIONS COMPARED TO THOSE SHOWN ON PLAN PRIOR TO GRADING. NOTIFY OWNER'S REPRESENTATIVE IF DISCREPANCIES ARE FOUND.
12. AREAS FOR CONSTRUCTION THAT REQUIRE DE-WATERING FOR EXCAVATION WILL BE DONE AT NO ADDITIONAL COST TO THE OWNER.
13. ADDITIONAL EROSION CONTROL DEVICES TO BE USED AS REQUIRED BY LOCAL INSPECTOR.
14. DISTURBED AREAS NOT AT FINISHED GRADE LEFT IDLE FOR FIVE DAYS MUST BE ESTABLISHED TO TEMPORARY VEGETATION. MULCH, TEMPORARY VEGETATION OR PERMANENT VEGETATION SHALL BE INSTALLED ON ALL EXPOSED AREAS WITHIN 14 DAYS OF DISTURBANCE. ALL AREAS TO FINAL GRADE WILL BE ESTABLISHED TO PERMANENT VEGETATION UPON COMPLETION.
15. WHEN HAND PLANTING, MULCH (HAY OR STRAW) SHOULD BE UNIFORMLY SPREAD OVER SEEDED AREA WITHIN 24 HOURS OF SEEDING. IF UNABLE TO ACCOMPLISH, MULCH SHALL BE USED AS A TEMPORARY COVER. CONCENTRATED FLOW AREAS AND ALL SLOPES STEEPER THAN 2.5:1 AND WITH A HEIGHT OF TEN FEET OR GREATER (DOES NOT APPLY TO RETAINING WALLS), AND CUTS AND FILLS WITHIN BUFFERS, SHALL BE STABILIZED WITH THE APPROPRIATE EROSION CONTROL MATTING OR BLANKETS.
16. THE LAND DISTURBANCE PERMIT MUST BE DISPLAYED ON SITE AT ALL TIMES DURING CONSTRUCTION AND IN PLAIN VIEW FROM A PUBLIC ROAD OR STREET.
17. EROSION AND SEDIMENT CONTROL DEVICES MUST BE DISPLAYED AND INSPECTED PRIOR TO ANY GRADING ON SITE. THE CONTRACTOR MUST CALL FOR AN INSPECTION TO OBTAIN A PERMIT TO GRADE. PLEASE CALL WITH ENOUGH LEAD-TIME FOR AN INSPECTION TO MEET YOUR SCHEDULE.
18. SEDIMENT/EROSION CONTROL DEVICES MUST BE INSPECTED ACCORDING TO LOCAL AND STATE REQUIREMENTS AND AS STIPULATED IN THE STORMWATER POLLUTION PREVENTION PLAN. EACH DEVICE IS TO BE MAINTAINED OR REPLACED IF SEDIMENT ACCUMULATION HAS REACHED ONE HALF THE CAPACITY OF THE DEVICE. ADDITIONAL DEVICES MAY BE NECESSARY AS THE PROJECT PROGRESSES AND NEW CHANNELS HAVE DEVELOPED.
19. THE ESCAPE OF SEDIMENT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO, OR CONCURRENT WITH, LAND-DISTURBING ACTIVITIES.
20. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION CONTROL AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.
21. SEED ALL DISTURBED AREAS UNLESS OTHERWISE NOTED AS PART OF THIS CONTRACT. REFER TO LANDSCAPING PLANS FOR AREAS TO RECEIVE SOD.
22. TOPSOIL ON SITE TO BE STRIPPED AND STOCKPILED FOR REUSE IN LAWN AREAS.
23. ADEQUATE DRAINAGE, EROSION AND SEDIMENT CONTROL MEASURES, BEST MANAGEMENT PRACTICES, AND/OR OTHER WATER QUALITY MANAGEMENT FACILITIES SHALL BE PROVIDED AND MAINTAINED AT ALL TIMES DURING CONSTRUCTION. DAMAGES TO ADJACENT PROPERTY AND/OR THE CONSTRUCTION SITE CAUSED BY THE CONTRACTOR'S OR PROPERTY OWNER'S FAILURE TO PROVIDE AND MAINTAIN ADEQUATE DRAINAGE AND EROSION/SEDIMENT CONTROL FOR THE CONSTRUCTION AREA SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR.
24. UNDERGROUND UTILITIES HAVE NOT BEEN VERIFIED BY THE OWNER, DESIGNER, OR THEIR REPRESENTATIVES. BEFORE YOU DIG CALL ONECALL-811 OR 1-800-351-1111. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREES TO BE RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT RESULT FROM THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY UNDERGROUND UTILITIES TO REMAIN.
25. PROVIDE POSITIVE DRAINAGE AWAY FROM BUILDINGS IN ALL LOCATIONS.
26. ALL SIDEWALKS TO BE ADA COMPLIANT.

GRAPHIC SCALE IN FEET
0 10 20 40

NORTH

Kimley»Horn
214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com
© 2018 Kimley-Horn and Associates, Inc.

BELL SELF-STORAGE
BELL & ASSOCIATES CONSTRUCTION
BRENTWOOD, TENNESSEE

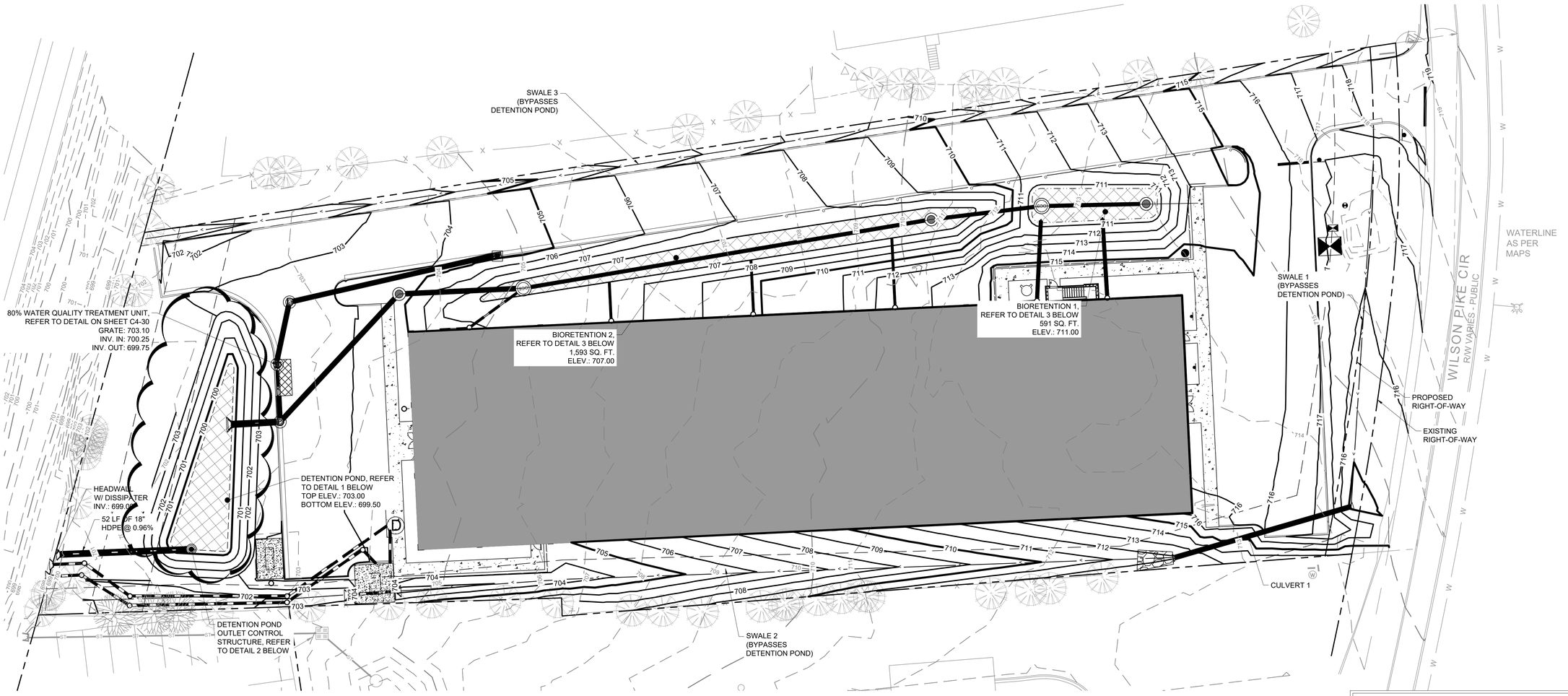
ZACHARY J. DUPOUR
REGISTERED ENGINEER
No. 112501
STATE OF TENNESSEE
07/21/20

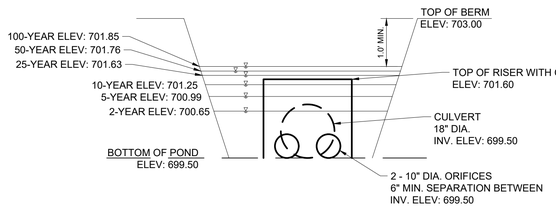
No.	REVISIONS	DATE	BY
1	BUILDING FOOTPRINT AND SIDEWALK	05/01/2018	KBB
2	STORM NETWORK	08/07/2019	ZJD
3			
4			
5	SIDEWALK GRADING - ASI 005	02/24/2020	ZJD
6	GENERATOR PAD/ BACKUP PUMP REVISION	04/20/2020	ZJD
7	GENERATOR / DETENTION POND REVISION	05/01/2020	ZJD
8	WEEP HOLE GRADING REVISION	06/03/2020	ZJD
9	EQUIPMENT PAD FENCING	06/22/2020	ZJD
10			

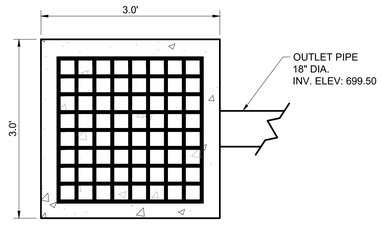
DESIGNED BY: KBB
DRAWN BY: LEB
CHECKED BY: KBB
DATE: 03/07/2018
KIMLEY-HORN PROJECT NO. 118230000

GRADING AND DRAINAGE PLAN

SHEET NUMBER
C4-00

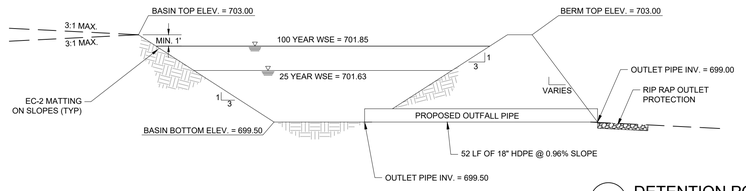






NOTE:
CONTRACTOR TO PROVIDE SHOP DRAWINGS OF OUTLET PIPE
FOR ENGINEER AND OWNER APPROVAL PRIOR TO FABRICATION.

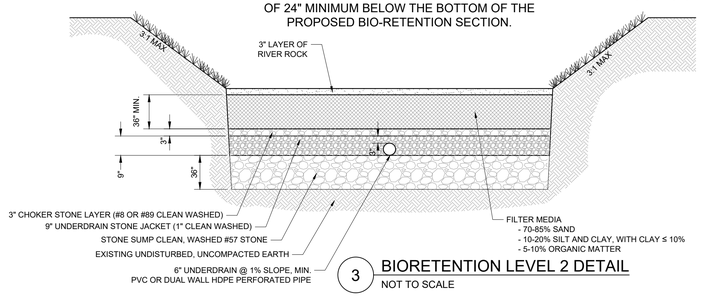
2 POND OUTLET STRUCTURE DETAIL
NOT TO SCALE



1 DETENTION POND CROSS SECTION
NOT TO SCALE

DETENTION POND CALCULATIONS	
TOTAL CONTRIBUTING AREA	1.43 AC
PROVIDED STORAGE	0.16 AC-FT
BOTTOM ELEVATION	699.50
TOP OF BANK ELEVATION	703.00
100-YEAR WATER SURFACE ELEVATION	701.85
2-YEAR PRE-DEVELOPMENT PEAK FLOW	7.66 CFS
25-YEAR POST-DEVELOPMENT PEAK FLOW	7.01 CFS

**IF BEDROCK IS ENCOUNTERED DURING CONSTRUCTION OF BIO-RETENTION AREAS, BEDROCK MUST BE EXCAVATED TO AN ELEVATION OF 24" MINIMUM BELOW THE BOTTOM OF THE PROPOSED BIO-RETENTION SECTION.



3 BIORETENTION LEVEL 2 DETAIL
NOT TO SCALE

GRADING LEGEND

	PROPOSED STORM PIPE
	PROPOSED STORM STRUCTURE
660	PROPOSED ELEVATION CONTOUR
660	EXISTING ELEVATION CONTOUR
660.00 TC	PROPOSED ELEVATION LABEL
P	PAVEMENT ELEVATION
TC	TOP OF CURB ELEVATION
FL	FLOWLINE ELEVATION
SW	SIDEWALK ELEVATION
G	GROUND ELEVATION
RIM	RIM ELEVATION
ME	MATCH EXISTING ELEVATION

REFER TO GRADING NOTES ON SHEET C4-00.

GRAPHIC SCALE IN FEET
0 10 20 40

NORTH

Kimley»Horn
214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com
© 2018 Kimley-Horn and Associates, Inc.

BELL SELF-STORAGE
BELL & ASSOCIATES CONSTRUCTION
BRENTWOOD, TENNESSEE

ZACHARY J. DUFOUR
REGISTERED ENGINEER
Zachary J. Dufour
07/31/2018
COMMERCE
No. 112301
STATE OF TENNESSEE

No	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DESIGNED BY:	KBB
DRAWN BY:	LEB
CHECKED BY:	KBB
DATE:	03/07/2018
KIMLEY-HORN PROJECT NO.	118230000

STORMWATER
MANAGEMENT PLAN

SHEET NUMBER
C4-10

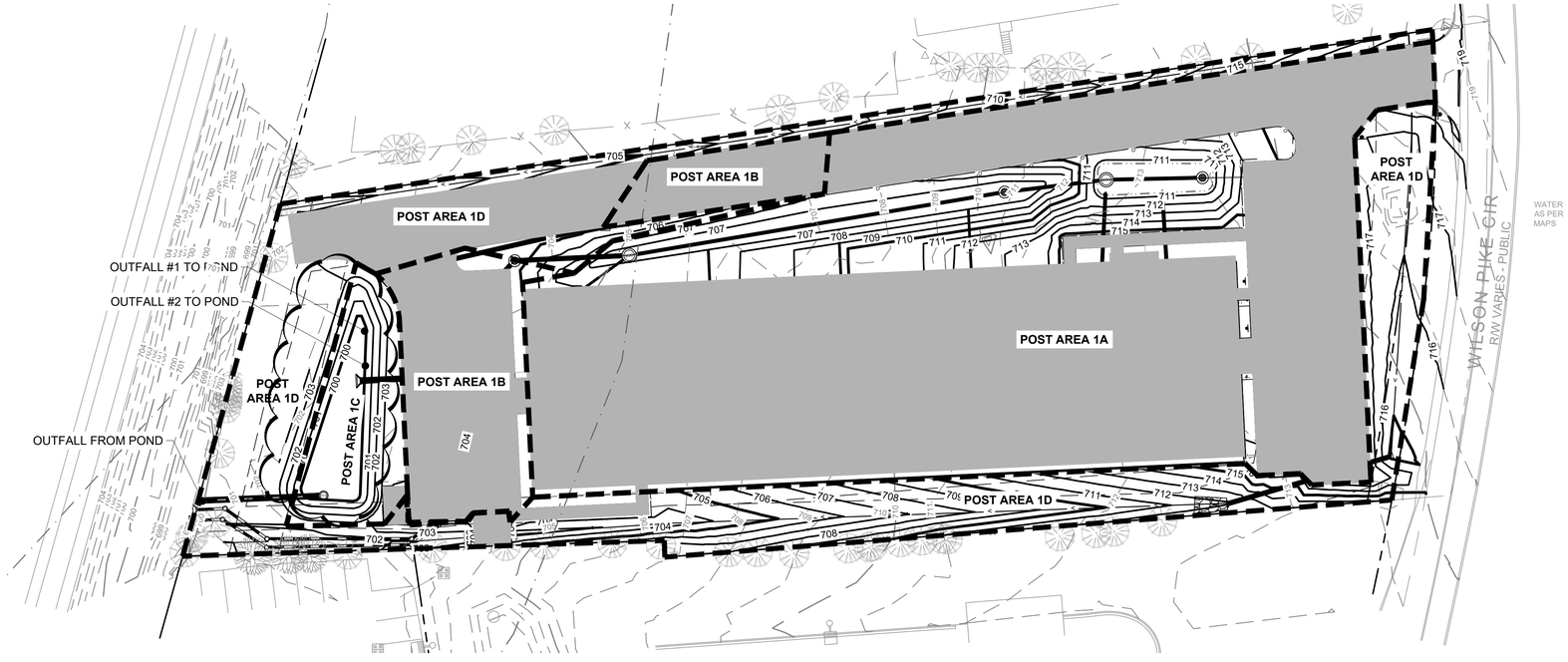


PRE-DEVELOPMENT DRAINAGE AREA

Pre-Development Condition	Area (ac)	Total Area	HSG	CN	Tc (min)
Pre-Area 1 Total =	**2.00**		**A/B**	**91**	**5.0**
Impervious	0.82	**2.00**	A/B	98	-
Compacted Gravel A	0.63		A	85	-
Compacted Gravel B	0.55		B	89	-

LEGEND

- IMPERVIOUS AREA
- PERVIOUS AREA
- GRAVEL
- DETENTION POND



POST-DEVELOPMENT DRAINAGE AREA

Post-Development Condition	Area (ac)	Total Area	HSG	CN	Adj CN	Tc (min)
Post-Area 1A (to Bioretention then to Pond)	**1.16**		**A/B**	**89**		**5.0**
Impervious	0.940		A/B	98	85.5	-
Turf A	0.214		A	49	46.6	-
Turf B	0.008		B	79	66.4	-
Post-Area 1B (to WQU then to Pond)	**0.19**		**A/B**	**96**		**5.0**
Impervious	0.173		A/B	98		-
Turf B	0.016		B	79		-
		2.00				
Post-Area 1C (to Pond only)	**0.08**		**A/B**	**79**		**5.0**
Impervious	0.002		A/B	98		-
Turf B	0.080		B	79		-
Post-Area 1D (Bypasses Pond)	**0.57**		**A/B**	**66**		**5.0**
Impervious	0.097		A/B	98		-
Turf A	0.298		A	49		-
Turf B	0.172		B	79		-

PRE- VS POST-DEVELOPMENT PEAK FLOWS

Pre-Development Peak Flows	2 yr (cfs)	5 yr (cfs)	10 yr (cfs)	25 yr (cfs)	50 yr (cfs)	100 yr (cfs)
Outfall 1	**7.66**	9.75	11.43	13.77	15.65	17.57

Post-Development Peak Flows	2 yr (cfs)	5 yr (cfs)	10 yr (cfs)	25 yr (cfs)	50 yr (cfs)	100 yr (cfs)
Outfall 1	3.45	4.73	5.67	**7.01**	10.05	12.01
Difference	-4.21	-5.02	-5.76	-6.76	-5.60	-5.56
Pond Water Surface Elevation	700.65	700.99	701.25	701.63	701.76	701.85

GRAPHIC SCALE IN FEET
0 15 30 60

NORTH

Kimley»Horn
214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com
© 2018 Kimley-Horn and Associates, Inc.

BELL SELF-STORAGE
BELL & ASSOCIATES CONSTRUCTION
BRENTWOOD, TENNESSEE

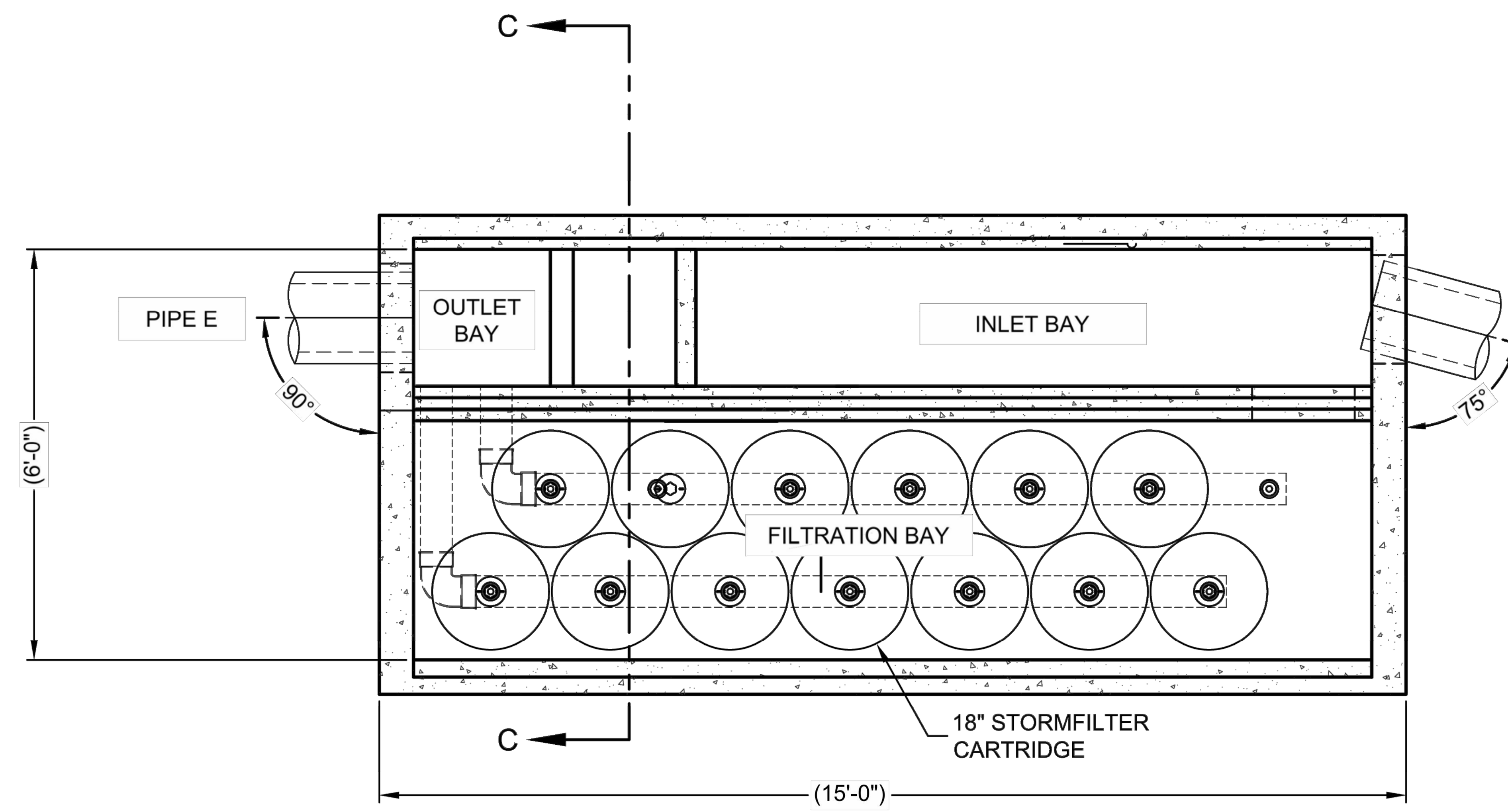
ZACHARY J. DUFOUR
REGISTERED ENGINEER
No. 112501
07/21/2020
STATE OF TENNESSEE

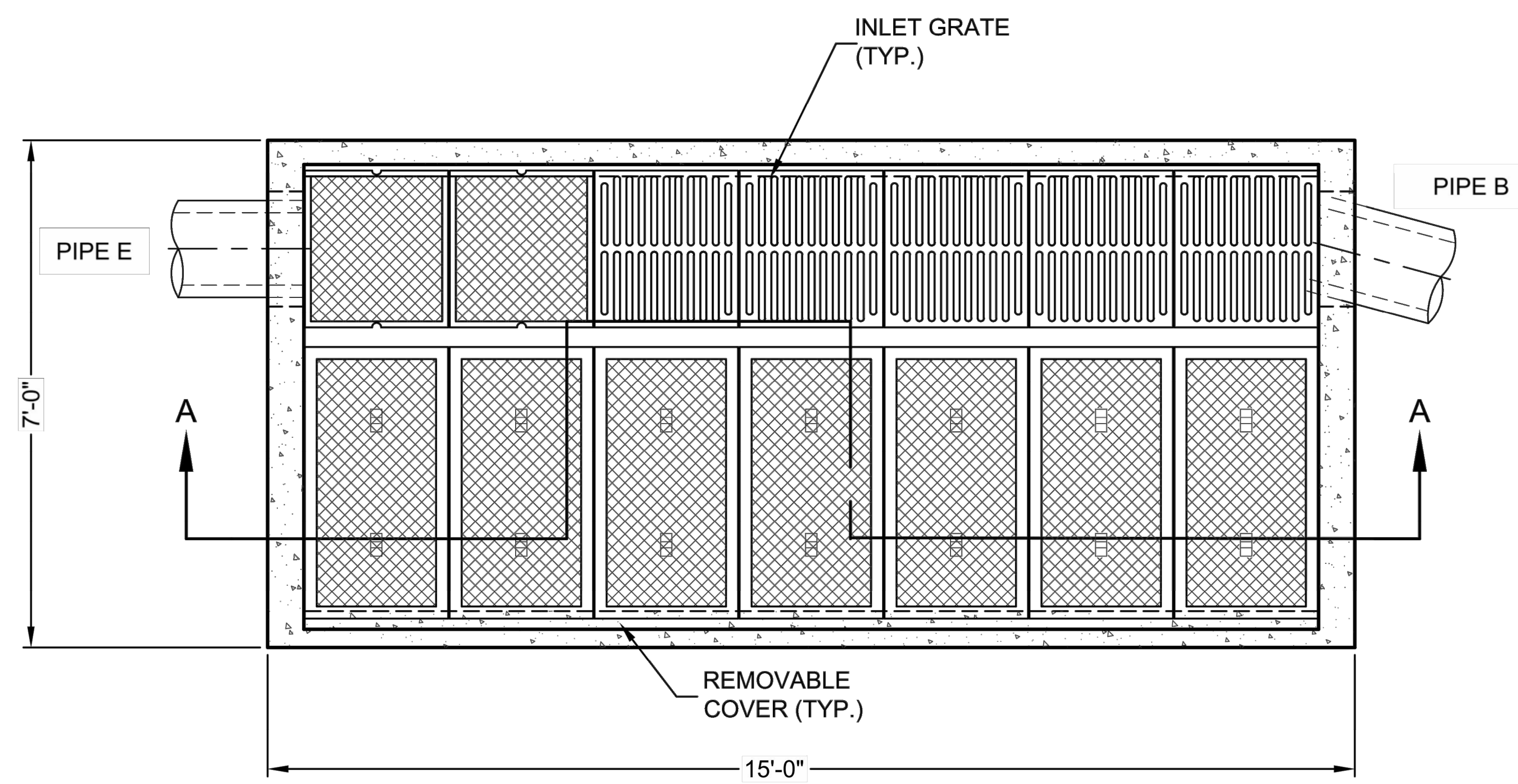
No.	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DESIGNED BY: KBB
DRAWN BY: LEB
CHECKED BY: KBB
DATE: 03/07/2018
KIMLEY-HORN PROJECT NO. 118230000

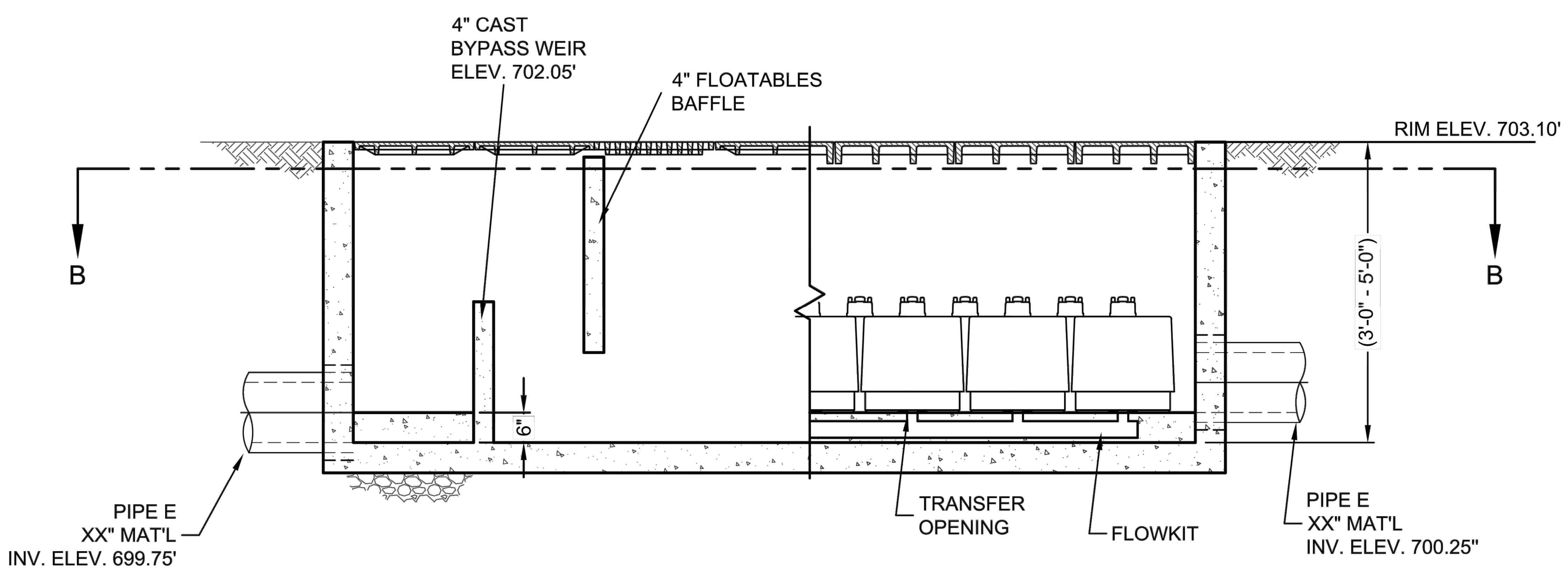
DRAINAGE MAPS

SHEET NUMBER
C4-20

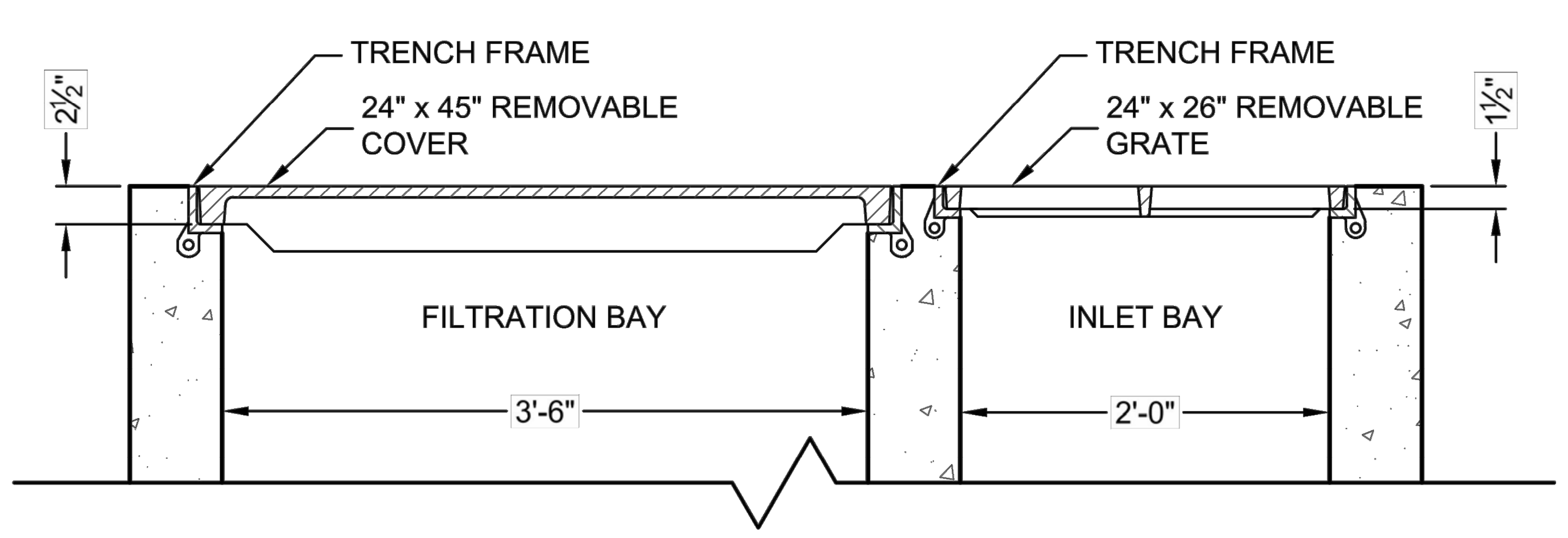




PLAN VIEW



SECTION A-A



SECTION C-C

STRUCTURE WEIGHT
APPROXIMATE HEAVIEST PICK = 38500 LBS.

CONTECH
PROPOSAL
DRAWING

MATERIALS LIST ~~PROVIDED~~ BY CONTECH

COUNT	DESCRIPTION	INSTALLED BY
13	18" CARTRIDGE, 15 GPM (BLK)	CONTECH
1	FLOW KIT	CONTECH
2	TRANSFER HOLE COVER	CONTECH
6 EA	48" x 2-1/2" x 1-5/8" TRENCH FRAME (EJIW 47300311)	CONTRACTOR
6 EA	48" x 1-1/2" x 1-1/8" TRENCH FRAME (EJIW 00695031)	CONTRACTOR
5	24" x 26" INLET GRATE (EJIW 00695841)	CONTRACTOR
2	24" x 26" REMOVABLE COVER (EJIW 00695820)	CONTRACTOR
7	24" x 45" REMOVABLE COVER (EJIW 47513031)	CONTRACTOR

SITE DESIGN DATA

WATER QUALITY FLOW RATE	0.41 CFS
PEAK FLOW RATE	TBD CFS
RETURN PERIOD OF PEAK FLOW	TBD YRS
FILTER MEDIA TYPE	PERLITE

PERFORMANCE SPECIFICATION
FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. **RADIAL MEDIA DEPTH SHALL BE 7-INCHES**. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST **37 SECONDS**.
SPECIFIC FLOW RATE SHALL BE 2 **GPM/SF (MAXIMUM)**. SPECIFIC FLOW RATE IS THE MEASURE OF THE FLOW (GPM) DIVIDED BY THE MEDIA SURFACE CONTACT AREA (SF). MEDIA VOLUMETRIC FLOW RATE SHALL BE **6 GPM/CF OF MEDIA (MAXIMUM).**

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM THAT STRUCTURE MEETS THE REQUIREMENTS OF THE PROJECT.
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
6. GRATE INLETS/COVERS SHALL BE EAST JORDAN IRON WORKS #00695840 / #00695820 / #47513031 OR APPROVED EQUALS.
7. TRENCH FRAMES SHALL BE EAST JORDAN IRON WORKS #00695031 / #47300311 OR APPROVED EQUALS.
8. HEAVIEST GRATE/COVER PICK WEIGHT IS 430 LBS.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH OUTLET PIPE INVERT WITH OUTLET BAY. FLOOR.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
F. CONTRACTOR TO REMOVE TRANSFER HOLE COVERS PRIOR TO PLACING THE SYSTEM ONLINE.

The design and information shown on this drawing is provided as a service to the project owner, engineer and contractor by Contech Engineered Solutions LLC ("Contech"). Neither this drawing, nor any part thereof, may be used, reproduced or modified in any manner without the prior written consent of Contech. Failure to comply is done at the user's own risk and Contech expressly disclaims any liability or responsibility for such use.

If discrepancies between the supplied information upon which the drawing is based and actual field conditions are encountered as site work progresses, these discrepancies must be reported to Contech immediately for re-evaluation of the design. Contech accepts no liability for designs based on missing, incomplete or inaccurate information supplied by others.

MARK	DATE	REVISION DESCRIPTION	BY

6' x 14' LINEAR GRATE
STORMFILTER - 574947-01
BELL SELF STORAGE
BRENTWOOD, TN
SITE DESIGNATION: WQU

CONTECH® ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX
The Stormwater Management StormFilter®
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,322,629; 5,524,576; 5,707,527; 5,985,157; 6,027,639; 6,649,048; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

DATE: 11/03/17	
DESIGNED: YI	DRAWN: YI
CHECKED:	APPROVED:
PROJECT NUMBER: 574947	
SHEET: 1 OF #	

Kimley»Horn
214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com
© 2018 Kimley-Horn and Associates, Inc.

BELL SELF-STORAGE
BELL & ASSOCIATES CONSTRUCTION
BRENTWOOD, TENNESSEE

ZACHARY J. DUFOUR REGISTERED ENGINEER AGRICULTURE COMMERCE No. 112501 STATE OF TENNESSEE 07/21/2020

REVISIONS		
No.	DATE	BY
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

DESIGNED BY:	KBB
DRAWN BY:	LEB
CHECKED BY:	KBB
DATE:	03/07/2018
KIMLEY-HORN PROJECT NO. 118230000	

STORMWATER DETAILS

SHEET NUMBER
C4-30

I:\MERLIN\PROJECTACTIVE\574900\574947\PRE-574947-010-SFLG0614-PRO-A.DWG 11/3/2017 4:54 PM

Drawing name: K:\NSH_LDEV\118230000 - Bell Storage\4-CADD\PlanSheets\C4-00-Grading and Drainage-118230000.dwg C4-30 STORMWATER DETAILS Jul 20, 2020 11:46am by: rachel.robinson

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

BBDB INVESTMENTS LLC
PROPERTY
TM: 011B C 9.00
DB 5922, PG 82

BUILDING

BUILDING ENCROACHMENT

EXISTING 10" CLAY SANITARY SEWER PIPE AT 0.61% UPSTREAM SSMH IS 322 LF FROM DOWNSTREAM SSMH. UPSTREAM SSMH INV: 698.90

20.0' PROPOSED PUBLIC UTILITY AND DRAINAGE EASEMENT

58 LF OF 4" PVC SANITARY SEWER @ 2.04%

CONNECT TO EXISTING SSWR PIPE
RIM: 701.60
INV IN: 697.08
INV IN: 697.08
INV OUT: 697.08

85 LF OF 4" PVC SANITARY SEWER @ 2.04%

TRACT 1
DB 5922, PG 78

± 145 LF OF 12" SDR-26 PVC PIPE

REFER TO PLUMBING PLANS FOR ADDITIONAL INFORMATION ON GROUNDWATER SUMP PUMP

± 14 LF OF 8" PVC SDR-17 PIPE

± 8 LF OF 8" SDR-26 PVC PIPE

± 131 LF OF 8" SDR-26 PVC PIPE

SSWR CLEANOUT 2
RIM: 703.12
INV: 698.26

1/2" IPF
NO ID

IE=698.50

18" RCP

SS MH
TOP=700.62
IE=696.92

18" RCP

1/2" IPF
ID:2315

SANITARY SEWER CROSSING - CLEARANCE 1.6'
STORM PIPE INVERT ELEV. AT CROSSING: 699.19
SANITARY SEWER CROWN ELEV. AT CROSSING: 697.58

1/2" IPS

ENVIROTEST SYSTEMS CORP
PROPERTY
TM: 011B C 12.00
DB 5894, PG 915

BUILDING

BBDB INVESTMENTS LLC
PROPERTY
TM: 011B C 10.00

SSWR CLEANOUT 1
RIM: 704.49
INV: 700.00

SEE PLUMBING PLANS FOR CONTINUATION OF FIRE AND DOMESTIC WATER SERVICES (FIRE AND DOMESTIC DETECTOR CHECK VALVE AND BACKFLOW PREVENTER TO BE LOCATED INSIDE THE BUILDING, SEE PLUMBING PLANS)

150 LF OF 1" PVC DOMESTIC WATER

145 LF OF 6" PVC FIRE LINE

PROPOSED PIV

WALL MOUNTED FIRE DEPT CONNECTION (REFER TO ARCHITECTURAL PLANS)

REFER TO INSET A, THIS SHEET

PROPOSED ELECTRIC SERVICE

PROPOSED PAD MOUNTED UTILITY TRANSFORMER

TBM PK NAIL
EL=713.84

UGE

PROPOSED NEW ELECTRIC POLE W/GUY

ELECTRIC POLE

1/2" IPS

24.2'

OHW

15.0' PROPOSED PUBLIC UTILITY AND DRAINAGE EASEMENT

CONTRACTOR SHALL MAINTAIN MIN. 1 FT VERT. SEPARATION FROM GAS LINE

WATERLINE AS PER MAPS

8"x6" TAPPING SLEEVE & 6" VALVE

JACK AND BORE ±35 LF OF 6" DIP, SEE DETAIL ON SHEET C6-03

WILSON PIKE CIR
R/W VARIES - PUBLIC

EXISTING 8" PVC WATER

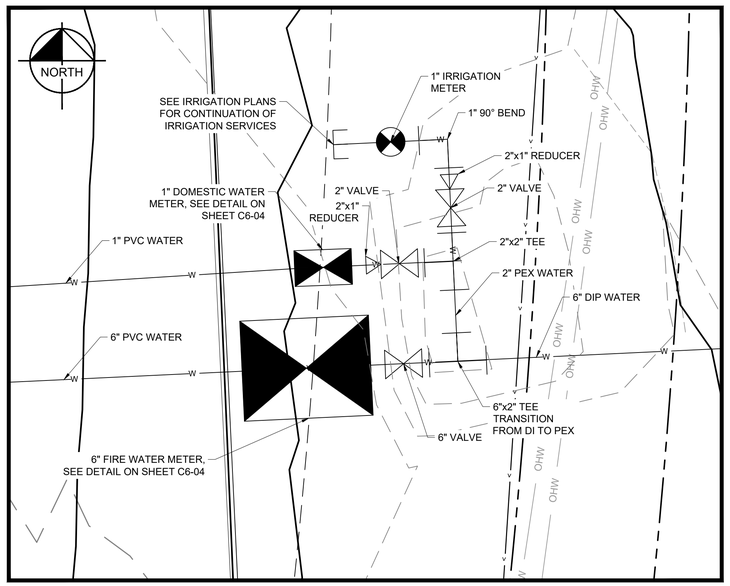
PROPOSED RIGHT-OF-WAY

EXISTING RIGHT-OF-WAY

1/2" PIPE FOUND

NORTH

GRAPHIC SCALE IN FEET
0 10 20 40



INSET A

GRAPHIC SCALE IN FEET
0 2.5 5 10

FRANCHISE UTILITY NOTES

1. TELEPHONE UTILITY CONSTRUCTION SHALL COMPLY WITH AT&T STANDARD SPECIFICATIONS.
2. OVERHEAD ELECTRICAL INSTALLATION SHALL COMPLY WITH NASHVILLE ELECTRIC SERVICE (NES) STANDARD SPECIFICATIONS.
3. NATURAL GAS CONSTRUCTION & INSTALLATION SHALL COMPLY WITH PIEDMONT NATURAL GAS STANDARD SPECIFICATIONS.

UTILITY NOTES

1. ALL WATER AND SEWER MATERIALS AND CONSTRUCTION SHALL BE IN COMPLIANCE WITH CITY OF BRENTWOOD'S STANDARD SPECIFICATIONS AND DETAILS.
2. CONTRACTOR SHALL VERIFY LOCATION OF ALL EXISTING UTILITIES AND VERIFY EXISTING ELEVATIONS COMPARED TO THOSE SHOWN ON PLAN PRIOR TO GRADING. NOTIFY ENGINEER IMMEDIATELY OF ANY DISCREPANCIES AND/OR CONFLICTS WITH EXISTING OR PROPOSED UTILITIES PRIOR TO PROCEEDING.
3. AREAS FOR CONSTRUCTION THAT REQUIRE DE-WATERING FOR EXCAVATION WILL BE DONE AT NO ADDITIONAL COST TO THE OWNER.
4. MAINTAIN MINIMUM 10 FEET HORIZONTAL SEPARATION BETWEEN WATER & SANITARY SEWER OR 18" VERTICAL SEPARATION AT CROSSING LOCATIONS.
5. REFER TO CITY OF BRENTWOOD STANDARD SPECIFICATIONS FOR PIPE BEDDING REQUIREMENTS.
6. ALL WATER VALVES TO BE LOCATED OUTSIDE OF PAVED AREAS WHERE POSSIBLE.
7. THE CONTRACTOR SHALL PROVIDE A COMPLETE SET OF AS-BUILT DRAWINGS OF WATER & SANITARY SEWER CONSTRUCTION PRIOR TO THE ACCEPTANCE OF THE PUBLIC UTILITIES.
8. CONTRACTOR RESPONSIBLE FOR DISCONNECTING EXISTING WATER SERVICE LINES AT THE PUBLIC MAIN PER CITY OF BRENTWOOD WATER SERVICES STANDARDS. PAVEMENT REPAIR SHALL BE DONE IN ACCORDANCE WITH BRENTWOOD PUBLIC WORKS STANDARD.
9. CONTRACTOR TO TAKE ALL PRECAUTIONS TO FIND AND AVOID SITE UTILITIES. ALL UTILITIES ARE NOT SHOWN ON DRAWING. VERIFY LOCATIONS AND CONSIDER SUCH WHEN ESTIMATING.
10. GENERAL CONTRACTOR RESPONSIBLE FOR INSTALLATION OF IRRIGATION SLEEVES AND SHALL COORDINATE INSTALLATION AND METER SIZE WITH IRRIGATION DESIGNER.
11. CONTRACTOR SHALL CONSTRUCT THE SEWER SYSTEM FORM THE DOWNSTREAM END TO THE UPSTREAM END.
12. ALL VALVES SHALL BE INSTALLED IN CITY OF BRENTWOOD APPROVED VALVE BOX AND COVER. COVER TO BE MARKED WITH "WATER".
13. ALL BACKFLOW PREVENTION DEVICES TO BE INSTALLED INSIDE THE BUILDING. REFER TO PLUMBING PLANS FOR ADDITIONAL INFORMATION.

CAUTION!

EXISTING OVERHEAD AND UNDERGROUND UTILITIES

Kimley»Horn
214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com
© 2018 Kimley-Horn and Associates, Inc.

BELL SELF-STORAGE
BELL & ASSOCIATES CONSTRUCTION
BRENTWOOD, TENNESSEE

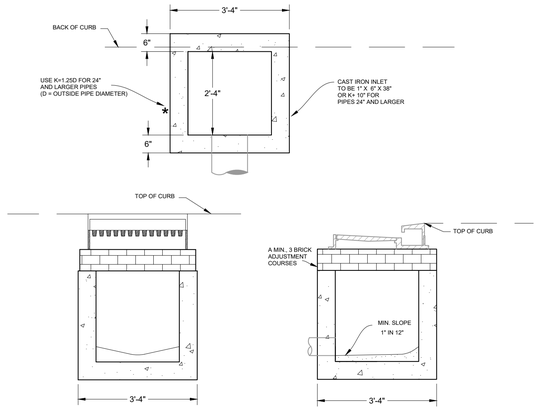
ZACHARY J. DUFOUR
REGISTERED ENGINEER
07/21/2020
COMMERCE
No. 112301
STATE OF TENNESSEE

No	REVISIONS	DATE	BY
1	ELECTRIC SERVICE REVISIONS	8/28/2018	ZJD
2	STORM NETWORK	08/07/2019	ZJD
3			
4			
5			
6			
7			
8			
9			
10			

DESIGNED BY:	KBB
DRAWN BY:	KBB
CHECKED BY:	ZJD
DATE:	03/07/2018
KIMLEY-HORN PROJECT NO.	118230000

UTILITY PLAN

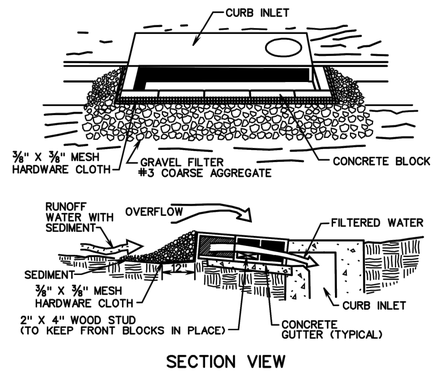
SHEET NUMBER
C5-00



NOTE: CASTING FOR STANDARD CURB AND GUTTER SHOWN (DR-129). ACCEPTABLE SUBSTITUTE WHERE USE IS DIRECTED ARE DR-130, DR-132 AND DR-133.

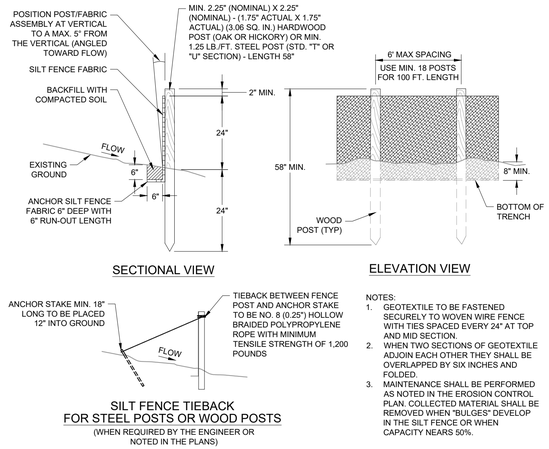
CONCRETE: 4000 PSI AT 28 DAYS MIN., REINFORCEMENT: 0.14 SQ. IN./ SQ. FT. GRADE 60 STEEL.

1 SINGLE INLET (PRECAST)
NOT TO SCALE



SECTION VIEW

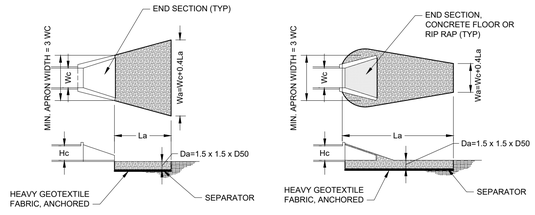
2 INLET PROTECTION
NOT TO SCALE



SILT FENCE TIEBACK
FOR STEEL POSTS OR WOOD POSTS
(WHEN REQUIRED BY THE ENGINEER OR NOTED IN THE PLANS)

NOTES:
1. GEOTEXTILE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION.
2. WHEN TWO SECTIONS OF GEOTEXTILE ADJOIN EACH OTHER THEY SHALL BE OVERLAPPED BY SIX INCHES AND FOLDED.
3. MAINTENANCE SHALL BE PERFORMED AS NOTED IN THE EROSION CONTROL PLAN. COLLECTED MATERIAL SHALL BE REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE OR WHEN CAPACITY NEARS 50%.

3 SILT FENCE
NOT TO SCALE



TAILWATER < 0.5 Hc AND ASSUMING FULL CULVERT FLOW (LOW TAILWATER CONDITIONS)

TAILWATER > 0.5 Hc AND ASSUMING FULL CULVERT FLOW (HIGH TAILWATER CONDITIONS)

H_C = HEIGHT OF CULVERT
W_C = WIDTH OF CULVERT
L_A = LENGTH OF RIP-RAP APRON
W_A = WIDTH OF RIP-RAP APRON AT END
D_{50} = MEDIAN SIZE OF RIP-RAP
D_{MAX} = MAXIMUM SIZE OF RIP-RAP = 1.5 D_{50}
D_A = DEPTH OF RIP-RAP APRON = 1.5 D_{MAX}
SEPARATOR = GEOTEXTILE UNDERLAYMENT OR GRAVEL FILTER BLANKET

4 OUTLET PROTECTION
NOT TO SCALE

LOW MAINTENANCE AREAS - SLOPES, POOR AND SHALLOW SOILS

PREFERRED RATE/MIX (LB/AC PLS)	SEEDING DATES	
	BEST	*MARGINAL*
15 BROWNTOP MILLET (NURSE CROP)	AUG. 25 - SEP. 15	SEP. 15 - OCT. 25
5 LITTLE BLUESTEM	FEB. 15 - MAY 30	MAR. 21 - MAY 30
2 SWITCH GRASS		
2 TALL DROPSEED		
5 SIDEOATS GRAMMA		
2 BLACK-EYED SUSAN		
2 PARTRIDGE PEA		
1 GREYHEADED CONEFLOWER		

LOW MAINTENANCE AREAS - SLOPES, SOILS > 6" DEEP

PREFERRED RATE/MIX (LB/AC PLS)	SEEDING DATES	
	BEST	*MARGINAL*
15 BROWNTOP MILLET (NURSE CROP)	AUG. 25 - SEP. 15	SEP. 15 - OCT. 25
5 PURPLETOP	FEB. 15 - MAY 30	MAR. 21 - APR. 15
5 LITTLE BLUESTEM		
5 VIRGINIA WILD RYE		
2 BLACK-EYED SUSAN		
2 PARTRIDGE PEA		
1 GREYHEADED CONEFLOWER		

HIGH MAINTENANCE AREAS - LAWNS, ETC.

PREFERRED RATE/MIX (LB/AC PLS)	SEEDING DATES	
	BEST	*MARGINAL*
15 BROWNTOP MILLET (NURSE CROP)	AUG. 30 - OCT. 15	FEB. 15 - APR. 15
2 PARTRIDGE PEA		
45 RED FESCUE		
45 HARD FESCUE		
25 CHEWING FESCUE		

NOTES:
1. MIXES INDICATED ABOVE ARE FOR THE REGION II PLANTING AREA (MIDDLE TENNESSEE).
2. PERMANENT STABILIZATION MEASURES SHALL BE DONE IN ACCORDANCE WITH TDEC EROSION AND SEDIMENT CONTROL HANDBOOK, FOURTH EDITION OR NEWER.
3. REFER TO LANDSCAPE PLANS FOR PERMANENT STABILIZATION PRACTICES AND AREAS TO RECEIVE SOD.

5 PERMANENT STABILIZATION
NOT TO SCALE

LATE WINTER/EARLY SPRING PLANTING

SPECIES	RATE (LB/ACRE)
RYE	120

SEEDING DATES
EAST — ABOVE 2500 FEET: FEB. 15 - MAY 15; BELOW 2500 FEET: FEB. 1- MAY 1
MIDDLE — JAN. 1 - MAY 1
WEST — DEC. 1 - APR. 15

MAINTENANCE
REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

FALL PLANTING

SPECIES	RATE (LB/ACRE)
OATS	30
WINTER WHEAT	30

SEEDING DATES
EAST — AUG. 15 - DEC. 15
MIDDLE — AUG. 15 - DEC. 30
WEST — AUG. 15 - DEC. 30

MAINTENANCE
REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE. IF NECESSARY TO EXTEND TEMPORARY COVER BEYOND JUNE 15, OVERSEED WITH 50 LB/AC CRIMSON CLOVER IN LATE FEBRUARY OR EARLY MARCH.

SUMMER PLANTING

SPECIES	RATE (LB/ACRE)
OATS	60
BROWN TOP MILLET	30

SEEDING DATES
EAST — MAY 15 - AUG. 15
MIDDLE — MAY 1 - AUG. 15
WEST — APR. 15 - AUG. 15

MAINTENANCE
REFERTILIZE IF GROWTH IS NOT FULLY ADEQUATE. RESEED, REFERTILIZE AND MULCH IMMEDIATELY FOLLOWING EROSION OR OTHER DAMAGE.

ALL SEASON NOTES

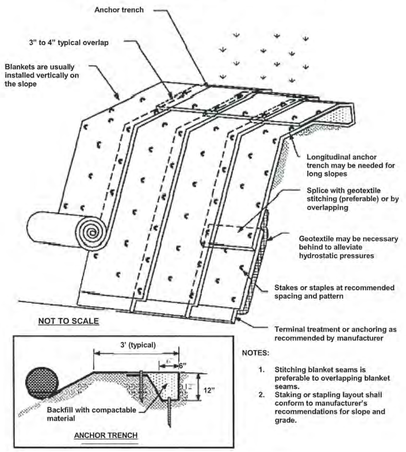
SOIL AMENDMENTS
FOLLOW RECOMMENDATIONS OF SOIL TESTS OR APPLY 2,000 LB/ACRE GROUND AGRICULTURAL LIMESTONE AND 750 LB/ACRE 10-10-10 FERTILIZER.

MULCH
APPLY 4,000 LB/ACRE STRAW. ANCHOR STRAW BY TACKING WITH ASPHALT, NETTING, OR A MULCH ANCHORING TOOL. A DISK WITH BLADES SET NEARLY STRAIGHT CAN BE USED AS A MULCH ANCHORING TOOL.

NOTES:
1. TEMPORARY STABILIZATION MEASURES SHALL BE DONE IN ACCORDANCE WITH TDEC EROSION AND SEDIMENT CONTROL HANDBOOK, FOURTH EDITION OR NEWER.

6 TEMPORARY STABILIZATION
NOT TO SCALE

Erosion Control Blanket - Slope Installation



NOTES:
1. Stitching blanket seams is preferable to overlapping blanket seams.
2. Staking or stapling layout shall conform to manufacturer's recommendations for slope and grade.

7 EROSION CONTROL MATTING
NOT TO SCALE

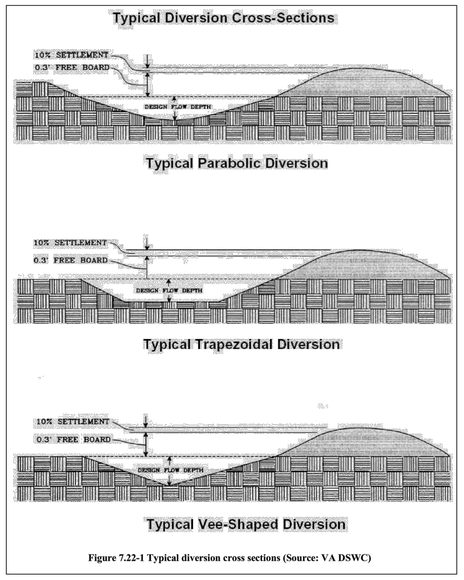
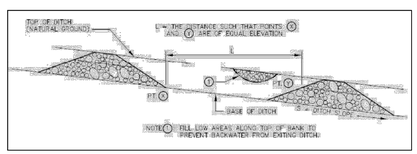
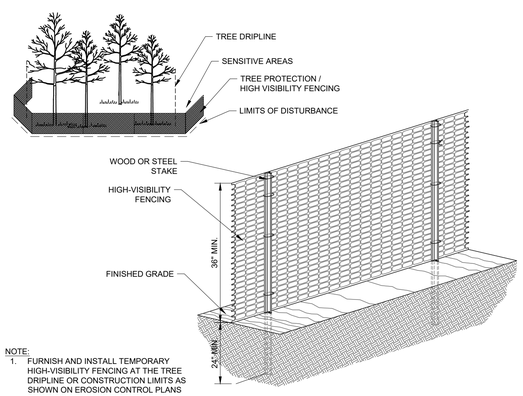


Figure 7.22-1 Typical diversion cross sections (Source: VA DSWC)

11 DIVERSION DITCH
NOT TO SCALE

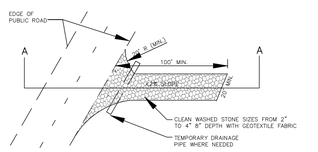


12 CHECK DAM
NOT TO SCALE

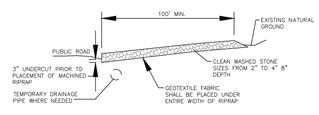


NOTE:
1. FURNISH AND INSTALL TEMPORARY HIGH-VISIBILITY FENCING AT THE TREE DRIPLINE OR CONSTRUCTION LIMITS AS SHOWN ON EROSION CONTROL PLANS PRIOR TO ANY LAND DISTURBANCE.
2. WHEN POSSIBLE PLACE FENCE 25 FEET BEYOND THE DRIP LINE.

8 TREE PROTECTION / HIGH VISIBILITY FENCE
NOT TO SCALE

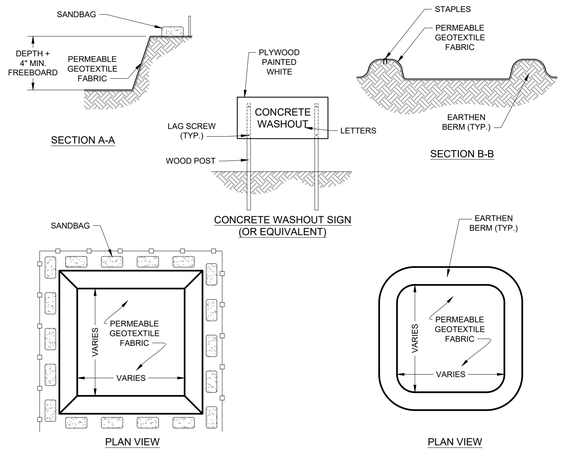


PLAN VIEW OF TEMPORARY CONSTRUCTION ROAD



SECTION A-A

9 CONSTRUCTION ENTRANCE/EXIT
NOT TO SCALE



10 CONCRETE WASHOUT AREA
NOT TO SCALE

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Kimley»Horn
214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com
© 2018 Kimley-Horn and Associates, Inc.

BELL SELF-STORAGE
BELL & ASSOCIATES CONSTRUCTION
BRENTWOOD, TENNESSEE

ZACHARY J. DUFOUR
REGISTERED ENGINEER
No. 112561
STATE OF TENNESSEE
07/21/2020

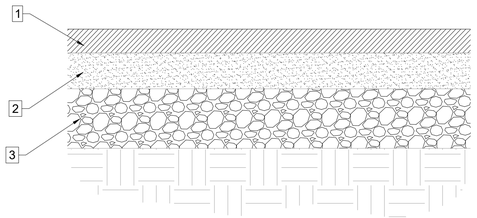
No.	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DESIGNED BY:	LEB
DRAWN BY:	LEB
CHECKED BY:	KBB
DATE:	03/07/2018
KIMLEY-HORN PROJECT NO.	118230000

DETAILS

SHEET NUMBER
C6-00

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



LIGHT DUTY PAVEMENT LEGEND

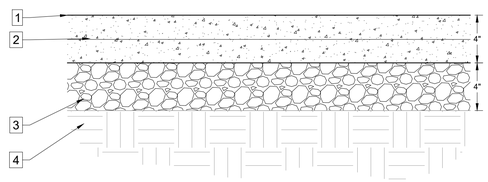
1	1-1/2" ASPHALT CONCRETE SURFACE
2	2" B-M2
3	6" STONE (TYPE A, GRADING D)

HEAVY DUTY PAVEMENT LEGEND

1	1-1/2" ASPHALT CONCRETE SURFACE
2	3" B-M2
3	8" STONE (TYPE A, GRADING D)

NOTES:
1. CONTRACTOR TO COORDINATE WITH GEOTECHNICAL ENGINEER FOR SUBGRADE REQUIREMENTS
2. PROPOSED PAVEMENT SECTIONS SHOWN HEREIN ARE PRELIMINARY. FINAL PAVEMENT DESIGN SHALL BE PROVIDED BY A LICENSED GEOTECHNICAL ENGINEER, BASED ON SITE CONDITIONS AND SOIL PROPERTIES FOUND DURING CONSTRUCTION.

1 TYPICAL ASPHALT PAVEMENT SECTION
NOT TO SCALE

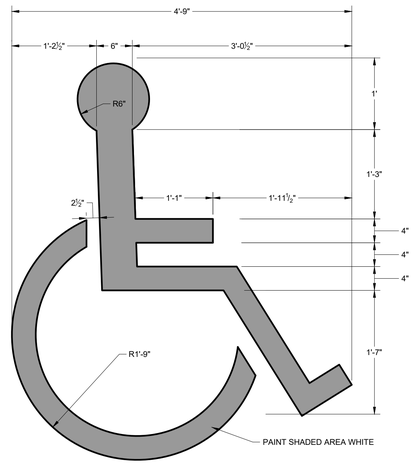


PAVEMENT LEGEND

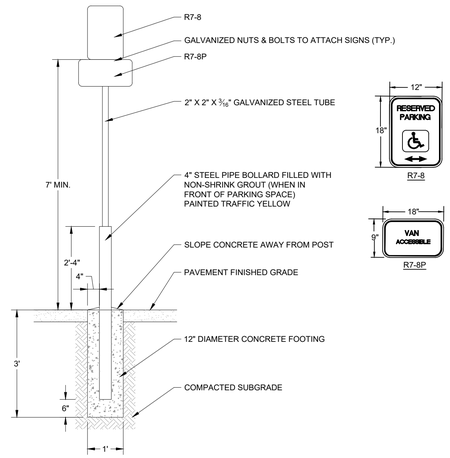
1	3,500 PSI CONCRETE WITH LIGHT BROOM FINISH
2	6 X 6, 10, 10 W.W.M., 2" BELOW CONC. SURFACE
3	COMPACTED GRAVEL BASE
4	COMPACTED SUBGRADE

NOTES:
1. FIBER MESH REINFORCING CAN BE SUBSTITUTED FOR WWM. APPLICATION RATES SHALL BE IN ACCORDANCE WITH MANUFACTURERS RECOMMENDATIONS.
2. ALL MATERIALS AND CONSTRUCTION SHALL COMPLY WITH TDOT STANDARD SPECIFICATIONS FOR ROADWAY AND BRIDGE CONSTRUCTION, LATEST EDITION.
3. BROOM FINISH SHALL BE PERPENDICULAR TO THE DIRECTION OF TRAVEL.

2 SIDEWALK CONCRETE SECTION
NOT TO SCALE



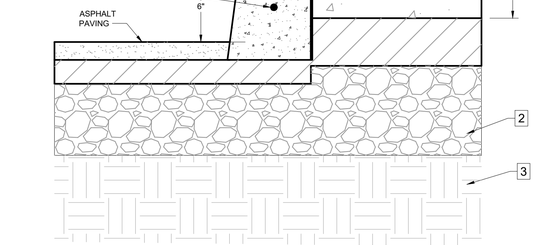
3 ADA PARKING SPACE SYMBOL
NOT TO SCALE



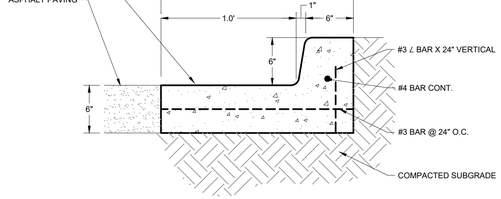
4 ADA PARKING SIGN DETAIL
NOT TO SCALE

PAVEMENT LEGEND

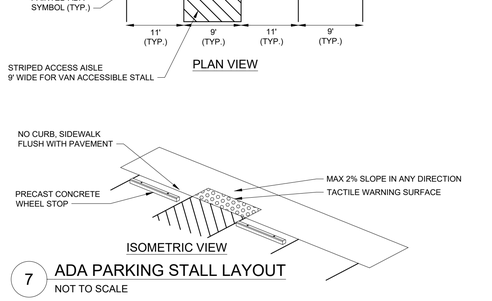
1	3,500 PSI CONCRETE WITH LIGHT BROOM FINISH
2	COMPACTED GRAVEL BASE
3	COMPACTED SUBGRADE



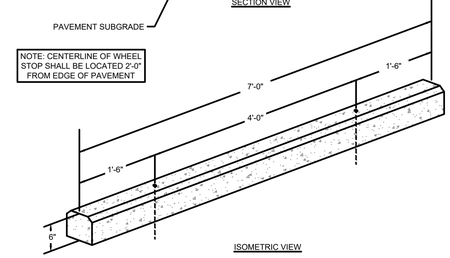
5 6" EXTRUDED CURB
NOT TO SCALE



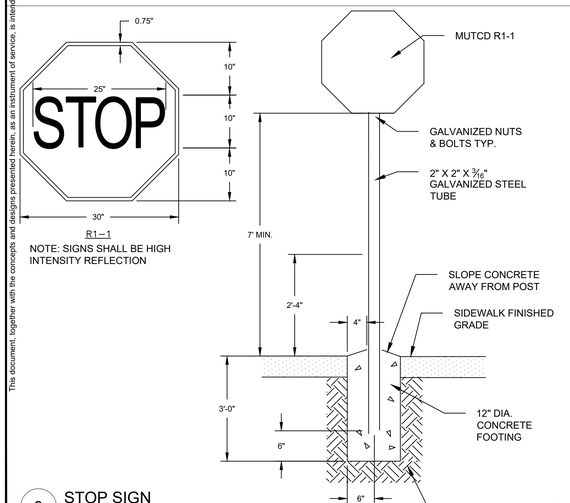
6 6" TALL 18" CURB AND GUTTER
NOT TO SCALE



7 ADA PARKING STALL LAYOUT
NOT TO SCALE

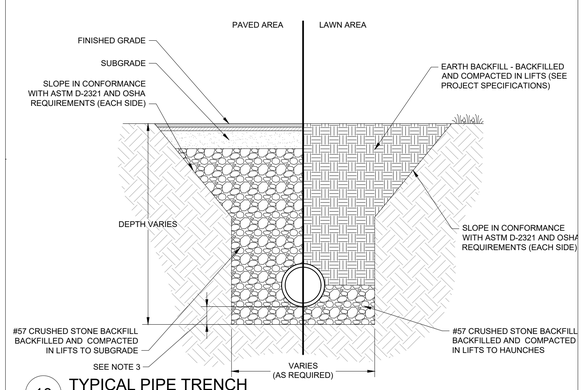


8 CONCRETE WHEEL STOP
NOT TO SCALE

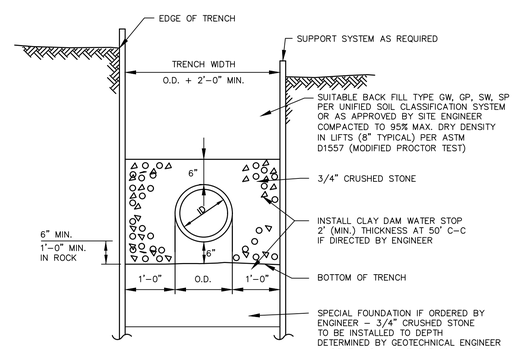


9 STOP SIGN
NOT TO SCALE

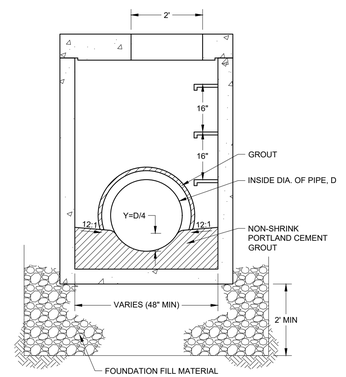
NOTES:
1. SEE LOCAL STANDARD SPECIFICATIONS FOR BACKFILL REQUIREMENTS FOR WATER, STORM, AND SANITARY SEWER. THE CONTRACTOR SHALL ADHERE TO LOCAL STANDARD SPECS WHERE MORE STRINGENT.
2. LIMIT TRENCH WIDTH TO O.D. + 16" UNLESS PERMITTED OTHERWISE BY ENGINEER.
3. PIPE BEDDING IS TO BE #57 CRUSHED STONE, OR OTHER GRANULAR MATERIAL AS APPROVED BY ENGINEER. MINIMUM DEPTH OF BEDDING MATERIAL UNDER PIPE IS TO BE ⅛ O.D. OF PIPE OR 6" WHICHEVER IS GREATER.
4. PIPE IS TO BE CONTINUOUSLY SUPPORTED ALONG LENGTH OF PIPE BARREL. BELL HOLES ARE REQUIRED SUCH THAT NO BEARING LOAD IS APPLIED TO THE BELLS.
5. BACKFILL REQUIREMENTS APPLY TO ALL TYPES OF PIPE (HDPE, PVC, CONCRETE, ETC.)



10 TYPICAL PIPE TRENCH
NOT TO SCALE



11 TYPICAL SANITARY SEWER TRENCH
NOT TO SCALE



NOTES:
1. DETAIL DRAWING REFLECTS DESIGN INTENT ONLY. ACTUAL DIMENSIONS AND CONFIGURATION OF STRUCTURE WILL BE SHOWN ON PRODUCTION SHOP DRAWING. IN ALL CASES, MANHOLE SHALL BE BUILT LARGE ENOUGH TO ACCOMMODATE INLET AND OUTLET PIPES.
2. PRECAST MANHOLE TO BE CONSTRUCTED IN ACCORDANCE WITH ASTM C478, LATEST REVISION.
3. STRUCTURE AND ACCESS TO MEET AASHTO H-20 LOAD RATING.

12 PRECAST MANHOLE
NOT TO SCALE

Kimley»Horn
214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com
© 2018 Kimley-Horn and Associates, Inc.

BELL SELF-STORAGE
BELL & ASSOCIATES CONSTRUCTION
BRENTWOOD, TENNESSEE

ZACHARY J. DUFOUR
REGISTERED ENGINEER
CUMMINGS
No. 112501
STATE OF TENNESSEE
07/21/2020

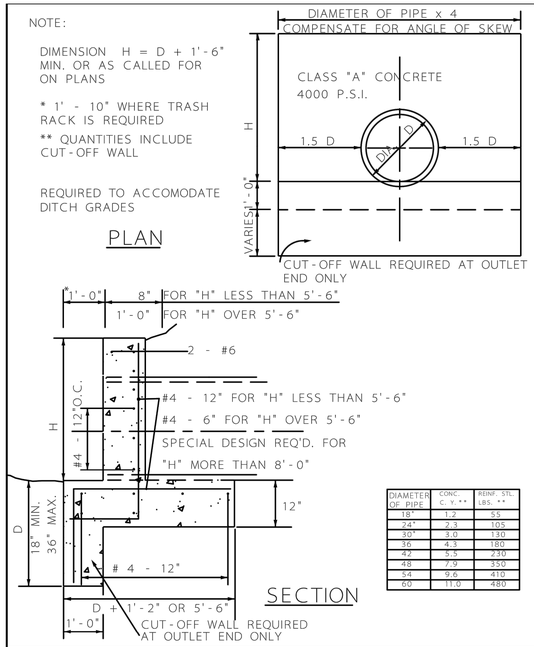
No.	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DESIGNED BY:	LEB
DRAWN BY:	LEB
CHECKED BY:	KBB
DATE:	03/07/2018

KIMLEY-HORN PROJECT NO. 118230000

DETAILS

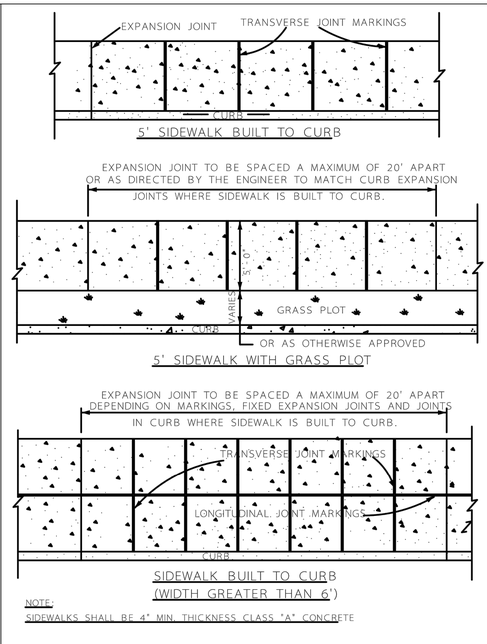
SHEET NUMBER
C6-01



DIAMETER OF PIPE	CONC. C. Y. **	REINF. STL. LBS. **
18"	1.2	55
24"	2.3	105
30"	3.0	130
36	4.3	180
42	5.5	230
48	7.9	350
54	9.6	410
60	11.0	480

REINFORCED CONCRETE HEADWALL
DRAWING NO. 1

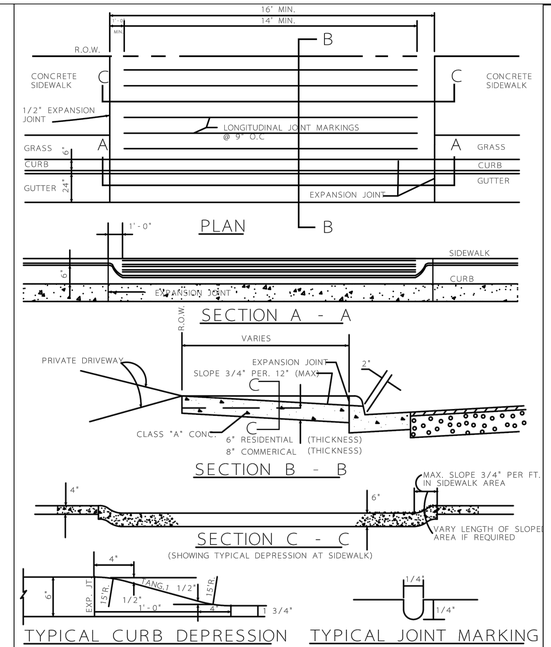
(NOT TO SCALE)



NOTE:
SIDEWALKS SHALL BE 4" MIN. THICKNESS CLASS "A" CONCRETE

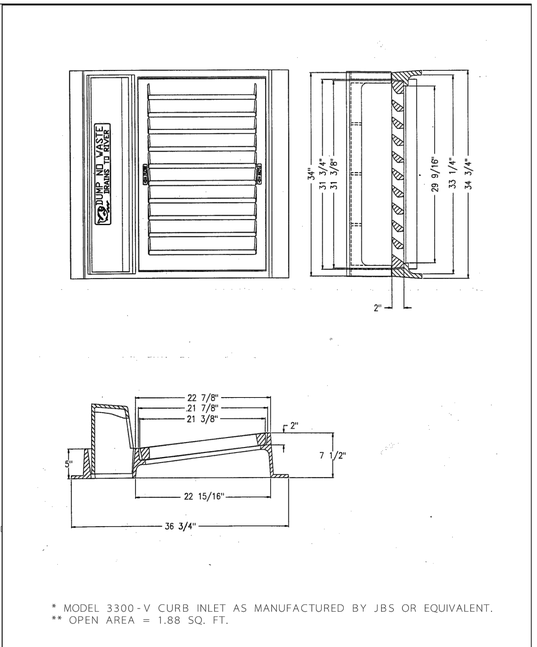
STANDARD CONCRETE SIDEWALK
DRAWING NO. 4

(NOT TO SCALE)



STANDARD DRIVEWAY RAMPS
DRAWING NO. 5

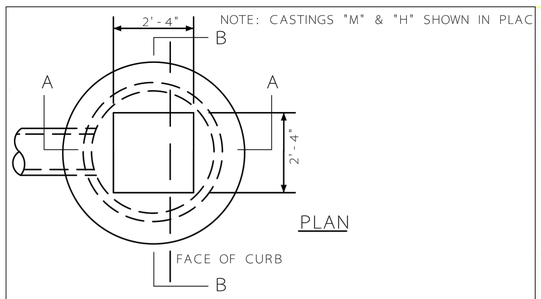
(NOT TO SCALE)



* MODEL 3300-V CURB INLET AS MANUFACTURED BY JBS OR EQUIVALENT.
** OPEN AREA = 1.88 SQ. FT.

STANDARD CATCH BASIN
DRAWING NO. 8

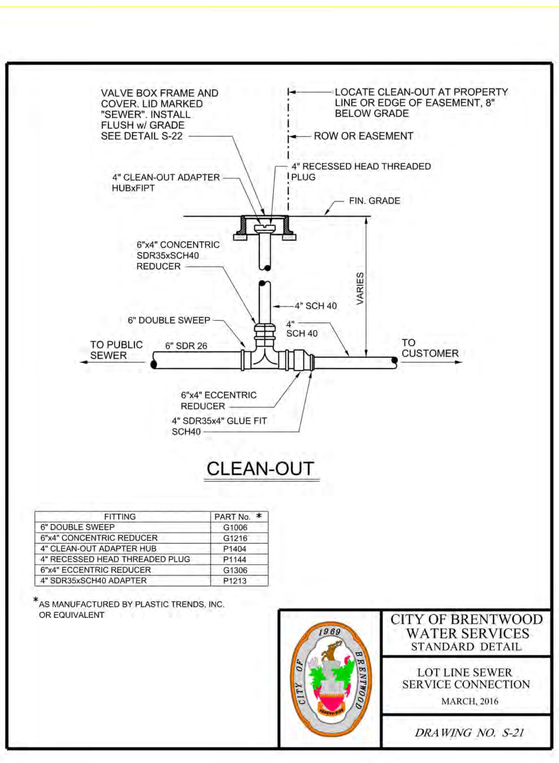
(NOT TO SCALE)



- CLASS "A" CONCRETE
- #6 WIRE AT 3" x 8" CENTERS
- MIN. SLOPE 1" = 12"

DETAILS OF SINGLE INLET
DRAWING NO. 10

(NOT TO SCALE)



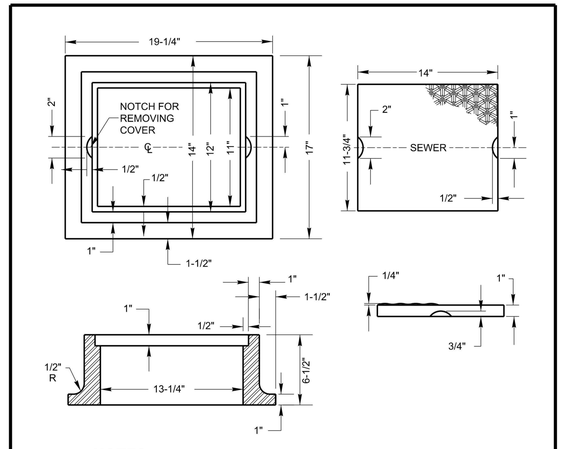
FITTING	PART No. *
6" DOUBLE SWEEP	G1006
6"x4" CONCENTRIC REDUCER	G1216
4" CLEAN-OUT ADAPTER HUB	P1404
4" RECESSED HEAD THREADED PLUG	P1144
6"x4" ECCENTRIC REDUCER	G1306
4" SDR35xSCH40 ADAPTER	P1213

*AS MANUFACTURED BY PLASTIC TRENDS, INC. OR EQUIVALENT

CITY OF BRENTWOOD WATER SERVICES
STANDARD DETAIL

LOT LINE SEWER SERVICE CONNECTION
MARCH, 2016

DRAWING NO. S-21



NOTES:

1. NO OPEN SAND CASTINGS, CASTINGS ARE TO BE MADE OF CAST IRON IN ACCORDANCE WITH CURRENT SPECIFICATIONS. COVER MUST FIT EVENLY ON RABBIT OF FRAME IN ORDER TO EQUALLY DISTRIBUTE WEIGHT OF COVER OVER FRAME MINIMUM WEIGHT OF FRAME 150 LBS. MINIMUM WEIGHT OF COVER 45 LBS.

CITY OF BRENTWOOD WATER SERVICES
STANDARD DETAIL

SANITARY SEWER CLEANOUT BOX FRAME & COVER
MARCH, 2016

DRAWING NO. S-22

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Kimley»Horn
214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com
© 2018 Kimley-Horn and Associates, Inc.

BELL SELF-STORAGE
BELL & ASSOCIATES CONSTRUCTION
BRENTWOOD, TENNESSEE

ZACHARY J. DUFOUR
REGISTERED ENGINEER
07/21/2020
COMMERCE
No. 112501
STATE OF TENNESSEE

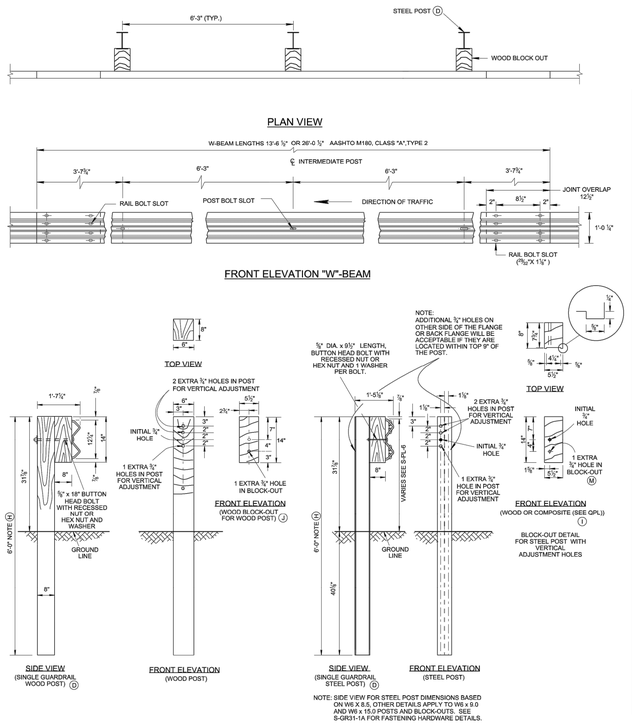
No.	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DESIGNED BY:	LEB
DRAWN BY:	LEB
CHECKED BY:	KBB
DATE:	03/07/2018

KIMLEY-HORN PROJECT NO. 118230000

DETAILS

SHEET NUMBER
C6-02



REV. 12-1-14: REVISED NOTE (U).
REV.4-4-16: REVISED NOTES.
REV. 10-20-16: ADDED NOTE TO ADDRESS ADDITIONAL HOLES.
REV. 3-28-17: REMOVED NOTE (T) CHANGED PAY ITEM NUMBER IMPROVED POST SIDE VIEWS AND FRONT ELEVATION VIEWS.

GENERAL NOTES

METAL BEAM

(A) METAL BEAMS SHALL CONFORM TO AASHTO M 180: TYPE 2, CLASS "A" UNLESS OTHERWISE NOTED ON THE PLANS.

(B) WHERE GUARDRAIL IS PLACED ON A CURVE WITH A RADIUS LESS THAN 150 FEET, THE RAIL IS TO BE SHOP-FORMED TO THE REQUIRED RADIUS.

(C) AT THE OPTION OF THE CONTRACTOR THE RAIL ELEMENTS FOR THE GUARDRAIL MAY BE FURNISHED IN EITHER 12'-6" OR 25' NOMINAL LENGTHS WITH POST BOLT SLOTS FOR CONNECTION TO POSTS.

POSTS

(D) THE CONTRACTOR MAY HAVE THE CHOICE OF EITHER HOT ROLLED OR WELDED STEEL W6 X 8.5 OR W6 X 9 OR 8" X 6" WOOD POST. EXCEPT AS NOTED:

(1) THE MIXING OF ANY POST TYPES ON A GIVEN PROJECT WILL BE AVOIDED IF AT ALL POSSIBLE.

(2) SHOULD IT BECOME NECESSARY TO MIX POST TYPES ON A GIVEN PROJECT POSTS SHALL NOT BE MIXED ON A SINGLE RUN OF GUARDRAIL EXCEPT AS NECESSARY AT END TERMINALS.

(3) W6 X 15 IS USED WITH GUARDRAIL CONNECTION TO STRUCTURES.

(E) STEEL POSTS SHALL CONFORM TO ASTM A36 AND BE GALVANIZED IN ACCORDANCE WITH ASTM A123. BOLT HOLES SHALL BE APPROXIMATELY CENTERED BETWEEN WEB AND EDGE OF FLANGE OF SPACERS AND POSTS.

(F) WOOD POSTS SHALL CONFORM WITH TDOT CONSTRUCTION STANDARD SPECIFICATIONS.

(G) WELDED STEEL POSTS SHALL CONFORM TO ASTM A769 AND BE GALVANIZED IN ACCORDANCE WITH ASTM A123, UNLESS OTHERWISE SPECIFIED ON THE PLANS.

(H) ON STEEP SLOPES, WHEN GUARDRAIL IS PLACED AT SLOPE BREAK, MINIMUM POST LENGTH SHALL BE BASED ON TABLE ON STANDARD DRAWING S-PL-6. ADDITIONAL EXPENSE TO BE INCLUDED IN THE COST OF THE RUN OF GUARDRAIL.

BLOCK OUTS

(I) BLOCK OUTS SHALL BE WOOD CONFORMING TO THE REQUIREMENTS OF TDOT CONSTRUCTION STANDARD SPECIFICATIONS OR PLASTIC GUARDRAIL BLOCK OUTS LISTED ON THE TDOT QUALIFIED PRODUCT LIST.

(J) ONLY WOODEN BLOCK OUTS MAY BE USED WITH WOODEN POSTS, PLASTIC OR WOODEN BLOCK OUTS MAY BE USED WITH STEEL POSTS.

(K) ALL BLOCK OUTS SHALL MEET MASH GUIDELINES.

(L) MIXING THE BLOCK OUT MATERIAL ON A GIVEN PROJECT SHOULD BE AVOIDED. IF MIXING OF BLOCK OUT MATERIAL IS NECESSARY, BLOCK OUTS SHALL NOT BE MIXED ON A SINGLE RUN OF GUARDRAIL.

FUTURE ADJUSTMENTS

(M) BLOCK OUTS SHALL HAVE ONE ADDITIONAL ¾" HOLE, FOUR INCHES BELOW THE INITIAL HOLE FOR FUTURE ADJUSTMENT.

(N) INITIAL INSTALLATION REQUIRES ONE BOLT CONNECTION, EACH ADJUSTMENT THEREAFTER REQUIRES TWO BOLT CONNECTIONS.

END TREATMENTS

(O) ALL RUNS OF GUARDRAIL WILL BEGIN AND END WITH AN ANCHOR SYSTEM (SEE S-GRA-SERIES).

(P) GUARDRAIL ENDS THAT ARE INSIDE THE CLEAR ZONE AND EXPOSED TO ONCOMING TRAFFIC SHALL HAVE A CRASH WORTHY END TERMINAL AS NOTED

(1) ANY ROAD WITH SUITABLE BACK SLOPES SHALL USE END TERMINALS BURIED IN BACK SLOPE (SEE S-GRT-1).

(2) ALL HIGHWAY SYSTEM ROADS WITHOUT SUITABLE BACK SLOPES SHALL USE TANGENTIAL END TERMINALS (SEE S-GRT-2).

(3) ALL OTHER ROADS WITH POSTED SPEED < 45 MPH SHALL USE MASH TL-2 END TERMINALS UNLESS OTHERWISE NOTED (SEE S-GRT-3).

DESIGN

(Q) 4 FEET BEHIND GUARDRAIL SHALL BE CLEAR OF OBSTRUCTIONS FOR DEFLECTION.

(R) REFER TO SAFETY PLAN STANDARDS FOR HOW TO DETERMINE THE BEGINNING AND END.

PAYMENT

(S) PAYMENT FOR GUARDRAIL WILL BE UNDER ITEM:

705-06.01 W BEAM GUARDRAIL (TYPE 2) (MASH TL-3) PER LF

(T) PAYMENT FOR SPECIAL CONNECTIONS AND GUARDRAIL SECTIONS REQUIRED FOR END TREATMENTS WILL BE AS NOTED ON THOSE DRAWINGS.

(U) FOR W-GR BEAM INSTALLATION, LOCATION, AND DEFLECTION NOTES SEE S-PL-6.

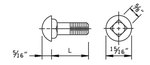
SHEET NOT TO SCALE

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE DEPARTMENT OF TRANSPORTATION

W-BEAM GUARDRAIL

7-11-13 | S-GR31-1



⅝" DIAMETER CARRIAGE BOLT

CARRIAGE BOLTS		
L	THREAD LENGTH	INTENDED USE
1½"	FULL LENGTH THREAD	THIS BOLT IS A SPLICE BOLT FOR THE CHANNEL RUB RAIL ELEMENTS.
3"	1½" MINIMUM THREAD LENGTH	THIS BOLT IS FOR FASTENING CHANNEL RUB RAIL ELEMENTS TO STEEL POST.
11"	1¾" MINIMUM THREAD LENGTH	THIS BOLT IS FOR FASTENING CHANNEL RUB RAIL ELEMENTS TO WOOD POST.
14"	1¾" MINIMUM THREAD LENGTH	THIS BOLT IS FOR FASTENING RUB RAIL ELEMENTS TO WOOD POST WHEN USED FOR MEDIAN DIVIDERS.

SPECIFICATIONS

(S1) BOLTS SHALL CONFORM TO THE REQUIREMENTS OF ASTM A307 AND NUTS TO THE REQUIREMENTS OF ASTM A563M, GRADE "A" OR BETTER, AND BE GALVANIZED IN ACCORDANCE WITH ASTM A153.

(S2) DIMENSIONAL TOLERANCES NOT SHOWN OR IMPLIED ARE INTENDED TO BE THOSE CONSISTENT WITH THE PROPER FUNCTIONING OF THE PART, INCLUDING ITS APPEARANCE, AND ACCEPTED MANUFACTURING PRACTICES.

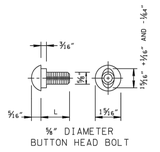
GENERAL NOTES

(A) BOLTS FOR CONNECTING RAIL TO POST THROUGH BLOCKOUT SHALL BE ⅝" DIAMETER X 10" (STEEL POST) OR ⅝" DIAMETER BY 18" (WOOD POST) BUTTON HEAD WITH ROUND STEEL WASHER. A ⅝" DIAMETER RECESSED BOLT (WITHOUT WASHER) MAY BE SUBSTITUTED FOR THE ⅝" DIAMETER BOLT (FOR BOTH WOOD AND STEEL POSTS) PER AASHTO SPECIFICATION M-180.

(B) BOLTS SHALL BE OF SUFFICIENT LENGTH TO EXTEND THROUGH THE FULL THICKNESS OF THE NUT AND NO MORE THAN ¾" BEYOND IT.

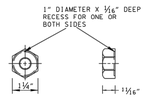


GR W-BEAM SPLICE (CROSS-SECTION)

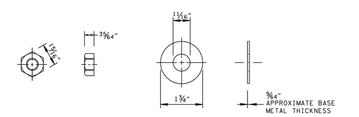


⅝" DIAMETER BUTTON HEAD BOLT

BUTTON HEAD BOLTS		
L	THREAD LENGTH	INTENDED USE
1¼"	FULL LENGTH THREAD	THIS BOLT IS FOR FASTENING "M" BEAM RAIL ELEMENTS AT JOINTS.
10"	1¾" MINIMUM THREAD LENGTH	THIS BOLT IS FOR FASTENING "M" BEAM RAIL ELEMENTS TO METAL POST WITH WOOD BLOCK-OUTS.
18"	2½" MINIMUM THREAD LENGTH	THIS BOLT IS FOR FASTENING "M" BEAM RAIL ELEMENTS TO WOOD POST WITH WOOD BLOCK-OUTS.
25"	2" MINIMUM THREAD LENGTH	THIS BOLT IS FOR FASTENING "M" BEAM RAIL ELEMENTS TO WOOD POST WITH WOOD BLOCK-OUTS WHEN USED FOR MEDIAN DIVIDERS.



⅝" DIAMETER RECESS NUT



⅝" DIAMETER HEX NUT AND STEEL WASHER
(ALTERNATE TO RECESS NUT)

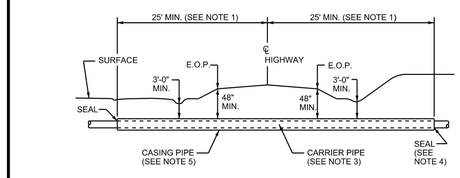
THIS WASHER IS TO BE USED UNDER ALL BOLT HEADS AND NUTS SUBJECT TO TURNING WHEN TORQUED. ROUND WASHERS SHALL BE STEEL, GALVANIZED IN ACCORDANCE WITH AASHTO M232 SPECIFICATION.

☐ MINOR REVISION -- FHWA APPROVAL NOT REQUIRED.

STATE OF TENNESSEE DEPARTMENT OF TRANSPORTATION

W-BEAM BARRIER FASTENING HARDWARE

5-12-16 | S-GR31-1A



NOTES:

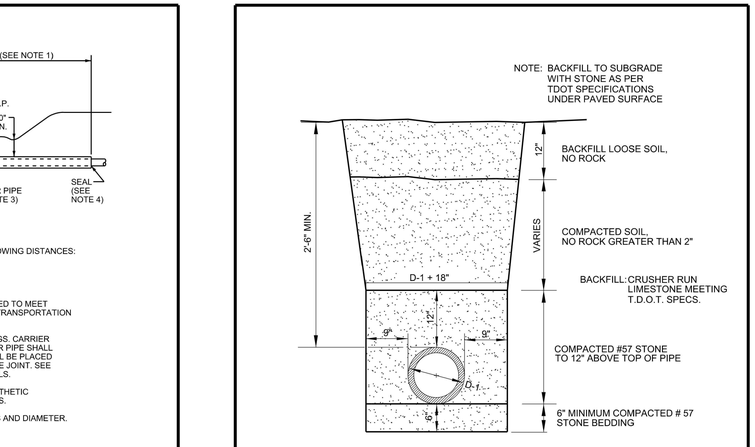
1. CASING SHALL EXTEND TO THE GREATER OF THE FOLLOWING DISTANCES:
   A. 2' BEYOND TOE OF SLOPE
   B. 5' BEYOND CENTERLINE OF DITCH
   C. MIN. OF 25' WHEN CASING IS SEALED AT BOTH ENDS
2. BORED CROSSINGS SHALL BE PERMITTED AND INSTALLED TO MEET THE REQUIREMENTS OF TENNESSEE DEPARTMENT OF TRANSPORTATION AND/OR LOCAL AUTHORITY.
3. CARRIER PIPE SHALL BE AS REQUIRED BY THE DRAWINGS. CARRIER PIPE SHALL BE CENTERED IN THE CASING PIPE. CARRIER PIPE SHALL BE INSTALLED USING CASING SPACERS. SPACERS SHALL BE PLACED AT PIPE JOINT MIDPOINT AND 1' FROM EACH END OF PIPE JOINT. SEE DETAIL M-02 FOR CASING SPACER AND END SEAL DETAILS.
4. ENDS OF CASING PIPE SHALL BE SEALED UTILIZING SYNTHETIC RUBBER SEALS WITH STAINLESS STEEL BINDING STRAPS.
5. REFER TO SPECIFICATION FOR CASING PIPE THICKNESS AND DIAMETER.

1969 CITY OF BRENTWOOD

CITY OF BRENTWOOD WATER SERVICES
STANDARD DETAIL

TYPICAL BORE AND JACK FOR HIGHWAYS
MARCH, 2016

DRAWING NO. M-01



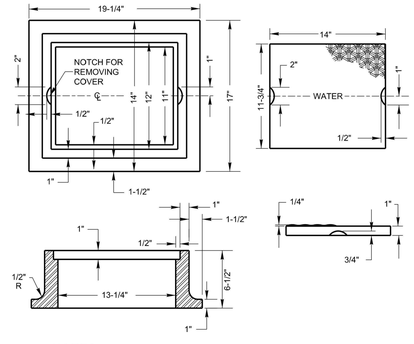
D-1 = OUTSIDE DIAMETER OF BELL

1969 CITY OF BRENTWOOD

CITY OF BRENTWOOD WATER SERVICES
STANDARD DETAIL

TYPICAL TRENCH SECTION - ALL PIPE
MARCH, 2016

DRAWING NO. W-01



NOTES:

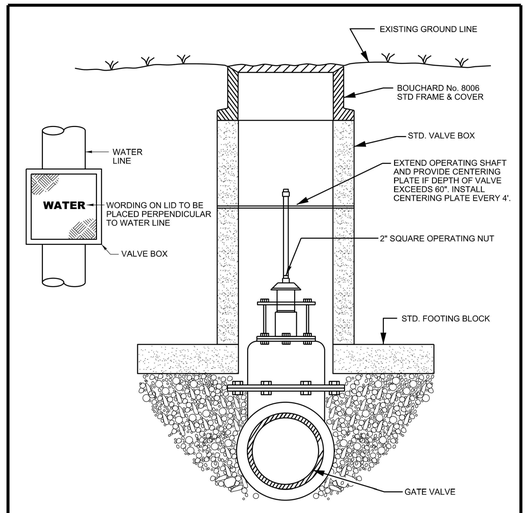
1. NO OPEN SAND CASTINGS, CASTINGS ARE TO BE MADE OF CAST IRON IN ACCORDANCE WITH CURRENT SPECIFICATIONS. COVER MUST FIT EVENLY ON RABBIT OF FRAME IN ORDER TO EQUALLY DISTRIBUTE WEIGHT OF COVER OVER FRAME MINIMUM WEIGHT OF FRAME 150 LBS. MINIMUM WEIGHT OF COVER 45 LBS.

1969 CITY OF BRENTWOOD

CITY OF BRENTWOOD WATER SERVICES
STANDARD DETAIL

VALVE BOX FRAME AND COVER
2" VALVE & LARGER
MARCH, 2016

DRAWING NO. W-02



1969 CITY OF BRENTWOOD

CITY OF BRENTWOOD WATER SERVICES
STANDARD DETAIL

TYPICAL VALVE BOX SETTING
2" VALVE & LARGER
MARCH, 2016

DRAWING NO. W-04

Kimley»Horn
214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com

© 2018 Kimley-Horn and Associates, Inc.

BELL SELF-STORAGE
BELL & ASSOCIATES CONSTRUCTION
BRENTWOOD, TENNESSEE

ZACHARY J. DUFOUR
REGISTERED ENGINEER
No. 112501
07/21/2020
STATE OF TENNESSEE

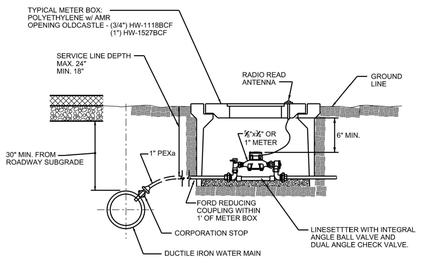
No.	DATE	BY	REVISIONS
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DESIGNED BY: LEB
DRAWN BY: LEB
CHECKED BY: KBB
DATE: 03/07/2018
KIMLEY-HORN PROJECT NO. 118230000

DETAILS

SHEET NUMBER
C6-03

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



NOTES:

1. FOR TAPS IN PVC PIPE USE TAPPING SADDLE.
   NO SADDLE REQUIRED FOR DUCTILE IRON PIPE.
2. PLACE 3" DEEP OF CLEAN ½" TO ⅜"
   CRUSHED STONE IN BOTTOM OF METER BOX.
3. PEXa SERVICE TUBING SHALL BE INSTALLED WITH 14 GA.
   SOLID STRAND COPPER WIRE. TRACER WIRE SHALL BE
   CONNECTED TO THE CORP STOP AND TERMINATED IN
   THE METER BOX TO ALLOW FOR CONNECTION TO
   DETECTION EQUIPMENT.

CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

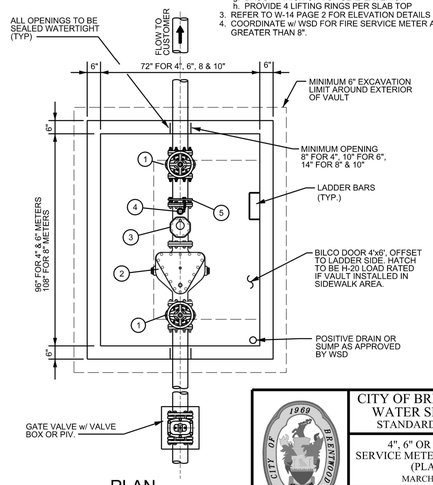
¾" OR 1"
SERVICE ASSEMBLY
MARCH, 2016

DRAWING NO. W-09

1. O.S. & Y GATE VALVE, FL.
2. STRAINER
3. SENSUS OMNI F' FIRE SERVICE TURBINE METER, UL / FM RATING
4. 2" TEST VALVE
5. FLANGE COUPLING ADAPTOR

NOTES:

1. ALL FIRE METERS TO BE IMMEDIATELY FOLLOWED BY A DOUBLE CHECK VALVE ASSEMBLY.
2. PRECAST CONCRETE VAULT DESIGN REQUIREMENTS
   a. MEET ACI 318-11.
   b. MEET ASTM C857 & AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES.
   c. PRECAST RATED FOR 300 PSF.
   d. CONCRETE COMPRESSIVE STRENGTH @ 28 DAYS = 5000 PSI.
   e. REINFORCEMENT: ASTM A615,GRADE 60
   f. JOINT SEALANT: BUTYL RUBBER, CONSEAL CS-102 (CONTINUOUS @ EACH JOINT).
   g. BROOM FINISH ON TOP SLAB EXTERIOR
   h. PROVIDE 4 LIFTING PER SLAB TOP
3. REFER TO W-14 PAGE 2 FOR ELEVATION DETAILS OF METER.
4. COORDINATE w/ WSD FOR FIRE SERVICE METER ASSEMBLIES GREATER THAN 8".

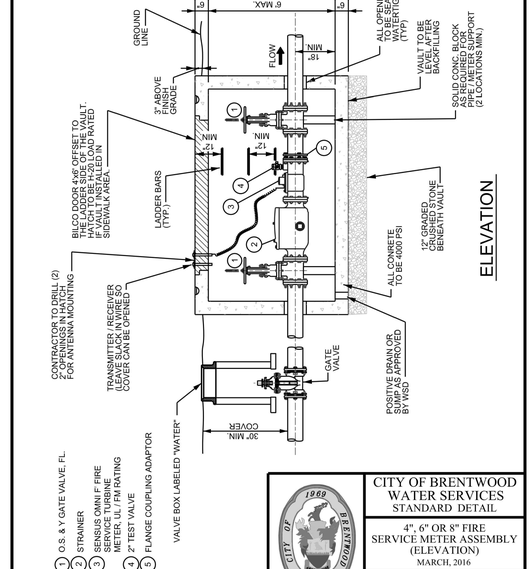


PLAN

CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

4", 6" OR 8" FIRE
SERVICE METER ASSEMBLY
(PLAN)
MARCH, 2016

DRAWING NO. W-14
PAGE 1 OF 2



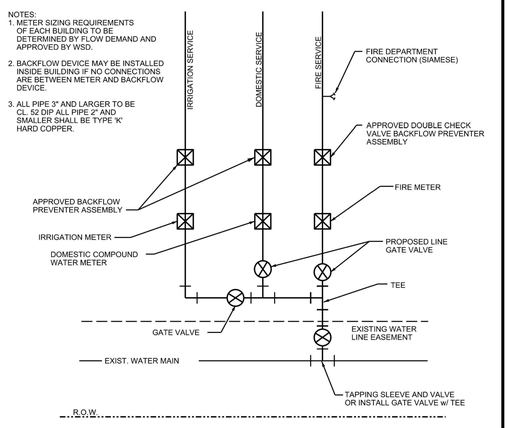
ELEVATION

CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

4", 6" OR 8" FIRE
SERVICE METER ASSEMBLY
(ELEVATION)
MARCH, 2016

DRAWING NO. W-14
PAGE 2 OF 2

NOTES:
1. METER SIZING REQUIREMENTS OF EACH BUILDING TO BE DETERMINED BY FLOW DEMAND AND APPROVED BY WSD.
2. BACKFLOW DEVICE MAY BE INSTALLED INSIDE BUILDING IF NO CONNECTIONS ARE BETWEEN METER AND BACKFLOW DEVICE.
3. ALL PIPE 3" AND LARGER TO BE CL. 52 DIP ALL PIPE 2" AND SMALLER SHALL BE TYPE 'K' HARD COPPER.



CITY OF BRENTWOOD
WATER SERVICES
STANDARD DETAIL

TYPICAL METERING SCHEMATIC
FOR COMBINED COMMERCIAL,
DOMESTIC, FIRE SERVICE,
AND IRRIGATION SERVICE
MARCH, 2016

DRAWING NO. W-17

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

Kimley»Horn
214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com
© 2018 Kimley-Horn and Associates, Inc.

BELL SELF-STORAGE
BELL & ASSOCIATES CONSTRUCTION
BRENTWOOD, TENNESSEE

ZACHARY J. DUFOUR
REGISTERED ENGINEER
07/21/2020
No. 112501
STATE OF TENNESSEE

No.	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DESIGNED BY:	LEB
DRAWN BY:	LEB
CHECKED BY:	KBB
DATE:	03/07/2018

KIMLEY-HORN PROJECT NO.
118230000

DETAILS

SHEET NUMBER
C6-04

BELL SELF-STORAGE OVERALL LANDSCAPE SCHEDULE (L4.0 AND L4.1)

ABBR.	QTY	BOTANICAL NAME	COMMON NAME	CAL/HT/SPR/CONT	NOTES
TREES					
ARB	6	*Acer rubrum `Bowhall Red`*	Brownhall Red Maple	3" Cal., 16' Ht. Min x 8' Spr.	SPECIMEN
LAN	4	*Lagerstroemia x `Natchez`*	Natchez Crape Myrtle	3" Cal., 12' Ht. Min x 6' Spr.	SPECIMEN
TDS	4	*Taxodium distichum `Shawnee Brave`*	Bald Cypress	3" Cal., 16' Ht. Min x 8' Spr.	SPECIMEN
TOD	14	*Thuja occidentalis `Degroot's Spire`*	Degroot's Spire Arborvitae	6' Ht. Min	SPECIMEN
UAL	3	*Ulmus parvifolia `Allee`*	Allee Lacebark Elm	3" Cal., 16' Ht. Min x 8' Spr.	SPECIMEN
SHRUBS					
ICB	8	*Ilex cornuta `Dwarf Burford`*	Dwarf Burford Holly	30" Ht.x 30" Spr.	4' O.C.
IGD	39	*Ilex glabra `Densa`*	Dense Inkberry	24" Ht.x 24" Spr.	FULL
IVH	22	*Itea virginica `Little Henry`*	Virginia Sweetspire	24" Ht.x 24" Spr.	4' O.C.
TMD	24	*Taxus x media `Densiformis`*	Dense Yew	30" Ht x 24" Spr.	FULL
GRASSES					
MUC	43	*Muhlenbergia capillaris*	Pink Muhly	3 Gal.	
PVN	30	*Panicum virgatum `North Wind`*	Northwind Switch Grass	3 Gal.	
PAM	32	*Pennisetum alopecuroides `Moudry`*	Oriental Fountain Grass	3 Gal.	
TURF SEED: +/-16900 SQ FT					
TURF SOD: +/-15200 SQ FT					

Key Legend:
Cal/Ht/Spr/Cont: This column provides suggested plant size when installing; Cal=Caliper (diameter of the tree trunk); Ht= Height of foliage; Spr= Spread (diameter of plant foliage; Cont= Container in Gallon size
Full: Plants shall have dense growth in height and width; ST: Single Trunk; MT: Multi-Trunk (3 Stems)
2nd Yr. Growth: A plant that has been growing for 2 years before install
FTG (Full to Ground): Plant has foilage from top to bottom
Specimen: Refers to Tree/Shrubs that shall be top grade for each species and type. Plants shall exhibit exceptionally heavy, symmertrical, apperance as be be unquestionably and outstandingly superior in form, compactness and shape
Spacing: Refers to how far apart to plant plantings (from center to center of plants) when in massings. Otherwise, if plant stands alone, use scale on drawing to measure how far away to plant in relation to other plants

BELL SELF-STORAGE SITE LANDSCAPE SCHEDULE (L4.0 ONLY)

ABBR.	QTY	BOTANICAL NAME	COMMON NAME	CAL/HT/SPR/CONT	NOTES
TREES					
ARB	6	*Acer rubrum `Bowhall Red`*	Brownhall Red Maple	3" Cal., 16' Ht. Min x 8' Spr.	SPECIMEN
LAN	4	*Lagerstroemia x `Natchez`*	Natchez Crape Myrtle	3" Cal., 12' Ht. Min x 6' Spr.	SPECIMEN
TDS	4	*Taxodium distichum `Shawnee Brave`*	Bald Cypress	3" Cal., 16' Ht. Min x 8' Spr.	SPECIMEN
TOD	14	*Thuja occidentalis `Degroot's Spire`*	Degroot's Spire Arborvitae	6' Ht. Min	SPECIMEN
UAL	3	*Ulmus parvifolia `Allee`*	Allee Lacebark Elm	3" Cal., 16' Ht. Min x 8' Spr.	SPECIMEN
SHRUBS					
ICB	11	*Ilex cornuta `Dwarf Burford`*	Dwarf Burford Holly	30" Ht.x 30" Spr.	4' O.C.
TMD	29	*Taxus x media `Densiformis`*	Dense Yew	30" Ht x 24" Spr.	FULL

BELL AND ASSOCIATES SELF-STORAGE FACILITY SITE DATA

BBDB INVESTMENTS LLC
PO BOX 363
BRENTWOOD, TN 37024

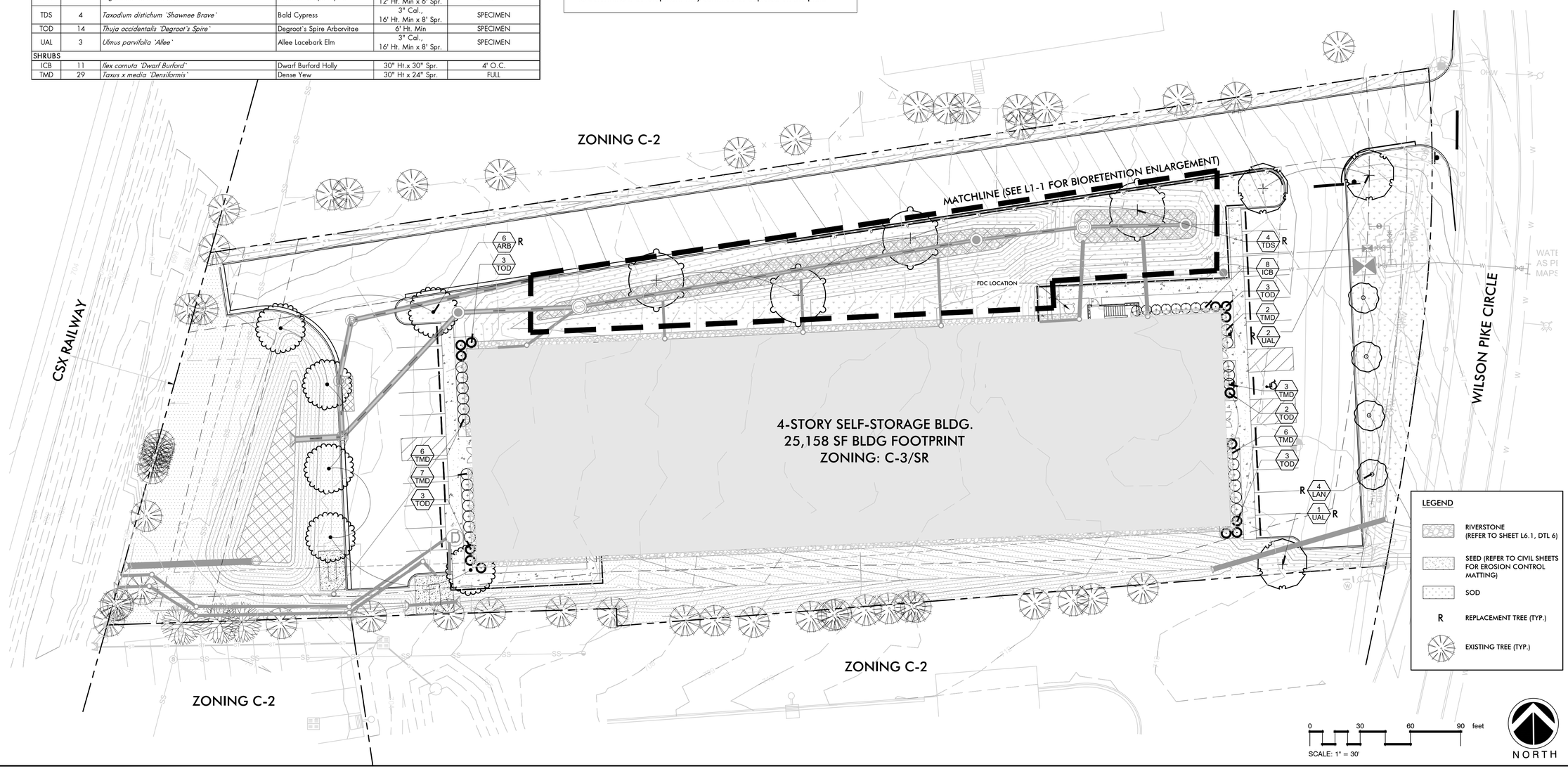
PROJECT ADDRESS:	263 WILSON PIKE CIRCLE BRENTWOOD, TN
TAX MAP AND PARCEL:	MAP #011B PARCEL 01000
ZONING:	C-3/SR (COMMERCIAL SERVICE/WAREHOUSE WITH SPECIAL RESTRICTIONS)
EXISTING LAND USE:	RETAIL
EXISTING PARCEL AREA:	2.00 ACRES
PROPOSED PARCEL AREA:	1.95 ACRES
SITE GREEN SPACE/ LANDSCAPING AREA:	REQUIRED: 20% (17,423 SQ. FT.) PROPOSED: 40% (34,568 SQ. FT.)
PARKING REQUIRED:	22 SPACES TOTAL
PARKING PROVIDED:	20 STANDARD SPACES (9' X 18') 2 LOADING SPACES (IN ADDITION TO STANDARD) 2 ADA SPACES (11' WIDE W/ 5' AISLE) 22 SPACES TOTAL

Replacement Trees	
Caliper Inches of Required Trees	97.5
	50%
Maximum Cal. Inches to Replace	48.75
Caliper Inches Removed	170
Replacement Caliper Inches Provided	51

Tree Requirements	
Tree Requirements	
ACI Requirement	50" Cal. Per Acre
Net Acreage	1.95
Required Ajusted Cal. Inches (ACI)	97.5
Existing Number of Trees on Site	33
Existing Cal. Inches	406
Removed Number of Trees	16
Removed Cal. Inches	170
Remaining Number of Trees	17
Remaining Cal. Inches	236
Proposed Number of Trees (@3" Cal.	17
Proposed Cal. Inches	51
Total Number of Trees Provided	34
Caliper Inches Provided	287

ALL DISTURBED AREAS MUST BE SODDED OR SEEDED.

This site plan is subject to a three year vesting period, during which the development standards in effect on the date of approval will remain the standards applicable to this plan. If construction is not completed during the first three years, the original site plan is considered a preliminary site plan and the applicant must obtain approval of a final site plan. Development of the property shown on this plan may be subject to standards other than those that were applicable during the vesting period. The Initial vesting period for this plan expires on January 2, 2021 unless extended by the City of Brentwood. Persons relying on this plan after said date should contact the City of Brentwood to determine if development may continue as depicted on the plan.



KVD KISER VOGRIN DESIGN
5005 Meridian Blvd., Ste 100 Franklin, TN 37067
615.813.0860

Kimley»Horn
214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com

© 2017 Kimley-Horn and Associates, Inc.

BELL-SELF STORAGE
BELL & ASSOCIATES CONSTRUCTION
BRENTWOOD, TENNESSEE

CHRISTOPHER BRANDON WOOD REGISTERED AGRICULTURE LANDSCAPE ARCHITECT
07-21-2020

No.	REVISIONS	DATE	BY
9	RFI 100 / MINOR SITE PLAN ALTERATION	07-21-2020	KMR

DESIGNED BY:	CDG
DRAWN BY:	CDG
CHECKED BY:	CBW
DATE:	11/6/2017
KVD PROJECT NO.	17089

OVERALL MINIMUM LANDSCAPE PLAN

SHEET NUMBER
L1-0

This document, together with the concepts and designs presented herein, as an instrument of service, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.

SITE NOTES

1. THE ARCHITECTURAL REFERENCE SITE PLAN GRAPHICALLY INDICATES THE APPROXIMATE LOCATIONS OF THE IMPROVEMENTS. REFER TO CIVIL ENGINEER'S PLANS FOR ALL HORIZONTAL DIMENSIONAL CONTROL.

2. THE GENERAL CONTRACTOR SHALL VERIFY ALL SITE DIMENSIONS, EXISTING GRADES AND UTILITIES, TREE LOCATIONS, AND PROPOSED BUILDING LOCATIONS AT THE PROJECT SITE AND SHALL ADVISE THE OWNER AND ARCHITECT OF ANY RECOMMENDED MODIFICATIONS PRIOR TO THE START OF ANY WORK.

3. THE GENERAL CONTRACTOR SHALL COORDINATE FINAL GRADING AND PAVING AS REQUIRED FOR POSITIVE DRAINAGE AWAY FROM ALL BUILDINGS INCLUDING EXTERIOR DOORS AT ALL CONDITIONS.

4. THE GENERAL CONTRACTOR SHALL LOCATE ALL UTILITY SERVICES (WATER, SEWER, GAS, ELECTRIC, TELEPHONE, CABLE TV) AND COORDINATE THE EXTENSIONS TO THE BUILDINGS. ALL CONNECTIONS, METERS, CLEAN OUTS, ETC., SHALL BE LOCATED IN NON-VISUALLY OFFENSIVE AREAS.

5. ALL INFORMATION RELATED TO THE SITE PROPERTY HAS BEEN PROVIDED BY THE OWNER'S SURVEYOR AND CIVIL ENGINEER.

6. REFER TO CIVIL DRAWINGS FOR LOCATION OF SITE UTILITIES, EASEMENTS AND RIGHTS OF WAY.

7. REFER TO CIVIL DRAWINGS FOR LOCATION OF EXISTING TREES TO REMAIN AND PROTECTION REQUIRED FOR THEM.

8. REFER TO LANDSCAPE DRAWINGS FOR ALL HARDSCAPE AND LANDSCAPE AREAS.

9. REFER TO LANDSCAPE DRAWINGS FOR ALL SITE FENCES, GATES, WALLS AND OTHER SITE AMENITIES.

10. REFER TO CIVIL AND LANDSCAPE DRAWINGS FOR ADDITIONAL INFORMATION REGARDING ACCESSIBLE ROUTES TO AND FROM BUILDINGS.

11. GUARD RAILS SHALL BE LOCATED ALONG OPEN SIDED WALKING SURFACES AND STAIRWAYS THAT ARE 30" ABOVE A FLOOR OR GRADE BELOW.

12. WHEN EXCAVATING FOR BUILDINGS OR EXCAVATING ACCESSORY THERETO, SUCH EXCAVATIONS SHALL BE MADE SAFE TO PREVENT ANY DANGER TO LIFE AND PROPERTY.

13. EXCAVATIONS FOR ANY PURPOSE SHALL NOT EXTEND WITHIN 1 FT. OF THE ANGLE OF REPOSE OR NATURAL SLOPE OF THE SOIL UNDER ANY FOOTING OR FOUNDATION, UNLESS SUCH FOOTING OR FOUNDATION IS FIRST PROPERLY UNDERPINNED OR PROTECTED AGAINST SETTLEMENT.

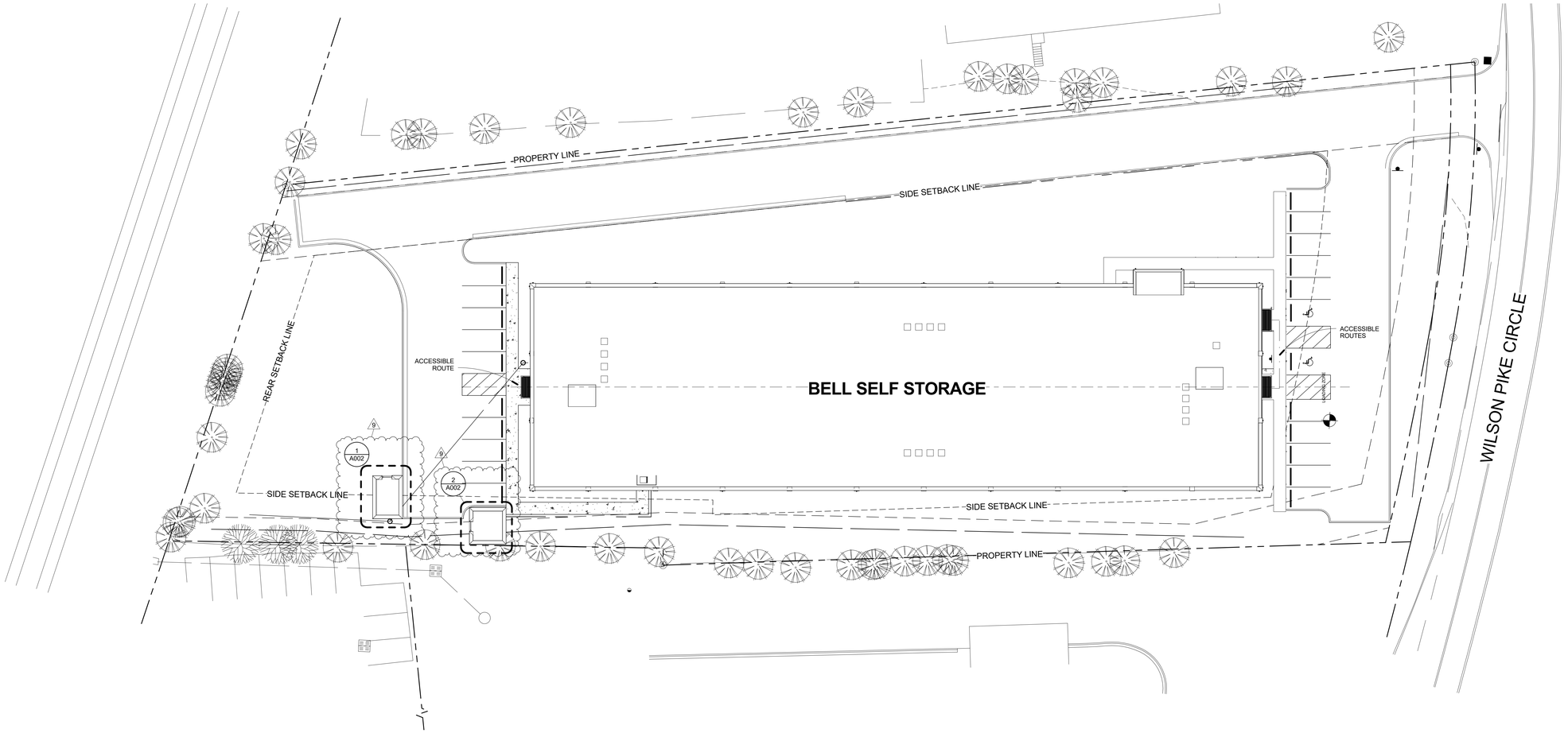
14. FOUNDATIONS SHALL BE BUILT ON UNDISTURBED SOIL OR PROPERLY COMPACTED FILL MATERIAL IN ACCORDANCE WITH SOILS ANALYSIS PROVIDED BY OWNER.

15. THE BOTTOM OF FOUNDATIONS SHALL EXTEND BELOW THE DEPTH OF FROST PENETRATION, BUT NO LESS THAN 12 INCHES BELOW FINISH GRADE.

16. FOUNDATION WALLS OR BEAMS SHALL EXTEND ABOVE THE FINISHED GRADE A MINIMUM OF 4 INCHES WHERE MASONRY VENEER IS USED AND A MINIMUM OF 6 INCHES ELSEWHERE.

17. ALL LANDSCAPE FEATURES, LANDSCAPE FEATURE DESIGN ACCESSORIES, AND LANDSCAPE FEATURE OPERATIONAL REQUIREMENTS ARE THE COMPLETE RESPONSIBILITY OF THE LANDSCAPE ARCHITECT AND OWNER.

18. ELEVATIONS SHOWN IN ARCHITECTURAL ARE RELATIVE TO MEAN SEA LEVEL ELEVATION 0'-0". ACTUAL BUILDING ELEVATION ABOVE MEAN SEA LEVEL VARIES - REFER TO CIVIL DRAWINGS FOR ACTUAL BUILDING ELEVATION LEVELS, TYP.



1 **ARCHITECTURAL SITE PLAN - FOR REFERENCE**
1" = 20'-0"

7/6/2020 11:08:12 AM

SMITH GEE STUDIO

Smith Gee Studio, LLC
209 10th Avenue South, Suite 425
Nashville, Tennessee 37203
phone: (615)739-5555
info@smithgeestudio.com

Rev:	Date:	Set Type:
9	07/01/20	RFI 100

Darek Bell
Phone: (615) 373-4343

SGS Contact: Jason Gibson
SGS Project Number: 17056.00

Project Address:
Bell Self Storage
263 Wilson Pike Cir, Brentwood, TN 37027

Bell Self Storage

Notes:

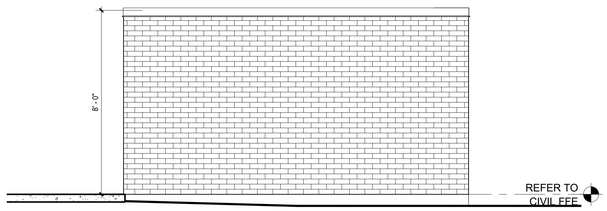
FLEMING W. SMITH, II
REGISTERED ARCHITECT
No. 20975
STATE OF TENNESSEE
5/9/18

Copyright 2018 by Smith Gee Studio, LLC: All drawings and text contained in these drawings are the property of Smith Gee Studio, LLC and cannot be used without the express written permission. Do not scale drawings, if dimensions are needed but not shown consult architect.

Drawing:
SITE PLAN

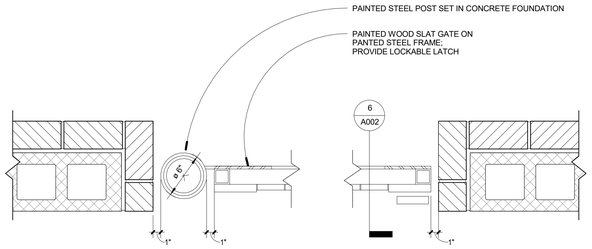
09/05/18
CONSTRUCTION DOCUMENTS

A001



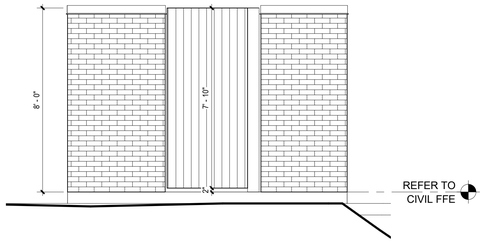
7 TYP. SCREEN WALL ELEVATION

3/8" = 1'-0"



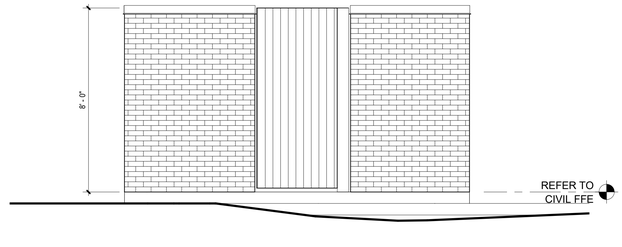
8 TYP. ACCESS GATE PLAN DETAIL

1 1/2" = 1'-0"



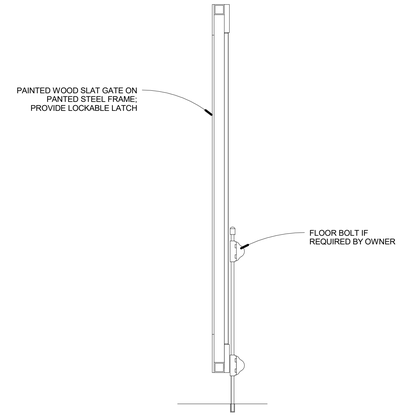
4 GENERATOR ACCESS GATE ELEVATION

3/8" = 1'-0"



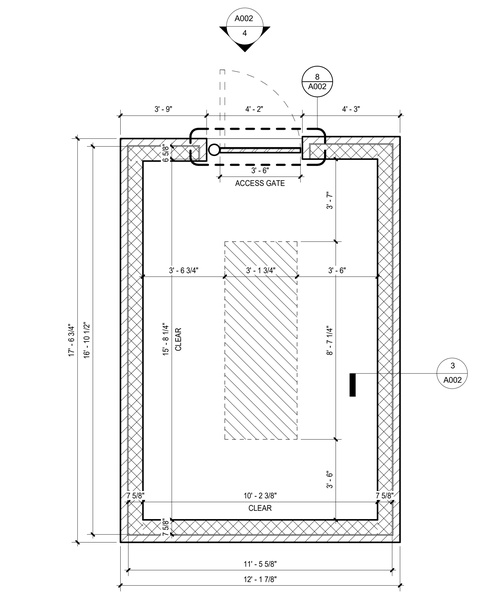
5 BACKUP PUMP ACCESS GATE ELEVATION

3/8" = 1'-0"



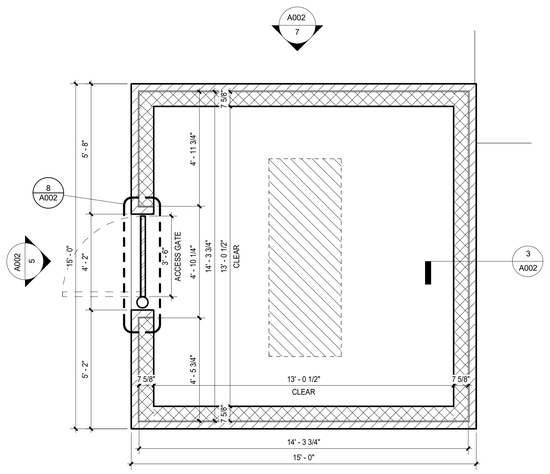
6 TYP. ACCESS GATE SECTION

1" = 1'-0"



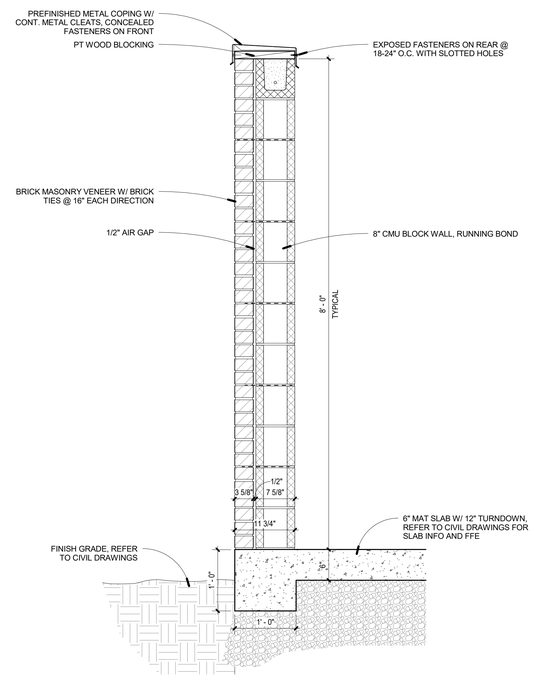
1 GENERATOR PAD AND SCREEN WALL PLAN

3/8" = 1'-0"



2 BACKUP PUMP PAD AND SCREEN WALL

3/8" = 1'-0"



3 SCREEN WALL SECTION

1" = 1'-0"

7/6/2020 11:07:57 AM

Smith Gee Studio, LLC
209 10th Avenue South, Suite 425
Nashville, Tennessee 37203
phone: (615)739-5555
info@smithgeestudio.com

Rev:	Date:	Set Type:
9	07/01/20	RFI 100

Darek Bell
Phone: (615) 373-4343

SGS Contact: Jason Gibson
SGS Project Number: 17056.00

Project Address:
Bell Self Storage
263 Wilson Pike Cir, Brentwood, TN 37027

Bell Self Storage

Notes:

FLEMING W. SMITH
LICENSED ARCHITECT
No. 20617
STATE OF TENNESSEE
5/9/18

Copyright 2018 by Smith Gee Studio, LLC: All drawings and text contained in these drawings are the property of Smith Gee Studio, LLC and cannot be used without the express written permission. Do not scale drawings, if dimensions are needed but not shown consult architect.

Drawing:
SITE DETAILS

09/05/18
CONSTRUCTION DOCUMENTS

A002

9

SURVEY NOTES:

—INFORMATION REGARDING THE PRESENCE, SIZE AND LOCATION OF UNDERGROUND UTILITIES IS SHOWN HEREON. THIS INFORMATION HAS BEEN SHOWN BASED ON THE LOCATION OF ABOVE GROUND APPURTENANCES, AVAILABLE DESIGN PLANS, AND FLAGS AND PAINT PLACED BY THE UNDERGROUND PROTECTION SERVICE. NO CERTIFICATION IS MADE AS TO THE ACCURACY OF THOROUGHNESS OF THE INFORMATION CONCERNING UNDERGROUND UTILITIES AND STRUCTURES SHOWN HEREON. (TN ONE CALL SYSTEM, INC. 1-800-351-111 OR 811).

ALL SUBSTANTIAL, VISIBLE IMPROVEMENTS UPON THE PROPERTY ARE SHOWN.

NO PRIVATE UTILITY LOCATE WAS PERFORMED ON THIS SITE AT THE TIME OF THIS SURVEY.

CONTACT PROPER AUTHORITIES BEFORE BUILDING NEAR UTILITY LINES, FOR EASEMENT WIDTH AND RESTRICTIONS. UTILITIES ARE APPROXIMATE AND SHOULD BE VERIFIED PRIOR TO ANY CONSTRUCTION.

THIS PROPERTY IS LOCATED WITHIN AN AREA HAVING ZONE DESIGNATIONS OF "X" BY THE FEDERAL EMERGENCY MANAGEMENT AGENCY, ON FLOOD INSURANCE RATE MAP NO. 47187C0093G, WITH AN EFFECTIVE DATE OF DECEMBER 22, 2016, IN WILLIAMSON COUNTY, STATE OF TENNESSEE, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR THE COMMUNITY IN WHICH SAID PROPERTY IS SITUATED."

THE SUBJECT PROPERTY HAS DIRECT ACCESS TO AND FROM A DULY DEDICATED AND ACCEPTED PUBLIC STREET OR HIGHWAY AS SHOWN HEREON AND IDENTIFIED AS WILSON PIKE CIRCLE.

LIST OF ENCROACHMENTS: AS SHOWN ALONG THE NORTH AND SOUTH PROPERTY LINES.

AT THE TIME OF THIS SURVEY THERE WAS NO OBSERVED EVIDENCE ON SITE OF USE AS A SOLID WASTE DUMP, SUMP OR SANITARY LANDFILL.

AT THE TIME OF THIS SURVEY THERE WAS NO DELINEATION OF WETLANDS ON THIS SITE.

AT THE TIME OF THIS SURVEY THERE WAS NO OBSERVED EVIDENCE OF RECENT STREET OR SIDEWALK CONSTRUCTION REPAIRS.

GROUND MEASUREMENTS ARE USED AS THE BASIS FOR LOCATION OF ALL FEATURES OF THE SUBJECT PROPERTY.

AT THE TIME OF THIS SURVEY THERE WAS NO OBSERVED EVIDENCE OF CURRENT EARTH MOVING WORK, BUILDING CONSTRUCTION OR BUILDING ADDITIONS.

CONTOURS WERE DERIVED FROM RANDOM SHOTS AND CROSS SECTIONS AND ARE SHOWN AT ONE FOOT INTERVALS. ELEVATIONS SHOWN HEREON ARE BASED ON AN OPUS SOLUTION, ELEVATION 714.83, DATED 9/30/2017 (NAVD88, GEOID12A).

UNLESS STATED OTHERWISE, ANY MONUMENT REFERRED TO HEREIN AS AN "IRON PIN SET" IS A SET 1/2" DIAMETER REBAR, 18" IN LENGTH, WITH A YELLOW PLASTIC CAP STAMPED "YOUNG HOBBS"

THE SURVEY SHOWN HEREON WAS MADE IN ACCORDANCE WITH CHAPTER 0820-3, STANDARDS OF PRACTICE AS ADOPTED BY THE TENNESSEE STATE BOARD OF EXAMINERS FOR LAND SURVEYORS.

I HEREBY CERTIFY THAT THIS SURVEY HAS BEEN MADE USING THE RECORDED INFORMATION SHOWN, AND THAT THIS SURVEY IS CORRECT TO THE BEST OF MY KNOWLEDGE AND BELIEF. I HEREBY CERTIFY THAT THIS IS A CATEGORY 1 SURVEY AND THAT THE RATIO OF PRECISION OF THE UNADJUSTED TRAVERSE IS BETTER THAN 1:10,000 AS SHOWN HEREON.

LEGEND

- BENCHMARK, AS NOTED
- IRON PIN SET (IPS)
- IRON PIN FOUND, AS NOTED
- CONCRETE MONUMENT FOUND
- UTILITY POLE
- WATER METER
- ELECTRIC METER
- SIGN, AS NOTED
- YARD HYDRANT
- SEWER CLEAN OUT
- SEWER MANHOLE
- BOLLARD
- SATELLITE DISH
- GUY WIRE
- GRATE INLET
- FIRE HYDRANT
- PROPERTY LINE
- SS — SS — SANITARY SEWER, AS NOTED
- W — W — WATER LINE, AS NOTED
- OHW — OHW — OVERHEAD WIRE
- ST — ST — STORM SEWER PIPE, AS NOTED

811 Know what's **below.** **Call** before you dig.

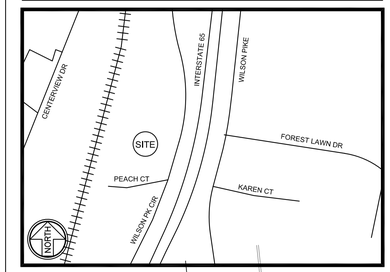
SITE ADDRESS:

263 WILSON PIKE CIR
BRENTOOD, TN 37027

PARKING:

REGULAR SPACES:	6
HANDICAP SPACES:	1
TOTAL SPACES:	7

LOCATION MAP NTS



BBDB INVESTMENTS LLC PROPERTY
TM: 011B C 9.00
DB 5922, PG 82

BUILDING

BUILDING ENCROACHMENT

WALL ENCROACHMENT

BUILDING ENCROACHMENT

N 81°23'32" E 489.93' (M)
N 78°" E 491.3' (R CAL)

313.43' (M)

CANOPY

BUILDING PUMP

TANK

CRUSHED STONE ENCROACHMENT

OPEN AIR SHED

CONEX BUILDING

176.50' (M-R)

OVERHANG

BRICK PAVER

GRAVEL AREA

ACCESS

1/2" IPS

ROCK

WATER LINE AS PER MAPS

WATERLINE 8" PVC

WILSON PIKE CIR
R/W VARIES - PUBLIC

S 00°49'34" W 100.27' (M)
S 03° W 100' (R)

S 08°19'34" W 100.27' (M)
S 04°30' W 100' (R)

S 07°44'39" W 10.72' (M)

TBM PK NAIL
EL=713.84

TOTAL AREA
2.00 ACRES±
87,115 SF±

HC/SIGN

BUILDING
FFE=713.16

LANDSCAPING LAYDOWN AREA

SIDEWALK/PAVER

STEPS/STOOP

GATE

GRAVEL / LANDSCAPING LAYDOWN AREA

TRACT 2
DB 5922, PG 79

BBDB INVESTMENTS LLC PROPERTY
TM: 011B C 10.00
DB 5922, PG 79

N 04°25'56" E 168.42' (M)
N 00°15' E 169' (R TOTAL)

S 00°15' W 162' (R)
S 04°25'56" W 168.42' (M)

TRACT 1
DB 5922, PG 79

GRAVEL / LANDSCAPING LAYDOWN AREA

SAN SEWER
10" CLAY PIPE

CSX RAILWAY

N 15°29'57" E 153.70' (M)
N 11°45' E 153.7' (R)

6-6" GROUP

6" OPEN AIR SHED

POSSIBLE FENCE ENCROACHMENT

S 88°07'10" W 97.01' (M)

S 84° W 203' (R)

S 88°08'37" W 105.67' (M)

PROPANE TANK

1/2" IPF
NO ID

IE=698.50

1/2" IPF
ID:2315

1/2" IPS

N 01°43'26" W 7.00' (M)

18" RCP

SS MH
TOP=700.62
IE=696.92

GRATE
TOP=702.56
IE=698.96

N 08°22'14" W 250.20' (M)

OUTFALL STRUCTURE

KERRY E. COUCH
PROPERTY
TM: 011B C 11.00
DB 2538, PG 670

GRATE
TOP=

1/2" IPF
NO ID

GREEN HOUSE

OPEN AIR SHED
0.5'
ENCROACHMENT

OPEN AIR SHED

GREEN HOUSE

BRICK PAVER

1/2" PIPE FOUND

S 85°30'29" W 306.70' (M)
S 83°15' W 304' (R CAL)

ENVIROTEST SYSTEMS CORP
PROPERTY
TM: 011B C 12.00
DB 5894, PG 915

BUILDING

~ASPHALT~

~ASPHALT~

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE
C1 M	545.89'	113.53'	113.33'	S 01°47'10" W	11°54'59"
C2 M	1475.89'	74.88'	74.88'	S 09°11'52" W	2°54'25"

BASIS OF BEARINGS
TN STATE PLANE
COORDINATE SYSTEM
NAD 83

0 20 40 60
SCALE 1" = 20'

YOUNG - HOBBS AND ASSOCIATES

1202 CROSSLAND AVE.
CLARKSVILLE, TN 37040
PHONE 931-645-2524
FAX 931-645-2768
dave@younghobbs.com

KENNETH A. BAU
REGISTERED LAND SURVEYOR
AGRICULTURE
ENGINEERING
SURVEYING
TENNESSEE No. 2019
12/1/17
KENNETH A. BAU, RLS
kenny@younghobbs.com

No.	Date	Revision
1	11/20/17	Changed rail road name

Kimley»Horn

Kimley Horn and Associates, Inc.
214 Oceanside Drive
Nashville, TN

BOUNDARY & TOPOGRAPHIC SURVEY

OWNER INFORMATION

BBDB INVESTMENTS LLC PROPERTY
TM: 011B C 10.00
DB 5922, PG 79

BRENTWOOD STATION
WILLIAMSON COUNTY, TENNESSEE

DRAWN BY:	KAB
APPROVED BY:	KAB
DATE: (FIELD)	9/30/2017
DATE: (OFFICE)	10/3/2017
YHA PRO. #	134-17

SHEET 1 OF 1

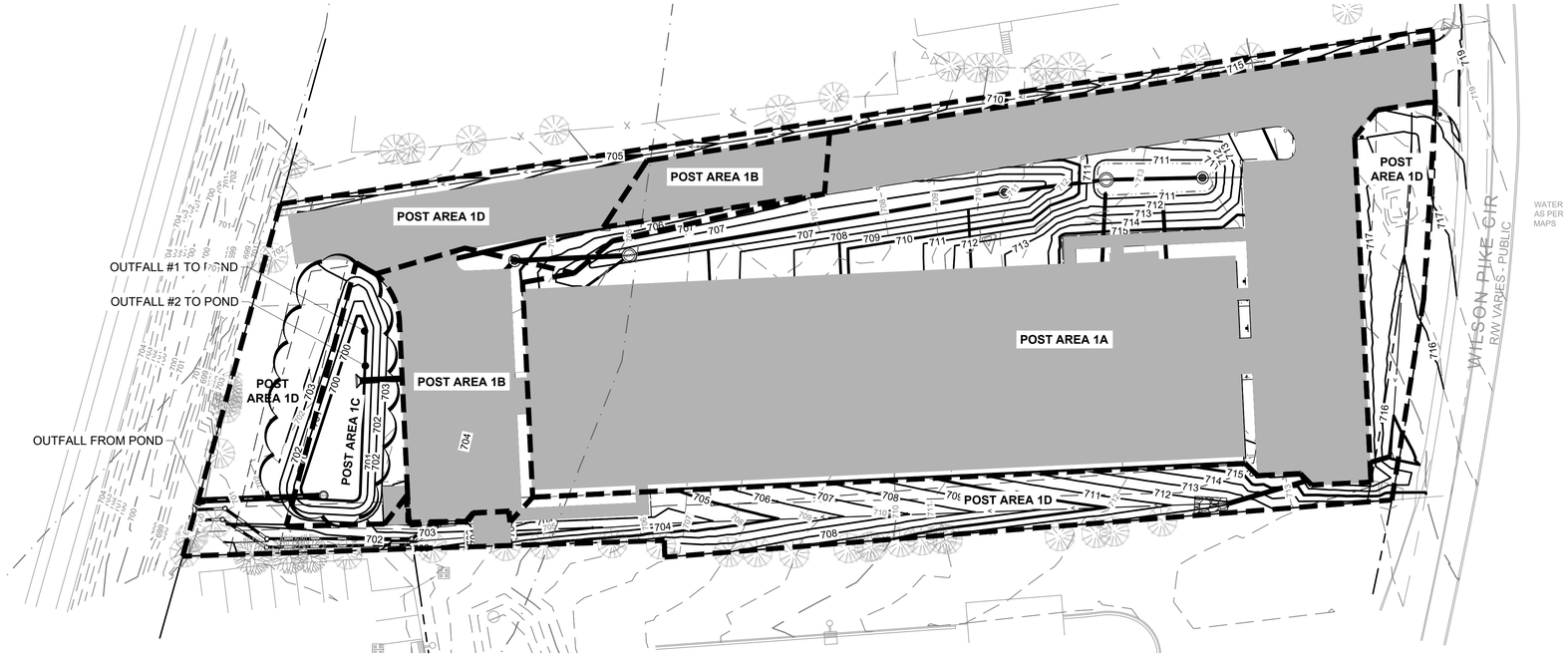


PRE-DEVELOPMENT DRAINAGE AREA

Pre-Development Condition	Area (ac)	Total Area	HSG	CN	Tc (min)
Pre-Area 1 Total =	**2.00**		**A/B**	**91**	**5.0**
Impervious	0.82	**2.00**	A/B	98	-
Compacted Gravel A	0.63		A	85	-
Compacted Gravel B	0.55		B	89	-

LEGEND

- IMPERVIOUS AREA
- PERVIOUS AREA
- GRAVEL
- DETENTION POND



POST-DEVELOPMENT DRAINAGE AREA

Post-Development Condition	Area (ac)	Total Area	HSG	CN	Adj CN	Tc (min)
Post-Area 1A (to Bioretention then to Pond)	**1.16**		**A/B**	**89**		**5.0**
Impervious	0.940		A/B	98	85.5	-
Turf A	0.214		A	49	46.6	-
Turf B	0.008		B	79	66.4	-
Post-Area 1B (to WQU then to Pond)	**0.19**		**A/B**	**96**		**5.0**
Impervious	0.173		A/B	98		-
Turf B	0.016		B	79		-
		2.00				
Post-Area 1C (to Pond only)	**0.08**		**A/B**	**79**		**5.0**
Impervious	0.002		A/B	98		-
Turf B	0.080		B	79		-
Post-Area 1D (Bypasses Pond)	**0.57**		**A/B**	**66**		**5.0**
Impervious	0.097		A/B	98		-
Turf A	0.298		A	49		-
Turf B	0.172		B	79		-

PRE- VS POST-DEVELOPMENT PEAK FLOWS

Pre-Development Peak Flows	2 yr (cfs)	5 yr (cfs)	10 yr (cfs)	25 yr (cfs)	50 yr (cfs)	100 yr (cfs)
Outfall 1	**7.66**	9.75	11.43	13.77	15.65	17.57

Post-Development Peak Flows	2 yr (cfs)	5 yr (cfs)	10 yr (cfs)	25 yr (cfs)	50 yr (cfs)	100 yr (cfs)
Outfall 1	3.45	4.73	5.67	**7.01**	10.05	12.01
Difference	-4.21	-5.02	-5.76	-6.76	-5.60	-5.56
Pond Water Surface Elevation	700.65	700.99	701.25	701.63	701.76	701.85

GRAPHIC SCALE IN FEET
0 15 30 60

NORTH

Kimley»Horn
214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com
© 2018 Kimley-Horn and Associates, Inc.

BELL SELF-STORAGE
BELL & ASSOCIATES CONSTRUCTION
BRENTWOOD, TENNESSEE

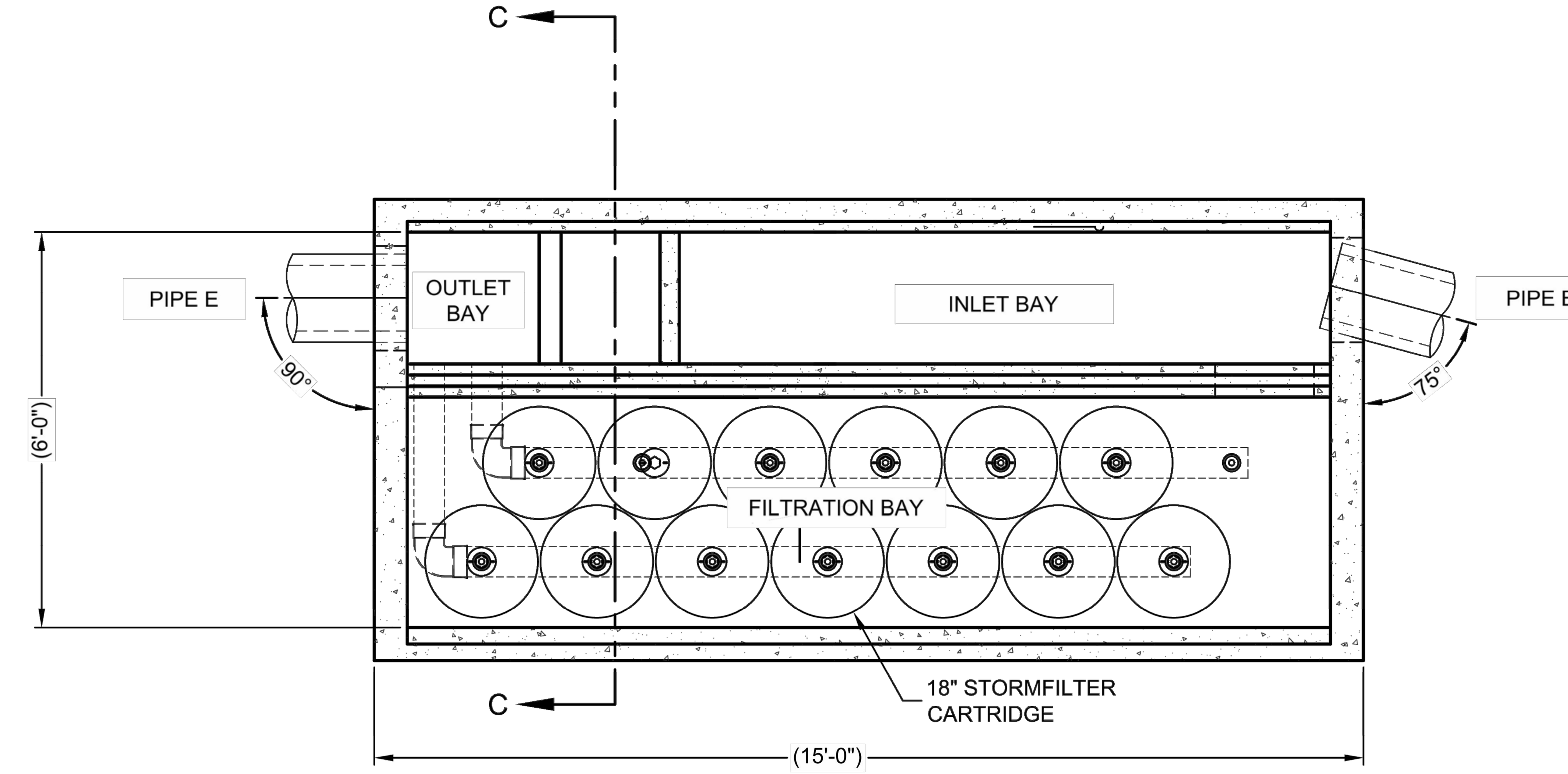
ZACHARY J. DUFOUR
REGISTERED ENGINEER
No. 112501
07/21/2020
STATE OF TENNESSEE

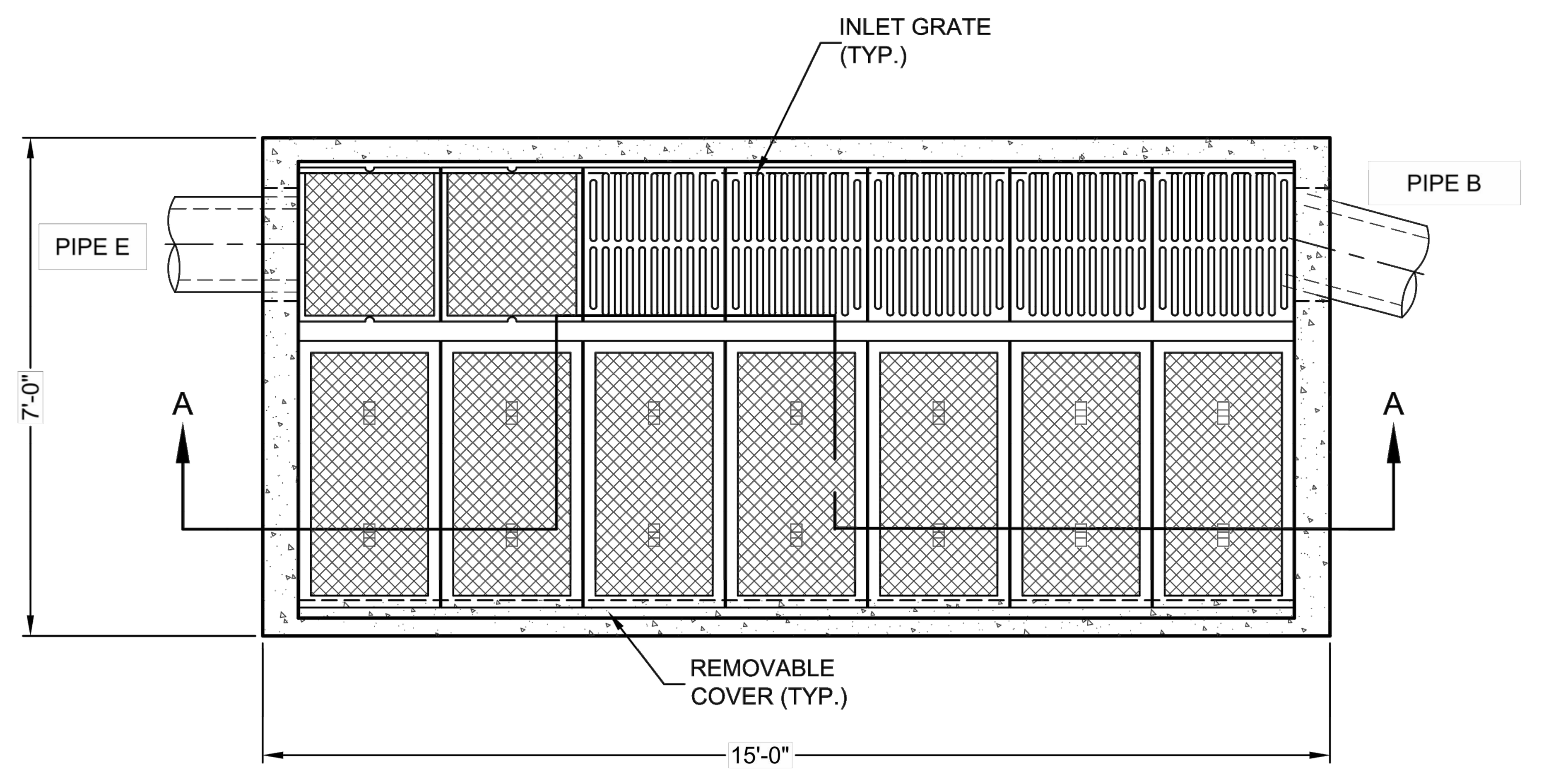
No.	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DESIGNED BY: KBB
DRAWN BY: LEB
CHECKED BY: KBB
DATE: 03/07/2018
KIMLEY-HORN PROJECT NO. 118230000

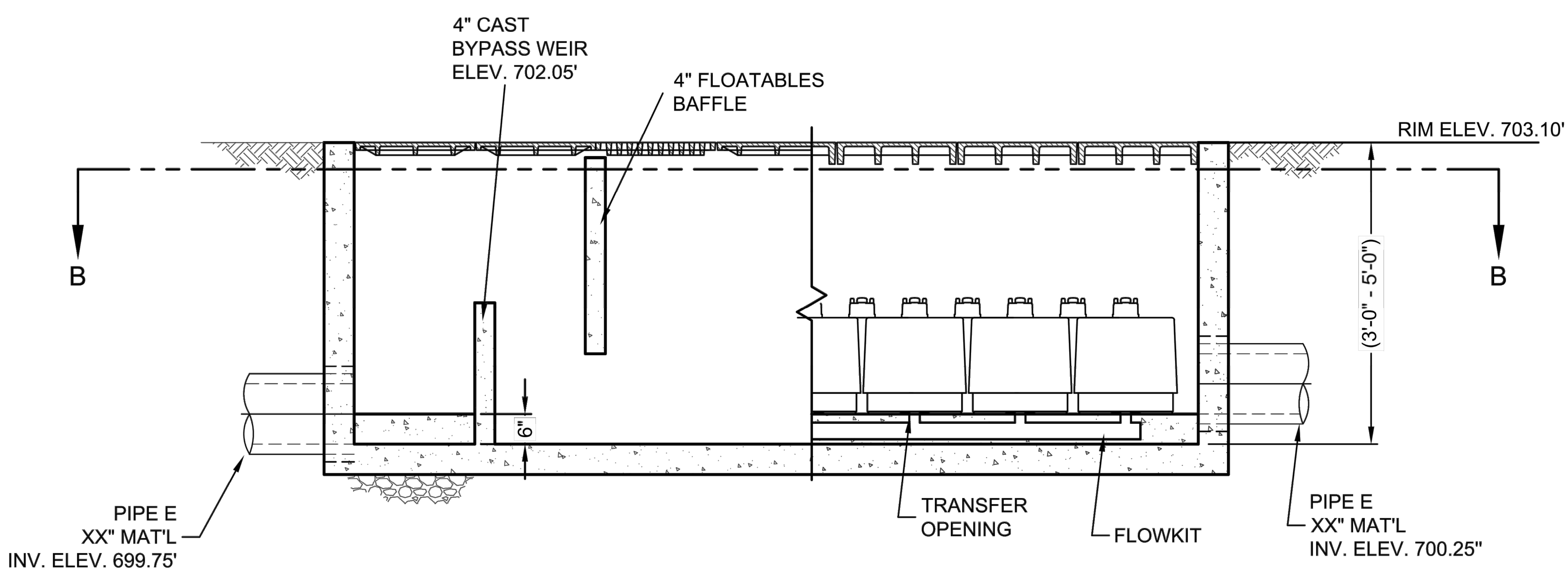
DRAINAGE MAPS

SHEET NUMBER
C4-20

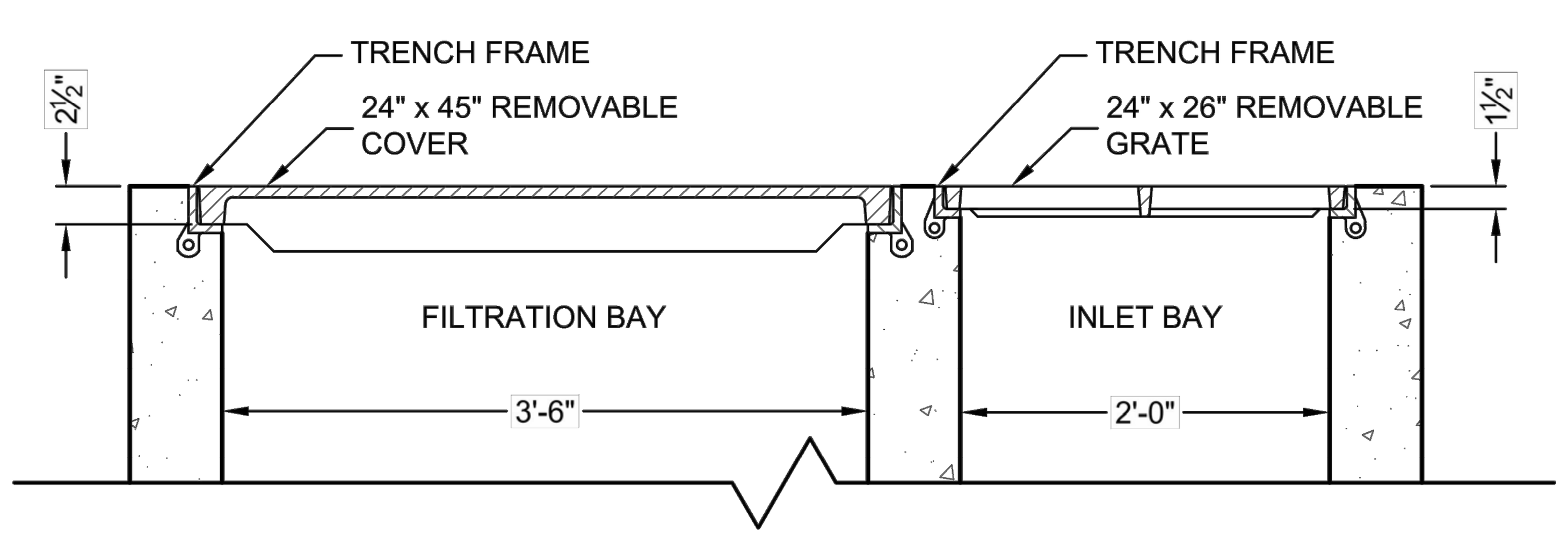




PLAN VIEW



SECTION A-A



SECTION C-C

STRUCTURE WEIGHT
APPROXIMATE HEAVIEST PICK = 38500 LBS.

CONTECH
PROPOSAL
DRAWING

MATERIALS LIST ~~- PROVIDED~~ BY CONTECH

COUNT	DESCRIPTION	INSTALLED BY
13	18" CARTRIDGE, 15 GPM (BLK)	CONTECH
1	FLOW KIT	CONTECH
2	TRANSFER HOLE COVER	CONTECH
6 EA	48" x 2-1/2" x 1-5/8" TRENCH FRAME (EJIW 47300311)	CONTRACTOR
6 EA	48" x 1-1/2" x 1-1/8" TRENCH FRAME (EJIW 00695031)	CONTRACTOR
5	24" x 26" INLET GRATE (EJIW 00695841)	CONTRACTOR
2	24" x 26" REMOVABLE COVER (EJIW 00695820)	CONTRACTOR
7	24" x 45" REMOVABLE COVER (EJIW 47513031)	CONTRACTOR

SITE DESIGN DATA

WATER QUALITY FLOW RATE	0.41 CFS
PEAK FLOW RATE	TBD CFS
RETURN PERIOD OF PEAK FLOW	TBD YRS
FILTER MEDIA TYPE	PERLITE

PERFORMANCE SPECIFICATION
FILTER CARTRIDGES SHALL BE MEDIA-FILLED, PASSIVE, SIPHON ACTUATED, RADIAL FLOW, AND SELF CLEANING. **RADIAL MEDIA DEPTH SHALL BE 7-INCHES**. FILTER MEDIA CONTACT TIME SHALL BE AT LEAST **37 SECONDS**.
SPECIFIC FLOW RATE SHALL BE 2 **GPM/SF (MAXIMUM)**. SPECIFIC FLOW RATE IS THE MEASURE OF THE FLOW (GPM) DIVIDED BY THE MEDIA SURFACE CONTACT AREA (SF). MEDIA VOLUMETRIC FLOW RATE SHALL BE **6 GPM/CF OF MEDIA (MAXIMUM).**

GENERAL NOTES
1. CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
2. DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
3. FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. www.contechES.com
4. STORMFILTER WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING. CONTRACTOR TO CONFIRM THAT STRUCTURE MEETS THE REQUIREMENTS OF THE PROJECT.
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING EARTH COVER OF 0' - 5' AND GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET AASHTO M306 AND BE CAST WITH THE CONTECH LOGO.
6. GRATE INLETS/COVERS SHALL BE EAST JORDAN IRON WORKS #00695840 / #00695820 / #47513031 OR APPROVED EQUALS.
7. TRENCH FRAMES SHALL BE EAST JORDAN IRON WORKS #00695031 / #47300311 OR APPROVED EQUALS.
8. HEAVIEST GRATE/COVER PICK WEIGHT IS 430 LBS.

INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE STORMFILTER STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH OUTLET PIPE INVERT WITH OUTLET BAY. FLOOR.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO PROTECT CARTRIDGES FROM CONSTRUCTION-RELATED EROSION RUNOFF.
F. CONTRACTOR TO REMOVE TRANSFER HOLE COVERS PRIOR TO PLACING THE SYSTEM ONLINE.

The design and information shown on this drawing is provided as a service to the project owner, engineer and contractor by Contech Engineered Solutions LLC ("Contech"). Neither this drawing, nor any part thereof, may be used, reproduced or modified in any manner without the prior written consent of Contech. Failure to comply is done at the user's own risk and Contech expressly disclaims any liability or responsibility for such use.

If discrepancies between the supplied information upon which the drawing is based and actual field conditions are encountered as site work progresses, these discrepancies must be reported to Contech immediately for re-evaluation of the design. Contech accepts no liability for designs based on missing, incomplete or inaccurate information supplied by others.

MARK	DATE	REVISION DESCRIPTION	BY

6' x 14' LINEAR GRATE
STORMFILTER - 574947-01
BELL SELF STORAGE
BRENTWOOD, TN
SITE DESIGNATION: WQU

CONTECH® ENGINEERED SOLUTIONS LLC
www.contechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX
The Stormwater Management StormFilter®
THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING U.S. PATENTS: 5,322,629; 5,524,576; 5,707,527; 5,985,157; 6,027,639; 6,649,048; RELATED FOREIGN PATENTS, OR OTHER PATENTS PENDING.

DATE: 11/03/17
DESIGNED: YI | DRAWN: YI
CHECKED: | APPROVED:
PROJECT NUMBER: 574947
SHEET: 1 OF #

Kimley»Horn
214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com
© 2018 Kimley-Horn and Associates, Inc.

BELL SELF-STORAGE
BELL & ASSOCIATES CONSTRUCTION
BRENTWOOD, TENNESSEE

ZACHARY J. DUFOUR, REGISTERED ENGINEER, AGRICULTURE, COMMERCE, No. 112501, STATE OF TENNESSEE, 07/21/2020

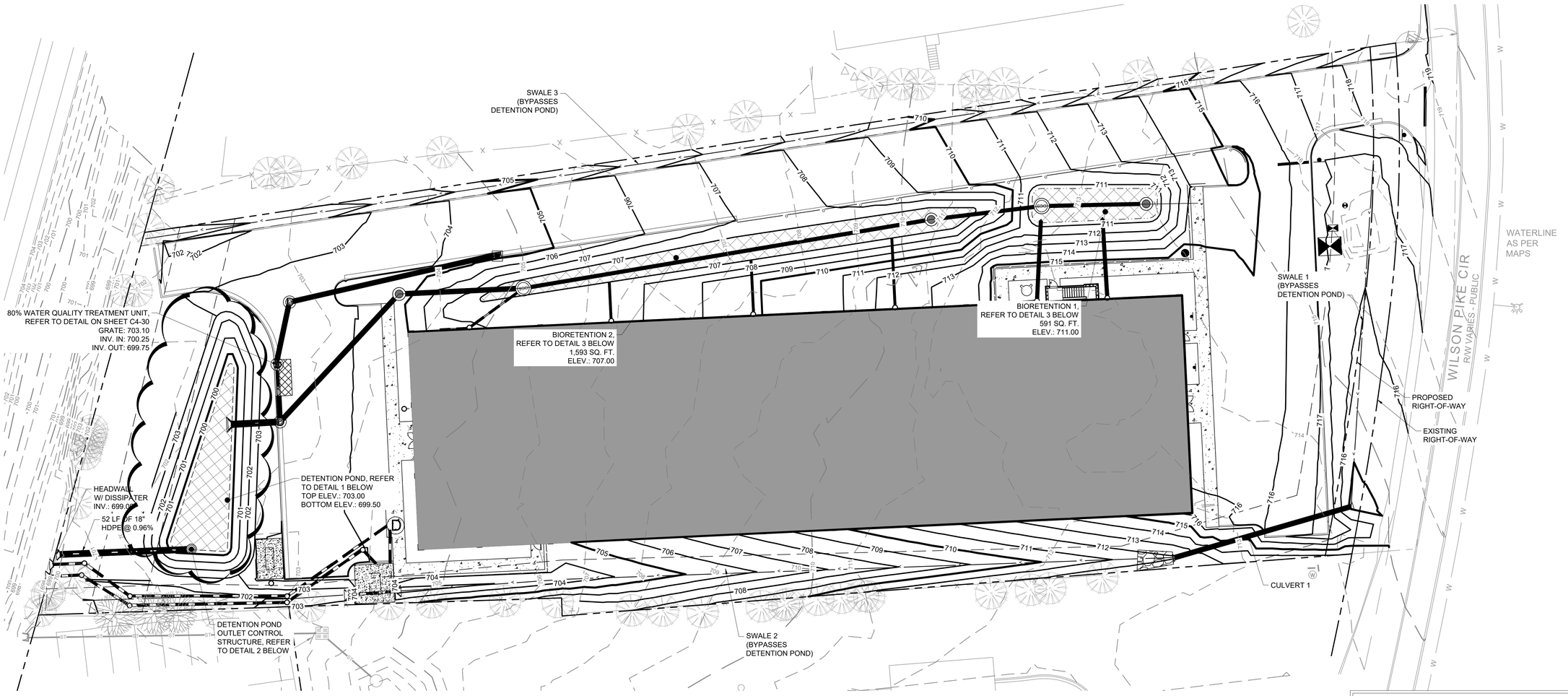
No.	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

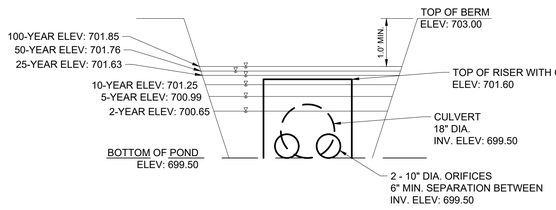
DESIGNED BY: KBB
DRAWN BY: LEB
CHECKED BY: KBB
DATE: 03/07/2018
KIMLEY-HORN PROJECT NO. 118230000

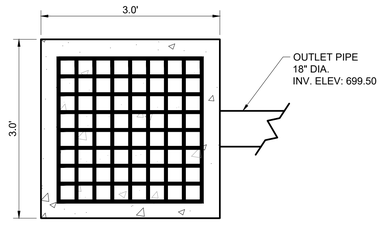
STORMWATER DETAILS

SHEET NUMBER
C4-30

I:\MERLIN\PROJECTACTIVE\574900\574947\PRE-574947-010-SFLG0614-PRO-A.DWG 11/3/2017 4:54 PM
Drawing name: K:\NSH_LDEV\118230000 - Bell Storage\4-CADD\PlanSheets\C4-00-Grading and Drainage-118230000.dwg C4-30 STORMWATER DETAILS Jul 20, 2020 11:46am by: rachel.robinson

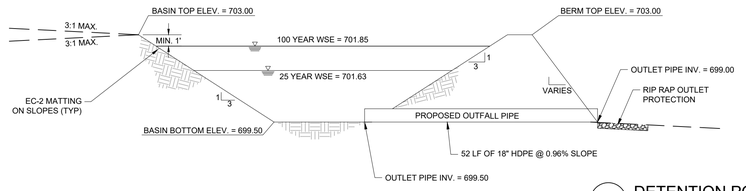






NOTE:
CONTRACTOR TO PROVIDE SHOP DRAWINGS OF OUTLET PIPE
FOR ENGINEER AND OWNER APPROVAL PRIOR TO FABRICATION.

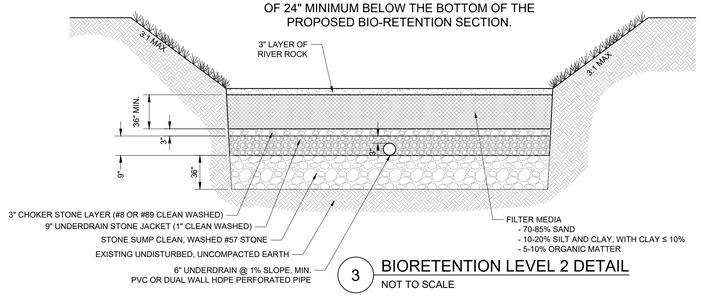
2 POND OUTLET STRUCTURE DETAIL
NOT TO SCALE



1 DETENTION POND CROSS SECTION
NOT TO SCALE

DETENTION POND CALCULATIONS	
TOTAL CONTRIBUTING AREA	1.43 AC
PROVIDED STORAGE	0.16 AC-FT
BOTTOM ELEVATION	699.50
TOP OF BANK ELEVATION	703.00
100-YEAR WATER SURFACE ELEVATION	701.85
2-YEAR PRE-DEVELOPMENT PEAK FLOW	7.66 CFS
25-YEAR POST-DEVELOPMENT PEAK FLOW	7.01 CFS

**IF BEDROCK IS ENCOUNTERED DURING CONSTRUCTION OF BIO-RETENTION AREAS, BEDROCK MUST BE EXCAVATED TO AN ELEVATION OF 24" MINIMUM BELOW THE BOTTOM OF THE PROPOSED BIO-RETENTION SECTION.



3 BIORETENTION LEVEL 2 DETAIL
NOT TO SCALE

GRADING LEGEND

	PROPOSED STORM PIPE
	PROPOSED STORM STRUCTURE
660	PROPOSED ELEVATION CONTOUR
660	EXISTING ELEVATION CONTOUR
660.00 TC	PROPOSED ELEVATION LABEL
P	PAVEMENT ELEVATION
TC	TOP OF CURB ELEVATION
FL	FLOWLINE ELEVATION
SW	SIDEWALK ELEVATION
G	GROUND ELEVATION
RIM	RIM ELEVATION
ME	MATCH EXISTING ELEVATION

REFER TO GRADING NOTES ON SHEET C4-00.

GRAPHIC SCALE IN FEET
0 10 20 40

NORTH

Kimley»Horn
214 Oceanside Drive, Nashville, TN 37204
Main: 615.564.2701 | www.kimley-horn.com
© 2018 Kimley-Horn and Associates, Inc.

BELL SELF-STORAGE
BELL & ASSOCIATES CONSTRUCTION
BRENTWOOD, TENNESSEE

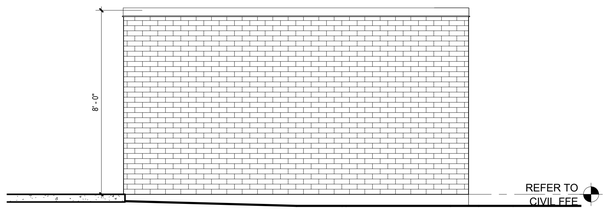
ZACHARY J. DUFOUR
REGISTERED ENGINEER
Zachary J. Dufour
07/31/2018
COMMERCE
No. 112301
STATE OF TENNESSEE

No	REVISIONS	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DESIGNED BY:	KBB
DRAWN BY:	LEB
CHECKED BY:	KBB
DATE:	03/07/2018
KIMLEY-HORN PROJECT NO.	118230000

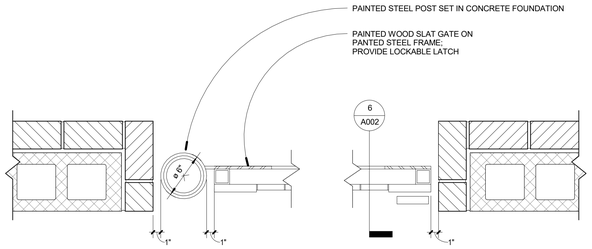
STORMWATER
MANAGEMENT PLAN

SHEET NUMBER
C4-10



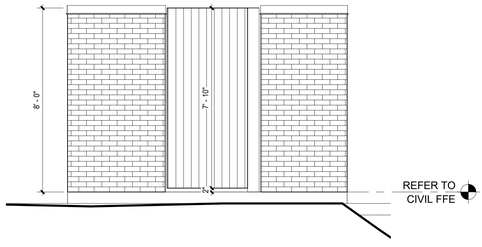
7 TYP. SCREEN WALL ELEVATION

3/8" = 1'-0"



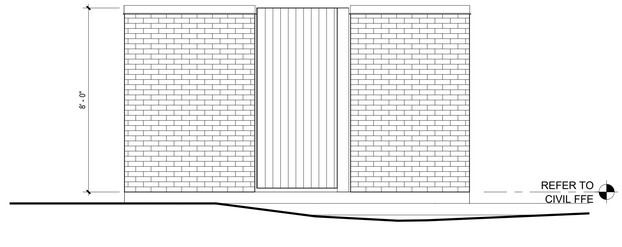
8 TYP. ACCESS GATE PLAN DETAIL

1 1/2" = 1'-0"



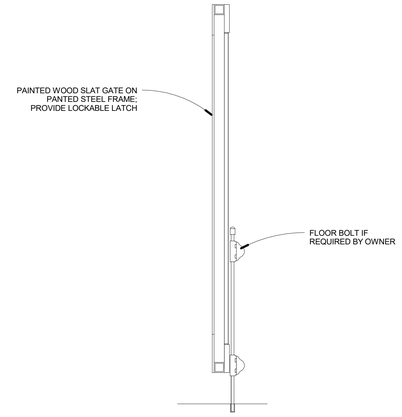
4 GENERATOR ACCESS GATE ELEVATION

3/8" = 1'-0"



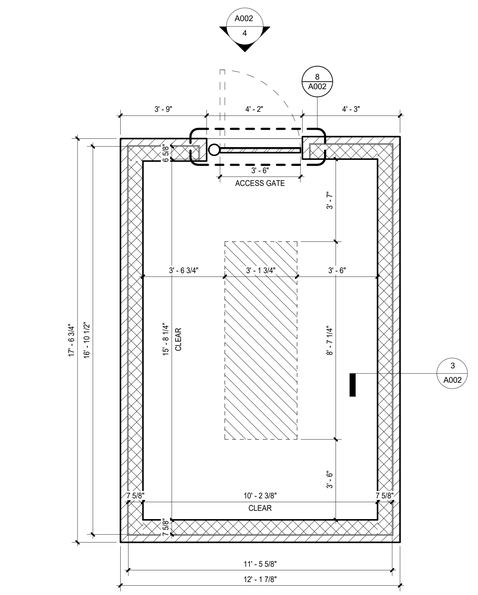
5 BACKUP PUMP ACCESS GATE ELEVATION

3/8" = 1'-0"



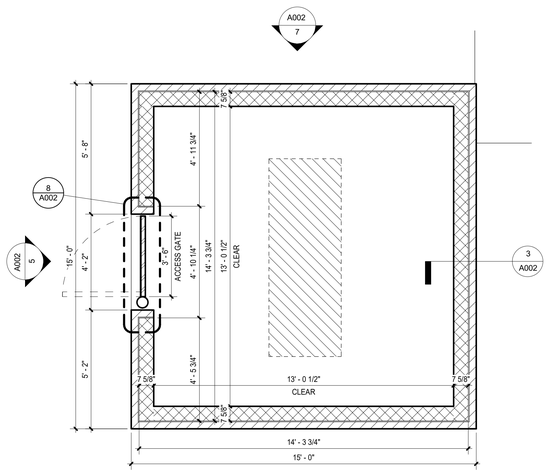
6 TYP. ACCESS GATE SECTION

1" = 1'-0"



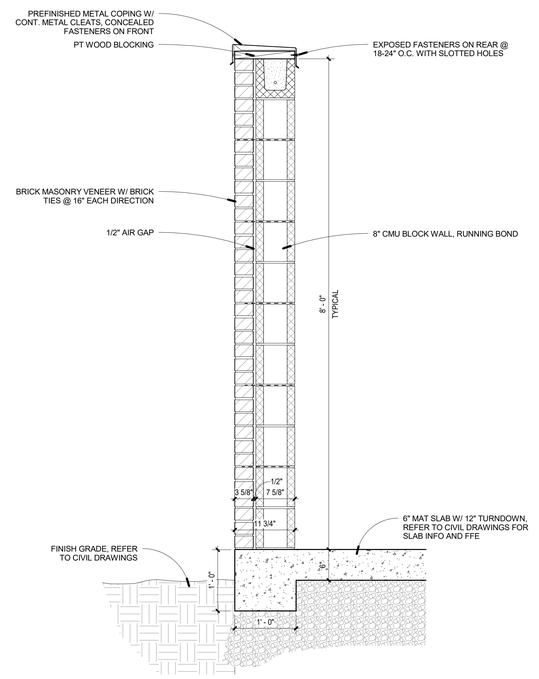
1 GENERATOR PAD AND SCREEN WALL PLAN

3/8" = 1'-0"



2 BACKUP PUMP PAD AND SCREEN WALL

3/8" = 1'-0"



3 SCREEN WALL SECTION

1" = 1'-0"

7/6/2020 11:07:57 AM

Smith Gee Studio, LLC
209 10th Avenue South, Suite 425
Nashville, Tennessee 37203
phone: (615)739-5555
info@smithgeestudio.com

Rev:	Date:	Set Type:
9	07/01/20	RFI 100

Darek Bell
Phone: (615) 373-4343

SGS Contact: Jason Gibson
SGS Project Number: 17056.00

Project Address:
Bell Self Storage
263 Wilson Pike Cir, Brentwood, TN 37027

Bell Self Storage

Notes:

FLEMING W. SMITH
LICENSED ARCHITECT
No. 20617
STATE OF TENNESSEE
5/9/18

Copyright 2018 by Smith Gee Studio, LLC: All drawings and text contained in these drawings are the property of Smith Gee Studio, LLC and cannot be used without the express written permission. Do not scale drawings, if dimensions are needed but not shown consult architect.

Drawing:
SITE DETAILS

09/05/18
CONSTRUCTION DOCUMENTS

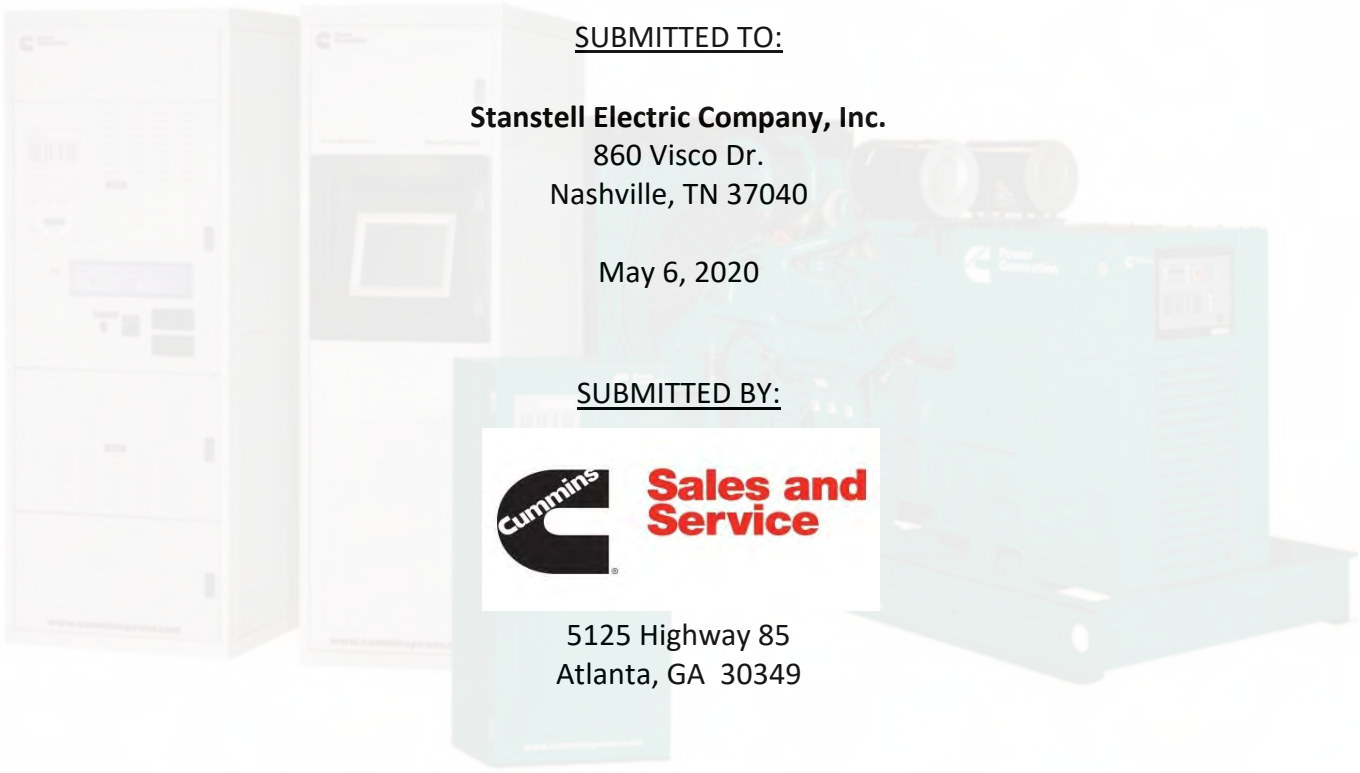
A002

9

BELL SELF STORAGE

SUBMITTAL

Project # 118474



SUBMITTED TO:

Stanstell Electric Company, Inc.
860 Visco Dr.
Nashville, TN 37040

May 6, 2020

SUBMITTED BY:

Sales and Service

5125 Highway 85
Atlanta, GA 30349

24 HOUR PARTS & SERVICE AVAILABLITY

ATLANTA Regional HQ	404-763-0151	MIAMI	305-821-4200
ALBANY	229-888-6210	CHARLOTTE	706-596-7690
AUGUSTA	706-722-8825	COLUMBIA	803-799-2410
CHATTANOOGA	423-629-1448	CHESAPEAKE	757-485-4848
FT. MYERS	941-337-1211	GREENSBORO	336-275-4531
GAINESVILLE	678-450-8700	SPARTANBURG	864-208-2657
JACKSONVILLE	904-378-1902	RICHMOND	804-232-7891
OCALA	352-861-1122	MYRTLE BEACH	843-716-7072
ORLANDO	407-298-2080	ROANOKE	540-966-3169
SAVANNAH	912-232-5565	KENLY	919-284-9111
TAMPA	813-626-1101	CHARLESTON	843-851-9819
WEST PALM BEACH	561-840-7281	WINCHESTER	540-931-9114
NASHVILLE	615-366-4341	KNOXVILLE	865-523-0446

Note: Please note that issuance of these submittals shall not be deemed or interpreted as performance nor acceptance of your Purchase Order Terms and Conditions.

Sales and Service

BELL SELF STORAGE

SUBMITTAL

Project # 118474

CUSTOMER

Attn: Chris Jordan
Stanstell Electric Company, Inc.
860 Visco Dr.
Nashville, TN 37040
cjordan@stansellelectric.com
Phone: (615) 917-8179

1 COPY OF YOUR SUBMITTAL IS ENCLOSED

RETURN APPROVED SUBMITTAL TO:

CUMMINS SALES AND SERVICE
Attn: Valerie Logan
5125 Highway 85
Atlanta, GA 30349
oc734@Cummins.com
Fax: 404-763-0711

- ☐ **ATS Withstand Ratings Approved Based on Feeder Breaker Requirements Detailed by ATS Drawings in Section 4.**
  (Approval Required Prior to Submitting Order to Factory)
- ☒ **No written specification for this submittal provided**
- ☐ **Approved, release order for production**
- ☐ **Approved as noted, release order for production**
- ☐ **Not approved, make changes and resubmit**

COMMENTS

PLEASE SIGN AND DATE FOR APPROVAL

Signature _____ Date _____

CUMMINS SALES AND SERVICE REPRESENTATIVE

Joesph Birdsall, Power Generation Sales
Phone: 615-854-0970

Valerie Logan, Project Manager
Phone: 404-765-5134

Sales and Service

TABLE OF CONTENTS

Section 1
CDE Statement
Project Bill of Material

Section 2
Generator Specification Sheet
Generator Data Sheet
PowerCommand Control (PCC) Specification Sheet
Enclosure and Tank Specification Sheet
Exhaust Emission Data Sheet
EPA Exhaust Emission Compliance Statement
Cooling System Data Sheet
Sound Data Sheet
Prototype Test Summary Report
Alternator Data Sheet

Section 3
Generator Outline Drawing
Enclosure Outline Drawing
Fuel Tank Outline Drawing

Section 4
ATS Specification Sheet(s)
ATS Outline Drawing
ATS Schematic and Wiring Diagram
ATS Interconnection Wiring Diagram
Special Breakers Withstand Ratings

Section 5
Generator Circuit Breaker Detail Drawing
Circuit Breaker Specifications and Trip Curve(s)
Cable Reference Sheet
Annunciator Specification Sheet

Section 6
(Generator) Commercial Warranty Statement
(ATS) Power Electronics Warranty Statement

BELL SELF STORAGE

NOTES AND CLARIFICATIONS

Project # 118474

Wednesday, May 6, 2020

The following are Cummins' notes and clarifications for the equipment provided in the submittal for the above project:

Item #	C/D/E	Specification #	Section	Reason for Change
1	Exception	---	---	Cummins takes exception to any NETA testing.
2	Clarification	---	---	Exclusion for AHJ Requirements of Field Testing on Diesel Fuel Tanks.

Bill of Materials
May 6, 2020
Bell Self Storage
Project# 118474

Item	Description	Qty
	Transfer Switch-Electronic Control:40A/70A/125A	
OTEC125	Transfer Switch-Electronic Control,125Amp	1
A028-7	Poles-3	1
A035-7	Application-Utility To Genset	1
A046-7	Listing-UL 1008/CSA Certification	1
A044-7	Frequency-60 Hertz	1
A042-7	System-3 Phase,3 Wire Or 4 Wire	1
R026-7	Voltage-480 Vac	1
B001-7	Cabinet-Type 1	1
M033-7	Genset Starting Battery-12VDC	1
J030-7	Clock-Exercise, External	1
G009-7	Transfer Switch Warranty - 1 Yr Comprehensive	1
CP01-7	Common Parts Listing	1
SPEC-A	Product Revision - A	1
	Diesel Genset: 60Hz-25kW-60kW	
Install-US-Stat	U.S. EPA, Stationary Emergency Application	1
C60 D6	60kW, 60HZ, Standby, Diesel Genset	1
A331-2	Duty Rating-Standby Power	1
L090-2	Listing-UL 2200	1
L193-2	NFPA 110 Type 10 Level 1 Capable	1
L169-2	Emissions Certification, EPA, Tier 3, NSPS CI Stationary Emergency	1
F231-2	Enclosure-Alum, Sound,Att,Level 1,w/Exhaust System	1
R002-2	Voltage-277/480,3 Phase,Wye,4 Wire	1
B943-2	Alternator-60Hz,12L,480/277V,120C,40C amb	1
H700-2	Generator Set Control-PowerCommand 1.1	1
B240-2	Exciter/Regulator-Torque Match	1
A366-2	Engine Governor-Electronic, Isochronous Only	1
H536-2	Display Language-English	1
H012-2	Gauge-Oil Pressure	1
H608-2	Control Mounting-Right Facing	1
KV03-2	Load Connection-Single	1
KV40-2	CB,Loc A,100A,3P,600VAC,80%,UL	1
P176-2	Enclosure Color-Green,Aluminum Enclosure	1
F252-2	Enclosure - Wind Load 180MPH, ASCE7-10	1

C320-2	Fuel Tank-Basic, 2 Wall, Sub Base, 48Hr Minimum	1
C310-2	Switch-Low, 40% Fuel	1
C312-2	Mechanical Fuel Gauge	1
C318-2	Switch-Fuel Tank, Rupture Basin, Installed	1
F179-2	Skidbase-Housing Ready	1
A422-2	Engine Starter - 12 VDC Motor	1
A333-2	Battery Charging Alternator-Normal Output	1
BB89-2	Battery Charger - 6 Amp, Regulated	1
E125-2	Engine Cooling-High Ambient Air Temperature	1
H389-2	Shutdown-Low Coolant Level	1
H669-2	Engine Coolant-50% Antifreeze, 50% Water Mixture	1
E089-2	Extension-Engine Coolant Drain	1
E153-2	Coolant Heater, Cold Ambient	1
D041-2	Engine Air Cleaner-Normal Duty	1
H706-2	Engine Oil	1
L028-2	Genset Warranty- Base	1
L050-2	Literature-English	1
A322-2	Packing-Skid, Poly Bag	1
F253-2	Rack, Larger Battery	1
H268-2	Extension-Oil Drain	1
CP01-2	Common Parts Listing	1
SPEC-A	Product Revision - A	1
A045J201	Annunciator-Panel Mount With Enclosure (RS485)	1
CSS	Flatbed	1
CPS	Startup & Testing	1

Submitted by

_____

Joseph Birdsall , Power Generation Sales
joseph.birdsall@cummins.com

Specification sheet

Diesel generator set

50 kW - 60 kW
EPA emissions
stationary Standby



Description

Cummins® generator sets are fully integrated power generation systems providing optimum performance, reliability and versatility for stationary Standby applications.

Features

Cummins heavy-duty engine - Rugged 4-cycle, liquid-cooled, industrial diesel engine delivers reliable power, low emissions and fast response to load changes.

Alternator - Several alternator sizes offer selectable motor starting capability with low reactance 2/3 pitch windings, low waveform distortion with non-linear loads and fault clearing short-circuit capability.

Control system - The PowerCommand® 1.1 electronic control is standard equipment and provides total generator set system integration including automatic remote starting/stopping, precise frequency and voltage regulation, alarm and status message display, output metering, auto-shutdown at fault detection and NFPA 110 Level 1 compliance.

Cooling system - Standard cooling package provides reliable running at up to 50 °C (122 °F) ambient temperature.

Enclosures - The aesthetically appealing enclosure incorporates special designs that deliver one of the quietest generators of its kind. Aluminum material plus durable powder coat paint provides the best anti-corrosion performance. The generator set enclosure has been evaluated to withstand 180 MPH wind loads in accordance with ASCE7-10. The intelligent design has removable panels and service doors to provide easy access for service and maintenance.

Fuel tanks - Two dual wall sub-base fuel tank series are offered as optional features, providing economical and flexible solutions to meet extensive code requirements on diesel fuel tanks.

NFPA - The generator set accepts full rated load in a single step in accordance with NFPA 110 for Level 1 systems.

Warranty and service - Backed by a comprehensive warranty and worldwide distributor network.

	Standby rating 60 Hz		Prime rating 60 Hz		Data sheets 60 Hz
Model	**kW**	**kVA**	**kW**	**kVA**	
C50 D6	50.0	62.5	45.0	56.25	NAD-5863
C60 D6	60.0	75.0	54.0	67.50	NAD-5864

Our energy working for you.™

©2017 Cummins Inc. | NAS-5873-EN (10/17)

Generator set specifications

Governor regulation class	TBC
Voltage regulation, no load to full load	± 1.0%
Random voltage variation	± 1.0%
Frequency regulation	Isochronous
Random frequency variation	TBD
Radio frequency emissions compliance	FCC code Title 47 Part 15 Class B

Engine specifications

Design	Turbocharged and charge air-cooled
Bore	95.0 mm (3.74 in.)
Stroke	115.0 mm (4.53 in.)
Displacement	3.26 litres (199 in^3)
Cylinder block	Cast iron, in-line, 4 cylinder
Battery capacity	550 amps at ambient temperature of 0 °F to 32 °F (-18 °C to 0 °C)
Battery charging alternator	50 amps
Starting voltage	12 volt, negative ground
Fuel system	Direct injection, number 2 diesel fuel, fuel filter, electric fuel shut off
Fuel filter	Single element, 10 micron filtration, spin-on fuel filter with water separator
Air cleaner type	Dry replaceable element
Lube oil filter type(s)	Spin-on, full flow
Standard cooling system	50 °C (122 °F) ambient cooling system
Rated speed	1800 rpm

Alternator specifications

Design	Brushless, 4 pole, drip proof, revolving field
Stator	2/3 pitch
Rotor	Direct coupled, flexible disc
Insulation system	Class H per NEMA MG1-1.65
Standard temperature rise	120 ºC (248 °F) Standby
Exciter type	Torque match (shunt) with PMG as option
Alternator cooling	Direct drive centrifugal blower
AC waveform Total Harmonic Distortion (THDV)	< 5% no load to full linear load, < 3% for any single harmonic
Telephone Influence Factor (TIF)	< 50 per NEMA MG1-22.43
Telephone Harmonic Factor (THF)	3%

Available voltages

Single phase	3 phase			
• 120/240	• 120/208	• 120/240 delta	• 277/480	• 347/600

Note: Consult factory for other voltages.

Generator set options

Fuel system

- Basic fuel tanks
- Regional fuel tanks

Engine

- Engine air cleaner – normal or heavy duty
- Shut down – low oil pressure
- Extension – oil drain
- 120 V 1000 W coolant heater

Alternator

- One size up alternator
- PMG
- Alternator heater, 120 V

Control

- AC output analog meters (bargraph)
- Stop switch – emergency
- Auxiliary output relays (2)
- Auxiliary configurable signal inputs (8) and relay outputs (8)

Electrical

- Single circuit breaker
- Dual circuit breakers

Enclosure

- Aluminum enclosure sound level 1 or level 2, with muffler installed, sandstone or green color
- Open set

Cooling system

- Shutdown – low coolant level
- Warning – low coolant level
- Extension – coolant drain
- Coolant heater – 120 V, 1 Ph

Exhaust system

- Exhaust connector - NPT

Generator set application

- Battery rack
- Battery rack, heavy duty

©2017 Cummins Inc. | NAS-5873-EN (10/17)

Generator set options (continued)

Warranty

- Base warranty – 2 year, 1000 hour, Standby
- Standby, 3 year, 1500 hour, parts
- Standby, 5 year, 2500 hour, parts
- Standby, 3 year, 1500 hour, parts and labor
- Standby, 5 year, 2500 hour, parts and labor
- Standby, 3 year, 1500 hour, parts, labor and travel
- Standby, 5 year, 2500 hour, parts, labor and travel

Note: Some options may not be available on all models - consult factory for availability.

Generator set accessories

- Coolant heater
- Extreme cold weather components
- HMI211RS in-home display, including pre-configured 12” harness
- HMI211 remote display, including pre-configured 12” harness
- HMI220 remote display
- Auxiliary output relays (2)
- Auxiliary configurable signal inputs (8) and relay outputs (8)
- Annunciator – RS485
- Remote monitoring device – PowerCommand 500
- Battery charger – stand-alone, 12 V
- Circuit breakers
- Enclosure Sound Level 1 to Sound Level 2 upgrade kit
- Enclosure paint touch up kit
- Mufflers – industrial, residential or critical
- Alternator PMG
- Alternator heater
- Maintenance and service kit
- Engine lift kit
- Various fuel tanks and accessories

Control system PowerCommand 1.1





PowerCommand control is an integrated generator set control system providing voltage regulation, engine protection, operator interface and isochronous governing (optional). Major features include:

- Battery monitoring and testing features and smart starting control system.
- Standard PCCNet interface to devices such as remote annunciator for NFPA 110 applications.
- Control boards potted for environmental protection.
- Control suitable for operation in ambient temperatures from -40 °C to +70 °C (-40 °F to +158 °F) and altitudes to 5000 meters (13,000 feet).
- Prototype tested; UL, CSA, and CE compliant.
- InPower™ PC-based service tool available for detailed diagnostics.

Operator/display panel

- Manual off switch
- Alpha-numeric display with pushbutton access for viewing engine and alternator data and providing setup, controls and adjustments (English or international symbols)
- LED lamps indicating generator set running, not in auto, common warning, common shutdown, manual run mode and remote start
- Suitable for operation in ambient temperatures from -40 °C to +70 °C
- Bargraph display (optional)

AC protection

- Over current warning and shutdown
- Over and under voltage shutdown
- Over and under frequency shutdown
- Over excitation (loss of sensing) fault
- Field overload

Engine protection

- Overspeed shutdown
- Low oil pressure warning and shutdown
- High coolant temperature warning and shutdown
- Low coolant level warning or shutdown
- Low coolant temperature warning
- High, low and weak battery voltage warning
- Fail to start (overcrank) shutdown
- Fail to crank shutdown
- Redundant start disconnect
- Cranking lockout
- Sensor failure indication
- Low fuel level warning or shutdown

Alternator data

- Line-to-Line and Line-to-Neutral AC volts
- 3-phase AC current
- Frequency
- Total kVa

Engine data

- DC voltage
- Lube oil pressure
- Coolant temperature
- Engine speed

©2017 Cummins Inc. | NAS-5873-EN (10/17)

Other data

- Generator set model data
- Start attempts, starts, running hours
- Fault history
- RS485 Modbus® interface
- Data logging and fault simulation (requires InPower service tool)

Digital governing (optional)

- Integrated digital electronic isochronous governor
- Temperature dynamic governing

Digital voltage regulation

- Integrated digital electronic voltage regulator
- 2-phase Line-to-Line sensing
- Configurable torque matching

Control functions

- Time delay start and cooldown
- Cycle cranking
- PCCNet interface
- (2) Configurable inputs
- (2) Configurable outputs
- Remote emergency stop
- Automatic Transfer Switch (ATS) control
- Generator set exercise, field adjustable

Options

- Auxiliary output relays (2)
- Remote annunciator with (3) configurable inputs and (4) configurable outputs
- PMG alternator excitation
- PowerCommand 500/550 for remote monitoring and alarm notification (accessory)
- Auxiliary, configurable signal inputs (8) and configurable relay outputs (8)
- Digital governing
- AC output analog meters (bargraph)
  - Color-coded graphical display of:
    - 3-phase AC voltage
    - 3-phase current
    - Frequency
    - kVa
- Remote operator panel

Ratings definitions

Emergency Standby Power (ESP):

Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Limited-Time Running Power (LTP):

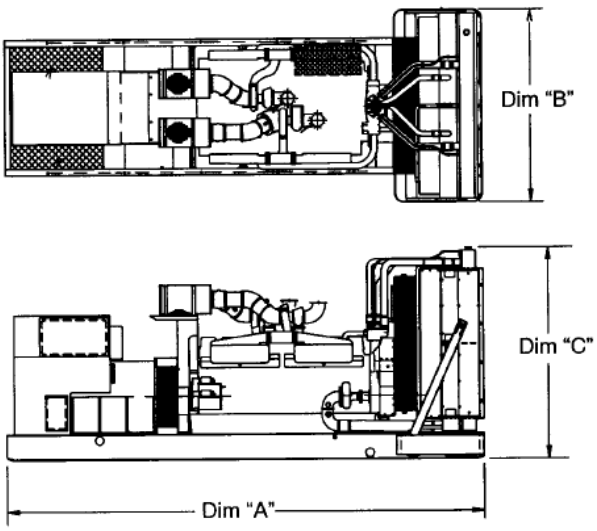
Applicable for supplying power to a constant electrical load for limited hours. Limited-Time Running Power (LTP) is in accordance with ISO 8528.

Prime Power (PRP):

Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.

Base Load (Continuous) Power (COP):

Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.



This outline drawing is for reference only. See respective model data sheet for specific model outline drawing number.

Do not use for installation design

©2017 Cummins Inc. | NAS-5873-EN (10/17)

Model	Dim “A” mm (in.)	Dim “B” mm (in.)	Dim “C” mm (in.)	Set weight* dry kg (lbs)	Set weight* wet kg (lbs)
Open set					
C50 D6	2224 (87.5)	864 (34)	1121 (44.13)	648 (1434)	669 (1480)
C60 D6	2224 (87.5)	864 (34)	1121 (44.13)	701 (1550)	721 (1596)
Sound attenuated enclosure Level 1					
C50 D6	2384 (93.8)	864 (34)	1156 (45.5)	695 (1538)	716 (1584)
C60 D6	2384 (93.8)	864 (34)	1156 (45.5)	748 (1654)	768 (1700)
Sound attenuated enclosure Level 2					
C50 D6	2629 (103.5)	864 (34)	1156 (45.5)	714 (1580)	735 (1626)
C60 D6	2629 (103.5)	864 (34)	1156 (45.5)	767 (1696)	787 (1742)

* Weights represent a set with standard features. See outline drawings for weights of other configurations.

Codes and standards

Codes or standards compliance may not be available with all model configurations – consult factory for availability.

	This generator set is designed in facilities certified to ISO 9001 and manufactured in facilities certified to ISO 9001 or ISO 9002.		The generator set is available Listed to UL 2200, Stationary Engine Generator Assemblies.
	The Prototype Test Support (PTS) program verifies the performance integrity of the generator set design. Cummins products bearing the PTS symbol meet the prototype test requirements of NFPA 110 for Level 1 systems.	**U.S. EPA**	Engine certified to U.S. EPA SI Stationary Emission Regulation 40 CFR, Part 60.
	All low voltage models are CSA certified to product class 4215-01.	**International Building Code**	The generator set is certified for seismic application in accordance with International Building Code (IBC) 2012.

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building’s electrical system except through an approved device or after building main switch is open.

For more information contact your local Cummins distributor or visit power.cummins.com

Our energy working for you.™

©2017 Cummins Inc. All rights reserved. Cummins is a registered trademark of Cummins Inc. PowerCommand, AmpSentry, InPower and “Our energy working for you.” are trademarks of Cummins Inc. Other company, product, or service names may be trademarks or service marks of others. Specifications are subject to change without notice.
NAS-5873-EN (10/17)

Generator set data sheet

Model:	**C60 D6**
Frequency:	**60 Hz**
Fuel type:	**Diesel**
kW rating:	**60 Standby** **54 Prime**
Emissions level:	**EPA Emission Stationary Standby**

Exhaust emission data sheet:	**EDS-1187**
Exhaust emission compliance sheet:	**EPA-1256**
Sound performance data sheet:	**MSP-1185**
Cooling performance data sheet:	**MCP-267**
Prototype test summary data sheet:	**PTS-430**

Fuel consumption

	Standby				**Prime**			
	kW (kVA)				**kW (kVA)**			
Ratings	60 (75)				54 (67.5)			
Load	**1/4**	**1/2**	**3/4**	**Full**	**1/4**	**1/2**	**3/4**	**Full**
US gph	1.68	2.79	3.89	5.04	1.53	2.54	3.53	4.58
L/hr	6.36	10.56	14.72	19.08	5.79	9.61	13.36	17.34

Engine

	Standby rating	**Prime rating**
Engine manufacturer	Cummins Inc.	
Engine model	4BTAA3.3-G7	
Configuration	Cast iron, in-line, 4 cylinder	
Aspiration	Turbocharged and charge air-cooled	
Gross engine power output, kWm (bhp)	73.8 (99)	67.1 (90)
BMEP at set rated load, kPa (psi)	1503.74 (218.1)	1366.54 (198.2)
Bore, mm (in.)	95 (3.74)	
Stroke, mm (in.)	115 (4.53)	
Rated speed, rpm	1800	
Piston speed, m/s (ft/min)	6.9 (1359)	
Compression ratio	17.3:1	
Lube oil capacity, L (qt)	7.9 (8.35)	
Overspeed limit, rpm	2250	

Fuel flow

Maximum fuel flow, L/hr (US gph)	56.39 (14.9)
Maximum fuel inlet restriction with clean filter, mm Hg (in Hg)	58.42 (2.3)
Maximum return restriction, mm Hg (in Hg)	375.92 (14.8)

©2018 Cummins Inc. | NAD-5865-EN (02/18)

Air	Standby rating	Prime rating
Combustion air, m^3/min (scfm)	5.63 (199)	5.40 (191)
Maximum air cleaner restriction with clean filter, kPa (in H_2O)	1.25 (5)	
Alternator cooling air, m^3/min (cfm)	16.84 (595)	

Exhaust		
Exhaust flow at set rated load, m^3/min (cfm)	14.52 (513)	13.50 (477)
Exhaust temperature, °C (°F)	493.3 (920)	463.8 (867)
Maximum back pressure, kPa (in H_2O)	10 (40.2)	10 (40.2)
Actual exhaust back pressure with CPG fitted muffler, kPa (in H_2O)	8.75 (35.2)	8.17 (32.8)

Standard set-mounted radiator cooling[1]

Ambient design, °C (°F)	50 (122)	
Fan load, kW_m (HP)	2.83 (3.8)	
Coolant capacity (with radiator), L (US gal)	14.76 (3.9)	
Cooling system air flow, m^3/min (scfm)	93.16 (3290)	
Total heat rejection, MJ/min (Btu/min)	3.07 (2918)	2.81 (2671)
Maximum cooling air flow static restriction, kPa (in H_2O)	0.12 (0.5)	

Weights[2]

Unit dry weight kgs (lbs)	750 (1654)
Unit wet weight kgs (lbs)	771 (1700)

Notes:

[1] For non-standard remote installations contact your local Cummins representative.

[2] Weights represent a set with standard features. See outline drawing for weights of other configurations.

Derating factors

Standby	Engine power available up to 1280 m (4,200 ft) and ambient temperatures up to 40 °C (104 °F). Above these conditions, derate at 3% per 300 m (985 ft) and 10% per 10 °C (18 °F).
Prime	Engine power available up to 2400 m (7,870 ft) and ambient temperatures up to 40 °C (104 °F). Above these conditions, derate at 6% per 300 m (985 ft) and 11% per 10 °C (18 °F).

Ratings definitions

Emergency Standby Power (ESP):	**Limited-Time Running Power (LTP):**	**Prime Power (PRP):**	**Base Load (Continuous) Power (COP):**
Applicable for supplying power to varying electrical load for the duration of power interruption of a reliable utility source. Emergency Standby Power (ESP) is in accordance with ISO 8528. Fuel Stop power in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power to a constant electrical load for limited hours. Limited-Time Running Power (LTP) is in accordance with ISO 8528.	Applicable for supplying power to varying electrical load for unlimited hours. Prime Power (PRP) is in accordance with ISO 8528. Ten percent overload capability is available in accordance with ISO 3046, AS 2789, DIN 6271 and BS 5514.	Applicable for supplying power continuously to a constant electrical load for unlimited hours. Continuous Power (COP) is in accordance with ISO 8528, ISO 3046, AS 2789, DIN 6271 and BS 5514.

©2018 Cummins Inc. | NAD-5865-EN (02/18)

Alternator data

Standard alternators		Single phase table	Three phase table			
Maximum temperature rise above 40 °C ambient		120 °C	120 °C	120 °C	120 °C	120 °C
Feature code		B949-2	B946-2	B986-2	B943-2	B952-2
Alternator data sheet number		ADS-583	ADS-582	ADS-582	ADS-582	ADS-582
Voltage ranges		120/240	120/208	120/240	277/480	347/600
Voltage feature code		R104-2	R098-2	R106-2	R002-2	R114-2
Surge kW		62.31	62.52	62.52	62.52	62.52
Motor starting kVA (at 90% sustained voltage)	Shunt	95	212	95	212	212
	PMG	150	225	150	225	225
Full load current amps at Standby rating		250	208.42	180.6	90.31	72.25

Notes:

[1] Single phase power can be taken from a three phase generator set at up to 2/3 set rated 3-phase kW at 1.0 power factor. Also see Note 3 below.

[2] The broad range alternators can supply single phase output up to 2/3 set rated 3-phase kW at 1.0 power factor.

[3] The extended stack (full single phase output) and 4 lead alternators can supply single phase output up to full set rated 3-phase kW at 1.0 power factor.

Formulas for calculating full load currents:

Three phase output

$$\frac{\text{kW} \times 1000}{\text{Voltage} \times 1.73 \times 0.8}$$

Single phase output

$$\frac{\text{kW} \times \text{SinglePhaseFactor} \times 1000}{\text{Voltage}}$$

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

For more information contact your local Cummins distributor or visit power.cummins.com

Our energy working for you.™

©2018 Cummins Inc. All rights reserved. Cummins is a registered trademark of Cummins Inc. PowerCommand, AmpSentry, InPower and "Our energy working for you." are trademarks of Cummins Inc. Other company, product, or service names may be trademarks or service marks of others. Specifications are subject to change without notice.
NAD-5865-EN (02/18)

PowerCommand®
1.1 control system



> Specification sheet

Our energy working for you.™

Power Generation

Control system description

The PowerCommand® control system is a microprocessor-based generator set monitoring, metering and control system designed to meet the demands of today's engine driven generator sets. The integration of all control functions into a single control system provides enhanced reliability and performance compared to conventional generator set control systems. These control systems have been designed and tested to meet the harsh environment in which gensets are typically applied.

Features

Easy to view: HMI 211RS for residential use. 128x64 pixel graphic LED backlight LCD.

Easy to use: Tactile buttons for generator set start/stop. Residential standby display for convenient use.

Modbus interface: Eliminates need for MODLON.

Progressive protective functions: Advanced Overcurrent Protection – Generator set monitoring & protection.

Digital voltage regulation: Single phase full wave SCR type regulator compatible with either shunt or PMSG systems.

Digital engine speed governing: Provides isochronous frequency regulation.

12 and 24 VDC battery operation.

Automatic mains failure: Smooth & automatic transfer and re-transfer of load from utility to generator set & vice-versa.

Exerciser clock: Runs generator set exerciser routines for dependability of operation.

Warranty and service: Backed by a comprehensive warranty and worldwide distributor service network.

Certification: Suitable for us on generator sets that are designed, manufactured, tested and certified to relevant UL, NFPA, ISO, IEC Mil Std., CE and CSA standards.

Our energy working for you.™

www.cumminspower.com

©2014 Cummins Power Generation Inc. All rights reserved. Cummins Power Generation and Cummins are registered trademarks of Cummins Inc. PowerCommand, InPower and "Our energy working for you." are trademarks of Cummins Power Generation. Other company, product, or service names may be trademarks or service marks of others. Specifications are subject to change without notice.

Power Generation

PowerCommand digital generator set control PCC 1302



Description

The PowerCommand generator set control is suitable for use on a wide range of generator sets in non-paralleling applications. The PowerCommand control is compatible with shunt or PMG excitation style. It is suitable for use with reconnectable or non-reconnectable generators, and it can be configured for any frequency, voltage and power connection from 120-600 VAC line-to-line.

Power for this control system is derived from the generator set starting batteries. The control functions over a voltage range from 8 VDC to 30 VDC.

Features

- 12 and 24 VDC battery operation.
- Digital voltage regulation.
- Digital engine speed governing (where applicable) - Provides isochronous frequency regulation.
- Full authority engine communications (where applicable) - Provides communication and control with the Engine Control Module (ECM).
- Common harnessing - with higher feature Cummins Power Generation controls allows for easy field upgrades.
- Generator set monitoring - Monitors status of all critical engine and alternator functions.
- Digital genset metering (AC and DC).
- Genset battery monitoring system - to sense and warn against a weak battery condition.
- Engine starting - Includes relay drivers for starter, fuel shut off (FSO), glow plug/spark ignition power and switch B+ applications.
- Generator set protection - Protects engine and alternator.
- Advanced serviceability - using InPower™, a PC-based software service tool.
- Environmental protection - The control system is designed for reliable operation in harsh environments. The main control board is a fully encapsulated module that is protected from the elements.
- Exerciser function – Routine exercising of generator set.
- Supports dual fuel control.
- Automatic Mains Failure function built in generator set controller.Modbus interface - for interconnecting to customer equipment.
- Configurable inputs and outputs - Four discrete inputs and two dry contact relay outputs.
- Warranty and service - Backed by a comprehensive warranty and worldwide distributor service network.
- Certifications - Suitable for use on generator sets that are designed, manufactured, tested and certified to relevant UL, NFPA, ISO, IEC, Mil Std., CE and CSA standards.

Base control functions

HMI capability

Operator adjustments - The HMI includes provisions for many set up and adjustment functions.

Generator set hardware data - Access to the control and software part number, generator set rating in KVA and generator set model number is provided from the HMI or InPower.

Data logs - Includes engine run time, controller on time, number of start attempts.

Fault history - Provides a record of the most recent fault conditions with control hours time stamp. Up to 10 events are stored in the control non-volatile memory.

Alternator data

- Voltage (single or three phase line-to-line and line-to-neutral)
- Current (single or three phase)
- KVA (three phase and total)
- Frequency

Engine data

- Starting battery voltage
- Engine speed
- Engine temperature
- Engine oil pressure
- Partial Full Authority Engine (FAE) data (where applicable)

Service adjustments - The HMI includes provisions for adjustment and calibration of generator set control functions. Adjustments are protected by a password. Functions include:

- Engine speed governor adjustments
- Voltage regulation adjustments
- Cycle cranking
- Configurable fault set up
- Configurable output set up
- Meter calibration
- Units of measurement

Our energy working for you.™

www.cumminspower.com

©2014 Cummins Power Generation Inc. All rights reserved. Cummins Power Generation and Cummins are registered trademarks of Cummins Inc. PowerCommand, InPower and "Our energy working for you." are trademarks of Cummins Power Generation. Other company, product, or service names may be trademarks or service marks of others. Specifications are subject to change without notice.

Power Generation

Equipment Submittal
Rev-0

Engine control

SAE-J1939 CAN interface to full authority ECMs (where applicable) - Provides data swapping between genset and engine controller for control, metering and diagnostics.

12 VDC/24 VDC battery operations - PowerCommand will operate either on 12 VDC or 24 VDC batteries.

Isochronous governing (where applicable) - Capable of controlling engine speed within +/-0.25% for any steady state load from no load to full load. Frequency drift will not exceed +/-0.5% for a 33 °C (60 °F) change in ambient temperature over an 8 hour period.

Temperature dependent governing dynamics (with electronic governing) - Modifies the engine governing control parameters as a function of engine temperature. This allows the engine to be more responsive when warm and more stable when operating at lower temperature levels.

Remote start mode - Accepts a ground signal from remote devices to automatically start the generator set and immediately accelerate to rated speed and voltage. The remote start signal will also wake up the control from sleep mode. The control can incorporate a time delay start and stop.

Remote and local emergency stop - The control accepts a ground signal from a local (genset mounted) or remote (facility mounted) emergency stop switch to cause the generator set to immediately shut down. The generator set is prevented from running or cranking with the switch engaged. If in sleep mode, activation of either emergency stop switch will wake up the control.

Sleep mode - The control includes a configurable low current draw state to minimize starting battery current draw when the genset is not operating. The control can also be configured to go into a low current state while in auto for prime applications or applications without a battery charger.

Engine starting - The control system supports automatic engine starting. Primary and backup start disconnects are achieved by one of three methods: magnetic pickup, battery charging alternator feedback or main alternator output frequency. The control also supports configurable glow plug control when applicable.

Cycle cranking - Configurable for the number of starting cycles (1 to 7) and duration of crank and rest periods. Control includes starter protection algorithms to prevent the operator from specifying a starting sequence that might be damaging.

Time delay start and stop (cooldown) - Configurable for time delay of 0-300 seconds prior to starting after receiving a remote start signal and for time delay of 0-600 seconds prior to shut down after signal to stop in normal operation modes. Default for both time delay periods is 0 seconds.

Alternator control

The control includes an integrated line-to-line sensing voltage regulation system that is compatible with shunt or PMG excitation systems. The voltage regulation system is full wave rectified and has an SCR output for good motor starting capability. Major system features include:

Digital output voltage regulation - Capable of regulating output voltage to within +/-1.0% for any loads between no load and full load. Voltage drift will not exceed +/-1.5% for a 40 ºC (104 ºF) change in temperature in an eight hour period. On engine starting or sudden load acceptance, voltage is controlled to a maximum of 5% overshoot over nominal level.

The automatic voltage regulator feature can be disabled to allow the use of an external voltage regulator.

Torque-matched V/Hz overload control - The voltage roll-off set point and rate of decay (i.e. the slope of the V/Hz curve) is adjustable in the control.

Protective functions

On operation of a protective function the control will indicate a fault by illuminating the appropriate status LED on the HMI, as well as display the fault code and fault description on the LCD. The nature of the fault and time of occurrence are logged in the control. The service manual and InPower service tool provide service keys and procedures based on the service codes provided. Protective functions include:

Battle short mode

When enabled and the *battle short* switch is active, the control will allow some shutdown faults to be bypassed. If a bypassed shutdown fault occurs, the fault code and description will still be annunciated, but the genset will not shutdown. This will be followed by a *fail to shutdown fault*. Emergency stop shutdowns and others that are critical for proper operation are not bypassed. Please refer to the Control Application Guide or Manual for list of these faults.

Configurable alarm and status inputs

The control accepts up to four alarm or status inputs (configurable contact closed to ground or open) to indicate a configurable (customer-specified) condition. The control is programmable for warning, shutdown or status indication and for labeling the input.

©2014 Cummins Power Generation Inc. All rights reserved. Cummins Power Generation and Cummins are registered trademarks of Cummins Inc. PowerCommand, InPower and "Our energy working for you." are trademarks of Cummins Power Generation. Other company, product, or service names may be trademarks or service marks of others. Specifications are subject to change without notice.

Cummins Power Generation

Emergency stop

Annunciated whenever either emergency stop signal is received from external switch.

General engine protection

Low and high battery voltage warning - Indicates status of battery charging system (failure) by continuously monitoring battery voltage.

Weak battery warning - The control system will test the battery each time the generator set is signaled to start and indicate a warning if the battery indicates impending failure.

Fail to start (overcrank) shutdown - The control system will indicate a fault if the generator set fails to start by the completion of the engine crack sequence.

Fail to crank shutdown - Control has signaled starter to crank engine but engine does not rotate.

Cranking lockout - The control will not allow the starter to attempt to engage or to crank the engine when the engine is rotating.

Hydro mechanical fuel system engine protection

Overspeed shutdown - Default setting is 115% of nominal.

Low lube oil pressure warning/shutdown - Level is preset (configurable with InPower) to match the capabilities of the engine used. Control includes time delays to prevent nuisance alarms.

High lube oil temperature warning/shutdown - Level is preset (configurable with InPower) to match the capabilities of the engine used. Control includes time delays to prevent nuisance alarms.

High engine temperature warning/shutdown - Level is preset (configurable with InPower) to match the capabilities of the engine used. Control includes time delays to prevent nuisance alarms.

Low coolant temperature warning – Indicates that engine temperature may not be high enough for a 10 second start or proper load acceptance.

Sensor failure indication - Logic is provided on the base control to detect analog sensor or interconnecting wiring failures.

Full authority electronic engine protection

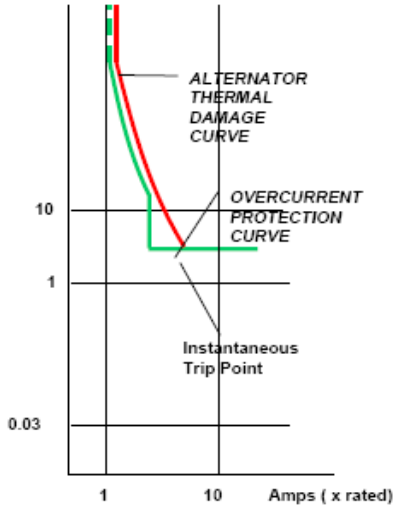
Engine fault detection is handled inside the engine ECM. Fault information is communicated via the SAE-J1939 data link for annunciation in the HMI.

Alternator protection

High AC voltage shutdown (59) - Output voltage on any phase exceeds preset values. Time to trip is inversely proportional to amount above threshold. Values adjustable from 105-130% of nominal voltage, with time delay adjustable from 0.1-10 seconds. Default value is 110% for 10 seconds.

Low AC voltage shutdown (27) - Voltage on any phase has dropped below a preset value. Adjustable over a range of 50-95% of reference voltage, time delay 2-20 seconds. Default value is 85% for 10 seconds.

Overcurrent warning/shutdown - Implementation of the thermal damage curve with instantaneous trip level calculated based on current transformer ratio and application power rating.



Under frequency shutdown (81 u) - Generator set output frequency cannot be maintained. Settings are adjustable from 2-10 Hz below nominal governor set point, for a 5-20 second time delay. Default: 6 Hz, 10 seconds.

Over frequency shutdown/warning (81o) - Generator set is operating at a potentially damaging frequency level. Settings are adjustable from 2-10 Hz above nominal governor set point for a 1-20 second time delay. Default: 6 Hz, 10 seconds, enabled.

Loss of sensing voltage shutdown - Shutdown of generator set will occur on loss of voltage sensing inputs to the control.

Field overload shutdown - Uses field voltage to shutdown generator set when a field overload condition occurs.

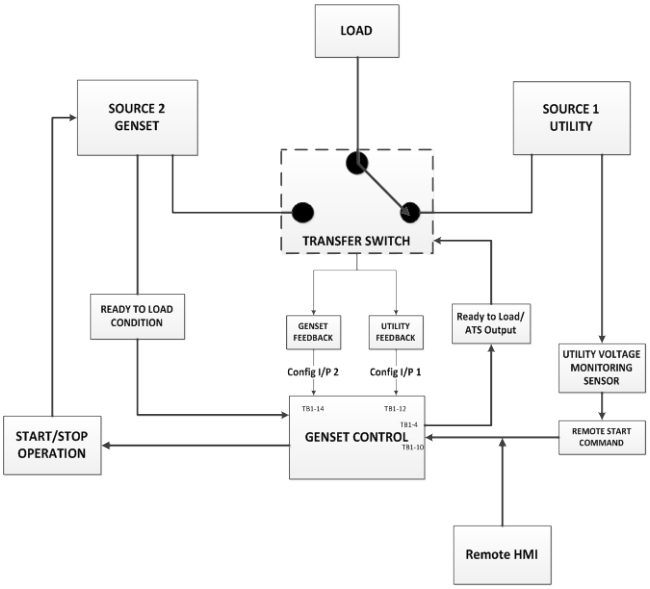
©2014 Cummins Power Generation Inc. All rights reserved. Cummins Power Generation and Cummins are registered trademarks of Cummins Inc. PowerCommand, InPower and "Our energy working for you." are trademarks of Cummins Power Generation. Other company, product, or service names may be trademarks or service marks of others. Specifications are subject to change without notice.

Advanced functions

Automatic mains failure*

The built in AMF feature provides the automatic transfer and re-transfer of the load from utility to generator set and vice-versa.

- Automatically starts-stops the generator set in the event of utility failure.
- Annunciates faults.



***** A utility voltage monitoring sensor (as shown in the AMF diagram above) must be connected in order to use the AMF feature on the 1302 control. Use Schneider Electric Relay RSB1A120U7, Socket RSZE1S35M.

Exerciser clock

The exerciser clock runs the generator set exerciser routines for dependability of operation.

Field control interface

Input signals to the base control include:

- Remote start
- Local and emergency stop
- Configurable inputs: Control includes (4) input signals from customer discrete devices that are configurable for warning, shutdown or status indication, as well as message displayed

Output signals from the PowerCommand control include:

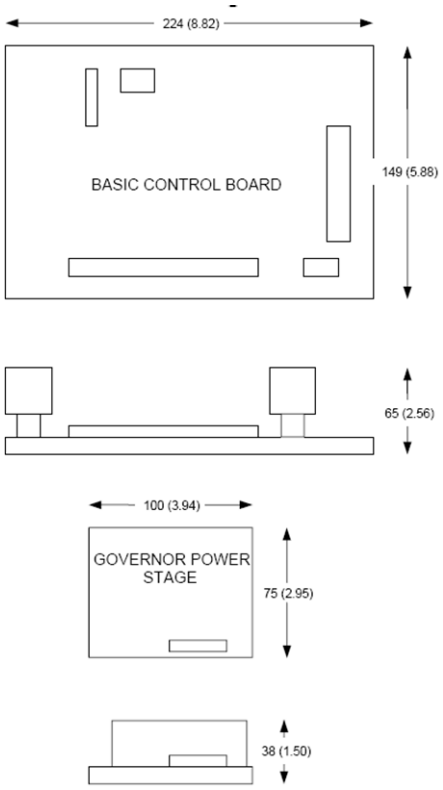
- Configurable relay outputs: Control includes (2) relay output contacts rated at 2 A. These outputs can be configured to activate on any control warning or shutdown fault as well as ready to load, not in auto, common alarm, common warning and common shutdown.
- Ready to load (generator set running) signal: Operates when the generator set has reached 90% of rated speed and voltage and latches until generator set is switched to off or idle mode.

Communications connections include:

- PC tool interface: This RS-485 communication port allows the control to communicate with a personal computer running InPower or PowerCommand for Windows® software.
- Modbus RS-485 port: Allows the control to communicate with external devices such as PLCs using Modbus protocol.

  Note - An RS-232 or USB to RS-485 converter is required for communication between PC and control.
- Networking: This RS-485 communication port allows connection from the control to the other Cummins Power Generation products.

Mechanical drawings



Our energy working for you.™

www.cumminspower.com

©2014 Cummins Power Generation Inc. All rights reserved. Cummins Power Generation and Cummins are registered trademarks of Cummins Inc. PowerCommand, InPower and "Our energy working for you." are trademarks of Cummins Power Generation. Other company, product, or service names may be trademarks or service marks of others. Specifications are subject to change without notice.

PowerCommand human machine interface HMI211



Description

This control system includes an intuitive operator interface panel that allows for complete genset control as well as system metering, fault annunciation, configuration and diagnostics. The interface includes five generator set status LED lamps with both internationally accepted symbols and English text to comply with customer needs. The interface also includes an LED backlit LCD display with tactile feel soft-switches for easy operation and screen navigation. It is configurable for units of measurement and has adjustable screen contrast and brightness.

The *run/off/auto* switch function is integrated into the interface panel.

All data on the control can be viewed by scrolling through screens with the navigation keys. The control displays the current active fault and a time-ordered history of the five previous faults.

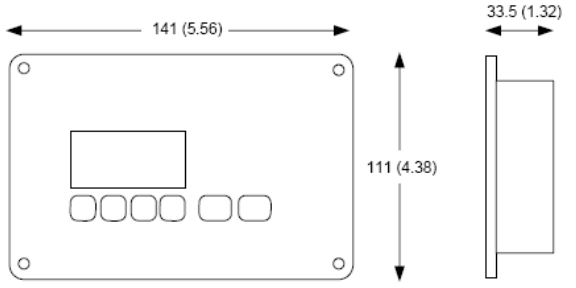
Features

- LED indicating lamps:
  - remote start
  - not in auto
  - shutdown
  - warning
  - auto
  - run
- 128 x 64 pixels graphic LED backlight LCD.
- Four tactile feel membrane switches for LCD defined operation. The functions of these switches are defined dynamically on the LCD.
- Two tactile feel membrane switches dedicated for *off* and *back*.
- Allows for complete genset control setup.
- Certifications: Suitable for use on generator sets that are designed, manufactured, tested and certified to relevant UL, NFPA, ISO, IEC, Mil Std., CE and CSA standards.
- HMI 211RS provides convenience for residential use.

Communications connections

- PC tool interface - This RS-485 communication port allows the HMI to communicate with a personal computer running InPower.
- This RS-485 communication port allows the HMI to communicate with the main control board.

Mechanical drawing



HMI

Dimensions: mm (inches)

Software

InPower (beyond 6.0 version) is a PC-based software service tool that is designed to directly communicate to PowerCommand generator sets and transfer switches, to facilitate service and monitoring of these products.

Environment

The control is designed for proper operation without recalibration in ambient temperatures from -40 °C (-40 °F) to +70° C (158 °F), and for storage from -55 °C (-67 °F) to +80 °C (176 °F). Control will operate with humidity up to 95%, non-condensing.

The HMI is designed for proper operation in ambient temperatures from -40 °C***** (-40 °F) to +70 °C (158 °F), and for storage from -40 °C***** (-40 °F) to +80 °C (176 °F).

The control board is fully encapsulated to provide superior resistance to dust and moisture. Display panel has a single membrane surface, which is impervious to effects of dust, moisture, oil and exhaust fumes. This panel uses a sealed membrane to provide long reliable service life in harsh environments.

The control system is specifically designed and tested for resistance to RFI/EMI and to resist effects of vibration to provide a long reliable life when mounted on a generator set. The control includes transient voltage surge suppression to provide compliance to referenced standards.

***** Heater accessory (pn: A040H853) is available for enhanced operation below -20 °C

Our energy working for you.™

www.cumminspower.com

©2014 Cummins Power Generation Inc. All rights reserved. Cummins Power Generation and Cummins are registered trademarks of Cummins Inc. PowerCommand, InPower and "Our energy working for you." are trademarks of Cummins Power Generation. Other company, product, or service names may be trademarks or service marks of others. Specifications are subject to change without notice.

Power Generation

Equipment Submittal
Rev-0

Certifications

PowerCommand meets or exceeds the requirements of the following codes and standards:

- NFPA 110 for level 1 and 2 systems.
- ISO 8528-4: 1993 compliance, controls and switchgear.
- CE marking: The control system is suitable for use on generator sets to be CE-marked.
- EN 50081-1,2 residential/light industrial emissions or industrial emissions.
- EN 50082-1,2 residential/light industrial or industrial susceptibility.
- ISO 7637-2, level 2; DC supply surge voltage test.
- Mil Std 202C, Method 101 and ASTM B117: Salt fog test.
- PowerCommand control systems and generator sets are designed and manufactured in ISO 9001 certified facilities.
- UL 508 recognized or Listed and suitable for use on UL 2200 Listed generator sets.
- CSA C282-M1999 compliance.
- CSA 22.2 No. 14 M91 industrial controls.

Warranty

All components and subsystems are covered by an express limited one year warranty. Other optional and extended factory warranties and local distributor maintenance agreements are available.

Accessories

1301-1302 Upgrade Kit (HM)	0541-1431
PowerCommand 500 (LAN)	A040X126
Remote HMI 211	0541-1394
Remote HMI 211RS	A046K103
I/O Expansion (Aux 101)	0541-1291
HMI Heater Accessory Kit	A040H853

Parts ordering information

1302 Control Board	0327-1617-02
1302 control Board – Arrow	A043W505
Aux 104 (Governor Control)	0327-1507
HMI 211 Without Heater	0300-6014
HMI 211 with Heater	A026G237

Additional resources

Resource	Where to Find
1302 Service Manual	QSOL
Accessories Catalog	cumminspower.com
Additional Controls Information	PowerSuite Library

PCCNet COMPATIBLE

See your distributor for more information

Cummins Power Generation

Americas
1400 73rd Avenue N.E.
Minneapolis, MN 55432 USA
Phone: 763 574 5000
Fax: 763 574 5298

Europe, CIS, Middle East and Africa
Manston Park Columbus Ave.
Manston Ramsgate
Kent CT 12 5BF United Kingdom
Phone 44 1843 255000
Fax 44 1843 255902

Asia Pacific
10 Toh Guan Road #07-01
TT International Tradepark
Singapore 608838
Phone 65 6417 2388
Fax 65 6417 2399

Warning: Back feed to a utility system can cause electrocution and/or property damage. Do not connect to any building's electrical system except through an approved device or after building main switch is open.

Our energy working for you.™

www.cumminspower.com

©2014 Cummins Power Generation Inc. All rights reserved. Cummins Power Generation and Cummins are registered trademarks of Cummins Inc. PowerCommand, InPower and "Our energy working for you." are trademarks of Cummins Power Generation. Other company, product, or service names may be trademarks or service marks of others. Specifications are subject to change without notice.

Cummins Power Generation

Exhaust emission data sheet

C60 D6

60 Hz Diesel generator set
EPA emission

Engine information:

Model:	Cummins 4BTAA3.3-G7	Bore:	3.74 in. (95 mm)
Type:	4 cycle, in-line, 4 cylinder diesel	Stroke:	4.53 in. (115 mm)
Aspiration:	Turbocharged and charge air-cooled	Displacement:	199 cu. in. (3.3 liters)
Compression ratio:	17.3:1		
Emission control device:			

Performance data	1/4 Standby	1/2 Standby	3/4 Standby	Full Standby
BHP @ 1800 RPM (60 Hz)	24.75	49.5	74.25	99
Fuel consumption (gal/Hr)	2.1	3.2	4.4	5
Exhaust gas flow (CFM)	245.3	380.2	490.6	613.3
Exhaust gas temperature (°F)	786	848	880	981
Exhaust emission data				
HC (Total unburned hydrocarbons)	0.41	0.15	0.07	0.04
NOx (Oxides of nitrogen as NO2)	2.79	2.41	2.9	3.85
CO (Carbon monoxide)	1.64	1.04	0.37	0.3
PM (Particular Matter)	0.37	0.16	0.1	0.08
SO2 (Sulfur dioxide)	0.22	0.12	0.08	0.09
Smoke (Bosch)	0.78	0.58	0.47	0.5

All values are Grams per HP - Hour

Test conditions

Data is representative of steady-state engine speed (± 25 RPM) at designated genset loads. Pressures, temperatures, and emission rates were stabilized.

Fuel specification:	ASTM D975 No. 2-D diesel fuel with 0.03-0.05% sulfur content (by weight), and 40-48 cetane number.
Fuel temperature:	99 ± 9 °F (at fuel pump inlet)
Intake air temperature:	77 ± 9 °F
Barometric pressure:	29.6 ± 1 in. Hg
Humidity:	NOx measurement corrected to 75 grains H2O/lb dry air
Reference standard:	ISO 8178

The NOx, HC, CO and PM emission data tabulated here are representative of test data taken from a single engine under the test conditions shown above. Data for the other components are estimated. These data are subjected to instrumentation and engine-to-engine variability. Field emission test data are not guaranteed to these levels. Actual field test results may vary due to test site conditions, installation, fuel specification, test procedures and instrumentation. Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may results in elevated emission levels.

2020 EPA Tier 3 Exhaust Emission Compliance Statement

C60 D6

Stationary Emergency

60 Hz Diesel Generator Set

Compliance Information:

The engine used in this generator set complies with Tier 3 emissions limit of U.S. EPA New Source Performance Standards for stationary emergency engines under the provisions of 40 CFR 60 Subpart IIII.

Engine Manufacturer:	Cummins Inc.
EPA Certificate Number:	LCEXL03.3CAA-042
Effective Date:	7/23/2019
Date Issued:	7/23/2019
EPA Engine Family (Cummins Emissions Family):	LCEXL03.3CAA

Engine Information:

Model:	4BTAA3.3-G7	Bore:	3.74 in. (95 mm)
Engine Nameplate HP:	99	Stroke:	4.53 in. (115 mm)
Type:	4 Cycle, In-line, 4 Cylinder Diesel	Displacement:	199 cu. in. (3.3 liters)
Aspiration:	Turbocharged & Charge Air Cooled	Compression ratio:	17.3:1
Emission Control Device:		Exhaust stack diameter:	3 in. (76 mm)

Diesel Fuel Emission Limits

D2 Cycle Exhaust Emissions

	Grams per BHP-hr			Grams per kWm-hr		
	NO_X + NMHC	CO	PM	NO_X + NMHC	CO	PM
Test Results	3.2	0.8	0.29	4.3	1.0	0.39
EPA Emissions Limit	3.5	3.7	0.30	4.7	5.0	0.40

Test methods: EPA emissions recorded per 40 CFR Part 60, 89, 1039, 1065 and weighted at load points prescribed in the regulations for constant speed engines.

Diesel fuel specifications: Cetane number: 40-50, Reference: ASTM D975 No. 2-D, 300-500 ppm Sulphur

Reference conditions: Air Inlet Temperature: 25 °C (77 °F), Fuel Inlet Temperature: 40 °C (104 °F). Barometric Pressure: 100 kPa (29.53 in Hg), Humidity: 10.7 g/kg (75 grains H2O/lb) of dry air; required for NOx correction, Restrictions: Intake Restriction set to a maximum allowable limit for clean filter; Exhaust Back Pressure set to a maximum allowable limit..

Tests conducted using alternate test methods, instrumentation, fuel or reference conditions can yield different results. Engine operation with excessive air intake or exhaust restriction beyond published maximum limits, or with improper maintenance, may result in elevated emission levels.

High ambient air temperature radiator cooling system

	Fuel type	Duty	Rating (Kw)	Max cooling @ air flow static restriction, unhoused (inches water/mm water)					Housed in free air, no air discharge restriction	
				0.0/0.0	0.25/6.4	0.5/12.7	0.75/19.1	1.0/25.4	F231	F217
				Maximum allowable ambient temperature, degree C						
60 Hz	Diesel	Standby	60	55	55	55	N/A	N/A	55	54
		Prime	54	55	55	55	N/A	N/A	55	53

Notes:

1. Data shown are anticipated cooling performance for typical generator set.
2. Cooling data is based on 1000 ft (305 m) site test location.
3. Generator set power output may need to be reduced at high ambient conditions. Refer generator set data sheet for derate schedules.
4. Cooling performance may be reduced due to several factors including but not limited to: Incorrect installation, improper operation, fouling of the cooling system, and other site installation variables.

Sound pressure level @ 7 meters, dB(A)

See notes 1-6 listed below

Configuration		Position (note 1)								8 Position average
		1	2	3	4	5	6	7	8	
Standard – unhoused	Infinite exhaust	79.2	82.3	80.4	82.9	79.0	82.2	82.4	81.8	81.5
F217-2 sound attenuated level 2	Mounted	69.1	69.2	67.5	70.3	69.1	69.5	68.4	68.6	69.0
F231-2 sound attenuated level 1	Mounted	75.0	72.1	68.4	69.5	68.8	70.1	69.8	72.5	71.3

Sound power level, dB(A)

See notes 2-4, 7, 8 listed below

Configuration		Octave band center frequency (Hz)								Overall sound power level
		31.5	63	125	250	500	1000	2000	4000	8000	
Standard – unhoused	Infinite exhaust	48.5	69.5	78.3	96.0	99.0	101.3	102.7	98.3	92.5	107.3
F217-2 sound attenuated level 2	Mounted	53.3	80.5	80.0	90.3	91.4	89.7	90.2	88.3	84.5	97.5
F231-2 sound attenuated level 1	Mounted	52.8	81.4	79.5	91.0	92.7	90.8	91.0	89.1	84.9	98.4

Exhaust sound power level, dB(A)

See notes 2, 9 listed below

Open exhaust (no muffler) @ rated load	Octave band center frequency (Hz)									Overall sound power level
	31.5	63	125	250	500	1000	2000	4000	8000	
	48.1	86.0	92.2	101.5	109.0	111.6	111.5	111.7	109.8	118.1

Note:

1. Position 1 faces the generator front per ISO 8528-10. The positions proceed around the generator set in a counter-clockwise direction in 45° increments. All position are at 7 m (23 ft) from surface of the generator set and 1.2 m (48 in.) from floor level.
2. Sound levels are subject to instrumentation, measurement, installation and manufacturing variability.
3. Data based on full rated load.
4. Sound data with generator sets with infinite exhaust do not include exhaust noise.
5. Sound pressure levels are measured per ANSI S1.13 and ANSI S12.18, as applicable.
6. Reference sound pressure is 20 µPa.
7. Sound power levels per ISO 3744 and ISO 8528-10, as applicable.
8. Reference power = 1 pw (10^{-12} W).
9. Exhaust sound power levels are per ISO 6798, as applicable.

Prototype Test Support (PTS)
60 Hz test summary

Generator set models

C50 D6 C60 D6

Representative prototype

Model: C60 D6

Alternator: CA125-L14

Engine: 4BTAA3.3-G7

The following summarizes prototype testing conducted on the designated representative prototype of the specified models. This testing is conducted to verify the complete generator set electrical and mechanical design integrity. Prototype testing is conducted only on generator sets not sold as new equipment.

Maximum surge power: 62.52 kW

The generator set was evaluated to determine the stated maximum surge power.

Maximum motor starting: 111 kVA

The generator set was tested to simulate motor starting by applying the specified kVA load at low lagging power factor (0.4 or lower). With this load applied, the generator set recovered to a minimum of 90% rated voltage.

Alternator temperature rise:

The highest rated temperature rise (120 °C) test results are reported as follows to verify that worst case temperature rises do not exceed allowable NEMA MG1 limits for class H insulation. Tests were conducted per IEEE 115, rise by resistance and embedded detector, with the rated voltages. Only the highest temperatures are reported.

Location	Maximum rise (ºC)
Alternator stator	83
Alternator rotor	66
Exciter stator	N/A
Exciter rotor	N/A

Torsional analysis and testing:

The generator set was tested to verify that the design is not subjected to harmful torsional stresses. A spectrum analysis of the transducer output was conducted over the speed range of 1650 to 1950 RPM.

Cooling system: 50 °C ambient

0.5 in. H_2O restriction

The cooling system was tested to determine ambient temperature and static restriction capabilities. The test was performed at full rated load in elevated ambient temperature under static restriction conditions.

Durability:

The C60 D6 generator set was subjected to a minimum 1000 hour endurance test operating at variable load up to the Standby rating based upon MIL-STD-705 to verify structural soundness and durability of the design.

Electrical and mechanical strength:

The generator set was tested to several single phase and three phase faults to verify that the generator can safely withstand the forces associated with short circuit conditions. The generator set was capable of producing full rated output at the conclusion of the testing.

Steady state performance:

The generator set was tested to verify if the steady state operating performance was within the specified maximum limits.

Voltage regulation:	± 1%
Random voltage variation:	± 1%
Frequency regulation:	± 0.5%
Random frequency variation:	± 0.5%

Transient performance:

The generator set was tested to verify single step loading capability as required by NFPA 110 and verify acceptable voltage and frequency response on load addition or rejection. The following results were recorded at 1.0 power factor:

Full load acceptance:

Voltage dip:	19.5%
Recovery time:	3.2 seconds
Frequency dip:	5.8%
Recovery time:	1.8 seconds

Full load rejection:

Voltage rise:	25.7%
Recovery time:	2.4 seconds
Frequency rise:	8.6%
Recovery time:	1.4 seconds

Harmonic analysis:

(per MIL-STD-705B, method 601.4)

	Line to Line		Line to Neutral	
Harmonic	No load	Full load	No load	Full load
3	0.2	2.2	0.2	2.1
5	1.1	1.1	0.9	0.9
7	0.9	0.6	0.8	0.6
9	0	0.9	0	0.8
11	0.4	0.4	0.3	0.4
13	0.3	0.1	0.2	0
15	0	0.2	0	0.1

Alternator data sheet

Frame size: CA135-L14

Characteristics

No of bearings:		1	
Weights:	**Stator assembly**:	353.7 lb	160.4 kg
	Rotor assembly:	211.5 lb	95.9 kg
	Complete assembly:	565 lb	256 kg
Maximum speed:		2250 rpm	
Insulation system:	Class H throughout		

	60 Hz Voltage (winding no)				
	240 (06)	208 (311)	480 (41)	600 (17)	240 (311)
Excitation current: Full load:	1.64	2.05	2.08	2.13	2.05
Excitation current: No load:	0.76	0.47	0.49	0.53	0.47
3 Ø Ratings (0.8 power factor) (Based on specific temperature rise at 40° C ambient temperature)	240 (06)	208 (311)	480 (41)	600 (17)	240 (311)
120° C Rise peak Standby ratings kW		60	60	60	60
kVA		75	75	75	75
105° C Rise peak Standby ratings kW		55	55	55	55
kVA		68.75	68.75	68.75	68.75
1 Ø Ratings (1.0 power factor) (Based on specific temperature rise at 40° C ambient temperature)	240 (06)	208 (311)	480 (41)	600 (17)	240 (311)
120° C Rise peak Standby ratings kW	50				
kVA	50				
105° C Rise peak Standby ratings kW	45.8				
kVA	45.8				
Reactances (per unit ± 30%) (Based on full load at 105° C rise rating)	240 (06)	208 (311)	480 (41)	600 (17)	240 (311)
Synchronous	1.24	2.26	2.26	2.26	2.26
Transient	0.14	0.18	0.18	0.18	0.18
Subtransient	0.09	0.11	0.11	0.11	0.11
Negative sequence	0.17	0.19	0.19	0.19	0.19
Zero sequence	0.11	0.12	0.12	0.12	0.12
Motor starting	240 (06)	208 (311)	480 (41)	240 (311)	240 (311)
Maximum kVA (90% sustained voltage)					
(At 20° C nominal generator & ambient temperature) (PMG)	150	225	225	225	225
(Shunt)	95	212	212	212	212

Alternator data sheet

Frame size: CA135-L14

Time constants (sec)	240 (06)	208 (311)	480 (41)	600 (17)	240 (311)
Transient	0.038	0.038	0.038	0.038	0.038
Subtransient	0.007	0.007	0.007	0.007	0.007
Open circuit	0.56	0.70	0.70	0.70	0.70
DC	0.007	0.008	0.008	0.008	0.008
Windings (@ 20° C)	240 (06)	208 (311)	480 (311)	600 (311)	240 (311)
Stator resistance (Ohms per phase)	0.32	0.156	0.212	0.320	0.156
Rotor resistance (Ohms)	0.736	0.736	0.736	0.736	0.736
Number of leads	4	12	12	12	12

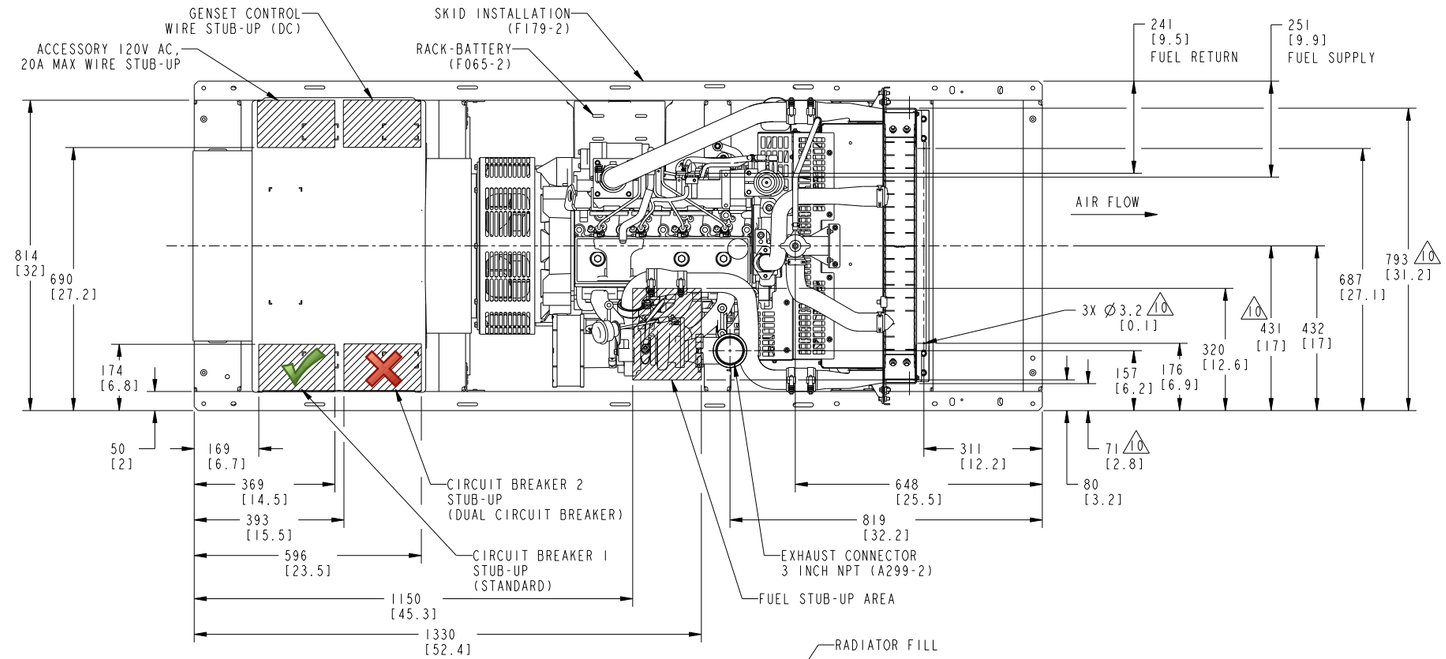
PTC® Creo® Parametric

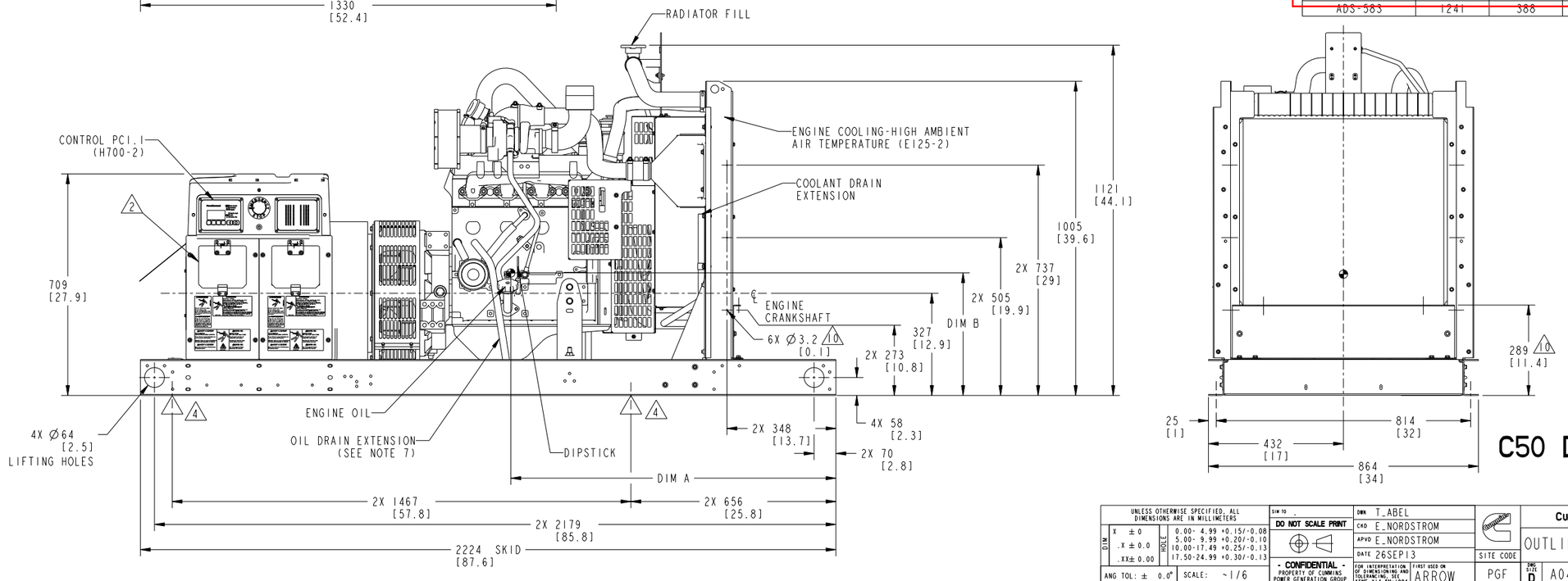
REL NO	LTR	NO	REVISION	DRW	CKD	APVD	DATE
ECO-144210	C	1	ADDED DIMNS AND NOTE - SEE ECO FOR	-	-	-	-
			DETAILS	DKS	BVM	B.MANN	11JUN14

NOTES:

1. DIMENSIONS SHOWN IN [ ] ARE IN INCHES.
2. REFER TO CIRCUIT BREAKER OUTLINE DRAWING FOR ELECTRICAL STUB-UP AREA FOR SPECIFIC BREAKERS.
3. CONTROL INTERFACE CONNECTIONS SHOULD BE MADE WITH FLEXIBLE CONNECTIONS.
4. Ø21 [0.8] HOLES MARKED BY △ FOR 4 POINT ISOLATION OR SECURING TO MOUNTING SURFACE.
5. REFER TO GENSET OR FUEL TANK FOUNDATION OUTLINES FOR ELECTRICAL, FUEL AND OTHER FOUNDATION SPECIFICS.
6. GENSET SUPPLIED WITH FLEXIBLE FUEL LINES THAT CAN BE CONNECTED TO ENGINE INTERFACE POINTS.
   - 6.1 FUEL SUPPLY LINE: 508 [20] LONG WITH 1/4 INCH NPT MALE TERMINATION.
   - 6.2 FUEL RETURN LINE: 965 [38] LONG WITH 1/4 INCH NPT MALE TERMINATION.
7. OIL DRAIN EXTENSION: 5/8 INCH HOSE I.D.
8. FOR IBC SEISMIC CERTIFIED INSTALLATIONS, SEE GENSET IBC SEISMIC INSTALLATION REQUIREMENTS DRAWING.
9. DRY WEIGHT = WET WEIGHT - 22 KG (48 LB).
10. Ø3.2 HOLES FOR CUSTOMER-SUPPLIED COOLING EXHAUST AIR DUCT ADAPTER.

TABULATION				
ALT DATA SHEET #	DIM A	DIM B	GENSET WET WEIGHT	
			KG	LB
ADS-581	1197	391	640	1410
ADS-582	1214	390	671	1480
ADS-583	1241	388	724	1596





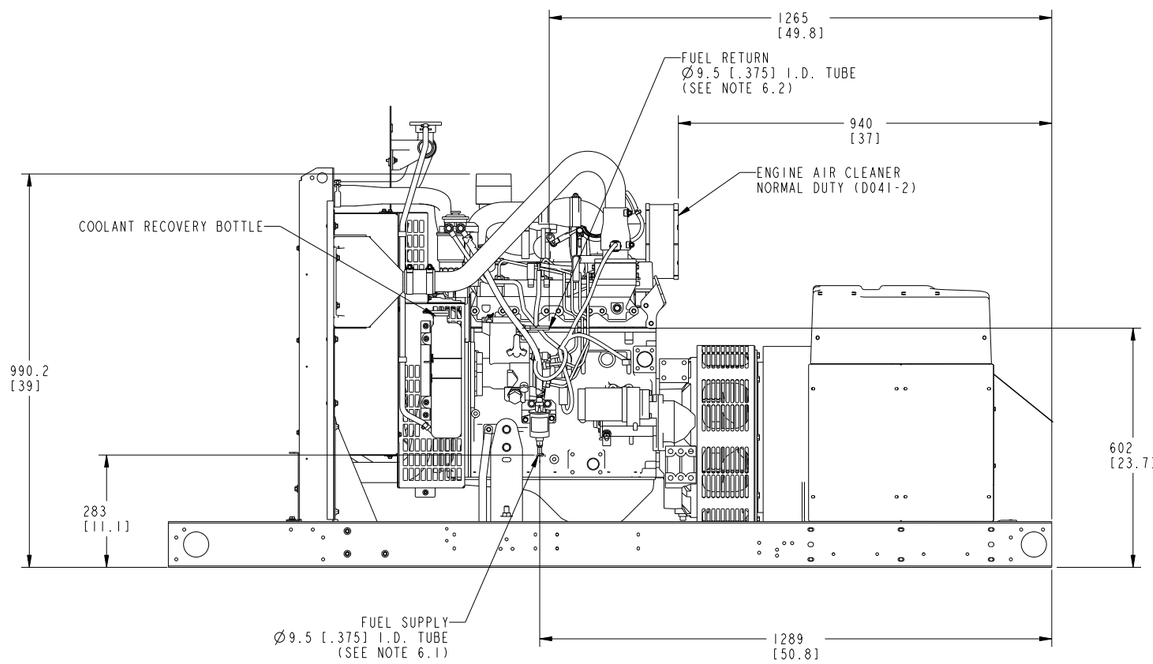
C50 D6, C60 D6

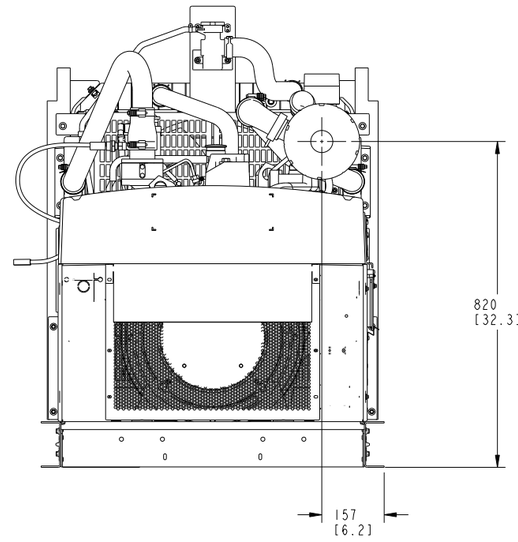
UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS			SIM TO	DRN T_ABEL	CUMMINS POWER GENERATION
DIM: X ± 0, .X ± 0.0, .XX± 0.00	HOLE: 0.00- 4.99 +0.15/-0.08; 5.00- 9.99 +0.20/-0.10; 10.00-17.49 +0.25/-0.13; 17.50-24.99 +0.30/-0.13		DO NOT SCALE PRINT	CHD E_NORDSTROM	
				APVD E_NORDSTROM	OUTLINE,GENSET
				DATE 26SEP13	SITE CODE
ANG TOL: ± 0.0°	SCALE: ~1/6	- CONFIDENTIAL - PROPERTY OF CUMMINS POWER GENERATION GROUP	FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994	FIRST USED ON ARROW	PGF
					DWG SIZE D — A047T035 — SHEET 1 of 2 — DWG REV C

Drawing Name: A047T036 Revision: C
Part Name: A047T035 Revision: C

PTC® Creo® Parametric

REL NO	LTR	NO	REVISION	DRN	CKD	APVD	DATE
ECO-144210	C	-	---	DKS	BVM	B.MANN	11JUN14





C50 D6, C60 D6

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS	SYM TO -	DRN T_ABEL		CUMMINS POWER GENERATION	
DIM: X ±0 / .X ±0.0 / .XX±0.00 — HOLE: 0.00-4.99 +0.15/-0.08; 5.00-9.99 +0.20/-0.10; 10.00-17.49 +0.25/-0.13; 17.50-24.99 +0.30/-0.13	DO NOT SCALE PRINT	CKD E_NORDSTROM	SITE CODE	OUTLINE,GENSET	
ANG TOL: ± 0.0° — SCALE: ~1/6	- CONFIDENTIAL - PROPERTY OF CUMMINS POWER GENERATION GROUP	APVD E_NORDSTROM; DATE 26SEP13; FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994; FIRST USED ON ARROW	PGF	DWG SIZE D — A047T035 — SHEET 2 of 2 — DWG REV C	

Drawing Name: A047T036 Revision: C
Part Name: A047T035 Revision: C
Equipment Submittal
Rev-0

PTC® Creo® Parametric

REL NO	LTR	NO	REVISION	DWN	CKD	APVD	DATE
ECO-178681	E	1	ZONE A4; F231-2 AND F216-2___	--	--	--	--
			CONFIGURATIONS WAS F231-2___	--	--	--	--
			CONFIGURATION	PPP	KAM	W.WINGFIELD	09JUL18
		2	UPDATE VIEWS PICTORIALLY	PPP	KAM	W.WINGFIELD	09JUL18

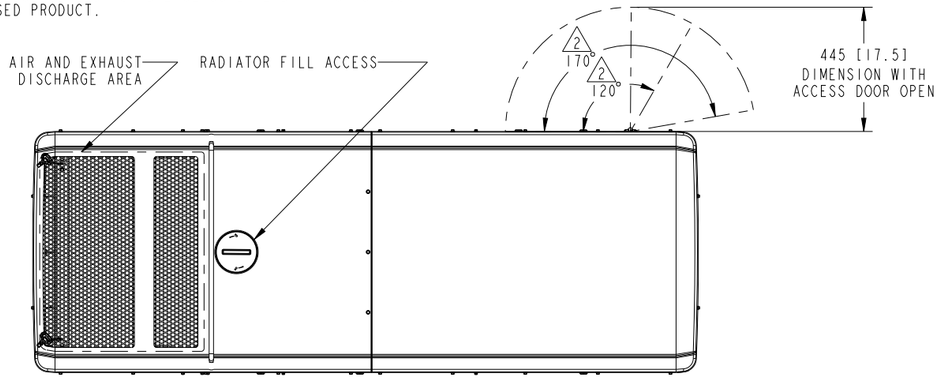
NOTES:

1. DIM [] IN INCHES

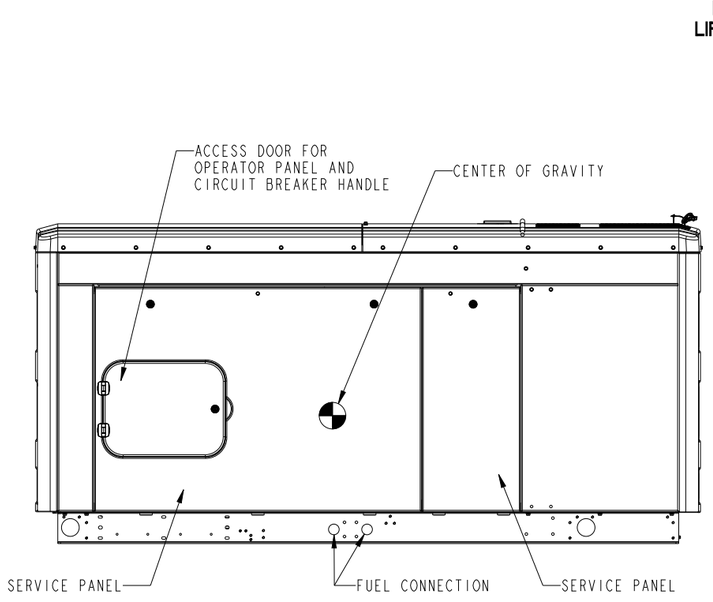
2. 120° AND 170° ARE DETENTED OPEN ANGLE FOR HINGE.

3. WHEN THE HOUSING INSTALLED ON AN OPEN GENERATOR SET, THE TOTAL WEIGHT WILL INCREASE BY 98 KG (216 LBS). THIS INCLUDES THE MUFFLER.

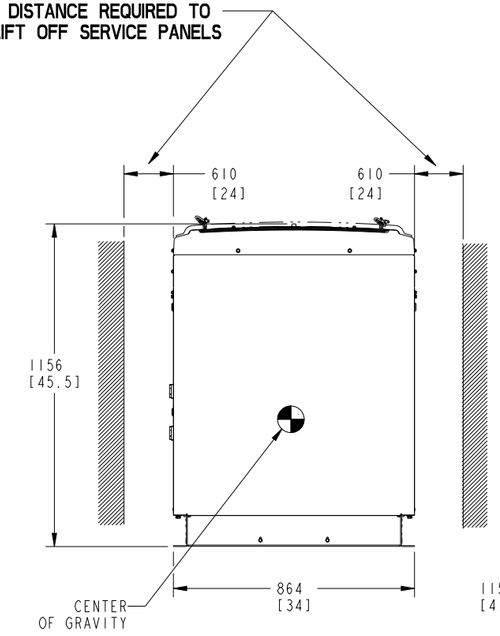
4. THE CENTER OF GRAVITY(CG) OF THE GENERATOR SET WHEN EQUIPPED WITH THIS HOUSING SHIFTS APPROXIMATELY 8MM (0.31 INCH) TOWARDS THE AIR DISCHARGE END OF THE HOUSING AND 38MM (1.5 INCH) HIGHER FROM THE GROUND. COMPARED TO THE EQUIVALENT NON-HOUSED PRODUCT WITH THE F179 SKID. SEE HOUSING READY SKID BASE OUTLINE DRAWING FOR CG LOCATION OF NON HOUSED PRODUCT.



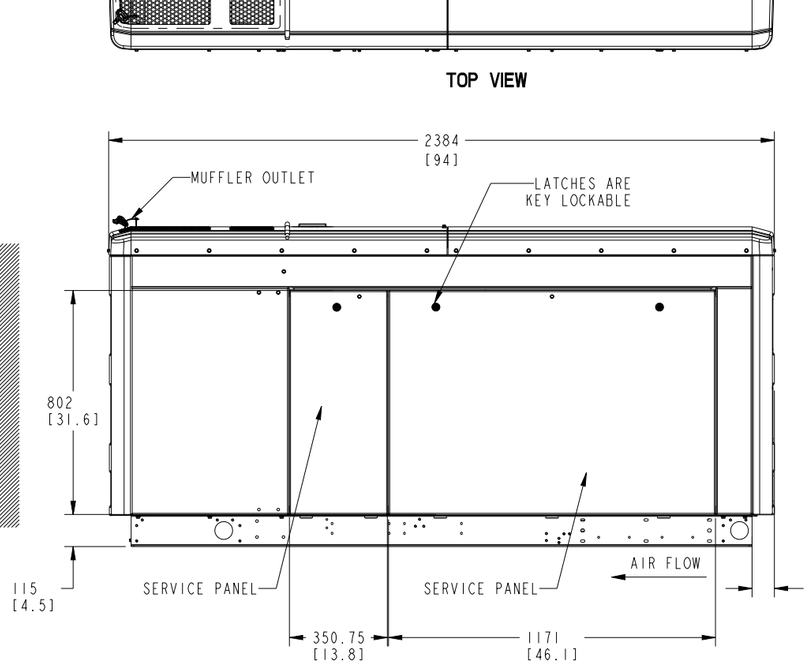
TOP VIEW



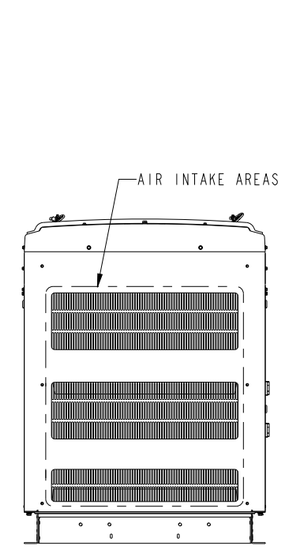
RIGHT SIDE VIEW



OUTLET VIEW



LEFT SIDE VIEW



INLET VIEW

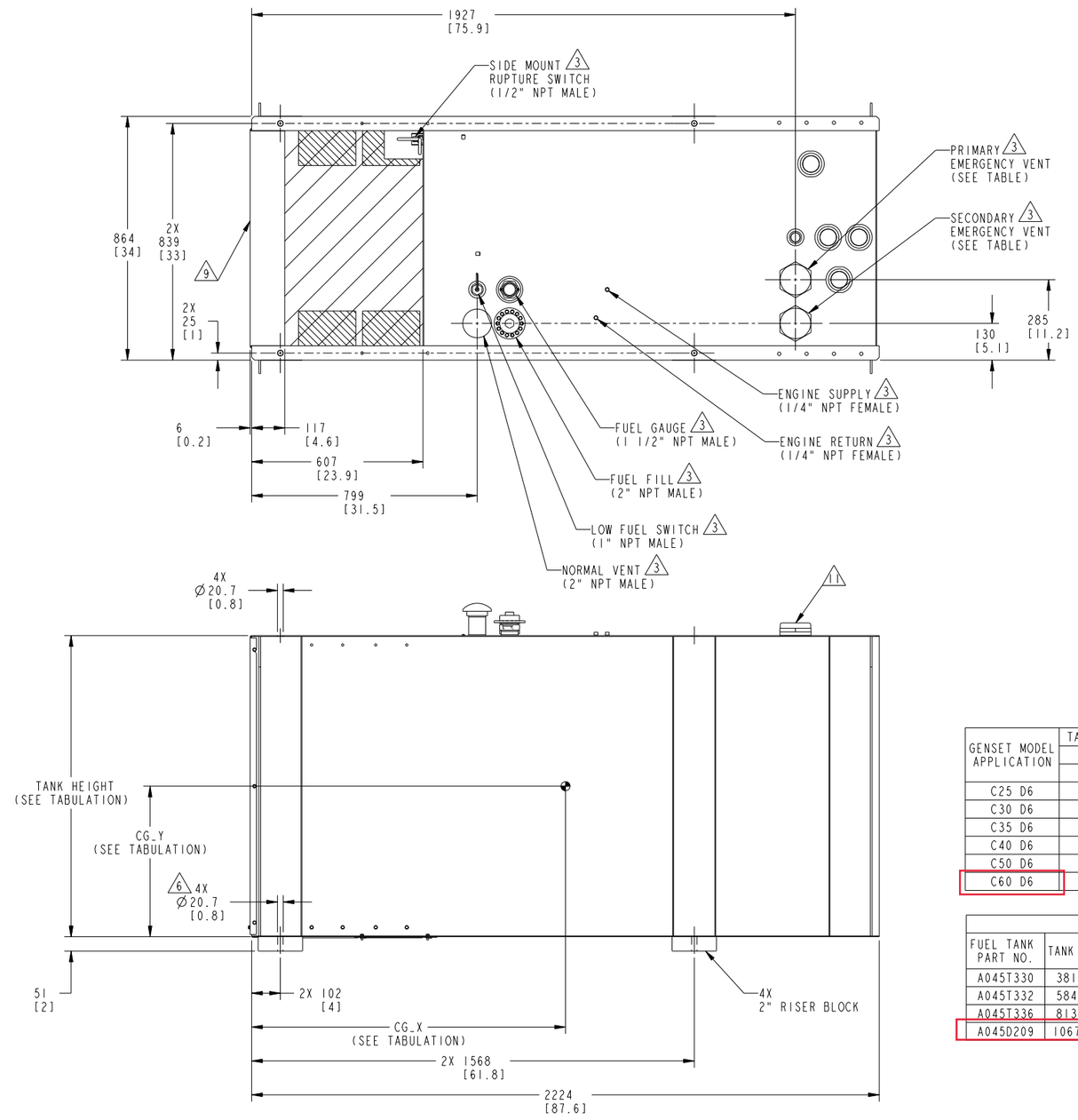
F231-2 AND F216-2 ENCLOSURE CONFIGURATIONS

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS	SIM TO NONE	DWN S_GAMBHIRE		CUMMINS POWER GENERATION	
DIM: X ±1; .X ±0.8; .XX± 0.38 — HOLE: 0.00- 4.99 +0.15/-0.08; 5.00- 9.99 +0.20/-0.10; 10.00-17.49 +0.25/-0.13; 17.50-24.99 +0.30/-0.13	DO NOT SCALE PRINT	CKD T_RADKE		OUTLINE,ENCLOSURE	
ANG TOL: ± 0.5° — SCALE: 1/10	- CONFIDENTIAL - PROPERTY OF CUMMINS POWER GENERATION GROUP	APVD J_MATTHEWS	SITE CODE		
		DATE 17JAN13	PGF	SIZE D — A043J729 — SHEET 1 OF 2 — DWG REV E	
	FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994	FIRST USED ON ARROW			

Drawing Name: A043J730 Revision: E
Part Name: A043J729 Revision: E
ECO-178681

Creo Parametric

REL NO	LTR	NO	REVISION	DRN	CKD	APVD	DATE
ECO-138549	A	1	PRODUCTION_RELEASE	DKS	MMG	M.GRIFFITH	26JUL13



NOTES:

1. TANKS ARE UL142 LISTED. SECONDARY CONTAINMENT FUEL TANK. REFER TO TANK LABELS AND LOCAL CODE TO DETERMINE VENTING REQUIREMENTS FOR BOTH COMPARTMENTS.
2. SUBBASE FUEL TANK MOUNTING.
   EXCESSIVE TWISTING OF THE FUEL TANK, MAY RESULT IN STRUCTURAL FAILURE OF THE TANK. TO ENSURE THE INSTALLATION DOES NOT EXCESSIVELY TWIST THE FUEL TANK, THE FOLLOWING PROCEDURE MUST BE OBSERVED:
   - 2.1 REFER TO APPLICATION MANUAL T030 FOR GENERAL SET MOUNTING GUIDELINES.
   - 2.2 AFTER PLACING SET ON FOUNDATION, VERIFY ALL FOUR MOUNTING PADS CONTACT FOUNDATION.
   - 2.3 THERE ARE SHIMS ATTACHED TO EACH FUEL TANK. THESE ARE INTENDED TO FILL ANY GAP BETWEEN THE MOUNTING PADS AND FOUNDATION.
   - 2.4 INSERT THE MAXIMUM HEIGHT STACK OF SHIMS THAT WILL SLIDE INTO THE GAP.
   - 2.5 TIGHTEN TANK HOLD DOWN MOUNTING FASTENERS.
3. INDICATES PIPE SIZE OF INTERFACE PORT OF FEATURE OR OPTION INDICATED.
4. DIMENSIONS IN [ ] ARE IN INCHES.
5. FOR IBC SEISMIC CERTIFIED INSTALLATIONS, SEE GENSET IBC SEISMIC INSTALLATION REQUIREMENTS DRAWING.
6. FUEL TANK HAS A FLANGE THICKNESS OF UP TO 10 mm [0.394 in], ALLOW EXTRA LENGTH ON HARDWARE FOR UNEVENESS OF MOUNTING SURFACE. RISER FEATURE WILL ADD ADDITIONAL 51 mm [2 in].
7. FUEL TANK PERIMETER IS SHOWN. FOUNDATION SHOULD BE EXTENDED BEYOND THIS PERIMETER. SEE (T030) APPLICATION MANUAL - (SEE SHEET 3).
8. INSTALLATION & REMOVAL LIFTING AND SERVICE ACCESS CLEARANCE (SUGGESTED MINIMUM) - (SEE SHEET 3).
9. REMOVABLE STUB-UP ACCESS PANEL.
10. ELECTRICAL STUB-UP AREA WITH FUEL TANK RISER FEATURE INSTALLED - (SEE SHEET 3).
11. MAINTAIN MIN 51 mm [2 in] CLEARANCE ABOVE E-VENT.
12. WEIGHT AND CENTER OF GRAVITY INFORMATION IS ESTIMATED AND CHANGES WITH TANK FEATURE INSTALLATION.

GENSET MODEL APPLICATION	TANK FEATURE CODE/RUN TIME	
	C319-2	C320-2
	24 HR	48 HR
C25 D6	A045T330	A045T332
C30 D6	A045T330	A045T336
C35 D6	A045T332	A045T336
C40 D6	A045T332	A045T336
C50 D6	A045T332	A045D209
C60 D6	A045T332	A045D209

TABULATION

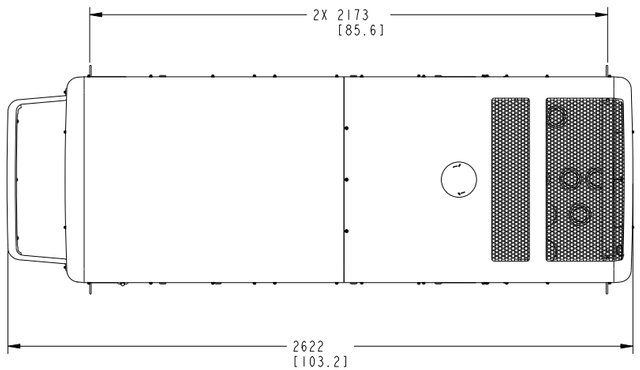
FUEL TANK PART NO.	TANK HEIGHT	E-VENT SIZE	TANK VOLUME-LITER [GAL]		WEIGHT - kg [lb]		CG_X		CG_Y	
			TOTAL (EST)	USABLE	MIN	MAX	MIN	MAX	MIN	MAX
A045T330	381 [15]	3" NPT	295 [78]	280 [74]	182 [401]	232 [511]	1321 [52]	1372 [54]	178 [7]	229 [9]
A045T332	584 [23]	3" NPT	526 [139]	500 [132]	266 [587]	341 [751]	1321 [52]	1372 [54]	279 [11]	330 [13]
A045T336	813 [32]	3" NPT	776 [205]	738 [195]	361 [796]	463 [1020]	1321 [52]	1372 [54]	381 [15]	432 [17]
A045D209	1067 [42]	3" NPT	1045 [276]	996 [263]	443 [977]	576 [1269]	1321 [52]	1372 [54]	508 [20]	559 [22]

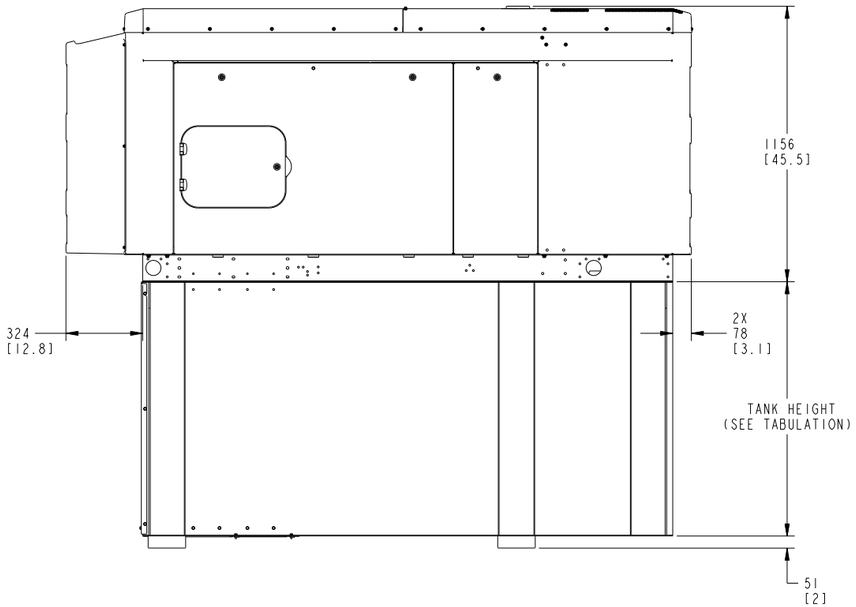
UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS
DIM: X ±1, .X ±0.8, .XX± 0.38 — HOLE: 0.00- 4.99 +0.15/-0.08, 5.00- 9.99 +0.20/-0.10, 10.00-17.49 +0.25/-0.13, 17.50-24.99 +0.30/-0.13
ANG TOL: ± 1.0° SCALE: 1:8
SW TO DO NOT SCALE PRINT
- CONFIDENTIAL - PROPERTY OF CUMMINS POWER GENERATION GROUP
DRN D.SUTAR
CHD M.GRIFFITH
APVD M.GRIFFITH
DATE 26JUL13
FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994
FIRST USED ON ARROW
SITE CODE PGF
CUMMINS POWER GENERATION
OUTLINE,FUEL TANK
PLATFORM-2 BASIC
DWG SIZE D | A047D046 | SHEET 1 OF 3 | DWG REV A

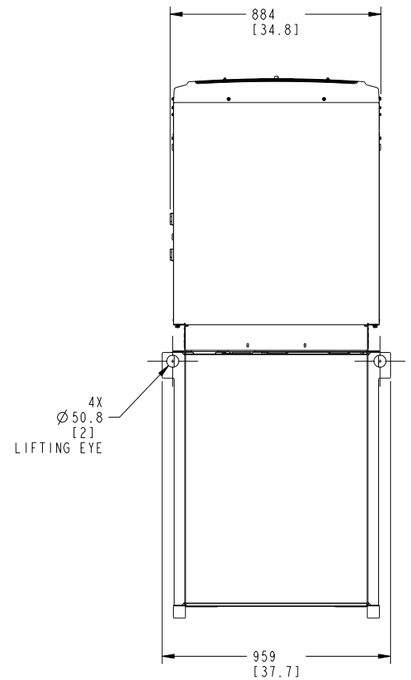
Drawing Name: A047D047 Revision: A
Part Name: A047D046 Revision: A
Equipment Submittal
Rev-0

Creo Parametric

REL NO	LTR	NO	REVISION	DRN	CKD	APVD	DATE
ECO-138549	A	1	PRODUCTION_RELEASE	DKS	MMG	M.GRIFFITH	26JUL13







UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS

DIM: X ±1; .X ±0.8; .XX± 0.38

HOLE: 0.00- 4.99 +0.15/-0.08; 5.00- 9.99 +0.20/-0.10; 10.00-17.49 +0.25/-0.13; 17.50-24.99 +0.30/-0.13

ANG TOL: ± 1.0°

SCALE: 3:32

SIM TO

DO NOT SCALE PRINT

- CONFIDENTIAL -
PROPERTY OF CUMMINS POWER GENERATION GROUP

DRN D.SUTAR

CKD M.GRIFFITH

APVD M.GRIFFITH

DATE 26JUL13

FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994

FIRST USED ON ARROW

SITE CODE PGF

CUMMINS POWER GENERATION

OUTLINE, FUEL TANK

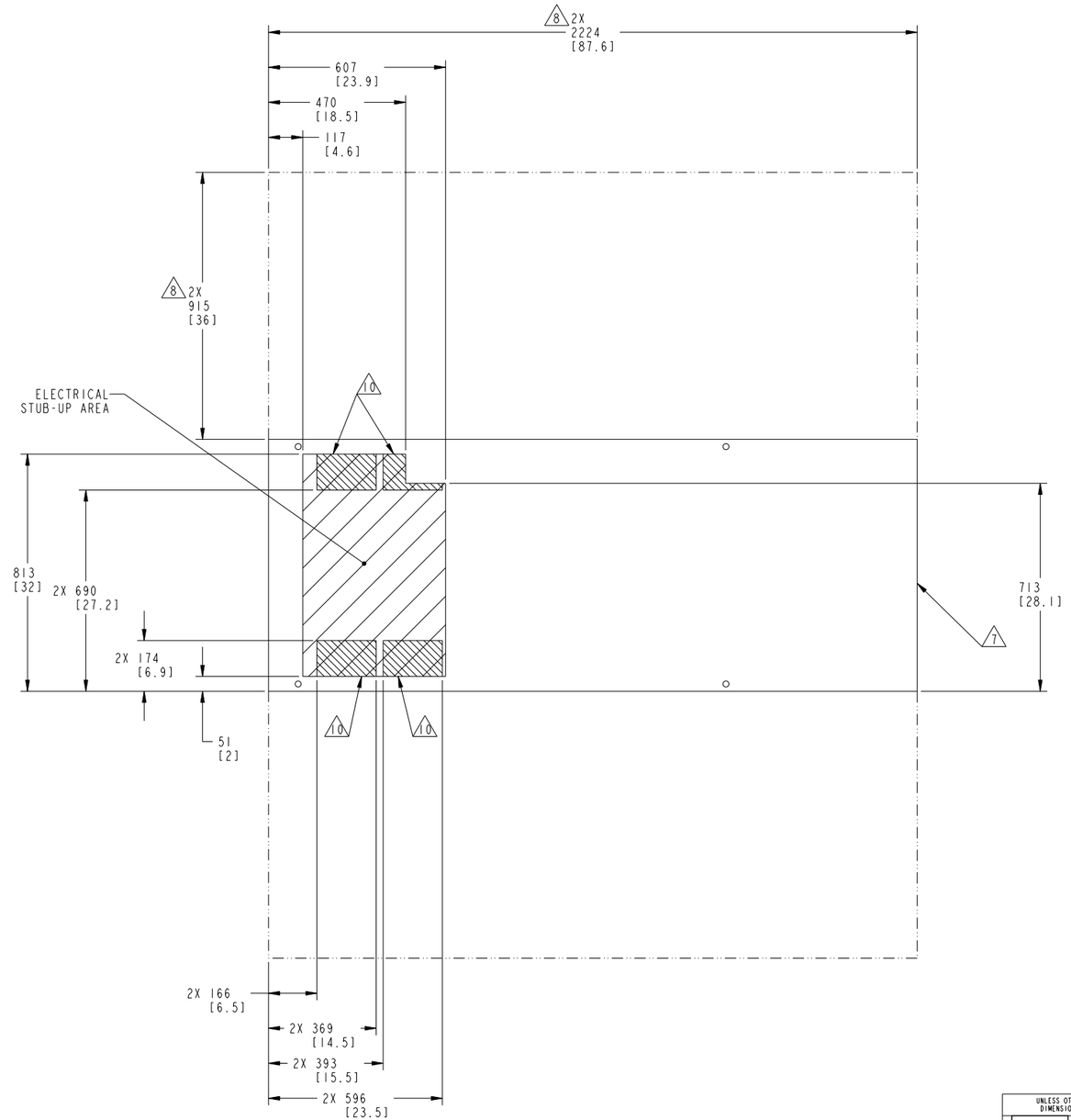
PLATFORM-2 BASIC

DWG SIZE D | A047D046 | SHEET 2 OF 3 | DWG REV A

Drawing Name: A047D047 Revision: A
Part Name: A047D046 Revision: A

Creo Parametric

REL NO	LTR	NO	REVISION	DRN	CKD	APVD	DATE
ECO-138549	A	1	PRODUCTION_RELEASE	DKS	MMG	M.GRIFFITH	26JUL13



UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS

DIM		HOLE	
X	± 1		0.00- 4.99 +0.15/-0.08
.X	± 0.8		5.00- 9.99 +0.20/-0.10
.XX	± 0.38		10.00-17.49 +0.25/-0.13
			17.50-24.99 +0.30/-0.13

ANG TOL: ± 1.0° SCALE: 1:8

SIM TO

DO NOT SCALE PRINT

- CONFIDENTIAL -
PROPERTY OF CUMMINS POWER GENERATION GROUP

DRN D.SUTAR
CKD M.GRIFFITH
APVD M.GRIFFITH
DATE 26JUL13

FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994

FIRST USED ON ARROW

SITE CODE PGF

CUMMINS POWER GENERATION

OUTLINE,FUEL TANK
PLATFORM-2 BASIC

DWG SIZE D | A047D046 | SHEET 3 OF 3 | DWG REV A

Drawing Name: A047D047 Revision: A
Part Name: A047D046 Revision: A
Equipment Submittal
Rev-0

Specification sheet

OTEC125 Transfer switch open transition

40 – 1200 amp



Description

OTEC transfer switches are designed for operation and switching of electrical loads between primary power and Standby generator sets. They are suitable for use in emergency, legally required, and optional Standby applications. The switches monitor both power sources, signal generator set startup, automatically transfer power, and return the load to the primary power source once a stable utility is available. The fully integrated controller is designed for practical functionality, with LED indicators and digital pushbuttons for ease of operator use.

Features

Microprocessor control - Easy-to-use, standard control. LEDs display transfer switch status; pushbuttons allow operator to activate control test, exercise timing and transfer mode.

Programmed transition – Open transition timing can be adjusted to completely disconnect the load from both sources for a programmed time period, as recommended by NEMA MG-1 for transfer of inductive loads.

Advanced transfer switch mechanism – Unique bi-directional linear actuator provides virtually frictionfree, constant force, straight-line transfer switch action during automatic operation.

Manual operation - Manual operating handles, shielded termination, and over-center contact mechanisms allow effective manual operation under deenergized conditions.

Positive interlocking - Mechanical and electrical interlocking prevent source-to-source connection through the power or control wiring.

Main contacts - Heavy-duty silver alloy contacts and multi-leaf arc chutes are rated for motor loads or total system load transfer. They require no routine contact maintenance. Continuous load current not to exceed 100% of switch rating and Tungsten loads not to exceed 30% of switch rating.

Easy service/access - Single-plug harness connection and compatible terminal markings simplify servicing. Access space is ample. Door-mounted controls are field-programmable; no tool is required.

Complete product line - Cummins offers a wide range of equipment, accessories and services to suit virtually any backup power application.

Warranty and service - Products are backed by a comprehensive warranty and a worldwide network of distributors with factory-trained service technicians.

©2017 Cummins Inc. | S-1464 (10/17)

Transfer switch mechanism



- Transfer switch mechanism is electrically operated and mechanically held in the Source 1 and Source 2 positions. The transfer switch incorporates electrical and mechanical interlocks to prevent inadvertent interconnection of the sources.
- Independent break-before-make action is used for both 3-pole and 4-pole/switched neutral switches. This design allows use of sync check operation when required, or control of the operating speed of the transfer switch for proper transfer of motor and rectifier-based loads (programmed transition feature).
- True 4-pole switching allows for proper ground (earth) fault sensing and consistent, reliable operation for the life of the transfer switch. The neutral poles of the transfer switch have the same ratings as the phase poles and are operated by a common crossbar mechanism, eliminating the possibility of incorrect neutral operation at any point in the operating cycle, or due to failure of a neutral operator.
- Electrical interlocks prevent simultaneous closing signals to normal and emergency contacts and interconnection of normal and emergency sources through the control wiring
- High pressure silver alloy contacts resist burning and pitting. Separate arcing surfaces further protect the main contacts. Contact wear is reduced by multiple leaf arc chutes that cool and quench the arcs. Barriers separate the phases to prevent interphase flashover. A transparent protective cover allows visual inspection while inhibiting inadvertent contact with energized components.
- Switch mechanism, including contact assemblies, is third-party certified to verify suitability for applications requiring high endurance switching capability for the life of the transfer switch. Withstand and closing ratings are validated using the same set of contacts, further demonstrating the robust nature of the design.

Specifications

Voltage rating	Transfer switches rated from 40 A through 1200 A are rated up to 600 VAC, 50 or 60 Hz.
Arc interruption	Multiple leaf arc chutes cool and quench the arcs. Barriers prevent interphase flashover.
Neutral bar	A full current-rated neutral bar with lugs is standard on enclosed 3-pole transfer switches.
Auxiliary contacts	Two contacts (one for each source) are provided for customer use. Wired to terminal block for easy access. Rated at 10A Continuous and 250 VAC maximum.
Operating temperature	-22 ˚F (-30 ˚C) to 140 ˚F (60 ˚C)
Storage temperature	-40 ˚F (-40 ˚C) to 140 ˚F (60 ˚C)
Humidity	Up to 95% relative, non-condensing
Altitude	Up to 10,000 ft (3,000 m) without derating
Total transfer time (source-to-source)	Will not exceed 6 cycles at 60 Hz with normal voltage applied to the actuator and without delayed transition enabled.
Manual operation handles	Transfer switches are equipped with permanently attached operating handles and quickbreak, quick-make contact mechanisms suitable for manual operation under de-energized conditions.

Transition Modes

Open transition/programmed – Controls the time required for the device to switch from source to source, so that the load-generated voltages decay to a safe level before connecting to an energized source. Recommended by NEMA MG-1 to prevent nuisance tripping breakers and load damage. Adjustable 0-10 seconds, default 0 seconds.

Open transition/in-phase – Initiates open transition transfer when in-phase monitor senses both sources are in phase. Operates in a break-before-make sequence. Includes ability to enable programmed transition as a backup. If sources are not in phase within 120 seconds, the system will transfer using programmed transition.

©2017 Cummins Inc. | S-1464 (10/17)

Microprocessor control



- Simple, easy-to-use control provides transfer switch information and operator controls
- LED lamps for source availability and source connected indication, exercise mode, and test mode. LED status lamps also provided for control set-up and configuration.
- Pushbutton controls for initiating test, overriding time delays and setting exercise time.
- Field-configurable for in-phase open or programmed open transition.
- Integral exerciser clock
- Control is prototype-tested to withstand voltage surges per EN60947-6-1.
- Gold-flashed generator start contacts

Control functions

Voltage sensing: All phases on the normal source and single phase on generator source. Normal Source Pickup: adjustable 90-95%, Dropout: adjustable 70-90% of nominal voltage; Generator Source Pickup: 90%, dropout: 75% of nominal voltage.

Frequency sensing: Generator Source Pickup: 90% of nominal frequency; Dropout: 75% of nominal frequency.

Exerciser clock: Switch is furnished with an integral engine exerciser configurable for operation on a 7, 14, 21, or 28-day cycle with a fixed exercise period duration of 20 minutes. A 12-hr exerciser time offset allows for the convenient setting of exercise time without the need to activate the timer at the exact time that you need to schedule the generator exercise for. Software selectable capability allows for the exercising of the generator with or without load.

Time-delay functions

Engine start: Prevents nuisance genset starts due to momentary power system variation or loss. Adjustable: 0-10 seconds; default: 3 seconds

Transfer normal to emergency: Allows genset to stabilize before application of load. Prevents power interruption if normal source variation or loss is momentary. Allows staggered transfer of loads in multiple transfer switch systems. Adjustable 0-300 seconds, default 5 seconds.

Retransfer emergency to normal: Allows the utility to stabilize before retransfer of load. Prevents needless power interruption if return of normal source is momentary. Allows staggered transfer of loads in multiple transfer switch systems. Adjustable 0-30 minutes, default 10 minutes.

Genset stop: Maintains availability of the genset for immediate reconnection in the event that the normal source fails shortly after transfer. Allows gradual genset cool down by running unloaded. Adjustable 0-30 minutes, default 10 minutes.

Delayed (programmed) transition: Controls the speed of operation of the transfer switch power contacts to allow load generated voltages from inductive devices to decay prior to connecting a live source. Adjustable 0-10 seconds, default 0 seconds.

Elevator signal: Provides a relay output contact for the elevator signal relay (load disconnect). The signal can also be configured to provide a post transfer delay of the same duration. Adjustable: 0-300 seconds (requires optional elevator signal relay for use).

Options

Elevator signal relay: Provides a relay output contact for the signal relay function

Programmable exerciser clock: Provides a fully-programmable 7-day clock to provide greater flexibility in scheduling exercise periods than standard integral exerciser. Time-of-day setting feature operates generator during periods of high utility rates.

©2017 Cummins Inc. | S-1464 (10/17)

UL withstand and closing ratings

The transfer switches listed below must be protected by circuit breakers or fuses. Referenced drawings include detailed listings of specific breakers or fuse types that must be used with the respective transfer switches. Consult with your distributor/dealer to obtain the necessary drawings. Withstand and Closing Ratings (WCR) are stated in symmetrical RMS amperes..

Transfer switch ampere	MCCB protection			Special circuit breaker protection		
	WCR @ volts max with specific manufacturers MCCBs	Max MCCB ratings	Drawing reference	With specific current limiting breakers (CLB)	Max CLB rating	Drawing reference
40, 70, 125 3-pole	14,000 at 600	225 A	A050J441	200,000 @ 600	225 A	A048J566
40, 70, 125 4-pole	30,000 at 600	225 A	A050J441	200,000 @ 600	225 A	A048J566
150, 225, 260	30,000 at 600	400 A	A048E949	200,000 @ 600	400 A	A051D533
300, 400, 600	65,000 at 600	1200 A	A056M829	200,000 @ 600	1200 A	A048J564
800, 1000	65,000 @ 480 50,000 @ 600	1400 A	A056M821	200,000 @ 600	1400 A	A048J562
1200	85,000 @ 480 65,000 @ 600	1600 A	A056M825	200,000 @ 600	1600 A	A048P186

Fuse Protection

Transfer switch ampere	WCR @ volts max. with current limiting fuses	Max fuse, size and type	Drawing reference
40, 70, 125 3- and 4-pole	200,000 at 600	200 A Class, J, RK1, RK5, T	A050J441
150, 225, 260	200,000 at 600	1200 A Class L or T, or 600 A class J, RK1, RK5	A048E949
300, 400, 600	200,000 at 600	1200 A Class L or T, or 600 A Class, J, RK1, RK5	A056M829
800, 1000	200,000 at 600	2000 A Class L or 1200 A class T or 600 A class J, RK1, RK5	A056M821
1200	200,000 at 600	2000 A Class L or 1200 A class T or 600 A class J, RK1, RK5	A056M825

3-cycle ratings

Transfer switch ampere	WCR @ volts max 3 cycle rating	Max MCCB rating	Drawing reference
300, 400, 600	25,000 at 600	1200 A	A056M829
800, 1000	35,000 at 600	1400 A	A056M821
1200	42,000 at 600 50,000 at 480	1600 A	A056M825

©2017 Cummins Inc. | S-1464 (10/17)

Enclosures

The transfer switch and control are wall-mounted in a key-locking enclosure. Wire bend space complies with 2008 NEC.

Dimensions - transfer switch in UL type 1 enclosure

Amp rating	Height		Width		Depth				Weight		Outline drawing
					Door closed		Door open				
	in	mm	in	mm	in	mm	in	mm	lb	kg	
40, 70, 125 3-pole	27.0	686	20.5	521	12.0	305	31.5	800	82	37	0310-0544
40, 70, 125 4-pole	35.5	902	26.0	660	16.0	406	41.0	1042	165	75	0500-4896
150, 225	35.5	902	26.0	660	16.0	406	41.0	1042	165	75	0310-0414
260	43.5	1105	28.5	724	16.0	406	43.0	1093	170	77	0310-0540
300, 400, 600	54.0	1372	25.5	648	18.0	457	42.0	1067	225	102	0310-1307
800, 1000	68.0	1727	30.0	762	19.5	495	48.5	1232	360	163	0310-0417
1200	90.0	2286	39.0	991	27.0	698	63.0	1600	730	331	A030L411

Dimensions - transfer switch in UL type 3R, 4, 4x, or 12 enclosure

Amp rating	Height		Width		Depth				Weight		Cabinet type	Outline drawing
					Door closed		Door open					
	in	mm	in	mm	in	mm	in	mm	lb	kg		
40, 70, 125 3-pole	34.0	864	26.5	673	12.5	318	36.5	927	125	57	3R, 12	0310-0453
											4	0310-0445
	46.0	1168	32.0	813	16.0	406	46.0	1168	255	102	4X	0500-4184
40, 70, 125 4-pole	42.5	1080	30.5	775	16.0	406	44.0	1118	215	97	3R, 12	0500-4896
											4	0500-4896
	46.0	1168	32.0	813	16.0	406	46.0	1168	215	102	4X	0500-4184
150, 225	42.5	1080	30.5	775	16.0	406	44.0	1118	215	97	3R, 12	0500-4184
											4	0310-0446
	46.0	1168	32.0	813	16.0	406	46.	1168	255	102	4X	0500-4184
260	46.0	1168	32.0	813	16.0	406	46.0	1168	255	102	3R, 12	0310-0455
											4	0310-0447
											4X	0500-4184
300, 400, 600	59.0	1499	27.5	699	16.5	419	41.5	1054	275	125	3R, 12	0310-1315
											4	0310-1316
	73.5	1867	32.5	826	19.5	495	49.5	1257	410	186	4X	0500-4185
800, 1000	73.5	1867	32.5	826	19.5	495	49.5	1257	410	186	3R, 12	0310-0457
											4	0310-0449
											4X	0500-4185
1200	90.0	2286	39.0	991	27.0	698	63.0	1600	730	331	3R, 12	A030L411
											4, 4X	A041N370

©2017 Cummins Inc. | S-1464 (10/17)

Transfer switch lug capacities

All lugs 90˚C rated and accept copper or aluminum wire unless indicated otherwise.

Transfer switch ampere	Cables per phase	Size
40, 70, 125 3-pole	1	#12 AWG-2/0
40 4-pole	1	#12 AWG-2/0
70, 125 4-pole	1	#6 AWG - 300 MCM
150, 225	1	#6 AWG - 300 MCM
260	1	#6 AWG - 400 MCM
300, 400	2	One accepts 3/0 AWG - 600 MCM and One #4 AWG - 250 MCM
600	2	250 - 500 MCM
800	4	250 - 500 MCM
1000, 1200	4	#2 AWG to 600 MCM standard (feature N045) 1/0 AWG to 750 MCM optional (feature N066) Compression Lug Adapter optional (feature N032)

Certification

All switches are UL 1008 Listed with UL Type Rated cabinets and UL Listed CU-AL terminals.

All switches are certified to CSA 282 Emergency Electrical Power Supply for Buildings, up to 600 VAC.

NEC

Suitable for use in emergency, legally required and Standby applications per NEC 700, 701 and 702.

All switches comply with NFPA 70, 99 and 110 (Level 1).

All switches comply with NEMA ICS 10.

All switches comply with IEEE 446 Recommended Practice for Emergency and Standby Power Systems.

This transfer switch is designed and manufactured in facilities certified to ISO9001.

©2017 Cummins Inc. | S-1464 (10/17)

Submittal detail

Amperage ratings

- 40
- 70
- 125
- 150
- 225
- 260
- 300
- 400
- 600
- 800
- 1000
- 1200

Voltage ratings

- R020 120
- R038 190
- R021 208
- R022 220
- R023 240
- R024 380
- R025 416
- R035 440
- R026 480
- R027 600

Pole configuration

- A028 Poles - 3 (solid neutral)
- A029 Poles - 4 (switched neutral)

Frequency

- A044 60 Hertz
- A045 50 Hertz

Application

- A035 Utility-to-genset

System options

- A041 Single phase, 2-wire or 3-wire
- A042 Three phase, 3-wire or 4-wire

Enclosure

- B001 Type 1: general purpose indoor (similar to IEC Type IP30)
- B002 Type 3R: intended for outdoor use, provides some protection from dirt, rain and snow (similar to IEC Type IP34)
- B003 Type 4: indoor or outdoor use, provides some protection from wind-blown dust and water spray (similar to IEC Type IP65)
- B010 Type 12: indoor use, some protection from dust (similar to IEC Type IP61)
- B025 Type 4X: stainless steel, indoor or outdoor use, provides some protection from corrosion (similar to IEC Type IP65)

Standards

- A046 UL 1008/CSA certification
- A080 Seismic certification

Control voltage

- M033 12V, Genset starting voltage
- M034 24V, Genset starting voltage

Control options

- J030 External exercise clock
- M032 Elevator signal relay

Battery chargers

- K001 2 Amps, 12/24 Volts
- KB59 15 Amps, 12 Volts
- KB60 12 Amps, 24 Volts

Auxiliary relays

Relays are UL Listed and factory installed. All relays provide (2) normally closed isolated contacts rated 10A @ 600 VAC. Relay terminals accept (1) 18 gauge to (2) 12 gauge wires per terminal.

- L101 24 VDC coil - installed, not wired (for customer use).
- L102 24 VDC coil - emergency position – relay energized when switch is in source 2 (emergency) position.
- L103 24 VDC coil - normal position - relay energized when switch is in source 1 (normal) position
- L201 12 VDC coil installed, not wired (for customer use)
- L202 12 VDC coil - emergency position – relay energized when switch is in source 2 (emergency) position
- L203 12 VDC coil - normal position - relay energized when switch is in source 1 (normal) position

Miscellaneous options

- C027 Cover - guard
- M003 Terminal block - 30 points (not wired)

Optional lug kits

- N032 Lug adapters, compression, ½ stab (1200A only)
- N045 Cable lugs, mechanical, 600 MCM, 4 per pole (1200A only)
- N066 Cable lugs, mechanical, 750 MCM, 4 per pole (1200A only)

Warranty

- G009 1 year comprehensive
- G004 2 year comprehensive
- G006 5 year basic
- G007 5 year comprehensive
- G008 10 year major components

Shipping

- A051 Packing – export box (800-1000 A)

Accessories

- AC-170 Accessories specifications sheet

Specifications are subject to change without notice.

For more information contact your local Cummins distributor or visit power.cummins.com

Our energy working for you.™

©2017 Cummins Inc. All rights reserved. Cummins is a registered trademark of Cummins Inc. PowerCommand, AmpSentry, InPower and "Our energy working for you." are trademarks of Cummins Inc. Other company, product, or service names may be trademarks or service marks of others. Specifications are subject to change without notice.

S-1464 (10/17)

Pro/ENGINEER

REL NO	LTR	NO	REVISION	DRN	CKD	APVD	DATE
ECO-104136	F	1	REDRAWN IN PRO-E 2D	NVB	LJY	L.SMITH	12OCT11
		2	ZONE C2; CHG NOTES 6 & 7	NVB	LJY	L.SMITH	12OCT11
		3	ZONE C4; RMV 4 RECTANGULAR FEATURES	NVB	LJY	L.SMITH	12OCT11

NOTES:

1. APPROX. WEIGHT: 82 LBS
   MASS: 37 kg

2. DIMENSIONS IN ( ) ARE MILLIMETERS.

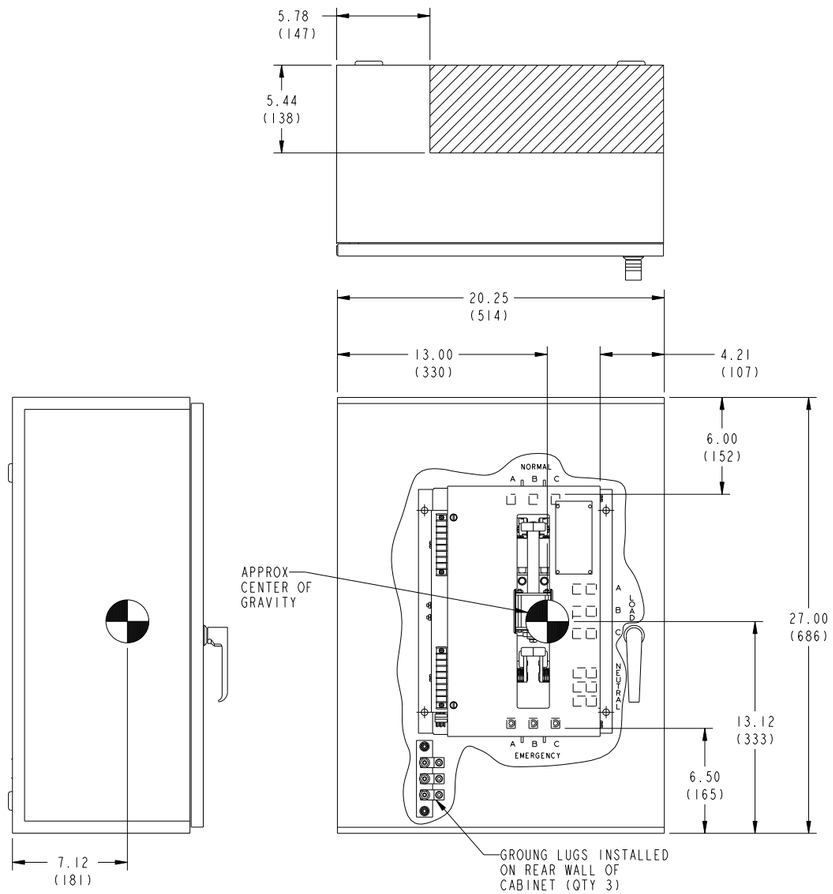
3. LUG CAPACITY:
   NORMAL & EMERGENCY LUGS (QTY 1 WIRE)
   12-2/0 MCM (4-50) CU-AL
   LOAD & NEUTRAL LUGS (QTY 1 WIRE)
   14- 2/0 MCM (2.5-50) CU-AL
   GND LUG CAPACITY:
   (1 WIRE) WIRE RANGE 14-1/0 (2.5-50) CU-AL.

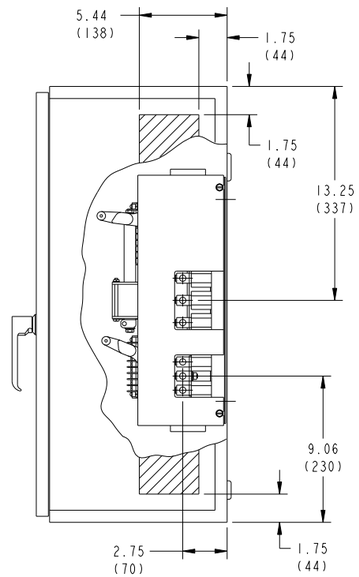
4. USE SEPARATE CONDUITS FOR CONTROL WIRING AND POWER WIRING. DO NOT COMBINE.

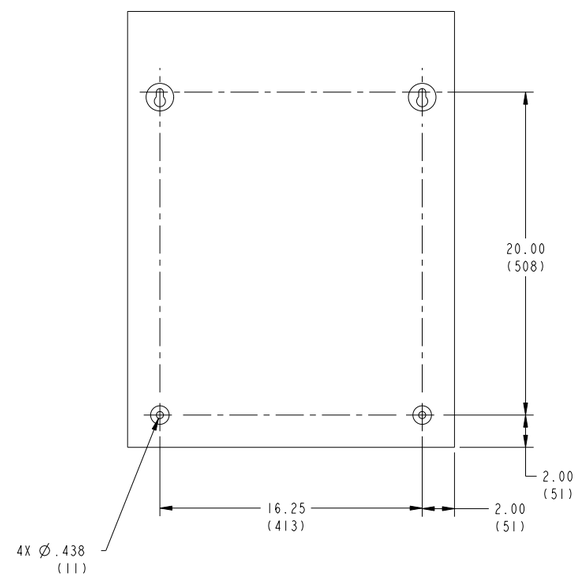
5. SHADED AREA INDICATES WIRING & CABLE ENTRANCE AREA. DO NOT INSTALL OUTSIDE OF SHADED AREA.

6. WIRE BENDING SPACE CONFORMS TO NATIONAL ELECTRIC CODE (NFPA70).

7. REFER TO THE NATIONAL ELECTRIC CODE FOR MINIMUM CLEAR SPACE IN FRONT OF THIS ENCLOSURE.





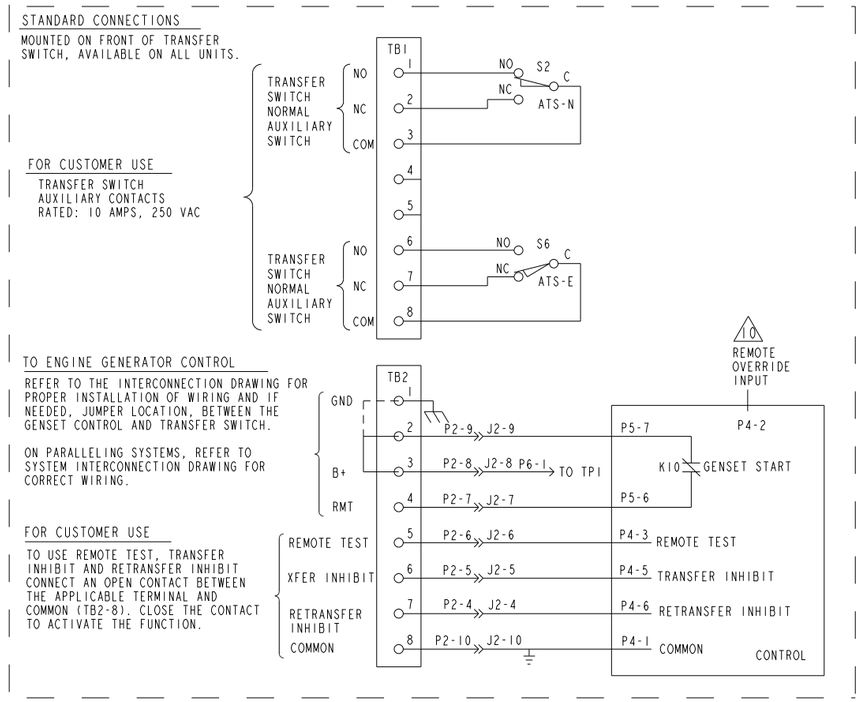


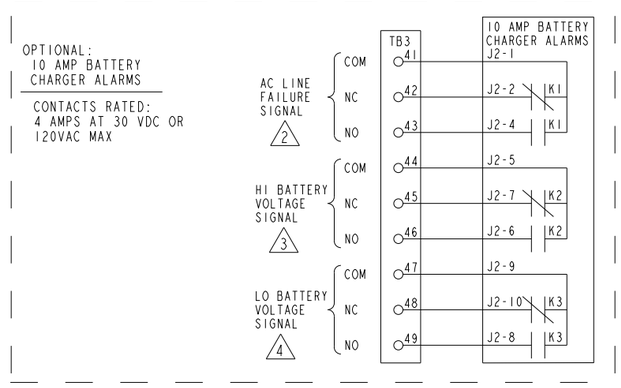
UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS	SIM TO 0319_0413	DWN E.ENGLE		CUMMINS POWER GENERATION	
DIM: X ± / .X ± / .XX± — HOLE: 0.00- 4.99 +0.15/-0.08; 5.00- 9.99 +0.20/-0.10; 10.00-17.49 +0.25/-0.13; 17.50-24.99 +0.30/-0.13	DO NOT SCALE PRINT	CKD J.OLSON		OUTLINE-CONTROL BOX	
		APVD J.MILLER			
		DATE 16APR90	SITE CODE		
ANG TOL: ± — SCALE: 1/1	- CONFIDENTIAL - PROPERTY OF CUMMINS POWER GENERATION GROUP	FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994 — FIRST USED ON 40-125 AMP	PGF	DWG SIZE D — 0310_0544 — SHEET 1 OF 1 — DWG REV F	

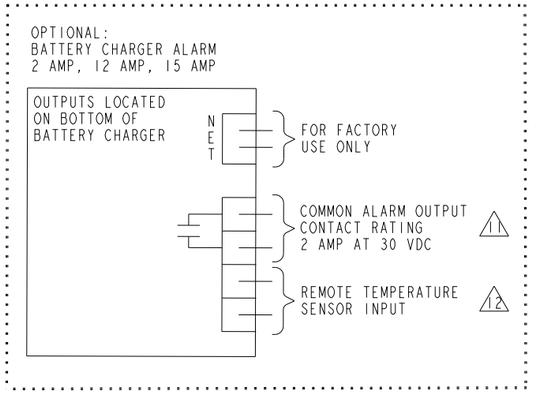
Drawing Name: 0310-0544 Revision: F
Part Name: 0310-0544 Revision: A
Equipment Submittal
Rev-0

PTC® Creo® Parametric

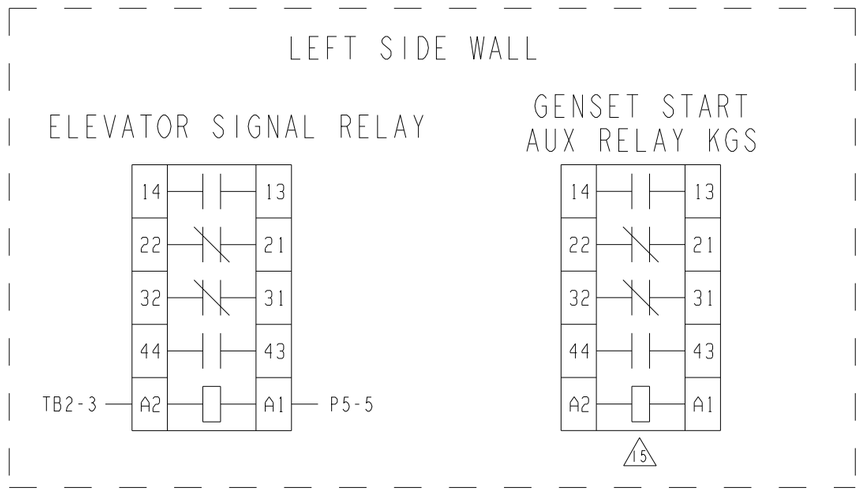
CUSTOMER CONNECTIONS







CUSTOMER CONNECTIONS



REL NO	REV	NO	REVISION	DWN	CKD	APVD	DATE
ECO-178424	H	1	ZONE A5, ADD GENSET START AUX RELAY	-	-	-	-
			KGS TERMINALS	MSC	LNK	T.BEAUCAGE	28JUN18
		2	ADD NOTE "KGS---WIRING"	MSC	LNK	T.BEAUCAGE	28JUN18
		3	ZONE A5, ADD FLAG NOTE 15	MSC	LNK	T.BEAUCAGE	28JUN18
		4	ZONE A1, TEXT "EXERCISER" WAS "EXECISER"	MSC	LNK	T.BEAUCAGE	28JUN18
		5	SEE SHEET 2	MSC	LNK	T.BEAUCAGE	28JUN18
		6	SEE SHEET 3	MSC	LNK	T.BEAUCAGE	28JUN18

NOTES:

1. TB1 AND TB2 ARE MOUNTED ON THE FRONT OF THE TRANSFER SWITCH. TB3 IS MOUNTED ON THE LEFT INSIDE PANEL OF THE ENCLOSURE.
2. SHOWN WITH SOURCE NOT CONNECTED.
3. SHOWN UNDER NORMAL BATTERY VOLTAGE CONDITION. CONTACTS TRANSFER UNDER A HIGH BATTERY VOLTAGE CONDITION.
4. SHOWN UNDER A LOW BATTERY VOLTAGE CONDITION.
5. SEE SHEET 2
6. SEE SHEET 2
7. SEE SHEET 3.
8. SEE SHEET 4.
9. SEE SHEET 4.
10. REMOTE OVERRIDE INPUT CONNECT AN OPEN CONTACT BETWEEN P4-2 & TB2-8.
11. THE FOLLOWING WILL CAUSE A BATTERY CHARGER ALARM OUTPUT.
    LOW BATTERY VOLTAGE
    HIGH BATTERY VOLTAGE
    LOW AC INPUT VOLTAGE
    HIGH AC INPUT VOLTAGE
    OVERCURRENT
    HIGH CHARGER TEMPERATURE
    BATTERY FAILURE
    HIGH BATTERY TEMPERATURE:
    NOT AVAILABLE ON 2 AMP CHARGER
12. USE THE INVERTER REMOTE TEMPERATURE PROBE. (PART NO. 0193-0530)
13. SEE SHEET 2.
14. ELEVATOR SIGNAL RELAY SHOWN DE-ENERGIZED. RELAY CHANGES STATE WHEN THE ELEVATOR TRANSFER TIME DELAY (TDEL) STARTS.
15. KGS PROVIDED UNWIRED FOR ADDITIONAL GENSET START WIRING LOGIC TO MEET ANY LOCAL CODE OR INSTALLATION REQUIREMENTS. REFER TO THE INTERCONNECTION DRAWING FOR PROPER INSTALLATION OF WIRING.

UTILITY TO GENSET
3 AND 4 POLE
OTEC 40-600 AMP & OTECSE 40-125 AMP
120 VOLT 1 PHASE L-N
240 VOLT 1 PHASE
190 VOLT 3 PHASE
208 VOLT 3 PHASE
220 VOLT 3 PHASE
240 VOLT 3 PHASE
380 VOLT 3 PHASE
415 VOLT 3 PHASE
440 VOLT 3 PHASE
480 VOLT 3 PHASE

OPTIONS:
BATTERY CHARGER
BATTERY CHARGER ALARMS
EXERCISER CLOCK
ELEVATOR RELAY

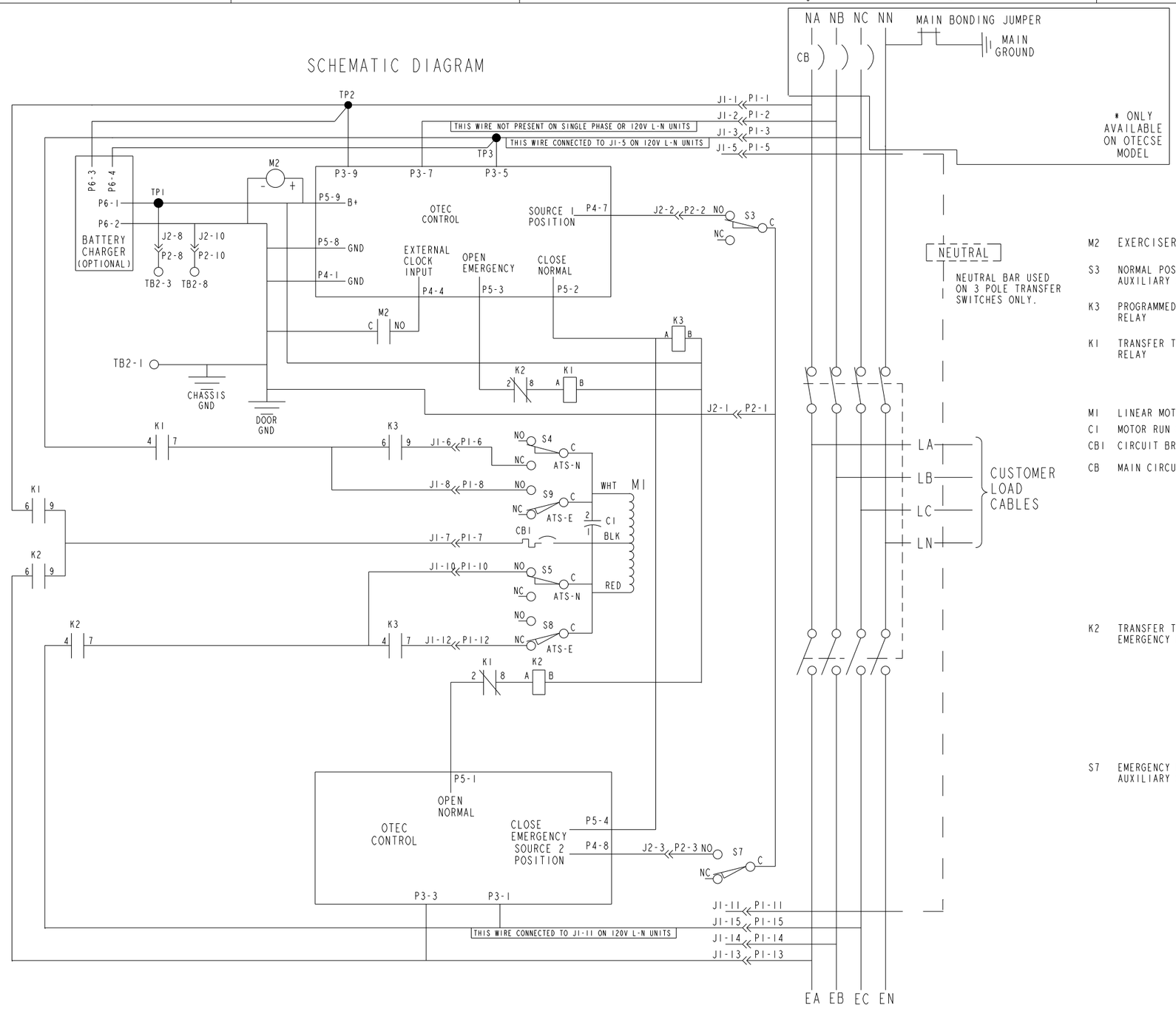
UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS
DIM: X ±1, .X ±0.8, .XX± 0.38
HOLE: 0.00- 4.99 +0.15/-0.08; 5.00- 9.99 +0.20/-0.10; 10.00-17.49 +0.25/-0.13; 17.50-24.99 +0.30/-0.13
ANG TOL ± 1.0°
SCALE 1:1
SIM TO .
DO NOT SCALE PRINT
THIS DOCUMENT (AND THE INFORMATION SHOWN THEREON) IS CONFIDENTIAL AND PROPRIETARY AND SHALL NOT BE DISCLOSED TO OTHERS IN HARD COPY OR ELECTRONIC FORM, REPRODUCED BY ANY MEANS, OR USED FOR ANY PURPOSE WITHOUT WRITTEN CONSENT OF CUMMINS INC.
FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994
FIRST USED ON OTEC
DWN S D MORE
CKD I A MAHADESHWAR
APVD MILLER
DATE 26NOV04
SITE CODE PGF
CUMMINS POWER GENERATION
WD-TRANSFER SWITCH
DWG SIZE D
0630_2766
CAD SHEET 1 OF 4

Drawing Name: 0630-2766 Revision: H
Part Name: 0630-2766 Revision: H
ECO-178424

PTC® Creo® Parametric

REL NO	REV	NO	REVISION	DWN	CKD	APVD	DATE
ECO-178424	H	5	ZONE D2, TEXT "EXERCISER" WAS "EXECISER"	MSC	LNK	T.BEAUCAGE	28JUN18

SCHEMATIC DIAGRAM



M2 EXERCISER CLOCK (OPTIONAL)

S3 NORMAL POSITION AUXILIARY SWITCH

K3 PROGRAMMED TRANSITION RELAY

K1 TRANSFER TO NORMAL RELAY

M1 LINEAR MOTOR

C1 MOTOR RUN CAPACITOR

CB1 CIRCUIT BREAKER

CB MAIN CIRCUIT BREAKER

NOTES:

5. ALL DEVICES ARE SHOWN DE-ENERGIZED, WITH THE TRANSFER SWITCH CLOSED TO NORMAL. 4 POLE TRANSFER SWITCH SHOWN. ON 3 POLE MODELS THE SWITCHED NEUTRAL POLE IS REPLACED WITH A SOLID NEUTRAL BAR.

6. FOR SINGLE PHASE UNITS:
   120/240, 3 WIRE - CONNECT POWER CABLES TO A AND C
   110 L-N, 2 WIRE - CONNECT POWER CABLES TO A AND NEUTRAL

13. FOR OTECSE MODEL, LIST OF MAIN CIRCUIT BREAKER TYPE SHOWN BELOW:

SWITCH RATING	MAIN CIRCUIT BREAKER TYPE
40-125A	SQUARE D, TYPE 'HG'

K2 TRANSFER TO EMERGENCY RELAY

S7 EMERGENCY POSITION AUXILIARY SWITCH

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS

DIM: X ±1 | .X ±0.8 | .XX± 0.38

HOLE: 0.00- 4.99 +0.15/-0.08 | 5.00- 9.99 +0.20/-0.10 | 10.00-17.49 +0.25/-0.13 | 17.50-24.99 +0.30/-0.13

ANG TOL ± 1.0°

SCALE 1:1

SIM TO .

DO NOT SCALE PRINT

THIS DOCUMENT AND THE INFORMATION SHOWN THEREON IS CONFIDENTIAL AND PROPRIETARY AND SHALL NOT BE DISCLOSED TO OTHERS OR REPRODUCED IN ANY FORM, ELECTRONIC OR MECHANICAL, OR USED FOR ANY PURPOSE WITHOUT WRITTEN CONSENT OF CUMMINS INC.

DWN S D MORE

CKD I A MAHADESHWAR

APVD MILLER

DATE 26NOV04

FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994

FIRST USED ON OTEC

SITE CODE PGF

CUMMINS POWER GENERATION

WD-TRANSFER SWITCH

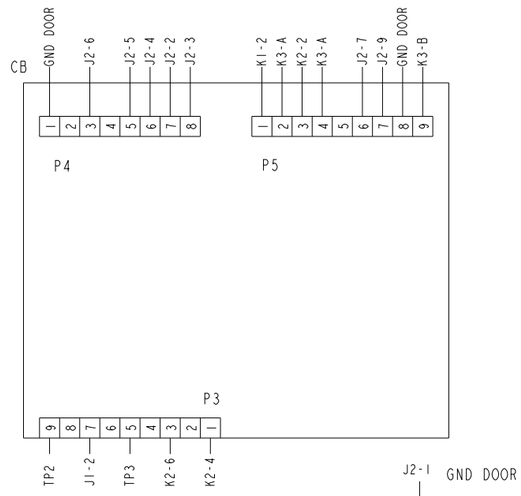
DWG SIZE D | 0630_2766 | CAD SHEET 2 OF 4

PTC® Creo® Parametric

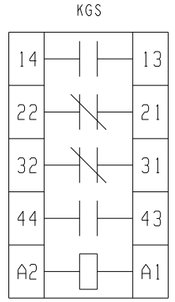
REL NO	REV	NO	REVISION	DWN	CKD	APVD	DATE
ECO-178424	H	6	ZONE D4, ADD KGS TERMINALS	MSC	LNK	T.BEAUCAGE	28JUN18

STANDARD WIRING

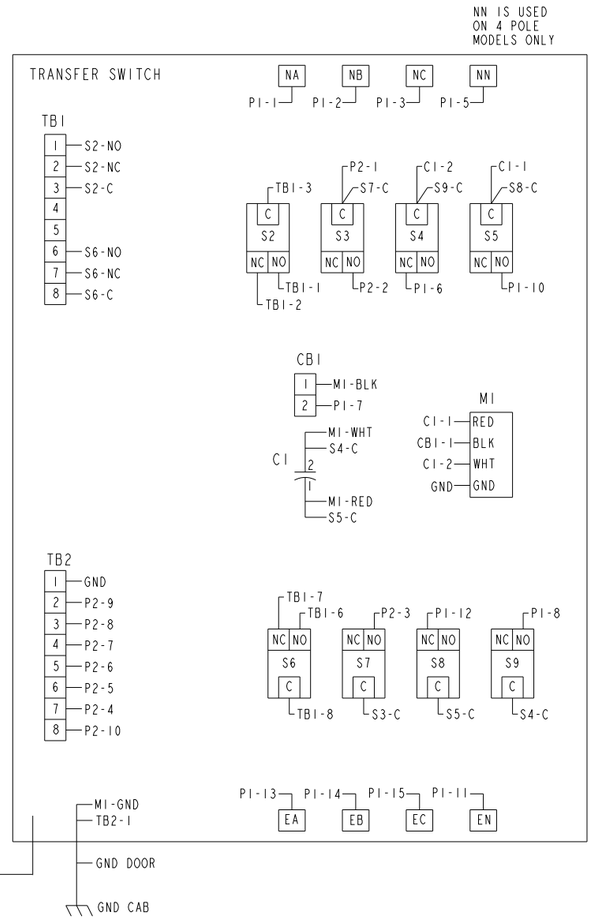
REAR VIEW OF DOOR



LEFT SIDEWALL



REAR WALL OF CABINET

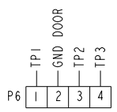


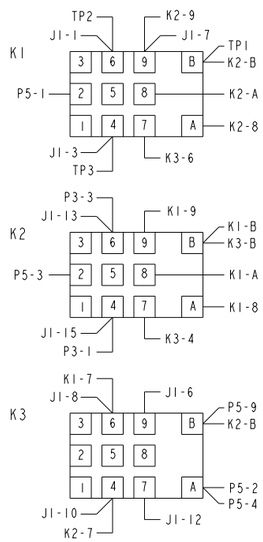
NEUTRAL BAR IS USED ON 3 POLE MODELS ONLY.

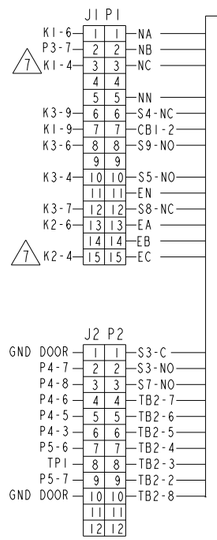
NOTES:

7 ON ALL SINGLE PHASE, 2 OR 3 WIRE UNITS: THE WIRE CONNECTED FROM J1-2 TO P3-7 IS NOT PRESENT.

IN ADDITION, ON 120 VOLT L-N, 2 WIRE UNITS: THE WIRE CONNECTED FROM K1-4 TO J1-3 WILL BE CONNECTED FROM K1-4 TO J1-5 AND THE WIRE CONNECTED FROM K2-4 TO J1-15 WILL BE CONNECTED FROM K2-4 TO J1-11.







UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS		SIM TO .	DWN S D MORE	CUMMINS POWER GENERATION
DIM: X ±1, .X ±0.8, .XX± 0.38 — HOLE: 0.00- 4.99 +0.15/-0.08; 5.00- 9.99 +0.20/-0.10; 10.00-17.49 +0.25/-0.13; 17.50-24.99 +0.30/-0.13		DO NOT SCALE PRINT	CKD I A MAHADESHWAR	
			APVD MILLER	WD-TRANSFER SWITCH
			DATE 26NOV04	SITE CODE: PGF
ANG TOL ± 1.0°	SCALE 1:1	THIS DOCUMENT, AND THE INFORMATION SHOWN THEREON, IS CONFIDENTIAL AND PROPRIETARY AND SHALL NOT BE DISCLOSED TO OTHERS IN HARD COPY OR ELECTRONIC FORM, REPRODUCED BY ANY MEANS, OR USED FOR ANY PURPOSE WITHOUT WRITTEN CONSENT OF CUMMINS INC.	FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994 — FIRST USED ON OTEC	DWG SIZE D — 0630_2766 — CAD SHEET 3 of 4

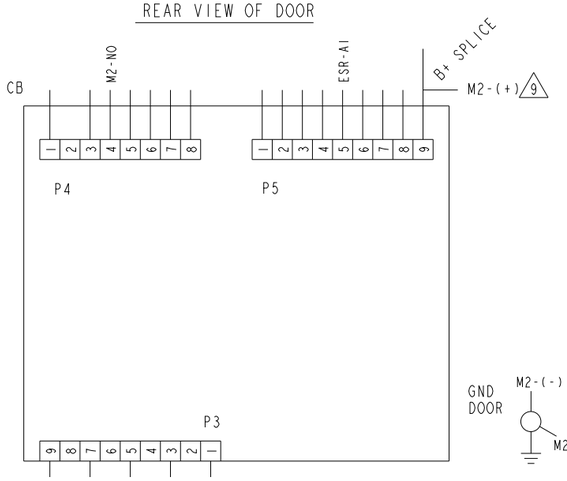
Drawing Name: 0630-2766 Revision: H
Part Name: 0630-2766 Revision: H
ECO-178424

PTC® Creo® Parametric

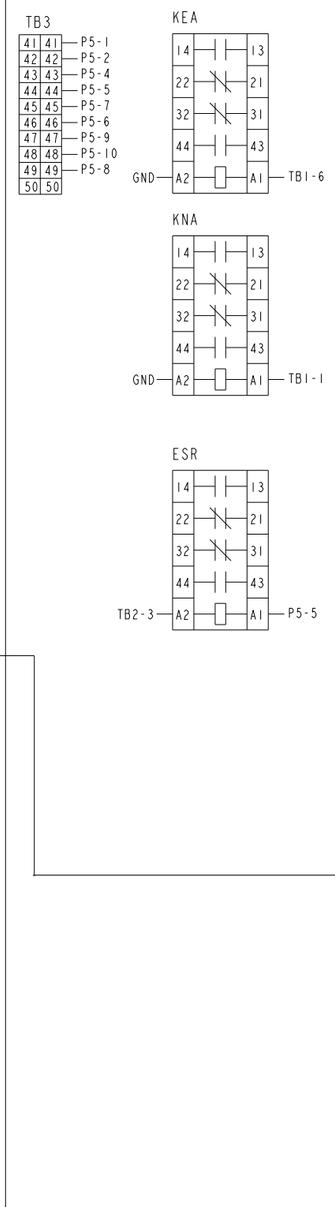
REL NO	REV	NO	REVISION	DWN	CKD	APVD	DATE
ECO-178424	H	-	---	MSC	LNK	T.BEAUCAGE	28JUN18

OPTION WIRING

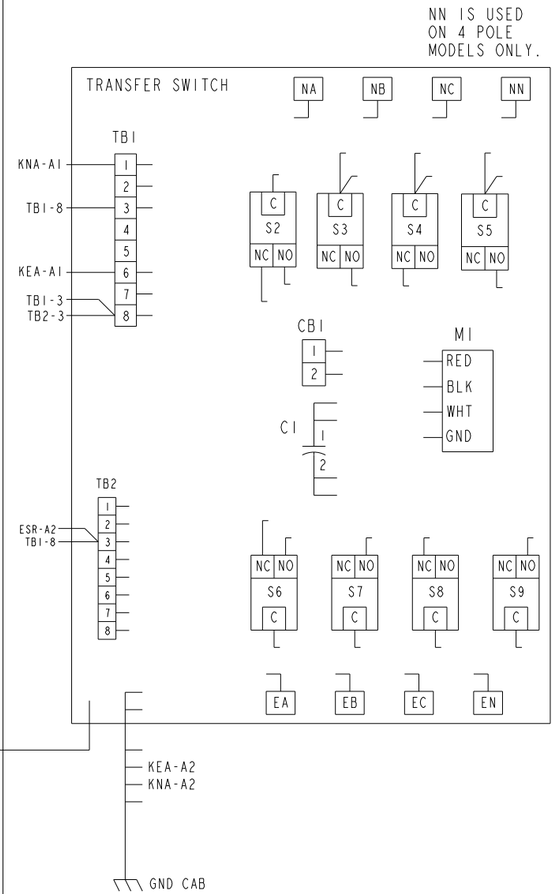
REAR VIEW OF DOOR



LEFT SIDEWALL



REAR WALL OF CABINET



NN IS USED ON 4 POLE MODELS ONLY.

NEUTRAL BAR

NEUTRAL BAR IS USED ON 3 POLE MODELS ONLY.

NOTES:

8. WIRING FOR RELAYS KNA AND KEA IS TYPICAL. POWER CONNECTIONS MAY VARY SLIGHTLY IF MORE OR LESS RELAYS ARE USED.

9. THE WIRE FROM M2-(+) IS CONNECTED TO THE WIRE GOING TO P5-9.

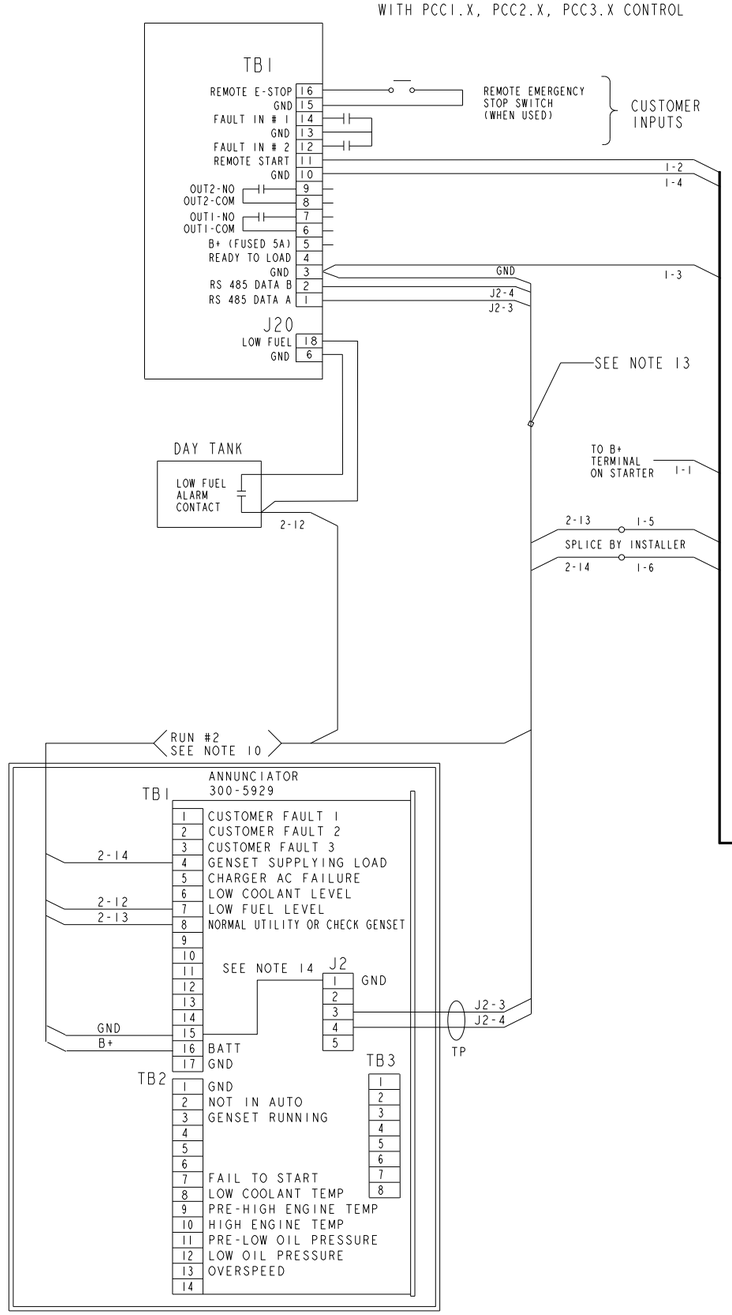
UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS		SIM TO .	DWN S D MORE	CUMMINS POWER GENERATION
DIM: X ±1, .X ±0.8, .XX± 0.38 — HOLE: 0.00- 4.99 +0.15/-0.08; 5.00- 9.99 +0.20/-0.10; 10.00-17.49 +0.25/-0.13; 17.50-24.99 +0.30/-0.13		DO NOT SCALE PRINT	CKD I A MAHADESHWAR	
			APVD MILLER	
			DATE 26NOV04	SITE CODE: PGF — WD-TRANSFER SWITCH
ANG TOL ± 1.0°	SCALE 1:1	THIS DOCUMENT (AND THE INFORMATION SHOWN THEREON) IS CONFIDENTIAL AND PROPRIETARY AND SHALL NOT BE DISCLOSED TO OTHERS IN HARD COPY OR ELECTRONIC FORM, REPRODUCED BY ANY MEANS, OR USED FOR ANY PURPOSE WITHOUT WRITTEN CONSENT OF CUMMINS INC.	FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994	FIRST USED ON OTEC — DWG SIZE D — 0630_2766 — CAD SHEET 4 OF 4

Drawing Name: 0630-2766 Revision: H
Part Name: 0630-2766 Revision: H
Equipment Submittal ECO-178424
Rev-0

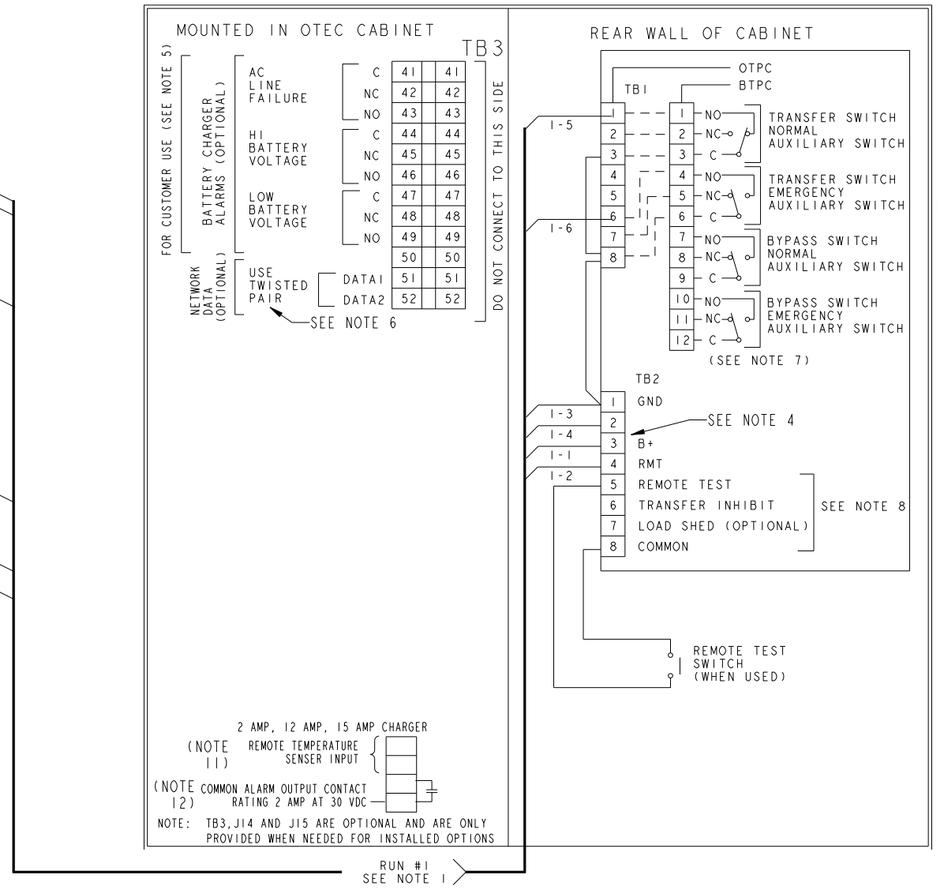
0630_2810 | D | Pro/ENGINEER | METRIC DWG

REL NO	LTR	NO	REVISION	ZONE	DR	CHKR	APPROVED	DATE
ECO-103227	F	2	ADDED THIS SHEET	-	JFM	RS	SCROGGINS	14JAN09

ONAN/CUMMINS GENERATOR SET
WITH PCC1.X, PCC2.X, PCC3.X CONTROL



OTEC UTILITY TO GENSET



WIRE SIZE (AWG)	DISTANCE IN FEET, ONE WAY (MULTIPLY BY 0.3 FOR METERS)				
	A	B	C	D	E
16	1000	90	-	50	-
14	1600	150	20	80	5
12	2400	225	30	125	10
10	4000	350	50	200	15
8	-	600	80	300	25
6	-	1000	125	500	40

NOTES:

1. WIRE SIZES MUST BE AS FOLLOWS:
   RUN #1-GENSET TO TRANSFER SWITCH-LEAD SIZE MUST BE INCREASED IF A BATTERY CHARGER IS INSTALLED IN THE SWITCH.
   WITH NO BATT CHARGER-LEADS 1-1, -2, -3, -4, -5 USE COL A.
   WITH 2 AMP CHARGER, MAXIMUM VOLTAGE DROP OF 1.5 VOLTS, LEADS 1-1, &1-3 USE COL B.
   WITH 12/15 AMP CHARGER MAXIMUM VOLTAGE DROP OF 1.5 VOLTS, LEADS 1-1 & 1-3 USE COL. C.
   WITH 2 AMP CHARGER, MAXIMUM VOLTAGE DROP OF 0.75 VOLTS, LEADS 1-1, &1-3 USE COL D.
   WITH 12/15 AMP CHARGER, MAXIMUM VOLTAGE DROP OF 0.75 VOLTS, LEADS 1-1, & 1-3 USE COL E. TO MEET THE NFPA110 REQUIREMENT TO RETURN A FULLY DISCHARGED BATTERY TO 100% OF IT'S AMPERE-HOUR RATING WITHIN 24 HOURS USE COL. E.
2. RUN #2-GENSET TO ANNUNCIATOR-ALL LEADS, USE COL. A
3. FOR MULTIPLE TRANSFER SWITCHES, DUPLICATE RUN #1 FOR EACH SWITCH. DAISY CHAIN CONNECTION IS ACCEPTABLE PROVIDED WIRE SIZE & DISTANCE TO THE LAST SWITCH MEET THE SPECS IN NOTE 1.
4. DO NOT INSTALL JUMPER BETWEEN TB2-2 & TB2-3 AND TB2-1 & TB2-2.
5. CONTACTS RATED: 4 AMPS AT 30 VDC OR 120V MAX.
6. USE STRANDED TWISTED PAIR WIRES WHEN CONNECTING DATA1 AND DATA2 TO THE NETWORK.
7. TRANSFER SWITCH SHOWN CLOSED TO NORMAL BYPASS SWITCH SHOWN IN NEUTRAL POSITION.
8. CONNECT AN OPEN DRY CONTACT BETWEEN THE APPLICABLE TERMINAL AND COMMON (TB2-8). FOR REMOTE TEST, TRANSFER INHIBIT AND LOAD SHED. CLOSE TO ACTIVATE.
9. CONTACTS RATED: 2 AMPS AT 30 VDC OR 0.60 AMPS AT 120 VAC.
10. REFER TO 0900-0301 FOR INSTALLATION OF 0300-5929.
11. USE THE INVENTER REMOTE TEMPERATURE PROBE (0193-0530).
12. THE FOLLOWING FAILS WILL CAUSE A BATTERY CHARGER ALARM OUTPUT:
    LOW BATTERY VOLTAGE, HIGH BATTERY VOLTAGE, LOW AC INPUT VOLTAGE, HIGH AC INPUT VOLTAGE OVERCURRENT, HIGH CHARGER TEMPERATURE, BATTERY FAILURE, HIGH BATTERY TEMPERATURE (NOT AVAILABLE ON 2 AMP CHARGER).
13. NETWORK CONNECTIONS: USE BELDEN 9729 24 GAUGE TWISTED, STRANDED, SHIELDED CABLE. SHIELD SHOULD BE GROUNDED AT ONE END. TOTAL NETWORK LENGTH NOT TO EEXCEED 4000 FEET. UP TO 20 NODES CAN BE CONNECTED TO THE NETWOK. (NOTE ANY COMMUNICATIONS WIRE CONNECTED TO THE GENSET SHOULD BE STRANDED CABLE.).
14. J2-1 CAN BE INTERCONNECTED TO PROVIDE A COMMON LOGIC REFERANCE WHEN APPLICABLE. J2-1 CAN BE USED TO INTERCONNECT TWO CONTROLS WHERE ONE OF THE CONTROLS USES A FLOATING DC POWER SUPPLY NOT CONNECTED TO EARTH GROUND AND THE OTHER IS CONNECTED TO EARTH GROUND. OTHERWISE, USING J2-1 CAN INDUCE A GROUND LOOP.

DO NOT SCALE PRINT
ANG TOL± 1.0°
DRAWN TO SCALE OF 1/1
TOLERANCE UNLESS OTHERWISE SPECIFIED
DIM: mm X ±1, .X ±0.8, .XX ±0.38; inch .X ±, .XX ±, .XXX±
HOLE: 0.00-4.99 +0.15/-0.00 (.004-.200 +.006/-.003); 5.00-9.99 +0.20/-0.10 (.201-.421 +.008/-.004); 10.00-17.49 +0.25/-0.13 (.422-.703 +.010/-.005); 17.50-24.99 +0.30/-0.13 (.704-.999 +.012/-.005)
SIM TO 0630_1974 D
COPIED FROM -
THIRD ANGLE PROJECTION
QTY
ITEM | PART NO | DWG SIZE | DESCRIPTION OR MATERIAL | REF DES
NAME | DATE
DR G_COLLEEN 02-13-04
CHKR MFG J MILLER 02-13-04
APPROVED J MILLER 02-13-04
SITE CODE PGA
MODEL FIRST USED ON OTEC
DWG NO 0630_2810
SHEET 10 OF 10
SIZE D
CUMMINS POWER GENERATION
1400 73RD AVE NE
MINNEAPOLIS, MINNESOTA 55432
TYPE WD-INTERCONNECTION .
THIS DOCUMENT IS THE PROPERTY OF CUMMINS POWER GENERATION. IT CONTAINS PROPRIETARY AND CONFIDENTIAL INFORMATION WHICH MUST NOT BE DUPLICATED, USED OR DISCLOSED OTHER THAN EXPRESSLY AUTHORIZED BY CUMMINS POWER GENERATION OR ITS REPRESENTATIVE
FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ANSI Y14.5M-1982

73

190

Special Withstand Ratings

Circuit Breaker Protection

When protected by one of the following circuit breakers rated not more than 225 amperes, this transfer switch is rated for use on a circuit capable of delivering not more than the indicated RMS symmetrical amperes at the voltage shown.

GE

Type	Interrupting Rating at		
	240 VAC	480 VAC	600 VAC
AKRU, AKU	200000	200000	200000
FB, FC	200000	150000	42000
FE	200000	150000	-
SEL, SFL	100000	50000	25000
SEP, SFP	200000	50000	25000
TEC & TECL	100000	100000	100000
TEL, TEML, TFL	100000	65000	25000
THLC1, THLC2	200000	200000	50000

Siemens

Type	Interrupting Rating at		
	240 VAC	480 VAC	600 VAC
CED6, CFD6	200000	200000	100000
CJD6, SCJD6	200000	150000	100000

Square D

Type	Interrupting Rating at		
	240 VAC	480 VAC	600 VAC
FI, KI, HR, JR	200000	200000	100000
HD, JD, LD	25000	18000	14000
HG, JG	65000	35000	18000
HJ, JJ	100000	65000	25000
HL, JL	125000	100000	50000
LG	65000	30000	18000
LJ	100000	30000	18000
LL	125000	30000	18000
LR	200000	30000	18000

Eaton

Type	Interrupting Rating at		
	240 VAC	480 VAC	600 VAC
DSL, FB, LA	200000	200000	200000
FCL	200000	150000	-
FDC, JDC, EGC, JGC	200000	100000	35000
JGU, JGX	200000	150000	35000
KDC	200000	100000	50000
LCL	200000	200000	100000
LGC, LGU, LGX	35000	-	-

Merlin Gerin

Type	Interrupting Rating at		
	240 VAC	480 VAC	600 VAC
CE106L	150000	100000	42000
CF250L	150000	150000	30000
NSE100N	65000	18000	-
NSF150N, NSF250N	65000	35000	18000
NSF150H, NSF250H	100000	65000	25000

A048J566.A

-THIS IS A CONTROLLED ITEM-

PER POLICY-PROCEDURE PGG 1-01-01-116

TO MAINTAIN COMPLIANCE WITH REQUIREMENTS OF THE CODES, STANDARDS, OR AGENCIES LISTED BELOW

☒ CSA ☒ UL ☐ CE ☐ RVIA ☐ ABYC

☐ IBC ☐ OTHER _____ ☐ OTHER _____

CHANGES, DEVIATIONS, OR SUBSTITUTIONS OF MATERIAL, PROCESS, OR PERFORMANCE FOR THIS ITEM MUST BE APPROVED BY THE FOLLOWING CONTROLLED ITEM APPROVER

RESPONSIBLE CIA ROLE PE TRANSFER SWITCH CIA

RESPONSIBLE CIA ROLE _____

RESPONSIBLE CIA ROLE _____

REL NO	LTR	NO	REVISION	DWN	CKD	APVD	DATE
ECO-147537	A	1	PRODUCTION_RELEASE	SGM	GRB	L.SMITH	28OCT14

NOTES:

1. LABEL SHOWN ON PRINT IS NOT ARTWORK. VENDOR ARTWORK CREATED TO PRODUCE THIS LABEL MUST BE SIGNED OFF BY CUMMINS POWER GENERATION PURCHASING.
2. ALL TEXT TO BE HELVETICA SANS SERIF, OR EQUIVALENT.
3. BLACK TEXT AND WHITE BACKGROUND.
4. MATERIAL THICKNESS: 10 MIL.
5. SEE CUMMINS POWER GENERATION MATERIAL SPECIFICATIONS FOR APPLICATION INFORMATION.
6. IF CORNERS SHOWN SQUARE, RADIUS OPTIONAL.
7. IF CSA AGENCY APPROVAL REQUIRED LOCATE VENDOR CSA IDENTIFICATION MARK IN LOWER RIGHT HAND CORNER.
8. LOCATE LABEL PART NUMBER & REVISION LETTER WHERE SHOWN.

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS

DIM: X ±1 | .X ±0.8 | .XX± 0.38

HOLE: 0.00- 4.99 +0.15/-0.08 | 5.00- 9.99 +0.20/-0.10 | 10.00-17.49 +0.25/-0.13 | 17.50-24.99 +0.30/-0.13

ANG TOL: ± 1.0° SCALE: 1/1

SIM TO 0098-6918

DO NOT SCALE PRINT

- CONFIDENTIAL -

PROPERTY OF CUMMINS POWER GENERATION GROUP

DWN S.MADARAKALL

CKD G.BAIRAGI

APVD L.SMITH

DATE 28OCT14

FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994

FIRST USED ON OT/OTPC/OTEC 40-125A

SITE CODE PGF

CUMMINS POWER GENERATION

LABEL, INFORMATION
(SPECIAL BREAKER)

DWG SIZE B | A048J566 | SHEET 1 OF 1 | DWG REV A

Drawing Name: A048J567 Revision: A
Part Name: A048J566 Revision: A
Equipment Submittal
Rev-0

PTC® Creo® Parametric

REL NO	LTR	NO	REVISION	DWN	CKD	APVD	DATE
ECO-146025	A	1	PRODUCTION_RELEASE	SGM	GRB	L.SMITH	22AUG14

73.15

120

SHORT-CIRCUIT WITHSTAND/CLOSING RATINGS

Specific Fuse Manufacturer and Type Listing

When protected by a fuse of the specific fuse class and up to the fuse amperes listed below, this transfer switch is suitable for use in a circuit capable of delivering up to the short circuit current and voltage listed below.

Short-Circuit Current RMS Symmetrical Amperes	Short Circuit AC Voltage	Fuse Class	Maximum Fuse Amperes
200000	600	J, T, RK1, RK5	200

Specific Circuit Breaker Manufacturer and Type Listing

When protected by a circuit breaker of a specific manufacturer and type, and up to the maximum breaker amperes listed below, this transfer switch is suitable for use in a circuit capable of delivering up to the short circuit current and voltage listed below, but not more than the rating of the specific circuit breaker.

Short-Circuit Current RMS Symmetrical Amperes	Short Circuit AC Voltage	Maximum Breaker Amperes
14000	600	225

GE

TEYD	TEYH	TEYL	TFJ	TFK	THFK

Siemens

BQCH	ED4	FXD6A	HFGA[1]	LDGA	NGG
BQD	ED6	HDGA	HFXD6	LFGA[1]	QJ2
CC	FD6	HED4	HHFD6	NDGA[1]	QJ2H
CQD	FD6A	HED6	HHFXD6	NFGA[1]	QJH2
ED2	FXD6	HFD6	HQJ2	NGB	

1 - 555 LSI trip unit, I_r limited to 150A maximum

Eaton

BAB	EGE[2]	GHBGFEP	JDB	QBHGF	QCHW	QPHGFEP
CHKD	EGH[2]	GHBS	JGE[3,4]	QBHGFEP	QCR	QPHW
CKD	EGS[2]	GHC	JGH[3,4]	QBHW	QHCW	
ED	EHD	GHCGFEP	JGS[3,4]	QC	QHCX	
EDB	FD	HFD	KD	QCF	QHPW	
EDC	FDB	HJD	KDB	QCGF	QHPX	
EDH	GBHS	HKD	QBGF	QCGFEP	QPGF	
EDS	GD	HQP	QBGFEP	QCHGF	QPGFEP	
EGB[2]	GHB	JD	QBH	QCHGFEP	QPHGF	

2 - Limited to 40 amps maximum
3 - 310 trip unit with flat response, I_r limited to 100A maximum
4 - 310 trip unit with I^2t response not allowed

A050J441.A

NOTES:

1. LABEL SHOWN ON PRINT IS NOT ARTWORK. VENDOR ARTWORK CREATED TO PRODUCE THIS LABEL MUST BE SIGNED OFF BY CUMMINS POWER GENERATION PURCHASING.
2. ALL TEXT TO BE HELVETICA SANS SERIF, OR EQUIVALENT.
3. BLACK TEXT AND WHITE BACKGROUND.
4. MATERIAL THICKNESS: 10 MIL.
5. SEE CUMMINS POWER GENERATION MATERIAL SPECIFICATIONS FOR APPLICATION INFORMATION.
6. IF CORNERS SHOWN SQUARE, RADIUS OPTIONAL.
7. IF CSA AGENCY APPROVAL REQUIRED LOCATE VENDOR CSA IDENTIFICATION MARK IN LOWER RIGHT HAND CORNER.
8. LOCATE LABEL PART NUMBER & REVISION LETTER WHERE SHOWN.

-THIS IS A CONTROLLED ITEM-

PER CPG PROCEDURE FRE-1002

TO MAINTAIN COMPLIANCE WITH REQUIREMENTS OF THE CODES, STANDARDS, OR AGENCIES LISTED BELOW

☒ CSA ☒ UL ☐ CE ☐ RVIA ☐ ABYC

☐ IBC ☐ OTHER _____ ☐ OTHER _____

CHANGES, DEVIATIONS, OR SUBSTITUTIONS OF MATERIAL, PROCESS, OR PERFORMANCE FOR THIS ITEM MUST BE APPROVED BY THE FOLLOWING CONTROLLED ITEM APPROVER

RESPONSIBLE CIA ROLE PE TRANSFER SWITCH CIA

RESPONSIBLE CIA ROLE _____

RESPONSIBLE CIA ROLE _____

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS

DIM		HOLE	
	X ± 1		0.00- 4.99 +0.15/-0.08
	.X ± 0.8		5.00- 9.99 +0.20/-0.10
	.XX± 0.38		10.00-17.49 +0.25/-0.13
			17.50-24.99 +0.30/-0.13

ANG TOL: ± 1.0° SCALE: 1/1

SIM TO 0098-6885

DO NOT SCALE PRINT

- CONFIDENTIAL -

PROPERTY OF CUMMINS POWER GENERATION GROUP

DWN	S.MADARAKALL
CKD	G.BAIRAGI
APVD	L.SMITH
DATE	22AUG14

FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994

FIRST USED ON OT 40-125A

SITE CODE PGF

CUMMINS POWER GENERATION

LABEL, INFORMATION
(WITHSTAND RATING)

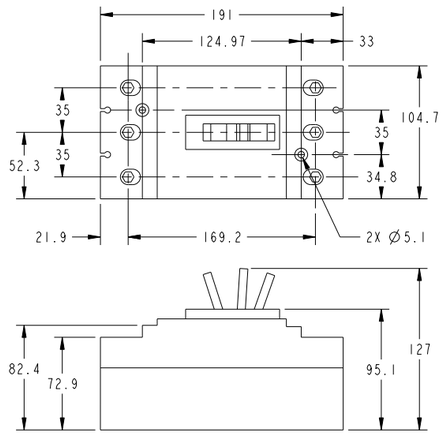
DWG SIZE		SHEET	DWG REV
B	A050J441	1 OF 1	A

Drawing Name: A050J442 Revision: A
Part Name: A050J441 Revision: A

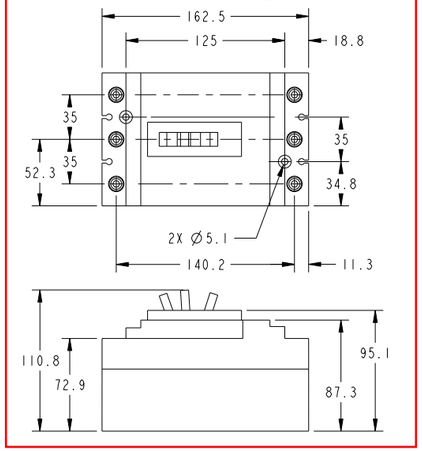
PTC® Creo® Parametric

REL NO	LTR	NO	REVISION	DRN	CKD	APVD	DATE
ECO-145094	C	1	PRODUCTION_RELEASE A050J725 AND A050J727	MK	AG	A.GRILLIOT	17JUL14
		2	RESPONSIBLE CIA ROLE 'STATIONARY	--	--	--	--
			GENSET CIA' WAS 'STATIONARY GENSET'	MK	AG	A.GRILLIOT	17JUL14

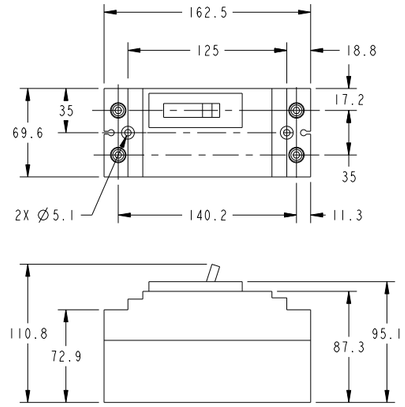
2 POLE & 3 POLE J-FRAME



3 POLE H-FRAME



2 POLE H-FRAME



NOTES:

1. THIS PART IS MANUFACTURER SOURCE CONTROLLED.
2. SUPPLIED WITH LINE & LOAD MECHANICAL LUGS :
   2.1 FOR THERMAL-MAGNETIC TRIP : AL/CU.
   2.2 FOR ELECTRONIC TRIP: CU FOR 90°C.
3.

INTERRUPTING RATINGS		KA
UL/ CSA/ NOM	240 Vac	25
	480 Vac	18
	600 Vac	14
IEC 947-2 Icu/Ics	220/240 Vac	25/25
	380/440/415 Vac	18/18
	500/525 Vac	14/14

4. H-FRAME:.65" WIRE STRIP LENGTH,
   LUG TORQUE= A : #14-#10 AWG 50 LB-IN,75°C.
   B : #8-3/0 AWG 120 LB-IN,75°C.
5. J-FRAME:1" WIRE STRIP LENGTH,
   LUG TORQUE= 1/0 AWG- 300 kcmil 250 LB-IN,75°C.

TABULATION							
PART NUMBER	CURRENT ER	AMP_RATING	VOLTS (UL/IEC)	FRAME_TYPE	POLES	BREAKER_TYPE	TRIP
A043E193	ECO-126169	250A	600	J-FRAME	2	JD	
A043E195	ECO-126169	225A	600	J-FRAME	2	JD	
A043E199	ECO-126169	200A	600	J-FRAME	2	JD	
A043E202	ECO-126169	175A	600	J-FRAME	2	JD	
A043L510	ECO-126169	250A	600	J-FRAME	3	JD	
A043L517	ECO-126169	225A	600	J-FRAME	3	JD	
A043L520	ECO-126169	200A	600	J-FRAME	3	JD	
A043L619	ECO-126169	175A	600	J-FRAME	3	JD	
A043C676	ECO-126169	150A	600	H-FRAME	2	HD	
A043D274	ECO-126169	125A	600	H-FRAME	2	HD	
A043D324	ECO-126169	100A	600	H-FRAME	2	HD	
A043D326	ECO-126169	90A	600	H-FRAME	2	HD	
A043D328	ECO-126169	80A	600	H-FRAME	2	HD	
A043E169	ECO-126169	70A	600	H-FRAME	2	HD	
A043E179	ECO-126169	60A	600	H-FRAME	2	HD	
A043E181	ECO-126169	50A	600	H-FRAME	2	HD	
A043E183	ECO-126169	40A	600	H-FRAME	2	HD	
A043E185	ECO-126169	30A	600	H-FRAME	2	HD	THERMAL-MAGNETIC 50-60 Hz
A043E187	ECO-126169	20A	600	H-FRAME	2	HD	
A043E189	ECO-126169	15A	600	H-FRAME	2	HD	
A043E191	ECO-126169	25A	600	H-FRAME	2	HD	
A043K991	ECO-126169	150A	600	H-FRAME	3	HD	
A043K994	ECO-126169	125A	600	H-FRAME	3	HD	
A043K997	ECO-126169	90A	600	H-FRAME	3	HD	
~~A043L012~~	~~ECO-126169~~	~~80A~~	~~600~~	~~H-FRAME~~	~~3~~	~~HD~~	
A043L024	ECO-126169	100A	600	H-FRAME	3	HD	
~~A043L451~~	~~ECO-126169~~	~~70A~~	~~600~~	~~H-FRAME~~	~~3~~	~~HD~~	
A043L459	ECO-126169	60A	600	H-FRAME	3	HD	
A043L461	ECO-126169	50A	600	H-FRAME	3	HD	
A043L464	ECO-126169	40A	600	H-FRAME	3	HD	
A043L475	ECO-126169	30A	600	H-FRAME	3	HD	
A043L480	ECO-126169	20A	600	H-FRAME	3	HD	
A043L506	ECO-126169	15A	600	H-FRAME	3	HD	
A043L508	ECO-126169	25A	600	H-FRAME	3	HD	
A044C640	ECO-126169	SET TRIP: 70 TO 250 A	600	J-FRAME	3	JD	ELECTRONIC 50-60 Hz
A047W923	ECO-137891	225A Cu LUG	600	J-FRAME	3	JD	THERMAL-MAGNETIC 50-60 Hz
A050J725	ECO-145094	250A	600	J-FRAME	3	JD	LSI ELECTRONIC TRIP 80%
A050J727	ECO-145094	250A	600	J-FRAME	3	JD	LSI ELECTRONIC TRIP 100%

-THIS IS A CONTROLLED ITEM-
PER CPG PROCEDURE FRE-1002

TO MAINTAIN COMPLIANCE WITH REQUIREMENTS OF THE CODES, STANDARDS, OR AGENCIES LISTED BELOW

☐ CSA ☐ UL ☐ CE ☐ RVIA ☐ ABYC
☐ IBC ☐ OTHER _____ ☐ OTHER _____

CHANGES, DEVIATIONS, OR SUBSTITUTIONS OF MATERIAL, PROCESS, OR PERFORMANCE FOR THIS ITEM MUST BE APPROVED BY THE FOLLOWING CONTROLLED ITEM APPROVER

RESPONSIBLE CIA ROLE STATIONARY GENSET CIA
RESPONSIBLE CIA ROLE
RESPONSIBLE CIA ROLE

UNLESS OTHERWISE SPECIFIED, ALL DIMENSIONS ARE IN MILLIMETERS

DIM		HOLE	
	X ± 1		0.00- 4.99 +0.15/-0.08
	.X ± 0.8		5.00- 9.99 +0.20/-0.10
			10.00-17.49 +0.25/-0.13
	.XX± 0.38		17.50-24.99 +0.30/-0.13

ANG TOL: ± 1.0° SCALE: 1/2

SIM TO NONE
DO NOT SCALE PRINT
- CONFIDENTIAL -
PROPERTY OF CUMMINS POWER GENERATION GROUP

DRN S_GAMBHIRE
CKD M_TULADHAR
APVD M_POZO
DATE 24SEP12

FOR INTERPRETATION OF DIMENSIONING AND TOLERANCING, SEE ASME Y14.5M-1994
FIRST USED ON ARROW

SITE CODE PGF

CUMMINS POWER GENERATION

BREAKER,CIRCUIT

DWG SIZE D | A043W056 | SHEET 1 OF 1 | DWG REV C

PowerPact H-, J-, and L-Frame Circuit Breakers

Catalog
0611CT1001 R12/15

2015

Class 0611



SQUARE D™
by Schneider Electric

Section 1—Catalog Numbering

PowerPact™ with Micrologic™ Circuit Breakers

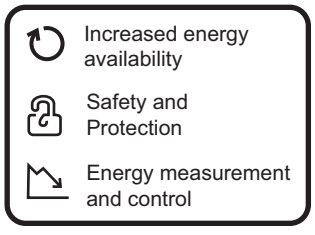
The PowerPact H-, J-, and L-frame circuit breakers are designed to protect electrical systems from damage caused by overloads and short circuits. H- and J-frame circuit breakers are available with either thermal-magnetic or Micrologic electronic trip units. L-frame circuit breakers are available with Micrologic electronic trip units only.



Direct Access to Energy Management

The new generation PowerPact with Micrologic circuit breakers set the standard with direct access to energy management. Integrated metering enhances their protective functions. For the first time, Schneider Electric™ users can monitor energy from 15 to 3000 A, offering new performance in a remarkably compact device.

- Smart – A meter in every breaker
- Safe – Combines safety and performance in one compact device
- Simple – To select, install, and use



© 2011–2015 Schneider Electric
All Rights Reserved

Catalog Numbering

Table 1: Circuit Breaker Catalog Numbers

Segment	Character	Description	—	J	L	L	3	6	250	W	T	—	— — — —
			H	D	L	3	6	100	-	-			
Brand	—	Square D											
	N	Schneider Electric											
Frame	H	H-Frame											
	J	J-Frame											
	L	L-Frame											
Performance Level (kA)	See Table 2												
Terminations	L	Lugs Line/Load Side											
	M	Lugs Line Side											
	P	Lugs Load Side											
	F	Bus Bar											
	A	A-Line											
	S	Rear Connected											
	N	Plug-in											
	D	Drawout											
	K	Reverse I-Line											
Poles	2	Two Pole											
	3	Three Pole											
	4	Four Pole											
Voltage	6	600 V											
	4	480 V											
Amperage	060	60 A											
	100	100 A											
	150	150 A											
	250	250 A											
	400	400 A											
	600	600 A											
	000	Switch or Frame Only											
Mission Critical	W	(J- and L-frame with D, G, J and L-interrupting ratings											
Trip Unit	See Table 3												
I-Line Phasing													
Accessory Suffix Code	See Table 4												

Table 2: Interrupting Rating

	UL® / CSA® / NOM®					IEC 647-2 Icu/Ics					
	240 Vac	480 Vac	600 Vac	250 Vdc[1]	500 Vdc[2]	220/240 Vac	380/440/415 Vac	500/525 Vac	690 Vac	250 Vdc[1]	500 Vdc[3]
D	25 kA	18 kA	14 kA	20 kA	—	25/25 kA	18/18 kA	14/14 kA	—	20 kA	20 kA
G	65 kA	35 kA	18 kA	20 kA	20 kA	65/65 kA	35/35 kA	18/18 kA	—	20 kA	20 kA
J	100 kA	65 kA	25 kA	20 kA	—	100/100 kA	65/65 kA	25/25 kA	—	20 kA	20 kA
L	125 kA	100 kA	50 kA	20 kA	50 kA	125/125 kA	100/100 kA	50/50 kA	—	20 kA	20 kA
R	200 kA	200 kA	100 kA	—	—	150 kA	125 kA	75 kA	20 kA	—	—

1 250 Vdc ratings only available with PowerPact H or J circuit breakers with thermal-magnetic trip units (not including MCP).

2 UL 500 Vdc ratings only available with PowerPact H-, J-, and L-frame circuit breakers with thermal-magnetic trip units (not including MCP).

3 IEC 500 Vdc rating only available on PowerPact J-frame circuit beakers.

SQUARE D by Schneider Electric

© 2011–2015 Schneider Electric
All Rights Reserved

Table 3: Trip Unit Numbering

Trip Unit Type	Character	Description
Micrologic Trip Units	U31 X	LI Standard Protection
	U33X	LSI Standard Protection
	U43X	LSI plus Ammeter
	U44X	LSIG plus Ammeter
	U53X	LSI plus Energy Management
	U54X	LSIG plus Energy Management
	M37X	Magnetic Only (L-Frame Only)
	M38X	Motor Protector Circuit Breaker
	S40X	400 A Molded Case Switch (L-Frame Automatic Switch)
	S60X	600 A Molded Case Switch (L-Frame Automatic Switch)
	F40	400 A L-Frame Only (No Trip Unit)
	F60	600 A L-Frame Only (No Trip Unit)
	—	Standard Fixed Trip Unit (Suitable for reverse connection)
	F06	60 A H-Frame Only (No trip unit)
	F15	150 A H-Frame Only (No trip unit)
	F25	250 A J-Frame Only (No trip unit)
	T	Complete Circuit Breaker (Frame + removable trip unit)
	S15	150 A Molded Case Switch (H-Frame automatic switch)
	S17	175 A Molded Case Switch (J-Frame automatic switch)
	S25	250 A Molded Case Switch (J-Frame automatic switch)
	C	100% Rated Continuous Current Rating[1]
Thermal-Magnetic Trip Units	M71	30 A H-Frame Motor Circuit Protector (MCP)
	M72	50 A H-Frame Motor Circuit Protector (MCP)
	M73	100 A H-Frame Motor Circuit Protector (MCP)
	M74	150 A H-Frame Motor Circuit Protector (MCP)
	M75	250 A J-Frame Motor Circuit Protector (MCP)
	D81	500 Vdc 150–175 A J-Frame Molded Case Circuit Breaker
	D82	500 Vdc 200–250 A J-Frame Molded Case Circuit Breaker
	D87	500 Vdc 30–70 A H-Frame Molded Case Circuit Breaker
	Dxx	500 Vdc 300A–1200A L-Frame Molded Case Circuit Breaker (Refer to Table 9 for details)
	R	100% Rated Continuous Current Rating Complete Circuit Breaker (frame + removable trip unit)

[1] 100% ratings valid for:
Three-pole H/J frame unit mount and busbar connection
Three-pole/four-pole L-frame 250 A and 400 A unit mount
Three-pole L-frame 250 A and 400 A I-Line

© 2011–2015 Schneider Electric
All Rights Reserved

Section 2—General Information

The PowerPact™ H-, J-, and L-frame circuit breakers are designed to protect electrical systems from damage caused by overloads and short circuits. H- and J-frame circuit breakers are available with either thermal-magnetic or Micrologic™ electronic trip units. L-frame circuit breakers are available with Micrologic electronic trip units only.

H- and J-frame circuit breakers with thermal-magnetic trip units contain individual thermal (overload) and instantaneous (short circuit) sensing elements in each pole. The amperage ratings of the thermal trip elements are calibrated at 104°F (40°C) free air ambient temperature. Per the National Electric Code® (NEC®) and the Canadian Electrical Code, standard circuit breakers may only be applied continuously at up to 80% of their rating. Circuit breakers rated for 100% operation are available but require specially-designed enclosures and 194°F (90°C) rated wire.

Devices with the Micrologic electronic trip unit provide adjustable protection settings for greater system flexibility. In addition to electronic protection, Micrologic trip units allow users to monitor both energy and power. Through direct access to in-depth information and networking using open protocols, PowerPact circuit breakers with Micrologic trip units let operators optimize the management of their electrical installations. Far more than just a circuit breaker, these devices are a measurement and communication tool ready to meet energy-efficiency needs through optimized power requirements, increased energy availability, and improved installation management.

Applications

PowerPact H-, J-, and L-frame circuit breakers offer high performance and a wide range of interchangeable trip units to protect most applications.

Electronic trip units provide highly accurate protection with wide setting ranges and can integrate measurement, metering and communication functions. They can be combined with the front display module (FDM121) to provide functions similar to a power meter.

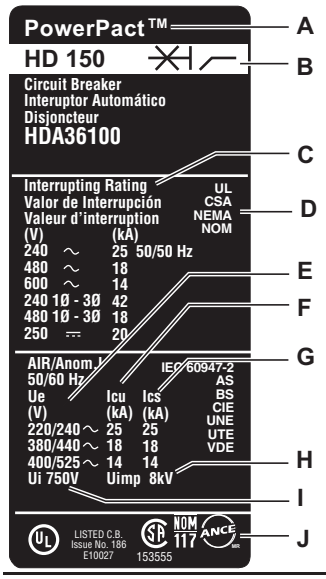
Table 5: Applications

	Power Meter	PowerPact H-, J-, and L-frame circuit breakers equipped with Micrologic 5/6 trip units offer type A (ammeter) or E (energy) metering functions as well as communication capability. Using Micrologic trip unit sensors and intelligence, PowerPact H-, J-, and L-frame circuit breakers provide access to measurements of all the main electrical parameters on the built-in screen, on a dedicated front display module (FDM121) or through the communication network.
	Operating assistance	Integration of measurement functions provides operators with operating assistance functions including alarms tripped by user-selected measurement values, time-stamped event tables and histories, and maintenance indicators.
	Front display module	The main measurements can be read on the built-in screen of Micrologic 5/6 trip units. They can also be displayed on the equipment FDM121 along with pop-up windows signalling the main alarms.
	Communication Network	PowerPact H-, J-, and L-frame circuit breakers equipped with Micrologic 5/6 trip units provide communication capabilities. Simple RJ45 cables connect to a Modbus communication interface module.

© 2011–2015 Schneider Electric
All Rights Reserved

General Characteristics

Faceplate Label



Characteristics indicated on the faceplate label:

A. Circuit breaker type
B. Circuit breaker disconnector symbol
C. Performance levels
D. Standards
E. Ue: Operating voltage per IEC
F. Icu: Ultimate breaking capacity per IEC
G. Ics: Service breaking capacity per IEC
H. Uimp: Rated impulse withstand voltage per IEC
I. Ui: Insulation voltage per IEC
J. Certification marks

NOTE: When the circuit breaker is equipped with an extended rotary handle, the door must be opened to view the faceplate.

Codes and Standards

H-, J-, and L-frame circuit breakers, automatic switches and electronic motor circuit protectors are manufactured and tested in accordance with the following standards.

NOTE: Apply circuit breakers according to guidelines detailed in the National Electric Code (NEC) and other local wiring codes.

Table 8: Codes and Standards (Domestic)

PowerPact H-, J-, and L-Frame Circuit Breakers	H-, J-, and L-Frame Switches	PowerPact H-, J-, and L-Frame Motor Circuit Protectors
UL 489[1]	UL 489[3]	UL 508
IEC 60947-2	IEC 60947-3	IEC 60947-2
CSA C22.2 No. 5[2]	CSA C22.2 No. 5[4]	CSA C22.2 No. 14
Federal Specification W-C-375B/GEN	Federal Specification W-C-375B/GEN	NEMA AB1
NEMA AB1	NEMA AB1	CCC
NMX J-266	NMX J-266	CE Marking
CCC	CE Marking	
CE Marking		

1 PowerPact H- and J-frame circuit breakers are in UL File E10027. PowerPact L-frame circuit breakers are in UL File E63335.

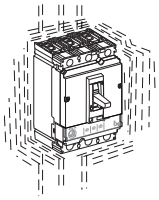
2 PowerPact H- and J-frame circuit breakers are in CSA File LR40970. PowerPact L-frame circuit breakers are in CSA File 69561.

3 PowerPact H- and J-frame switches are in UL File E87159.

4 PowerPact H- and J-frame switches are in CSA File LR32390.

© 2011–2015 Schneider Electric
All Rights Reserved

Vibration



PowerPact H-, J-, and L-frame devices resist mechanical vibration.

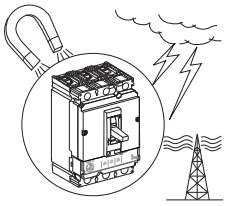
Tests are carried out in compliance with standard UL 489 SA and SB for the levels required by merchant-marine inspection organizations (Veritas®, Lloyd's®, etc.):

PowerPact H-, J-, and L-frame circuit breaker meet IEC 60068-2-6 for vibration:

- 2.0 to 25.0 Hz and amplitude +/- 1.6 mm
- 25.0 to 100 Hz acceleration +/- 4.0 g

Excessive vibration may cause tripping, breaks in connections or damage to mechanical parts.

Electromagnetic Disturbances



PowerPact H-, J-, and L-frame devices are protected against:

- overvoltages caused by circuit switching
- overvoltages caused by an atmospheric disturbances or by a distribution-system outage (such as from failure due to lightning)
- devices emitting radio waves (radios, walkie-talkies, radar, etc.)
- electrostatic discharges produced directly by users

PowerPact H-, J-, and L-frame devices have successfully passed the electromagnetic-compatibility tests (EMC) defined by the following international standards:

- IEC/EN 60947-2: Low-voltage switchgear and controlgear, part 2: Circuit breakers:
  - Annex F: Immunity tests for circuit breakers with electronic protection
  - Annex B: Immunity tests for residual current protection
- IEC/EN 61000-4-2: Electrostatic-discharge immunity tests
- IEC/EN 61000-4-3: Radiated, radio-frequency, electromagnetic-field immunity tests
- IEC/EN 61000-4-4: Electrical fast transient/burst immunity tests
- IEC/EN 61000-4-5: Surge immunity tests
- IEC/EN 61000-4-6: Immunity tests for conducted disturbances induced by radio frequency fields
- CISPR 11: Limits and methods of measurement of electromagnetic disturbance characteristics of industrial, scientific and medical (ISM) radio-frequency equipment.

These tests ensure that:

- no nuisance tripping occurs due to electromagnetic disturbances
- tripping times are respected

Tropicalization

The materials used in PowerPact circuit breakers will not support the growth of fungus and mold.

PowerPact circuit breakers have passed the test defined below for extreme atmospheric conditions.

Dry cold and dry heat:

- IEC 68-2-1–dry cold at -55°C
- IEC 68-2-2–dry heat at +85°C

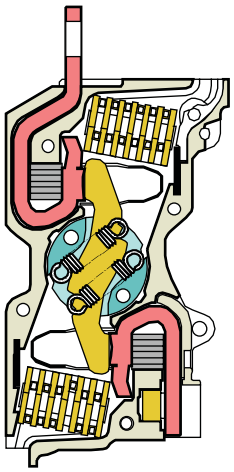
Damp heat (tropicalization)

- IEC 68-2-30–damp heat (temperature + 55°C and relative humidity of 95%)
- IEC 68-2-52 level 2–salt mist

© 2011–2015 Schneider Electric
All Rights Reserved

Section 3—Circuit Breakers

Dual-Break Rotating Contacts



All PowerPact™ H-, J-, and L-frame circuit breakers are equipped with dual-break rotating contacts that reduce the amount of peak current during a short circuit fault. This reduces the let-through currents and enhances equipment protection.

Reduced Let-Through Currents



The moving contact has the shape of an elongated “S” and rotates around a floating axis. The shape of the fixed and moving contacts are such that the repelling forces appear as soon as the circuit reaches approximately 15 times I_n.

Due to the rotating movement, repulsion is rapid and the device greatly limits short-circuit currents, whatever the interrupting level of the unit (D, G, J or L). The fault current is extinguished before it can fully develop. Lower let-through currents provide less peak energy, reducing the required bus bar bracing, lowering enclosure pressure, and delivering improved series or combination ratings. See page 25 for UL Current-Limiting labels.

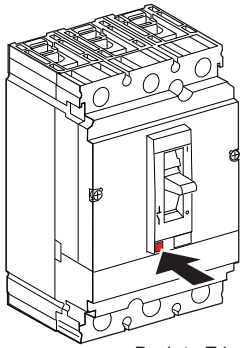
High Ampere Interrupting Ratings (AIR)

Circuit breakers are available with interrupting ratings up to:

- 200 kA at 240 Vac delta
- 200 kA at 480 Vac delta
- 100 kA at 600 Vac delta.

See Table 2 for additional performance levels.

Internal Operating Mechanism



Push-to-Trip

PowerPact H-, J-, and L-frame circuit breakers have an over-center toggle mechanism providing quick-make, quick-break operation. The operating mechanism is also trip-free, which allows tripping even when the circuit breaker handle is held in the “ON” position.

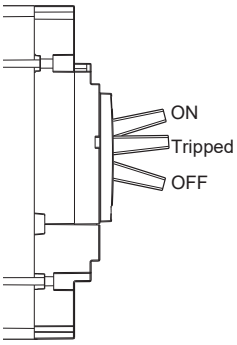
Internal cross-bars provide common opening and closing of all poles with a single operating handle.

All PowerPact circuit breakers have an integral push-to-trip button in the cover to manually trip the circuit breaker. This should be used as part of a regular preventive maintenance program.

SQUARE D™
by Schneider Electric

© 2011–2015 Schneider Electric
All Rights Reserved

Handle Position Indication



The circuit breaker handle can assume any of three positions, ON, tripped or OFF as shown. The center tripped position provides positive visual indication that the circuit breaker has tripped.

The circuit breaker can be reset by first pushing the handle to the extreme “OFF” position. Power can then be restored to the load by pushing the handle to the “ON” position.

Circuit Breaker Ratings

The interrupting rating is the highest current at rated voltage the circuit breaker is designed to safely interrupt under standard test conditions. Circuit breakers must be selected with interrupting ratings equal to or greater than the available short-circuit current at the point where the circuit breaker is applied to the system (unless it is a branch device in a series rated combination). Interrupting ratings are shown on Table 11: Circuit Breakers on page 21 and on the faceplate label on the front of the circuit breaker.

Reverse Feeding of Circuit Breakers

The standard unit-mount H-, J-, and L-frame circuit breakers have sealed trip units and may be reverse fed. See Tables 18, 19, and 32 through 40 for catalog numbers.

Circuit breakers with field-interchangeable trip units (designated by the suffix T and labeled “LINE” and “LOAD”) cannot be reverse fed. Neither can circuit breaker frames without terminations or trip units.

Current-Limiting

The current-limiting attributes of PowerPact H-, J-, and L-frame circuit breakers provide greater protection for downstream devices by limiting the let-through current in the event of a fault. The current-limiting capabilities of HJ/HL/HR, JJ/JL/JR, and LJ/LL/LR frame circuit breakers are documented with Underwriters Laboratories and Canadian Standards Association. These current-limiting circuit breakers ship with a label that identifies them as UL/CSA Current-Limiting Circuit Breakers. (The HD/HG, JD/JG, and LD/LG circuit breakers do not carry the UL Current-Limiting label).

The trip curves with let-through data are available in the trip curve section in this catalog.

Please note that as let-through curves for UL Listed/CSA Certified Current-Limiting Circuit Breakers, these curves are maximum let-through values.

100% Rated

Some models of the H-, J-, and L-frame circuit breakers are UL Listed/CSA Certified to be applied at up to 100% of their current rating. Because of the additional heat generated, the use of specially-designed enclosures on H- and J-frame circuit breakers and 194°F (90°C) rated wire is required when applying circuit breakers at 100% of continuous current rating. (H-, J-, and L-frame circuit breakers can use aluminum or copper lugs.) Markings on the circuit breaker indicate the minimum enclosure size and ventilation required. The 194°F (90°C) wire must be sized according to the ampacities of the 167°F (75°C) wire column in the NEC. Circuit breakers with 100% rating can also be used in applications requiring only standard (80%) continuous loading.

© 2011–2015 Schneider Electric
All Rights Reserved

100% ratings valid for:

- three-pole H/J-frame unit mount construction only.
- three- and four-pole L-frame 250 A and 400 A unit mount construction.
- three-pole L-frame 250 A and 400 A I-Line™ construction.

Corner Grounded Delta Ratings (1Ø-3Ø)

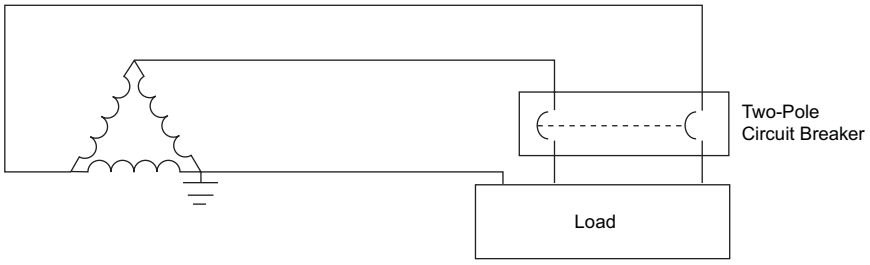
Circuit breakers suitable for corner-grounded circuits are marked 1Ø-3Ø. For additional information, refer to data bulletin 2700DB0202.

Table 13: Corner Grounded Delta Ratings (1Ø-3Ø)

	Two-Pole H-Frame					Two-Pole J-Frame				
	HD	**HG**	**HJ[1]**	**HL[1]**	**HR[1]**	**JD[1]**	**JG[1]**	**JJ[1]**	**JL[1]**	**JR[1]**
Ampere Rating (A)	15–150					150–250				
Voltage Rating (Vac)	240					240				
UL Interrupting Rating (kA)	42	42	65	100	200	42	42	65	100	200

[1] Built using three-pole module.

Figure 3: Three-Phase 240 Vac Corner-Grounded Delta System



© 2011–2015 Schneider Electric
All Rights Reserved

H- and J-Frame Catalog Numbers

Unit-Mount Circuit Breaker Catalog Numbers

Table 18: PowerPact H-Frame 150 A Unit-Mount[1] Thermal-Magnetic Circuit Breakers (600 Vac, 250 Vdc) with Factory Sealed Trip Unit (Suitable for Reverse Connection)

Current Rating at 104°F (40°C)	Fixed AC Magnetic Trip		Interrupting Rating							
			D		G		J[2]		L[2]	
	Hold	Trip	Standard (80%) Rated	100% Rated	Standard (80%) Rated	100% Rated	Standard (80%) Rated	100% Rated	Standard (80%) Rated	100% Rated
H-Frame, 150 A, Two-Pole, 600 Vac 50/60 Hz, 250 Vdc[3]										
15 A	350 A	750 A	HDL26015	HDL26015C	HGL26015	HGL26015C	HJL26015	HJL26015C	HLL26015	HLL26015C
20 A	350 A	750 A	HDL26020	HDL26020C	HGL26020	HGL26020C	HJL26020	HJL26020C	HLL26020	HLL26020C
25 A	350 A	750 A	HDL26025	HDL26025C	HGL26025	HGL26025C	HJL26025	HJL26025C	HLL26025	HLL26025C
30 A	350 A	750 A	HDL26030	HDL26030C	HGL26030	HGL26030C	HJL26030	HJL26030C	HLL26030	HLL26030C
35 A	400 A	850 A	HDL26035	HDL26035C	HGL26035	HGL26035C	HJL26035	HJL26035C	HLL26035	HLL26035C
40 A	400 A	850 A	HDL26040	HDL26040C	HGL26040	HGL26040C	HJL26040	HJL26040C	HLL26040	HLL26040C
45 A	400 A	850 A	HDL26045	HDL26045C	HGL26045	HGL26045C	HJL26045	HJL26045C	HLL26045	HLL26045C
50 A	400 A	850 A	HDL26050	HDL26050C	HGL26050	HGL26050C	HJL26050	HJL26050C	HLL26050	HLL26050C
60 A	800 A	1450 A	HDL26060	HDL26060C	HGL26060	HGL26060C	HJL26060	HJL26060C	HLL26060	HLL26060C
70 A	800 A	1450 A	HDL26070	HDL26070C	HGL26070	HGL26070C	HJL26070	HJL26070C	HLL26070	HLL26070C
80 A	800 A	1450 A	HDL26080	HDL26080C	HGL26080	HGL26080C	HJL26080	HJL26080C	HLL26080	HLL26080C
90 A	800 A	1450 A	HDL26090	HDL26090C	HGL26090	HGL26090C	HJL26090	HJL26090C	HLL26090	HLL26090C
100 A	900 A	1700 A	HDL26100	HDL26100C	HGL26100	HGL26100C	HJL26100	HJL26100C	HLL26100	HLL26100C
110 A	900 A	1700 A	HDL26110	HDL26110C	HGL26110	HGL26110C	HJL26110	HJL26110C	HLL26110	HLL26110C
125 A	900 A	1700 A	HDL26125	HDL26125C	HGL26125	HGL26125C	HJL26125	HJL26125C	HLL26125	HLL26125C
150 A	900 A	1700 A	HDL26150	HDL26150C	HGL26150	HGL26150C	HJL26150	HJL26150C	HLL26150	HLL26150C
H-Frame, 150 A, Three-Pole, 600 Vac 50/60 Hz, 250 Vdc										
15 A	350 A	750 A	HDL36015	HDL36015C	HGL36015	HGL36015C	HJL36015	HJL36015C	HLL36015	HLL36015C
20 A	350 A	750 A	HDL36020	HDL36020C	HGL36020	HGL36020C	HJL36020	HJL36020C	HLL36020	HLL36020C
25 A	350 A	750 A	HDL36025	HDL36025C	HGL36025	HGL36025C	HJL36025	HJL36025C	HLL36025	HLL36025C
30 A	350 A	750 A	HDL36030	HDL36030C	HGL36030	HGL36030C	HJL36030	HJL36030C	HLL36030	HLL36030C
35 A	400 A	850 A	HDL36035	HDL36035C	HGL36035	HGL36035C	HJL36035	HJL36035C	HLL36035	HLL36035C
40 A	400 A	850 A	HDL36040	HDL36040C	HGL36040	HGL36040C	HJL36040	HJL36040C	HLL36040	HLL36040C
45 A	400 A	850 A	HDL36045	HDL36045C	HGL36045	HGL36045C	HJL36045	HJL36045C	HLL36045	HLL36045C
50 A	400 A	850 A	HDL36050	HDL36050C	HGL36050	HGL36050C	HJL36050	HJL36050C	HLL36050	HLL36050C
60 A	800 A	1450 A	HDL36060	HDL36060C	HGL36060	HGL36060C	HJL36060	HJL36060C	HLL36060	HLL36060C
70 A	800 A	1450 A	HDL36070	HDL36070C	HGL36070	HGL36070C	HJL36070	HJL36070C	HLL36070	HLL36070C
80 A	800 A	1450 A	HDL36080	HDL36080C	HGL36080	HGL36080C	HJL36080	HJL36080C	HLL36080	HLL36080C
90 A	800 A	1450 A	HDL36090	HDL36090C	HGL36090	HGL36090C	HJL36090	HJL36090C	HLL36090	HLL36090C
100 A	900 A	1700 A	HDL36100	HDL36100C	HGL36100	HGL36100C	HJL36100	HJL36100C	HLL36100	HLL36100C
110 A	900 A	1700 A	HDL36110	HDL36110C	HGL36110	HGL36110C	HJL36110	HJL36110C	HLL36110	HLL36110C
125 A	900 A	1700 A	HDL36125	HDL36125C	HGL36125	HGL36125C	HJL36125	HJL36125C	HLL36125	HLL36125C
150 A	900 A	1700 A	HDL36150	HDL36150C	HGL36150	HGL36150C	HJL36150	HJL36150C	HLL36150	HLL36150C

1 Standard lug kit: AL150HD. Terminal wire range: 14–3/0 AWG Al or Cu.

2 UL Listed/CSA Certified as current-limiting circuit breakers.

3 HD and HG circuit breakers are true two-pole construction.

© 2011–2015 Schneider Electric
All Rights Reserved

Accessory Connections

Electrical accessories are fitted with numbered terminal blocks for wires with the following maximum size:

- 16 AWG (1.5 mm^2) for auxiliary switches (OF1 or OF2), and shunt trip (MX) or undervoltage trip (MN)
- 14 AWG (2.5 mm^2) for the motor operator

Auxiliary switch wiring exits fixed mounted devices through a knock-out in the front cover.

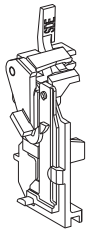
NOTE: See page 140 for plug-in and page 142 for drawout options.

Auxiliary and Alarm Indication Contacts

Auxiliary indication contacts provide remote information of the circuit breaker status and can thus be used for indications, electrical locking, relays, etc.



Auxiliary Switch (OF)/
Alarm Switch (SD)



Overcurrent Trip
Switch Actuator (SDE)

Table 88: Auxiliary and Alarm Indication Contacts

Applications	**Open/Closed—Auxiliary Switches (OF)** • Indicates the position of the circuit breaker contacts **Trip Indication—Alarm Switch (SD)** • Indicates that the circuit breaker has tripped due to an overload, short circuit or ground fault, the operation of a shunt trip or undervoltage trip or the “push-to-trip” button • Resets when the circuit breaker is reset **Overcurrent Trip Switch (SDE)** • Indicates that the circuit breaker has tripped due to an overload, short circuit or ground fault • Resets when the circuit breaker is reset The above switches are also available in low-level versions (with gold flash plating) capable of switching very low loads (e.g., for controlling PLCs or electronic circuits) **Rotary Handle Indicator: CAO (early-break) and CAF (early-make)** • Fitted in the rotary handle module (see page 127)
Installation & Connection	• The auxiliary switch (OF), alarm switch (SD), and overcurrent trip switch (SDE) indication contacts snap into cavities behind the front accessory cover of the circuit breaker. • One model serves for all indication functions depending on where it is fitted in the circuit breaker. • The overcurrent trip switch (SDE) in a circuit breaker equipped with a thermal-magnetic or Micrologic 1/2/3 trip unit requires the SDE actuator.
Standards	• The internal accessories comply with requirements of Underwriters Laboratories® Inc. (UL®). • UL 489 and Canadian Standard Association C22.2 No. 5-02 Standards. • All internal accessories are Listed for field installation per UL file E103955 and Certified under CSA file LR 69561. • Auxiliary indicator contacts comply with UL 489, CSA C22.2 No. 5-02 and IEC 60947-5 Standards. “Low-level” indicator contacts are not UL Recognized.

Table 89: Electrical Characteristics

Characteristic	Standard		Low-Level[1]	
Supplied as Standard (Form C)	4		4	
Maximum Number of Contacts	4		4	
Rated Thermal Current	6 A		5 A	
Minimum Load	100 mA at 24 V		1 mA at 4 V	
Operational Current	AC	DC	AC	DC
24 V	6 A	6 A	5 A	5 A
48 V	6 A	2.5 A	5 A	2.5 A
110 V	6 A	0.6 A	5 A	0.6
220/240 V	6 A	—	5 A	—
250 V	—	0.6 A	5 A	0.3 A
380/440 V	6 A	—	5 A	—
480 V	6 A	—	5 A	—
660/690 V	6 A	—	—	—

1 If the maximum voltage and current is exceeded, the low-level function of the switch will be lost but the switch will continue to function as a standard switch.

SQUARE D™ by Schneider Electric

© 2011–2015 Schneider Electric
All Rights Reserved

Table 90: Auxiliary Switch Catalog Numbers

Contacts	Factory-Installed Suffix	Field-Installable Kit No.	Kit Qty.
1A/1B Standard	AA	**S29450**	1
2A/2B Standard	AB	**S29450**	2
1A/1B Low-Level (Gold)	AE	**S29452**	1
2A/2B Low-Level (Gold)	AF	**S29452**	2

Table 91: Alarm/Overcurrent Trip Switch Catalog Numbers

Suffix	Switch	Kit No.	Kit Qty.
PowerPact L-Frame PowerPact H/J-Frame with Micrologic 5/6 trip units			
BC	Alarm Switch	S29450	1
BH	Alarm Switch Low-Level	S29452	1
BD	Overcurrent Trip Switch Standard	S29450	1
BJ	Overcurrent Trip Switch Low-Level	S29452	1
BE	Alarm Switch and Overcurrent Trip Switch, Standard	S29450	2
BK	Alarm Switch and Overcurrent Trip Switch, Low-Level	S29452	2
PowerPact H/J-Frame with Thermal-Magnetic or Micrologic 1/2/3 trip units			
BC	Alarm Switch	S29450	1
BH	Alarm Switch, Low-Level	S29452	1
BD	Overcurrent Trip Switch, Standard SDE Actuator	S29450 S29451	1 1
BJ	Overcurrent Trip Switch, Low-Level SDE Actuator	S29452 S29451	1 1
BE	Alarm Switch and Overcurrent Trip Switch, Standard SDE Actuators	S29450 S29451	2 2
BK	Alarm Switch and Overcurrent Trip Switch, Low-Level SDE Actuators	S29452 S29451	2 2

© 2011–2015 Schneider Electric
All Rights Reserved

Shunt Trip (MX) and Undervoltage Trip (MN)



A voltage release can be used to trip the circuit breaker using a control signal.

Table 93: Shunt Trip and Undervoltage Trip

Applications	**Shunt Trip (MX)** • Trips the circuit breaker when the control voltage rises above 70% of its rated voltage • Impulse type ≥ 20 ms or maintained control signals • AC shunt trips are suitable for ground-fault protection when combined with a Class I ground-fault sensing element • Continuous duty rated coil **Undervoltage Trip (MN)** • Trips the circuit breaker when the control voltage drops below a tripping threshold • Drops out between 35% and 70% of the rated voltage • Continuous duty rated coil • Circuit breaker closing is possible only if the voltage exceeds 85% of the rated voltage. If an undervoltage condition exists, operation of the closing mechanism of the circuit breaker will not permit the main contacts to touch, even momentarily. This is commonly called “Kiss Free”.
Installation and Connection	• Accessories are common to H-, J-, and L-frame circuit breakers and snap into cavities under the front accessory cover of the circuit breaker • Each terminal may be connected by one 18–14 AWG (1.0–2.5 mm^2) stranded copper wire
Operation	• The circuit breaker must be reset locally after being tripped by shunt trip (MX) or undervoltage trip (MN) • Tripping by the shunt trip or undervoltage trip has priority over manual (or motor operator) closing; in the presence of a standing trip order such an action does not result in any closing, even temporarily, of the main contacts • Endurance: 50% of the rated mechanical endurance of the circuit breaker

Table 94: Electrical Characteristics

		AC	DC
Rated Voltage (V)		24, 48, 120, 208/277, 380/480, 525, 600	12, 24, 30, 48, 60, 125, 250
Power Requirements	Pickup (shunt trip)	< 10 VA	< 5 W
	Seal-in (undervoltage trip)	< 5 VA	< 5 W
Clearing Time (ms)		< 50	< 50

Table 95: Shunt Trip and Undervoltage Trip Suffix Codes and Kit Numbers

Voltage	Shunt Trip (MX)		Undervoltage Release (MN)	
	Factory-Installed Suffix	Field-Installable Kit No.	Factory-Installed Suffix	Field-Installable Kit No.
24 Vac	SK	**S29384**	UK	**S29404**
48 Vac	SL	**S29385**	UL	**S29405**
120 Vac	SA	**S29386**	UA	**S29406**
208/277 Vac	SD	**S29387**	UD	**S29407**
380/480 Vac	SH	**S29388**	UH	**S29408**
525/600 Vac	SJ	**S29389**	UJ	**S29409**
12 Vdc	SN	**S29382**	UN	**S29402**
24 Vdc	SO	**S29390**	UO	**S29410**
30 Vdc	SU	**S29391**	UU	**S29411**
48 Vdc	SP	**S29392**	UP	**S29412**
60 Vdc	SV	**S29383**	UV	**S29403**
125 Vdc	SR	**S29393**	UR	**S29413**
250 Vdc	SS	**S29394**	US	**S29414**

Table 96: Adjustable and Fixed Time Delay Units for Undervoltage Trip

Rated Input Voltage	Field-Installable Kit No.		Use Only with These Undervoltage Releases (MN)
	Adjustable	Fixed	
48 Vac/dc	S33680	S29426	S29412
100/130 Vac/dc	S33681	—	S29413
220/250 Vac/dc	S33682	S29427	S29414

SQUARE D™ by Schneider Electric

© 2011–2015 Schneider Electric
All Rights Reserved

Table 125: Mechanical Lug Kits for H-Frame and J-Frame Circuit Breakers

	Circuit Breaker Application				Number of Wires Per Lug and Wire Range	Kit Cat. No.	Qty Per Kit
	Standard	Ampere Rating	Optional	Ampere Rating			
Al Lugs for Use with Al or Cu Wire	HD, HG, HJ, HL	15–150 A			(1) 14–3/0 AWG Al or Cu	**AL150HD**	3
	JD, JG, JJ, JL	150–175 A			(1) 4-4/0 AWG Al or Cu	**AL175JD**	3
	JD, JG, JJ, JL	200–250 A	JD, JG, JJ, JL	150–175 A	(1) 3/0–350 kcmil Al or Cu	**AL250JD**	3
Cu Lugs for Use with Cu Wire Only			HD, HG, HJ, HL	15–150 A	(1) 14–2/0 AWG Cu	**CU150HD**	3
			JD, JG, JJ, JL	150–250 A	(1) 1/0–300 kcmil Cu	**CU250JD**	3
Control Wire Terminal for H-frame lug kit						**S37423**	2
Control Wire Terminal for J-frame lug kit						**S37424**	2

Table 126: Mechanical Lug Kits for L-Frame Circuit Breakers[1]

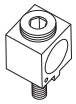
	Circuit Breaker Application				Number of Wires Per Lug and Wire Range[2]	Kit Cat. No.	Qty Per Kit	Type of Terminal Shield[3]
	Ampere Rating	Poles	Unit Mount	I-Line				
Al Lugs for Use with Al or Cu Wire	250	3	X	X	(1) 2 AWG–500 kcmil Al	**AL400L61K3**	3	Short
		4	X	—	(1) 2 AWG–600 kcmil Cu	**AL400L61K4**	4	Medium
	400/600	3	X	—	(2) 2/0 AWG–500 kcmil Al or Cu	**AL600LS52K3[4]**	3	Medium
		4	X	—		**AL600LS52K4[4]**	4	Medium
	400/600	3	X	X	(2) 3/0 AWG–500 kcmil Al or Cu	**AL600LF52K3[4]**	3	Short
Cu Lugs for Use with Cu Wire Only	250/400	3	X	X	(1) 2 AWG–500 kcmil Al	**CU400L61K3**	3	Short
		4	X	—	(1) 2 AWG–600 kcmil Cu	**CU400L61K4**	4	Medium
	400/600	3	X	—	(2) 2/0 AWG–500 kcmil Al or Cu	**CU600LS52K3[4]**	3	Medium
		4	X	—		**CU600LS52K4[4]**	4	Medium
	400/600	3	X	X	(2) 3/0 AWG–500 kcmil Al or Cu	**CU600LF52K3[4]**	3	Short

1 For lug pack information, see Figure 36 on page 177.

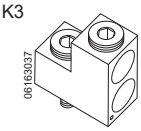
2 For control wire installation, use an 8-32 x 1/4 in. screw (not provided) into tapped control wire hole in lower left hand corner of lug.

3 For terminal shield dimensions, see Figure 36 on page 177.

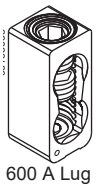
4 Terminal shields are included in mechanical lug kits.



400 A Lug
AL400L6IK3



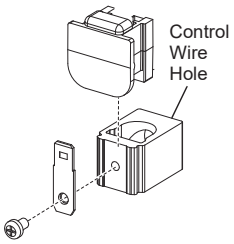
600 A Lug
AL600LS52K3



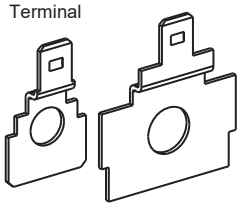
600 A Lug
AL600LF52K3

Voltage Takeoff (Control Wire Terminals) for Mechanical Lugs and Terminal Nuts

Mechanical Lug Control Wire Terminal



Busbar Control Wire Terminal



Powerpact H- and J-Frame mechanical lugs may be equipped with a separate control wire termination. The kit is available factory installed or as a field installable kit. The adaptor is secured underneath the lug and has a tab extension suitable for attachment of a 0.250 inch slip-on connector.

All L-frame mechanical lugs are pre-tapped for control wires. For control wire installation, use an 8-32 x 1/4 in. screw (not provided) into tapped control wire hole in lower left hand corner of the lug.

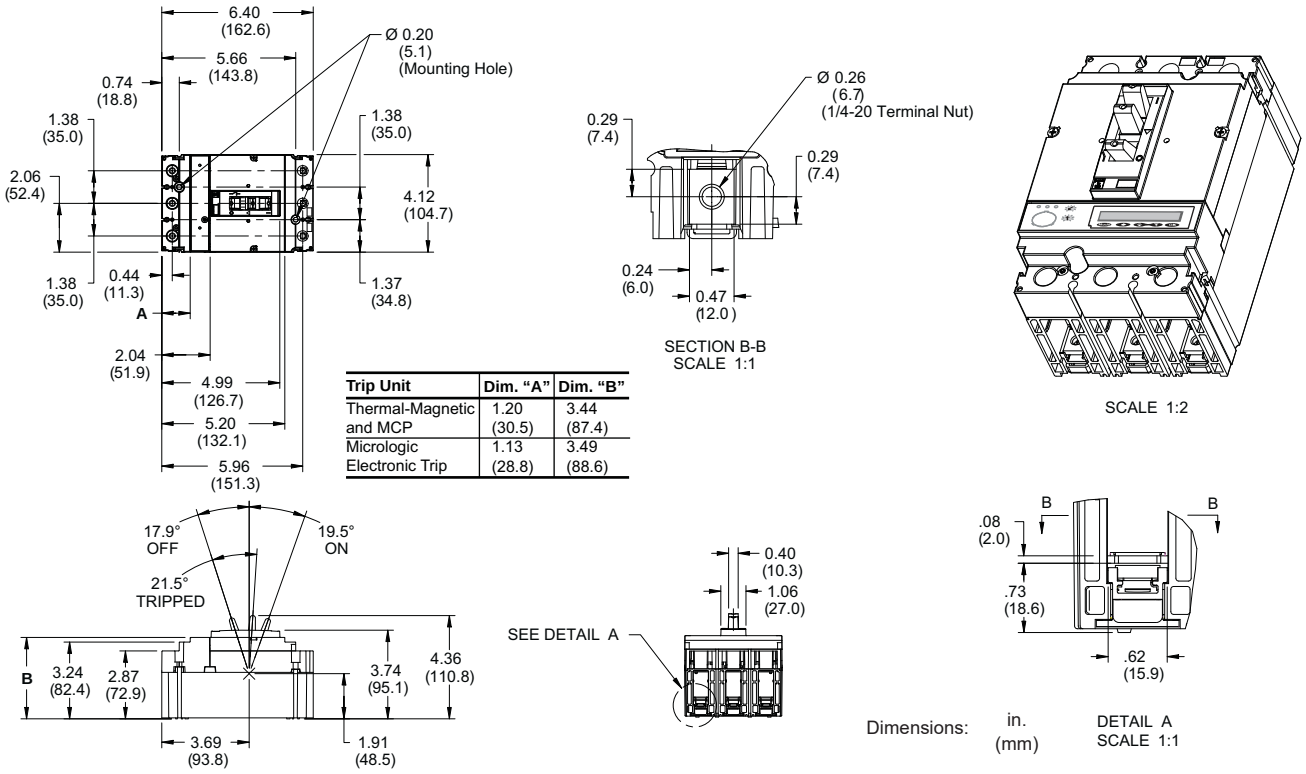
Fully insulated type connectors must be used to prevent live parts from extending into the wiring gutter area.

Table 127: Control Wire Terminals

Description	Frame	Cat. No.	Qty Per Kit
Mechanical Lugs			
Control Wire Terminal for H-Frame Lugs	HD/HG/HJ/HL	**S37423**	2
Control Wire Terminal for J-Frame Lugs	JD/JG/JJ/JL	**S37424**	2
Busbar Connection			
Control Wire Terminal for H-Frame Terminal Nut	HD/HG/HJ/HL	**S37429**	2
Control Wire Terminal for J-Frame Terminal Nut	JD/JG/JJ/JL	**S37430**	2

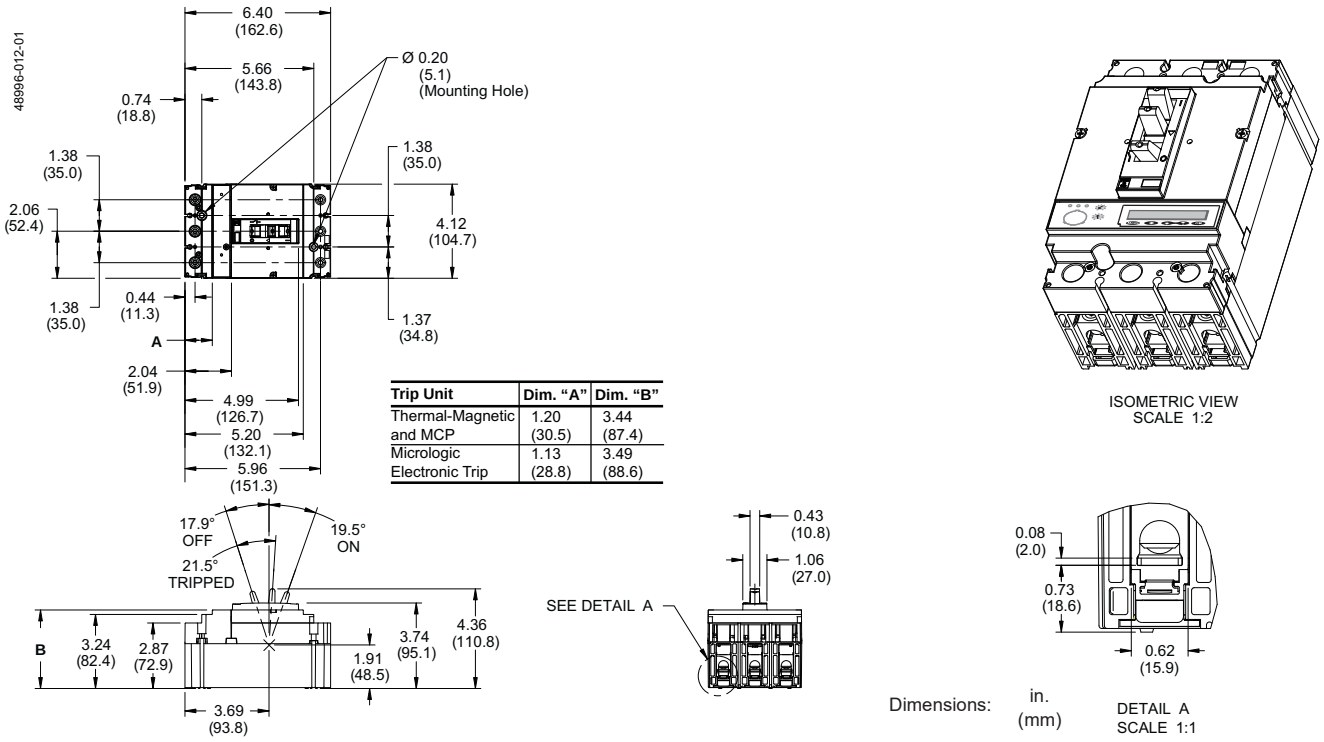
© 2011–2015 Schneider Electric
All Rights Reserved

Figure 15: 15–150 A Bus Bar PowerPact H-Frame Three-Pole Circuit Breaker



Trip Unit	Dim. "A"	Dim. "B"
Thermal-Magnetic and MCP	1.20 (30.5)	3.44 (87.4)
Micrologic Electronic Trip	1.13 (28.8)	3.49 (88.6)

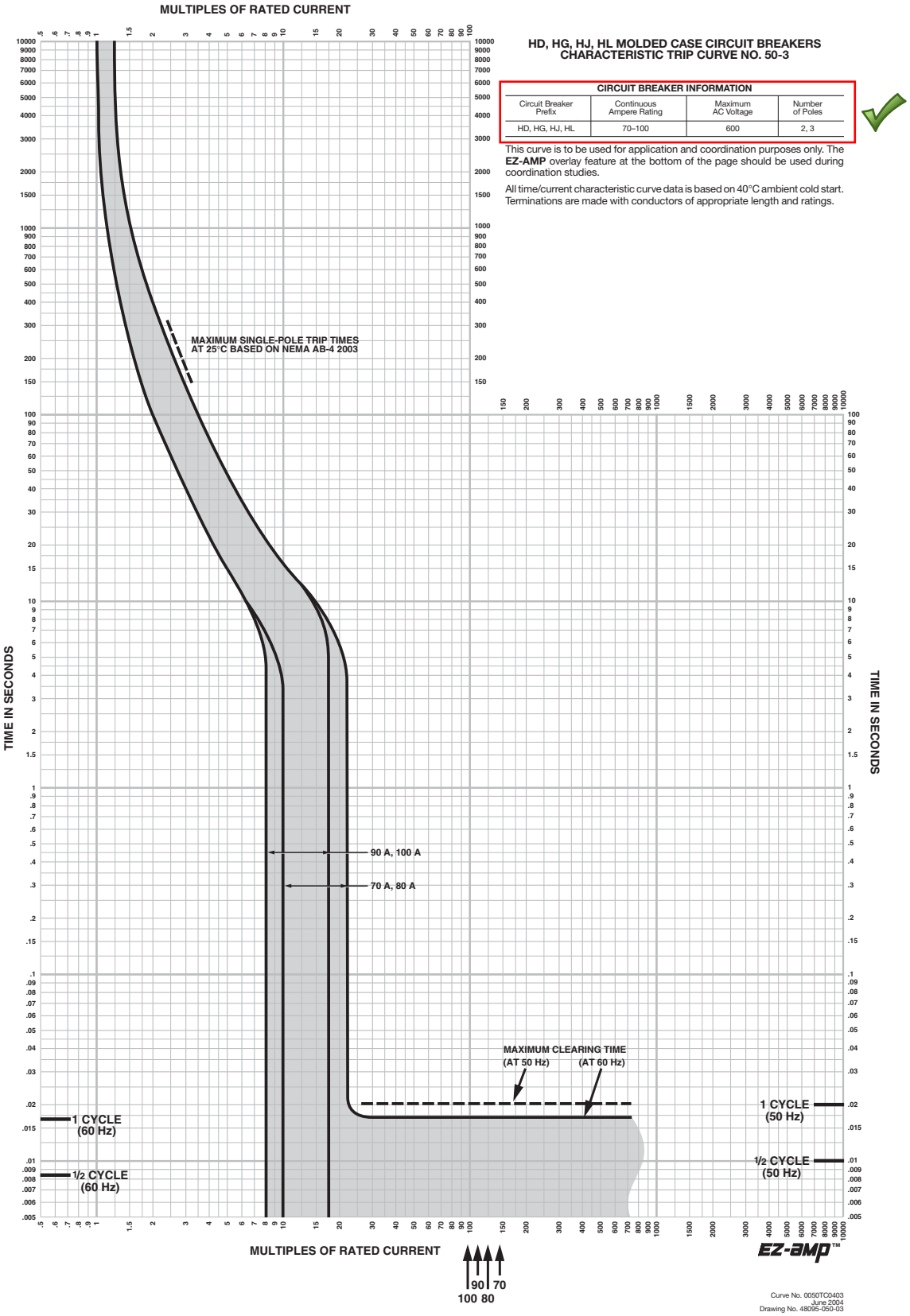
Figure 16: 15–150 A Lug-Lug PowerPact H-Frame Three-Pole Circuit Breaker



Trip Unit	Dim. "A"	Dim. "B"
Thermal-Magnetic and MCP	1.20 (30.5)	3.44 (87.4)
Micrologic Electronic Trip	1.13 (28.8)	3.49 (88.6)

© 2011–2015 Schneider Electric
All Rights Reserved

Figure 72: H-Frame 70–100 A (HD, HG, HJ, and HL) Thermal-Magnetic Trip



SQUARE D™ by Schneider Electric
© 2011–2015 Schneider Electric
All Rights Reserved

Schneider Electric USA, Inc.
800 Federal Street
Andover, MA 01810 USA
888-778-2733
www.schneider-electric.us

Schneider Electric Canada, Inc.
5985 McLaughlin Road
Mississauga, ON L5R 1B8 Canada
800-565-6699
www.schneider-electric.ca

Schneider Electric, Square D, PowerPact and Micrologic are trademarks owned by Schneider Electric Industries SAS or its affiliated companies. All other trademarks are the property of their respective owners.

Schneider Electric, Square D, PowerPact et Micrologic sont des marques commerciales de Schneider Electric Industries SAS ou de ses compagnies affiliées. Toutes les autres marques commerciales utilisées dans ce document sont la propriété de leurs propriétaires respectifs.

0611CT1001 R12/15 Replaces / Remplace 0611CT1001 R05/15
© 2011–2015 Schneider Electric All Rights Reserved / Tous droits réservés

12/2015

Power South

Our energy working for you.™

CABLES REFERENCE SHEET
Revision
0

FTT-10 NETWORK CABLE SELECTIONS:

All the following cables (Table 1) have been approved and verified for use by Echelon (FTT-10 Network). Network cable recommended by Cummins Power Generation is included.

TABLE 1: TP/FTT-10 NETWORK CABLE SELECTION:

Cable Type P/N	# of Pairs	Size AWG	Detail	Manufacturer/Supplier
0334-1350*	2	22	Non Plenum,Twisted Pair, Unshielded	Cummins Power Generation
0334-1351	2	22	Plenum, Twisted pair, Unshielded	Cummins Power Generation
**Belden 8471	1	16	PVC Jacket, Twisted Pair, Unshielded	Belden Wire & Cable Co.
**Belden 85102	2/c	16	Unshielded, High Temperature, Tfzel Jacket	Belden Wire & Cable Co.

* Cummins Power Generation specified FTT-10 network cables can also be ordered from **Connect-Air International**. **Part Number W221P-2001**, 2/C #22AWG NEMA Level 4 Stranded, Unshielded, non plenum.

** Belden cables maximum node to node distance 1300ft. Maximum total wire length 1600ft.

PCC NET NETWORK CABLE SELECTIONS:

Cummins Power Generation recommends Belden cable 9729 for PCC net. West Penn Wire cable equivalent to Belden cable is added into this list. Total Network Length can't exceed 4000ft.

TABLE 2: PCC NET NETWORK CABLE SELECTION:

Cable Type Part No.	# of Pairs	Size AWG	Detail	Manufacturer/Supplier
*Belden 9729	2	24	PVC Jacket, Stranded, Twisted Pair, Shielded	Belden Wire & Cable Company
DA2402	2	24	PVC Jacket, Stranded, Twisted Pair, Shielded	West Penn Wire Company

*Factory Recommended Wire.

MODBUS PLUS (MB+) NETWORK CABLE SELECTIONS:

Cummins Power Generation specifies the following cables for Modicon Modbus Plus network.

TABLE 3: MODICON MODBUS PLUS NETWORK CABLE SELECTION:

Cable Type Part No.	Detail	Manufacturer/Supplier
0326-0149-03	TP-PVC Standard Modbus Plus Cables (300 Meters)	Cummins Power Generation
490 NAA 271 03	TP-PVC Standard Modbus Plus Cables (300 Meters)	Square_D
Belden YM29560	Gray PVC, 22AWG, 1pair, RS-485; Equivalent to Square-D Modicon Modbus plus cable.	Belden Wire & Cable Co.

LOAD SHARE & LOAD GOVERN CABLE SELECTIONS:

Cummins Power Generation specifies all load shares & govern cables to be stranded, twisted and overall shielded. Cables shown in Table 4 and 5 are within the specification of Cummins Power Generation (CPG).

TABLE 4: LOAD SHARE CABLE SELECTION:

Cable Type Part No.	# of Cond.	Size AWG	Detail	Manufacturer/Supplier
Belden 9418	4/C	18	PVC Jacket, Stranded, Twisted Pair, Shielded	Belden Wire & Cable Company

TABLE 5: LOAD GOVERN CABLE SELECTION:

Cable Type Part No.	# of Pairs	Size AWG	Detail	Manufacturer/Supplier
Belden 8760	1	18	PVC Jacket, Stranded, Twisted Pair, Shielded	Belden Wire & Cable Company

IMPORTANT NOTES:

- Cummins Power South recommends all control wires shall be #14 AWG minimum.
- DC Wires varies per application and distance (See Factory Interconnection drawings).
- Network Cable Must Be Run In Separate Conduit.
- All AC & DC Circuits Should Be Run In Separate.
- All Cabling Must Be Stranded.

TABLE 6: LOCAL IMPORTANT VENDORS AND CONTACT INFORMATION:

Vendor Name	Contact Information
Square_D	Local Distributor: Georgia Control Center, 404-767-6677
Connect Air International	Contact Susan Christy; Phone # 678-430-0310
Belden Wire & Co.	Local Distributor: Allied Electronics; Contact Kim Reed, Phone # 770-406-5335 or Belden CO at: 1800-235-3361

ANNUNCIATORS (HMI 113 UNIT)

~~Annunciator – RS485 Panel Mount (A045J199)~~

Annunciator – RS485 Panel Mount w/ Enclosure (A045J201)

Description

The Universal Annunciator Module provides visual and audible indication of up to 20 separate alarm or status conditions, based on discrete (relay) inputs or network inputs. Each LED can be controlled by either a discrete wire input or by a signal on the PCCnet network sent from an external device, such as a PCC 1301, 1302, 2300, 3300 controls.

In addition to the LEDs, the annunciator can control four custom relays based on signals received over the PCCnet. When one of the annunciator's discrete inputs is activated, the annunciator will broadcast that information over the network. By taking advantage of the network, discrete inputs and custom relays, the annunciator can be used as expanded I/O for a PCC 1301, 1302, 2300, 3300 controls.

This unit can be easily installed in a suitable location in order to provide prompt at-a-glance notification of an alarm or warning condition to nearby personnel.

Remote annunciator panels comply with NFPA 110 (Emergency and Standby Power Systems). The annunciator module can also be used for monitoring of transfer switch or other equipment status.

Features

- Visual and audible warnings of up to 20 separate alarm or status conditions.
- LEDs can be controlled either via PCCnet or discrete input.
- Status of discrete inputs are broadcast on network.
- Four custom relays can be controlled over the PCCnet network.
- Configurable LED color (red, yellow, or green) and selectable horn operation allows maximum flexibility.
- Standard NFPA 110 label, field configurable for other alarm status and conditions.
- Each audible alarm is annunciated, regardless of the number of existing alarm conditions displayed.
- Sealed membrane panel design provides environmental protection for internal components and is easy to clean.
- Configurable for negative (ground) input or positive input.
- Integral DC Voltage Sensing.
- Flush or surface mount provisions.
- UL Listed and Labeled; CSA certified; CE Marked.



A045J199

Dimensions

X / Length: 6.25in / 159mm

Y / Width: 5.25in / 133mm

Z / Height (Depth): 3.00in / 76mm

Kits include: Annunciator, Wiring Harness, Cable tie and Window splice.



A045201

Warranty Statement

Global Commercial Warranty Statement

Generator Set

English
Original Instructions

7-2017

A028U870 (Issue 5)

Our energy working for you.™

Power Generation

Limited Warranty

Commercial Generating Set

This limited warranty applies to all Cummins Power Generation® branded commercial generating sets and associated accessories (hereinafter referred to as "Product").

This warranty covers any failures of the Product, under normal use and service, which result from a defect in material or factory workmanship.

Warranty Period:

The warranty start date† is the date of initial start up, first rental, demonstration or 18 months after factory ship date, whichever is sooner. See table for details.

Continuous Power (COP) is defined as being the maximum power which the generating set is capable of delivering continuously whilst supplying a constant electrical load when operated for an unlimited number of hours per year. No overload capability is available for this rating.

Prime Power (PRP) is defined as being the maximum power which a generating set is capable of delivering continuously whilst supplying a variable electrical load when operated for an unlimited number of hours per year. The permissible average power output over 24 hours of operation shall not exceed 70% of the PRP. For applications requiring permissible average output higher than stated, a COP rating should be used.

Limited-Time Running Power (LTP) is defined as the maximum power available, under the agreed operating conditions, for which the generating set is capable of delivering for up to 500 hours of operation per year.

Emergency Standby Power (ESP) is defined as the maximum power available during a variable electrical power sequence, under the stated operating conditions, for which a generating set is capable of delivering in the event of a utility power outage or under test conditions for up to 500 hours of operation per year. The permissible average power output over 24 hours of operation shall not exceed 70% of the ESP.

Environmental Protection Agency – Stationary Emergency (EPA-SE) is defined as being the maximum power available during a variable electrical power sequence, under the stated operating conditions, for which a generator set is capable of delivering in the event of a utility power outage or under test conditions and used in strict accordance with the EPA NSPS for stationary engines, 40 CFR part 60, subparts IIII and JJJJ, where a reliable utility must be present. The permissible average power output over 24 hours of operation shall not exceed 70% of the EPA-SE.

Data Center Continuous (DCC) is defined as the maximum power which the generator is capable of delivering continuously to a constant or varying electrical load for unlimited hours in a data center application.

Base Warranty Coverage Duration (Whichever occurs first)

Rating	Months	Max. Hours
COP	12	Unlimited
PRP	12	Unlimited
LTP	12	500 hrs
ESP	24	1000 hrs
EPA-SE	24	Unlimited
DCC	24	Unlimited

† Warranty start date for designated rental and oil and gas model Products is determined to be date of receipt of Product by the end customer.

Cummins Power Generation® Responsibilities:

In the event of a failure of the Product during the warranty period due to defects in material or workmanship, Cummins Power Generation® will only be responsible for the following costs:

- All parts and labor required to repair the Product.
- Reasonable travel expenses to and from the Product site location.
- Maintenance items that are contaminated or damaged by a warrantable failure.

Owner Responsibilities:

The owner will be responsible for the following:

- Notifying Cummins Power Generation® distributor or dealer within 30 days of the discovery of failure.
- Installing, operating, commissioning and maintaining the Product in accordance with Cummins Power Generation®'s published policies and guidelines.
- Providing evidence for date of commissioning.
- Providing sufficient access to and reasonable ability to remove the Product from the installation in the event of a warrantable failure.
- Incremental costs and expenses associated with Product removal and reinstallation resulting from non-standard installations.
- Costs associated with rental of generating sets used to replace the Product being repaired.
- Costs associated with labor overtime and premium shipping requested by the owner.
- All downtime expenses, fines, all applicable taxes, and other losses resulting from a warrantable failure.

Limitations:

This limited warranty does not cover Product failures resulting from:

- Inappropriate use relative to designated power rating.
- Inappropriate use relative to application guidelines.
- Inappropriate use of an EPA-SE application generator set relative to EPA's standards.
- Normal wear and tear.
- Improper and/or unauthorized installation.
- Negligence, accidents or misuse.
- Lack of maintenance or unauthorized repair.
- Noncompliance with any Cummins Power Generation® published guideline or policy.
- Use of improper or contaminated fuels, coolants or lubricants.
- Improper storage before and after commissioning.
- Owner's delay in making Product available after notification of potential Product problem.
- Replacement parts and accessories not authorized by Cummins Power Generation®.
- Use of Battle Short Mode.
- Owner or operator abuse or neglect such as: operation without adequate coolant or lubricants; overfueling; overspeeding; lack of maintenance to lubricating, cooling or air intake systems; late servicing and maintenance; improper storage, starting, warm-up, run-in or shutdown practices, or for progressive damage resulting from a defective shutdown or warning device.
- Damage to parts, fixtures, housings, attachments and accessory items that are not part of the generating set.

This limited warranty does not cover costs resulting from:

- Difficulty in gaining access to the Product.
- Damage to customer property.

A "Data center" is defined as a dedicated facility that house computers and associated equipment for data storage and data handling.

Reliable utility is defined as utility power without routine or regularly scheduled black-outs.

Please contact your local Cummins Power Generation® Distributor for clarification concerning these limitations.

CUMMINS POWER GENERATION® RIGHT TO FAILED COMPONENTS:

Failed components claimed under warranty remain the property of Cummins Power Generation®. Cummins Power Generation® has the right to reclaim any failed component that has been replaced under warranty.

Extended Warranty:

Cummins Power Generation® offers several levels of Extended Warranty Coverage. Please contact your local Cummins Power Generation ® Distributor for details.
www.power.cummins.com

THE WARRANTIES SET FORTH HEREIN ARE THE SOLE WARRANTIES MADE BY CUMMINS POWER GENERATION ® IN REGARD TO THE PRODUCT. CUMMINS POWER GENERATION® MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, OR OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT IS CUMMINS POWER GENERATION® LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

This limited warranty shall be enforced to the maximum extent permitted by applicable law. This limited warranty gives the owner specific rights that may vary from state to state or from jurisdiction to jurisdiction.

Product Model Number:_____
Product Serial Number:_____
Date in Service:_____

Warranty Statement

Global Power Electronics

Transfer Switch

English
Original Instructions

1-2015

A029Y876 Issue D

Equipment Submittal
Rev-0

Limited Warranty

Transfer Switch

This limited warranty applies to all Cummins Power Generation® branded Transfer Switches and associated accessories (hereinafter referred to as "Product").

This warranty covers any failures of the Product, under normal use and service, which result from a defect in material or factory workmanship.

Warranty Period:

The warranty start date is the date of commissioning†, demonstration or 18 months after factory ship date, whichever is sooner.

† Date of commissioning not to exceed date of Generator Set initial start-up.

Transfer Switch Coverage Duration:

The warranty coverage duration for Transfer Switches is defined in the table below for the different product families:

Product Family	Duration
GTEC, LT, LC, RST, OTEC	▪ 1 Year: Parts, Labor & Travel
RSS, RA, and other Power Transfer Devices††	▪ 2 Years: Parts, Labor & Travel
OT, OTPC, BTPC, OHPC, CHPC, PLT	▪ Years 0-2: Parts, Labor &Travel ▪ Years 3-5: Parts Only ▪ Years 6-10: Main Contacts Only

†† Devices manufactured by Cummins Power Generation that allow power transfer between two power sources.

Cummins Power Generation® Responsibilities:

In the event of a failure of the Product during the warranty period due to defects in material or workmanship, Cummins Power Generation® will only be responsible for the following costs:

- Parts and labor required to repair the Product as defined by coverage duration.
- Reasonable travel expenses to and from the Product site location as defined by coverage duration.

Owner Responsibilities:

The owner will be responsible for the following:

- Notifying Cummins Power Generation® distributor or dealer within 30 days of the discovery of failure.
- Installing, operating, commissioning and maintaining the Product in accordance with Cummins Power Generation®'s published policies and guidelines.
- Providing evidence for date of commissioning.
- Providing sufficient access to and reasonable ability to remove the Product from the installation in the event of a warrantable failure.

In addition, the owner will be responsible for:

- Incremental costs and expenses associated with Product removal and reinstallation resulting from non-standard installations.
- Costs associated with rental of power generating equipment used to replace the Product being repaired.
- Costs associated with labor overtime and premium shipping requested by the owner.
- All downtime expenses, fines, all applicable taxes, and other losses resulting from a warrantable failure.

Limitations:

This limited warranty does not cover Product failures resulting from:

- Inappropriate use relative to designated power rating.
- Inappropriate use relative to application guidelines.
- Non-conformance to applicable industry standards for installation
- Normal wear and tear.
- Improper and/or unauthorized installation.
- Negligence, accidents or misuse.
- Lack of maintenance or unauthorized repair.
- Noncompliance with any Cummins Power Generation® published guideline or policy.
- Improper storage before and after commissioning.
- Owner's delay in making Product available after notification of potential Product problem.
- Replacement parts and accessories not authorized by Cummins Power Generation®.
- Owner or operator abuse or neglect such as: late servicing and maintenance and improper storage.
- Damage to parts, fixtures, housings, attachments and accessory items that are not part of the transfer switch or paralleling system.

This limited warranty does not cover costs resulting from:

- Difficulty in gaining access to the Product.
- Damage to customer property.

Please contact your local Cummins Power Generation® Distributor for clarification concerning these limitations.

CUMMINS POWER GENERATION® RIGHT TO FAILED COMPONENTS:

Failed components claimed under warranty remain the property of Cummins Power Generation®. Cummins Power Generation® has the right to reclaim any failed component that has been replaced under warranty.

Extended Warranty:

Cummins Power Generation® offers several levels of Extended Warranty Coverage. Please contact your local Cummins Power Generation ® Distributor for details.

www.power.cummins.com

THE WARRANTIES SET FORTH HEREIN ARE THE SOLE WARRANTIES MADE BY CUMMINS POWER GENERATION ® IN REGARD TO THE PRODUCT. CUMMINS POWER GENERATION® MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, OR OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

IN NO EVENT IS CUMMINS POWER GENERATION® LIABLE FOR INCIDENTAL OR CONSEQUENTIAL DAMAGES.

This limited warranty shall be enforced to the maximum extent permitted by applicable law. This limited warranty gives the owner specific rights that may vary from state to state or from jurisdiction to jurisdiction.

Product Model Number:_____

Product Serial Number:_____

Date in Service:_____

Cummins Power Generation
1400 73rd Ave. NE
Minneapolis, MN 55432 USA

Phone 1 763 574 5000
Toll-free 1 800 888 6626
Fax 1 763 574 5298
Email ask.powergen@cummins.com
www.cumminspower.com

Cummins®, the "C" logo, and "Our energy working for you." are trademarks of Cummins Inc.

©2014 Cummins Power Generation, Inc. All rights reserved.

BRENTWOOD PLANNING COMMISSION **5.**

Meeting Date: 08/03/2020

Information

PROJECT NUMBER

BPC2007-005

PROJECT DESCRIPTION

Revised Preliminary Plan – Brentwood Country Club Subdivision

Ragan Smith Associates requests approval of a revised preliminary plan that reduces the area of the golfer's easement on Lot 116. The preliminary plan updates the site data to reflect the proposed easement reduction.

Because the golfer's easement is considered as part of the open space for the project, approval by the Board of Commissioners is required for the proposed revisions to the OSRD Development Plan.

ZONING OF PROPERTY

Zoning OSRD

APPLICANT NAME/ADDRESS

Mr. Chris Mabery, Ragan Smith Associates, 100 East Vine Street, Suite 402, Murfreesboro, TN 37130

Attachments

Final Staff Report
Vicinity Map
Proposed Preliminary Plan
Open Space Comparison

CITY OF BRENTWOOD
MUNICIPAL PLANNING COMMISSION
PLANNING DEPARTMENT STAFF REPORT
MONDAY, AUGUST 3, 2020 -- 7:00 P.M.
FINAL

CONSENT AGENDA -- ITEM 5:

REQUEST:	***REVISED PRELIMINARY PLAN – BRENTWOOD COUNTRY CLUB SUBDIVISION***
PROJECT NUMBER:	***BPC200-005***
CURRENT ZONING:	***OSRD -- OPEN SPACE RESIDENTIAL DEVELOPMENT***

GENERAL INFORMATION:

Ragan Smith Associates requests approval of a revised preliminary plan that reduces the area of the golfer's easement on Lot 116. The preliminary plan updates the site data to reflect the proposed easement reduction.

Because the golfer's easement is considered as part of the open space for the project, approval by the Board of Commissioners is required for the proposed revisions to the OSRD Development Plan.

PROJECT LOCATION:

The subject property is located on the west side of Franklin Road.

APPROVAL HISTORY:

At its June 1, 2020 meeting the Brentwood Planning Commission voted to approve a revised preliminary / site plan for the amenity area at the Brentwood Country Club. The amenity area is located at 5123 Country Club Drive. The plan proposes the following changes:

1. *Construction of a small splash pad located northeasterly of the existing kiddie pool, and*
2. *Replacement of approximately 400 feet of the existing chain link fence area with an eight-foot-tall wooden privacy fence.*

At its December 2, 2019 meeting the Planning Commission approved a revised preliminary plan that abandons approximately 2,908 sq. ft. or 0.07 acres of the golfer's easement located behind the existing house at 5120 Hershel Spears Circle. The proposal also adjusts the rear building setback line to correspond with the adjustment in the Golfer's Easement. The existing house also encroaches into the golfer's easement. This encroachment was permitted by the Club and the Association in 1988.

The proposed change is to accommodate a house addition.

The excess open space for the project increased by 0.07 acres. The reason for the increase is related to the decrease in the area of the Golfers Easement, resulting in a change in the area of the required open space for the project.

As part of the review the Planning Commission also voted to forward a recommendation of approval of the corresponding changes to the OSRD Development Plan for the project.
At its November 4, 2019 meeting, the Brentwood Planning Commission voted to approve a revised OSRD Development Plan that abandons an 11-foot-wide (994 SF) portion of the Golfers Easement located to the rear of the structure on Lot 102.

The applicant plans to erect a covering over an existing at grade patio.

The excess open space for the project increases by approximately 0.02 acres to 16.79 ac. The reason for the increase is related to the decrease in the area of the Golfers Easement, resulting in a change in the area of the required open space for the project.

Because the proposal affects the open space for the project, approval of the revised OSRD Development Plan is required by the Board of Commissioners.

Also at its November 4, 2019 regular meeting the Brentwood Planning Commission voted to approve a revised final plat that abandons a strip of the golfer's easement, which is considered as open space for the subdivision, being approximately 11 feet, and having a total area of 944 sf, located behind the house at 5132 Herschel Spears Circle in the Brentwood Country Club Subdivision. The plan moves the rear setback line accordingly.

At its August 6, 2018 regular meeting the Planning Commission approved a revised Preliminary Plan for the Brentwood Country Club. The request abandons a 9-foot-wide portion of the Golfer's Easement at the rear of Lot 97. The area of the change is 738 square feet. The remainder of the Golfer's Easement to rear of the lot would remain.

The Golfer's Easement for the entire project includes 14.00 acres, which includes the proposed reduction, of 0.02 acres. The subdivision provides a total of 16.77 acres of excess open space. The Golfers Easement is included as part of the open space for the project.

The excess open space for the project increased 0.02 acres. The reason for the increase related to the decrease in the area of the Golfers Easement, resulting in a change in the area of the required open space for the project.

Because the proposal affects the open space for the project, approval of the revised OSRD Development Plan is required by the Board of Commissioners.

Portions of the Golfer's Easement have also been abandoned through revised plats for lots 32, 35, 47, 69, and 98.

At its July 5, 2017 regular meeting the Brentwood Planning Commission voted to approve a revised preliminary plan for the Brentwood Country Club Subdivision. As part of the review the Planning Commission also voted to forward a recommendation of approval of the corresponding

changes to the OSRD Development Plan for the project. The revised plan proposes a minimal reduction in the area of the Golfer's Easement. The proposal will allow for an existing patio to come into compliance built by the previous property owners. The reduction is an area of 0.03 acres or 1,445 sf.

At its June 6, 2016 regular meeting, the Brentwood Planning Commission voted to approve a revised preliminary plan for the Brentwood Country Club Subdivision. As part of the review, the Planning Commission also voted to forward a recommendation of approval of the corresponding changes to the OSRD Development Plan for the project.

The revised plan proposes a minimal reduction in the area of the Golfer's Easement. The proposal will allow for a new wooden deck to be constructed on the rear of the existing structure on Lot 98, which is located at 5124 Herschel Spears Circle.

The plan proposes the reduction in area of the Golfer's Easement of 750 sf (0.02 acres).

CONDITIONS OF APPROVAL:

*Staff recommends that the following **four** conditions be attached to the approval of the request.*

1. Verify all open space calculations.

2. Since the proposal is a change to the area of the open space, the revised OSRD Development Plan will also require review and approval by the Board of Commissioners.

3. Approval of the preliminary plan shall be contingent upon the approval of the corresponding modifications to the OSRD Development Plan by the Board of Commissioners.

4. A preliminary plan shall be vested for a period of three years from the date of the original approval.

STANDARD REQUIREMENTS:

*Staff recommends that the following **nine** standard requirements be attached to the approval of the request.*

1. Add the following note to the preliminary plan;

   *This site plan is subject to a three-year vesting period, during which the development standards in effect on the date of approval will remain the standards applicable to this plan. If construction is not completed during the first three years, the original site plan is considered a preliminary site plan and the applicant must obtain approval of a final site plan. Development of the property shown on this plan may be subject to standards other than those that were applicable during the vesting period. The Initial vesting period for this plan expires on **August 3, 2023**, unless extended by the City of Brentwood. Persons relying on this plan after said date should contact the City of Brentwood to determine if development may continue as depicted on the plan.*

2. When the construction authorized pursuant to a site plan is not completed within three years from the date of initial approval, but the applicant desires to complete the project proposed for the site, the plan as initially approved for the project or as amended shall be considered a preliminary site plan. If the applicant secures all necessary permits, commences site preparation and obtains approval of a final site plan within the three-year vesting period following approval of the preliminary site plan, then the vesting period shall be extended an additional two years beyond the expiration of the initial three-year vesting period. During the two-year extension, the applicant must commence construction and maintain any necessary permits to remain vested.

3. If necessary permits are maintained and construction, as defined by Section 78-43, has commenced by the end of the two-year extension, then the vesting period shall remain in effect until the Planning and Codes Department has certified final completion of the project, provided the total vesting period shall not exceed ten years from the date of approval of the preliminary site plan.

4. If the construction authorized pursuant to a site plan is completed within three years from the date of approval, the site plan shall then be considered the final site plan for the project.

5. The property owner is responsible for all development fees including water and sewer service and tap fees, building permit fees and Public Works Project Fees. The required fees shall be used for future infrastructure related improvements required by the proposed development.

6. Deviations from the approved plan in the development of a project or the failure to satisfy any standard requirements or special conditions of approval imposed by the planning commission will be considered a violation of the provisions of the Zoning Ordinance, which shall be subject to punishment as provided in Section 1-9 of the Brentwood Municipal Code. The City may also require the applicant to appear before the Planning Commission to address any deficiencies or unapproved modifications. The project may also be subject to delays in issuance of permits, certificates of occupancy, recordation of plats or other project approvals.

7. Any changes to plans approved by the Planning Commission will require staff review and re-approval by the Planning Commission.

8. Development of this project shall comply with all applicable codes and ordinances of the City of Brentwood.

9. Approval of the proposed plan shall be limited to the illustrations and plans presented to the Planning Commission for review and approval on ***August 3, 2020***. Any changes to Planning Commission approved plans and specifications will require staff review and re-approval by the Planning Commission.

RECOMMENDATION:

Planning staff requests that the Planning Commission approve the proposed minor revisions to the preliminary plan, subject to the requirements of the staff report, and forward a recommendation of approval of the corresponding minor revisions to the OSRD Development Plan to the Board of Commissioners.

BRENTWOOD COUNTRY CLUB SUBDIVISION OPEN SPACE COMPARISON				
	8/2018	11/2019	12/2019	8/2020
Total Site Area (AC)	180.27	180.27	180.27	180.27
Less R.O.W. dedication -- Internal streets	10.50	10.50	10.50	10.50
TOTAL	169.77	169.77	169.77	169.77
Less Areas in 25% Slopes	1.90	1.90	1.90	1.90
Plus 25% of slopes over 25%	0.48	0.48	0.48	0.48
Less Areas in Floodway	35.79	35.79	35.79	35.79
Plus 25% Areas in Floodways	8.95	8.95	8.95	8.95
Total Usable Land Area (AC)	141.50	141.50	141.50	141.50
Less area in lots>1 acre	0.00	0.00	0.00	0.00
TOTAL LAND AREA AVAILABLE	141.50	141.50	141.50	141.50
Total Land Area Required @ 1 DUPA (AC)	139	139	139	139
Land Area in Lots	53.58	53.58	53.58	53.58
Open Space Required	85.42	85.42	85.42	85.42
Plus Area of Golfer's Easement	14.00	13.98	13.89	13.88
Dedicated Open Space	99.42	99.40	99.31	99.30
Golf Course Open Space	111.02	111.02	111.02	111.02
Clubhouse Recreation Center -- Open Space	5.17	5.17	5.17	5.17
Total Open Space Provided	116.19	116.19	116.19	116.19
Excess Open Space	16.77	16.79	16.88	16.89


Brentwood United Methodist Church
Chick-fil-A
AT&T Store
TJ Maxx & H
Granny White Pike
Little Harpeth River
Brentwood Country Club
Little Harpeth River
SITE
U.S. Hwy 31
Granny White Park
Brentwood Middle School
Brentwood High School
Murray Ln
Murray Ln
Murray Ln
Ironhorse



GENERAL NOTES AND SITE DATA (STANDARD OSRD)

1. SUBJECT PROPERTY CONSISTS OF:

PARCEL REFERENCES FOR RESIDENTIAL		
LOTS 1–15, 17–86, 88–139		
MAP	GROUP	PARCELS
11P	D	1.00, 2.00–87.00
12L	C	2.00–20.00, 21.01–57.00

PARCEL REFERENCES FOR GOLF COURSE OPEN SPACES AND AMENITY LOTS		
GOLF COURSE–OPEN SPACE AREA		
MAP	GROUP	PARCELS
11P	D	1.01

AMENITY LOTS 143 AND 144		
MAP	GROUP	PARCELS
12L	C	1.00 & 21.00

2. PROPERTY OWNERS: BRENTWOOD COUNTRY CLUB.
3. EXISTING ZONING: OSRD (OPEN SPACE RESIDENTIAL DEVELOPMENT).
4. GROSS SITE AREA: 180.17 ACRES.
5. BOUNDARY INFORMATION TAKEN FROM PLATS OF RECORD.
6. TOPOGRAPHIC INFORMATION TAKEN FROM CITY OF BRENTWOOD MAPPING.
7. NUMBER OF PROPOSED LOTS: 146.
8. PROPOSED DENSITY: 139/180.27 = 0.77 DU./ACRE.
9. MAXIMUM BUILDING COVERAGE OF PROPOSED LOTS: 25%.
10. EACH PROPOSED LOT SHALL PROVIDE A MINIMUM OF TWO OFF–STREET PARKING SPACES.
12. MINIMUM BUILDING SETBACKS:
    FRONT – 30'
    SIDE – 15'
    SIDE ABUTTING A STREET: 30'
    REAR – 20'
    ABUTTING PROJECT PERIMETER – 35'
    ABUTTING MEADOW LAKE SUBDIVISION – 75'
13. ALL ELECTRIC SERVICE FOR THE PROPOSED DEVELOPMENT SHALL BE UNDERGROUND. ALL PUBLIC UTILITIES SHALL BE SUBJECT TO THE APPROVAL OF THE APPLICABLE UTILITY COMPANIES.
14. LOTS DESIGNATED AS TRANSITIONAL SHALL REQUIRE DETAILED SITE AND GRADING PLANS REVIEW BY THE CITY ENGINEER PRIOR TO ISSUANCE OF A BUILDING PERMIT.
15. GOLF GREENS AND GOLF CART PATH LOCATIONS ARE APPROXIMATE AND SUBJECT TO REVISION.
16. THIS SITE PLAN IS SUBJECT TO A THREE YEAR VESTING PERIOD, DURING WHICH THE DEVELOPMENT STANDARDS IN EFFECT ON THE DATE OF APPROVAL WILL REMAIN THE STANDARDS APPLICABLE TO THIS PLAN. IF CONSTRUCTION IS NOT COMPLETED DURING THE FIRST THREE YEARS, THE ORIGINAL SITE PLAN IS CONSIDERED A PRELIMINARY SITE PLAN AND THE APPLICANT MUST OBTAIN APPROVAL OF A FINAL SITE PLAN. DEVELOPMENT OF THE PROPERTY SHOWN ON THIS PLAN MAY BE SUBJECT TO STANDARDS OTHER THAN THOSE THAT WERE APPLICABLE DURING THE VESTING PERIOD. THE INITIAL VESTING PERIOD FOR THIS PLAN EXPIRES ON AUGUST 3, 2023, UNLESS EXTENDED BY THE CITY OF BRENTWOOD. PERSONS RELYING ON THIS PLAN AFTER SAID DATE SHOULD CONTACT THE CITY OF BRENTWOOD TO DETERMINE IF DEVELOPMENT MAY CONTINUE AS DEPICTED ON THE PLAN.

7/02/20 – THE PURPOSE OF THIS REVISION IS TO REVISE THE GOLFER'S EASEMENT AND REAR SETBACK LINE ON LOT 116.

LOT AREA TABLE

LOT	SQ. FT. +/-	ACRES +/-
1	15405	0.35
2	14889	0.34
3	14943	0.34
4	14036	0.32
5	14101	0.32
6	14114	0.32
7	14010	0.32
8	14183	0.33
9	14558	0.33
10	14952	0.34
11	15003	0.34
12	14758	0.34
13	14608	0.34
14	14474	0.33
15	31083	0.71
17	15416	0.35
18	14014	0.32
19	14245	0.33
20	14181	0.33
21	14656	0.34
22	15068	0.35
23	14874	0.34
24	14363	0.33
25	14141	0.32
26	14583	0.33
27	14358	0.33
28	15095	0.35
29	14110	0.32
30	14151	0.32
31	14608	0.34
32	16149	0.37
33	16150	0.37
34	16148	0.37
35	14247	0.33
36	17141	0.39
37	17648	0.41
38	18648	0.43
39	16890	0.39
40	14141	0.32
41	14006	0.32
42	15867	0.36
43	20965	0.48
44	18237	0.42
45	14066	0.32
46	14198	0.33
47	14036	0.32
48	15105	0.35

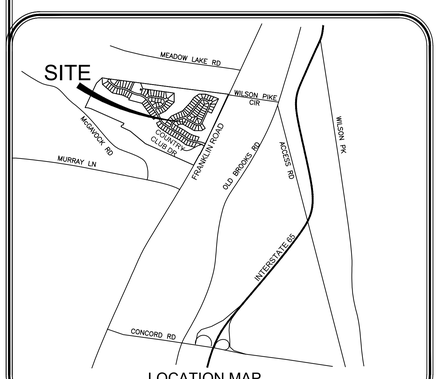
LOT	SQ. FT. +/-	ACRES +/-
49	19106	0.44
50	17930	0.41
51	17980	0.41
52	17633	0.40
53	17245	0.40
54	17446	0.40
55	18014	0.41
56	18583	0.43
57	15626	0.36
58	15505	0.36
59	16493	0.38
60	16231	0.37
61	15147	0.35
62	16079	0.37
63	15897	0.36
64	16288	0.37
65	14297	0.33
66	16917	0.39
67	14332	0.33
68	14055	0.32
69	14960	0.34
70	15072	0.35
71	16948	0.39
72	15069	0.35
73	14998	0.34
74	14310	0.33
75	14009	0.32
76	14007	0.32
77	14001	0.32
78	13996	0.32
79	14115	0.32
80	13963	0.32
81	13873	0.32
82	14501	0.33
83	17801	0.41
84	18574	0.43
85	19605	0.45
86	16858	0.39
88	18502	0.42
89	14033	0.32
90	13999	0.32
91	14992	0.34
92	14888	0.34
93	18814	0.43
94	17807	0.41
95	36335	0.83
96	34449	0.79

LOT	SQ. FT. +/-	ACRES +/-
97	18851	0.43
98	15070	0.35
99	18400	0.42
100	15000	0.34
101	18432	0.42
102	17833	0.41
103	21298	0.49
104	16020	0.37
105	19547	0.45
106	19441	0.45
107	14161	0.33
108	14818	0.34
109	14277	0.33
110	14101	0.32
111	15059	0.35
112	14337	0.33
113	14470	0.33
114	14165	0.33
115	14126	0.32
116	17789	0.41
117	16733	0.38
118	16150	0.37
119	16150	0.37
120	16150	0.37
121	16150	0.37
122	16150	0.37
123	15205	0.35
124	16442	0.38
125	18098	0.42
126	15398	0.35
127	15091	0.35
128	16577	0.38
129	17106	0.39
130	21155	0.49
131	19604	0.45
132	16949	0.39
133	16749	0.38
134	21744	0.50
135	30760	0.71
136	26643	0.61
137	24021	0.55
138	23786	0.55
139	28575	0.66
141	24162	0.55
142	23315	0.54

TOTAL NO. OF LOTS		
139	2333964	53.58

OPEN SPACE TABLE

OS LOT	SQ. FT. +/-	ACRES +/-
143	114137	2.62
144	110935	2.55
A	3239920	74.38
B	1596172	36.64
	5061164	116.19



OVERALL OSRD Calculations	Acres
Total Site Area	180.27
Less Internal ROW Dedication	10.50
Total	169.77
Less Area 25% in slopes	1.90
Plus 25% of Slopes over 25%	0.48
Less Areas Floodways	35.79
Plus 25% of Areas in Floodways	8.95
Total Usable Land Area (AC)	141.50
Less Area in Lots > 1.0 Acre	0.00
Total Land Area Available	141.50
Total Land Area Required @ 1 DUPA (AC)	139.00
Land Area in Lots	53.58
Open Space Required	85.42
Plus Area Golfer's Easement	13.88
Total Open Space Required	99.30
Golf Course (Open Space)	111.02
Open Space – Clubhouse, Rec. Ctr.	5.17
Total Open Space Provided	116.19
EXCESS OPEN SPACE	16.89

The Golfer's Easement, as shown on the recorded plats is included as part of the required open space for the project.

LEGEND

G = GOLF COURSE AREA
OS = OPEN SPACE AREA
H = HISTORICAL AREA

SLOPE OVER 25%
GOLF COURSE
OPEN SPACE
FLOODWAY

LEGEND

CM(O)	CONCRETE MONUMENT (OLD)	Ø	UTILITY POLE
	FIRE HYDRANT		TELEPHONE RISER
	WATER VALVE		CABLE TV BOX
	WATER METER	—P—	OVERHEAD POWER LINE
	SIAMESE WATER CONNECTION	—SA—	SANITARY SEWER LINE
	POST INDICATOR VALVE	—G—	GAS LINE
	CATCH BASIN	—W—	WATER LINE
ST	STORM MANHOLE	–UGE–	UNDERGROUND ELECTRIC LINE
E	ELECTRIC MANHOLE	–UGT–	UNDERGROUND TELEPHONE LINE
	SANITARY SEWER MANHOLE (UNLESS OTHERWISE NOTED)	–X–X–	FENCE
	LIGHT STANDARD	TC	TOP OF CASTING
	YARD LIGHT	INV	INVERT
E	ELECTRIC BOX	ELEV	ELEVATION
eB	BOLLARD	FFE	FINISHED FLOOR ELEVATION
	SIGN	650.00	SPOT ELEVATION
	GAS VALVE	RCP	REINFORCED CONCRETE PIPE
	ASPHALT SURFACE	R.O.D.C.T.	REGISTER'S OFFICE FOR DAVIDSON COUNTY, TN

UTILITY PROVIDERS:

ELECTRICITY:
NASHVILLE ELECTRIC SERVICE
(615) 736–6900

NATURAL GAS:
ATMOS ENERGY CORPORATION
(615) 794–2596

WATER AND SEWER:
MR. CHRIS MILTON
CITY OF BRENTWOOD
(615) 371–2241

TELEPHONE:
AT&T
(615) 269–6563

0 200 400 600

RAGAN•SMITH
LAND PLANNERS • CIVIL ENGINEERS
LANDSCAPE ARCHITECTS • SURVEYORS
CHATTANOOGA
1801 HAMILTON AVENUE
CHATTANOOGA, TN 37408
(423) 490-8400
NASHVILLE
5115 MARYLAND WAY
BRENTWOOD, TN 37027
(615) 244-8591
www.ragansmith.com

CHRISTOPHER L. MARTIN
REGISTERED LANDSCAPE ARCHITECT
No. 328
STATE OF TENNESSEE
07/21/2020

07/02/2020 REVISED PER CITY COMMENTS
05/01/2020 ADDED SPLASH PAD TO AMENITY
11/04/2019 REVISED PER CITY COMMENTS
10/21/2019 REVISED PER CITY COMMENTS
07/21/2020 REVISED PER CITY COMMENTS
10/07/2019 REVISED PER CITY COMMENTS
07/17/2018 REVISED PER CITY COMMENTS
07/02/2018 REVISED PER CITY COMMENTS
06/20/2017 REVISED PER CITY COMMENTS
06/05/2017 REVISED PER CITY COMMENTS
05/17/2016 REVISED PER CITY COMMENTS
03/29/2016 REVISED PER CITY COMMENTS
03/22/2016 REVISED PER CITY COMMENTS
02/12/2016 REVISED PER CITY COMMENTS
02/01/2016 REVISED PER LOT 47 ESMT REVISION
04/24/2014 REVISED PER CITY COMMENTS
04/22/2014 COUNTRY CLUB LAYOUT ADJUSTMENTS PER CITY COMMENTS

DATE:	November 4, 2013
DESIGNED:	K.Guenther
DRAWN:	D.Kirkham
SCALE:	1"=200'
JOB NO.	13-060
WK. ORDER	9781

OSRD PLAN
FOR
BRENTWOOD COUNTRY CLUB

OSRD PLAN

1

G:\2013\13-060\LA\ARAN\SHEETS\13-060.DWG
XREF: 13-060 BASE.DWG, TOPO.DWG, XPLAN.DWG
PLOTTED BY: ARAN ANDERSON, TN PLOT: 7 JUL - LAST UPDATED BY ARAN ON: 7/20/2020 11:39 AM

BRENTWOOD COUNTRY CLUB SUBDIVISION *OPEN SPACE COMPARISON*				
	8/2018	11/2019	12/2019	8/2020
Total Site Area (AC)	180.27	180.27	180.27	180.27
Less R.O.W. dedication -- Internal streets	10.50	10.50	10.50	10.50
TOTAL	169.77	169.77	169.77	169.77
Less Areas in 25% Slopes	1.90	1.90	1.90	1.90
Plus 25% of slopes over 25%	0.48	0.48	0.48	0.48
Less Areas in Floodway	35.79	35.79	35.79	35.79
Plus 25% Areas in Floodways	8.95	8.95	8.95	8.95
Total Usable Land Area (AC)	141.50	141.50	141.50	141.50
Less area in lots>1 acre	0.00	0.00	0.00	0.00
TOTAL LAND AREA AVAILABLE	141.50	141.50	141.50	141.50
Total Land Area Required @ 1 DUPA (AC)	139	139	139	139
Land Area in Lots	53.58	53.58	53.58	53.58
Open Space Required	85.42	85.42	85.42	85.42
Plus Area of Golfer's Easement	14.00	13.98	13.89	13.88
Dedicated Open Space	99.42	99.40	99.31	99.30
Golf Course Open Space	111.02	111.02	111.02	111.02
Clubhouse Recreation Center -- Open Space	5.17	5.17	5.17	5.17
Total Open Space Provided	116.19	116.19	116.19	116.19
Excess Open Space	16.77	16.79	16.88	16.89

BRENTWOOD PLANNING COMMISSION **6.**

Meeting Date: 08/03/2020

Information

PROJECT NUMBER

BPC2007-004

PROJECT DESCRIPTION

Revised Final Plat – Brentwood Country Club Subdivision, Lot 116, 5101 Country Club Drive

Ragan Smith Associates requests approval of a revised final plat that reduces the golfer's easement by 383 square feet or 0.01 acres.

ZONING OF PROPERTY

Zoning OSRD

APPLICANT NAME/ADDRESS

Mr. Chris Mabery, Ragan Smith Associates, 100 East Vine Street, Suite 402, Murfreesboro, TN 37130

Attachments

Final Staff Report
Vicinity Map
Revised Final Plat

CITY OF BRENTWOOD
MUNICIPAL PLANNING COMMISSION
PLANNING DEPARTMENT STAFF REPORT
MONDAY, AUGUST 3, 2020 -- 7:00 P.M.
FINAL

CONSENT AGENDA -- ITEM 6:

REQUEST:	***REVISED FINAL PLAT – BRENTWOOD COUNTRY CLUB SUBDIVISION, LOT 116, 5101 COUNTRY CLUB DRIVE***
PROJECT NUMBER:	***BPC2006-004***
CURRENT ZONING:	***OSRD -- OPEN SPACE RESIDENTIAL DEVELOPMENT***

GENERAL INFORMATION:

Ragan Smith Associates requests approval of a revised final plat that reduces the golfer's easement by 383 square feet or 0.01 acres.

PROJECT LOCATION:

The subject property is located at 5101 Country Club Drive.

APPROVAL HISTORY:

There has been no recent Planning Commission action related to the subject property.

CONDITIONS OF APPROVAL:

*Staff recommends that the following **three** conditions be attached to the approval of the request.*

1. The revised final plat cannot be recorded until the Board of Commissioners approves the revised OSRD Development Plan showing the corresponding changes to the open space area.

2. The property owner is responsible for any required building permits.

3. Approval of a final plat by the Planning Commission shall become effective upon the date of the last signature required on the plat for recording. The initial vesting period shall be for a period of five years after approval.

STANDARD REQUIREMENTS:

*Staff recommends that the following **eight** standard requirements be attached to the approval of the request.*

1. Add the following note to all pages of the final plat:

   This final plat is subject to a vesting period, during which the development standards in effect on the date of approval will remain the standards applicable to this plan. Upon expiration of the vesting period, development of the property shown on this plat may be subject to standards other than those that were applicable during the vesting period. The vesting period for this plat expires on _____, unless extended by the City of Brentwood. Persons relying on this plat after said date should contact the City of Brentwood to determine if development may continue as depicted on the plan.

   (Planning and Codes Department staff will insert the expiration year for the plat at the time the plat is ready for recording and may also make changes to the wording of the above note as necessary to carry out the intent of Standard Requirements 1, 2 and 3 below.)

1. Provide the Planning staff with a digital copy of the proposed subdivision. This request is consistent with Article 2.3 of the Brentwood Subdivision Regulations. The file should be in AutoCAD .DWG or .DXF compatible format and CD-ROM. The file shall use the Tennessee State Plane coordinate system, FIPS Zone 4100, NAD 83 datum. The digital copies must be received before the plat may be recorded.

2. The property owner is responsible for all development fees including water and sewer service and tap fees, building permit fees and Public Works Project Fees. The required fees shall be used for future infrastructure related improvements required by the proposed development.

3. Deviations from the approved plan in the development of a project or the failure to satisfy any standard requirements or special conditions of approval imposed by the planning commission will be considered a violation of the provisions of the Zoning Ordinance, which shall be subject to punishment as provided in Section 1-9 of the Brentwood Municipal Code. The City may also require the applicant to appear before the Planning Commission to address any deficiencies or unapproved modifications. The project may also be subject to delays in issuance of permits, certificates of occupancy, recordation of plats or other project approvals.

4. Any changes to plans approved by the Planning Commission will require staff review and re-approval by the Planning Commission.

5. Development of this project shall comply with all applicable codes and ordinances of the City of Brentwood.

6. Approval of the proposed plan shall be limited to the illustrations and plans presented to the Planning Commission for review and approval on **August 3, 2020 .** Any changes to Planning Commission approved plans and specifications will require staff review and re-approval by the Planning Commission.

RECOMMENDATION:

Staff requests that the Planning Commission vote to approve the proposed revised final plat, subject to the requirements of the staff report.


Brentwood United Methodist Church
Chick-fil-A
AT&T Store
TJ Maxx & H
Granny White Pike
Little Harpeth River
Brentwood Country Club
Little Harpeth River
SITE
U.S. Hwy 31
Granny White Park
Brentwood Middle School
Brentwood High School
Murray Ln
Murray Ln
Murray Ln
Ironhorse

GENERAL NOTES

1. THE PURPOSE OF RECORDING THIS PLAT IS TO REVISE THE GOLFER'S EASEMENT AND REAR SETBACK LINE ON LOT 116.

2. BEARINGS SHOWN HEREON ARE BASED ON THE TENNESSEE COORDINATE SYSTEM OF 1983. GPS EQUIPMENT WAS USED TO DETERMINE THE POSITION OF TWO (2) CONTROL POINTS FOR THE SURVEYED PROPERTY TO ESTABLISH AS BASIS FOR BEARING FOR THE SURVEY. TYPE OF GPS EQUIPMENT USED: SPECTRA PRECISION SP80. TYPE OF GPS SURVEY: TDOT NETWORK ADJUSTED REAL TIME KINEMATIC. THE AVERAGE POSITIONAL QUALITY IS 0.05'.

3. THIS SURVEYOR HAS NOT PHYSICALLY LOCATED THE UNDERGROUND UTILITIES. ABOVE GRADE AND UNDERGROUND UTILITIES SHOWN WERE TAKEN FROM VISIBLE APPURTENANCES, PUBLIC RECORDS, AND/OR MAPS PREPARED BY OTHERS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THE SURVEYOR FURTHER DOES NOT WARRANT THAT THE UNDERGROUND UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED. THEREFORE, RELIANCE UPON THE TYPE, SIZE AND LOCATION OF UTILITIES SHOWN SHOULD BE DONE SO WITH THIS CIRCUMSTANCE CONSIDERED. DETAILED VERIFICATION OF EXISTENCE, LOCATION AND DEPTH SHOULD ALSO BE MADE PRIOR TO ANY DECISION RELATIVE THERETO IS MADE. AVAILABILITY AND COST OF SERVICE SHOULD BE CONFIRMED WITH THE APPROPRIATE UTILITY COMPANY. IN TENNESSEE, IT IS A REQUIREMENT, PER "THE UNDERGROUND UTILITY DAMAGE PREVENTION ACT", THAT ANYONE WHO ENGAGES IN EXCAVATION MUST NOTIFY ALL KNOWN UNDERGROUND UTILITY OWNERS NO LESS THAN THREE (3) NOR MORE THAN TEN (10) WORKING DAYS PRIOR TO THE DATE OF THEIR INTENT TO EXCAVATE AND ALSO TO AVOID ANY POSSIBLE HAZARD OR CONFLICT. TENNESSEE ONE CALL, DIAL 811.

4. BY SCALED MAP LOCATION AND GRAPHIC PLOTTING ONLY, THE PROPERTY LIES WITHIN FLOOD ZONE "X" AS DESIGNATED ON CURRENT FEDERAL EMERGENCY MANAGEMENT AGENCY MAP NO. 47187C0093G, WITH AN EFFECTIVE DATE OF DECEMBER 22, 2016, WHICH MAKES UP A PART OF THE NATIONAL FLOOD INSURANCE ADMINISTRATION REPORT; COMMUNITY NO. 470205, PANEL NO. 0093, SUFFIX G, WHICH IS THE CURRENT FLOOD INSURANCE RATE MAP FOR THE COMMUNITY IN WHICH SAID PREMISES IS SITUATED. SAID MAP DEFINES ZONE "X" UNDER "OTHER AREAS" AS "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN."

5. EXISTING ZONING: OSRD (OPEN SPACE RESIDENTIAL DEVELOPMENT).

6. EACH PROPOSED LOT SHALL PROVIDE A MINIMUM OF TWO OFF-STREET PARKING SPACES.

   MINIMUM BUILDING SETBACKS:
   FRONT – 30'
   SIDE – 15'
   REAR – AS SHOWN

7. ALL ELECTRIC SERVICE FOR THE PROPOSED DEVELOPMENT SHALL BE UNDERGROUND. ALL PUBLIC UTILITIES SHALL BE SUBJECT TO THE APPROVAL OF THE APPLICABLE UTILITY COMPANIES.

8. I HEREBY STATE THAT THIS SURVEY WAS DONE IN COMPLIANCE WITH THE CURRENT TENNESSEE MINIMUM STANDARDS OF PRACTICE AND THIS IS A CATEGORY I SURVEY AND THE RATIO OF PRECISION OF THE UNADJUSTED SURVEY IS < 1:15,000 AS SHOWN HEREON.

   BY: _____ DATE: 7/21/2020
   CHRISTOPHER J. MABERY, R.L.S. NO. 2483

9. THE OPEN SPACE IS THE SAME PROPERTY CONVEYED TO BRENTWOOD COUNTRY CLUB HOMEOWNER'S ASSOCIATION BY DEED OF RECORD IN BOOK 670, PAGE 193, R.O.W.C.T. AND LEASED TO BRENTWOOD COUNTRY CLUB BY DEED OF RECORD IN BOOK 670, PAGE 214, R.O.W.C.T.

10. THE GOLFERS EASEMENTS AND GOLF CART EASEMENTS ARE SUBJECT TO THE TERMS OF THE QUITCLAIM DEED OF RECORD IN BOOK 670, PAGE 193, R.O.W.C.T. AND WERE LEASED TO BRENTWOOD COUNTRY CLUB BY DEED OF RECORD IN BOOK 670, PAGE 214, R.O.W.C.T.

11. THIS PROPERTY IS SUBJECT TO THE DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS OF RECORD IN BOOK 670, PAGE, 149, R.O.W.C.T. BY-LAWS WERE AMENDED OF RECORD IN BOOK 1252, PAGE 104, BOOK 1579, PAGE 444, BOOK 2071, 241 AND BOOK 5731, PAGE 406, R.O.W.C.T.

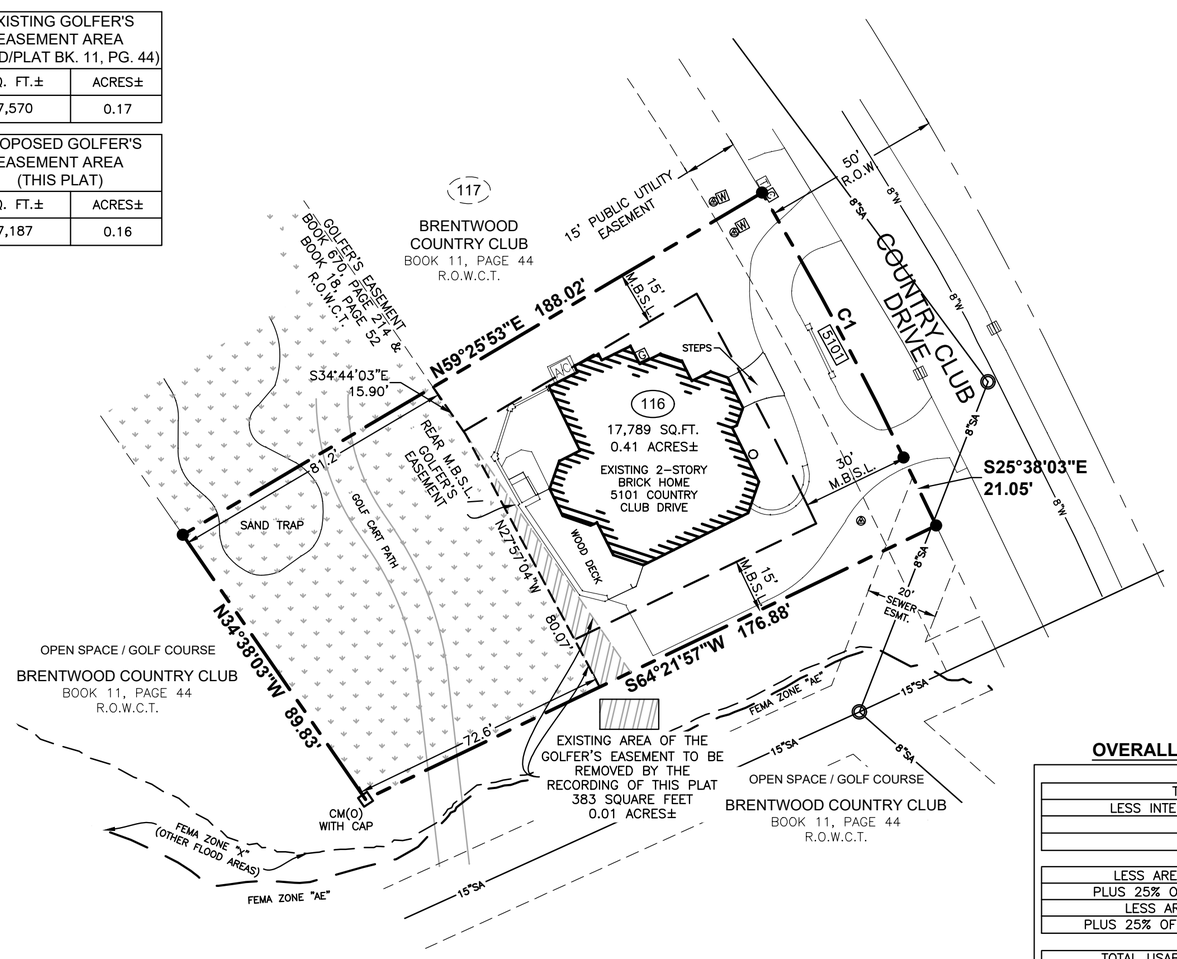
12. MR. KENNETH DONAHEY MADE APPLICATION TO THE BRENTWOOD COUNTRY CLUB HOA ARCHITECTURAL REVIEW BOARD FOR PORCH IMPROVEMENTS. THE APPLICATION WAS APPROVED AND SIGNED BY THE BOARD ON MARCH 13, 2020.

13. THE RECORDING OF THIS PLAT VOIDS, VACATES, AND SUPERSEDES THE RECORDING OF LOT 116 AS SHOWN ON THE FINAL PLAT ENTITLED "BRENTWOOD COUNTRY CLUB" OF RECORD IN PLAT BOOK 11, PAGE 44, REGISTER'S OFFICE FOR WILLIAMSON COUNTY, TENNESSEE.

14. THIS FINAL PLAT IS SUBJECT TO A VESTING PERIOD, DURING WHICH THE DEVELOPMENT STANDARDS IN EFFECT ON THE DATE OF APPROVAL WILL REMAIN THE STANDARDS APPLICABLE TO THIS PLAN. UPON EXPIRATION OF THE VESTING PERIOD, DEVELOPMENT OF THE PROPERTY SHOWN ON THIS PLAT MAY BE SUBJECT TO STANDARDS OTHER THAN THOSE THAT WERE APPLICABLE DURING THE VESTING PERIOD. THE VESTING PERIOD FOR THIS PLAT EXPIRES ON _____, UNLESS EXTENDED BY THE CITY OF BRENTWOOD. PERSONS RELYING ON THIS PLAT AFTER SAID DATE SHOULD CONTACT THE CITY OF BRENTWOOD TO DETERMINE IF DEVELOPMENT MAY CONTINUE AS DEPICTED ON THE PLAN.

EXISTING GOLFER'S EASEMENT AREA (OSRD/PLAT BK. 11, PG. 44)	
SQ. FT.±	ACRES±
7,570	0.17

PROPOSED GOLFER'S EASEMENT AREA (THIS PLAT)	
SQ. FT.±	ACRES±
7,187	0.16



CURVE TABLE						
CURVE	RADIUS	LENGTH	DELTA	TANGENT	CHORD	CHD BRG
C1	975.00'	83.95'	4°56'00"	42.00	83.92'	S28°06'03"E

LEGEND

IR(O)	IRON ROD (OLD)	T	TELEPHONE RISER
IP(O)	IRON PIPE (OLD)	C	CABLE TV BOX
PK(O)	PK NAIL (OLD)	G	GAS METER
CM(O)	CONCRETE MONUMENT (OLD)		SANITARY SEWER MANHOLE
W	WATER METER		SANITARY SEWER CLEANOUT
E	ELECTRIC BOX	—SA—	SANITARY SEWER LINE
M.B.S.L.	MINIMUM BUILDING SETBACK LINE	—W—	WATER LINE
		5101	STREET ADDRESS
R.O.W.C.T.	REGISTER'S OFFICE FOR WILLIAMSON COUNTY, TENNESSEE	A/C	AIR CONDITIONING UNIT
	GOLFER'S EASEMENT		

PROPERTY MAP REFERENCE

BEING PARCEL NUMBER 41.00 AS SHOWN ON WILLIAMSON COUNTY PROPERTY MAP NUMBER 12L, GROUP C.

PLAT REFERENCE

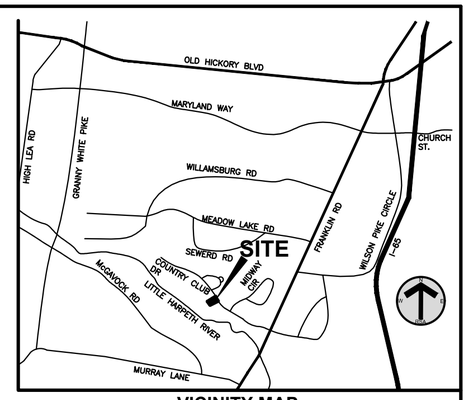
BEING LOT 116 AS SHOWN ON THE FINAL PLAT ENTITLED "BRENTWOOD COUNTRY CLUB" OF RECORD IN BOOK 11, PAGE 44, REGISTER'S OFFICE FOR WILLIAMSON COUNTY, TENNESSEE

DEED REFERENCE

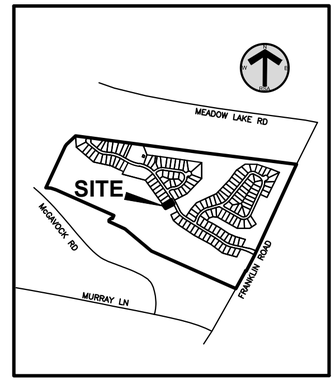
BEING THE PROPERTY CONVEYED TO KENNETH C. DONAHEY AND ELIZABETH ANNETTE DONAHEY FROM KENNETH C. DONAHEY BY QUITCLAIM DEED OF RECORD IN BOOK 4570, PAGE 250, REGISTER'S OFFICE FOR WILLIAMSON COUNTY, TENNESSEE.

TOTAL LOT 96 AREA = 17,789 SQ. FT. OR 0.41 ACRES±

(SEE NOTE 2)



VICINITY MAP
(NOT TO SCALE)



KEY MAP
(NOT TO SCALE)

OVERALL OSRD CALCULATIONS

	ACRES
TOTAL SITE AREA	180.27
LESS INTERNAL ROW DEDICATION	10.50
TOTAL	169.77
LESS AREA 25% IN SLOPES	1.90
PLUS 25% OF SLOPES OVER 25%	0.48
LESS AREAS FLOODWAYS	35.79
PLUS 25% OF AREAS IN FLOODWAYS	8.95
TOTAL USABLE LAND AREA (AC)	141.50
LESS AREA IN LOTS > 1.0 ACRE	0.00
TOTAL LAND AREA AVAILABLE	141.50
TOTAL LAND AREA REQUIRED @ 1 DUPA (AC)	139.00
LAND AREA IN LOTS	53.58
OPEN SPACE REQUIRED	85.42
PLUS AREA GOLFER'S EASEMENT	13.88
TOTAL OPEN SPACE REQUIRED	99.30
GOLF COURSE (OPEN SPACE)	111.02
OPEN SPACE--CLUBHOUSE, RECREATION CENTER	5.17
TOTAL OPEN SPACE PROVIDED	116.19
EXCESS OPEN SPACE	16.89

THE GOLFER'S EASEMENT, AS SHOWN ON THE RECORDED PLATS, IS INCLUDED AS PART OF THE REQUIRED OPEN SPACE FOR THE PROJECT.

RECORDER'S INFORMATION

OWNER
KENNETH & ELIZABETH DONAHEY
5101 COUNTRY CLUB DRIVE
BRENTWOOD, TENNESSEE 37027
(615) 887-0451

SURVEYOR
RAGAN-SMITH ASSOCIATES, INC.
CHRIS MABERY, RLS
100 E. VINE STREET, SUITE 402
MURFREESBORO, TENNESSEE
(615) 546-6050

REVISED: JULY 21, 2020

BRENTWOOD COUNTRY CLUB

REVISION TO LOT 116

DRAWN BY: C. MABERY/A. REED
JOB NO: 13-060 W.O: 1913
DATE: JULY 2, 2020
SCALE: 1" = 30'

CERTIFICATE OF OWNERSHIP & DEDICATION OF EASEMENTS

I (WE) HEREBY CERTIFY THAT I AM (WE ARE) THE OWNER(S) OF THE OPEN SPACE AND GOLFERS EASEMENTS SHOWN AND DESCRIBED HEREON AND THAT I (WE) HEREBY ADOPT THIS REVISION TO THE GOLFERS EASEMENT WITH MY (OUR) FREE CONSENT.

OWNER NAME: BRENTWOOD COUNTRY CLUB HOMEOWNERS ASSOCIATION

BY: _____
JOHN CHURCH
TITLE: BCC HOA BOARD PRESIDENT DATE: _____

CERTIFICATE OF APPROVAL OF STREET NAMES

I HEREBY CERTIFY THAT THE WILLIAMSON COUNTY DEPARTMENT OF EMERGENCY COMMUNICATIONS HAS APPROVED THE STREET NAMES.

_____ _____
WILLIAMSON COUNTY DEPARTMENT OF EMERGENCY COMMUNICATIONS — DATE

CERTIFICATE OF PROVISION OF ELECTRICAL SERVICE

I HEREBY CERTIFY THAT THE REQUIREMENTS SET FORTH IN RULES, REGULATIONS, BY-LAWS, POLICY AND OPERATIONAL BULLETINS, PLAT APPROVAL CHECKLIST AND TREE PLANTING GUIDELINES HAVE BEEN MET FOR THE ELECTRICAL PROVIDER NAMED BELOW. ANY APPROVAL IS AT ALL TIMES CONTINGENT UPON CONTINUING COMPLIANCE WITH THE AFOREMENTIONED REQUIREMENTS.

_____ _____
NASHVILLE ELECTRIC SERVICE — DATE

CERTIFICATE OF APPROVAL OF SUBDIVISION NAME

I HEREBY CERTIFY THAT THE CITY OF BRENTWOOD HAS APPROVED THE SUBDIVISION NAME.

_____ _____
SECRETARY, PLANNING COMMISSION — DATE

CERTIFICATE OF OWNERSHIP & DEDICATION

I (WE) HEREBY CERTIFY THAT I AM (WE ARE) THE OWNER(S) OF THE PROPERTY SHOWN AND DESCRIBED HEREON AND THAT I (WE) HEREBY ADOPT THIS PLAN OF SUBDIVISION WITH MY (OUR) FREE CONSENT, ESTABLISH THE MINIMUM BUILDING RESTRICTION LINES, AND DEDICATE ALL STREETS, ALLEYS, WALKS, PARKS, AND OTHER OPEN SPACES TO PUBLIC OR PRIVATE USE AS NOTED.

OWNERS' NAMES: KENNETH & ELIZABETH DONAHEY

BY: _____ DATE: _____
KENNETH C. DONAHEY, OWNER

BY: _____ DATE: _____
ELIZABETH ANNETTE DONAHEY, OWNER

CERTIFICATE OF ACCURACY

I HEREBY CERTIFY THAT THE PLAN SHOWN AND DESCRIBED HEREON IS A TRUE AND CORRECT SURVEY, TO THE ACCURACY REQUIRED BY THE SPECIFICATIONS OF THE

BRENTWOOD MUNICIPAL PLANNING COMMISSION

NAME: RAGAN-SMITH-ASSOCIATES, INC.

BY: _____ DATE: 7/21/2020
CHRISTOPHER J. MABERY, RLS

CERTIFICATE OF APPROVAL OF UTILITY SYSTEMS

I HEREBY CERTIFY THAT THE FOLLOWING UTILITY SYSTEMS OUTLINED OR INDICATED ON THE FINAL SUBDIVISION PLAT ENTITLED "BRENTWOOD COUNTRY CLUB, REVISION TO LOT 116" HAVE BEEN INSTALLED IN ACCORDANCE WITH CURRENT APPLICABLE REGULATIONS.

SEWER SYSTEM _____ 20__ _____
(CITY OF BRENTWOOD) — AUTHORIZED APPROVING AGENT

WATER SYSTEM _____ 20__ _____
(CITY OF BRENTWOOD) — AUTHORIZED APPROVING AGENT

CERTIFICATE OF APPROVAL OF STREETS

I HEREBY CERTIFY THAT ALL STREETS DESIGNATED ON THE FINAL SUBDIVISION PLAT ENTITLED "BRENTWOOD COUNTRY CLUB, REVISION TO LOT 116" HAVE BEEN CONSTRUCTED IN ACCORDANCE WITH CURRENT APPLICABLE REGULATIONS.

_____ 20__
DATE

_____
CITY OF BRENTWOOD DIRECTOR OF ENGINEERING

CERTIFICATE OF APPROVAL FOR RECORDING

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON HAS BEEN FOUND TO COMPLY WITH THE SUBDIVISION REGULATIONS OF THE CITY OF BRENTWOOD, WITH THE EXCEPTION OF SUCH VARIANCES AND/OR MODIFICATIONS, IF ANY, AS ARE NOTED IN THE MINUTES OF THE PLANNING COMMISSION, AND THAT IT HAS BEEN APPROVED FOR RECORDING IN THE OFFICE OF THE CITY RECORDER.

_____ 20__
DATE

_____
SECRETARY, PLANNING COMMISSION

FINAL SUBDIVISION PLAT
CITY OF BRENTWOOD
WILLIAMSON COUNTY, TENNESSEE

NET AREA: 0.41 ACRES± TOTAL LOTS: 1
ACRES NEW ROAD: N/A CIVIL DISTRICT: 15TH
MILES NEW ROAD: N/A CLOSURE ERROR: 1:15000+

OWNER: KENNETH & ELIZABETH DONAHEY
SURVEYOR: RAGAN - SMITH - ASSOCIATES, INC.
SCALE: 1" = 30' 0 15' 30' 60'

G:\13060-1913\1-SURVEY\PLAT\1913 LOT 116 REVISED FINAL PLAT.DWG SHEET 1 OF 1

BRENTWOOD PLANNING COMMISSION **1.**

Meeting Date: 08/03/2020

Information

PROJECT NUMBER

Ordinance 2020-08

PROJECT DESCRIPTION

An Ordinance Rezoning Property Located in the Southeast Quadrant of the Intersection of Wilson Pike and Old Smyrna Road from SI-3 to R-2

Ordinance 2020-08 requests the rezoning of approximately 10.27 acres located in the southeast quadrant of the intersection of Wilson Pike and Old Smyrna Road. The requested change is from the SI-3 (Service Institution -- Cultural, Recreational and Governmental) zoning district to the R-2 (Suburban Residential) zoning district. The subject property is commonly referred to as the "Dolphin Club" property and is located at 502 Wilson Pike.

ZONING OF PROPERTY

SI-3

APPLICANT NAME/ADDRESS

Attachments

Final Staff Report
Adjacent Zoning
Proposed Concept Development Plan
Estimated Lot Areas
Notification Area

CITY OF BRENTWOOD
MUNICIPAL PLANNING COMMISSION
PLANNING DEPARTMENT STAFF REPORT
MONDAY, AUGUST 3, 2020 -- 7:00 P.M.
FINAL

REGULAR AGENDA -- ITEM 1:

ORDINANCE 2020-08 - AN ORDINANCE REZONING PROPERTY LOCATED IN THE SOUTHEAST QUADRANT OF THE INTERSECTION OF WILSON PIKE AND OLD SMYRNA ROAD FROM SI-3 TO R-2

Ordinance 2020-08 requests the rezoning of approximately 10.27 acres located in the southeast quadrant of the intersection of Wilson Pike and Old Smyrna Road. The requested change is from the SI-3 (Service Institution -- Cultural, Recreational and Governmental) zoning district to the R-2 (Suburban Residential) zoning district. The subject property is commonly referred to as the "Dolphin Club" property and is located at 502 Wilson Pike.

While not legally binding like an OSRD Development Plan, the applicant has provided a preliminary concept site plan for an R-2 development. The plan shows a total of five residential lots on the tract. All proposed lots appear to meet the minimum lot area requirements of the R-2 zoning district. The submitted plan shows one cul-de-sac from Old Smyrna Road that will provide access to all lots. The existing driveway to Wilson Pike would be removed under this plan. There shall be no access for individual lots to either adjacent arterial street. The NW corner of the property is encumbered by 100-year floodplain. None of the proposed lots encroaches into the floodplain area. All existing structures would be removed from the property as part of the development plan.

The applicant is in the process of performing a final survey for the property. A survey is usually not completed until the preliminary plan or final plat stage of the review process. All lots will be developed in accordance with the technical standards of Article III, Division 4 (R-2) of the zoning ordinance and the requirements of the Subdivision Regulations. All of the the surrounding properties, including those across Wilson Pike and Old Smyrna Road are also zoned R-2.

The tract is located within the Little Harpeth River Drainage Basin. Based upon the number of lots (five) the development is proposing water and sewer service for up to 1,550 gpd each. The tract was included in the City's Sewer Master Plan and was projected to have a peak sewer flow of 7,000 gpd. Based upon the information provided and the review of the impacted water and sewer collection system, staff with the Water Services Department has approved water and sanitary sewer service to the property for the proposed R-2 zoning. The developer will be responsible for any water and/or sewer main extensions that may be required to connect to the public water and sewer system.

Hidden Valley Homes has built homes in the Avery, Annandale, Brass Lantern Farms, Morgan Farms, and Oman subdivisions to name a few.

The proposed ordinance was approved on first reading by the Board of Commissioners on July 13th. The community meeting was conducted at the Brentwood Library on July 30th. A total of ten citizens attended the meeting. There were no major concerns raised. The public hearing is scheduled for August 10th, with second and final reading scheduled for August 24, 2020.

RECOMMENDATION:

Staff requests that the Planning Commission forward a recommendation of approval of Ordinance 2020-08 to the Board of Commissioners.

ORDINANCE 2020-08

AN ORDINANCE OF THE CITY OF BRENTWOOD, TENNESSEE TO AMEND THE ZONING ORDINANCE, SAME BEING CHAPTER 78 OF THE CODE OF ORDINANCES OF THE CITY OF BRENTWOOD, BY CHANGING THE PRESENT ZONING CLASSIFICATION ON CERTAIN PROPERTY LOCATED IN THE SOUTHEAST QUADRANT OF THE INTERSECTION OF WILSON PIKE AND OLD SMYRNA ROAD FROM THE SI-3 (SERVICE INSTITUTION – CULTURAL, RECREATIONAL AND GOVERNMENTAL) ZONING DISTRICT TO THE R-2 (SUBURBAN RESIDENTIAL) ZONING DISTRICT, SAID PROPERTY BEING MORE SPECIFICALLY DESCRIBED IN THE PROPERTY DESCRIPTION ATTACHED HERETO AND MADE A PART OF THIS ORDINANCE BY REFERENCE, AND SHOWN ON THE MAP ATTACHED HERETO AND MADE A PART OF THIS ORDINANCE BY REFERENCE; AND TO AMEND THE OFFICIAL ZONING MAP ACCORDINGLY

SECTION 1. That the present zoning classification for certain property located in the southeast quadrant of the intersection of Wilson Pike and old Smyrna Road from the SI-3 (Service Institution – Cultural, Recreational And Governmental) zoning district to the R-2 (Suburban Residential) zoning district, said property being more particularly described in the property description attached hereto as Attachment A, and being more particularly shown on Attachment B, said attachments being made a part of this ordinance by reference.

SECTION 2. That the official zoning map be and the same is hereby amended accordingly.

S**ECTION 3.** That this ordinance shall take effect from and after its final passage, or fifteen days after its first passage, whichever occurs later, the general welfare of the City of Brentwood, Williamson County, Tennessee, requiring it.

PLANNING COMMISSION_____

PASSED: 1st reading _____

NOTICE OF PASSAGE

2nd reading _____ Notice published in: _____

Date of publication: _____

PUBLIC HEARING

Notice published in: *Williamson A.M.*

EFFECTIVE DATE _____

Date of publication: _____

Date of hearing: _____

_____

RECORDER Holly Earls

_____

MAYOR Rhea E. Little III

Approved as to form:

_____

CITY ATTORNEY Kristen L. Corn

ATTACHMENT A
ORDINANCE 2020-08

Being a tract of land in the City of Brentwood, Williamson County, Tennessee and being bounded on the north by the southerly margin of Old Smyrna Road, on the east by Smyrna Road Homes Subdivision, on the south by John W McConnell ETUX and on the west by the easterly margin of Wilson Pike and being more particularly described as follows:

Beginning at an iron pin, the intersection of the southerly margin of Old Smyrna Road as of record in Book 4436, page 617, Register's Office for Williamson County, Tennessee, with the easterly margin of Wilson Pike as of record in Book 4436, pages 627 and 638, Register's Office for said county;

Thence with said southerly margin, S 82 deg. 20' 55" E, 722.43 feet to an iron pin, and being the northwest comer of the Smyrna Road Homes Subdivision as of record in Plat Book 03, page 31, Registers Office for said county; Thence, with the westerly line of the aforementioned subdivision, S 06 deg. 25' 54" W, 687.02 feet to an iron pin and being northeast comer of the John W. McConnell ETUX property of record in Book 3904, page 769, Register's Office for said county;

Thence, with McConnell's northerly line, N 61 deg. 02' 45" W, 572.31 feet to an iron pin on the easterly margin of Wilson Pike;

Thence, with said easterly margin the following:

N 09 deg. 09' 50" N, 257.88 feet to an iron pin;
N 80 deg. 50' 06" E 10.18 feet to an iron pin;
N 09 deg. 21' 27" N, 57.92 feet to an iron pin, the beginning of a curve to the right; With curve to the right having a central angle of 00 deg. 48' 37", radius of 5,697.58 feet, chord of 80.57 feet at N 08 deg. 57' 09" N, 80.58 feet to an iron pin;
N 08 deg. 32' 52" N, 162.28 feet to an iron pin, the beginning of a curve to the left;
With curve to the left having a central angle of 00 deg. 51' 62", radius of 5,761.58 feet, chord of 88.93 feet at N 08 deg. 58' 46" N, 86.93 feet to an iron pin;
N 09 deg. 24' 42" N, 20.69 feet to an iron pin;
N 80 deg. 35' 18" E, 10.00 feet to an iron pin:
N 09 deg. 24' 42" N, 10.55 feet to an iron pin;
N 34 deg. 03' 32" S, 21.80 feet to the point of beginning containing 447,430 square feet or 10.272 acres, according to survey by Charles B. Moseley, Jr., TRLS 778, with Land Surveying Services, Brentwood, TN, dated March 14, 2008.

Being the same property conveyed to CALVARY CHAPEL BRENTWOOD, A NONPROFIT CORPORATION, by deed from THE DOLPHIN CLUB, LLC, A TENNESSEE LIMITED LIABILITY COMPANY, of record in Book 4519, page 435, dated March 24, 2008, said Register's Office.

Chris Milton
DIRECTOR

Richard Rigsby
CONSTRUCTION SUPERVISOR

Drew Muirhead
ASST. DIRECTOR

Travis Lankford
OPERATIONS SUPERVISOR

BRENTWOOD
WATER SERVICES

June 30, 2020

Ms. Lauren Pennington
Hidden Valley Homes, LLC
1728 General George Patton Dr, Suite 101
Brentwood, TN 37027

RE: Water & Sewer Availability Request Approval
Former Dolphin Swim Club Property
502 Wilson Pike

Dear Ms. Pennington:

The Water and Sewer Department is in receipt of your request for water & sewer availability for the subject project. According to the submitted application, the development is proposing water service for up to 1,550 gpd/average day (5 lots) and sewer service for up to 1,550 gpd/average day (5 lots). This development is proposed to connect to the Little Harpeth River Sewer Basin. This parcel (10 acres +/-) was included in the City's Sewer Master Plan (ultimate buildout) and was projected to have peak sewer flows of 7,000 gpd during a 2 year-24 hour wet weather event. Based on the information submitted and the review of impacted water and sewer collection system infrastructure, water & sanitary sewer service is approved as submitted. The proposed sewer flows from this development fall within the allowed moratorium relief (capacity credits) granted by TDEC. These flows account for 0.13% of overall granted capacity. To date, including these proposed flows, 600,273 gpd remain of the granted moratorium relief per TDEC. The development shall be responsible for any water and/or sewer main extensions required to connect to the public water & sewer system.

This approval shall be contingent upon meeting any and all requirements of the City of Brentwood including payment of all fees and approval of water and sewer construction plans. It is the responsibility of the developer of the project to verify all required fire flows prior to construction plan approval.

The availability is granted based on water and sewer construction plans being submitted to the Water & Sewer Department within 12 months and construction starting within 24 months from the date of this approval.

Should you have any questions, please feel free to contact our office at (615) 371-0080.

Sincerely,

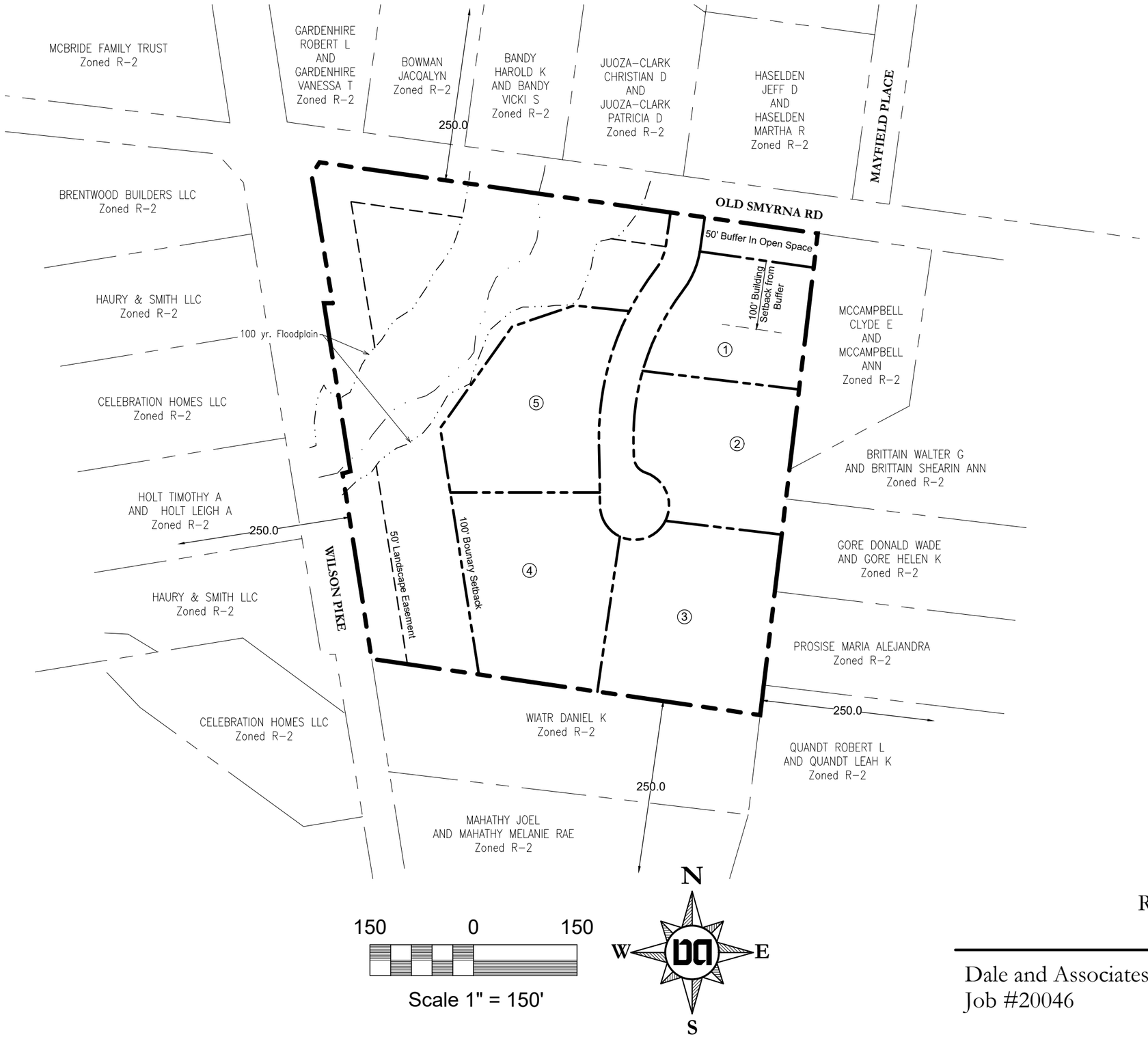
Drew Muirhead, PE
Assistant Director

1750 General George Patton Drive • Brentwood, TN 37027 • 615-371-0080 • www.BrentwoodTN.gov



ZONING OVERLAY

ORDINANCE 2020-08



Development Summary

Map 11 Parcel 56.01
502 Wilson Pike
Brentwood, TN

10.0 ac.
Current Zoning: SI3

Owner

502 Wilson Pike LLC
Deed Book 7232 Page 668

Engineer

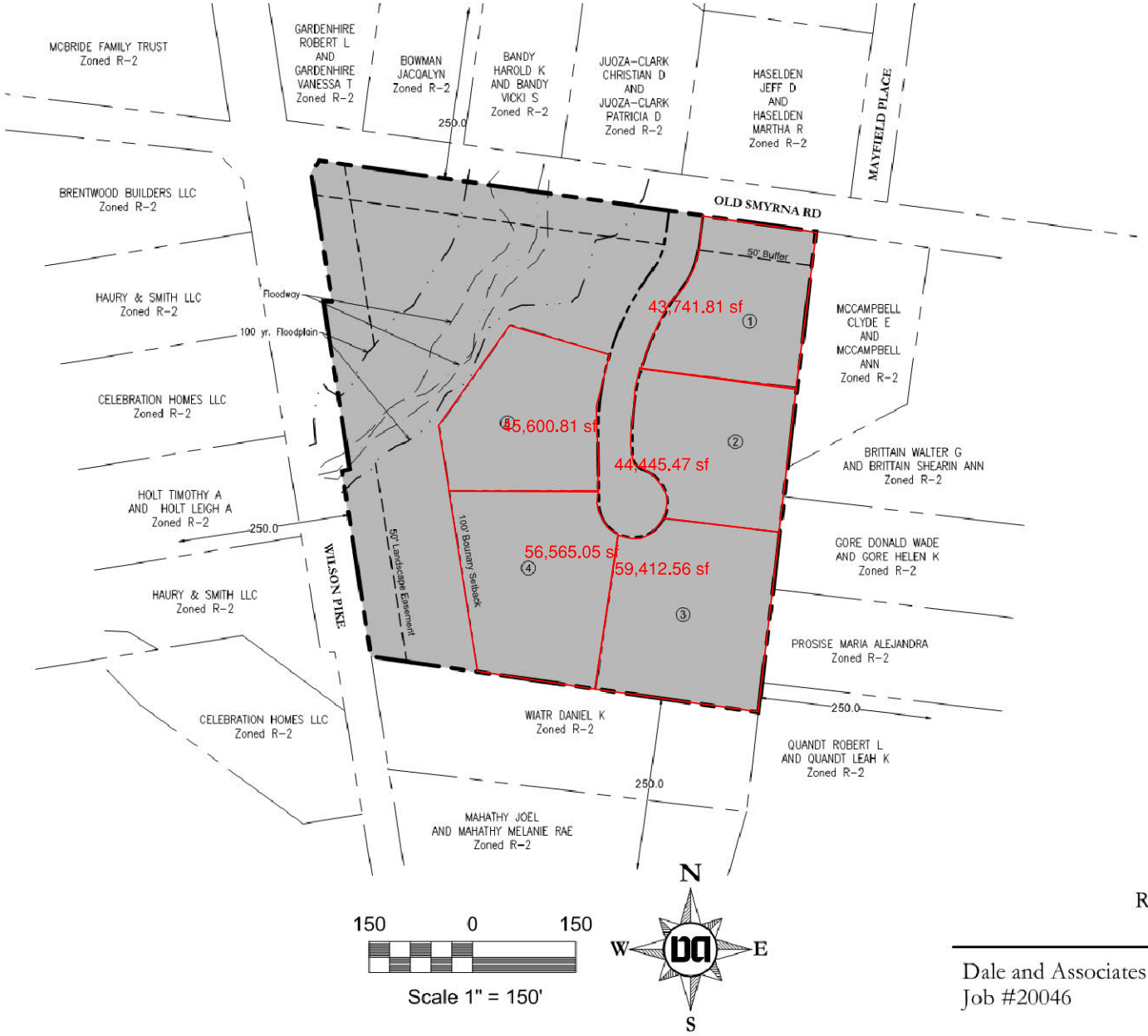
Dale and Associates
Contact: Adam Seger
516 Heather Place
Nashville, TN 37204
Phone: 615.297.5166
Email: adam@daleandassociates.net

Purpose Note:
The purpose of this plan is to illustrate an intended layout for a single family residential development that will meet the R-2 zoning. All final layout, dimensions, and details of the development will be in accordance with all R-2 zoning requirements.

R-2 Zoning Exhibit and Vicinity Map
502 Wilson Pike

Dale and Associates
Job #20046

7/6/2020



Development Summary

Map 11 Parcel 56.01
502 Wilson Pike
Brentwood, TN

9.94 ac.
Current Zoning: SI3-Service Institution

Owner
502 Wilson Pike LLC
Deed Book 7232 Page 668

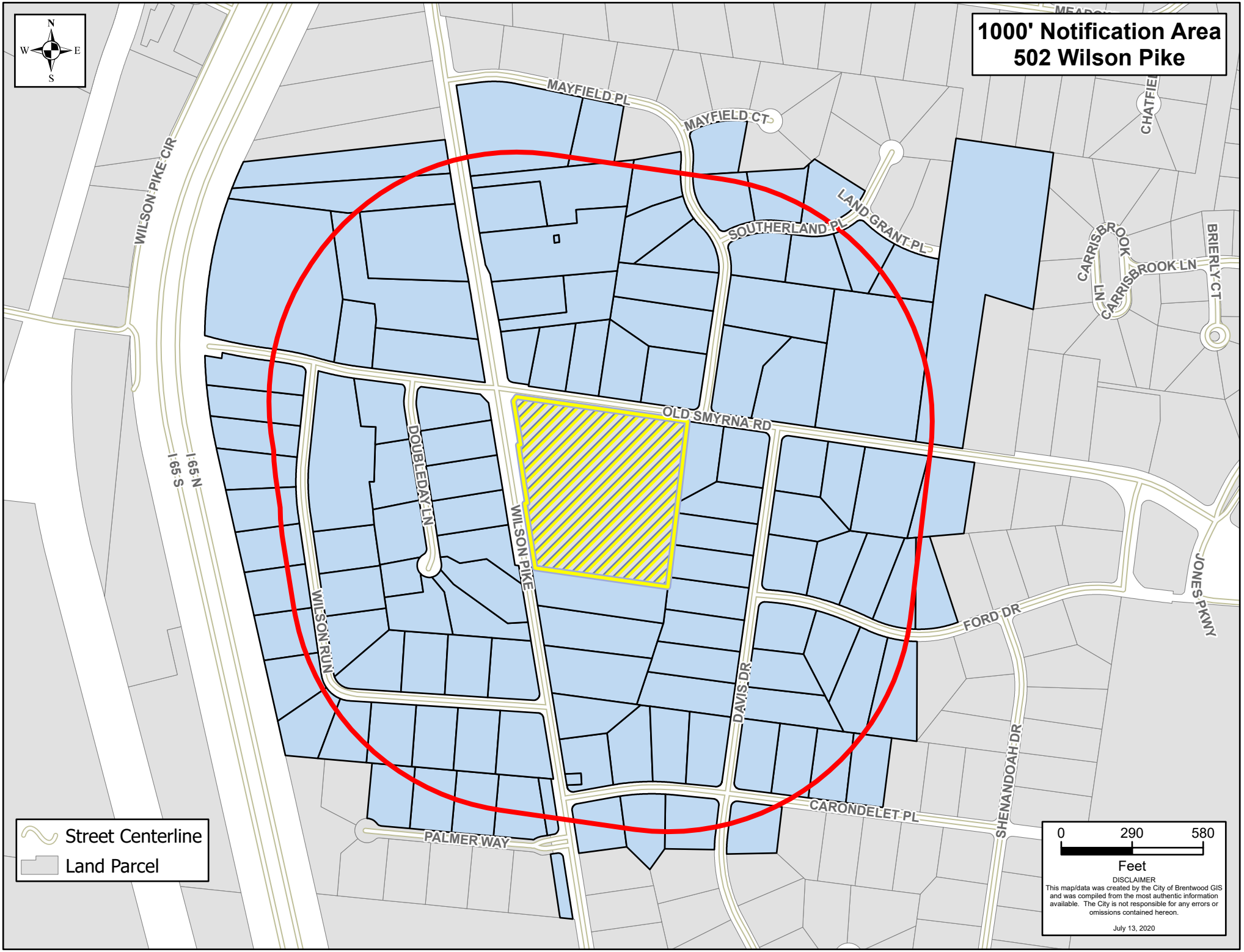
Engineer
Dale and Associates
Contact: Adam Seger
516 Heather Place
Nashville, TN 37204
Phone: 615.297.5166
Email: adam@daleandassociates.net

Purpose Note:
The purpose of this plan is to illustrate an intended layout for a single family residential development that will meet the R-2 zoning. All final layout, dimensions, and details of the development will be in accordance with all R-2 zoning requirements.

R-2 Zoning Exhibit and Vicinity Map
502 Wilson Pike

Dale and Associates
Job #20046

7/2/2020


1000' Notification Area
502 Wilson Pike
N
W
E
S
MAYFIELD PL
MAYFIELD CT
LAND GRANT PL
SOUTHERLAND PL
CHATFIELD
CARRISBROOK LN
CARRISBROOK LN
BRIERLY CT
WILSON PIKE CIR
I-65 S
I-65 N
OLD SMYRNA RD
DOUBLEDAY LN
WILSON PIKE
WILSON RUN
DAVIS DR
FORD DR
JONES PKWY
SHENANDOAH DR
CARONDELET PL
PALMER WAY
Street Centerline
Land Parcel
0
290
580
Feet
DISCLAIMER
This map/data was created by the City of Brentwood GIS and was compiled from the most authentic information available. The City is not responsible for any errors or omissions contained hereon.
July 13, 2020

BRENTWOOD PLANNING COMMISSION **2.**

Meeting Date: 08/03/2020

Information

PROJECT NUMBER

BPC2007-011

PROJECT DESCRIPTION

Preliminary Plan, Allen Property, 9520 Split Log Road

Turnberry Homes, LLC requests approval of a preliminary plan showing 18 lots on approximately 28 acres. The plan includes on 6.28 acre lot (Lot 18) that will remain.

The proposed subdivision restrictive covenants will require that lot 18 on which the Allen residence is located shall not be further subdivided but shall remain as currently configured. The restrictive covenants will be recorded at the Williamson County Register of Deeds Office along with the final plat and will run with the land. A copy of the proposed Restrictive Covenant is attached below. The restriction would also be added as a note to the final plat.

The plan provides the required arterial road buffer, which is 150 feet wide as measured from the right-of-way of Split Log Road. The buffer extends to the east across Lot 18. Plantings, which will meet Code requirements will be added within the buffer consistent with those existing in the Glen Abbey, arterial road buffer. If the plan is approved, and upon submittal of the preliminary plan for Planning Commission review, the developer will request that 70 trees be permitted to relocated from the buffer to a planting strip between the sidewalk and the back of the curb to serve as street trees. The reason for this request is related to the encumbrance of a jurisdictional wetland area and overhead utility lines along Split Log Road in the buffer. This request is consistent with Section 78-512(b)5c of the Municipal Code.

Finally, the plan shows a perpetual scenic easement, as permitted by Section 78-186(c)2 of the Municipal Code, around a jurisdictional wetland and a stream at the front of the subdivision. The perpetual scenic easement will be left undisturbed and in its natural state. The City becomes a party to the easement once it is recorded.

ZONING OF PROPERTY

Zoning OSRD

APPLICANT NAME/ADDRESS

Mr. Nicky Wells, Turnberry Homes, LLC, 210 Jamestown Park Drive, Suite 102, Brentwood, TN 37027

Attachments

Final Staff Report
Vicinity Map
Proposed Preliminary Plan
Preliminary Hydrologic Letter - Lose
Engineering Calcs
Long Term Maintenance Plan
COB Annual Rainfall Totals Per Year
COB Number of 1-Inch Rainfall Events Per Year
Image 1
Image 2

CITY OF BRENTWOOD
MUNICIPAL PLANNING COMMISSION
PLANNING DEPARTMENT STAFF REPORT
MONDAY, AUGUST 3, 2020 -- 7:00 P.M.
FINAL

REGULAR AGENDA -- ITEM 2:

REQUEST:	***PRELIMINARY PLAN – ALLEN PROPERTY, 9520 SPLIT LOG ROAD***
PROJECT NUMBER:	***BPC2007-011***
CURRENT ZONING:	***OSRD -- OPEN SPACE RESIDENTIAL DEVELOPMENT***

GENERAL INFORMATION:

Turnberry Homes, LLC requests approval of a preliminary plan showing 18 lots on approximately 28 acres. The plan includes on 6.28 acre lot (Lot 18) that will remain.

The proposed subdivision restrictive covenants will require that lot 18 on which the Allen residence is located shall not be further subdivided but shall remain as currently configured. The restrictive covenants will be recorded at the Williamson County Register of Deeds Office along with the final plat and will run with the land. A copy of the proposed Restrictive Covenant is attached below. The restriction would also be added as a note to the final plat.

The plan provides the required arterial road buffer, which is 150 feet wide as measured from the right-of-way of Split Log Road. The buffer extends to the east across Lot 18. Plantings, which will meet Code requirements will be added within the buffer consistent with those existing in the Glen Abbey, arterial road buffer. The developer is requesting that 70 trees be permitted to relocated from the buffer to a planting strip between the sidewalk and the back of the curb to serve as street trees. The reason for this request is related to the encumbrance of a jurisdictional wetland area and overhead utility lines along Split Log Road in the buffer. This request is consistent with Section 78-512(b)5c of the Municipal Code.

Finally, the plan shows a perpetual scenic easement, as permitted by Section 78-186(c)2 of the Municipal Code, around a jurisdictional wetland and a stream at the front of the subdivision. The perpetual scenic easement will be left undisturbed and in its natural state. The City becomes a party to the easement once it is recorded.

PROJECT LOCATION:

The subject property is located at 9520 Split Log Road.

APPROVAL HISTORY:

On June 22nd the Board of Commissioners voted unanimously, seven for and zero against to approve Ordinance 2020-01. The zoning of the property was changed from R-02 to OSRD.

On June 8, 2020, the Board of Commissioners conducted the required public hearing, remotely for Ordinance 2020-01. A total of three citizens addressed the Board;

On June 1st the Planning Commission conducted its review and recommendation of the proposed Ordinance, voting unanimously, ten for and zero against (10-0) to recommend approval of Ordinance 2020-01 to the Board of Commissioners.

The community meeting was conducted on Thursday May 28, 2020, at the Library. A total of 12 citizens attended the meeting. Concerns expressed included:

- *Drainage from Glen Abbey and the new development onto the neighboring properties – 9510 & 9528 Split Log Road;*
- *The existing temporary dead end of Barrow in Glen Abbey – residents not aware that the road would be extended;*
- *The new entrance aligning with Ivy Crest Drive in Taramore;*
- *Additional traffic on Split Log Road;*
- *Future subdivision of the 6.23 acre tract;*
- *The elevation of the stub road in Glen Abbey – road cut through the hill and grading;*
- *Removal of the perimeter fence – it will remain; and*
- *Maintenance of the gas line easement – which is open space and will be maintained by the future HOA.*

On March 9, 2020 the aboard of Commissioners voted unanimously, seven for and zero against (7-0) to recommend approval on first reading of Ordinance 2020-01.

CONDITIONS OF APPROVAL:

*Staff recommends that the following **seven** conditions be attached to the approval of the request.*

1. Label lots 1-3, 15, 16 & 17 as transitional. Add an asterisk (*) to each lot, and to the legend. Add the transitional lot note to the plat.

2. Identify the Lowest Floor Elevation (LFE) for lots 1, 2, 3, 15, 16 and 17 on each lot, not in a table.

3. Add a label to the plan indicating that the existing trees behind Lots 1 & 2 are to remain.

4. Revise the PUDE at the front of all lots to be 20 feet wide. Add side and rear PUDE's to each lot.

5. The three utility poles along Split Log Road must be relocated in order to keep the sidewalk straight and to improve sight visibility.

6. The water line connection along Split Log Road shall be located outside of the intersection of Ivy Crest Drive.

7. A preliminary plan shall be vested for a period of three years from the date of the original approval.

STANDARD REQUIREMENTS:

*Staff recommends that the following **15** standard requirements be attached to the approval of the request.*

1. Add the following note to the preliminary plan;

   *This site plan is subject to a three-year vesting period, during which the development standards in effect on the date of approval will remain the standards applicable to this plan. If construction is not completed during the first three years, the original site plan is considered a preliminary site plan and the applicant must obtain approval of a final site plan. Development of the property shown on this plan may be subject to standards other than those that were applicable during the vesting period. The Initial vesting period for this plan expires on **August 3, 2023**, unless extended by the City of Brentwood. Persons relying on this plan after said date should contact the City of Brentwood to determine if development may continue as depicted on the plan.*

2. When the construction authorized pursuant to a site plan is not completed within three years from the date of initial approval, but the applicant desires to complete the project proposed for the site, the plan as initially approved for the project or as amended shall be considered a preliminary site plan. If the applicant secures all necessary permits, commences site preparation and obtains approval of a final site plan within the three-year vesting period following approval of the preliminary site plan, then the vesting period shall be extended an additional two years beyond the expiration of the initial three-year vesting period. During the two-year extension, the applicant must commence construction and maintain any necessary permits to remain vested.

3. If necessary permits are maintained and construction, as defined by Section 78-43, has commenced by the end of the two-year extension, then the vesting period shall remain in effect until the Planning and Codes Department has certified final completion of the project, provided the total vesting period shall not exceed ten years from the date of approval of the preliminary site plan.

4. If the construction authorized pursuant to a site plan is completed within three years from the date of approval, the site plan shall then be considered the final site plan for the project.

5. The homes within the project shall use U.S. Postal Service approved Cluster Box Units for mail delivery. The home builder shall install permanent address posts, in lieu of mailboxes at the end of each driveway to facilitate emergency response, per the requirements of the Brentwood Subdivision Regulations. The address posts must be installed before a certificate of occupancy will be issued for the home. As part of the

submittal of the final plat, provide evidence of approval of the location of the CBU's by the Post Office.

6. The property owner is responsible for all development fees including water and sewer service and tap fees, building permit fees and Public Works Project Fees. The required fees shall be used for future infrastructure related improvements required by the proposed development.

7. A Maintenance Agreement and Stormwater System Long-Term Operation and Maintenance Plan for all storm water structures and facilities must be prepared, submitted and approved per Section 56-43 of the Brentwood Code.

8. A geotechnical report will be required as part of the submittal of the construction plans.

9. Agency permits from TDEC and a no conflict letter from Columbia Gulf will be required as part of the submittal of the construction plans.

10. An overall drainage map is required in addition to drainage areas to each inlet with proposed grading and off-site existing contours shown a minimum of 100' outside of the project.

11. Adequate security that meets the requirements of Article VIII of the Brentwood Subdivision Regulations must be provided for all improvements – roadway, drainage, utilities, water, sewer, landscaping, street trees, and signage improvements must be provided for staff review before the plat may be released for recording. The landscaping amount shall be provided at 110% of the total amount of all materials, installation and irrigation improvements.

12. Deviations from the approved plan in the development of a project or the failure to satisfy any standard requirements or special conditions of approval imposed by the planning commission will be considered a violation of the provisions of the Zoning Ordinance, which shall be subject to punishment as provided in Section 1-9 of the Brentwood Municipal Code. The City may also require the applicant to appear before the Planning Commission to address any deficiencies or unapproved modifications. The project may also be subject to delays in issuance of permits, certificates of occupancy, recordation of plats or other project approvals.

13. Any changes to plans approved by the Planning Commission will require staff review and re-approval by the Planning Commission.

14. Development of this project shall comply with all applicable codes and ordinances of the City of Brentwood.

15. Approval of the proposed plan shall be limited to the illustrations and plans presented to the Planning Commission for review and approval on ***August 3, 2020***. Any changes to Planning Commission approved plans and specifications will require staff review and re-approval by the Planning Commission.

RECOMMENDATION:

Staff requests that the Planning Commission vote to approve the proposed preliminary plan, to include the relocation of 70 trees from the arterial road buffer to serve as street trees, subject to the requirements of the staff report.

ALLEN PROPERTY REZONING *OPEN SPACE CALCULATIONS COMPARISON*		
	6/2020	*8/2020*
Total Site Area (AC)	**27.99**	**27.99**
Less R.O.W. dedication -- Internal streets	**1.80**	**1.80**
TOTAL	**26.19**	**26.19**
Less Areas in 25% Slopes	**0.15**	**0.15**
Plus 25% of slopes over 25%	**0.04**	**0.04**
Less Areas in Floodway	**3.51**	**3.51**
Plus 25% Areas in Floodways	**0.88**	**0.88**
Total Usable Land Area (AC)	**23.45**	**23.45**
Less area in lots>1 acre	**5.23**	**5.23**
TOTAL LAND AREA AVAILABLE	**18.22**	**18.22**
Total Land Area Required @ 1 DUPA (AC)	**18**	**18**
Land Area in Lots	**14.82**	**14.82**
Open Space Required	**3.18**	**3.18**
Opewn Space Provided	**11.37**	**11.37**
Dedicated Open Space	**8.19**	**8.19**

THIS INSTRUMENT PREPARED BY:
JOHN T. COOK, ESQ.
2927 Berry Hill Drive
Nashville, TN 37204

RESTRICTIVE CO VENAN T
(Kendall Keller Allen and Mary Jo Allen Property)

WHEREAS, the undersigned, KENDALL KELLER ALLEN and wife, MARY JO ALLEN (collectively "Allen" or the "Allens") are the owners of a tract of land consisting of 27.995 acres, more or less, as more particulalry described on the attached Exhibit "A" (the "Development Parcel"); and,

WHEREAS, TURNBERRY HOMES, LLC, a Tennessee limited liability company (hereinafter "Turnberry"), with the consent and participation of the Allens, has applied to the City of Brentwood, Tennessee (the "City") for approval of OSRD zoning and approval of the subdivision of the Development Parcel so that the Development Parcel may be subdivided into 18 residential lots or building sites (each a "Lot" and collectively the "Lots"); and

WHEREAS, Turnberry and the Allens (collectively the "Declarants") contemplate that the Allens will sell and convey the entire Development Parcel to Turnberry at a point in time which follows after the approval of the OSRD zoning, but prior to the approval and recording of the future subdivision plat (the "Plat"); and

WHEREAS, the Declarants have agreed that, at such time as the Plat is approved and recorded, Turnberry shall then reconvey back to the Allens the presently existing residential structure (the "House") in which the Allens live, together with the Lot on which the House is located (the "Allen Residence Lot"), the anticipated shape, size and configuration of the Allen Residence Lot being stated and/or described on the attached Exhibit "B", provided that the final and permanent shape, size and configuration of the Allen Residence Lot will be as established on the final recorded Plat; and

WHEREAS, the City and the Declarants have agreed that it is and shall be a precondition to the final approval of the OSRD rezoning and the recording of the final Plat that the Allen Residence Lot be restricted to provide that the Allen Residence Lot shall not be further subdivided after such time as the Plat is actually recorded; and

WHEREAS, the Declarants desire to execute and publish this Restrictive Covenant, which shall be effective when and if, and only when and if, the final Plat is approved and recorded (hereinafter the "Activating Event") in a manner which is acceptable to the Declarants; and

WHEREAS, the Declarants hereby declare and publish this Restrictive Covenant to run with the land as contemplated above.

NOW, THEREFORE,for and in consideration of the premises and the mutual benefits to be derived by the present and future owners of the Development Parcel or any part thereof, in consideration of the Declarants' desire to preserve and protect the residential property or

properties being developed on the Development Parcel, and in recognition that the Development Parcel would not be of sufficient size to qualify for OSRD rezoning without inclusion of the acreage of the Allen Residence Lot as part of the Development Parcel, Declarants hereby subject the Allen Residence Lot, as the same is to be shown on the final Plat, to the following restrictive covenants, it being intended that they shall be construed as covenants running with the land binding upon all parties now having or hereafter acquiring any right, title or interest in the Allen Residence Lot, the Development Parcel, or any part, subdivision or resubdivision thereof.

1. *The Allen Residence Lot is hereby, but effective as of the Activating Event, restricted to provide that the Allen Residence Lot shall never be subdivided.*

2. *The restrictions and covenants contained herein, from and after the occurrence of the Activating Event, shall run with the Allen Residence Lot described above and shall be binding on and inure to the benefit of the Declarants and their representatives, heirs, successors, and assigns. The restrictions and covenants contained herein shall be enforceable by any one or all of the Declarants, either acting alone, or by the City, and/or by any owner of any property or Lot established or created within the Development Parcel (including all future phases or sections), and their respective heirs, representatives, successors, and assigns.*

Executed this _____ day of _____, 2020.

_____
Kendall Keller Allen

_____
Mary Jo Allen

TURNBERRY HOMES, L.L.C.
a Tennessee limited liability company

*By:*_____
Nicky Wells, President of Land Development

LOSE DESIGN
SPACES FOR LIFE.

June 12, 2020

Lori Lange, P.E., City Engineer
City of Brentwood
1750 General George Patton Drive
Brentwood, TN 37027

RE: Allen Property Preliminary Hydrologic Analysis

Lori,

On behalf of Turnberry Homes and pursuant to concerns expressed by the neighbors of this development, specifically regarding stormwater runoff, we have prepared this preliminary hydrologic analysis. While we have classified this report as "preliminary", we have evaluated/designed the proposed stormwater facilities to a level where we can confidently state that our design will meet and exceed the City's requirements, as outlined in the subdivision regulations, and provide additional benefits to our downstream neighbors. Referring to the tables below, in addition to exceeding the standard detention requirements, we show significant reductions to the flows at every storm event for each watershed. We have summarized our findings below.

As much as practical, we honored the natural drainage patterns for this site. The property has two analysis points or outfalls where runoff crosses the property line. The primary means of stormwater control will be the construction of 3 quantity detention ponds and 2 water quality ponds. As a large portion of the watersheds are off-site, we are facilitating the runoff by safely routing through our ponds and the flow reductions are applied to the on-site portions of each respective watershed.

Analysis Point #1
Based on our calculations, for analysis point #1 which lies near the southern portion of the site, we found that the total required peak flow reduction was 41.1cfs. This is the reduction required for the post-developed 25-yr flow to match the pre-developed 2-yr flow for our contributing portion of the watershed. After routing runoff through our ponds, the 25-yr post-developed flow rate was reduced from 187cfs to 91.83cfs for a total reduction of 95.17cfs. This equates to an additional reduction of 54.07cfs over that which was required by 131.5%.

Analysis Point #2
Likewise, for analysis point #2 which is situated in the northern portion of the site, we found that the total required peak flow reduction was 10.81 CFS. Again, after routing runoff through our ponds, the 25yr post-developed flow rate was reduced from 54.57cfs to 40.85cfs for a total reduction of 13.72cfs. This equates to an additional reduction of 2.91cfs over that which was required by 26.9%.

LOSE DESIGN | 2809 FOSTER AVENUE NASHVILLE, TN 37210 | 615.242.0040

LOSE DESIGN
SPACES FOR LIFE.

Originally, we designed the facilities as efficiently as possible to meet the requirements of the City and to minimize cost of construction. After meeting and hearing the concerns from the neighboring community, Turnberry Homes authorized our firm to design the ponds and maximize their footprints to provide the best possible downstream benefit practical. This decision will add significant cost to the infrastructure but will provide additional security to our downstream neighbors.

Tabulated results of our calculations are provided below for your review. Please feel free to reach out to me directly if you have any questions with regards to our methodology or if you require any additional information.

Sincerely,

Michael Black, P.E.
Vice President – Engineering
Lose Design

LOSE DESIGN | 2809 FOSTER AVENUE NASHVILLE, TN 37210 | 615.242.0040

LOSE DESIGN
SPACES FOR LIFE.

Analysis Point #1 – Developed Area			
	Drainage Area (ac)	CN	Flow (cfs)
Pre-Development 2-year	9.167	74	14.14
Post Development 25-year	9.778	82	55.24
			41.1

Analysis Point #2 – Developed Area			
	Drainage Area	CN	Flow (cfs)
Pre-Development 2-year	3.39	74	5.7
Post Development 25-year	2.781	81	16.51
			10.81

*Reduction in peak flow at outfalls required from 25 year event to meet existing 2 year flows for developed areas

Analysis Point #1 – Southern Watershed			
Storm Event	**Existing Total Runoff (cfs)	**Proposed Total Flow Rate (cfs)	Peak Flow Reduction (cfs)
2-yr	63.45	27.24	36.21
5-yr	110.44	42.09	68.35
10-yr	143.44	58.12	85.32
25-yr	187	91.83	95.17
100-yr	253.07	145.43	107.64
Analysis Point 2 – Northern Watershed			
Storm Event	**Existing Total Runoff (cfs)	**Proposed Total Flow Rate (cfs)	Peak Flow Reduction (cfs)
2-yr	19.33	15.26	4.07
5-yr	32.8	25.1	7.7
10-yr	42.21	31.93	10.28
25-yr	54.57	40.85	13.72
100-yr	73.21	54.24	18.97

** Total runoff at analysis points include developed and undeveloped area within watersheds on and offsite

LOSE DESIGN | 2809 FOSTER AVENUE NASHVILLE, TN 37210 | 615.242.0040

N:\2019\19182_Allen_Property\CAD\04_CIVIL\19182_Quad Map.dwg - Printed on 2020-01-21 at 8:14:21 AM.

NOT FOR CONSTRUCTION

SITE

PORTOFINO DR

SPLIT LOGGING RD

SAM DONALD RD

Edmondson Br

Owl Cr

SONOMA TRCE

BURLAND CRES

IVY CREST DR

LEGACY COVE LN

ELGIN WAY

NOTTAWAY LN

VERNON RD

VICKERY PARK DR

ALLEN PROPERTY

USGS QUAD MAP

BRENTWOOD, TN

LOSE DESIGN
SPACES FOR LIFE.

SCALE: 1" = 1000'

JANUARY 2020

LD# 19182

© 2018 LOSE DESIGN

PRELIMINARY PLAN

ALLEN PROPERTY

OSRD ZONING

PREPARED FOR:
TURNBERRY HOMES

OSRD SITE DATA

DEVELOPMENT SITE TABLE:
Allen Property , BRENTWOOD, TENNESSEE

LOSE DESIGN NO: 19182

GENERAL NOTES AND INFORMATION

1. The subject property consists of Parcel 35.03 of Map 55
2. Zoning: OSRD (Open Space Residential Development)
3. Total site area = 27.99 +/- Acres
4. Boundary and topographic information for Parcel 35.03 was provided by Delta Associates, Inc. Lose Design accepts no responsibility for inaccuracies of base information provided.
5. Total lots proposed: 18
6. Proposed density: 0.75 DUA (Maximum allowed = 1 DUA)
7. Minimum lot width at building setback: 110' for standard lots
8. Minimum Building Setbacks:

Front:	50'	Rear abutting boundary:	35'	
Rear:	30'	Side abutting street:	30'	
Side:	15'/25' or 20'/20'			

9. All electric service for the proposed development shall be underground. All public utilities shall be subject to the approval of the applicable utility provider.
10. The existing vegetation in the open space is to remain preserved. It is the intent to also preserve the existing vegetation within the proposed lot areas as much as possible in order to promote a mature neighborhood environment.
11. Optionee, Developer and Applicant: Engineer:
Turnberry Homes — Lose Design
Mr. Nicky Wells — Mr. Michael Black
210 Jamestown Park Drive — 2809 Foster Avenue
Suite 102
Brentwood, TN 37027 — Nashville, TN 37208
12. A review of FIRM map number 47187C0230F, revised 09-29-2006, Brentwood, Williamson County, Tennessee and unincorporated areas, revealed that no portion of the subject property lies within 100 year flood plain.
13. All areas of the proposed development having a slope greater than 25% shall remain in permanent open space. No lots shall contain any contiguous portion of slopes greater than 24.9% slope.
14. In accordance with section 78-512(b)(5)b. of the Brentwood Municipal Code, the remaining evergreen plants required within the road frontage buffer have been dispersed throught the other open spaces areas of the development due to the lack of usable land for plantings.
15. An asterisk (*) denotes transitional lots.

OSRD CALCULATIONS	SIZE (S.F.)	ACRES
TOTAL SITE AREA:	**1219449.47**	**27.99**
LESS RIGHT OF WAY:	**-78270.00**	**-1.80**
TOTAL:	**1141179.47**	**26.19**
LESS AREA IN 25% OR GREATER SLOPES:	-6424.00	-0.15
PLUS 25% OF AREA IN 25% OR GREATER SLOPES:	1606.00	0.04
LESS AREA IN ELECTRICAL, NATURAL & GAS EASEMENTS:	-153075.35	-3.51
PLUS 25% AREA IN ELECTRICAL, NATURAL & GAS ESMTS:	38268.84	0.88
TOTAL USEABLE LAND AREA:	**1021554.96**	**23.45**
LESS AREA IN LOTS > 1 ACRE:	**-227716.00**	**-5.23**
TOTAL LAND AREA AVAILABLE:	**793838.96**	**18.22**
TOTAL LAND AREA REQUIRED AT 1 DPU PER ACRE	**784080.00**	**18.00**
TOTAL LAND AREA PROVIDED IN LOTS	**-645507.00**	**-14.82**
TOTAL OPEN SPACE REQUIRED:	**138573.00**	**3.18**
TOTAL OPEN SPACE PROVIDED:	**495666.00**	**11.37**
EXCESS OPEN SPACE PROVIDED:	**357093.00**	**8.19**

LOT DATA

LOT NO:	LOT SIZE (S.F.)	(ACRES)
1	19,077	0.438
2	24,690	0.567
3	23,780	0.546
4	21,385	0.491
5	30,136	0.692
6	22,393	0.514
7	19,013	0.436
8	19,013	0.436
9	21,458	0.493
10	19,241	0.442
11	17,600	0.404
12	17,600	0.404
13	17,768	0.408
14	22,979	0.528
15	27,172	0.624
16	23,453	0.538
17	27,473	0.631
18	271,276	6.228
645507	**TOTAL S.F. AREA IN LOTS**	
14.82	**TOTAL AC. OF AREA IN LOTS**	

TOTAL	
LOTS	18
SF	645,507
AC	14.82

TOTAL OPEN SPACE		
Open Space #	**SF**	**AC**
20	166502.0000	3.82
21	47893.0000	1.10
22	43539.0000	1.00
23	138495.0000	3.18
24	10717.0000	0.25
25	27488.0000	0.63
26	12797.0000	0.29
27	48235.0000	1.11
TOTAL	**495,666.0000**	**11.37**

OWNER/DEVELOPER

TURNBERRY HOMES
210 JAMESTOWN PARK DRIVE, SUITE 102
BRENTWOOD, TN 37027
(615) 376-7001
CONTACT: NICKY WELLS, P.E.

DESIGNER

LOSE DESIGN

LANDSCAPE ARCHITECTURE/ARCHITECTURE/CIVIL ENGINEERING/PLANNING

2809 FOSTER AVENUE
NASHVILLE, TENNESSEE 37210
PHONE: 615-242-0040
CONTACT: MICHAEL BLACK, P.E.

CONTACTS

SURVEYOR:
DELTA ASSOCIATES, INC.
7121 CROSSROADS BLVD, SUITE 102
BRENTWOOD, TN 37027
(615) 850-3506
RONL@DELTAASSOCIATESINC.COM

UTILITY:
COLUMBIA GULF TRANSMISSION
5422 GREEN GROVE ROAD
HARTSVILLE, TN 37074
(615) 374-2166
MCOTHRON@NISOURCE.COM

WATER.....CITY OF BRENTWOOD.....(615) 371-0080
SANITARY SEWER....CITY OF BRENTWOOD.....(615) 661-7061
GAS.....ATMOS ENERGY.....(615) 794-2596
TELEPHONE.....BELLSOUTH.....(615) 451-4336
CABLE.....COMCAST.....(615) 244-5900

LOCATION MAP



SHEET INDEX

C0.00	COVER SHEET
C0.01	GENERAL NOTES
C0.02	SITE SURVEY
C0.03	REZONING REQUEST
C1.00	SITE LAYOUT PLAN
C1.01	LOT TABLES
C2.00	GRADING & DRAINAGE PLAN
C2.01	SLOPE ANALYSIS
C3.00	ROAD PLAN & PROFILE SERIES
C3.01	ROAD PLAN & PROFILE SERIES
C4.00	SITE DETAILS
C4.01	SITE DETAILS
C5.00	UTILITY LAYOUT PLAN
L1.00	TREE REMOVAL PLAN
L1.01	OVERALL LANDSCAPE PLAN
L1.02	ROADWAY BUFFER LANDSCAPE PLAN
L1.10	LANDSCAPING NOTES & DETAILS

LOSE DESIGN
SPACES FOR LIFE.

THIS DRAWING AND THE DESIGN SHOWN IS THE PROPERTY OF THE ARCHITECT. REPRODUCTION, COPYING, OR USE OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED, AND ANY INFRINGEMENT IS SUBJECT TO LEGAL ACTION.

MICHAEL LEE BLACK
REGISTERED LANDSCAPE ARCHITECT
No. 113031
STATE OF TENNESSEE

APRIL P. ANDERSEN
REGISTERED LAND SURVEYOR
2-26-2020
STATE OF TENNESSEE

TN

ALLEN PROPERTY
OSRD ZONING

TURNBERRY HOMES

BRENTWOOD

SUBMITTALS / REVISIONS

NO.	DATE	DESCRIPTION

SHEET TITLE
COVER SHEET

PROJECT NO. 19182	DATE 07/21/2020
DRAWN BY BB	SCALE NTS
CHECKED BY MB	

SHEET NO.
C0.00

N:\2019\19182_Allen_Property\CAD\01_SHEETS\19182_C0.00_SITE_COVER_SERIES.dwg - Printed on 2020-07-21 at 10:11:06 AM.

GENERAL NOTES

1. THE CONTRACTOR IS TO CHECK AND VERIFY ALL MEASUREMENTS, DIMENSIONS, LEVELS, PLAN ELEVATIONS, INVERTS, ETC. BEFORE ORDERING MATERIALS AND PROCEEDING WITH THE WORK, AND IS TO BE RESPONSIBLE FOR THE SAME. REMEDIAL WORK RESULTING FROM LACK OF VERIFICATION WILL BE AT CONTRACTOR'S SOLE EXPENSE.
2. THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR THE DAMAGE OR LOSS OF ANY REFERENCE POINTS AND HUBS DURING THE CONSTRUCTION OF HIS/HER WORK, AND SHALL BEAR THE COST OF REPLACING SAME.
3. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THESE PLANS, SPECIFICATIONS AND THE REQUIREMENTS AND STANDARDS OF THE LOCAL GOVERNING AUTHORITY. THE SOILS REPORT AND RECOMMENDATIONS SET FORTH THEREIN ARE A PART OF THE REQUIRED CONSTRUCTION DOCUMENTS AND TAKE PRECEDENCE UNLESS SPECIFICALLY NOTED OTHERWISE ON THE PLANS. THE CONTRACTOR SHALL NOTIFY THE CONSTRUCTION/PROJECT MANAGER OF ANY DISCREPANCY BETWEEN SOILS REPORT AND PLANS, ETC.
4. CARE SHALL BE TAKEN TO PROTECT ANY UTILITIES, TREES, ETC. WHICH ARE TO REMAIN AND NOT TO BE DISTURBED BY THE CONSTRUCTION. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGES TO SUCH PROPERTY.
5. THE SITE SURVEY SHALL BE CONSIDERED A PART OF THESE PLANS. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR LOCATING IMPROVEMENTS PER THESE PLANS.
6. UPON RECEIPT OF POINT COORDINATE DATA, THE CONTRACTOR SHALL RUN AN INDEPENDENT VERTICAL CONTROL TRAVERSE TO CHECK BENCHMARKS AND A HORIZONTAL CONTROL TRAVERSE THROUGH GIVEN POINTS TO CONFIRM GEOMETRIC DATA AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO ANY CONSTRUCTION.
7. THE LOCATIONS OF UNDERGROUND FACILITIES SHOWN ON THE PLAN ARE BASED ON FIELD SURVEYS AND LOCAL UTILITY COMPANY RECORDS. IT SHALL BE THE CONTRACTOR'S FULL RESPONSIBILITY TO CONTACT THE VARIOUS UTILITY COMPANIES TO LOCATE THEIR FACILITIES PRIOR TO STARTING CONSTRUCTION. NO ADDITIONAL COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR DAMAGE AND REPAIR TO THESE FACILITIES CAUSED BY HIS WORK FORCE.
8. PRIOR TO STARTING CONSTRUCTION THE CONTRACTOR SHALL BE RESPONSIBLE TO MAKE SURE THAT ALL REQUIRED PERMITS AND APPROVALS HAVE BEEN OBTAINED. NO CONSTRUCTION OR FABRICATION SHALL BEGIN UNTIL THE CONTRACTOR HAS RECEIVED AND THOROUGHLY REVIEWED ALL PLANS AND OTHER DOCUMENTS APPROVED BY ALL OF THE PERMITTING AUTHORITIES.
9. THE CONTRACTOR SHALL GIVE ALL NECESSARY NOTICES AND OBTAIN ALL PERMITS AND PAY ALL LEGAL FEES. HE/SHE SHALL ALSO COMPLY WITH ALL CITY, COUNTY AND STATE BUILDING LAWS, ORDINANCES OR REGULATIONS RELATING TO BUILDING SIDEWALKS, STREETS, WATER MAINS, SEWERS, BLASTING, PUBLIC STRUCTURES, ETC.
10. THE CONTRACTOR ACKNOWLEDGES AND AGREES THAT THE WORK IS ENTIRELY AT THE CONTRACTOR'S RISK UNTIL SITE IS ACCEPTED, AND THE CONTRACTOR WILL BE HELD RESPONSIBLE FOR PROTECTION OF THE PROJECT AND PUBLIC SAFETY. THE CONTRACTOR WILL INDEMNIFY THE OWNER AND LOSE DESIGN. FROM LIABILITY AT THE SITE THROUGHOUT THE CONSTRUCTION PROCESS.
11. ALL DIMENSIONS, GRADES, AND UTILITY LOCATIONS SHOWN ON THESE PLANS WERE BASED ON SITE SURVEY PROVIDED BY OTHERS. THE CONTRACTOR SHALL FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO CONSTRUCTION. CONTRACTOR SHALL NOTIFY CONSTRUCTION/PROJECT MANAGER IF ANY DISCREPANCIES EXIST PRIOR TO PROCEEDING WITH CONSTRUCTION FOR NECESSARY CHANGES. NO EXTRA COMPENSATION SHALL BE PAID TO THE CONTRACTOR FOR WORK HAVING TO BE REDONE DUE TO INFORMATION SHOWN INCORRECTLY ON THESE PLANS IF SUCH NOTIFICATION HAS NOT BEEN GIVEN.
12. THE CONTRACTOR SHALL FURNISH, INSTALL AND MAINTAIN ALL NECESSARY TEMPORARY WORKS FOR THE PROTECTION OF THE WORK AND THE PUBLIC, INCLUDING BARRICADES, WARNING SIGNS, LIGHTS OR OTHER DEVICES SOLELY AT THE DETERMINATION OF THE CONTRACTOR.
13. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE DONE TO THE PREMISES OR ADJACENT PREMISES, OR INJURIES TO THE PUBLIC DURING THE CONSTRUCTION OF THE WORK, WHETHER CAUSED BY THE CONTRACTOR, SUBCONTRACTORS, OR THE CARELESSNESS OF ANY OF THEIR EMPLOYEES.
14. ALL PAY ITEMS HAVE BEEN EXPLICITLY SET FORTH AS SUCH IN THE PROPOSAL, ALL OTHER ITEMS OF COST ARE TO BE INCLUDED IN THE PRICE OF THE ITEMS ACTUALLY BID UPON.
15. ALL WORK WITHIN THE RIGHTS OF WAY SHALL BE IN ACCORDANCE WITH THE GOVERNING JURISDICTION AND SPECIFICATIONS.
16. THE CONTRACTOR SHALL PROVIDE SUCH BRACING, SHEETING AND SHORING, BLASTING PROTECTION, WARNING LIGHTS AND BARRICADES, ETC. AS MAY BE NECESSARY FOR THE PROTECTION OF LIFE AND PROPERTY FOR EMPLOYEES AND THE GENERAL PUBLIC. THE CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE SAFETY STATUTES AND RULES REQUIRING CERTAIN PROTECTIVE PERSONAL APPAREL SUCH AS HARD HATS, EAR PLUGS, EYE SHIELDS, PROTECTIVE SHOES, ETC. THE OWNER AND ENGINEER ASSUME NO RESPONSIBILITY OR LIABILITY FOR ACTIONS TAKEN BY THE CONTRACTOR WHICH ENDANGER LIFE OR PROPERTY.
17. THE CONTRACTOR WILL, UPON BECOMING AWARE OF SUBSURFACE OR LATENT PHYSICAL CONDITIONS DIFFERING FROM THOSE DISCLOSED BY THE ORIGINAL SOIL EXPLORATION WORK, PROMPTLY NOTIFY THE OWNER VERBALLY TO PERMIT VERIFICATION OF THE CONDITIONS AND IN WRITING, AS TO THE NATURE OF THE DIFFERING CONDITIONS. NO CLAIM BY THE CONTRACTOR FOR ANY CONDITIONS DIFFERING FROM THOSE ANTICIPATED IN THE PLAN AND SPECIFICATIONS AND DISCLOSED BY THE SOIL STUDIES WILL BE ALLOWED UNLESS THE CONTRACTOR HAS SO NOTIFIED THE OWNER, VERBALLY AND IN WRITING AS REQUIRED ABOVE, OF SUCH DIFFERING CONDITIONS.
18. ANY FOREIGN ITEM FOUND DURING CONSTRUCTION IS THE PROPERTY OF THE LAND OWNER. THIS INCLUDES, BUT IS NOT LIMITED TO, PRECIOUS METALS, COINS, PAPER CURRENCY, ARTIFACTS AND ANTIQUITIES.
19. ALL SURPLUS EXCAVATION SHALL BE PLACED ON-SITE IN A LOCATION DESIGNATED BY OWNER.
20. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS TO INSURE THAT THE NEW WORK SHALL FIT INTO THE EXISTING SITE IN THE MANNER INTENDED AND AS SHOWN ON THE DRAWINGS. SHOULD ANY CONDITIONS EXIST THAT ARE CONTRARY TO THOSE SHOWN ON THE DRAWINGS, THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE PRIOR TO PERFORMING ANY WORK IN THE AREA INVOLVING DIFFERENCES. NOTIFICATION SHALL BE IN THE FORM OF A DRAWING OR SKETCH INDICATING FIELD MEASUREMENTS AND NOTES RELATING TO THE AREA.
21. THE CONTRACTOR SHALL MAINTAIN THE SITE IN A NEAT AND ORDERLY CONDITION AT ALL TIMES. DAILY, AND MORE OFTEN IF NECESSARY, INSPECT & AND PICK UP ALL SCRAP, DEBRIS, & WASTE MATERIAL.
22. THE CONTRACTOR SHALL PROVIDE PROTECTION TO ALL FINISHED WORK. MAINTAIN SURFACES CLEAN, UNMARRED, AND SUITABLY PROTECTED UNTIL ACCEPTANCE BY OWNER.
23. UPON COMPLETION OF PROJECT, CONTRACTOR SHALL CLEAN THE PAVED AREAS PRIOR TO REMOVAL OF TEMPORARY SEDIMENT CONTROLS, AS DIRECTED BY THE CITY AND/OR CONSTRUCTION/PROJECT MANAGER. IF POWER WASHING IS USED, NO SEDIMENT LADEN WATER SHALL BE WASHED INTO THE STORM SYSTEM. ALL SEDIMENT LADEN MATERIAL ON PAVEMENT OR WITHIN THE STORM SYSTEM SHALL BE COLLECTED AND REMOVED FROM THE SITE AT CONTRACTOR'S EXPENSE.
24. CONTRACTOR SHALL AT ALL TIMES ENSURE THAT SWPPP MEASURES PROTECTING EXISTING DRAINAGE FACILITIES BE IN PLACE PRIOR TO THE COMMENCEMENT OF ANY PHASE OF THE SITE CONSTRUCTION OR LAND ALTERATION.
25. THE CONTRACTOR SHALL COORDINATE ALL ROAD CLOSURES, EXCAVATIONS, ETC. WITH LOCAL JURISDICTIONS. ALL TEMPORARY LANE CLOSURES, EXCAVATIONS, BORINGS, TRAFFIC CONTROL, ETC. SHALL BE DONE IN COMPLIANCE WITH LOCAL REQUIREMENTS.
26. THE CONTRACTOR SHALL PERFORM ALL QUANTITY TAKEOFFS REQUIRED FOR BIDDING AND CONSTRUCTION OF THIS PROJECT. LOSE DESIGN ACCEPTS NO RESPONSIBILITY NOR LIABILITY FOR QUANTITY TAKEOFFS PERFORMED FOR THIS PROJECT.

DEMOLITION

1. DEMOLITION INCLUDES THE FOLLOWING WITHIN THE PROPERTY LINES:
   - 1.1. TRANSFER BENCHMARK CONTROL TO NEW LOCATIONS OUTSIDE THE DISTURBED AREA PRIOR TO COMMENCING DEMOLITION OPERATIONS (WHEN APPLICABLE).
   - 1.2. PROVIDE TEMPORARY BARRICADES AND OTHER FORMS OF PROTECTION AS REQUIRED TO PROTECT OWNER'S PERSONNEL AND GENERAL PUBLIC FROM INJURY DUE TO DEMOLITION WORK.
   - 1.3. DEMOLITION AND REMOVAL OF SITE IMPROVEMENTS.
   - 1.4. DISCONNECTING, CAPPING OR SEALING, AND ABANDONING/REMOVING SITE UTILITIES IN PLACE (WHICHEVER IS APPLICABLE).

DEMOLITION (CONT.)

2. ALL DEMOLISHED MATERIALS (EXCLUDING FOREIGN ITEMS AS LISTED IN 'GENERAL') BECOME THE PROPERTY OF THE CONTRACTOR UNLESS OTHERWISE DESIGNATED BY THE OWNER'S REP. DISPOSE OF OFF THE OWNER'S PROPERTY AT NO ADDITIONAL COST.
3. ALL PAVEMENT, BASE COURSES, SIDEWALKS, CURBS, ETC., THAT ARE REMOVED SHALL BE REMOVED TO FULL DEPTH. ALL PAVEMENT, SIDEWALK, AND CURB SHALL BE SAW CUT IN ORDER TO OBTAIN NEAT LINES AND SMOOTH TRANSITIONS TO NEW SURFACES.
4. ALL ITEMS OF CONSTRUCTION REMAINING AND NOT SPECIFICALLY MENTIONED THAT INTERFERES WITH THE NEW CONSTRUCTION SHALL BE REMOVED AS DIRECTED BY THE OWNERS REPRESENTATIVE AT NO ADDITIONAL COST.
5. CONTRACTOR SHALL PROVIDE PROTECTION TO ALL STREETS, TREES, UTILITIES, AND STRUCTURES THAT ARE TO REMAIN. CONTRACTOR-CAUSED DAMAGE WILL BE REPAIRED TO LOCAL STANDARDS AT NO ADDITIONAL COST TO THE OWNER.
6. THE CONTRACTOR SHALL CONFORM TO ALL LOCAL CODES AND OBTAIN ALL PERMITS PRIOR TO BEGINNING WORK.
7. NO TREES ARE TO BE REMOVED AND/OR VEGETATION DISTURBED EXCEPT AS NECESSARY FOR DEMOLITION PURPOSES AND ONLY WITH PRIOR APPROVAL FROM THE OWNER'S REPRESENTATIVE.
8. OBTAIN APPROVED BORROW SOIL MATERIALS OFF-SITE.
9. STORAGE OR SALE OF REMOVED ITEMS OR MATERIALS ON-SITE WILL NOT BE PERMITTED.
10. DO NOT START DEMOLITION WORK UNTIL UTILITY DISCONNECTING AND SEALING HAVE BEEN COMPLETED AND VERIFIED IN WRITING.
11. REMOVE: REMOVE AND LEGALLY DISPOSE OF ITEMS EXCEPT THOSE INDICATED TO BE REINSTALLED, SALVAGED, OR TO REMAIN.
12. REMOVE, REINSTALL, AND RELOCATE: REMOVE ITEMS INDICATED; CLEAN, SERVICE, AND OTHERWISE PREPARE THEM FOR REUSE; STORE AND PROTECT AGAINST DAMAGE. REINSTALL ITEMS IN LOCATIONS INDICATED.
13. EXISTING TO REMAIN: PROTECT ITEMS INDICATED TO REMAIN AGAINST DAMAGE AND SOILING THROUGHOUT CONSTRUCTION. WHEN PERMITTED BY THE ENGINEER, ITEMS MAY BE REMOVED TO A SUITABLE, PROTECTED STORAGE LOCATION THROUGHOUT CONSTRUCTION AND THEN CLEANED AND REINSTALLED IN THEIR ORIGINAL LOCATIONS.
14. REGULATORY REQUIREMENTS: COMPLY WITH GOVERNING EPA NOTIFICATION REGULATIONS BEFORE STARTING DEMOLITION. COMPLY WITH HAULING AND DISPOSAL REGULATIONS OF AUTHORITIES HAVING JURISDICTION.
15. CONTRACTOR SHALL SCHEDULE DEMOLITION ACTIVITIES WITH THE CONSTRUCTION/PROJECT MANAGER INCLUDING THE FOLLOWING:
    - 15.1. DETAILED SEQUENCE OF DEMOLITION AND REMOVAL WORK, INCLUSIVE OF STARTING AND ENDING DATES FOR EACH ACTIVITY.
    - 15.2. DATES FOR SHUTOFF, CAPPING, AND CONTINUATION OF UTILITY SERVICES.
    - 15.3. IDENTIFY AND ACCURATELY LOCATE UTILITIES AND OTHER SUBSURFACE STRUCTURAL, ELECTRICAL, OR MECHANICAL CONDITIONS.
16. MAINTAIN EXISTING UTILITIES INDICATED TO REMAIN IN SERVICE AND PROTECT THEM AGAINST DAMAGE THROUGHOUT CONSTRUCTION OPERATIONS.
    - 16.1. DO NOT INTERRUPT EXISTING UTILITIES SERVING OCCUPIED OR OPERATING FACILITIES, EXCEPT WHEN AUTHORIZED IN WRITING BY ENGINEER AND AUTHORITIES HAVING JURISDICTION. PROVIDE TEMPORARY SERVICES DURING INTERRUPTIONS TO EXISTING UTILITIES, AS ACCEPTABLE TO OWNER AND TO GOVERNING AUTHORITIES.
17. UTILITY REQUIREMENTS: LOCATE, IDENTIFY, DISCONNECT, AND SEAL OR CAP OFF INDICATED UTILITY SERVICES SERVING THE SITE.
    - 17.1. ARRANGE TO SHUT OFF AND CAP UTILITIES WITH UTILITY COMPANIES AND FOLLOW THEIR RESPECTIVE UTILITY KILL AND CAP POLICIES.
    - 17.2. ALL EXISTING UNDERGROUND UTILITIES SHOWN ARE APPROXIMATE AND ARE TO BE VERIFIED BY CONTRACTOR. LOSE DESIGN DOES NOT ACCEPT ANY RESPONSIBILITY FOR THE ACCURACY OF EXISTING UTILITIES INDICATED ON THE CONSTRUCTION DOCUMENTS. VERIFY LOCATION OF EXISTING UTILITIES AND EXERCISE EVERY PRECAUTION WHEN WORKING ON OR NEAR THESE AREAS TO AVOID DAMAGE TO THESE EXISTING FACILITIES. UTILITY LINES MAY BE ENCOUNTERED IN EXCAVATION THAT WERE NOT KNOWN OR SHOWN TO EXIST, SO CAUTION SHALL BE TAKEN IN ALL EXCAVATIONS. ACTIVE OR INACTIVE UTILITIES ENCOUNTERED BY THE CONTRACTOR SHALL BE HANDLED IN ACCORDANCE WITH THE REQUIREMENTS OR THE UTILITY COMPANIES.
18. CONDUCT DEMOLITION OPERATIONS TO PREVENT INJURY TO PEOPLE AND DAMAGE TO ADJACENT BUILDINGS AND FACILITIES TO REMAIN. ENSURE SAFE PASSAGE OF PEOPLE AROUND DEMOLITION AREA.
    - 18.1. ERECT TEMPORARY PROTECTION, BARRICADES AS PER LOCAL GOVERNING AUTHORITIES.
    - 18.2. PROTECT EXISTING SITE IMPROVEMENTS AND APPURTENANCES TO REMAIN.
19. EXPLOSIVES: USE OF EXPLOSIVES WILL NOT BE PERMITTED.
20. REMOVE AND TRANSPORT DEBRIS IN A MANNER THAT WILL PREVENT SPILLAGE ON ADJACENT SURFACES AND AREAS.
21. CLEAN ADJACENT BUILDINGS AND IMPROVEMENT OF DUST, DIRT, AND DEBRIS CAUSED BY DEMOLITION OPERATIONS. RETURN ADJACENT AREAS TO CONDITION EXISTING BEFORE START OF DEMOLITION.
22. DAMAGES: PROMPTLY REPAIR DAMAGES TO ADJACENT FACILITIES CAUSED BY DEMOLITION OPERATIONS AT THE CONTRACTORS COST.
23. GENERAL: PROMPTLY DISPOSE OF DEMOLISHED MATERIALS. DO NOT ALLOW DEMOLISHED MATERIALS TO ACCUMULATE ON-SITE.
24. BURNING: DO NOT BURN DEMOLISHED MATERIALS.
25. CONDUCT DEMOLITION OPERATIONS AND REMOVE DEBRIS TO ENSURE MINIMUM INTERFERENCE WITH EXISTING FACILITIES.
    - 25.1. DO NOT CLOSE OR OBSTRUCT STREETS, WALKS, OR OTHER ADJACENT OCCUPIED OR USED FACILITIES WITHOUT PERMISSION FROM OWNER AND AUTHORITIES HAVING JURISDICTION. PROVIDE ALTERNATE ROUTES AROUND CLOSED OR OBSTRUCTED TRAFFIC WAYS IF REQUIRED BY GOVERNING REGULATIONS.
    - 25.2. PROVIDE TEMPORARY FENCES, BARRICADES, COVERINGS OR OTHER PROTECTIONS TO PRESERVE EXISTING ITEMS INDICATED TO REMAIN AND TO PREVENT INJURY OR DAMAGE TO PERSONS OR PROPERTY. APPLY PROTECTIONS TO ADJACENT PROPERTIES AS REQUIRED.

CLEARING & GRUBBING

1. DO NOT EXCEED CLEARING AND GRUBBING LIMITS OF CONSTRUCTION LINES INDICATED ON THE PLANS.
2. ALL AREAS OUTSIDE THE LIMITS OF CONSTRUCTION SHALL NOT BE CROSSED BY HEAVY EQUIPMENT OR USED FOR STORING HEAVY EQUIPMENT OR MATERIALS.
3. NO EQUIPMENT SHALL BE STORED UNDER THE DRIP LINE OF TREES TO REMAIN.
4. DO NOT FALL ANY TREES OR PUSH PILES OF DEBRIS AGAINST TREES TO REMAIN.
5. REMOVE ALL STUMPS, ROCKS, ASPHALT & CONCRETE DEBRIS, ETC. WITHIN CLEARING LIMITS AND DISPOSE OFF SITE IN ACCORDANCE WITH LOCAL, STATE, & FEDERAL REGULATIONS.
6. CONTACT ALL UTILITY AUTHORITIES WHO HAVE LINES WITHIN THE CLEARING AND GRUBBING LIMITS BEFORE STARTING WORK.
7. ALL EROSION CONTROL SEDIMENT BARRIERS, SILT FENCES, AND TREE PROTECTION DEVICES SHALL BE INSTALLED PRIOR TO STARTING CLEARING AND GRUBBING OPERATIONS.
8. CONTRACTOR TO STAKE TRAIL CENTERLINES (WHEN APPROPRIATE) & LIMITS OF CLEARING FOR REVIEW BY LOSE DESIGN PRIOR TO BEGINNING CLEARING OPERATIONS; TREES WITHIN GRADING LIMITS TO BE SAVED WILL BE IDENTIFIED BY THE OWNER'S REPRESENTATIVE. FIELD CHANGES TO GRADING PLANS SHALL BE MADE FOR SMOOTH TRANSITION OF GRADES AROUND ALL TREES.
9. SEE SPECIFICATIONS FOR TREE CLEARING REQUIREMENTS AND PENALTIES FOR DAMAGES TO TREES DESIGNATED TO REMAIN.
10. ALL CLEARING SHALL BE LIMITED TO AREAS TO BE GRADED WITHIN 14 CALENDAR DAYS PER STATE PERMITS.

EXISTING UTILITIES

1. UNDERGROUND UTILITIES HAVE NOT BEEN VERIFIED BY THE OWNER, LOSE DESIGN, OR THEIR REPRESENTATIVES. BEFORE YOU DIG CALL 811 TO HAVE EXISTING UTILITIES MARKED.
2. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREES TO BE RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT RESULT FROM THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY UNDERGROUND UTILITIES TO REMAIN.
3. LOSE DESIGN ACCEPTS NO RESPONSIBILITY FOR THE ACCURACY OF THE BASE SURVEY INFORMATION PROVIDED BY OTHERS.

DEVELOPMENT

1. NOTIFY OWNER AND LOSE DESIGN AT 50, 95, AND 100 PERCENT COMPLETION OF EVERY PHASE OF CONSTRUCTION
2. ALL BUFFERS AND TREE SAVE AREAS SHALL BE CLEARLY IDENTIFIED BY FLAGGING AND/OR FENCING PRIOR TO COMMENCEMENT OF ANY LAND DISTURBANCE.
3. ALL CONSTRUCTION TO COMPLY WITH LOCAL/COUNTY ZONING AND CODES STANDARDS AND STATE OF TENNESSEE STORMWATER REGULATIONS.

GRADING

1. TOPSOIL SHALL BE STORED ON SITE IN LOCATIONS APPROVED BY THE OWNERS REPRESENTATIVE AND OUTSIDE AREAS PRONE TO FLOODING. DRAINAGE SHALL ROUTE AROUND THESE TOPSOIL STOCKPILES FOR THE DURATION OF THE GRADING OPERATIONS. EROSION CONTROL MEASURES SHALL PREVENT LOSS OF TOPSOIL MATERIAL.
2. UNSUITABLE SOILS SHALL BE UNIFORMLY SPREAD ACROSS NON-STRUCTURAL FILL AREAS, COVERED WITH TOPSOIL, AND VEGETATED PER DRAWINGS.
3. FILL AREAS SHALL BE PROOF-ROLLED WITH RUBBER-TIRED EQUIPMENT WITH A MINIMUM WEIGHT OF FIFTEEN TONS PRIOR TO BEGINNING FILL OPERATION. AREAS WHICH ARE SOFT OR UNSTABLE SHALL BE UNDERCUT UNTIL STABLE SOILS ARE FOUND. RECOMPACTION OF THESE SOILS TO 98 PERCENT MAXIMUM DRY DENSITY (AS PER ASTM D698 STANDARD PROCTOR) WILL BE ALLOWED, UNDER THE DIRECTION OF A QUALIFIED SOILS ENGINEER.
4. CUT AREA SHALL BE PROOF-ROLLED AFTER FINAL SUBGRADE IS ACHIEVED IN THE SAME MANNER AS FILLED AREAS. SOFT OR UNSTABLE SOILS SHALL BE SCARIFIED TO A DEPTH OF 12" AND RECOMPACTED TO 98 PERCENT MAXIMUM DRY DENSITY AS PER ASTM D698 (STANDARD PROCTOR).
5. CONFIRMATION OF ALL COMPACTION REQUIREMENTS SHALL BE CONFIRMED BY A QUALIFIED SOILS ENGINEER. SEE SPECIFICATION FOR SOIL COMPACTION RATES.
6. ALL FILL AREAS SHALL BE RAISED IN LIFTS NOT EXCEEDING 6 INCHES.
7. ALL AREAS WILL BE GRADED TO PROVIDE PROPER DRAINAGE AND PREVENT STANDING WATER.
8. ELEVATIONS SHOWN ON THE PLANS IS THE FINISH GRADE ELEVATION.
9. GRADING SHALL BE SEQUENCED SO THAT BASE STONE IS PLACED WITHIN 14 CALENDAR DAYS OF ACHIEVING OPTIMUM SUBGRADE COMPACTION.
10. ALL GRADING OPERATIONS SHALL BE COMPLETED IN COMPLIANCE OF CITY, COUNTY, AND STATE LAND DISTURBANCE PERMITS AS REQUIRED.

LAYOUT

1. ALL LAYOUT MEASUREMENTS ARE TO CENTERLINE UNLESS OTHERWISE NOTED.
2. COORDINATE POINTS SHOWN ARE TAKEN FROM BASE INFORMATION PROVIDED BY OTHERS. CONTRACTOR SHALL CROSS CHECK BETWEEN COORDINATE LAYOUT AND PLAN DIMENSIONS PRIOR TO COMMENCING WORK.
3. LOSE DESIGN, ACCEPTS NO RESPONSIBILITY FOR THE ACCURACY OF THE BASE INFORMATION AS PROVIDED. CONTRACTOR IS TO VERIFY ALL BASE INFORMATION AS NECESSARY AND TO ADVISE THE ARCHITECT OF ANY DISCREPANCIES PRIOR TO ANY LAYOUT WORK
4. ALL WORK SHALL BE COMPLETED TO THE LEVEL INDICATED BY THE SCOPE OF WORK LISTED IN THE BID DOCUMENTS.
5. CONTRACTOR SHALL BE RESPONSIBLE FOR REPLACEMENT OF ALL DAMAGED AND/OR DISTURBED MONUMENTS, STAKES, ETC.
6. CONTRACTOR SHALL NOT SCALE DRAWINGS. CONTRACTOR SHALL USE DIMENSION, COORDINATES, AND OTHER INFORMATION PROVIDED ON LAYOUT PLANS.
7. CONTRACTOR IS RESPONSIBLE FOR ALL CONSTRUCTION STAKING REQUIRED ON THE PROJECT. THE CONTRACTOR SHALL VERIFY THAT NO CONFLICTS EXIST BETWEEN EXISTING FACILITIES AND PROPOSED FACILITIES PRIOR TO BEGINNING CONSTRUCTION ACTIVITIES.
8. CONTRACTOR SHALL NOTIFY LOSE DESIGN WITHIN 24 HOURS OF ANY LAYOUT DISCREPANCIES PRIOR TO PROCEEDING WITH WORK. ALL ADDITIONAL COSTS, INCLUDING BUT NOT LIMITED TO REMEDIAL CONSTRUCTION, ADDITIONAL SITE VISITS, OR ENGINEERING SERVICES AND FEES, ETC., INCURRED DUE TO THE FAILURE TO FOLLOW THIS PROCEDURE WILL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR.
9. CONTRACTOR SHALL PROVIDE ADEQUATE LAYOUT INFORMATION TO DEMONSTRATE, TO THE MAXIMUM EXTENT PRACTICAL, THAT NO CONFLICTS BETWEEN VARIOUS TRADES EXIST.
10. DRAINAGE STRUCTURES ARE SHOWN TO INDICATE CASTING TYPE AND LOCATION. CONTRACTOR SHALL STAKE PROPOSED PAVING, STRUCTURES, CURBS, ETC. TO ENSURE DRAINAGE STRUCTURES ARE PLACED TO AVOID CONFLICTS. DRAINAGE STRUCTURES ARE NOT DRAWN TO SCALE.

ADA REQUIREMENTS

1. ALL CONSTRUCTION ACTIVITIES SHALL BE COMPLETED IN FULL COMPLIANCE WITH THE AMERICANS WITH DISABILITIES ACT ("ADA") AND ARCHITECTURAL AND TRANSPORTATION BARRIERS COMPLIANCE BOARD, FEDERAL REGISTER 36CFR PARTS 1190 AND 1191, ACCESSIBILITY GUIDELINES FOR BUILDINGS AND FACILITIES; ARCHITECTURAL BARRIERS ACT (ABA) ACCESSIBILITY GUIDELINES
2. CONTRACTOR TO COORDINATE ALL INSPECTIONS AS REQUIRED BY THE LOCAL ADA COMPLIANCE OFFICE.
3. AT ALL INTERSECTION OF TRAILS, SIDEWALKS, PLAZAS, AND OTHER INSTANCES WHERE 90 DEGREE TURNS CAN TAKE PLACE, THE MAX. SLOPE IN ALL DIRECTIONS IS 2 PERCENT.

TREE PROTECTION / REMOVAL

1. EXISTING TREES ON-SITE TO BE REMOVED HAVE BEEN MARKED ON THE SITE PLANS WITH AN "X". ONLY THOSE MARKED TREES SHALL BE REMOVED. CONTRACTOR SHALL PROCEED WITH THE FOLLOWING FOR TREES TO BE REMOVED ONLY:
   - 1.1. REMOVE THE TOP OF ALL TREES INCLUDING BRANCHES AND TRUNK IN AN ORGANIZED AND SAFE MATTER BEING CAREFUL NOT TO DAMAGE ANY TREES TO REMAIN OR OTHER SITE FEATURES.
   - 1.2. ALL STUMPS OF TREES BEING REMOVED SHALL BE COMPLETELY EXCAVATED AND REMOVED. ALL EXCAVATED HOLES, FROM REMOVAL OF TREE ROOTS, REMAINING ON-SITE SHALL BE REMEDIATED WITH ENGINEERED FILL AND COMPACTED TO MEET SPECIFICATIONS.
   - 1.3. ALL TREE WASTE, INCLUDING LIMBS, BRANCHES, TRUNKS, ROOTS OR OTHER, SHALL BE COMPLETELY REMOVED FROM THE CONSTRUCTION SITE AND DISPOSED OF IN A LEGAL MANNER.
2. ALL TREES THAT HAVE NOT BEEN MARKED ON THESE PLANS WITH AN "X" SHALL BE PROTECTED ON SITE DURING CONSTRUCTION FROM ANY AND ALL DAMAGE. CONTRACTOR SHALL PROCEED WITH THE FOLLOW FOR TREES TO BE PROTECTED ONLY:
   - 2.1. ALL PROTECTED TREES THAT ARE LOCATED NEAR OR WITHIN THE LIMITS OF CONSTRUCTION SHALL BE PROTECTED BY TREE PROTECTION FENCING PER DETAILS.
   - 2.2. THE CONTRACTOR SHALL BE HELD RESPONSIBLE FOR ANY PROTECTED TREES THAT ARE DAMAGED DURING CONSTRUCTION.
   - 2.3. IF PROTECTED TREES ARE LOCATED WITHIN THE LIMITS OF CONSTRUCTION, THEY MUST BE PROTECTED DURING SITE CONSTRUCTION.
   - 2.4. IF GRADING, EXCAVATION OR PAVING IS SHOWN TO OCCUR NEAR THE PROTECTED TREE, THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTRACTING WITH A LOCAL TREE SURGEON FOR RECOMMENDATIONS ON TREE PROTECTION.
   - 2.5. IF DISCREPANCIES OCCUR AND IT IS ANTICIPATED THAT THE PROTECTED TREES WILL BE DAMAGED DUE TO PROPOSED CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE DESIGNER IMMEDIATELY OF ANY CONFLICT.
   - 2.6. THE CONTRACTOR SHALL ALSO SUBMIT RECOMMENDATIONS TO THE DESIGNER FROM THE TREE SURGEON FOR PROTECTION MEASURES.
   - 2.7. CONTRACTOR SHALL BE RESPONSIBLE FOR IN-FIELD COORDINATION WITH THE DESIGNER TO RESOLVE ANY CONFLICTS THAT MAY ARISE DUE TO PROTECTED TREES.
   - 2.8. IF THE CONTRACTOR LOCATES TREES IN THE FIELD THAT ARE NOT SHOWN ON THESE PLANS OR THAT ARE MISLOCATED, THE CONTRACTOR SHALL NOTIFY THE DESIGNER FOR REVIEW OF THE TREE AND ITS LOCATION.
   - 2.9. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATION WITH SUB-CONSULTANTS AND UTILITY PROVIDERS DURING CONSTRUCTION TO ENSURE THE PROTECTION OF THE TREES TO REMAIN.

TREE PROTECTION / REMOVAL (CONT.)

- 2.10. IN THE EVENT OF UTILITY LINE ADJUSTMENTS, ADDITIONS OR RELOCATIONS, THE CONTRACTOR SHALL WORK WITH THE UTILITY PROVIDER AND INSTALLER TO ROUTE THE UTILITY LINES OUTSIDE OF THE TREE PROTECTION ZONE. IF THIS IS NOT POSSIBLE, RECOMMENDATIONS MUST BE OBTAINED FROM A LOCAL TREE SURGEON FOR REMEDIATION OPTIONS.
- 2.11. CONTRACTOR MUST SUBMIT ALL REPORTS OR RECOMMENDATIONS FOR TREE PRUNING OR ALTERING TO THE LANDSCAPE ARCHITECT FOR REVIEW PRIOR TO RENDERING SERVICES.

CITY OF BRENTWOOD NOTES:

1. STREETS WILL BE BUILT TO CITY OF BRENTWOOD ROAD SPECIFICATIONS IN FORCE AT THE TIME OF CONSTRUCTION.
2. ROAD CONSTRUCTION SHALL NOT BEGIN WITHOUT APPROVAL OF THE CITY OF BRENTWOOD ENGINEERING DEPARTMENT.
3. ALL FILL IS TO BE PLACED AND COMPACTED PRIOR TO INSTALLATION OF PUBLIC UTILITIES.
4. ALL FILL SHALL BE INSTALLED IN SIX (6) INCH LAYERS AND COMPACTED WITH A SHEEP FOOT ROLLER TO BE 95% OF THE MAXIMUM DENSITY OBTAINABLE WITH THE STANDARD PROCTOR TEST METHOD.
5. STREET LIGHTING SHALL BE PURCHASED AND INSTALLED BY THE DEVELOPER, DESIGN LAYOUT SHALL BE COORDINATED WITH THE CITY OF BRENTWOOD ENGINEERING DEPARTMENT PRIOR TO LIGHT INSTALLATION.
6. ALL STOP SIGNS SHALL MEASURE 30"X30" IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD). INSTALLATION SHALL BE IN CONFORMANCE WITH THE MUTCD. MATERIAL SHALL BE HIGH DENSITY REFLECTIVE SHEETING (TYPE II)
7. ALL STREET NAMES SIGNS SHALL BE MADE FROM A CITY APPROVED MATERIAL AND SHALL CONTAIN THE CITY APPROVED FONT.
8. ALL UTILITY SERVICES MUST BE EXTENDED TO APPROXIMATELY 10' BEYOND THE PROPOSED SIDEWALK.
9. FIRE HYDRANTS MUST BE LOCATED BEHIND THE SIDEWALK.
10. DRAINAGE EASEMENTS OUTSIDE DEDICATED ROW'S ARE NOT THE RESPONSIBILITY OF WILLIAMSON COUNTY OR THE CITY OF BRENTWOOD.
11. NO ALTERATION OF THIS (THESE) STREAM(S) SHOWN WILL OCCUR PRIOR TO WRITTEN APPROVAL BEING GRANTED BY THE APPROPRIATE AUTHORITIES.
12. ALL SEWER CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CITY OF BRENTWOOD AND THE DEPARTMENT OF ENVIRONMENTAL CONSERVATION CURRENT SPECIFICATIONS.
13. ALL WATER CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CITY OF BRENTWOOD WATER AND SEWER DEPARTMENT'S CURRENT SPECIFICATIONS.

ABBREVIATIONS

ASPH	- ASPHALT	NIC	- NOT IN CONTRACT
@	- AT	NO	- NUMBER
BOC	- BOTTOM OF CURB	O.C.	- ON CENTER
BFP	- BACKFLOW PREVENTER	OD	- OUTSIDE DIAMETER
BS	- BOTTOM OF STEP	PD	- PERFORATED DRAIN
BW	- BOTTOM OF WALL	PL	- PROPERTY LINE
CL	- CENTERLINE	POB	- POINT OF BEGINNING
CJ	- CONTROL JOINT	PP	- POWER POLE
CO	- COMPANY	R	- RADIUS
CONT	- CONTINUOUS	ROW	- RIGHT OF WAY
CY	- CUBIC YARD	SERV	- SERVICE
DIA	- DIAMETER	SCH	- SCHEDULE
DR	- DRIVE	SF	- SQUARE FEET
EJ	- EXPANSION JOINT	S.F.	- SILT FENCE
ELEC	- ELECTRIC	SQ	- SQUARE
ELEV	- ELEVATION	SY	- SQARE YARD
FH	- FIRE HYDRANT	SIG	- SIGNAL
EX	- EXISTING	SPEC	- SPECIFICATION(S)
FT	- FEET	STA	- STATION
FL	- FLOW LINE	ST	- STREET
GALV	- GALVANIZED	T	- TELEPHONE
HP	- HIGH POINT	TC	- TOP OF CASTING
HT	- HEIGHT	TOC	- TOP OF CURB
HW	- HEADWALL	TF	- TOP OF FOOTING
HYD	- HYDRANT	TP	- TOP OF PAVEMENT
ID	- INSIDE DIAMETER	TS	- TOP OF STEP
JUNC	- JUNCTION	TW	- TOP OF WALL
LOC	- LIMITS OF CLEARANCE	TYP.	- TYPICAL
L.O.D.	- LIMITS OF DISTURBANCE	VERT	- VERTICAL
LF	- LINEAR FEET	W	- WATER
MAX	- MAXIMUM	WS	- WATER SERVICE
MIN	- MINIMUM	WV	- WATER VALVE
MH	- MANHOLE	WWF	- WELDED WIRE FABRIC
MPH	- MILES PER HOUR		

BVCS	- BEGINNING OF VERTICAL CURVE STATION
BVCE	- BEGINNING OF VERTICAL CURVE ELEVATION
EVCS	- ENDING OF VERTICAL CURVE STATION
EVCE	- ENDING OF VERTICAL CURVE ELEVATION
PVI	- POINT OF VERTICAL INTERSECTION

NOTE: THESE ABBREVIATIONS ARE GENERAL; INDIVIDUAL SHEETS MAY INCLUDE OTHERS.

"C" SHEETS LEGEND

— OE —— OE ——	OVERHEAD ELECTRIC
— UE —— UE ——	UNDERGROUND ELECTRIC
— G —— G ——	GAS
— W —— W ——	WATER
— SW —— SW ——	STORM SEWER
— SS —— SS ——	SANITARY SEWER
(symbol)	BENCHMARK
(symbol)	FIRE HYDRANT

Know what's **below**.
Call before you dig.

LOSE DESIGN
SPACES FOR LIFE.

THIS DRAWING AND THE DESIGN SHOWN IS THE PROPERTY OF THE ARCHITECT. REPRODUCTION, COPYING, OR USE OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED, AND ANY INFRINGEMENT IS SUBJECT TO LEGAL ACTION.

MICHAEL LEE BLACK
REGISTERED ENGINEER
AGRICULTURE COMMERCE
NO. 113031
STATE OF TENNESSEE
07/21/2020

ALLEN PROPERTY
OSRD ZONING
TURNBERRY HOMES
BRENTWOOD TN

SUBMITTALS / REVISIONS

NO.	DATE	DESCRIPTION
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.

SHEET TITLE

GENERAL NOTES

PROJECT NO. 19182	DATE 07/21/2020
DRAWN BY BB	SCALE NTS
CHECKED BY MB	

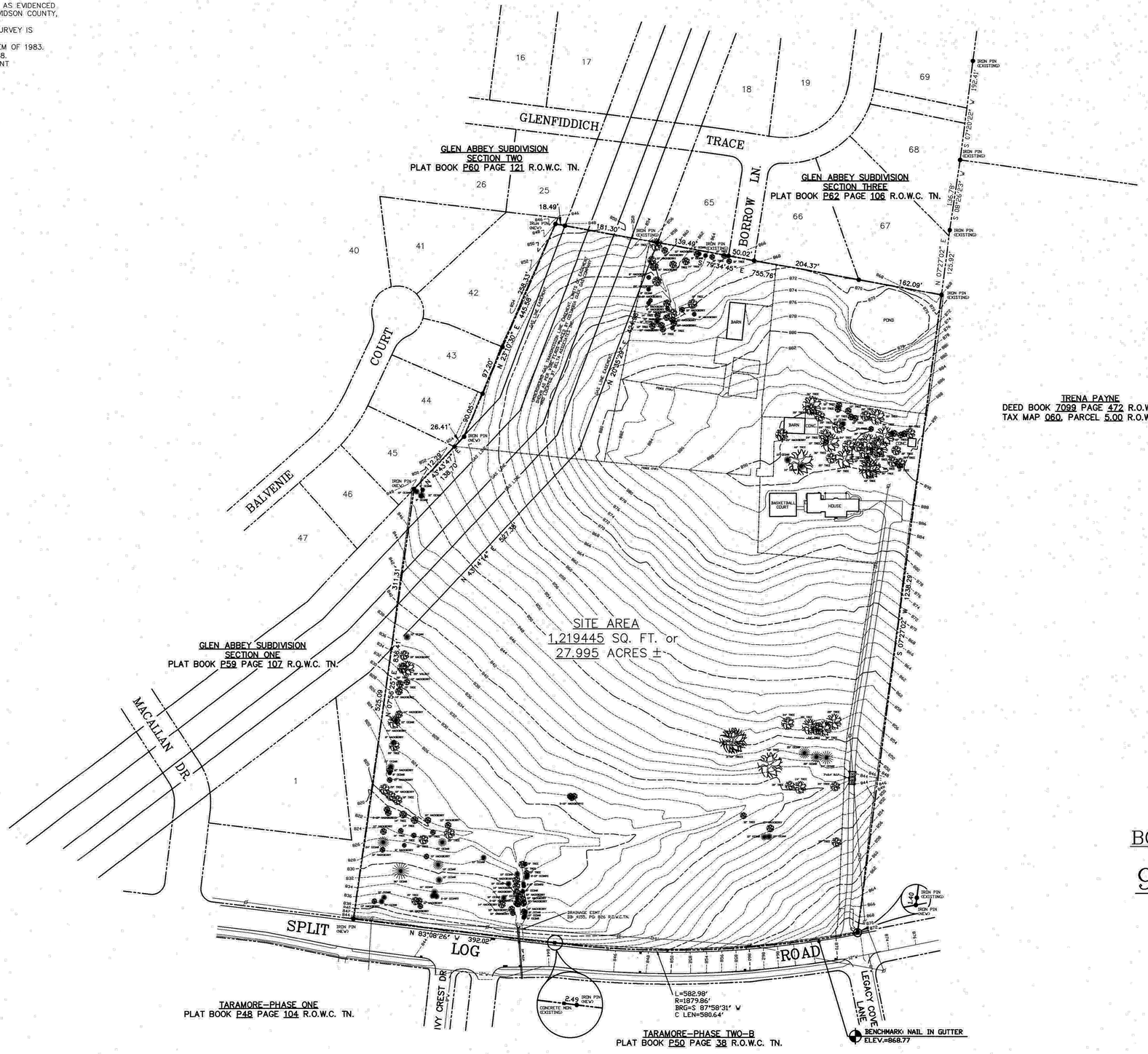
SHEET NO.

C0.01

N:\2019\19182_Allen_Property\CAD\01_SHEETS\19182_C0.00_SITE_COVER_SERIES.dwg - Printed on 2020-07-21 at 10:11:10 AM.

GENERAL NOTES:

1. THE UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UTILITIES SHOWN COMPROMISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THIS SURVEYOR FUTHER DOES NOT WARRENT THAT THE UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE.
2. THIS PROPERTY DOES NOT LIE WITHIN THE 100 YEAR FLOOD ZONE AS EVIDENCED ON F.E.M.A. PANEL 47187O230F, OF BRENTWOOD, WILLIAMSON, DAVIDSON COUNTY, TENNESSEE DATED 9-29-2006.
3. NO TITLE REPORT FURNISHED THIS SURVEYOR, THEREFORE, THIS SURVEY IS SUBJECT TO THE FINDINGS OF AN ACCURATE TITLE SEARCH.
4. BEARINGS BASED ON TENNESSEE STATE PLANE COORDINATE SYSTEM OF 1983.
5. ELEVATIONS BASED ON NORTH AMERCIAN VERTICAL DATUM OF 1988.
6. ALL DISTANCES BASED ON A SURVEY MADE USING E.D.M. EQUIPMENT AND ARE ADJUSTED FOR TEMPERATURE.
7. MEANDERING FENCE ALONG BOUNDARY AS SHOWN.



N
W E
S

GRAPHIC SCALE

0' 100' 200' 300'

Scale: 1" = 100'

CERTIFICATE OF SURVEY

I HEREBY CERTIFY THAT THIS IS A CATEGORY I SURVEY AND THE RATIO OF PRECISION OF THE UNADJUSTED SURVEY IS 1: 13,900+ AS SHOWN HEREON.

Tori D Cassidy
SURVEYOR
TENN. REG. NO. 2467

TORI D CASSIDY 2467 REGISTERED LAND SURVEYOR TENNESSEE NO. 2467

Tori D Cassidy 5-10-19

BOUNDARY & TOPOGRAPHIC SURVEY
OF
9520 SPLIT LOG ROAD

TAX MAP 55, PARCEL 35.03 R.O.W.C. TN.
16th CIVIL DISTRICT
BRENTWOOD, WILLIAMSON COUNTY, TENNESSEE

Delta Associates
INCORPORATED
Design - Surveying
7121 Crossroads Blvd., Brentwood, TN 37027
PHONE: (615) 850-3501

SCALE : 1" = 100'	DRAWN BY TDC	DATE 10-1-19	DRAWING NO.
	CHECKED BY TDC	JOB NO.19-505SL-9520	1 OF 1

PROPERTY TITLE REFERENCE

PROPERTY BEING PARCEL 35.03 ON TAX MAP 55 WILLIAMSON COUNTY, TENNESSEE, AND BEING PROPERTY CONVEYED TO KENDALL KELLER ALLEN & MARY JO ALLEN BY DEED RECORDED IN BK.5772, PG.450, R.O.W.C. TENNESSEE.



PROPERTY INFORMATION:

PARCEL: 35.03
TAX MAP: 55
WILLIAMSON COUNTY, TN
OWNER: KENDALL ALLEN
DEED RECORDED IN BK. 5772, PG. 450, R.O.W.C. TN.
SITE AREA: 1,219,445 SQ. FT. OR 27.995 ACRES ±
ZONED: R-2
PROPOSED ZONING: OSRD

NOTE:
BOUNDARY AND FIELD RUN TOPO PROVIDED BY DETLA ASSOCIATES INC..
LOSE DESIGN ACCEPTS NO RESPONSIBILITY FOR THE ACCURACY OF THE BASE SURVEY INFORMATION.
CONTACT INFO: 615.850.3501

0 80 200 300
SCALE: 1" = 100 '

LOSE DESIGN
SPACES FOR LIFE.

THIS DRAWING AND THE DESIGN SHOWN IS THE PROPERTY OF THE ARCHITECT. REPRODUCTION, COPYING, OR USE OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED, AND ANY INFRINGEMENT IS SUBJECT TO LEGAL ACTION.

MICHAEL LEE LOSE
REGISTERED LANDSCAPE ARCHITECT
AGRICULTURE
No. 113051
STATE OF TENNESSEE

TN

ALLEN PROPERTY
OSRD ZONING

TURNBERRY HOMES

BRENTWOOD

SUBMITTALS / REVISIONS

NO.	DATE	DESCRIPTION
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.

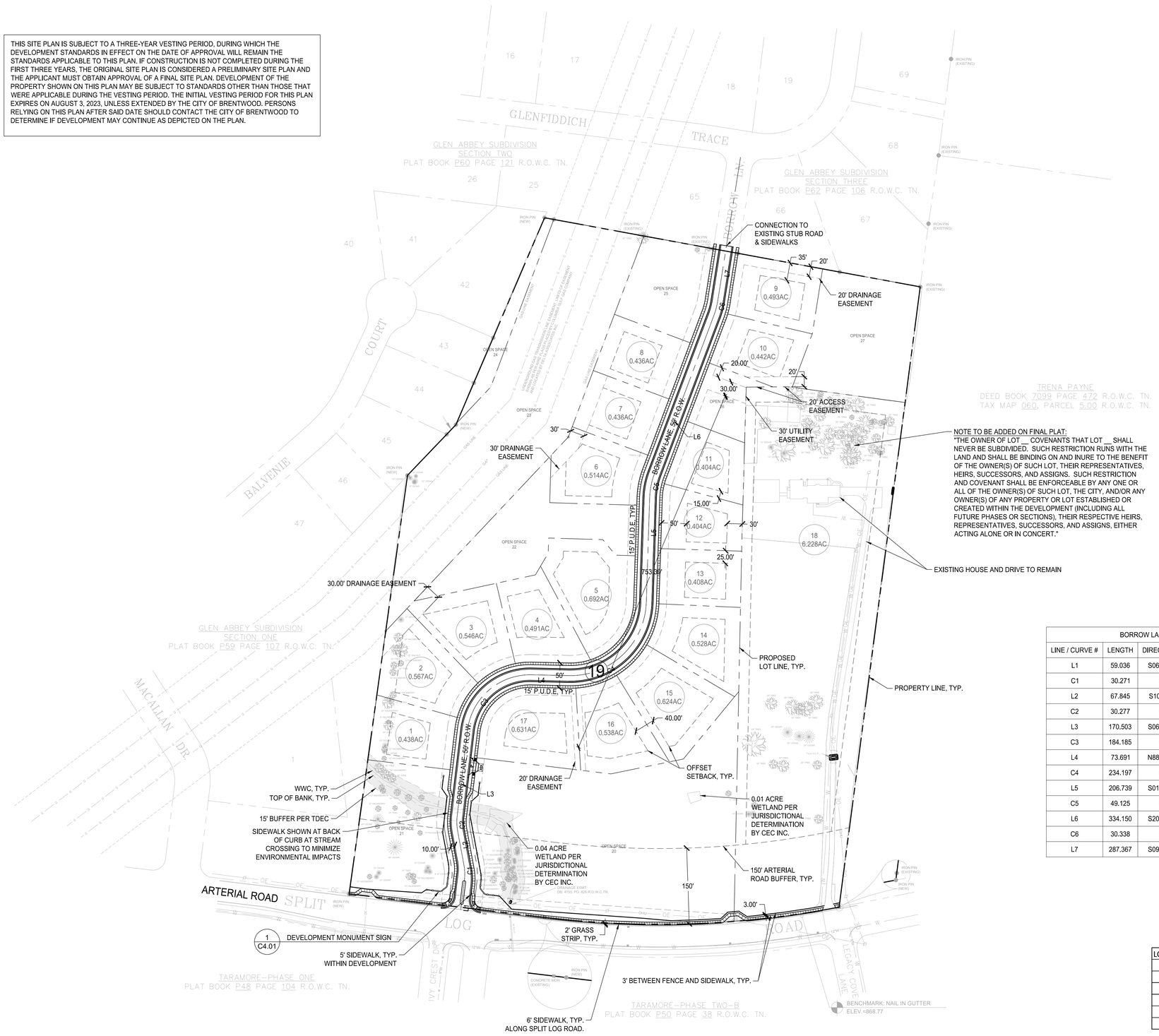
SHEET TITLE
REZONING REQUEST

PROJECT NO. 19182	DATE 07/21/2020
DRAWN BY BB	SCALE 1" = 100'
CHECKED BY MB	

SHEET NO.
C0.03

N:\2019\19182_Allen_Property\CAD\01_SHEETS\19182_C0.03_SITE_COVER_SERIES.dwg • Printed on 2020-07-21 at 10:11:28 AM.

THIS SITE PLAN IS SUBJECT TO A THREE-YEAR VESTING PERIOD, DURING WHICH THE DEVELOPMENT STANDARDS IN EFFECT ON THE DATE OF APPROVAL WILL REMAIN THE STANDARDS APPLICABLE TO THIS PLAN. IF CONSTRUCTION IS NOT COMPLETED DURING THE FIRST THREE YEARS, THE ORIGINAL SITE PLAN IS CONSIDERED A PRELIMINARY SITE PLAN AND THE APPLICANT MUST OBTAIN EIPPROVAL OF A FINAL SITE PLAN. DEVELOPMENT OF THE PROPERTY SHOWN ON THIS PLAN MAY BE SUBJECT TO STANDARDS OTHER THAN THOSE THAT WERE APPLICABLE DURING THE VESTING PERIOD. THE INITIAL VESTING PERIOD FOR THIS PLAN EXPIRES ON AUGUST 3, 2023, UNLESS EXTENDED BY THE CITY OF BRENTWOOD. PERSONS RELYING ON THIS PLAN AFTER SAID DATE SHOULD CONTACT THE CITY OF BRENTWOOD TO DETERMINE IF DEVELOPMENT MAY CONTINUE AS DEPICTED ON THE PLAN.



BORROW LANE			
LINE / CURVE #	LENGTH	DIRECTION / DELTA	RADIUS
L1	59.036	S06° 51' 20.29"W	
C1	30.271	017.3440	100.000
L2	67.845	S10° 29' 17.97"E	
C2	30.277	017.3477	100.000
L3	170.503	S06° 51' 33.67"W	
C3	184.185	084.4242	125.000
L4	73.691	N88° 42' 59.32"W	
C4	234.197	089.4565	150.000
L5	206.739	S01° 49' 37.33"W	
C5	49.125	018.7643	150.000
L6	334.150	S20° 35' 28.83"W	
C6	30.338	011.5882	150.000
L7	287.367	S09° 00' 11.43"W	

LOT #	LFE (MIN)
1	825
2	832
3	842
15	850
16	842
17	838

LAYOUT NOTES:

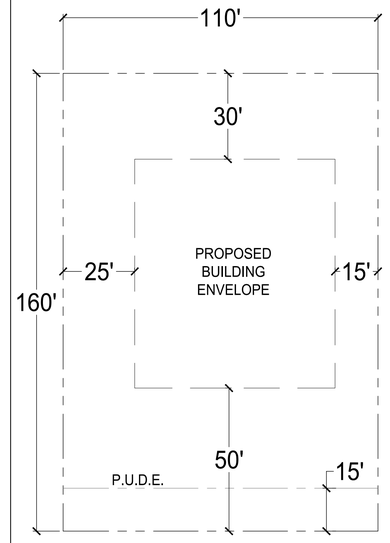
1. SEE SHEET C0.01 FOR GENERAL NOTES.
2. SEE ARCHITECTURAL SHEETS FOR BUILDING.
3. INSTALL JOINTS WHERE SHOWN TO ALIGN TO WALLS, BUILDINGS, RADII, ETC. EVENLY SPACE BETWEEN ELEMENTS AS SHOWN. PROVIDE EXPANSION JOINTS BETWEEN CONCRETE PAVEMENT AND VERTICAL ELEMENTS (WALL, CURBS, ETC.). ALL JOINTS TO BE STRAIGHT AND TRUE.
4. LAYOUT ALL CURVES SMOOTHLY WITH NO ABRUPT CHANGES AT TANGENT POINTS.
5. ALL CURBS ARE DIMENSIONED TO THE FACE OF CURB.
6. CONTRACTOR TO TAKE ALL PRECAUTIONS TO FIND AND AVOID SITE UTILITIES. ALL UTILITIES ARE NOT SHOWN ON DRAWING. VERIFY LOCATIONS AND CONSIDER SUCH WHEN ESTIMATING.
7. ALL PAVEMENT MARKING AND TRAFFIC CONTROL DEVICES SHALL BE INSTALLED PER THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), LATEST EDITION.
8. ALL PAVEMENT MARKINGS TO BE THERMOPLASTIC, UNLESS OTHERWISE NOTED.
9. ALL CONSTRUCTION AND MATERIALS SHALL COMPLY WITH TDOT'S STANDARDS FOR ROADWAY AND BRIDGE CONSTRUCTION, LATEST EDITION.
10. ALL ANGLES ARE 90° UNLESS OTHERWISE NOTED.

NOTE TO BE ADDED ON FINAL PLAT:
"THE OWNER OF LOT __ COVENANTS THAT LOT __ SHALL NEVER BE SUBDIVIDED. SUCH RESTRICTION RUNS WITH THE LAND AND SHALL BE BINDING ON AND INURE TO THE BENEFIT OF THE OWNER(S) OF SUCH LOT, THEIR REPRESENTATIVES, HEIRS, SUCCESSORS, AND ASSIGNS. SUCH RESTRICTION AND COVENANT SHALL BE ENFORCEABLE BY ANY ONE OR ALL OF THE OWNER(S) OF SUCH LOT, THE CITY, AND/OR ANY OWNER(S) OF ANY PROPERTY OR LOT ESTABLISHED OR CREATED WITHIN THE DEVELOPMENT (INCLUDING ALL FUTURE PHASES OR SECTIONS), THEIR RESPECTIVE HEIRS, REPRESENTATIVES, SUCCESSORS, AND ASSIGNS, EITHER ACTING ALONE OR IN CONCERT."

LEGEND:

DENOTES SCENIC EASEMENT AREA

TYPICAL LOT



STREET FRONTAGE
50' RIGHT OF WAY

0 80 200 300

SCALE: 1" = 100 '

LOSE DESIGN
SPACES FOR LIFE.

THIS DRAWING AND THE DESIGN SHOWN IS THE PROPERTY OF THE ARCHITECT. REPRODUCTION, COPYING, OR USE OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED, AND ANY INFRINGEMENT IS SUBJECT TO LEGAL ACTION.

MICHAEL LEE PACK
REGISTERED LANDSCAPE ARCHITECT
AGRICULTURE
TENNESSEE
No. 113051
STATE OF TENNESSEE

ALLEN PROPERTY
OSRD ZONING

TURNBERRY HOMES

BRENTWOOD

TN

SUBMITTALS / REVISIONS		
NO.	DATE	DESCRIPTION
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.

SHEET TITLE

SITE LAYOUT PLAN

PROJECT NO. 19182	DATE 07/21/2020
DRAWN BY BB	SCALE 1" = 100'
CHECKED BY MB	
SHEET NO. C1.00	

N:\2019\19182_Allen_Property\CAD\01_SHEETS\19182_C1.00_SITE_LSHEET.dwg - Printed on 2020-07-21 at 10:13:37 AM.

LOT AREA TABLE

PARCEL AREA TABLE				
LOT #	SQ. FOOTAGE	ACREAGE	LENGTH	BEARING
1	19077	0.438	129.64 165.13 23.05 81.39 163.86	N07° 56' 24.59"E S74° 20' 13.58"E S11° 15' 40.04"W S06° 51' 33.67"W N83° 08' 26.33"W
2	24690	0.567	127.50 61.28 203.54 80.46 165.13	N07° 56' 24.59"E N43° 14' 13.87"E S43° 36' 18.42"E S31° 01' 44.00"W N74° 20' 13.58"W
3	23780	0.546	166.40 163.36 84.41 203.54 20.59	N77° 50' 22.58"E S13° 16' 22.46"E S62° 30' 57.94"W N43° 36' 18.42"W N43° 14' 13.87"E
4	21385	0.491	79.17 20.00 209.97 42.89 73.69 33.11 163.36	N77° 50' 22.58"E N30° 33' 36.73"E S28° 03' 04.74"E S81° 27' 13.06"W N88° 42' 59.32"W S84° 57' 37.49"W N13° 16' 22.46"W
5	30136	0.692	29.82 30.00 107.20 39.79 38.76 91.31 152.27 209.97	N30° 33' 36.73"E N01° 41' 19.77"E S88° 18' 40.23"E S39° 22' 07.39"E S88° 18' 40.23"E S01° 49' 37.33"W S36° 43' 31.39"W N28° 03' 04.74"W
6	22393	0.514	49.75 21.69 160.00 29.60 57.31 15.42 172.33 93.77	N43° 14' 13.87"E N20° 35' 28.83"E S69° 24' 31.17"E S20° 35' 28.83"W S11° 12' 33.08"W S01° 49' 37.33"W N88° 18' 40.23"W N01° 41' 19.77"E
7	19013	0.436	118.83 160.00 118.83 160.00	N20° 35' 28.83"E S69° 24' 31.17"E S20° 35' 28.83"W N69° 24' 31.17"W
8	19013	0.436	118.83 160.00 118.83 160.00	N20° 35' 28.83"E S69° 24' 31.17"E S20° 35' 28.83"W N69° 24' 31.17"W
9	21458	0.493	171.87 22.89 99.06 170.05 129.86 0.46	N76° 46' 45.20"W N12° 44' 59.61"E N09° 00' 11.43"E S79° 34' 45.00"E S09° 00' 11.43"W S20° 35' 28.83"W
10	19241	0.442	6.69 31.53 134.03 91.06 12.51 171.87 112.84	N82° 20' 42.78"W S89° 39' 32.21"W N69° 24' 31.17"W N20° 35' 28.83"E N18° 32' 38.31"E S76° 46' 45.20"E S20° 35' 28.83"W
11	17600	0.404	122.91 160.76 12.14 119.71 120.66	S01° 37' 52.97"W N74° 58' 17.53"W N17° 48' 35.65"E N20° 35' 28.83"E S69° 24' 31.17"E
12	17600	0.404	65.26 26.22 160.33 99.65 28.80 160.76	S01° 37' 52.97"W S01° 11' 27.25"W N88° 10' 22.67"W N01° 49' 37.33"E N08° 25' 39.90"E S74° 58' 17.53"E
13	17768	0.408	111.45 161.59 2.26 107.09 160.33	S01° 11' 27.25"W N87° 25' 56.03"W N02° 11' 50.65"E N01° 49' 37.33"E S88° 10' 22.67"E
14	22979	0.528	166.64 13.04 201.93 85.56 161.59	S01° 11' 27.25"W S39° 25' 08.24"W N59° 25' 15.46"W N16° 34' 24.25"E S87° 25' 56.03"E
15	27172	0.624	200.71 85.56 201.93 159.57 16.14 11.81	N31° 24' 34.89"W N44° 35' 04.82"E S59° 25' 15.46"E S39° 25' 08.24"W S78° 23' 49.22"W S78° 23' 49.22"W
16	23453	0.538	162.89 85.56 200.71 118.47 60.15	N03° 23' 54.32"W N72° 35' 45.40"E S31° 24' 34.89"E S78° 23' 49.22"W N83° 08' 26.33"W
17	27473	0.631	162.89 38.11 168.69 51.63 147.35 73.69 14.30	S03° 23' 54.32"E N83° 08' 26.33"W N83° 08' 26.33"W N06° 51' 33.67"E N49° 04' 17.17"E S88° 42' 59.32"E N88° 56' 33.18"E
18	271276	6.228	6.69 225.42 1007.51 209.98 454.85 166.64 111.45 26.22 65.26 122.91 110.53 52.76 31.53	S82° 20' 42.78"E S82° 20' 42.78"E S07° 27' 02.00"W S82° 17' 27.49"W N01° 11' 27.25"E N01° 11' 27.25"E N01° 11' 27.25"E N01° 11' 27.25"E N01° 37' 52.97"E N01° 37' 52.97"E N01° 37' 52.97"E N89° 39' 32.21"E N89° 39' 32.21"E

OPEN SPACE AREA TABLE

PARCEL AREA TABLE				
LOT #	SQ. FOOTAGE	ACREAGE	LENGTH	BEARING
20	166502	3.822	54.40 37.84 67.84 22.71 118.87 168.69 38.11 60.15 118.47 11.81 16.14 159.57 13.04 454.85 372.99 143.78	N06° 51' 20.29"E N01° 48' 58.84"W N10° 29' 17.97"W N01° 48' 52.15"W N06° 51' 33.67"E S83° 08' 26.33"E S83° 08' 26.33"E S83° 08' 26.33"E N78° 23' 49.22"E N78° 23' 49.22"E N78° 23' 49.22"E N39° 25' 08.24"E N39° 25' 08.24"E S01° 11' 27.25"W N88° 49' 29.39"W N83° 08' 26.33"W
21	47893	1.099	198.25 267.94 163.86 89.11 37.85 67.84 22.70 54.39	N83° 08' 26.33"W N07° 56' 24.67"E S83° 08' 26.33"E S06° 51' 33.67"W S01° 48' 52.15"E S10° 29' 17.97"E S01° 48' 58.84"E S06° 51' 20.29"W
22	43539	1.000	166.40 395.76 93.77 172.33 100.00 38.76 39.79 107.20 30.00 29.82 20.00 79.17	S77° 50' 22.58"W N43° 14' 13.87"E S01° 41' 19.77"W S88° 18' 40.23"E S01° 49' 37.33"W N88° 18' 40.23"W N39° 22' 07.39"W N88° 18' 40.23"W S01° 41' 19.77"W S30° 33' 36.73"W S30° 33' 36.73"W S77° 50' 22.58"W
23	138495	3.179	311.31 112.29 26.41 3.29 98.53 354.22 0.01 181.30 165.62 118.83 118.83 21.69 49.75 395.76 20.59 61.28	N07° 56' 24.73"E N43° 43' 47.00"E N43° 43' 47.00"E N23° 10' 30.00"E N43° 17' 37.10"E N20° 36' 32.77"E S79° 34' 45.01"E S79° 34' 45.00"E S20° 35' 28.83"W S20° 35' 28.83"W S20° 35' 28.83"W S20° 35' 28.83"W S43° 14' 13.87"W S43° 14' 13.87"W S43° 14' 13.87"W S43° 14' 13.87"W
24	10717	0.246	86.76 97.20 258.33 18.49 354.22 98.53	N23° 10' 30.00"E N23° 10' 30.00"E N23° 10' 30.00"E S79° 34' 45.00"E S20° 36' 32.77"W S43° 17' 37.10"W
25	27488	0.631	0.00 139.49 0.01 100.30 25.28 66.89 160.00 165.62	S79° 34' 44.95"E S79° 34' 45.00"E S79° 34' 45.00"E S09° 00' 11.43"W S14° 47' 50.13"W S20° 35' 28.83"W N69° 24' 31.17"W N20° 35' 28.83"E
26	12797	0.294	52.76 110.53 120.66 123.38 134.03	S89° 39' 32.21"W S01° 37' 52.97"W N69° 24' 31.17"W N20° 35' 28.83"E S69° 24' 31.17"E
27	48235	1.107	225.42 112.84 0.46 129.86 34.32 162.09 230.78	N82° 20' 42.78"W N20° 35' 28.83"E N20° 35' 28.83"E N09° 00' 11.43"E S79° 34' 45.00"E S79° 34' 45.00"E S07° 27' 02.00"W

ROW AREA TABLE

PARCEL AREA TABLE				
LOT #	SQ. FOOTAGE	ACREAGE	LENGTH	BEARING
19	78270	1.797	15.42 57.31 29.60 118.83 118.83 66.89 25.28 100.30 50.01 0.00 99.06 22.89 12.51 91.06 123.38 119.71 12.14 28.80 99.65 107.09 2.26 85.56 85.56 85.56 14.30 73.69 147.35 51.63 118.87 22.71 67.84 37.84 54.40 50.00 54.39 22.70 67.84 37.85 89.11 81.39 23.05 80.46 84.41 33.11 73.69 42.89 0.00 0.00 152.27 91.31 0.28 0.28 100.00 0.04 0.04	N01° 49' 37.33"E N11° 12' 33.08"E N20° 35' 28.83"E N20° 35' 28.83"E N20° 35' 28.83"E N20° 35' 28.83"E N14° 47' 50.13"E N09° 00' 11.43"E S79° 34' 45.00"E S79° 34' 45.01"E S09° 00' 11.43"W S12° 44' 59.61"W S18° 32' 38.31"W S20° 35' 28.83"W S20° 35' 28.83"W S20° 35' 28.83"W S17° 48' 35.65"W S08° 25' 39.90"W S01° 49' 37.33"W S01° 49' 37.33"W S02° 11' 50.65"W S16° 34' 24.25"W S44° 35' 04.82"W S72° 35' 45.40"W S88° 56' 33.18"W N88° 42' 59.32"W S49° 04' 17.17"W S06° 51' 33.67"W S06° 51' 33.67"W S01° 48' 52.15"E S10° 29' 17.97"E S01° 48' 58.84"E S06° 51' 20.29"W N83° 08' 26.33"W N06° 51' 20.29"E N01° 48' 58.84"W N10° 29' 17.97"W N01° 48' 52.15"W N06° 51' 33.67"E N06° 51' 33.67"E N11° 15' 40.04"E N31° 01' 44.00"E N62° 30' 57.94"E N84° 57' 37.49"E S88° 42' 59.32"E N81° 27' 13.06"E S28° 03' 04.80"E N28° 03' 04.80"W N36° 43' 31.39"E N01° 49' 37.33"E S88° 18' 40.23"E N88° 18' 40.23"W N01° 49' 37.33"E S88° 18' 40.23"E N88° 18' 40.23"W

THIS DRAWING AND THE DESIGN SHOWN IS THE PROPERTY OF THE ARCHITECT. REPRODUCTION, COPYING, OR USE OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED, AND ANY INFRINGEMENT IS SUBJECT TO LEGAL ACTION.

LOSE DESIGN
SPACES FOR LIFE.

MICHAEL LEE BLOCK
REGISTERED LANDSCAPE ARCHITECT
AGRICULTURE
No. 113051
STATE OF TENNESSEE

TN

ALLEN PROPERTY
OSRD ZONING

TURNBERRY HOMES

BRENTWOOD

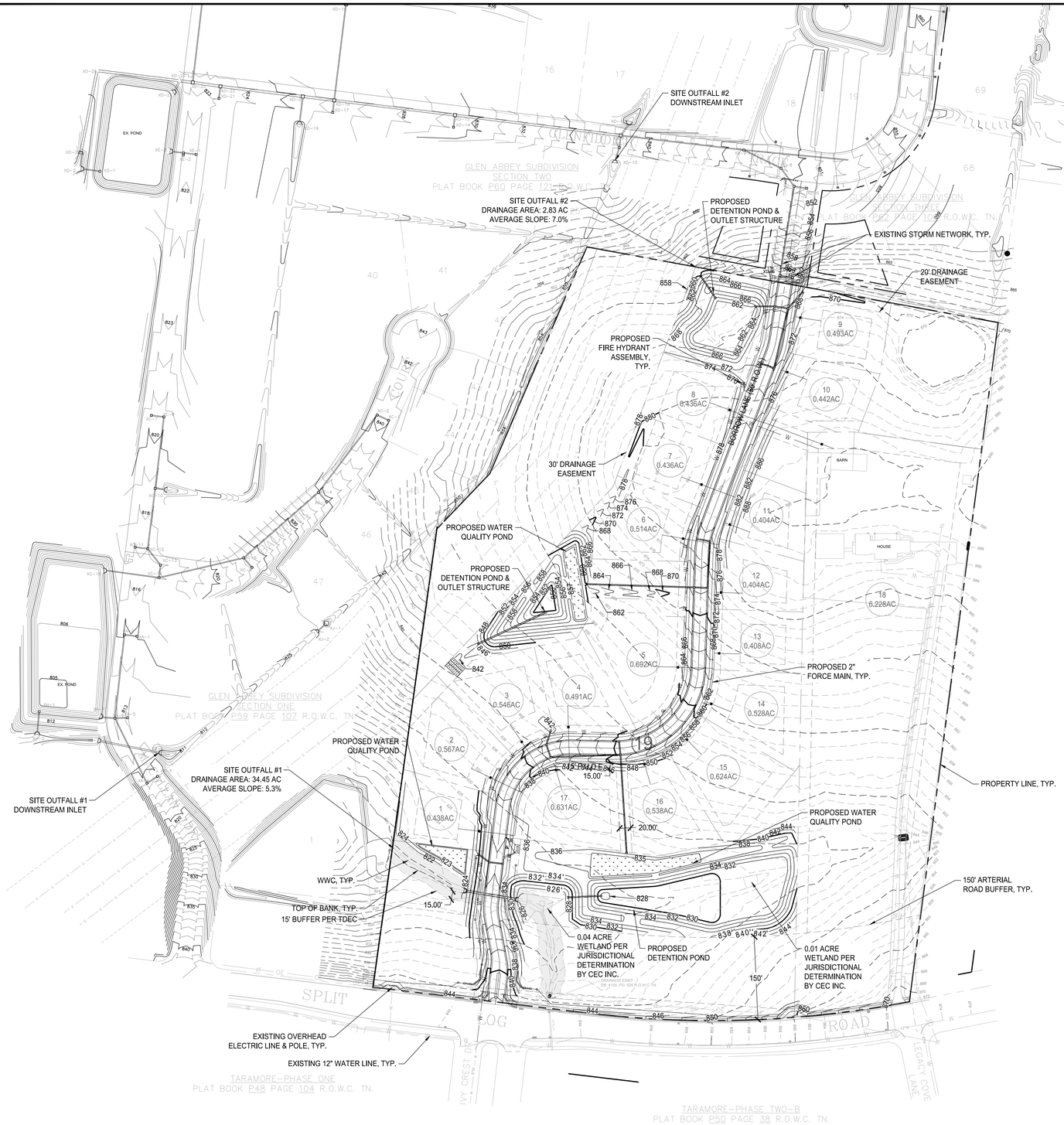
SUBMITTALS / REVISIONS		
NO.	DATE	DESCRIPTION

SHEET TITLE

LOT TABLES

PROJECT NO. 19182	DATE 07/21/2020
DRAWN BY OM	SCALE NTS
CHECKED BY MB	
SHEET NO. C1.01	

N:\2019\19182_Allen_Property\CAD\01_SHEETS\19182_C1.00_SITE_SERIES.dwg - Printed on 2020-07-21 at 10:11:42 AM.



GRADING LEGEND:

- 860 — PROPOSED INDEX CONTOUR LINE
- 861 — PROPOSED INTERVAL CONTOUR LINE
- 860 — EXISTING INDEX CONTOUR LINE
- 861 — EXISTING INTERVAL CONTOUR LINE
- 860 — EXISTING INDEX CONTOUR LINE
- 861 — EXISTING INTERVAL CONTOUR LINE
- SCENIC EASEMENT (NO DISTURBANCE)

Lot #	Lowest Floor Elevation
1	825.00
5	858.50
16	836.00
17	836.00

0 100 200 300

SCALE: 1" = 100'

LOSE DESIGN
SPACES FOR LIFE.

THIS DRAWING AND THE DESIGN SHOWN IS THE PROPERTY OF THE ARCHITECT. REPRODUCTION, COPYING, OR USE OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED, AND ANY INFRINGEMENT IS SUBJECT TO LEGAL ACTION.

MICHAEL LEE BLACK
REGISTERED LANDSCAPE ARCHITECT
AGRICULTURE
No. 113051
STATE OF TENNESSEE

TN

ALLEN PROPERTY
OSRD ZONING

TURNBERRY HOMES

BRENTWOOD

SUBMITTALS / REVISIONS		
NO.	DATE	DESCRIPTION
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.

SHEET TITLE

GRADING & DRAINAGE PLAN

PROJECT NO. 19182	DATE 07/21/2020
DRAWN BY BB	SCALE 1" = 100'
CHECKED BY MB	

SHEET NO.

C2.00

N:\2019\19182_Allen_Property\CAD\01_SHEETS\19182_C2.00_GRADING_SERIES.dwg - Printed on 2020-07-21 at 10:11:57 AM.



GRADING LEGEND:

860 PROPOSED INDEX CONTOUR LINE

861 PROPOSED INTERVAL CONTOUR LINE

860 EXISTING INDEX CONTOUR LINE

861 EXISTING INTERVAL CONTOUR LINE

SLOPE LEGEND:

DENOTES AREA OF 15% - 24.99% SLOPE

DENOTES AREA OF 25% OR GREATER SLOPE

0 80 160 240

SCALE: 1" = 80 '

LOSE DESIGN
SPACES FOR LIFE.

THIS DRAWING AND THE DESIGN SHOWN IS THE PROPERTY OF THE ARCHITECT. REPRODUCTION, COPYING, OR USE OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED, AND ANY INFRINGEMENT IS SUBJECT TO LEGAL ACTION.

MICHAEL LEE BLOCK
REGISTERED LANDSCAPE ARCHITECT
AGRICULTURE
STATE OF TENNESSEE
No. 112051
STATE OF TENNESSEE

ALLEN PROPERTY
OSRD ZONING

TURNBERRY HOMES

BRENTWOOD TN

SUBMITTALS / REVISIONS		
NO.	DATE	DESCRIPTION

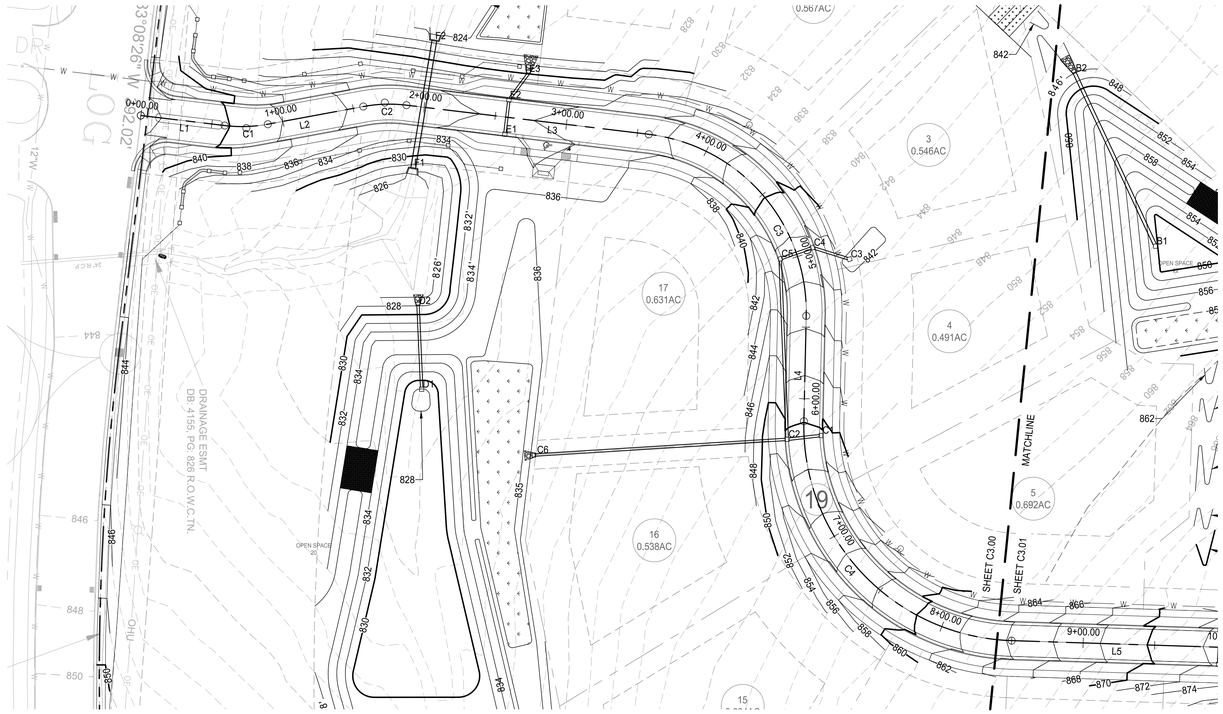
SHEET TITLE

SLOPE ANALYSIS

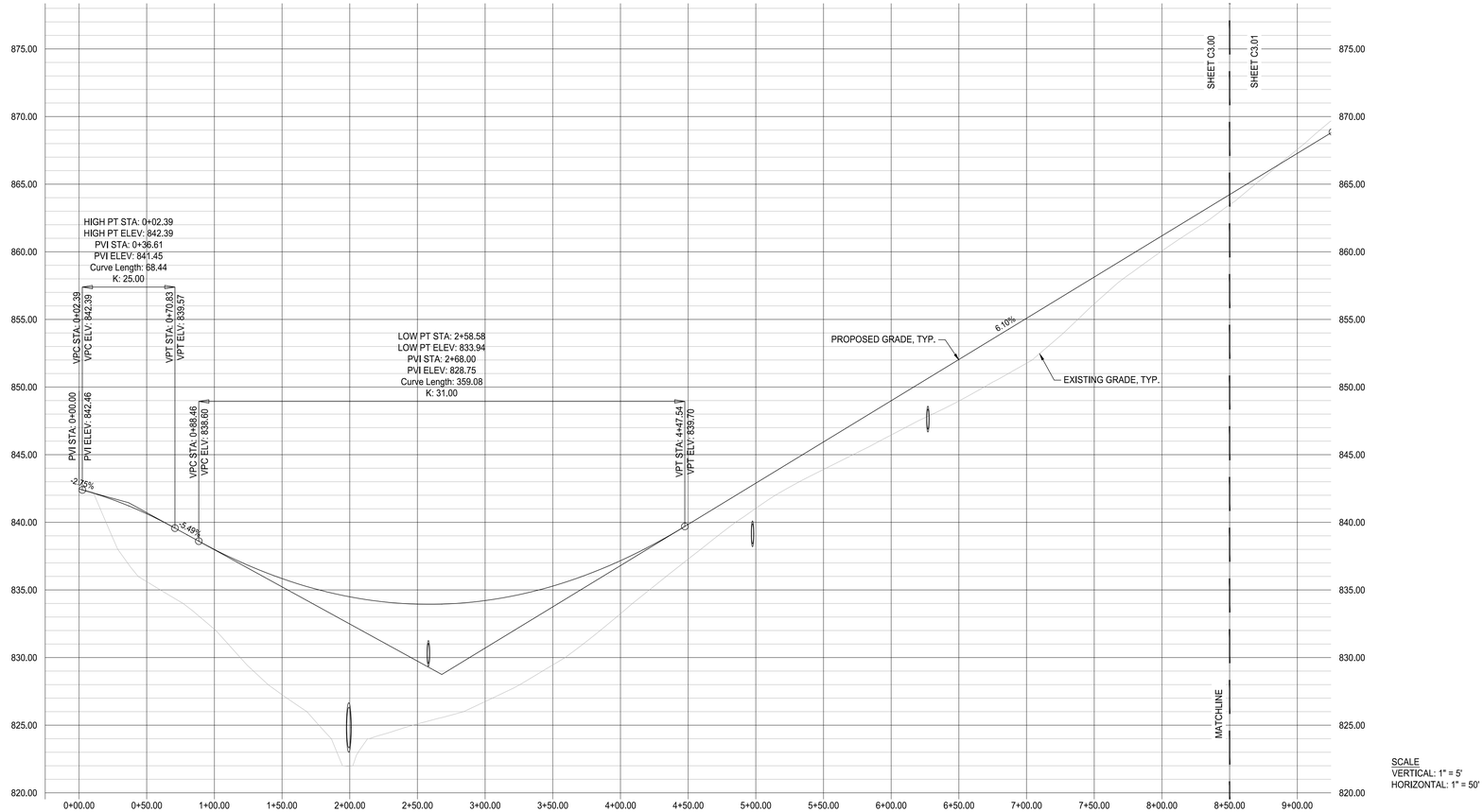
PROJECT NO. 19182	DATE 07/21/2020
DRAWN BY BB	SCALE 1" = 100'
CHECKED BY MB	
SHEET NO. C2.01	

N:\2019\19182_Allen_Property\CAD\01_SHEETS\19182_C2.02_GRADING_SERIES.dwg - Printed on 2020-07-21 at 10:12:02 AM.

BORROW LANE			
LINE / CURVE #	LENGTH	DIRECTION / DELTA	RADIUS
L1	59.036	S06° 51' 20.29"W	
C1	30.271	017.3440	100.000
L2	67.845	S10° 29' 17.97"E	
C2	30.277	017.3477	100.000
L3	170.503	S06° 51' 33.67"W	
C3	184.185	084.4242	125.000
L4	73.691	N88° 42' 59.32"W	
C4	234.197	089.4565	150.000
L5	206.739	S01° 49' 37.33"W	
C5	49.125	018.7643	150.000
L6	334.150	S20° 35' 28.83"W	
C6	30.338	011.5882	150.000
L7	287.367	S09° 00' 11.43"W	



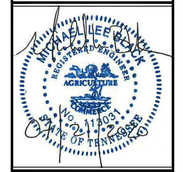
PROFILE VIEW OF BORROW LANE



SCALE
VERTICAL: 1" = 5'
HORIZONTAL: 1" = 50'

LOSE DESIGN
SPACES FOR LIFE.

THIS DRAWING AND THE DESIGN SHOWN IS THE PROPERTY OF THE ARCHITECT. REPRODUCTION, COPYING, OR USE OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED, AND ANY INFRINGEMENT IS SUBJECT TO LEGAL ACTION.



TN

ALLEN PROPERTY
OSRD ZONING

TURNBERRY HOMES

BRENTWOOD

SUBMITTALS / REVISIONS		
NO.	DATE	DESCRIPTION
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.

SHEET TITLE

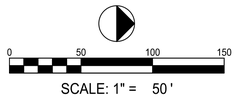
ROAD PLAN & PROFILE SERIES

PROJECT NO. 19182	DATE 07/21/2020
DRAWN BY BB	SCALE NTS
CHECKED BY MB	

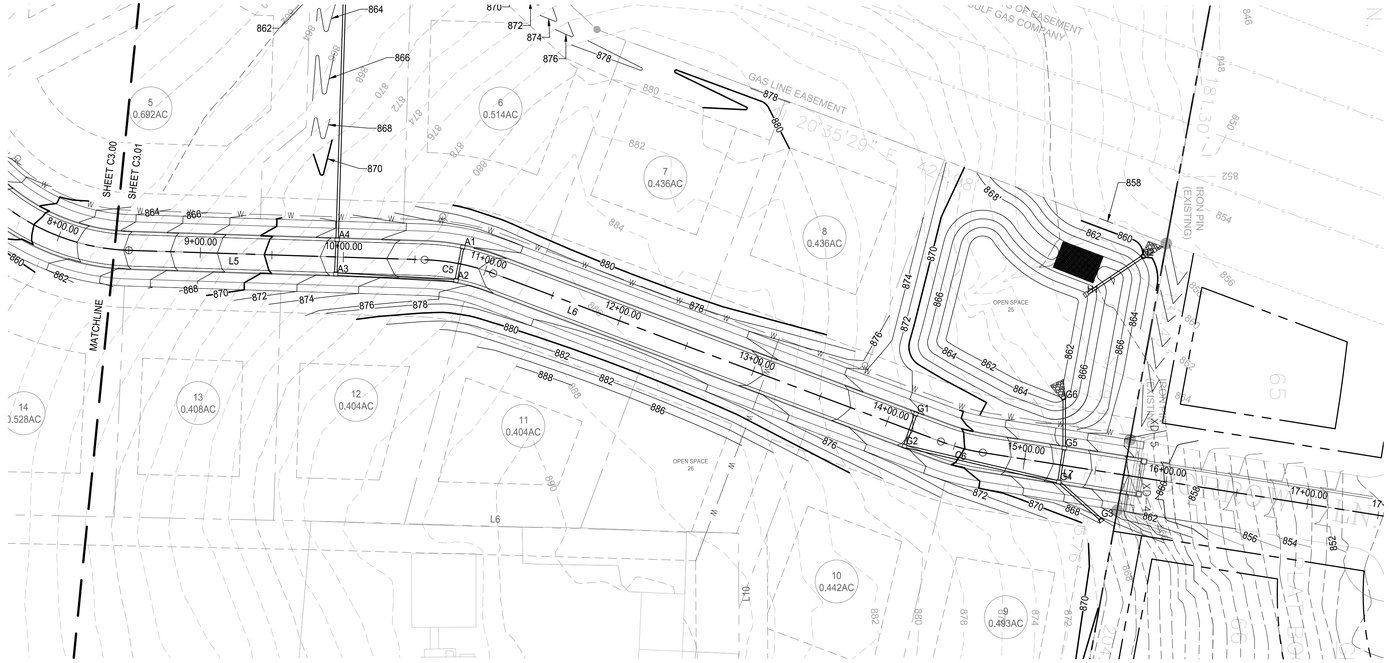
SHEET NO.

C3.00

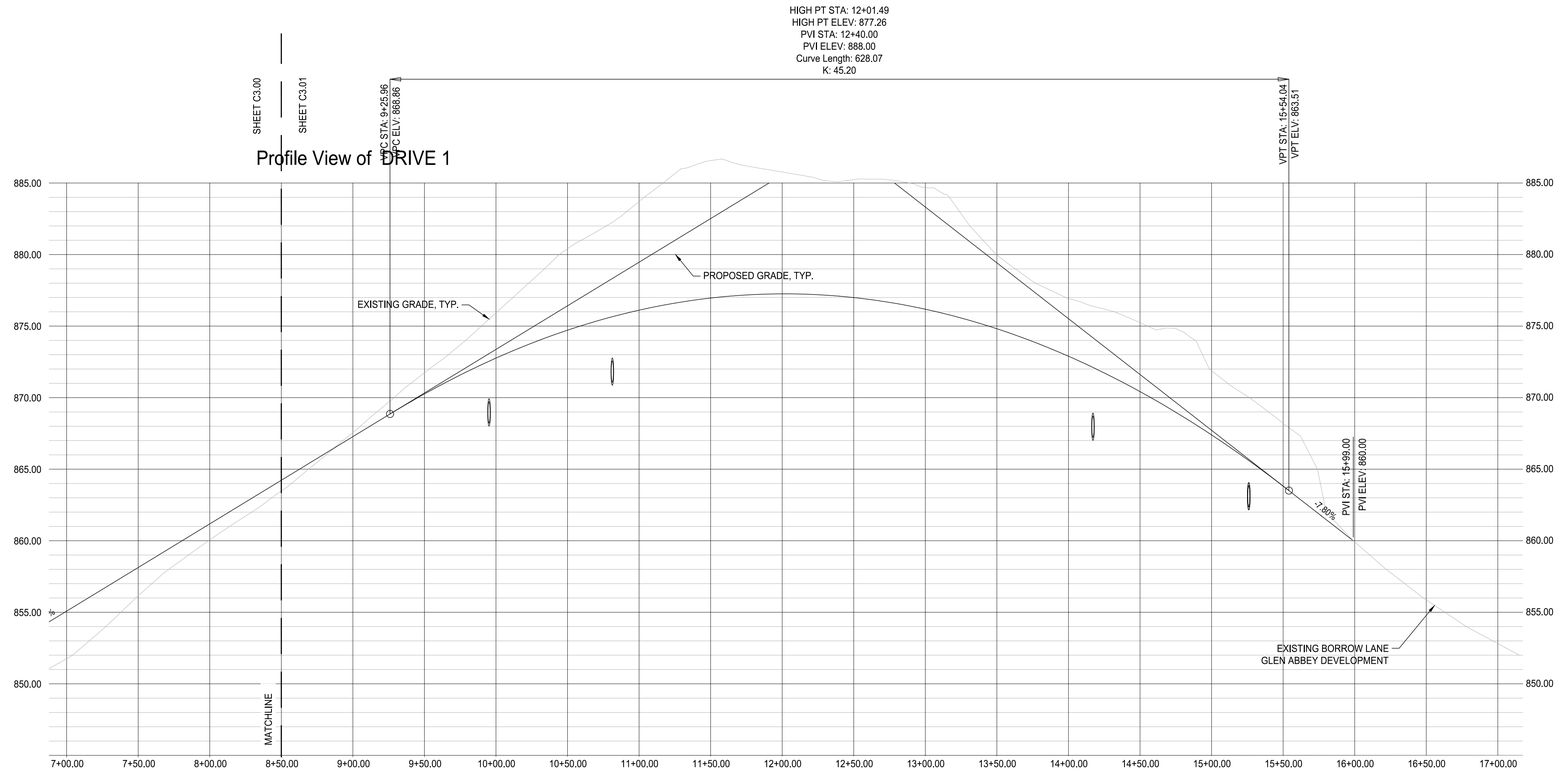
N:\2019\19182_Allen_Property\CAD\01_SHEETS\19182_C3.00_ROAD_PROFILE_SERIES.dwg - Printed on 2020-07-21 at 10:13:18 AM.



BORROW LANE			
LINE / CURVE #	LENGTH	DIRECTION / DELTA	RADIUS
L1	59.036	S06° 51' 20.29"W	
C1	30.271	017.3440	100.000
L2	67.845	S10° 29' 17.97"E	
C2	30.277	017.3477	100.000
L3	170.503	S06° 51' 33.67"W	
C3	184.185	084.4242	125.000
L4	73.691	N88° 42' 59.32"W	
C4	234.197	089.4565	150.000
L5	206.739	S01° 49' 37.33"W	
C5	49.125	018.7643	150.000
L6	334.150	S20° 35' 28.83"W	
C6	30.338	011.5882	150.000
L7	287.367	S09° 00' 11.43"W	



PROFILE VIEW OF BORROW LANE



SCALE
VERTICAL: 1" = 5'
HORIZONTAL: 1" = 50'

N:\2019\19182_Allen_Property\CAD\01_SHEETS\19182_C3.00_ROAD_PROFILE_SERIES.dwg - Printed on 2020-07-21 at 10:12:24 AM

LOOSE DESIGN
SPACES FOR LIFE.

THIS DRAWING AND THE DESIGN SHOWN IS THE PROPERTY OF THE ARCHITECT. REPRODUCTION, COPYING, OR USE OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED, AND ANY INFRINGEMENT IS SUBJECT TO LEGAL ACTION.

MICHAEL LEE-CHIN
LICENSED PROFESSIONAL ENGINEER
AGRICULTURE
ONTARIO
2020/07/21
PROVINCE OF ONTARIO

TN

ALLEN PROPERTY
OSRD ZONING

TURNBERRY HOMES

BRENTWOOD

SUBMITTALS / REVISIONS		
NO.	DATE	DESCRIPTION

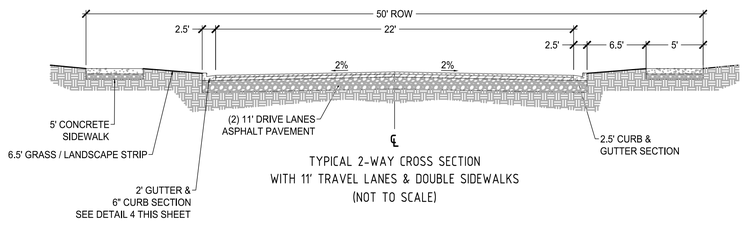
SHEET TITLE

ROAD PLAN & PROFILE SERIES

PROJECT NO. 19182	DATE 07/21/2020
DRAWN BY BB	SCALE NTS
CHECKED BY MB	

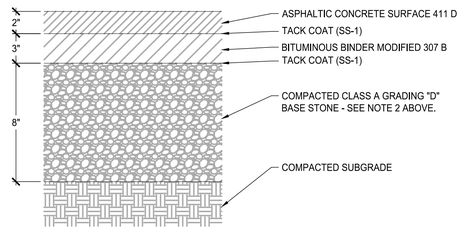
SHEET NO.

C3.01

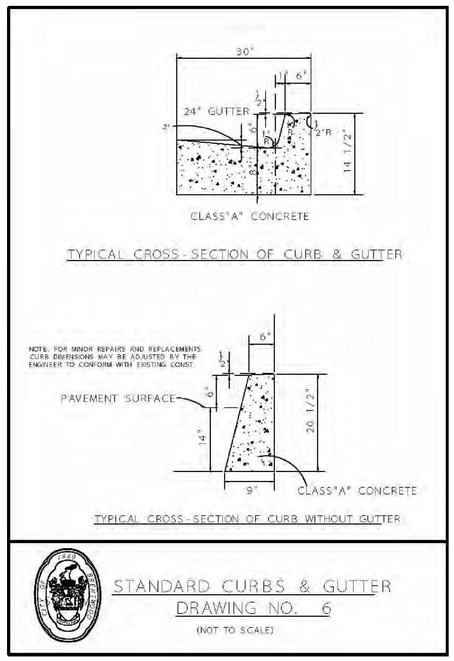


1 ROADWAY TYPICAL SECTION
SCALE: NTS

NOTES:
1. SUB GRADE TO BE COMPACTED TO 95% STANDARD PROCTOR.
2. AGGREGATE BASE COARSE TO BE COMPACTED TO 100% STANDARD PROCTOR.
3. ALL ROADWAY CONSTRUCTION TO COMPLY WITH THE TENNESSEE DEPARTMENT OF TRANSPORTATION STANDARDS FOR ROADWAY AND BRIDGE CONSTRUCTION, LATEST EDITION AND THE CITY OF BRENTWOOD'S SUBDIVISION REGULATIONS.

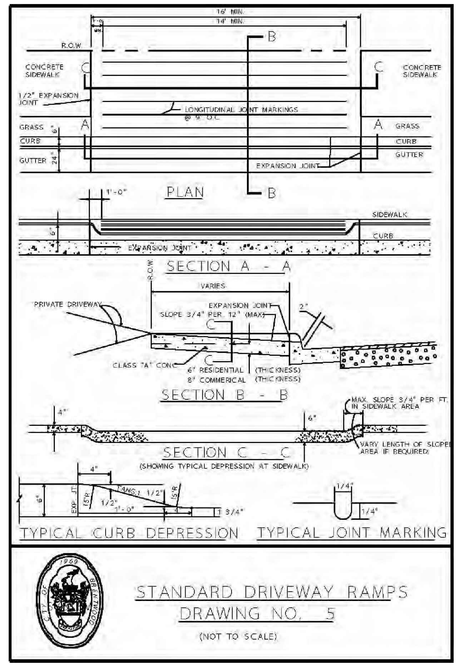


2 ROADWAY PAVEMENT SECTION
SCALE: NTS



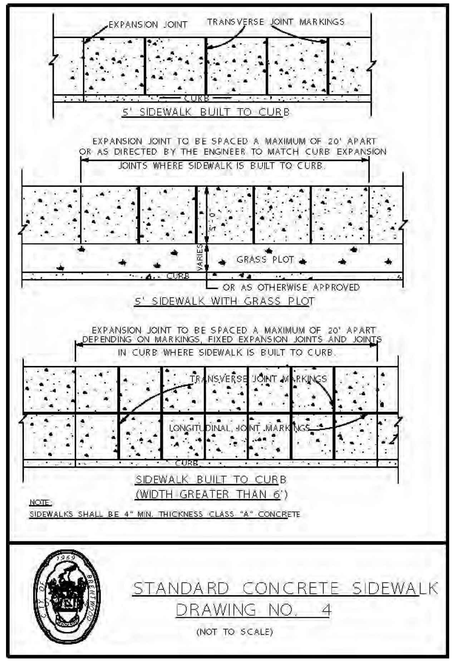
STANDARD CURBS & GUTTER
DRAWING NO. 6
(NOT TO SCALE)

4 CURB & GUTTER
SCALE: NTS



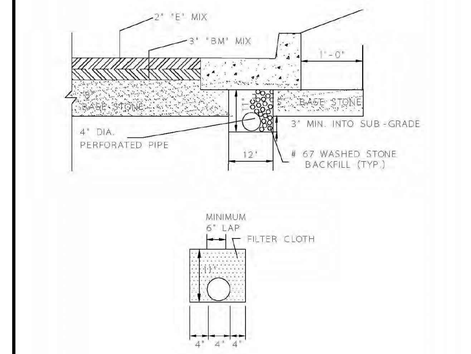
STANDARD DRIVEWAY RAMPS
DRAWING NO. 5
(NOT TO SCALE)

5 DRIVEWAY RAMPS
SCALE: NTS



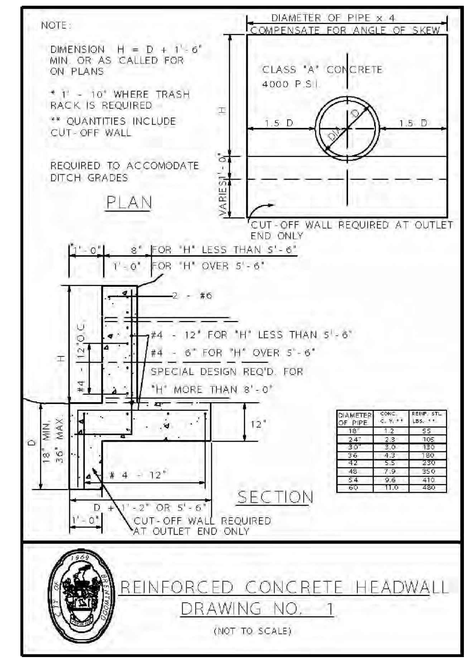
STANDARD CONCRETE SIDEWALK
DRAWING NO. 4
(NOT TO SCALE)

6 CONCRETE SIDEWALK
SCALE: NTS



UNDERDRAIN DETAIL
DRAWING NO. 7
(NOT TO SCALE)

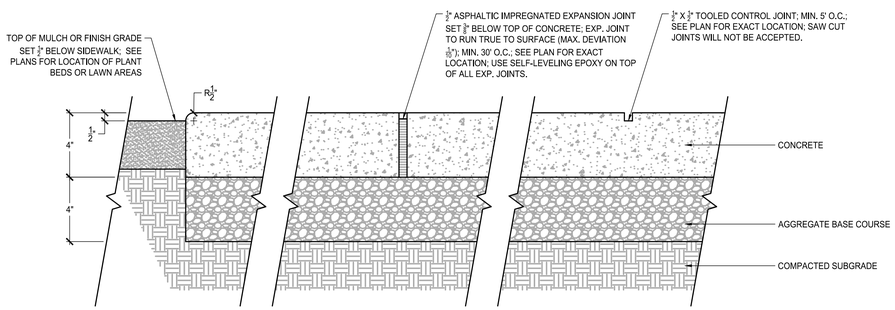
3 UNDERDRAIN
SCALE: NTS



DIAMETER OF PIPE	CONC. C.Y.**	REINF. STL. LBS.**
18"	1.3	55
24"	2.8	105
30"	5.0	130
36"	7.2	190
42"	9.5	230
48"	7.9	350
54"	9.6	410
60"	11.0	480

REINFORCED CONCRETE HEADWALL
DRAWING NO. 1
(NOT TO SCALE)

7 REINFORCED CONCRETE HEADWALL
SCALE: NTS



8 CONCRETE SIDEWALK SECTION
SCALE: NTS

THIS DRAWING AND THE DESIGN SHOWN IS THE PROPERTY OF THE ARCHITECT. REPRODUCTION, COPYING, OR USE OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED, AND ANY INFRINGEMENT IS SUBJECT TO LEGAL ACTION.

MICHAEL LEE BLACK
REGISTERED LANDSCAPE ARCHITECT
No. 113051
STATE OF TENNESSEE

LOSE DESIGN
SPACES FOR LIFE.

ALLEN PROPERTY
OSRD ZONING
TURNBERRY HOMES
BRENTWOOD
TN

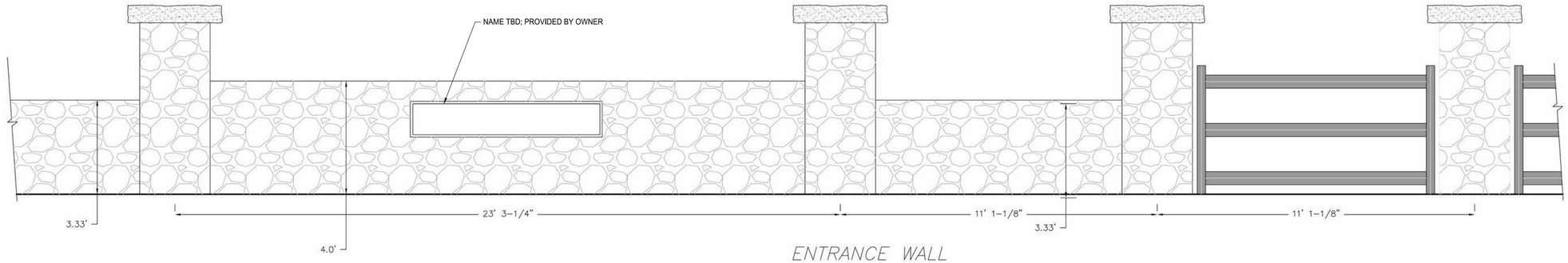
SUBMITTALS / REVISIONS		
NO.	DATE	DESCRIPTION
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.

SHEET TITLE
SITE DETAILS

PROJECT NO. 19182	DATE 07/21/2020
DRAWN BY BB	SCALE NTS
CHECKED BY MB	

SHEET NO.
C4.00

N:\2019\19182_Allen_Property\CAD\01_SHEETS\19182_CA00_DETAIL_SERIES.dwg - Printed on 2020-07-21 at 10:12:28 AM.

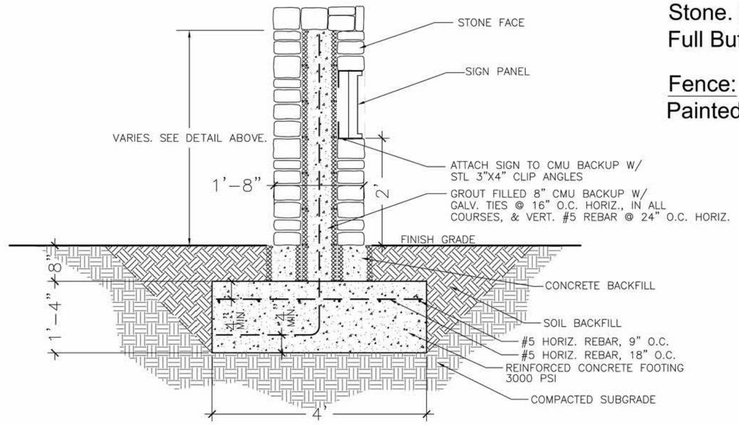


ENTRANCE WALL

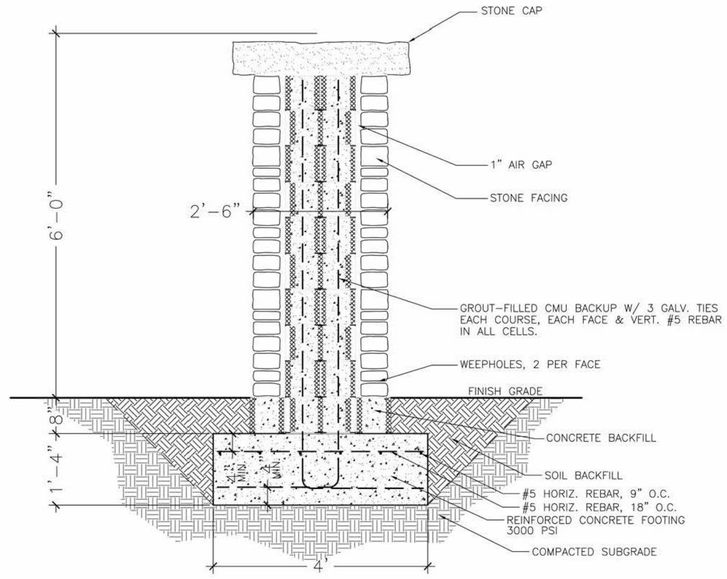
Material Selections

Wall and Columns:
Arriscraft Weathered Wood Stone. Style to be Chalet.
Full Buff Mortar.

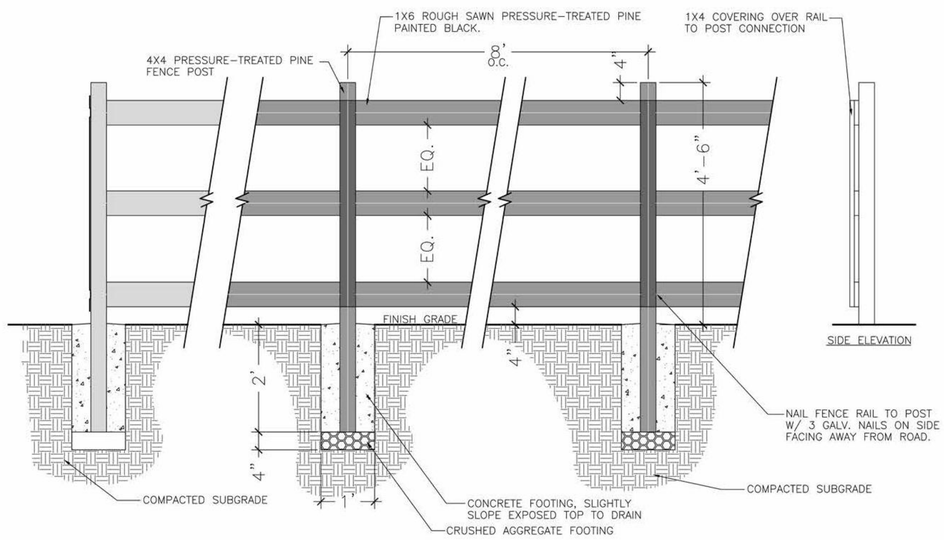
Fence:
Painted Black.



WALL PROFILE



COLUMN PROFILE



WOOD FENCE

Turnberry HOMES
210 Jamestown Park Drive, Suite 210
Brentwood, Tennessee 37027
Phone: 615.376.7001
Fax: 615.376.6036

1 DEVELOPMENT MONUMENT SIGN
SCALE: NTS

LOSE DESIGN
SPACES FOR LIFE.

THIS DRAWING AND THE DESIGN SHOWN IS THE PROPERTY OF THE ARCHITECT. REPRODUCTION, COPYING, OR USE OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED, AND ANY INFRINGEMENT IS SUBJECT TO LEGAL ACTION.

ALLEN PROPERTY
OSRD ZONING
TURNBERRY HOMES
BRENTWOOD
TN

SUBMITTALS / REVISIONS

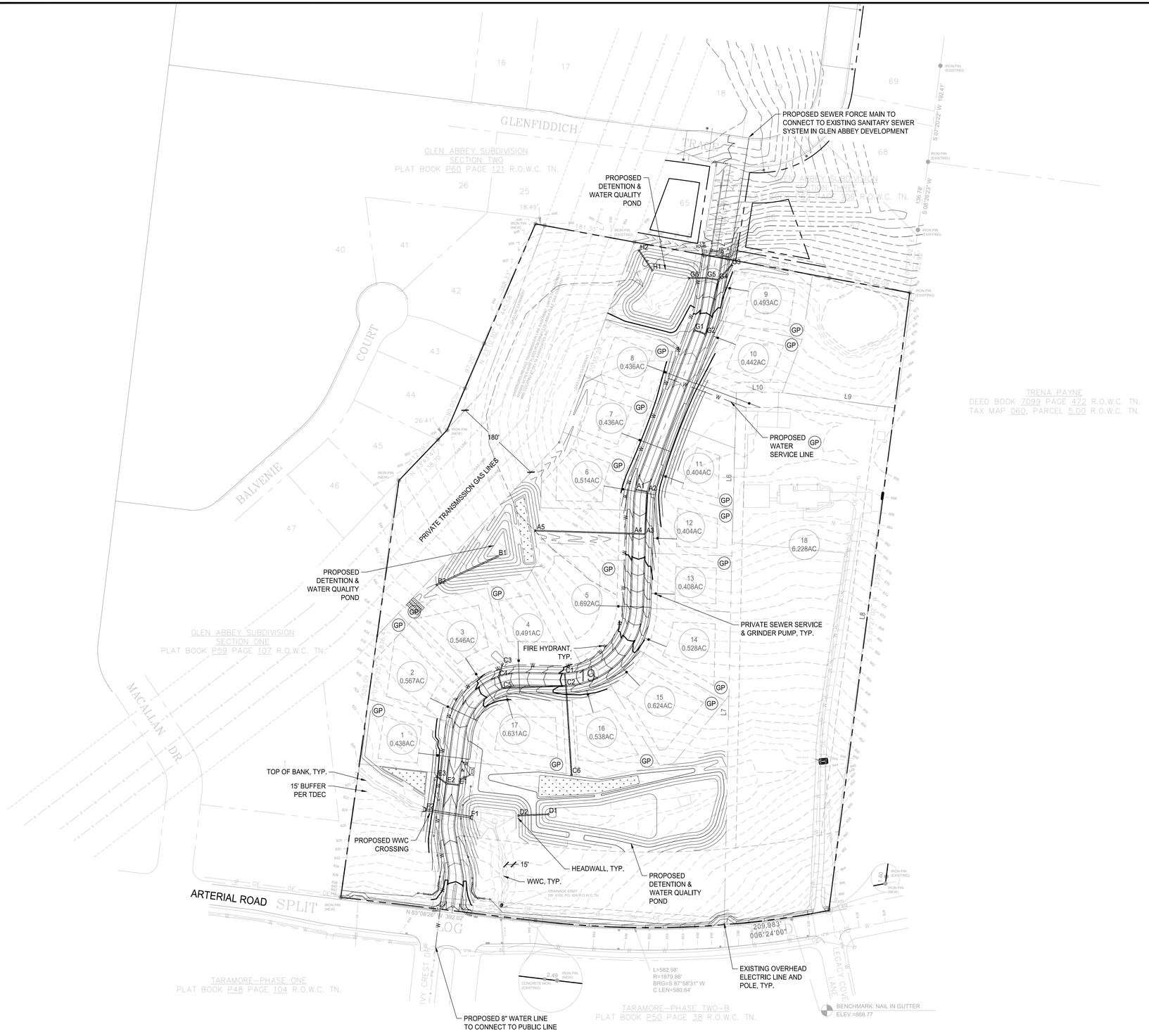
NO.	DATE	DESCRIPTION

SHEET TITLE
SITE DETAILS

PROJECT NO.	DATE
19182	07/21/2020
DRAWN BY: BB	SCALE: NTS
CHECKED BY: MB	

SHEET NO.
C4.01

N:\2019\19182_Allen_Property\CAD\01_SHEETS\19182_CAD_DETAIL_SITBES.dwg - Printed on 2020-07-21 at 10:12:35 AM.



SANITARY SEWER NOTES:

1. ALL WASTEWATER PIPE CONSTRUCTION MUST CONFORM TO ALL REGULATED CITY UTILITIES DEPT. SEWER STANDARDS AND SPECIFICATIONS.
2. CONSTRUCTION PERMIT AND A MANDATORY PRE-CONSTRUCTION CONFERENCE, WITH INSPECTOR BY APPOINTMENT ONLY, ARE REQUIRED PRIOR TO ANY SEWER WORK.
3. COMPACTION OF THE BACKFILL OF ALL TRENCHES SHALL BE COMPACTED TO THE DENSITY OF 96% OF THE THEORETICAL MAXIMUM DENSITY. BACKFILL MATERIAL SHALL BE FREE FROM ROOTS, STUMPS OR OTHER FOREIGN DEBRIS AND SHALL BE PLACED AT OR NEAR OPTIMUM MOISTURE. CORRECTION OF ANY TRENCH SETTLEMENT WITHIN A YEAR FROM DATE OF APPROVAL WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
4. CONTRACTOR TO FIELD VERIFY LOCATION AND INVERT ELEVATIONS OF WASTEWATER PIPE FOR CONNECTION TO EXISTING WASTEWATER SYSTEMS.
5. FOR ALL CONSTRUCTION ALONG AND/OR ACROSS WATERWAYS, BANK STABILIZATION AND PROTECTION SHALL BE REQUIRED AS PER EROSION CONTROL REQUIREMENTS AND THE LAWS OF CITY OF BRENTWOOD AND THE STATE OF TENNESSEE.
6. ALL PROPOSED SANITARY SEWER PIPING IS TO BE INSTALLED AT A MINIMUM SLOPE OF 1.0% UNLESS OTHERWISE STATED (SEE SANITARY SEWER PROFILES FOR ADDITIONAL INFORMATION).
7. SEWERS SHOULD BE LAID AT LEAST 10' HORIZONTALLY AND 18" VERTICALLY FROM ANY EXISTING OR PROPOSED WATER MAIN WITH THE WATER MAIN ABOVE THE SEWER PIPE. SEWERS CROSSING WATER MAINS SHALL BE ARRANGED SO THAT THE SEWER THE SEWER JOINTS WILL BE EQUAL DISTANT AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS. WHERE A WATER MAIN CROSSES UNDER A SEWER, EITHER THE WATER MAIN OR THE SEWER SHOULD BE DUCTILE IRON OR SHALL BE ENCASED IN DUCTILE IRON OR CONCRETE FOR A MINIMUM OF ONE FULL JOINT LENGTH ON EACH SIDE OF THE CROSSING.
8. ALL SANITARY SEWER FORCE MAIN LESS THAN 4" SHALL BE PVC SDR 21.
9. ALL SANITARY SEWER FORCE MAIN FROM 4" TO 12" SHALL BE DR 25, C900 PVC, GREEN IN COLOR.

WATER NOTES:

1. ALL CONSTRUCTION METHODS AND MATERIALS USED IN THE WATER SYSTEM MUST COMPLY IN ALL REGULATED CITY OF BRENTWOOD PUBLIC UTILITIES DEPT. STANDARDS, SPECIFICATIONS AND INSPECTION REQUIREMENTS.
2. THRUST BLOCKS TO BE USED AT ALL BENDS, PLUGS, AND TEES ON LINES 4" AND LARGER.
3. FIRE HYDRANTS SHOWN IN THE RADIUS OF A CURVE SHALL BE FIELD ADJUSTED SO THAT THE ACTUAL INSTALLATION OF FIRE HYDRANTS WILL BE A MIN. OF 3' OUTSIDE IF CURVE RADIUS.
4. ANY CHANGES TO THE WATER DRAWINGS MUST BE APPROVED BY THE REGULATED CITY OF BRENTWOOD UTILITIES DEPARTMENT.
5. ALL FIRE HYDRANTS SHALL BE "MUELLER SUPER CENTURION 250 A-423" AND MUST MEET THE SPECIFICATIONS OF THE REGULATED CITY OF BRENTWOOD UTILITIES DEPARTMENT.
6. ALL WATER SERVICE LINES SHALL BE EQUIPPED WITH BACKFLOW PREVENTION DEVICES.

LEGEND:

(GP) - DENOTES GRINDER PUMP LOT

0 80 160 240

SCALE: 1" = 80 '

LOSE DESIGN
SPACES FOR LIFE.

THIS DRAWING AND THE DESIGN SHOWN IS THE PROPERTY OF THE ARCHITECT. REPRODUCTION, COPYING, OR USE OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED, AND ANY INFRINGEMENT IS SUBJECT TO LEGAL ACTION.

MICHAEL LEE BLACK
REGISTERED LANDSCAPE ARCHITECT
AGRICULTURE
No. 113051
STATE OF TENNESSEE

ALLEN PROPERTY
OSRD ZONING

TURNBERRY HOMES

BRENTWOOD

TN

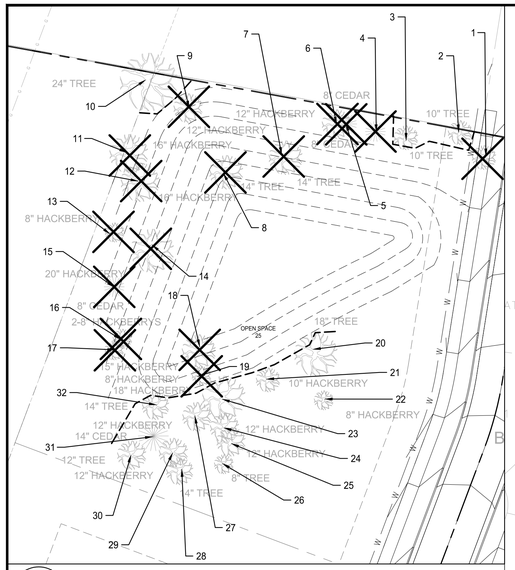
SUBMITTALS / REVISIONS		
NO.	DATE	DESCRIPTION
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.

SHEET TITLE

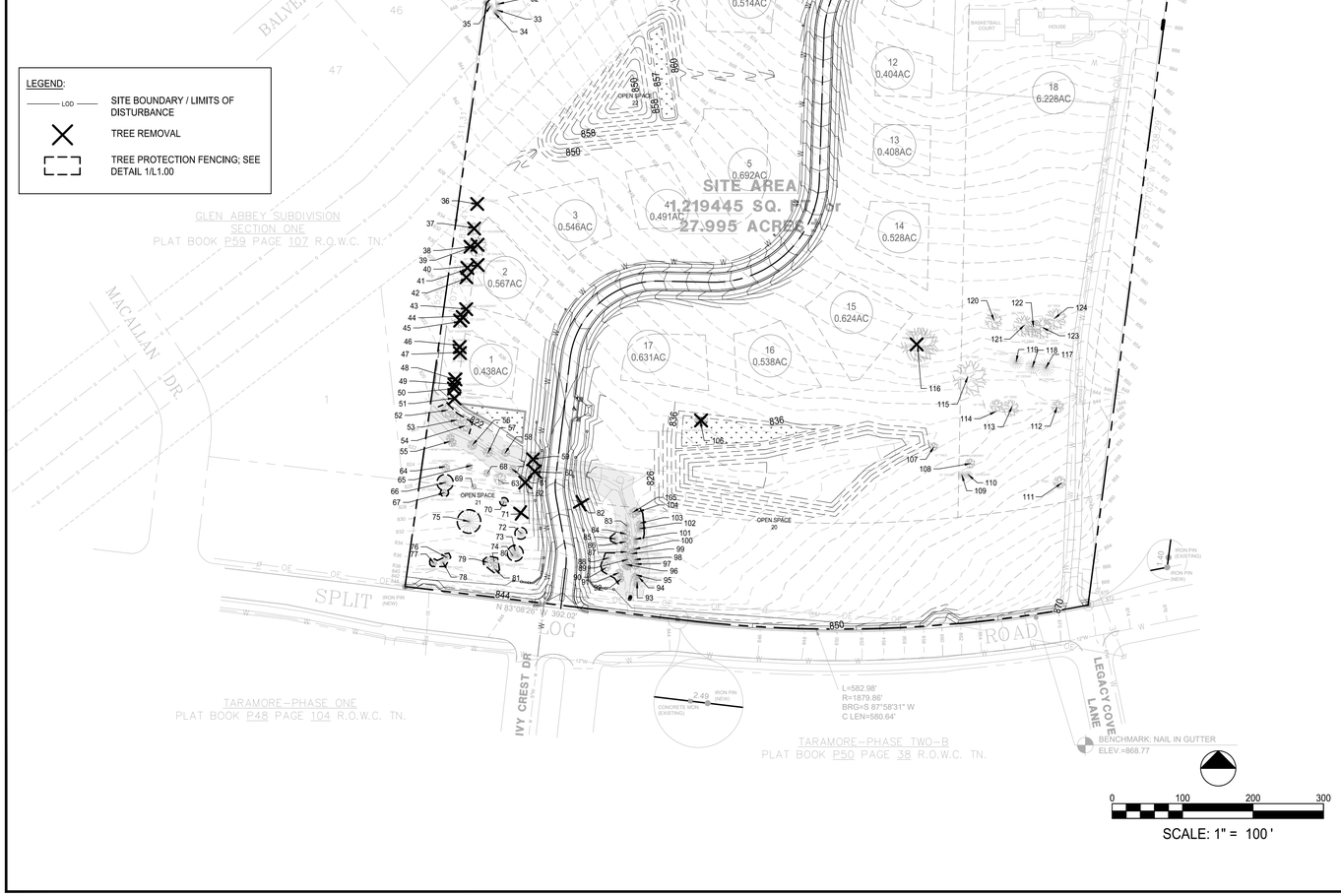
UTILITY LAYOUT PLAN

PROJECT NO. 19182	DATE 07/21/2020
DRAWN BY BB	SCALE 1" = 100'
CHECKED BY MB	
SHEET NO. C5.00	

N:\2019\19182_Allen_Property\CAD\01_SHEETS\19182_C5.00_UTILITY_SERIES.dwg - Printed on 2020-07-21 at 10:12:50 AM



1 ENLARGEMENT
SCALE: 1" = 30'



LEGEND:

- LOD — SITE BOUNDARY / LIMITS OF DISTURBANCE
- TREE REMOVAL
- TREE PROTECTION FENCING; SEE DETAIL 1/L1.00

GLEN ABBEY SUBDIVISION SECTION ONE PLAT BOOK P59 PAGE 107 R.O.W.C. TN.

TARAMORE-PHASE ONE PLAT BOOK P48 PAGE 104 R.O.W.C. TN.

TREE INVENTORY LIST

NO.	SPECIES		CALIPER INCHES	CALIPER REMOVED	CALIPER PROTECTED
1	TREE		10	10	
2	TREE		10		10
3	TREE		10		10
4	CEDAR		8	8	
5	CEDAR		8	8	
6	HACKBERRY		12	12	
7	TREE		14	14	
8	TREE		14	14	
9	HACKBERRY		12	12	
10	TREE		24		24
11	HACKBERRY		16	16	
12	HACKBERRY		16	16	
13	HACKBERRY		8	8	
14	HACKBERRY		20	20	
15	CEDAR		8	8	
16	HACKBERRY		8	8	
17	HACKBERRY		8	8	
18	HACKBERRY		15	15	
19	HACKBERRY		8	8	
20	TREE		18	18	
21	HACKBERRY		10	10	
22	HACKBERRY		8	8	
23	HACKBERRY		18	18	
24	HACKBERRY		12	12	
25	HACKBERRY		12	12	
26	TREE		8	8	
27	HACKBERRY		12	12	
28	TREE		14	14	
29	HACKBERRY		12	12	
30	TREE		12	12	
31	CEDAR		14	14	
32	CEDAR		8		8
33	CEDAR		12		12
34	CEDAR		8		8
35	CEDAR		10		10
36	CEDAR		12	12	
37	HACKBERRY		18	18	
38	TREE		20	20	
39	WALNUT		28	28	
40	HACKBERRY		12	12	
41	TREE		15	15	
42	HACKBERRY		14	14	
43	HACKBERRY		14	14	
44	CEDAR		12	12	
45	HACKBERRY		24	24	
46	HACKBERRY		8	8	
47	TREE		20	20	
48	CEDAR		12	12	
49	HACKBERRY		12	12	
50	CEDAR		8	8	
51	HACKBERRY		10		10
52	TREE		20		20
53	HACKBERRY		18		18
54	TREE		18		18
55	HACKBERRY	TWIN	24		24
56	TREE		14		14
57	TREE		14		14
58	HACKBERRY		12		12
59	HACKBERRY		12	12	
60	TREE		20	20	
61	TREE		10		10
62	CEDAR		15	15	
63	TREE		18		18
64	HACKBERRY		12		12
65	TREE		10		10
66	CEDAR		24		24
67	HACKBERRY		10		10
68	TREE		10		10
69	HACKBERRY		8		8
70	HACKBERRY		10		10
71	CEDAR		18	18	
72	CEDAR		12		12
73	CEDAR		12		12
74	CEDAR	TWIN	20		20
75	CEDAR		36		36
76	CEDAR		10		10
77	HACKBERRY		10		10
78	CEDAR		10		10
79	TREE		15		15
80	HACKBERRY		10		10
81	HACKBERRY		10		10
82	CEDAR		10	10	
83	CEDAR		10		10
84	HACKBERRY		14		14
85	CEDAR		10		10
86	HACKBERRY		14		14
87	HACKBERRY		14		14
88	CEDAR		10		10
89	CEDAR		8		8
90	HACKBERRY		14		14
91	HACKBERRY		12		12
92	HACKBERRY		10		10
93	CEDAR	TWIN	16		16
94	CEDAR		10		10
95	HACKBERRY		10		10
96	HACKBERRY	TWIN	24		24
97	HACKBERRY		12		12
98	HACKBERRY		12		12
99	HACKBERRY		10		10
100	CEDAR		8		8
101	CEDAR	TWIN	16		16
102	CEDAR	TWIN	20		20
103	TREE		10		10
104	TREE		8		8
105	TREE		15		15
106	HACKBERRY	TRIPLE	36	36	
107	TREE		12		12
108	HACKBERRY		15		15
109	CEDAR		12		12
110	CEDAR		12		12
111	TREE		18		18
112	TREE		20		20
113	TREE		24		24
114	TREE		18		18
115	TREE		48		48
116	TREE	TWIN	96		96
117	CEDAR		24		24
118	CEDAR		20		20
119	CEDAR		20		20
120	TREE		24		24
121	TREE		30		30
122	TREE		24		24
123	TREE		30		30
124	TREE		28		28
125	CEDAR		14		14
126	TREE		48		48
127	CEDAR		12		12
128	HACKBERRY		24		24
129	TREE		20		20
130	TREE		20		20
131	TREE		36		36
132	TREE		12		12
133	TREE		12		12
134	TREE		12		12
135	TREE		12		12
136	TREE		14		14
137	TREE		20		20
138	TREE		30		30
139	TREE		36		36
140	TREE	TRIPLE	36		36
141	TREE		20		20
142	TREE		18		18
143	TREE		40		40
144	TREE		24		24
145	TREE		20		20
146	TREE		10		10
147	TREE		20		20
148	TREE		36		36
149	TREE		40		40
150	TREE		10		10
151	TREE		24		24
152	TREE		36		36
153	TREE		20		20
154	TREE		36		36
155	TREE		10		10
156	TREE		24		24
157	TREE		24		24
158	TREE		20		20
159	TREE		10		10
160	TREE		30		30
161	TREE		20		20
162	TREE		24		24
	TOTAL		2,780	675	2,105

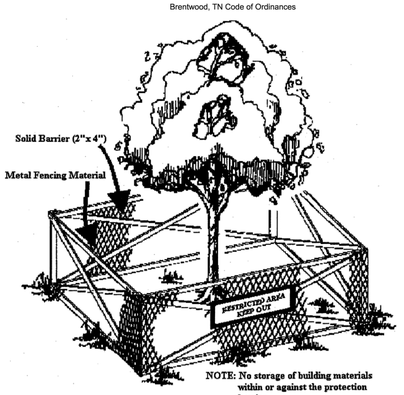
TREE PROTECTION NOTES:

1. LIMITS OF GRADING SHALL BE SET AT DRIPLINE OF TREES.
2. PROTECTIVE FENCING SHALL BE UTILIZED TO PRESERVE TREE TRUNK, BRANCHES, AND ROOT SYSTEM.
3. FENCING SHALL BE PLACED PRIOR TO ANY SITE DISTURBANCE AND SHALL NOT BE REMOVED UNTIL COMMENCEMENT OF LANDSCAPE PLANTING.
4. NO FENCING MAY BE NAILED TO TREE.
5. NO HEAVY EQUIPMENT, VEHICULAR TRAFFIC, OR STOCKPILING IS PERMITTED WITHIN DRIP LINE OF TREES.
6. NO TOXIC MATERIALS MAY BE STORED WITHIN 100' OF TREE DRIP LINE.
7. IN AREAS WHERE FOOTINGS AND PAVEMENT WILL PENETRATE INTO THE TREE DRIP LINE AREA, A LICENSED TREE SURGEON SHALL BE ASSIGNED TO PRUNE ROOTS ACCORDINGLY PRIOR TO CONSTRUCTION.
8. TREES TO BE REMOVED SHALL BE DONE SO IN A MANNER THAT DOES NOT IMPACT TREES TO BE PRESERVED.
9. REFER TO PLANS FOR FENCING LOCATIONS.

NOTES:

1. SEE SHEET C0.01 FOR GENERAL NOTES.
2. SEE SHEET L1.02 FOR ROADWAY BUFFER LANDSCAPE PLAN AND SCHEDULES.
3. SEE SHEET L1.10 FOR LANDSCAPE NOTES AND DETAILS.

12/12/2019 Brentwood, TN Code of Ordinances



Tree protection detail

Secs. 78-515—78-530. - Reserved.

1 TREE PROTECTION DETAIL (APPENDIX A)
SCALE: NTS

811 Know what's **below**. **Call** before you dig.

LOSE DESIGN
SPACES FOR LIFE.

THIS DRAWING AND THE DESIGN SHOWN IS THE PROPERTY OF THE ARCHITECT. REPRODUCTION, COPYING, OR USE OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED, AND ANY INFRINGEMENT IS SUBJECT TO LEGAL ACTION.

APRIL ANDERSEN 2-26-2020 LICENSED PROFESSIONAL LANDSCAPE ARCHITECT

TN

ALLEN PROPERTY
OSRD ZONING
TURNBERRY HOMES
BRENTWOOD

SUBMITTALS / REVISIONS

NO.	DATE	DESCRIPTION
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.

SHEET TITLE
TREE REMOVAL PLAN

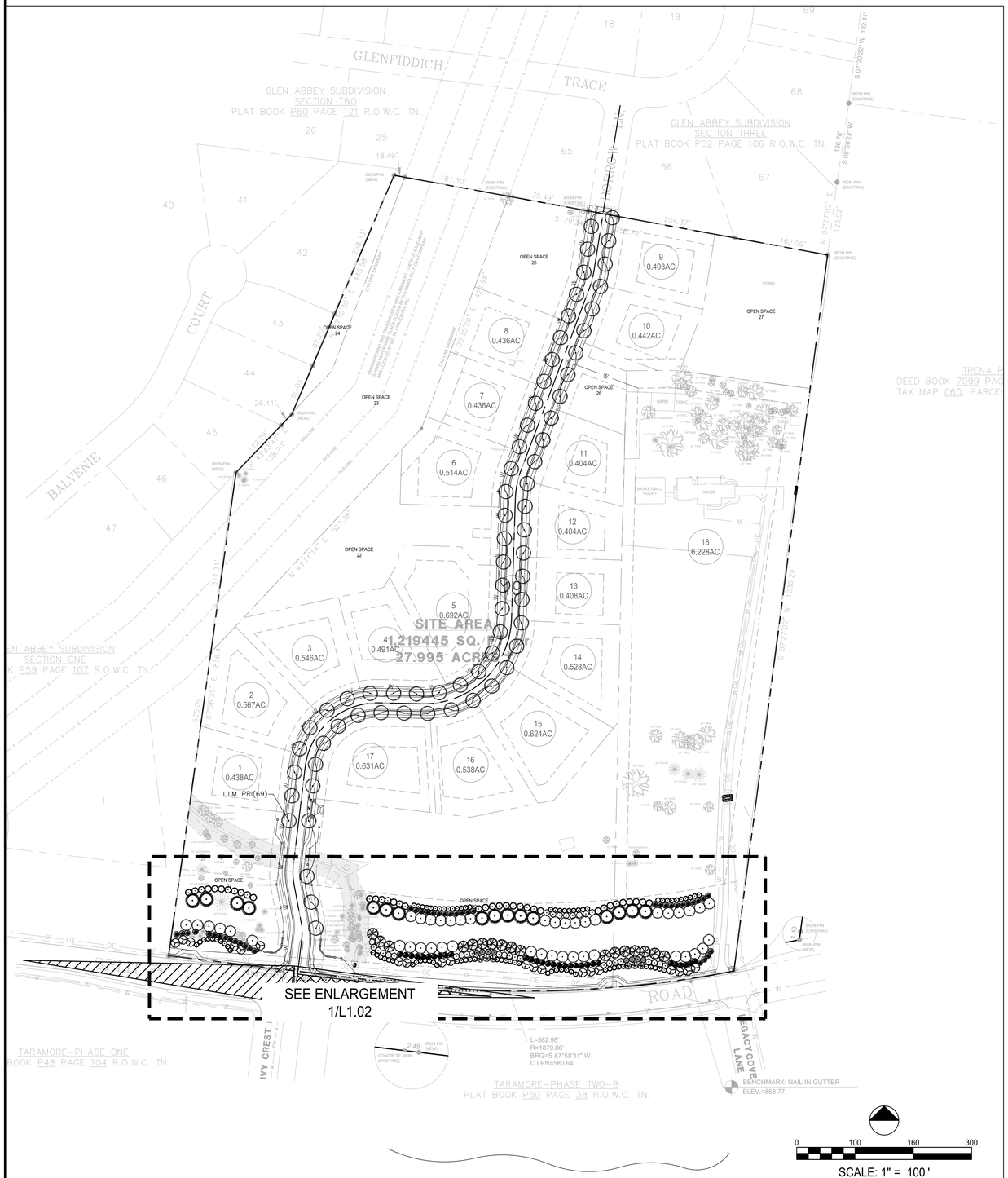
PROJECT NO. 19182	DATE 02/26/2020
DRAWN BY ZK	SCALE 1" = 80'
CHECKED BY AA	

SHEET NO.
L1.00

I:\2019\19182_allen_property\CAD\01_plotted\19182_L1.00_LANDSCAPE_SERIES.dwg - Plotted on 2020-02-26 at 3:25:12 PM.

PLANT SCHEDULE STREET TREES

DECIDUOUS TREES	QTY	BOTANICAL NAME	COMMON NAME	CONT	CAL	HT	REMARKS
ULM PRI	69	ULMUS AMERICANA 'PRINCETON'	AMERICAN ELM	B&B	3" CAL	12'–14' HT	STRONG CENTRAL LEADER, MATCHING.



LANDSCAPING NOTES:

1. SEE SHEET C0.01 FOR GENERAL NOTES.
2. SEE SHEET L1.10 FOR LANDSCAPING NOTES AND DETAILS.
3. CONTRACTOR TO TAKE ALL PRECAUTIONS TO FIND AND AVOID SITE UTILITIES. ALL UTILITIES ARE NOT SHOWN ON DRAWING. VERIFY LOCATIONS AND CONSIDER SUCH WHEN ESTIMATING.

SITE TREE REQUIREMENTS		
DESCRIPTION	CALIPER INCHES	COMMENTS
CALIPER INCHES ON SITE	2780	
CALIPER INCHES PROTECTED	2105	
CALIPER INCHES REMOVED	675	
CALIPER INCHES TO REPLACE	338	
CALIPER INCHES REQUIRED PER ACRE	700	
TOTALS		
PROPOSED	333	
PROTECTED	2105	
TOTAL	2438	

LOSE DESIGN
SPACES FOR LIFE.

THIS DRAWING AND THE DESIGN SHOWN IS THE PROPERTY OF THE ARCHITECT. REPRODUCTION, COPYING, OR USE OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED, AND ANY INFRINGEMENT IS SUBJECT TO LEGAL ACTION.

TN

ALLEN PROPERTY
OSRD ZONING

TURNBERRY HOMES

BRENTWOOD

SUBMITTALS / REVISIONS		
NO.	DATE	DESCRIPTION
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.

SHEET TITLE

OVERALL LANDSCAPE PLAN

PROJECT NO. 19182	DATE 02/26/2020
DRAWN BY ZK	SCALE 1" = 100'
CHECKED BY AA	
SHEET NO. L1.01	

n:\2019\19182_allen_property\CADD\T_sheets\19182_L1.00_LANDSCAPE_SERIES.dwg - Printed on 2020-02-26 at 3:25:23 PM.

PLANT SCHEDULE ARTERIAL ROAD BUFFER

EVERGREEN TREES	QTY	BOTANICAL NAME	COMMON NAME	CONT	CAL	HT	REMARKS
ILE AME	31	ILEX OPACA GREENLEAF'	GREENLEAF HOLLY	B&B	2" CAL MIN	10'–12' HT	FULL TO GROUND, MATCHING
ILE NEL	41	ILEX X 'NELLIE R STEVENS'	NELLIE STEVENS HOLLY	B&B	2" CAL MIN	10'–12' HT	FULL TO GROUND, MATCHING
JUN EAS	30	JUNIPERUS VIRGINIANA	EASTERN RED CEDAR	B&B	2" CAL MIN	10' MIN HT	FULL PLANT, MATCHING.
JUN BUR	84	JUNIPERUS VIRGINIANA 'BURKII'	BURK RED CEDAR	B&B	2" CAL MIN	8' MIN HT	FULL PLANT, MATCHED TREES
MAG GRA	16	MAGNOLIA GRANDIFLORA	SOUTHERN MAGNOLIA	B&B	2" CAL MIN	12'–14' HT	FULL PLANT, MATCHING.
PIN STR	43	PINUS STROBUS	WHITE PINE	B&B	2" CAL MIN	8' MIN HT	FULL PLANT, MATCHING.
PIN TAE	17	PINUS TAEDA	LOBLOLLY PINE	B&B	2" CAL MIN	8' MIN HT	FULL PLANT, MATCHING.
THU G17	8	THUJA OCCIDENTALIS 'GREEN GIANT'	GREEN GIANT ARBORVITAE	B&B	2" CAL MIN	12'–14'	FULL PLANT, MATCHING
CUP LEY	37	X CUPRESSOCYPARIS LEYLANDII	LEYLANDI CYPRESS	B&B	2" CAL MIN	10' MIN HT	FULL PLANT, MATCHING.

FLOWERING TREES	QTY	BOTANICAL NAME	COMMON NAME	CONT	CAL	HT	REMARKS
COR FLO	20	CORNUS FLORIDA	EASTERN DOGWOOD	B&B	2" CAL MIN	8' MIN HT	STRONG CENTRAL LEADER, MATCHING.
MAG ST3	6	MAGNOLIA STELLATA	STAR MAGNOLIA	B&B	2"CAL	8' MIN HT	MATCHING FORM, TREE FORM, MIN. BRANCH 3'

ARTERIAL ROADWAY BUFFER CALCULATIONS

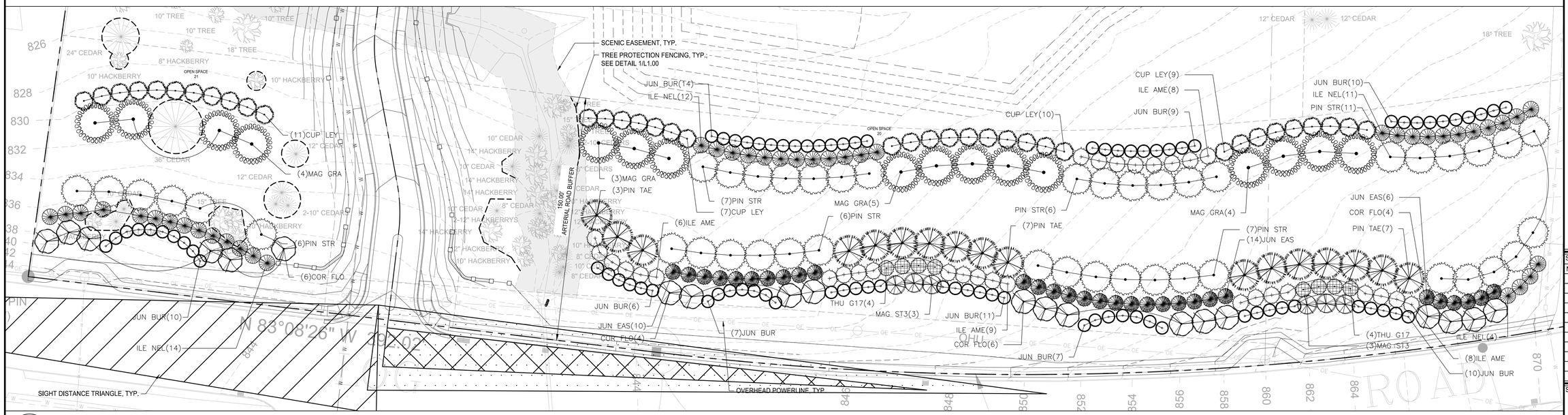
DESCRIPTION	QUANTITY	NOTES
TREES REQUIRED	438	972.66/100 = 9.73 9.73 X 45 = 437.85 = 438
PROVIDED		
BUFFER TREES	333	EVERGREEN TREES: 307 DECIDUOUS TREES: 26
STREET TREES	69	DECIDUOUS TREES: 69
SAVED TREES IN ARTERIAL BUFFER	36	SEE EXCEL CHART SHEET L1.00
TOTAL TREES PROVIDED	438	EVERGREEN TREES: 76% (438-36=402 307/ 402= .763) DECIDUOUS TREES: 24% (26+69) / 402) = .236

ARTERIAL ROADWAY BUFFER REQUIREMENTS:

1. PER SECTION 78-512(b)5, A LANDSCAPING BUFFER SHALL BE PROVIDED ALONG THE FRONTAGE OF SPLIT LOG ROAD AT 45 TREES PER 100 LF, PRIMARILY EVERGREEN PLANT MATERIALS (MINIMUM 75%) WITH A MIXTURE OF A VARIETY OF PLANT SPECIES.
2. 972.66 +/- LINEAR FEET OF ROAD FRONTAGE =
   972.66/100 = 9.73
   9.73 X 45 = 437.85 = **438 TREES REQUIRED**

NOTE:

1. TO REMAIN CONSISTENT WITH THE ADJOINING GLEN ABBEY, THE DEVELOPER PROPOSES TO RELOCATE 70 OF THE REQUIRED BUFFER PLANTINGS IN THE PLANTING STRIP BETWEEN THE CURB AND SIDEWALK ALONG THE STREET.



1 ENLARGEMENT
SCALE:

SCALE: 1" = 30 '

LOSE DESIGN
SPACES FOR LIFE.

THIS DRAWING AND THE DESIGN SHOWN IS THE PROPERTY OF THE ARCHITECT. REPRODUCTION, COPYING, OR USE OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED, AND ANY INFRINGEMENT IS SUBJECT TO LEGAL ACTION.

ANDERSEN
2-26-2020
REGISTERED LANDSCAPE ARCHITECT

TN

ALLEN PROPERTY
OSRD ZONING

TURNBERRY HOMES

BRENTWOOD

SUBMITTALS / REVISIONS		
NO.	DATE	DESCRIPTION

SHEET TITLE

ROADWAY BUFFER LANDSCAPE PLAN

PROJECT NO. 19182	DATE 02/26/2020
DRAWN BY ZK	SCALE 1" = 30'
CHECKED BY AA	

SHEET NO.
L1.02

I:\2019\19182_Allen_property\CADD\1_sheets\19182_L1.02_LANDSCAPE_SERIES.dwg - Printed on 2020-02-26 at 3:25:33 PM,

GENERAL NOTES:

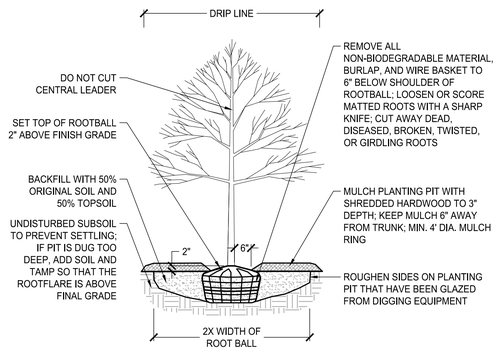
1. UNDERGROUND UTILITIES:
   - 1.1. UNDERGROUND UTILITIES HAVE NOT BEEN VERIFIED BY THE OWNER, LANDSCAPE ARCHITECT, OR THEIR REPRESENTATIVES. BEFORE YOU DIG, CALL TENNESSEEONE CALL SYSTEM.
   - 1.2. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK AND AGREES TO BE RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT RESULT FROM THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY UNDERGROUND UTILITIES TO REMAIN.
2. THE CONTRACTOR SHALL VERIFY EXISTING CONDITIONS TO ENSURE THAT THE NEW WORK SHALL FIT INTO THE EXISTING SITE IN THE MANNER INTENDED AND AS SHOWN ON THE DRAWINGS. SHOULD ANY CONDITIONS EXIST THAT ARE CONTRARY TO THOSE ON THE DRAWINGS, THE CONTRACTOR SHALL NOTIFY THE OWNER'S REPRESENTATIVE PRIOR TO PERFORMING ANY WORK IN THE AREA INVOLVING DIFFERENCES. NOTIFICATION SHALL BE IN THE FORM OF A DRAWING OR SKETCH INDICATIING FIELD MEASUREMENTS AND NOTES RELATING TO THE AREA.

LANDSCAPE NOTES:

1. PLANTING BEDS AND PLANT LOCATIONS SHALL BE STAKED BY THE LANDSCAPE CONTRACTOR. THE LANDSCAPE CONTRACTOR SHALL NOTIFY THE OWNER OR THE OWNER'S REPRESENTATIVE FOR APPROVAL PRIOR TO INSTALLATION OF THE PLANTS.
2. PLANTING BEDS SHALL BE CLEARED OF ALL GRASS AND WEEDS PRIOR TO INSTALLATION OF PLANTS, INCLUDING SPRAYING "ROUND-UP" OR APPROVED SUBSTITUTE TO KILL ACTIVELY GROWING PLANTS. PLANT BEDS SHALL BE PREPARED AS CALLED FOR IN THE SPECIFICATIONS AND DETAILS.
3. ALL OTHER DISTURBED AREAS ARE TO BE SEEDED OR SODDED AS PER THE PLANS. ADDITIONAL SEEDING OR SODDING, IF REQUIRED, WILL BE AS DIRECTED BY THE OWNER OR OWNER'S REPRESENTATIVE. SEE GRADING SHEET FOR SEEDING.
4. PLANTING BEDS SHALL HAVE A THREE (3) INCH SHREDDED HARDWOOD BARK MULCH OVER THE ENTIRE BED, UNLESS OTHERWISE NOTED ON THE DRAWINGS.
5. PRIOR TO PLANTING, ALL PLANTED AREAS SHALL BE TREATED WITH A WATER-SOLUBLE HERBICIDE FOR THE NON-SELECTIVE CONTROL OF ANNUAL AND PERENNIAL WEEDS PRIOR TO PLANTING.
6. ALL TREE AND SHRUB PLANTING PITS SHALL BE BACKFILLED WITH A PLANTING SOIL MIXTURE OF ONE (1) PART ORIGINAL SOIL AND ONE (1) PART TOPSOIL, THOROUGHLY MIXED. SAMPLE OF MIXTURE TO BE APPROVED IN WRITING BY OWNER OR OWNER'S REPRESENTATIVE PRIOR TO INSTALLATION.
7. PLANT GROUNDCOVER AND ANNUAL BEDS IN SAME MIXTURE AS SHRUBS. AFTER PLANTING & MULCHING, WATER AREAS TO POINT OF SATURATION.
8. ALL PLANTED AREAS ARE TO BE FERTILIZED WITH GRANULAR FERTILIZER. LANDSCAPE CONTRACTOR IS TO PROVIDE SOIL TEST RESULTS AND PROPOSED FERTILIZER APPLICATION RATES TO THE OWNER OR OWNER'S REPRESENTATIVE FOR APPROVAL.
9. ALL PLANT MATERIAL IS TO BE NURSERY GROWN AND TO COMPLY WITH AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60. 1-2004) OR LATEST EDITION. PLANTS NOT IN COMPLIANCE WILL BE REJECTED AND REPLACED WITH PLANTS THAT MEET THE STANDARDS.
10. SPRAY TREES AND SHRUBS WITH AN ANTI-DESICCANT IF FOLIAGE IS PRESENT.
11. EVERGREEN TREES AND SHRUBS SHALL BE PLANTED IN THE SAME MANNER AS DECIDUOUS MATERIAL IS PLANTED.
12. DO NOT PRUNE ANY PLANT MATERIAL UNTIL IT HAS BEEN INSPECTED AND ACCEPTED BY THE OWNER OR OWNER'S REPRESENTATIVE.
13. ALL LANDSCAPE MATERIAL SHALL BE APPROVED BY THE OWNER OR OWNER'S REPRESENTATIVE BEFORE INSTALLATION. MATERIALS MAY BE VIEWED AT LANDSCAPE CONTRACTOR'S HOLDING SITE OR AT THIS SITE. IT SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR TO NOTIFY THE OWNER OR OWNER'S REPRESENTATIVE OF THE AVAILABILITY OF THE MATERIALS TO BE INSPECTED.
14. ALL MATERIALS INSPECTED ON THE SITE AND FOUND TO BE UNACCEPTABLE SHALL BE REMOVED FROM THE SITE ON THE DAY OF INSPECTION.
15. FIELD CHANGES MUST BE APPROVED IN WRITING BY THE OWNER OR OWNER'S REPRESENTATIVE.
16. EXISTING PLANT MATERIAL IS TO BE EVALUATED BY THE LANDSCAPE ARCHITECT FOR POSSIBLE RELOCATION ON SITE. THE LANDSCAPE CONTRACTOR IS TO NOTIFY THE LANDSCAPE ARCHITECT FORTY-EIGHT (48) HOURS BEFORE BEGINNING WORK.
17. ALL PLANT MATERIAL SHALL BE SUPPLIED BY APPROPRIATE SOURCES TO PREVENT UNDUE STRESS OR PROLONGED ACCLIMATIZATION WHICH WOULD INHIBIT PLANT GROWTH.
18. LANDSCAPE CONTRACTOR IS TO VERIFY PLANT QUANTITIES SHOWN ON PLAN AND IN PLANT LIST. IF DISCREPANCIES OCCUR, LANDSCAPE CONTRACTOR IS TO CONTACT LANDSCAPE ARCHITECT IMMEDIATELY. QUANTITIES SHOWN ON PLAN TAKE PRECEDENCE.
19. EVERGREEN TREES TO BE A MINIMUM OF 8' IN HEIGHT AT TIME OF PLANTING - DECIDUOUS TREES TO BE 2" DBH MIN AT TIME OF PLANTING. SEE PLANT LIST FOR LARGER MATERIAL REQUIRED.
20. MULTI-TRUNK PLANT MATERIAL SHALL BE ONE PLANT GROWN FROM SINGLE SEEDLING. NO CLUMP MULTI-PLANT STOCK WILL BE ACCEPTED.
21. IF IN THE OPINION OF THE LANDSCAPE ARCHITECT, THE CENTRAL LEADER OF ANY TREE HAS BEEN CUT IN THE HISTORY OF THE PLANT'S GROWTH, THE MATERIAL SHALL BE REPLACED AT NO ADDITIONAL COST TO THE OWNER. THE DECISION OF THE LANDSCAPE ARCHITECT WILL BE FINAL.

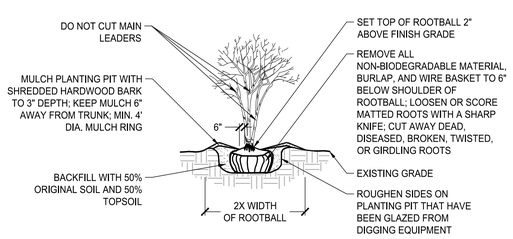
PLANT STOCK NOTES:

1. ALL PEDESTRIAN ACCESS WAYS MUST HAVE AT LEAST 7' OF CLEARANCE.
2. ALL CANOPY AND UNDERSTORY TREES SHALL HAVE ONE STRONG CENTRAL LEADER TRUNK. NO MULTI-TRUNK UNLESS SPECIFIED.
3. THE SOUTH SIDE OF ALL TREES SHALL BE MARKED BEFORE TRANSPLANT FOR DIRECTIONAL PLACEMENT AT THE TIME OF PLANTING. CONTRACTOR SHALL BE RESPONSIBLE FOR DIRECTIONAL PLACEMENT.
4. ALL TREES SHALL BE MATCHED SPECIMENS WITH A FULL CANOPY AND A UNIFORM BRANCHING HABIT.
5. EVERGREEN TREES SHALL BE FULL TO GROUND WITH A HEAVY CANOPY AND STRONG CENTRAL LEADER.
6. MULCH "VOLCANOES" ARE UNACCEPTABLE. MULCH MUST BE INSTALLED PER DETAILS.
7. INSTALL ALL PLANTS IN ACCORDANCE WITH ALL APPLICABLE DETAILS AND SPECIFICATIONS INCLUDED WITHIN THE CONSTRUCTION PACKAGE.
8. ALL PLANTS MUST BE SELECTED, INSTALLED, AND MAINTAINED ACCORDING TO THE SPECIFICATIONS.
9. ALL TREES MUST BE PLANTED A MINIMUM OF 5 FEET FROM MAJOR UTILITY LINES. CONTACT LANDSCAPE ARCHITECT WHERE DISCREPANCIES OCCUR FOR FIELD ADJUSTMENT.



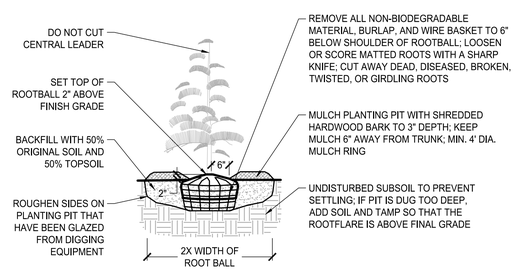
NOTES:
1. WATER TREES IMMEDIATELY AFTER PLANTING.
2. TREES OF SAME SPECIES TO BE MATCHED IN UNIFORMITY AND GROWTH.
3. TREE MUST MEET AMERICAN STANDARD FOR NURSERY STOCK (ANSI Z60.1)

1 DECIDUOUS TREE
SCALE: NTS



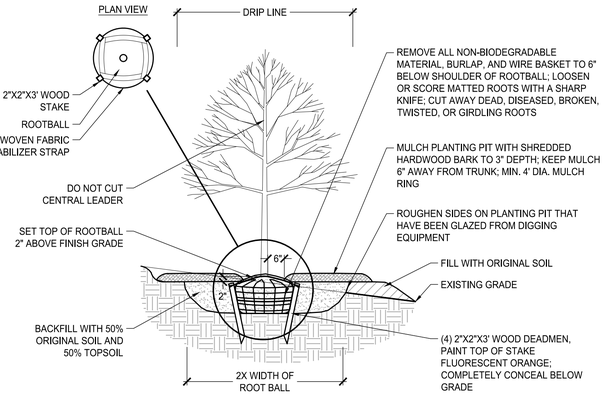
NOTES:
1. WATER MULTI-TRUNK TREES IMMEDIATELY AFTER PLANTING.
2. MULTI-TRUNK TREES OF SAME SPECIES TO BE MATCHED IN UNIFORMITY AND GROWTH

2 MULTI-TRUNK TREE
SCALE: NTS



NOTES:
1. WATER TREES IMMEDIATELY AFTER PLANTING.
2. TREES OF SAME SPECIES TO BE MATCHED IN UNIFORMITY AND GROWTH

3 CONIFER TREE
SCALE: NTS



NOTES:
1. CONTRACTOR SHALL SECURE STABILIZER STRAPS ACROSS ROOTBALL AND TIGHTEN ONLY ENOUGH TO KEEP ROOT BALL INTACT; DO NOT DAMAGE ROOT BALL BY OVERTIGHTENING.
2. WATER TREES IMMEDIATELY AFTER PLANTING.
3. TREES OF SAME SPECIES TO BE MATCHED IN UNIFORMITY AND GROWTH.

4 TREE PLANTING ON SLOPES (10:1 TO 2:1 SLOPE)
SCALE: NTS

LOOSE DESIGN
SPACES FOR LIFE.

THIS DRAWING AND THE DESIGN SHOWN IS THE PROPERTY OF THE ARCHITECT. REPRODUCTION, COPYING, OR USE OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED, AND ANY INFRINGEMENT IS SUBJECT TO LEGAL ACTION.



TN

ALLEN PROPERTY
OSRD ZONING
TURNBERRY HOMES
BRENTWOOD

SUBMITTALS / REVISIONS		
NO.	DATE	DESCRIPTION
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.

SHEET TITLE
LANDSCAPING NOTES & DETAILS

PROJECT NO. 19182	DATE 02/26/2020
DRAWN BY ZK	SCALE AS SHOWN
CHECKED BY AA	

SHEET NO.
L1.10

n:\2019\19182_allen_property\CAD\01_sheets\19182_L1.00_LANDSCAPE_SERIES.dwg - Printed on 2020-02-26 at 3:25:39 PM.

LOSE DESIGN
SPACES FOR LIFE.

June 12, 2020

Lori Lange, P.E., City Engineer
City of Brentwood
1750 General George Patton Drive
Brentwood, TN 37027

RE: Allen Property Preliminary Hydrologic Analysis

Lori,

On behalf of Turnberry Homes and pursuant to concerns expressed by the neighbors of this development, specifically regarding stormwater runoff, we have prepared this preliminary hydrologic analysis. While we have classified this report as "preliminary", we have evaluated/designed the proposed stormwater facilities to a level where we can confidently state that our design will meet and exceed the City's requirements, as outlined in the subdivision regulations, and provide additional benefits to our downstream neighbors. Referring to the tables below, in addition to exceeding the standard detention requirements, we show significant reductions to the flows at every storm event for each watershed. We have summarized our findings below.

As much as practical, we honored the natural drainage patterns for this site. The property has two analysis points or outfalls where runoff crosses the property line. The primary means of stormwater control will be the construction of 3 quantity detention ponds and 2 water quality ponds. As a large portion of the watersheds are off-site, we are facilitating the runoff by safely routing through our ponds and the flow reductions are applied to the on-site portions of each respective watershed.

Analysis Point #1

Based on our calculations, for analysis point #1 which lies near the southern portion of the site, we found that the total required peak flow reduction was 41.1cfs. This is the reduction required for the post-developed 25-yr flow to match the pre-developed 2-yr flow for our contributing portion of the watershed. After routing runoff through our ponds, the 25-yr post-developed flow rate was reduced from 187cfs to 91.83cfs for a total reduction of 95.17cfs. This equates to an additional reduction of 54.07cfs over that which was required by 131.5%.

Analysis Point #2

Likewise, for analysis point #2 which is situated in the northern portion of the site, we found that the total required peak flow reduction was 10.81 CFS. Again, after routing runoff through our ponds, the 25yr post-developed flow rate was reduced from 54.57cfs to 40.85cfs for a total reduction of 13.72cfs. This equates to an additional reduction of 2.91cfs over that which was required by 26.9%.

LOSE DESIGN
SPACES FOR LIFE.

Originally, we designed the facilities as efficiently as possible to meet the requirements of the City and to minimize cost of construction. After meeting and hearing the concerns from the neighboring community, Turnberry Homes authorized our firm to design the ponds and maximize their footprints to provide the best possible downstream benefit practical. This decision will add significant cost to the infrastructure but will provide additional security to our downstream neighbors.

Tabulated results of our calculations are provided below for your review. Please feel free to reach out to me directly if you have any questions with regards to our methodology or if you require any additional information.

Sincerely,



Michael Black, P.E.
Vice President – Engineering
Lose Design

Analysis Point #1 – Developed Area			
	Drainage Area (ac)	CN	Flow (cfs)
Pre-Development 2-year	9.167	74	14.14
Post Development 25-year	9.778	82	55.24
			41.1

Analysis Point #2 – Developed Area			
	Drainage Area	CN	Flow (cfs)
Pre-Development 2-year	3.39	74	5.7
Post Development 25-year	2.781	81	16.51
			10.81

*Reduction in peak flow at outfalls required from 25 year event to meet existing 2 year flows for developed areas

Analysis Point #1 – Southern Watershed			
Storm Event	**Existing Total Runoff (cfs)	**Proposed Total Flow Rate (cfs)	Peak Flow Reduction (cfs)
2-yr	63.45	27.24	36.21
5-yr	110.44	42.09	68.35
10-yr	143.44	58.12	85.32
25-yr	187	91.83	95.17
100-yr	253.07	145.43	107.64

Analysis Point 2 – Northern Watershed			
Storm Event	**Existing Total Runoff (cfs)	**Proposed Total Flow Rate (cfs)	Peak Flow Reduction (cfs)
2-yr	19.33	15.26	4.07
5-yr	32.8	25.1	7.7
10-yr	42.21	31.93	10.28
25-yr	54.57	40.85	13.72
100-yr	73.21	54.24	18.97

** Total runoff at analysis points include developed and undeveloped area within watersheds on and offsite

ENGINEERING CALCULATION REPORT

ALLEN PROPERTY

9520 SPLIT LOG ROAD
BRENTWOOD, TN 37027

JOB # 19182

JULY 2020

PREPARED FOR:

TURNBERRY HOMES
210 JAMESTOWN PARK DRIVE, SUITE 102
BRENTWOOD, TN 37027
(615) 376-7001



PREPARED BY:

LOSE DESIGN
2809 FOSTER AVENUE
NASHVILLE, TN 37210
(615) 242-0040

LOSE DESIGN
SPACES FOR LIFE.

TABLE OF CONTENTS

1) Project Summary
2) U.S. Quadrangle Maps (Site Location)
3) U.S.G.S. Soils Map
4) Stream Determination Report
5) Overall Site Hydrology
    a. Existing & Proposed Watershed Maps
    b. HydroCAD Report
        i. Pre 2-yr Storm
        ii. Post 25-yr Storm
        iii. Existing Model
        iv. Proposed Model
    c. Water Quality Calcs
    d. Existing Culvert Capacity
6) Site Hydraulics
    a. Pipe Chart
    b. Inlet Watershed Map
    c. Hydraflow Report
7) Erosion Prevention Sediment Control
    a. EPSC HydroCAD Report
    b. Sediment Basin Sizing
8) Sight Distance
    a. Intersection Sight Distance Exhibit
    b. Intersection Sight Distance Calculations

LOSE DESIGN
SPACES FOR LIFE.

Project Summary

Existing Conditions
The subject property is located on the north side of Split Log Road in Williamson County just east of the Northumberland Subdivision and Glen Abby, directly across from the Taramore Subdivision to the south of Split Log Road. The site consists of open pasture. The terrain is moderately sloping with two outfalls. The majority of the site slopes from the north to the south then exits the property to the west with about 70 feet in topographic relief. Surface waters leaving the site drain overland to an Unnamed Tributary to the Little Harpeth River.

Project Description
The project consists of the construction of a residential subdivision along with all supporting roadways, utilities, and storm water systems. The total site area for this project is approximately 27.99 acres, of which approximately 15.00 acres will be disturbed. Approximately 1,768 linear feet of new roadway will provide access to the site from Split Log Road to the south and Glenfiddich Trace to the north. All proposed roadways will be constructed in accordance with TDOT standards specifications and the City of Brentwood's Subdivision Regulations.

Proposed Site Drainage
As much as practical, existing drainage characteristics will be maintained. Upon completion of bulk grading, runoff from the majority of the site will flow overland as in pre-developed conditions. Some of the new roadway runoff will be collected in storm sewer systems that have been designed to provide proper drainage of the roads. The storm sewer systems will route runoff to the proposed water quality measures and detention basins. The detention basins will also be constructed to serve as temporary sediment basins during construction and will remain until the site is fully stabilized. The basins will then be modified converted to permanent detention basins to control peak flow rates off the site in accordance with the City of Brentwood design requirements. Rip-rap pads will be utilized at the outlet end of all storm pipes to spread the flow and dissipate velocity.

The pre and post-development runoff was calculated with HydroCAD Stormwater Modeling System V10.00 software, which utilizes the Natural Resource Conservation Service TR-20 method. The following table gives a summary of the flows for each storm event at each of the analysis points.

Analysis Point #1 – Developed Area			
	Drainage Area (ac)	CN	Flow (cfs)
Pre-Development 2-year	9.167	74	14.14
Post Development 25-year	9.778	82	55.24
			41.1

Analysis Point #2 – Developed Area			
	Drainage Area	CN	Flow (cfs)
Pre-Development 2-year	3.39	74	5.7
Post Development 25-year	2.781	81	16.51
			10.81

*Reduction in peak flow at outfalls required from 25 year event to meet existing 2 year flows for developed areas

Analysis Point #1 – Southern Watershed			
Storm Event	**Existing Total Runoff (cfs)	**Proposed Total Flow Rate (cfs)	Peak Flow Reduction (cfs)
2-yr	63.45	27.34	36.11
5-yr	110.44	42.35	68.09
10-yr	143.44	58.95	84.49
25-yr	187	92.97	94.03
100-yr	253.07	147.99	105.08

Analysis Point 2 – Northern Watershed			
Storm Event	**Existing Total Runoff (cfs)	**Proposed Total Flow Rate (cfs)	Peak Flow Reduction (cfs)
2-yr	19.33	15.26	4.07
5-yr	32.8	25.1	7.7
10-yr	42.21	31.93	10.28
25-yr	54.57	40.85	13.72
100-yr	73.21	54.24	18.97

** Total runoff at analysis points include developed and undeveloped area within watersheds on and offsite

At both analysis points, peak flows are being decrease by utilizing stormwater detention ponds with respect to the Pre-2, Post-25 detention requirement in the City of Brentwood Subdivision Regulations for the portion of land being developed. Since offsite runoff is being routed through the detention ponds and are not held to the Pre-2, Post 25 requirement a separate peak flow reduction calculation was performed to generate the amount of flow our site contributed to the overall watershed and was used to show adequate stormwater management provisions are being provided.

N:\2019\19182_Allen_Property\CAD\04_CIVIL\19182_Quad Map.dwg - Printed on 2020-01-21 at 8:14:21 AM.

NOT FOR CONSTRUCTION

SITE

PORTOFINO DR

SPLIT LOGGING RD

SAM DONALD RD

Edmondson Br

Owl Cr

SONOMA TRCE

BURLAND CRES

IVY CREST DR

LEGACY COVE LN

ELGIN WAY

NOTTAWAY LN

VERNON RD

VICKERY PARK DR

ALLEN PROPERTY

USGS QUAD MAP

BRENTWOOD, TN

LOSE DESIGN
SPACES FOR LIFE.

SCALE: 1" = 1000'

JANUARY 2020

LD# 19182

© 2018 LOSE DESIGN

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Williamson County, Tennessee



January 21, 2020

Custom Soil Resource Report
Soil Map



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Williamson County, Tennessee
Survey Area Data: Version 14, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 12, 2015—Oct 12, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
ArB	Armour silt loam, 2 to 5 percent slopes	10.4	7.1%
ArB2	Armour silt loam, 2 to 5 percent slopes, eroded	1.8	1.2%
ArC2	Armour silt loam, 5 to 12 percent slopes, eroded	1.6	1.1%
AwC	Ashwood silty clay loam, 5 to 12 percent slopes	5.7	3.8%
AwD	Ashwood silty clay loam, 12 to 20 percent slopes	2.2	1.5%
BrB2	Braxton cherty silt loam, 2 to 5 percent slopes, eroded	7.2	4.9%
BrC2	Braxton cherty silt loam, 5 to 12 percent slopes, eroded	39.8	27.0%
BsC3	Braxton cherty silty clay loam, 5 to 12 percent slopes, severely eroded	7.4	5.0%
BsD3	Braxton cherty silty clay loam, 12 to 20 percent slopes, severely eroded	1.5	1.0%
CfE2	Culleoka flaggy loam, 20 to 30 percent slopes, eroded	2.7	1.8%
Eg	Egam silt loam, phosphatic	3.1	2.1%
Gu	Gullied land	3.0	2.0%
HbC2	Hampshire silt loam, 5 to 12 percent slopes, eroded	0.7	0.5%
Hu	Huntington silt loam, phosphatic	8.7	5.9%
MbB2	Maury silt loam, 2 to 5 percent slopes, eroded	13.6	9.2%
MbC2	Maury silt loam, 5 to 12 percent slopes, eroded	14.7	9.9%
MnE	Mimosa-Rock outcrop complex, 20 to 40 percent slopes	2.9	1.9%
MoD	Ashwood-Mimosa-Rock outcrop complex, 5 to 15 percent slopes	15.6	10.5%
Rc	Rockland	4.9	3.3%
StC2	Stiversville silt loam, 5 to 12 percent slopes, eroded	0.0	0.0%
Totals for Area of Interest		**147.5**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas

shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Williamson County, Tennessee

ArB—Armour silt loam, 2 to 5 percent slopes

Map Unit Setting

National map unit symbol: 2td31
Elevation: 500 to 850 feet
Mean annual precipitation: 48 to 58 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 230 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Armour and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Armour

Setting

Landform: Stream terraces
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave, convex
Across-slope shape: Linear, convex
Parent material: Silty alluvium over clayey residuum weathered from phosphatic limestone

Typical profile

A - 0 to 19 inches: silt loam
Bt - 19 to 58 inches: silty clay loam
BC - 58 to 79 inches: clay

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 11.6 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

Minor Components

Byler

Percent of map unit: 4 percent
Landform: Stream terraces
Landform position (two-dimensional): Footslope, toeslope
Landform position (three-dimensional): Base slope, tread
Down-slope shape: Concave, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

Arrington

Percent of map unit: 4 percent
Landform: Flood plains
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Base slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Mimosa

Percent of map unit: 2 percent
Landform: Escarpments
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

ArB2—Armour silt loam, 2 to 5 percent slopes, eroded

Map Unit Setting

National map unit symbol: kkpp
Elevation: 450 to 700 feet
Mean annual precipitation: 46 to 60 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Armour and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Armour

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Parent material: Loamy alluvium derived from interbedded sedimentary rock

Typical profile

H1 - 0 to 13 inches: silt loam
H2 - 13 to 60 inches: silty clay loam

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 11.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: B
Hydric soil rating: No

ArC2—Armour silt loam, 5 to 12 percent slopes, eroded

Map Unit Setting

National map unit symbol: kkpr
Elevation: 450 to 700 feet
Mean annual precipitation: 46 to 60 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Armour and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Armour

Setting

Landform: Stream terraces
Landform position (three-dimensional): Tread
Parent material: Loamy alluvium derived from interbedded sedimentary rock

Typical profile

H1 - 0 to 13 inches: silt loam
H2 - 13 to 60 inches: silty clay loam

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)

Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 11.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Hydric soil rating: No

AwC—Ashwood silty clay loam, 5 to 12 percent slopes

Map Unit Setting

National map unit symbol: 2v599
Elevation: 570 to 1,180 feet
Mean annual precipitation: 48 to 58 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 230 days
Farmland classification: Not prime farmland

Map Unit Composition

Ashwood and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ashwood

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey residuum weathered from limestone

Typical profile

Ap - 0 to 5 inches: silty clay loam
BA - 5 to 9 inches: silty clay
Bt - 9 to 36 inches: clay
R - 36 to 46 inches: bedrock

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: 20 to 39 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 5.1 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Gladdice
Percent of map unit: 7 percent
Landform: Escarpments
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Barfield
Percent of map unit: 4 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Mimosa
Percent of map unit: 4 percent
Landform: Escarpments
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

AwD—Ashwood silty clay loam, 12 to 20 percent slopes

Map Unit Setting
National map unit symbol: 2v59b
Elevation: 580 to 1,130 feet
Mean annual precipitation: 48 to 58 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 230 days
Farmland classification: Not prime farmland

Map Unit Composition
Ashwood and similar soils: 85 percent

Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ashwood

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey residuum weathered from limestone

Typical profile

Ap - 0 to 5 inches: silty clay loam
BA - 5 to 9 inches: silty clay
Bt - 9 to 36 inches: clay
R - 36 to 46 inches: bedrock

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: 20 to 39 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.01 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Gladdice

Percent of map unit: 7 percent
Landform: Escarpments
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Barfield

Percent of map unit: 7 percent
Landform: Hillslopes
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear

Hydric soil rating: No

Mimosa

Percent of map unit: 1 percent
Landform: Escarpments
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

BrB2—Braxton cherty silt loam, 2 to 5 percent slopes, eroded

Map Unit Setting

National map unit symbol: kkq6
Elevation: 900 to 1,200 feet
Mean annual precipitation: 48 to 55 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 205 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Braxton and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Braxton

Setting

Landform: Hillslopes
Landform position (three-dimensional): Crest
Parent material: Clayey alluvium and/or residuum

Typical profile

H1 - 0 to 10 inches: gravelly silt loam
H2 - 10 to 30 inches: silty clay loam
H3 - 30 to 60 inches: clay

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e

Hydrologic Soil Group: C
Hydric soil rating: No

BrC2—Braxton cherty silt loam, 5 to 12 percent slopes, eroded

Map Unit Setting

National map unit symbol: kkq7
Elevation: 900 to 1,200 feet
Mean annual precipitation: 48 to 55 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Braxton and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Braxton

Setting

Landform: Hillslopes
Landform position (three-dimensional): Side slope
Parent material: Clayey alluvium and/or residuum

Typical profile

H1 - 0 to 6 inches: gravelly silt loam
H2 - 6 to 26 inches: silty clay loam
H3 - 26 to 60 inches: clay

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

BsC3—Braxton cherty silty clay loam, 5 to 12 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: kkq9
Elevation: 900 to 1,200 feet
Mean annual precipitation: 48 to 55 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Braxton, severely eroded, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Braxton, Severely Eroded

Setting

Landform: Hillslopes
Landform position (three-dimensional): Side slope
Parent material: Clayey alluvium and/or residuum

Typical profile

H1 - 0 to 5 inches: gravelly silty clay loam
H2 - 5 to 60 inches: clay

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Hydric soil rating: No

BsD3—Braxton cherty silty clay loam, 12 to 20 percent slopes, severely eroded

Map Unit Setting

National map unit symbol: kkqb
Elevation: 900 to 1,200 feet
Mean annual precipitation: 48 to 55 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Braxton, severely eroded, and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Braxton, Severely Eroded

Setting

Landform: Hillslopes
Landform position (three-dimensional): Side slope
Parent material: Clayey alluvium and/or residuum

Typical profile

H1 - 0 to 5 inches: gravelly silty clay loam
H2 - 5 to 60 inches: clay

Properties and qualities

Slope: 12 to 20 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: C
Hydric soil rating: No

CfE2—Culleoka flaggy loam, 20 to 30 percent slopes, eroded

Map Unit Setting

National map unit symbol: kkqj

Elevation: 500 to 900 feet
Mean annual precipitation: 48 to 55 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition
Sandhill and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Sandhill

Setting
Landform: Hillslopes
Landform position (three-dimensional): Side slope
Parent material: Loamy residuum weathered from limestone, sandstone, and shale

Typical profile
H1 - 0 to 7 inches: flaggy loam
H2 - 7 to 20 inches: flaggy clay loam
H3 - 20 to 48 inches: channery clay loam
Cr - 48 to 58 inches: bedrock

Properties and qualities
Slope: 20 to 30 percent
Depth to restrictive feature: 39 to 59 inches to paralithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.60 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 4.8 inches)

Interpretive groups
Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: A
Hydric soil rating: No

Eg—Egam silt loam, phosphatic

Map Unit Setting
National map unit symbol: kkr4
Elevation: 800 to 1,300 feet
Mean annual precipitation: 52 to 56 inches
Mean annual air temperature: 54 to 57 degrees F
Frost-free period: 170 to 190 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Egam and similar soils: 92 percent
Minor components: 8 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Egam

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Parent material: Clayey alluvium

Typical profile

H1 - 0 to 20 inches: silt loam
H2 - 20 to 40 inches: silty clay loam
H3 - 40 to 55 inches: silty clay loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.60 in/hr)
Depth to water table: About 36 to 48 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water storage in profile: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Dunning

Percent of map unit: 8 percent
Landform: Depressions
Hydric soil rating: Yes

Gu—Gullied land

Map Unit Composition

Gullied land: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gullied Land

Typical profile

H1 - 0 to 60 inches: variable

HbC2—Hampshire silt loam, 5 to 12 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2v5bj
Elevation: 420 to 1,070 feet
Mean annual precipitation: 46 to 61 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 154 to 233 days
Farmland classification: Not prime farmland

Map Unit Composition

Hampshire and similar soils: 87 percent
Minor components: 13 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hampshire

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Clayey residuum weathered from limestone and shale over residuum weathered from limestone, sandstone, and shale

Typical profile

Ap - 0 to 7 inches: silt loam
Bt1 - 7 to 12 inches: silty clay loam
Bt2 - 12 to 30 inches: clay
2B/C - 30 to 47 inches: very channery clay loam
2Cr - 47 to 57 inches: bedrock

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: 39 to 59 inches to paralithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Inman

Percent of map unit: 5 percent
Landform: Flats
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Hicks

Percent of map unit: 4 percent
Landform: Flats
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Stiversville

Percent of map unit: 2 percent
Landform: Flats
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Rise
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Sandhill

Percent of map unit: 2 percent
Landform: Flats
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Hu—Huntington silt loam, phosphatic

Map Unit Setting

National map unit symbol: kks7
Mean annual precipitation: 46 to 60 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Huntington and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Huntington

Setting

Landform: Flood plains
Landform position (three-dimensional): Tread
Parent material: Loamy alluvium derived from limestone, sandstone, and shale

Typical profile

H1 - 0 to 10 inches: silt loam
H2 - 10 to 60 inches: silt loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 2.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: Occasional
Frequency of ponding: None
Available water storage in profile: High (about 11.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: B
Hydric soil rating: No

MbB2—Maury silt loam, 2 to 5 percent slopes, eroded

Map Unit Setting

National map unit symbol: kksq
Mean annual precipitation: 46 to 60 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 200 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Maury and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Maury

Setting

Landform: Flats
Landform position (three-dimensional): Rise
Parent material: Loess over clayey residuum and/or alluvium derived from limestone

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 20 inches: silty clay loam

H3 - 20 to 60 inches: silty clay

Properties and qualities

Slope: 2 to 5 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: High (about 11.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: A
Hydric soil rating: No

MbC2—Maury silt loam, 5 to 12 percent slopes, eroded

Map Unit Setting

National map unit symbol: kksr
Mean annual precipitation: 46 to 60 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Maury and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Maury

Setting

Landform: Flats
Landform position (three-dimensional): Rise
Parent material: Loess over clayey residuum and/or alluvium derived from limestone

Typical profile

H1 - 0 to 8 inches: silt loam
H2 - 8 to 20 inches: silty clay loam
H3 - 20 to 60 inches: silty clay

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.60 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None

Frequency of ponding: None
Available water storage in profile: High (about 11.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A
Hydric soil rating: No

MnE—Mimosa-Rock outcrop complex, 20 to 40 percent slopes

Map Unit Setting

National map unit symbol: 2td3h
Elevation: 500 to 850 feet
Mean annual precipitation: 48 to 58 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 230 days
Farmland classification: Not prime farmland

Map Unit Composition

Mimosa and similar soils: 70 percent
Rock outcrop: 15 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mimosa

Setting

Landform: Escarpments
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, convex
Across-slope shape: Linear, convex
Parent material: Clayey residuum weathered from limestone

Typical profile

Ap - 0 to 6 inches: silt loam
Bt - 6 to 40 inches: clay
BC - 40 to 50 inches: clay
C - 50 to 55 inches: clay
R - 55 to 65 inches: bedrock

Properties and qualities

Slope: 20 to 40 percent
Depth to restrictive feature: 31 to 72 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 7.2 inches)

Interpretive groups
Land capability classification (irrigated): 7e
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Ashwood
Percent of map unit: 6 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Dellrose
Percent of map unit: 5 percent
Landform: Hillsides
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Gladdice
Percent of map unit: 4 percent
Landform: Escarpments
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave, convex
Across-slope shape: Linear, convex
Hydric soil rating: No

MoD—Ashwood-Mimosa-Rock outcrop complex, 5 to 15 percent slopes

Map Unit Setting
National map unit symbol: 2v63p
Elevation: 540 to 1,230 feet
Mean annual precipitation: 48 to 58 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 190 to 230 days
Farmland classification: Not prime farmland

Map Unit Composition
Ashwood and similar soils: 45 percent

Mimosa and similar soils: 35 percent
Rock outcrop: 15 percent
Minor components: 5 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ashwood

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Clayey residuum weathered from limestone

Typical profile

Ap - 0 to 5 inches: silty clay loam
BA - 5 to 9 inches: silty clay
Bt - 9 to 36 inches: clay
R - 36 to 46 inches: bedrock

Properties and qualities

Slope: 5 to 15 percent
Depth to restrictive feature: 20 to 39 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 5.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: D
Hydric soil rating: No

Description of Mimosa

Setting

Landform: Escarpments
Landform position (two-dimensional): Footslope
Landform position (three-dimensional): Base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Clayey residuum weathered from limestone

Typical profile

Ap - 0 to 6 inches: silt loam
Bt - 6 to 50 inches: clay
C - 50 to 55 inches: clay
R - 55 to 65 inches: bedrock

Properties and qualities

Slope: 5 to 15 percent
Depth to restrictive feature: 39 to 59 inches to lithic bedrock
Natural drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6s
Hydrologic Soil Group: C
Hydric soil rating: No

Description of Rock Outcrop

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s

Minor Components

Dellrose

Percent of map unit: 5 percent
Landform: Hillsides
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

Rc—Rockland

Map Unit Setting

National map unit symbol: kktm
Elevation: 400 to 4,000 feet
Mean annual precipitation: 8 to 55 inches
Mean annual air temperature: 45 to 61 degrees F
Frost-free period: 110 to 205 days
Farmland classification: Not prime farmland

Map Unit Composition

Rock outcrop: 60 percent
Gladeville and similar soils: 30 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rock Outcrop

Typical profile

R - 0 to 10 inches: bedrock

Properties and qualities

Slope: 3 to 30 percent
Depth to restrictive feature: 0 inches to lithic bedrock
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Frequency of ponding: Rare

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 8s
Hydric soil rating: No

Description of Gladeville

Setting

Landform: Hillslopes
Landform position (three-dimensional): Side slope
Parent material: Flaggy residuum weathered from limestone

Typical profile

H1 - 0 to 10 inches: very flaggy silty clay loam
R - 10 to 20 inches: bedrock

Properties and qualities

Slope: 2 to 20 percent
Depth to restrictive feature: 3 to 12 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 0.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Minor components

Percent of map unit: 10 percent
Hydric soil rating: No

StC2—Stiversville silt loam, 5 to 12 percent slopes, eroded

Map Unit Setting

National map unit symbol: 2v5bt
Elevation: 420 to 1,100 feet
Mean annual precipitation: 46 to 61 inches
Mean annual air temperature: 57 to 61 degrees F
Frost-free period: 154 to 233 days
Farmland classification: Not prime farmland

Map Unit Composition

Stiversville and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Stiversville

Setting

Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Side slope
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Loamy residuum weathered from limestone, sandstone, and shale

Typical profile

Ap - 0 to 7 inches: silt loam
Bt1 - 7 to 25 inches: clay loam
Bt2 - 25 to 45 inches: parachannery clay loam
Cr - 45 to 55 inches: bedrock

Properties and qualities

Slope: 5 to 12 percent
Depth to restrictive feature: 39 to 59 inches to paralithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately high (0.00 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 7.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: A

Hydric soil rating: No

Minor Components

Hicks

Percent of map unit: 5 percent
Landform: Flats
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Crest
Down-slope shape: Linear
Across-slope shape: Convex
Hydric soil rating: No

Hampshire

Percent of map unit: 5 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Crest
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Marsh

Percent of map unit: 3 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Inman

Percent of map unit: 2 percent
Landform: Hillslopes
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Erosion Factors

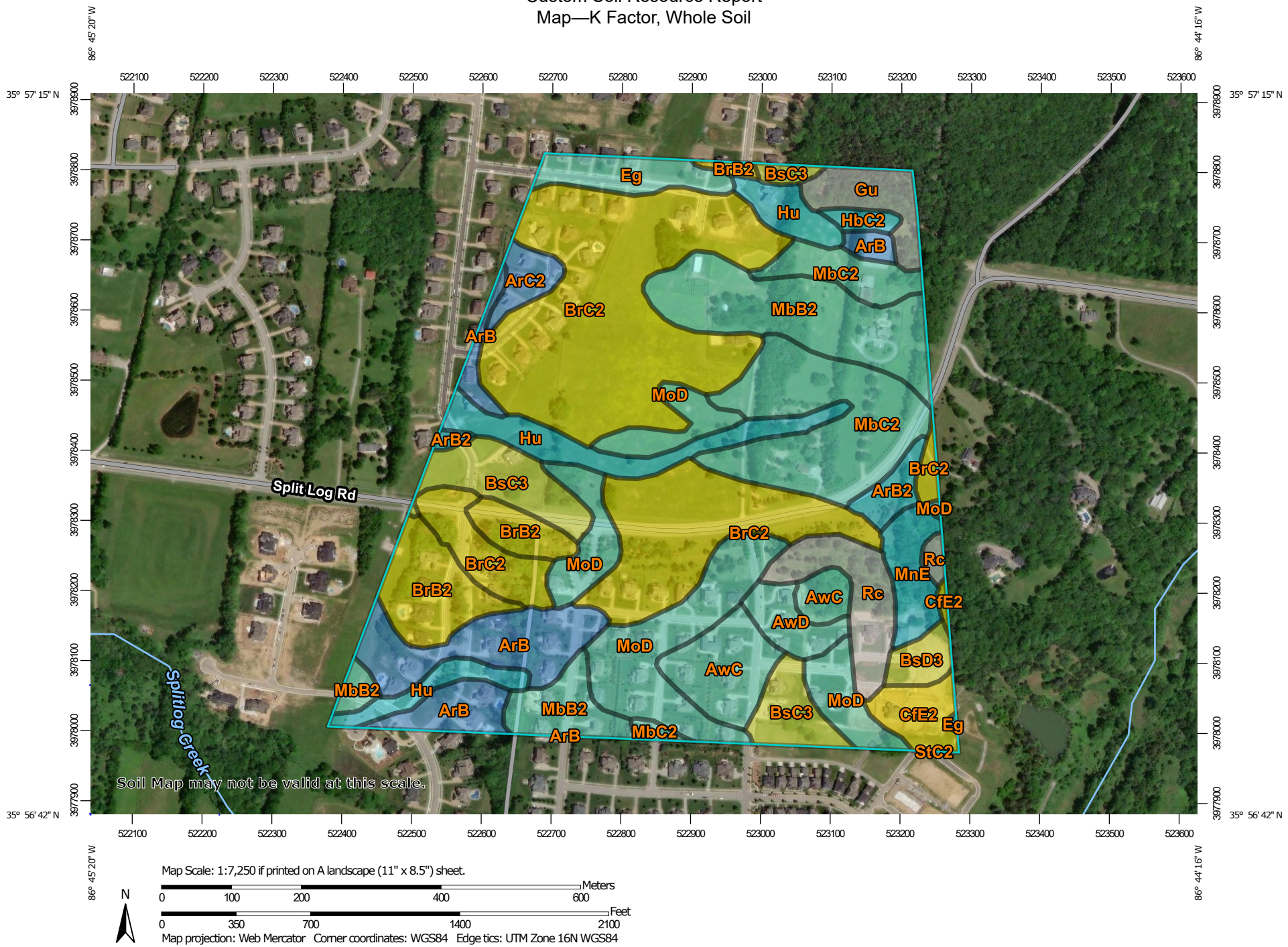
Soil Erosion Factors are soil properties and interpretations used in evaluating the soil for potential erosion. Example soil erosion factors can include K factor for the whole soil or on a rock free basis, T factor, wind erodibility group and wind erodibility index.

K Factor, Whole Soil

Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and saturated hydraulic conductivity (Ksat). Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

"Erosion factor Kw (whole soil)" indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Custom Soil Resource Report
Map—K Factor, Whole Soil



MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- .02
- .05
- .10
- .15
- .17
- .20
- .24
- .28
- .32
- .37
- .43
- .49
- .55
- .64
- Not rated or not available

Soil Rating Lines
- .02
- .05
- .10
- .15
- .17
- .20
- .24
- .28
- .32
- .37
- .43
- .49
- .55
- .64
- Not rated or not available

Soil Rating Points
- .02
- .05
- .10
- .15
- .17
- .20
- .24
- .28
- .32
- .37
- .43
- .49
- .55
- .64
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Williamson County, Tennessee
Survey Area Data: Version 14, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 12, 2015—Oct 12, 2017

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Table—K Factor, Whole Soil

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
ArB	Armour silt loam, 2 to 5 percent slopes	.43	10.4	7.1%
ArB2	Armour silt loam, 2 to 5 percent slopes, eroded	.37	1.8	1.2%
ArC2	Armour silt loam, 5 to 12 percent slopes, eroded	.43	1.6	1.1%
AwC	Ashwood silty clay loam, 5 to 12 percent slopes	.32	5.7	3.8%
AwD	Ashwood silty clay loam, 12 to 20 percent slopes	.32	2.2	1.5%
BrB2	Braxton cherty silt loam, 2 to 5 percent slopes, eroded	.17	7.2	4.9%
BrC2	Braxton cherty silt loam, 5 to 12 percent slopes, eroded	.17	39.8	27.0%
BsC3	Braxton cherty silty clay loam, 5 to 12 percent slopes, severely eroded	.20	7.4	5.0%
BsD3	Braxton cherty silty clay loam, 12 to 20 percent slopes, severely eroded	.20	1.5	1.0%
CfE2	Culleoka flaggy loam, 20 to 30 percent slopes, eroded	.17	2.7	1.8%
Eg	Egam silt loam, phosphatic	.32	3.1	2.1%
Gu	Gullied land		3.0	2.0%
HbC2	Hampshire silt loam, 5 to 12 percent slopes, eroded	.37	0.7	0.5%
Hu	Huntington silt loam, phosphatic	.37	8.7	5.9%
MbB2	Maury silt loam, 2 to 5 percent slopes, eroded	.32	13.6	9.2%
MbC2	Maury silt loam, 5 to 12 percent slopes, eroded	.32	14.7	9.9%
MnE	Mimosa-Rock outcrop complex, 20 to 40 percent slopes	.37	2.9	1.9%
MoD	Ashwood-Mimosa-Rock outcrop complex, 5 to 15 percent slopes	.32	15.6	10.5%
Rc	Rockland		4.9	3.3%

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
StC2	Stiversville silt loam, 5 to 12 percent slopes, eroded	.32	0.0	0.0%
Totals for Area of Interest			**147.5**	**100.0%**

Rating Options—K Factor, Whole Soil

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

Layer Options (Horizon Aggregation Method): Surface Layer (Not applicable)

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

August 29, 2019

Mr. Jason Miles, P.E.
Lose Design
2809 Foster Avenue
Nashville, TN 37210

Dear Mr. Miles:

Subject: Jurisdictional Waters Determination at Allen Property
Split Log Road
Williamson County, Tennessee
CEC Project 194-500

Civil & Environmental Consultants, Inc. (CEC) was contracted by Lose Design to Perform a Jurisdictional Waters Determination at the Allen property located on Split Log Road in Brentwood, Williamson County, Tennessee. The site coordinates are N35.950838; W86.746826. The area of interest is depicted on the attached Franklin, USGS 7.5 Minute Topographic Map (Figure 1). The property is located in the Little Harpeth River (HUC12–051302040601) and Harpeth (HUC8–05130204) watersheds.

The site is being evaluated for a potential residential development. CEC biologist Caleb Duke performed the site visit on August 22, 2019. The subject property primarily consists of pasture with some small patches of forest (Figure 2). This report documents CEC's findings on the day the field survey was performed with no knowledge of past activities.

Prior to the site visit, a desktop review of the National Resources Conservation Service Web Soil Survey (Figure 3), the U.S. Fish and Wildlife Service National Wetland Inventory (NWI) map (Figure 4), and the Tennessee Department of Environment and Conservation GIS (TDEC-GIS) website was conducted. As depicted on Figure 1, there was one "blue line" feature located within the limits of investigation. Figure 2 displays the features that were identified by CEC during the field survey. According to the NRCS Soil Survey map, there was no hydric soil located within the property boundary. The NWI map indicated one pond located at the southwest corner of the property and no wetlands within the property boundary.

Hydrologic determinations at the proposed site included both a literature review and an on-site evaluation in accordance with the Tennessee Division of Water Resources' "Hydrologic Determination Field Data Sheet". Evaluation of wetlands at the site included both a literature review and an on-site evaluation in accordance with the criteria established in the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: *Eastern Mountains and Piedmont Region,* Version 2.0. Wetland forms were completed for areas exhibiting the

characteristics of wetland hydrology, hydrophytic plant community, and hydric soils. A photographic summary and associated Photo Location Map (Figure 5) depicting conditions observed during the site visit are attached.

The TVA daily precipitation gauge located along Mill Creek near Antioch, TN indicates total precipitation in the area between August 15, 2019 and our arrival on August 21, 2019 was 0.00-inches with 0.00-inches falling in the 48 hours prior to CEC's site visit (Table 1). A calculation of the 30-year average rainfall indicates normal weather conditions for 2019 (Table 2).

Table 1 - Rainfall Data

Date	8/15 Thurs	8/16 Fri	8/17 Sat	8/18 Sun	8/19 Mon	8/20 Tues	8/21 Wed
ANNTT1-Mill Creek , Antioch	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table 2
Calculation of Normal Weather Conditions

		Long-term rainfall records							
	Month	Minus One STD. Dev. (DRY)	Normal (Mean inches)	Plus One STD. Dev. (WET)	Actual Rainfall	Condition (dry, wet, normal)	Condition value	Month weight value	Product of previous two columns
1st prior month	July	2.31	4.01	5.71	4.86	NORMAL	2	x 3	6
2nd prior month	June	1.44	3.91	6.38	8.77	WET	3	x 2	6
3rd prior month	May	1.36	4.28	7.2	1.37	NORMAL	2	x 1	2
								Sum =	14

Note:

If sum is:	
6-9	then period prior has been drier than normal
10-14	then period prior has been normal
15-18	then period prior has been wetter than normal

Condition value:	
Dry =	1
Normal =	2
Wet =	3

Conclusions: Period prior has been normal.

Figure 2 depicts the features identified and delineated by CEC during the August 21, 2019 field survey. Figure 5 depicts the location and direction of the photographs of the study area provided in the photo summary.

PND-1 is a pond located at coordinates N35.952113; W86.74499 and is 0.34 acres in size. The pond was not depicted on the National Wetland Inventory Map and did not have a defined channel flowing into or out of the pond. PND-1 is an excavated farm pond created for use of livestock.

SWL-1 is a swale that drains from east to west for approximately 606 feet. It begins along the eastern border of the property at coordinates N35.949679; W86.745265 and drains westward ending at WTL-2 at coordinates N35.94935; W86.747258. SWL-1 is a grassy swale with no bed or bank.

WTL-1 is a small depression wetland located at coordinates N35.949465; W86.746131.WTL-1 and is approximately 0.01 acres in size. The vegetation within WTL-1 primarily consists of barnyard grass (*Echinochloa crus-galli*) and needle spikerush (*Eleocharis acicularis*). WTL-1 soils met the shallow dark surface indicator with a matrix of 10YR 3/1 and redox concentrations of 5YR 4/6. WTL-1 had a single hydrology indicator of an algal crust.

WWC-1C-1/EPH-1 is a wet weather conveyance/ephemeral stream that begins at a culvert at coordinates N35.94887; 86.747359 and drains off property at coordinates N35.94961; W86.748315. WWC-1/EPH-1 is approximately 402 feet in length. WWC-1/EPH-1 drains to WTL-2 where is becomes sheet flow for approximately 50 feet until a defined channel resumes as WWC-1/EPH-1 down-gradient of WTL-2. WWC-1/EPH-1 had a secondary HD score of 15.75 and a habitat score of 18.

WTL-2 was identified in an area historically occupied by a farm pond and is highly impacted by cattle. WTL-2 is located at coordinates N35.949341; W86.747407 and is approximately 0.04 acres in size. WTL-2 hydrologic indicators include algal mat, surface soil cracks, and drainage patterns. The vegetation in WTL-2 primarily consists of smartweed species (*Persicaria hydropiperoides*), (*Persicaria setacea*), and barnyard grass (*Echinochloa crus-galli*). Soils in WTL-2 were hydric with a matrix of 10YR 4/2 and redox concentrations of 10YR 4/6.

WWC-2/UDF-1 is a wet weather conveyance/upland drainage feature located at coordinates N35.952403; W86.746572. WWC-2/UDF-1 is approximately 109 feet in length and severely impacted by fill material such as wood, tires, and metal. The feature has a poorly defined bed and bank and lacks an ordinary high water mark. WWC-2/UDF-1 had a HD score of 6.25 and a habitat assessment score of 9.

CEC biologists found one jurisdictional stream with a total length of 402 feet, and a total of two wetlands with a total acreage of 0.05 acres.

CEC appreciates the opportunity to provide Lose Design with this jurisdictional determination letter. If you have any questions or need any additional information regarding this report, please contact us at 615-333-7797 or by e-mail at cduke@cecinc.com or jgarcia@cecinc.com.

Sincerely,

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.

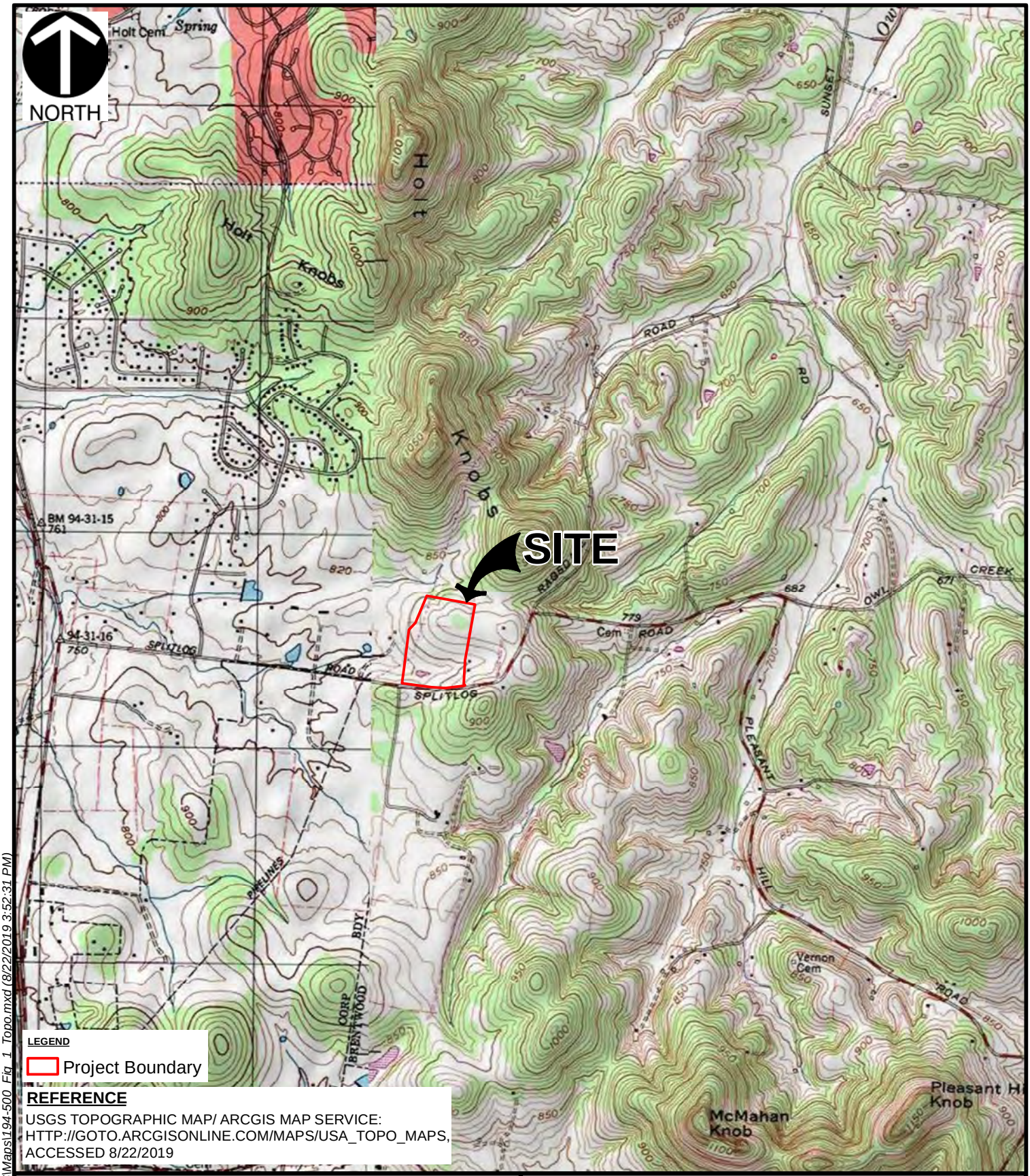
Caleb Duke, QHPIT
Project Scientist

Jose Garcia, QHP
Project Manager

Attachments: Figures
Photo Summary
Forms

Level of Care:

CEC's wetland delineation and stream determination services were conducted with the level of care and skill ordinarily exercised by members of the environmental consulting profession practicing contemporaneously under similar conditions in the locality of the project. Wetland delineations were conducted in a manner consistent with the criteria contained in the Corps Manual and Regional Supplement. Stream determinations were conducted in a manner consistent with the criteria established and codified in Tennessee Rule 1200-4-03-.05(9) of Public Chapter 464 of 2009. It must be recognized that the delineation of waters of the U.S. was based on field observations and CEC's professional interpretation of the criteria in the Corps Manual and Regional Supplement at the time of our fieldwork. Wetland and stream determinations may change subsequent to CEC's delineation based on changes in the regulatory criteria, seasonal variations in hydrology, alterations to drainage patterns and other human activities and/or land disturbances.



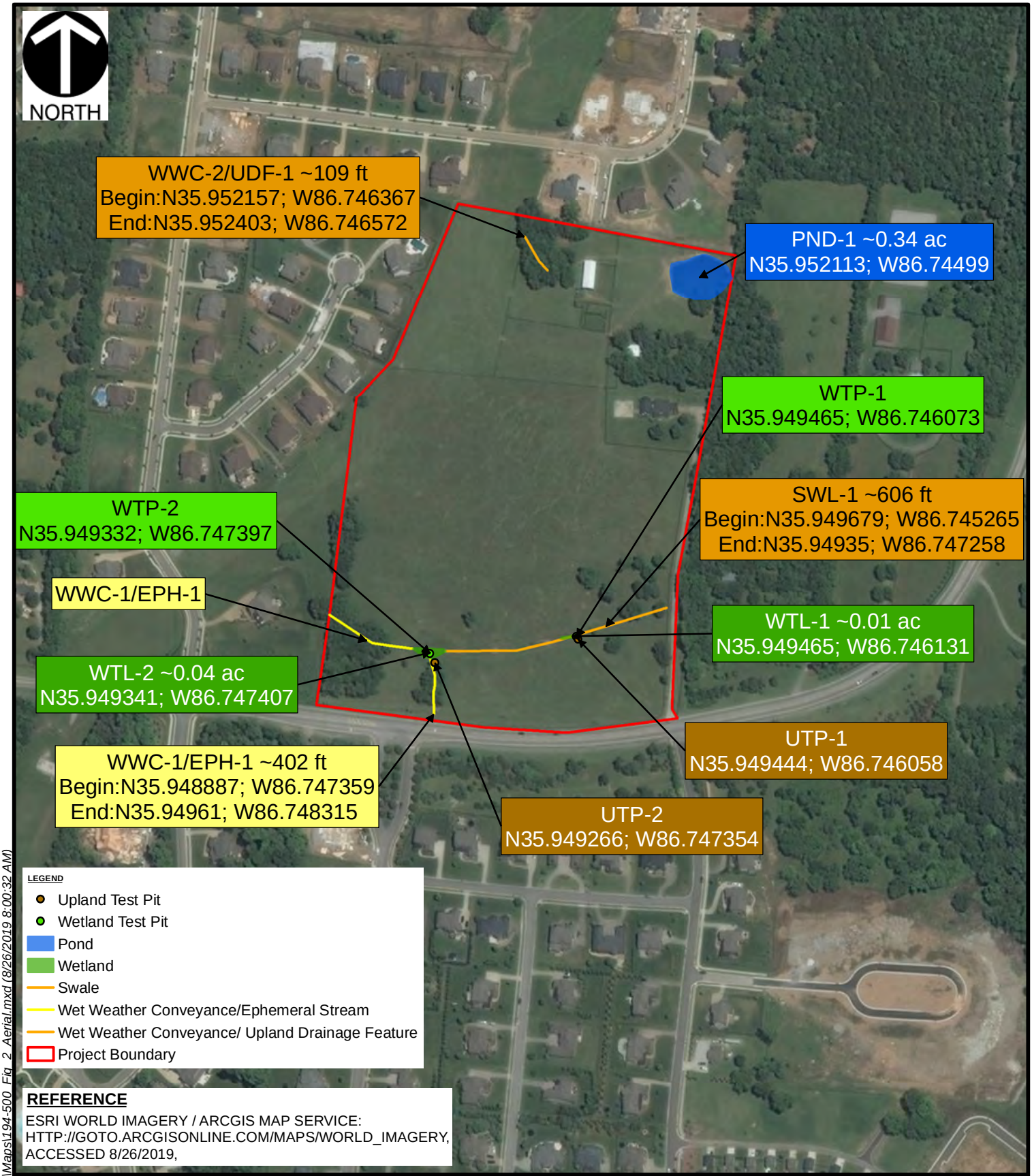
Civil & Environmental Consultants, Inc.
117 Seaboard Lane, Ste. E100 Franklin, Tennessee
615-333-7797 • 800-763-2326
www.cecinc.com

ALLEN PROPERTY
JURISDICTIONAL DETERMINATION
SPLIT LOG ROAD
BRENTWOOD, WILLIAMSON COUNTY, TN

SITE LOCATION MAP

DRAWN BY:	CAD	CHECKED BY:	DRAFT	APPROVED BY:	DRAFT	FIGURE NO:	1
DATE:	8/22/2019	SCALE:	1 " = 2,000 '	PROJECT NO:	194-500		

\\SVR-NASH\ P:\2019\194-500\I-GIS\Maps\194-500_Fig_1_Topo.mxd (8/22/2019 3:52:31 PM)



REFERENCE

ESRI WORLD IMAGERY / ARCGIS MAP SERVICE: HTTP://GOTO.ARCGISONLINE.COM/MAPS/WORLD_IMAGERY, ACCESSED 8/26/2019,

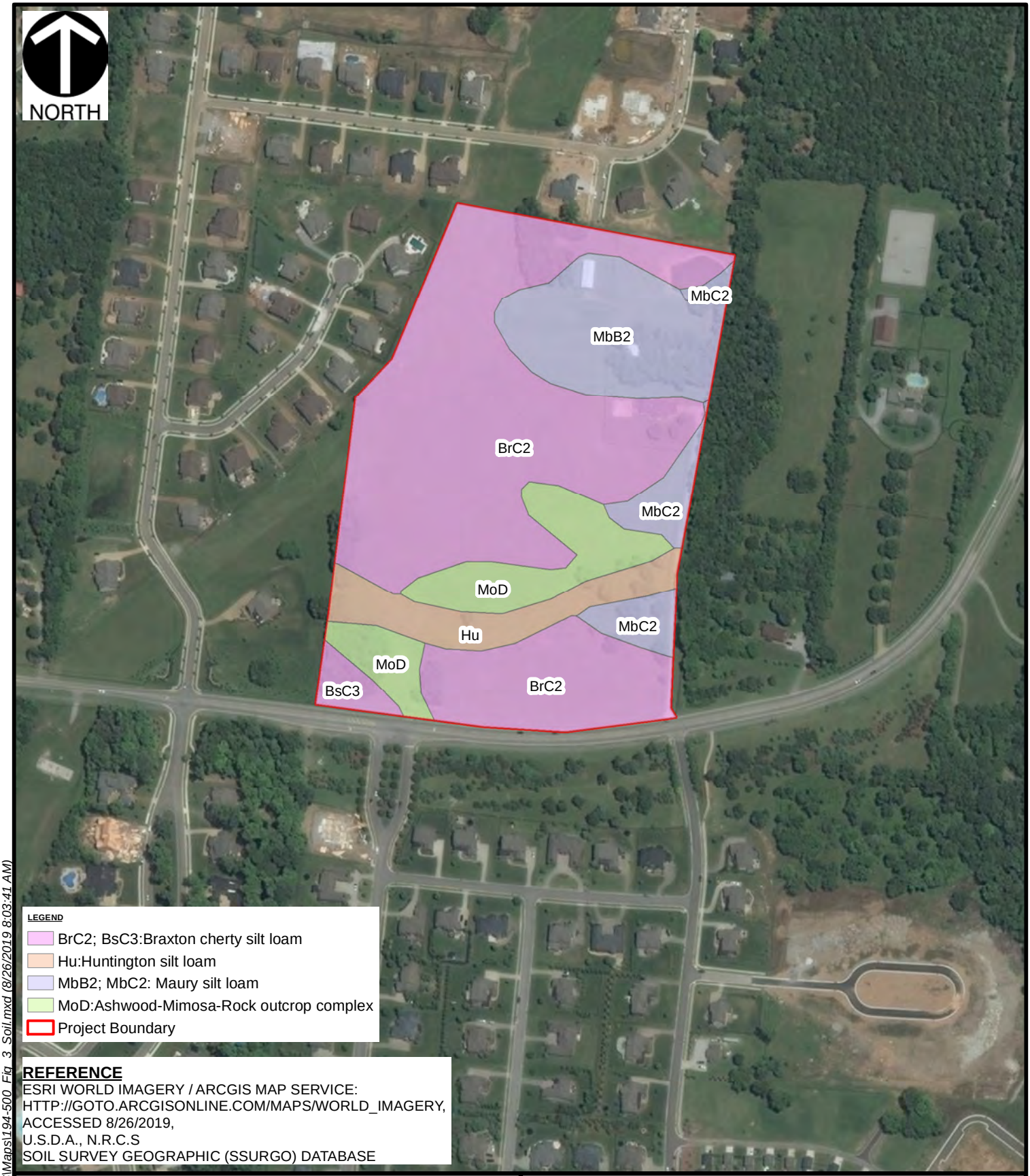
Civil & Environmental Consultants, Inc.
117 Seaboard Lane, Ste. E100 Franklin, Tennessee
615-333-7797 • 800-763-2326
www.cecinc.com

ALLEN PROPERTY
JURISDICTIONAL DETERMINATION
SPLIT LOG ROAD
BRENTWOOD, WILLIAMSON COUNTY, TN

FEATURE LOCATION MAP

DRAWN BY:	CAD	CHECKED BY:	DRAFT	APPROVED BY:	DRAFT	FIGURE NO:	2
DATE:	8/26/2019	SCALE:	1 " = 350 '	PROJECT NO:	194-500		

\\SVR-NASH\ P:\2019\194-500\I-GIS\Maps\194-500_Fig_2_Aerial.mxd (8/26/2019 8:00:32 AM)



REFERENCE
ESRI WORLD IMAGERY / ARCGIS MAP SERVICE:
HTTP://GOTO.ARCGISONLINE.COM/MAPS/WORLD_IMAGERY,
ACCESSED 8/26/2019,
U.S.D.A., N.R.C.S
SOIL SURVEY GEOGRAPHIC (SSURGO) DATABASE

Civil & Environmental Consultants, Inc.
117 Seaboard Lane, Ste. E100 Franklin, Tennessee
615-333-7797 • 800-763-2326
www.cecinc.com

ALLEN PROPERTY
JURISDICTIONAL DETERMINATION
SPLIT LOG ROAD
BRENTWOOD, WILLIAMSON COUNTY, TN

NRCS SOILS MAP

DRAWN BY:	CAD	CHECKED BY:	DRAFT	APPROVED BY:	DRAFT	FIGURE NO:	3
DATE:	8/26/2019	SCALE:	1 " = 350 '	PROJECT NO:	194-500		

\\SVR-NASH\ P:\2019\194-500\I-GIS\Maps\194-500_Fig_3_Soil.mxd (8/26/2019 8:03:41 AM)



REFERENCE

ESRI WORLD IMAGERY / ARCGIS MAP SERVICE:
HTTP://GOTO.ARCGISONLINE.COM/MAPS/WORLD_IMAGERY,
ACCESSED 8/23/2019,
U.S. FISH & WILDLIFE SERVICE
NATIONAL WETLANDS INVENTORY (NWI) MAP
ACCESSED 8/23/2019,

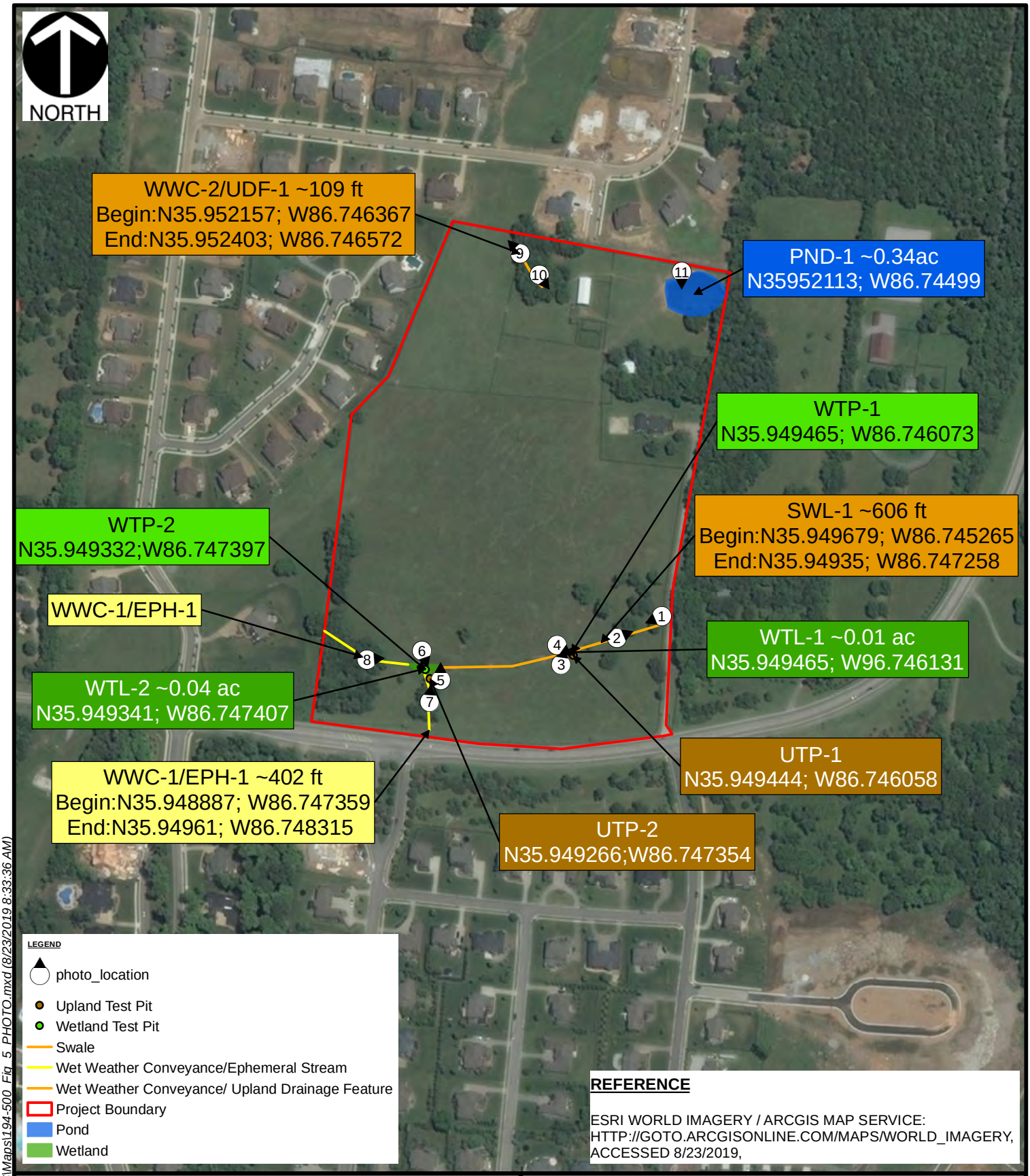
Civil & Environmental Consultants, Inc.
117 Seaboard Lane, Ste. E100 Franklin, Tennessee
615-333-7797 • 800-763-2326
www.cecinc.com

ALLEN PROPERTY
JURISDICTIONAL DETERMINATION
SPLIT LOG ROAD
BRENTWOOD, WILLIAMSON COUNTY, TN

NATIONAL WETLANDS INVENTORY (NWI) MAP

DRAWN BY:	CAD	CHECKED BY:	DRAFT	APPROVED BY:	DRAFT	FIGURE NO:	4
DATE:	8/23/2019	SCALE:	1 " = 500 '	PROJECT NO:	194-500		

\\SVR-NASH\P:\2019\194-500\GIS\Maps\194-500_Fig_4_NWI.mxd (8/23/2019 7:55:07 AM)



Civil & Environmental Consultants, Inc.
117 Seaboard Lane, Ste. E100 Franklin, Tennessee
615-333-7797 • 800-763-2326
www.cecinc.com

ALLEN PROPERTY
JURISDICTIONAL DETERMINATION
SPLIT LOG ROAD
BRENTWOOD, WILLIAMSON COUNTY, TN

PHOTO LOCATION MAP

DRAWN BY:	CAD	CHECKED BY:	DRAFT	APPROVED BY:	DRAFT	FIGURE NO:	5
DATE:	8/23/2019	SCALE:	1 " = 350 '	PROJECT NO:	194-500		

\\SVR-NASH\ P:\2019\194-500\I-GIS\Maps\194-500_Fig_5_PHOTO.mxd (8/23/2019 8:33:36 AM)



Photo 1 (8035): View looking down-gradient of SWL-1.



Photo 2 (8038): View looking up-gradient of SWL-1



Photo 3 (8041): View of WTL-1.



Photo 4 (8043): View of WTP-1 from WTL-1. Soils were 10YR3/1 with 5YR 4/6 redox..



Photo 5 (8051): View of WTL-2 looking east. .



Photo 6 : View of WTP-2 within WTL2. Soils were hydric with a matrix of 10YR4/2 and redox concentrations of 10YR 4/6.



Photo 7 (8066): View of WWC-1/EPH-1 (upstream section) looking down-gradient.



Photo 8 (8074): View of WWC-1/EPH-1 (downstream section) facing up-gradient.



Photo 9 (8086): View of WWC-2/UDF-1 looking down-gradient.



Photo 10 (8091): View of WWC-2/UDF-1 looking up-gradient.



Photo 7 (8031): General view of PND-1 facing southeast.

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Allen Property JD City/County: brentwood/williamson Sampling Date: Aug 22, 2019
Applicant/Owner: Lose Design State: TN Sampling Point: WTL-1
Investigator(s): Caleb Duke Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): Concave Slope (%): 0
Subregion (LRR or MLRA): LRR N Lat: 35.94803 Long: -86.7461 Datum: NAD 83
Soil Map Unit Name: BrC2; Braxton cherty silt loam NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☑ No ☐	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐
Hydric Soil Present?	Yes ☑ No ☐	
Wetland Hydrology Present?	Yes ☑ No ☐	

Remarks:
Size:0.01 acre

Photos3-4:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☑ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____
Water Table Present? Yes ☐ No ☑ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
.

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: WTL-1

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: .1)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: .1)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: .1)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: .1)			
1. *Echinochloa crus-galli*	50	Yes	FAC
2. *Eleocharis acicularis*	15	No	OBL
3. *Festuca rubra*	15	No	FACU
4. *Cyperus strigosus*	2	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	82 = Total Cover		
50% of total cover: 41	20% of total cover: 16.4		
Woody Vine Stratum (Plot size: .1)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: Wtl-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
6	10YR3/1	98	5YR4/6	2	C	M	loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☑ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
- ☐ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ☑ **No** ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Allen Property JD City/County: brentwood, williamson Sampling Date: Aug 22, 2019
Applicant/Owner: Lose Design State: TN Sampling Point: UTP-1
Investigator(s): Caleb Duke Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 3
Subregion (LRR or MLRA): LRR N Lat: 35.94944 Long: -86.74609 Datum: NAD 83
Soil Map Unit Name: BrC2; Braxton cherty silt loam NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☑ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐ No ☑	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑
Hydric Soil Present?	Yes ☐ No ☑	
Wetland Hydrology Present?	Yes ☐ No ☑	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____
Water Table Present? Yes ☐ No ☑ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: UTP-1

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size:)			
1. *Festuca rubra*	60	Yes	FACU
2. *Cynodon dactylon*	30	Yes	FACU
3. *Echinochloa crus-galli*	10	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	10	x 3 =	30
FACU species	90	x 4 =	360
UPL species	0	x 5 =	0
Column Totals:	100 (A)		390 (B)

Prevalence Index = B/A = 3.9

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: UTP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
6	10YR4/4	100				[object		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
- ☐ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ☐ **No** ☑

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Allen Property JD City/County: Brentwood/ Williamson Sampling Date: Aug 22, 2019
Applicant/Owner: Lose Design State: TN Sampling Point: WTL-2
Investigator(s): Caleb Duke Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): 0
Subregion (LRR or MLRA): LRR N Lat: 35.94924 Long: -86.7474 Datum: NAD 83
Soil Map Unit Name: Ashwood-Mimosa-Rock outcrop complex, 5 to 15 percent NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☑ No ☐ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☑ No ☐	**Is the Sampled Area within a Wetland?** Yes ☑ No ☐
Hydric Soil Present?	Yes ☑ No ☐	
Wetland Hydrology Present?	Yes ☑ No ☐	

Remarks:
Size:

Photo:5-6

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☑ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☑ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☑ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____
Water Table Present? Yes ☐ No ☑ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

Wetland Hydrology Present? Yes ☑ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: WTL-2

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: .1)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size: .1)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size: .1)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size: .1)			
1. *Persicaria hydropiperoides*	75	Yes	OBL
2. *Echinochloa crus-galli*	20	No	FAC
3. *Persicaria setacea*	10	No	OBL
4. *Xanthium strumarium*	5	No	FAC
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	110 = Total Cover		
50% of total cover: 55	20% of total cover: 22		
Woody Vine Stratum (Plot size: .1)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100 (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- ☑ 1 - Rapid Test for Hydrophytic Vegetation
- ☑ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☑ No ☐

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: WTL-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
12	10YR4/2	85	10YR4/6	15	C	M	silt loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☑ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
- ☐ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ☑ **No** ☐

Remarks:

WETLAND DETERMINATION DATA FORM – Eastern Mountains and Piedmont Region

Project/Site: Allen Property JD City/County: brentwood, williamson Sampling Date: Aug 22, 2019
Applicant/Owner: Lose Design State: TN Sampling Point: UTP-2
Investigator(s): Caleb Duke Section, Township, Range: N/A
Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 3
Subregion (LRR or MLRA): LRR N Lat: 35.94928 Long: -86.74732 Datum: NAD 83
Soil Map Unit Name: Ashwood-Mimosa-Rock outcrop complex, 5 to 15 percent NWI classification: N/A
Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☑ (If no, explain in Remarks.)
Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☑ No ☐
Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ☐ No ☑	**Is the Sampled Area within a Wetland?** Yes ☐ No ☑
Hydric Soil Present?	Yes ☐ No ☑	
Wetland Hydrology Present?	Yes ☐ No ☑	

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres on Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Sparsely Vegetated Concave Surface (B8)
- ☐ Drainage Patterns (B10)
- ☐ Moss Trim Lines (B16)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ Shallow Aquitard (D3)
- ☐ Microtopographic Relief (D4)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☑ Depth (inches): _____
Water Table Present? Yes ☐ No ☑ Depth (inches): _____
Saturation Present? (includes capillary fringe) Yes ☐ No ☑ Depth (inches): _____

Wetland Hydrology Present? Yes ☐ No ☑

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION (Five Strata) – Use scientific names of plants. Sampling Point: UTP-2

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Sapling Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Shrub Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
6.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		
Herb Stratum (Plot size:)			
1. *Festuca rubra*	60	Yes	FACU
2. *Cynodon dactylon*	30	Yes	FACU
3. *Echinochloa crus-galli*	10	No	FAC
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 = Total Cover		
50% of total cover: 50	20% of total cover: 20		
Woody Vine Stratum (Plot size:)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
50% of total cover: 0	20% of total cover: 0		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	10	x 3 =	30
FACU species	90	x 4 =	360
UPL species	0	x 5 =	0
Column Totals:	100 (A)		390 (B)

Prevalence Index = B/A = 3.9

Hydrophytic Vegetation Indicators:

- ☐ 1 - Rapid Test for Hydrophytic Vegetation
- ☐ 2 - Dominance Test is >50%
- ☐ 3 - Prevalence Index is ≤3.0[1]
- ☐ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Five Vegetation Strata:

Tree – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and 3 in. (7.6 cm) or larger in diameter at breast height (DBH).

Sapling – Woody plants, excluding woody vines, approximately 20 ft (6 m) or more in height and less than 3 in. (7.6 cm) DBH.

Shrub – Woody plants, excluding woody vines, approximately 3 to 20 ft (1 to 6 m) in height.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants, except woody vines, less than approximately 3 ft (1 m) in height.

Woody vine – All woody vines, regardless of height.

Hydrophytic Vegetation Present? Yes ☐ No ☑

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL Sampling Point: UTP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
6	10YR4/4	100				[object		

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10) **(LRR N)**
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1) **(LRR N, MLRA 147, 148)**
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Dark Surface (S7)
- ☐ Polyvalue Below Surface (S8) **(MLRA 147, 148)**
- ☐ Thin Dark Surface (S9) **(MLRA 147, 148)**
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Iron-Manganese Masses (F12) **(LRR N, MLRA 136)**
- ☐ Umbric Surface (F13) **(MLRA 136, 122)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 148)**
- ☐ Red Parent Material (F21) **(MLRA 127, 147)**

Indicators for Problematic Hydric Soils[3]:

- ☐ 2 cm Muck (A10) **(MLRA 147)**
- ☐ Coast Prairie Redox (A16) **(MLRA 147, 148)**
- ☐ Piedmont Floodplain Soils (F19) **(MLRA 136, 147)**
- ☐ Very Shallow Dark Surface (TF12)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ☐ **No** ☑

Remarks:

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: Williamson	Named Waterbody: N/A	Date/Time: 08/22/2019 9:22 AM
Assessors/Affiliation: Caleb Duke, CEC Inc.		Project ID: WWC-1/EPH-1
Site Name/Description: Allen Property JD		
Site Location: Split Log Road, Brentwood, TN		
USGS quad: Franklin	HUC (12 digit): 051302040601	Lat/Long: 35.94952; -86.74822
Previous Rainfall (7-days) : 0.00″ in previous 24-hrs; 0.00″ previous 7-days		
Precipitation this Season vs. Normal : ☐ very wet ☐ wet ☑ average ☐ dry ☐ drought ☐ unknown Source of recent & seasonal precip data : https://lakeinfo.tva.gov/htbin/pdet?postmainpage		
Watershed Size : ~0.05 SQMI	Photos: Y or N (circle) Number : 7-8	
Soil Type(s) / Geology : Ashwood-Mimosa-Rock outcrop complex, 5 to 15 percent		
Surrounding Land Use : Pasture , Agricultural		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : ☐ Severe ☑ Moderate ☐ Slight ☐ Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	☐	WWC ☐
2. Defined bed and bank absent, dominated by upland vegetation / grass	☑	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	☑	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	☑	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	☑	Stream ☐
6. Presence of fish (except *Gambusia*)	☑	Stream ☐
7. Presence of naturally occurring ground water table connection	☑	Stream ☐
8. Flowing water in channel and 7 days since last precipitation in local watershed	☑	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	☑	Stream ☐

NOTE : If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.4*

Overall Hydrologic Determination = Wet Weather Conveyance

Secondary Indicator Score (if applicable) = 15.75

Justification / Notes :

photos on phone

Secondary Field Indicator Evaluation Project ID: WWC-1/EPH-1

A. Geomorphology (Subtotal = 7.5)		**Absent**	**Weak**	**Moderate**	**Strong**
1. Continuous bed and bank	**2.5**	0	1	2	3
2. Sinuous channel	**1.5**	0	1	2	3
3. In-channel structure: riffle-pool sequences	**1**	0	1	2	3
4. Sorting of soil textures or other substrate	**0.5**	0	1	2	3
5. Active/relic floodplain	**0**	0	1	2	3
6. Depositional bars or benches	**0**	0	1	2	3
7. Braided channel	**0**	0	1	2	3
8. Recent alluvial deposits	**0.5**	0	0.5	1	1.5
9. Natural levees	**0**	0	1	2	3
10. Headcuts	**1**	0	1	2	3
11. Grade controls	**0.25**	0	0.5	1	1.5
12. Natural valley or drainageway	**0.25**	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map		**No = 0**			

B. Hydrology (Subtotal = 3.25)		**Absent**	**Weak**	**Moderate**	**Strong**
14. Subsurface flow/discharge into channel	**0**	0	1	2	3
15. Water in channel and >48 hours since sig. rain	**0.5**	0	1	2	3
16. Leaf litter in channel (January – September)	**1.25**	1.5	1	0.5	0
17. Sediment on plants or on debris	**0.5**	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	**1**	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel		**No = 0**			

C. Biology (Subtotal = 5)		**Absent**	**Weak**	**Moderate**	**Strong**
20. Fibrous roots in channel [1]	**2.5**	3	2	1	0
21. Rooted plants in channel [1]	**2**	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	**0**	0	0.5	1	1.5
23. Bivalves/mussels	**0**	0	1	2	3
24. Amphibians	**0.5**	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	**0**	0	1	2	3
26. Filamentous algae; periphyton	**0**	0	1	2	3
27. Iron oxidizing bacteria/fungus	**0**	0	0.5	1	1.5
28.Wetland plants in channel [2]	**0**	0	0.5	1	2

[1] Focus is on the presence of upland plants. [2] Focus is on the presence of aquatic or wetland plants.

Total Points = 15.75

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

created by culvert at begining of feature, highly impacted by cattle

HABITAT ASSESSMENT FIELD DATA SHEET – MODERATE TO HIGH GRADIENT STREAM (FRONT)

(Refer to Protocol E for detailed descriptions and rank information)

PROJECT: Jurisdictional Waters Determination at Allen Property																				
STA: NA										**HABITAT ASSESSED BY:** C. Duke										
STREAM NAME: NA										**DATE:** 8/22/19					**TIME:** 8:00					
MAP LABEL: WWC-1/ EPH-1										**ECOREGION:** 71h										
HUC: Little Harpeth River (051302040601)										**QC: Consensus / Duplicate**										
	OPTIMAL					**SUBOPTIMAL**					**MARGINAL**					**POOR**				
1. Epifaunal Substrate / Available Cover	Over 70% of stream reach has natural stable habitat suitable for colonization by fish and/or macroinvertebrates. Four or more productive habitats are present.					Natural stable habitat covers 40-70% of stream reach. Three or more productive habitats present. (If near 70% and more than 3 go to optimal.)					Natural stable habitat covers 20 -40% of stream reach or only 1-2 productive habitats present. (If near 40% and more than 2 go to suboptimal.)					Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.				
SCORE 1	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments:																				
	OPTIMAL					**SUBOPTIMAL**					**MARGINAL**					**POOR**				
2. Embeddedness of Riffles	Gravel, cobble, and boulders 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. If near 25% drop to suboptimal if riffle not layered cobble.					Gravel, cobble and boulders 25-50% surrounded by fine sediment. Niches in bottom layers of cobble compromised. If near 50% & riffles not layered cobble drop to marginal.					Gravel, cobble, and boulder s are 50-75% surrounded by fine sediment. Niche space in middle layers of cobble is starting to fill with fine sediment.					Gravel, cobble, and boulders are more than 75% surrounded by fine sediment. Niche space is reduced to a single layer or is absent.				
SCORE 1	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments:																				
	OPTIMAL					**SUBOPTIMAL**					**MARGINAL**					**POOR**				
3. Velocity/ Depth Regime	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow).					Only 3 of the 4 regimes present (if fast-shallow is missing score lower). If slow-deep missing score 15.					Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).					Dominated by 1 velocity/depth regime. Others regimes too small or infrequent to support aquatic populations.				
SCORE 1	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments:																				
	OPTIMAL					**SUBOPTIMAL**					**MARGINAL**					**POOR**				
4. Sediment Deposition	Sediment deposition affects less than 5% of stream bottom in quiet areas. New deposition on islands and point bars is absent or minimal.					Sediment deposition affects 5-30% of stream bottom. Slight deposition in pool or slow areas. Some new deposition on islands and point bars. Move to marginal if build-up approaches 30%.					Sediment deposition affects 30-50% of stream bottom. Sediment deposits at obstruction, constrictions and bends. Moderate pool deposition.					Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.				
SCORE 1	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments:																				
	OPTIMAL					**SUBOPTIMAL**					**MARGINAL**					**POOR**				
5. Channel Flow Status	Water reaches base of both lower banks and streambed is covered by water throughout reach. Minimal productive habitat is exposed.					Water covers > 75% of streambed or 25% of productive habitat is exposed.					Water covers 25-75% of streambed and/or productive habitat is mostly exposed.					Very little water in channel and mostly present as standing pools. Little or no productive habitat due to lack of water.				
SCORE 1	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments:																				

HABITAT ASSESSMENT FIELD DATA SHEET – MODERATE TO HIGH GRADIENT STREAM (BACK)

MAP LABEL:	WWC-1/ EPH-1	DATE:	8/22/19	ASSESSOR INITIALS:	C. Duke

	OPTIMAL	SUBOPTIMAL	MARGINAL	POOR
6. Channel Alteration	Channelization, dredging rock removal or 4-wheel activity (past or present) absent or minimal; natural meander pattern. NO artificial structures in reach. Upstream or downstream structures do not affect reach.	Channelization, dredging or 4-wheel activity up to 40%. Channel has stabilized. If larger reach, channelization is historic and stable. Artificial structures in or out of reach do not affect natural flow patterns.	Channelization, dredging or 4-wheel activity 40-80% (or less that has not stabilized.) Artificial structures in or out of reach may have slight affect.	Over 80% of reach channelized, dredged or affected by 4-wheelers. In-stream habitat greatly altered or removed. Artificial structures have greatly affected flow pattern.

SCORE 2	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	**2**	1

Comments:

	OPTIMAL	SUBOPTIMAL	MARGINAL	POOR
7. Frequency of re-oxygenation zones. Use frequency of riffles or bends for category. Rank by quality.	Occurrence of re-oxygenation zones relatively frequent; ratio of distance between areas divided by average stream width <7:1.	Occurrence of re-oxygenation zones infrequent; distance between areas divided by average stream width is 7 - 15.	Occasional re-oxygenation area. The distance between areas divided by average stream width is over 15 and up to 25.	Generally all flat water or flat bedrock; little opportunity for re-oxygenation. Distance between areas divided by average stream width >25.

SCORE 1	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	**1**

Comments:

	OPTIMAL	SUBOPTIMAL	MARGINAL	POOR
8. Bank Stability (score each bank) Determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. If approaching 30% score marginal if banks steep.	Moderately unstable; 30-60 % of bank in reach has areas of erosion; high erosion potential during floods, If approaching 60% score poor if banks steep.	Unstable; many eroded area; raw areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.

SCORE (LDB) 2	LEFT	10	9	8	7	6	5	4	3	**2**	1	0
SCORE (RDB) 2	RIGHT	10	9	8	7	6	5	4	3	**2**	1	0

Comments:

	OPTIMAL	SUBOPTIMAL	MARGINAL	POOR
9. Bank Vegetative Protection (score each bank) include vegetation from top of bank to base of bank. Determine left or right side by facing downstream.	More than 90% of the bank covered by undisturbed vegetation. All 4 classes (mature trees, understory trees, shrubs, groundcover) are represented and allowed to grow naturally. All plants are native.	70-90% of the bank covered by undisturbed vegetation. One class may not be well represented. Disruption evident but not effecting full plant growth. Non-natives are rare (< 30%).	50-70% of the bank covered by undisturbed vegetation. Two classes of vegetation may not be well represented. Non-native vegetation may be common (30-50%).	Less than 50% of the banks covered by undisturbed vegetation or more than 2 classes are not well represented or most vegetation has been cropped. Non-native vegetation may dominate (> 50%).

SCORE (LDB) 2	LEFT	10	9	8	7	6	5	4	3	**2**	1	0
SCORE (RDB) 2	RIGHT	10	9	8	7	6	5	4	3	**2**	1	0

Comments:

	OPTIMAL	SUBOPTIMAL	MARGINAL	POOR
10. Riparian Vegetative Zone Width (score each bank.) Zone begins at top of bank.	Average width of riparian zone > 18 meters. Unpaved footpaths may score 9 if run-off potential is negligible.	Average width of riparian zone 12-18 meters. Score high if areas < 18 meters are small or are minimally disturbed.	Average width of riparian zone 6-11 meters. Score high if areas less than 12 meters are small or are minimally disturbed.	Average width of riparian zone <6 meters. Score high if areas less than 6 meters are small or are minimally disturbed.

SCORE (LDB) 1	LEFT	10	9	8	7	6	5	4	3	2	**1**	0
SCORE (RDB) 1	RIGHT	10	9	8	7	6	5	4	3	2	**1**	0

Comments:

TOTAL SCORE 18 | Comparison to Ecoregion Guidelines (circle): ABOVE or **BELOW**

If score is below guidelines, result of (circle) Natural Conditions **Human Disturbance**

Comments:

Hydrologic Determination Field Data Sheet

Tennessee Division of Water Pollution Control, Version 1.4

County: Williamson	Named Waterbody: N/A	Date/Time: 08/22/2019 9:44 AM
Assessors/Affiliation: Caleb Duke, CEC Inc.		Project ID: WWC-2/DF-1
Site Name/Description: Allen Property JD		
Site Location: Split Log Road, Brentwood, TN		
USGS quad: Franklin	HUC (12 digit): 051302040601	Lat/Long: 35.94701; -86.74454
Previous Rainfall (7-days) : 0.00″ in previous 24-hrs; 0.00″ previous 7-days		
Precipitation this Season vs. Normal : ☐ very wet ☐ wet ☑ average ☐ dry ☐ drought ☐ unknown Source of recent & seasonal precip data : https://lakeinfo.tva.gov/htbin/pdet?postmainpage		
Watershed Size : ~0.01 SQMI	Photos: Y or N (circle) Number : 9-10	
Soil Type(s) / Geology : Ashwood-Mimosa-Rock outcrop complex, 5 to 15 percent		
Surrounding Land Use : Pasture , Agricultural		
Degree of historical alteration to natural channel morphology & hydrology (circle one & describe fully in Notes) : ☑ Severe ☐ Moderate ☐ Slight ☐ Absent		

Primary Field Indicators Observed

Primary Indicators	NO	YES
1. Hydrologic feature exists solely due to a process discharge	☑	WWC ☐
2. Defined bed and bank absent, dominated by upland vegetation / grass	☑	WWC ☐
3. Watercourse dry anytime during February through April 15th, under normal precipitation / groundwater conditions	☑	WWC ☐
4. Daily flow and precipitation records showing feature only flows in direct response to rainfall	☑	WWC ☐
5. Presence of multiple populations of obligate lotic organisms with ≥ 2 month aquatic phase	☑	Stream ☐
6. Presence of fish (except *Gambusia*)	☑	Stream ☐
7. Presence of naturally occurring ground water table connection	☑	Stream ☐
8. Flowing water in channel and 7 days since last precipitation in local watershed	☑	Stream ☐
9. Evidence watercourse has been used as a supply of drinking water	☑	Stream ☐

NOTE : If any Primary Indicators 1-9 = "Yes", then STOP; absent directly contradictory evidence, determination is complete.

In the absence of a primary indicator, or other definitive evidence, complete the secondary indicator table on page 2 of this sheet, and provide score below.

Guidance for the interpretation and scoring of both the primary & secondary indicators is provided in *TDEC-WPC Guidance For Making Hydrologic Determinations, Version 1.4*

Overall Hydrologic Determination = Wet Weather Conveyance

Secondary Indicator Score (if applicable) = 6.25

Justification / Notes :

Secondary Field Indicator Evaluation

Project ID: WWC-2/DF-1

A. Geomorphology (Subtotal = 2.25)		**Absent**	**Weak**	**Moderate**	**Strong**
1. Continuous bed and bank	**1**	0	1	2	3
2. Sinuous channel	**0**	0	1	2	3
3. In-channel structure: riffle-pool sequences	**0**	0	1	2	3
4. Sorting of soil textures or other substrate	**0**	0	1	2	3
5. Active/relic floodplain	**0**	0	1	2	3
6. Depositional bars or benches	**0**	0	1	2	3
7. Braided channel	**0**	0	1	2	3
8. Recent alluvial deposits	**0**	0	0.5	1	1.5
9. Natural levees	**0**	0	1	2	3
10. Headcuts	**0.5**	0	1	2	3
11. Grade controls	**0.25**	0	0.5	1	1.5
12. Natural valley or drainageway	**0.5**	0	0.5	1	1.5
13. At least second order channel on existing USGS or NRCS map		**No = 0**			

B. Hydrology (Subtotal = 1.5)		**Absent**	**Weak**	**Moderate**	**Strong**
14. Subsurface flow/discharge into channel	**0**	0	1	2	3
15. Water in channel and >48 hours since sig. rain	**0**	0	1	2	3
16. Leaf litter in channel (January – September)	**0**	1.5	1	0.5	0
17. Sediment on plants or on debris	**1**	0	0.5	1	1.5
18. Organic debris lines or piles (wrack lines)	**0.5**	0	0.5	1	1.5
19. Hydric soils in stream bed or sides of channel		**No = 0**			

C. Biology (Subtotal = 2.5)		**Absent**	**Weak**	**Moderate**	**Strong**
20. Fibrous roots in channel [1]	**1**	3	2	1	0
21. Rooted plants in channel [1]	**1.5**	3	2	1	0
22. Crayfish in stream (exclude in floodplain)	**0**	0	0.5	1	1.5
23. Bivalves/mussels	**0**	0	1	2	3
24. Amphibians	**0**	0	0.5	1	1.5
25. Macrobenthos (record type & abundance)	**0**	0	1	2	3
26. Filamentous algae; periphyton	**0**	0	1	2	3
27. Iron oxidizing bacteria/fungus	**0**	0	0.5	1	1.5
28.Wetland plants in channel [2]	**0**	0	0.5	1	2

[1] Focus is on the presence of upland plants. [2] Focus is on the presence of aquatic or wetland plants.

Total Points = 6.25

Under Normal Conditions, Watercourse is a Wet Weather Conveyance if Secondary Indicator Score < 19 points

Notes :

filled with scrap wood,metal,tires,

HABITAT ASSESSMENT FIELD DATA SHEET – MODERATE TO HIGH GRADIENT STREAM (FRONT)

(Refer to Protocol E for detailed descriptions and rank information)

PROJECT: Jurisdictional Waters Determination at Allen Property																				
STA: NA											**HABITAT ASSESSED BY:** C. Duke									
STREAM NAME: NA											**DATE:** 8/22/19					**TIME:** 8:00				
MAP LABEL: WWC-2/UDF-1											**ECOREGION:** 71h									
HUC: Little Harpeth River (051302040601)											**QC: Consensus / Duplicate**									
	OPTIMAL					**SUBOPTIMAL**					**MARGINAL**					**POOR**				
1. Epifaunal Substrate / Available Cover	Over 70% of stream reach has natural stable habitat suitable for colonization by fish and/or macroinvertebrates. Four or more productive habitats are present.					Natural stable habitat covers 40-70% of stream reach. Three or more productive habitats present. (If near 70% and more than 3 go to optimal.)					Natural stable habitat covers 20 -40% of stream reach or only 1-2 productive habitats present. (If near 40% and more than 2 go to suboptimal.)					Less than 20% stable habitat; lack of habitat is obvious; substrate unstable or lacking.				
SCORE 1	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments:																				
	OPTIMAL					**SUBOPTIMAL**					**MARGINAL**					**POOR**				
2. Embeddedness of Riffles	Gravel, cobble, and boulders 0-25% surrounded by fine sediment. Layering of cobble provides diversity of niche space. If near 25% drop to suboptimal if riffle not layered cobble.					Gravel, cobble and boulders 25-50% surrounded by fine sediment. Niches in bottom layers of cobble compromised. If near 50% & riffles not layered cobble drop to marginal.					Gravel, cobble, and boulder s are 50-75% surrounded by fine sediment. Niche space in middle layers of cobble is starting to fill with fine sediment.					Gravel, cobble, and boulders are more than 75% surrounded by fine sediment. Niche space is reduced to a single layer or is absent.				
SCORE 1	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments:																				
	OPTIMAL					**SUBOPTIMAL**					**MARGINAL**					**POOR**				
3. Velocity/ Depth Regime	All four velocity/depth regimes present (slow-deep, slow-shallow, fast-deep, fast-shallow).					Only 3 of the 4 regimes present (if fast-shallow is missing score lower). If slow-deep missing score 15.					Only 2 of the 4 habitat regimes present (if fast-shallow or slow-shallow are missing, score low).					Dominated by 1 velocity/depth regime. Others regimes too small or infrequent to support aquatic populations.				
SCORE 1	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments:																				
	OPTIMAL					**SUBOPTIMAL**					**MARGINAL**					**POOR**				
4. Sediment Deposition	Sediment deposition affects less than 5% of stream bottom in quiet areas. New deposition on islands and point bars is absent or minimal.					Sediment deposition affects 5-30% of stream bottom. Slight deposition in pool or slow areas. Some new deposition on islands and point bars. Move to marginal if build-up approaches 30%.					Sediment deposition affects 30-50% of stream bottom. Sediment deposits at obstruction, constrictions and bends. Moderate pool deposition.					Heavy deposits of fine material, increased bar development; more than 50% of the bottom changing frequently; pools almost absent due to substantial sediment deposition.				
SCORE 1	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments:																				
	OPTIMAL					**SUBOPTIMAL**					**MARGINAL**					**POOR**				
5. Channel Flow Status	Water reaches base of both lower banks and streambed is covered by water throughout reach. Minimal productive habitat is exposed.					Water covers > 75% of streambed or 25% of productive habitat is exposed.					Water covers 25-75% of streambed and/or productive habitat is mostly exposed.					Very little water in channel and mostly present as standing pools. Little or no productive habitat due to lack of water.				
SCORE 1	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
Comments:																				

HABITAT ASSESSMENT FIELD DATA SHEET – MODERATE TO HIGH GRADIENT STREAM (BACK)

MAP LABEL:	WWC-2/UDF-1	DATE:	8/22/19	ASSESSOR INITIALS:	C. Duke

	OPTIMAL	SUBOPTIMAL	MARGINAL	POOR
6. Channel Alteration	Channelization, dredging rock removal or 4-wheel activity (past or present) absent or minimal; natural meander pattern. NO artificial structures in reach. Upstream or downstream structures do not affect reach.	Channelization, dredging or 4-wheel activity up to 40%. Channel has stabilized. If larger reach, channelization is historic and stable. Artificial structures in or out of reach do not affect natural flow patterns.	Channelization, dredging or 4-wheel activity 40-80% (or less that has not stabilized.) Artificial structures in or out of reach may have slight affect.	Over 80% of reach channelized, dredged or affected by 4-wheelers. In-stream habitat greatly altered or removed. Artificial structures have greatly affected flow pattern.

SCORE 1	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	**1**

Comments:

	OPTIMAL	SUBOPTIMAL	MARGINAL	POOR
7. Frequency of re-oxygenation zones. Use frequency of riffles or bends for category. Rank by quality.	Occurrence of re-oxygenation zones relatively frequent; ratio of distance between areas divided by average stream width <7:1.	Occurrence of re-oxygenation zones infrequent; distance between areas divided by average stream width is 7 - 15.	Occasional re-oxygenation area. The distance between areas divided by average stream width is over 15 and up to 25.	Generally all flat water or flat bedrock; little opportunity for re-oxygenation. Distance between areas divided by average stream width >25.

SCORE 1	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	**1**

Comments:

	OPTIMAL	SUBOPTIMAL	MARGINAL	POOR
8. Bank Stability (score each bank) Determine left or right side by facing downstream.	Banks stable; evidence of erosion or bank failure absent or minimal; little potential for future problems <5% of bank affected.	Moderately stable; infrequent, small areas of erosion mostly healed over. 5-30% of bank in reach has areas of erosion. If approaching 30% score marginal if banks steep.	Moderately unstable; 30-60 % of bank in reach has areas of erosion; high erosion potential during floods, If approaching 60% score poor if banks steep.	Unstable; many eroded area; raw areas frequent along straight sections and bends; obvious bank sloughing; 60-100% of bank has erosional scars.

SCORE (LDB) 0	LEFT	10	9	8	7	6	5	4	3	2	1	**0**
SCORE (RDB) 0	RIGHT	10	9	8	7	6	5	4	3	2	1	**0**

Comments:

	OPTIMAL	SUBOPTIMAL	MARGINAL	POOR
9. Bank Vegetative Protection (score each bank) include vegetation from top of bank to base of bank. Determine left or right side by facing downstream.	More than 90% of the bank covered by undisturbed vegetation. All 4 classes (mature trees, understory trees, shrubs, groundcover) are represented and allowed to grow naturally. All plants are native.	70-90% of the bank covered by undisturbed vegetation. One class may not be well represented. Disruption evident but not effecting full plant growth. Non-natives are rare (< 30%).	50-70% of the bank covered by undisturbed vegetation. Two classes of vegetation may not be well represented. Non-native vegetation may be common (30-50%).	Less than 50% of the banks covered by undisturbed vegetation or more than 2 classes are not well represented or most vegetation has been cropped. Non-native vegetation may dominate (> 50%).

SCORE (LDB) 0	LEFT	10	9	8	7	6	5	4	3	2	1	**0**
SCORE (RDB) 0	RIGHT	10	9	8	7	6	5	4	3	2	1	**0**

Comments:

	OPTIMAL	SUBOPTIMAL	MARGINAL	POOR
10. Riparian Vegetative Zone Width (score each bank.) Zone begins at top of bank.	Average width of riparian zone > 18 meters. Unpaved footpaths may score 9 if run-off potential is negligible.	Average width of riparian zone 12-18 meters. Score high if areas < 18 meters are small or are minimally disturbed.	Average width of riparian zone 6-11 meters. Score high if areas less than 12 meters are small or are minimally disturbed.	Average width of riparian zone <6 meters. Score high if areas less than 6 meters are small or are minimally disturbed.

SCORE (LDB) 1	LEFT	10	9	8	7	6	5	4	3	2	**1**	0
SCORE (RDB) 1.	RIGHT	10	9	8	7	6	5	4	3	2	**1**	0

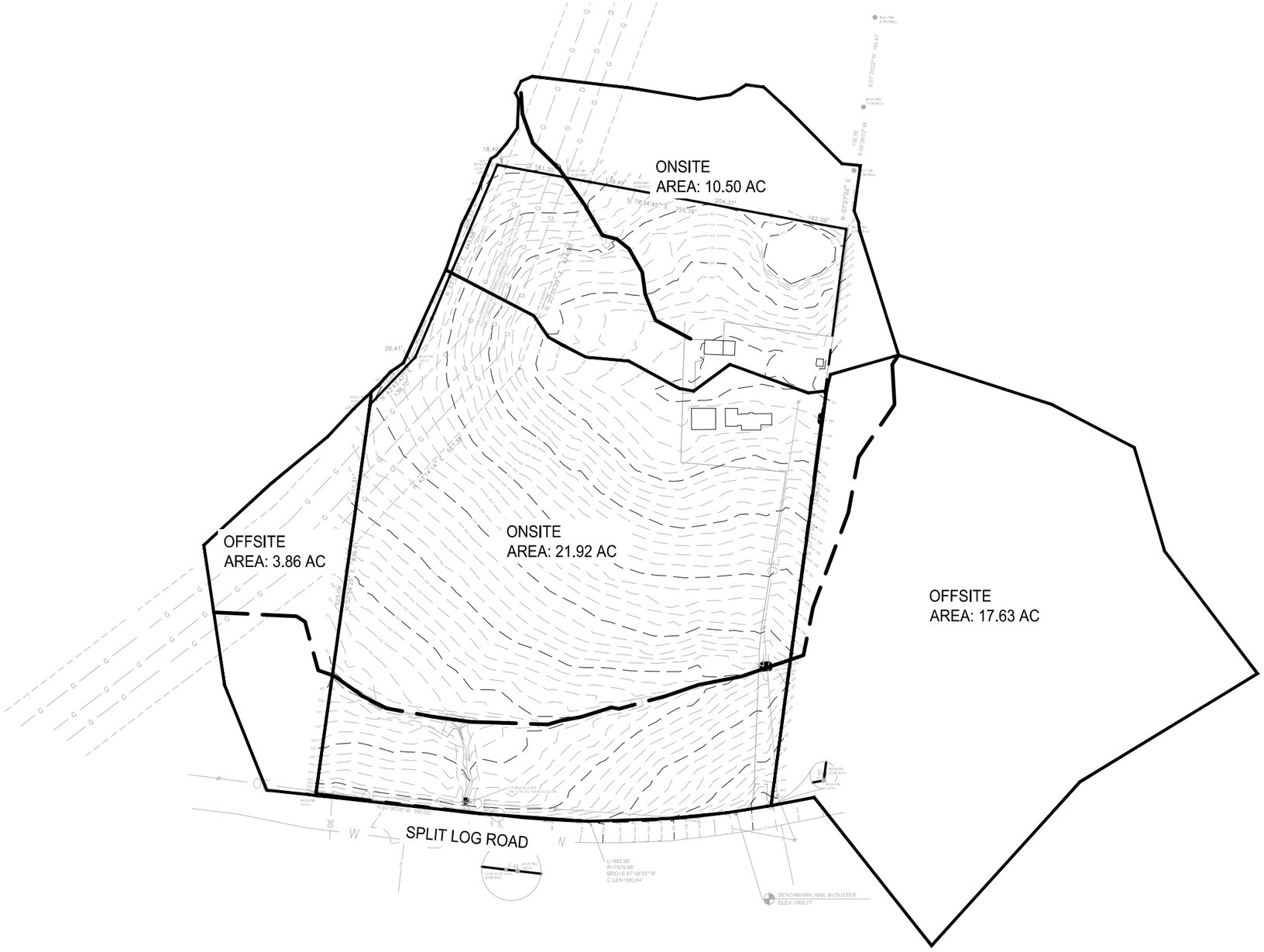
Comments:

TOTAL SCORE 9 | Comparison to Ecoregion Guidelines (circle): ABOVE or **BELOW**

If score is below guidelines, result of (circle) Natural Conditions **Human Disturbance**

Comments:

N:\2019\19182_Allen_Property\CAD\04_CIVIL\19182_Hydrology_jm.dwg - Printed on 2020-01-21 at 9:09:54 AM.



LOSE DESIGN
SPACES FOR LIFE.

ALLEN PROPERTY

EXISTING WATERSHED MAP

TURNBERRY HOMES

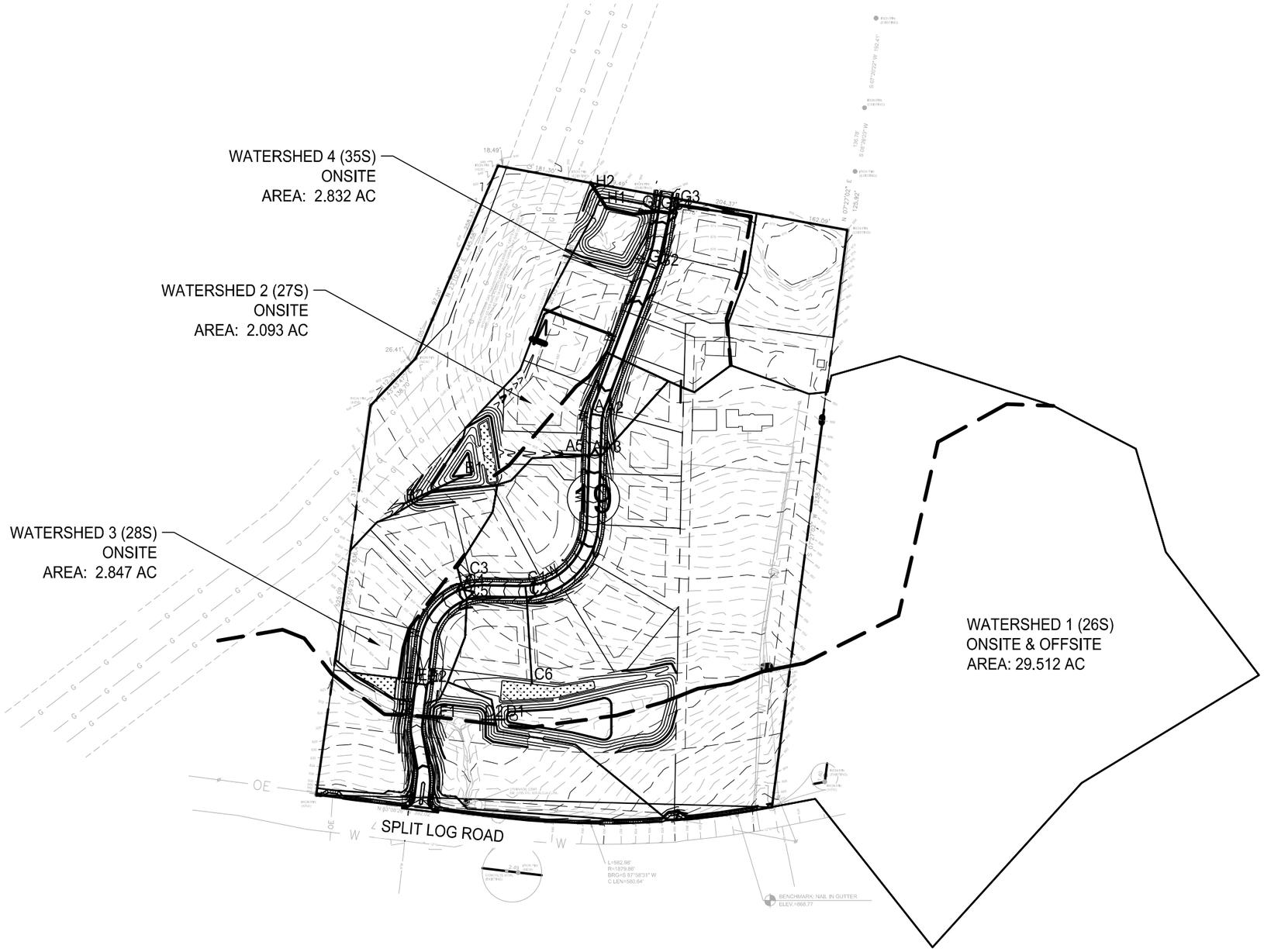
NOT FOR CONSTRUCTION

JANUARY 21, 2020

LD# 19182

© 2019 LOSE DESIGN

N:\2019\19182_Allen_Property\CAD\04_CIVIL\19182_Hydrology_jm.dwg - Printed on 2020-07-01 at 3:56:51 PM.



LOSE DESIGN
SPACES FOR LIFE.

ALLEN PROPERTY

PROPOSED WATERSHED MAP

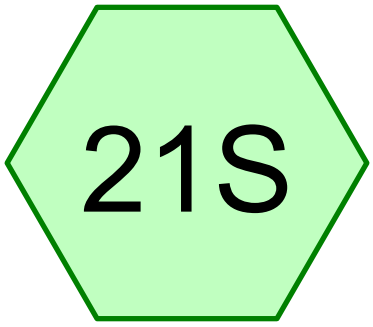
TURNBERRY HOMES

NOT FOR CONSTRUCTION

JULY 1, 2020

LD# 19182

© 2019 LOSE DESIGN



PRE NORTH



PRE SOUTH

Subcat Reach Pond Link

Routing Diagram for 19182_Hydrology_JM
Prepared by Hewlett-Packard Company, Printed 1/21/2020
HydroCAD® 10.00-19 s/n 02652 © 2016 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
12.557	74	>75% Grass cover, Good, HSG C (21S, 24S)
12.557	**74**	**TOTAL AREA**

Time span=1.00-24.00 hrs, dt=0.05 hrs, 461 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment21S: PRE NORTH Runoff Area=3.390 ac 0.00% Impervious Runoff Depth>1.16"
Flow Length=450' Tc=10.9 min CN=74 Runoff=5.70 cfs 0.328 af

Subcatchment24S: PRE SOUTH Runoff Area=9.167 ac 0.00% Impervious Runoff Depth>1.16"
Flow Length=1,000' Tc=13.3 min CN=74 Runoff=14.14 cfs 0.886 af

Total Runoff Area = 12.557 ac Runoff Volume = 1.214 af Average Runoff Depth = 1.16"
100.00% Pervious = 12.557 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 21S: PRE NORTH

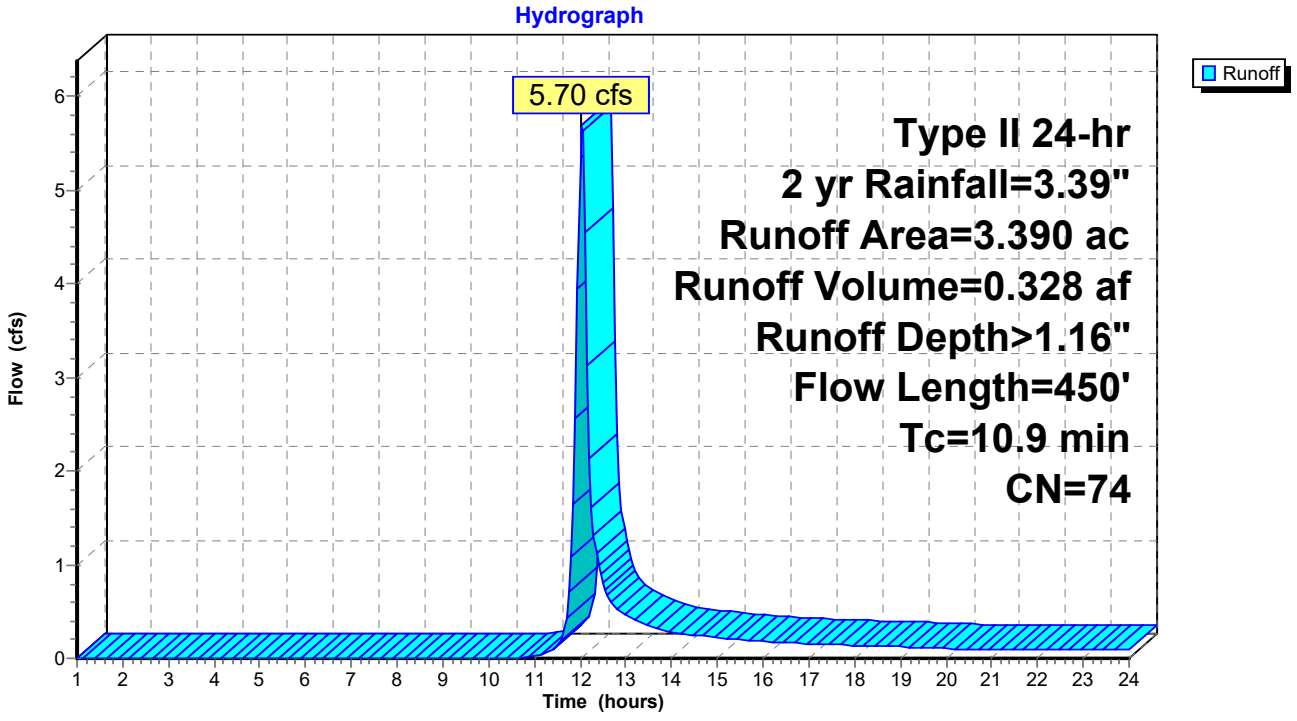
Runoff = 5.70 cfs @ 12.04 hrs, Volume= 0.328 af, Depth> 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2 yr Rainfall=3.39"

Area (ac)	CN	Description
3.390	74	>75% Grass cover, Good, HSG C
3.390		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0150	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
1.0	350	0.1450	6.13		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
10.9	450	Total			

Subcatchment 21S: PRE NORTH



Summary for Subcatchment 24S: PRE SOUTH

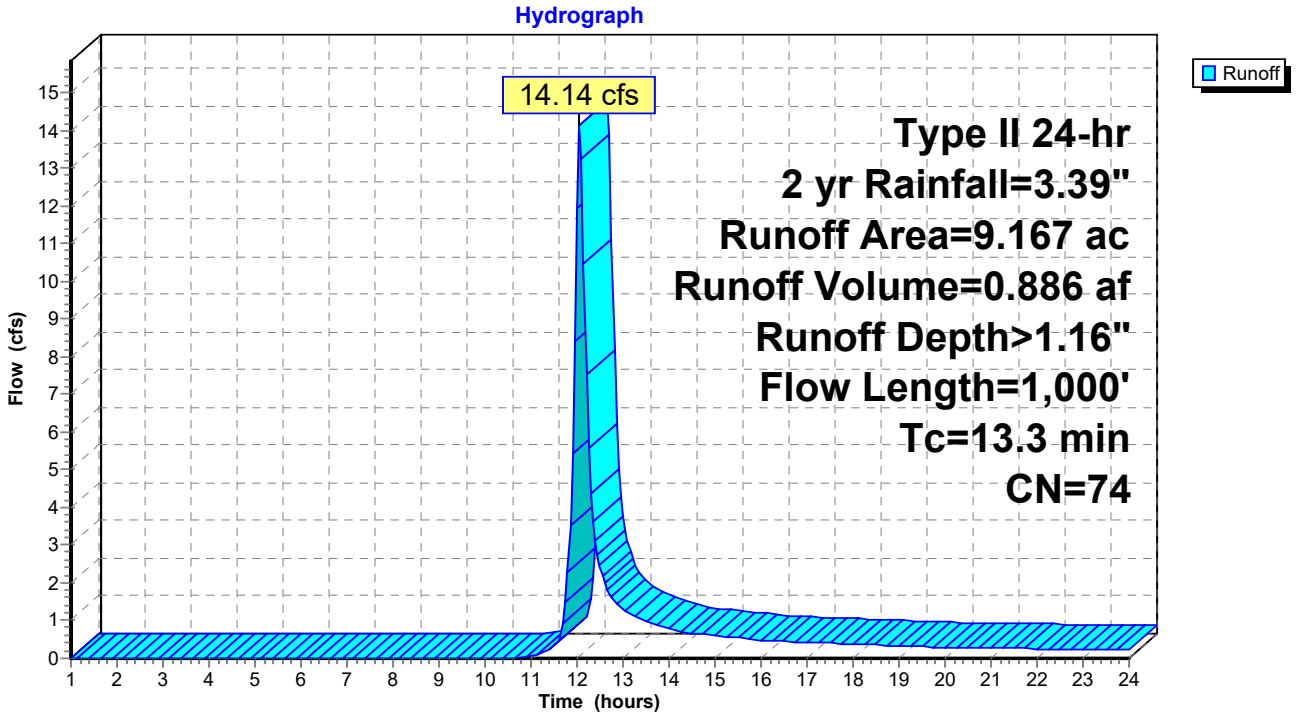
Runoff = 14.14 cfs @ 12.06 hrs, Volume= 0.886 af, Depth> 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2 yr Rainfall=3.39"

Area (ac)	CN	Description
9.167	74	>75% Grass cover, Good, HSG C
9.167		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0150	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
3.4	900	0.0760	4.44		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
13.3	1,000	Total			

Subcatchment 24S: PRE SOUTH





POST NORTH



POST SOUTH

Subcat Reach Pond Link

Routing Diagram for 19182_Hydrology_JM
Prepared by Hewlett-Packard Company, Printed 1/21/2020
HydroCAD® 10.00-19 s/n 02652 © 2016 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
11.851	80	1/2 acre lots, 25% imp, HSG C (23S, 25S)
0.233	98	Paved parking, HSG C (23S)
0.475	98	Paved roads w/curbs & sewers, HSG C (25S)
12.559	**81**	**TOTAL AREA**

Time span=1.00-24.00 hrs, dt=0.05 hrs, 461 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 23S: POST NORTH Runoff Area=2.781 ac 31.28% Impervious Runoff Depth>4.13"
Flow Length=450' Tc=10.9 min CN=82 Runoff=16.51 cfs 0.956 af

Subcatchment 25S: POST SOUTH Runoff Area=9.778 ac 28.64% Impervious Runoff Depth>4.02"
Flow Length=1,000' Tc=11.9 min CN=81 Runoff=55.24 cfs 3.276 af

Total Runoff Area = 12.559 ac Runoff Volume = 4.232 af Average Runoff Depth = 4.04"
70.77% Pervious = 8.888 ac 29.23% Impervious = 3.671 ac

Summary for Subcatchment 23S: POST NORTH

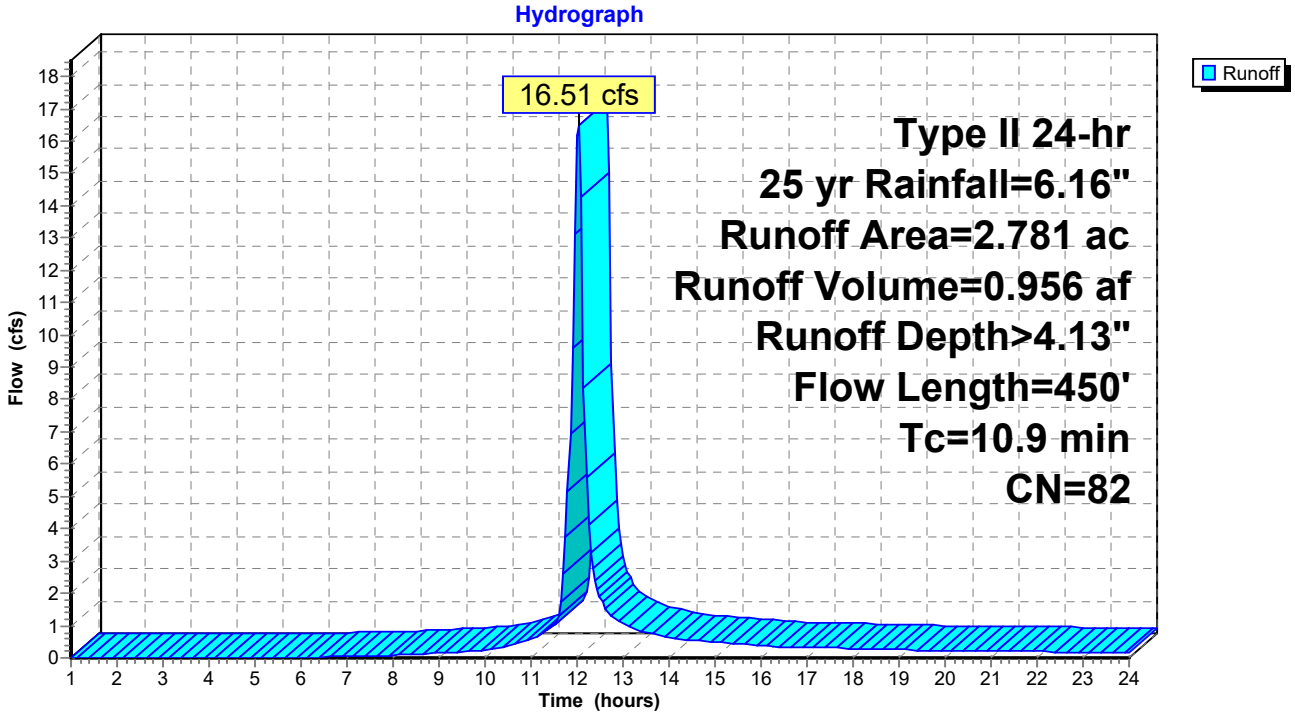
Runoff = 16.51 cfs @ 12.02 hrs, Volume= 0.956 af, Depth> 4.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 yr Rainfall=6.16"

Area (ac)	CN	Description
2.548	80	1/2 acre lots, 25% imp, HSG C
0.233	98	Paved parking, HSG C
2.781	82	Weighted Average
1.911		68.72% Pervious Area
0.870		31.28% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0150	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
1.0	350	0.1450	6.13		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
10.9	450	Total			

Subcatchment 23S: POST NORTH



Summary for Subcatchment 25S: POST SOUTH

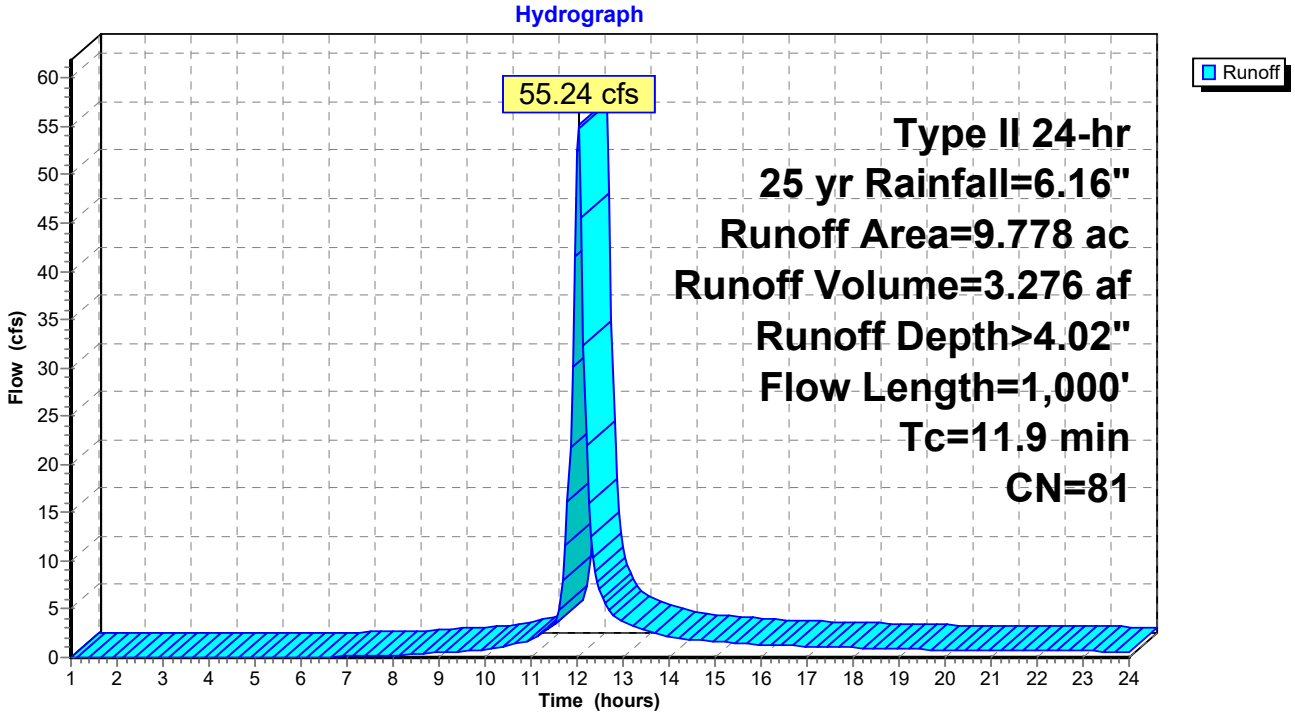
Runoff = 55.24 cfs @ 12.03 hrs, Volume= 3.276 af, Depth> 4.02"

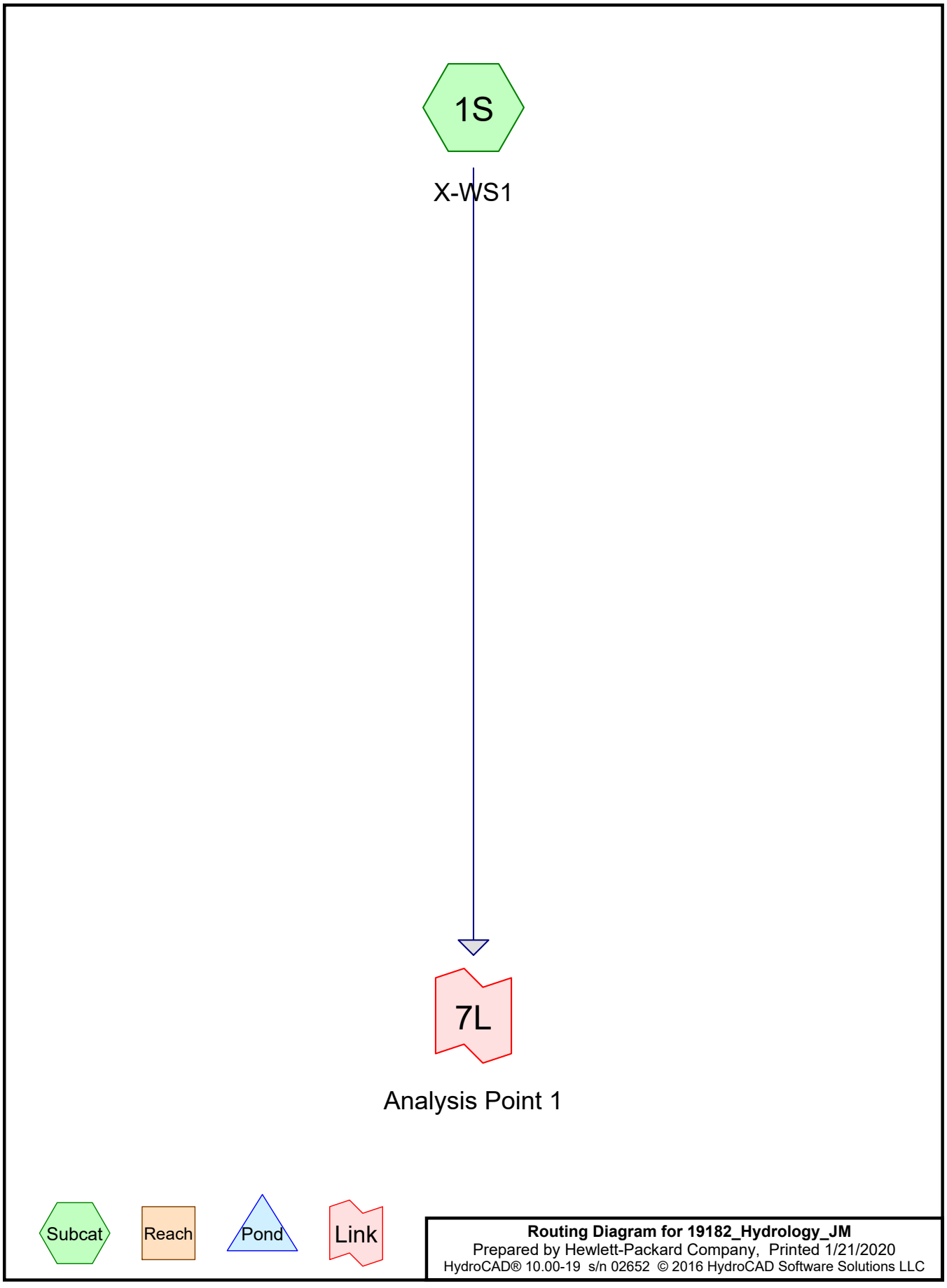
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 yr Rainfall=6.16"

Area (ac)	CN	Description
9.303	80	1/2 acre lots, 25% imp, HSG C
0.475	98	Paved roads w/curbs & sewers, HSG C
9.778	81	Weighted Average
6.977		71.36% Pervious Area
2.801		28.64% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.9	100	0.0150	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
0.4	100	0.0700	4.26		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.6	800	0.0200	8.41	14.86	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.013
11.9	1,000	Total			

Subcatchment 25S: POST SOUTH





Routing Diagram for 19182_Hydrology_JM
Prepared by Hewlett-Packard Company, Printed 1/21/2020
HydroCAD® 10.00-19 s/n 02652 © 2016 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
43.414	74	>75% Grass cover, Good, HSG C (1S)
43.414	**74**	**TOTAL AREA**

Time span=1.00-24.00 hrs, dt=0.05 hrs, 461 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: X-WS1 Runoff Area=43.414 ac 0.00% Impervious Runoff Depth>3.31"
Flow Length=2,209' Tc=14.7 min CN=74 Runoff=187.01 cfs 11.969 af

Link 7L: Analysis Point 1 Inflow=187.01 cfs 11.969 af
Primary=187.01 cfs 11.969 af

Total Runoff Area = 43.414 ac Runoff Volume = 11.969 af Average Runoff Depth = 3.31"
100.00% Pervious = 43.414 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: X-WS1

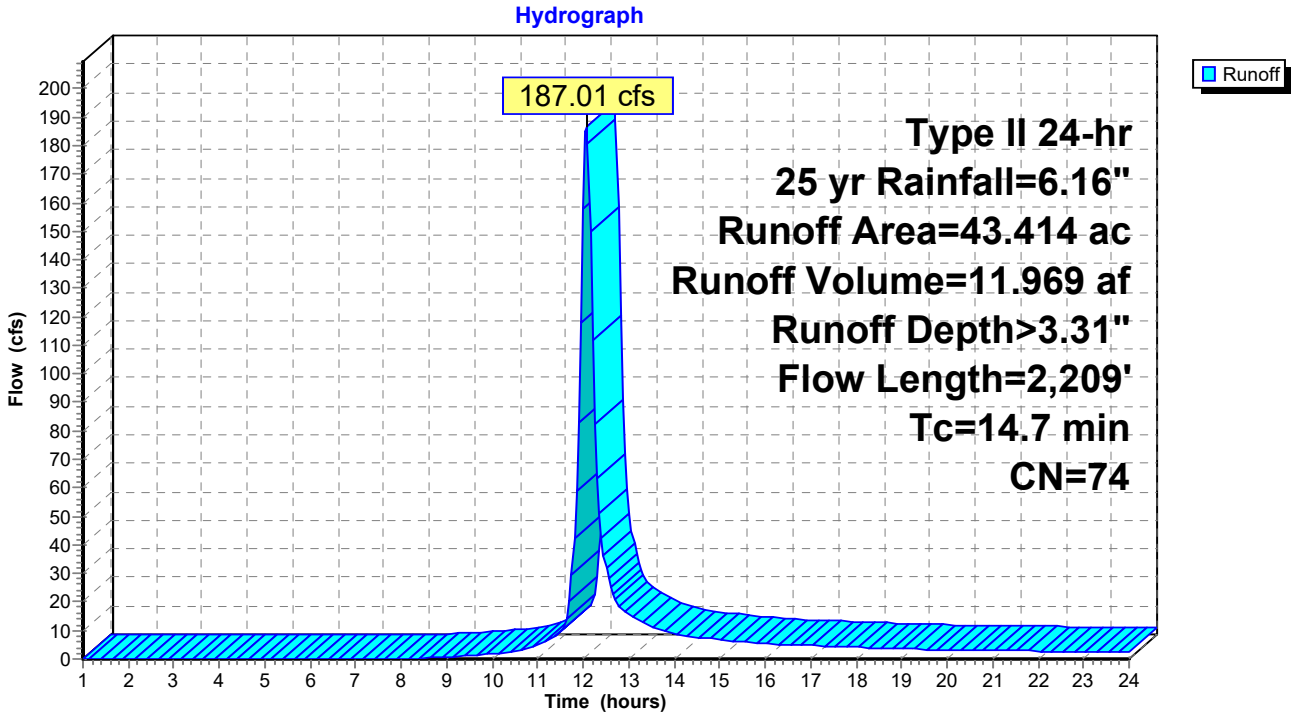
Runoff = 187.01 cfs @ 12.07 hrs, Volume= 11.969 af, Depth> 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 yr Rainfall=6.16"

Area (ac)	CN	Description
14.855	74	>75% Grass cover, Good, HSG C
3.959	74	>75% Grass cover, Good, HSG C
21.583	74	>75% Grass cover, Good, HSG C
3.017	74	>75% Grass cover, Good, HSG C
43.414	74	Weighted Average
43.414		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0250	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
3.9	845	0.0592	3.65		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
2.7	1,264	0.0237	7.91	385.20	**Channel Flow,** Area= 48.7 sf Perim= 60.6' r= 0.80' n= 0.025 Earth, clean & winding
14.7	2,209	Total			

Subcatchment 1S: X-WS1

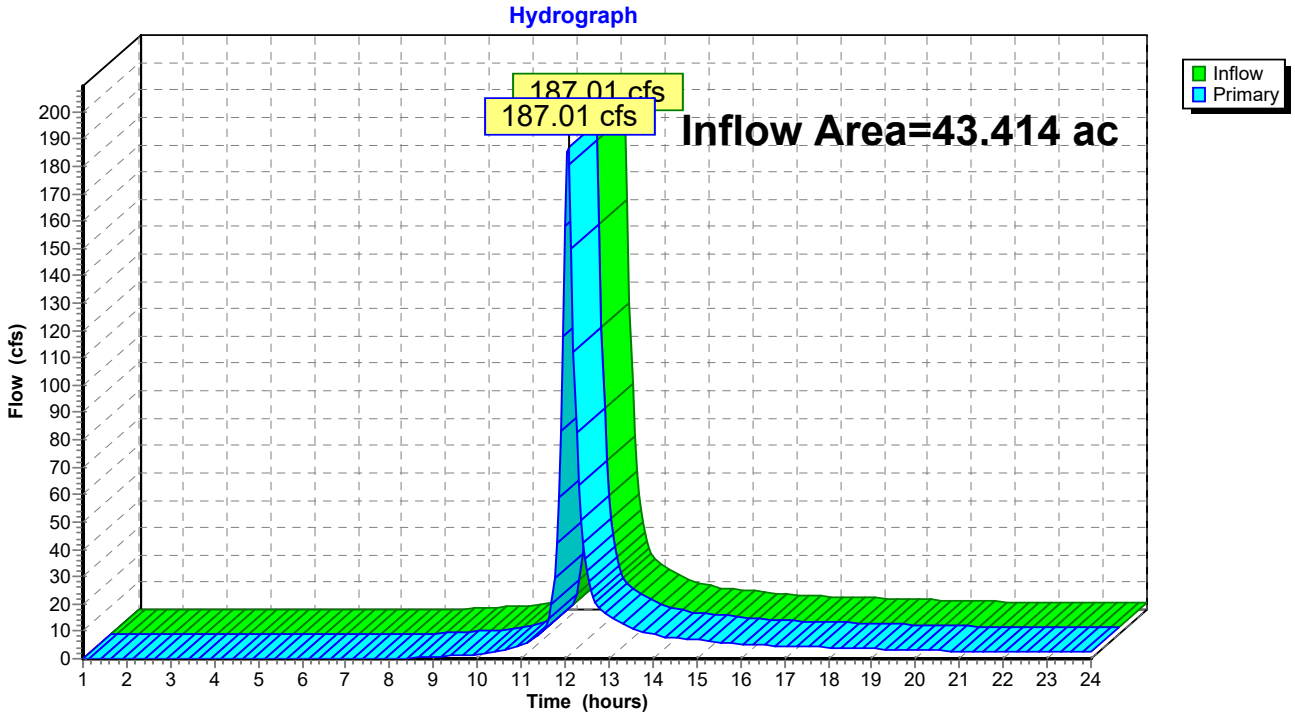


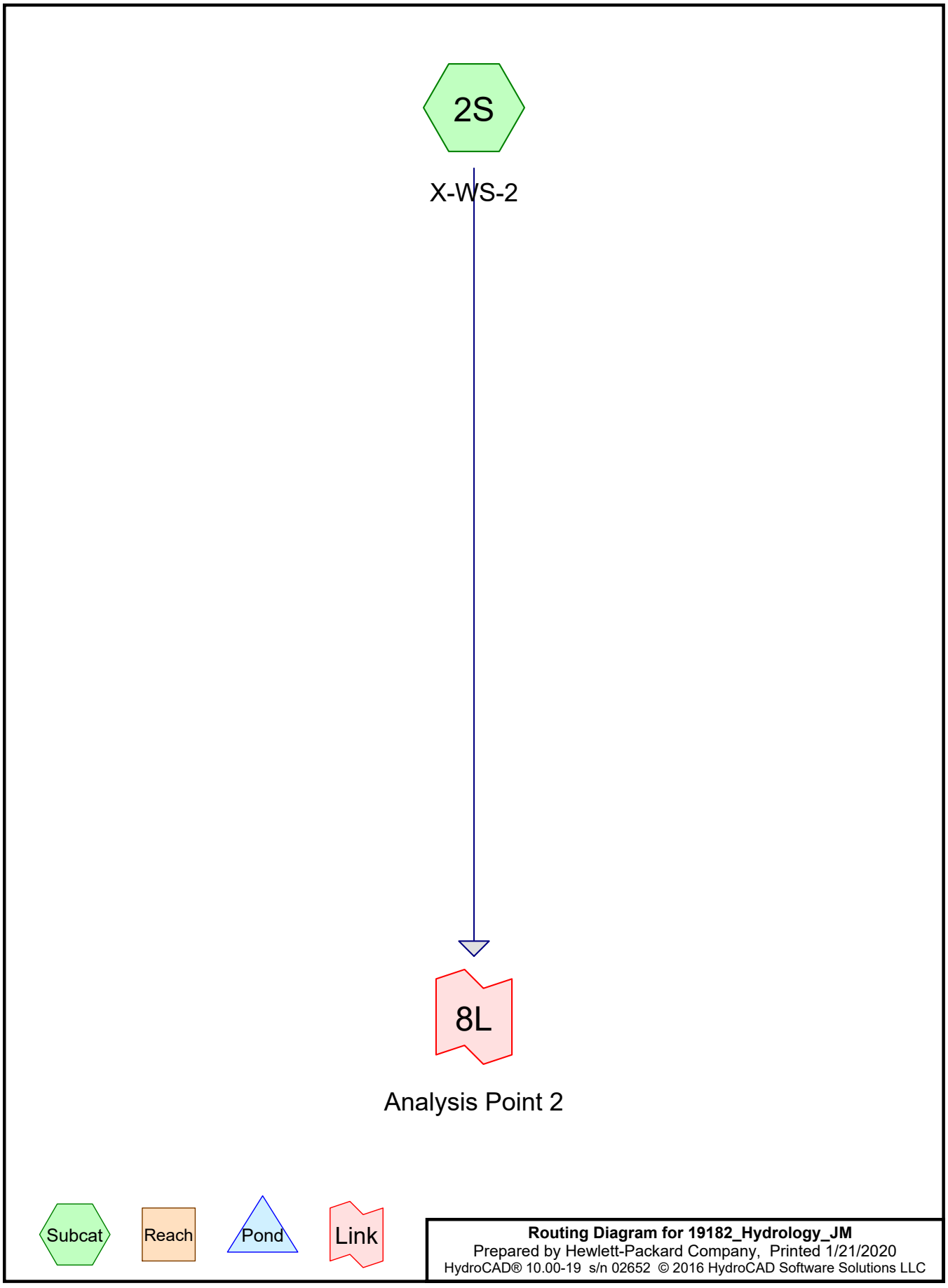
Summary for Link 7L: Analysis Point 1

Inflow Area = 43.414 ac, 0.00% Impervious, Inflow Depth > 3.31" for 25 yr event
Inflow = 187.01 cfs @ 12.07 hrs, Volume= 11.969 af
Primary = 187.01 cfs @ 12.07 hrs, Volume= 11.969 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Link 7L: Analysis Point 1





Routing Diagram for 19182_Hydrology_JM
Prepared by Hewlett-Packard Company, Printed 1/21/2020
HydroCAD® 10.00-19 s/n 02652 © 2016 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.485	80	1/2 acre lots, 25% imp, HSG C (2S)
8.039	74	>75% Grass cover, Good, HSG C (2S)
10.524	**75**	**TOTAL AREA**

Time span=1.00-24.00 hrs, dt=0.05 hrs, 461 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 2S: X-WS-2 Runoff Area=10.524 ac 5.90% Impervious Runoff Depth>3.41"
Flow Length=772' Tc=9.9 min CN=75 Runoff=54.57 cfs 2.992 af

Link 8L: Analysis Point 2 Inflow=54.57 cfs 2.992 af
Primary=54.57 cfs 2.992 af

Total Runoff Area = 10.524 ac Runoff Volume = 2.992 af Average Runoff Depth = 3.41"
94.10% Pervious = 9.903 ac 5.90% Impervious = 0.621 ac

Summary for Subcatchment 2S: X-WS-2

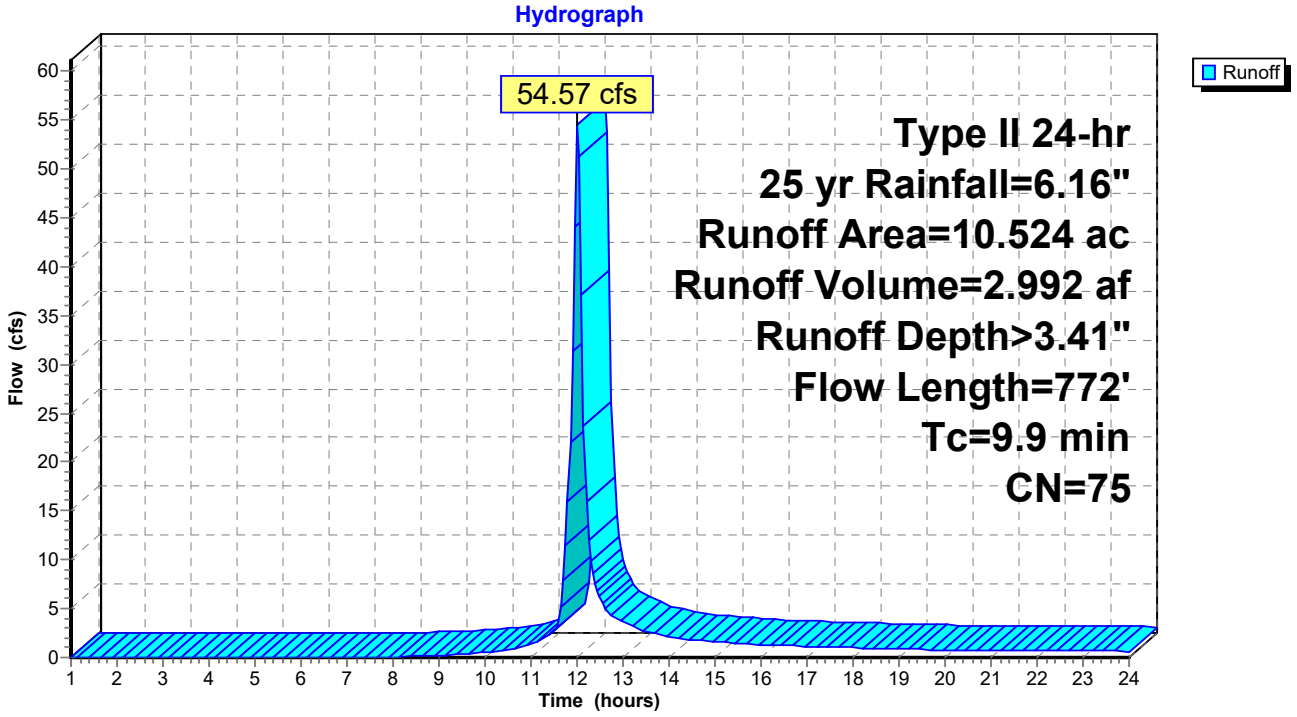
Runoff = 54.57 cfs @ 12.01 hrs, Volume= 2.992 af, Depth> 3.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 yr Rainfall=6.16"

Area (ac)	CN	Description
3.807	74	>75% Grass cover, Good, HSG C
4.232	74	>75% Grass cover, Good, HSG C
0.289	80	1/2 acre lots, 25% imp, HSG C
2.196	80	1/2 acre lots, 25% imp, HSG C
10.524	75	Weighted Average
9.903		94.10% Pervious Area
0.621		5.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0250	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
1.3	314	0.0760	4.14		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.5	358	0.0810	12.75	34.42	**Channel Flow,** Area= 2.7 sf Perim= 5.0' r= 0.54' n= 0.022 Earth, clean & straight
9.9	772	Total			

Subcatchment 2S: X-WS-2

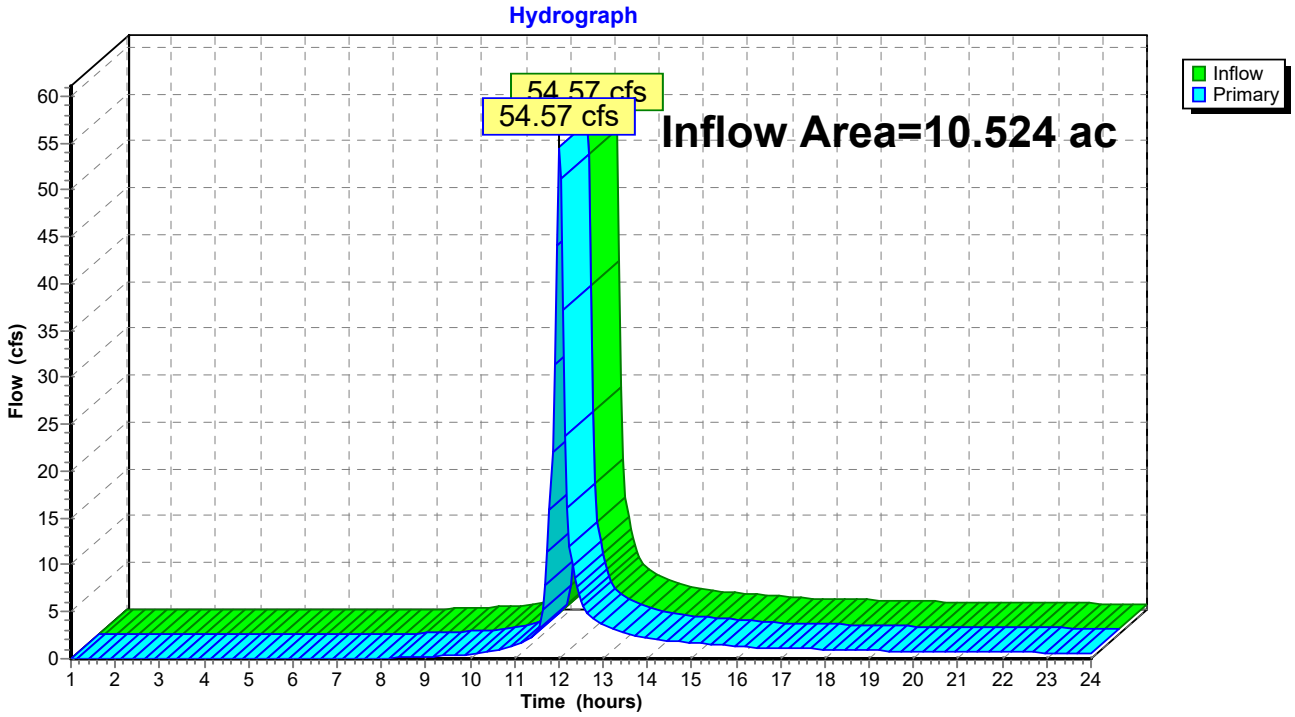


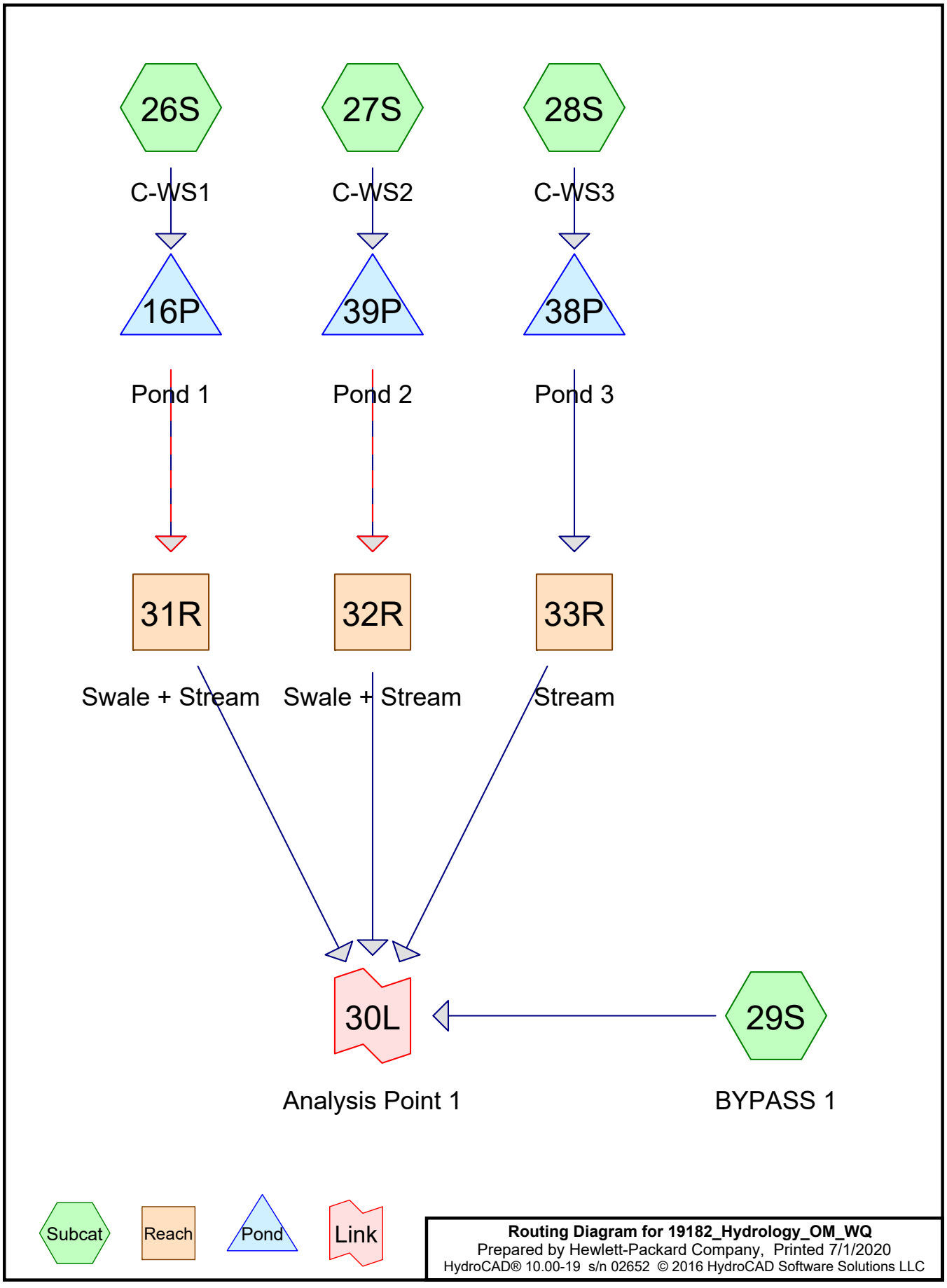
Summary for Link 8L: Analysis Point 2

Inflow Area = 10.524 ac, 5.90% Impervious, Inflow Depth > 3.41" for 25 yr event
Inflow = 54.57 cfs @ 12.01 hrs, Volume= 2.992 af
Primary = 54.57 cfs @ 12.01 hrs, Volume= 2.992 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Link 8L: Analysis Point 2





Routing Diagram for 19182_Hydrology_OM_WQ
Prepared by Hewlett-Packard Company, Printed 7/1/2020
HydroCAD® 10.00-19 s/n 02652 © 2016 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
40.408	74	>75% Grass cover, Good, HSG C (26S, 27S, 28S, 29S)
0.866	98	Paved roads w/curbs & sewers, HSG C (26S, 27S, 28S)
0.110	98	Unconnected roofs, HSG A (27S)
0.220	98	Unconnected roofs, HSG B (28S)
1.806	98	Unconnected roofs, HSG C (26S, 27S, 28S)
43.410	**76**	**TOTAL AREA**

Time span=1.00-24.00 hrs, dt=0.05 hrs, 461 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 26S: C-WS1 Runoff Area=29.512 ac 5.01% Impervious Runoff Depth>1.22"
Flow Length=1,285' Tc=12.6 min CN=75 Runoff=49.40 cfs 3.001 af

Subcatchment 27S: C-WS2 Runoff Area=2.093 ac 37.74% Impervious Runoff Depth>1.76"
Flow Length=360' Tc=9.0 min CN=83 Runoff=5.82 cfs 0.307 af

Subcatchment 28S: C-WS3 Runoff Area=2.847 ac 25.75% Impervious Runoff Depth>1.41"
Flow Length=306' Tc=6.3 min UI Adjusted CN=78 Runoff=6.96 cfs 0.335 af

Subcatchment 29S: BYPASS 1 Runoff Area=8.958 ac 0.00% Impervious Runoff Depth>1.16"
Tc=15.0 min CN=74 Runoff=12.97 cfs 0.865 af

Reach 31R: Swale + Stream Avg. Flow Depth=0.33' Max Vel=2.40 fps Inflow=8.26 cfs 3.000 af
n=0.030 L=708.0' S=0.0198 '/' Capacity=631.76 cfs Outflow=8.25 cfs 2.985 af

Reach 32R: Swale + Stream Avg. Flow Depth=0.12' Max Vel=3.18 fps Inflow=2.42 cfs 0.307 af
n=0.025 L=400.0' S=0.0750 '/' Capacity=1,476.44 cfs Outflow=2.41 cfs 0.307 af

Reach 33R: Stream Avg. Flow Depth=0.30' Max Vel=1.98 fps Inflow=6.81 cfs 0.334 af
n=0.030 L=405.0' S=0.0148 '/' Capacity=546.83 cfs Outflow=6.01 cfs 0.333 af

Pond 16P: Pond 1 Peak Elev=831.87' Storage=41,606 cf Inflow=49.40 cfs 3.001 af
Primary=8.26 cfs 3.000 af Secondary=0.00 cfs 0.000 af Outflow=8.26 cfs 3.000 af

Pond 38P: Pond 3 Peak Elev=823.71' Storage=606 cf Inflow=6.96 cfs 0.335 af
Outflow=6.81 cfs 0.334 af

Pond 39P: Pond 2 Peak Elev=851.91' Storage=2,896 cf Inflow=5.82 cfs 0.307 af
Primary=2.42 cfs 0.307 af Secondary=0.00 cfs 0.000 af Outflow=2.42 cfs 0.307 af

Link 30L: Analysis Point 1 Inflow=27.34 cfs 4.490 af
Primary=27.34 cfs 4.490 af

Total Runoff Area = 43.410 ac Runoff Volume = 4.509 af Average Runoff Depth = 1.25"
93.08% Pervious = 40.408 ac 6.92% Impervious = 3.002 ac

Summary for Subcatchment 26S: C-WS1

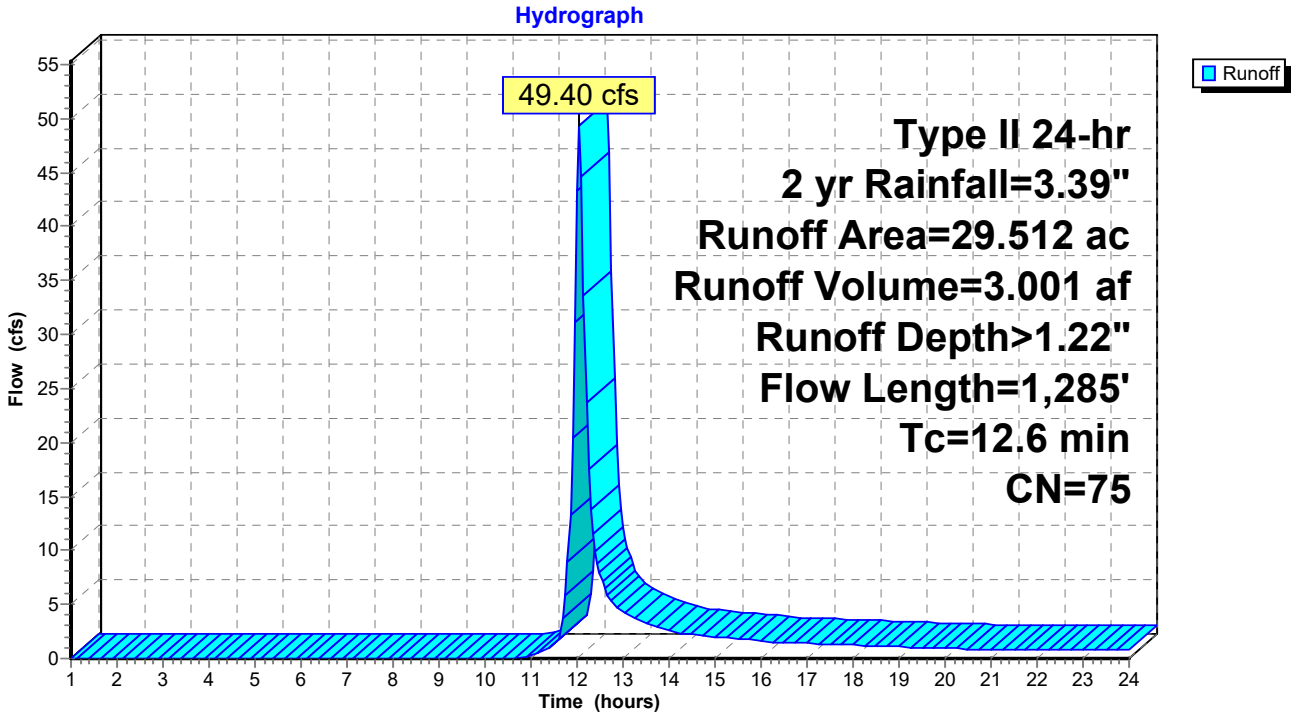
Runoff = 49.40 cfs @ 12.05 hrs, Volume= 3.001 af, Depth> 1.22"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2 yr Rainfall=3.39"

Area (ac)	CN	Description
1.168	98	Unconnected roofs, HSG C
0.311	98	Paved roads w/curbs & sewers, HSG C
14.607	74	>75% Grass cover, Good, HSG C
1.327	74	>75% Grass cover, Good, HSG C
10.488	74	>75% Grass cover, Good, HSG C
1.611	74	>75% Grass cover, Good, HSG C
29.512	75	Weighted Average
28.033		94.99% Pervious Area
1.479		5.01% Impervious Area
1.168		78.97% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0250	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
3.9	845	0.0592	3.65		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.6	340	0.0353	9.65	470.11	**Channel Flow,** Area= 48.7 sf Perim= 60.6' r= 0.80' n= 0.025
12.6	1,285	Total			

Subcatchment 26S: C-WS1



Summary for Subcatchment 27S: C-WS2

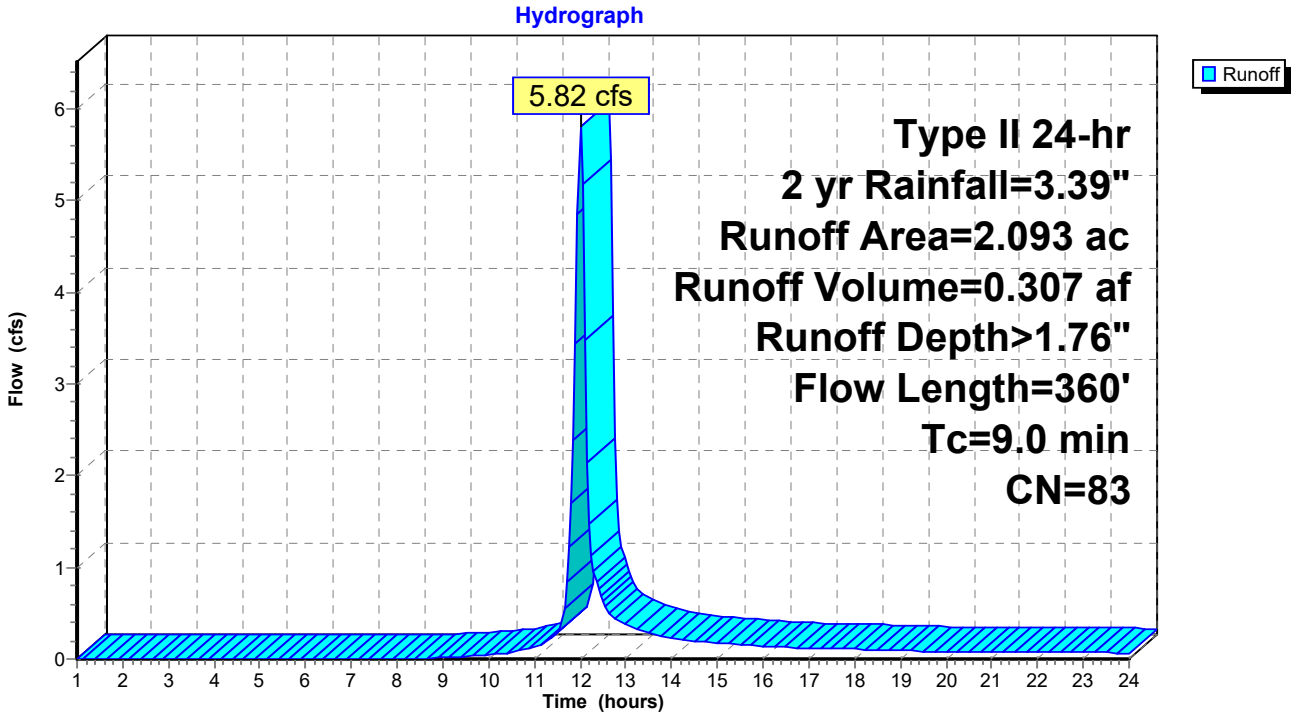
Runoff = 5.82 cfs @ 12.00 hrs, Volume= 0.307 af, Depth> 1.76"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2 yr Rainfall=3.39"

Area (ac)	CN	Description
0.110	98	Unconnected roofs, HSG A
0.418	98	Unconnected roofs, HSG C
0.262	98	Paved roads w/curbs & sewers, HSG C
0.383	74	>75% Grass cover, Good, HSG C
0.920	74	>75% Grass cover, Good, HSG C
2.093	83	Weighted Average
1.303		62.26% Pervious Area
0.790		37.74% Impervious Area
0.528		66.84% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0260	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
1.0	260	0.0885	4.46		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.0	360	Total			

Subcatchment 27S: C-WS2



Summary for Subcatchment 28S: C-WS3

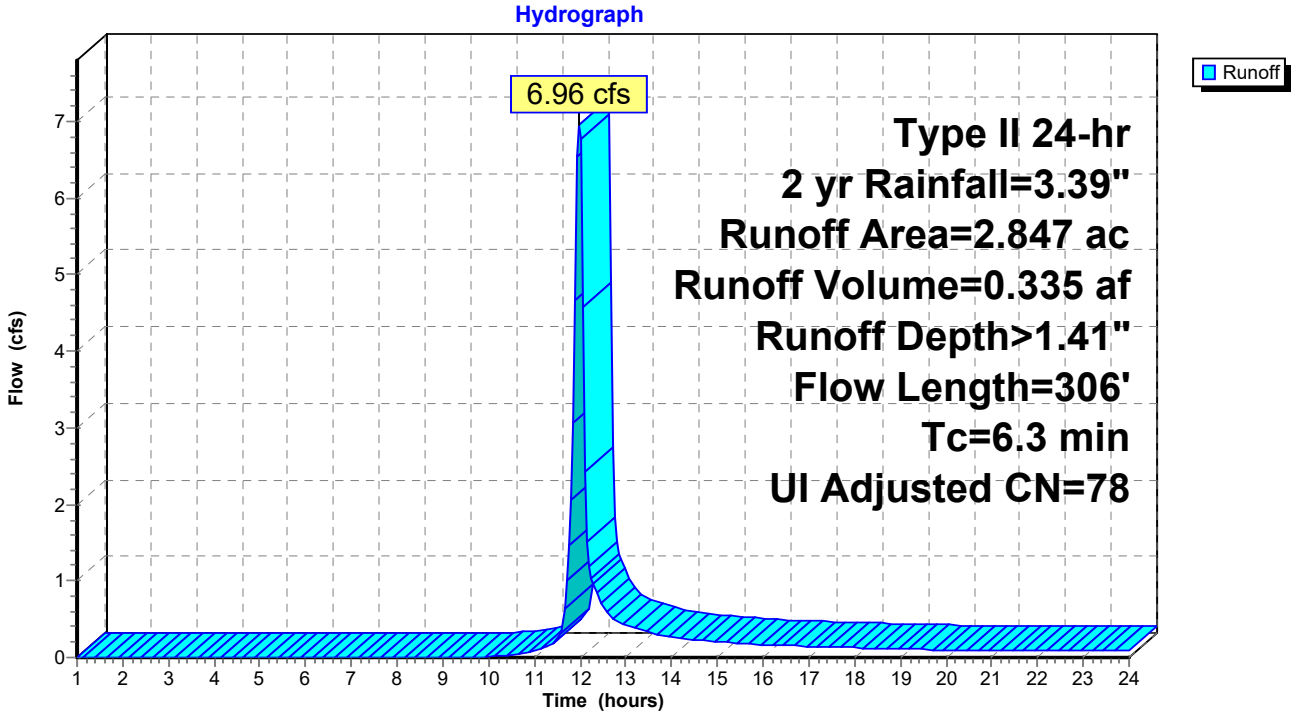
Runoff = 6.96 cfs @ 11.98 hrs, Volume= 0.335 af, Depth> 1.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2 yr Rainfall=3.39"

Area (ac)	CN	Adj	Description
0.220	98		Unconnected roofs, HSG B
0.220	98		Unconnected roofs, HSG C
0.293	98		Paved roads w/curbs & sewers, HSG C
0.658	74		>75% Grass cover, Good, HSG C
1.246	74		>75% Grass cover, Good, HSG C
0.210	74		>75% Grass cover, Good, HSG C
2.847	80	78	Weighted Average, UI Adjusted
2.114			74.25% Pervious Area
0.733			25.75% Impervious Area
0.440			60.03% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	100	0.0700	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
0.9	206	0.0680	3.91		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
6.3	306	Total			

Subcatchment 28S: C-WS3



Summary for Subcatchment 29S: BYPASS 1

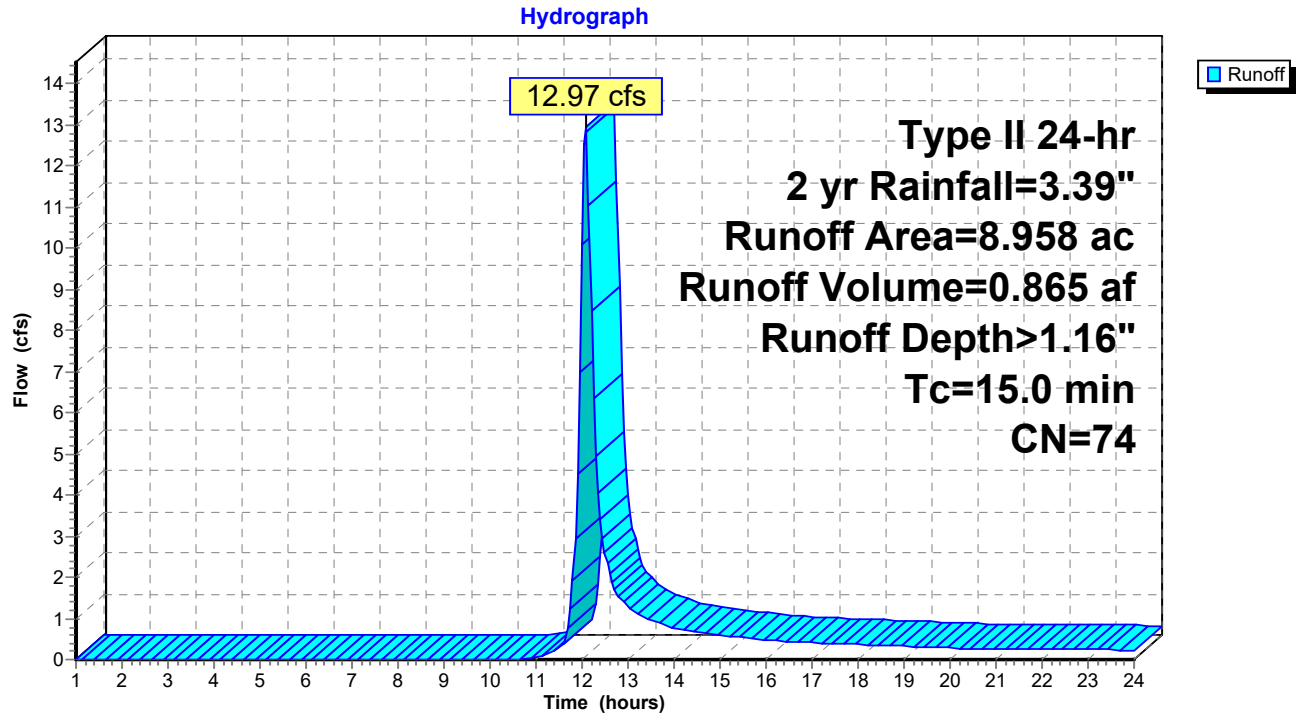
Runoff = 12.97 cfs @ 12.08 hrs, Volume= 0.865 af, Depth> 1.16"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2 yr Rainfall=3.39"

Area (ac)	CN	Description
1.359	74	>75% Grass cover, Good, HSG C
6.273	74	>75% Grass cover, Good, HSG C
1.326	74	>75% Grass cover, Good, HSG C
8.958	74	Weighted Average
8.958		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry,**

Subcatchment 29S: BYPASS 1



Summary for Reach 31R: Swale + Stream

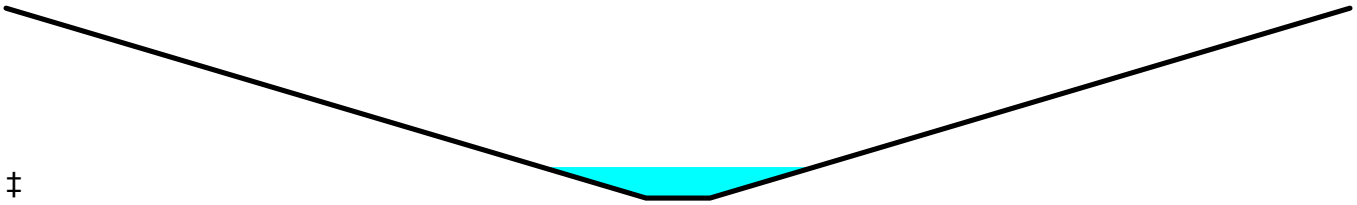
[81] Warning: Exceeded Pond 16P by 1.40' @ 1.00 hrs

Inflow Area = 29.512 ac, 5.01% Impervious, Inflow Depth > 1.22" for 2 yr event
Inflow = 8.26 cfs @ 12.48 hrs, Volume= 3.000 af
Outflow = 8.25 cfs @ 12.64 hrs, Volume= 2.985 af, Atten= 0%, Lag= 9.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.40 fps, Min. Travel Time= 4.9 min
Avg. Velocity = 1.58 fps, Avg. Travel Time= 7.5 min

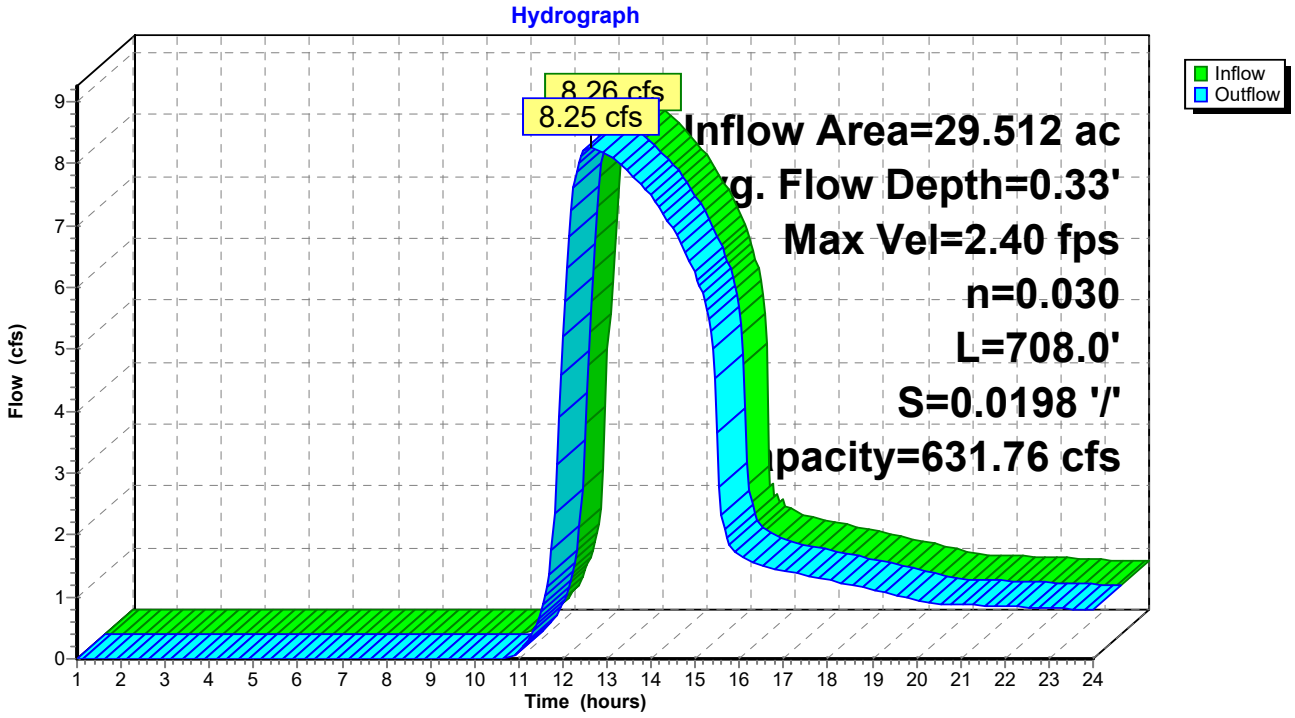
Peak Storage= 2,439 cf @ 12.56 hrs
Average Depth at Peak Storage= 0.33'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 631.76 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 708.0' Slope= 0.0198 '/'
Inlet Invert= 828.00', Outlet Invert= 814.00'



‡

Reach 31R: Swale + Stream



Stage-Area-Storage for Reach 31R: Swale + Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
828.00	0.0	0
828.02	0.1	62
828.04	0.2	136
828.06	0.3	221
828.08	0.4	317
828.10	0.6	425
828.12	0.8	544
828.14	1.0	674
828.16	1.2	816
828.18	1.4	969
828.20	1.6	1,133
828.22	1.8	1,308
828.24	2.1	1,495
828.26	2.4	1,694
828.28	2.7	1,903
828.30	3.0	2,124
828.32	3.3	2,356
828.34	3.7	2,600
828.36	4.0	2,855
828.38	4.4	3,121
828.40	4.8	3,398
828.42	5.2	3,687
828.44	5.6	3,987
828.46	6.1	4,299
828.48	6.5	4,622
828.50	7.0	4,956
828.52	7.5	5,302
828.54	8.0	5,658
828.56	8.5	6,026
828.58	9.0	6,406
828.60	9.6	6,797
828.62	10.2	7,199
828.64	10.8	7,612
828.66	11.4	8,037
828.68	12.0	8,473
828.70	12.6	8,921
828.72	13.2	9,380
828.74	13.9	9,850
828.76	14.6	10,331
828.78	15.3	10,824
828.80	16.0	11,328
828.82	16.7	11,843
828.84	17.5	12,370
828.86	18.2	12,908
828.88	19.0	13,458
828.90	19.8	14,018
828.92	20.6	14,590
828.94	21.4	15,174
828.96	22.3	15,769
828.98	23.1	16,375
829.00	24.0	16,992
829.02	24.9	17,621
829.04	25.8	18,261
829.06	26.7	18,912
829.08	27.6	19,575
829.10	28.6	20,249
829.12	29.6	20,934
829.14	30.6	21,631
829.16	31.6	22,339
829.18	32.6	23,058
829.20	33.6	23,789
829.22	34.6	24,531
829.24	35.7	25,284
829.26	36.8	26,049
829.28	37.9	26,825
829.30	39.0	27,612
829.32	40.1	28,411
829.34	41.3	29,221
829.36	42.4	30,042
829.38	43.6	30,874
829.40	44.8	31,718
829.42	46.0	32,574
829.44	47.2	33,440
829.46	48.5	34,318
829.48	49.7	35,207
829.50	51.0	36,108
829.52	52.3	37,020
829.54	53.6	37,943
829.56	54.9	38,878
829.58	56.2	39,824
829.60	57.6	40,781
829.62	59.0	41,749
829.64	60.4	42,729
829.66	61.8	43,720
829.68	63.2	44,723
829.70	64.6	45,737
829.72	66.0	46,762
829.74	67.5	47,798
829.76	69.0	48,846
829.78	70.5	49,906
829.80	72.0	50,976
829.82	73.5	52,058
829.84	75.1	53,151
829.86	76.6	54,255
829.88	78.2	55,371
829.90	79.8	56,498
829.92	81.4	57,637
829.94	83.0	58,787
829.96	84.7	59,948
829.98	86.3	61,120
830.00	**88.0**	**62,304**

Summary for Reach 32R: Swale + Stream

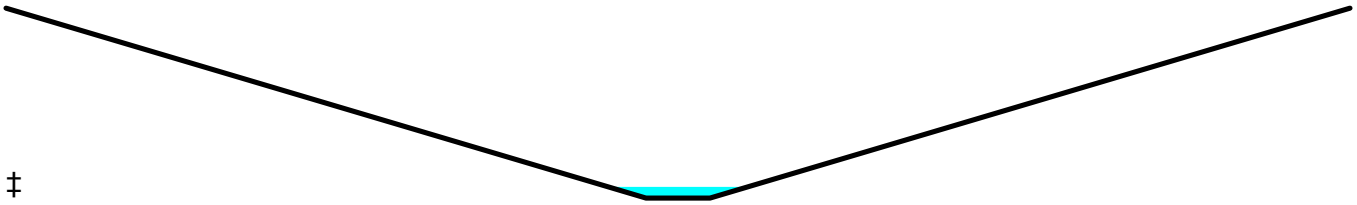
[79] Warning: Submerged Pond 39P Primary device # 1 OUTLET by 0.12'

Inflow Area = 2.093 ac, 37.74% Impervious, Inflow Depth > 1.76" for 2 yr event
Inflow = 2.42 cfs @ 12.15 hrs, Volume= 0.307 af
Outflow = 2.41 cfs @ 12.21 hrs, Volume= 0.307 af, Atten= 0%, Lag= 4.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.18 fps, Min. Travel Time= 2.1 min
Avg. Velocity = 1.37 fps, Avg. Travel Time= 4.9 min

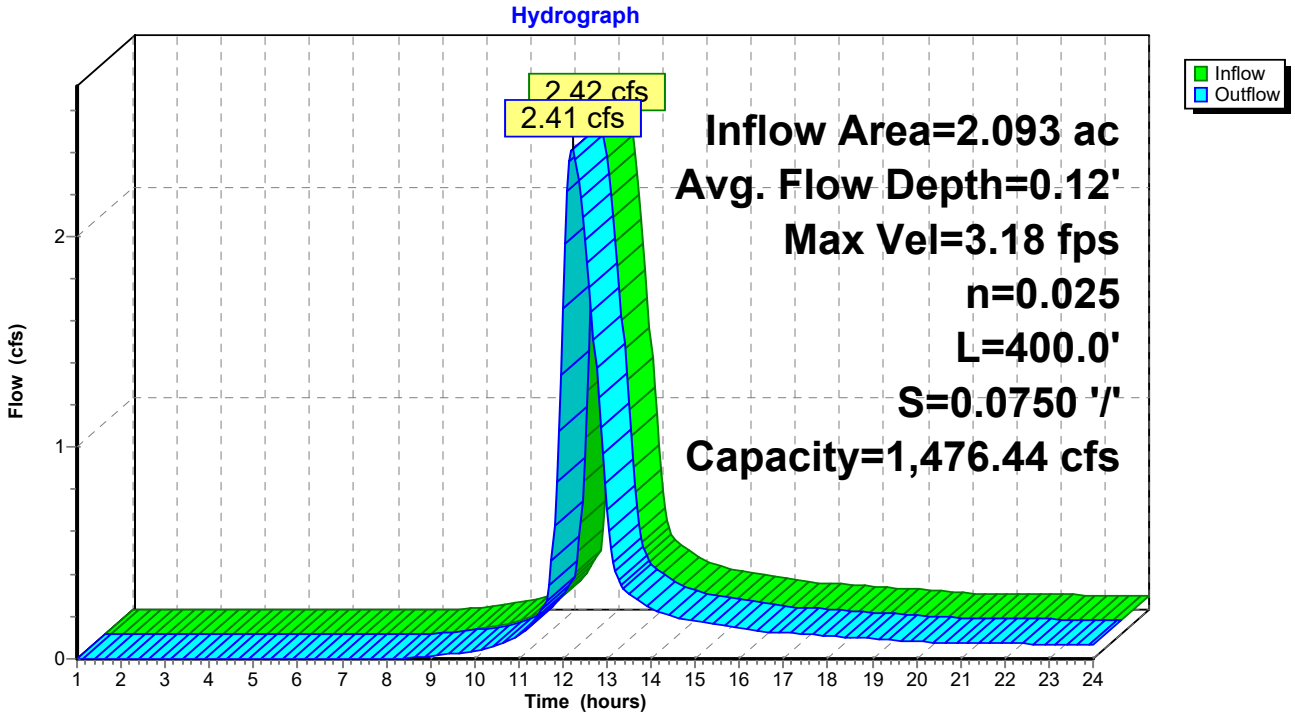
Peak Storage= 303 cf @ 12.17 hrs
Average Depth at Peak Storage= 0.12'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 1,476.44 cfs

4.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 400.0' Slope= 0.0750 '/'
Inlet Invert= 844.00', Outlet Invert= 814.00'



‡

Reach 32R: Swale + Stream



Stage-Area-Storage for Reach 32R: Swale + Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
844.00	0.0	0
844.02	0.1	35
844.04	0.2	77
844.06	0.3	125
844.08	0.4	179
844.10	0.6	240
844.12	0.8	307
844.14	1.0	381
844.16	1.2	461
844.18	1.4	547
844.20	1.6	640
844.22	1.8	739
844.24	2.1	845
844.26	2.4	957
844.28	2.7	1,075
844.30	3.0	1,200
844.32	3.3	1,331
844.34	3.7	1,469
844.36	4.0	1,613
844.38	4.4	1,763
844.40	4.8	1,920
844.42	5.2	2,083
844.44	5.6	2,253
844.46	6.1	2,429
844.48	6.5	2,611
844.50	7.0	2,800
844.52	7.5	2,995
844.54	8.0	3,197
844.56	8.5	3,405
844.58	9.0	3,619
844.60	9.6	3,840
844.62	10.2	4,067
844.64	10.8	4,301
844.66	11.4	4,541
844.68	12.0	4,787
844.70	12.6	5,040
844.72	13.2	5,299
844.74	13.9	5,565
844.76	14.6	5,837
844.78	15.3	6,115
844.80	16.0	6,400
844.82	16.7	6,691
844.84	17.5	6,989
844.86	18.2	7,293
844.88	19.0	7,603
844.90	19.8	7,920
844.92	20.6	8,243
844.94	21.4	8,573
844.96	22.3	8,909
844.98	23.1	9,251
845.00	24.0	9,600
845.02	24.9	9,955
845.04	25.8	10,317
845.06	26.7	10,685
845.08	27.6	11,059
845.10	28.6	11,440
845.12	29.6	11,827
845.14	30.6	12,221
845.16	31.6	12,621
845.18	32.6	13,027
845.20	33.6	13,440
845.22	34.6	13,859
845.24	35.7	14,285
845.26	36.8	14,717
845.28	37.9	15,155
845.30	39.0	15,600
845.32	40.1	16,051
845.34	41.3	16,509
845.36	42.4	16,973
845.38	43.6	17,443
845.40	44.8	17,920
845.42	46.0	18,403
845.44	47.2	18,893
845.46	48.5	19,389
845.48	49.7	19,891
845.50	51.0	20,400
845.52	52.3	20,915
845.54	53.6	21,437
845.56	54.9	21,965
845.58	56.2	22,499
845.60	57.6	23,040
845.62	59.0	23,587
845.64	60.4	24,141
845.66	61.8	24,701
845.68	63.2	25,267
845.70	64.6	25,840
845.72	66.0	26,419
845.74	67.5	27,005
845.76	69.0	27,597
845.78	70.5	28,195
845.80	72.0	28,800
845.82	73.5	29,411
845.84	75.1	30,029
845.86	76.6	30,653
845.88	78.2	31,283
845.90	79.8	31,920
845.92	81.4	32,563
845.94	83.0	33,213
845.96	84.7	33,869
845.98	86.3	34,531
846.00	**88.0**	**35,200**

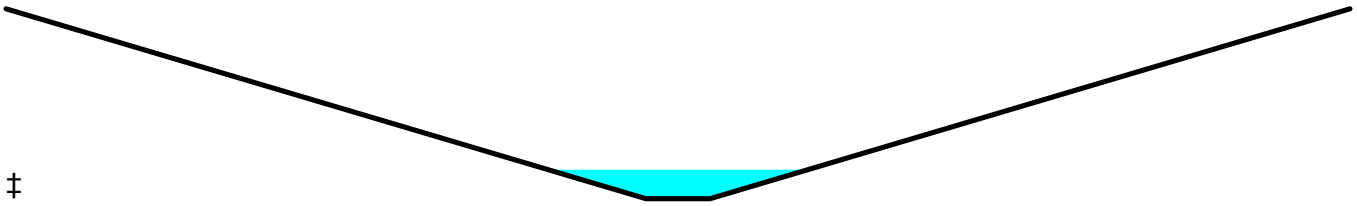
Summary for Reach 33R: Stream

Inflow Area = 2.847 ac, 25.75% Impervious, Inflow Depth > 1.41" for 2 yr event
Inflow = 6.81 cfs @ 12.00 hrs, Volume= 0.334 af
Outflow = 6.01 cfs @ 12.09 hrs, Volume= 0.333 af, Atten= 12%, Lag= 5.7 min

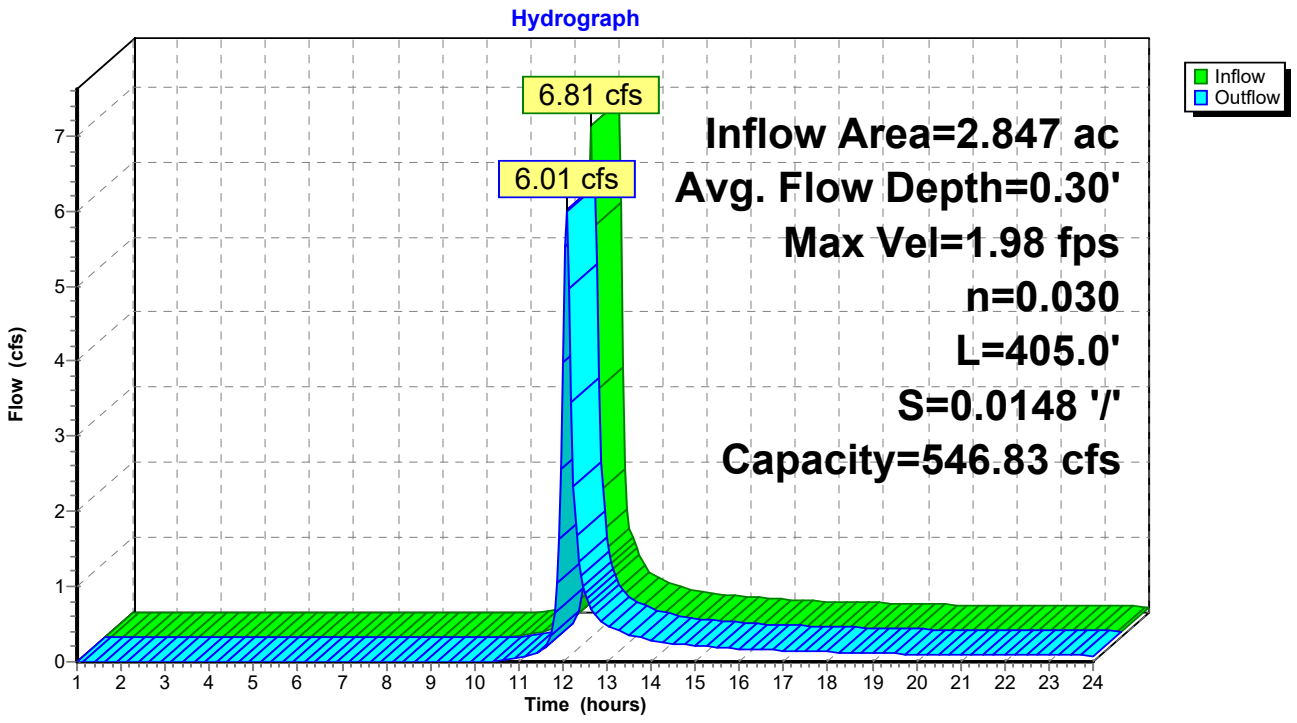
Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.98 fps, Min. Travel Time= 3.4 min
Avg. Velocity = 0.71 fps, Avg. Travel Time= 9.5 min

Peak Storage= 1,242 cf @ 12.03 hrs
Average Depth at Peak Storage= 0.30'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 546.83 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 405.0' Slope= 0.0148 '/'
Inlet Invert= 820.00', Outlet Invert= 814.00'



‡



Stage-Area-Storage for Reach 33R: Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
820.00	0.0	0
820.02	0.1	36
820.04	0.2	78
820.06	0.3	126
820.08	0.4	181
820.10	0.6	243
820.12	0.8	311
820.14	1.0	386
820.16	1.2	467
820.18	1.4	554
820.20	1.6	648
820.22	1.8	748
820.24	2.1	855
820.26	2.4	969
820.28	2.7	1,089
820.30	3.0	1,215
820.32	3.3	1,348
820.34	3.7	1,487
820.36	4.0	1,633
820.38	4.4	1,785
820.40	4.8	1,944
820.42	5.2	2,109
820.44	5.6	2,281
820.46	6.1	2,459
820.48	6.5	2,644
820.50	7.0	2,835
820.52	7.5	3,033
820.54	8.0	3,237
820.56	8.5	3,447
820.58	9.0	3,664
820.60	9.6	3,888
820.62	10.2	4,118
820.64	10.8	4,355
820.66	11.4	4,598
820.68	12.0	4,847
820.70	12.6	5,103
820.72	13.2	5,365
820.74	13.9	5,634
820.76	14.6	5,910
820.78	15.3	6,192
820.80	16.0	6,480
820.82	16.7	6,775
820.84	17.5	7,076
820.86	18.2	7,384
820.88	19.0	7,698
820.90	19.8	8,019
820.92	20.6	8,346
820.94	21.4	8,680
820.96	22.3	9,020
820.98	23.1	9,367
821.00	24.0	9,720
821.02	24.9	10,080
821.04	25.8	10,446
821.06	26.7	10,818
821.08	27.6	11,197
821.10	28.6	11,583
821.12	29.6	11,975
821.14	30.6	12,374
821.16	31.6	12,779
821.18	32.6	13,190
821.20	33.6	13,608
821.22	34.6	14,032
821.24	35.7	14,463
821.26	36.8	14,901
821.28	37.9	15,345
821.30	39.0	15,795
821.32	40.1	16,252
821.34	41.3	16,715
821.36	42.4	17,185
821.38	43.6	17,661
821.40	44.8	18,144
821.42	46.0	18,633
821.44	47.2	19,129
821.46	48.5	19,631
821.48	49.7	20,140
821.50	51.0	20,655
821.52	52.3	21,177
821.54	53.6	21,705
821.56	54.9	22,239
821.58	56.2	22,780
821.60	57.6	23,328
821.62	59.0	23,882
821.64	60.4	24,443
821.66	61.8	25,010
821.68	63.2	25,583
821.70	64.6	26,163
821.72	66.0	26,749
821.74	67.5	27,342
821.76	69.0	27,942
821.78	70.5	28,548
821.80	72.0	29,160
821.82	73.5	29,779
821.84	75.1	30,404
821.86	76.6	31,036
821.88	78.2	31,674
821.90	79.8	32,319
821.92	81.4	32,970
821.94	83.0	33,628
821.96	84.7	34,292
821.98	86.3	34,963
822.00	**88.0**	**35,640**

Summary for Pond 16P: Pond 1

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=2)

Inflow Area = 29.512 ac, 5.01% Impervious, Inflow Depth > 1.22" for 2 yr event
Inflow = 49.40 cfs @ 12.05 hrs, Volume= 3.001 af
Outflow = 8.26 cfs @ 12.48 hrs, Volume= 3.000 af, Atten= 83%, Lag= 25.7 min
Primary = 8.26 cfs @ 12.48 hrs, Volume= 3.000 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 831.87' @ 12.48 hrs Surf.Area= 24,670 sf Storage= 41,606 cf

Plug-Flow detention time= 36.9 min calculated for 3.000 af (100% of inflow)
Center-of-Mass det. time= 36.9 min (892.8 - 856.0)

Volume	Invert	Avail.Storage	Storage Description
#1	826.60'	179,320 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

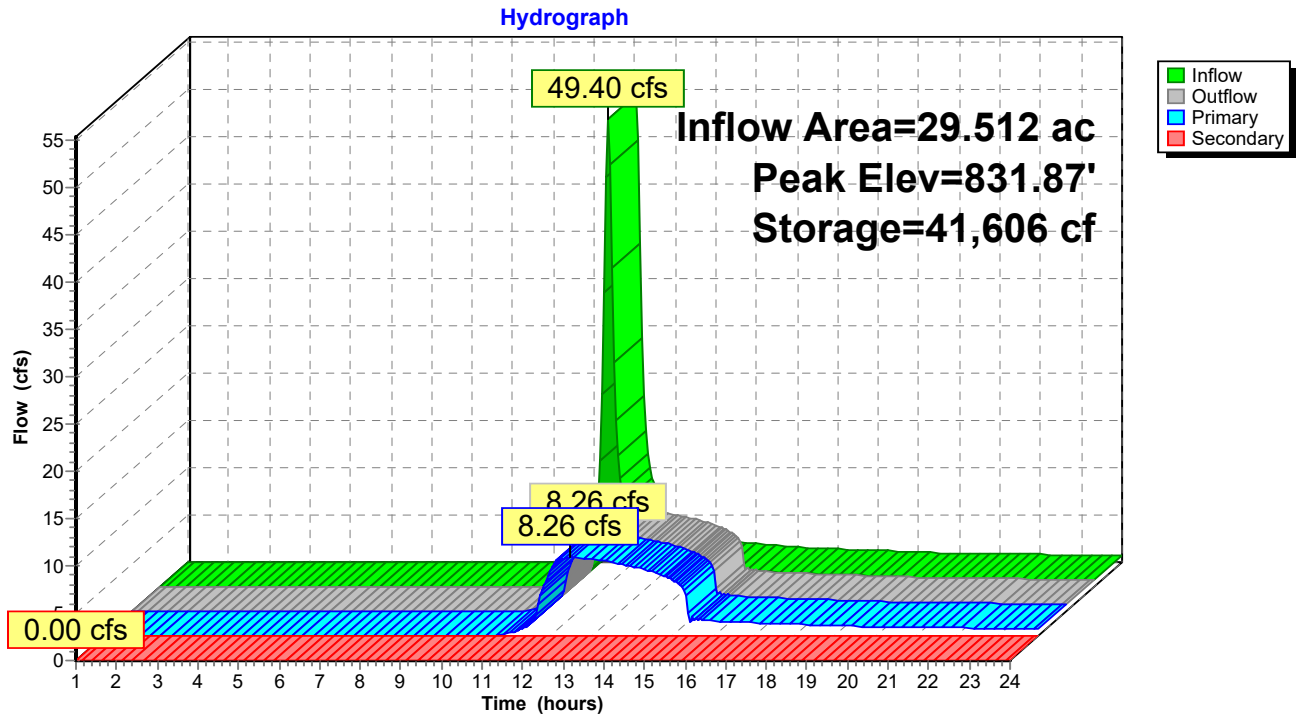
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
826.60	5	20.0	0	0	5
828.00	169	47.0	95	95	156
830.00	11,373	539.8	8,619	8,714	23,176
832.00	25,791	810.0	36,194	44,907	52,230
834.00	30,848	854.2	56,564	101,471	58,316
836.00	47,604	1,729.9	77,849	179,320	238,410

Device	Routing	Invert	Outlet Devices
#1	Primary	826.60'	**36.0" Round Culvert** L= 61.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 826.60' / 826.00' S= 0.0098 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	826.60'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	832.00'	**30.0" W x 6.0" H Vert. Orifice/Grate X 4.00** C= 0.600
#4	Device 1	833.00'	**28.0" x 28.0" Horiz. TOS** C= 0.600 Limited to weir flow at low heads
#5	Secondary	834.30'	**30.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=8.26 cfs @ 12.48 hrs HW=831.87' (Free Discharge)
- **1=Culvert** (Passes 8.26 cfs of 66.07 cfs potential flow)
  - **2=Orifice/Grate** (Orifice Controls 8.26 cfs @ 10.51 fps)
  - **3=Orifice/Grate** (Controls 0.00 cfs)
  - **4=TOS** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=826.60' (Free Discharge)
- **5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 16P: Pond 1



Stage-Area-Storage for Pond 16P: Pond 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
826.60	5	0
826.70	9	1
826.80	14	2
826.90	21	4
827.00	28	6
827.10	37	9
827.20	47	13
827.30	58	19
827.40	70	25
827.50	84	33
827.60	98	42
827.70	114	53
827.80	131	65
827.90	150	79
828.00	169	95
828.10	313	118
828.20	500	159
828.30	732	220
828.40	1,007	307
828.50	1,326	423
828.60	1,689	573
828.70	2,095	762
828.80	2,546	994
828.90	3,040	1,273
829.00	3,579	1,603
829.10	4,161	1,990
829.20	4,787	2,437
829.30	5,457	2,949
829.40	6,170	3,530
829.50	6,928	4,184
829.60	7,729	4,917
829.70	8,574	5,731
829.80	9,463	6,633
829.90	10,396	7,626
830.00	11,373	8,714
830.10	11,956	9,880
830.20	12,553	11,105
830.30	13,165	12,391
830.40	13,791	13,739
830.50	14,432	15,150
830.60	15,087	16,626
830.70	15,757	18,168
830.80	16,442	19,777
830.90	17,141	21,456
831.00	17,854	23,206
831.10	18,582	25,028
831.20	19,325	26,923
831.30	20,083	28,893
831.40	20,854	30,940
831.50	21,641	33,065
831.60	22,442	35,269
831.70	23,257	37,553
831.80	24,087	39,921
831.90	24,932	42,371
832.00	25,791	44,907
832.10	26,033	47,499
832.20	26,276	50,114
832.30	26,521	52,754
832.40	26,766	55,418
832.50	27,013	58,107
832.60	27,261	60,821
832.70	27,509	63,559
832.80	27,760	66,323
832.90	28,011	69,111
833.00	28,263	71,925
833.10	28,516	74,764
833.20	28,771	77,628
833.30	29,027	80,518
833.40	29,283	83,434
833.50	29,541	86,375
833.60	29,800	89,342
833.70	30,061	92,335
833.80	30,322	95,354
833.90	30,584	98,399
834.00	30,848	101,471
834.10	31,600	104,593
834.20	32,361	107,791
834.30	33,131	111,066
834.40	33,910	114,418
834.50	34,698	117,848
834.60	35,495	121,358
834.70	36,301	124,947
834.80	37,116	128,618
834.90	37,940	132,371
835.00	38,773	136,206
835.10	39,616	140,126
835.20	40,467	144,130
835.30	41,328	148,219
835.40	42,197	152,396
835.50	43,076	156,659
835.60	43,963	161,011
835.70	44,860	165,452
835.80	45,765	169,983
835.90	46,680	174,605
836.00	**47,604**	**179,320**

Summary for Pond 38P: Pond 3

Inflow Area = 2.847 ac, 25.75% Impervious, Inflow Depth > 1.41" for 2 yr event
Inflow = 6.96 cfs @ 11.98 hrs, Volume= 0.335 af
Outflow = 6.81 cfs @ 12.00 hrs, Volume= 0.334 af, Atten= 2%, Lag= 1.0 min
Primary = 6.81 cfs @ 12.00 hrs, Volume= 0.334 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 823.71' @ 12.00 hrs Surf.Area= 2,988 sf Storage= 606 cf

Plug-Flow detention time= 3.4 min calculated for 0.334 af (100% of inflow)
Center-of-Mass det. time= 2.1 min (844.3 - 842.2)

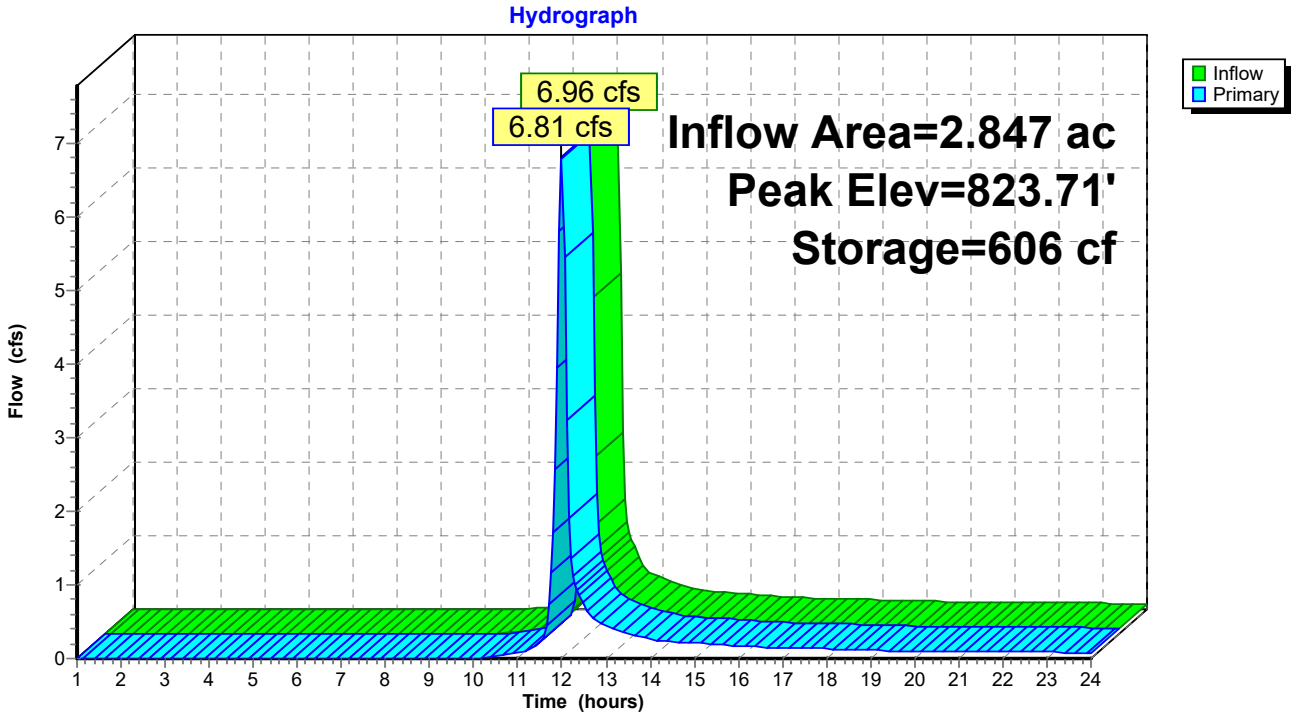
Volume	Invert	Avail.Storage	Storage Description
#1	823.50'	3,444 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
823.50	2,814	277.0	0	0	2,814
824.00	3,238	287.0	1,512	1,512	3,284
824.50	4,526	323.0	1,932	3,444	5,039

Device	Routing	Invert	Outlet Devices
#1	Primary	823.50'	**30.0' long x 6.0' breadth Overflow Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=6.72 cfs @ 12.00 hrs HW=823.71' (Free Discharge)
1=Overflow Weir (Weir Controls 6.72 cfs @ 1.08 fps)

Pond 38P: Pond 3



Stage-Area-Storage for Pond 38P: Pond 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
823.50	2,814	0
823.51	2,822	28
823.52	2,830	56
823.53	2,839	85
823.54	2,847	113
823.55	2,855	142
823.56	2,863	170
823.57	2,872	199
823.58	2,880	228
823.59	2,888	257
823.60	2,896	286
823.61	2,905	315
823.62	2,913	344
823.63	2,921	373
823.64	2,930	402
823.65	2,938	431
823.66	2,946	461
823.67	2,955	490
823.68	2,963	520
823.69	2,972	550
823.70	2,980	579
823.71	2,988	609
823.72	2,997	639
823.73	3,005	669
823.74	3,014	699
823.75	3,022	729
823.76	3,031	760
823.77	3,039	790
823.78	3,048	820
823.79	3,056	851
823.80	3,065	882
823.81	3,073	912
823.82	3,082	943
823.83	3,091	974
823.84	3,099	1,005
823.85	3,108	1,036
823.86	3,116	1,067
823.87	3,125	1,098
823.88	3,134	1,129
823.89	3,142	1,161
823.90	3,151	1,192
823.91	3,159	1,224
823.92	3,168	1,256
823.93	3,177	1,287
823.94	3,186	1,319
823.95	3,194	1,351
823.96	3,203	1,383
823.97	3,212	1,415
823.98	3,220	1,447
823.99	3,229	1,479
824.00	3,238	1,512
824.01	3,262	1,544
824.02	3,285	1,577
824.03	3,309	1,610
824.04	3,333	1,643
824.05	3,357	1,677
824.06	3,381	1,710
824.07	3,405	1,744
824.08	3,430	1,778
824.09	3,454	1,813
824.10	3,478	1,848
824.11	3,503	1,882
824.12	3,527	1,918
824.13	3,552	1,953
824.14	3,577	1,989
824.15	3,602	2,025
824.16	3,627	2,061
824.17	3,652	2,097
824.18	3,677	2,134
824.19	3,702	2,171
824.20	3,727	2,208
824.21	3,753	2,245
824.22	3,778	2,283
824.23	3,804	2,321
824.24	3,829	2,359
824.25	3,855	2,397
824.26	3,881	2,436
824.27	3,907	2,475
824.28	3,933	2,514
824.29	3,959	2,554
824.30	3,985	2,593
824.31	4,011	2,633
824.32	4,038	2,673
824.33	4,064	2,714
824.34	4,090	2,755
824.35	4,117	2,796
824.36	4,144	2,837
824.37	4,170	2,879
824.38	4,197	2,921
824.39	4,224	2,963
824.40	4,251	3,005
824.41	4,278	3,048
824.42	4,305	3,091
824.43	4,333	3,134
824.44	4,360	3,177
824.45	4,388	3,221
824.46	4,415	3,265
824.47	4,443	3,309
824.48	4,470	3,354
824.49	4,498	3,399
824.50	**4,526**	**3,444**

Summary for Pond 39P: Pond 2

Inflow Area = 2.093 ac, 37.74% Impervious, Inflow Depth > 1.76" for 2 yr event
Inflow = 5.82 cfs @ 12.00 hrs, Volume= 0.307 af
Outflow = 2.42 cfs @ 12.15 hrs, Volume= 0.307 af, Atten= 58%, Lag= 8.4 min
Primary = 2.42 cfs @ 12.15 hrs, Volume= 0.307 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 851.91' @ 12.15 hrs Surf.Area= 1,918 sf Storage= 2,896 cf

Plug-Flow detention time= 8.5 min calculated for 0.307 af (100% of inflow)
Center-of-Mass det. time= 8.2 min (836.8 - 828.6)

Volume	Invert	Avail.Storage	Storage Description
#1	849.50'	40,741 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

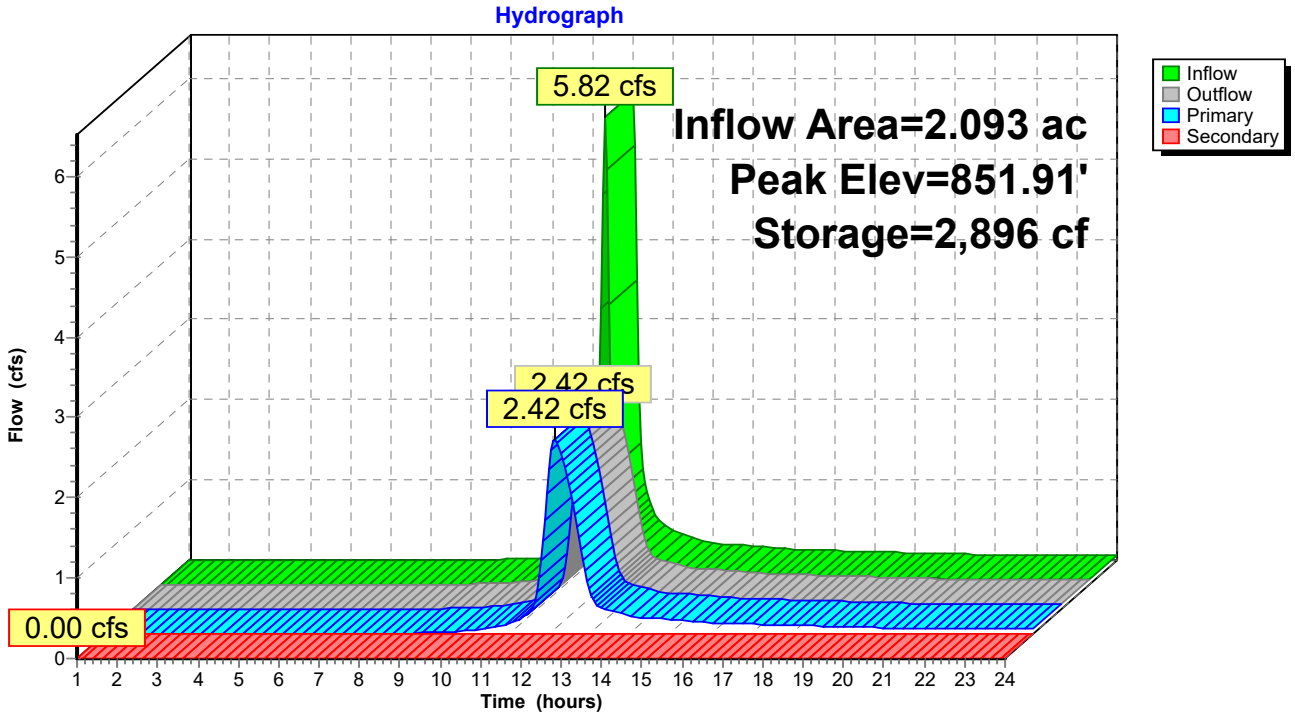
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
849.50	5	20.0	0	0	5
850.00	986	146.0	177	177	1,670
852.00	1,972	183.0	2,902	3,078	2,693
854.00	3,498	252.0	5,398	8,476	5,121
856.00	5,438	321.0	8,865	17,341	8,319
857.00	8,862	631.0	7,081	24,422	31,809
858.00	11,447	647.0	10,127	34,549	33,557
858.50	13,348	665.0	6,193	40,741	35,464

Device	Routing	Invert	Outlet Devices
#1	Primary	849.00'	**24.0" Round Culvert** L= 140.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 849.00' / 844.00' S= 0.0357 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Device 1	849.50'	**8.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	856.00'	**28.0" W x 28.0" H Vert. TOS** C= 0.600
#4	Secondary	857.50'	**30.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=2.42 cfs @ 12.15 hrs HW=851.90' (Free Discharge)
└**1=Culvert** (Passes 2.42 cfs of 20.86 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 2.42 cfs @ 6.93 fps)
  └**3=TOS** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=849.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 39P: Pond 2



Stage-Area-Storage for Pond 39P: Pond 2

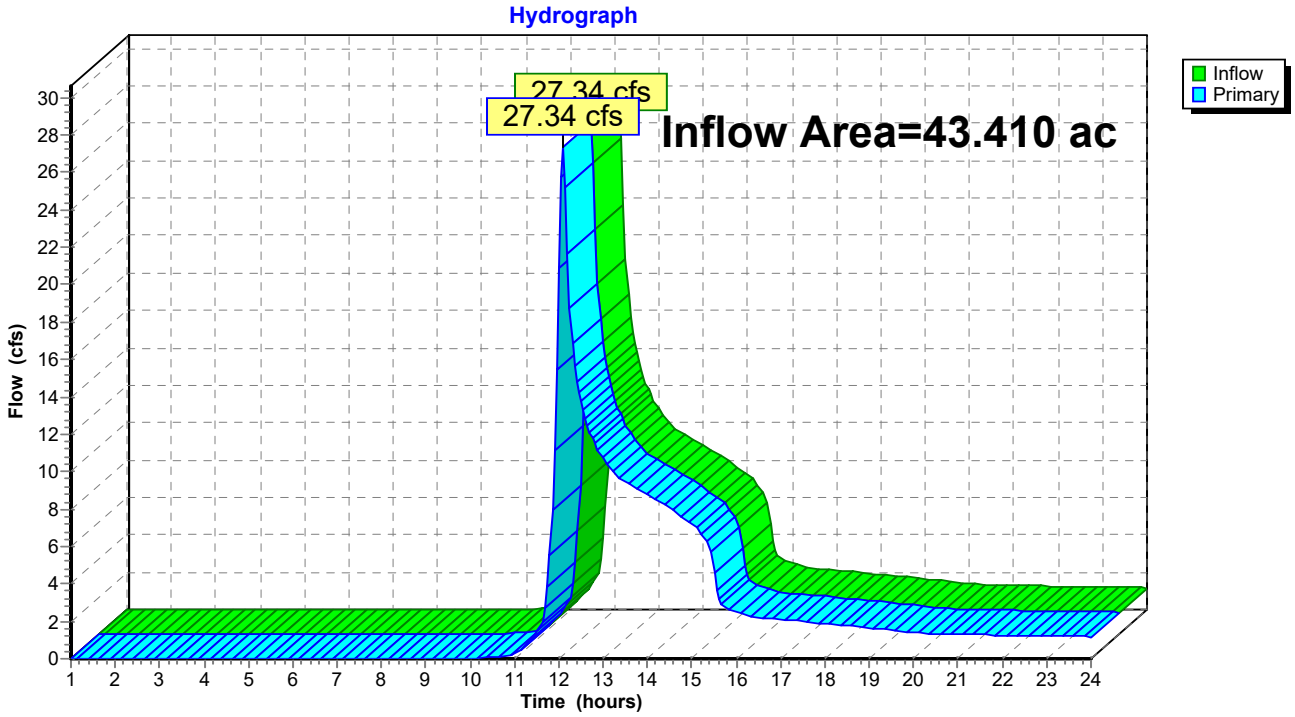
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
849.50	5	0
849.60	65	3
849.70	193	15
849.80	389	44
849.90	654	95
850.00	986	177
850.10	1,027	278
850.20	1,069	382
850.30	1,112	491
850.40	1,156	605
850.50	1,201	723
850.60	1,246	845
850.70	1,293	972
850.80	1,340	1,104
850.90	1,388	1,240
851.00	1,437	1,381
851.10	1,486	1,527
851.20	1,537	1,678
851.30	1,588	1,835
851.40	1,641	1,996
851.50	1,694	2,163
851.60	1,748	2,335
851.70	1,803	2,512
851.80	1,858	2,696
851.90	1,915	2,884
852.00	1,972	3,078
852.10	2,038	3,279
852.20	2,105	3,486
852.30	2,173	3,700
852.40	2,242	3,921
852.50	2,313	4,149
852.60	2,384	4,383
852.70	2,457	4,625
852.80	2,530	4,875
852.90	2,605	5,132
853.00	2,681	5,396
853.10	2,758	5,668
853.20	2,835	5,947
853.30	2,914	6,235
853.40	2,995	6,530
853.50	3,076	6,834
853.60	3,158	7,145
853.70	3,241	7,465
853.80	3,326	7,794
853.90	3,411	8,131
854.00	3,498	8,476
854.10	3,585	8,830
854.20	3,673	9,193
854.30	3,762	9,565
854.40	3,852	9,946
854.50	3,943	10,335
854.60	4,035	10,734
854.70	4,129	11,142
854.80	4,223	11,560
854.90	4,318	11,987
855.00	4,415	12,424
855.10	4,512	12,870
855.20	4,611	13,326
855.30	4,711	13,792
855.40	4,811	14,268
855.50	4,913	14,754
855.60	5,016	15,251
855.70	5,120	15,758
855.80	5,225	16,275
855.90	5,331	16,803
856.00	5,438	17,341
856.10	5,743	17,900
856.20	6,056	18,490
856.30	6,378	19,112
856.40	6,708	19,766
856.50	7,046	20,453
856.60	7,393	21,175
856.70	7,747	21,932
856.80	8,111	22,725
856.90	8,482	23,555
857.00	8,862	24,422
857.10	9,106	25,320
857.20	9,353	26,243
857.30	9,603	27,191
857.40	9,856	28,164
857.50	10,113	29,162
857.60	10,373	30,186
857.70	10,637	31,237
857.80	10,904	32,314
857.90	11,174	33,418
858.00	11,447	34,549
858.10	11,816	35,712
858.20	12,190	36,912
858.30	12,570	38,150
858.40	12,956	39,426
858.50	**13,348**	**40,741**

Summary for Link 30L: Analysis Point 1

Inflow Area = 43.410 ac, 6.92% Impervious, Inflow Depth > 1.24" for 2 yr event
Inflow = 27.34 cfs @ 12.10 hrs, Volume= 4.490 af
Primary = 27.34 cfs @ 12.10 hrs, Volume= 4.490 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Link 30L: Analysis Point 1



Time span=1.00-24.00 hrs, dt=0.05 hrs, 461 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 26S: C-WS1 Runoff Area=29.512 ac 5.01% Impervious Runoff Depth>2.04"
Flow Length=1,285' Tc=12.6 min CN=75 Runoff=84.11 cfs 5.026 af

Subcatchment 27S: C-WS2 Runoff Area=2.093 ac 37.74% Impervious Runoff Depth>2.72"
Flow Length=360' Tc=9.0 min CN=83 Runoff=8.89 cfs 0.475 af

Subcatchment 28S: C-WS3 Runoff Area=2.847 ac 25.75% Impervious Runoff Depth>2.29"
Flow Length=306' Tc=6.3 min UI Adjusted CN=78 Runoff=11.23 cfs 0.543 af

Subcatchment 29S: BYPASS 1 Runoff Area=8.958 ac 0.00% Impervious Runoff Depth>1.96"
Tc=15.0 min CN=74 Runoff=22.51 cfs 1.466 af

Reach 31R: Swale + Stream Avg. Flow Depth=0.55' Max Vel=3.25 fps Inflow=27.56 cfs 5.026 af
n=0.030 L=708.0' S=0.0198 '/' Capacity=631.76 cfs Outflow=26.95 cfs 5.007 af

Reach 32R: Swale + Stream Avg. Flow Depth=0.13' Max Vel=3.38 fps Inflow=2.97 cfs 0.474 af
n=0.025 L=400.0' S=0.0750 '/' Capacity=1,476.44 cfs Outflow=2.96 cfs 0.473 af

Reach 33R: Stream Avg. Flow Depth=0.38' Max Vel=2.25 fps Inflow=11.08 cfs 0.542 af
n=0.030 L=405.0' S=0.0148 '/' Capacity=546.83 cfs Outflow=10.10 cfs 0.540 af

Pond 16P: Pond 1 Peak Elev=832.85' Storage=67,706 cf Inflow=84.11 cfs 5.026 af
Primary=27.56 cfs 5.026 af Secondary=0.00 cfs 0.000 af Outflow=27.56 cfs 5.026 af

Pond 38P: Pond 3 Peak Elev=823.78' Storage=836 cf Inflow=11.23 cfs 0.543 af
Outflow=11.08 cfs 0.542 af

Pond 39P: Pond 2 Peak Elev=852.96' Storage=5,291 cf Inflow=8.89 cfs 0.475 af
Primary=2.97 cfs 0.474 af Secondary=0.00 cfs 0.000 af Outflow=2.97 cfs 0.474 af

Link 30L: Analysis Point 1 Inflow=42.35 cfs 7.487 af
Primary=42.35 cfs 7.487 af

Total Runoff Area = 43.410 ac Runoff Volume = 7.511 af Average Runoff Depth = 2.08"
93.08% Pervious = 40.408 ac 6.92% Impervious = 3.002 ac

Summary for Subcatchment 26S: C-WS1

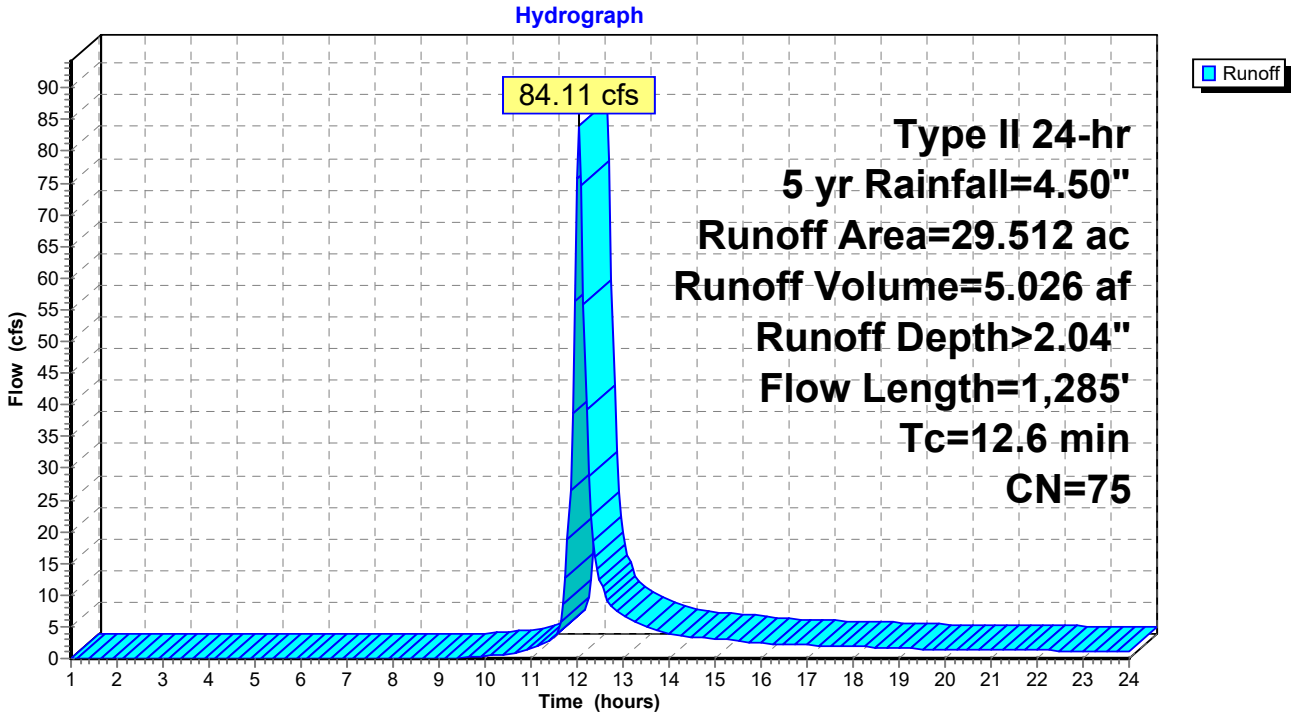
Runoff = 84.11 cfs @ 12.05 hrs, Volume= 5.026 af, Depth> 2.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 5 yr Rainfall=4.50"

Area (ac)	CN	Description
1.168	98	Unconnected roofs, HSG C
0.311	98	Paved roads w/curbs & sewers, HSG C
14.607	74	>75% Grass cover, Good, HSG C
1.327	74	>75% Grass cover, Good, HSG C
10.488	74	>75% Grass cover, Good, HSG C
1.611	74	>75% Grass cover, Good, HSG C
29.512	75	Weighted Average
28.033		94.99% Pervious Area
1.479		5.01% Impervious Area
1.168		78.97% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0250	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
3.9	845	0.0592	3.65		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.6	340	0.0353	9.65	470.11	**Channel Flow,** Area= 48.7 sf Perim= 60.6' r= 0.80' n= 0.025
12.6	1,285	Total			

Subcatchment 26S: C-WS1



Summary for Subcatchment 27S: C-WS2

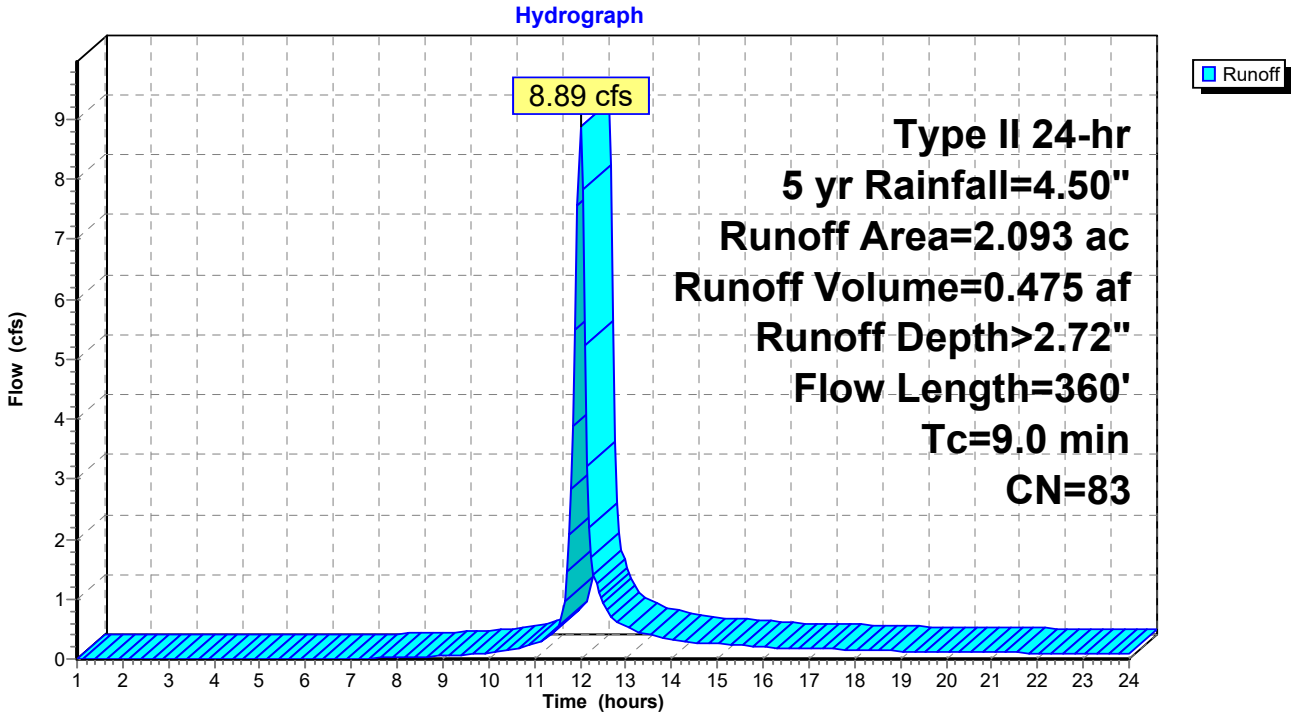
Runoff = 8.89 cfs @ 12.00 hrs, Volume= 0.475 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 5 yr Rainfall=4.50"

Area (ac)	CN	Description
0.110	98	Unconnected roofs, HSG A
0.418	98	Unconnected roofs, HSG C
0.262	98	Paved roads w/curbs & sewers, HSG C
0.383	74	>75% Grass cover, Good, HSG C
0.920	74	>75% Grass cover, Good, HSG C
2.093	83	Weighted Average
1.303		62.26% Pervious Area
0.790		37.74% Impervious Area
0.528		66.84% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0260	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
1.0	260	0.0885	4.46		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.0	360	Total			

Subcatchment 27S: C-WS2



Summary for Subcatchment 28S: C-WS3

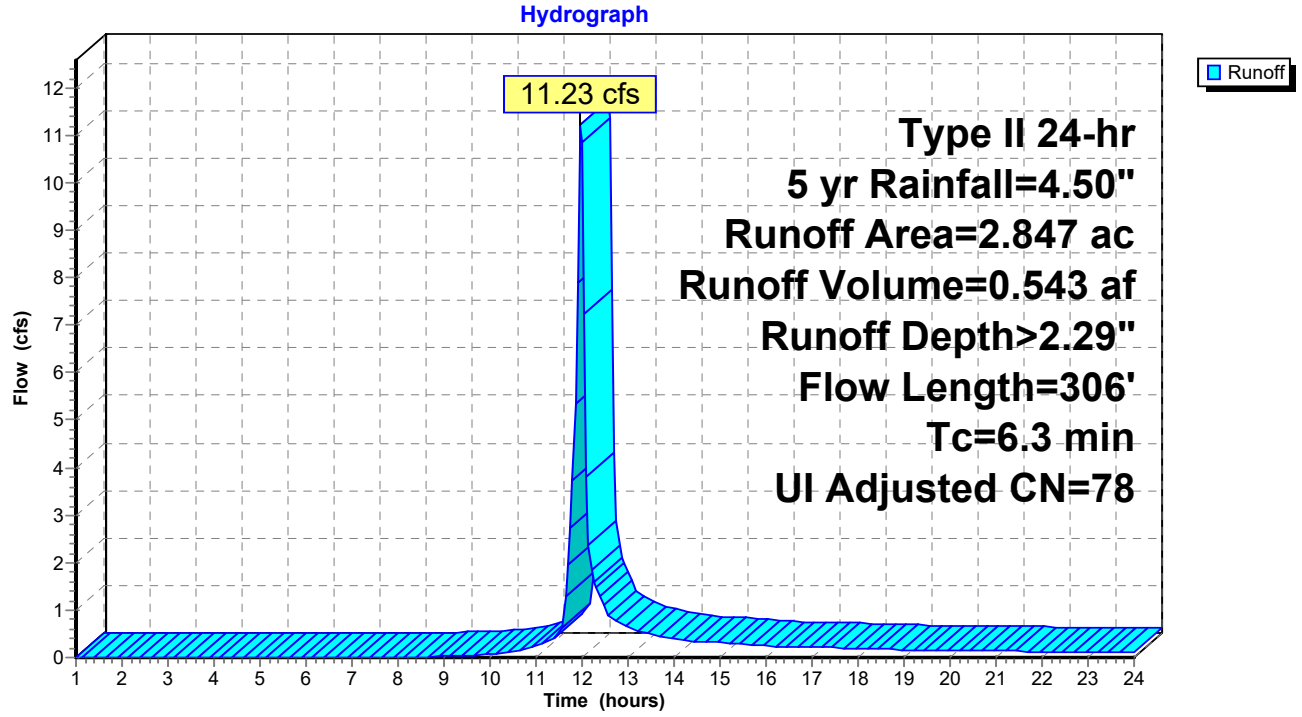
Runoff = 11.23 cfs @ 11.98 hrs, Volume= 0.543 af, Depth> 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 5 yr Rainfall=4.50"

Area (ac)	CN	Adj	Description
0.220	98		Unconnected roofs, HSG B
0.220	98		Unconnected roofs, HSG C
0.293	98		Paved roads w/curbs & sewers, HSG C
0.658	74		>75% Grass cover, Good, HSG C
1.246	74		>75% Grass cover, Good, HSG C
0.210	74		>75% Grass cover, Good, HSG C
2.847	80	78	Weighted Average, UI Adjusted
2.114			74.25% Pervious Area
0.733			25.75% Impervious Area
0.440			60.03% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	100	0.0700	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
0.9	206	0.0680	3.91		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
6.3	306	Total			

Subcatchment 28S: C-WS3



Summary for Subcatchment 29S: BYPASS 1

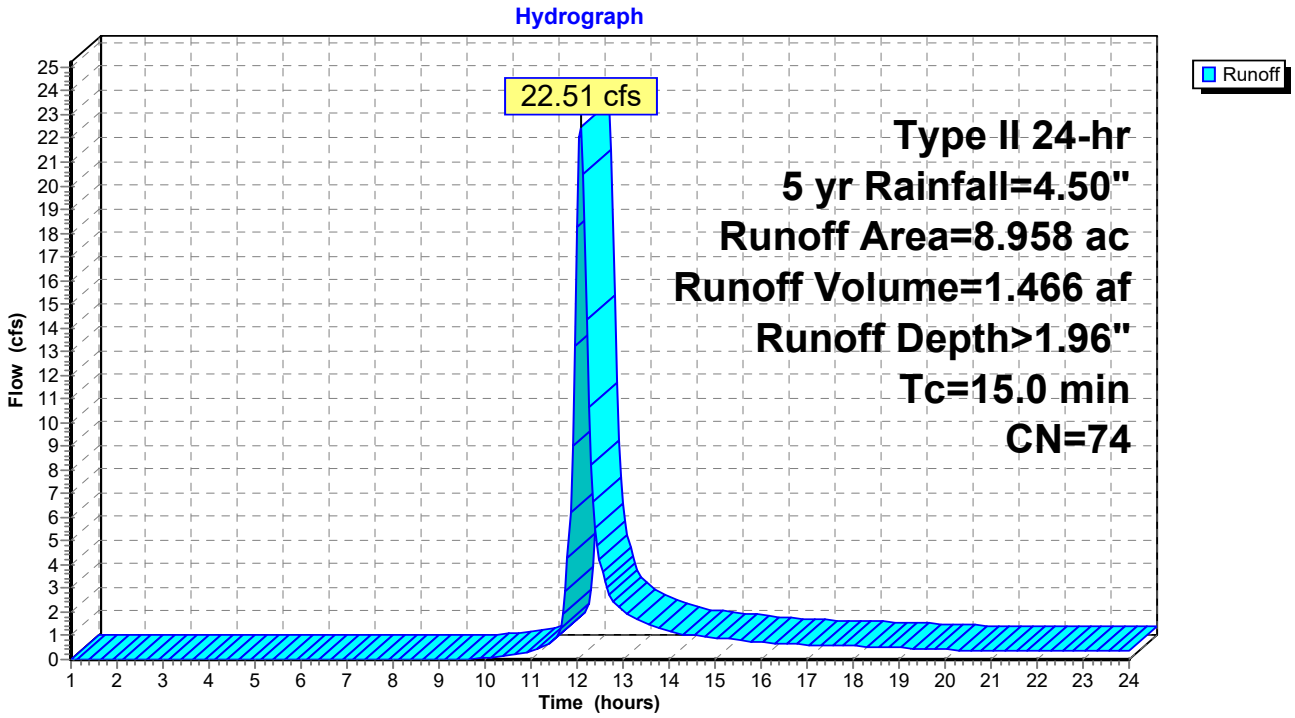
Runoff = 22.51 cfs @ 12.08 hrs, Volume= 1.466 af, Depth> 1.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 5 yr Rainfall=4.50"

Area (ac)	CN	Description
1.359	74	>75% Grass cover, Good, HSG C
6.273	74	>75% Grass cover, Good, HSG C
1.326	74	>75% Grass cover, Good, HSG C
8.958	74	Weighted Average
8.958		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry,**

Subcatchment 29S: BYPASS 1



Summary for Reach 31R: Swale + Stream

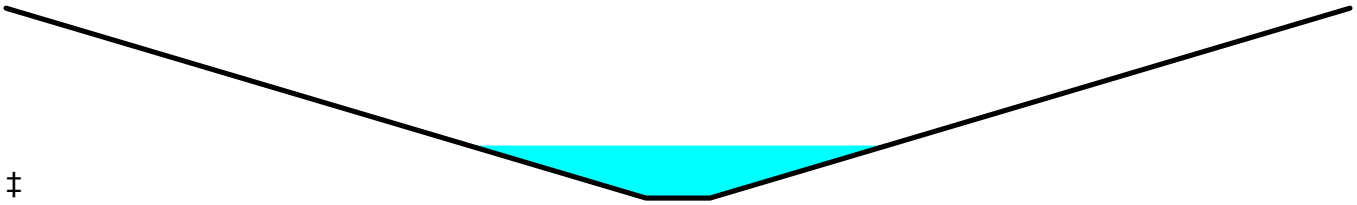
[81] Warning: Exceeded Pond 16P by 1.40' @ 1.00 hrs

Inflow Area = 29.512 ac, 5.01% Impervious, Inflow Depth > 2.04" for 5 yr event
Inflow = 27.56 cfs @ 12.26 hrs, Volume= 5.026 af
Outflow = 26.95 cfs @ 12.39 hrs, Volume= 5.007 af, Atten= 2%, Lag= 7.7 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.25 fps, Min. Travel Time= 3.6 min
Avg. Velocity = 1.75 fps, Avg. Travel Time= 6.7 min

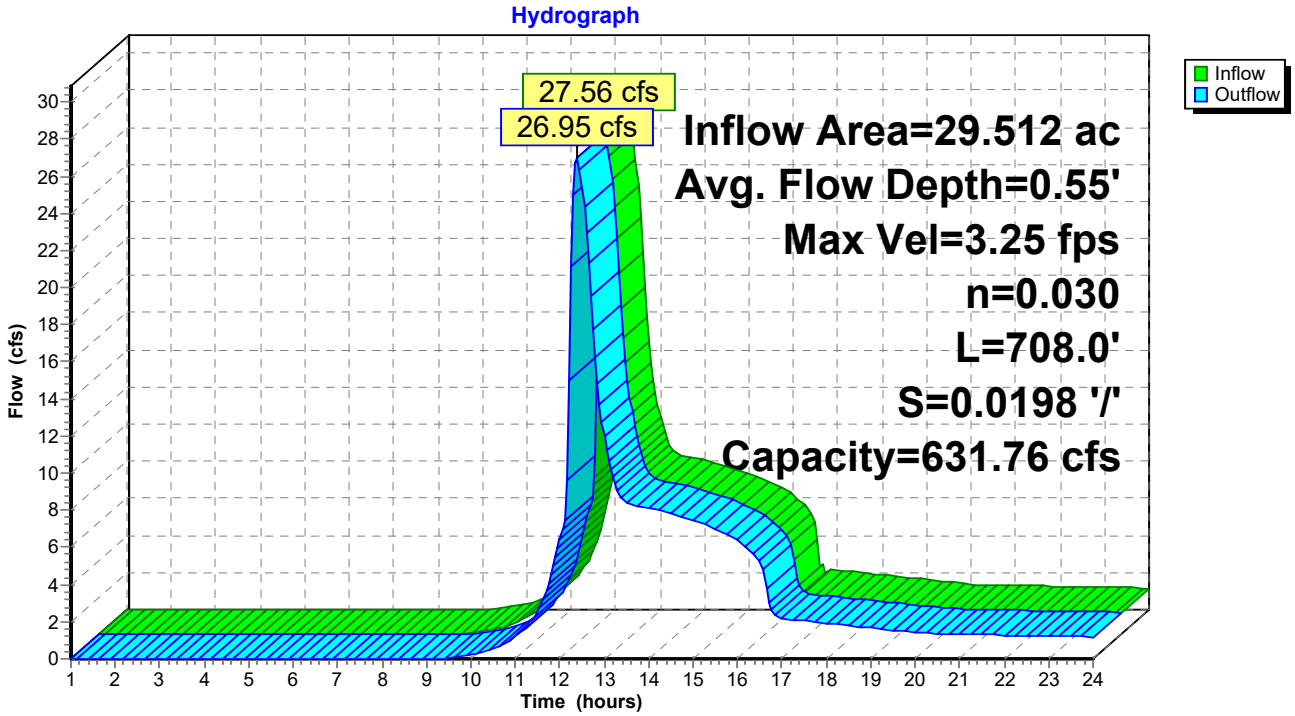
Peak Storage= 5,890 cf @ 12.33 hrs
Average Depth at Peak Storage= 0.55'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 631.76 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 708.0' Slope= 0.0198 '/'
Inlet Invert= 828.00', Outlet Invert= 814.00'



‡

Reach 31R: Swale + Stream



Stage-Area-Storage for Reach 31R: Swale + Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
828.00	0.0	0
828.02	0.1	62
828.04	0.2	136
828.06	0.3	221
828.08	0.4	317
828.10	0.6	425
828.12	0.8	544
828.14	1.0	674
828.16	1.2	816
828.18	1.4	969
828.20	1.6	1,133
828.22	1.8	1,308
828.24	2.1	1,495
828.26	2.4	1,694
828.28	2.7	1,903
828.30	3.0	2,124
828.32	3.3	2,356
828.34	3.7	2,600
828.36	4.0	2,855
828.38	4.4	3,121
828.40	4.8	3,398
828.42	5.2	3,687
828.44	5.6	3,987
828.46	6.1	4,299
828.48	6.5	4,622
828.50	7.0	4,956
828.52	7.5	5,302
828.54	8.0	5,658
828.56	8.5	6,026
828.58	9.0	6,406
828.60	9.6	6,797
828.62	10.2	7,199
828.64	10.8	7,612
828.66	11.4	8,037
828.68	12.0	8,473
828.70	12.6	8,921
828.72	13.2	9,380
828.74	13.9	9,850
828.76	14.6	10,331
828.78	15.3	10,824
828.80	16.0	11,328
828.82	16.7	11,843
828.84	17.5	12,370
828.86	18.2	12,908
828.88	19.0	13,458
828.90	19.8	14,018
828.92	20.6	14,590
828.94	21.4	15,174
828.96	22.3	15,769
828.98	23.1	16,375
829.00	24.0	16,992
829.02	24.9	17,621
829.04	25.8	18,261
829.06	26.7	18,912
829.08	27.6	19,575
829.10	28.6	20,249
829.12	29.6	20,934
829.14	30.6	21,631
829.16	31.6	22,339
829.18	32.6	23,058
829.20	33.6	23,789
829.22	34.6	24,531
829.24	35.7	25,284
829.26	36.8	26,049
829.28	37.9	26,825
829.30	39.0	27,612
829.32	40.1	28,411
829.34	41.3	29,221
829.36	42.4	30,042
829.38	43.6	30,874
829.40	44.8	31,718
829.42	46.0	32,574
829.44	47.2	33,440
829.46	48.5	34,318
829.48	49.7	35,207
829.50	51.0	36,108
829.52	52.3	37,020
829.54	53.6	37,943
829.56	54.9	38,878
829.58	56.2	39,824
829.60	57.6	40,781
829.62	59.0	41,749
829.64	60.4	42,729
829.66	61.8	43,720
829.68	63.2	44,723
829.70	64.6	45,737
829.72	66.0	46,762
829.74	67.5	47,798
829.76	69.0	48,846
829.78	70.5	49,906
829.80	72.0	50,976
829.82	73.5	52,058
829.84	75.1	53,151
829.86	76.6	54,255
829.88	78.2	55,371
829.90	79.8	56,498
829.92	81.4	57,637
829.94	83.0	58,787
829.96	84.7	59,948
829.98	86.3	61,120
830.00	**88.0**	**62,304**

Summary for Reach 32R: Swale + Stream

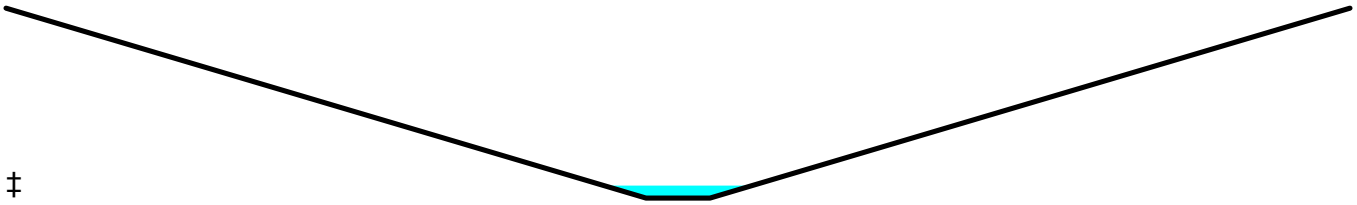
[79] Warning: Submerged Pond 39P Primary device # 1 OUTLET by 0.13'

Inflow Area = 2.093 ac, 37.74% Impervious, Inflow Depth > 2.72" for 5 yr event
Inflow = 2.97 cfs @ 12.17 hrs, Volume= 0.474 af
Outflow = 2.96 cfs @ 12.23 hrs, Volume= 0.473 af, Atten= 0%, Lag= 3.7 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.38 fps, Min. Travel Time= 2.0 min
Avg. Velocity = 1.49 fps, Avg. Travel Time= 4.5 min

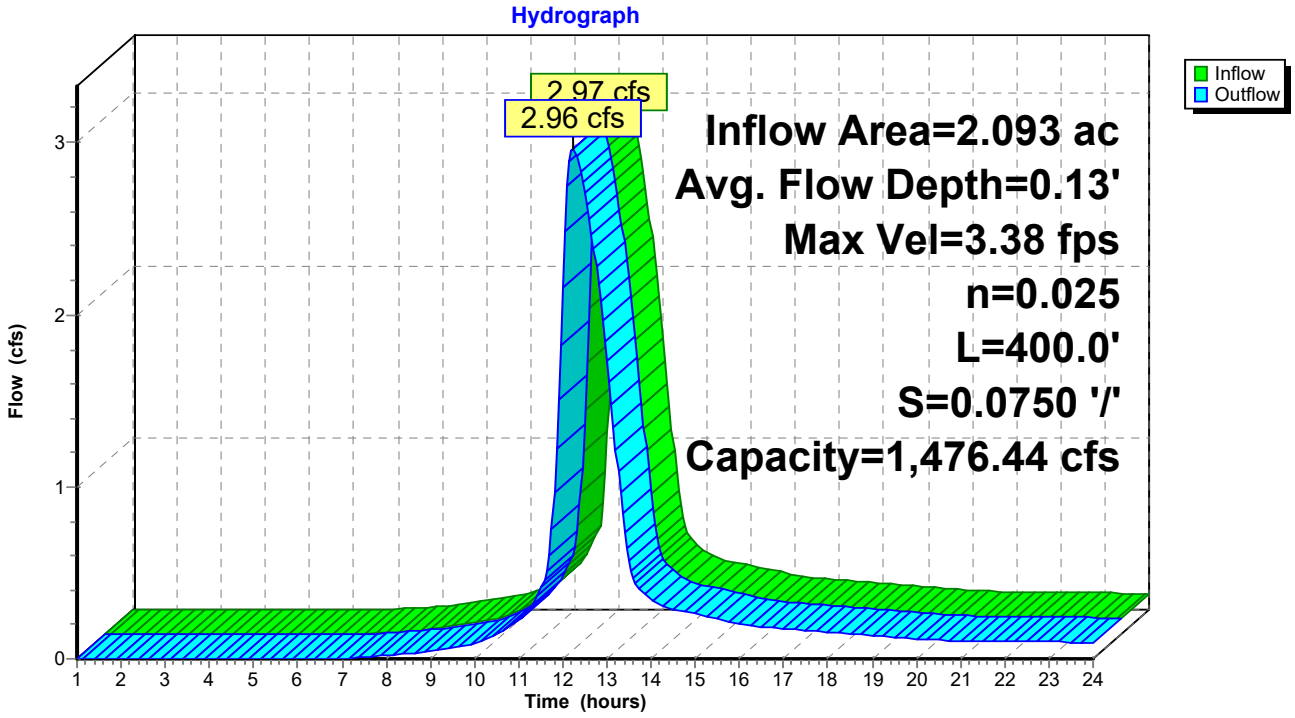
Peak Storage= 351 cf @ 12.19 hrs
Average Depth at Peak Storage= 0.13'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 1,476.44 cfs

4.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 400.0' Slope= 0.0750 '/'
Inlet Invert= 844.00', Outlet Invert= 814.00'



‡

Reach 32R: Swale + Stream



Stage-Area-Storage for Reach 32R: Swale + Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
844.00	0.0	0
844.02	0.1	35
844.04	0.2	77
844.06	0.3	125
844.08	0.4	179
844.10	0.6	240
844.12	0.8	307
844.14	1.0	381
844.16	1.2	461
844.18	1.4	547
844.20	1.6	640
844.22	1.8	739
844.24	2.1	845
844.26	2.4	957
844.28	2.7	1,075
844.30	3.0	1,200
844.32	3.3	1,331
844.34	3.7	1,469
844.36	4.0	1,613
844.38	4.4	1,763
844.40	4.8	1,920
844.42	5.2	2,083
844.44	5.6	2,253
844.46	6.1	2,429
844.48	6.5	2,611
844.50	7.0	2,800
844.52	7.5	2,995
844.54	8.0	3,197
844.56	8.5	3,405
844.58	9.0	3,619
844.60	9.6	3,840
844.62	10.2	4,067
844.64	10.8	4,301
844.66	11.4	4,541
844.68	12.0	4,787
844.70	12.6	5,040
844.72	13.2	5,299
844.74	13.9	5,565
844.76	14.6	5,837
844.78	15.3	6,115
844.80	16.0	6,400
844.82	16.7	6,691
844.84	17.5	6,989
844.86	18.2	7,293
844.88	19.0	7,603
844.90	19.8	7,920
844.92	20.6	8,243
844.94	21.4	8,573
844.96	22.3	8,909
844.98	23.1	9,251
845.00	24.0	9,600
845.02	24.9	9,955
845.04	25.8	10,317
845.06	26.7	10,685
845.08	27.6	11,059
845.10	28.6	11,440
845.12	29.6	11,827
845.14	30.6	12,221
845.16	31.6	12,621
845.18	32.6	13,027
845.20	33.6	13,440
845.22	34.6	13,859
845.24	35.7	14,285
845.26	36.8	14,717
845.28	37.9	15,155
845.30	39.0	15,600
845.32	40.1	16,051
845.34	41.3	16,509
845.36	42.4	16,973
845.38	43.6	17,443
845.40	44.8	17,920
845.42	46.0	18,403
845.44	47.2	18,893
845.46	48.5	19,389
845.48	49.7	19,891
845.50	51.0	20,400
845.52	52.3	20,915
845.54	53.6	21,437
845.56	54.9	21,965
845.58	56.2	22,499
845.60	57.6	23,040
845.62	59.0	23,587
845.64	60.4	24,141
845.66	61.8	24,701
845.68	63.2	25,267
845.70	64.6	25,840
845.72	66.0	26,419
845.74	67.5	27,005
845.76	69.0	27,597
845.78	70.5	28,195
845.80	72.0	28,800
845.82	73.5	29,411
845.84	75.1	30,029
845.86	76.6	30,653
845.88	78.2	31,283
845.90	79.8	31,920
845.92	81.4	32,563
845.94	83.0	33,213
845.96	84.7	33,869
845.98	86.3	34,531
846.00	**88.0**	**35,200**

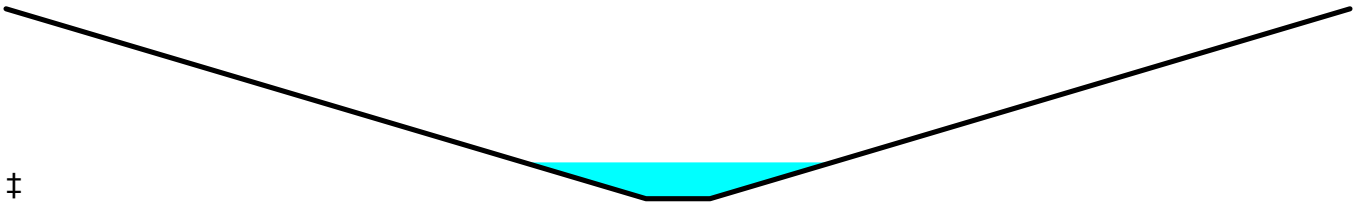
Summary for Reach 33R: Stream

Inflow Area = 2.847 ac, 25.75% Impervious, Inflow Depth > 2.29" for 5 yr event
Inflow = 11.08 cfs @ 11.99 hrs, Volume= 0.542 af
Outflow = 10.10 cfs @ 12.07 hrs, Volume= 0.540 af, Atten= 9%, Lag= 5.0 min

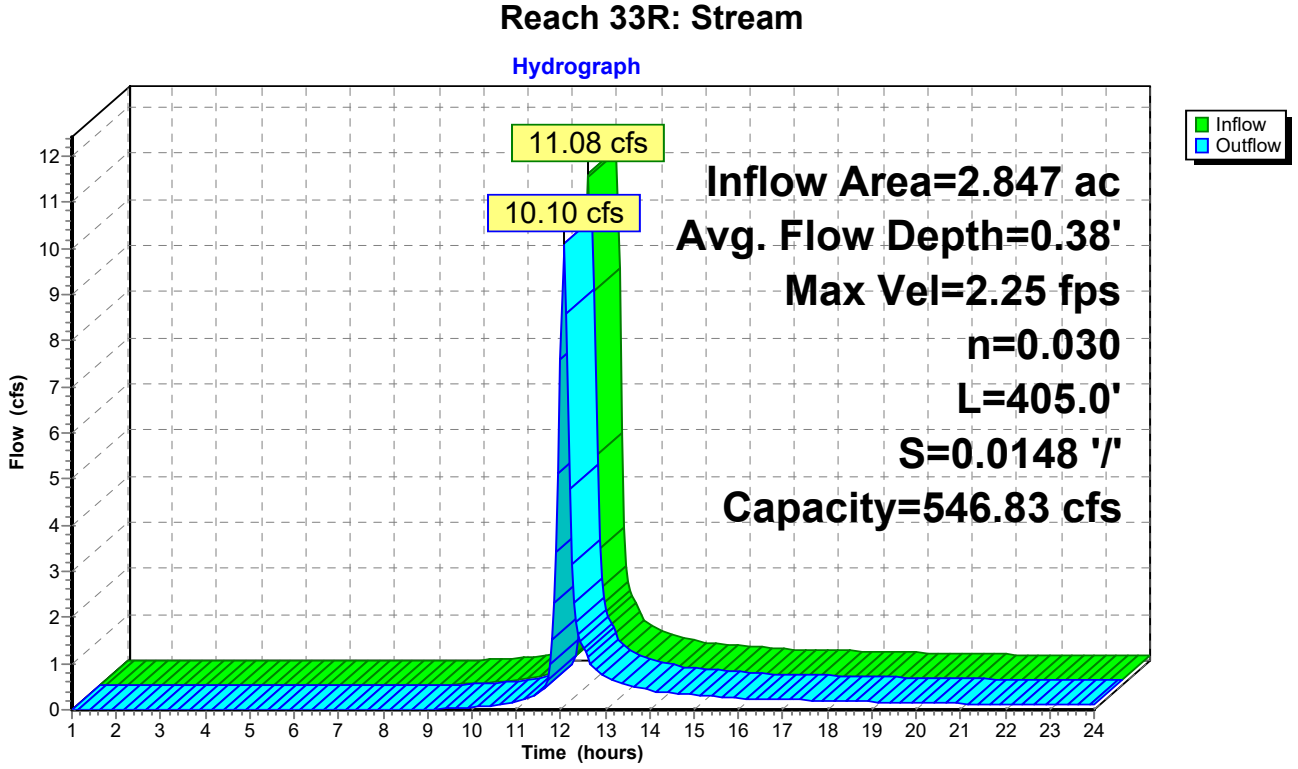
Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.25 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 0.78 fps, Avg. Travel Time= 8.6 min

Peak Storage= 1,805 cf @ 12.02 hrs
Average Depth at Peak Storage= 0.38'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 546.83 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 405.0' Slope= 0.0148 '/'
Inlet Invert= 820.00', Outlet Invert= 814.00'



‡



Stage-Area-Storage for Reach 33R: Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
820.00	0.0	0
820.02	0.1	36
820.04	0.2	78
820.06	0.3	126
820.08	0.4	181
820.10	0.6	243
820.12	0.8	311
820.14	1.0	386
820.16	1.2	467
820.18	1.4	554
820.20	1.6	648
820.22	1.8	748
820.24	2.1	855
820.26	2.4	969
820.28	2.7	1,089
820.30	3.0	1,215
820.32	3.3	1,348
820.34	3.7	1,487
820.36	4.0	1,633
820.38	4.4	1,785
820.40	4.8	1,944
820.42	5.2	2,109
820.44	5.6	2,281
820.46	6.1	2,459
820.48	6.5	2,644
820.50	7.0	2,835
820.52	7.5	3,033
820.54	8.0	3,237
820.56	8.5	3,447
820.58	9.0	3,664
820.60	9.6	3,888
820.62	10.2	4,118
820.64	10.8	4,355
820.66	11.4	4,598
820.68	12.0	4,847
820.70	12.6	5,103
820.72	13.2	5,365
820.74	13.9	5,634
820.76	14.6	5,910
820.78	15.3	6,192
820.80	16.0	6,480
820.82	16.7	6,775
820.84	17.5	7,076
820.86	18.2	7,384
820.88	19.0	7,698
820.90	19.8	8,019
820.92	20.6	8,346
820.94	21.4	8,680
820.96	22.3	9,020
820.98	23.1	9,367
821.00	24.0	9,720
821.02	24.9	10,080
821.04	25.8	10,446
821.06	26.7	10,818
821.08	27.6	11,197
821.10	28.6	11,583
821.12	29.6	11,975
821.14	30.6	12,374
821.16	31.6	12,779
821.18	32.6	13,190
821.20	33.6	13,608
821.22	34.6	14,032
821.24	35.7	14,463
821.26	36.8	14,901
821.28	37.9	15,345
821.30	39.0	15,795
821.32	40.1	16,252
821.34	41.3	16,715
821.36	42.4	17,185
821.38	43.6	17,661
821.40	44.8	18,144
821.42	46.0	18,633
821.44	47.2	19,129
821.46	48.5	19,631
821.48	49.7	20,140
821.50	51.0	20,655
821.52	52.3	21,177
821.54	53.6	21,705
821.56	54.9	22,239
821.58	56.2	22,780
821.60	57.6	23,328
821.62	59.0	23,882
821.64	60.4	24,443
821.66	61.8	25,010
821.68	63.2	25,583
821.70	64.6	26,163
821.72	66.0	26,749
821.74	67.5	27,342
821.76	69.0	27,942
821.78	70.5	28,548
821.80	72.0	29,160
821.82	73.5	29,779
821.84	75.1	30,404
821.86	76.6	31,036
821.88	78.2	31,674
821.90	79.8	32,319
821.92	81.4	32,970
821.94	83.0	33,628
821.96	84.7	34,292
821.98	86.3	34,963
822.00	**88.0**	**35,640**

Summary for Pond 16P: Pond 1

Inflow Area = 29.512 ac, 5.01% Impervious, Inflow Depth > 2.04" for 5 yr event
Inflow = 84.11 cfs @ 12.05 hrs, Volume= 5.026 af
Outflow = 27.56 cfs @ 12.26 hrs, Volume= 5.026 af, Atten= 67%, Lag= 12.9 min
Primary = 27.56 cfs @ 12.26 hrs, Volume= 5.026 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 832.85' @ 12.26 hrs Surf.Area= 27,884 sf Storage= 67,706 cf

Plug-Flow detention time= 40.2 min calculated for 5.015 af (100% of inflow)
Center-of-Mass det. time= 40.1 min (881.1 - 841.0)

Volume	Invert	Avail.Storage	Storage Description
#1	826.60'	179,320 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

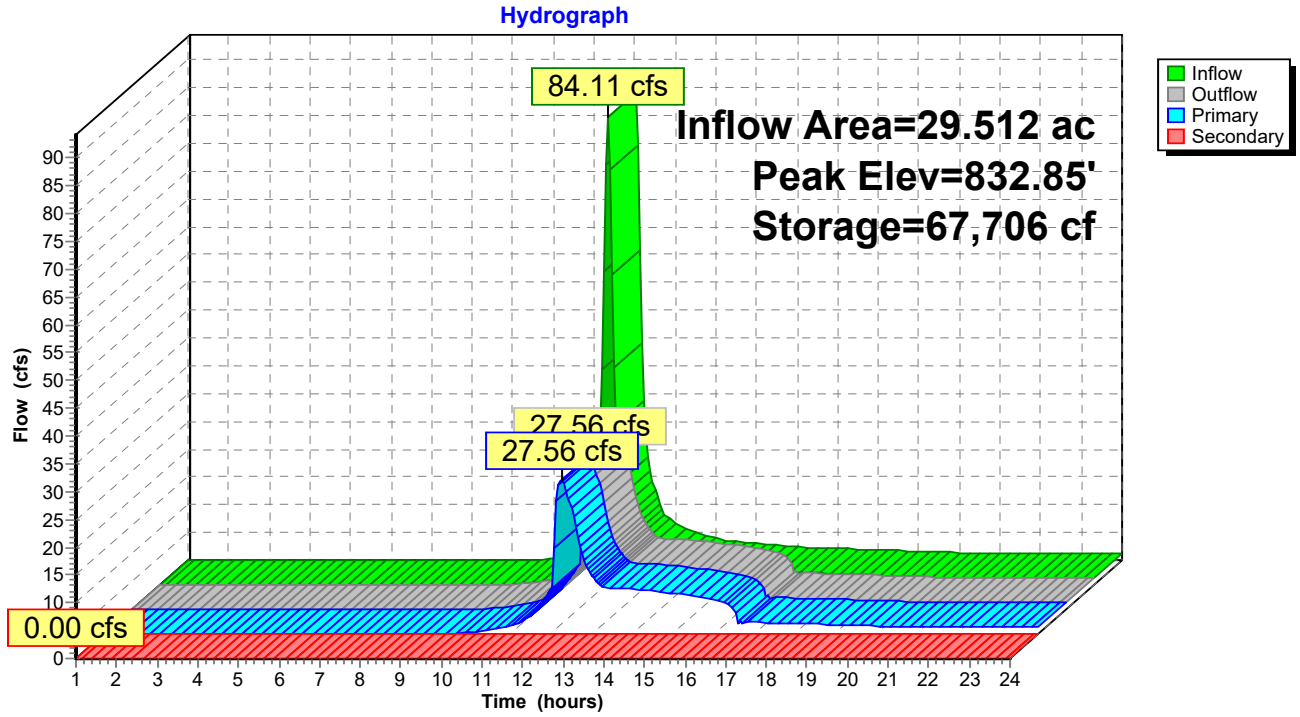
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
826.60	5	20.0	0	0	5
828.00	169	47.0	95	95	156
830.00	11,373	539.8	8,619	8,714	23,176
832.00	25,791	810.0	36,194	44,907	52,230
834.00	30,848	854.2	56,564	101,471	58,316
836.00	47,604	1,729.9	77,849	179,320	238,410

Device	Routing	Invert	Outlet Devices
#1	Primary	826.60'	**36.0" Round Culvert** L= 61.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 826.60' / 826.00' S= 0.0098 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	826.60'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	832.00'	**30.0" W x 6.0" H Vert. Orifice/Grate X 4.00** C= 0.600
#4	Device 1	833.00'	**28.0" x 28.0" Horiz. TOS** C= 0.600 Limited to weir flow at low heads
#5	Secondary	834.30'	**30.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=27.48 cfs @ 12.26 hrs HW=832.84' (Free Discharge)
└**1=Culvert** (Passes 27.48 cfs of 74.13 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 9.06 cfs @ 11.54 fps)
  ├**3=Orifice/Grate** (Orifice Controls 18.41 cfs @ 3.68 fps)
  └**4=TOS** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=826.60' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 16P: Pond 1



Stage-Area-Storage for Pond 16P: Pond 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
826.60	5	0
826.70	9	1
826.80	14	2
826.90	21	4
827.00	28	6
827.10	37	9
827.20	47	13
827.30	58	19
827.40	70	25
827.50	84	33
827.60	98	42
827.70	114	53
827.80	131	65
827.90	150	79
828.00	169	95
828.10	313	118
828.20	500	159
828.30	732	220
828.40	1,007	307
828.50	1,326	423
828.60	1,689	573
828.70	2,095	762
828.80	2,546	994
828.90	3,040	1,273
829.00	3,579	1,603
829.10	4,161	1,990
829.20	4,787	2,437
829.30	5,457	2,949
829.40	6,170	3,530
829.50	6,928	4,184
829.60	7,729	4,917
829.70	8,574	5,731
829.80	9,463	6,633
829.90	10,396	7,626
830.00	11,373	8,714
830.10	11,956	9,880
830.20	12,553	11,105
830.30	13,165	12,391
830.40	13,791	13,739
830.50	14,432	15,150
830.60	15,087	16,626
830.70	15,757	18,168
830.80	16,442	19,777
830.90	17,141	21,456
831.00	17,854	23,206
831.10	18,582	25,028
831.20	19,325	26,923
831.30	20,083	28,893
831.40	20,854	30,940
831.50	21,641	33,065
831.60	22,442	35,269
831.70	23,257	37,553
831.80	24,087	39,921
831.90	24,932	42,371
832.00	25,791	44,907
832.10	26,033	47,499
832.20	26,276	50,114
832.30	26,521	52,754
832.40	26,766	55,418
832.50	27,013	58,107
832.60	27,261	60,821
832.70	27,509	63,559
832.80	27,760	66,323
832.90	28,011	69,111
833.00	28,263	71,925
833.10	28,516	74,764
833.20	28,771	77,628
833.30	29,027	80,518
833.40	29,283	83,434
833.50	29,541	86,375
833.60	29,800	89,342
833.70	30,061	92,335
833.80	30,322	95,354
833.90	30,584	98,399
834.00	30,848	101,471
834.10	31,600	104,593
834.20	32,361	107,791
834.30	33,131	111,066
834.40	33,910	114,418
834.50	34,698	117,848
834.60	35,495	121,358
834.70	36,301	124,947
834.80	37,116	128,618
834.90	37,940	132,371
835.00	38,773	136,206
835.10	39,616	140,126
835.20	40,467	144,130
835.30	41,328	148,219
835.40	42,197	152,396
835.50	43,076	156,659
835.60	43,963	161,011
835.70	44,860	165,452
835.80	45,765	169,983
835.90	46,680	174,605
836.00	**47,604**	**179,320**

Summary for Pond 38P: Pond 3

Inflow Area = 2.847 ac, 25.75% Impervious, Inflow Depth > 2.29" for 5 yr event
Inflow = 11.23 cfs @ 11.98 hrs, Volume= 0.543 af
Outflow = 11.08 cfs @ 11.99 hrs, Volume= 0.542 af, Atten= 1%, Lag= 0.8 min
Primary = 11.08 cfs @ 11.99 hrs, Volume= 0.542 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 823.78' @ 11.99 hrs Surf.Area= 3,052 sf Storage= 836 cf

Plug-Flow detention time= 2.9 min calculated for 0.542 af (100% of inflow)
Center-of-Mass det. time= 1.9 min (830.2 - 828.3)

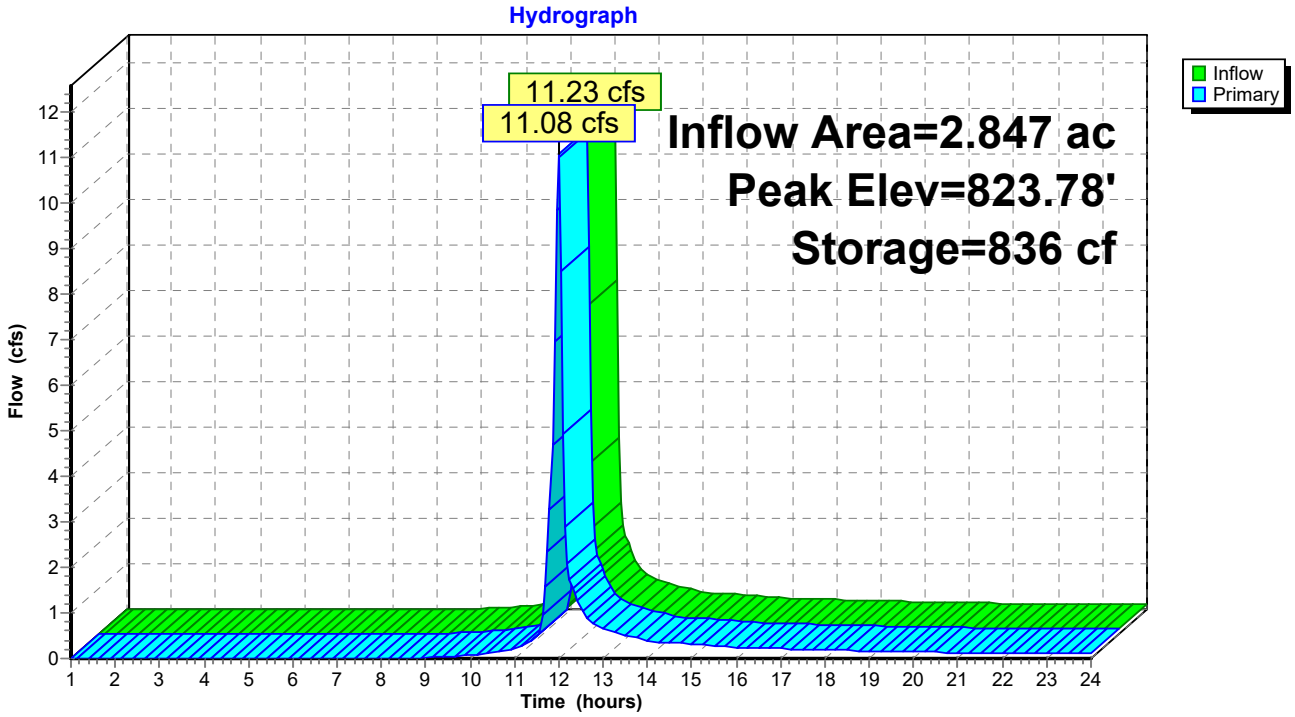
Volume	Invert	Avail.Storage	Storage Description
#1	823.50'	3,444 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
823.50	2,814	277.0	0	0	2,814
824.00	3,238	287.0	1,512	1,512	3,284
824.50	4,526	323.0	1,932	3,444	5,039

Device	Routing	Invert	Outlet Devices
#1	Primary	823.50'	**30.0' long x 6.0' breadth Overflow Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=10.80 cfs @ 11.99 hrs HW=823.78' (Free Discharge)
1=Overflow Weir (Weir Controls 10.80 cfs @ 1.28 fps)

Pond 38P: Pond 3



Stage-Area-Storage for Pond 38P: Pond 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
823.50	2,814	0
823.51	2,822	28
823.52	2,830	56
823.53	2,839	85
823.54	2,847	113
823.55	2,855	142
823.56	2,863	170
823.57	2,872	199
823.58	2,880	228
823.59	2,888	257
823.60	2,896	286
823.61	2,905	315
823.62	2,913	344
823.63	2,921	373
823.64	2,930	402
823.65	2,938	431
823.66	2,946	461
823.67	2,955	490
823.68	2,963	520
823.69	2,972	550
823.70	2,980	579
823.71	2,988	609
823.72	2,997	639
823.73	3,005	669
823.74	3,014	699
823.75	3,022	729
823.76	3,031	760
823.77	3,039	790
823.78	3,048	820
823.79	3,056	851
823.80	3,065	882
823.81	3,073	912
823.82	3,082	943
823.83	3,091	974
823.84	3,099	1,005
823.85	3,108	1,036
823.86	3,116	1,067
823.87	3,125	1,098
823.88	3,134	1,129
823.89	3,142	1,161
823.90	3,151	1,192
823.91	3,159	1,224
823.92	3,168	1,256
823.93	3,177	1,287
823.94	3,186	1,319
823.95	3,194	1,351
823.96	3,203	1,383
823.97	3,212	1,415
823.98	3,220	1,447
823.99	3,229	1,479
824.00	3,238	1,512
824.01	3,262	1,544
824.02	3,285	1,577
824.03	3,309	1,610
824.04	3,333	1,643
824.05	3,357	1,677
824.06	3,381	1,710
824.07	3,405	1,744
824.08	3,430	1,778
824.09	3,454	1,813
824.10	3,478	1,848
824.11	3,503	1,882
824.12	3,527	1,918
824.13	3,552	1,953
824.14	3,577	1,989
824.15	3,602	2,025
824.16	3,627	2,061
824.17	3,652	2,097
824.18	3,677	2,134
824.19	3,702	2,171
824.20	3,727	2,208
824.21	3,753	2,245
824.22	3,778	2,283
824.23	3,804	2,321
824.24	3,829	2,359
824.25	3,855	2,397
824.26	3,881	2,436
824.27	3,907	2,475
824.28	3,933	2,514
824.29	3,959	2,554
824.30	3,985	2,593
824.31	4,011	2,633
824.32	4,038	2,673
824.33	4,064	2,714
824.34	4,090	2,755
824.35	4,117	2,796
824.36	4,144	2,837
824.37	4,170	2,879
824.38	4,197	2,921
824.39	4,224	2,963
824.40	4,251	3,005
824.41	4,278	3,048
824.42	4,305	3,091
824.43	4,333	3,134
824.44	4,360	3,177
824.45	4,388	3,221
824.46	4,415	3,265
824.47	4,443	3,309
824.48	4,470	3,354
824.49	4,498	3,399
824.50	**4,526**	**3,444**

Summary for Pond 39P: Pond 2

Inflow Area = 2.093 ac, 37.74% Impervious, Inflow Depth > 2.72" for 5 yr event
Inflow = 8.89 cfs @ 12.00 hrs, Volume= 0.475 af
Outflow = 2.97 cfs @ 12.17 hrs, Volume= 0.474 af, Atten= 67%, Lag= 9.8 min
Primary = 2.97 cfs @ 12.17 hrs, Volume= 0.474 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 852.96' @ 12.17 hrs Surf.Area= 2,651 sf Storage= 5,291 cf

Plug-Flow detention time= 12.5 min calculated for 0.474 af (100% of inflow)
Center-of-Mass det. time= 12.2 min (828.5 - 816.3)

Volume	Invert	Avail.Storage	Storage Description
#1	849.50'	40,741 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

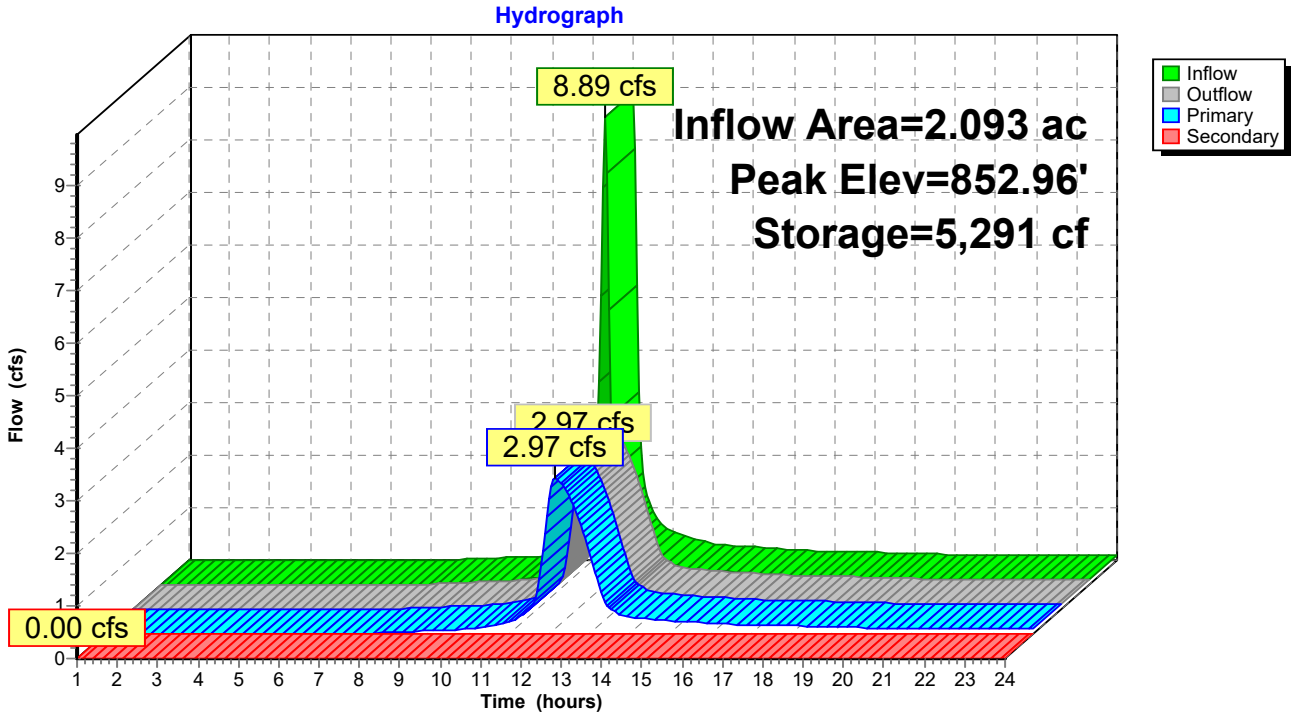
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
849.50	5	20.0	0	0	5
850.00	986	146.0	177	177	1,670
852.00	1,972	183.0	2,902	3,078	2,693
854.00	3,498	252.0	5,398	8,476	5,121
856.00	5,438	321.0	8,865	17,341	8,319
857.00	8,862	631.0	7,081	24,422	31,809
858.00	11,447	647.0	10,127	34,549	33,557
858.50	13,348	665.0	6,193	40,741	35,464

Device	Routing	Invert	Outlet Devices
#1	Primary	849.00'	**24.0" Round Culvert** L= 140.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 849.00' / 844.00' S= 0.0357 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Device 1	849.50'	**8.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	856.00'	**28.0" W x 28.0" H Vert. TOS** C= 0.600
#4	Secondary	857.50'	**30.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=2.97 cfs @ 12.17 hrs HW=852.95' (Free Discharge)
└**1=Culvert** (Passes 2.97 cfs of 25.98 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 2.97 cfs @ 8.50 fps)
  └**3=TOS** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=849.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 39P: Pond 2



Stage-Area-Storage for Pond 39P: Pond 2

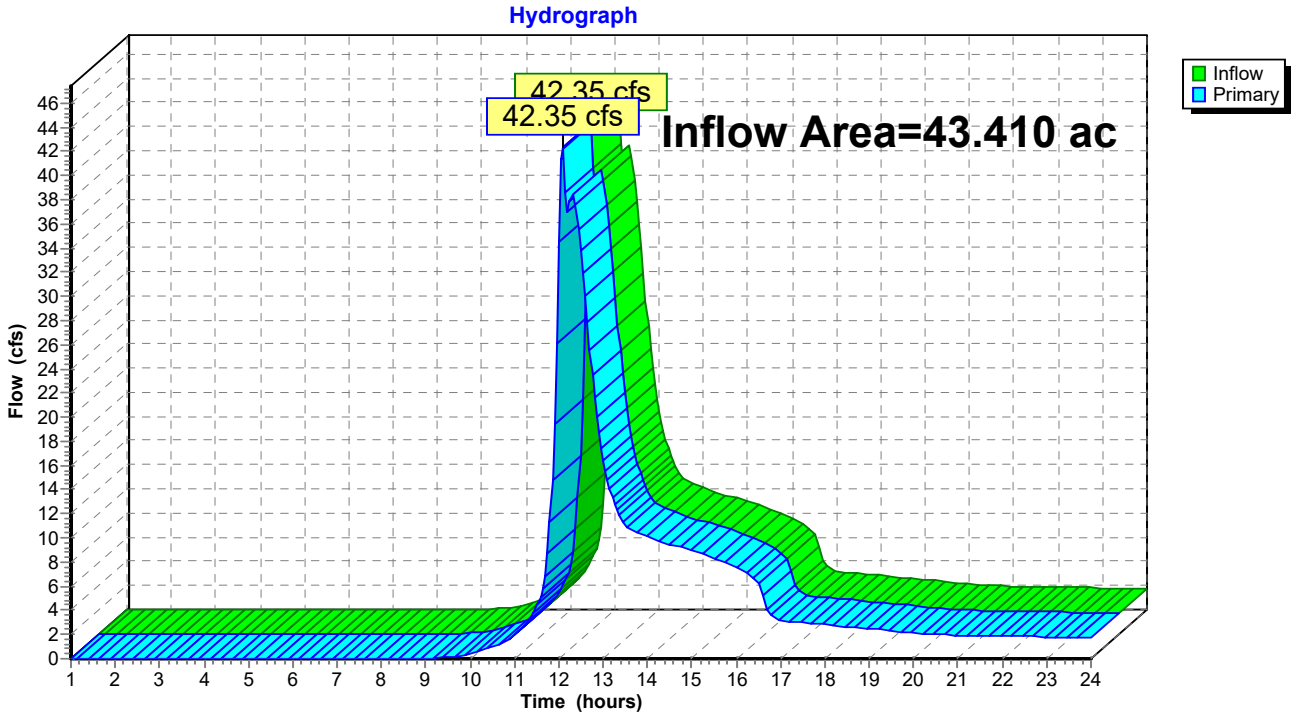
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
849.50	5	0
849.60	65	3
849.70	193	15
849.80	389	44
849.90	654	95
850.00	986	177
850.10	1,027	278
850.20	1,069	382
850.30	1,112	491
850.40	1,156	605
850.50	1,201	723
850.60	1,246	845
850.70	1,293	972
850.80	1,340	1,104
850.90	1,388	1,240
851.00	1,437	1,381
851.10	1,486	1,527
851.20	1,537	1,678
851.30	1,588	1,835
851.40	1,641	1,996
851.50	1,694	2,163
851.60	1,748	2,335
851.70	1,803	2,512
851.80	1,858	2,696
851.90	1,915	2,884
852.00	1,972	3,078
852.10	2,038	3,279
852.20	2,105	3,486
852.30	2,173	3,700
852.40	2,242	3,921
852.50	2,313	4,149
852.60	2,384	4,383
852.70	2,457	4,625
852.80	2,530	4,875
852.90	2,605	5,132
853.00	2,681	5,396
853.10	2,758	5,668
853.20	2,835	5,947
853.30	2,914	6,235
853.40	2,995	6,530
853.50	3,076	6,834
853.60	3,158	7,145
853.70	3,241	7,465
853.80	3,326	7,794
853.90	3,411	8,131
854.00	3,498	8,476
854.10	3,585	8,830
854.20	3,673	9,193
854.30	3,762	9,565
854.40	3,852	9,946
854.50	3,943	10,335
854.60	4,035	10,734
854.70	4,129	11,142
854.80	4,223	11,560
854.90	4,318	11,987
855.00	4,415	12,424
855.10	4,512	12,870
855.20	4,611	13,326
855.30	4,711	13,792
855.40	4,811	14,268
855.50	4,913	14,754
855.60	5,016	15,251
855.70	5,120	15,758
855.80	5,225	16,275
855.90	5,331	16,803
856.00	5,438	17,341
856.10	5,743	17,900
856.20	6,056	18,490
856.30	6,378	19,112
856.40	6,708	19,766
856.50	7,046	20,453
856.60	7,393	21,175
856.70	7,747	21,932
856.80	8,111	22,725
856.90	8,482	23,555
857.00	8,862	24,422
857.10	9,106	25,320
857.20	9,353	26,243
857.30	9,603	27,191
857.40	9,856	28,164
857.50	10,113	29,162
857.60	10,373	30,186
857.70	10,637	31,237
857.80	10,904	32,314
857.90	11,174	33,418
858.00	11,447	34,549
858.10	11,816	35,712
858.20	12,190	36,912
858.30	12,570	38,150
858.40	12,956	39,426
858.50	**13,348**	**40,741**

Summary for Link 30L: Analysis Point 1

Inflow Area = 43.410 ac, 6.92% Impervious, Inflow Depth > 2.07" for 5 yr event
Inflow = 42.35 cfs @ 12.08 hrs, Volume= 7.487 af
Primary = 42.35 cfs @ 12.08 hrs, Volume= 7.487 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Link 30L: Analysis Point 1



Time span=1.00-24.00 hrs, dt=0.05 hrs, 461 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 26S: C-WS1 Runoff Area=29.512 ac 5.01% Impervious Runoff Depth>2.63"
Flow Length=1,285' Tc=12.6 min CN=75 Runoff=108.38 cfs 6.466 af

Subcatchment 27S: C-WS2 Runoff Area=2.093 ac 37.74% Impervious Runoff Depth>3.38"
Flow Length=360' Tc=9.0 min CN=83 Runoff=10.95 cfs 0.589 af

Subcatchment 28S: C-WS3 Runoff Area=2.847 ac 25.75% Impervious Runoff Depth>2.90"
Flow Length=306' Tc=6.3 min UI Adjusted CN=78 Runoff=14.16 cfs 0.689 af

Subcatchment 29S: BYPASS 1 Runoff Area=8.958 ac 0.00% Impervious Runoff Depth>2.54"
Tc=15.0 min CN=74 Runoff=29.29 cfs 1.896 af

Reach 31R: Swale + Stream Avg. Flow Depth=0.67' Max Vel=3.64 fps Inflow=44.39 cfs 6.465 af
n=0.030 L=708.0' S=0.0198 '/' Capacity=631.76 cfs Outflow=42.64 cfs 6.443 af

Reach 32R: Swale + Stream Avg. Flow Depth=0.14' Max Vel=3.47 fps Inflow=3.25 cfs 0.589 af
n=0.025 L=400.0' S=0.0750 '/' Capacity=1,476.44 cfs Outflow=3.24 cfs 0.588 af

Reach 33R: Stream Avg. Flow Depth=0.43' Max Vel=2.40 fps Inflow=14.01 cfs 0.688 af
n=0.030 L=405.0' S=0.0148 '/' Capacity=546.83 cfs Outflow=12.81 cfs 0.686 af

Pond 16P: Pond 1 Peak Elev=833.43' Storage=84,427 cf Inflow=108.38 cfs 6.466 af
Primary=44.39 cfs 6.465 af Secondary=0.00 cfs 0.000 af Outflow=44.39 cfs 6.465 af

Pond 38P: Pond 3 Peak Elev=823.83' Storage=975 cf Inflow=14.16 cfs 0.689 af
Outflow=14.01 cfs 0.688 af

Pond 39P: Pond 2 Peak Elev=853.57' Storage=7,036 cf Inflow=10.95 cfs 0.589 af
Primary=3.25 cfs 0.589 af Secondary=0.00 cfs 0.000 af Outflow=3.25 cfs 0.589 af

Link 30L: Analysis Point 1 Inflow=58.95 cfs 9.612 af
Primary=58.95 cfs 9.612 af

Total Runoff Area = 43.410 ac Runoff Volume = 9.639 af Average Runoff Depth = 2.66"
93.08% Pervious = 40.408 ac 6.92% Impervious = 3.002 ac

Summary for Subcatchment 26S: C-WS1

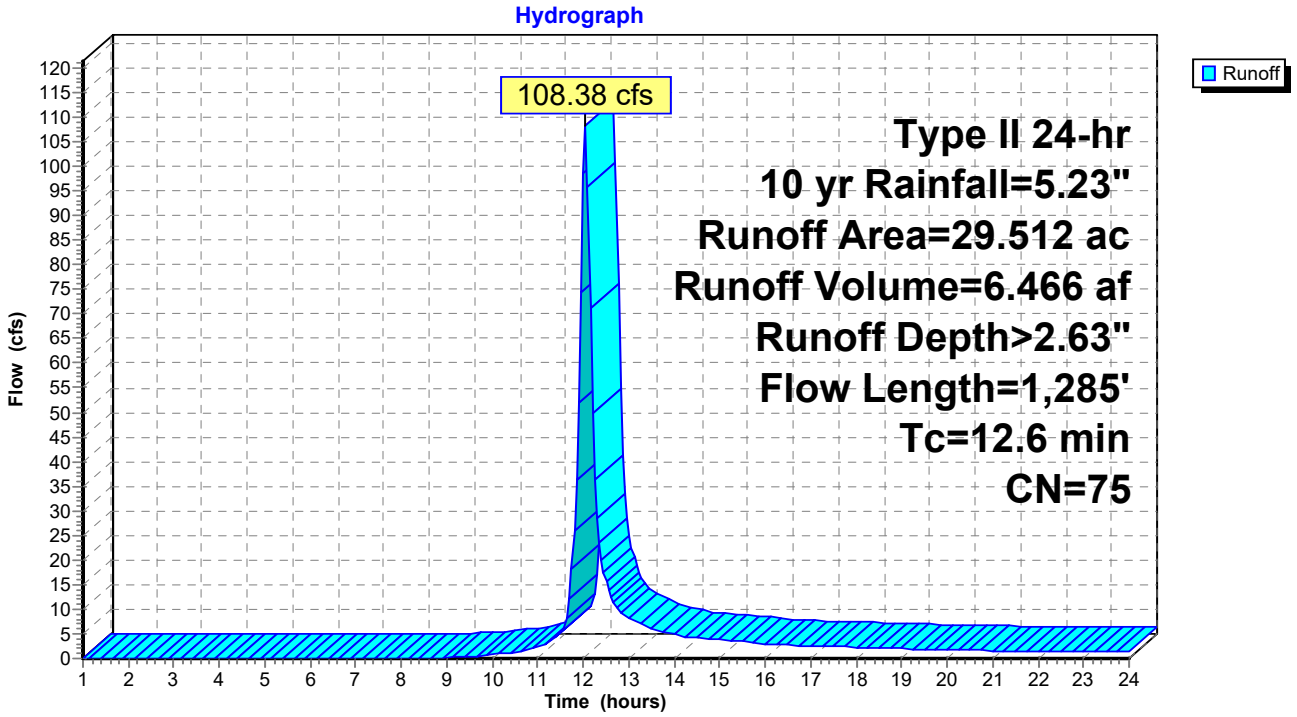
Runoff = 108.38 cfs @ 12.05 hrs, Volume= 6.466 af, Depth> 2.63"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 yr Rainfall=5.23"

Area (ac)	CN	Description
1.168	98	Unconnected roofs, HSG C
0.311	98	Paved roads w/curbs & sewers, HSG C
14.607	74	>75% Grass cover, Good, HSG C
1.327	74	>75% Grass cover, Good, HSG C
10.488	74	>75% Grass cover, Good, HSG C
1.611	74	>75% Grass cover, Good, HSG C
29.512	75	Weighted Average
28.033		94.99% Pervious Area
1.479		5.01% Impervious Area
1.168		78.97% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0250	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
3.9	845	0.0592	3.65		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.6	340	0.0353	9.65	470.11	**Channel Flow,** Area= 48.7 sf Perim= 60.6' r= 0.80' n= 0.025
12.6	1,285	Total			

Subcatchment 26S: C-WS1



Summary for Subcatchment 27S: C-WS2

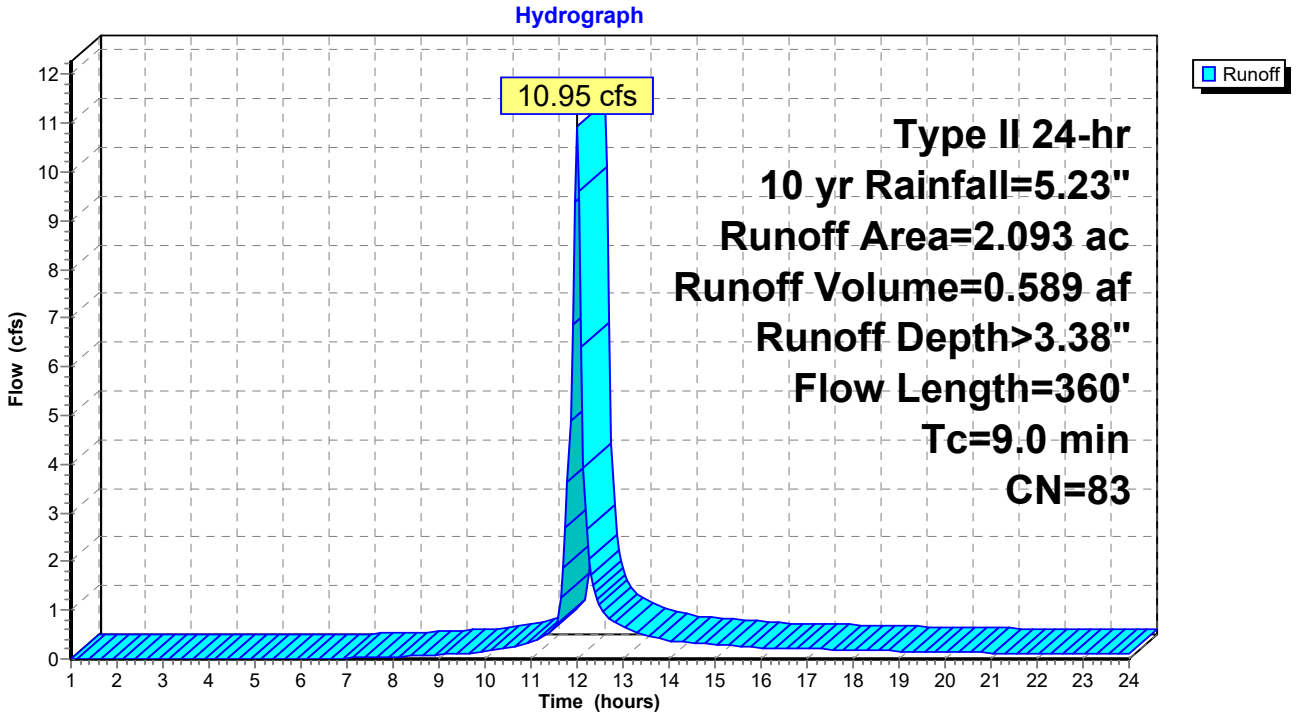
Runoff = 10.95 cfs @ 12.00 hrs, Volume= 0.589 af, Depth> 3.38"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 yr Rainfall=5.23"

Area (ac)	CN	Description
0.110	98	Unconnected roofs, HSG A
0.418	98	Unconnected roofs, HSG C
0.262	98	Paved roads w/curbs & sewers, HSG C
0.383	74	>75% Grass cover, Good, HSG C
0.920	74	>75% Grass cover, Good, HSG C
2.093	83	Weighted Average
1.303		62.26% Pervious Area
0.790		37.74% Impervious Area
0.528		66.84% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0260	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
1.0	260	0.0885	4.46		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.0	360	Total			

Subcatchment 27S: C-WS2



Summary for Subcatchment 28S: C-WS3

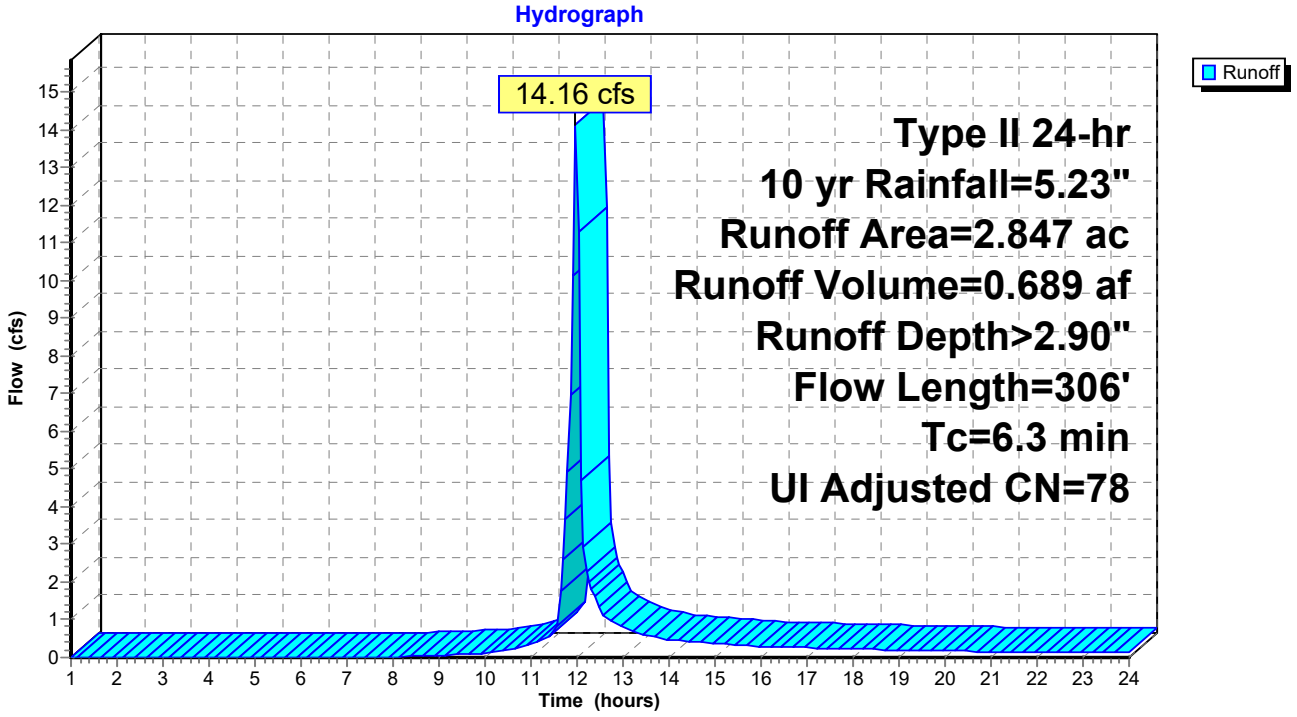
Runoff = 14.16 cfs @ 11.98 hrs, Volume= 0.689 af, Depth> 2.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 yr Rainfall=5.23"

Area (ac)	CN	Adj	Description
0.220	98		Unconnected roofs, HSG B
0.220	98		Unconnected roofs, HSG C
0.293	98		Paved roads w/curbs & sewers, HSG C
0.658	74		>75% Grass cover, Good, HSG C
1.246	74		>75% Grass cover, Good, HSG C
0.210	74		>75% Grass cover, Good, HSG C
2.847	80	78	Weighted Average, UI Adjusted
2.114			74.25% Pervious Area
0.733			25.75% Impervious Area
0.440			60.03% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	100	0.0700	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
0.9	206	0.0680	3.91		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
6.3	306	Total			

Subcatchment 28S: C-WS3



Summary for Subcatchment 29S: BYPASS 1

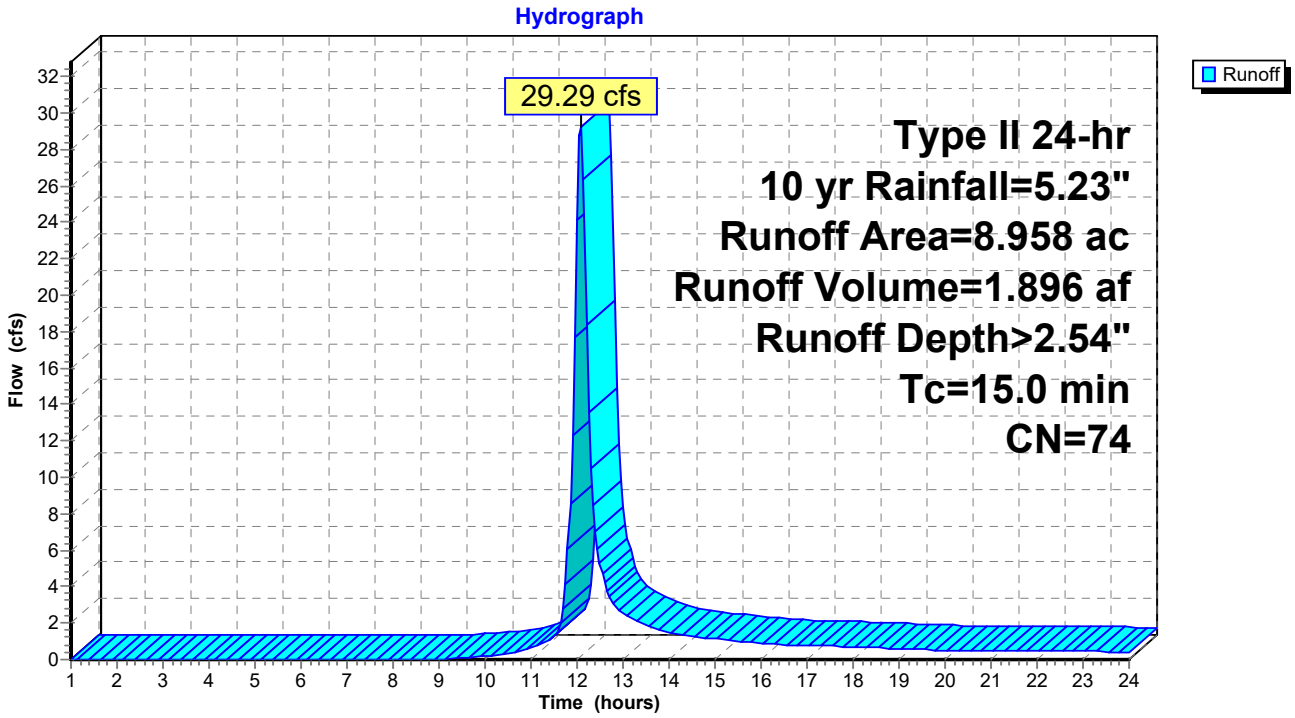
Runoff = 29.29 cfs @ 12.07 hrs, Volume= 1.896 af, Depth> 2.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10 yr Rainfall=5.23"

Area (ac)	CN	Description
1.359	74	>75% Grass cover, Good, HSG C
6.273	74	>75% Grass cover, Good, HSG C
1.326	74	>75% Grass cover, Good, HSG C
8.958	74	Weighted Average
8.958		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry,**

Subcatchment 29S: BYPASS 1



Summary for Reach 31R: Swale + Stream

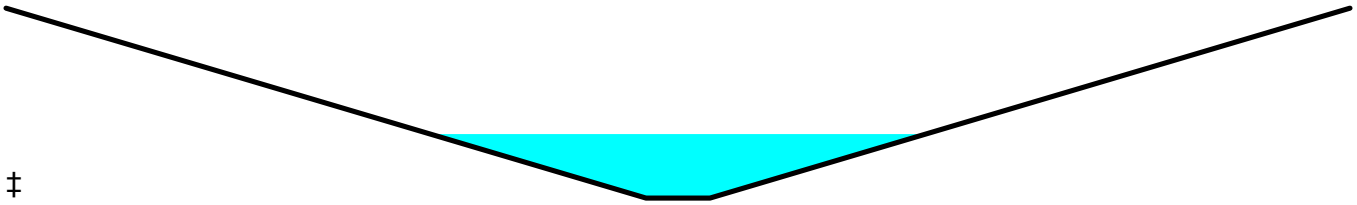
[81] Warning: Exceeded Pond 16P by 1.40' @ 1.00 hrs

Inflow Area = 29.512 ac, 5.01% Impervious, Inflow Depth > 2.63" for 10 yr event
Inflow = 44.39 cfs @ 12.22 hrs, Volume= 6.465 af
Outflow = 42.64 cfs @ 12.33 hrs, Volume= 6.443 af, Atten= 4%, Lag= 6.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.64 fps, Min. Travel Time= 3.2 min
Avg. Velocity = 1.83 fps, Avg. Travel Time= 6.4 min

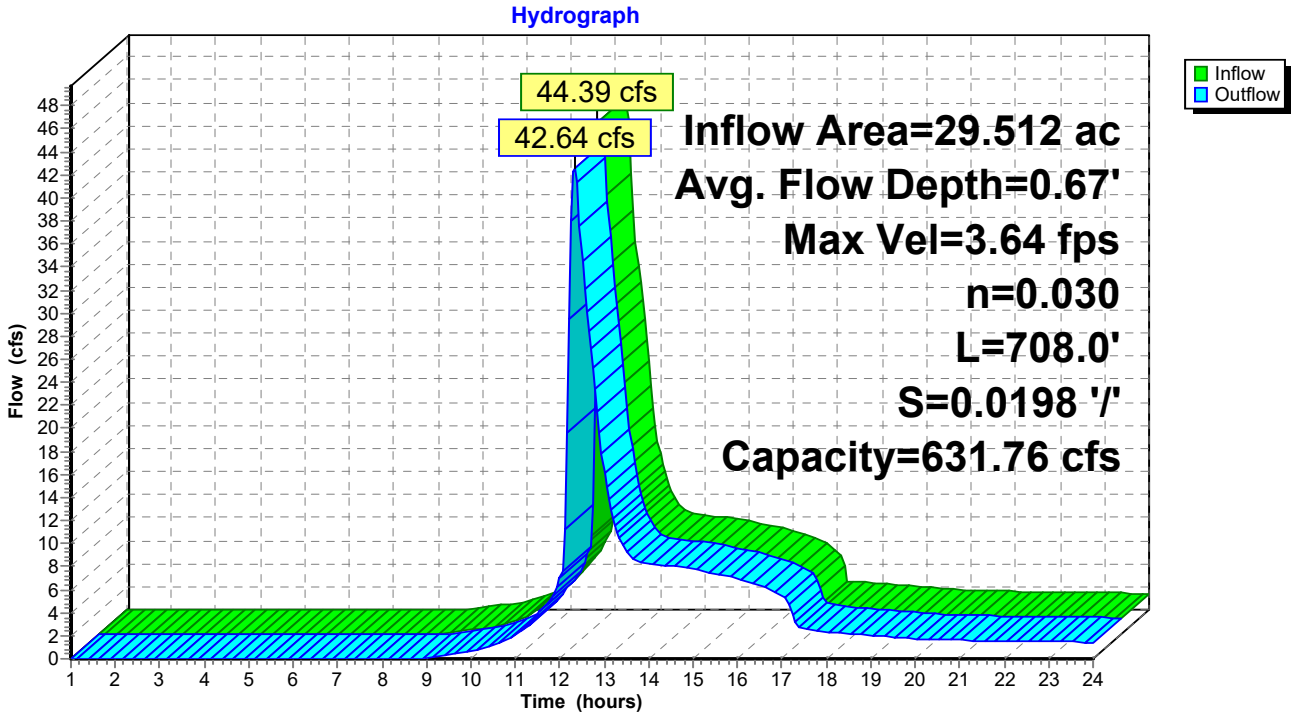
Peak Storage= 8,333 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.67'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 631.76 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 708.0' Slope= 0.0198 '/'
Inlet Invert= 828.00', Outlet Invert= 814.00'



‡

Reach 31R: Swale + Stream



Stage-Area-Storage for Reach 31R: Swale + Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
828.00	0.0	0
828.02	0.1	62
828.04	0.2	136
828.06	0.3	221
828.08	0.4	317
828.10	0.6	425
828.12	0.8	544
828.14	1.0	674
828.16	1.2	816
828.18	1.4	969
828.20	1.6	1,133
828.22	1.8	1,308
828.24	2.1	1,495
828.26	2.4	1,694
828.28	2.7	1,903
828.30	3.0	2,124
828.32	3.3	2,356
828.34	3.7	2,600
828.36	4.0	2,855
828.38	4.4	3,121
828.40	4.8	3,398
828.42	5.2	3,687
828.44	5.6	3,987
828.46	6.1	4,299
828.48	6.5	4,622
828.50	7.0	4,956
828.52	7.5	5,302
828.54	8.0	5,658
828.56	8.5	6,026
828.58	9.0	6,406
828.60	9.6	6,797
828.62	10.2	7,199
828.64	10.8	7,612
828.66	11.4	8,037
828.68	12.0	8,473
828.70	12.6	8,921
828.72	13.2	9,380
828.74	13.9	9,850
828.76	14.6	10,331
828.78	15.3	10,824
828.80	16.0	11,328
828.82	16.7	11,843
828.84	17.5	12,370
828.86	18.2	12,908
828.88	19.0	13,458
828.90	19.8	14,018
828.92	20.6	14,590
828.94	21.4	15,174
828.96	22.3	15,769
828.98	23.1	16,375
829.00	24.0	16,992
829.02	24.9	17,621
829.04	25.8	18,261
829.06	26.7	18,912
829.08	27.6	19,575
829.10	28.6	20,249
829.12	29.6	20,934
829.14	30.6	21,631
829.16	31.6	22,339
829.18	32.6	23,058
829.20	33.6	23,789
829.22	34.6	24,531
829.24	35.7	25,284
829.26	36.8	26,049
829.28	37.9	26,825
829.30	39.0	27,612
829.32	40.1	28,411
829.34	41.3	29,221
829.36	42.4	30,042
829.38	43.6	30,874
829.40	44.8	31,718
829.42	46.0	32,574
829.44	47.2	33,440
829.46	48.5	34,318
829.48	49.7	35,207
829.50	51.0	36,108
829.52	52.3	37,020
829.54	53.6	37,943
829.56	54.9	38,878
829.58	56.2	39,824
829.60	57.6	40,781
829.62	59.0	41,749
829.64	60.4	42,729
829.66	61.8	43,720
829.68	63.2	44,723
829.70	64.6	45,737
829.72	66.0	46,762
829.74	67.5	47,798
829.76	69.0	48,846
829.78	70.5	49,906
829.80	72.0	50,976
829.82	73.5	52,058
829.84	75.1	53,151
829.86	76.6	54,255
829.88	78.2	55,371
829.90	79.8	56,498
829.92	81.4	57,637
829.94	83.0	58,787
829.96	84.7	59,948
829.98	86.3	61,120
830.00	**88.0**	**62,304**

Summary for Reach 32R: Swale + Stream

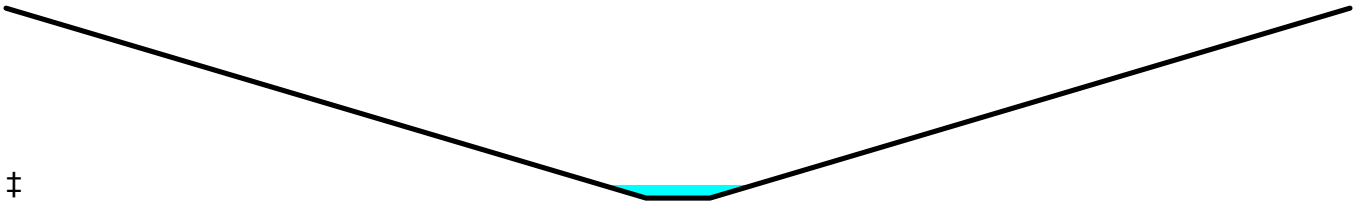
[79] Warning: Submerged Pond 39P Primary device # 1 OUTLET by 0.14'

Inflow Area = 2.093 ac, 37.74% Impervious, Inflow Depth > 3.38" for 10 yr event
Inflow = 3.25 cfs @ 12.18 hrs, Volume= 0.589 af
Outflow = 3.24 cfs @ 12.24 hrs, Volume= 0.588 af, Atten= 0%, Lag= 4.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.47 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.57 fps, Avg. Travel Time= 4.2 min

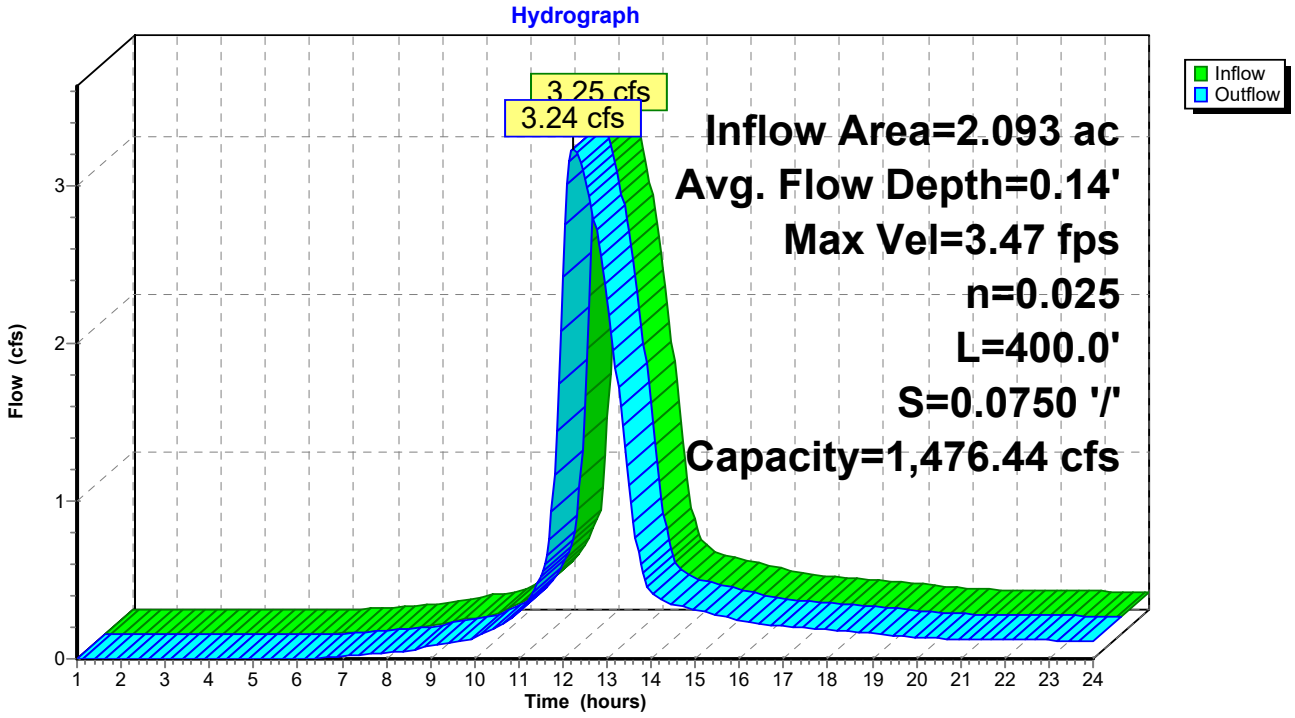
Peak Storage= 375 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 1,476.44 cfs

4.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 400.0' Slope= 0.0750 '/'
Inlet Invert= 844.00', Outlet Invert= 814.00'



‡

Reach 32R: Swale + Stream



Stage-Area-Storage for Reach 32R: Swale + Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
844.00	0.0	0
844.02	0.1	35
844.04	0.2	77
844.06	0.3	125
844.08	0.4	179
844.10	0.6	240
844.12	0.8	307
844.14	1.0	381
844.16	1.2	461
844.18	1.4	547
844.20	1.6	640
844.22	1.8	739
844.24	2.1	845
844.26	2.4	957
844.28	2.7	1,075
844.30	3.0	1,200
844.32	3.3	1,331
844.34	3.7	1,469
844.36	4.0	1,613
844.38	4.4	1,763
844.40	4.8	1,920
844.42	5.2	2,083
844.44	5.6	2,253
844.46	6.1	2,429
844.48	6.5	2,611
844.50	7.0	2,800
844.52	7.5	2,995
844.54	8.0	3,197
844.56	8.5	3,405
844.58	9.0	3,619
844.60	9.6	3,840
844.62	10.2	4,067
844.64	10.8	4,301
844.66	11.4	4,541
844.68	12.0	4,787
844.70	12.6	5,040
844.72	13.2	5,299
844.74	13.9	5,565
844.76	14.6	5,837
844.78	15.3	6,115
844.80	16.0	6,400
844.82	16.7	6,691
844.84	17.5	6,989
844.86	18.2	7,293
844.88	19.0	7,603
844.90	19.8	7,920
844.92	20.6	8,243
844.94	21.4	8,573
844.96	22.3	8,909
844.98	23.1	9,251
845.00	24.0	9,600
845.02	24.9	9,955
845.04	25.8	10,317
845.06	26.7	10,685
845.08	27.6	11,059
845.10	28.6	11,440
845.12	29.6	11,827
845.14	30.6	12,221
845.16	31.6	12,621
845.18	32.6	13,027
845.20	33.6	13,440
845.22	34.6	13,859
845.24	35.7	14,285
845.26	36.8	14,717
845.28	37.9	15,155
845.30	39.0	15,600
845.32	40.1	16,051
845.34	41.3	16,509
845.36	42.4	16,973
845.38	43.6	17,443
845.40	44.8	17,920
845.42	46.0	18,403
845.44	47.2	18,893
845.46	48.5	19,389
845.48	49.7	19,891
845.50	51.0	20,400
845.52	52.3	20,915
845.54	53.6	21,437
845.56	54.9	21,965
845.58	56.2	22,499
845.60	57.6	23,040
845.62	59.0	23,587
845.64	60.4	24,141
845.66	61.8	24,701
845.68	63.2	25,267
845.70	64.6	25,840
845.72	66.0	26,419
845.74	67.5	27,005
845.76	69.0	27,597
845.78	70.5	28,195
845.80	72.0	28,800
845.82	73.5	29,411
845.84	75.1	30,029
845.86	76.6	30,653
845.88	78.2	31,283
845.90	79.8	31,920
845.92	81.4	32,563
845.94	83.0	33,213
845.96	84.7	33,869
845.98	86.3	34,531
846.00	**88.0**	**35,200**

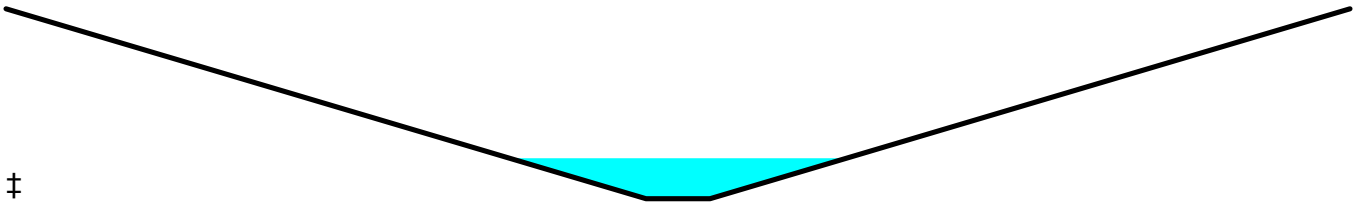
Summary for Reach 33R: Stream

Inflow Area = 2.847 ac, 25.75% Impervious, Inflow Depth > 2.90" for 10 yr event
Inflow = 14.01 cfs @ 11.99 hrs, Volume= 0.688 af
Outflow = 12.81 cfs @ 12.07 hrs, Volume= 0.686 af, Atten= 9%, Lag= 4.6 min

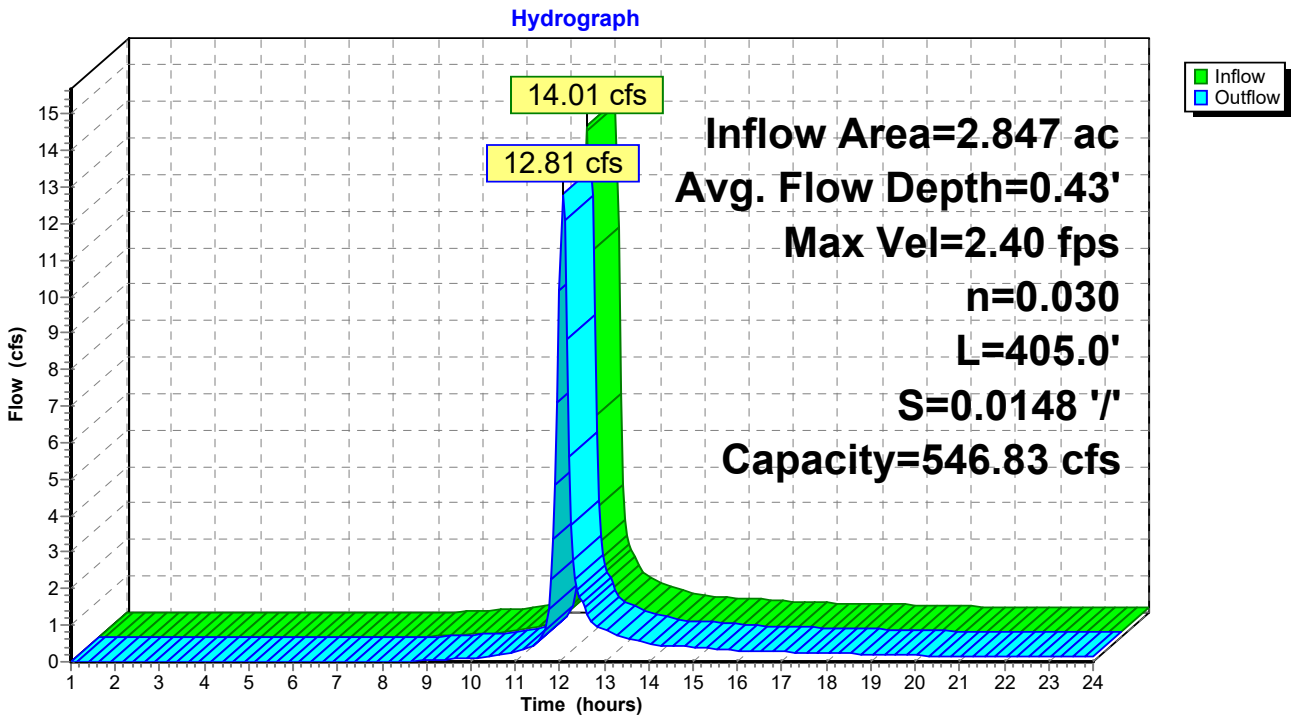
Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.40 fps, Min. Travel Time= 2.8 min
Avg. Velocity = 0.82 fps, Avg. Travel Time= 8.2 min

Peak Storage= 2,164 cf @ 12.02 hrs
Average Depth at Peak Storage= 0.43'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 546.83 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 405.0' Slope= 0.0148 '/'
Inlet Invert= 820.00', Outlet Invert= 814.00'



‡



Stage-Area-Storage for Reach 33R: Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
820.00	0.0	0
820.02	0.1	36
820.04	0.2	78
820.06	0.3	126
820.08	0.4	181
820.10	0.6	243
820.12	0.8	311
820.14	1.0	386
820.16	1.2	467
820.18	1.4	554
820.20	1.6	648
820.22	1.8	748
820.24	2.1	855
820.26	2.4	969
820.28	2.7	1,089
820.30	3.0	1,215
820.32	3.3	1,348
820.34	3.7	1,487
820.36	4.0	1,633
820.38	4.4	1,785
820.40	4.8	1,944
820.42	5.2	2,109
820.44	5.6	2,281
820.46	6.1	2,459
820.48	6.5	2,644
820.50	7.0	2,835
820.52	7.5	3,033
820.54	8.0	3,237
820.56	8.5	3,447
820.58	9.0	3,664
820.60	9.6	3,888
820.62	10.2	4,118
820.64	10.8	4,355
820.66	11.4	4,598
820.68	12.0	4,847
820.70	12.6	5,103
820.72	13.2	5,365
820.74	13.9	5,634
820.76	14.6	5,910
820.78	15.3	6,192
820.80	16.0	6,480
820.82	16.7	6,775
820.84	17.5	7,076
820.86	18.2	7,384
820.88	19.0	7,698
820.90	19.8	8,019
820.92	20.6	8,346
820.94	21.4	8,680
820.96	22.3	9,020
820.98	23.1	9,367
821.00	24.0	9,720
821.02	24.9	10,080
821.04	25.8	10,446
821.06	26.7	10,818
821.08	27.6	11,197
821.10	28.6	11,583
821.12	29.6	11,975
821.14	30.6	12,374
821.16	31.6	12,779
821.18	32.6	13,190
821.20	33.6	13,608
821.22	34.6	14,032
821.24	35.7	14,463
821.26	36.8	14,901
821.28	37.9	15,345
821.30	39.0	15,795
821.32	40.1	16,252
821.34	41.3	16,715
821.36	42.4	17,185
821.38	43.6	17,661
821.40	44.8	18,144
821.42	46.0	18,633
821.44	47.2	19,129
821.46	48.5	19,631
821.48	49.7	20,140
821.50	51.0	20,655
821.52	52.3	21,177
821.54	53.6	21,705
821.56	54.9	22,239
821.58	56.2	22,780
821.60	57.6	23,328
821.62	59.0	23,882
821.64	60.4	24,443
821.66	61.8	25,010
821.68	63.2	25,583
821.70	64.6	26,163
821.72	66.0	26,749
821.74	67.5	27,342
821.76	69.0	27,942
821.78	70.5	28,548
821.80	72.0	29,160
821.82	73.5	29,779
821.84	75.1	30,404
821.86	76.6	31,036
821.88	78.2	31,674
821.90	79.8	32,319
821.92	81.4	32,970
821.94	83.0	33,628
821.96	84.7	34,292
821.98	86.3	34,963
822.00	**88.0**	**35,640**

Summary for Pond 16P: Pond 1

Inflow Area = 29.512 ac, 5.01% Impervious, Inflow Depth > 2.63" for 10 yr event
Inflow = 108.38 cfs @ 12.05 hrs, Volume= 6.466 af
Outflow = 44.39 cfs @ 12.22 hrs, Volume= 6.465 af, Atten= 59%, Lag= 10.6 min
Primary = 44.39 cfs @ 12.22 hrs, Volume= 6.465 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 833.43' @ 12.22 hrs Surf.Area= 29,371 sf Storage= 84,427 cf

Plug-Flow detention time= 38.6 min calculated for 6.451 af (100% of inflow)
Center-of-Mass det. time= 38.4 min (872.2 - 833.8)

Volume	Invert	Avail.Storage	Storage Description
#1	826.60'	179,320 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

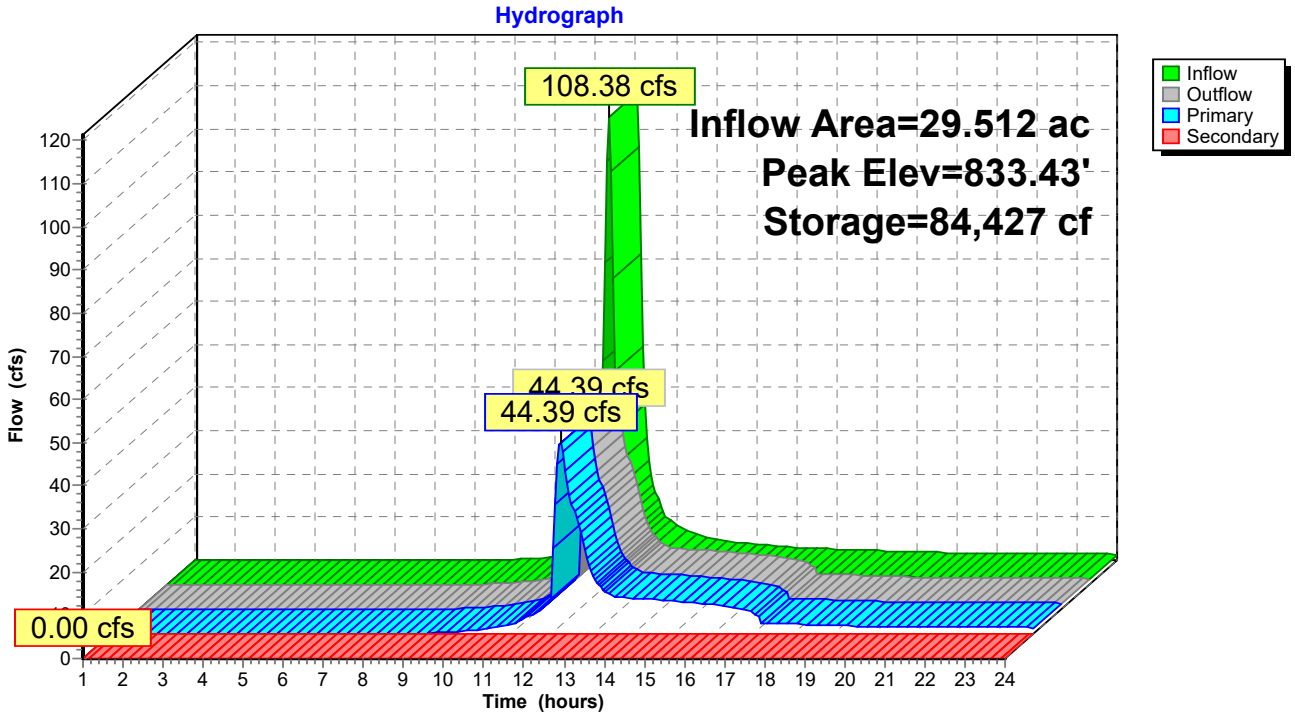
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
826.60	5	20.0	0	0	5
828.00	169	47.0	95	95	156
830.00	11,373	539.8	8,619	8,714	23,176
832.00	25,791	810.0	36,194	44,907	52,230
834.00	30,848	854.2	56,564	101,471	58,316
836.00	47,604	1,729.9	77,849	179,320	238,410

Device	Routing	Invert	Outlet Devices
#1	Primary	826.60'	**36.0" Round Culvert** L= 61.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 826.60' / 826.00' S= 0.0098 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	826.60'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	832.00'	**30.0" W x 6.0" H Vert. Orifice/Grate X 4.00** C= 0.600
#4	Device 1	833.00'	**28.0" x 28.0" Horiz. TOS** C= 0.600 Limited to weir flow at low heads
#5	Secondary	834.30'	**30.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=43.76 cfs @ 12.22 hrs HW=833.42' (Free Discharge)
└**1=Culvert** (Passes 43.76 cfs of 78.49 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 9.51 cfs @ 12.10 fps)
  ├**3=Orifice/Grate** (Orifice Controls 25.98 cfs @ 5.20 fps)
  └**4=TOS** (Weir Controls 8.27 cfs @ 2.12 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=826.60' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 16P: Pond 1



Stage-Area-Storage for Pond 16P: Pond 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
826.60	5	0
826.70	9	1
826.80	14	2
826.90	21	4
827.00	28	6
827.10	37	9
827.20	47	13
827.30	58	19
827.40	70	25
827.50	84	33
827.60	98	42
827.70	114	53
827.80	131	65
827.90	150	79
828.00	169	95
828.10	313	118
828.20	500	159
828.30	732	220
828.40	1,007	307
828.50	1,326	423
828.60	1,689	573
828.70	2,095	762
828.80	2,546	994
828.90	3,040	1,273
829.00	3,579	1,603
829.10	4,161	1,990
829.20	4,787	2,437
829.30	5,457	2,949
829.40	6,170	3,530
829.50	6,928	4,184
829.60	7,729	4,917
829.70	8,574	5,731
829.80	9,463	6,633
829.90	10,396	7,626
830.00	11,373	8,714
830.10	11,956	9,880
830.20	12,553	11,105
830.30	13,165	12,391
830.40	13,791	13,739
830.50	14,432	15,150
830.60	15,087	16,626
830.70	15,757	18,168
830.80	16,442	19,777
830.90	17,141	21,456
831.00	17,854	23,206
831.10	18,582	25,028
831.20	19,325	26,923
831.30	20,083	28,893
831.40	20,854	30,940
831.50	21,641	33,065
831.60	22,442	35,269
831.70	23,257	37,553
831.80	24,087	39,921
831.90	24,932	42,371
832.00	25,791	44,907
832.10	26,033	47,499
832.20	26,276	50,114
832.30	26,521	52,754
832.40	26,766	55,418
832.50	27,013	58,107
832.60	27,261	60,821
832.70	27,509	63,559
832.80	27,760	66,323
832.90	28,011	69,111
833.00	28,263	71,925
833.10	28,516	74,764
833.20	28,771	77,628
833.30	29,027	80,518
833.40	29,283	83,434
833.50	29,541	86,375
833.60	29,800	89,342
833.70	30,061	92,335
833.80	30,322	95,354
833.90	30,584	98,399
834.00	30,848	101,471
834.10	31,600	104,593
834.20	32,361	107,791
834.30	33,131	111,066
834.40	33,910	114,418
834.50	34,698	117,848
834.60	35,495	121,358
834.70	36,301	124,947
834.80	37,116	128,618
834.90	37,940	132,371
835.00	38,773	136,206
835.10	39,616	140,126
835.20	40,467	144,130
835.30	41,328	148,219
835.40	42,197	152,396
835.50	43,076	156,659
835.60	43,963	161,011
835.70	44,860	165,452
835.80	45,765	169,983
835.90	46,680	174,605
836.00	**47,604**	**179,320**

Summary for Pond 38P: Pond 3

Inflow Area = 2.847 ac, 25.75% Impervious, Inflow Depth > 2.90" for 10 yr event
Inflow = 14.16 cfs @ 11.98 hrs, Volume= 0.689 af
Outflow = 14.01 cfs @ 11.99 hrs, Volume= 0.688 af, Atten= 1%, Lag= 0.8 min
Primary = 14.01 cfs @ 11.99 hrs, Volume= 0.688 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 823.83' @ 11.99 hrs Surf.Area= 3,091 sf Storage= 975 cf

Plug-Flow detention time= 2.7 min calculated for 0.687 af (100% of inflow)
Center-of-Mass det. time= 1.8 min (823.3 - 821.5)

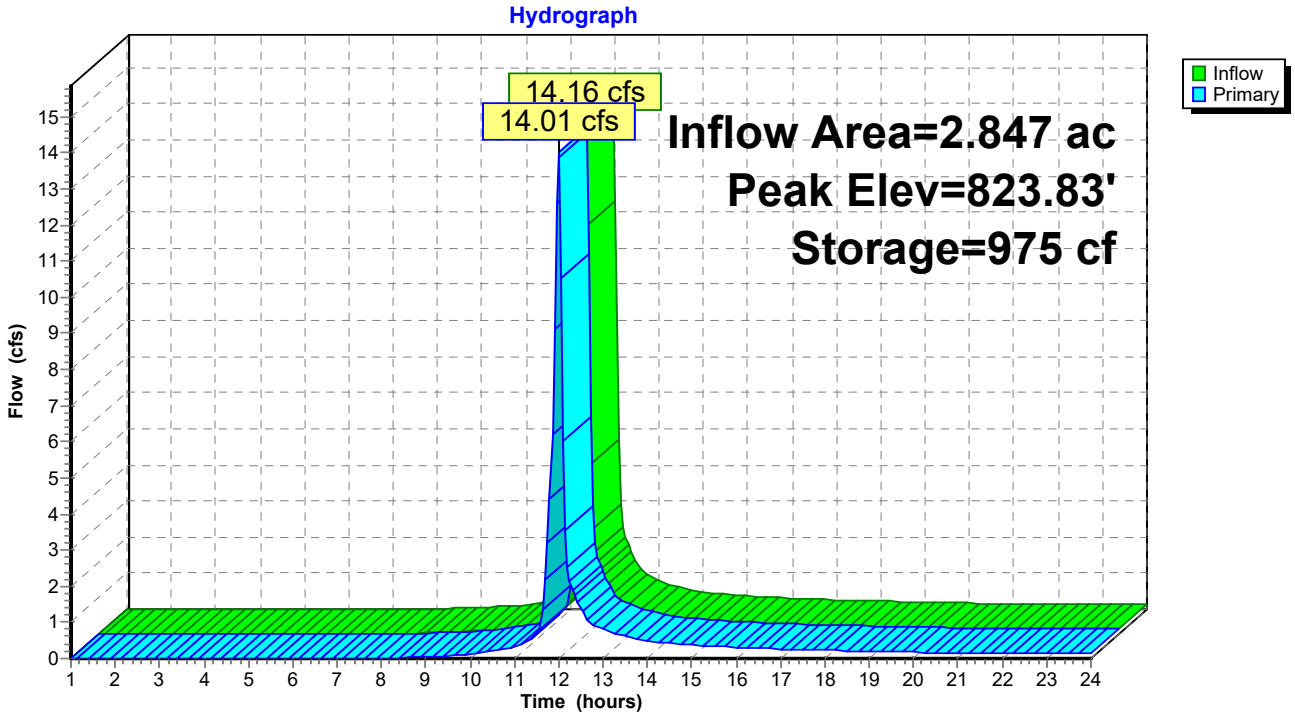
Volume	Invert	Avail.Storage	Storage Description
#1	823.50'	3,444 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
823.50	2,814	277.0	0	0	2,814
824.00	3,238	287.0	1,512	1,512	3,284
824.50	4,526	323.0	1,932	3,444	5,039

Device	Routing	Invert	Outlet Devices
#1	Primary	823.50'	**30.0' long x 6.0' breadth Overflow Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=13.60 cfs @ 11.99 hrs HW=823.82' (Free Discharge)
1=Overflow Weir (Weir Controls 13.60 cfs @ 1.40 fps)

Pond 38P: Pond 3



Stage-Area-Storage for Pond 38P: Pond 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
823.50	2,814	0
823.51	2,822	28
823.52	2,830	56
823.53	2,839	85
823.54	2,847	113
823.55	2,855	142
823.56	2,863	170
823.57	2,872	199
823.58	2,880	228
823.59	2,888	257
823.60	2,896	286
823.61	2,905	315
823.62	2,913	344
823.63	2,921	373
823.64	2,930	402
823.65	2,938	431
823.66	2,946	461
823.67	2,955	490
823.68	2,963	520
823.69	2,972	550
823.70	2,980	579
823.71	2,988	609
823.72	2,997	639
823.73	3,005	669
823.74	3,014	699
823.75	3,022	729
823.76	3,031	760
823.77	3,039	790
823.78	3,048	820
823.79	3,056	851
823.80	3,065	882
823.81	3,073	912
823.82	3,082	943
823.83	3,091	974
823.84	3,099	1,005
823.85	3,108	1,036
823.86	3,116	1,067
823.87	3,125	1,098
823.88	3,134	1,129
823.89	3,142	1,161
823.90	3,151	1,192
823.91	3,159	1,224
823.92	3,168	1,256
823.93	3,177	1,287
823.94	3,186	1,319
823.95	3,194	1,351
823.96	3,203	1,383
823.97	3,212	1,415
823.98	3,220	1,447
823.99	3,229	1,479
824.00	3,238	1,512
824.01	3,262	1,544
824.02	3,285	1,577
824.03	3,309	1,610
824.04	3,333	1,643
824.05	3,357	1,677
824.06	3,381	1,710
824.07	3,405	1,744
824.08	3,430	1,778
824.09	3,454	1,813
824.10	3,478	1,848
824.11	3,503	1,882
824.12	3,527	1,918
824.13	3,552	1,953
824.14	3,577	1,989
824.15	3,602	2,025
824.16	3,627	2,061
824.17	3,652	2,097
824.18	3,677	2,134
824.19	3,702	2,171
824.20	3,727	2,208
824.21	3,753	2,245
824.22	3,778	2,283
824.23	3,804	2,321
824.24	3,829	2,359
824.25	3,855	2,397
824.26	3,881	2,436
824.27	3,907	2,475
824.28	3,933	2,514
824.29	3,959	2,554
824.30	3,985	2,593
824.31	4,011	2,633
824.32	4,038	2,673
824.33	4,064	2,714
824.34	4,090	2,755
824.35	4,117	2,796
824.36	4,144	2,837
824.37	4,170	2,879
824.38	4,197	2,921
824.39	4,224	2,963
824.40	4,251	3,005
824.41	4,278	3,048
824.42	4,305	3,091
824.43	4,333	3,134
824.44	4,360	3,177
824.45	4,388	3,221
824.46	4,415	3,265
824.47	4,443	3,309
824.48	4,470	3,354
824.49	4,498	3,399
824.50	**4,526**	**3,444**

Summary for Pond 39P: Pond 2

Inflow Area = 2.093 ac, 37.74% Impervious, Inflow Depth > 3.38" for 10 yr event
Inflow = 10.95 cfs @ 12.00 hrs, Volume= 0.589 af
Outflow = 3.25 cfs @ 12.18 hrs, Volume= 0.589 af, Atten= 70%, Lag= 10.5 min
Primary = 3.25 cfs @ 12.18 hrs, Volume= 0.589 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 853.57' @ 12.18 hrs Surf.Area= 3,129 sf Storage= 7,036 cf

Plug-Flow detention time= 15.3 min calculated for 0.587 af (100% of inflow)
Center-of-Mass det. time= 15.0 min (825.2 - 810.2)

Volume	Invert	Avail.Storage	Storage Description
#1	849.50'	40,741 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

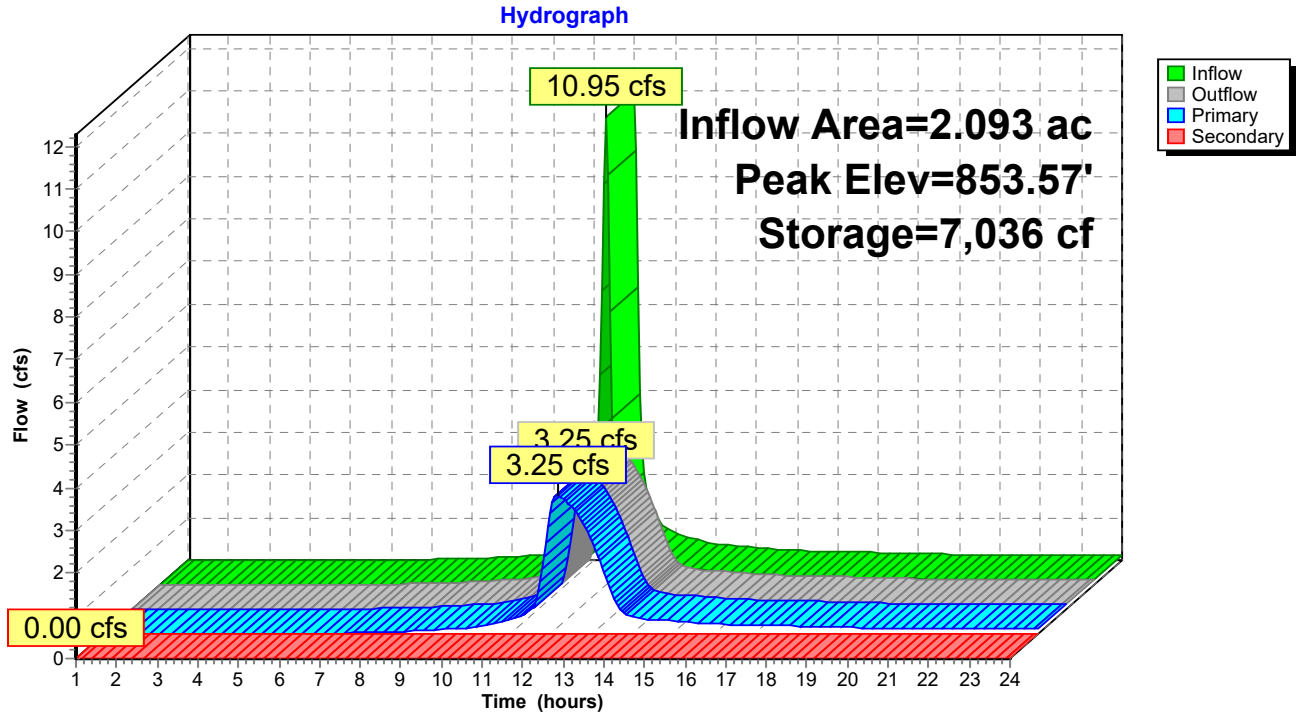
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
849.50	5	20.0	0	0	5
850.00	986	146.0	177	177	1,670
852.00	1,972	183.0	2,902	3,078	2,693
854.00	3,498	252.0	5,398	8,476	5,121
856.00	5,438	321.0	8,865	17,341	8,319
857.00	8,862	631.0	7,081	24,422	31,809
858.00	11,447	647.0	10,127	34,549	33,557
858.50	13,348	665.0	6,193	40,741	35,464

Device	Routing	Invert	Outlet Devices
#1	Primary	849.00'	**24.0" Round Culvert** L= 140.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 849.00' / 844.00' S= 0.0357 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Device 1	849.50'	**8.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	856.00'	**28.0" W x 28.0" H Vert. TOS** C= 0.600
#4	Secondary	857.50'	**30.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=3.24 cfs @ 12.18 hrs HW=853.56' (Free Discharge)
└**1=Culvert** (Passes 3.24 cfs of 28.53 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 3.24 cfs @ 9.29 fps)
  └**3=TOS** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=849.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 39P: Pond 2



Stage-Area-Storage for Pond 39P: Pond 2

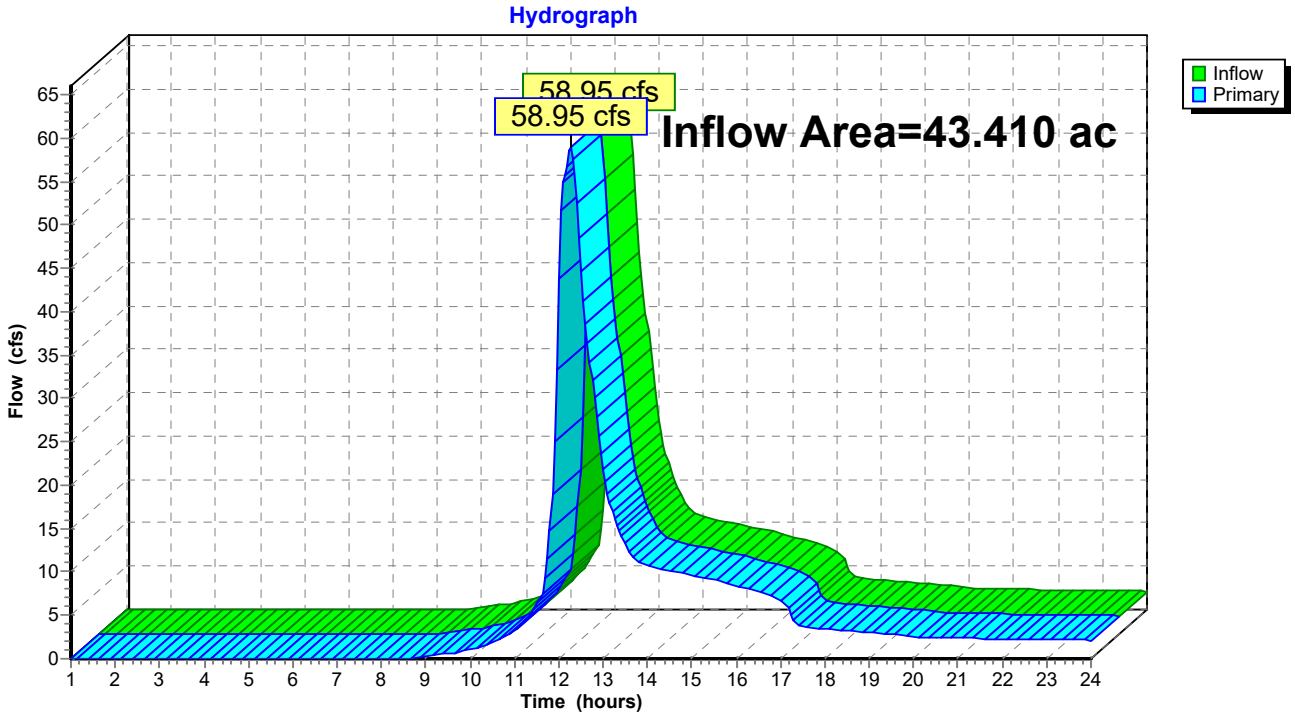
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
849.50	5	0
849.60	65	3
849.70	193	15
849.80	389	44
849.90	654	95
850.00	986	177
850.10	1,027	278
850.20	1,069	382
850.30	1,112	491
850.40	1,156	605
850.50	1,201	723
850.60	1,246	845
850.70	1,293	972
850.80	1,340	1,104
850.90	1,388	1,240
851.00	1,437	1,381
851.10	1,486	1,527
851.20	1,537	1,678
851.30	1,588	1,835
851.40	1,641	1,996
851.50	1,694	2,163
851.60	1,748	2,335
851.70	1,803	2,512
851.80	1,858	2,696
851.90	1,915	2,884
852.00	1,972	3,078
852.10	2,038	3,279
852.20	2,105	3,486
852.30	2,173	3,700
852.40	2,242	3,921
852.50	2,313	4,149
852.60	2,384	4,383
852.70	2,457	4,625
852.80	2,530	4,875
852.90	2,605	5,132
853.00	2,681	5,396
853.10	2,758	5,668
853.20	2,835	5,947
853.30	2,914	6,235
853.40	2,995	6,530
853.50	3,076	6,834
853.60	3,158	7,145
853.70	3,241	7,465
853.80	3,326	7,794
853.90	3,411	8,131
854.00	3,498	8,476
854.10	3,585	8,830
854.20	3,673	9,193
854.30	3,762	9,565
854.40	3,852	9,946
854.50	3,943	10,335
854.60	4,035	10,734
854.70	4,129	11,142
854.80	4,223	11,560
854.90	4,318	11,987
855.00	4,415	12,424
855.10	4,512	12,870
855.20	4,611	13,326
855.30	4,711	13,792
855.40	4,811	14,268
855.50	4,913	14,754
855.60	5,016	15,251
855.70	5,120	15,758
855.80	5,225	16,275
855.90	5,331	16,803
856.00	5,438	17,341
856.10	5,743	17,900
856.20	6,056	18,490
856.30	6,378	19,112
856.40	6,708	19,766
856.50	7,046	20,453
856.60	7,393	21,175
856.70	7,747	21,932
856.80	8,111	22,725
856.90	8,482	23,555
857.00	8,862	24,422
857.10	9,106	25,320
857.20	9,353	26,243
857.30	9,603	27,191
857.40	9,856	28,164
857.50	10,113	29,162
857.60	10,373	30,186
857.70	10,637	31,237
857.80	10,904	32,314
857.90	11,174	33,418
858.00	11,447	34,549
858.10	11,816	35,712
858.20	12,190	36,912
858.30	12,570	38,150
858.40	12,956	39,426
858.50	**13,348**	**40,741**

Summary for Link 30L: Analysis Point 1

Inflow Area = 43.410 ac, 6.92% Impervious, Inflow Depth > 2.66" for 10 yr event
Inflow = 58.95 cfs @ 12.28 hrs, Volume= 9.612 af
Primary = 58.95 cfs @ 12.28 hrs, Volume= 9.612 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Link 30L: Analysis Point 1



Time span=1.00-24.00 hrs, dt=0.05 hrs, 461 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 26S: C-WS1 Runoff Area=29.512 ac 5.01% Impervious Runoff Depth>3.41"
Flow Length=1,285' Tc=12.6 min CN=75 Runoff=140.26 cfs 8.384 af

Subcatchment 27S: C-WS2 Runoff Area=2.093 ac 37.74% Impervious Runoff Depth>4.23"
Flow Length=360' Tc=9.0 min CN=83 Runoff=13.59 cfs 0.738 af

Subcatchment 28S: C-WS3 Runoff Area=2.847 ac 25.75% Impervious Runoff Depth>3.72"
Flow Length=306' Tc=6.3 min UI Adjusted CN=78 Runoff=17.78 cfs 0.882 af

Subcatchment 29S: BYPASS 1 Runoff Area=8.958 ac 0.00% Impervious Runoff Depth>3.31"
Tc=15.0 min CN=74 Runoff=38.19 cfs 2.469 af

Reach 31R: Swale + Stream Avg. Flow Depth=0.82' Max Vel=4.10 fps Inflow=69.03 cfs 8.383 af
n=0.030 L=708.0' S=0.0198 '/' Capacity=631.76 cfs Outflow=67.80 cfs 8.358 af

Reach 32R: Swale + Stream Avg. Flow Depth=0.14' Max Vel=3.55 fps Inflow=3.54 cfs 0.738 af
n=0.025 L=400.0' S=0.0750 '/' Capacity=1,476.44 cfs Outflow=3.53 cfs 0.737 af

Reach 33R: Stream Avg. Flow Depth=0.48' Max Vel=2.57 fps Inflow=17.80 cfs 0.881 af
n=0.030 L=405.0' S=0.0148 '/' Capacity=546.83 cfs Outflow=16.33 cfs 0.878 af

Pond 16P: Pond 1 Peak Elev=834.05' Storage=102,931 cf Inflow=140.26 cfs 8.384 af
Primary=69.03 cfs 8.383 af Secondary=0.00 cfs 0.000 af Outflow=69.03 cfs 8.383 af

Pond 38P: Pond 3 Peak Elev=823.88' Storage=1,141 cf Inflow=17.78 cfs 0.882 af
Outflow=17.80 cfs 0.881 af

Pond 39P: Pond 2 Peak Elev=854.27' Storage=9,440 cf Inflow=13.59 cfs 0.738 af
Primary=3.54 cfs 0.738 af Secondary=0.00 cfs 0.000 af Outflow=3.54 cfs 0.738 af

Link 30L: Analysis Point 1 Inflow=92.97 cfs 12.442 af
Primary=92.97 cfs 12.442 af

Total Runoff Area = 43.410 ac Runoff Volume = 12.473 af Average Runoff Depth = 3.45"
93.08% Pervious = 40.408 ac 6.92% Impervious = 3.002 ac

Summary for Subcatchment 26S: C-WS1

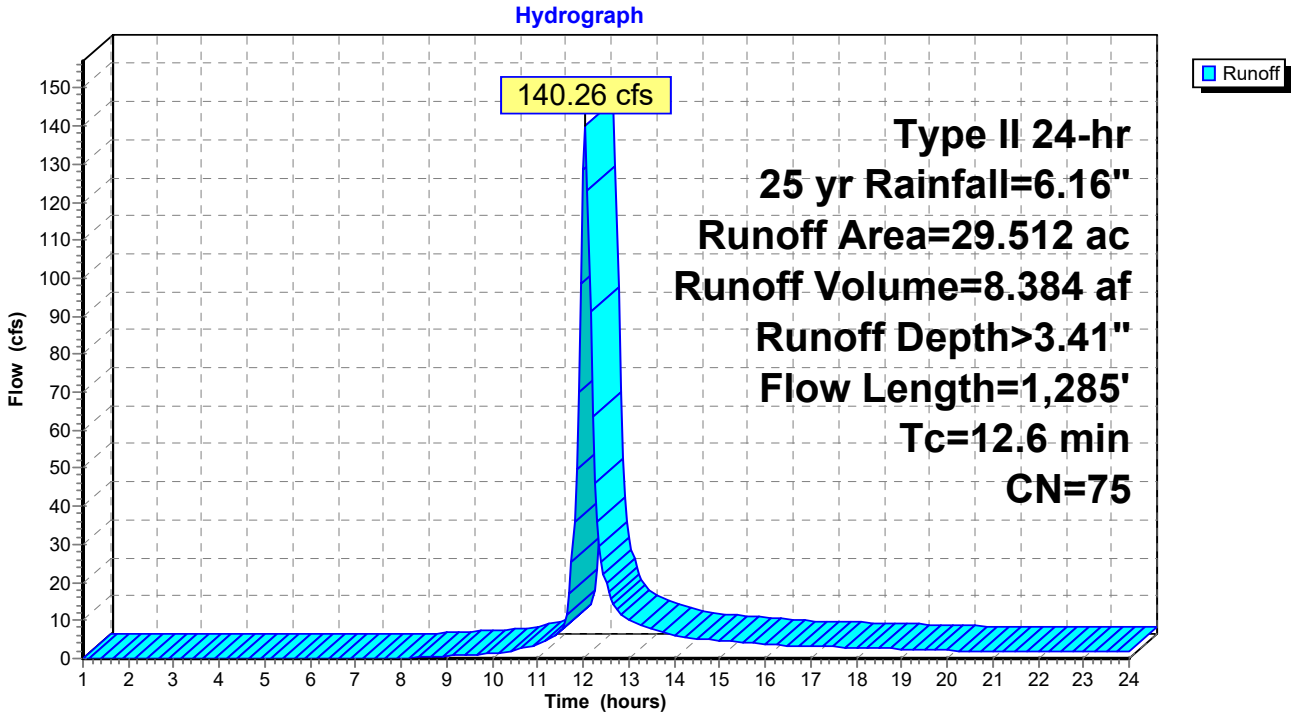
Runoff = 140.26 cfs @ 12.05 hrs, Volume= 8.384 af, Depth> 3.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 yr Rainfall=6.16"

Area (ac)	CN	Description
1.168	98	Unconnected roofs, HSG C
0.311	98	Paved roads w/curbs & sewers, HSG C
14.607	74	>75% Grass cover, Good, HSG C
1.327	74	>75% Grass cover, Good, HSG C
10.488	74	>75% Grass cover, Good, HSG C
1.611	74	>75% Grass cover, Good, HSG C
29.512	75	Weighted Average
28.033		94.99% Pervious Area
1.479		5.01% Impervious Area
1.168		78.97% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0250	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
3.9	845	0.0592	3.65		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.6	340	0.0353	9.65	470.11	**Channel Flow,** Area= 48.7 sf Perim= 60.6' r= 0.80' n= 0.025
12.6	1,285	Total			

Subcatchment 26S: C-WS1



Summary for Subcatchment 27S: C-WS2

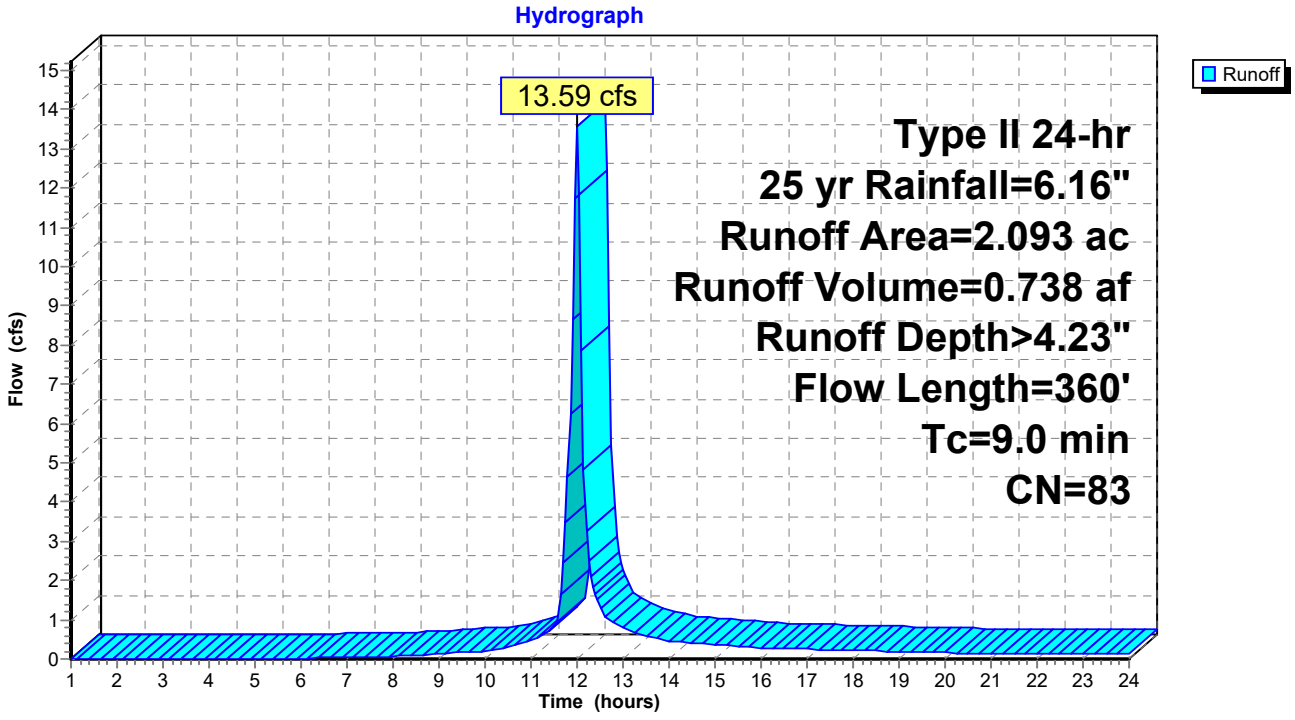
Runoff = 13.59 cfs @ 12.00 hrs, Volume= 0.738 af, Depth> 4.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 yr Rainfall=6.16"

Area (ac)	CN	Description
0.110	98	Unconnected roofs, HSG A
0.418	98	Unconnected roofs, HSG C
0.262	98	Paved roads w/curbs & sewers, HSG C
0.383	74	>75% Grass cover, Good, HSG C
0.920	74	>75% Grass cover, Good, HSG C
2.093	83	Weighted Average
1.303		62.26% Pervious Area
0.790		37.74% Impervious Area
0.528		66.84% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0260	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
1.0	260	0.0885	4.46		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.0	360	Total			

Subcatchment 27S: C-WS2



Summary for Subcatchment 28S: C-WS3

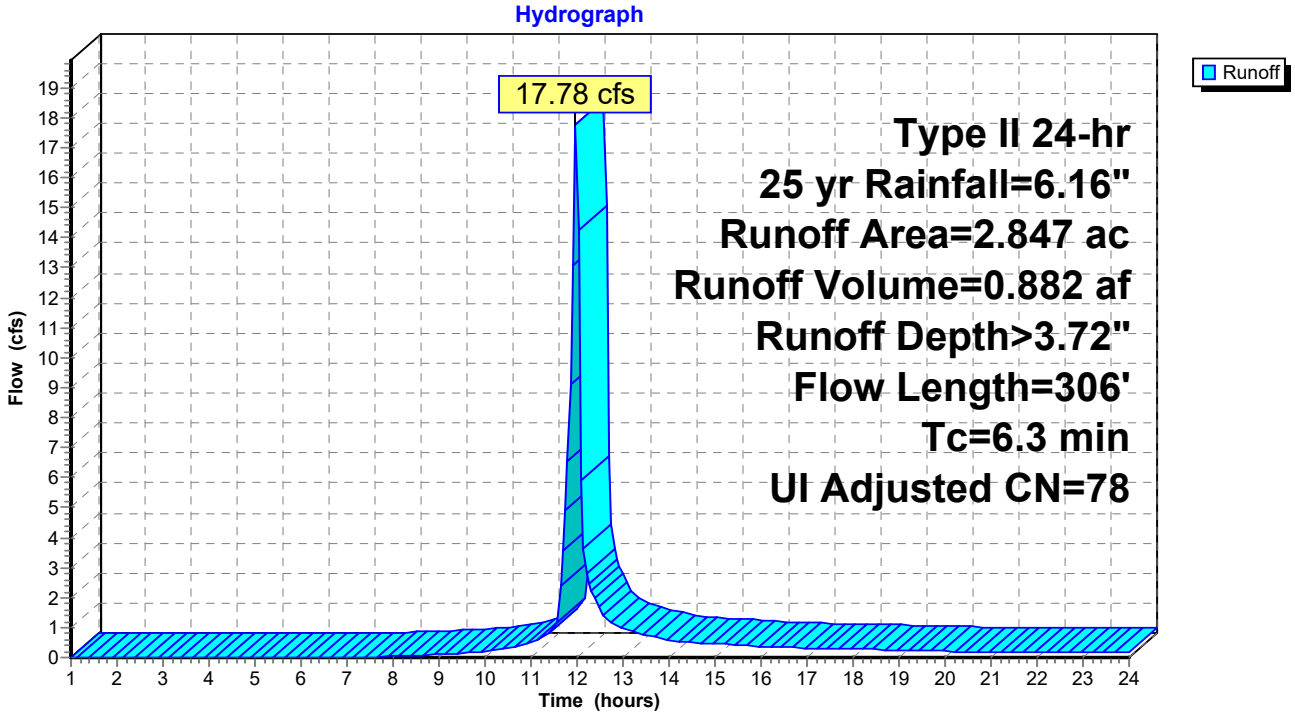
Runoff = 17.78 cfs @ 11.97 hrs, Volume= 0.882 af, Depth> 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 yr Rainfall=6.16"

Area (ac)	CN	Adj	Description
0.220	98		Unconnected roofs, HSG B
0.220	98		Unconnected roofs, HSG C
0.293	98		Paved roads w/curbs & sewers, HSG C
0.658	74		>75% Grass cover, Good, HSG C
1.246	74		>75% Grass cover, Good, HSG C
0.210	74		>75% Grass cover, Good, HSG C
2.847	80	78	Weighted Average, UI Adjusted
2.114			74.25% Pervious Area
0.733			25.75% Impervious Area
0.440			60.03% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	100	0.0700	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
0.9	206	0.0680	3.91		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
6.3	306	Total			

Subcatchment 28S: C-WS3



Summary for Subcatchment 29S: BYPASS 1

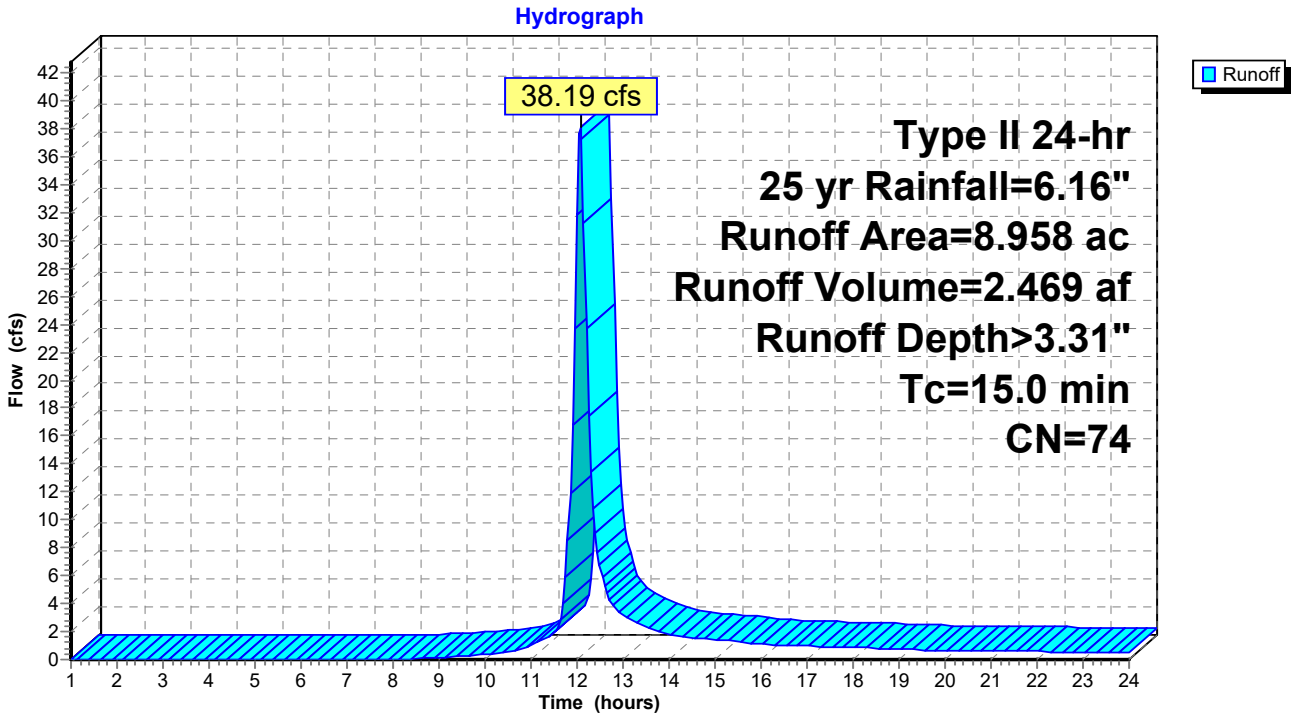
Runoff = 38.19 cfs @ 12.07 hrs, Volume= 2.469 af, Depth> 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 yr Rainfall=6.16"

Area (ac)	CN	Description
1.359	74	>75% Grass cover, Good, HSG C
6.273	74	>75% Grass cover, Good, HSG C
1.326	74	>75% Grass cover, Good, HSG C
8.958	74	Weighted Average
8.958		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry,**

Subcatchment 29S: BYPASS 1



Summary for Reach 31R: Swale + Stream

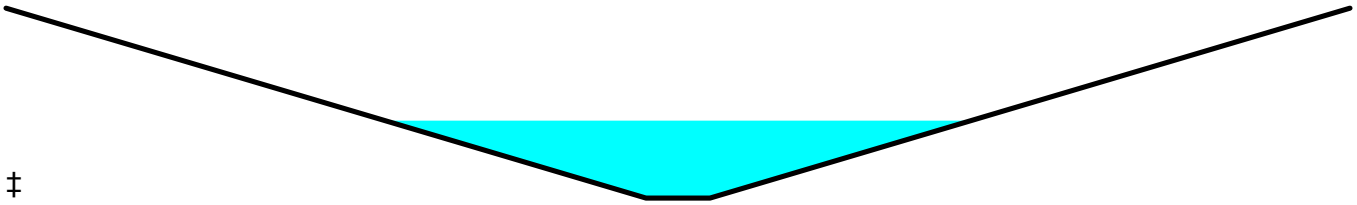
[81] Warning: Exceeded Pond 16P by 1.40' @ 1.00 hrs

Inflow Area = 29.512 ac, 5.01% Impervious, Inflow Depth > 3.41" for 25 yr event
Inflow = 69.03 cfs @ 12.19 hrs, Volume= 8.383 af
Outflow = 67.80 cfs @ 12.29 hrs, Volume= 8.358 af, Atten= 2%, Lag= 5.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.10 fps, Min. Travel Time= 2.9 min
Avg. Velocity = 1.91 fps, Avg. Travel Time= 6.2 min

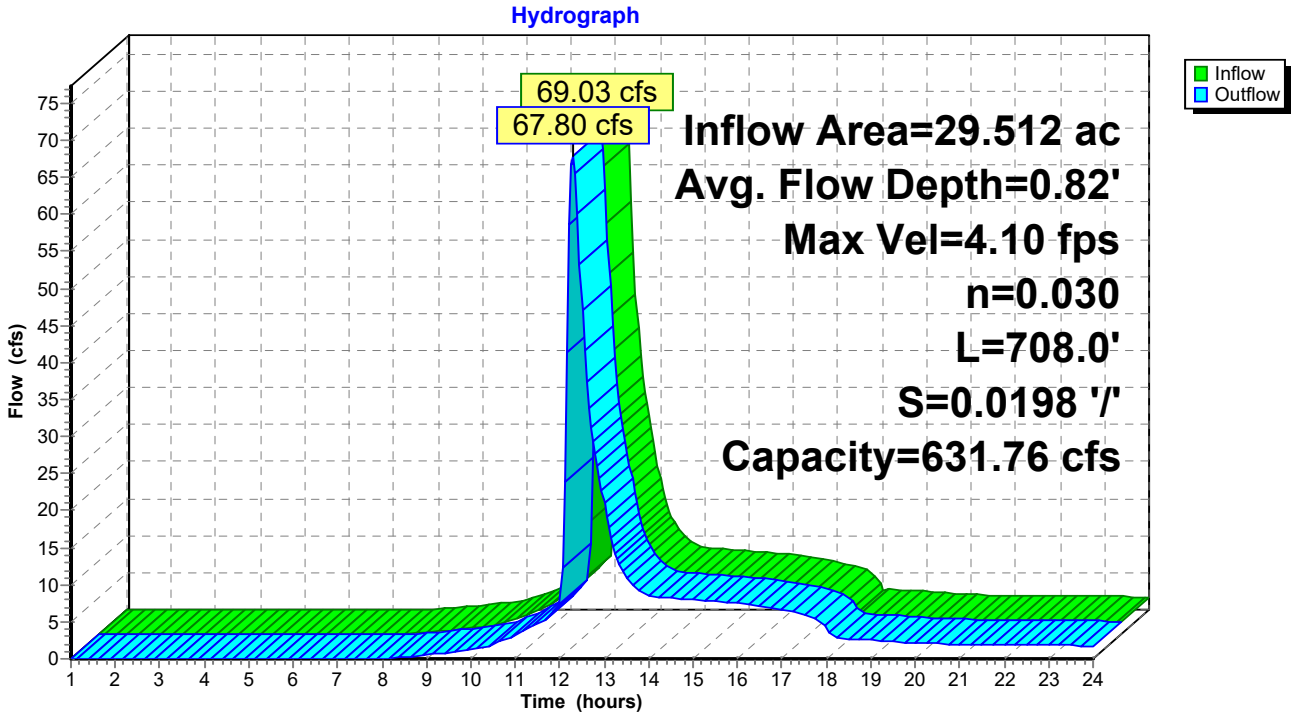
Peak Storage= 11,719 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.82'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 631.76 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 708.0' Slope= 0.0198 '/'
Inlet Invert= 828.00', Outlet Invert= 814.00'



‡

Reach 31R: Swale + Stream



Stage-Area-Storage for Reach 31R: Swale + Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
828.00	0.0	0
828.02	0.1	62
828.04	0.2	136
828.06	0.3	221
828.08	0.4	317
828.10	0.6	425
828.12	0.8	544
828.14	1.0	674
828.16	1.2	816
828.18	1.4	969
828.20	1.6	1,133
828.22	1.8	1,308
828.24	2.1	1,495
828.26	2.4	1,694
828.28	2.7	1,903
828.30	3.0	2,124
828.32	3.3	2,356
828.34	3.7	2,600
828.36	4.0	2,855
828.38	4.4	3,121
828.40	4.8	3,398
828.42	5.2	3,687
828.44	5.6	3,987
828.46	6.1	4,299
828.48	6.5	4,622
828.50	7.0	4,956
828.52	7.5	5,302
828.54	8.0	5,658
828.56	8.5	6,026
828.58	9.0	6,406
828.60	9.6	6,797
828.62	10.2	7,199
828.64	10.8	7,612
828.66	11.4	8,037
828.68	12.0	8,473
828.70	12.6	8,921
828.72	13.2	9,380
828.74	13.9	9,850
828.76	14.6	10,331
828.78	15.3	10,824
828.80	16.0	11,328
828.82	16.7	11,843
828.84	17.5	12,370
828.86	18.2	12,908
828.88	19.0	13,458
828.90	19.8	14,018
828.92	20.6	14,590
828.94	21.4	15,174
828.96	22.3	15,769
828.98	23.1	16,375
829.00	24.0	16,992
829.02	24.9	17,621
829.04	25.8	18,261
829.06	26.7	18,912
829.08	27.6	19,575
829.10	28.6	20,249
829.12	29.6	20,934
829.14	30.6	21,631
829.16	31.6	22,339
829.18	32.6	23,058
829.20	33.6	23,789
829.22	34.6	24,531
829.24	35.7	25,284
829.26	36.8	26,049
829.28	37.9	26,825
829.30	39.0	27,612
829.32	40.1	28,411
829.34	41.3	29,221
829.36	42.4	30,042
829.38	43.6	30,874
829.40	44.8	31,718
829.42	46.0	32,574
829.44	47.2	33,440
829.46	48.5	34,318
829.48	49.7	35,207
829.50	51.0	36,108
829.52	52.3	37,020
829.54	53.6	37,943
829.56	54.9	38,878
829.58	56.2	39,824
829.60	57.6	40,781
829.62	59.0	41,749
829.64	60.4	42,729
829.66	61.8	43,720
829.68	63.2	44,723
829.70	64.6	45,737
829.72	66.0	46,762
829.74	67.5	47,798
829.76	69.0	48,846
829.78	70.5	49,906
829.80	72.0	50,976
829.82	73.5	52,058
829.84	75.1	53,151
829.86	76.6	54,255
829.88	78.2	55,371
829.90	79.8	56,498
829.92	81.4	57,637
829.94	83.0	58,787
829.96	84.7	59,948
829.98	86.3	61,120
830.00	**88.0**	**62,304**

Summary for Reach 32R: Swale + Stream

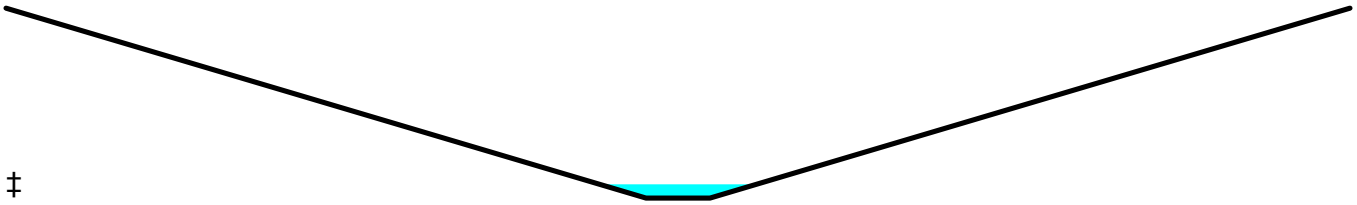
[79] Warning: Submerged Pond 39P Primary device # 1 OUTLET by 0.14'

Inflow Area = 2.093 ac, 37.74% Impervious, Inflow Depth > 4.23" for 25 yr event
Inflow = 3.54 cfs @ 12.20 hrs, Volume= 0.738 af
Outflow = 3.53 cfs @ 12.26 hrs, Volume= 0.737 af, Atten= 0%, Lag= 3.6 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.55 fps, Min. Travel Time= 1.9 min
Avg. Velocity = 1.67 fps, Avg. Travel Time= 4.0 min

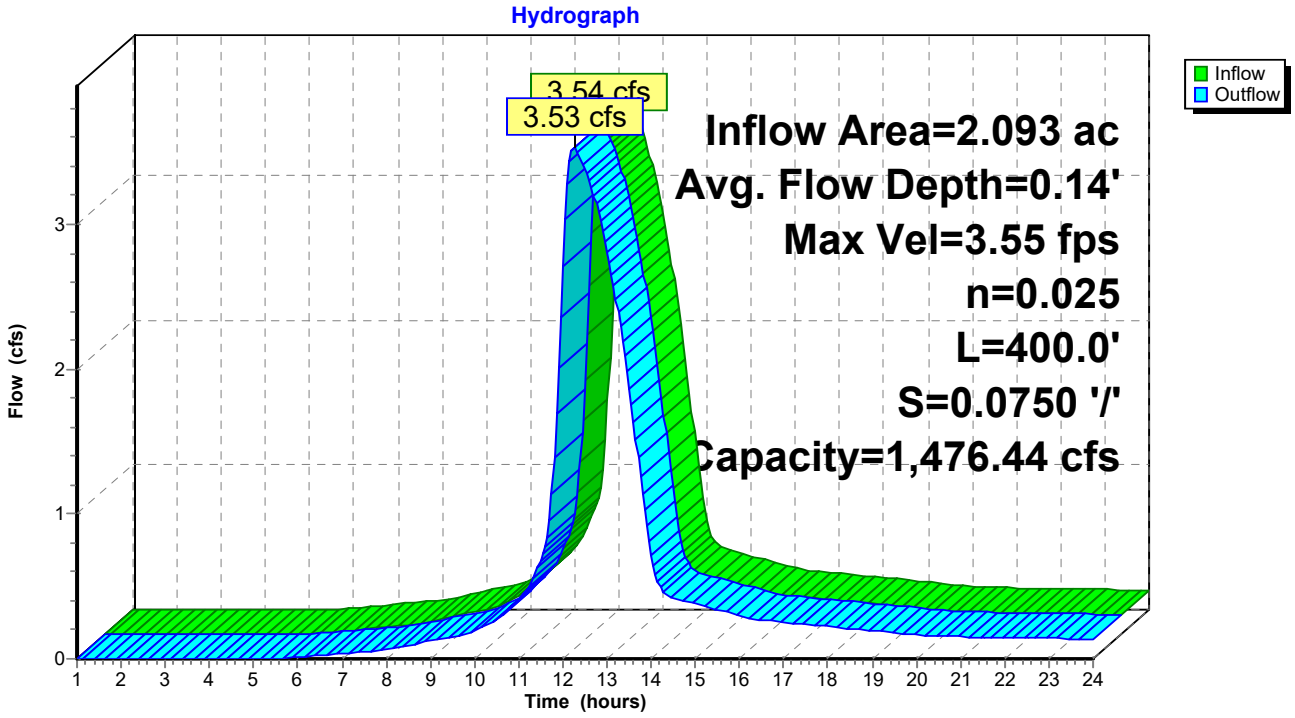
Peak Storage= 398 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.14'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 1,476.44 cfs

4.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 400.0' Slope= 0.0750 '/'
Inlet Invert= 844.00', Outlet Invert= 814.00'



‡

Reach 32R: Swale + Stream



Stage-Area-Storage for Reach 32R: Swale + Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
844.00	0.0	0
844.02	0.1	35
844.04	0.2	77
844.06	0.3	125
844.08	0.4	179
844.10	0.6	240
844.12	0.8	307
844.14	1.0	381
844.16	1.2	461
844.18	1.4	547
844.20	1.6	640
844.22	1.8	739
844.24	2.1	845
844.26	2.4	957
844.28	2.7	1,075
844.30	3.0	1,200
844.32	3.3	1,331
844.34	3.7	1,469
844.36	4.0	1,613
844.38	4.4	1,763
844.40	4.8	1,920
844.42	5.2	2,083
844.44	5.6	2,253
844.46	6.1	2,429
844.48	6.5	2,611
844.50	7.0	2,800
844.52	7.5	2,995
844.54	8.0	3,197
844.56	8.5	3,405
844.58	9.0	3,619
844.60	9.6	3,840
844.62	10.2	4,067
844.64	10.8	4,301
844.66	11.4	4,541
844.68	12.0	4,787
844.70	12.6	5,040
844.72	13.2	5,299
844.74	13.9	5,565
844.76	14.6	5,837
844.78	15.3	6,115
844.80	16.0	6,400
844.82	16.7	6,691
844.84	17.5	6,989
844.86	18.2	7,293
844.88	19.0	7,603
844.90	19.8	7,920
844.92	20.6	8,243
844.94	21.4	8,573
844.96	22.3	8,909
844.98	23.1	9,251
845.00	24.0	9,600
845.02	24.9	9,955
845.04	25.8	10,317
845.06	26.7	10,685
845.08	27.6	11,059
845.10	28.6	11,440
845.12	29.6	11,827
845.14	30.6	12,221
845.16	31.6	12,621
845.18	32.6	13,027
845.20	33.6	13,440
845.22	34.6	13,859
845.24	35.7	14,285
845.26	36.8	14,717
845.28	37.9	15,155
845.30	39.0	15,600
845.32	40.1	16,051
845.34	41.3	16,509
845.36	42.4	16,973
845.38	43.6	17,443
845.40	44.8	17,920
845.42	46.0	18,403
845.44	47.2	18,893
845.46	48.5	19,389
845.48	49.7	19,891
845.50	51.0	20,400
845.52	52.3	20,915
845.54	53.6	21,437
845.56	54.9	21,965
845.58	56.2	22,499
845.60	57.6	23,040
845.62	59.0	23,587
845.64	60.4	24,141
845.66	61.8	24,701
845.68	63.2	25,267
845.70	64.6	25,840
845.72	66.0	26,419
845.74	67.5	27,005
845.76	69.0	27,597
845.78	70.5	28,195
845.80	72.0	28,800
845.82	73.5	29,411
845.84	75.1	30,029
845.86	76.6	30,653
845.88	78.2	31,283
845.90	79.8	31,920
845.92	81.4	32,563
845.94	83.0	33,213
845.96	84.7	33,869
845.98	86.3	34,531
846.00	**88.0**	**35,200**

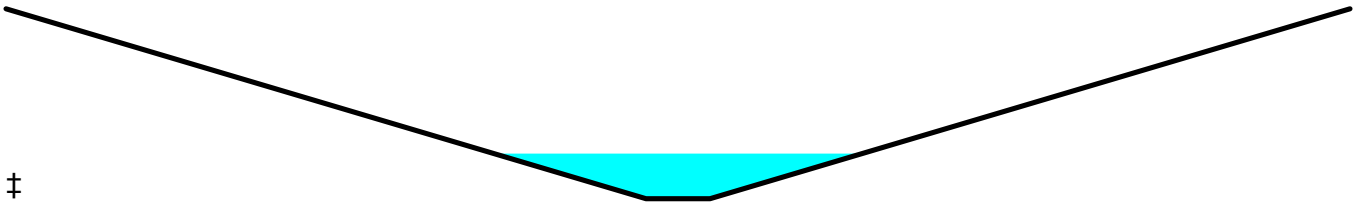
Summary for Reach 33R: Stream

Inflow Area = 2.847 ac, 25.75% Impervious, Inflow Depth > 3.71" for 25 yr event
Inflow = 17.80 cfs @ 11.99 hrs, Volume= 0.881 af
Outflow = 16.33 cfs @ 12.06 hrs, Volume= 0.878 af, Atten= 8%, Lag= 4.3 min

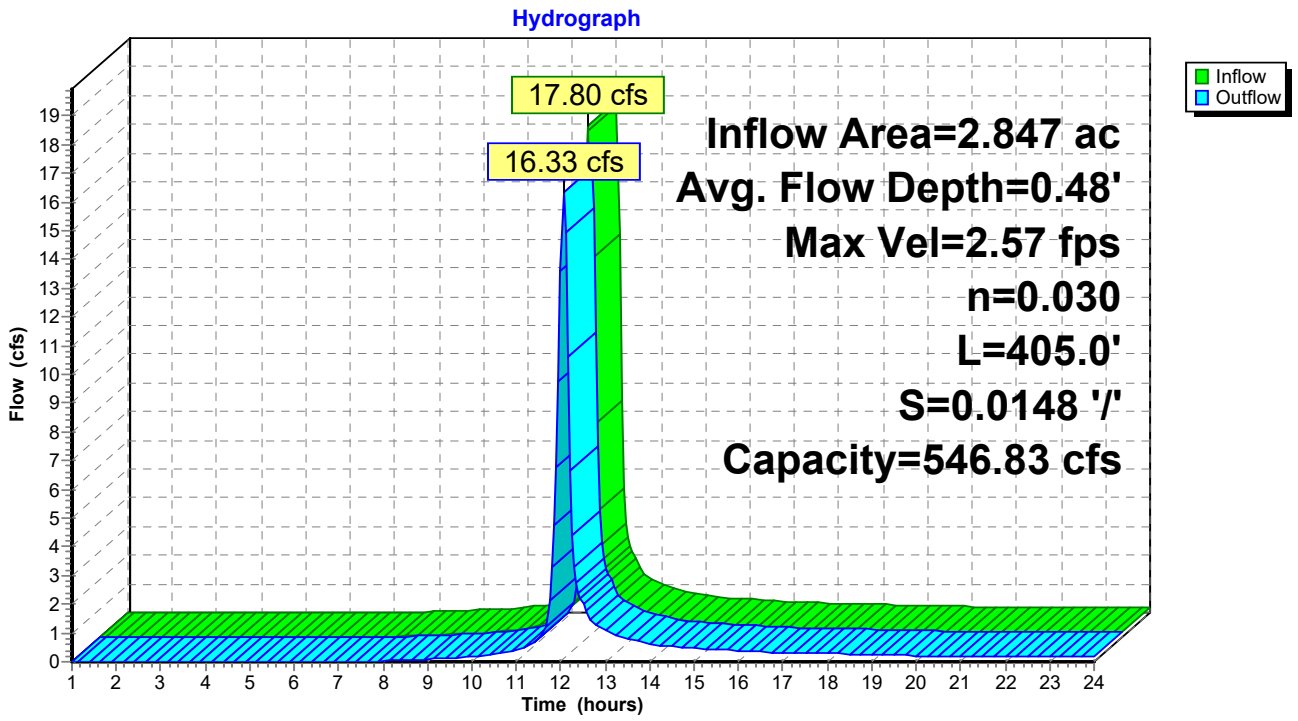
Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.57 fps, Min. Travel Time= 2.6 min
Avg. Velocity = 0.87 fps, Avg. Travel Time= 7.8 min

Peak Storage= 2,604 cf @ 12.01 hrs
Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 546.83 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 405.0' Slope= 0.0148 '/'
Inlet Invert= 820.00', Outlet Invert= 814.00'



‡



Stage-Area-Storage for Reach 33R: Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
820.00	0.0	0
820.02	0.1	36
820.04	0.2	78
820.06	0.3	126
820.08	0.4	181
820.10	0.6	243
820.12	0.8	311
820.14	1.0	386
820.16	1.2	467
820.18	1.4	554
820.20	1.6	648
820.22	1.8	748
820.24	2.1	855
820.26	2.4	969
820.28	2.7	1,089
820.30	3.0	1,215
820.32	3.3	1,348
820.34	3.7	1,487
820.36	4.0	1,633
820.38	4.4	1,785
820.40	4.8	1,944
820.42	5.2	2,109
820.44	5.6	2,281
820.46	6.1	2,459
820.48	6.5	2,644
820.50	7.0	2,835
820.52	7.5	3,033
820.54	8.0	3,237
820.56	8.5	3,447
820.58	9.0	3,664
820.60	9.6	3,888
820.62	10.2	4,118
820.64	10.8	4,355
820.66	11.4	4,598
820.68	12.0	4,847
820.70	12.6	5,103
820.72	13.2	5,365
820.74	13.9	5,634
820.76	14.6	5,910
820.78	15.3	6,192
820.80	16.0	6,480
820.82	16.7	6,775
820.84	17.5	7,076
820.86	18.2	7,384
820.88	19.0	7,698
820.90	19.8	8,019
820.92	20.6	8,346
820.94	21.4	8,680
820.96	22.3	9,020
820.98	23.1	9,367
821.00	24.0	9,720
821.02	24.9	10,080
821.04	25.8	10,446
821.06	26.7	10,818
821.08	27.6	11,197
821.10	28.6	11,583
821.12	29.6	11,975
821.14	30.6	12,374
821.16	31.6	12,779
821.18	32.6	13,190
821.20	33.6	13,608
821.22	34.6	14,032
821.24	35.7	14,463
821.26	36.8	14,901
821.28	37.9	15,345
821.30	39.0	15,795
821.32	40.1	16,252
821.34	41.3	16,715
821.36	42.4	17,185
821.38	43.6	17,661
821.40	44.8	18,144
821.42	46.0	18,633
821.44	47.2	19,129
821.46	48.5	19,631
821.48	49.7	20,140
821.50	51.0	20,655
821.52	52.3	21,177
821.54	53.6	21,705
821.56	54.9	22,239
821.58	56.2	22,780
821.60	57.6	23,328
821.62	59.0	23,882
821.64	60.4	24,443
821.66	61.8	25,010
821.68	63.2	25,583
821.70	64.6	26,163
821.72	66.0	26,749
821.74	67.5	27,342
821.76	69.0	27,942
821.78	70.5	28,548
821.80	72.0	29,160
821.82	73.5	29,779
821.84	75.1	30,404
821.86	76.6	31,036
821.88	78.2	31,674
821.90	79.8	32,319
821.92	81.4	32,970
821.94	83.0	33,628
821.96	84.7	34,292
821.98	86.3	34,963
822.00	**88.0**	**35,640**

Summary for Pond 16P: Pond 1

Inflow Area = 29.512 ac, 5.01% Impervious, Inflow Depth > 3.41" for 25 yr event
Inflow = 140.26 cfs @ 12.05 hrs, Volume= 8.384 af
Outflow = 69.03 cfs @ 12.19 hrs, Volume= 8.383 af, Atten= 51%, Lag= 9.0 min
Primary = 69.03 cfs @ 12.19 hrs, Volume= 8.383 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 834.05' @ 12.19 hrs Surf.Area= 31,201 sf Storage= 102,931 cf

Plug-Flow detention time= 36.4 min calculated for 8.383 af (100% of inflow)
Center-of-Mass det. time= 36.4 min (862.9 - 826.5)

Volume	Invert	Avail.Storage	Storage Description
#1	826.60'	179,320 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

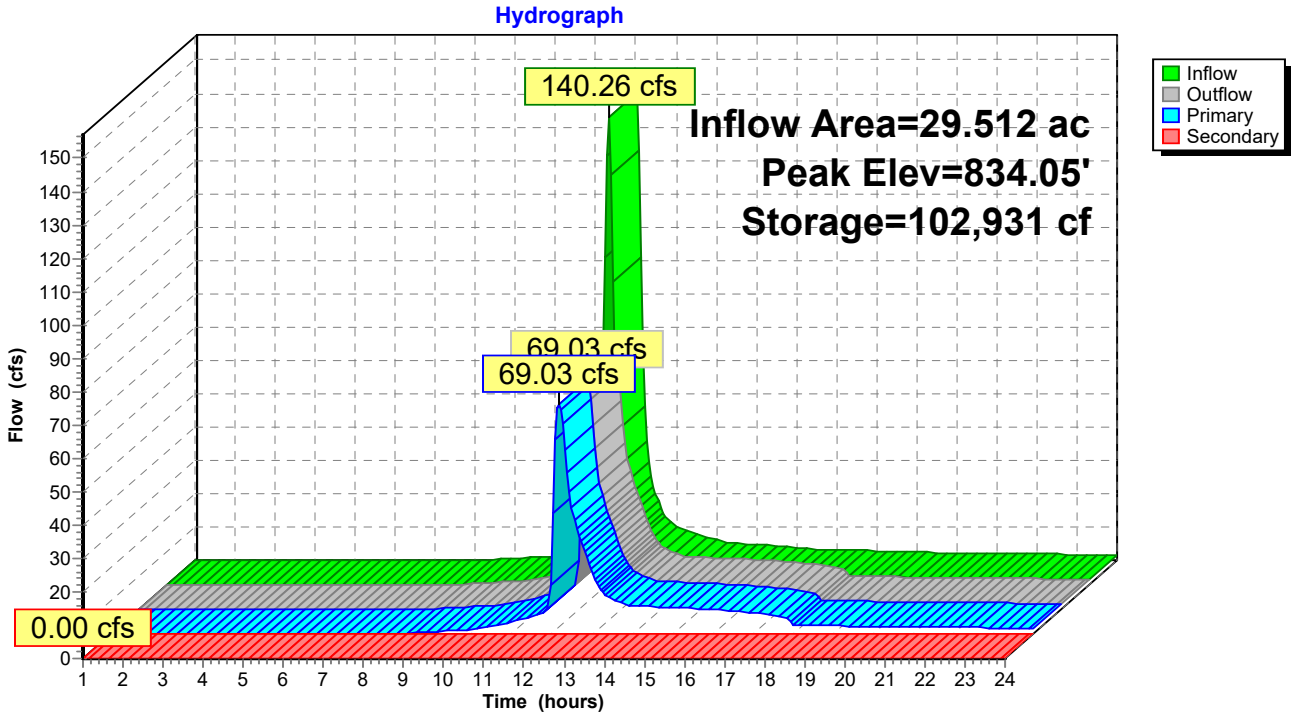
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
826.60	5	20.0	0	0	5
828.00	169	47.0	95	95	156
830.00	11,373	539.8	8,619	8,714	23,176
832.00	25,791	810.0	36,194	44,907	52,230
834.00	30,848	854.2	56,564	101,471	58,316
836.00	47,604	1,729.9	77,849	179,320	238,410

Device	Routing	Invert	Outlet Devices
#1	Primary	826.60'	**36.0" Round Culvert** L= 61.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 826.60' / 826.00' S= 0.0098 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	826.60'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	832.00'	**30.0" W x 6.0" H Vert. Orifice/Grate X 4.00** C= 0.600
#4	Device 1	833.00'	**28.0" x 28.0" Horiz. TOS** C= 0.600 Limited to weir flow at low heads
#5	Secondary	834.30'	**30.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=68.90 cfs @ 12.19 hrs HW=834.04' (Free Discharge)
└**1=Culvert** (Passes 68.90 cfs of 82.96 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 9.96 cfs @ 12.69 fps)
  ├**3=Orifice/Grate** (Orifice Controls 32.19 cfs @ 6.44 fps)
  └**4=TOS** (Orifice Controls 26.75 cfs @ 4.91 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=826.60' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 16P: Pond 1



Stage-Area-Storage for Pond 16P: Pond 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
826.60	5	0
826.70	9	1
826.80	14	2
826.90	21	4
827.00	28	6
827.10	37	9
827.20	47	13
827.30	58	19
827.40	70	25
827.50	84	33
827.60	98	42
827.70	114	53
827.80	131	65
827.90	150	79
828.00	169	95
828.10	313	118
828.20	500	159
828.30	732	220
828.40	1,007	307
828.50	1,326	423
828.60	1,689	573
828.70	2,095	762
828.80	2,546	994
828.90	3,040	1,273
829.00	3,579	1,603
829.10	4,161	1,990
829.20	4,787	2,437
829.30	5,457	2,949
829.40	6,170	3,530
829.50	6,928	4,184
829.60	7,729	4,917
829.70	8,574	5,731
829.80	9,463	6,633
829.90	10,396	7,626
830.00	11,373	8,714
830.10	11,956	9,880
830.20	12,553	11,105
830.30	13,165	12,391
830.40	13,791	13,739
830.50	14,432	15,150
830.60	15,087	16,626
830.70	15,757	18,168
830.80	16,442	19,777
830.90	17,141	21,456
831.00	17,854	23,206
831.10	18,582	25,028
831.20	19,325	26,923
831.30	20,083	28,893
831.40	20,854	30,940
831.50	21,641	33,065
831.60	22,442	35,269
831.70	23,257	37,553
831.80	24,087	39,921
831.90	24,932	42,371
832.00	25,791	44,907
832.10	26,033	47,499
832.20	26,276	50,114
832.30	26,521	52,754
832.40	26,766	55,418
832.50	27,013	58,107
832.60	27,261	60,821
832.70	27,509	63,559
832.80	27,760	66,323
832.90	28,011	69,111
833.00	28,263	71,925
833.10	28,516	74,764
833.20	28,771	77,628
833.30	29,027	80,518
833.40	29,283	83,434
833.50	29,541	86,375
833.60	29,800	89,342
833.70	30,061	92,335
833.80	30,322	95,354
833.90	30,584	98,399
834.00	30,848	101,471
834.10	31,600	104,593
834.20	32,361	107,791
834.30	33,131	111,066
834.40	33,910	114,418
834.50	34,698	117,848
834.60	35,495	121,358
834.70	36,301	124,947
834.80	37,116	128,618
834.90	37,940	132,371
835.00	38,773	136,206
835.10	39,616	140,126
835.20	40,467	144,130
835.30	41,328	148,219
835.40	42,197	152,396
835.50	43,076	156,659
835.60	43,963	161,011
835.70	44,860	165,452
835.80	45,765	169,983
835.90	46,680	174,605
836.00	**47,604**	**179,320**

Summary for Pond 38P: Pond 3

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 2.847 ac, 25.75% Impervious, Inflow Depth > 3.72" for 25 yr event
Inflow = 17.78 cfs @ 11.97 hrs, Volume= 0.882 af
Outflow = 17.80 cfs @ 11.99 hrs, Volume= 0.881 af, Atten= 0%, Lag= 0.8 min
Primary = 17.80 cfs @ 11.99 hrs, Volume= 0.881 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 823.88' @ 11.99 hrs Surf.Area= 3,137 sf Storage= 1,141 cf

Plug-Flow detention time= 2.5 min calculated for 0.879 af (100% of inflow)
Center-of-Mass det. time= 1.7 min (816.2 - 814.5)

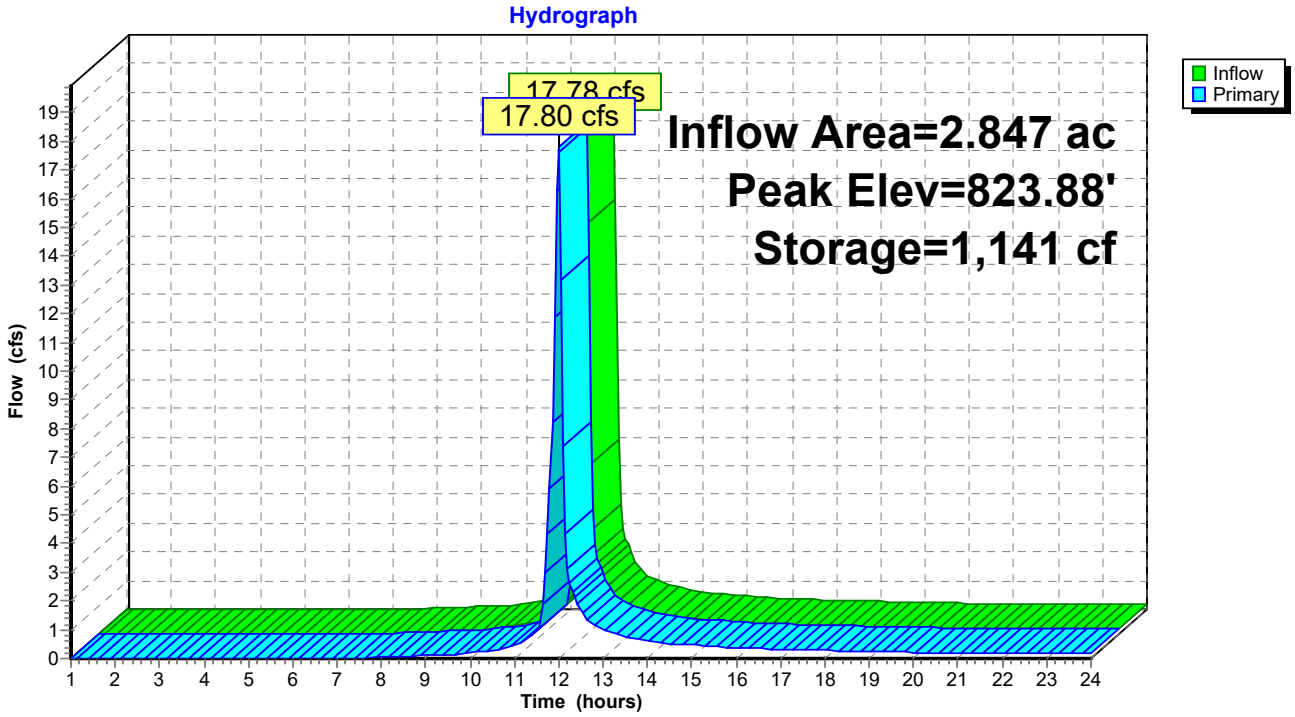
Volume	Invert	Avail.Storage	Storage Description
#1	823.50'	3,444 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
823.50	2,814	277.0	0	0	2,814
824.00	3,238	287.0	1,512	1,512	3,284
824.50	4,526	323.0	1,932	3,444	5,039

Device	Routing	Invert	Outlet Devices
#1	Primary	823.50'	**30.0' long x 6.0' breadth Overflow Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=17.23 cfs @ 11.99 hrs HW=823.88' (Free Discharge)
1=Overflow Weir (Weir Controls 17.23 cfs @ 1.53 fps)

Pond 38P: Pond 3



Stage-Area-Storage for Pond 38P: Pond 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
823.50	2,814	0
823.51	2,822	28
823.52	2,830	56
823.53	2,839	85
823.54	2,847	113
823.55	2,855	142
823.56	2,863	170
823.57	2,872	199
823.58	2,880	228
823.59	2,888	257
823.60	2,896	286
823.61	2,905	315
823.62	2,913	344
823.63	2,921	373
823.64	2,930	402
823.65	2,938	431
823.66	2,946	461
823.67	2,955	490
823.68	2,963	520
823.69	2,972	550
823.70	2,980	579
823.71	2,988	609
823.72	2,997	639
823.73	3,005	669
823.74	3,014	699
823.75	3,022	729
823.76	3,031	760
823.77	3,039	790
823.78	3,048	820
823.79	3,056	851
823.80	3,065	882
823.81	3,073	912
823.82	3,082	943
823.83	3,091	974
823.84	3,099	1,005
823.85	3,108	1,036
823.86	3,116	1,067
823.87	3,125	1,098
823.88	3,134	1,129
823.89	3,142	1,161
823.90	3,151	1,192
823.91	3,159	1,224
823.92	3,168	1,256
823.93	3,177	1,287
823.94	3,186	1,319
823.95	3,194	1,351
823.96	3,203	1,383
823.97	3,212	1,415
823.98	3,220	1,447
823.99	3,229	1,479
824.00	3,238	1,512
824.01	3,262	1,544
824.02	3,285	1,577
824.03	3,309	1,610
824.04	3,333	1,643
824.05	3,357	1,677
824.06	3,381	1,710
824.07	3,405	1,744
824.08	3,430	1,778
824.09	3,454	1,813
824.10	3,478	1,848
824.11	3,503	1,882
824.12	3,527	1,918
824.13	3,552	1,953
824.14	3,577	1,989
824.15	3,602	2,025
824.16	3,627	2,061
824.17	3,652	2,097
824.18	3,677	2,134
824.19	3,702	2,171
824.20	3,727	2,208
824.21	3,753	2,245
824.22	3,778	2,283
824.23	3,804	2,321
824.24	3,829	2,359
824.25	3,855	2,397
824.26	3,881	2,436
824.27	3,907	2,475
824.28	3,933	2,514
824.29	3,959	2,554
824.30	3,985	2,593
824.31	4,011	2,633
824.32	4,038	2,673
824.33	4,064	2,714
824.34	4,090	2,755
824.35	4,117	2,796
824.36	4,144	2,837
824.37	4,170	2,879
824.38	4,197	2,921
824.39	4,224	2,963
824.40	4,251	3,005
824.41	4,278	3,048
824.42	4,305	3,091
824.43	4,333	3,134
824.44	4,360	3,177
824.45	4,388	3,221
824.46	4,415	3,265
824.47	4,443	3,309
824.48	4,470	3,354
824.49	4,498	3,399
824.50	**4,526**	**3,444**

Summary for Pond 39P: Pond 2

Inflow Area = 2.093 ac, 37.74% Impervious, Inflow Depth > 4.23" for 25 yr event
Inflow = 13.59 cfs @ 12.00 hrs, Volume= 0.738 af
Outflow = 3.54 cfs @ 12.20 hrs, Volume= 0.738 af, Atten= 74%, Lag= 11.7 min
Primary = 3.54 cfs @ 12.20 hrs, Volume= 0.738 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 854.27' @ 12.20 hrs Surf.Area= 3,732 sf Storage= 9,440 cf

Plug-Flow detention time= 18.9 min calculated for 0.736 af (100% of inflow)
Center-of-Mass det. time= 18.5 min (822.4 - 803.8)

Volume	Invert	Avail.Storage	Storage Description
#1	849.50'	40,741 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

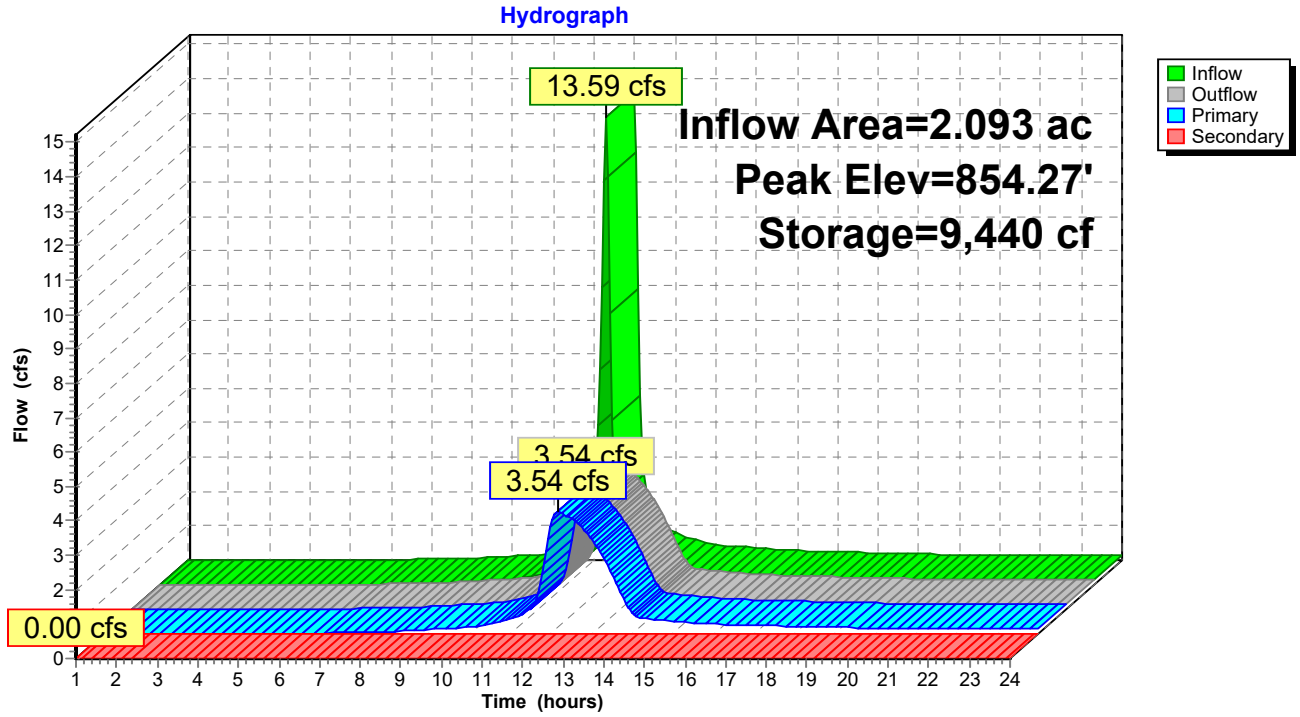
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
849.50	5	20.0	0	0	5
850.00	986	146.0	177	177	1,670
852.00	1,972	183.0	2,902	3,078	2,693
854.00	3,498	252.0	5,398	8,476	5,121
856.00	5,438	321.0	8,865	17,341	8,319
857.00	8,862	631.0	7,081	24,422	31,809
858.00	11,447	647.0	10,127	34,549	33,557
858.50	13,348	665.0	6,193	40,741	35,464

Device	Routing	Invert	Outlet Devices
#1	Primary	849.00'	**24.0" Round Culvert** L= 140.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 849.00' / 844.00' S= 0.0357 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Device 1	849.50'	**8.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	856.00'	**28.0" W x 28.0" H Vert. TOS** C= 0.600
#4	Secondary	857.50'	**30.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=3.54 cfs @ 12.20 hrs HW=854.26' (Free Discharge)
└**1=Culvert** (Passes 3.54 cfs of 31.24 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 3.54 cfs @ 10.14 fps)
  └**3=TOS** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=849.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 39P: Pond 2



Stage-Area-Storage for Pond 39P: Pond 2

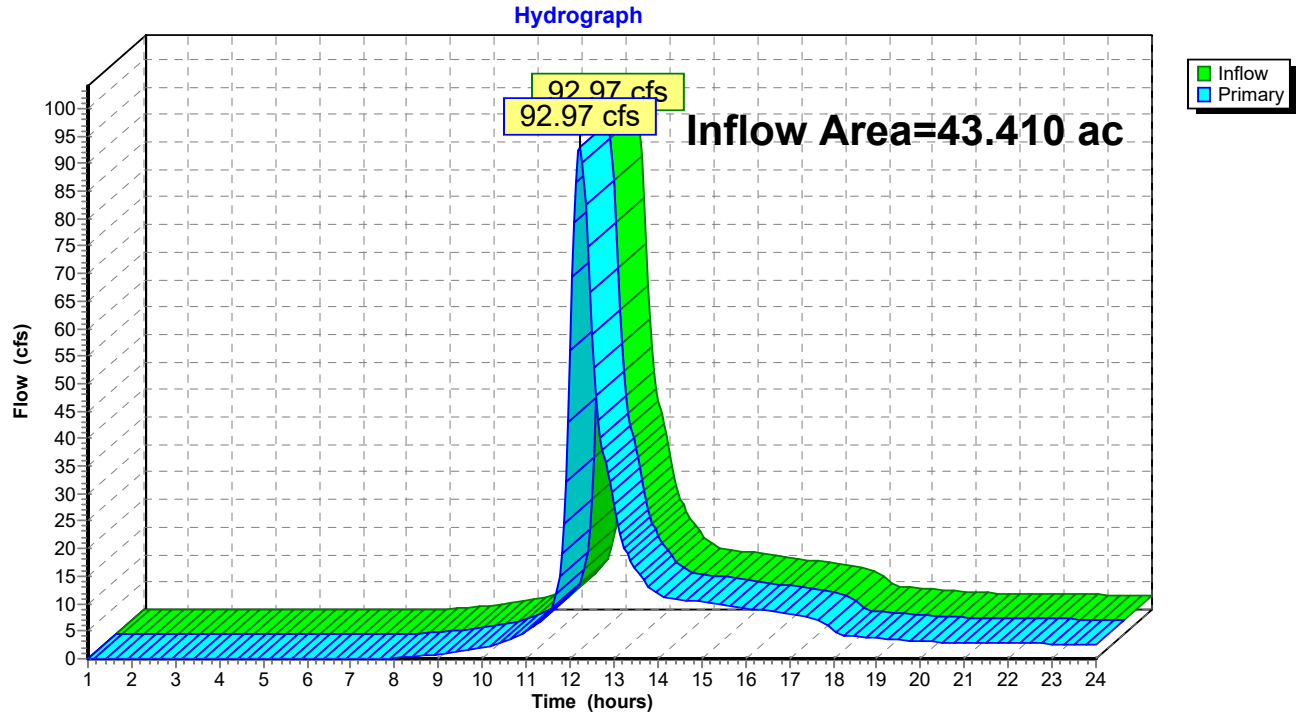
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
849.50	5	0
849.60	65	3
849.70	193	15
849.80	389	44
849.90	654	95
850.00	986	177
850.10	1,027	278
850.20	1,069	382
850.30	1,112	491
850.40	1,156	605
850.50	1,201	723
850.60	1,246	845
850.70	1,293	972
850.80	1,340	1,104
850.90	1,388	1,240
851.00	1,437	1,381
851.10	1,486	1,527
851.20	1,537	1,678
851.30	1,588	1,835
851.40	1,641	1,996
851.50	1,694	2,163
851.60	1,748	2,335
851.70	1,803	2,512
851.80	1,858	2,696
851.90	1,915	2,884
852.00	1,972	3,078
852.10	2,038	3,279
852.20	2,105	3,486
852.30	2,173	3,700
852.40	2,242	3,921
852.50	2,313	4,149
852.60	2,384	4,383
852.70	2,457	4,625
852.80	2,530	4,875
852.90	2,605	5,132
853.00	2,681	5,396
853.10	2,758	5,668
853.20	2,835	5,947
853.30	2,914	6,235
853.40	2,995	6,530
853.50	3,076	6,834
853.60	3,158	7,145
853.70	3,241	7,465
853.80	3,326	7,794
853.90	3,411	8,131
854.00	3,498	8,476
854.10	3,585	8,830
854.20	3,673	9,193
854.30	3,762	9,565
854.40	3,852	9,946
854.50	3,943	10,335
854.60	4,035	10,734
854.70	4,129	11,142
854.80	4,223	11,560
854.90	4,318	11,987
855.00	4,415	12,424
855.10	4,512	12,870
855.20	4,611	13,326
855.30	4,711	13,792
855.40	4,811	14,268
855.50	4,913	14,754
855.60	5,016	15,251
855.70	5,120	15,758
855.80	5,225	16,275
855.90	5,331	16,803
856.00	5,438	17,341
856.10	5,743	17,900
856.20	6,056	18,490
856.30	6,378	19,112
856.40	6,708	19,766
856.50	7,046	20,453
856.60	7,393	21,175
856.70	7,747	21,932
856.80	8,111	22,725
856.90	8,482	23,555
857.00	8,862	24,422
857.10	9,106	25,320
857.20	9,353	26,243
857.30	9,603	27,191
857.40	9,856	28,164
857.50	10,113	29,162
857.60	10,373	30,186
857.70	10,637	31,237
857.80	10,904	32,314
857.90	11,174	33,418
858.00	11,447	34,549
858.10	11,816	35,712
858.20	12,190	36,912
858.30	12,570	38,150
858.40	12,956	39,426
858.50	**13,348**	**40,741**

Summary for Link 30L: Analysis Point 1

Inflow Area = 43.410 ac, 6.92% Impervious, Inflow Depth > 3.44" for 25 yr event
Inflow = 92.97 cfs @ 12.22 hrs, Volume= 12.442 af
Primary = 92.97 cfs @ 12.22 hrs, Volume= 12.442 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Link 30L: Analysis Point 1



Time span=1.00-24.00 hrs, dt=0.05 hrs, 461 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 26S: C-WS1 Runoff Area=29.512 ac 5.01% Impervious Runoff Depth>4.01"
Flow Length=1,285' Tc=12.6 min CN=75 Runoff=164.37 cfs 9.853 af

Subcatchment 27S: C-WS2 Runoff Area=2.093 ac 37.74% Impervious Runoff Depth>4.88"
Flow Length=360' Tc=9.0 min CN=83 Runoff=15.55 cfs 0.851 af

Subcatchment 28S: C-WS3 Runoff Area=2.847 ac 25.75% Impervious Runoff Depth>4.33"
Flow Length=306' Tc=6.3 min UI Adjusted CN=78 Runoff=20.61 cfs 1.028 af

Subcatchment 29S: BYPASS 1 Runoff Area=8.958 ac 0.00% Impervious Runoff Depth>3.90"
Tc=15.0 min CN=74 Runoff=44.94 cfs 2.910 af

Reach 31R: Swale + Stream Avg. Flow Depth=0.89' Max Vel=4.32 fps Inflow=86.14 cfs 9.852 af
n=0.030 L=708.0' S=0.0198 '/' Capacity=631.76 cfs Outflow=83.91 cfs 9.825 af

Reach 32R: Swale + Stream Avg. Flow Depth=0.15' Max Vel=3.60 fps Inflow=3.72 cfs 0.850 af
n=0.025 L=400.0' S=0.0750 '/' Capacity=1,476.44 cfs Outflow=3.72 cfs 0.849 af

Reach 33R: Stream Avg. Flow Depth=0.51' Max Vel=2.67 fps Inflow=20.65 cfs 1.027 af
n=0.030 L=405.0' S=0.0148 '/' Capacity=546.83 cfs Outflow=18.99 cfs 1.024 af

Pond 16P: Pond 1 Peak Elev=834.52' Storage=118,394 cf Inflow=164.37 cfs 9.853 af
Primary=78.79 cfs 9.787 af Secondary=7.34 cfs 0.065 af Outflow=86.14 cfs 9.852 af

Pond 38P: Pond 3 Peak Elev=823.92' Storage=1,257 cf Inflow=20.61 cfs 1.028 af
Outflow=20.65 cfs 1.027 af

Pond 39P: Pond 2 Peak Elev=854.74' Storage=11,313 cf Inflow=15.55 cfs 0.851 af
Primary=3.72 cfs 0.850 af Secondary=0.00 cfs 0.000 af Outflow=3.72 cfs 0.850 af

Link 30L: Analysis Point 1 Inflow=114.53 cfs 14.608 af
Primary=114.53 cfs 14.608 af

Total Runoff Area = 43.410 ac Runoff Volume = 14.642 af Average Runoff Depth = 4.05"
93.08% Pervious = 40.408 ac 6.92% Impervious = 3.002 ac

Summary for Subcatchment 26S: C-WS1

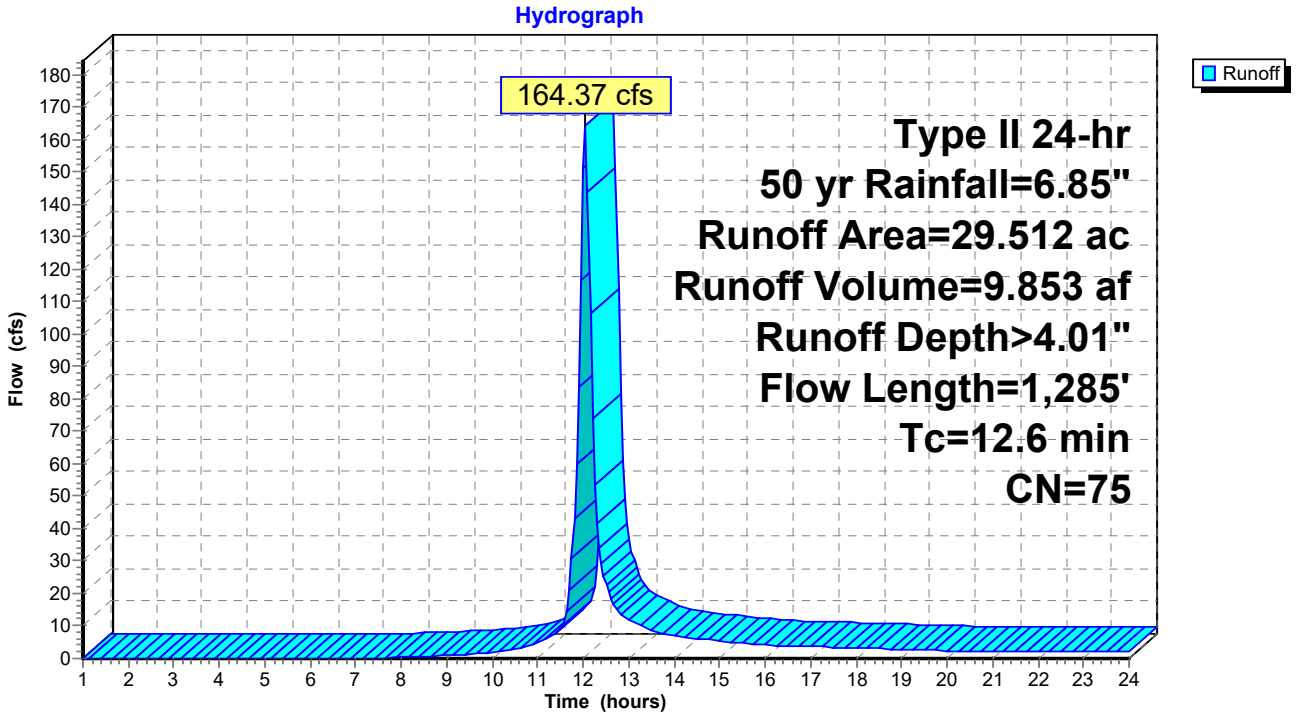
Runoff = 164.37 cfs @ 12.04 hrs, Volume= 9.853 af, Depth> 4.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 50 yr Rainfall=6.85"

Area (ac)	CN	Description
1.168	98	Unconnected roofs, HSG C
0.311	98	Paved roads w/curbs & sewers, HSG C
14.607	74	>75% Grass cover, Good, HSG C
1.327	74	>75% Grass cover, Good, HSG C
10.488	74	>75% Grass cover, Good, HSG C
1.611	74	>75% Grass cover, Good, HSG C
29.512	75	Weighted Average
28.033		94.99% Pervious Area
1.479		5.01% Impervious Area
1.168		78.97% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0250	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
3.9	845	0.0592	3.65		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.6	340	0.0353	9.65	470.11	**Channel Flow,** Area= 48.7 sf Perim= 60.6' r= 0.80' n= 0.025
12.6	1,285	Total			

Subcatchment 26S: C-WS1



Summary for Subcatchment 27S: C-WS2

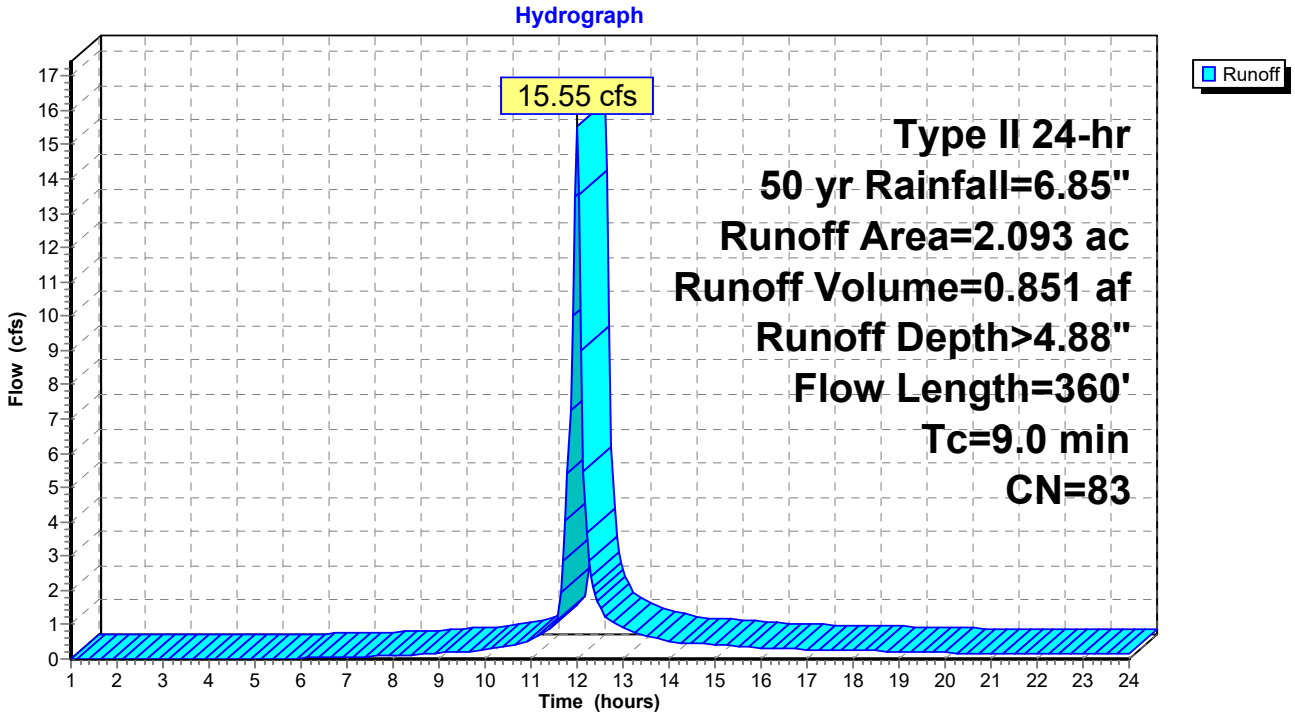
Runoff = 15.55 cfs @ 12.00 hrs, Volume= 0.851 af, Depth> 4.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 50 yr Rainfall=6.85"

Area (ac)	CN	Description
0.110	98	Unconnected roofs, HSG A
0.418	98	Unconnected roofs, HSG C
0.262	98	Paved roads w/curbs & sewers, HSG C
0.383	74	>75% Grass cover, Good, HSG C
0.920	74	>75% Grass cover, Good, HSG C
2.093	83	Weighted Average
1.303		62.26% Pervious Area
0.790		37.74% Impervious Area
0.528		66.84% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0260	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
1.0	260	0.0885	4.46		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.0	360	Total			

Subcatchment 27S: C-WS2



Summary for Subcatchment 28S: C-WS3

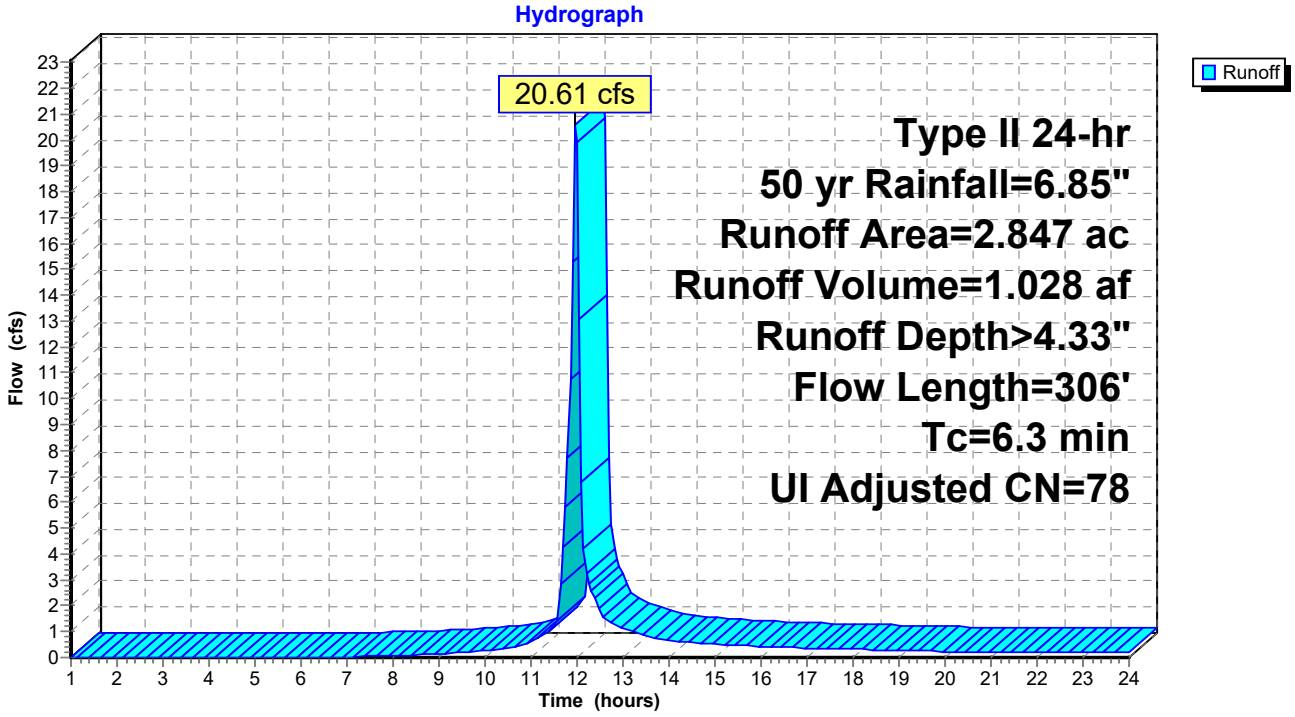
Runoff = 20.61 cfs @ 11.97 hrs, Volume= 1.028 af, Depth> 4.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 50 yr Rainfall=6.85"

Area (ac)	CN	Adj	Description
0.220	98		Unconnected roofs, HSG B
0.220	98		Unconnected roofs, HSG C
0.293	98		Paved roads w/curbs & sewers, HSG C
0.658	74		>75% Grass cover, Good, HSG C
1.246	74		>75% Grass cover, Good, HSG C
0.210	74		>75% Grass cover, Good, HSG C
2.847	80	78	Weighted Average, UI Adjusted
2.114			74.25% Pervious Area
0.733			25.75% Impervious Area
0.440			60.03% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	100	0.0700	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
0.9	206	0.0680	3.91		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
6.3	306	Total			

Subcatchment 28S: C-WS3



Summary for Subcatchment 29S: BYPASS 1

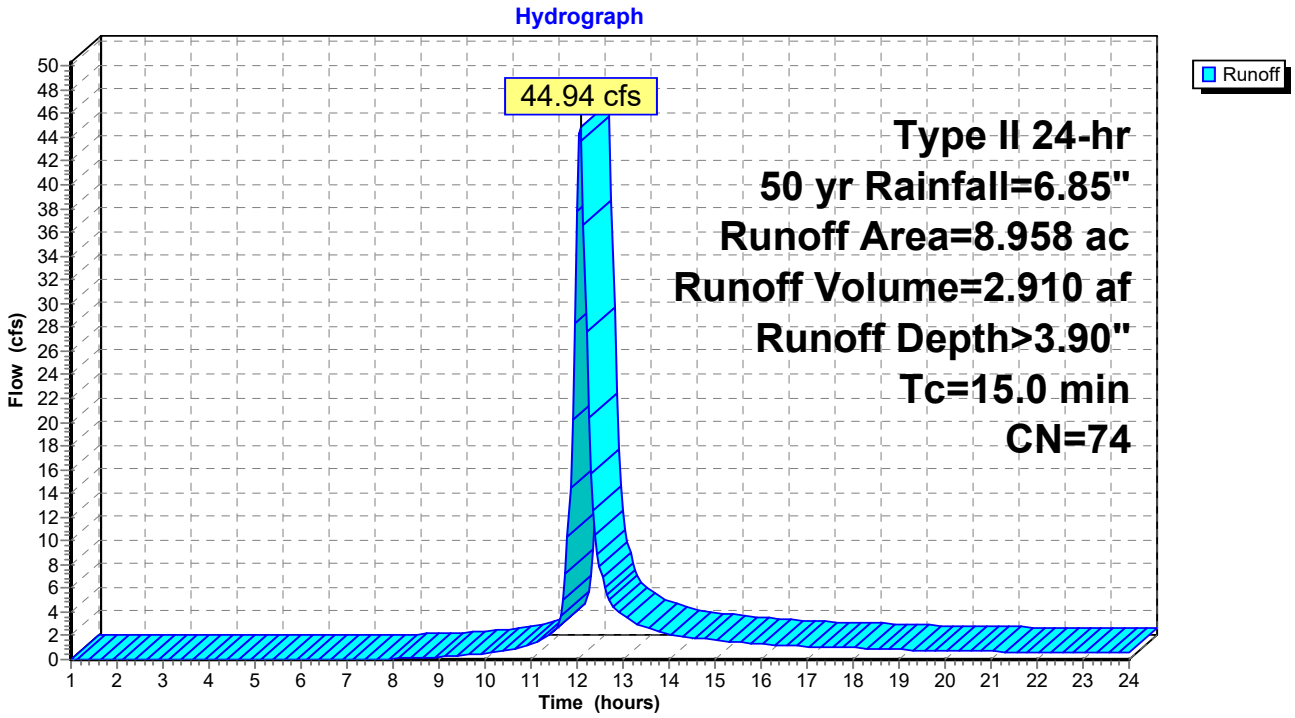
Runoff = 44.94 cfs @ 12.07 hrs, Volume= 2.910 af, Depth> 3.90"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 50 yr Rainfall=6.85"

Area (ac)	CN	Description
1.359	74	>75% Grass cover, Good, HSG C
6.273	74	>75% Grass cover, Good, HSG C
1.326	74	>75% Grass cover, Good, HSG C
8.958	74	Weighted Average
8.958		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry,**

Subcatchment 29S: BYPASS 1



Summary for Reach 31R: Swale + Stream

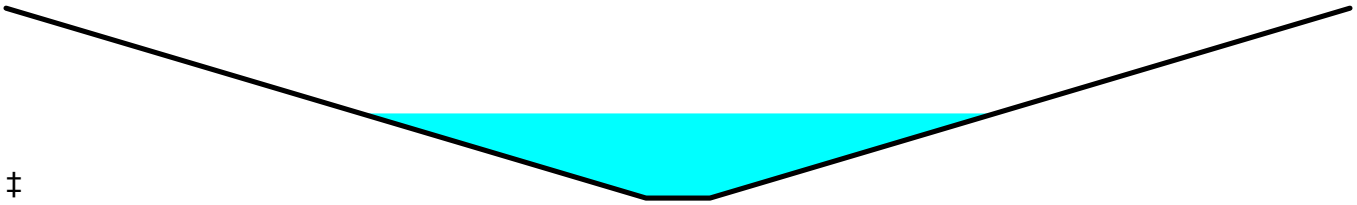
[81] Warning: Exceeded Pond 16P by 1.40' @ 1.00 hrs

Inflow Area = 29.512 ac, 5.01% Impervious, Inflow Depth > 4.01" for 50 yr event
Inflow = 86.14 cfs @ 12.19 hrs, Volume= 9.852 af
Outflow = 83.91 cfs @ 12.27 hrs, Volume= 9.825 af, Atten= 3%, Lag= 5.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.32 fps, Min. Travel Time= 2.7 min
Avg. Velocity = 1.97 fps, Avg. Travel Time= 6.0 min

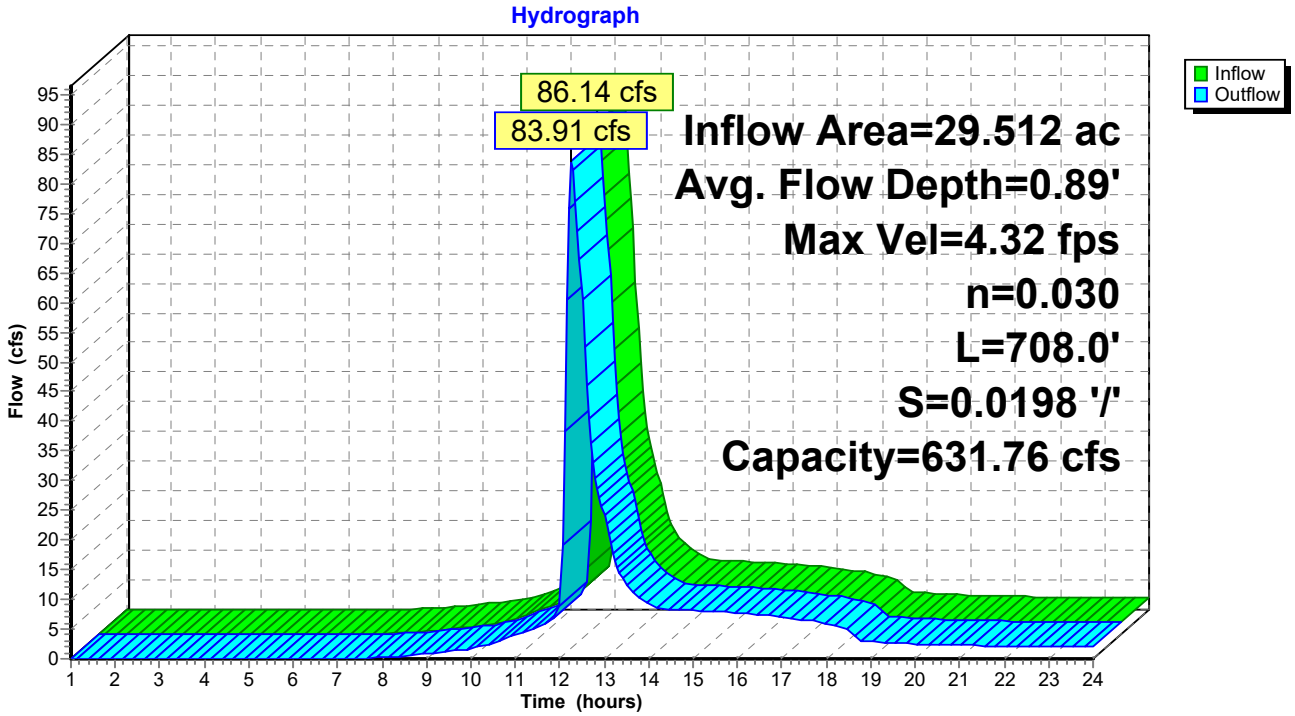
Peak Storage= 13,768 cf @ 12.22 hrs
Average Depth at Peak Storage= 0.89'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 631.76 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 708.0' Slope= 0.0198 '/'
Inlet Invert= 828.00', Outlet Invert= 814.00'



‡

Reach 31R: Swale + Stream



Stage-Area-Storage for Reach 31R: Swale + Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
828.00	0.0	0
828.02	0.1	62
828.04	0.2	136
828.06	0.3	221
828.08	0.4	317
828.10	0.6	425
828.12	0.8	544
828.14	1.0	674
828.16	1.2	816
828.18	1.4	969
828.20	1.6	1,133
828.22	1.8	1,308
828.24	2.1	1,495
828.26	2.4	1,694
828.28	2.7	1,903
828.30	3.0	2,124
828.32	3.3	2,356
828.34	3.7	2,600
828.36	4.0	2,855
828.38	4.4	3,121
828.40	4.8	3,398
828.42	5.2	3,687
828.44	5.6	3,987
828.46	6.1	4,299
828.48	6.5	4,622
828.50	7.0	4,956
828.52	7.5	5,302
828.54	8.0	5,658
828.56	8.5	6,026
828.58	9.0	6,406
828.60	9.6	6,797
828.62	10.2	7,199
828.64	10.8	7,612
828.66	11.4	8,037
828.68	12.0	8,473
828.70	12.6	8,921
828.72	13.2	9,380
828.74	13.9	9,850
828.76	14.6	10,331
828.78	15.3	10,824
828.80	16.0	11,328
828.82	16.7	11,843
828.84	17.5	12,370
828.86	18.2	12,908
828.88	19.0	13,458
828.90	19.8	14,018
828.92	20.6	14,590
828.94	21.4	15,174
828.96	22.3	15,769
828.98	23.1	16,375
829.00	24.0	16,992
829.02	24.9	17,621
829.04	25.8	18,261
829.06	26.7	18,912
829.08	27.6	19,575
829.10	28.6	20,249
829.12	29.6	20,934
829.14	30.6	21,631
829.16	31.6	22,339
829.18	32.6	23,058
829.20	33.6	23,789
829.22	34.6	24,531
829.24	35.7	25,284
829.26	36.8	26,049
829.28	37.9	26,825
829.30	39.0	27,612
829.32	40.1	28,411
829.34	41.3	29,221
829.36	42.4	30,042
829.38	43.6	30,874
829.40	44.8	31,718
829.42	46.0	32,574
829.44	47.2	33,440
829.46	48.5	34,318
829.48	49.7	35,207
829.50	51.0	36,108
829.52	52.3	37,020
829.54	53.6	37,943
829.56	54.9	38,878
829.58	56.2	39,824
829.60	57.6	40,781
829.62	59.0	41,749
829.64	60.4	42,729
829.66	61.8	43,720
829.68	63.2	44,723
829.70	64.6	45,737
829.72	66.0	46,762
829.74	67.5	47,798
829.76	69.0	48,846
829.78	70.5	49,906
829.80	72.0	50,976
829.82	73.5	52,058
829.84	75.1	53,151
829.86	76.6	54,255
829.88	78.2	55,371
829.90	79.8	56,498
829.92	81.4	57,637
829.94	83.0	58,787
829.96	84.7	59,948
829.98	86.3	61,120
830.00	**88.0**	**62,304**

Summary for Reach 32R: Swale + Stream

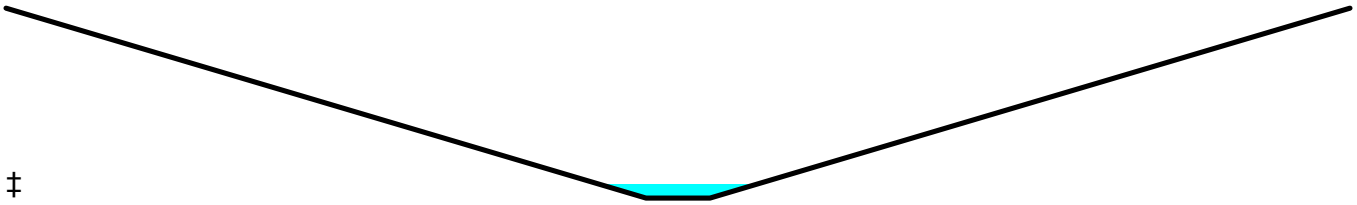
[79] Warning: Submerged Pond 39P Primary device # 1 OUTLET by 0.15'

Inflow Area = 2.093 ac, 37.74% Impervious, Inflow Depth > 4.88" for 50 yr event
Inflow = 3.72 cfs @ 12.21 hrs, Volume= 0.850 af
Outflow = 3.72 cfs @ 12.27 hrs, Volume= 0.849 af, Atten= 0%, Lag= 3.5 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.60 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 1.73 fps, Avg. Travel Time= 3.9 min

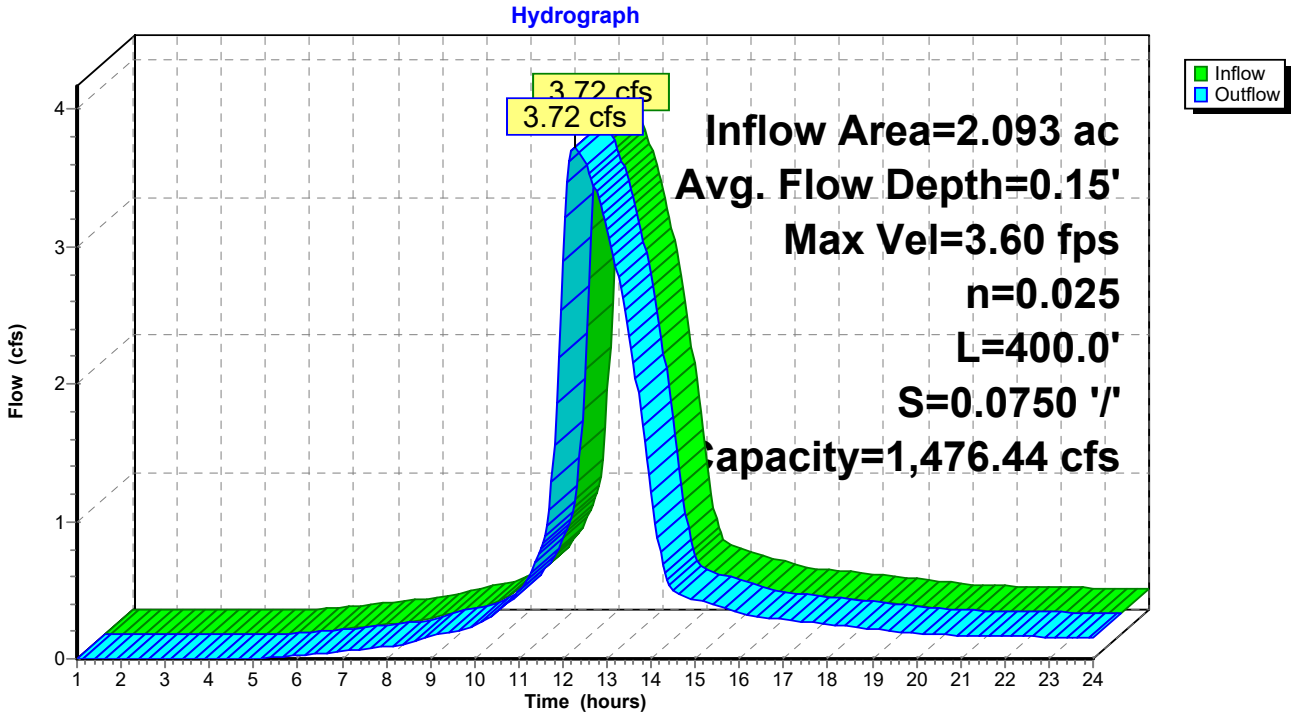
Peak Storage= 413 cf @ 12.23 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 1,476.44 cfs

4.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 400.0' Slope= 0.0750 '/'
Inlet Invert= 844.00', Outlet Invert= 814.00'



‡

Reach 32R: Swale + Stream



Stage-Area-Storage for Reach 32R: Swale + Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
844.00	0.0	0
844.02	0.1	35
844.04	0.2	77
844.06	0.3	125
844.08	0.4	179
844.10	0.6	240
844.12	0.8	307
844.14	1.0	381
844.16	1.2	461
844.18	1.4	547
844.20	1.6	640
844.22	1.8	739
844.24	2.1	845
844.26	2.4	957
844.28	2.7	1,075
844.30	3.0	1,200
844.32	3.3	1,331
844.34	3.7	1,469
844.36	4.0	1,613
844.38	4.4	1,763
844.40	4.8	1,920
844.42	5.2	2,083
844.44	5.6	2,253
844.46	6.1	2,429
844.48	6.5	2,611
844.50	7.0	2,800
844.52	7.5	2,995
844.54	8.0	3,197
844.56	8.5	3,405
844.58	9.0	3,619
844.60	9.6	3,840
844.62	10.2	4,067
844.64	10.8	4,301
844.66	11.4	4,541
844.68	12.0	4,787
844.70	12.6	5,040
844.72	13.2	5,299
844.74	13.9	5,565
844.76	14.6	5,837
844.78	15.3	6,115
844.80	16.0	6,400
844.82	16.7	6,691
844.84	17.5	6,989
844.86	18.2	7,293
844.88	19.0	7,603
844.90	19.8	7,920
844.92	20.6	8,243
844.94	21.4	8,573
844.96	22.3	8,909
844.98	23.1	9,251
845.00	24.0	9,600
845.02	24.9	9,955
845.04	25.8	10,317
845.06	26.7	10,685
845.08	27.6	11,059
845.10	28.6	11,440
845.12	29.6	11,827
845.14	30.6	12,221
845.16	31.6	12,621
845.18	32.6	13,027
845.20	33.6	13,440
845.22	34.6	13,859
845.24	35.7	14,285
845.26	36.8	14,717
845.28	37.9	15,155
845.30	39.0	15,600
845.32	40.1	16,051
845.34	41.3	16,509
845.36	42.4	16,973
845.38	43.6	17,443
845.40	44.8	17,920
845.42	46.0	18,403
845.44	47.2	18,893
845.46	48.5	19,389
845.48	49.7	19,891
845.50	51.0	20,400
845.52	52.3	20,915
845.54	53.6	21,437
845.56	54.9	21,965
845.58	56.2	22,499
845.60	57.6	23,040
845.62	59.0	23,587
845.64	60.4	24,141
845.66	61.8	24,701
845.68	63.2	25,267
845.70	64.6	25,840
845.72	66.0	26,419
845.74	67.5	27,005
845.76	69.0	27,597
845.78	70.5	28,195
845.80	72.0	28,800
845.82	73.5	29,411
845.84	75.1	30,029
845.86	76.6	30,653
845.88	78.2	31,283
845.90	79.8	31,920
845.92	81.4	32,563
845.94	83.0	33,213
845.96	84.7	33,869
845.98	86.3	34,531
846.00	**88.0**	**35,200**

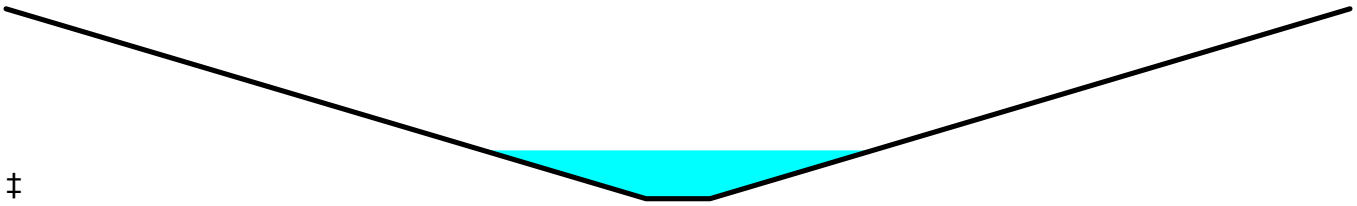
Summary for Reach 33R: Stream

Inflow Area = 2.847 ac, 25.75% Impervious, Inflow Depth > 4.33" for 50 yr event
Inflow = 20.65 cfs @ 11.99 hrs, Volume= 1.027 af
Outflow = 18.99 cfs @ 12.05 hrs, Volume= 1.024 af, Atten= 8%, Lag= 4.2 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.67 fps, Min. Travel Time= 2.5 min
Avg. Velocity = 0.89 fps, Avg. Travel Time= 7.5 min

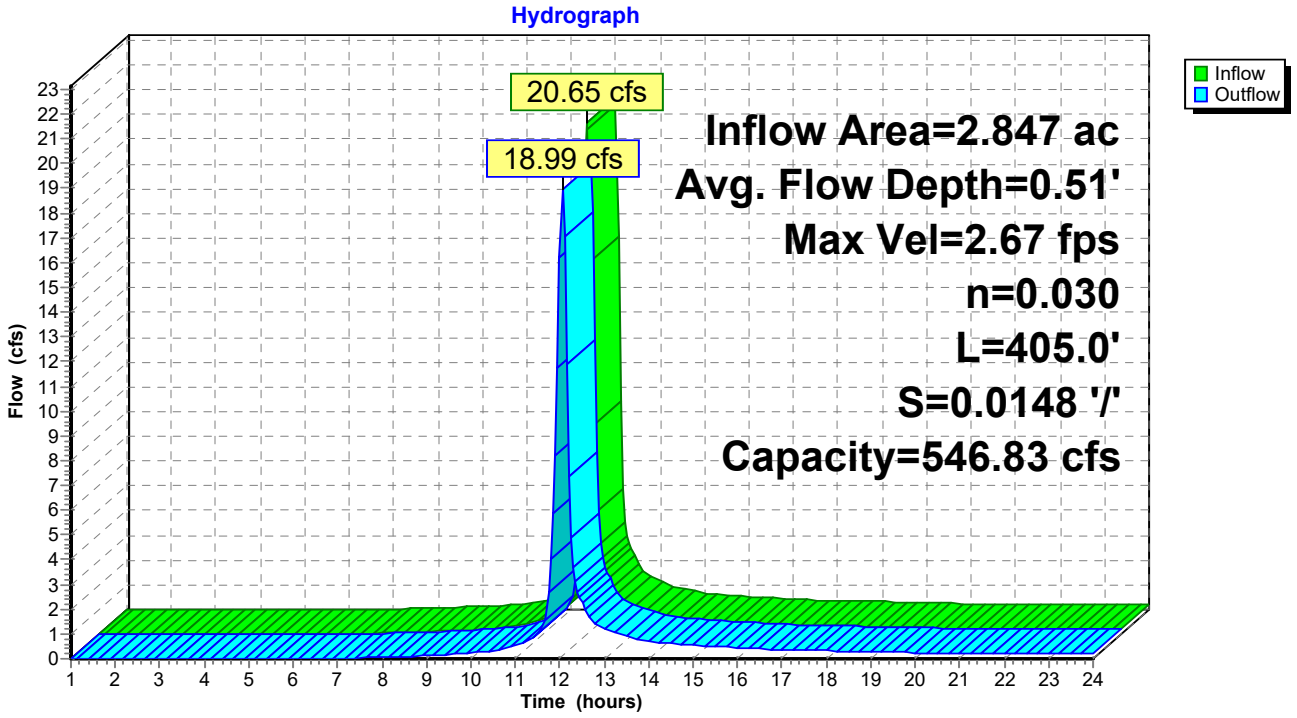
Peak Storage= 2,921 cf @ 12.01 hrs
Average Depth at Peak Storage= 0.51'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 546.83 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 405.0' Slope= 0.0148 '/'
Inlet Invert= 820.00', Outlet Invert= 814.00'



‡

Reach 33R: Stream



Stage-Area-Storage for Reach 33R: Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
820.00	0.0	0
820.02	0.1	36
820.04	0.2	78
820.06	0.3	126
820.08	0.4	181
820.10	0.6	243
820.12	0.8	311
820.14	1.0	386
820.16	1.2	467
820.18	1.4	554
820.20	1.6	648
820.22	1.8	748
820.24	2.1	855
820.26	2.4	969
820.28	2.7	1,089
820.30	3.0	1,215
820.32	3.3	1,348
820.34	3.7	1,487
820.36	4.0	1,633
820.38	4.4	1,785
820.40	4.8	1,944
820.42	5.2	2,109
820.44	5.6	2,281
820.46	6.1	2,459
820.48	6.5	2,644
820.50	7.0	2,835
820.52	7.5	3,033
820.54	8.0	3,237
820.56	8.5	3,447
820.58	9.0	3,664
820.60	9.6	3,888
820.62	10.2	4,118
820.64	10.8	4,355
820.66	11.4	4,598
820.68	12.0	4,847
820.70	12.6	5,103
820.72	13.2	5,365
820.74	13.9	5,634
820.76	14.6	5,910
820.78	15.3	6,192
820.80	16.0	6,480
820.82	16.7	6,775
820.84	17.5	7,076
820.86	18.2	7,384
820.88	19.0	7,698
820.90	19.8	8,019
820.92	20.6	8,346
820.94	21.4	8,680
820.96	22.3	9,020
820.98	23.1	9,367
821.00	24.0	9,720
821.02	24.9	10,080
821.04	25.8	10,446
821.06	26.7	10,818
821.08	27.6	11,197
821.10	28.6	11,583
821.12	29.6	11,975
821.14	30.6	12,374
821.16	31.6	12,779
821.18	32.6	13,190
821.20	33.6	13,608
821.22	34.6	14,032
821.24	35.7	14,463
821.26	36.8	14,901
821.28	37.9	15,345
821.30	39.0	15,795
821.32	40.1	16,252
821.34	41.3	16,715
821.36	42.4	17,185
821.38	43.6	17,661
821.40	44.8	18,144
821.42	46.0	18,633
821.44	47.2	19,129
821.46	48.5	19,631
821.48	49.7	20,140
821.50	51.0	20,655
821.52	52.3	21,177
821.54	53.6	21,705
821.56	54.9	22,239
821.58	56.2	22,780
821.60	57.6	23,328
821.62	59.0	23,882
821.64	60.4	24,443
821.66	61.8	25,010
821.68	63.2	25,583
821.70	64.6	26,163
821.72	66.0	26,749
821.74	67.5	27,342
821.76	69.0	27,942
821.78	70.5	28,548
821.80	72.0	29,160
821.82	73.5	29,779
821.84	75.1	30,404
821.86	76.6	31,036
821.88	78.2	31,674
821.90	79.8	32,319
821.92	81.4	32,970
821.94	83.0	33,628
821.96	84.7	34,292
821.98	86.3	34,963
822.00	**88.0**	**35,640**

Summary for Pond 16P: Pond 1

Inflow Area = 29.512 ac, 5.01% Impervious, Inflow Depth > 4.01" for 50 yr event
Inflow = 164.37 cfs @ 12.04 hrs, Volume= 9.853 af
Outflow = 86.14 cfs @ 12.19 hrs, Volume= 9.852 af, Atten= 48%, Lag= 8.5 min
Primary = 78.79 cfs @ 12.19 hrs, Volume= 9.787 af
Secondary = 7.34 cfs @ 12.19 hrs, Volume= 0.065 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 834.52' @ 12.19 hrs Surf.Area= 34,822 sf Storage= 118,394 cf

Plug-Flow detention time= 35.7 min calculated for 9.852 af (100% of inflow)
Center-of-Mass det. time= 35.6 min (857.5 - 821.9)

Volume	Invert	Avail.Storage	Storage Description
#1	826.60'	179,320 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

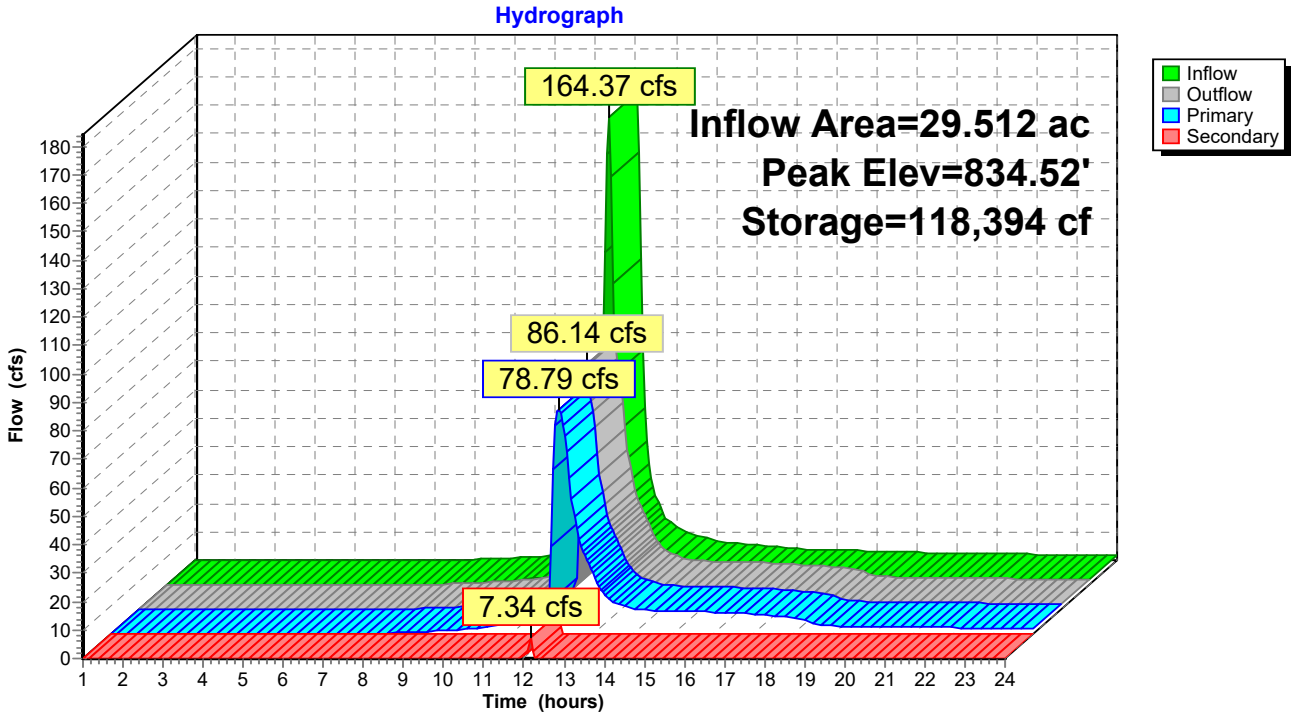
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
826.60	5	20.0	0	0	5
828.00	169	47.0	95	95	156
830.00	11,373	539.8	8,619	8,714	23,176
832.00	25,791	810.0	36,194	44,907	52,230
834.00	30,848	854.2	56,564	101,471	58,316
836.00	47,604	1,729.9	77,849	179,320	238,410

Device	Routing	Invert	Outlet Devices
#1	Primary	826.60'	**36.0" Round Culvert** L= 61.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 826.60' / 826.00' S= 0.0098 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	826.60'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	832.00'	**30.0" W x 6.0" H Vert. Orifice/Grate X 4.00** C= 0.600
#4	Device 1	833.00'	**28.0" x 28.0" Horiz. TOS** C= 0.600 Limited to weir flow at low heads
#5	Secondary	834.30'	**30.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=78.54 cfs @ 12.19 hrs HW=834.50' (Free Discharge)
└**1=Culvert** (Passes 78.54 cfs of 86.12 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 10.29 cfs @ 13.10 fps)
  ├**3=Orifice/Grate** (Orifice Controls 36.12 cfs @ 7.22 fps)
  └**4=TOS** (Orifice Controls 32.14 cfs @ 5.90 fps)

Secondary OutFlow Max=6.69 cfs @ 12.19 hrs HW=834.50' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Weir Controls 6.69 cfs @ 1.10 fps)

Pond 16P: Pond 1



Stage-Area-Storage for Pond 16P: Pond 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
826.60	5	0
826.70	9	1
826.80	14	2
826.90	21	4
827.00	28	6
827.10	37	9
827.20	47	13
827.30	58	19
827.40	70	25
827.50	84	33
827.60	98	42
827.70	114	53
827.80	131	65
827.90	150	79
828.00	169	95
828.10	313	118
828.20	500	159
828.30	732	220
828.40	1,007	307
828.50	1,326	423
828.60	1,689	573
828.70	2,095	762
828.80	2,546	994
828.90	3,040	1,273
829.00	3,579	1,603
829.10	4,161	1,990
829.20	4,787	2,437
829.30	5,457	2,949
829.40	6,170	3,530
829.50	6,928	4,184
829.60	7,729	4,917
829.70	8,574	5,731
829.80	9,463	6,633
829.90	10,396	7,626
830.00	11,373	8,714
830.10	11,956	9,880
830.20	12,553	11,105
830.30	13,165	12,391
830.40	13,791	13,739
830.50	14,432	15,150
830.60	15,087	16,626
830.70	15,757	18,168
830.80	16,442	19,777
830.90	17,141	21,456
831.00	17,854	23,206
831.10	18,582	25,028
831.20	19,325	26,923
831.30	20,083	28,893
831.40	20,854	30,940
831.50	21,641	33,065
831.60	22,442	35,269
831.70	23,257	37,553
831.80	24,087	39,921
831.90	24,932	42,371
832.00	25,791	44,907
832.10	26,033	47,499
832.20	26,276	50,114
832.30	26,521	52,754
832.40	26,766	55,418
832.50	27,013	58,107
832.60	27,261	60,821
832.70	27,509	63,559
832.80	27,760	66,323
832.90	28,011	69,111
833.00	28,263	71,925
833.10	28,516	74,764
833.20	28,771	77,628
833.30	29,027	80,518
833.40	29,283	83,434
833.50	29,541	86,375
833.60	29,800	89,342
833.70	30,061	92,335
833.80	30,322	95,354
833.90	30,584	98,399
834.00	30,848	101,471
834.10	31,600	104,593
834.20	32,361	107,791
834.30	33,131	111,066
834.40	33,910	114,418
834.50	34,698	117,848
834.60	35,495	121,358
834.70	36,301	124,947
834.80	37,116	128,618
834.90	37,940	132,371
835.00	38,773	136,206
835.10	39,616	140,126
835.20	40,467	144,130
835.30	41,328	148,219
835.40	42,197	152,396
835.50	43,076	156,659
835.60	43,963	161,011
835.70	44,860	165,452
835.80	45,765	169,983
835.90	46,680	174,605
836.00	**47,604**	**179,320**

Summary for Pond 38P: Pond 3

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 2.847 ac, 25.75% Impervious, Inflow Depth > 4.33" for 50 yr event
Inflow = 20.61 cfs @ 11.97 hrs, Volume= 1.028 af
Outflow = 20.65 cfs @ 11.99 hrs, Volume= 1.027 af, Atten= 0%, Lag= 0.7 min
Primary = 20.65 cfs @ 11.99 hrs, Volume= 1.027 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 823.92' @ 11.98 hrs Surf.Area= 3,169 sf Storage= 1,257 cf

Plug-Flow detention time= 2.4 min calculated for 1.027 af (100% of inflow)
Center-of-Mass det. time= 1.6 min (811.8 - 810.1)

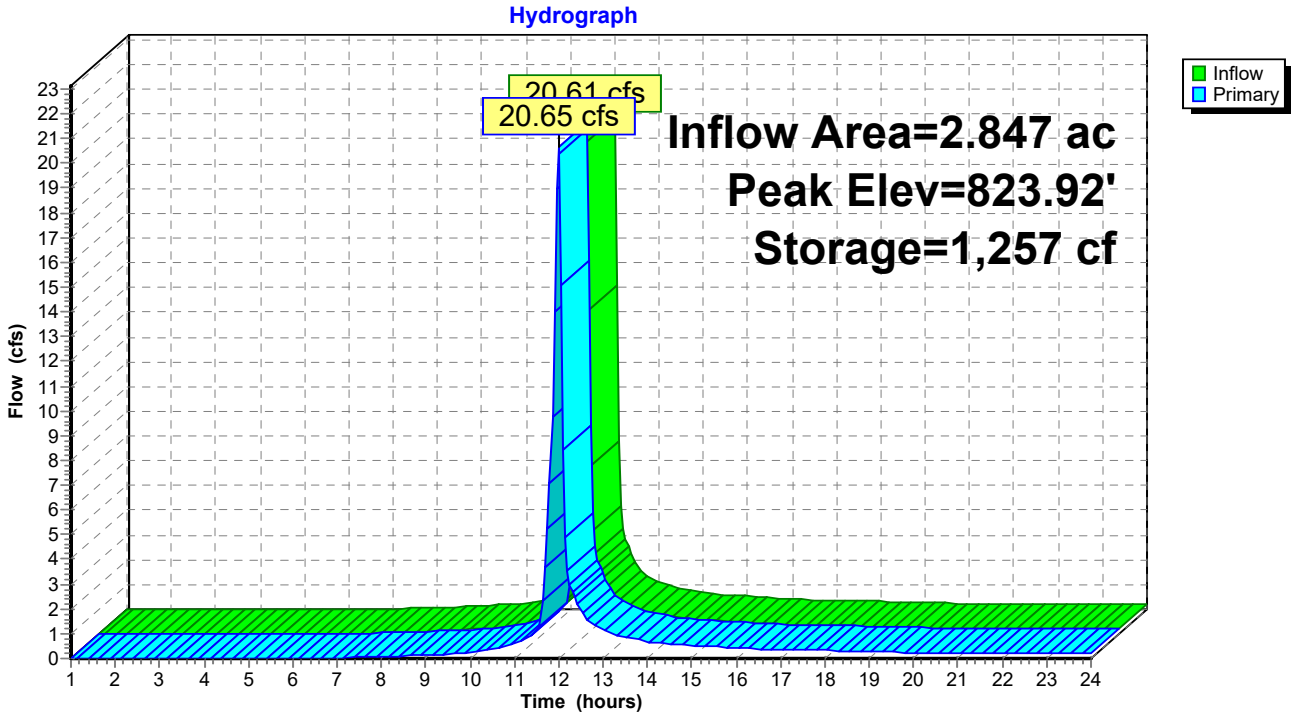
Volume	Invert	Avail.Storage	Storage Description
#1	823.50'	3,444 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
823.50	2,814	277.0	0	0	2,814
824.00	3,238	287.0	1,512	1,512	3,284
824.50	4,526	323.0	1,932	3,444	5,039

Device	Routing	Invert	Outlet Devices
#1	Primary	823.50'	**30.0' long x 6.0' breadth Overflow Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=19.96 cfs @ 11.99 hrs HW=823.91' (Free Discharge)
1=Overflow Weir (Weir Controls 19.96 cfs @ 1.62 fps)

Pond 38P: Pond 3



Stage-Area-Storage for Pond 38P: Pond 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
823.50	2,814	0
823.51	2,822	28
823.52	2,830	56
823.53	2,839	85
823.54	2,847	113
823.55	2,855	142
823.56	2,863	170
823.57	2,872	199
823.58	2,880	228
823.59	2,888	257
823.60	2,896	286
823.61	2,905	315
823.62	2,913	344
823.63	2,921	373
823.64	2,930	402
823.65	2,938	431
823.66	2,946	461
823.67	2,955	490
823.68	2,963	520
823.69	2,972	550
823.70	2,980	579
823.71	2,988	609
823.72	2,997	639
823.73	3,005	669
823.74	3,014	699
823.75	3,022	729
823.76	3,031	760
823.77	3,039	790
823.78	3,048	820
823.79	3,056	851
823.80	3,065	882
823.81	3,073	912
823.82	3,082	943
823.83	3,091	974
823.84	3,099	1,005
823.85	3,108	1,036
823.86	3,116	1,067
823.87	3,125	1,098
823.88	3,134	1,129
823.89	3,142	1,161
823.90	3,151	1,192
823.91	3,159	1,224
823.92	3,168	1,256
823.93	3,177	1,287
823.94	3,186	1,319
823.95	3,194	1,351
823.96	3,203	1,383
823.97	3,212	1,415
823.98	3,220	1,447
823.99	3,229	1,479
824.00	3,238	1,512
824.01	3,262	1,544
824.02	3,285	1,577
824.03	3,309	1,610
824.04	3,333	1,643
824.05	3,357	1,677
824.06	3,381	1,710
824.07	3,405	1,744
824.08	3,430	1,778
824.09	3,454	1,813
824.10	3,478	1,848
824.11	3,503	1,882
824.12	3,527	1,918
824.13	3,552	1,953
824.14	3,577	1,989
824.15	3,602	2,025
824.16	3,627	2,061
824.17	3,652	2,097
824.18	3,677	2,134
824.19	3,702	2,171
824.20	3,727	2,208
824.21	3,753	2,245
824.22	3,778	2,283
824.23	3,804	2,321
824.24	3,829	2,359
824.25	3,855	2,397
824.26	3,881	2,436
824.27	3,907	2,475
824.28	3,933	2,514
824.29	3,959	2,554
824.30	3,985	2,593
824.31	4,011	2,633
824.32	4,038	2,673
824.33	4,064	2,714
824.34	4,090	2,755
824.35	4,117	2,796
824.36	4,144	2,837
824.37	4,170	2,879
824.38	4,197	2,921
824.39	4,224	2,963
824.40	4,251	3,005
824.41	4,278	3,048
824.42	4,305	3,091
824.43	4,333	3,134
824.44	4,360	3,177
824.45	4,388	3,221
824.46	4,415	3,265
824.47	4,443	3,309
824.48	4,470	3,354
824.49	4,498	3,399
824.50	**4,526**	**3,444**

Summary for Pond 39P: Pond 2

Inflow Area = 2.093 ac, 37.74% Impervious, Inflow Depth > 4.88" for 50 yr event
Inflow = 15.55 cfs @ 12.00 hrs, Volume= 0.851 af
Outflow = 3.72 cfs @ 12.21 hrs, Volume= 0.850 af, Atten= 76%, Lag= 12.5 min
Primary = 3.72 cfs @ 12.21 hrs, Volume= 0.850 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 854.74' @ 12.21 hrs Surf.Area= 4,167 sf Storage= 11,313 cf

Plug-Flow detention time= 21.6 min calculated for 0.849 af (100% of inflow)
Center-of-Mass det. time= 21.2 min (821.1 - 799.8)

Volume	Invert	Avail.Storage	Storage Description
#1	849.50'	40,741 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

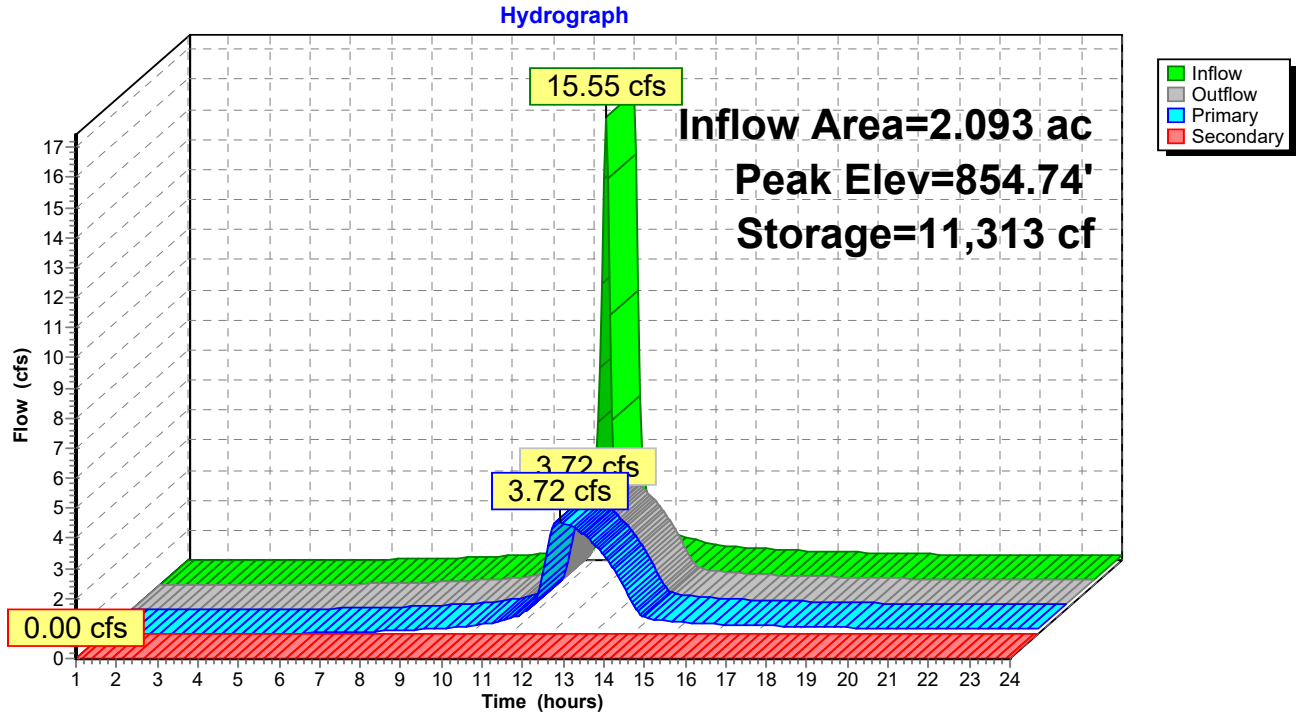
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
849.50	5	20.0	0	0	5
850.00	986	146.0	177	177	1,670
852.00	1,972	183.0	2,902	3,078	2,693
854.00	3,498	252.0	5,398	8,476	5,121
856.00	5,438	321.0	8,865	17,341	8,319
857.00	8,862	631.0	7,081	24,422	31,809
858.00	11,447	647.0	10,127	34,549	33,557
858.50	13,348	665.0	6,193	40,741	35,464

Device	Routing	Invert	Outlet Devices
#1	Primary	849.00'	**24.0" Round Culvert** L= 140.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 849.00' / 844.00' S= 0.0357 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Device 1	849.50'	**8.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	856.00'	**28.0" W x 28.0" H Vert. TOS** C= 0.600
#4	Secondary	857.50'	**30.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=3.72 cfs @ 12.21 hrs HW=854.74' (Free Discharge)
└**1=Culvert** (Passes 3.72 cfs of 32.92 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 3.72 cfs @ 10.66 fps)
  └**3=TOS** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=849.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 39P: Pond 2



Stage-Area-Storage for Pond 39P: Pond 2

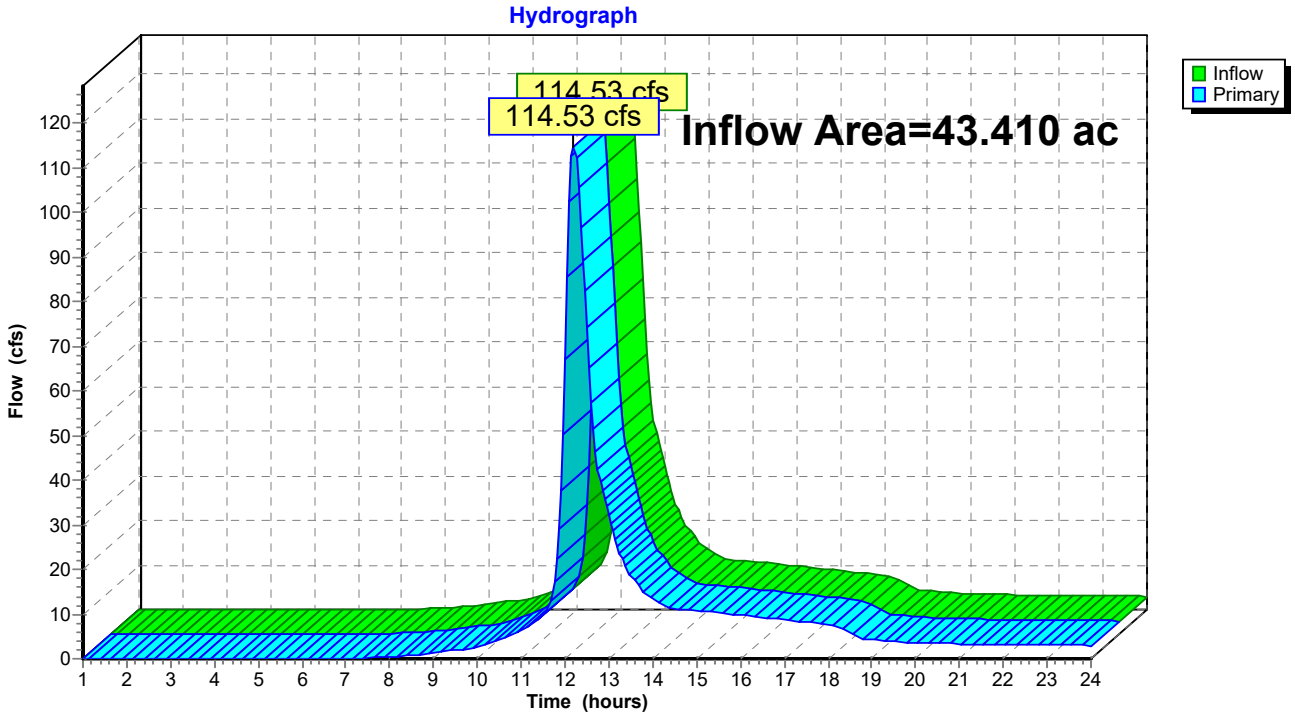
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
849.50	5	0
849.60	65	3
849.70	193	15
849.80	389	44
849.90	654	95
850.00	986	177
850.10	1,027	278
850.20	1,069	382
850.30	1,112	491
850.40	1,156	605
850.50	1,201	723
850.60	1,246	845
850.70	1,293	972
850.80	1,340	1,104
850.90	1,388	1,240
851.00	1,437	1,381
851.10	1,486	1,527
851.20	1,537	1,678
851.30	1,588	1,835
851.40	1,641	1,996
851.50	1,694	2,163
851.60	1,748	2,335
851.70	1,803	2,512
851.80	1,858	2,696
851.90	1,915	2,884
852.00	1,972	3,078
852.10	2,038	3,279
852.20	2,105	3,486
852.30	2,173	3,700
852.40	2,242	3,921
852.50	2,313	4,149
852.60	2,384	4,383
852.70	2,457	4,625
852.80	2,530	4,875
852.90	2,605	5,132
853.00	2,681	5,396
853.10	2,758	5,668
853.20	2,835	5,947
853.30	2,914	6,235
853.40	2,995	6,530
853.50	3,076	6,834
853.60	3,158	7,145
853.70	3,241	7,465
853.80	3,326	7,794
853.90	3,411	8,131
854.00	3,498	8,476
854.10	3,585	8,830
854.20	3,673	9,193
854.30	3,762	9,565
854.40	3,852	9,946
854.50	3,943	10,335
854.60	4,035	10,734
854.70	4,129	11,142
854.80	4,223	11,560
854.90	4,318	11,987
855.00	4,415	12,424
855.10	4,512	12,870
855.20	4,611	13,326
855.30	4,711	13,792
855.40	4,811	14,268
855.50	4,913	14,754
855.60	5,016	15,251
855.70	5,120	15,758
855.80	5,225	16,275
855.90	5,331	16,803
856.00	5,438	17,341
856.10	5,743	17,900
856.20	6,056	18,490
856.30	6,378	19,112
856.40	6,708	19,766
856.50	7,046	20,453
856.60	7,393	21,175
856.70	7,747	21,932
856.80	8,111	22,725
856.90	8,482	23,555
857.00	8,862	24,422
857.10	9,106	25,320
857.20	9,353	26,243
857.30	9,603	27,191
857.40	9,856	28,164
857.50	10,113	29,162
857.60	10,373	30,186
857.70	10,637	31,237
857.80	10,904	32,314
857.90	11,174	33,418
858.00	11,447	34,549
858.10	11,816	35,712
858.20	12,190	36,912
858.30	12,570	38,150
858.40	12,956	39,426
858.50	**13,348**	**40,741**

Summary for Link 30L: Analysis Point 1

Inflow Area = 43.410 ac, 6.92% Impervious, Inflow Depth > 4.04" for 50 yr event
Inflow = 114.53 cfs @ 12.20 hrs, Volume= 14.608 af
Primary = 114.53 cfs @ 12.20 hrs, Volume= 14.608 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Link 30L: Analysis Point 1



Time span=1.00-24.00 hrs, dt=0.05 hrs, 461 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 26S: C-WS1 Runoff Area=29.512 ac 5.01% Impervious Runoff Depth>4.61"
Flow Length=1,285' Tc=12.6 min CN=75 Runoff=188.38 cfs 11.330 af

Subcatchment 27S: C-WS2 Runoff Area=2.093 ac 37.74% Impervious Runoff Depth>5.52"
Flow Length=360' Tc=9.0 min CN=83 Runoff=17.49 cfs 0.963 af

Subcatchment 28S: C-WS3 Runoff Area=2.847 ac 25.75% Impervious Runoff Depth>4.95"
Flow Length=306' Tc=6.3 min UI Adjusted CN=78 Runoff=23.41 cfs 1.175 af

Subcatchment 29S: BYPASS 1 Runoff Area=8.958 ac 0.00% Impervious Runoff Depth>4.49"
Tc=15.0 min CN=74 Runoff=51.68 cfs 3.354 af

Reach 31R: Swale + Stream Avg. Flow Depth=1.00' Max Vel=4.65 fps Inflow=116.79 cfs 11.330 af
n=0.030 L=708.0' S=0.0198 '/' Capacity=631.76 cfs Outflow=110.72 cfs 11.300 af

Reach 32R: Swale + Stream Avg. Flow Depth=0.15' Max Vel=3.65 fps Inflow=3.89 cfs 0.962 af
n=0.025 L=400.0' S=0.0750 '/' Capacity=1,476.44 cfs Outflow=3.88 cfs 0.961 af

Reach 33R: Stream Avg. Flow Depth=0.54' Max Vel=2.77 fps Inflow=23.47 cfs 1.174 af
n=0.030 L=405.0' S=0.0148 '/' Capacity=546.83 cfs Outflow=21.61 cfs 1.170 af

Pond 16P: Pond 1 Peak Elev=834.84' Storage=130,259 cf Inflow=188.38 cfs 11.330 af
Primary=84.88 cfs 10.943 af Secondary=31.91 cfs 0.386 af Outflow=116.79 cfs 11.330 af

Pond 38P: Pond 3 Peak Elev=823.95' Storage=1,364 cf Inflow=23.41 cfs 1.175 af
Outflow=23.47 cfs 1.174 af

Pond 39P: Pond 2 Peak Elev=855.18' Storage=13,219 cf Inflow=17.49 cfs 0.963 af
Primary=3.89 cfs 0.962 af Secondary=0.00 cfs 0.000 af Outflow=3.89 cfs 0.962 af

Link 30L: Analysis Point 1 Inflow=147.99 cfs 16.785 af
Primary=147.99 cfs 16.785 af

Total Runoff Area = 43.410 ac Runoff Volume = 16.822 af Average Runoff Depth = 4.65"
93.08% Pervious = 40.408 ac 6.92% Impervious = 3.002 ac

Summary for Subcatchment 26S: C-WS1

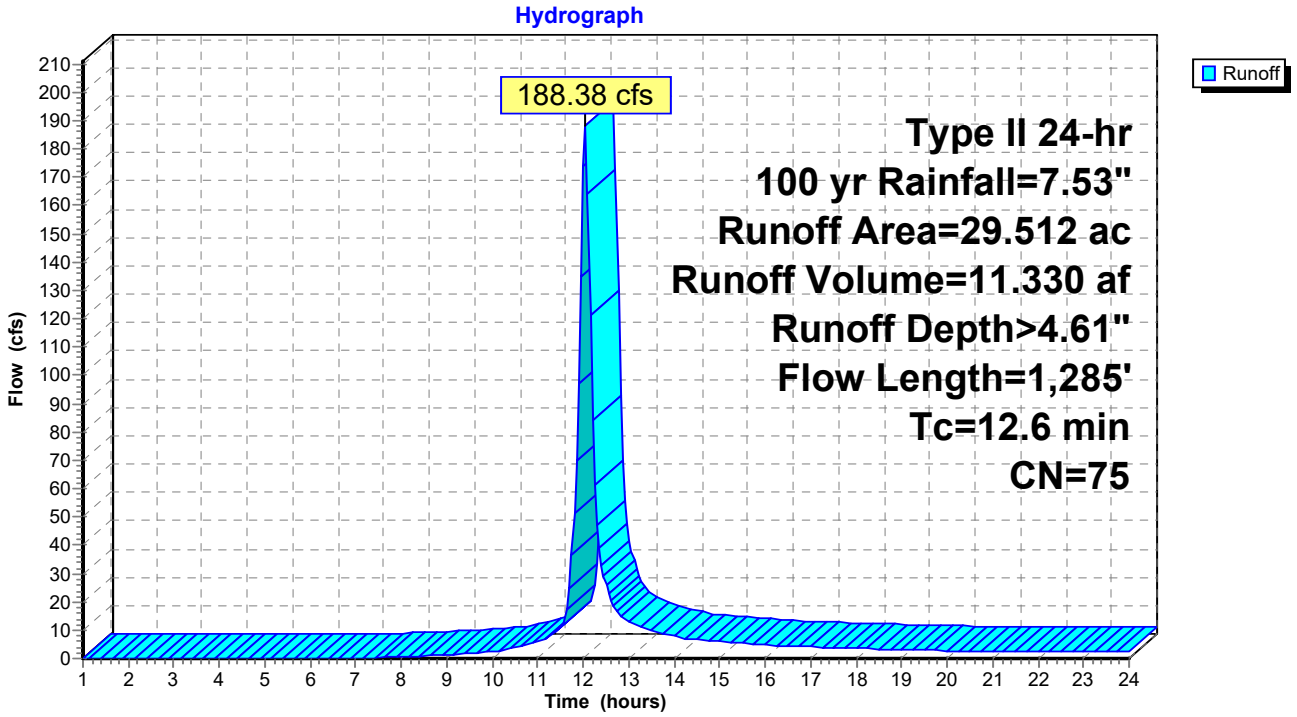
Runoff = 188.38 cfs @ 12.04 hrs, Volume= 11.330 af, Depth> 4.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 yr Rainfall=7.53"

Area (ac)	CN	Description
1.168	98	Unconnected roofs, HSG C
0.311	98	Paved roads w/curbs & sewers, HSG C
14.607	74	>75% Grass cover, Good, HSG C
1.327	74	>75% Grass cover, Good, HSG C
10.488	74	>75% Grass cover, Good, HSG C
1.611	74	>75% Grass cover, Good, HSG C
29.512	75	Weighted Average
28.033		94.99% Pervious Area
1.479		5.01% Impervious Area
1.168		78.97% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0250	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
3.9	845	0.0592	3.65		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.6	340	0.0353	9.65	470.11	**Channel Flow,** Area= 48.7 sf Perim= 60.6' r= 0.80' n= 0.025
12.6	1,285	Total			

Subcatchment 26S: C-WS1



Summary for Subcatchment 27S: C-WS2

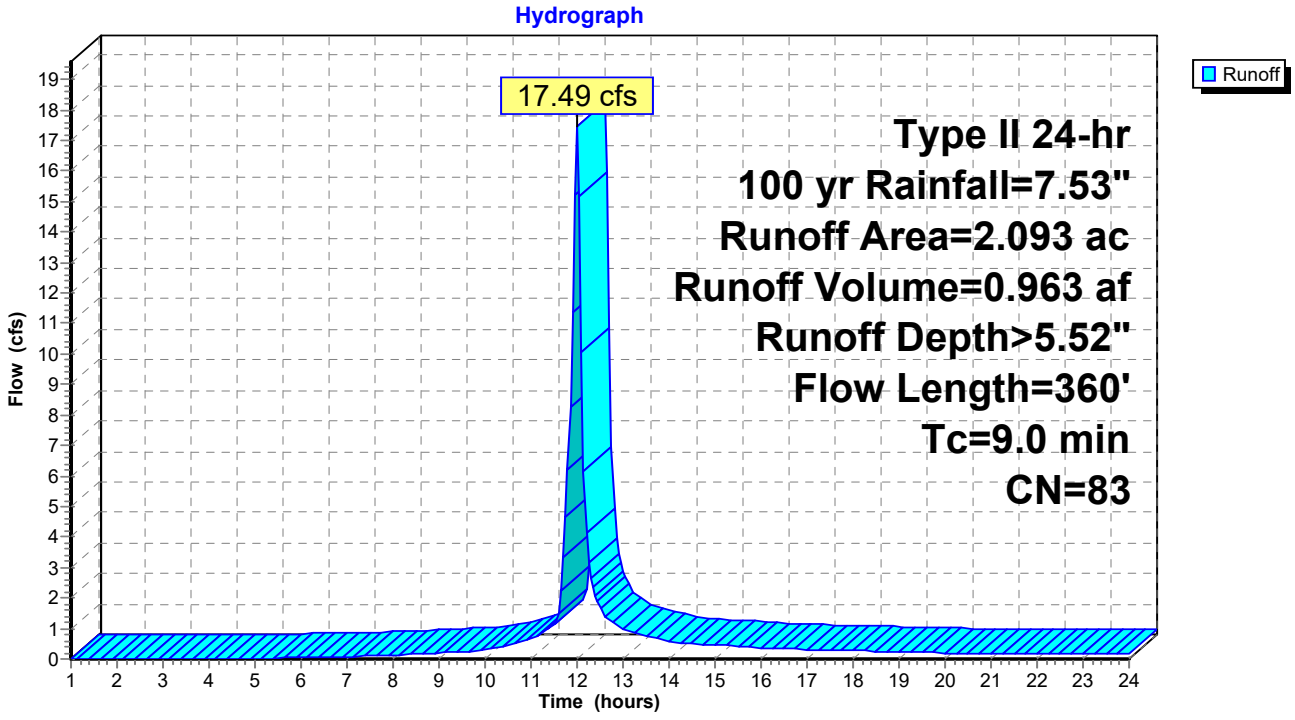
Runoff = 17.49 cfs @ 12.00 hrs, Volume= 0.963 af, Depth> 5.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 yr Rainfall=7.53"

Area (ac)	CN	Description
0.110	98	Unconnected roofs, HSG A
0.418	98	Unconnected roofs, HSG C
0.262	98	Paved roads w/curbs & sewers, HSG C
0.383	74	>75% Grass cover, Good, HSG C
0.920	74	>75% Grass cover, Good, HSG C
2.093	83	Weighted Average
1.303		62.26% Pervious Area
0.790		37.74% Impervious Area
0.528		66.84% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0260	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
1.0	260	0.0885	4.46		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.0	360	Total			

Subcatchment 27S: C-WS2



Summary for Subcatchment 28S: C-WS3

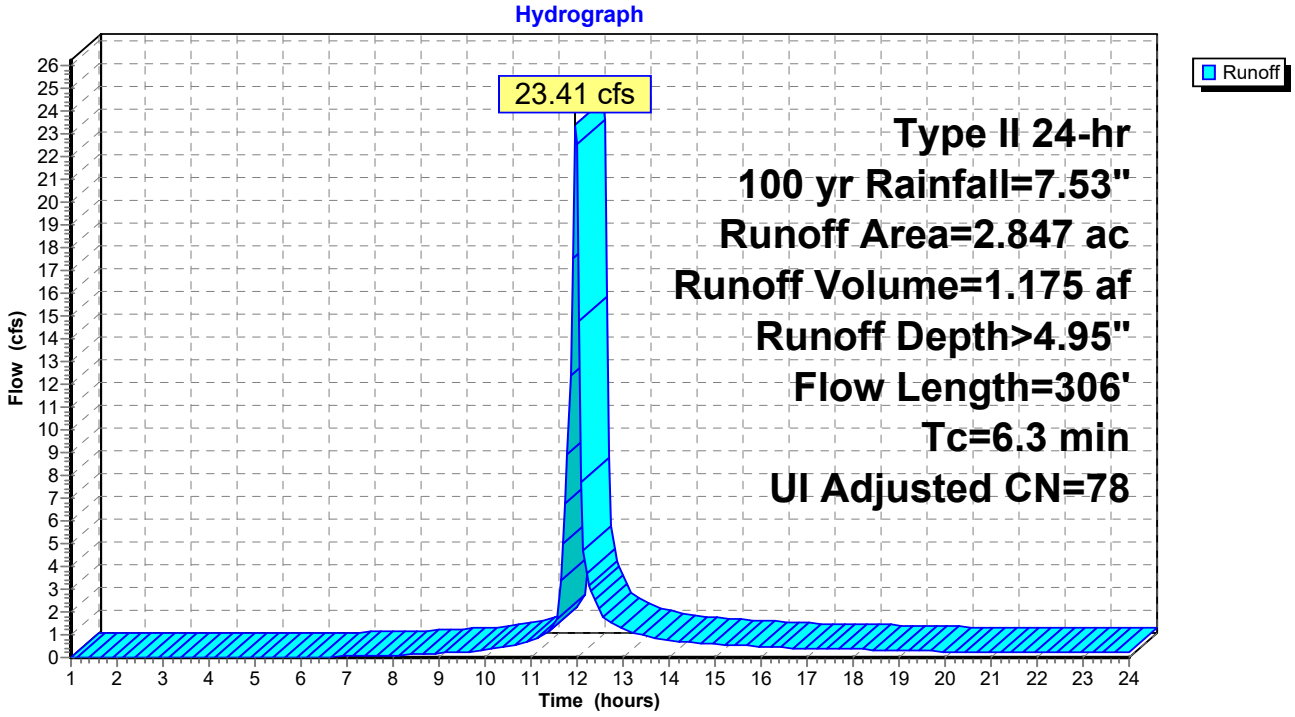
Runoff = 23.41 cfs @ 11.97 hrs, Volume= 1.175 af, Depth> 4.95"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 yr Rainfall=7.53"

Area (ac)	CN	Adj	Description
0.220	98		Unconnected roofs, HSG B
0.220	98		Unconnected roofs, HSG C
0.293	98		Paved roads w/curbs & sewers, HSG C
0.658	74		>75% Grass cover, Good, HSG C
1.246	74		>75% Grass cover, Good, HSG C
0.210	74		>75% Grass cover, Good, HSG C
2.847	80	78	Weighted Average, UI Adjusted
2.114			74.25% Pervious Area
0.733			25.75% Impervious Area
0.440			60.03% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	100	0.0700	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
0.9	206	0.0680	3.91		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
6.3	306	Total			

Subcatchment 28S: C-WS3



Summary for Subcatchment 29S: BYPASS 1

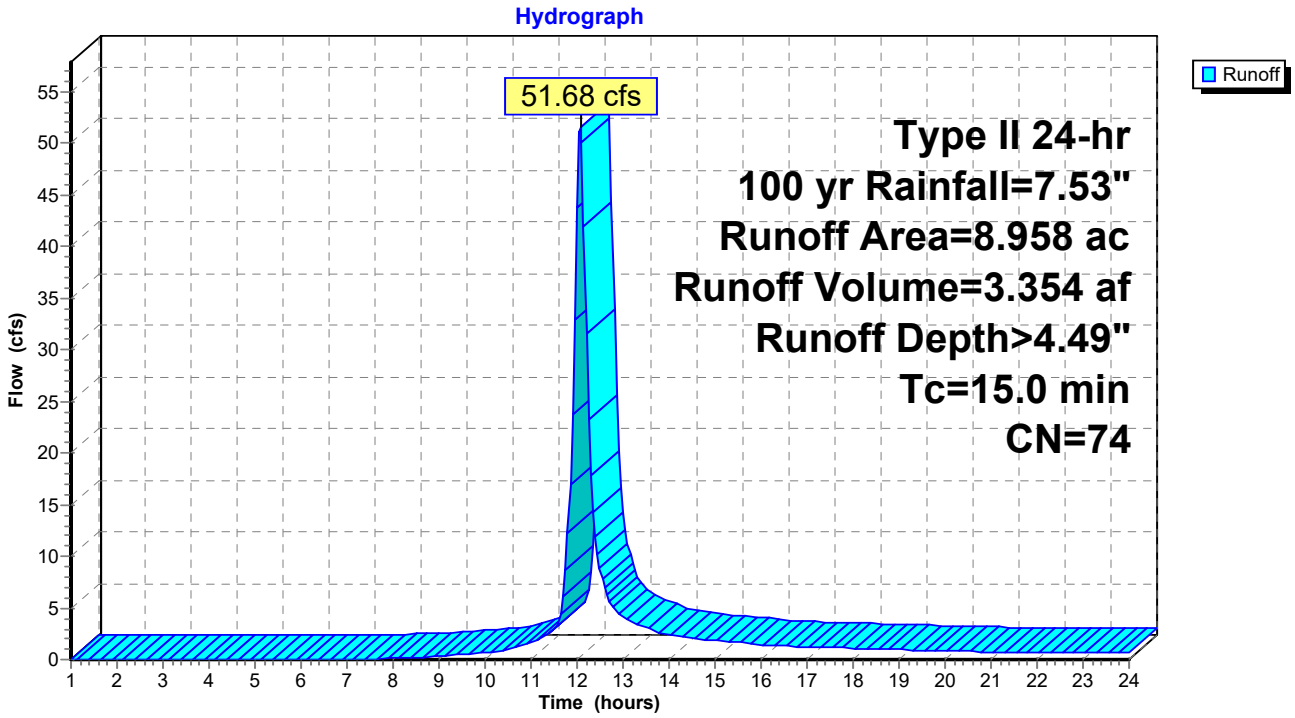
Runoff = 51.68 cfs @ 12.07 hrs, Volume= 3.354 af, Depth> 4.49"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100 yr Rainfall=7.53"

Area (ac)	CN	Description
1.359	74	>75% Grass cover, Good, HSG C
6.273	74	>75% Grass cover, Good, HSG C
1.326	74	>75% Grass cover, Good, HSG C
8.958	74	Weighted Average
8.958		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry,**

Subcatchment 29S: BYPASS 1



Summary for Reach 31R: Swale + Stream

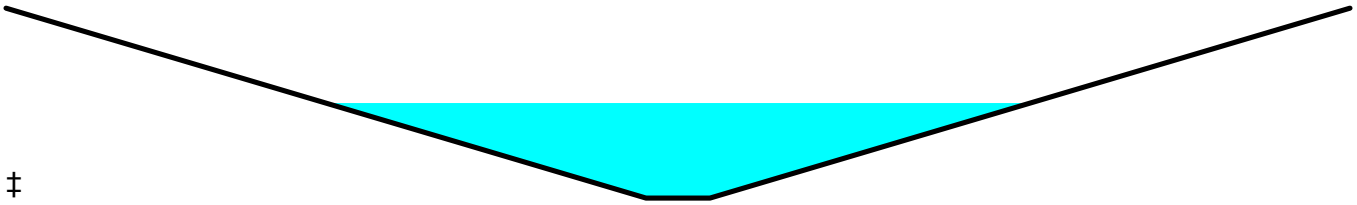
[81] Warning: Exceeded Pond 16P by 1.40' @ 1.00 hrs

Inflow Area = 29.512 ac, 5.01% Impervious, Inflow Depth > 4.61" for 100 yr event
Inflow = 116.79 cfs @ 12.16 hrs, Volume= 11.330 af
Outflow = 110.72 cfs @ 12.25 hrs, Volume= 11.300 af, Atten= 5%, Lag= 5.0 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.65 fps, Min. Travel Time= 2.5 min
Avg. Velocity = 2.01 fps, Avg. Travel Time= 5.9 min

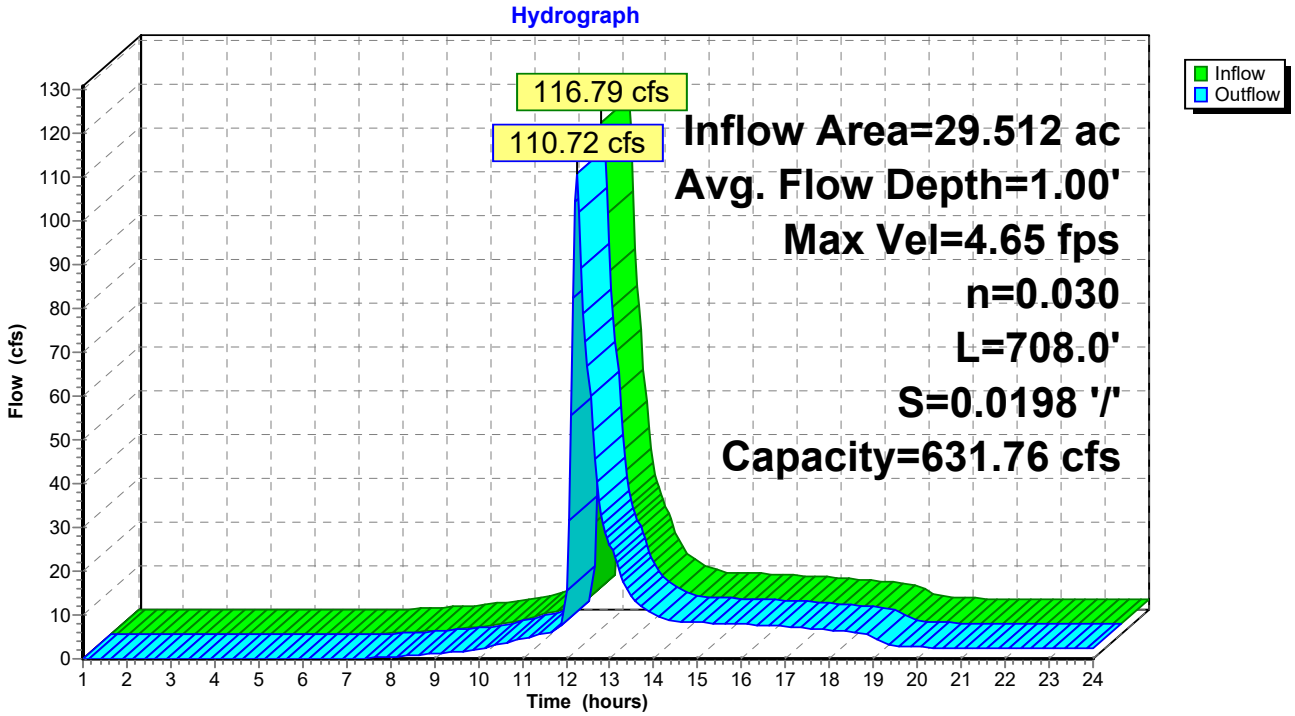
Peak Storage= 17,035 cf @ 12.20 hrs
Average Depth at Peak Storage= 1.00'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 631.76 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 708.0' Slope= 0.0198 '/'
Inlet Invert= 828.00', Outlet Invert= 814.00'



‡

Reach 31R: Swale + Stream



Stage-Area-Storage for Reach 31R: Swale + Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
828.00	0.0	0
828.02	0.1	62
828.04	0.2	136
828.06	0.3	221
828.08	0.4	317
828.10	0.6	425
828.12	0.8	544
828.14	1.0	674
828.16	1.2	816
828.18	1.4	969
828.20	1.6	1,133
828.22	1.8	1,308
828.24	2.1	1,495
828.26	2.4	1,694
828.28	2.7	1,903
828.30	3.0	2,124
828.32	3.3	2,356
828.34	3.7	2,600
828.36	4.0	2,855
828.38	4.4	3,121
828.40	4.8	3,398
828.42	5.2	3,687
828.44	5.6	3,987
828.46	6.1	4,299
828.48	6.5	4,622
828.50	7.0	4,956
828.52	7.5	5,302
828.54	8.0	5,658
828.56	8.5	6,026
828.58	9.0	6,406
828.60	9.6	6,797
828.62	10.2	7,199
828.64	10.8	7,612
828.66	11.4	8,037
828.68	12.0	8,473
828.70	12.6	8,921
828.72	13.2	9,380
828.74	13.9	9,850
828.76	14.6	10,331
828.78	15.3	10,824
828.80	16.0	11,328
828.82	16.7	11,843
828.84	17.5	12,370
828.86	18.2	12,908
828.88	19.0	13,458
828.90	19.8	14,018
828.92	20.6	14,590
828.94	21.4	15,174
828.96	22.3	15,769
828.98	23.1	16,375
829.00	24.0	16,992
829.02	24.9	17,621
829.04	25.8	18,261
829.06	26.7	18,912
829.08	27.6	19,575
829.10	28.6	20,249
829.12	29.6	20,934
829.14	30.6	21,631
829.16	31.6	22,339
829.18	32.6	23,058
829.20	33.6	23,789
829.22	34.6	24,531
829.24	35.7	25,284
829.26	36.8	26,049
829.28	37.9	26,825
829.30	39.0	27,612
829.32	40.1	28,411
829.34	41.3	29,221
829.36	42.4	30,042
829.38	43.6	30,874
829.40	44.8	31,718
829.42	46.0	32,574
829.44	47.2	33,440
829.46	48.5	34,318
829.48	49.7	35,207
829.50	51.0	36,108
829.52	52.3	37,020
829.54	53.6	37,943
829.56	54.9	38,878
829.58	56.2	39,824
829.60	57.6	40,781
829.62	59.0	41,749
829.64	60.4	42,729
829.66	61.8	43,720
829.68	63.2	44,723
829.70	64.6	45,737
829.72	66.0	46,762
829.74	67.5	47,798
829.76	69.0	48,846
829.78	70.5	49,906
829.80	72.0	50,976
829.82	73.5	52,058
829.84	75.1	53,151
829.86	76.6	54,255
829.88	78.2	55,371
829.90	79.8	56,498
829.92	81.4	57,637
829.94	83.0	58,787
829.96	84.7	59,948
829.98	86.3	61,120
830.00	**88.0**	**62,304**

Summary for Reach 32R: Swale + Stream

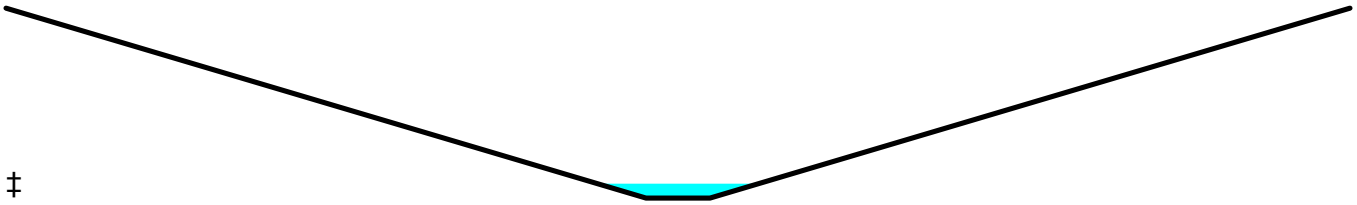
[79] Warning: Submerged Pond 39P Primary device # 1 OUTLET by 0.15'

Inflow Area = 2.093 ac, 37.74% Impervious, Inflow Depth > 5.52" for 100 yr event
Inflow = 3.89 cfs @ 12.22 hrs, Volume= 0.962 af
Outflow = 3.88 cfs @ 12.27 hrs, Volume= 0.961 af, Atten= 0%, Lag= 3.4 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.65 fps, Min. Travel Time= 1.8 min
Avg. Velocity = 1.78 fps, Avg. Travel Time= 3.7 min

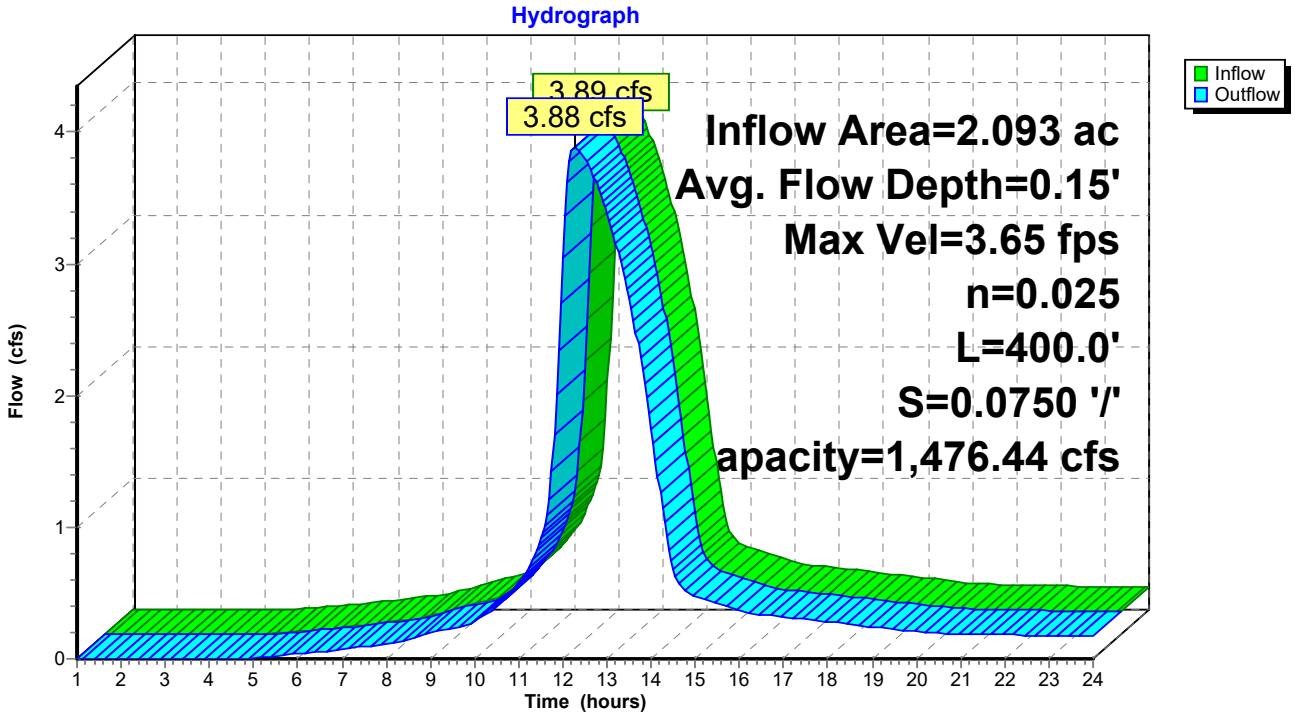
Peak Storage= 426 cf @ 12.24 hrs
Average Depth at Peak Storage= 0.15'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 1,476.44 cfs

4.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 400.0' Slope= 0.0750 '/'
Inlet Invert= 844.00', Outlet Invert= 814.00'



‡

Reach 32R: Swale + Stream



Stage-Area-Storage for Reach 32R: Swale + Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
844.00	0.0	0
844.02	0.1	35
844.04	0.2	77
844.06	0.3	125
844.08	0.4	179
844.10	0.6	240
844.12	0.8	307
844.14	1.0	381
844.16	1.2	461
844.18	1.4	547
844.20	1.6	640
844.22	1.8	739
844.24	2.1	845
844.26	2.4	957
844.28	2.7	1,075
844.30	3.0	1,200
844.32	3.3	1,331
844.34	3.7	1,469
844.36	4.0	1,613
844.38	4.4	1,763
844.40	4.8	1,920
844.42	5.2	2,083
844.44	5.6	2,253
844.46	6.1	2,429
844.48	6.5	2,611
844.50	7.0	2,800
844.52	7.5	2,995
844.54	8.0	3,197
844.56	8.5	3,405
844.58	9.0	3,619
844.60	9.6	3,840
844.62	10.2	4,067
844.64	10.8	4,301
844.66	11.4	4,541
844.68	12.0	4,787
844.70	12.6	5,040
844.72	13.2	5,299
844.74	13.9	5,565
844.76	14.6	5,837
844.78	15.3	6,115
844.80	16.0	6,400
844.82	16.7	6,691
844.84	17.5	6,989
844.86	18.2	7,293
844.88	19.0	7,603
844.90	19.8	7,920
844.92	20.6	8,243
844.94	21.4	8,573
844.96	22.3	8,909
844.98	23.1	9,251
845.00	24.0	9,600
845.02	24.9	9,955
845.04	25.8	10,317
845.06	26.7	10,685
845.08	27.6	11,059
845.10	28.6	11,440
845.12	29.6	11,827
845.14	30.6	12,221
845.16	31.6	12,621
845.18	32.6	13,027
845.20	33.6	13,440
845.22	34.6	13,859
845.24	35.7	14,285
845.26	36.8	14,717
845.28	37.9	15,155
845.30	39.0	15,600
845.32	40.1	16,051
845.34	41.3	16,509
845.36	42.4	16,973
845.38	43.6	17,443
845.40	44.8	17,920
845.42	46.0	18,403
845.44	47.2	18,893
845.46	48.5	19,389
845.48	49.7	19,891
845.50	51.0	20,400
845.52	52.3	20,915
845.54	53.6	21,437
845.56	54.9	21,965
845.58	56.2	22,499
845.60	57.6	23,040
845.62	59.0	23,587
845.64	60.4	24,141
845.66	61.8	24,701
845.68	63.2	25,267
845.70	64.6	25,840
845.72	66.0	26,419
845.74	67.5	27,005
845.76	69.0	27,597
845.78	70.5	28,195
845.80	72.0	28,800
845.82	73.5	29,411
845.84	75.1	30,029
845.86	76.6	30,653
845.88	78.2	31,283
845.90	79.8	31,920
845.92	81.4	32,563
845.94	83.0	33,213
845.96	84.7	33,869
845.98	86.3	34,531
846.00	**88.0**	**35,200**

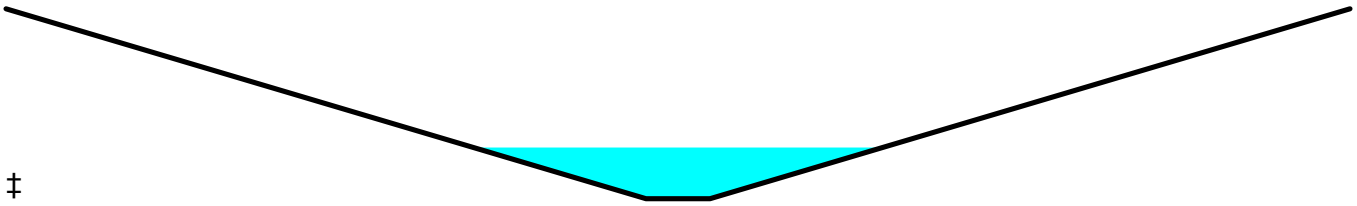
Summary for Reach 33R: Stream

Inflow Area = 2.847 ac, 25.75% Impervious, Inflow Depth > 4.95" for 100 yr event
Inflow = 23.47 cfs @ 11.98 hrs, Volume= 1.174 af
Outflow = 21.61 cfs @ 12.05 hrs, Volume= 1.170 af, Atten= 8%, Lag= 4.0 min

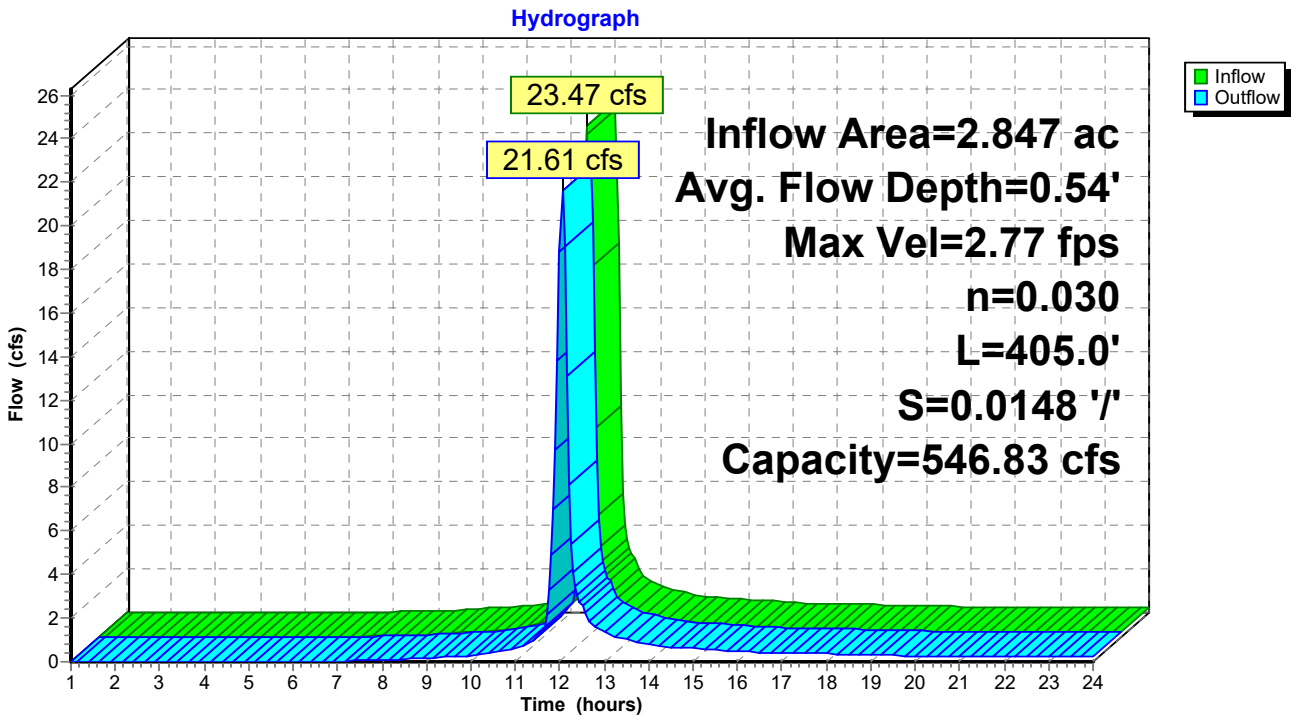
Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.77 fps, Min. Travel Time= 2.4 min
Avg. Velocity = 0.92 fps, Avg. Travel Time= 7.3 min

Peak Storage= 3,224 cf @ 12.01 hrs
Average Depth at Peak Storage= 0.54'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 546.83 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 405.0' Slope= 0.0148 '/'
Inlet Invert= 820.00', Outlet Invert= 814.00'



‡



Stage-Area-Storage for Reach 33R: Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
820.00	0.0	0
820.02	0.1	36
820.04	0.2	78
820.06	0.3	126
820.08	0.4	181
820.10	0.6	243
820.12	0.8	311
820.14	1.0	386
820.16	1.2	467
820.18	1.4	554
820.20	1.6	648
820.22	1.8	748
820.24	2.1	855
820.26	2.4	969
820.28	2.7	1,089
820.30	3.0	1,215
820.32	3.3	1,348
820.34	3.7	1,487
820.36	4.0	1,633
820.38	4.4	1,785
820.40	4.8	1,944
820.42	5.2	2,109
820.44	5.6	2,281
820.46	6.1	2,459
820.48	6.5	2,644
820.50	7.0	2,835
820.52	7.5	3,033
820.54	8.0	3,237
820.56	8.5	3,447
820.58	9.0	3,664
820.60	9.6	3,888
820.62	10.2	4,118
820.64	10.8	4,355
820.66	11.4	4,598
820.68	12.0	4,847
820.70	12.6	5,103
820.72	13.2	5,365
820.74	13.9	5,634
820.76	14.6	5,910
820.78	15.3	6,192
820.80	16.0	6,480
820.82	16.7	6,775
820.84	17.5	7,076
820.86	18.2	7,384
820.88	19.0	7,698
820.90	19.8	8,019
820.92	20.6	8,346
820.94	21.4	8,680
820.96	22.3	9,020
820.98	23.1	9,367
821.00	24.0	9,720
821.02	24.9	10,080
821.04	25.8	10,446
821.06	26.7	10,818
821.08	27.6	11,197
821.10	28.6	11,583
821.12	29.6	11,975
821.14	30.6	12,374
821.16	31.6	12,779
821.18	32.6	13,190
821.20	33.6	13,608
821.22	34.6	14,032
821.24	35.7	14,463
821.26	36.8	14,901
821.28	37.9	15,345
821.30	39.0	15,795
821.32	40.1	16,252
821.34	41.3	16,715
821.36	42.4	17,185
821.38	43.6	17,661
821.40	44.8	18,144
821.42	46.0	18,633
821.44	47.2	19,129
821.46	48.5	19,631
821.48	49.7	20,140
821.50	51.0	20,655
821.52	52.3	21,177
821.54	53.6	21,705
821.56	54.9	22,239
821.58	56.2	22,780
821.60	57.6	23,328
821.62	59.0	23,882
821.64	60.4	24,443
821.66	61.8	25,010
821.68	63.2	25,583
821.70	64.6	26,163
821.72	66.0	26,749
821.74	67.5	27,342
821.76	69.0	27,942
821.78	70.5	28,548
821.80	72.0	29,160
821.82	73.5	29,779
821.84	75.1	30,404
821.86	76.6	31,036
821.88	78.2	31,674
821.90	79.8	32,319
821.92	81.4	32,970
821.94	83.0	33,628
821.96	84.7	34,292
821.98	86.3	34,963
822.00	**88.0**	**35,640**

Summary for Pond 16P: Pond 1

Inflow Area = 29.512 ac, 5.01% Impervious, Inflow Depth > 4.61" for 100 yr event
Inflow = 188.38 cfs @ 12.04 hrs, Volume= 11.330 af
Outflow = 116.79 cfs @ 12.16 hrs, Volume= 11.330 af, Atten= 38%, Lag= 7.2 min
Primary = 84.88 cfs @ 12.16 hrs, Volume= 10.943 af
Secondary = 31.91 cfs @ 12.16 hrs, Volume= 0.386 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 834.84' @ 12.16 hrs Surf.Area= 37,478 sf Storage= 130,259 cf

Plug-Flow detention time= 35.0 min calculated for 11.305 af (100% of inflow)
Center-of-Mass det. time= 34.8 min (852.8 - 818.0)

Volume	Invert	Avail.Storage	Storage Description
#1	826.60'	179,320 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

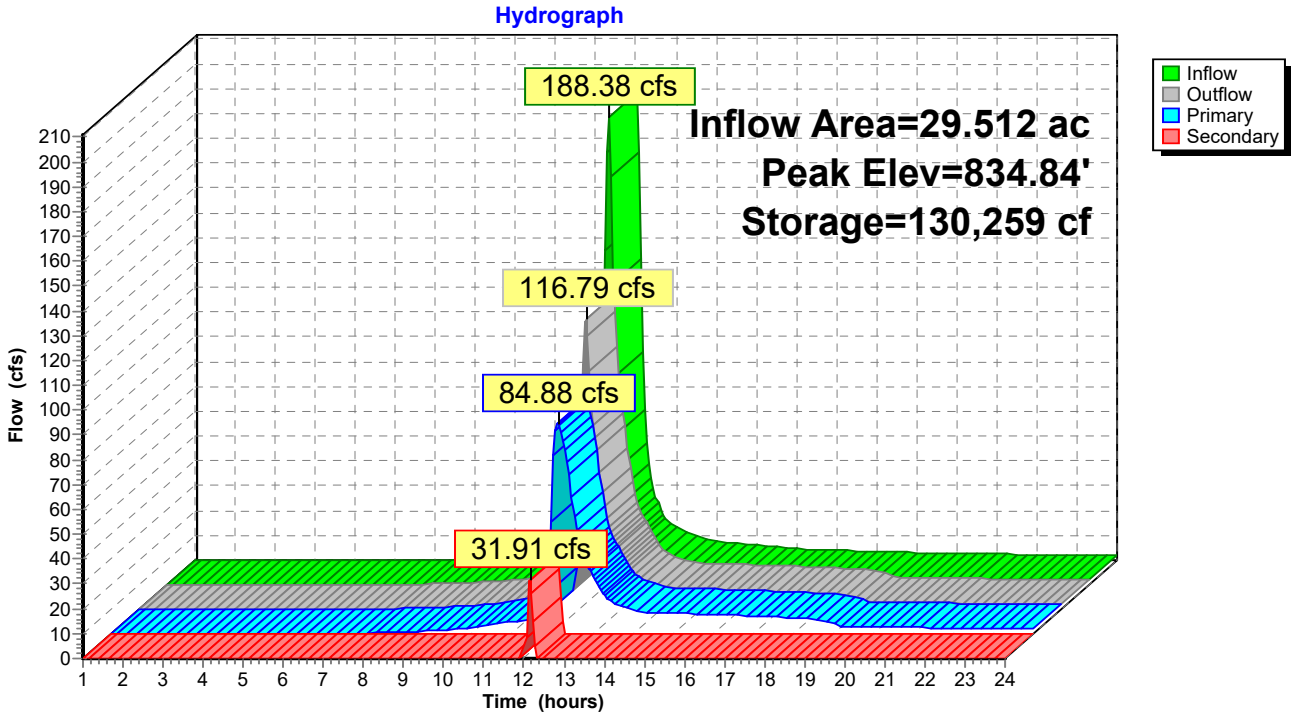
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
826.60	5	20.0	0	0	5
828.00	169	47.0	95	95	156
830.00	11,373	539.8	8,619	8,714	23,176
832.00	25,791	810.0	36,194	44,907	52,230
834.00	30,848	854.2	56,564	101,471	58,316
836.00	47,604	1,729.9	77,849	179,320	238,410

Device	Routing	Invert	Outlet Devices
#1	Primary	826.60'	**36.0" Round Culvert** L= 61.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 826.60' / 826.00' S= 0.0098 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	826.60'	**12.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	832.00'	**30.0" W x 6.0" H Vert. Orifice/Grate X 4.00** C= 0.600
#4	Device 1	833.00'	**28.0" x 28.0" Horiz. TOS** C= 0.600 Limited to weir flow at low heads
#5	Secondary	834.30'	**30.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=84.48 cfs @ 12.16 hrs HW=834.82' (Free Discharge)
└**1=Culvert** (Passes 84.48 cfs of 88.24 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 10.51 cfs @ 13.38 fps)
  ├**3=Orifice/Grate** (Orifice Controls 38.59 cfs @ 7.72 fps)
  └**4=TOS** (Orifice Controls 35.38 cfs @ 6.50 fps)

Secondary OutFlow Max=29.91 cfs @ 12.16 hrs HW=834.82' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Weir Controls 29.91 cfs @ 1.91 fps)

Pond 16P: Pond 1



Stage-Area-Storage for Pond 16P: Pond 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
826.60	5	0
826.70	9	1
826.80	14	2
826.90	21	4
827.00	28	6
827.10	37	9
827.20	47	13
827.30	58	19
827.40	70	25
827.50	84	33
827.60	98	42
827.70	114	53
827.80	131	65
827.90	150	79
828.00	169	95
828.10	313	118
828.20	500	159
828.30	732	220
828.40	1,007	307
828.50	1,326	423
828.60	1,689	573
828.70	2,095	762
828.80	2,546	994
828.90	3,040	1,273
829.00	3,579	1,603
829.10	4,161	1,990
829.20	4,787	2,437
829.30	5,457	2,949
829.40	6,170	3,530
829.50	6,928	4,184
829.60	7,729	4,917
829.70	8,574	5,731
829.80	9,463	6,633
829.90	10,396	7,626
830.00	11,373	8,714
830.10	11,956	9,880
830.20	12,553	11,105
830.30	13,165	12,391
830.40	13,791	13,739
830.50	14,432	15,150
830.60	15,087	16,626
830.70	15,757	18,168
830.80	16,442	19,777
830.90	17,141	21,456
831.00	17,854	23,206
831.10	18,582	25,028
831.20	19,325	26,923
831.30	20,083	28,893
831.40	20,854	30,940
831.50	21,641	33,065
831.60	22,442	35,269
831.70	23,257	37,553
831.80	24,087	39,921
831.90	24,932	42,371
832.00	25,791	44,907
832.10	26,033	47,499
832.20	26,276	50,114
832.30	26,521	52,754
832.40	26,766	55,418
832.50	27,013	58,107
832.60	27,261	60,821
832.70	27,509	63,559
832.80	27,760	66,323
832.90	28,011	69,111
833.00	28,263	71,925
833.10	28,516	74,764
833.20	28,771	77,628
833.30	29,027	80,518
833.40	29,283	83,434
833.50	29,541	86,375
833.60	29,800	89,342
833.70	30,061	92,335
833.80	30,322	95,354
833.90	30,584	98,399
834.00	30,848	101,471
834.10	31,600	104,593
834.20	32,361	107,791
834.30	33,131	111,066
834.40	33,910	114,418
834.50	34,698	117,848
834.60	35,495	121,358
834.70	36,301	124,947
834.80	37,116	128,618
834.90	37,940	132,371
835.00	38,773	136,206
835.10	39,616	140,126
835.20	40,467	144,130
835.30	41,328	148,219
835.40	42,197	152,396
835.50	43,076	156,659
835.60	43,963	161,011
835.70	44,860	165,452
835.80	45,765	169,983
835.90	46,680	174,605
836.00	**47,604**	**179,320**

Summary for Pond 38P: Pond 3

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 2.847 ac, 25.75% Impervious, Inflow Depth > 4.95" for 100 yr event
Inflow = 23.41 cfs @ 11.97 hrs, Volume= 1.175 af
Outflow = 23.47 cfs @ 11.98 hrs, Volume= 1.174 af, Atten= 0%, Lag= 0.7 min
Primary = 23.47 cfs @ 11.98 hrs, Volume= 1.174 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 823.95' @ 11.98 hrs Surf.Area= 3,198 sf Storage= 1,364 cf

Plug-Flow detention time= 2.3 min calculated for 1.174 af (100% of inflow)
Center-of-Mass det. time= 1.6 min (808.0 - 806.4)

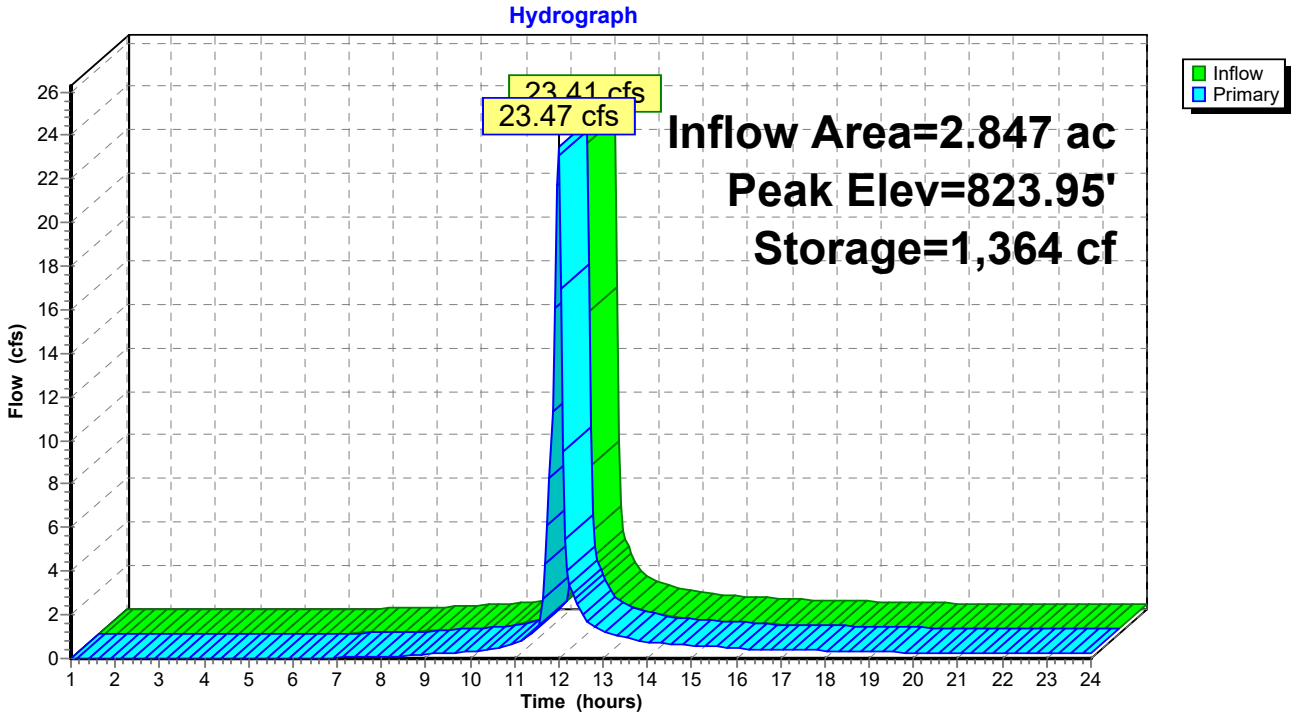
Volume	Invert	Avail.Storage	Storage Description
#1	823.50'	3,444 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
823.50	2,814	277.0	0	0	2,814
824.00	3,238	287.0	1,512	1,512	3,284
824.50	4,526	323.0	1,932	3,444	5,039

Device	Routing	Invert	Outlet Devices
#1	Primary	823.50'	**30.0' long x 6.0' breadth Overflow Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=22.65 cfs @ 11.98 hrs HW=823.94' (Free Discharge)
1=Overflow Weir (Weir Controls 22.65 cfs @ 1.70 fps)

Pond 38P: Pond 3



Stage-Area-Storage for Pond 38P: Pond 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
823.50	2,814	0
823.51	2,822	28
823.52	2,830	56
823.53	2,839	85
823.54	2,847	113
823.55	2,855	142
823.56	2,863	170
823.57	2,872	199
823.58	2,880	228
823.59	2,888	257
823.60	2,896	286
823.61	2,905	315
823.62	2,913	344
823.63	2,921	373
823.64	2,930	402
823.65	2,938	431
823.66	2,946	461
823.67	2,955	490
823.68	2,963	520
823.69	2,972	550
823.70	2,980	579
823.71	2,988	609
823.72	2,997	639
823.73	3,005	669
823.74	3,014	699
823.75	3,022	729
823.76	3,031	760
823.77	3,039	790
823.78	3,048	820
823.79	3,056	851
823.80	3,065	882
823.81	3,073	912
823.82	3,082	943
823.83	3,091	974
823.84	3,099	1,005
823.85	3,108	1,036
823.86	3,116	1,067
823.87	3,125	1,098
823.88	3,134	1,129
823.89	3,142	1,161
823.90	3,151	1,192
823.91	3,159	1,224
823.92	3,168	1,256
823.93	3,177	1,287
823.94	3,186	1,319
823.95	3,194	1,351
823.96	3,203	1,383
823.97	3,212	1,415
823.98	3,220	1,447
823.99	3,229	1,479
824.00	3,238	1,512
824.01	3,262	1,544
824.02	3,285	1,577
824.03	3,309	1,610
824.04	3,333	1,643
824.05	3,357	1,677
824.06	3,381	1,710
824.07	3,405	1,744
824.08	3,430	1,778
824.09	3,454	1,813
824.10	3,478	1,848
824.11	3,503	1,882
824.12	3,527	1,918
824.13	3,552	1,953
824.14	3,577	1,989
824.15	3,602	2,025
824.16	3,627	2,061
824.17	3,652	2,097
824.18	3,677	2,134
824.19	3,702	2,171
824.20	3,727	2,208
824.21	3,753	2,245
824.22	3,778	2,283
824.23	3,804	2,321
824.24	3,829	2,359
824.25	3,855	2,397
824.26	3,881	2,436
824.27	3,907	2,475
824.28	3,933	2,514
824.29	3,959	2,554
824.30	3,985	2,593
824.31	4,011	2,633
824.32	4,038	2,673
824.33	4,064	2,714
824.34	4,090	2,755
824.35	4,117	2,796
824.36	4,144	2,837
824.37	4,170	2,879
824.38	4,197	2,921
824.39	4,224	2,963
824.40	4,251	3,005
824.41	4,278	3,048
824.42	4,305	3,091
824.43	4,333	3,134
824.44	4,360	3,177
824.45	4,388	3,221
824.46	4,415	3,265
824.47	4,443	3,309
824.48	4,470	3,354
824.49	4,498	3,399
824.50	**4,526**	**3,444**

Summary for Pond 39P: Pond 2

Inflow Area = 2.093 ac, 37.74% Impervious, Inflow Depth > 5.52" for 100 yr event
Inflow = 17.49 cfs @ 12.00 hrs, Volume= 0.963 af
Outflow = 3.89 cfs @ 12.22 hrs, Volume= 0.962 af, Atten= 78%, Lag= 13.1 min
Primary = 3.89 cfs @ 12.22 hrs, Volume= 0.962 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 855.18' @ 12.22 hrs Surf.Area= 4,588 sf Storage= 13,219 cf

Plug-Flow detention time= 24.3 min calculated for 0.962 af (100% of inflow)
Center-of-Mass det. time= 23.9 min (820.3 - 796.4)

Volume	Invert	Avail.Storage	Storage Description
#1	849.50'	40,741 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

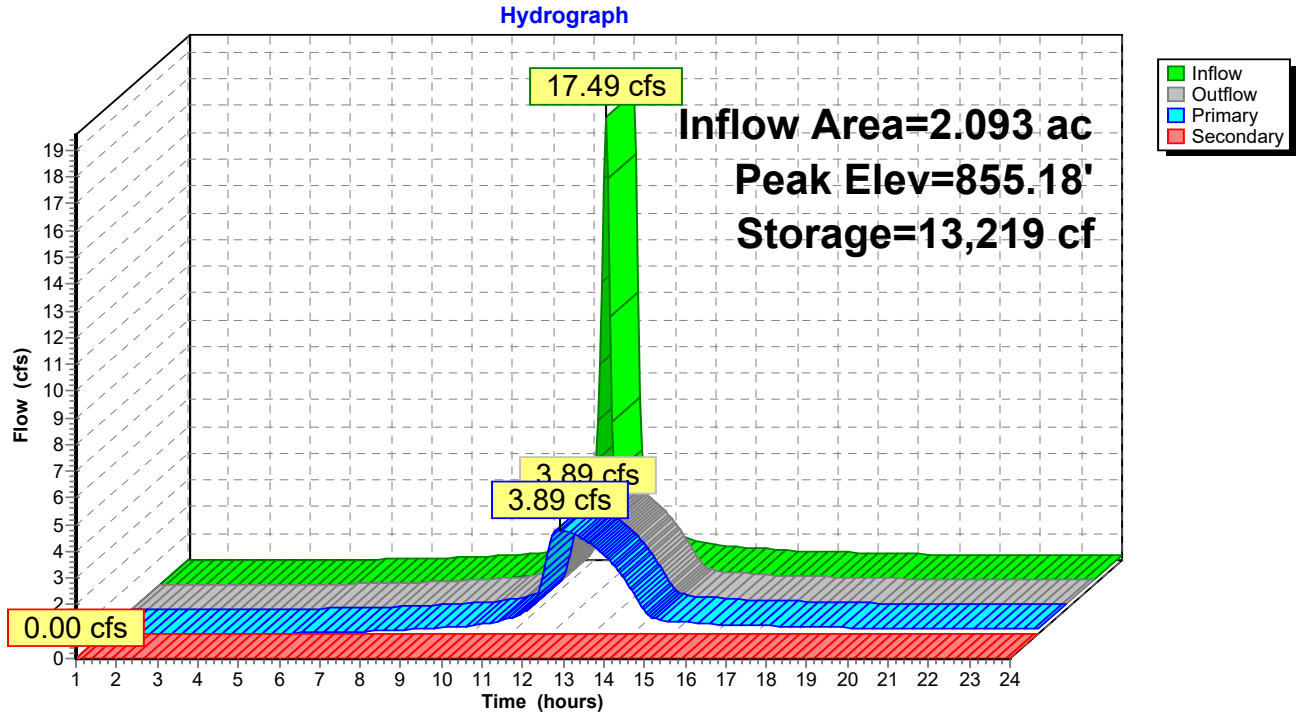
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
849.50	5	20.0	0	0	5
850.00	986	146.0	177	177	1,670
852.00	1,972	183.0	2,902	3,078	2,693
854.00	3,498	252.0	5,398	8,476	5,121
856.00	5,438	321.0	8,865	17,341	8,319
857.00	8,862	631.0	7,081	24,422	31,809
858.00	11,447	647.0	10,127	34,549	33,557
858.50	13,348	665.0	6,193	40,741	35,464

Device	Routing	Invert	Outlet Devices
#1	Primary	849.00'	**24.0" Round Culvert** L= 140.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 849.00' / 844.00' S= 0.0357 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Device 1	849.50'	**8.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	856.00'	**28.0" W x 28.0" H Vert. TOS** C= 0.600
#4	Secondary	857.50'	**30.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=3.88 cfs @ 12.22 hrs HW=855.17' (Free Discharge)
└**1=Culvert** (Passes 3.88 cfs of 34.39 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 3.88 cfs @ 11.12 fps)
  └**3=TOS** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=849.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 39P: Pond 2



Stage-Area-Storage for Pond 39P: Pond 2

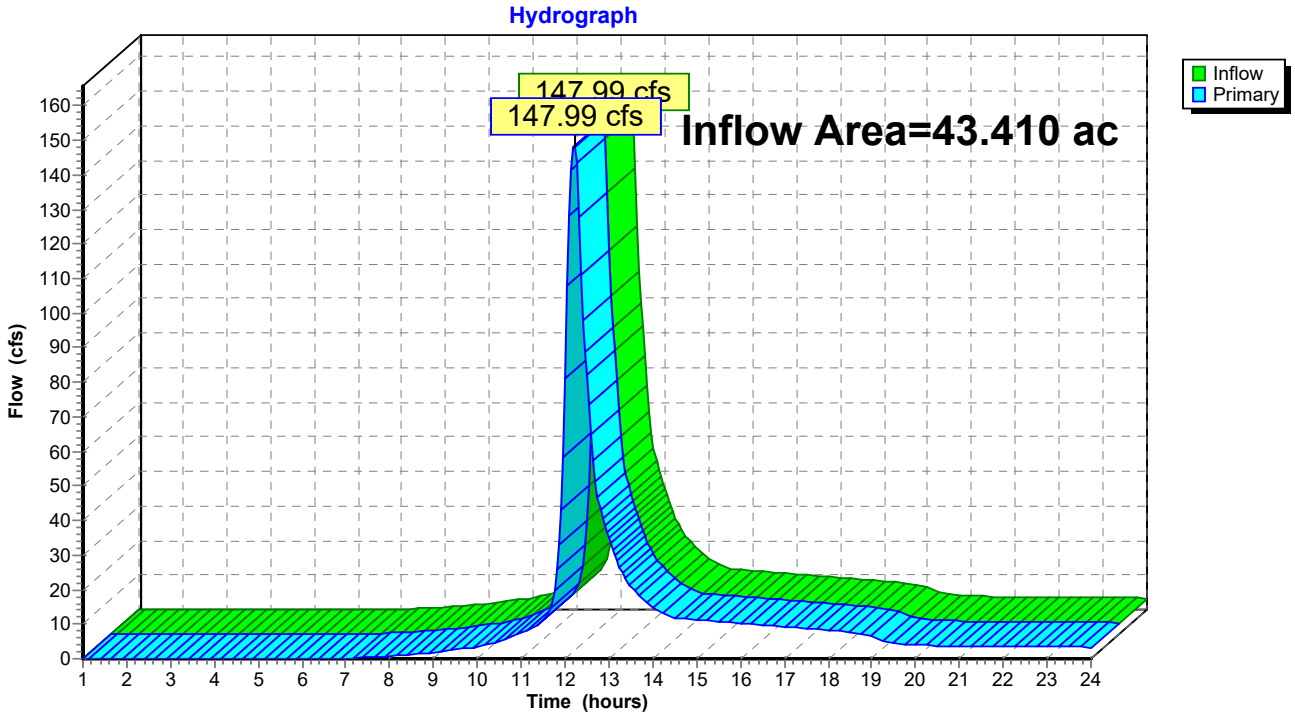
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
849.50	5	0
849.60	65	3
849.70	193	15
849.80	389	44
849.90	654	95
850.00	986	177
850.10	1,027	278
850.20	1,069	382
850.30	1,112	491
850.40	1,156	605
850.50	1,201	723
850.60	1,246	845
850.70	1,293	972
850.80	1,340	1,104
850.90	1,388	1,240
851.00	1,437	1,381
851.10	1,486	1,527
851.20	1,537	1,678
851.30	1,588	1,835
851.40	1,641	1,996
851.50	1,694	2,163
851.60	1,748	2,335
851.70	1,803	2,512
851.80	1,858	2,696
851.90	1,915	2,884
852.00	1,972	3,078
852.10	2,038	3,279
852.20	2,105	3,486
852.30	2,173	3,700
852.40	2,242	3,921
852.50	2,313	4,149
852.60	2,384	4,383
852.70	2,457	4,625
852.80	2,530	4,875
852.90	2,605	5,132
853.00	2,681	5,396
853.10	2,758	5,668
853.20	2,835	5,947
853.30	2,914	6,235
853.40	2,995	6,530
853.50	3,076	6,834
853.60	3,158	7,145
853.70	3,241	7,465
853.80	3,326	7,794
853.90	3,411	8,131
854.00	3,498	8,476
854.10	3,585	8,830
854.20	3,673	9,193
854.30	3,762	9,565
854.40	3,852	9,946
854.50	3,943	10,335
854.60	4,035	10,734
854.70	4,129	11,142
854.80	4,223	11,560
854.90	4,318	11,987
855.00	4,415	12,424
855.10	4,512	12,870
855.20	4,611	13,326
855.30	4,711	13,792
855.40	4,811	14,268
855.50	4,913	14,754
855.60	5,016	15,251
855.70	5,120	15,758
855.80	5,225	16,275
855.90	5,331	16,803
856.00	5,438	17,341
856.10	5,743	17,900
856.20	6,056	18,490
856.30	6,378	19,112
856.40	6,708	19,766
856.50	7,046	20,453
856.60	7,393	21,175
856.70	7,747	21,932
856.80	8,111	22,725
856.90	8,482	23,555
857.00	8,862	24,422
857.10	9,106	25,320
857.20	9,353	26,243
857.30	9,603	27,191
857.40	9,856	28,164
857.50	10,113	29,162
857.60	10,373	30,186
857.70	10,637	31,237
857.80	10,904	32,314
857.90	11,174	33,418
858.00	11,447	34,549
858.10	11,816	35,712
858.20	12,190	36,912
858.30	12,570	38,150
858.40	12,956	39,426
858.50	**13,348**	**40,741**

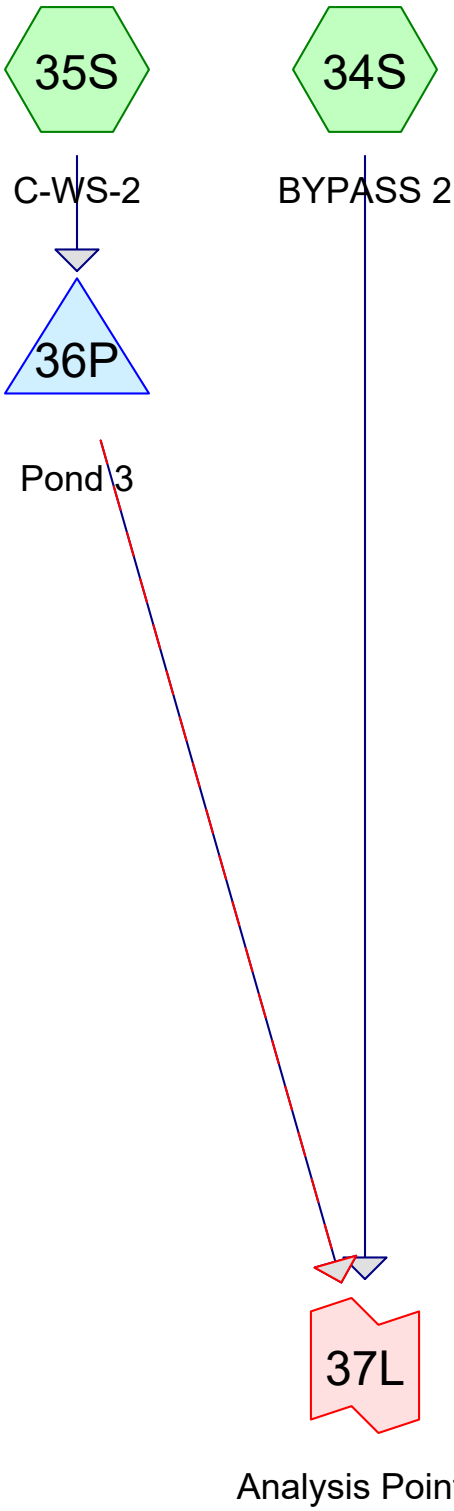
Summary for Link 30L: Analysis Point 1

Inflow Area = 43.410 ac, 6.92% Impervious, Inflow Depth > 4.64" for 100 yr event
Inflow = 147.99 cfs @ 12.20 hrs, Volume= 16.785 af
Primary = 147.99 cfs @ 12.20 hrs, Volume= 16.785 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Link 30L: Analysis Point 1





Subcat Reach Pond Link

Routing Diagram for 19182_Hydrology_JM
Prepared by Hewlett-Packard Company, Printed 1/21/2020
HydroCAD® 10.00-19 s/n 02652 © 2016 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.485	80	1/2 acre lots, 25% imp, HSG C (34S)
7.107	74	>75% Grass cover, Good, HSG C (34S, 35S)
0.233	98	Paved roads w/curbs & sewers, HSG C (35S)
0.440	98	Unconnected roofs, HSG C (35S)
10.265	**77**	**TOTAL AREA**

Time span=1.00-24.00 hrs, dt=0.05 hrs, 461 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 34S: BYPASS 2 Runoff Area=7.433 ac 8.36% Impervious Runoff Depth>3.51"
Flow Length=772' Tc=9.9 min CN=76 Runoff=39.60 cfs 2.175 af

Subcatchment 35S: C-WS-2 Runoff Area=2.832 ac 23.76% Impervious Runoff Depth>3.71"
Flow Length=804' Tc=10.5 min UI Adjusted CN=78 Runoff=15.54 cfs 0.876 af

Pond 36P: Pond 3 Peak Elev=865.18' Storage=11,572 cf Inflow=15.54 cfs 0.876 af
Primary=6.50 cfs 0.874 af Secondary=0.00 cfs 0.000 af Outflow=6.50 cfs 0.874 af

Link 37L: Analysis Point 2 Inflow=43.14 cfs 3.049 af
Primary=43.14 cfs 3.049 af

Total Runoff Area = 10.265 ac Runoff Volume = 3.051 af Average Runoff Depth = 3.57"
87.39% Pervious = 8.971 ac 12.61% Impervious = 1.294 ac

Summary for Subcatchment 34S: BYPASS 2

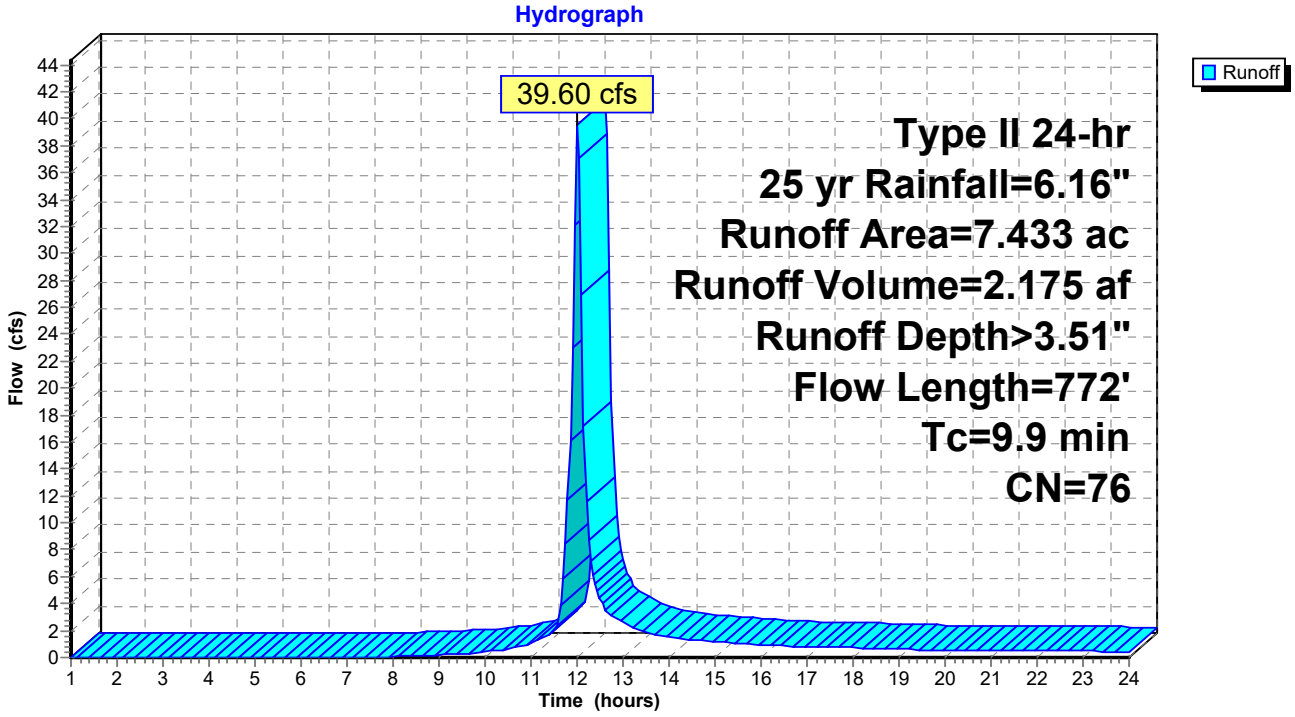
Runoff = 39.60 cfs @ 12.01 hrs, Volume= 2.175 af, Depth> 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 yr Rainfall=6.16"

Area (ac)	CN	Description
1.789	74	>75% Grass cover, Good, HSG C
3.159	74	>75% Grass cover, Good, HSG C
0.289	80	1/2 acre lots, 25% imp, HSG C
2.196	80	1/2 acre lots, 25% imp, HSG C
7.433	76	Weighted Average
6.812		91.64% Pervious Area
0.621		8.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0250	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
1.3	314	0.0760	4.14		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.5	358	0.0810	12.75	34.42	**Channel Flow,** Area= 2.7 sf Perim= 5.0' r= 0.54' n= 0.022 Earth, clean & straight
9.9	772	Total			

Subcatchment 34S: BYPASS 2



Summary for Subcatchment 35S: C-WS-2

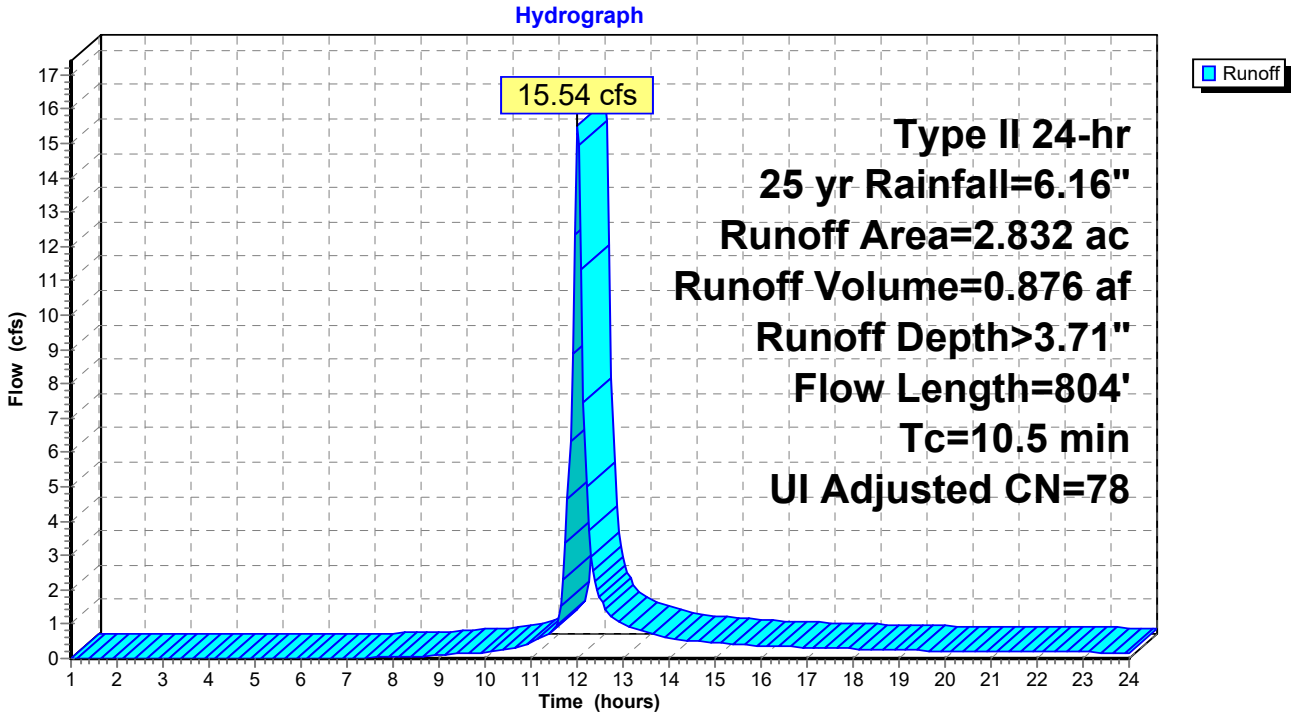
Runoff = 15.54 cfs @ 12.02 hrs, Volume= 0.876 af, Depth> 3.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 yr Rainfall=6.16"

Area (ac)	CN	Adj	Description
1.295	74		>75% Grass cover, Good, HSG C
0.864	74		>75% Grass cover, Good, HSG C
0.220	98		Unconnected roofs, HSG C
0.220	98		Unconnected roofs, HSG C
0.233	98		Paved roads w/curbs & sewers, HSG C
2.832	80	78	Weighted Average, UI Adjusted
2.159			76.24% Pervious Area
0.673			23.76% Impervious Area
0.440			65.38% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0250	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
1.3	478	0.0380	6.26	37.56	**Channel Flow,** Area= 6.0 sf Perim= 18.3' r= 0.33' n= 0.022 Earth, clean & straight
0.2	90	0.0200	9.93	17.56	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.8	74	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	62	0.0150	10.42	32.74	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.011 Concrete pipe, straight & clean
10.5	804	Total			

Subcatchment 35S: C-WS-2



Summary for Pond 36P: Pond 3

Inflow Area = 2.832 ac, 23.76% Impervious, Inflow Depth > 3.71" for 25 yr event
Inflow = 15.54 cfs @ 12.02 hrs, Volume= 0.876 af
Outflow = 6.50 cfs @ 12.17 hrs, Volume= 0.874 af, Atten= 58%, Lag= 9.1 min
Primary = 6.50 cfs @ 12.17 hrs, Volume= 0.874 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 865.18' @ 12.17 hrs Surf.Area= 4,654 sf Storage= 11,572 cf

Plug-Flow detention time= 33.2 min calculated for 0.872 af (100% of inflow)
Center-of-Mass det. time= 31.6 min (849.3 - 817.7)

Volume	Invert	Avail.Storage	Storage Description
#1	860.50'	28,528 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

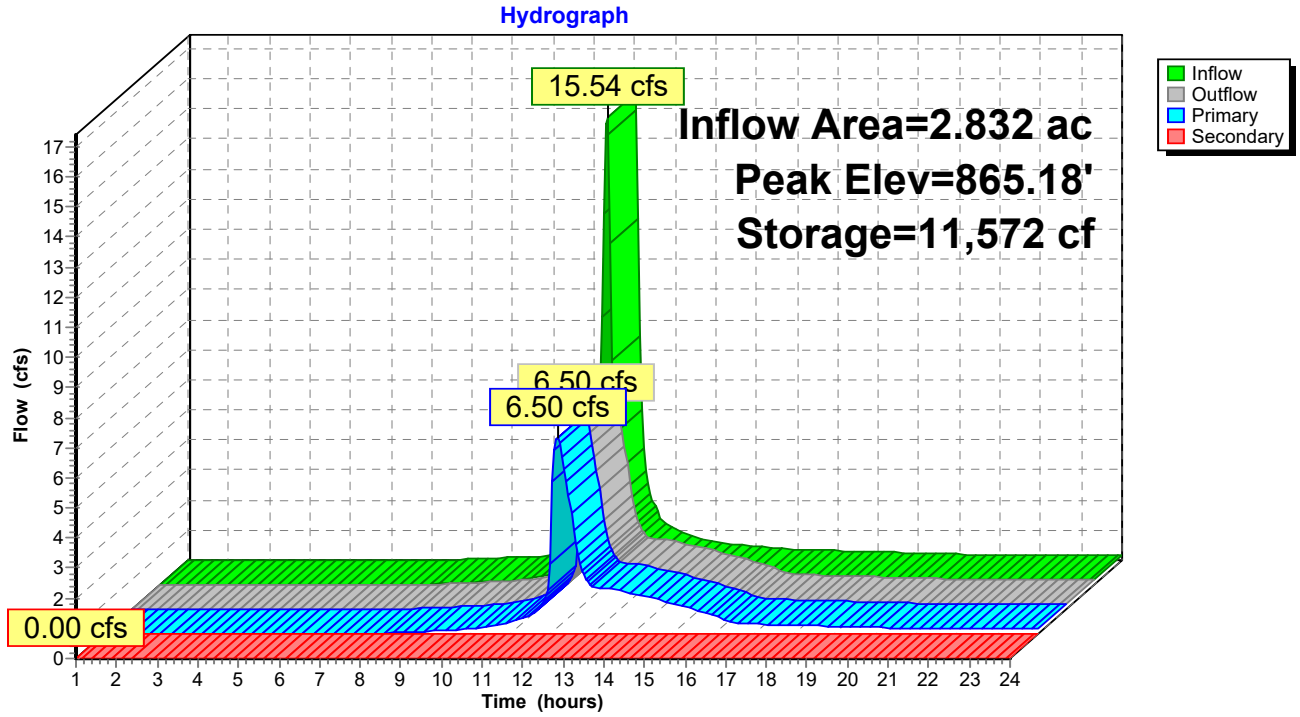
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
860.50	5	20.0	0	0	5
861.00	148	114.0	30	30	1,008
862.00	2,135	226.4	948	978	4,057
864.00	3,649	276.4	5,717	6,695	6,120
866.00	5,428	316.3	9,018	15,714	8,093
868.00	7,439	354.2	12,814	28,528	10,224

Device	Routing	Invert	Outlet Devices
#1	Primary	860.50'	**24.0" Round Outlet Pipe** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 860.50' / 858.00' S= 0.0417 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Device 1	861.00'	**6.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	864.00'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	866.00'	**28.0" x 28.0" Horiz. TOS** C= 0.600 Limited to weir flow at low heads
#5	Secondary	867.50'	**30.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=6.45 cfs @ 12.17 hrs HW=865.16' (Free Discharge)
└**1=Outlet Pipe** (Passes 6.45 cfs of 28.95 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.87 cfs @ 9.52 fps)
  ├**3=Orifice/Grate** (Orifice Controls 4.58 cfs @ 4.58 fps)
  └**4=TOS** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=860.50' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 36P: Pond 3



Stage-Area-Storage for Pond 36P: Pond 3

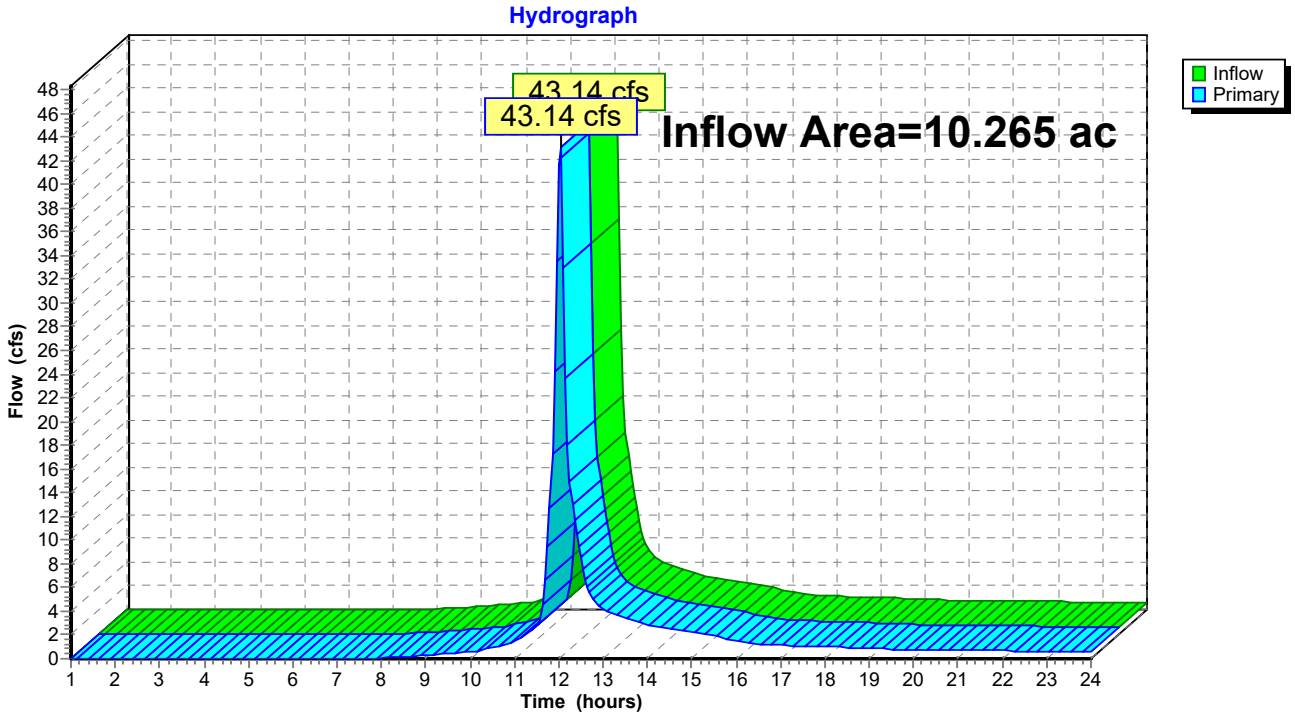
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
860.50	5	0
860.60	18	1
860.70	39	4
860.80	67	9
860.90	104	18
861.00	148	30
861.10	242	49
861.20	360	79
861.30	501	122
861.40	665	180
861.50	852	256
861.60	1,062	351
861.70	1,296	469
861.80	1,552	611
861.90	1,832	780
862.00	2,135	978
862.10	2,201	1,195
862.20	2,268	1,419
862.30	2,336	1,649
862.40	2,406	1,886
862.50	2,476	2,130
862.60	2,547	2,381
862.70	2,619	2,639
862.80	2,692	2,905
862.90	2,766	3,178
863.00	2,842	3,458
863.10	2,918	3,746
863.20	2,995	4,042
863.30	3,073	4,345
863.40	3,152	4,657
863.50	3,233	4,976
863.60	3,314	5,303
863.70	3,396	5,639
863.80	3,479	5,982
863.90	3,564	6,335
864.00	3,649	6,695
864.10	3,730	7,064
864.20	3,811	7,441
864.30	3,893	7,826
864.40	3,977	8,220
864.50	4,061	8,622
864.60	4,146	9,032
864.70	4,232	9,451
864.80	4,318	9,878
864.90	4,406	10,315
865.00	4,494	10,760
865.10	4,584	11,214
865.20	4,674	11,676
865.30	4,765	12,148
865.40	4,857	12,629
865.50	4,950	13,120
865.60	5,044	13,620
865.70	5,139	14,129
865.80	5,234	14,647
865.90	5,331	15,176
866.00	5,428	15,714
866.10	5,521	16,261
866.20	5,615	16,818
866.30	5,709	17,384
866.40	5,805	17,960
866.50	5,901	18,545
866.60	5,998	19,140
866.70	6,096	19,745
866.80	6,194	20,359
866.90	6,294	20,984
867.00	6,394	21,618
867.10	6,495	22,262
867.20	6,597	22,917
867.30	6,699	23,582
867.40	6,802	24,257
867.50	6,907	24,942
867.60	7,012	25,638
867.70	7,117	26,345
867.80	7,224	27,062
867.90	7,331	27,789
868.00	**7,439**	**28,528**

Summary for Link 37L: Analysis Point 2

Inflow Area = 10.265 ac, 12.61% Impervious, Inflow Depth > 3.56" for 25 yr event
Inflow = 43.14 cfs @ 12.03 hrs, Volume= 3.049 af
Primary = 43.14 cfs @ 12.03 hrs, Volume= 3.049 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Link 37L: Analysis Point 2



MWS LID Site Design Tool

Project Name	*Allen Property*
Parcel Identification #	*0*
Combined Sewer Overlay?	**NO**
Pre-Development Impervious Area (acres)	**0.19**
Post-Development Impervious Area (acres)	**2.57**
Pre-Development Rv =	**0.19**
Target Runoff Reduction Requirement =	**80%**

See Section 7.2.1 in Metro SWMM Volume 1

Capture Depth=	**1**	**inch**
Cistern Capture=		**% Total Vol captured**

From Cistern Design Tool

MWS LID SITE DESIGN TOOL VERSION 9 - August 1, 2016

Instructions

1. Input cells are in **Green**.
2. Break Site Into Sub areas by single soils and land use type combinations.
3. Assign a code to each subarea and input the code into column C. Descriptions can be entered in column B.
4. Input the subarea drainage area in column D.
5. Input treatment credit code (Column F) for the first tier of treatments
6. Input additional treatment code as desired (Column I) for any subarea
7. Adjust until you reach 80% reduction or better (Cell N turns green if 80% reached).
8. If 80% reduction is not reached and it has been decided that GIPs in series is an option use Step 3a to place GIPs in series . Their respective treatment volumes are calculated in column W. This volume is separate from GIPs upstream.
9. When using GIPs in Series the user will look to Cell T for confirmation the 80% goal has been met.

Percent Volume Reduction-Based Calculations

Step 1: Lay out the site and divide it into sub-areas each of a specific land use type and Rv.					Step 1a: Change any basic land use types through reforesting, permeable pavement or green roofs - or through use of open space for a GIP.			Step 2: Treat impervious areas through the use of disconnection or sheet flow			Step 3: Treat primarily impervious areas with structural GIPs either in series with Step 3 intrinsic GIPs or alone downstream from Steps 1 and 2 land use.			Size controls for Step 3 by assigning structure ID to each sub-area, combining sub-areas into one structure if appropriate.			Step 3a Treatment in Series Calculation - Place Structural GIPs in same row as upstream GIP			Size controls for Step 3a in series by assigning a sequential structure ID to each area treated in series.				
Step1 Basic Land Use					**Step 1a Modified LU**			**Step 2 Intrinsic GIPs**			**Step 3 Structural GIPs**			**Structure ID**	**IA Capture**		**Step 3a Structural GIPs in Series**			**Structure ID**	**IA Capture**		**Nominal Curve Number**	
Subarea	Description	Code	Acres	Base Rv	Code	Acres	Eff Rv1	Code	Trtmt VR1	Eff Rv2	Code	Trtmt VR2	Eff Rv3		Tv Multiplier	Tv (cf)	Code	Trtmt VR2	Eff Rv4	Site GIP ID Number	Tv Multiplier	Structure in Series Tv (cf)	Step 1	Step 1A
1	Road Area 1	IA	0.3118	0.95	IA	0.3118	0.95		0	0.95	B2	0.8	0.19	B1	1.25	1,344		0	0.19		0.00	-	98	98
2	Roofs 4,5, 14-19	IA	1.068	0.95	IA	1.068	0.95	DAB	0.5	0.48	B2	0.8	0.10	B1	1.25	2,302		0	0.10		0.00	-	98	98
3	Lots 4,5, 14-19	TC	1.9122	0.20	TC	1.9122	0.20		0	0.20	B2	0.8	0.04	B1	1.25	1,735		0	0.04		0.00	-	79	79
4	Lots 4,5, 14-19	TD	1.4749	0.23	TD	1.4749	0.23		0	0.23	B2	0.8	0.05	B1	1.25	1,539		0	0.05		0.00	-	84	84
5				0.00		0	0.00		0	0.00		0	0.00		0.00	-		0	0.00		0.00	-	0	0
6	Road Area 3	IA	0.2331	0.95	IA	0.2331	0.95		0	0.95	B2	0.8	0.19	B3	1.25	1,005		0	0.19		0.00	-	98	98
7	Roofs 1-3, 20	IA	0.4399	0.95	IA	0.4399	0.95	DAB	0.5	0.48	B2	0.8	0.10	B3	1.25	948		0	0.10		0.00	-	98	98
8	Lots 1-3,20	TB	0.5	0.18	TB	0.5	0.18		0	0.18	B2	0.8	0.04	B3	1.25	408		0	0.04		0.00	-	69	69
9	Lots 1-3,20	TC	1.4684	0.20	TC	1.4684	0.20		0	0.20	B2	0.8	0.04	B3	1.25	1,333		0	0.04		0.00	-	79	79
10	Lots 1-3,20	TD	0.06659	0.23	TD	0.06659	0.23		0	0.23	B2	0.8	0.05	B3	1.25	69		0	0.05		0.00	-	84	84
11				0.00		0	0.00		0	0.00		0	0.00		0.00	-		0	0.00		0.00	-	0	0
12	Road Area 2	IA	0.1627	0.95	IA	0.1627	0.95		0	0.95	B2	0.8	0.19	B2	1.25	701		0	0.19		0.00	-	98	98
13	Roofs 6,7,8,13	IA	0.3131	0.95	IA	0.3131	0.95	DAB	0.5	0.48	B2	0.8	0.10	B2	1.25	675		0	0.10		0.00	-	98	98
14	Lots 6,7,8,13	TA	0.2928	0.15	TA	0.2928	0.15		0	0.15	B2	0.8	0.03	B2	1.25	199		0	0.03		0.00	-	49	49
15	Lots 6,7,8,13	TC	1.5015	0.20	TC	1.5015	0.20		0	0.20	B2	0.8	0.04	B2	1.25	1,363		0	0.04		0.00	-	79	79
16	Roof / Road Bypass	IA	0.5462	0.95	IA	0.5462	0.95		0	0.95		0	0.95		0.00	-		0	0.95		0.00	-	98	98
17	Grass Bypass	TA	4.9412	0.15	TA	4.9412	0.15		0	0.15		0	0.15		0.00	-		0	0.15		0.00	-	49	49
18	Grass Bypass	TC	10.5635	0.20	TC	10.5635	0.20		0	0.20		0	0.20		0.00	-		0	0.20		0.00	-	79	79
19	Grass Bypass	TB	0.8459	0.18	TB	0.8459	0.18		0	0.18		0	0.18		0.00	-		0	0.18		0.00	-	69	69
20	Grass Bypass	TD	1.3482	0.23	TD	1.3482	0.23		0	0.23		0	0.23		0.00	-		0	0.23		0.00	-	84	84
		Weighted Rv		0.275	Weighted Rv		0.275	Weighted Rv		0.244	Weighted Rv		0.159		Step 3 Tv Total	**13,622**			0.159		Final Tv Total	**13,622**	75.5	75.5
		Total Area=	27.98999	7.70	Total Area=	27.98999	7.70			6.84			4.45						4.45					
		% Removal		72.5%	% Removal		72.5%	% Removal		75.6%	% Removal		**84.1%**				% Removal		**84.1%**					

THIS CELL WILL TURN GREEN WHEN TARGET RUNOFF REDUCTION MET

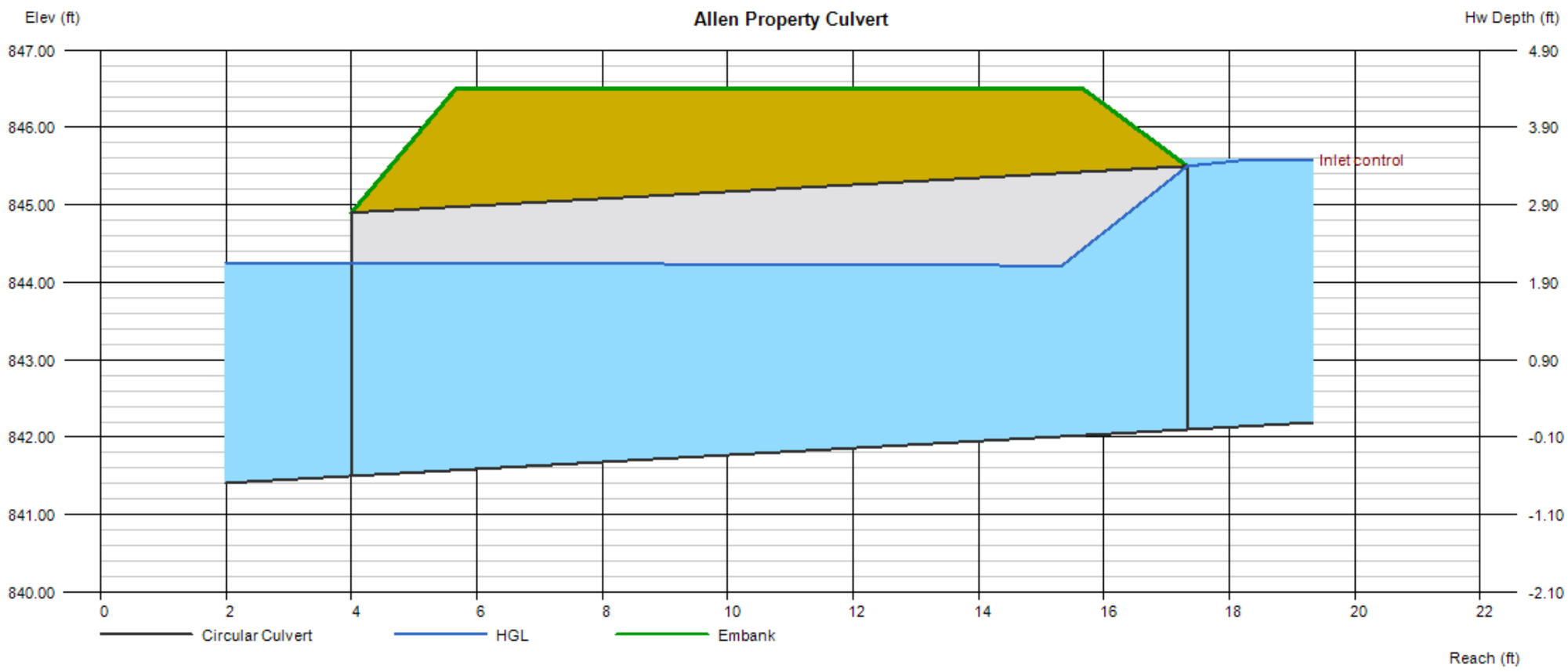
THIS CELL WILL TURN GREEN WHEN TARGET RUNOFF REDUCTION MET

Culvert Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc. Tuesday, Feb 4 2020

Allen Property Culvert

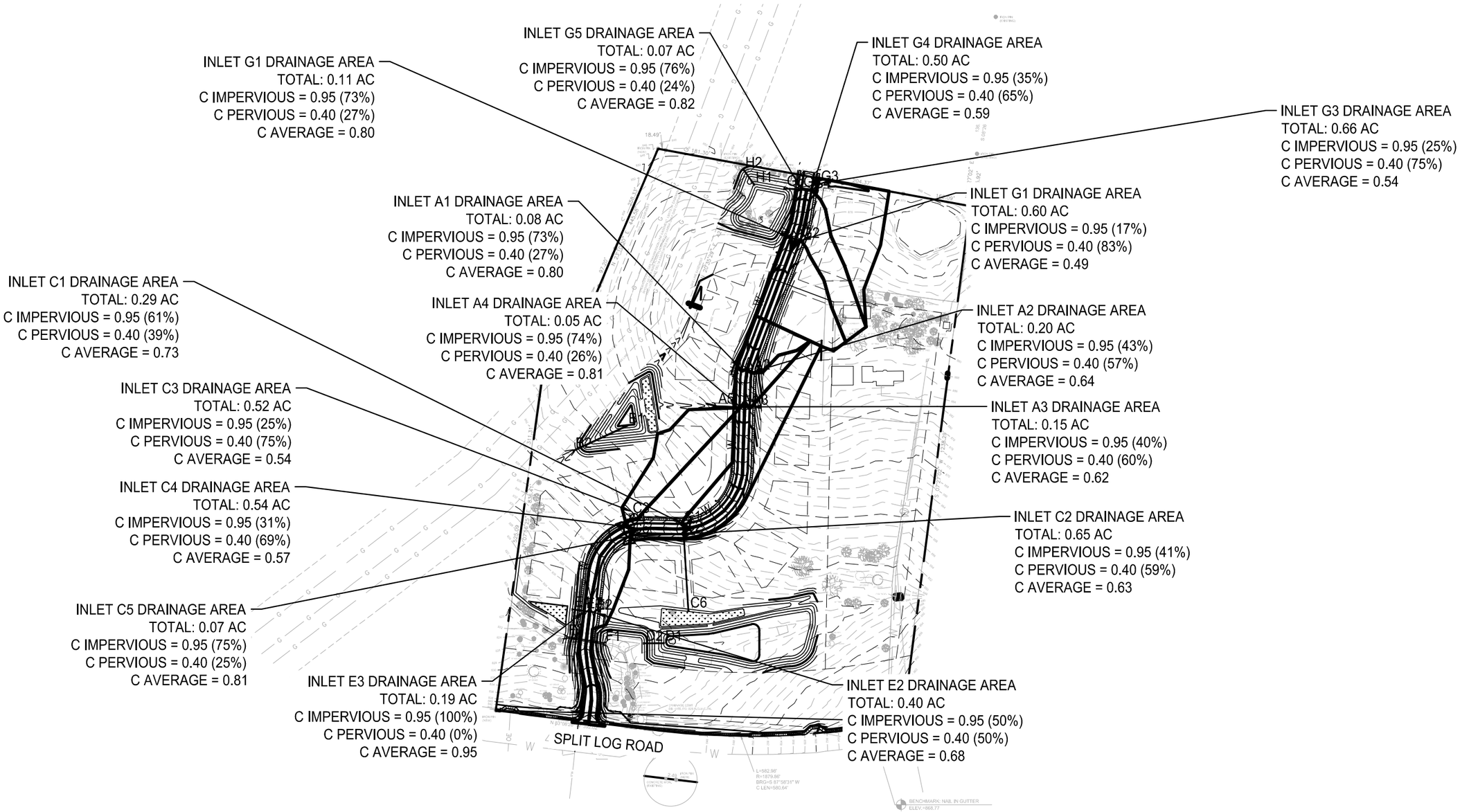
Invert Elev Dn (ft)	= 841.50	**Calculations**	
Pipe Length (ft)	= 13.33	Qmin (cfs)	= 0.00
Slope (%)	= 4.50	Qmax (cfs)	= 45.00
Invert Elev Up (ft)	= 842.10	Tailwater Elev (ft)	= (dc+D)/2
Rise (in)	= 40.8		
Shape	= Circular	**Highlighted**	
Span (in)	= 40.8	Qtotal (cfs)	= 45.00
No. Barrels	= 1	Qpipe (cfs)	= 45.00
n-Value	= 0.012	Qovertop (cfs)	= 0.00
Culvert Type	= Elliptical Inlet Face (C)	Veloc Dn (ft/s)	= 5.71
Culvert Entrance	= Tapered inlet-square edges (C)	Veloc Up (ft/s)	= 7.61
Coeff. K,M,c,Y,k	= 0.5035, 0.719, 0.0478, 0.8, 0.5	HGL Dn (ft)	= 844.25
		HGL Up (ft)	= 844.21
Embankment		Hw Elev (ft)	= 845.59
Top Elevation (ft)	= 846.50	Hw/D (ft)	= 1.03
Top Width (ft)	= 10.00	Flow Regime	= Inlet Control
Crest Width (ft)	= 14.00		



ALLEN PROPERTY

US Structure	DS Structure	US Invert	DS Invert	LENGTH (FT.)	SLOPE (%)	DIAMETER (INCHES)	TYPE PIPE	STRUCTURE TYPE	T.C. ELEV.	CASTING TYPE	NOTES / DETAILS
A1								SINGLE INLET	877.75	JBS 3101	PER DETAIL 2/C2.92
A1	A2	871.19	870.95	24.0	1.00	18	RCP				
A2								SINGLE INLET	877.75	JBS 3101	PER DETAIL 2/C2.92
A2	A3	870.85	870.01	84.2	1.00	18	RCP				
A3								SINGLE INLET	872.65	JBS 3101	PER DETAIL 2/C2.92
A3	A4	869.91	869.67	24.0	1.00	18	RCP				
A4								SINGLE INLET	872.65	JBS 3101	PER DETAIL 2/C2.92
A4	A5	869.57	860.00	194.0	4.93	18	RCP				
A5								HEADWALL	--		PER DETAIL 7/C4.00
B1								OUTLET STRUCTURE	--		PER DETAIL 1/C2.92
B1	B2	849.50	844.50	133.5	3.75	24	RCP				
B2								HEADWALL	--		PER DETAIL 7/C4.00
C1								SINGLE INLET	850.15		PER DETAIL 2/C2.92
C1	C2	847.00	846.76	24.0	1.00	18	RCP				
C3								TRIPLE AREA DRAIN	841.60	JBS 4310	PER DETAIL 4/C2.91
C3	C4	838.90	838.62	27.0	1.04	18	RCP				
C4								SINGLE INLET	842.30	JBS 3101	PER DETAIL 2/C2.92
C4	C5	838.52	838.28	24.0	1.00	18	RCP				
C5								SINGLE INLET	842.30	JBS 3101	PER DETAIL 2/C2.92
C5	C2	838.18	836.92	126.3	1.00	18	RCP				
C2								SINGLE INLET	850.25	JBS 3101	PER DETAIL 2/C2.92
C2	C6	836.82	835.00	176.0	1.03	18	RCP				
C6								HEADWALL	--		PER DETAIL 7/C4.00
D1								OUTLET STRUCTURE	--		PER DETAIL 1/C2.92
D1	D2	828.00	827.00	58.5	1.71	36	RCP				
D2								HEADWALL	--		PER DETAIL 7/C4.00
E1								TRIPLE INLET	833.58	JBS 3101	PER DETAIL 4/C2.91
E1	E2	830.00	829.10	24.0	3.71	18	RCP				
E2								TRIPLE INLET	833.58	JBS 3101	PER DETAIL 4/C2.91
E2	E3	829.00	828.00	28.0	4.43	18	RCP				
E3								HEADWALL	--		PER DETAIL 7/C4.00
F1								HEADWALL	--		PER DETAIL 7/C4.00
F1	F2	825.00	821.00	90.0	3.89	36	RCP				
F2								HEADWALL	--		PER DETAIL 7/C4.00
G1								SINGLE INLET	871.90	JBS 3101	PER DETAIL 2/C2.92
G1	G2	867.34	867.10	24.0	1.00	18	RCP				
G2								SINGLE INLET	871.90	JBS 3101	PER DETAIL 2/C2.92
G2	G4	867.00	863.03	124.0	3.24	18	RCP				
G3								HEADWALL	--		PER DETAIL 7/C4.00
G3	G4	868.00	863.03	29.5	17.06	18	RCP				
G4								SINGLE INLET	865.20	JBS 3101	PER DETAIL 2/C2.92
G4	G5	862.42	862.30	24.0	0.50	18	RCP				
G5								SINGLE INLET	865.20	JBS 3101	PER DETAIL 2/C2.92
G5	G6	862.30	862.00	34.0	0.89	18	RCP				
G6								HEADWALL	--		PER DETAIL 7/C4.00
H1								OUTLET STRUCTURE	--		PER DETAIL 1/C2.92
H1	H2	862.00	860.00	46.5	4.30	24	RCP				
H2								HEADWALL	--		PER DETAIL 7/C4.00

N:\2019\19182_Allen_Property\CAD\04_CIVIL\19182_Hydrology_jm.dwg - Printed on 2020-07-01 at 3:59:07 PM.



LOSE DESIGN
SPACES FOR LIFE.

ALLEN PROPERTY

INLET WATERSHED MAP

TURNBERRY HOMES

NOT FOR CONSTRUCTION

JULY 1, 2020

LD# 19182

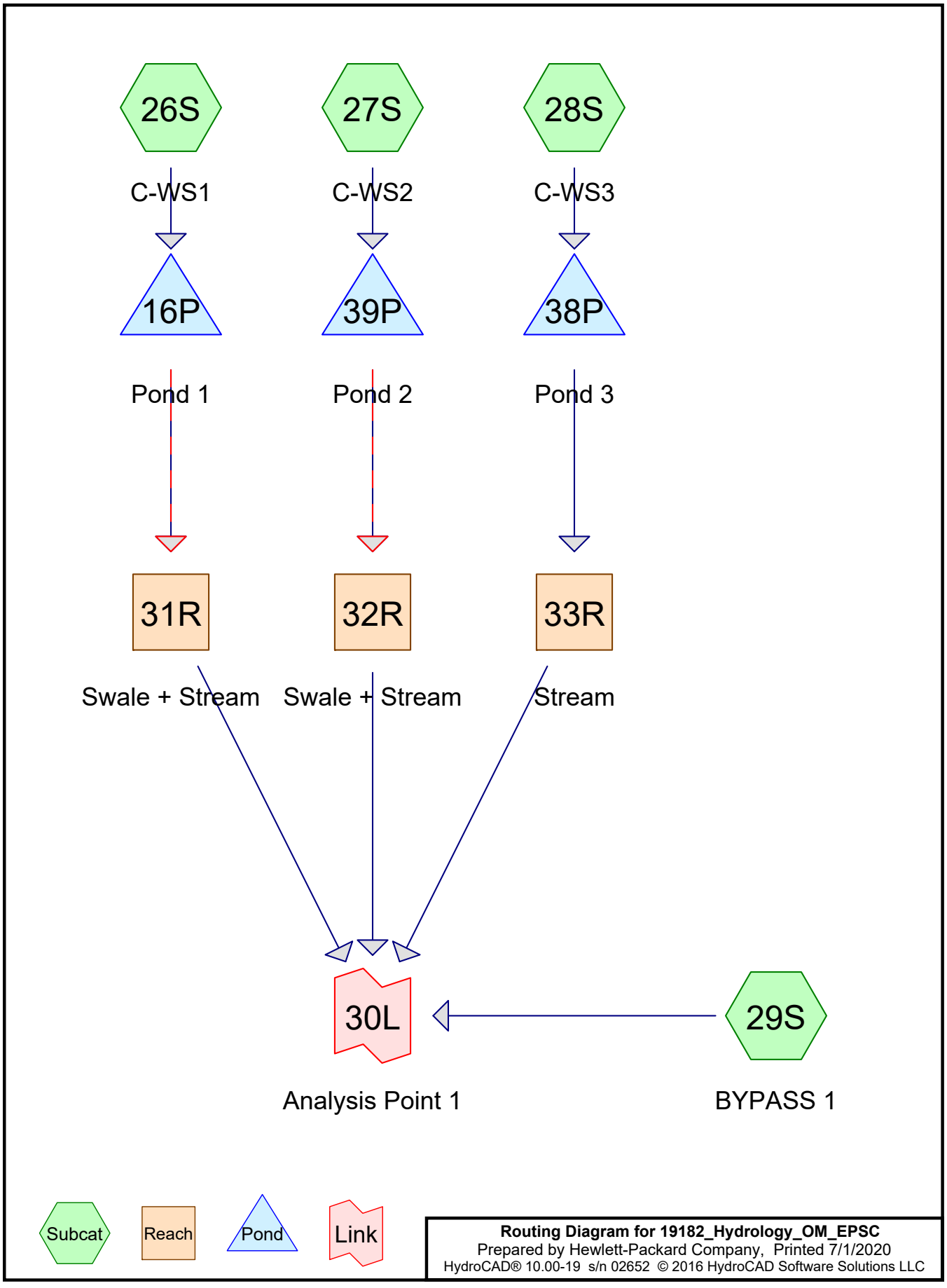
© 2019 LOSE DESIGN

MyReport

Line No.	Inlet ID	Line ID	Line Length (ft)	Line Size (in)	Line Slope (%)	Flow Rate (cfs)	Capac Full (cfs)	Gutter Spread (ft)	Invert Dn (ft)	Invert Up (ft)	HGL Dn (ft)	HGL Up (ft)
1	A4	A4-A5	194.000	18	4.93	2.19	27.56	1.56	860.00	869.57	860.29	870.13
2	A3	A3-A4	23.972	18	1.00	1.93	12.42	2.41	869.67	869.91	870.13	870.43
3	A2	A2-A3	84.197	18	1.00	1.33	12.40	3.22	870.01	870.85	870.43	871.28
4	A1	A1-A2	24.038	18	1.00	0.45	12.40	1.93	870.95	871.19	871.28	871.44 j
5	G5	G5-G6	34.000	18	0.88	7.38	11.66	1.77	862.00	862.30	862.87	863.35
6	G4	G4-G5	24.016	18	0.50	7.01	8.77	5.28	862.30	862.42	863.35	863.44
7	G2	G2-G4	123.000	18	3.23	2.64	22.30	5.09	863.03	867.00	863.44	867.62
8	G1	G1-G2	23.967	18	1.00	0.61	12.42	2.36	867.10	867.34	867.62	867.63 j
9	G3	G3-G4	29.000	18	17.14	2.48	51.38	....	863.03	868.00	863.44	868.60
10	C2	C2-C6	176.000	18	1.03	8.54	12.62	5.71	835.00	836.82	835.90	837.95
11	C5	C5-C2	126.252	18	1.00	4.45	12.40	3.28	836.92	838.18	837.95	838.99 j
12	C4	C4-C5	24.007	18	1.00	4.07	12.41	5.18	838.28	838.52	838.99	839.29
13	C3	C3-C4	27.036	18	1.04	1.96	12.63	13.61	838.62	838.90	839.29	839.43 j
14	C1	C1-C2	23.917	18	1.00	1.48	12.43	4.04	846.76	847.00	847.11	847.46
15	E2	E2-E3	28.000	18	3.57	3.14	23.45	5.89	828.00	829.00	828.37	829.67
16	E1	E1-E2	24.015	18	3.75	1.90	24.03	6.61	829.10	830.00	829.67	830.52 j

Project File: 19182_ALLEN PROPERTY_HYDRAFLOW.stm | Number of lines: 16 | Date: 7/21/2020

NOTES: ** Critical depth



Routing Diagram for 19182_Hydrology_OM_EPSC
Prepared by Hewlett-Packard Company, Printed 7/1/2020
HydroCAD® 10.00-19 s/n 02652 © 2016 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
40.408	74	>75% Grass cover, Good, HSG C (26S, 27S, 28S, 29S)
0.866	98	Paved roads w/curbs & sewers, HSG C (26S, 27S, 28S)
0.110	98	Unconnected roofs, HSG A (27S)
0.220	98	Unconnected roofs, HSG B (28S)
1.806	98	Unconnected roofs, HSG C (26S, 27S, 28S)
43.410	**76**	**TOTAL AREA**

Time span=1.00-24.00 hrs, dt=0.05 hrs, 461 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 26S: C-WS1 Runoff Area=29.512 ac 5.01% Impervious Runoff Depth>2.04"
Flow Length=1,285' Tc=12.6 min CN=75 Runoff=84.11 cfs 5.026 af

Subcatchment 27S: C-WS2 Runoff Area=2.093 ac 37.74% Impervious Runoff Depth>2.72"
Flow Length=360' Tc=9.0 min CN=83 Runoff=8.89 cfs 0.475 af

Subcatchment 28S: C-WS3 Runoff Area=2.847 ac 25.75% Impervious Runoff Depth>2.29"
Flow Length=306' Tc=6.3 min UI Adjusted CN=78 Runoff=11.23 cfs 0.543 af

Subcatchment 29S: BYPASS 1 Runoff Area=8.958 ac 0.00% Impervious Runoff Depth>1.96"
Tc=15.0 min CN=74 Runoff=22.51 cfs 1.466 af

Reach 31R: Swale + Stream Avg. Flow Depth=0.59' Max Vel=3.36 fps Inflow=32.01 cfs 3.934 af
n=0.030 L=708.0' S=0.0198 '/' Capacity=631.76 cfs Outflow=30.87 cfs 3.915 af

Reach 32R: Swale + Stream Avg. Flow Depth=0.06' Max Vel=2.12 fps Inflow=0.62 cfs 0.474 af
n=0.025 L=400.0' S=0.0750 '/' Capacity=1,476.44 cfs Outflow=0.62 cfs 0.473 af

Reach 33R: Stream Avg. Flow Depth=0.38' Max Vel=2.25 fps Inflow=11.08 cfs 0.542 af
n=0.030 L=405.0' S=0.0148 '/' Capacity=546.83 cfs Outflow=10.10 cfs 0.540 af

Pond 16P: Pond 1 Peak Elev=833.33' Storage=81,525 cf Inflow=84.11 cfs 5.026 af
Primary=32.01 cfs 3.934 af Secondary=0.00 cfs 0.000 af Outflow=32.01 cfs 3.934 af

Pond 38P: Pond 3 Peak Elev=823.78' Storage=836 cf Inflow=11.23 cfs 0.543 af
Outflow=11.08 cfs 0.542 af

Pond 39P: Pond 2 Peak Elev=854.33' Storage=9,696 cf Inflow=8.89 cfs 0.475 af
Primary=0.62 cfs 0.474 af Secondary=0.00 cfs 0.000 af Outflow=0.62 cfs 0.474 af

Link 30L: Analysis Point 1 Inflow=40.67 cfs 6.394 af
Primary=40.67 cfs 6.394 af

Total Runoff Area = 43.410 ac Runoff Volume = 7.511 af Average Runoff Depth = 2.08"
93.08% Pervious = 40.408 ac 6.92% Impervious = 3.002 ac

Summary for Subcatchment 26S: C-WS1

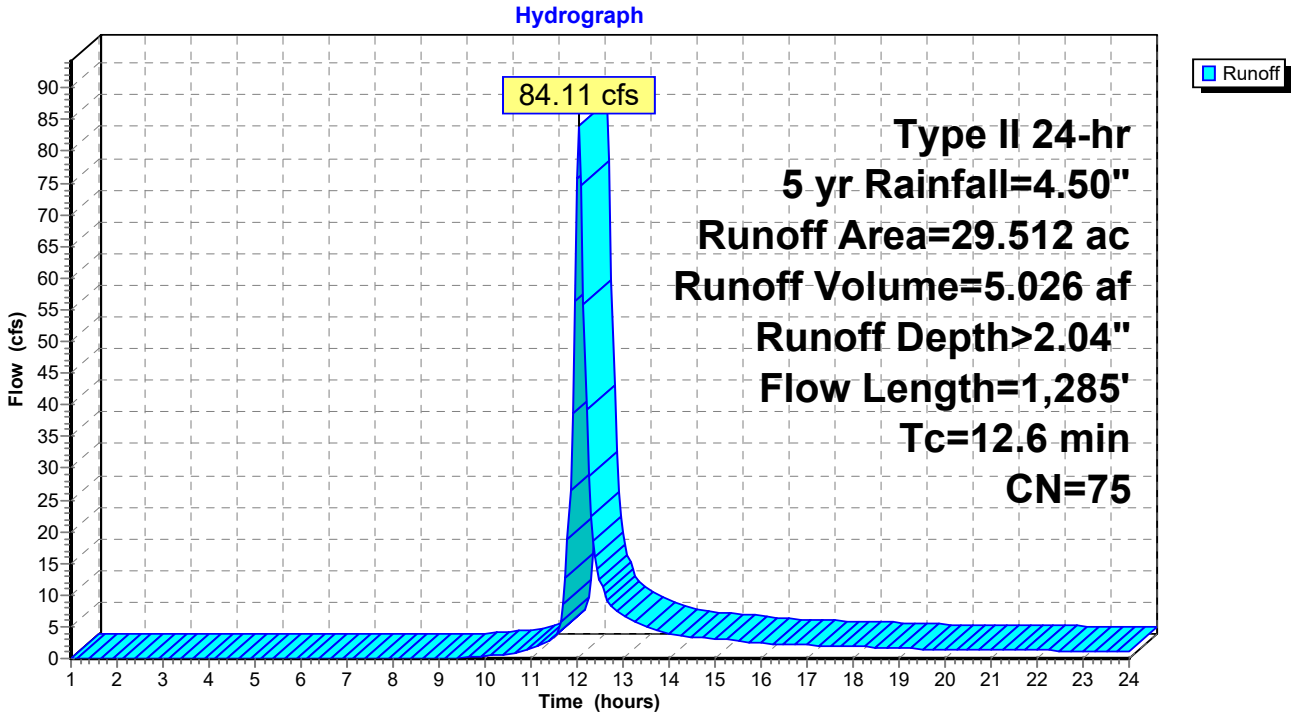
Runoff = 84.11 cfs @ 12.05 hrs, Volume= 5.026 af, Depth> 2.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 5 yr Rainfall=4.50"

Area (ac)	CN	Description
1.168	98	Unconnected roofs, HSG C
0.311	98	Paved roads w/curbs & sewers, HSG C
14.607	74	>75% Grass cover, Good, HSG C
1.327	74	>75% Grass cover, Good, HSG C
10.488	74	>75% Grass cover, Good, HSG C
1.611	74	>75% Grass cover, Good, HSG C
29.512	75	Weighted Average
28.033		94.99% Pervious Area
1.479		5.01% Impervious Area
1.168		78.97% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0250	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
3.9	845	0.0592	3.65		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.6	340	0.0353	9.65	470.11	**Channel Flow,** Area= 48.7 sf Perim= 60.6' r= 0.80' n= 0.025
12.6	1,285	Total			

Subcatchment 26S: C-WS1



Summary for Subcatchment 27S: C-WS2

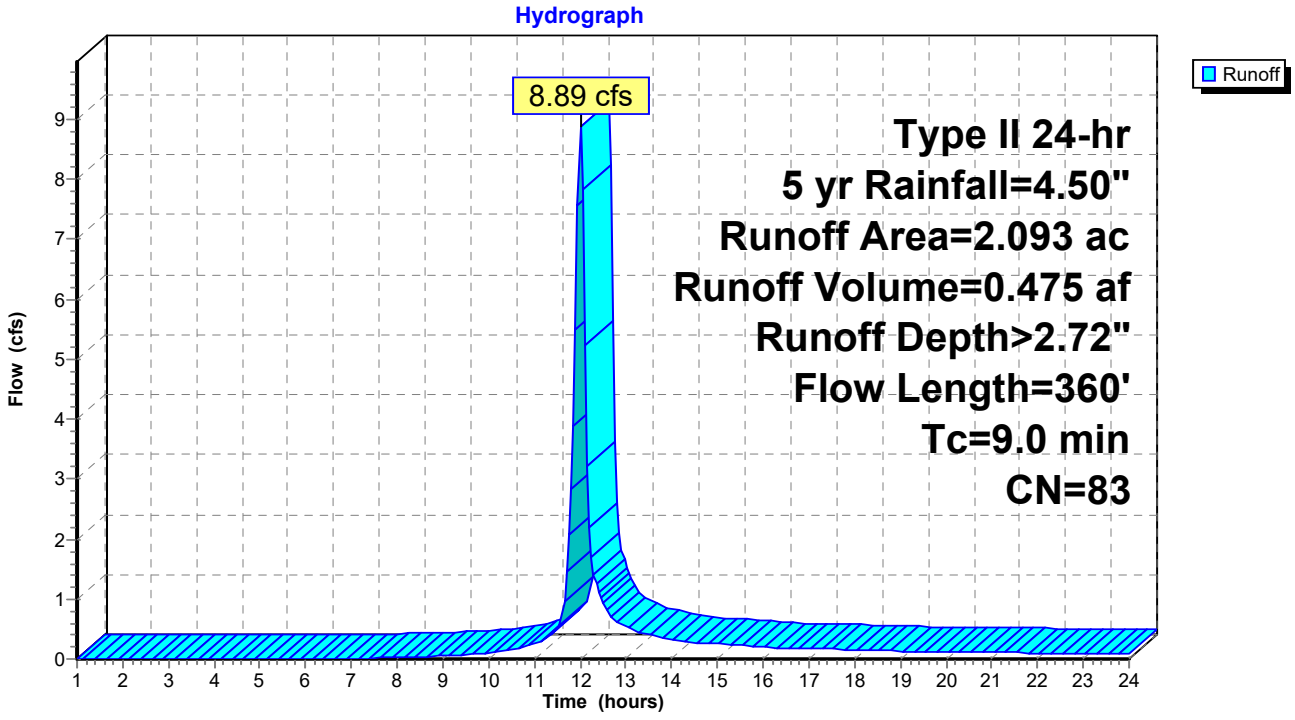
Runoff = 8.89 cfs @ 12.00 hrs, Volume= 0.475 af, Depth> 2.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 5 yr Rainfall=4.50"

Area (ac)	CN	Description
0.110	98	Unconnected roofs, HSG A
0.418	98	Unconnected roofs, HSG C
0.262	98	Paved roads w/curbs & sewers, HSG C
0.383	74	>75% Grass cover, Good, HSG C
0.920	74	>75% Grass cover, Good, HSG C
2.093	83	Weighted Average
1.303		62.26% Pervious Area
0.790		37.74% Impervious Area
0.528		66.84% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0260	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
1.0	260	0.0885	4.46		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.0	360	Total			

Subcatchment 27S: C-WS2



Summary for Subcatchment 28S: C-WS3

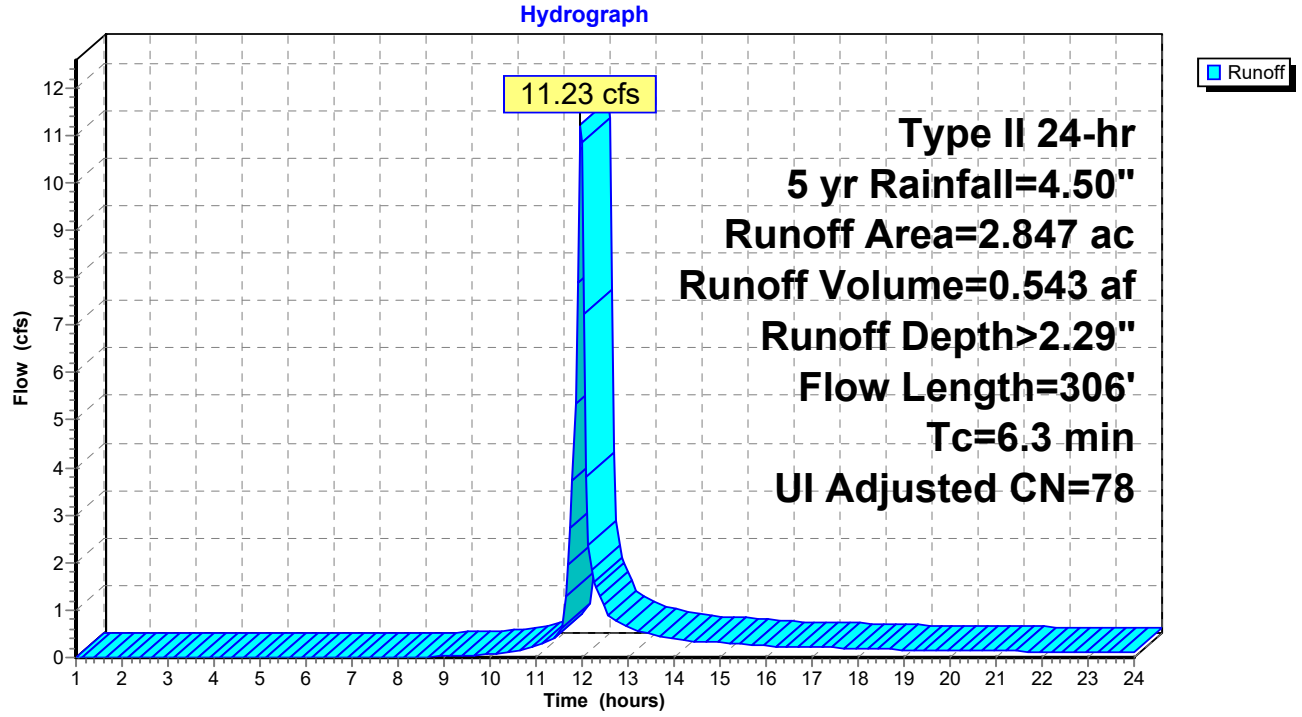
Runoff = 11.23 cfs @ 11.98 hrs, Volume= 0.543 af, Depth> 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 5 yr Rainfall=4.50"

Area (ac)	CN	Adj	Description
0.220	98		Unconnected roofs, HSG B
0.220	98		Unconnected roofs, HSG C
0.293	98		Paved roads w/curbs & sewers, HSG C
0.658	74		>75% Grass cover, Good, HSG C
1.246	74		>75% Grass cover, Good, HSG C
0.210	74		>75% Grass cover, Good, HSG C
2.847	80	78	Weighted Average, UI Adjusted
2.114			74.25% Pervious Area
0.733			25.75% Impervious Area
0.440			60.03% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	100	0.0700	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
0.9	206	0.0680	3.91		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
6.3	306	Total			

Subcatchment 28S: C-WS3



Summary for Subcatchment 29S: BYPASS 1

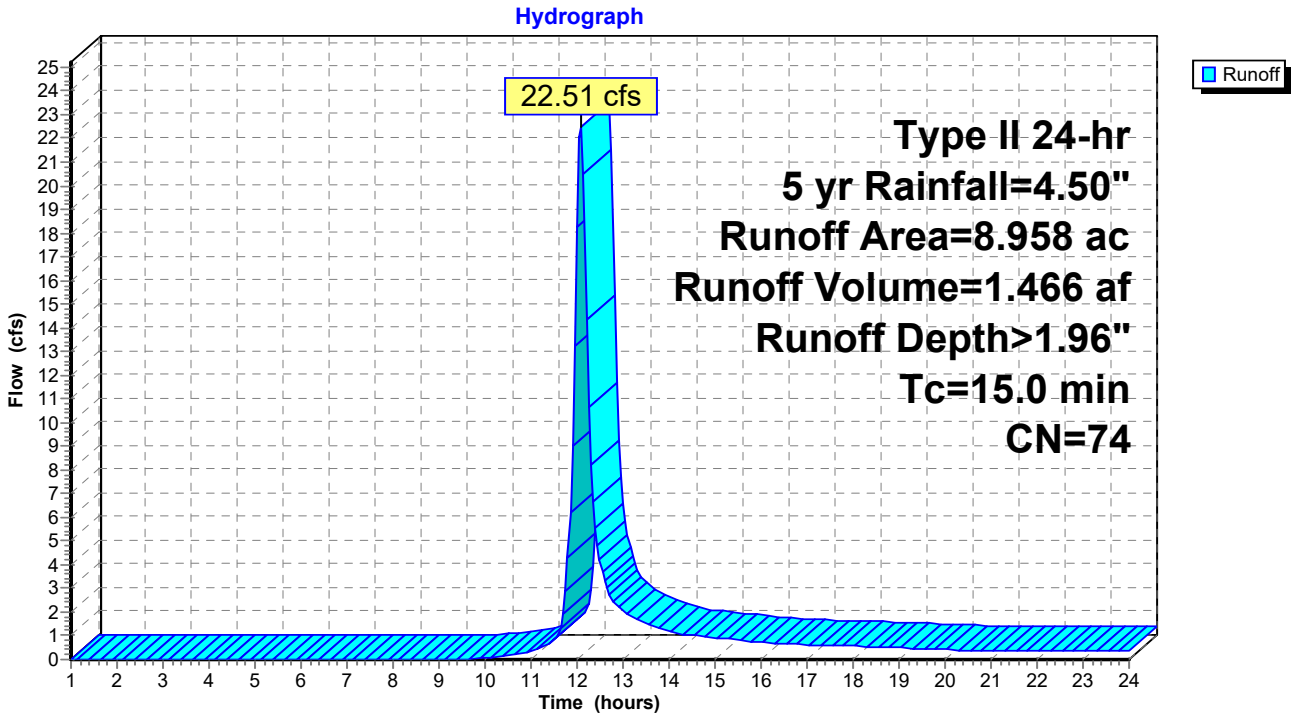
Runoff = 22.51 cfs @ 12.08 hrs, Volume= 1.466 af, Depth> 1.96"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 5 yr Rainfall=4.50"

Area (ac)	CN	Description
1.359	74	>75% Grass cover, Good, HSG C
6.273	74	>75% Grass cover, Good, HSG C
1.326	74	>75% Grass cover, Good, HSG C
8.958	74	Weighted Average
8.958		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry,**

Subcatchment 29S: BYPASS 1



Summary for Reach 31R: Swale + Stream

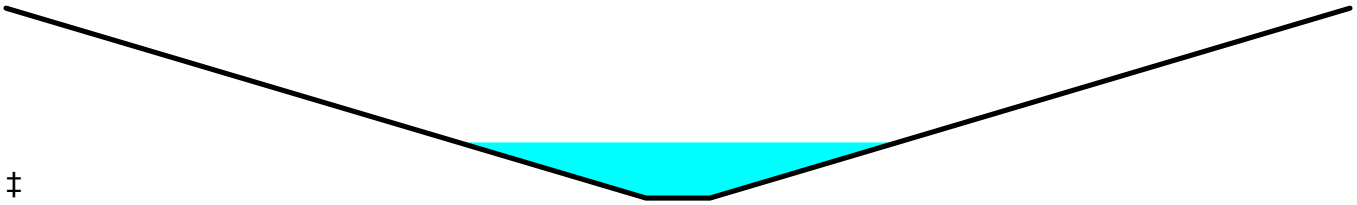
[79] Warning: Submerged Pond 16P Primary device # 1 INLET by 1.99'

Inflow Area = 29.512 ac, 5.01% Impervious, Inflow Depth > 1.60" for 5 yr event
Inflow = 32.01 cfs @ 12.24 hrs, Volume= 3.934 af
Outflow = 30.87 cfs @ 12.36 hrs, Volume= 3.915 af, Atten= 4%, Lag= 7.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 3.36 fps, Min. Travel Time= 3.5 min
Avg. Velocity = 1.78 fps, Avg. Travel Time= 6.6 min

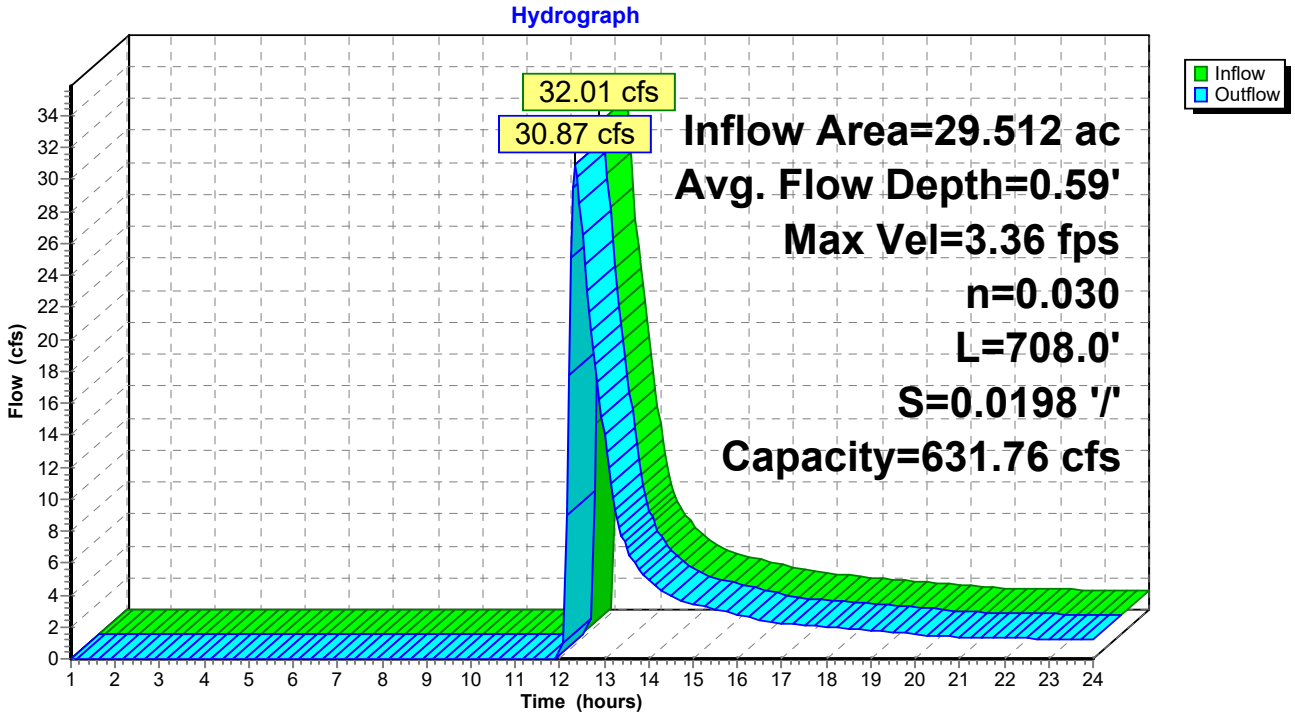
Peak Storage= 6,523 cf @ 12.30 hrs
Average Depth at Peak Storage= 0.59'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 631.76 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 708.0' Slope= 0.0198 '/'
Inlet Invert= 828.00', Outlet Invert= 814.00'



‡

Reach 31R: Swale + Stream



Stage-Area-Storage for Reach 31R: Swale + Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
828.00	0.0	0
828.02	0.1	62
828.04	0.2	136
828.06	0.3	221
828.08	0.4	317
828.10	0.6	425
828.12	0.8	544
828.14	1.0	674
828.16	1.2	816
828.18	1.4	969
828.20	1.6	1,133
828.22	1.8	1,308
828.24	2.1	1,495
828.26	2.4	1,694
828.28	2.7	1,903
828.30	3.0	2,124
828.32	3.3	2,356
828.34	3.7	2,600
828.36	4.0	2,855
828.38	4.4	3,121
828.40	4.8	3,398
828.42	5.2	3,687
828.44	5.6	3,987
828.46	6.1	4,299
828.48	6.5	4,622
828.50	7.0	4,956
828.52	7.5	5,302
828.54	8.0	5,658
828.56	8.5	6,026
828.58	9.0	6,406
828.60	9.6	6,797
828.62	10.2	7,199
828.64	10.8	7,612
828.66	11.4	8,037
828.68	12.0	8,473
828.70	12.6	8,921
828.72	13.2	9,380
828.74	13.9	9,850
828.76	14.6	10,331
828.78	15.3	10,824
828.80	16.0	11,328
828.82	16.7	11,843
828.84	17.5	12,370
828.86	18.2	12,908
828.88	19.0	13,458
828.90	19.8	14,018
828.92	20.6	14,590
828.94	21.4	15,174
828.96	22.3	15,769
828.98	23.1	16,375
829.00	24.0	16,992
829.02	24.9	17,621
829.04	25.8	18,261
829.06	26.7	18,912
829.08	27.6	19,575
829.10	28.6	20,249
829.12	29.6	20,934
829.14	30.6	21,631
829.16	31.6	22,339
829.18	32.6	23,058
829.20	33.6	23,789
829.22	34.6	24,531
829.24	35.7	25,284
829.26	36.8	26,049
829.28	37.9	26,825
829.30	39.0	27,612
829.32	40.1	28,411
829.34	41.3	29,221
829.36	42.4	30,042
829.38	43.6	30,874
829.40	44.8	31,718
829.42	46.0	32,574
829.44	47.2	33,440
829.46	48.5	34,318
829.48	49.7	35,207
829.50	51.0	36,108
829.52	52.3	37,020
829.54	53.6	37,943
829.56	54.9	38,878
829.58	56.2	39,824
829.60	57.6	40,781
829.62	59.0	41,749
829.64	60.4	42,729
829.66	61.8	43,720
829.68	63.2	44,723
829.70	64.6	45,737
829.72	66.0	46,762
829.74	67.5	47,798
829.76	69.0	48,846
829.78	70.5	49,906
829.80	72.0	50,976
829.82	73.5	52,058
829.84	75.1	53,151
829.86	76.6	54,255
829.88	78.2	55,371
829.90	79.8	56,498
829.92	81.4	57,637
829.94	83.0	58,787
829.96	84.7	59,948
829.98	86.3	61,120
830.00	**88.0**	**62,304**

Summary for Reach 32R: Swale + Stream

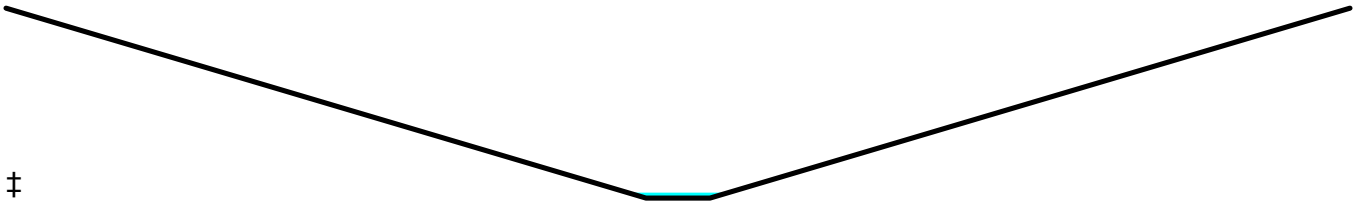
[79] Warning: Submerged Pond 39P Primary device # 1 OUTLET by 0.06'

Inflow Area = 2.093 ac, 37.74% Impervious, Inflow Depth > 2.72" for 5 yr event
Inflow = 0.62 cfs @ 12.81 hrs, Volume= 0.474 af
Outflow = 0.62 cfs @ 12.90 hrs, Volume= 0.473 af, Atten= 0%, Lag= 5.6 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.12 fps, Min. Travel Time= 3.1 min
Avg. Velocity = 1.67 fps, Avg. Travel Time= 4.0 min

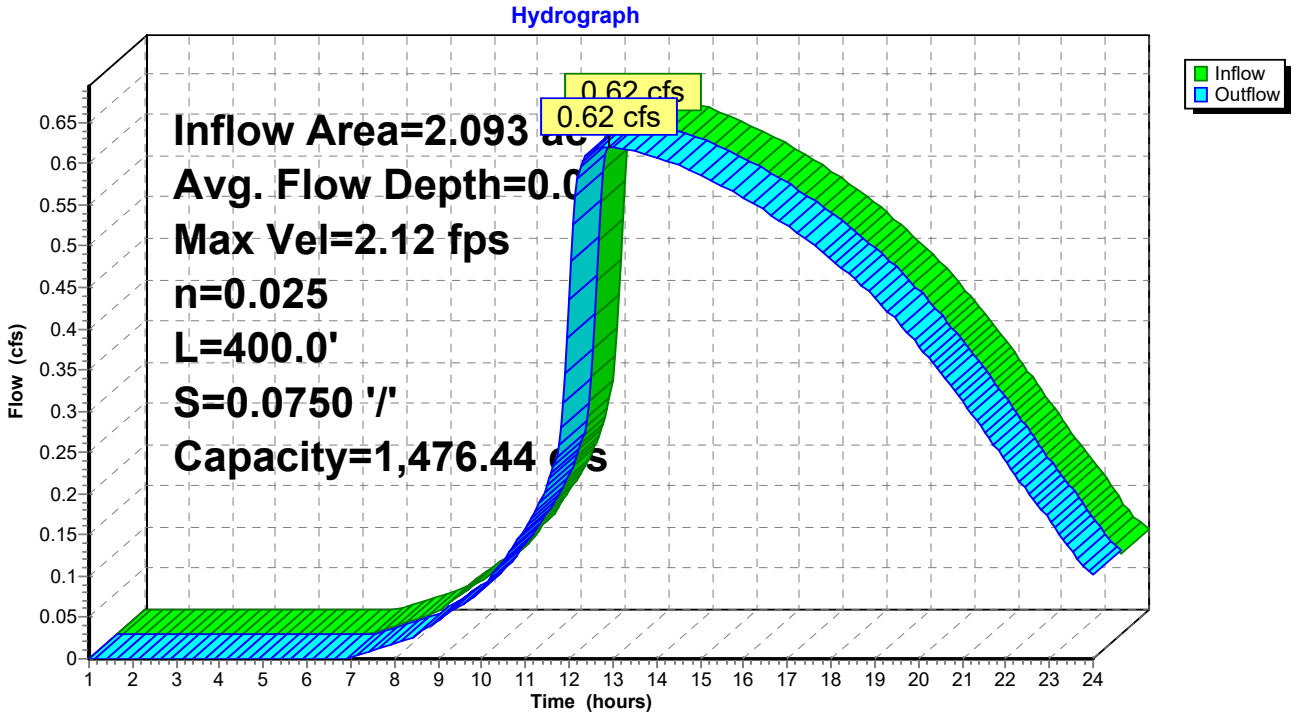
Peak Storage= 117 cf @ 12.85 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 1,476.44 cfs

4.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 400.0' Slope= 0.0750 '/'
Inlet Invert= 844.00', Outlet Invert= 814.00'



‡

Reach 32R: Swale + Stream



Stage-Area-Storage for Reach 32R: Swale + Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
844.00	0.0	0
844.02	0.1	35
844.04	0.2	77
844.06	0.3	125
844.08	0.4	179
844.10	0.6	240
844.12	0.8	307
844.14	1.0	381
844.16	1.2	461
844.18	1.4	547
844.20	1.6	640
844.22	1.8	739
844.24	2.1	845
844.26	2.4	957
844.28	2.7	1,075
844.30	3.0	1,200
844.32	3.3	1,331
844.34	3.7	1,469
844.36	4.0	1,613
844.38	4.4	1,763
844.40	4.8	1,920
844.42	5.2	2,083
844.44	5.6	2,253
844.46	6.1	2,429
844.48	6.5	2,611
844.50	7.0	2,800
844.52	7.5	2,995
844.54	8.0	3,197
844.56	8.5	3,405
844.58	9.0	3,619
844.60	9.6	3,840
844.62	10.2	4,067
844.64	10.8	4,301
844.66	11.4	4,541
844.68	12.0	4,787
844.70	12.6	5,040
844.72	13.2	5,299
844.74	13.9	5,565
844.76	14.6	5,837
844.78	15.3	6,115
844.80	16.0	6,400
844.82	16.7	6,691
844.84	17.5	6,989
844.86	18.2	7,293
844.88	19.0	7,603
844.90	19.8	7,920
844.92	20.6	8,243
844.94	21.4	8,573
844.96	22.3	8,909
844.98	23.1	9,251
845.00	24.0	9,600
845.02	24.9	9,955
845.04	25.8	10,317
845.06	26.7	10,685
845.08	27.6	11,059
845.10	28.6	11,440
845.12	29.6	11,827
845.14	30.6	12,221
845.16	31.6	12,621
845.18	32.6	13,027
845.20	33.6	13,440
845.22	34.6	13,859
845.24	35.7	14,285
845.26	36.8	14,717
845.28	37.9	15,155
845.30	39.0	15,600
845.32	40.1	16,051
845.34	41.3	16,509
845.36	42.4	16,973
845.38	43.6	17,443
845.40	44.8	17,920
845.42	46.0	18,403
845.44	47.2	18,893
845.46	48.5	19,389
845.48	49.7	19,891
845.50	51.0	20,400
845.52	52.3	20,915
845.54	53.6	21,437
845.56	54.9	21,965
845.58	56.2	22,499
845.60	57.6	23,040
845.62	59.0	23,587
845.64	60.4	24,141
845.66	61.8	24,701
845.68	63.2	25,267
845.70	64.6	25,840
845.72	66.0	26,419
845.74	67.5	27,005
845.76	69.0	27,597
845.78	70.5	28,195
845.80	72.0	28,800
845.82	73.5	29,411
845.84	75.1	30,029
845.86	76.6	30,653
845.88	78.2	31,283
845.90	79.8	31,920
845.92	81.4	32,563
845.94	83.0	33,213
845.96	84.7	33,869
845.98	86.3	34,531
846.00	**88.0**	**35,200**

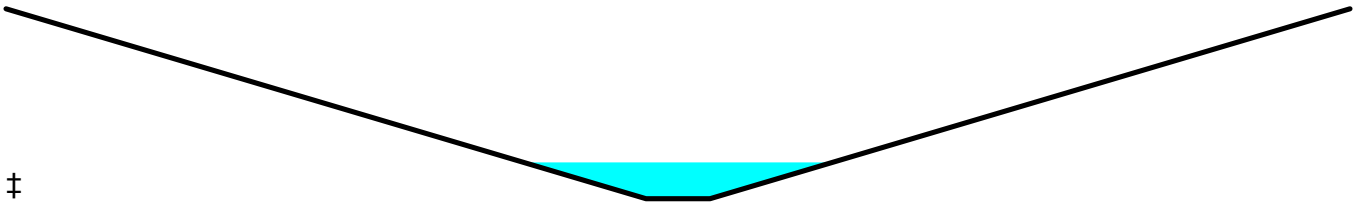
Summary for Reach 33R: Stream

Inflow Area = 2.847 ac, 25.75% Impervious, Inflow Depth > 2.29" for 5 yr event
Inflow = 11.08 cfs @ 11.99 hrs, Volume= 0.542 af
Outflow = 10.10 cfs @ 12.07 hrs, Volume= 0.540 af, Atten= 9%, Lag= 5.0 min

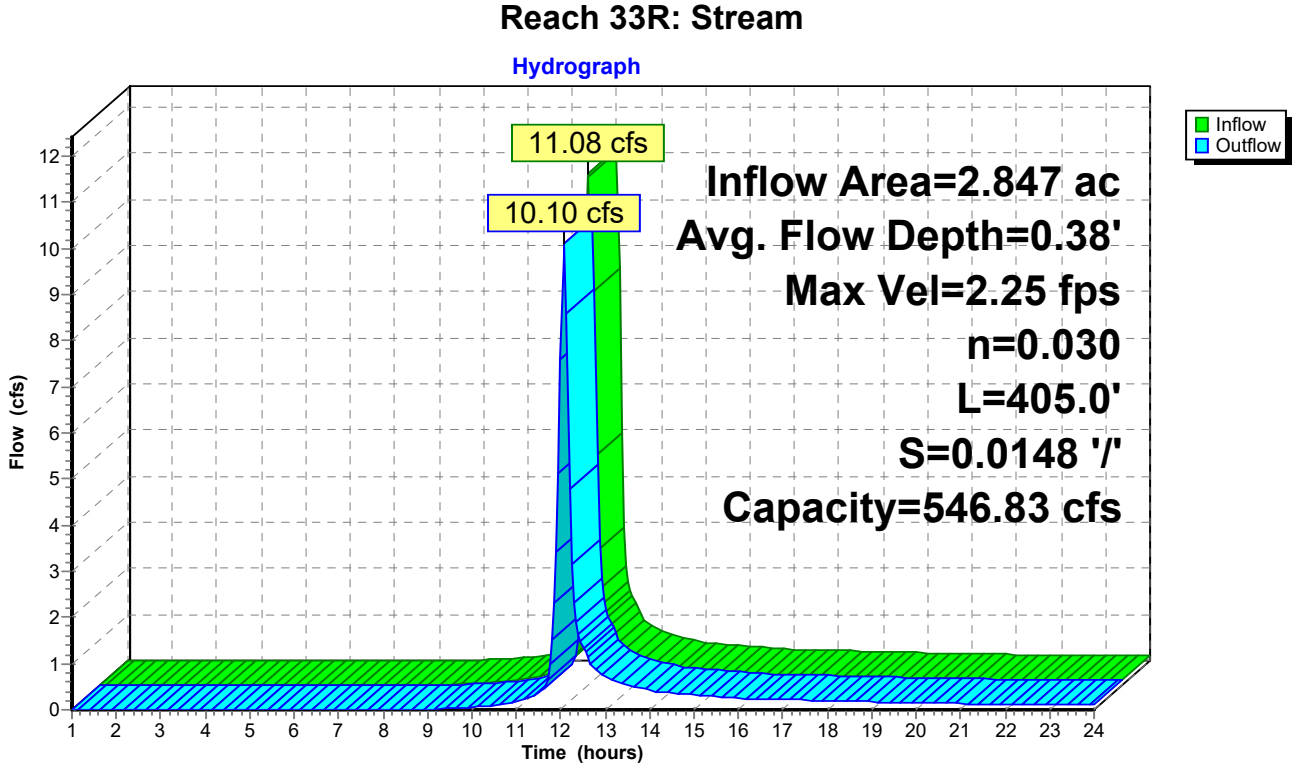
Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.25 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 0.78 fps, Avg. Travel Time= 8.6 min

Peak Storage= 1,805 cf @ 12.02 hrs
Average Depth at Peak Storage= 0.38'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 546.83 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 405.0' Slope= 0.0148 '/'
Inlet Invert= 820.00', Outlet Invert= 814.00'



‡



Stage-Area-Storage for Reach 33R: Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
820.00	0.0	0
820.02	0.1	36
820.04	0.2	78
820.06	0.3	126
820.08	0.4	181
820.10	0.6	243
820.12	0.8	311
820.14	1.0	386
820.16	1.2	467
820.18	1.4	554
820.20	1.6	648
820.22	1.8	748
820.24	2.1	855
820.26	2.4	969
820.28	2.7	1,089
820.30	3.0	1,215
820.32	3.3	1,348
820.34	3.7	1,487
820.36	4.0	1,633
820.38	4.4	1,785
820.40	4.8	1,944
820.42	5.2	2,109
820.44	5.6	2,281
820.46	6.1	2,459
820.48	6.5	2,644
820.50	7.0	2,835
820.52	7.5	3,033
820.54	8.0	3,237
820.56	8.5	3,447
820.58	9.0	3,664
820.60	9.6	3,888
820.62	10.2	4,118
820.64	10.8	4,355
820.66	11.4	4,598
820.68	12.0	4,847
820.70	12.6	5,103
820.72	13.2	5,365
820.74	13.9	5,634
820.76	14.6	5,910
820.78	15.3	6,192
820.80	16.0	6,480
820.82	16.7	6,775
820.84	17.5	7,076
820.86	18.2	7,384
820.88	19.0	7,698
820.90	19.8	8,019
820.92	20.6	8,346
820.94	21.4	8,680
820.96	22.3	9,020
820.98	23.1	9,367
821.00	24.0	9,720
821.02	24.9	10,080
821.04	25.8	10,446
821.06	26.7	10,818
821.08	27.6	11,197
821.10	28.6	11,583
821.12	29.6	11,975
821.14	30.6	12,374
821.16	31.6	12,779
821.18	32.6	13,190
821.20	33.6	13,608
821.22	34.6	14,032
821.24	35.7	14,463
821.26	36.8	14,901
821.28	37.9	15,345
821.30	39.0	15,795
821.32	40.1	16,252
821.34	41.3	16,715
821.36	42.4	17,185
821.38	43.6	17,661
821.40	44.8	18,144
821.42	46.0	18,633
821.44	47.2	19,129
821.46	48.5	19,631
821.48	49.7	20,140
821.50	51.0	20,655
821.52	52.3	21,177
821.54	53.6	21,705
821.56	54.9	22,239
821.58	56.2	22,780
821.60	57.6	23,328
821.62	59.0	23,882
821.64	60.4	24,443
821.66	61.8	25,010
821.68	63.2	25,583
821.70	64.6	26,163
821.72	66.0	26,749
821.74	67.5	27,342
821.76	69.0	27,942
821.78	70.5	28,548
821.80	72.0	29,160
821.82	73.5	29,779
821.84	75.1	30,404
821.86	76.6	31,036
821.88	78.2	31,674
821.90	79.8	32,319
821.92	81.4	32,970
821.94	83.0	33,628
821.96	84.7	34,292
821.98	86.3	34,963
822.00	**88.0**	**35,640**

Summary for Pond 16P: Pond 1

Inflow Area = 29.512 ac, 5.01% Impervious, Inflow Depth > 2.04" for 5 yr event
Inflow = 84.11 cfs @ 12.05 hrs, Volume= 5.026 af
Outflow = 32.01 cfs @ 12.24 hrs, Volume= 3.934 af, Atten= 62%, Lag= 11.4 min
Primary = 32.01 cfs @ 12.24 hrs, Volume= 3.934 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 833.33' @ 12.24 hrs Surf.Area= 29,115 sf Storage= 81,525 cf

Plug-Flow detention time= 139.3 min calculated for 3.925 af (78% of inflow)
Center-of-Mass det. time= 51.9 min (892.9 - 841.0)

Volume	Invert	Avail.Storage	Storage Description
#1	826.60'	179,320 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

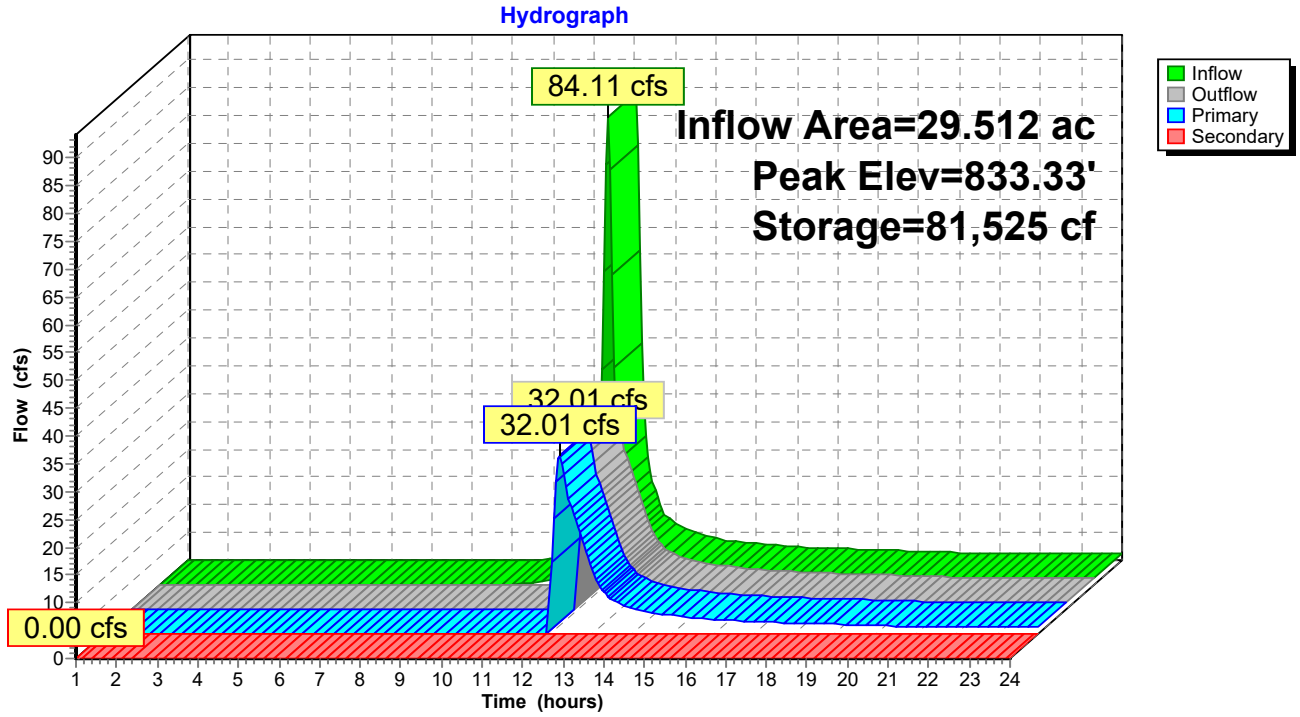
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
826.60	5	20.0	0	0	5
828.00	169	47.0	95	95	156
830.00	11,373	539.8	8,619	8,714	23,176
832.00	25,791	810.0	36,194	44,907	52,230
834.00	30,848	854.2	56,564	101,471	58,316
836.00	47,604	1,729.9	77,849	179,320	238,410

Device	Routing	Invert	Outlet Devices
#1	Primary	826.60'	**36.0" Round Culvert** L= 61.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 826.60' / 826.00' S= 0.0098 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	832.00'	**6.2" Vert. Orifice/Grate** C= 0.600
#3	Device 1	832.00'	**30.0" W x 6.0" H Vert. Orifice/Grate X 4.00** C= 0.600
#4	Device 1	833.00'	**28.0" x 28.0" Horiz. TOS** C= 0.600 Limited to weir flow at low heads
#5	Secondary	834.30'	**30.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=31.81 cfs @ 12.24 hrs HW=833.33' (Free Discharge)
└**1=Culvert** (Passes 31.81 cfs of 77.84 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.05 cfs @ 4.99 fps)
  ├**3=Orifice/Grate** (Orifice Controls 24.97 cfs @ 4.99 fps)
  └**4=TOS** (Weir Controls 5.79 cfs @ 1.88 fps)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=826.60' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 16P: Pond 1



Stage-Area-Storage for Pond 16P: Pond 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
826.60	5	0
826.70	9	1
826.80	14	2
826.90	21	4
827.00	28	6
827.10	37	9
827.20	47	13
827.30	58	19
827.40	70	25
827.50	84	33
827.60	98	42
827.70	114	53
827.80	131	65
827.90	150	79
828.00	169	95
828.10	313	118
828.20	500	159
828.30	732	220
828.40	1,007	307
828.50	1,326	423
828.60	1,689	573
828.70	2,095	762
828.80	2,546	994
828.90	3,040	1,273
829.00	3,579	1,603
829.10	4,161	1,990
829.20	4,787	2,437
829.30	5,457	2,949
829.40	6,170	3,530
829.50	6,928	4,184
829.60	7,729	4,917
829.70	8,574	5,731
829.80	9,463	6,633
829.90	10,396	7,626
830.00	11,373	8,714
830.10	11,956	9,880
830.20	12,553	11,105
830.30	13,165	12,391
830.40	13,791	13,739
830.50	14,432	15,150
830.60	15,087	16,626
830.70	15,757	18,168
830.80	16,442	19,777
830.90	17,141	21,456
831.00	17,854	23,206
831.10	18,582	25,028
831.20	19,325	26,923
831.30	20,083	28,893
831.40	20,854	30,940
831.50	21,641	33,065
831.60	22,442	35,269
831.70	23,257	37,553
831.80	24,087	39,921
831.90	24,932	42,371
832.00	25,791	44,907
832.10	26,033	47,499
832.20	26,276	50,114
832.30	26,521	52,754
832.40	26,766	55,418
832.50	27,013	58,107
832.60	27,261	60,821
832.70	27,509	63,559
832.80	27,760	66,323
832.90	28,011	69,111
833.00	28,263	71,925
833.10	28,516	74,764
833.20	28,771	77,628
833.30	29,027	80,518
833.40	29,283	83,434
833.50	29,541	86,375
833.60	29,800	89,342
833.70	30,061	92,335
833.80	30,322	95,354
833.90	30,584	98,399
834.00	30,848	101,471
834.10	31,600	104,593
834.20	32,361	107,791
834.30	33,131	111,066
834.40	33,910	114,418
834.50	34,698	117,848
834.60	35,495	121,358
834.70	36,301	124,947
834.80	37,116	128,618
834.90	37,940	132,371
835.00	38,773	136,206
835.10	39,616	140,126
835.20	40,467	144,130
835.30	41,328	148,219
835.40	42,197	152,396
835.50	43,076	156,659
835.60	43,963	161,011
835.70	44,860	165,452
835.80	45,765	169,983
835.90	46,680	174,605
836.00	**47,604**	**179,320**

Summary for Pond 38P: Pond 3

Inflow Area = 2.847 ac, 25.75% Impervious, Inflow Depth > 2.29" for 5 yr event
Inflow = 11.23 cfs @ 11.98 hrs, Volume= 0.543 af
Outflow = 11.08 cfs @ 11.99 hrs, Volume= 0.542 af, Atten= 1%, Lag= 0.8 min
Primary = 11.08 cfs @ 11.99 hrs, Volume= 0.542 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 823.78' @ 11.99 hrs Surf.Area= 3,052 sf Storage= 836 cf

Plug-Flow detention time= 2.9 min calculated for 0.542 af (100% of inflow)
Center-of-Mass det. time= 1.9 min (830.2 - 828.3)

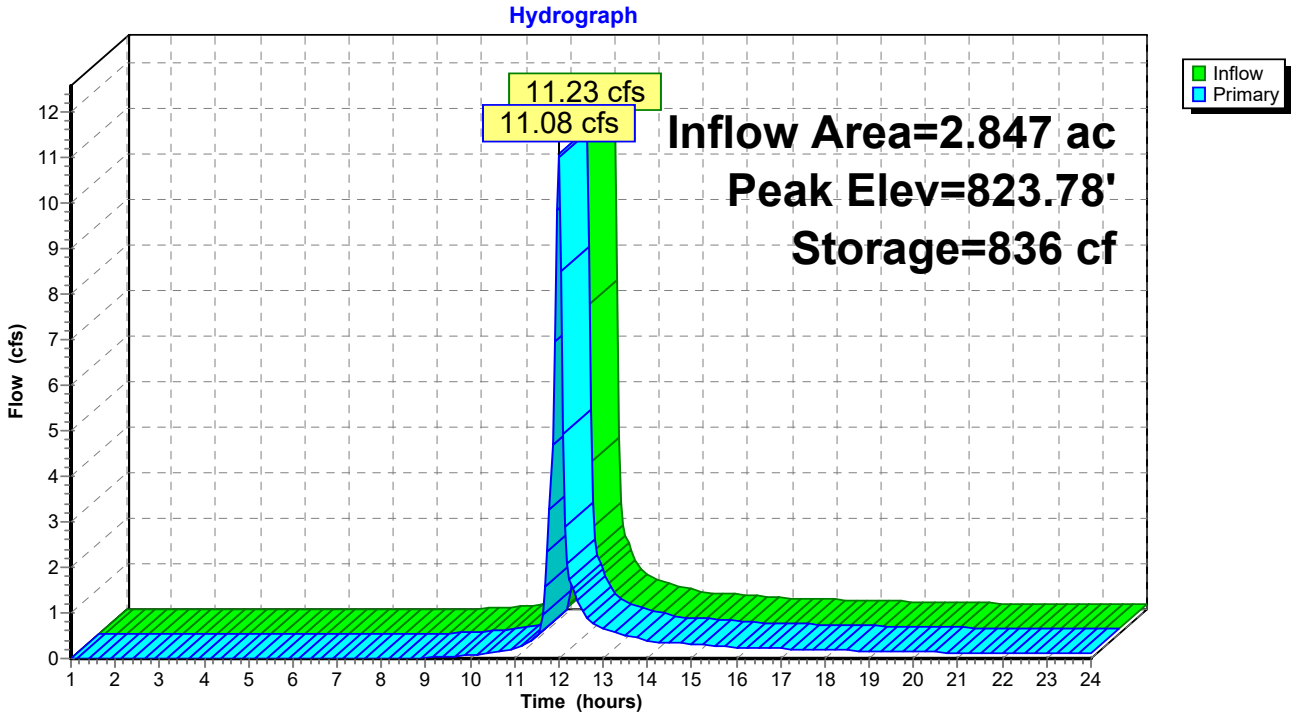
Volume	Invert	Avail.Storage	Storage Description
#1	823.50'	3,444 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
823.50	2,814	277.0	0	0	2,814
824.00	3,238	287.0	1,512	1,512	3,284
824.50	4,526	323.0	1,932	3,444	5,039

Device	Routing	Invert	Outlet Devices
#1	Primary	823.50'	**30.0' long x 6.0' breadth Overflow Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=10.80 cfs @ 11.99 hrs HW=823.78' (Free Discharge)
1=Overflow Weir (Weir Controls 10.80 cfs @ 1.28 fps)

Pond 38P: Pond 3



Stage-Area-Storage for Pond 38P: Pond 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
823.50	2,814	0
823.51	2,822	28
823.52	2,830	56
823.53	2,839	85
823.54	2,847	113
823.55	2,855	142
823.56	2,863	170
823.57	2,872	199
823.58	2,880	228
823.59	2,888	257
823.60	2,896	286
823.61	2,905	315
823.62	2,913	344
823.63	2,921	373
823.64	2,930	402
823.65	2,938	431
823.66	2,946	461
823.67	2,955	490
823.68	2,963	520
823.69	2,972	550
823.70	2,980	579
823.71	2,988	609
823.72	2,997	639
823.73	3,005	669
823.74	3,014	699
823.75	3,022	729
823.76	3,031	760
823.77	3,039	790
823.78	3,048	820
823.79	3,056	851
823.80	3,065	882
823.81	3,073	912
823.82	3,082	943
823.83	3,091	974
823.84	3,099	1,005
823.85	3,108	1,036
823.86	3,116	1,067
823.87	3,125	1,098
823.88	3,134	1,129
823.89	3,142	1,161
823.90	3,151	1,192
823.91	3,159	1,224
823.92	3,168	1,256
823.93	3,177	1,287
823.94	3,186	1,319
823.95	3,194	1,351
823.96	3,203	1,383
823.97	3,212	1,415
823.98	3,220	1,447
823.99	3,229	1,479
824.00	3,238	1,512
824.01	3,262	1,544
824.02	3,285	1,577
824.03	3,309	1,610
824.04	3,333	1,643
824.05	3,357	1,677
824.06	3,381	1,710
824.07	3,405	1,744
824.08	3,430	1,778
824.09	3,454	1,813
824.10	3,478	1,848
824.11	3,503	1,882
824.12	3,527	1,918
824.13	3,552	1,953
824.14	3,577	1,989
824.15	3,602	2,025
824.16	3,627	2,061
824.17	3,652	2,097
824.18	3,677	2,134
824.19	3,702	2,171
824.20	3,727	2,208
824.21	3,753	2,245
824.22	3,778	2,283
824.23	3,804	2,321
824.24	3,829	2,359
824.25	3,855	2,397
824.26	3,881	2,436
824.27	3,907	2,475
824.28	3,933	2,514
824.29	3,959	2,554
824.30	3,985	2,593
824.31	4,011	2,633
824.32	4,038	2,673
824.33	4,064	2,714
824.34	4,090	2,755
824.35	4,117	2,796
824.36	4,144	2,837
824.37	4,170	2,879
824.38	4,197	2,921
824.39	4,224	2,963
824.40	4,251	3,005
824.41	4,278	3,048
824.42	4,305	3,091
824.43	4,333	3,134
824.44	4,360	3,177
824.45	4,388	3,221
824.46	4,415	3,265
824.47	4,443	3,309
824.48	4,470	3,354
824.49	4,498	3,399
824.50	**4,526**	**3,444**

Summary for Pond 39P: Pond 2

Inflow Area = 2.093 ac, 37.74% Impervious, Inflow Depth > 2.72" for 5 yr event
Inflow = 8.89 cfs @ 12.00 hrs, Volume= 0.475 af
Outflow = 0.62 cfs @ 12.81 hrs, Volume= 0.474 af, Atten= 93%, Lag= 48.5 min
Primary = 0.62 cfs @ 12.81 hrs, Volume= 0.474 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 854.33' @ 12.81 hrs Surf.Area= 3,793 sf Storage= 9,696 cf

Plug-Flow detention time= 158.1 min calculated for 0.473 af (100% of inflow)
Center-of-Mass det. time= 156.9 min (973.2 - 816.3)

Volume	Invert	Avail.Storage	Storage Description
#1	849.50'	40,741 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

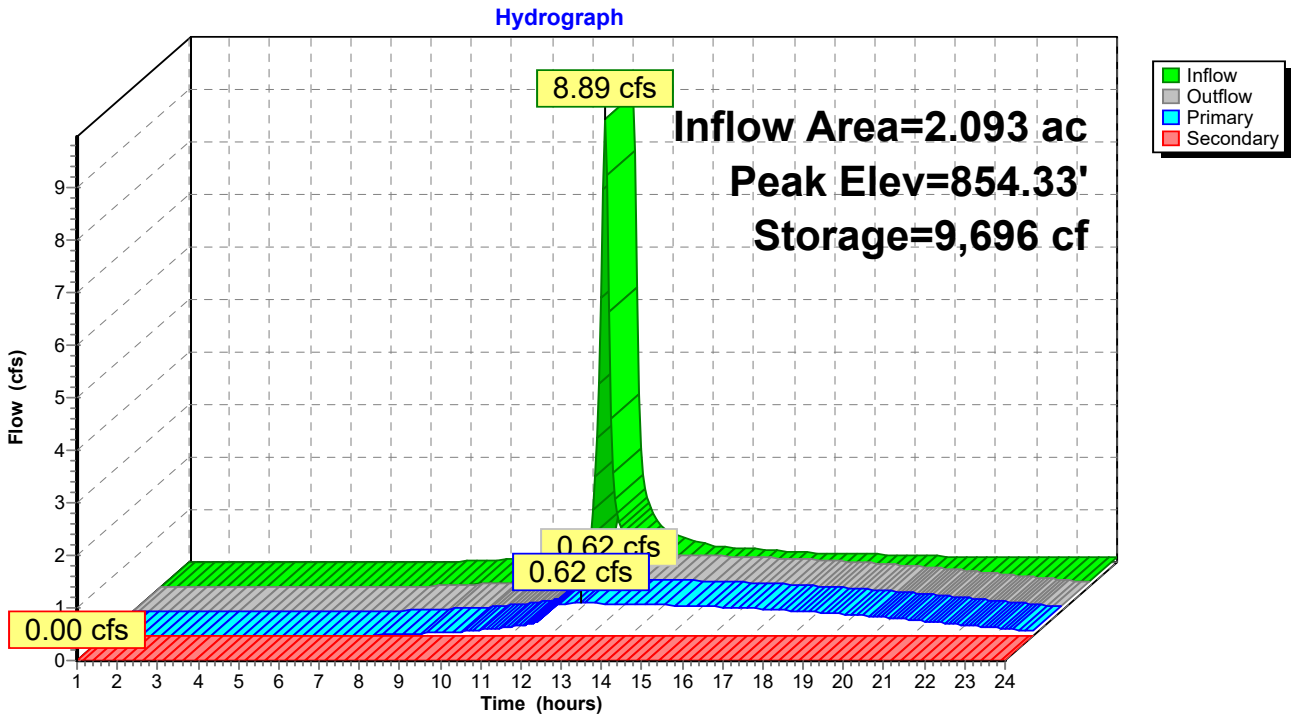
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
849.50	5	20.0	0	0	5
850.00	986	146.0	177	177	1,670
852.00	1,972	183.0	2,902	3,078	2,693
854.00	3,498	252.0	5,398	8,476	5,121
856.00	5,438	321.0	8,865	17,341	8,319
857.00	8,862	631.0	7,081	24,422	31,809
858.00	11,447	647.0	10,127	34,549	33,557
858.50	13,348	665.0	6,193	40,741	35,464

Device	Routing	Invert	Outlet Devices
#1	Primary	849.00'	**24.0" Round Culvert** L= 140.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 849.00' / 844.00' S= 0.0357 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Device 1	849.50'	**3.3" Vert. Orifice/Grate** C= 0.600
#3	Device 1	856.00'	**28.0" W x 28.0" H Vert. TOS** C= 0.600
#4	Secondary	856.75'	**30.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.62 cfs @ 12.81 hrs HW=854.33' (Free Discharge)
└**1=Culvert** (Passes 0.62 cfs of 31.49 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.62 cfs @ 10.44 fps)
  └**3=TOS** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=849.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 39P: Pond 2



Stage-Area-Storage for Pond 39P: Pond 2

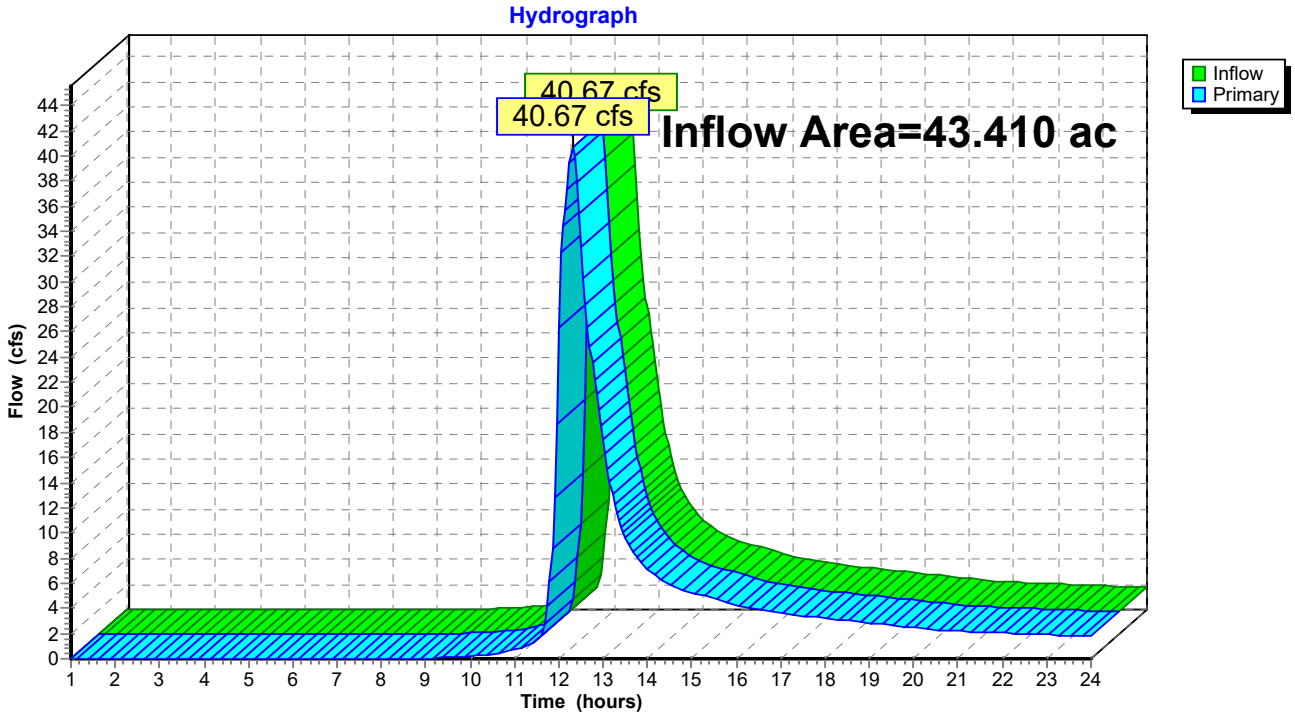
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
849.50	5	0
849.60	65	3
849.70	193	15
849.80	389	44
849.90	654	95
850.00	986	177
850.10	1,027	278
850.20	1,069	382
850.30	1,112	491
850.40	1,156	605
850.50	1,201	723
850.60	1,246	845
850.70	1,293	972
850.80	1,340	1,104
850.90	1,388	1,240
851.00	1,437	1,381
851.10	1,486	1,527
851.20	1,537	1,678
851.30	1,588	1,835
851.40	1,641	1,996
851.50	1,694	2,163
851.60	1,748	2,335
851.70	1,803	2,512
851.80	1,858	2,696
851.90	1,915	2,884
852.00	1,972	3,078
852.10	2,038	3,279
852.20	2,105	3,486
852.30	2,173	3,700
852.40	2,242	3,921
852.50	2,313	4,149
852.60	2,384	4,383
852.70	2,457	4,625
852.80	2,530	4,875
852.90	2,605	5,132
853.00	2,681	5,396
853.10	2,758	5,668
853.20	2,835	5,947
853.30	2,914	6,235
853.40	2,995	6,530
853.50	3,076	6,834
853.60	3,158	7,145
853.70	3,241	7,465
853.80	3,326	7,794
853.90	3,411	8,131
854.00	3,498	8,476
854.10	3,585	8,830
854.20	3,673	9,193
854.30	3,762	9,565
854.40	3,852	9,946
854.50	3,943	10,335
854.60	4,035	10,734
854.70	4,129	11,142
854.80	4,223	11,560
854.90	4,318	11,987
855.00	4,415	12,424
855.10	4,512	12,870
855.20	4,611	13,326
855.30	4,711	13,792
855.40	4,811	14,268
855.50	4,913	14,754
855.60	5,016	15,251
855.70	5,120	15,758
855.80	5,225	16,275
855.90	5,331	16,803
856.00	5,438	17,341
856.10	5,743	17,900
856.20	6,056	18,490
856.30	6,378	19,112
856.40	6,708	19,766
856.50	7,046	20,453
856.60	7,393	21,175
856.70	7,747	21,932
856.80	8,111	22,725
856.90	8,482	23,555
857.00	8,862	24,422
857.10	9,106	25,320
857.20	9,353	26,243
857.30	9,603	27,191
857.40	9,856	28,164
857.50	10,113	29,162
857.60	10,373	30,186
857.70	10,637	31,237
857.80	10,904	32,314
857.90	11,174	33,418
858.00	11,447	34,549
858.10	11,816	35,712
858.20	12,190	36,912
858.30	12,570	38,150
858.40	12,956	39,426
858.50	**13,348**	**40,741**

Summary for Link 30L: Analysis Point 1

Inflow Area = 43.410 ac, 6.92% Impervious, Inflow Depth > 1.77" for 5 yr event
Inflow = 40.67 cfs @ 12.31 hrs, Volume= 6.394 af
Primary = 40.67 cfs @ 12.31 hrs, Volume= 6.394 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Link 30L: Analysis Point 1



Time span=1.00-24.00 hrs, dt=0.05 hrs, 461 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 26S: C-WS1 Runoff Area=29.512 ac 5.01% Impervious Runoff Depth>3.41"
Flow Length=1,285' Tc=12.6 min CN=75 Runoff=140.26 cfs 8.384 af

Subcatchment 27S: C-WS2 Runoff Area=2.093 ac 37.74% Impervious Runoff Depth>4.23"
Flow Length=360' Tc=9.0 min CN=83 Runoff=13.59 cfs 0.738 af

Subcatchment 28S: C-WS3 Runoff Area=2.847 ac 25.75% Impervious Runoff Depth>3.72"
Flow Length=306' Tc=6.3 min UI Adjusted CN=78 Runoff=17.78 cfs 0.882 af

Subcatchment 29S: BYPASS 1 Runoff Area=8.958 ac 0.00% Impervious Runoff Depth>3.31"
Tc=15.0 min CN=74 Runoff=38.19 cfs 2.469 af

Reach 31R: Swale + Stream Avg. Flow Depth=0.86' Max Vel=4.23 fps Inflow=79.14 cfs 7.269 af
n=0.030 L=708.0' S=0.0198 '/' Capacity=631.76 cfs Outflow=76.60 cfs 7.244 af

Reach 32R: Swale + Stream Avg. Flow Depth=0.06' Max Vel=2.21 fps Inflow=0.71 cfs 0.680 af
n=0.025 L=400.0' S=0.0750 '/' Capacity=1,476.44 cfs Outflow=0.71 cfs 0.676 af

Reach 33R: Stream Avg. Flow Depth=0.48' Max Vel=2.57 fps Inflow=17.80 cfs 0.881 af
n=0.030 L=405.0' S=0.0148 '/' Capacity=546.83 cfs Outflow=16.33 cfs 0.878 af

Pond 16P: Pond 1 Peak Elev=834.54' Storage=119,366 cf Inflow=140.26 cfs 8.384 af
Primary=70.55 cfs 7.189 af Secondary=8.59 cfs 0.080 af Outflow=79.14 cfs 7.269 af

Pond 38P: Pond 3 Peak Elev=823.88' Storage=1,141 cf Inflow=17.78 cfs 0.882 af
Outflow=17.80 cfs 0.881 af

Pond 39P: Pond 2 Peak Elev=855.84' Storage=16,467 cf Inflow=13.59 cfs 0.738 af
Primary=0.71 cfs 0.680 af Secondary=0.00 cfs 0.000 af Outflow=0.71 cfs 0.680 af

Link 30L: Analysis Point 1 Inflow=101.61 cfs 11.267 af
Primary=101.61 cfs 11.267 af

Total Runoff Area = 43.410 ac Runoff Volume = 12.473 af Average Runoff Depth = 3.45"
93.08% Pervious = 40.408 ac 6.92% Impervious = 3.002 ac

Summary for Subcatchment 26S: C-WS1

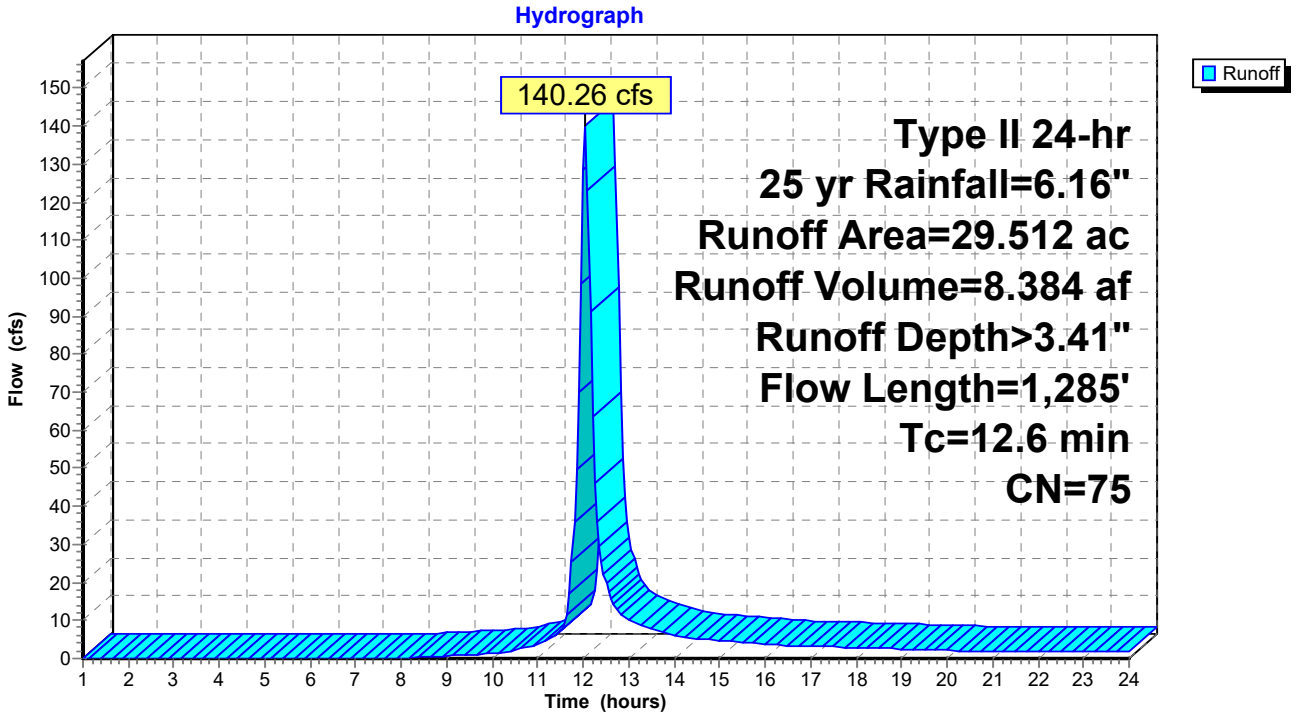
Runoff = 140.26 cfs @ 12.05 hrs, Volume= 8.384 af, Depth> 3.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 yr Rainfall=6.16"

Area (ac)	CN	Description
1.168	98	Unconnected roofs, HSG C
0.311	98	Paved roads w/curbs & sewers, HSG C
14.607	74	>75% Grass cover, Good, HSG C
1.327	74	>75% Grass cover, Good, HSG C
10.488	74	>75% Grass cover, Good, HSG C
1.611	74	>75% Grass cover, Good, HSG C
29.512	75	Weighted Average
28.033		94.99% Pervious Area
1.479		5.01% Impervious Area
1.168		78.97% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0250	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
3.9	845	0.0592	3.65		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.6	340	0.0353	9.65	470.11	**Channel Flow,** Area= 48.7 sf Perim= 60.6' r= 0.80' n= 0.025
12.6	1,285	Total			

Subcatchment 26S: C-WS1



Summary for Subcatchment 27S: C-WS2

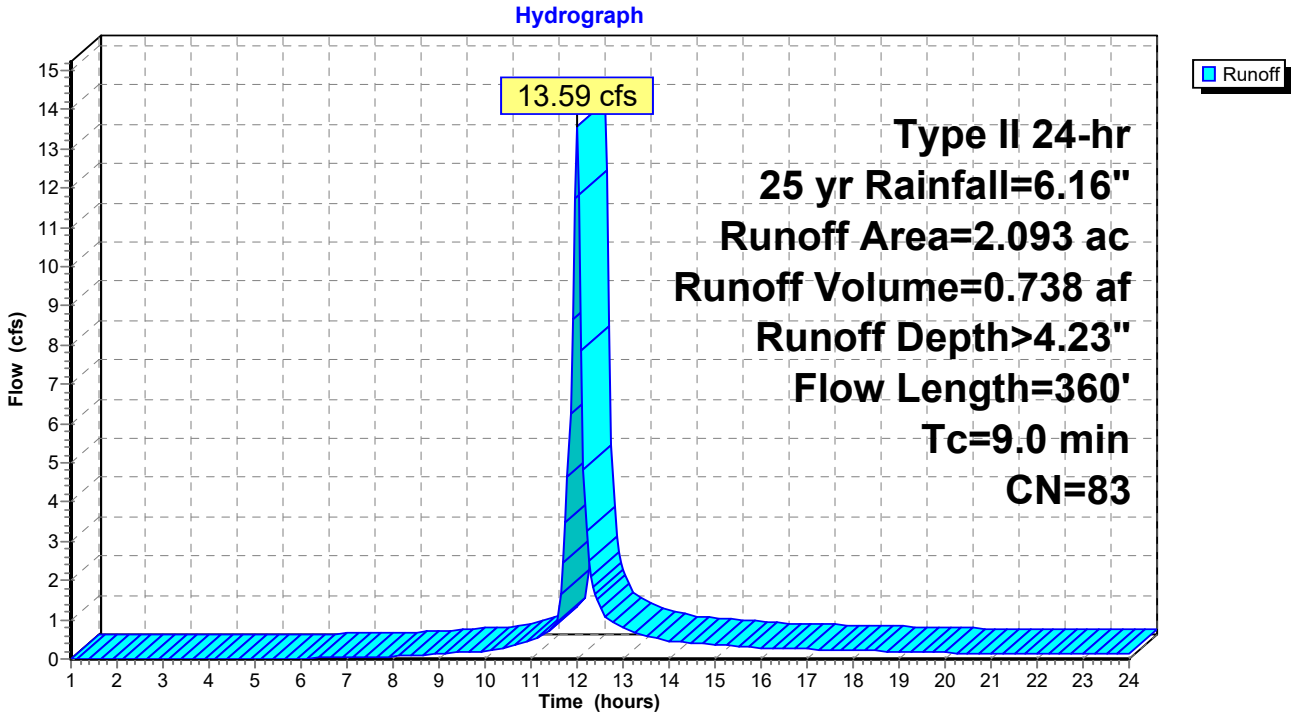
Runoff = 13.59 cfs @ 12.00 hrs, Volume= 0.738 af, Depth> 4.23"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 yr Rainfall=6.16"

Area (ac)	CN	Description
0.110	98	Unconnected roofs, HSG A
0.418	98	Unconnected roofs, HSG C
0.262	98	Paved roads w/curbs & sewers, HSG C
0.383	74	>75% Grass cover, Good, HSG C
0.920	74	>75% Grass cover, Good, HSG C
2.093	83	Weighted Average
1.303		62.26% Pervious Area
0.790		37.74% Impervious Area
0.528		66.84% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0260	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
1.0	260	0.0885	4.46		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.0	360	Total			

Subcatchment 27S: C-WS2



Summary for Subcatchment 28S: C-WS3

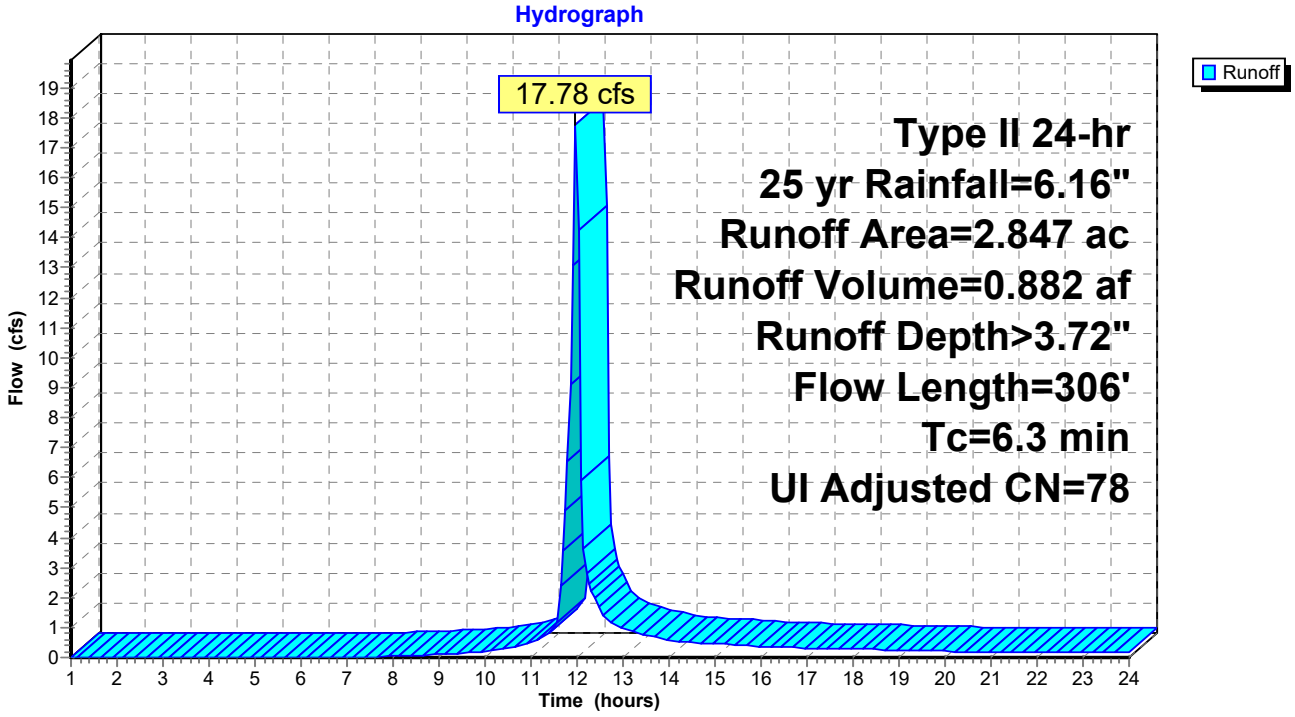
Runoff = 17.78 cfs @ 11.97 hrs, Volume= 0.882 af, Depth> 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 yr Rainfall=6.16"

Area (ac)	CN	Adj	Description
0.220	98		Unconnected roofs, HSG B
0.220	98		Unconnected roofs, HSG C
0.293	98		Paved roads w/curbs & sewers, HSG C
0.658	74		>75% Grass cover, Good, HSG C
1.246	74		>75% Grass cover, Good, HSG C
0.210	74		>75% Grass cover, Good, HSG C
2.847	80	78	Weighted Average, UI Adjusted
2.114			74.25% Pervious Area
0.733			25.75% Impervious Area
0.440			60.03% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	100	0.0700	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
0.9	206	0.0680	3.91		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
6.3	306	Total			

Subcatchment 28S: C-WS3



Summary for Subcatchment 29S: BYPASS 1

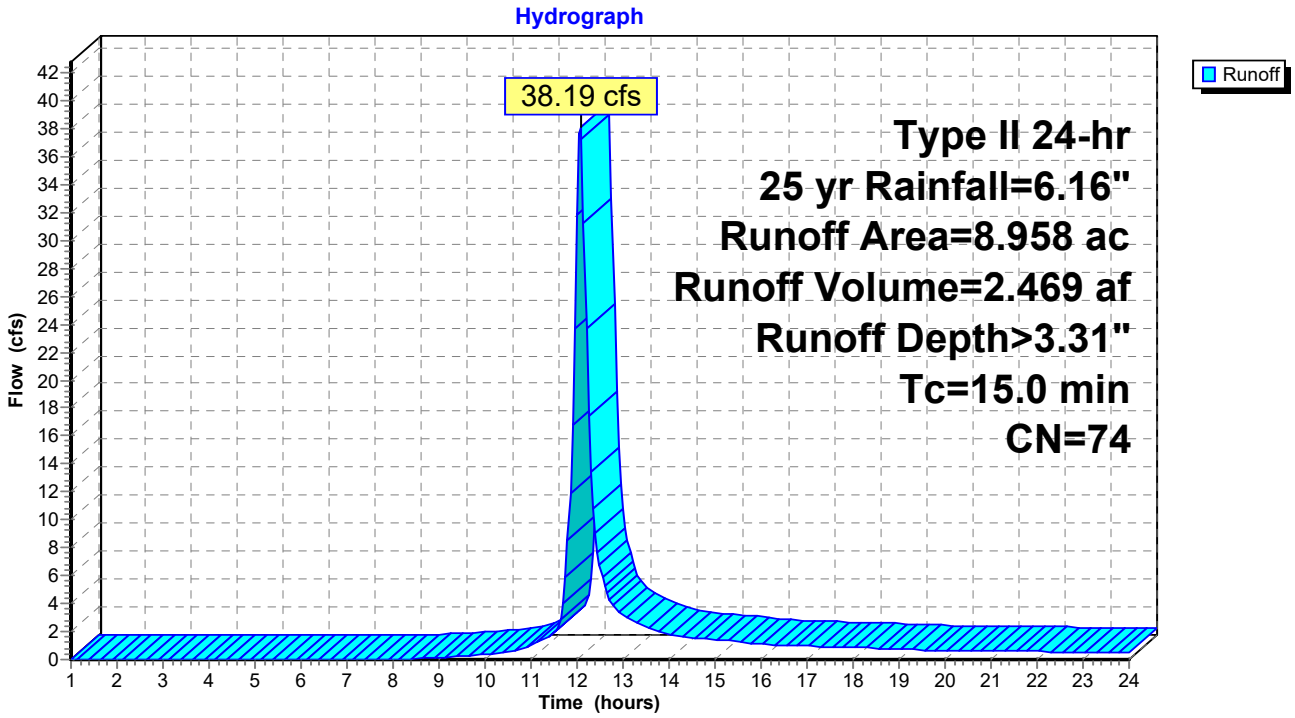
Runoff = 38.19 cfs @ 12.07 hrs, Volume= 2.469 af, Depth> 3.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 yr Rainfall=6.16"

Area (ac)	CN	Description
1.359	74	>75% Grass cover, Good, HSG C
6.273	74	>75% Grass cover, Good, HSG C
1.326	74	>75% Grass cover, Good, HSG C
8.958	74	Weighted Average
8.958		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry,**

Subcatchment 29S: BYPASS 1



Summary for Reach 31R: Swale + Stream

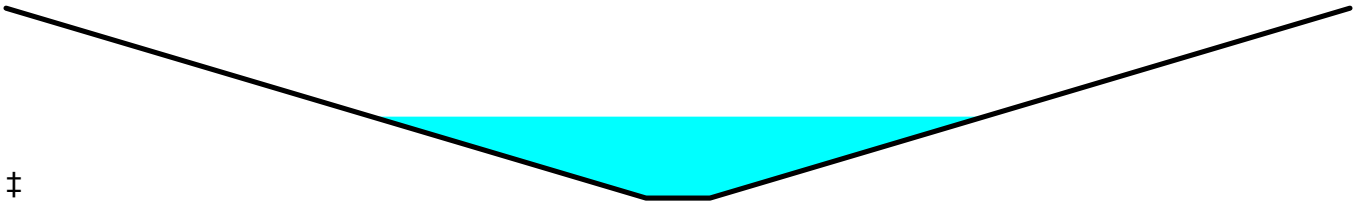
[79] Warning: Submerged Pond 16P Primary device # 1 INLET by 2.26'

Inflow Area = 29.512 ac, 5.01% Impervious, Inflow Depth > 2.96" for 25 yr event
Inflow = 79.14 cfs @ 12.17 hrs, Volume= 7.269 af
Outflow = 76.60 cfs @ 12.26 hrs, Volume= 7.244 af, Atten= 3%, Lag= 5.3 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 4.23 fps, Min. Travel Time= 2.8 min
Avg. Velocity = 2.02 fps, Avg. Travel Time= 5.8 min

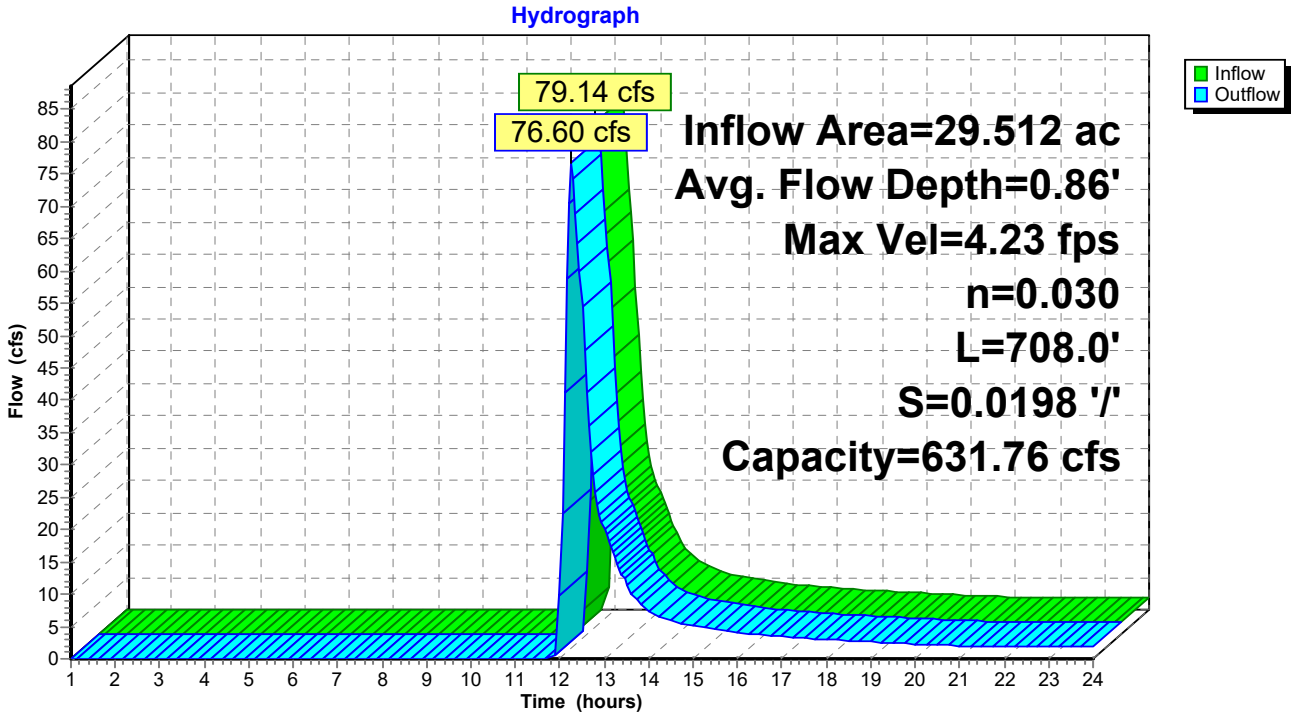
Peak Storage= 12,857 cf @ 12.21 hrs
Average Depth at Peak Storage= 0.86'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 631.76 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 708.0' Slope= 0.0198 '/'
Inlet Invert= 828.00', Outlet Invert= 814.00'



‡

Reach 31R: Swale + Stream



Stage-Area-Storage for Reach 31R: Swale + Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
828.00	0.0	0
828.02	0.1	62
828.04	0.2	136
828.06	0.3	221
828.08	0.4	317
828.10	0.6	425
828.12	0.8	544
828.14	1.0	674
828.16	1.2	816
828.18	1.4	969
828.20	1.6	1,133
828.22	1.8	1,308
828.24	2.1	1,495
828.26	2.4	1,694
828.28	2.7	1,903
828.30	3.0	2,124
828.32	3.3	2,356
828.34	3.7	2,600
828.36	4.0	2,855
828.38	4.4	3,121
828.40	4.8	3,398
828.42	5.2	3,687
828.44	5.6	3,987
828.46	6.1	4,299
828.48	6.5	4,622
828.50	7.0	4,956
828.52	7.5	5,302
828.54	8.0	5,658
828.56	8.5	6,026
828.58	9.0	6,406
828.60	9.6	6,797
828.62	10.2	7,199
828.64	10.8	7,612
828.66	11.4	8,037
828.68	12.0	8,473
828.70	12.6	8,921
828.72	13.2	9,380
828.74	13.9	9,850
828.76	14.6	10,331
828.78	15.3	10,824
828.80	16.0	11,328
828.82	16.7	11,843
828.84	17.5	12,370
828.86	18.2	12,908
828.88	19.0	13,458
828.90	19.8	14,018
828.92	20.6	14,590
828.94	21.4	15,174
828.96	22.3	15,769
828.98	23.1	16,375
829.00	24.0	16,992
829.02	24.9	17,621
829.04	25.8	18,261
829.06	26.7	18,912
829.08	27.6	19,575
829.10	28.6	20,249
829.12	29.6	20,934
829.14	30.6	21,631
829.16	31.6	22,339
829.18	32.6	23,058
829.20	33.6	23,789
829.22	34.6	24,531
829.24	35.7	25,284
829.26	36.8	26,049
829.28	37.9	26,825
829.30	39.0	27,612
829.32	40.1	28,411
829.34	41.3	29,221
829.36	42.4	30,042
829.38	43.6	30,874
829.40	44.8	31,718
829.42	46.0	32,574
829.44	47.2	33,440
829.46	48.5	34,318
829.48	49.7	35,207
829.50	51.0	36,108
829.52	52.3	37,020
829.54	53.6	37,943
829.56	54.9	38,878
829.58	56.2	39,824
829.60	57.6	40,781
829.62	59.0	41,749
829.64	60.4	42,729
829.66	61.8	43,720
829.68	63.2	44,723
829.70	64.6	45,737
829.72	66.0	46,762
829.74	67.5	47,798
829.76	69.0	48,846
829.78	70.5	49,906
829.80	72.0	50,976
829.82	73.5	52,058
829.84	75.1	53,151
829.86	76.6	54,255
829.88	78.2	55,371
829.90	79.8	56,498
829.92	81.4	57,637
829.94	83.0	58,787
829.96	84.7	59,948
829.98	86.3	61,120
830.00	**88.0**	**62,304**

Summary for Reach 32R: Swale + Stream

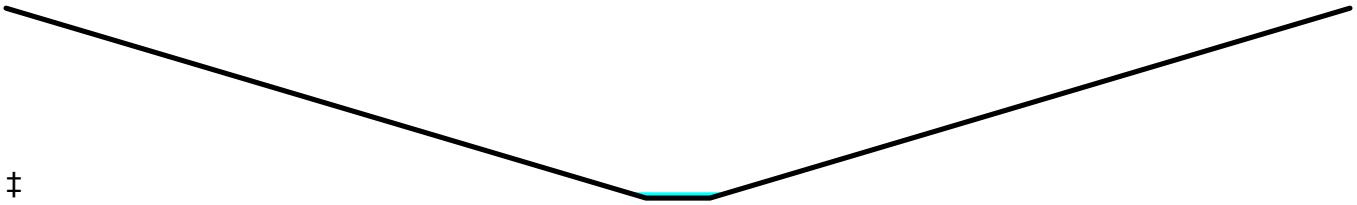
[79] Warning: Submerged Pond 39P Primary device # 1 OUTLET by 0.06'

Inflow Area = 2.093 ac, 37.74% Impervious, Inflow Depth > 3.90" for 25 yr event
Inflow = 0.71 cfs @ 13.16 hrs, Volume= 0.680 af
Outflow = 0.71 cfs @ 13.24 hrs, Volume= 0.676 af, Atten= 0%, Lag= 5.1 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.21 fps, Min. Travel Time= 3.0 min
Avg. Velocity = 1.82 fps, Avg. Travel Time= 3.7 min

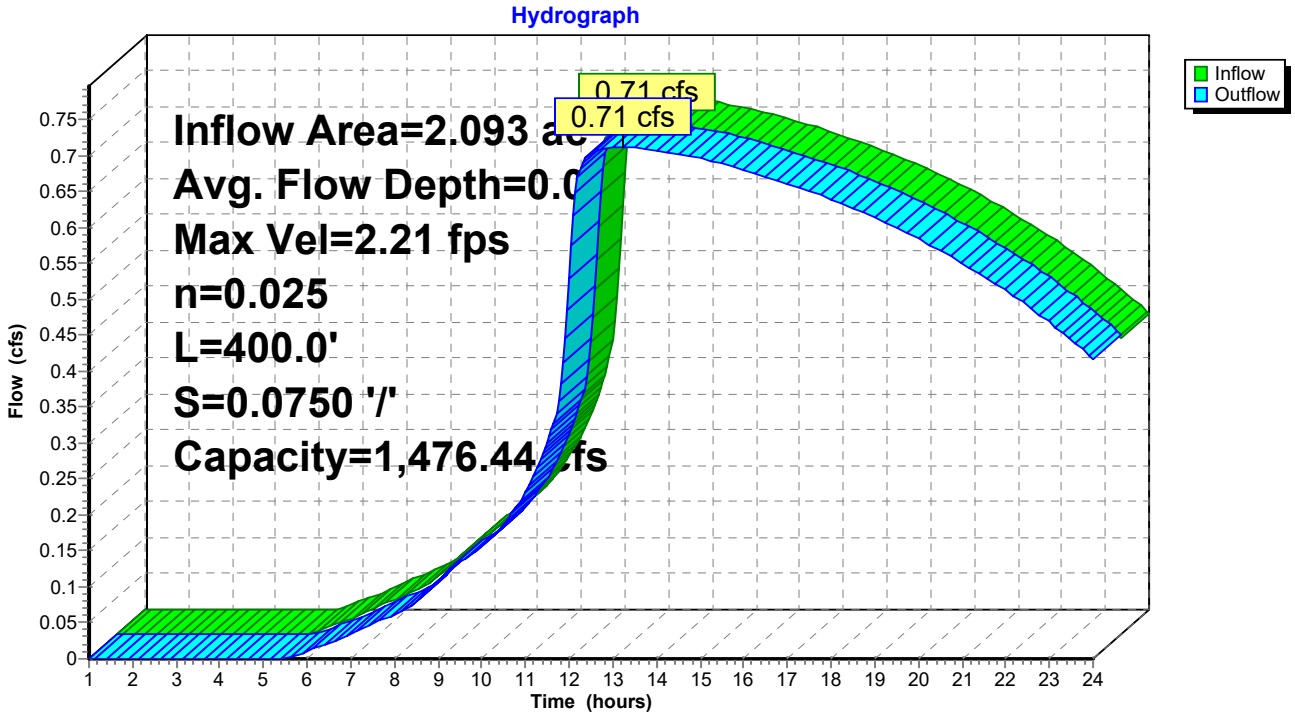
Peak Storage= 129 cf @ 13.19 hrs
Average Depth at Peak Storage= 0.06'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 1,476.44 cfs

4.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 400.0' Slope= 0.0750 '/'
Inlet Invert= 844.00', Outlet Invert= 814.00'



‡

Reach 32R: Swale + Stream



Stage-Area-Storage for Reach 32R: Swale + Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
844.00	0.0	0
844.02	0.1	35
844.04	0.2	77
844.06	0.3	125
844.08	0.4	179
844.10	0.6	240
844.12	0.8	307
844.14	1.0	381
844.16	1.2	461
844.18	1.4	547
844.20	1.6	640
844.22	1.8	739
844.24	2.1	845
844.26	2.4	957
844.28	2.7	1,075
844.30	3.0	1,200
844.32	3.3	1,331
844.34	3.7	1,469
844.36	4.0	1,613
844.38	4.4	1,763
844.40	4.8	1,920
844.42	5.2	2,083
844.44	5.6	2,253
844.46	6.1	2,429
844.48	6.5	2,611
844.50	7.0	2,800
844.52	7.5	2,995
844.54	8.0	3,197
844.56	8.5	3,405
844.58	9.0	3,619
844.60	9.6	3,840
844.62	10.2	4,067
844.64	10.8	4,301
844.66	11.4	4,541
844.68	12.0	4,787
844.70	12.6	5,040
844.72	13.2	5,299
844.74	13.9	5,565
844.76	14.6	5,837
844.78	15.3	6,115
844.80	16.0	6,400
844.82	16.7	6,691
844.84	17.5	6,989
844.86	18.2	7,293
844.88	19.0	7,603
844.90	19.8	7,920
844.92	20.6	8,243
844.94	21.4	8,573
844.96	22.3	8,909
844.98	23.1	9,251
845.00	24.0	9,600
845.02	24.9	9,955
845.04	25.8	10,317
845.06	26.7	10,685
845.08	27.6	11,059
845.10	28.6	11,440
845.12	29.6	11,827
845.14	30.6	12,221
845.16	31.6	12,621
845.18	32.6	13,027
845.20	33.6	13,440
845.22	34.6	13,859
845.24	35.7	14,285
845.26	36.8	14,717
845.28	37.9	15,155
845.30	39.0	15,600
845.32	40.1	16,051
845.34	41.3	16,509
845.36	42.4	16,973
845.38	43.6	17,443
845.40	44.8	17,920
845.42	46.0	18,403
845.44	47.2	18,893
845.46	48.5	19,389
845.48	49.7	19,891
845.50	51.0	20,400
845.52	52.3	20,915
845.54	53.6	21,437
845.56	54.9	21,965
845.58	56.2	22,499
845.60	57.6	23,040
845.62	59.0	23,587
845.64	60.4	24,141
845.66	61.8	24,701
845.68	63.2	25,267
845.70	64.6	25,840
845.72	66.0	26,419
845.74	67.5	27,005
845.76	69.0	27,597
845.78	70.5	28,195
845.80	72.0	28,800
845.82	73.5	29,411
845.84	75.1	30,029
845.86	76.6	30,653
845.88	78.2	31,283
845.90	79.8	31,920
845.92	81.4	32,563
845.94	83.0	33,213
845.96	84.7	33,869
845.98	86.3	34,531
846.00	**88.0**	**35,200**

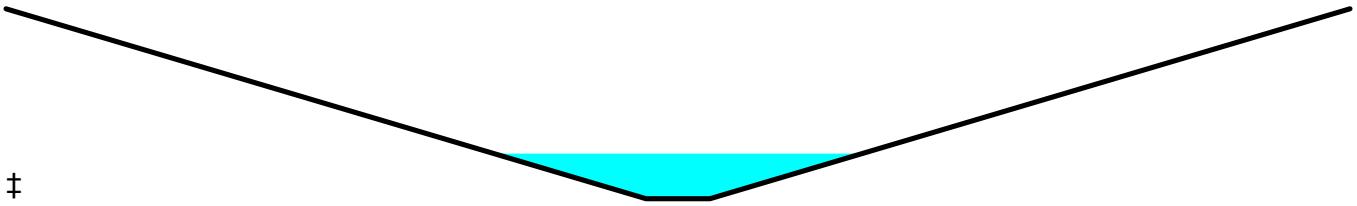
Summary for Reach 33R: Stream

Inflow Area = 2.847 ac, 25.75% Impervious, Inflow Depth > 3.71" for 25 yr event
Inflow = 17.80 cfs @ 11.99 hrs, Volume= 0.881 af
Outflow = 16.33 cfs @ 12.06 hrs, Volume= 0.878 af, Atten= 8%, Lag= 4.3 min

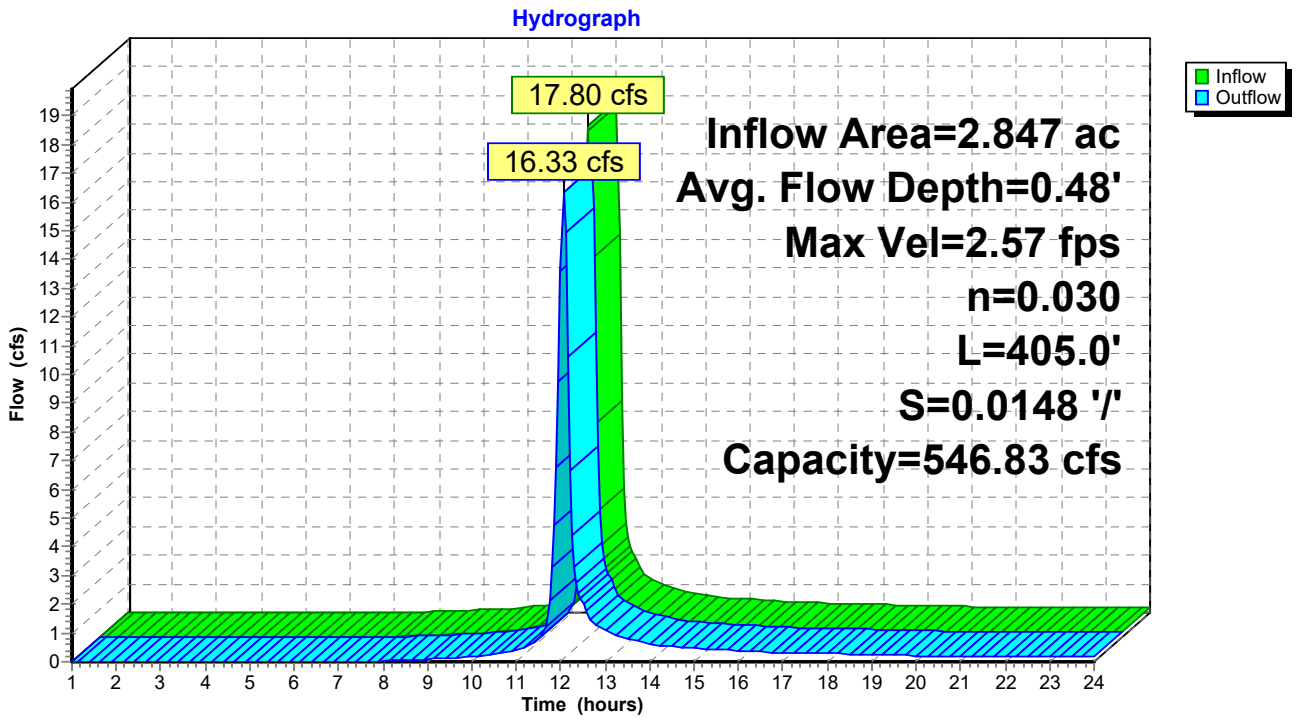
Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 2.57 fps, Min. Travel Time= 2.6 min
Avg. Velocity = 0.87 fps, Avg. Travel Time= 7.8 min

Peak Storage= 2,604 cf @ 12.01 hrs
Average Depth at Peak Storage= 0.48'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 546.83 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 405.0' Slope= 0.0148 '/'
Inlet Invert= 820.00', Outlet Invert= 814.00'



‡



Stage-Area-Storage for Reach 33R: Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
820.00	0.0	0
820.02	0.1	36
820.04	0.2	78
820.06	0.3	126
820.08	0.4	181
820.10	0.6	243
820.12	0.8	311
820.14	1.0	386
820.16	1.2	467
820.18	1.4	554
820.20	1.6	648
820.22	1.8	748
820.24	2.1	855
820.26	2.4	969
820.28	2.7	1,089
820.30	3.0	1,215
820.32	3.3	1,348
820.34	3.7	1,487
820.36	4.0	1,633
820.38	4.4	1,785
820.40	4.8	1,944
820.42	5.2	2,109
820.44	5.6	2,281
820.46	6.1	2,459
820.48	6.5	2,644
820.50	7.0	2,835
820.52	7.5	3,033
820.54	8.0	3,237
820.56	8.5	3,447
820.58	9.0	3,664
820.60	9.6	3,888
820.62	10.2	4,118
820.64	10.8	4,355
820.66	11.4	4,598
820.68	12.0	4,847
820.70	12.6	5,103
820.72	13.2	5,365
820.74	13.9	5,634
820.76	14.6	5,910
820.78	15.3	6,192
820.80	16.0	6,480
820.82	16.7	6,775
820.84	17.5	7,076
820.86	18.2	7,384
820.88	19.0	7,698
820.90	19.8	8,019
820.92	20.6	8,346
820.94	21.4	8,680
820.96	22.3	9,020
820.98	23.1	9,367
821.00	24.0	9,720
821.02	24.9	10,080
821.04	25.8	10,446
821.06	26.7	10,818
821.08	27.6	11,197
821.10	28.6	11,583
821.12	29.6	11,975
821.14	30.6	12,374
821.16	31.6	12,779
821.18	32.6	13,190
821.20	33.6	13,608
821.22	34.6	14,032
821.24	35.7	14,463
821.26	36.8	14,901
821.28	37.9	15,345
821.30	39.0	15,795
821.32	40.1	16,252
821.34	41.3	16,715
821.36	42.4	17,185
821.38	43.6	17,661
821.40	44.8	18,144
821.42	46.0	18,633
821.44	47.2	19,129
821.46	48.5	19,631
821.48	49.7	20,140
821.50	51.0	20,655
821.52	52.3	21,177
821.54	53.6	21,705
821.56	54.9	22,239
821.58	56.2	22,780
821.60	57.6	23,328
821.62	59.0	23,882
821.64	60.4	24,443
821.66	61.8	25,010
821.68	63.2	25,583
821.70	64.6	26,163
821.72	66.0	26,749
821.74	67.5	27,342
821.76	69.0	27,942
821.78	70.5	28,548
821.80	72.0	29,160
821.82	73.5	29,779
821.84	75.1	30,404
821.86	76.6	31,036
821.88	78.2	31,674
821.90	79.8	32,319
821.92	81.4	32,970
821.94	83.0	33,628
821.96	84.7	34,292
821.98	86.3	34,963
822.00	**88.0**	**35,640**

Summary for Pond 16P: Pond 1

Inflow Area = 29.512 ac, 5.01% Impervious, Inflow Depth > 3.41" for 25 yr event
Inflow = 140.26 cfs @ 12.05 hrs, Volume= 8.384 af
Outflow = 79.14 cfs @ 12.17 hrs, Volume= 7.269 af, Atten= 44%, Lag= 7.7 min
Primary = 70.55 cfs @ 12.17 hrs, Volume= 7.189 af
Secondary = 8.59 cfs @ 12.17 hrs, Volume= 0.080 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 834.54' @ 12.17 hrs Surf.Area= 35,043 sf Storage= 119,366 cf

Plug-Flow detention time= 98.7 min calculated for 7.269 af (87% of inflow)
Center-of-Mass det. time= 36.4 min (862.9 - 826.5)

Volume	Invert	Avail.Storage	Storage Description
#1	826.60'	179,320 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

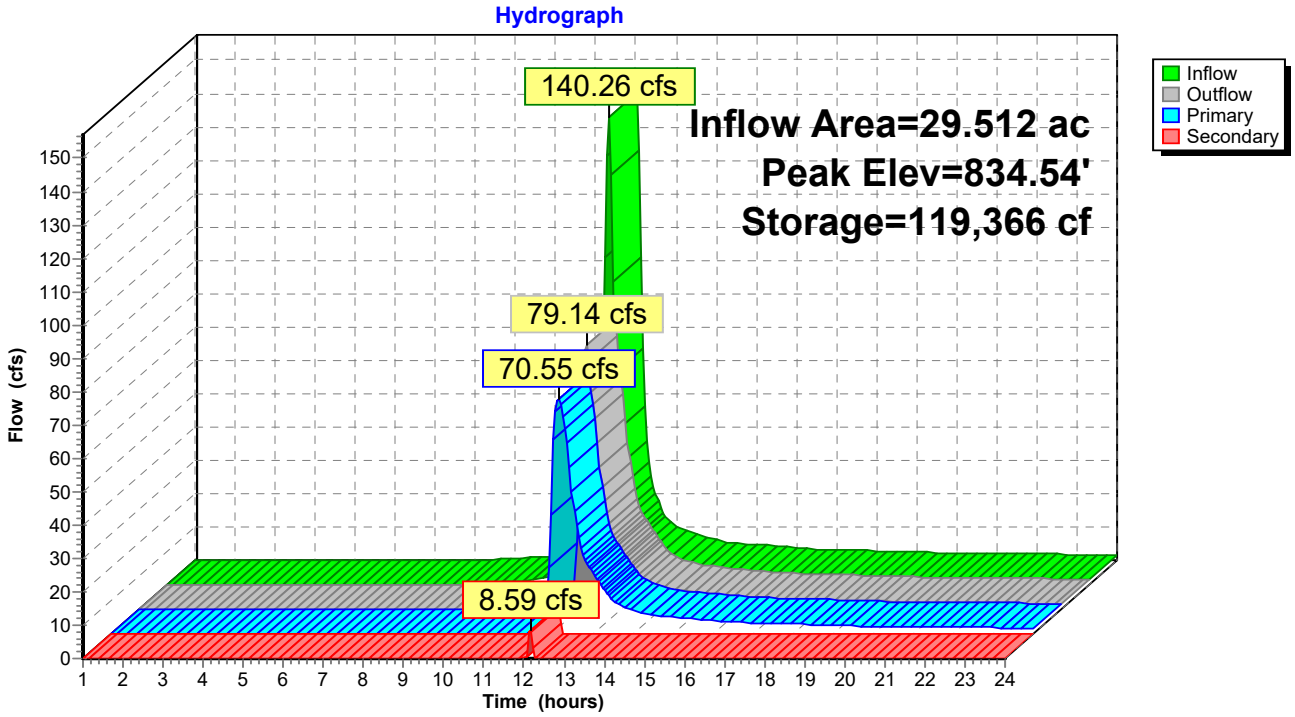
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
826.60	5	20.0	0	0	5
828.00	169	47.0	95	95	156
830.00	11,373	539.8	8,619	8,714	23,176
832.00	25,791	810.0	36,194	44,907	52,230
834.00	30,848	854.2	56,564	101,471	58,316
836.00	47,604	1,729.9	77,849	179,320	238,410

Device	Routing	Invert	Outlet Devices
#1	Primary	826.60'	**36.0" Round Culvert** L= 61.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 826.60' / 826.00' S= 0.0098 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	832.00'	**6.2" Vert. Orifice/Grate** C= 0.600
#3	Device 1	832.00'	**30.0" W x 6.0" H Vert. Orifice/Grate X 4.00** C= 0.600
#4	Device 1	833.00'	**28.0" x 28.0" Horiz. TOS** C= 0.600 Limited to weir flow at low heads
#5	Secondary	834.30'	**30.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=70.10 cfs @ 12.17 hrs HW=834.52' (Free Discharge)
└**1=Culvert** (Passes 70.10 cfs of 86.24 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 1.52 cfs @ 7.24 fps)
  ├**3=Orifice/Grate** (Orifice Controls 36.26 cfs @ 7.25 fps)
  └**4=TOS** (Orifice Controls 32.33 cfs @ 5.94 fps)

Secondary OutFlow Max=7.59 cfs @ 12.17 hrs HW=834.52' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Weir Controls 7.59 cfs @ 1.15 fps)

Pond 16P: Pond 1



Stage-Area-Storage for Pond 16P: Pond 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
826.60	5	0
826.70	9	1
826.80	14	2
826.90	21	4
827.00	28	6
827.10	37	9
827.20	47	13
827.30	58	19
827.40	70	25
827.50	84	33
827.60	98	42
827.70	114	53
827.80	131	65
827.90	150	79
828.00	169	95
828.10	313	118
828.20	500	159
828.30	732	220
828.40	1,007	307
828.50	1,326	423
828.60	1,689	573
828.70	2,095	762
828.80	2,546	994
828.90	3,040	1,273
829.00	3,579	1,603
829.10	4,161	1,990
829.20	4,787	2,437
829.30	5,457	2,949
829.40	6,170	3,530
829.50	6,928	4,184
829.60	7,729	4,917
829.70	8,574	5,731
829.80	9,463	6,633
829.90	10,396	7,626
830.00	11,373	8,714
830.10	11,956	9,880
830.20	12,553	11,105
830.30	13,165	12,391
830.40	13,791	13,739
830.50	14,432	15,150
830.60	15,087	16,626
830.70	15,757	18,168
830.80	16,442	19,777
830.90	17,141	21,456
831.00	17,854	23,206
831.10	18,582	25,028
831.20	19,325	26,923
831.30	20,083	28,893
831.40	20,854	30,940
831.50	21,641	33,065
831.60	22,442	35,269
831.70	23,257	37,553
831.80	24,087	39,921
831.90	24,932	42,371
832.00	25,791	44,907
832.10	26,033	47,499
832.20	26,276	50,114
832.30	26,521	52,754
832.40	26,766	55,418
832.50	27,013	58,107
832.60	27,261	60,821
832.70	27,509	63,559
832.80	27,760	66,323
832.90	28,011	69,111
833.00	28,263	71,925
833.10	28,516	74,764
833.20	28,771	77,628
833.30	29,027	80,518
833.40	29,283	83,434
833.50	29,541	86,375
833.60	29,800	89,342
833.70	30,061	92,335
833.80	30,322	95,354
833.90	30,584	98,399
834.00	30,848	101,471
834.10	31,600	104,593
834.20	32,361	107,791
834.30	33,131	111,066
834.40	33,910	114,418
834.50	34,698	117,848
834.60	35,495	121,358
834.70	36,301	124,947
834.80	37,116	128,618
834.90	37,940	132,371
835.00	38,773	136,206
835.10	39,616	140,126
835.20	40,467	144,130
835.30	41,328	148,219
835.40	42,197	152,396
835.50	43,076	156,659
835.60	43,963	161,011
835.70	44,860	165,452
835.80	45,765	169,983
835.90	46,680	174,605
836.00	**47,604**	**179,320**

Summary for Pond 38P: Pond 3

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

Inflow Area = 2.847 ac, 25.75% Impervious, Inflow Depth > 3.72" for 25 yr event
Inflow = 17.78 cfs @ 11.97 hrs, Volume= 0.882 af
Outflow = 17.80 cfs @ 11.99 hrs, Volume= 0.881 af, Atten= 0%, Lag= 0.8 min
Primary = 17.80 cfs @ 11.99 hrs, Volume= 0.881 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 823.88' @ 11.99 hrs Surf.Area= 3,137 sf Storage= 1,141 cf

Plug-Flow detention time= 2.5 min calculated for 0.879 af (100% of inflow)
Center-of-Mass det. time= 1.7 min (816.2 - 814.5)

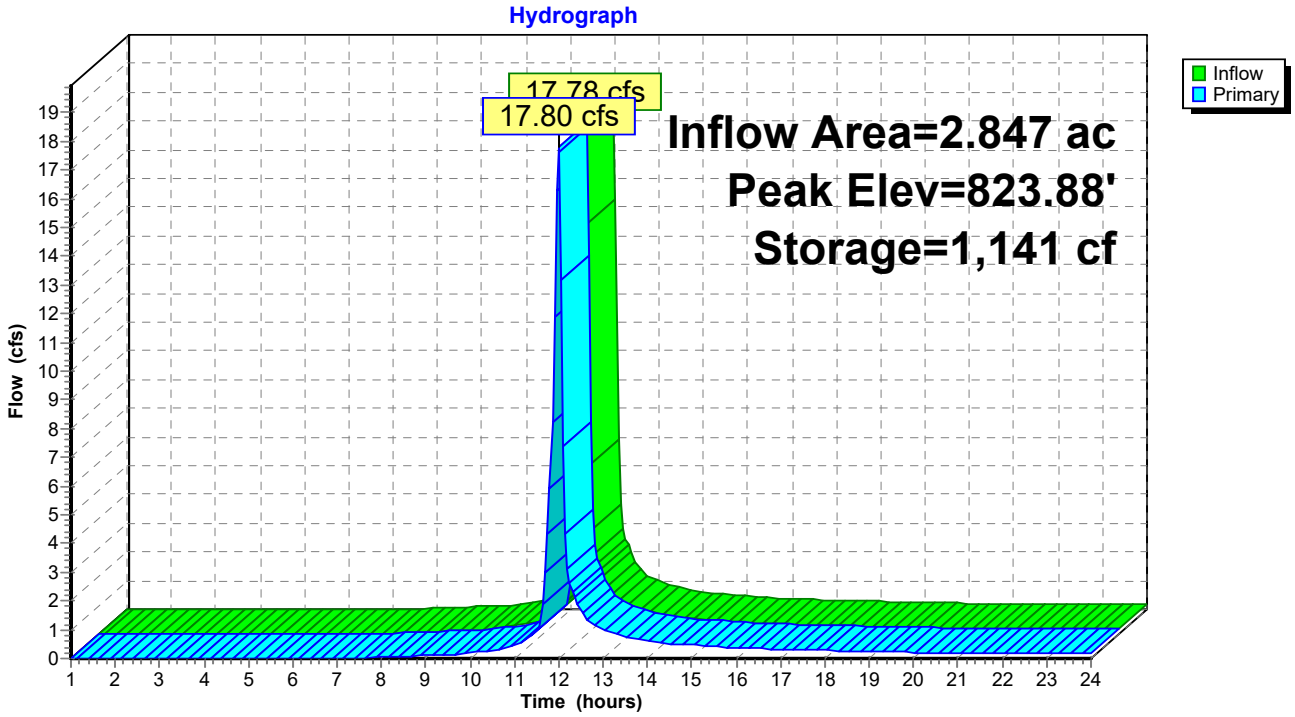
Volume	Invert	Avail.Storage	Storage Description
#1	823.50'	3,444 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
823.50	2,814	277.0	0	0	2,814
824.00	3,238	287.0	1,512	1,512	3,284
824.50	4,526	323.0	1,932	3,444	5,039

Device	Routing	Invert	Outlet Devices
#1	Primary	823.50'	**30.0' long x 6.0' breadth Overflow Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=17.23 cfs @ 11.99 hrs HW=823.88' (Free Discharge)
1=Overflow Weir (Weir Controls 17.23 cfs @ 1.53 fps)

Pond 38P: Pond 3



Stage-Area-Storage for Pond 38P: Pond 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
823.50	2,814	0
823.51	2,822	28
823.52	2,830	56
823.53	2,839	85
823.54	2,847	113
823.55	2,855	142
823.56	2,863	170
823.57	2,872	199
823.58	2,880	228
823.59	2,888	257
823.60	2,896	286
823.61	2,905	315
823.62	2,913	344
823.63	2,921	373
823.64	2,930	402
823.65	2,938	431
823.66	2,946	461
823.67	2,955	490
823.68	2,963	520
823.69	2,972	550
823.70	2,980	579
823.71	2,988	609
823.72	2,997	639
823.73	3,005	669
823.74	3,014	699
823.75	3,022	729
823.76	3,031	760
823.77	3,039	790
823.78	3,048	820
823.79	3,056	851
823.80	3,065	882
823.81	3,073	912
823.82	3,082	943
823.83	3,091	974
823.84	3,099	1,005
823.85	3,108	1,036
823.86	3,116	1,067
823.87	3,125	1,098
823.88	3,134	1,129
823.89	3,142	1,161
823.90	3,151	1,192
823.91	3,159	1,224
823.92	3,168	1,256
823.93	3,177	1,287
823.94	3,186	1,319
823.95	3,194	1,351
823.96	3,203	1,383
823.97	3,212	1,415
823.98	3,220	1,447
823.99	3,229	1,479
824.00	3,238	1,512
824.01	3,262	1,544
824.02	3,285	1,577
824.03	3,309	1,610
824.04	3,333	1,643
824.05	3,357	1,677
824.06	3,381	1,710
824.07	3,405	1,744
824.08	3,430	1,778
824.09	3,454	1,813
824.10	3,478	1,848
824.11	3,503	1,882
824.12	3,527	1,918
824.13	3,552	1,953
824.14	3,577	1,989
824.15	3,602	2,025
824.16	3,627	2,061
824.17	3,652	2,097
824.18	3,677	2,134
824.19	3,702	2,171
824.20	3,727	2,208
824.21	3,753	2,245
824.22	3,778	2,283
824.23	3,804	2,321
824.24	3,829	2,359
824.25	3,855	2,397
824.26	3,881	2,436
824.27	3,907	2,475
824.28	3,933	2,514
824.29	3,959	2,554
824.30	3,985	2,593
824.31	4,011	2,633
824.32	4,038	2,673
824.33	4,064	2,714
824.34	4,090	2,755
824.35	4,117	2,796
824.36	4,144	2,837
824.37	4,170	2,879
824.38	4,197	2,921
824.39	4,224	2,963
824.40	4,251	3,005
824.41	4,278	3,048
824.42	4,305	3,091
824.43	4,333	3,134
824.44	4,360	3,177
824.45	4,388	3,221
824.46	4,415	3,265
824.47	4,443	3,309
824.48	4,470	3,354
824.49	4,498	3,399
824.50	**4,526**	**3,444**

Summary for Pond 39P: Pond 2

Inflow Area = 2.093 ac, 37.74% Impervious, Inflow Depth > 4.23" for 25 yr event
Inflow = 13.59 cfs @ 12.00 hrs, Volume= 0.738 af
Outflow = 0.71 cfs @ 13.16 hrs, Volume= 0.680 af, Atten= 95%, Lag= 69.4 min
Primary = 0.71 cfs @ 13.16 hrs, Volume= 0.680 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 855.84' @ 13.16 hrs Surf.Area= 5,264 sf Storage= 16,467 cf

Plug-Flow detention time= 244.5 min calculated for 0.679 af (92% of inflow)
Center-of-Mass det. time= 202.7 min (1,006.5 - 803.8)

Volume	Invert	Avail.Storage	Storage Description
#1	849.50'	40,741 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

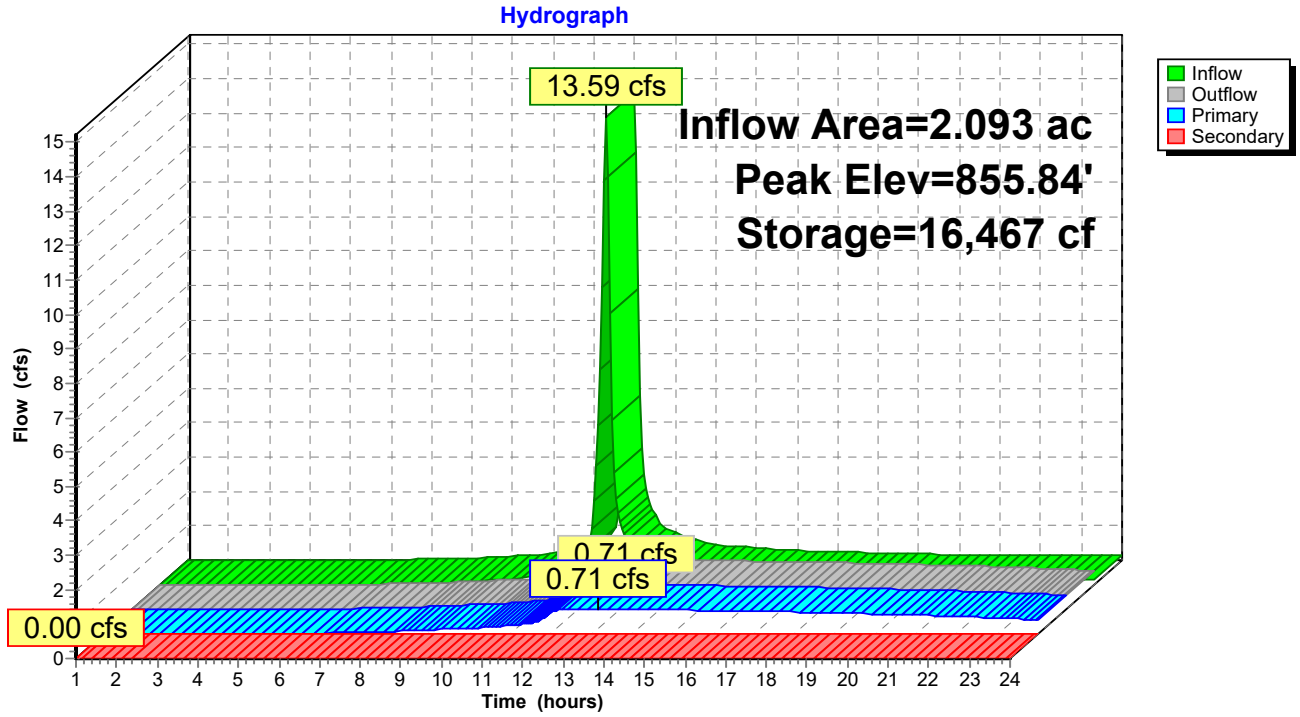
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
849.50	5	20.0	0	0	5
850.00	986	146.0	177	177	1,670
852.00	1,972	183.0	2,902	3,078	2,693
854.00	3,498	252.0	5,398	8,476	5,121
856.00	5,438	321.0	8,865	17,341	8,319
857.00	8,862	631.0	7,081	24,422	31,809
858.00	11,447	647.0	10,127	34,549	33,557
858.50	13,348	665.0	6,193	40,741	35,464

Device	Routing	Invert	Outlet Devices
#1	Primary	849.00'	**24.0" Round Culvert** L= 140.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 849.00' / 844.00' S= 0.0357 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Device 1	849.50'	**3.3" Vert. Orifice/Grate** C= 0.600
#3	Device 1	856.00'	**28.0" W x 28.0" H Vert. TOS** C= 0.600
#4	Secondary	856.75'	**30.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.71 cfs @ 13.16 hrs HW=855.84' (Free Discharge)
└**1=Culvert** (Passes 0.71 cfs of 36.54 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.71 cfs @ 11.99 fps)
  └**3=TOS** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=849.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 39P: Pond 2



Stage-Area-Storage for Pond 39P: Pond 2

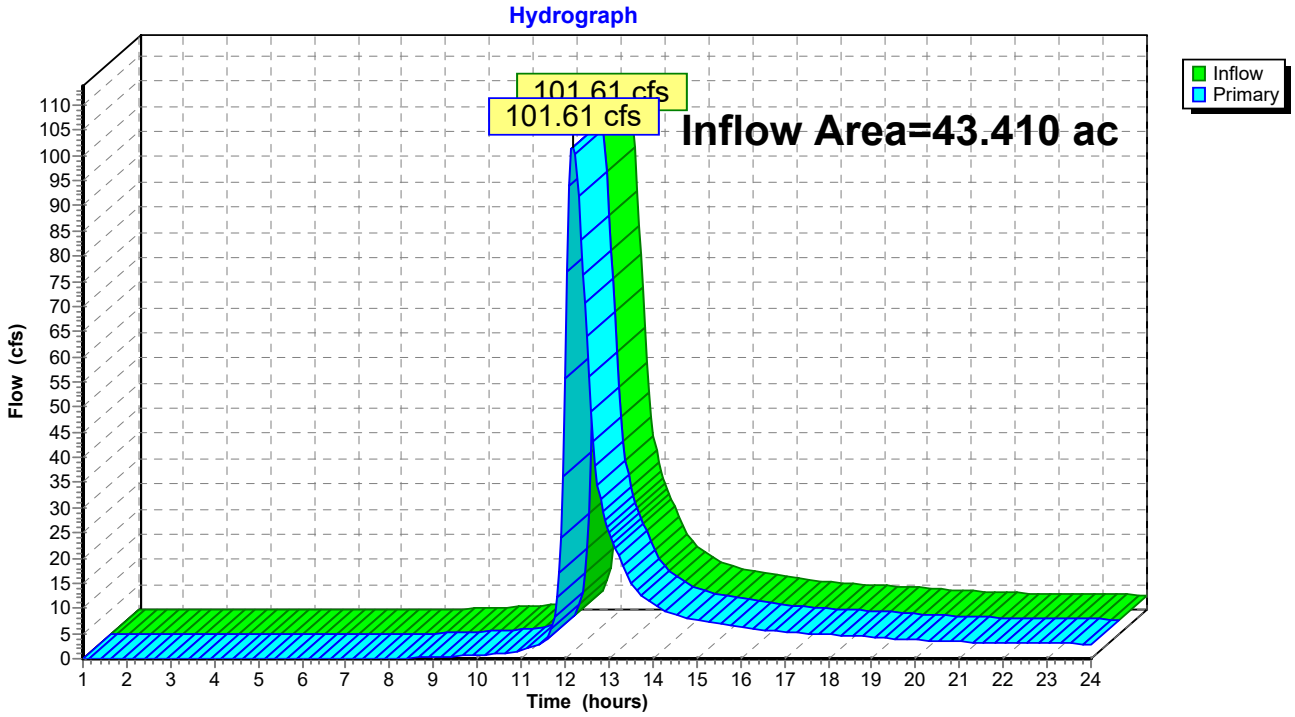
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
849.50	5	0
849.60	65	3
849.70	193	15
849.80	389	44
849.90	654	95
850.00	986	177
850.10	1,027	278
850.20	1,069	382
850.30	1,112	491
850.40	1,156	605
850.50	1,201	723
850.60	1,246	845
850.70	1,293	972
850.80	1,340	1,104
850.90	1,388	1,240
851.00	1,437	1,381
851.10	1,486	1,527
851.20	1,537	1,678
851.30	1,588	1,835
851.40	1,641	1,996
851.50	1,694	2,163
851.60	1,748	2,335
851.70	1,803	2,512
851.80	1,858	2,696
851.90	1,915	2,884
852.00	1,972	3,078
852.10	2,038	3,279
852.20	2,105	3,486
852.30	2,173	3,700
852.40	2,242	3,921
852.50	2,313	4,149
852.60	2,384	4,383
852.70	2,457	4,625
852.80	2,530	4,875
852.90	2,605	5,132
853.00	2,681	5,396
853.10	2,758	5,668
853.20	2,835	5,947
853.30	2,914	6,235
853.40	2,995	6,530
853.50	3,076	6,834
853.60	3,158	7,145
853.70	3,241	7,465
853.80	3,326	7,794
853.90	3,411	8,131
854.00	3,498	8,476
854.10	3,585	8,830
854.20	3,673	9,193
854.30	3,762	9,565
854.40	3,852	9,946
854.50	3,943	10,335
854.60	4,035	10,734
854.70	4,129	11,142
854.80	4,223	11,560
854.90	4,318	11,987
855.00	4,415	12,424
855.10	4,512	12,870
855.20	4,611	13,326
855.30	4,711	13,792
855.40	4,811	14,268
855.50	4,913	14,754
855.60	5,016	15,251
855.70	5,120	15,758
855.80	5,225	16,275
855.90	5,331	16,803
856.00	5,438	17,341
856.10	5,743	17,900
856.20	6,056	18,490
856.30	6,378	19,112
856.40	6,708	19,766
856.50	7,046	20,453
856.60	7,393	21,175
856.70	7,747	21,932
856.80	8,111	22,725
856.90	8,482	23,555
857.00	8,862	24,422
857.10	9,106	25,320
857.20	9,353	26,243
857.30	9,603	27,191
857.40	9,856	28,164
857.50	10,113	29,162
857.60	10,373	30,186
857.70	10,637	31,237
857.80	10,904	32,314
857.90	11,174	33,418
858.00	11,447	34,549
858.10	11,816	35,712
858.20	12,190	36,912
858.30	12,570	38,150
858.40	12,956	39,426
858.50	**13,348**	**40,741**

Summary for Link 30L: Analysis Point 1

Inflow Area = 43.410 ac, 6.92% Impervious, Inflow Depth > 3.11" for 25 yr event
Inflow = 101.61 cfs @ 12.18 hrs, Volume= 11.267 af
Primary = 101.61 cfs @ 12.18 hrs, Volume= 11.267 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Link 30L: Analysis Point 1



Time span=1.00-24.00 hrs, dt=0.05 hrs, 461 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 26S: C-WS1 Runoff Area=29.512 ac 5.01% Impervious Runoff Depth>0.05"
Flow Length=1,285' Tc=12.6 min CN=75 Runoff=0.29 cfs 0.122 af

Subcatchment 27S: C-WS2 Runoff Area=2.093 ac 37.74% Impervious Runoff Depth>0.17"
Flow Length=360' Tc=9.0 min CN=83 Runoff=0.46 cfs 0.030 af

Subcatchment 28S: C-WS3 Runoff Area=2.847 ac 25.75% Impervious Runoff Depth>0.09"
Flow Length=306' Tc=6.3 min UI Adjusted CN=78 Runoff=0.19 cfs 0.020 af

Subcatchment 29S: BYPASS 1 Runoff Area=8.958 ac 0.00% Impervious Runoff Depth>0.04"
Tc=15.0 min CN=74 Runoff=0.06 cfs 0.030 af

Reach 31R: Swale + Stream Avg. Flow Depth=0.00' Max Vel=0.00 fps Inflow=0.00 cfs 0.000 af
n=0.030 L=708.0' S=0.0198 '/' Capacity=631.76 cfs Outflow=0.00 cfs 0.000 af

Reach 32R: Swale + Stream Avg. Flow Depth=0.03' Max Vel=1.42 fps Inflow=0.17 cfs 0.030 af
n=0.025 L=400.0' S=0.0750 '/' Capacity=1,476.44 cfs Outflow=0.17 cfs 0.030 af

Reach 33R: Stream Avg. Flow Depth=0.03' Max Vel=0.57 fps Inflow=0.13 cfs 0.020 af
n=0.030 L=405.0' S=0.0148 '/' Capacity=546.83 cfs Outflow=0.08 cfs 0.020 af

Pond 16P: Pond 1 Peak Elev=829.65' Storage=5,277 cf Inflow=0.29 cfs 0.122 af
Primary=0.00 cfs 0.000 af Secondary=0.00 cfs 0.000 af Outflow=0.00 cfs 0.000 af

Pond 38P: Pond 3 Peak Elev=823.51' Storage=42 cf Inflow=0.19 cfs 0.020 af
Outflow=0.13 cfs 0.020 af

Pond 39P: Pond 2 Peak Elev=850.01' Storage=185 cf Inflow=0.46 cfs 0.030 af
Primary=0.17 cfs 0.030 af Secondary=0.00 cfs 0.000 af Outflow=0.17 cfs 0.030 af

Link 30L: Analysis Point 1 Inflow=0.30 cfs 0.080 af
Primary=0.30 cfs 0.080 af

Total Runoff Area = 43.410 ac Runoff Volume = 0.202 af Average Runoff Depth = 0.06"
93.08% Pervious = 40.408 ac 6.92% Impervious = 3.002 ac

Summary for Subcatchment 26S: C-WS1

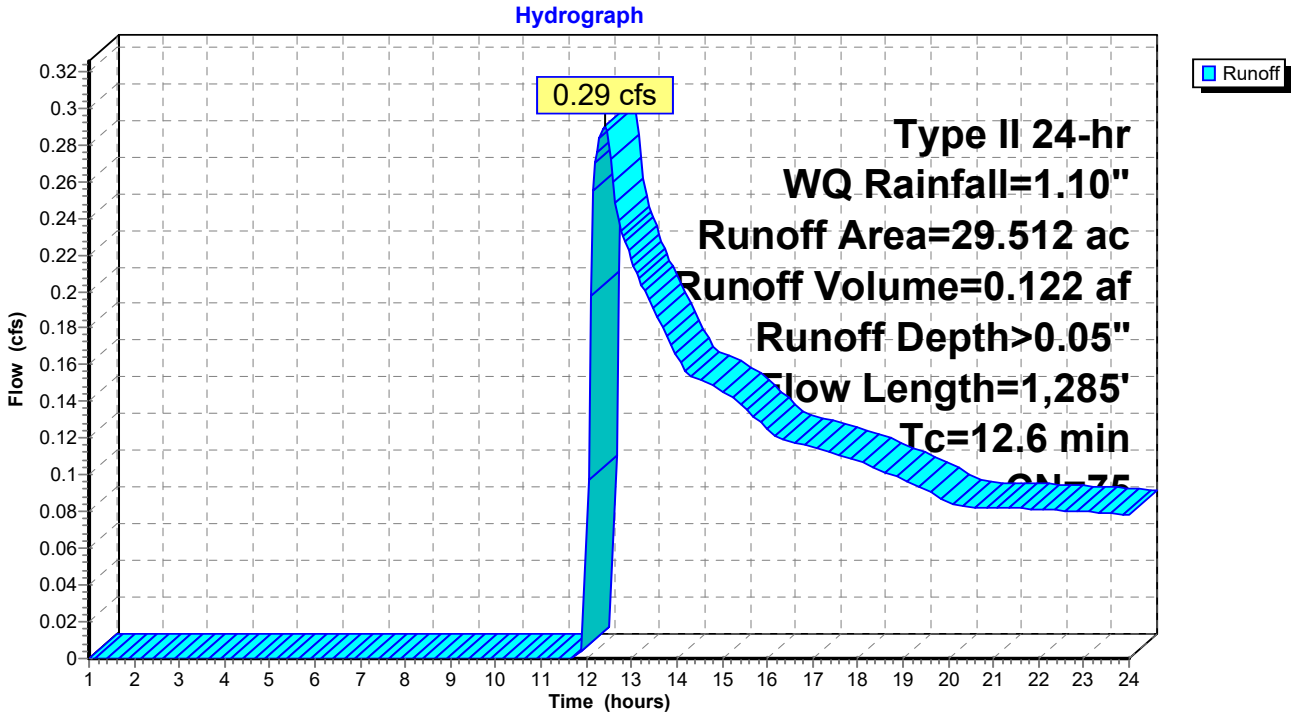
Runoff = 0.29 cfs @ 12.40 hrs, Volume= 0.122 af, Depth> 0.05"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr WQ Rainfall=1.10"

Area (ac)	CN	Description
1.168	98	Unconnected roofs, HSG C
0.311	98	Paved roads w/curbs & sewers, HSG C
14.607	74	>75% Grass cover, Good, HSG C
1.327	74	>75% Grass cover, Good, HSG C
10.488	74	>75% Grass cover, Good, HSG C
1.611	74	>75% Grass cover, Good, HSG C
29.512	75	Weighted Average
28.033		94.99% Pervious Area
1.479		5.01% Impervious Area
1.168		78.97% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0250	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
3.9	845	0.0592	3.65		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.6	340	0.0353	9.65	470.11	**Channel Flow,** Area= 48.7 sf Perim= 60.6' r= 0.80' n= 0.025
12.6	1,285	Total			

Subcatchment 26S: C-WS1



Summary for Subcatchment 27S: C-WS2

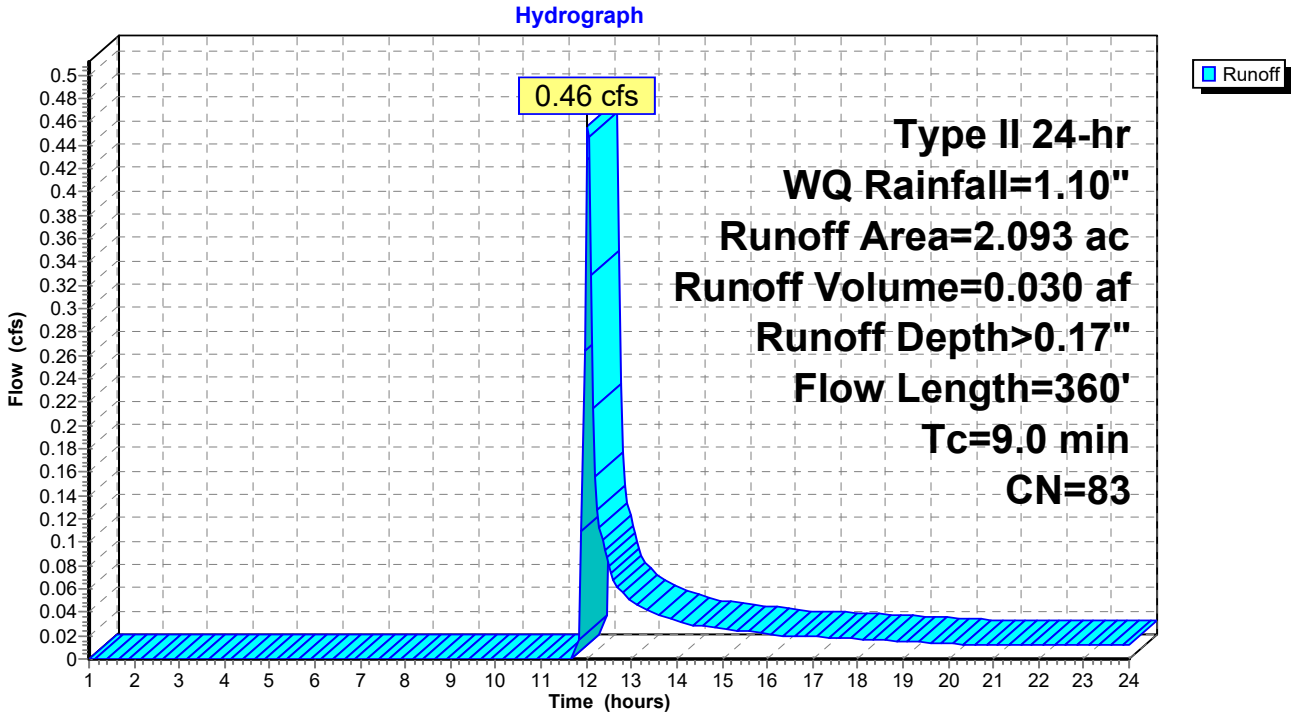
Runoff = 0.46 cfs @ 12.03 hrs, Volume= 0.030 af, Depth> 0.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr WQ Rainfall=1.10"

Area (ac)	CN	Description
0.110	98	Unconnected roofs, HSG A
0.418	98	Unconnected roofs, HSG C
0.262	98	Paved roads w/curbs & sewers, HSG C
0.383	74	>75% Grass cover, Good, HSG C
0.920	74	>75% Grass cover, Good, HSG C
2.093	83	Weighted Average
1.303		62.26% Pervious Area
0.790		37.74% Impervious Area
0.528		66.84% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.0	100	0.0260	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
1.0	260	0.0885	4.46		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
9.0	360	Total			

Subcatchment 27S: C-WS2



Summary for Subcatchment 28S: C-WS3

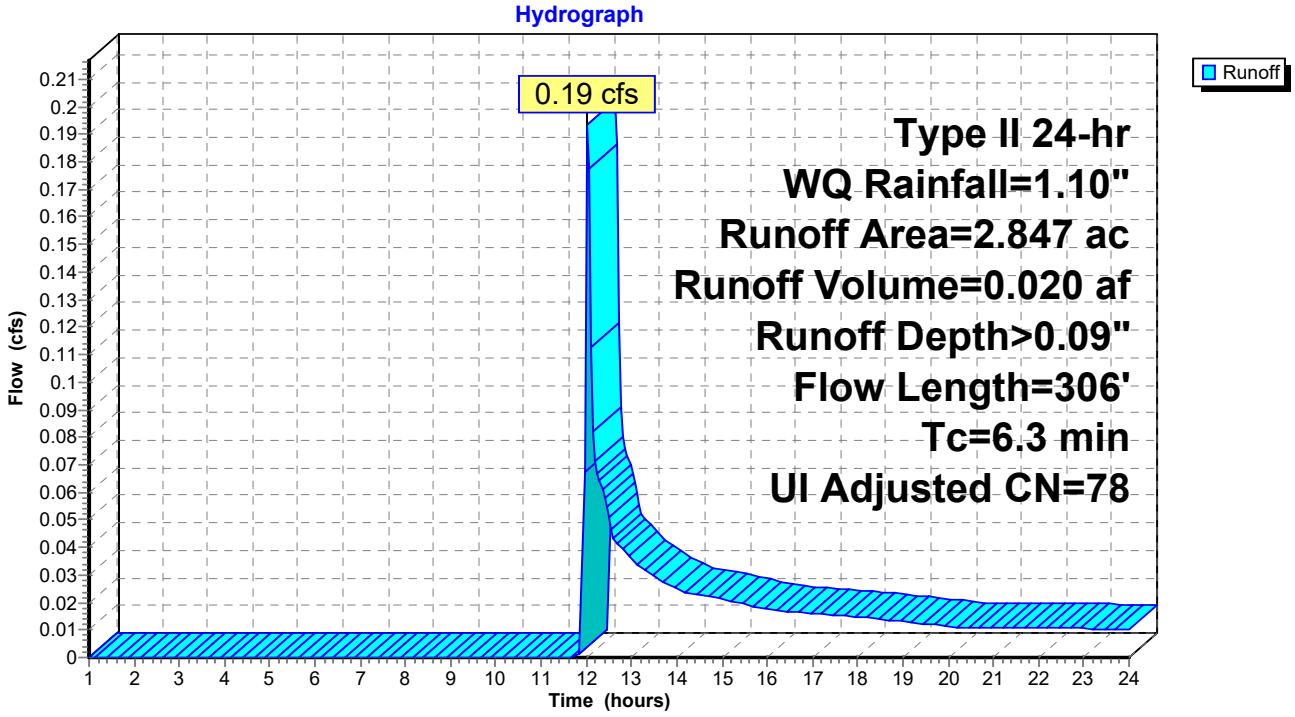
Runoff = 0.19 cfs @ 12.02 hrs, Volume= 0.020 af, Depth> 0.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr WQ Rainfall=1.10"

Area (ac)	CN	Adj	Description
0.220	98		Unconnected roofs, HSG B
0.220	98		Unconnected roofs, HSG C
0.293	98		Paved roads w/curbs & sewers, HSG C
0.658	74		>75% Grass cover, Good, HSG C
1.246	74		>75% Grass cover, Good, HSG C
0.210	74		>75% Grass cover, Good, HSG C
2.847	80	78	Weighted Average, UI Adjusted
2.114			74.25% Pervious Area
0.733			25.75% Impervious Area
0.440			60.03% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.4	100	0.0700	0.31		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
0.9	206	0.0680	3.91		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
6.3	306	Total			

Subcatchment 28S: C-WS3



Summary for Subcatchment 29S: BYPASS 1

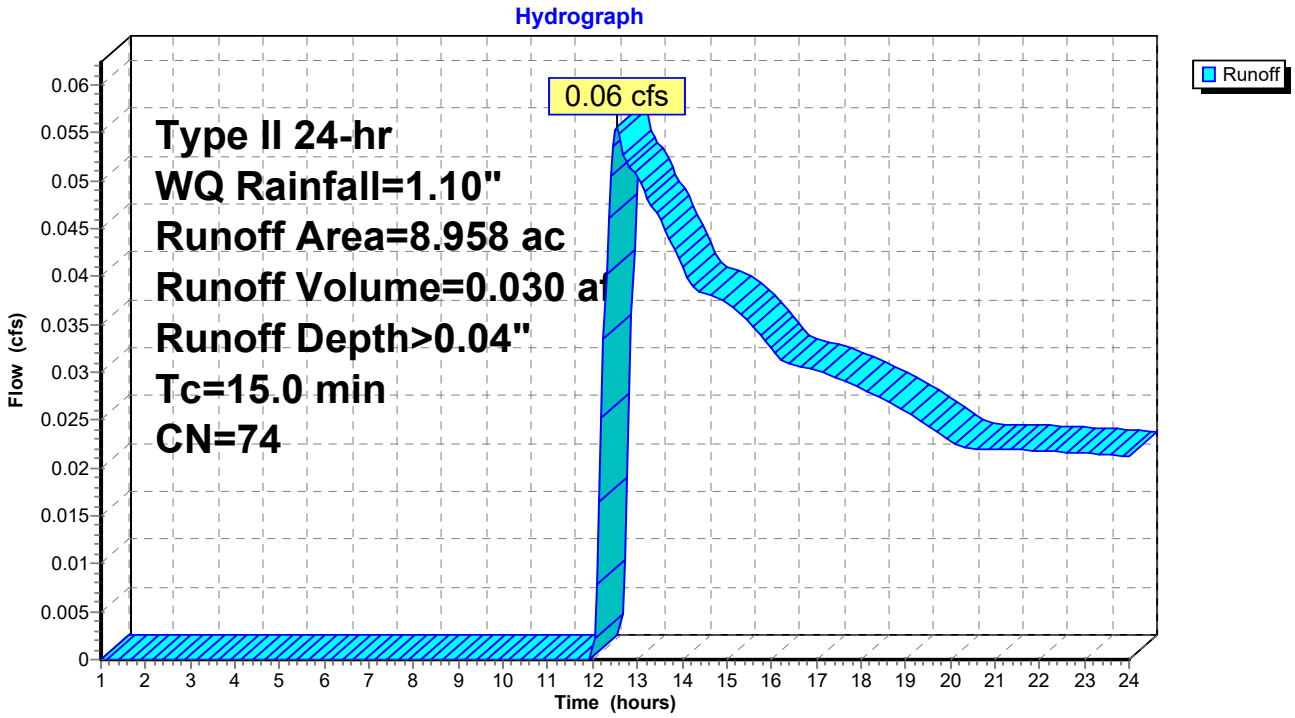
Runoff = 0.06 cfs @ 12.54 hrs, Volume= 0.030 af, Depth> 0.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr WQ Rainfall=1.10"

Area (ac)	CN	Description
1.359	74	>75% Grass cover, Good, HSG C
6.273	74	>75% Grass cover, Good, HSG C
1.326	74	>75% Grass cover, Good, HSG C
8.958	74	Weighted Average
8.958		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					**Direct Entry,**

Subcatchment 29S: BYPASS 1



Summary for Reach 31R: Swale + Stream

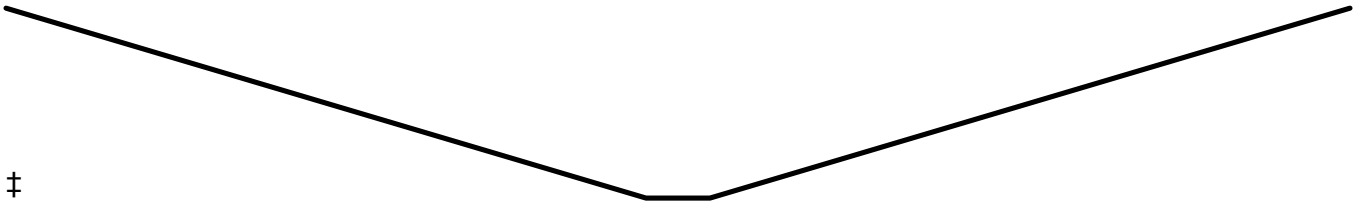
[79] Warning: Submerged Pond 16P Primary device # 1 INLET by 1.40'

Inflow Area = 29.512 ac, 5.01% Impervious, Inflow Depth = 0.00" for WQ event
Inflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

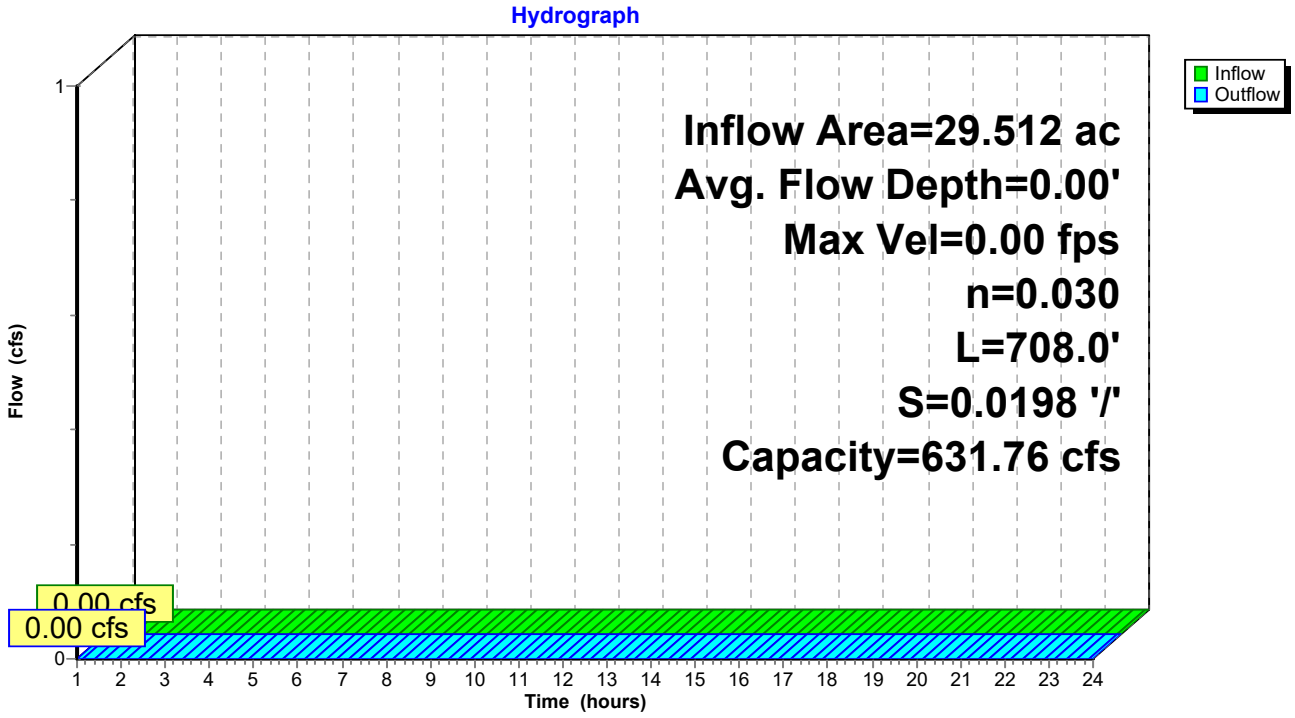
Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.00 fps, Min. Travel Time= 0.0 min
Avg. Velocity = 0.00 fps, Avg. Travel Time= 0.0 min

Peak Storage= 0 cf @ 1.00 hrs
Average Depth at Peak Storage= 0.00'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 631.76 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 708.0' Slope= 0.0198 '/'
Inlet Invert= 828.00', Outlet Invert= 814.00'



‡



Stage-Area-Storage for Reach 31R: Swale + Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
828.00	0.0	0
828.02	0.1	62
828.04	0.2	136
828.06	0.3	221
828.08	0.4	317
828.10	0.6	425
828.12	0.8	544
828.14	1.0	674
828.16	1.2	816
828.18	1.4	969
828.20	1.6	1,133
828.22	1.8	1,308
828.24	2.1	1,495
828.26	2.4	1,694
828.28	2.7	1,903
828.30	3.0	2,124
828.32	3.3	2,356
828.34	3.7	2,600
828.36	4.0	2,855
828.38	4.4	3,121
828.40	4.8	3,398
828.42	5.2	3,687
828.44	5.6	3,987
828.46	6.1	4,299
828.48	6.5	4,622
828.50	7.0	4,956
828.52	7.5	5,302
828.54	8.0	5,658
828.56	8.5	6,026
828.58	9.0	6,406
828.60	9.6	6,797
828.62	10.2	7,199
828.64	10.8	7,612
828.66	11.4	8,037
828.68	12.0	8,473
828.70	12.6	8,921
828.72	13.2	9,380
828.74	13.9	9,850
828.76	14.6	10,331
828.78	15.3	10,824
828.80	16.0	11,328
828.82	16.7	11,843
828.84	17.5	12,370
828.86	18.2	12,908
828.88	19.0	13,458
828.90	19.8	14,018
828.92	20.6	14,590
828.94	21.4	15,174
828.96	22.3	15,769
828.98	23.1	16,375
829.00	24.0	16,992
829.02	24.9	17,621
829.04	25.8	18,261
829.06	26.7	18,912
829.08	27.6	19,575
829.10	28.6	20,249
829.12	29.6	20,934
829.14	30.6	21,631
829.16	31.6	22,339
829.18	32.6	23,058
829.20	33.6	23,789
829.22	34.6	24,531
829.24	35.7	25,284
829.26	36.8	26,049
829.28	37.9	26,825
829.30	39.0	27,612
829.32	40.1	28,411
829.34	41.3	29,221
829.36	42.4	30,042
829.38	43.6	30,874
829.40	44.8	31,718
829.42	46.0	32,574
829.44	47.2	33,440
829.46	48.5	34,318
829.48	49.7	35,207
829.50	51.0	36,108
829.52	52.3	37,020
829.54	53.6	37,943
829.56	54.9	38,878
829.58	56.2	39,824
829.60	57.6	40,781
829.62	59.0	41,749
829.64	60.4	42,729
829.66	61.8	43,720
829.68	63.2	44,723
829.70	64.6	45,737
829.72	66.0	46,762
829.74	67.5	47,798
829.76	69.0	48,846
829.78	70.5	49,906
829.80	72.0	50,976
829.82	73.5	52,058
829.84	75.1	53,151
829.86	76.6	54,255
829.88	78.2	55,371
829.90	79.8	56,498
829.92	81.4	57,637
829.94	83.0	58,787
829.96	84.7	59,948
829.98	86.3	61,120
830.00	**88.0**	**62,304**

Summary for Reach 32R: Swale + Stream

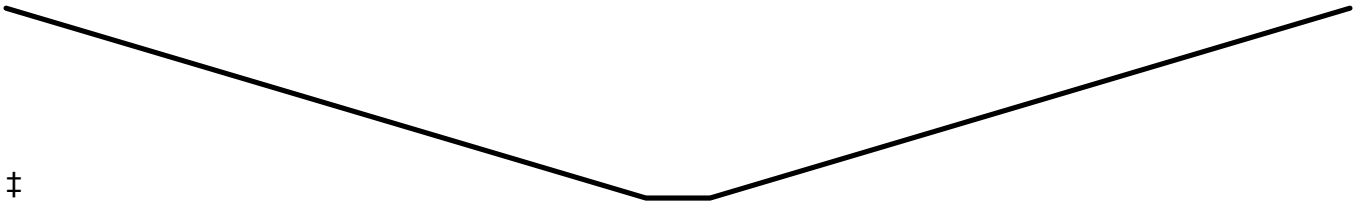
[79] Warning: Submerged Pond 39P Primary device # 1 OUTLET by 0.03'

Inflow Area = 2.093 ac, 37.74% Impervious, Inflow Depth > 0.17" for WQ event
Inflow = 0.17 cfs @ 12.19 hrs, Volume= 0.030 af
Outflow = 0.17 cfs @ 12.35 hrs, Volume= 0.030 af, Atten= 1%, Lag= 9.8 min

Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 1.42 fps, Min. Travel Time= 4.7 min
Avg. Velocity = 1.15 fps, Avg. Travel Time= 5.8 min

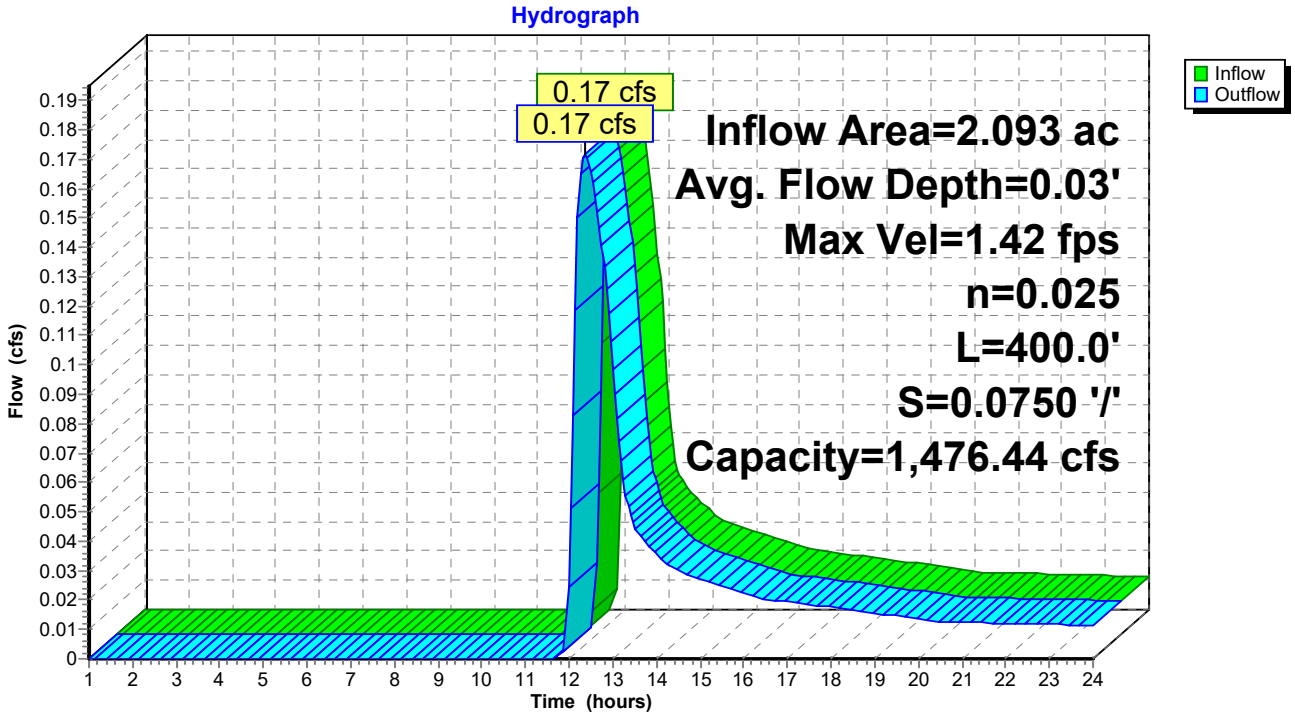
Peak Storage= 48 cf @ 12.27 hrs
Average Depth at Peak Storage= 0.03'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 1,476.44 cfs

4.00' x 2.00' deep channel, n= 0.025 Earth, clean & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 400.0' Slope= 0.0750 '/'
Inlet Invert= 844.00', Outlet Invert= 814.00'



‡

Reach 32R: Swale + Stream



Stage-Area-Storage for Reach 32R: Swale + Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
844.00	0.0	0
844.02	0.1	35
844.04	0.2	77
844.06	0.3	125
844.08	0.4	179
844.10	0.6	240
844.12	0.8	307
844.14	1.0	381
844.16	1.2	461
844.18	1.4	547
844.20	1.6	640
844.22	1.8	739
844.24	2.1	845
844.26	2.4	957
844.28	2.7	1,075
844.30	3.0	1,200
844.32	3.3	1,331
844.34	3.7	1,469
844.36	4.0	1,613
844.38	4.4	1,763
844.40	4.8	1,920
844.42	5.2	2,083
844.44	5.6	2,253
844.46	6.1	2,429
844.48	6.5	2,611
844.50	7.0	2,800
844.52	7.5	2,995
844.54	8.0	3,197
844.56	8.5	3,405
844.58	9.0	3,619
844.60	9.6	3,840
844.62	10.2	4,067
844.64	10.8	4,301
844.66	11.4	4,541
844.68	12.0	4,787
844.70	12.6	5,040
844.72	13.2	5,299
844.74	13.9	5,565
844.76	14.6	5,837
844.78	15.3	6,115
844.80	16.0	6,400
844.82	16.7	6,691
844.84	17.5	6,989
844.86	18.2	7,293
844.88	19.0	7,603
844.90	19.8	7,920
844.92	20.6	8,243
844.94	21.4	8,573
844.96	22.3	8,909
844.98	23.1	9,251
845.00	24.0	9,600
845.02	24.9	9,955
845.04	25.8	10,317
845.06	26.7	10,685
845.08	27.6	11,059
845.10	28.6	11,440
845.12	29.6	11,827
845.14	30.6	12,221
845.16	31.6	12,621
845.18	32.6	13,027
845.20	33.6	13,440
845.22	34.6	13,859
845.24	35.7	14,285
845.26	36.8	14,717
845.28	37.9	15,155
845.30	39.0	15,600
845.32	40.1	16,051
845.34	41.3	16,509
845.36	42.4	16,973
845.38	43.6	17,443
845.40	44.8	17,920
845.42	46.0	18,403
845.44	47.2	18,893
845.46	48.5	19,389
845.48	49.7	19,891
845.50	51.0	20,400
845.52	52.3	20,915
845.54	53.6	21,437
845.56	54.9	21,965
845.58	56.2	22,499
845.60	57.6	23,040
845.62	59.0	23,587
845.64	60.4	24,141
845.66	61.8	24,701
845.68	63.2	25,267
845.70	64.6	25,840
845.72	66.0	26,419
845.74	67.5	27,005
845.76	69.0	27,597
845.78	70.5	28,195
845.80	72.0	28,800
845.82	73.5	29,411
845.84	75.1	30,029
845.86	76.6	30,653
845.88	78.2	31,283
845.90	79.8	31,920
845.92	81.4	32,563
845.94	83.0	33,213
845.96	84.7	33,869
845.98	86.3	34,531
846.00	**88.0**	**35,200**

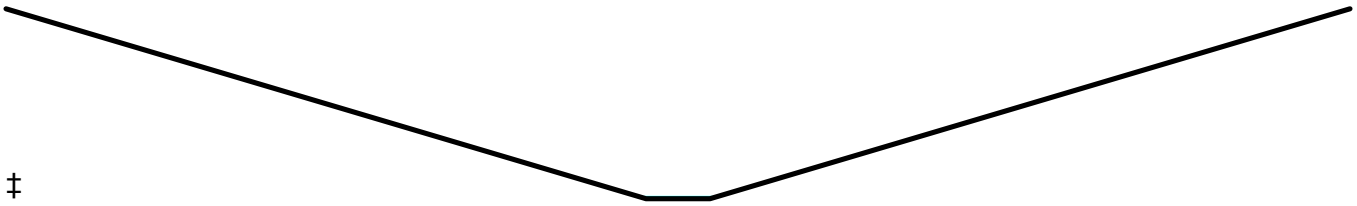
Summary for Reach 33R: Stream

Inflow Area = 2.847 ac, 25.75% Impervious, Inflow Depth > 0.08" for WQ event
Inflow = 0.13 cfs @ 12.10 hrs, Volume= 0.020 af
Outflow = 0.08 cfs @ 12.46 hrs, Volume= 0.020 af, Atten= 41%, Lag= 21.6 min

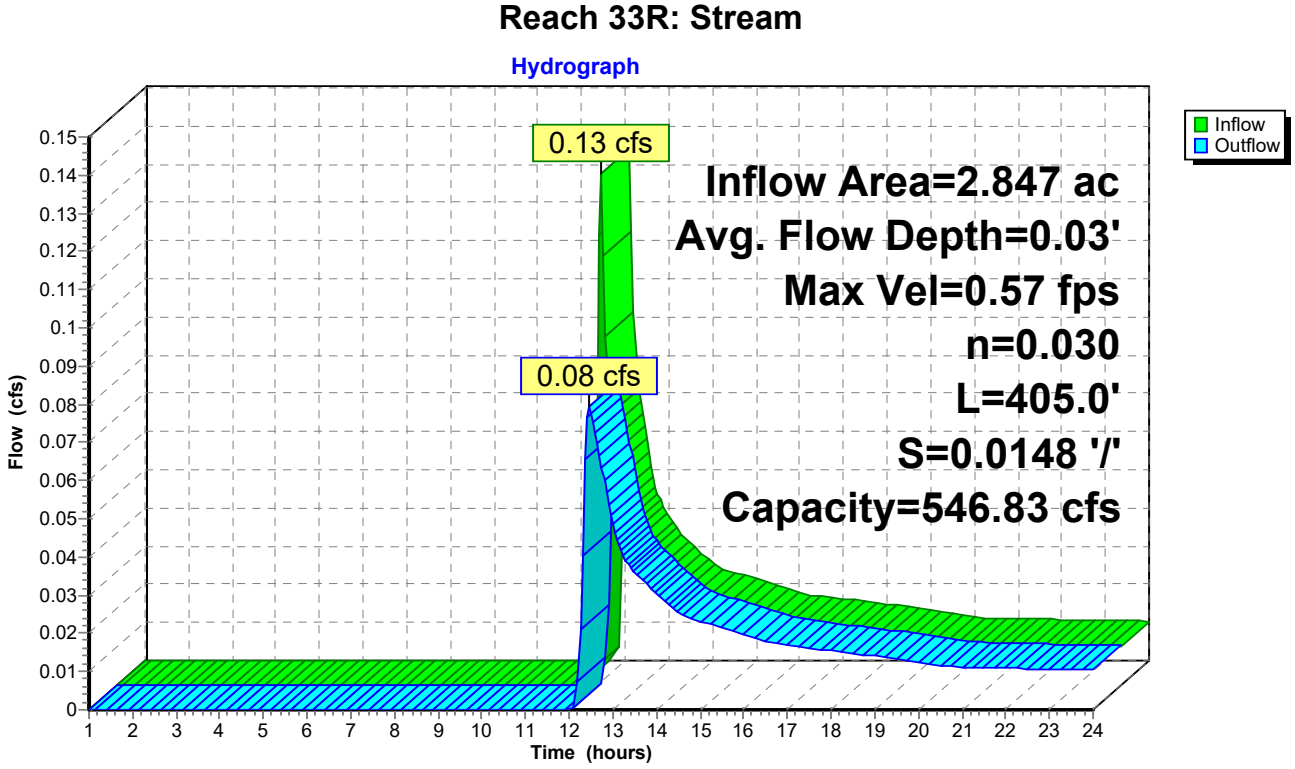
Routing by Stor-Ind+Trans method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Max. Velocity= 0.57 fps, Min. Travel Time= 11.9 min
Avg. Velocity = 0.43 fps, Avg. Travel Time= 15.8 min

Peak Storage= 57 cf @ 12.26 hrs
Average Depth at Peak Storage= 0.03'
Bank-Full Depth= 2.00' Flow Area= 88.0 sf, Capacity= 546.83 cfs

4.00' x 2.00' deep channel, n= 0.030 Earth, grassed & winding
Side Slope Z-value= 20.0 '/' Top Width= 84.00'
Length= 405.0' Slope= 0.0148 '/'
Inlet Invert= 820.00', Outlet Invert= 814.00'



‡



Stage-Area-Storage for Reach 33R: Stream

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
820.00	0.0	0
820.02	0.1	36
820.04	0.2	78
820.06	0.3	126
820.08	0.4	181
820.10	0.6	243
820.12	0.8	311
820.14	1.0	386
820.16	1.2	467
820.18	1.4	554
820.20	1.6	648
820.22	1.8	748
820.24	2.1	855
820.26	2.4	969
820.28	2.7	1,089
820.30	3.0	1,215
820.32	3.3	1,348
820.34	3.7	1,487
820.36	4.0	1,633
820.38	4.4	1,785
820.40	4.8	1,944
820.42	5.2	2,109
820.44	5.6	2,281
820.46	6.1	2,459
820.48	6.5	2,644
820.50	7.0	2,835
820.52	7.5	3,033
820.54	8.0	3,237
820.56	8.5	3,447
820.58	9.0	3,664
820.60	9.6	3,888
820.62	10.2	4,118
820.64	10.8	4,355
820.66	11.4	4,598
820.68	12.0	4,847
820.70	12.6	5,103
820.72	13.2	5,365
820.74	13.9	5,634
820.76	14.6	5,910
820.78	15.3	6,192
820.80	16.0	6,480
820.82	16.7	6,775
820.84	17.5	7,076
820.86	18.2	7,384
820.88	19.0	7,698
820.90	19.8	8,019
820.92	20.6	8,346
820.94	21.4	8,680
820.96	22.3	9,020
820.98	23.1	9,367
821.00	24.0	9,720
821.02	24.9	10,080
821.04	25.8	10,446
821.06	26.7	10,818
821.08	27.6	11,197
821.10	28.6	11,583
821.12	29.6	11,975
821.14	30.6	12,374
821.16	31.6	12,779
821.18	32.6	13,190
821.20	33.6	13,608
821.22	34.6	14,032
821.24	35.7	14,463
821.26	36.8	14,901
821.28	37.9	15,345
821.30	39.0	15,795
821.32	40.1	16,252
821.34	41.3	16,715
821.36	42.4	17,185
821.38	43.6	17,661
821.40	44.8	18,144
821.42	46.0	18,633
821.44	47.2	19,129
821.46	48.5	19,631
821.48	49.7	20,140
821.50	51.0	20,655
821.52	52.3	21,177
821.54	53.6	21,705
821.56	54.9	22,239
821.58	56.2	22,780
821.60	57.6	23,328
821.62	59.0	23,882
821.64	60.4	24,443
821.66	61.8	25,010
821.68	63.2	25,583
821.70	64.6	26,163
821.72	66.0	26,749
821.74	67.5	27,342
821.76	69.0	27,942
821.78	70.5	28,548
821.80	72.0	29,160
821.82	73.5	29,779
821.84	75.1	30,404
821.86	76.6	31,036
821.88	78.2	31,674
821.90	79.8	32,319
821.92	81.4	32,970
821.94	83.0	33,628
821.96	84.7	34,292
821.98	86.3	34,963
822.00	**88.0**	**35,640**

Summary for Pond 16P: Pond 1

Inflow Area = 29.512 ac, 5.01% Impervious, Inflow Depth > 0.05" for WQ event
Inflow = 0.29 cfs @ 12.40 hrs, Volume= 0.122 af
Outflow = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 829.65' @ 24.00 hrs Surf.Area= 8,108 sf Storage= 5,277 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	826.60'	179,320 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

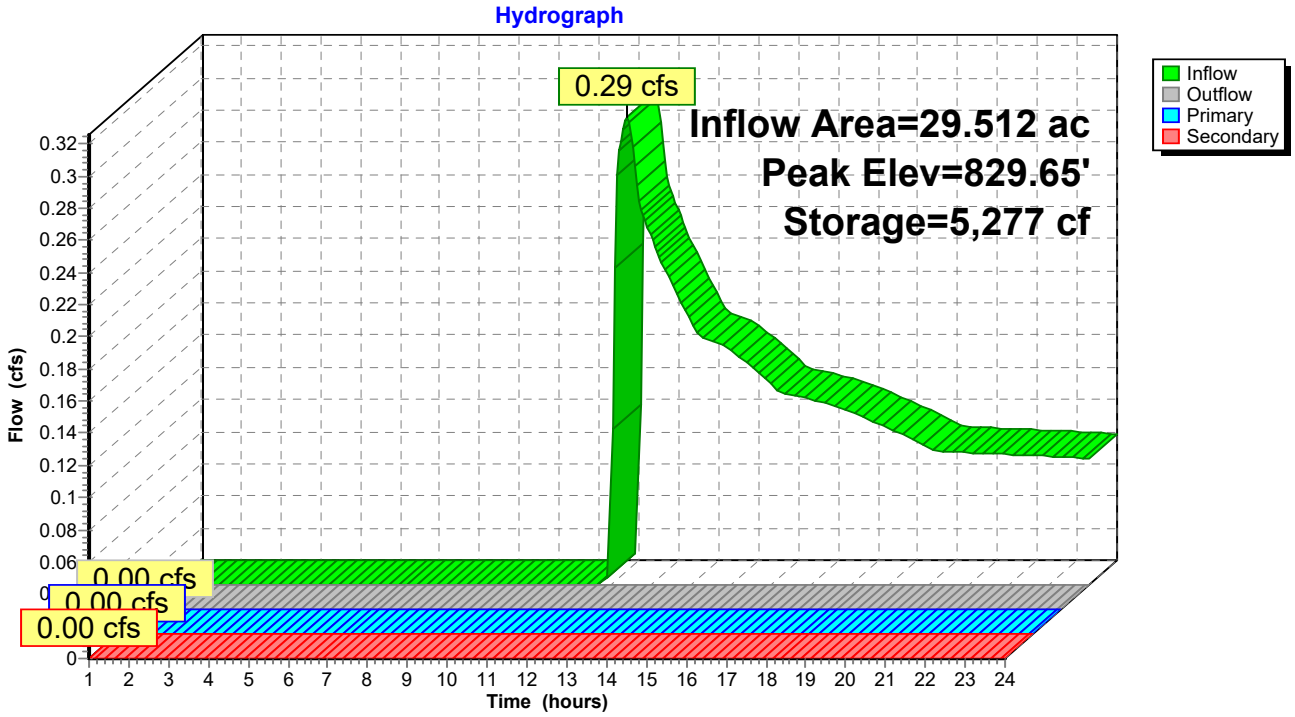
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
826.60	5	20.0	0	0	5
828.00	169	47.0	95	95	156
830.00	11,373	539.8	8,619	8,714	23,176
832.00	25,791	810.0	36,194	44,907	52,230
834.00	30,848	854.2	56,564	101,471	58,316
836.00	47,604	1,729.9	77,849	179,320	238,410

Device	Routing	Invert	Outlet Devices
#1	Primary	826.60'	**36.0" Round Culvert** L= 61.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 826.60' / 826.00' S= 0.0098 '/' Cc= 0.900 n= 0.013, Flow Area= 7.07 sf
#2	Device 1	832.00'	**6.2" Vert. Orifice/Grate** C= 0.600
#3	Device 1	832.00'	**30.0" W x 6.0" H Vert. Orifice/Grate X 4.00** C= 0.600
#4	Device 1	833.00'	**28.0" x 28.0" Horiz. TOS** C= 0.600 Limited to weir flow at low heads
#5	Secondary	834.30'	**30.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=0.00 cfs @ 1.00 hrs HW=826.60' (Free Discharge)
└**1=Culvert** (Controls 0.00 cfs)
  ├**2=Orifice/Grate** (Controls 0.00 cfs)
  ├**3=Orifice/Grate** (Controls 0.00 cfs)
  └**4=TOS** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=826.60' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 16P: Pond 1



Stage-Area-Storage for Pond 16P: Pond 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
826.60	5	0
826.70	9	1
826.80	14	2
826.90	21	4
827.00	28	6
827.10	37	9
827.20	47	13
827.30	58	19
827.40	70	25
827.50	84	33
827.60	98	42
827.70	114	53
827.80	131	65
827.90	150	79
828.00	169	95
828.10	313	118
828.20	500	159
828.30	732	220
828.40	1,007	307
828.50	1,326	423
828.60	1,689	573
828.70	2,095	762
828.80	2,546	994
828.90	3,040	1,273
829.00	3,579	1,603
829.10	4,161	1,990
829.20	4,787	2,437
829.30	5,457	2,949
829.40	6,170	3,530
829.50	6,928	4,184
829.60	7,729	4,917
829.70	8,574	5,731
829.80	9,463	6,633
829.90	10,396	7,626
830.00	11,373	8,714
830.10	11,956	9,880
830.20	12,553	11,105
830.30	13,165	12,391
830.40	13,791	13,739
830.50	14,432	15,150
830.60	15,087	16,626
830.70	15,757	18,168
830.80	16,442	19,777
830.90	17,141	21,456
831.00	17,854	23,206
831.10	18,582	25,028
831.20	19,325	26,923
831.30	20,083	28,893
831.40	20,854	30,940
831.50	21,641	33,065
831.60	22,442	35,269
831.70	23,257	37,553
831.80	24,087	39,921
831.90	24,932	42,371
832.00	25,791	44,907
832.10	26,033	47,499
832.20	26,276	50,114
832.30	26,521	52,754
832.40	26,766	55,418
832.50	27,013	58,107
832.60	27,261	60,821
832.70	27,509	63,559
832.80	27,760	66,323
832.90	28,011	69,111
833.00	28,263	71,925
833.10	28,516	74,764
833.20	28,771	77,628
833.30	29,027	80,518
833.40	29,283	83,434
833.50	29,541	86,375
833.60	29,800	89,342
833.70	30,061	92,335
833.80	30,322	95,354
833.90	30,584	98,399
834.00	30,848	101,471
834.10	31,600	104,593
834.20	32,361	107,791
834.30	33,131	111,066
834.40	33,910	114,418
834.50	34,698	117,848
834.60	35,495	121,358
834.70	36,301	124,947
834.80	37,116	128,618
834.90	37,940	132,371
835.00	38,773	136,206
835.10	39,616	140,126
835.20	40,467	144,130
835.30	41,328	148,219
835.40	42,197	152,396
835.50	43,076	156,659
835.60	43,963	161,011
835.70	44,860	165,452
835.80	45,765	169,983
835.90	46,680	174,605
836.00	**47,604**	**179,320**

Summary for Pond 38P: Pond 3

Inflow Area = 2.847 ac, 25.75% Impervious, Inflow Depth > 0.09" for WQ event
Inflow = 0.19 cfs @ 12.02 hrs, Volume= 0.020 af
Outflow = 0.13 cfs @ 12.10 hrs, Volume= 0.020 af, Atten= 31%, Lag= 4.4 min
Primary = 0.13 cfs @ 12.10 hrs, Volume= 0.020 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 823.51' @ 12.10 hrs Surf.Area= 2,826 sf Storage= 42 cf

Plug-Flow detention time= 6.5 min calculated for 0.020 af (99% of inflow)
Center-of-Mass det. time= 4.2 min (960.2 - 956.0)

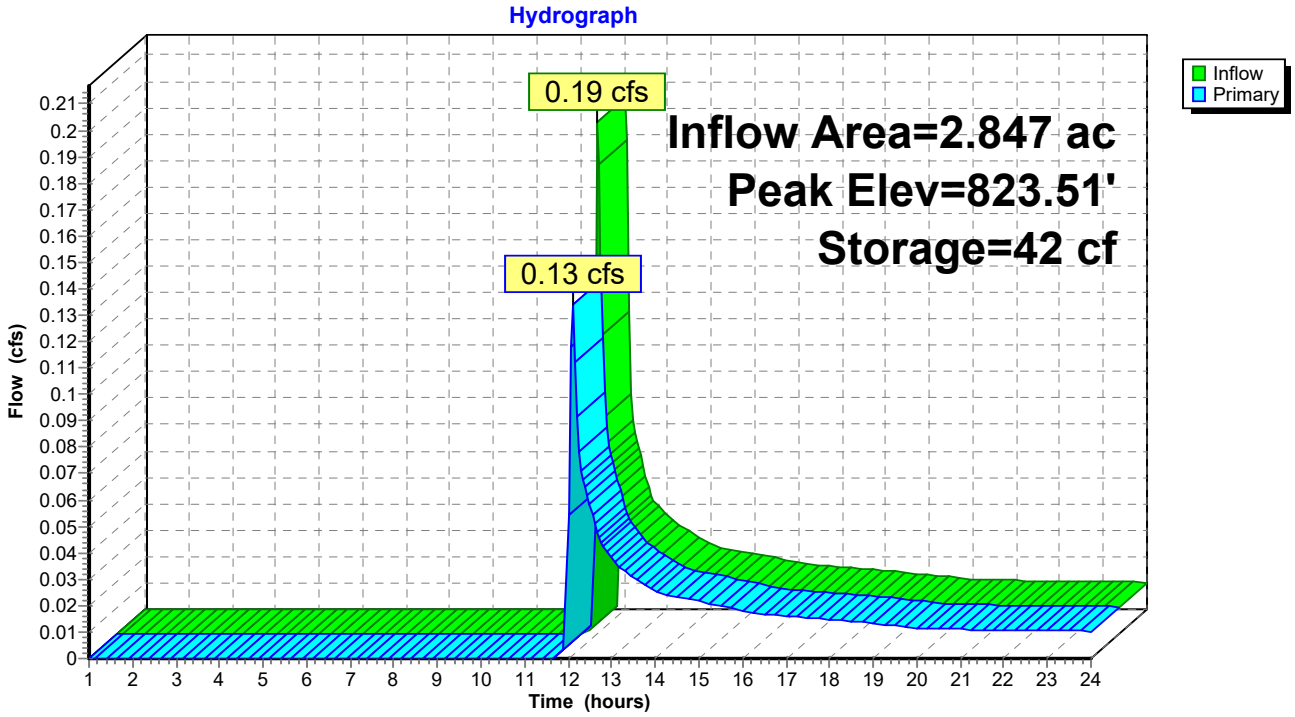
Volume	Invert	Avail.Storage	Storage Description
#1	823.50'	3,444 cf	**Custom Stage Data (Irregular)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
823.50	2,814	277.0	0	0	2,814
824.00	3,238	287.0	1,512	1,512	3,284
824.50	4,526	323.0	1,932	3,444	5,039

Device	Routing	Invert	Outlet Devices
#1	Primary	823.50'	**30.0' long x 6.0' breadth Overflow Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.13 cfs @ 12.10 hrs HW=823.51' (Free Discharge)
1=Overflow Weir (Weir Controls 0.13 cfs @ 0.29 fps)

Pond 38P: Pond 3



Stage-Area-Storage for Pond 38P: Pond 3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
823.50	2,814	0
823.51	2,822	28
823.52	2,830	56
823.53	2,839	85
823.54	2,847	113
823.55	2,855	142
823.56	2,863	170
823.57	2,872	199
823.58	2,880	228
823.59	2,888	257
823.60	2,896	286
823.61	2,905	315
823.62	2,913	344
823.63	2,921	373
823.64	2,930	402
823.65	2,938	431
823.66	2,946	461
823.67	2,955	490
823.68	2,963	520
823.69	2,972	550
823.70	2,980	579
823.71	2,988	609
823.72	2,997	639
823.73	3,005	669
823.74	3,014	699
823.75	3,022	729
823.76	3,031	760
823.77	3,039	790
823.78	3,048	820
823.79	3,056	851
823.80	3,065	882
823.81	3,073	912
823.82	3,082	943
823.83	3,091	974
823.84	3,099	1,005
823.85	3,108	1,036
823.86	3,116	1,067
823.87	3,125	1,098
823.88	3,134	1,129
823.89	3,142	1,161
823.90	3,151	1,192
823.91	3,159	1,224
823.92	3,168	1,256
823.93	3,177	1,287
823.94	3,186	1,319
823.95	3,194	1,351
823.96	3,203	1,383
823.97	3,212	1,415
823.98	3,220	1,447
823.99	3,229	1,479
824.00	3,238	1,512
824.01	3,262	1,544
824.02	3,285	1,577
824.03	3,309	1,610
824.04	3,333	1,643
824.05	3,357	1,677
824.06	3,381	1,710
824.07	3,405	1,744
824.08	3,430	1,778
824.09	3,454	1,813
824.10	3,478	1,848
824.11	3,503	1,882
824.12	3,527	1,918
824.13	3,552	1,953
824.14	3,577	1,989
824.15	3,602	2,025
824.16	3,627	2,061
824.17	3,652	2,097
824.18	3,677	2,134
824.19	3,702	2,171
824.20	3,727	2,208
824.21	3,753	2,245
824.22	3,778	2,283
824.23	3,804	2,321
824.24	3,829	2,359
824.25	3,855	2,397
824.26	3,881	2,436
824.27	3,907	2,475
824.28	3,933	2,514
824.29	3,959	2,554
824.30	3,985	2,593
824.31	4,011	2,633
824.32	4,038	2,673
824.33	4,064	2,714
824.34	4,090	2,755
824.35	4,117	2,796
824.36	4,144	2,837
824.37	4,170	2,879
824.38	4,197	2,921
824.39	4,224	2,963
824.40	4,251	3,005
824.41	4,278	3,048
824.42	4,305	3,091
824.43	4,333	3,134
824.44	4,360	3,177
824.45	4,388	3,221
824.46	4,415	3,265
824.47	4,443	3,309
824.48	4,470	3,354
824.49	4,498	3,399
824.50	**4,526**	**3,444**

Summary for Pond 39P: Pond 2

Inflow Area = 2.093 ac, 37.74% Impervious, Inflow Depth > 0.17" for WQ event
Inflow = 0.46 cfs @ 12.03 hrs, Volume= 0.030 af
Outflow = 0.17 cfs @ 12.19 hrs, Volume= 0.030 af, Atten= 62%, Lag= 9.4 min
Primary = 0.17 cfs @ 12.19 hrs, Volume= 0.030 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 850.01' @ 12.19 hrs Surf.Area= 989 sf Storage= 185 cf

Plug-Flow detention time= 6.5 min calculated for 0.030 af (100% of inflow)
Center-of-Mass det. time= 5.9 min (911.1 - 905.2)

Volume	Invert	Avail.Storage	Storage Description
#1	849.50'	40,741 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

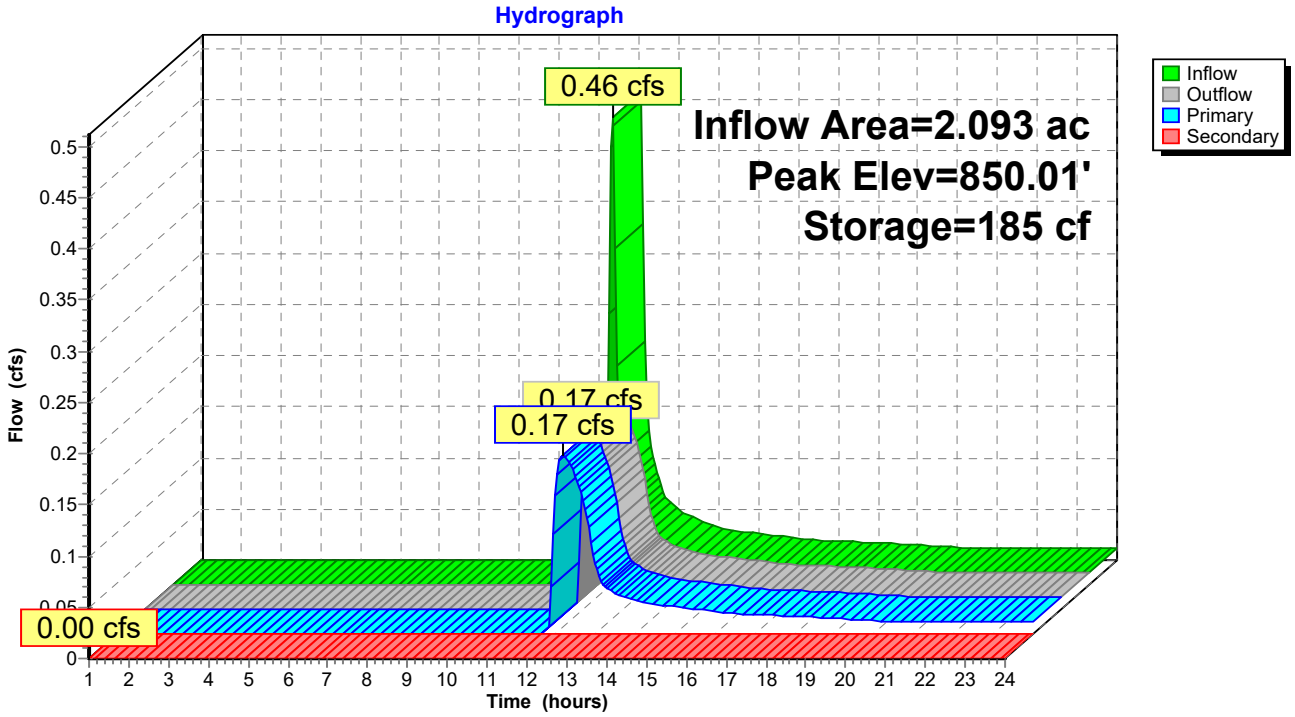
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
849.50	5	20.0	0	0	5
850.00	986	146.0	177	177	1,670
852.00	1,972	183.0	2,902	3,078	2,693
854.00	3,498	252.0	5,398	8,476	5,121
856.00	5,438	321.0	8,865	17,341	8,319
857.00	8,862	631.0	7,081	24,422	31,809
858.00	11,447	647.0	10,127	34,549	33,557
858.50	13,348	665.0	6,193	40,741	35,464

Device	Routing	Invert	Outlet Devices
#1	Primary	849.00'	**24.0" Round Culvert** L= 140.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 849.00' / 844.00' S= 0.0357 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Device 1	849.50'	**3.3" Vert. Orifice/Grate** C= 0.600
#3	Device 1	856.00'	**28.0" W x 28.0" H Vert. TOS** C= 0.600
#4	Secondary	856.75'	**30.0' long x 6.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.37 2.51 2.70 2.68 2.68 2.67 2.65 2.65 2.65 2.65 2.66 2.66 2.67 2.69 2.72 2.76 2.83

Primary OutFlow Max=0.17 cfs @ 12.19 hrs HW=850.01' (Free Discharge)
└**1=Culvert** (Passes 0.17 cfs of 5.42 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.17 cfs @ 2.93 fps)
  └**3=TOS** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=849.50' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 39P: Pond 2



Stage-Area-Storage for Pond 39P: Pond 2

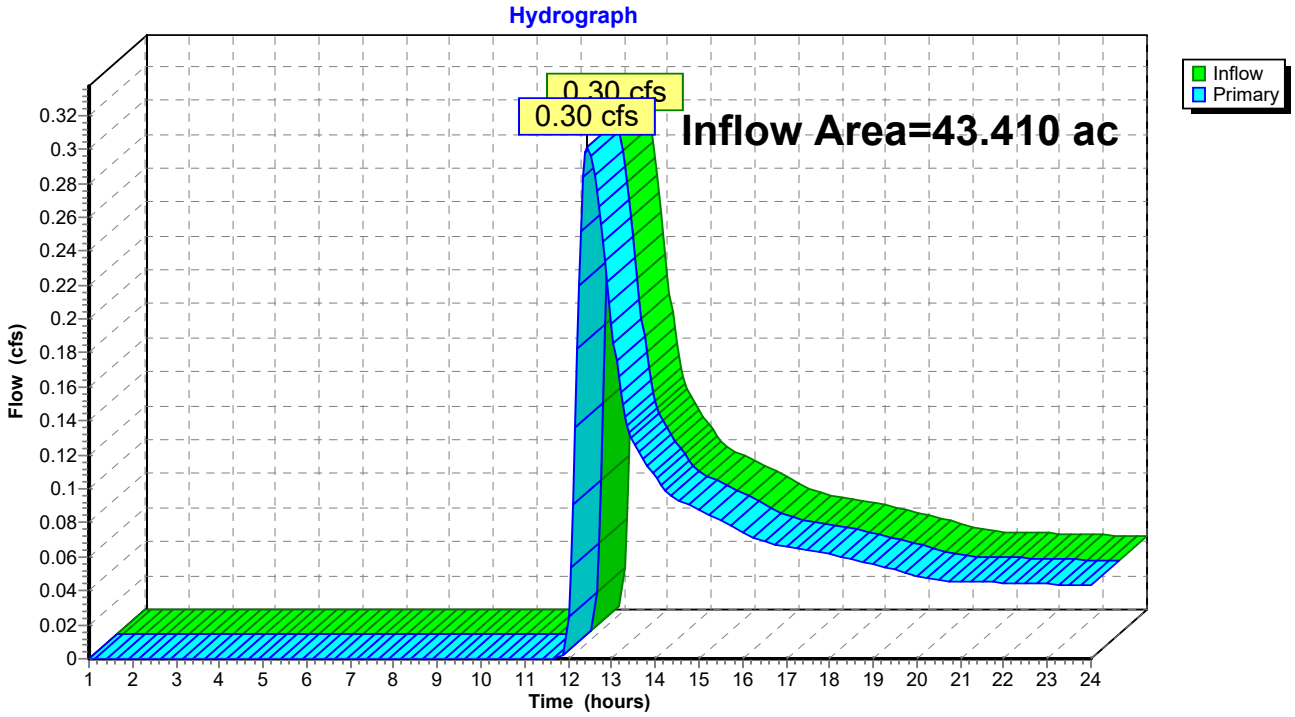
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
849.50	5	0
849.60	65	3
849.70	193	15
849.80	389	44
849.90	654	95
850.00	986	177
850.10	1,027	278
850.20	1,069	382
850.30	1,112	491
850.40	1,156	605
850.50	1,201	723
850.60	1,246	845
850.70	1,293	972
850.80	1,340	1,104
850.90	1,388	1,240
851.00	1,437	1,381
851.10	1,486	1,527
851.20	1,537	1,678
851.30	1,588	1,835
851.40	1,641	1,996
851.50	1,694	2,163
851.60	1,748	2,335
851.70	1,803	2,512
851.80	1,858	2,696
851.90	1,915	2,884
852.00	1,972	3,078
852.10	2,038	3,279
852.20	2,105	3,486
852.30	2,173	3,700
852.40	2,242	3,921
852.50	2,313	4,149
852.60	2,384	4,383
852.70	2,457	4,625
852.80	2,530	4,875
852.90	2,605	5,132
853.00	2,681	5,396
853.10	2,758	5,668
853.20	2,835	5,947
853.30	2,914	6,235
853.40	2,995	6,530
853.50	3,076	6,834
853.60	3,158	7,145
853.70	3,241	7,465
853.80	3,326	7,794
853.90	3,411	8,131
854.00	3,498	8,476
854.10	3,585	8,830
854.20	3,673	9,193
854.30	3,762	9,565
854.40	3,852	9,946
854.50	3,943	10,335
854.60	4,035	10,734
854.70	4,129	11,142
854.80	4,223	11,560
854.90	4,318	11,987
855.00	4,415	12,424
855.10	4,512	12,870
855.20	4,611	13,326
855.30	4,711	13,792
855.40	4,811	14,268
855.50	4,913	14,754
855.60	5,016	15,251
855.70	5,120	15,758
855.80	5,225	16,275
855.90	5,331	16,803
856.00	5,438	17,341
856.10	5,743	17,900
856.20	6,056	18,490
856.30	6,378	19,112
856.40	6,708	19,766
856.50	7,046	20,453
856.60	7,393	21,175
856.70	7,747	21,932
856.80	8,111	22,725
856.90	8,482	23,555
857.00	8,862	24,422
857.10	9,106	25,320
857.20	9,353	26,243
857.30	9,603	27,191
857.40	9,856	28,164
857.50	10,113	29,162
857.60	10,373	30,186
857.70	10,637	31,237
857.80	10,904	32,314
857.90	11,174	33,418
858.00	11,447	34,549
858.10	11,816	35,712
858.20	12,190	36,912
858.30	12,570	38,150
858.40	12,956	39,426
858.50	**13,348**	**40,741**

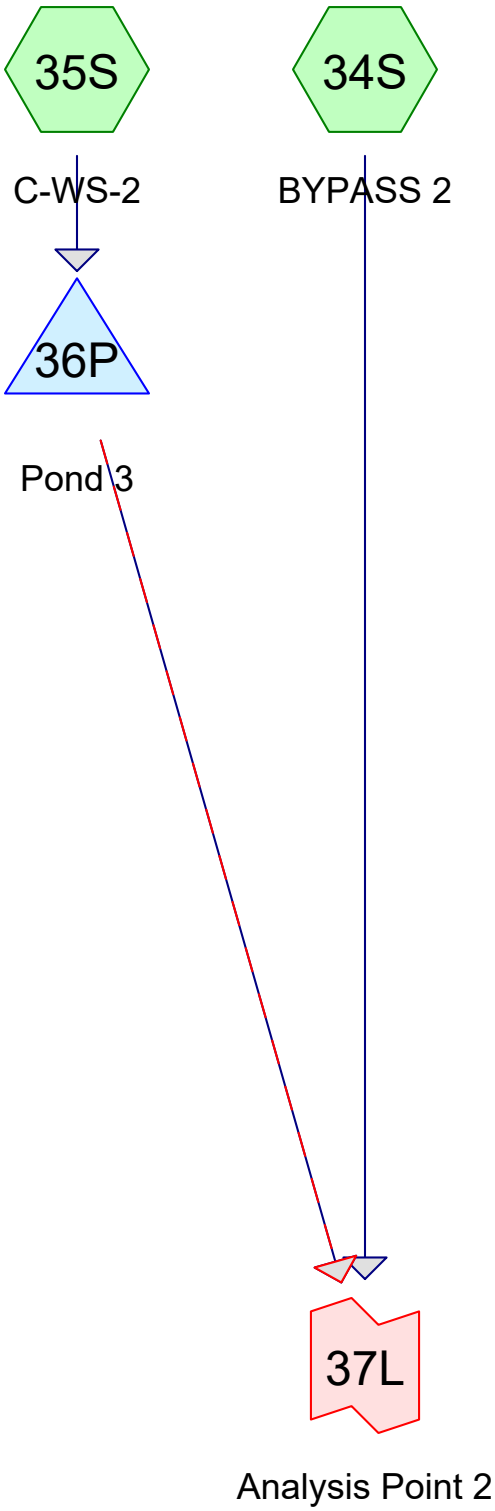
Summary for Link 30L: Analysis Point 1

Inflow Area = 43.410 ac, 6.92% Impervious, Inflow Depth > 0.02" for WQ event
Inflow = 0.30 cfs @ 12.45 hrs, Volume= 0.080 af
Primary = 0.30 cfs @ 12.45 hrs, Volume= 0.080 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Link 30L: Analysis Point 1





Subcat Reach Pond Link

Routing Diagram for 19182_Hydrology_OM_EPSC
Prepared by Hewlett-Packard Company, Printed 7/1/2020
HydroCAD® 10.00-19 s/n 02652 © 2016 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.485	80	1/2 acre lots, 25% imp, HSG C (34S)
7.107	74	>75% Grass cover, Good, HSG C (34S, 35S)
0.233	98	Paved roads w/curbs & sewers, HSG C (35S)
0.440	98	Unconnected roofs, HSG C (35S)
10.265	**77**	**TOTAL AREA**

Time span=1.00-24.00 hrs, dt=0.05 hrs, 461 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 34S: BYPASS 2 Runoff Area=7.433 ac 8.36% Impervious Runoff Depth>2.12"
Flow Length=772' Tc=9.9 min CN=76 Runoff=24.08 cfs 1.316 af

Subcatchment 35S: C-WS-2 Runoff Area=2.832 ac 23.76% Impervious Runoff Depth>2.29"
Flow Length=804' Tc=10.5 min UI Adjusted CN=78 Runoff=9.65 cfs 0.540 af

Pond 36P: Pond 3 Peak Elev=864.05' Storage=16,743 cf Inflow=9.65 cfs 0.540 af
Primary=0.27 cfs 0.176 af Secondary=0.00 cfs 0.000 af Outflow=0.27 cfs 0.176 af

Link 37L: Analysis Point 2 Inflow=24.08 cfs 1.492 af
Primary=24.08 cfs 1.492 af

Total Runoff Area = 10.265 ac Runoff Volume = 1.856 af Average Runoff Depth = 2.17"
87.39% Pervious = 8.971 ac 12.61% Impervious = 1.294 ac

Summary for Subcatchment 34S: BYPASS 2

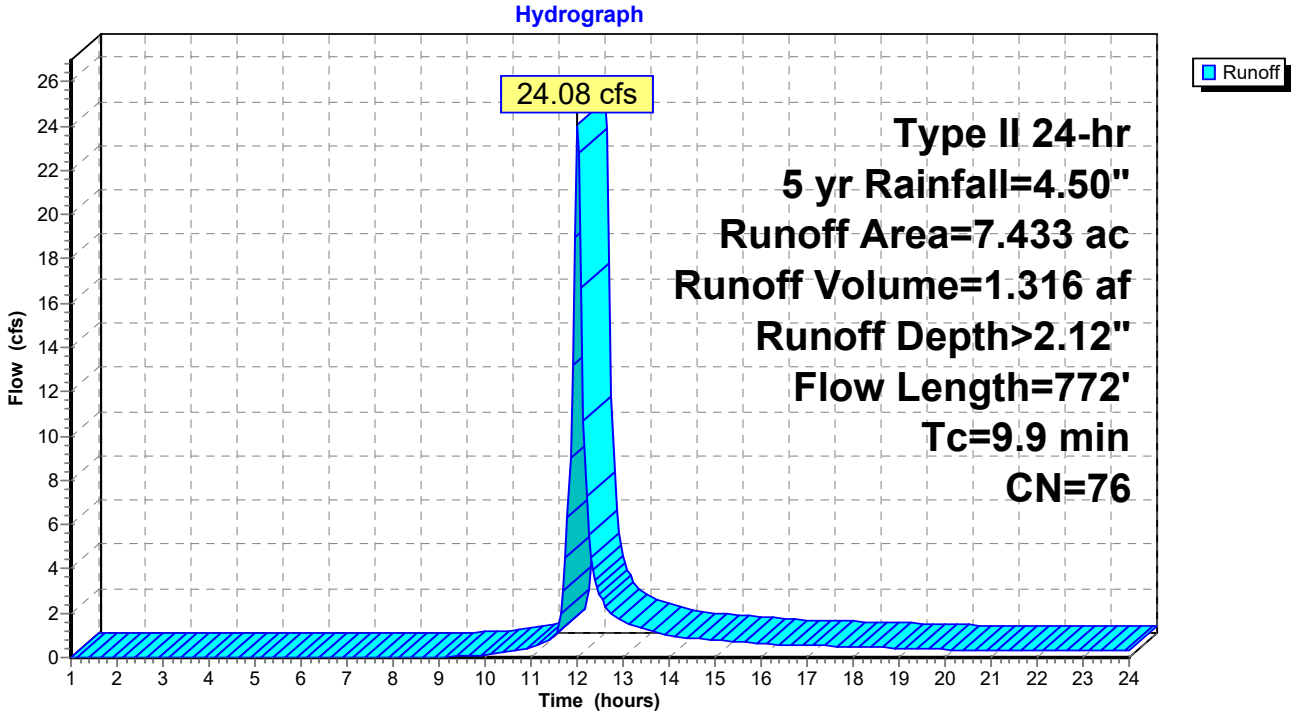
Runoff = 24.08 cfs @ 12.02 hrs, Volume= 1.316 af, Depth> 2.12"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 5 yr Rainfall=4.50"

Area (ac)	CN	Description
1.789	74	>75% Grass cover, Good, HSG C
3.159	74	>75% Grass cover, Good, HSG C
0.289	80	1/2 acre lots, 25% imp, HSG C
2.196	80	1/2 acre lots, 25% imp, HSG C
7.433	76	Weighted Average
6.812		91.64% Pervious Area
0.621		8.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0250	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
1.3	314	0.0760	4.14		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.5	358	0.0810	12.75	34.42	**Channel Flow,** Area= 2.7 sf Perim= 5.0' r= 0.54' n= 0.022 Earth, clean & straight
9.9	772	Total			

Subcatchment 34S: BYPASS 2



Summary for Subcatchment 35S: C-WS-2

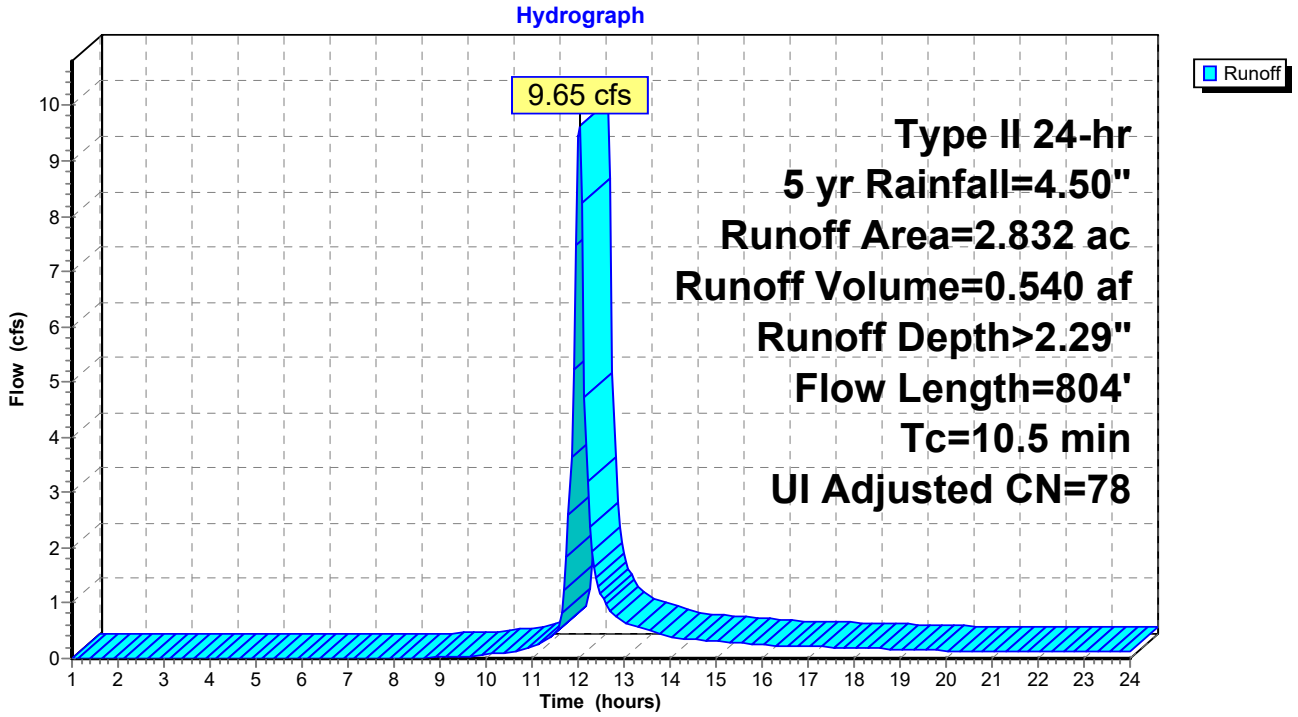
Runoff = 9.65 cfs @ 12.02 hrs, Volume= 0.540 af, Depth> 2.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 5 yr Rainfall=4.50"

Area (ac)	CN	Adj	Description
1.295	74		>75% Grass cover, Good, HSG C
0.864	74		>75% Grass cover, Good, HSG C
0.220	98		Unconnected roofs, HSG C
0.220	98		Unconnected roofs, HSG C
0.233	98		Paved roads w/curbs & sewers, HSG C
2.832	80	78	Weighted Average, UI Adjusted
2.159			76.24% Pervious Area
0.673			23.76% Impervious Area
0.440			65.38% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0250	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
1.3	478	0.0380	6.26	37.56	**Channel Flow,** Area= 6.0 sf Perim= 18.3' r= 0.33' n= 0.022 Earth, clean & straight
0.2	90	0.0200	9.93	17.56	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.8	74	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	62	0.0150	10.42	32.74	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.011 Concrete pipe, straight & clean
10.5	804	Total			

Subcatchment 35S: C-WS-2



Summary for Pond 36P: Pond 3

Inflow Area = 2.832 ac, 23.76% Impervious, Inflow Depth > 2.29" for 5 yr event
Inflow = 9.65 cfs @ 12.02 hrs, Volume= 0.540 af
Outflow = 0.27 cfs @ 15.61 hrs, Volume= 0.176 af, Atten= 97%, Lag= 215.0 min
Primary = 0.27 cfs @ 15.61 hrs, Volume= 0.176 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 864.05' @ 15.61 hrs Surf.Area= 8,218 sf Storage= 16,743 cf

Plug-Flow detention time= 388.0 min calculated for 0.175 af (32% of inflow)
Center-of-Mass det. time= 261.1 min (1,092.5 - 831.4)

Volume	Invert	Avail.Storage	Storage Description
#1	861.00'	58,277 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

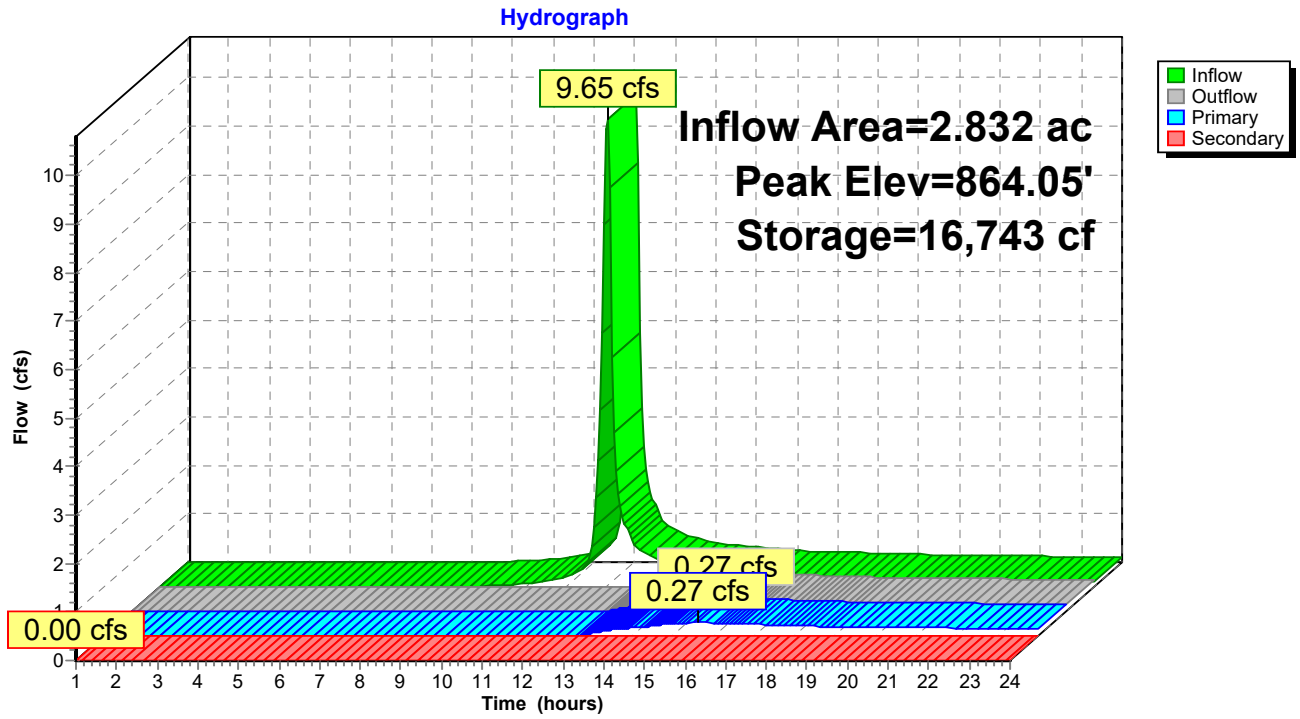
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
861.00	5	20.0	0	0	5
862.00	6,142	317.2	2,107	2,107	7,982
864.00	8,170	356.4	14,264	16,371	10,188
866.00	10,438	395.7	18,562	34,933	12,658
868.00	12,951	436.1	23,344	58,277	15,458

Device	Routing	Invert	Outlet Devices
#1	Primary	860.50'	**24.0" Round Outlet Pipe** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 860.50' / 858.00' S= 0.0417 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Device 1	863.64'	**3.9" Vert. Orifice/Grate** C= 0.600
#3	Device 1	864.00'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	866.00'	**28.0" x 28.0" Horiz. TOS** C= 0.600 Limited to weir flow at low heads
#5	Secondary	867.50'	**30.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=0.26 cfs @ 15.61 hrs HW=864.05' (Free Discharge)
└**1=Outlet Pipe** (Passes 0.26 cfs of 24.13 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.20 cfs @ 2.37 fps)
  ├**3=Orifice/Grate** (Orifice Controls 0.06 cfs @ 0.68 fps)
  └**4=TOS** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=861.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 36P: Pond 3



Stage-Area-Storage for Pond 36P: Pond 3

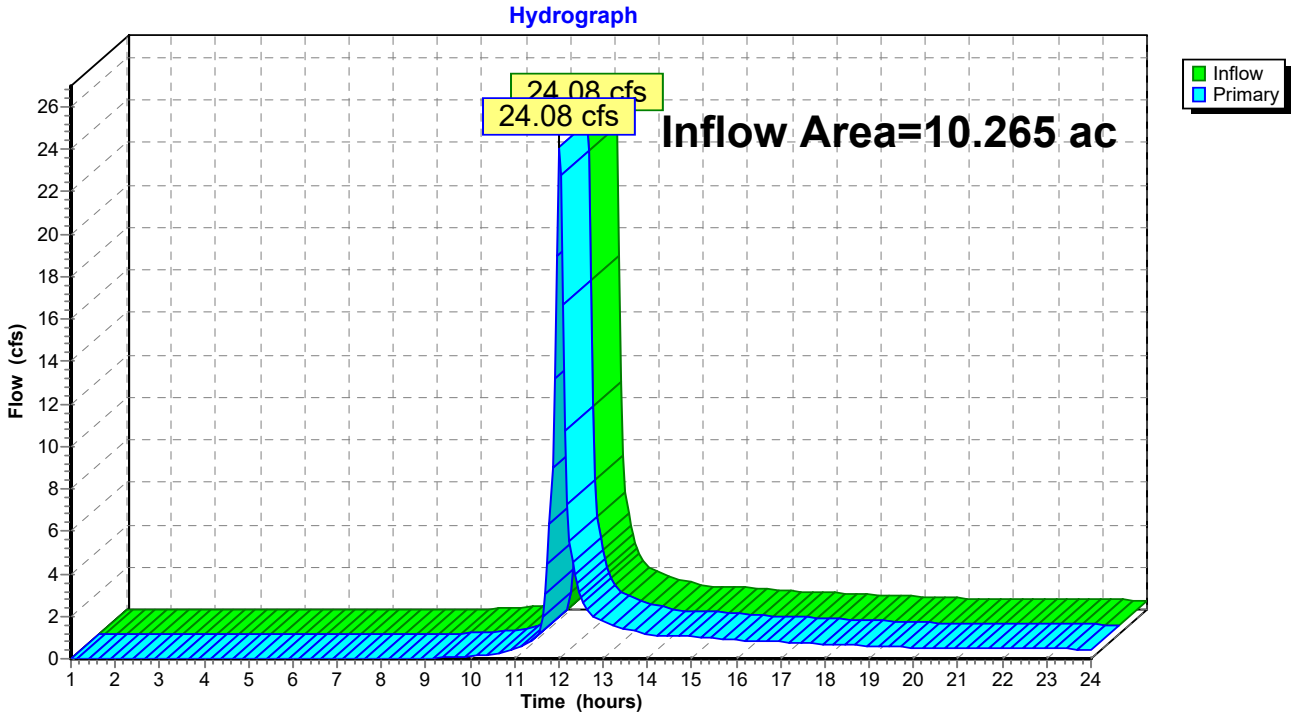
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
861.00	5	0
861.10	97	4
861.20	305	23
861.30	629	69
861.40	1,069	153
861.50	1,624	287
861.60	2,296	482
861.70	3,084	750
861.80	3,987	1,102
861.90	5,007	1,551
862.00	6,142	2,107
862.10	6,237	2,726
862.20	6,332	3,355
862.30	6,428	3,993
862.40	6,524	4,640
862.50	6,622	5,298
862.60	6,720	5,965
862.70	6,819	6,642
862.80	6,919	7,329
862.90	7,019	8,025
863.00	7,120	8,732
863.10	7,222	9,449
863.20	7,324	10,177
863.30	7,427	10,914
863.40	7,531	11,662
863.50	7,636	12,421
863.60	7,741	13,189
863.70	7,847	13,969
863.80	7,954	14,759
863.90	8,062	15,560
864.00	8,170	16,371
864.10	8,277	17,194
864.20	8,384	18,027
864.30	8,493	18,870
864.40	8,601	19,725
864.50	8,711	20,591
864.60	8,821	21,467
864.70	8,932	22,355
864.80	9,044	23,254
864.90	9,156	24,164
865.00	9,269	25,085
865.10	9,383	26,018
865.20	9,498	26,962
865.30	9,613	27,917
865.40	9,728	28,884
865.50	9,845	29,863
865.60	9,962	30,853
865.70	10,080	31,855
865.80	10,199	32,869
865.90	10,318	33,895
866.00	10,438	34,933
866.10	10,557	35,983
866.20	10,677	37,044
866.30	10,798	38,118
866.40	10,919	39,204
866.50	11,041	40,302
866.60	11,163	41,412
866.70	11,287	42,535
866.80	11,411	43,670
866.90	11,535	44,817
867.00	11,661	45,977
867.10	11,787	47,149
867.20	11,913	48,334
867.30	12,041	49,532
867.40	12,169	50,742
867.50	12,297	51,966
867.60	12,427	53,202
867.70	12,557	54,451
867.80	12,688	55,713
867.90	12,819	56,988
868.00	**12,951**	**58,277**

Summary for Link 37L: Analysis Point 2

Inflow Area = 10.265 ac, 12.61% Impervious, Inflow Depth > 1.74" for 5 yr event
Inflow = 24.08 cfs @ 12.02 hrs, Volume= 1.492 af
Primary = 24.08 cfs @ 12.02 hrs, Volume= 1.492 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Link 37L: Analysis Point 2



Time span=1.00-24.00 hrs, dt=0.05 hrs, 461 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 34S: BYPASS 2 Runoff Area=7.433 ac 8.36% Impervious Runoff Depth>3.51"
Flow Length=772' Tc=9.9 min CN=76 Runoff=39.60 cfs 2.175 af

Subcatchment 35S: C-WS-2 Runoff Area=2.832 ac 23.76% Impervious Runoff Depth>3.71"
Flow Length=804' Tc=10.5 min UI Adjusted CN=78 Runoff=15.54 cfs 0.876 af

Pond 36P: Pond 3 Peak Elev=864.45' Storage=20,188 cf Inflow=15.54 cfs 0.876 af
Primary=2.29 cfs 0.499 af Secondary=0.00 cfs 0.000 af Outflow=2.29 cfs 0.499 af

Link 37L: Analysis Point 2 Inflow=39.61 cfs 2.674 af
Primary=39.61 cfs 2.674 af

Total Runoff Area = 10.265 ac Runoff Volume = 3.051 af Average Runoff Depth = 3.57"
87.39% Pervious = 8.971 ac 12.61% Impervious = 1.294 ac

Summary for Subcatchment 34S: BYPASS 2

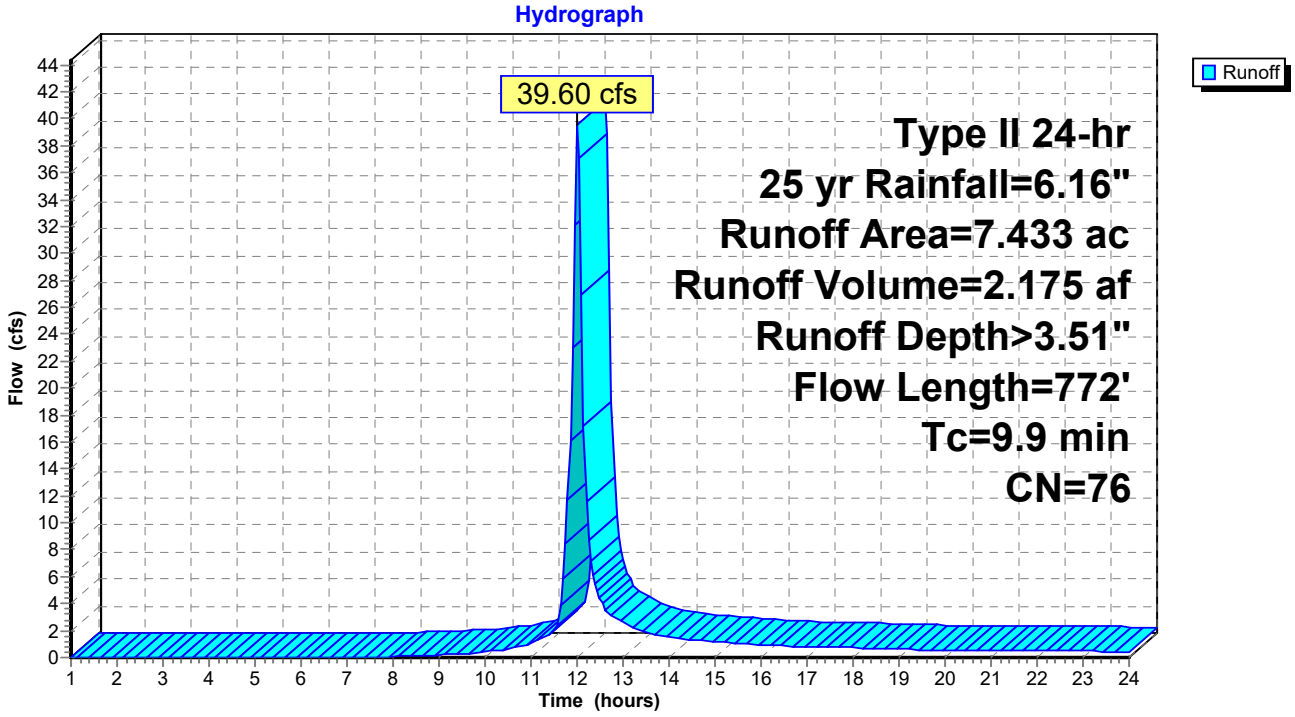
Runoff = 39.60 cfs @ 12.01 hrs, Volume= 2.175 af, Depth> 3.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 yr Rainfall=6.16"

Area (ac)	CN	Description
1.789	74	>75% Grass cover, Good, HSG C
3.159	74	>75% Grass cover, Good, HSG C
0.289	80	1/2 acre lots, 25% imp, HSG C
2.196	80	1/2 acre lots, 25% imp, HSG C
7.433	76	Weighted Average
6.812		91.64% Pervious Area
0.621		8.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0250	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
1.3	314	0.0760	4.14		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.5	358	0.0810	12.75	34.42	**Channel Flow,** Area= 2.7 sf Perim= 5.0' r= 0.54' n= 0.022 Earth, clean & straight
9.9	772	Total			

Subcatchment 34S: BYPASS 2



Summary for Subcatchment 35S: C-WS-2

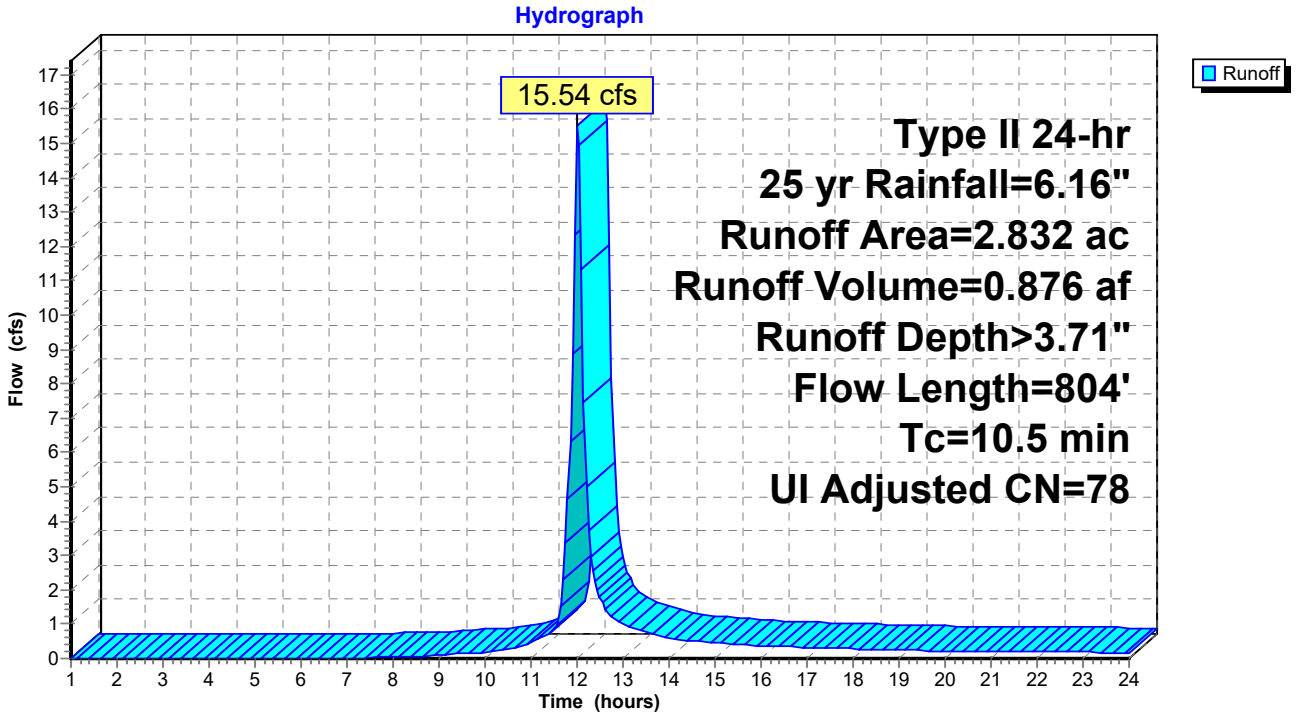
Runoff = 15.54 cfs @ 12.02 hrs, Volume= 0.876 af, Depth> 3.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 25 yr Rainfall=6.16"

Area (ac)	CN	Adj	Description
1.295	74		>75% Grass cover, Good, HSG C
0.864	74		>75% Grass cover, Good, HSG C
0.220	98		Unconnected roofs, HSG C
0.220	98		Unconnected roofs, HSG C
0.233	98		Paved roads w/curbs & sewers, HSG C
2.832	80	78	Weighted Average, UI Adjusted
2.159			76.24% Pervious Area
0.673			23.76% Impervious Area
0.440			65.38% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.1	100	0.0250	0.21		**Sheet Flow,** Grass: Short n= 0.150 P2= 3.92"
1.3	478	0.0380	6.26	37.56	**Channel Flow,** Area= 6.0 sf Perim= 18.3' r= 0.33' n= 0.022 Earth, clean & straight
0.2	90	0.0200	9.93	17.56	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.011 Concrete pipe, straight & clean
0.8	74	0.0100	1.50		**Shallow Concentrated Flow,** Grassed Waterway Kv= 15.0 fps
0.1	62	0.0150	10.42	32.74	**Pipe Channel,** 24.0" Round Area= 3.1 sf Perim= 6.3' r= 0.50' n= 0.011 Concrete pipe, straight & clean
10.5	804	Total			

Subcatchment 35S: C-WS-2



Summary for Pond 36P: Pond 3

Inflow Area = 2.832 ac, 23.76% Impervious, Inflow Depth > 3.71" for 25 yr event
Inflow = 15.54 cfs @ 12.02 hrs, Volume= 0.876 af
Outflow = 2.29 cfs @ 12.40 hrs, Volume= 0.499 af, Atten= 85%, Lag= 22.6 min
Primary = 2.29 cfs @ 12.40 hrs, Volume= 0.499 af
Secondary = 0.00 cfs @ 1.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs
Peak Elev= 864.45' @ 12.40 hrs Surf.Area= 8,660 sf Storage= 20,188 cf

Plug-Flow detention time= 225.1 min calculated for 0.498 af (57% of inflow)
Center-of-Mass det. time= 115.6 min (933.3 - 817.7)

Volume	Invert	Avail.Storage	Storage Description
#1	861.00'	58,277 cf	**Custom Stage Data (Irregular)**Listed below (Recalc)

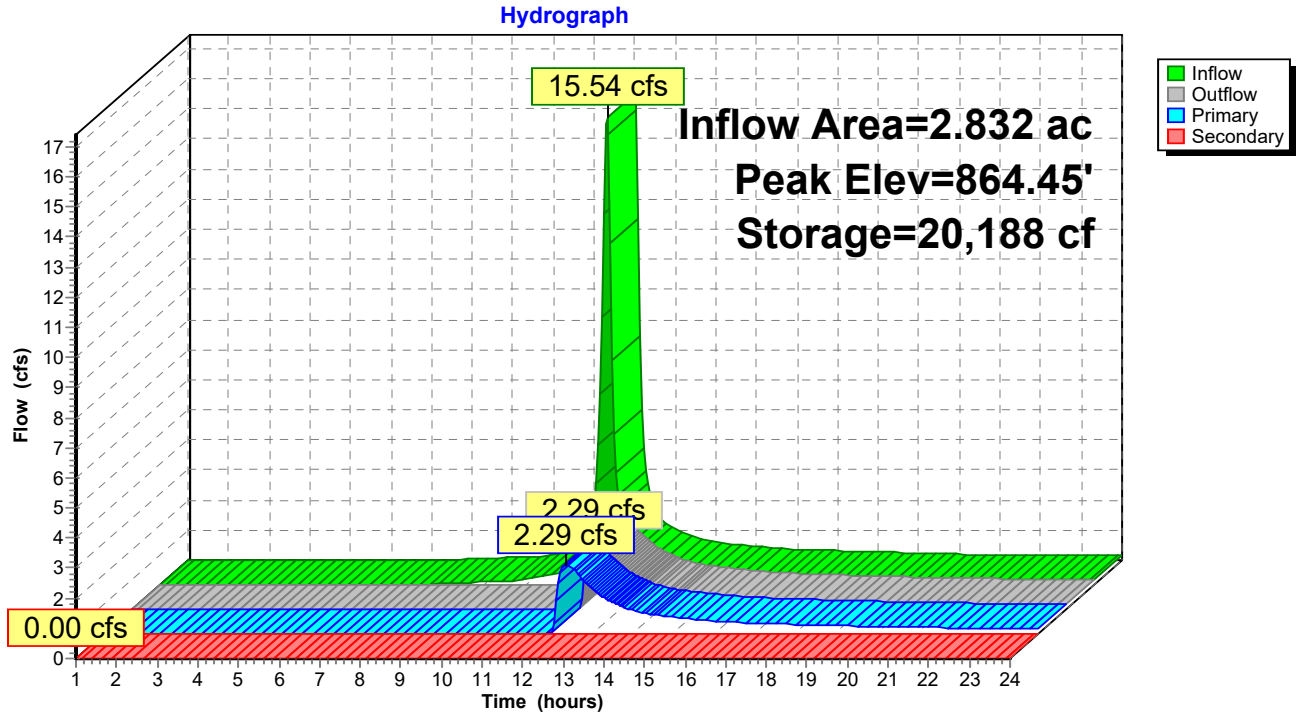
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
861.00	5	20.0	0	0	5
862.00	6,142	317.2	2,107	2,107	7,982
864.00	8,170	356.4	14,264	16,371	10,188
866.00	10,438	395.7	18,562	34,933	12,658
868.00	12,951	436.1	23,344	58,277	15,458

Device	Routing	Invert	Outlet Devices
#1	Primary	860.50'	**24.0" Round Outlet Pipe** L= 60.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 860.50' / 858.00' S= 0.0417 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 3.14 sf
#2	Device 1	863.64'	**3.9" Vert. Orifice/Grate** C= 0.600
#3	Device 1	864.00'	**24.0" W x 6.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	866.00'	**28.0" x 28.0" Horiz. TOS** C= 0.600 Limited to weir flow at low heads
#5	Secondary	867.50'	**30.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64 2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74

Primary OutFlow Max=2.28 cfs @ 12.40 hrs HW=864.45' (Free Discharge)
└**1=Outlet Pipe** (Passes 2.28 cfs of 26.00 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.32 cfs @ 3.88 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.96 cfs @ 2.16 fps)
  └**4=TOS** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 1.00 hrs HW=861.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 36P: Pond 3



Stage-Area-Storage for Pond 36P: Pond 3

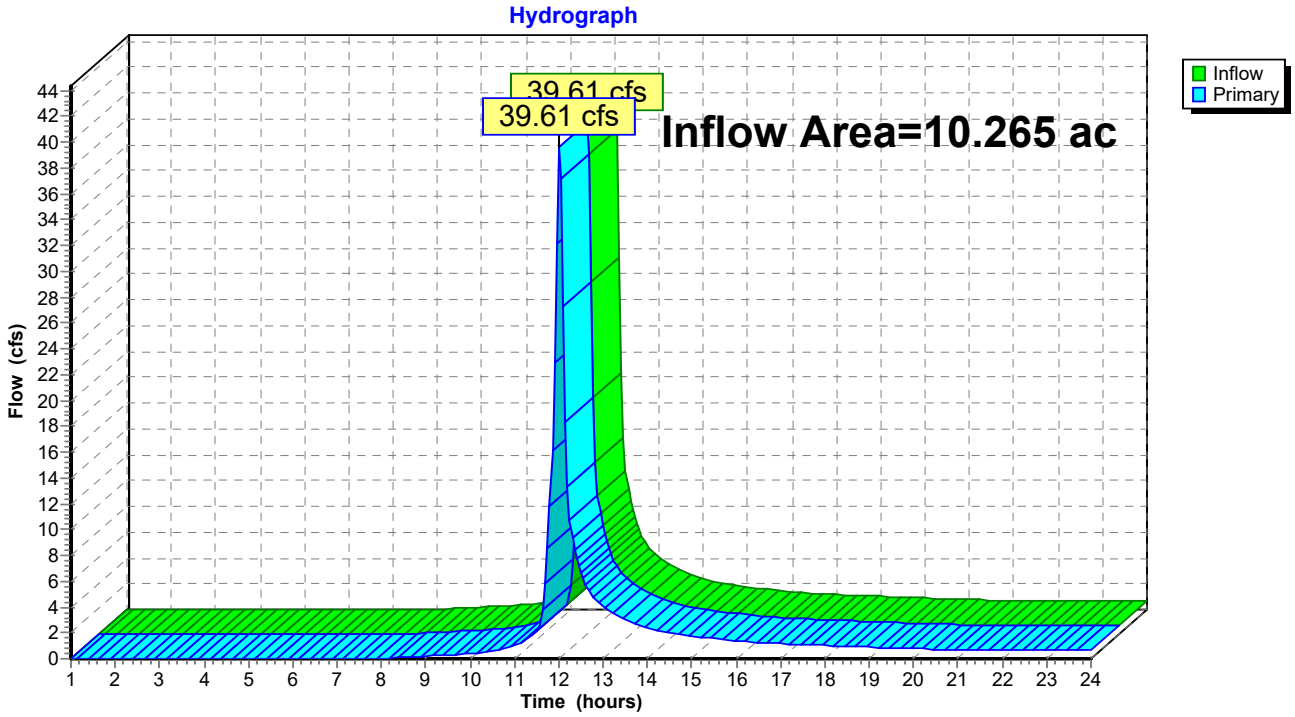
Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
861.00	5	0
861.10	97	4
861.20	305	23
861.30	629	69
861.40	1,069	153
861.50	1,624	287
861.60	2,296	482
861.70	3,084	750
861.80	3,987	1,102
861.90	5,007	1,551
862.00	6,142	2,107
862.10	6,237	2,726
862.20	6,332	3,355
862.30	6,428	3,993
862.40	6,524	4,640
862.50	6,622	5,298
862.60	6,720	5,965
862.70	6,819	6,642
862.80	6,919	7,329
862.90	7,019	8,025
863.00	7,120	8,732
863.10	7,222	9,449
863.20	7,324	10,177
863.30	7,427	10,914
863.40	7,531	11,662
863.50	7,636	12,421
863.60	7,741	13,189
863.70	7,847	13,969
863.80	7,954	14,759
863.90	8,062	15,560
864.00	8,170	16,371
864.10	8,277	17,194
864.20	8,384	18,027
864.30	8,493	18,870
864.40	8,601	19,725
864.50	8,711	20,591
864.60	8,821	21,467
864.70	8,932	22,355
864.80	9,044	23,254
864.90	9,156	24,164
865.00	9,269	25,085
865.10	9,383	26,018
865.20	9,498	26,962
865.30	9,613	27,917
865.40	9,728	28,884
865.50	9,845	29,863
865.60	9,962	30,853
865.70	10,080	31,855
865.80	10,199	32,869
865.90	10,318	33,895
866.00	10,438	34,933
866.10	10,557	35,983
866.20	10,677	37,044
866.30	10,798	38,118
866.40	10,919	39,204
866.50	11,041	40,302
866.60	11,163	41,412
866.70	11,287	42,535
866.80	11,411	43,670
866.90	11,535	44,817
867.00	11,661	45,977
867.10	11,787	47,149
867.20	11,913	48,334
867.30	12,041	49,532
867.40	12,169	50,742
867.50	12,297	51,966
867.60	12,427	53,202
867.70	12,557	54,451
867.80	12,688	55,713
867.90	12,819	56,988
868.00	**12,951**	**58,277**

Summary for Link 37L: Analysis Point 2

Inflow Area = 10.265 ac, 12.61% Impervious, Inflow Depth > 3.13" for 25 yr event
Inflow = 39.61 cfs @ 12.01 hrs, Volume= 2.674 af
Primary = 39.61 cfs @ 12.01 hrs, Volume= 2.674 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 1.00-24.00 hrs, dt= 0.05 hrs

Link 37L: Analysis Point 2



Project Name: ALLEN PROPERTY
Project Number: 19182
Sediment Pond Calculations
5 yr - 24 hr Storm 4.50 inches

Per TDEC, 3618 CF Storage / 1 acre drainage area

		BASIN 1 Calculated		PROVIDED	REQUIRED
Drainage Area (AC)		29.21			
Required Storage Volume		105,693 CF		106503	105,693 CF
Wet		52,846 CF		53285	52846.317
Dry		52,846 CF	46,037 CF	53218	52846.317
Forebay		13,212 CF	6,809 CF		13211.579
Bottom Basin Elevation		826.60'			
Wet Storage Elevation		832.32'			
Dry Storage Elevation		834.16'			

477,194 C.F.

Project Name: ALLEN PROPERTY
Project Number: 19182
Sediment Pond Calculations
2 yr - 24 hr Storm 4.50 inches

Per TDEC, 3618 CF Storage / 1 acre drainage area

		BASIN 2 Calculated		PROVIDED	REQUIRED
Drainage Area (AC)		2.51			
Required Storage Volume		9,092 CF		26056	23962
Wet		4,546 CF		13051	11981
Dry		4,546 CF	-2,263 CF	13005	11981
Forebay		1,137 CF	6,809 CF		2995.25
Bottom Basin Elevation		849.50'			
Wet Storage Elevation		855.14'			
Dry Storage Elevation		857.18'			

41,050 C.F.

Project Name: ALLEN PROPERTY
Project Number: 19182
Sediment Pond Calculations
2 yr - 24 hr Storm 4.50 inches

Per TDEC, 3618 CF Storage / 1 acre drainage area

		BASIN 4 Calculated		PROVIDED	REQUIRED
Drainage Area (AC)		2.83			
Required Storage Volume		10,246 CF		26206	23962
Wet		5,123 CF		13035	11981
Dry		5,123 CF	-1,686 CF	13171	11981
Forebay		1,281 CF	6,809 CF		2995.25
Bottom Basin Elevation		861.00'			
Wet Storage Elevation		863.64'			
Dry Storage Elevation		865.12'			

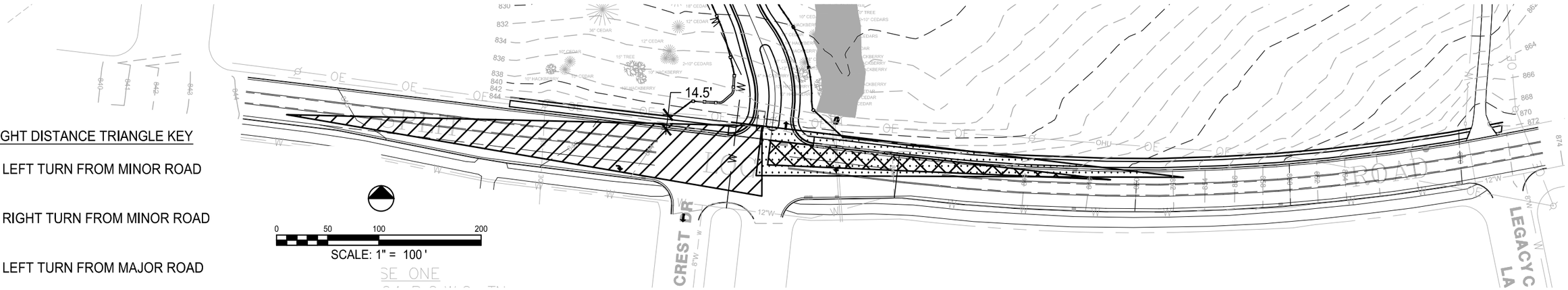
46,261 C.F.

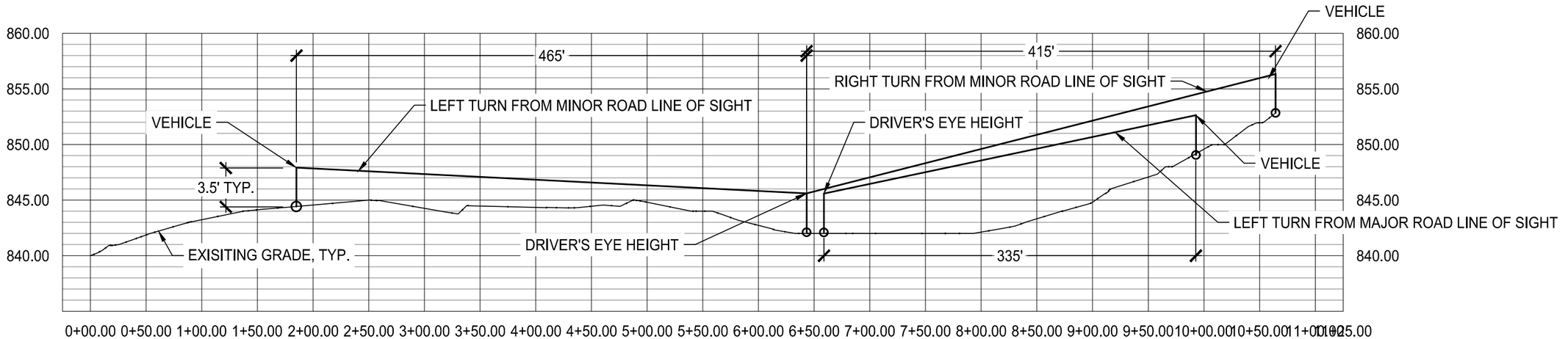
SIGHT DISTANCE TRIANGLE KEY

LEFT TURN FROM MINOR ROAD

RIGHT TURN FROM MINOR ROAD

LEFT TURN FROM MAJOR ROAD





SCALE
VERTICAL: 1" = 10'
HORIZONTAL: 1" = 100'

LOSE DESIGN
SPACES FOR LIFE.

ALLEN PROPERTY

INTERSECTION SIGHT DISTANCE

TURNBERRY HOMES

NOT FOR CONSTRUCTION

© 2020 LOSE DESIGN

ALLEN PROPERTY LD# 19182
BRENTWOOD, TN
INTERSECTION SIGHT DISTANCE (ISD) CALCULATIONS
ISD=1.47Vt
V=35 MPH

CASE B1- LEFT TURN FROM THE MINOR ROAD
t=7.5+0.5+0.2(8-3)
t=9.0 sec

ISD= ~~463.05~~ 465 ft

CASE B2 - RIGHT TURN FROM THE MINOR ROAD
t=9.0-1.0
t=8.0 sec

ISD= ~~411.6~~ 415 ft

CASE C2 - LEFT TURN FROM THE MAJOR ROAD
t=6.5 sec

ISD= ~~334.43~~ 335 ft

Long Term BMP Maintenance Plan
For:
Allen Property

PREPARED FOR:

Turnberry Homes
210 Jamestown Park Drive, Suite 102
Brentwood, TN 37027
Phone: 615-376-7001

Prepared by:

Lose Design
2809 Foster Avenue
Nashville, TN 37210

TABLE OF CONTENTS

I. Description and Location of BMP to be Inspected
II. Schedule of inspections
III. Disposal of Pollutants
IV. Inspection and Maintenance Personnel Contacts
V. Inspection Checklists
VI. BMP Location Map (LID Exhibit)

I. Description and Location of BMP to be Inspected

The proposed BMPs for this project are three dry detention ponds, three bioretention ponds, and grass channels. See section VI. for BMP Location Map for their locations.

II. Schedule of inspections

Dry Detention Pond

Maintenance Tasks
-Repairing areas of erosion or reseeding areas that are bare
-Removing trash and debris from area
-Addressing areas of standing water which might breed mosquitoes
-Picking up branches that have fallen
-Ensure outlet structure is free of debris

Bioretention Pond

Maintenance Tasks
-Mowing of grass filter strips and bioretention turf cover
-Spot weeding, erosion repair, trash removal, and mulch raking
-Add reinforcement planting to maintain desired vegetation density
-Remove invasive plants using recommended control methods
-Stabilize the contributing drainage area to prevent erosion
-Spring inspection and cleanup
-Supplement mulch to maintain a 3-inch layer
-Prune trees and shrubs
-Remove sediment in pre-treatment cells and inflow points
-Replace the mulch layer Every 3 years

Grass Channel

Maintenance Tasks
-Maintain grass height of approximately 3 to 4 inches.
-Remove sediment build up in channel bottom when it accumulates to 25% of original total channel volume.

-Ensure that rills and gullies have not formed on side slopes. Correct if necessary.
-Remove trash and debris build up.
-Replant areas where vegetation has not been successfully established.

III. Disposal of Pollutants

All local and state guidelines must be followed for the disposal of trash, sediment and other pollutants removed during maintenance of the stormwater system.

IV. Inspection and Maintenance Personnel Contacts

Turnberry Homes
210 Jamestown Park Drive, Suite 102
Brentwood, TN 37027
Phone: 615-376-7001
Contact: Nicky Wells

SCM Inspection Checklist

Complete one checklist per stormwater control measure. Submit checklists per site.

SCM TYPE: _____
(dry detention pond, wet detention pond, bioretention/rain garden, grass channel, water quality swale)

Date of Last Rain: _____

Please note whether feature is satisfactory, maintenance needed, unsatisfactory / non-functioning. Clarify with your own comments. Note locations of photographs.

Inspection Key *S= Satisfactory*: Feature is functioning as designed; *M= Maintenance needed*: Feature has mild to moderate routine maintenance needs, but is still functioning; *U= Unsatisfactory*: Feature requires immediate major remedial maintenance to restore function; *N/A*= Feature does not apply

Feature	S-M-U Rating	Comments
Inlet structure/headwall stable?		
Inlet sediment accumulation or erosion?		
Flow path vegetation per plans?		
Flow path bare soil/erosion?		
Banks/ Perimeter stable?		
Outlet Structure stable?		
Outlet orifice blocked?		
Outlet sediment accumulation or erosion?		
Emergency Spillway stable?		
Stormwater Detention volume		
Stormwater Infiltration rate		
Underdrain Cleanout		

General Comments:
_____
_____
_____
_____

Date of Next Inspection:_____

Inspector's Signature:_____ Date:_____

Owner's Signature:_____ Date:_____

SCM Inspection Checklist

Complete one checklist per stormwater control measure. Submit checklists per site.

SCM TYPE: _____
(dry detention pond, wet detention pond, bioretention/rain garden, grass channel, water quality swale)

Date of Last Rain: _____

Please note whether feature is satisfactory, maintenance needed, unsatisfactory / non-functioning. Clarify with your own comments. Note locations of photographs.

Inspection Key *S= Satisfactory*: Feature is functioning as designed; *M= Maintenance needed*: Feature has mild to moderate routine maintenance needs, but is still functioning; *U= Unsatisfactory*: Feature requires immediate major remedial maintenance to restore function; *N/A*= Feature does not apply

Feature	S-M-U Rating	Comments
Inlet structure/headwall stable?		
Inlet sediment accumulation or erosion?		
Flow path vegetation per plans?		
Flow path bare soil/erosion?		
Banks/ Perimeter stable?		
Outlet Structure stable?		
Outlet orifice blocked?		
Outlet sediment accumulation or erosion?		
Emergency Spillway stable?		
Stormwater Detention volume		
Stormwater Infiltration rate		
Underdrain Cleanout		

General Comments:
_____
_____
_____
_____

Date of Next Inspection:_____

Inspector's Signature:_____ Date:_____

Owner's Signature:_____ Date:_____

SCM Inspection Checklist

Complete one checklist per stormwater control measure. Submit checklists per site.

SCM TYPE: _____
(dry detention pond, wet detention pond, bioretention/rain garden, grass channel, water quality swale)

Date of Last Rain: _____

Please note whether feature is satisfactory, maintenance needed, unsatisfactory / non-functioning. Clarify with your own comments. Note locations of photographs.

Inspection Key *S= Satisfactory*: Feature is functioning as designed; *M= Maintenance needed*: Feature has mild to moderate routine maintenance needs, but is still functioning; *U= Unsatisfactory*: Feature requires immediate major remedial maintenance to restore function; *N/A*= Feature does not apply

Feature	S-M-U Rating	Comments
Inlet structure/headwall stable?		
Inlet sediment accumulation or erosion?		
Flow path vegetation per plans?		
Flow path bare soil/erosion?		
Banks/ Perimeter stable?		
Outlet Structure stable?		
Outlet orifice blocked?		
Outlet sediment accumulation or erosion?		
Emergency Spillway stable?		
Stormwater Detention volume		
Stormwater Infiltration rate		
Underdrain Cleanout		

General Comments:
_____
_____
_____
_____

Date of Next Inspection:_____

Inspector's Signature:_____ Date:_____

Owner's Signature:_____ Date:_____

SCM Inspection Checklist

Complete one checklist per stormwater control measure. Submit checklists per site.

SCM TYPE: _____
(dry detention pond, wet detention pond, bioretention/rain garden, grass channel, water quality swale)

Date of Last Rain: _____

Please note whether feature is satisfactory, maintenance needed, unsatisfactory / non-functioning. Clarify with your own comments. Note locations of photographs.

Inspection Key *S= Satisfactory*: Feature is functioning as designed; *M= Maintenance needed*: Feature has mild to moderate routine maintenance needs, but is still functioning; *U= Unsatisfactory*: Feature requires immediate major remedial maintenance to restore function; *N/A*= Feature does not apply

Feature	S-M-U Rating	Comments
Inlet structure/headwall stable?		
Inlet sediment accumulation or erosion?		
Flow path vegetation per plans?		
Flow path bare soil/erosion?		
Banks/ Perimeter stable?		
Outlet Structure stable?		
Outlet orifice blocked?		
Outlet sediment accumulation or erosion?		
Emergency Spillway stable?		
Stormwater Detention volume		
Stormwater Infiltration rate		
Underdrain Cleanout		

General Comments:
_____
_____
_____
_____

Date of Next Inspection:_____

Inspector's Signature:_____ Date:_____

Owner's Signature:_____ Date:_____

SCM Inspection Checklist

Complete one checklist per stormwater control measure. Submit checklists per site.

SCM TYPE: _____
(dry detention pond, wet detention pond, bioretention/rain garden, grass channel, water quality swale)

Date of Last Rain: _____

Please note whether feature is satisfactory, maintenance needed, unsatisfactory / non-functioning. Clarify with your own comments. Note locations of photographs.

Inspection Key *S= Satisfactory*: Feature is functioning as designed; *M= Maintenance needed*: Feature has mild to moderate routine maintenance needs, but is still functioning; *U= Unsatisfactory*: Feature requires immediate major remedial maintenance to restore function; *N/A*= Feature does not apply

Feature	S-M-U Rating	Comments
Inlet structure/headwall stable?		
Inlet sediment accumulation or erosion?		
Flow path vegetation per plans?		
Flow path bare soil/erosion?		
Banks/ Perimeter stable?		
Outlet Structure stable?		
Outlet orifice blocked?		
Outlet sediment accumulation or erosion?		
Emergency Spillway stable?		
Stormwater Detention volume		
Stormwater Infiltration rate		
Underdrain Cleanout		

General Comments:
_____
_____
_____
_____

Date of Next Inspection:_____

Inspector's Signature:_____ Date:_____

Owner's Signature:_____ Date:_____

SCM Inspection Checklist

Complete one checklist per stormwater control measure. Submit checklists per site.

SCM TYPE: _____
(dry detention pond, wet detention pond, bioretention/rain garden, grass channel, water quality swale)

Date of Last Rain: _____

Please note whether feature is satisfactory, maintenance needed, unsatisfactory / non-functioning. Clarify with your own comments. Note locations of photographs.

Inspection Key *S= Satisfactory*: Feature is functioning as designed; *M= Maintenance needed*: Feature has mild to moderate routine maintenance needs, but is still functioning; *U= Unsatisfactory*: Feature requires immediate major remedial maintenance to restore function; *N/A*= Feature does not apply

Feature	S-M-U Rating	Comments
Inlet structure/headwall stable?		
Inlet sediment accumulation or erosion?		
Flow path vegetation per plans?		
Flow path bare soil/erosion?		
Banks/ Perimeter stable?		
Outlet Structure stable?		
Outlet orifice blocked?		
Outlet sediment accumulation or erosion?		
Emergency Spillway stable?		
Stormwater Detention volume		
Stormwater Infiltration rate		
Underdrain Cleanout		

General Comments:
_____
_____
_____
_____

Date of Next Inspection:_____

Inspector's Signature:_____ Date:_____

Owner's Signature:_____ Date:_____

SCM Inspection Checklist

Complete one checklist per stormwater control measure. Submit checklists per site.

SCM TYPE: _____
(dry detention pond, wet detention pond, bioretention/rain garden, grass channel, water quality swale)

Date of Last Rain: _____

Please note whether feature is satisfactory, maintenance needed, unsatisfactory / non-functioning. Clarify with your own comments. Note locations of photographs.

Inspection Key *S= Satisfactory*: Feature is functioning as designed; *M= Maintenance needed*: Feature has mild to moderate routine maintenance needs, but is still functioning; *U= Unsatisfactory*: Feature requires immediate major remedial maintenance to restore function; *N/A*= Feature does not apply

Feature	S-M-U Rating	Comments
Inlet structure/headwall stable?		
Inlet sediment accumulation or erosion?		
Flow path vegetation per plans?		
Flow path bare soil/erosion?		
Banks/ Perimeter stable?		
Outlet Structure stable?		
Outlet orifice blocked?		
Outlet sediment accumulation or erosion?		
Emergency Spillway stable?		
Stormwater Detention volume		
Stormwater Infiltration rate		
Underdrain Cleanout		

General Comments:
_____
_____
_____
_____

Date of Next Inspection:_____

Inspector's Signature:_____ Date:_____

Owner's Signature:_____ Date:_____

SCM Inspection Checklist

Complete one checklist per stormwater control measure. Submit checklists per site.

SCM TYPE: _____
(dry detention pond, wet detention pond, bioretention/rain garden, grass channel, water quality swale)

Date of Last Rain: _____

Please note whether feature is satisfactory, maintenance needed, unsatisfactory / non-functioning. Clarify with your own comments. Note locations of photographs.

Inspection Key *S= Satisfactory*: Feature is functioning as designed; *M= Maintenance needed*: Feature has mild to moderate routine maintenance needs, but is still functioning; *U= Unsatisfactory*: Feature requires immediate major remedial maintenance to restore function; *N/A*= Feature does not apply

Feature	S-M-U Rating	Comments
Inlet structure/headwall stable?		
Inlet sediment accumulation or erosion?		
Flow path vegetation per plans?		
Flow path bare soil/erosion?		
Banks/ Perimeter stable?		
Outlet Structure stable?		
Outlet orifice blocked?		
Outlet sediment accumulation or erosion?		
Emergency Spillway stable?		
Stormwater Detention volume		
Stormwater Infiltration rate		
Underdrain Cleanout		

General Comments:
_____
_____
_____
_____

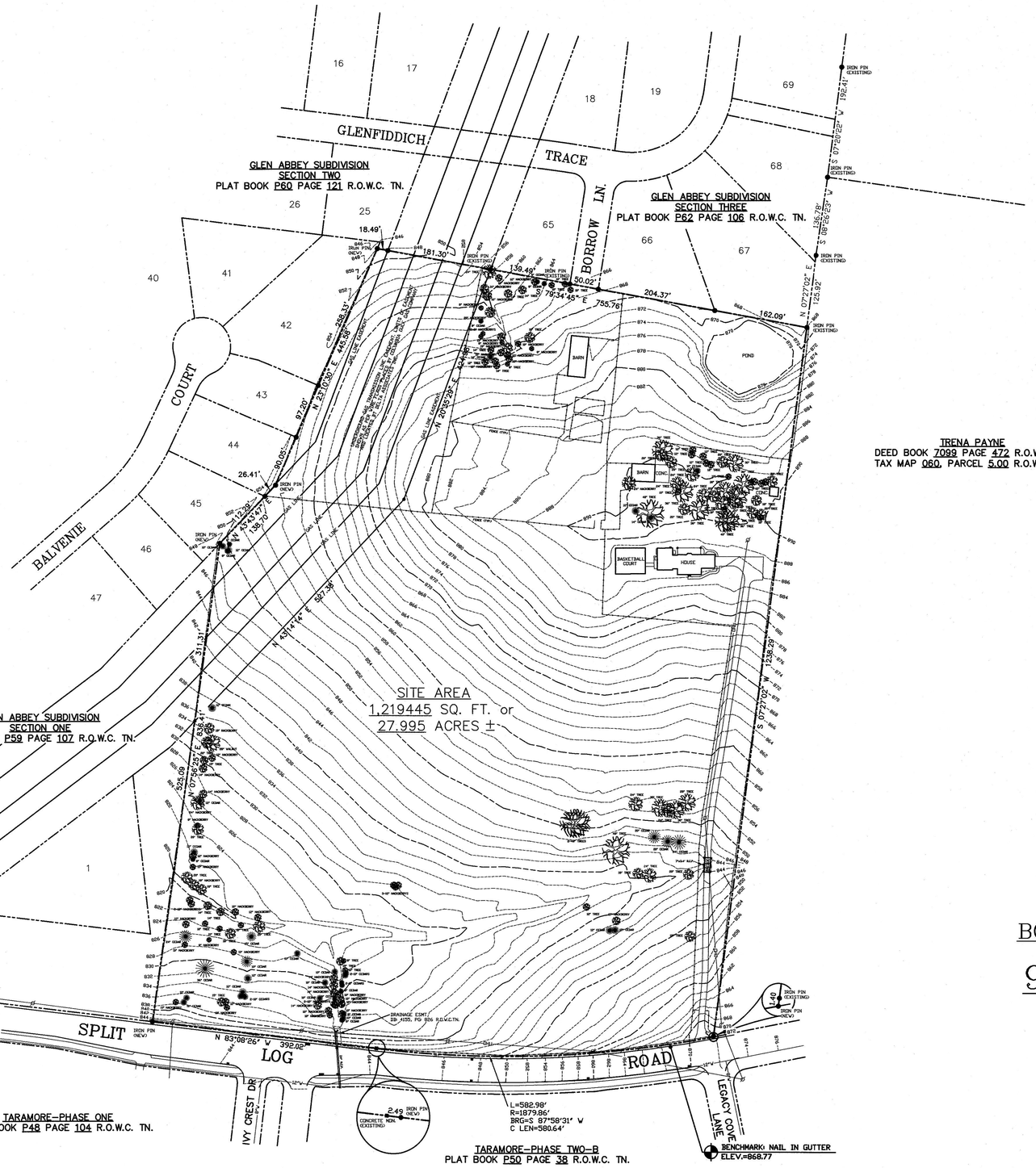
Date of Next Inspection:_____

Inspector's Signature:_____ Date:_____

Owner's Signature:_____ Date:_____

GENERAL NOTES:

1. THE UTILITIES SHOWN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING DRAWINGS. THE SURVEYOR MAKES NO GUARANTEES THAT THE UTILITIES SHOWN COMPROMISE ALL SUCH UTILITIES IN THE AREA, EITHER IN SERVICE OR ABANDONED. THIS SURVEYOR FUTHER DOES NOT WARRENT THAT THE UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH HE DOES CERTIFY THAT THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM INFORMATION AVAILABLE.
2. THIS PROPERTY DOES NOT LIE WITHIN THE 100 YEAR FLOOD ZONE AS EVIDENCED ON F.E.M.A. PANEL 47187O230F, OF BRENTWOOD, WILLIAMSON, DAVIDSON COUNTY, TENNESSEE DATED 9-29-2006.
3. NO TITLE REPORT FURNISHED THIS SURVEYOR, THEREFORE, THIS SURVEY IS SUBJECT TO THE FINDINGS OF AN ACCURATE TITLE SEARCH.
4. BEARINGS BASED ON TENNESSEE STATE PLANE COORDINATE SYSTEM OF 1983.
5. ELEVATIONS BASED ON NORTH AMERCIAN VERTICAL DATUM OF 1988.
6. ALL DISTANCES BASED ON A SURVEY MADE USING E.D.M. EQUIPMENT AND ARE ADJUSTED FOR TEMPERATURE.
7. MEANDERING FENCE ALONG BOUNDARY AS SHOWN.



N

W E

S

GRAPHIC SCALE

0' 100' 200' 300'

Scale: 1" = 100'

CERTIFICATE OF SURVEY

I HEREBY CERTIFY THAT THIS IS A CATEGORY I SURVEY AND THE RATIO OF PRECISION OF THE UNADJUSTED SURVEY IS 1: 13,900+ AS SHOWN HEREON.

Tori D Cassidy

SURVEYOR

TENN. REG. NO. 2467

TORI D CASSIDY REGISTERED LAND SURVEYOR 2467 STATE OF TENNESSEE 10-2-19 TENNESSEE NO. 2467

BOUNDARY & TOPOGRAPHIC SURVEY

OF

9520 SPLIT LOG ROAD

TAX MAP 55, PARCEL 35.03 R.O.W.C. TN.

16th CIVIL DISTRICT

BRENTWOOD, WILLIAMSON COUNTY, TENNESSEE

Delta Associates INCORPORATED

Design – Surveying

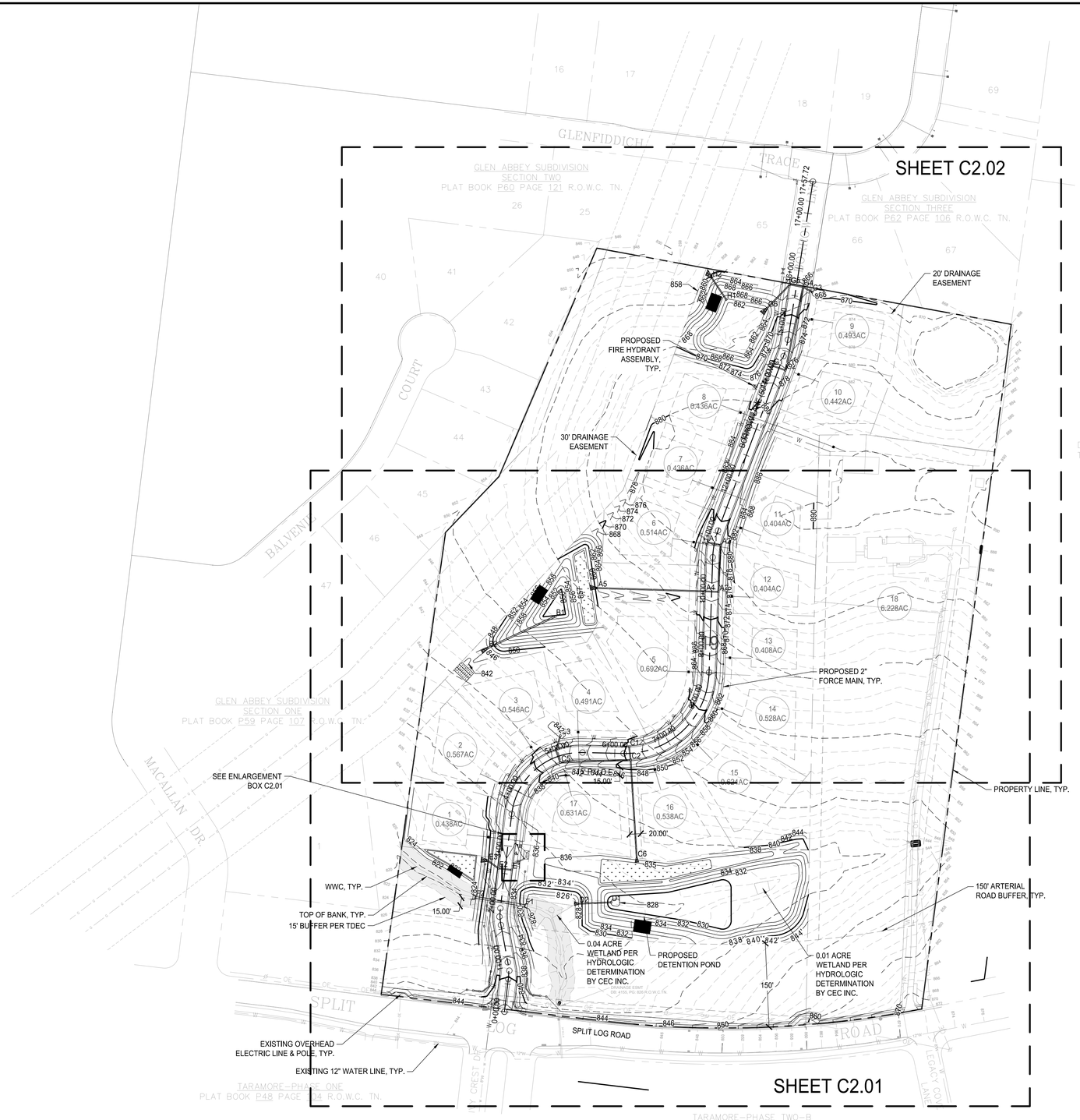
7121 Crossroads Blvd., Brentwood, TN 37027

PHONE: (615) 850-3501

SCALE : 1" = 100'	DRAWN BY TDC	DATE 10-1-19	DRAWING NO.
	CHECKED BY TDC	JOB NO.19-505SL-9520	1 OF 1

PROPERTY TITLE REFERENCE

PROPERTY BEING PARCEL 35.03 ON TAX MAP 55 WILLIAMSON COUNTY, TENNESSEE, AND BEING PROPERTY CONVEYED TO KENDALL KELLER ALLEN & MARY JO ALLEN BY DEED RECORDED IN BK.5772, PG.450, R.O.W.C. TENNESSEE.



GRADING LEGEND:

- 860 — PROPOSED INDEX CONTOUR LINE
- 861 — PROPOSED INTERVAL CONTOUR LINE
- 860 — EXISTING INDEX CONTOUR LINE
- 861 — EXISTING INTERVAL CONTOUR LINE
- SCENIC EASEMENT (NO DISTURBANCE)

Lot #	Lowest Floor Elevation
1	825.00
5	858.50
16	836.00
17	836.00

GRADING NOTES:

1. CONTRACTOR RESPONSIBLE FOR VERIFYING EXISTING ELEVATIONS COMPARED TO THOSE SHOWN ON PLAN PRIOR TO GRADING. NOTIFY OWNER'S REPRESENTATIVE IF DISCREPANCIES ARE FOUND.
2. AREAS FOR CONSTRUCTION THAT REQUIRE DE-WATERING FOR EXCAVATION WILL BE DONE AT NO ADDITIONAL COST TO THE OWNER.
3. TEMPORARY VEGETATION SHALL BE ESTABLISHED IN DISTURBED AREAS THAT ARE NOT GRADED TO PROPOSED FINAL GRADE ELEVATIONS AND ARE IDLE FOR GREATER THAN FIVE DAYS. MULCH, TEMPORARY VEGETATION OR PERMANENT VEGETATION SHALL BE COMPLETED ON ALL EXPOSED AREAS WITHIN 14 DAYS AFTER DISTURBANCE. ALL AREAS TO FINAL GRADE WILL BE ESTABLISHED TO PERMANENT VEGETATION UPON COMPLETION.
4. EROSION AND SEDIMENT CONTROL DEVICES MUST BE INSTALLED AS SHOWN IN PLAN AND INSPECTED AND ACCEPTED BY THE TOWN PRIOR TO ANY LAND DISTURBANCE ON SITE.
5. SEDIMENT AND EROSION CONTROL DEVICES MUST BE INSPECTED ACCORDING TO LOCAL AND STATE REQUIREMENTS. EACH DEVICE IS TO BE MAINTAINED OR REPLACED IF SEDIMENT ACCUMULATION HAS REACHED ONE HALF ITS CAPACITY. ADDITIONAL DEVICES MAY BE NECESSARY AS THE PROJECT PROGRESSES AND NEW CHANNELS HAVE DEVELOPED.
6. SEDIMENT TRANSPORT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO, OR CONCURRENT WITH, LAND-DISTURBING ACTIVITIES.
7. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION CONTROL AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.
8. WETLANDS ARE NOT TO BE DISTURBED UNTIL ENVIRONMENTAL PERMITS ARE OBTAINED

0 100 200 300

SCALE: 1" = 100 '

LOSE DESIGN
SPACES FOR LIFE.

THIS DRAWING AND THE DESIGN SHOWN IS THE PROPERTY OF THE ARCHITECT. REPRODUCTION, COPYING, OR USE OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED, AND ANY INFRINGEMENT IS SUBJECT TO LEGAL ACTION.

MICHAEL LEE BECK — REGISTERED ARCHITECT — AGRICULTURE — COMMERCE — RESIDENCE — TENNESSEE — 13051 — 07/14/20

ALLEN PROPERTY
CONSTRUCTION DOCUMENTS

TURNBERRY HOMES

BRENTWOOD TENNESSEE

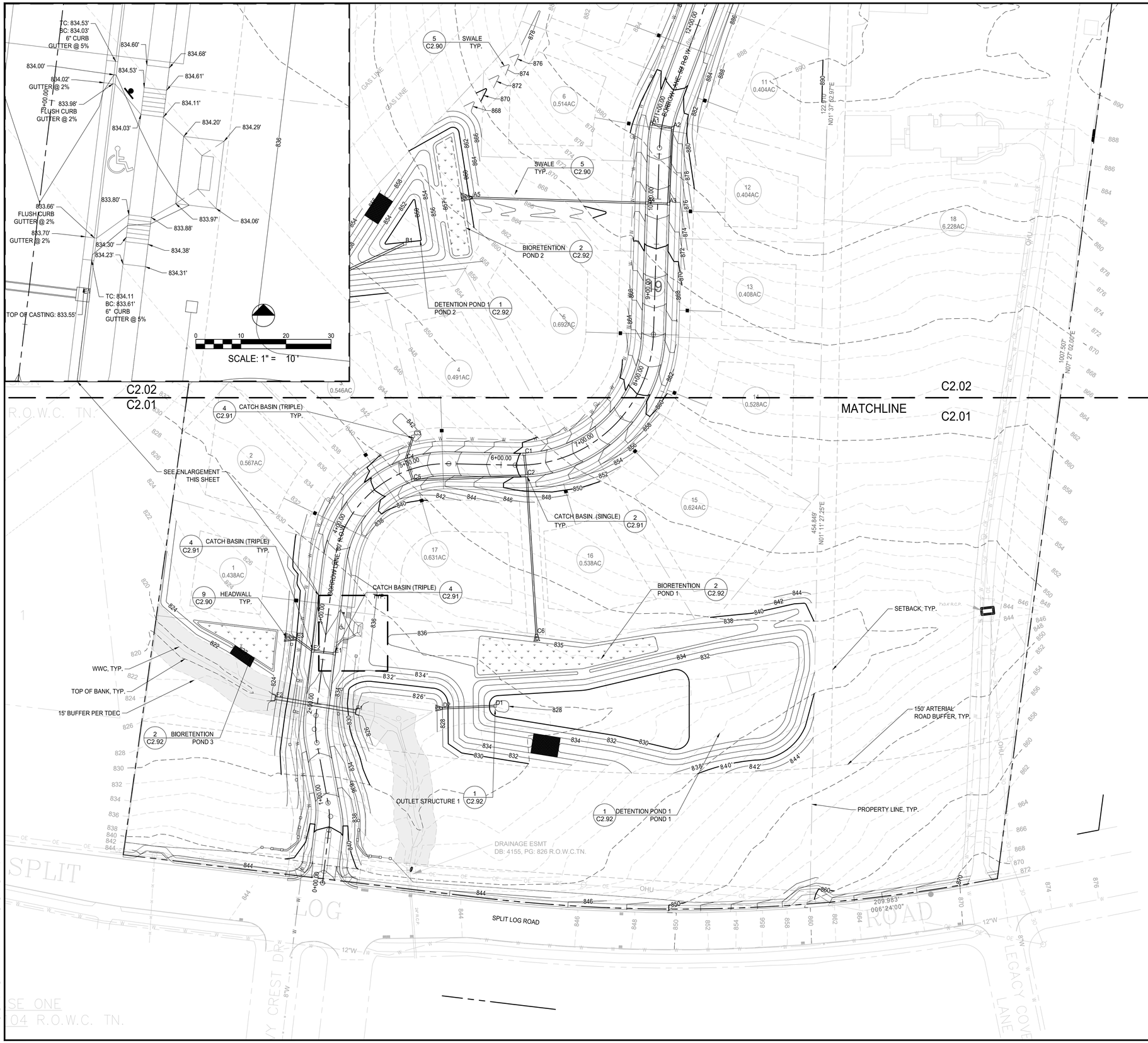
SUBMITTALS / REVISIONS		
NO.	DATE	DESCRIPTION
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.
.	.	.

SHEET TITLE

GRADING & DRAINAGE KEY

PROJECT NO. 19182	DATE 07/14/2020
DRAWN BY OM	SCALE 1" = 100'
CHECKED BY MB	
SHEET NO. C2.00	

N:\2019\19182_Allen_Property\CAD\01_SHEETS\CONSTRUCTION DOCUMENTS\19182_C2.00_GRADING_SEBES.dwg - Printed on 2020-07-29 at 5:00:18 PM



GRADING LEGEND:

- PROPOSED INDEX CONTOUR LINE
- PROPOSED INTERVAL CONTOUR LINE
- EXISTING INDEX CONTOUR LINE
- EXISTING INTERVAL CONTOUR LINE
- SCENIC EASEMENT (NO DISTURBANCE)

GRADING NOTES:

1. CONTRACTOR RESPONSIBLE FOR VERIFYING EXISTING ELEVATIONS COMPARED TO THOSE SHOWN ON PLAN PRIOR TO GRADING. NOTIFY OWNER'S REPRESENTATIVE IF DISCREPANCIES ARE FOUND.
2. AREAS FOR CONSTRUCTION THAT REQUIRE DE-WATERING FOR EXCAVATION WILL BE DONE AT NO ADDITIONAL COST TO THE OWNER.
3. TEMPORARY VEGETATION SHALL BE ESTABLISHED IN DISTURBED AREAS THAT ARE NOT GRADED TO PROPOSED FINAL GRADE ELEVATIONS AND ARE IDLE FOR GREATER THAN FIVE DAYS. MULCH, TEMPORARY VEGETATION OR PERMANENT VEGETATION SHALL BE COMPLETED ON ALL EXPOSED AREAS WITHIN 14 DAYS AFTER DISTURBANCE. ALL AREAS TO FINAL GRADE WILL BE ESTABLISHED TO PERMANENT VEGETATION UPON COMPLETION.
4. EROSION AND SEDIMENT CONTROL DEVICES MUST BE INSTALLED AS SHOWN IN PLAN AND INSPECTED AND ACCEPTED BY THE TOWN PRIOR TO ANY LAND DISTURBANCE ON SITE.
5. SEDIMENT AND EROSION CONTROL DEVICES MUST BE INSPECTED ACCORDING TO LOCAL AND STATE REQUIREMENTS. EACH DEVICE IS TO BE MAINTAINED OR REPLACED IF SEDIMENT ACCUMULATION HAS REACHED ONE HALF ITS CAPACITY. ADDITIONAL DEVICES MAY BE NECESSARY AS THE PROJECT PROGRESSES AND NEW CHANNELS HAVE DEVELOPED.
6. SEDIMENT TRANSPORT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO, OR CONCURRENT WITH, LAND-DISTURBING ACTIVITIES.
7. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION CONTROL AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.
8. WETLANDS ARE NOT TO BE DISTURBED UNTIL ENVIRONMENTAL PERMITS ARE OBTAINED

LOSE DESIGN
SPACES FOR LIFE.

THIS DRAWING AND THE DESIGN SHOWN IS THE PROPERTY OF THE ARCHITECT. REPRODUCTION, COPYING, OR USE OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED, AND ANY INFRINGEMENT IS SUBJECT TO LEGAL ACTION.

MICHAEL LEE BECK
REGISTERED ARCHITECT
AGRICULTURE
ARCHITECTURE
ENGINEERING
No. 13051
STATE OF TENNESSEE

ALLEN PROPERTY
CONSTRUCTION DOCUMENTS

TURNBERRY HOMES

BRENTWOOD

TENNESSEE

SUBMITTALS / REVISIONS		
NO.	DATE	DESCRIPTION

SHEET TITLE

GRADING & DRAINAGE PLAN

PROJECT NO. 19182	DATE 07/14/2020
DRAWN BY OM	SCALE 1" = 50'
CHECKED BY MB	

SHEET NO.

C2.01

N:\2019\19182_Allen_Property\CAD\01_SHEETS\CONSTRUCTION DOCUMENTS 19182_C2.00_GRADING_SERIES.dwg - Printed on 2020-07-20 at 8:00:25 PM.

GLEN ABBEY SUBDIVISION
SECTION TWO
PLAT BOOK P60 PAGE 121 R.O.W.C. TN.

GLEN ABBEY SUBDIVISION
SECTION THREE
PLAT BOOK P62 PAGE 106 R.O.W.C. TN.

GLENFIDDICH TRACE, 50' R.O.W.

BALVENIE COURT, 50' R.O.W.

BORROW LANE, 50' R.O.W.

9 C2.90 HEADWALL TYP.

SWALE TYP. 5 C2.90

1 C2.92 OUTLET STRUCTURE 4

1 C2.92 DETENTION POND 1 POND 4

UNDERGROUND GAS TRANSMISSION LINE EASEMENT, LIMITS OF EASEMENT SHOWN AS PER WIRE FLAGS PLACED BY COLUMBIA GAS COMPANY AND LOCATED BY DELTA ASSOCIATES INC

GAS LINE EASEMENT

2 C2.92 BIORETENTION POND 2

1 C2.92 DETENTION POND 1 POND 2

1 C2.92 OUTLET STRUCTURE 2

3 C2.92 LEVEL SPREADER TYP.

30.00' DRAINAGE EASEMENT

6.00' MIN

4 C2.91 CATCH BASIN (TRIPLE) TYP.

5 C2.90 SWALE TYP.

CATCH BASIN (SINGLE) 2 C2.91 TYP.

EXISTING BUILDING, TYP.

SETBACK, TYP.

PROPERTY LINE, TYP.

52.764'
N89° 39' 32.21"E

225.423'
S82° 20' 42.78"E

122.670'
N01° 37' 52.97"E

1007.507'
N0° 27' 02.00"E

C2.02
C2.01

MATCHLINE

C2.02
C2.01

8 0.436AC
7 0.436AC
6 0.514AC
5 0.692AC
4 0.491AC
3 0.546AC
2 0.567AC
9 0.493AC
10 0.442AC
11 0.404AC
12 0.404AC
13 0.408AC
14 0.528AC
15 0.624AC
18 6.228AC

GRADING LEGEND:

- PROPOSED INDEX CONTOUR LINE
- PROPOSED INTERVAL CONTOUR LINE
- EXISTING INDEX CONTOUR LINE
- EXISTING INTERVAL CONTOUR LINE
- SCENIC EASEMENT (NO DISTURBANCE)

GRADING NOTES:

1. CONTRACTOR RESPONSIBLE FOR VERIFYING EXISTING ELEVATIONS COMPARED TO THOSE SHOWN ON PLAN PRIOR TO GRADING. NOTIFY OWNER'S REPRESENTATIVE IF DISCREPANCIES ARE FOUND.
2. AREAS FOR CONSTRUCTION THAT REQUIRE DE-WATERING FOR EXCAVATION WILL BE DONE AT NO ADDITIONAL COST TO THE OWNER.
3. TEMPORARY VEGETATION SHALL BE ESTABLISHED IN DISTURBED AREAS THAT ARE NOT GRADED TO PROPOSED FINAL GRADE ELEVATIONS AND ARE IDLE FOR GREATER THAN FIVE DAYS. MULCH, TEMPORARY VEGETATION OR PERMANENT VEGETATION SHALL BE COMPLETED ON ALL EXPOSED AREAS WITHIN 14 DAYS AFTER DISTURBANCE. ALL AREAS TO FINAL GRADE WILL BE ESTABLISHED TO PERMANENT VEGETATION UPON COMPLETION.
4. EROSION AND SEDIMENT CONTROL DEVICES MUST BE INSTALLED AS SHOWN IN PLAN AND INSPECTED AND ACCEPTED BY THE TOWN PRIOR TO ANY LAND DISTURBANCE ON SITE.
5. SEDIMENT AND EROSION CONTROL DEVICES MUST BE INSPECTED ACCORDING TO LOCAL AND STATE REQUIREMENTS. EACH DEVICE IS TO BE MAINTAINED OR REPLACED IF SEDIMENT ACCUMULATION HAS REACHED ONE HALF ITS CAPACITY. ADDITIONAL DEVICES MAY BE NECESSARY AS THE PROJECT PROGRESSES AND NEW CHANNELS HAVE DEVELOPED.
6. SEDIMENT TRANSPORT FROM THE SITE SHALL BE PREVENTED BY THE INSTALLATION OF EROSION AND SEDIMENT CONTROL MEASURES AND PRACTICES PRIOR TO, OR CONCURRENT WITH, LAND-DISTURBING ACTIVITIES.
7. EROSION CONTROL MEASURES WILL BE MAINTAINED AT ALL TIMES. IF FULL IMPLEMENTATION OF THE PLAN DOES NOT PROVIDE FOR EFFECTIVE EROSION CONTROL, ADDITIONAL EROSION CONTROL AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED TO CONTROL OR TREAT THE SEDIMENT SOURCE.
8. WETLANDS ARE NOT TO BE DISTURBED UNTIL ENVIRONMENTAL PERMITS ARE OBTAINED

0 50 100 150
SCALE: 1" = 50 '

LOSE DESIGN
SPACES FOR LIFE.

THIS DRAWING AND THE DESIGN SHOWN IS THE PROPERTY OF THE ARCHITECT. REPRODUCTION, COPYING, OR USE OF THIS DRAWING WITHOUT THEIR WRITTEN CONSENT IS PROHIBITED, AND ANY INFRINGEMENT IS SUBJECT TO LEGAL ACTION.

MICHAEL LEE BECK
REGISTERED LANDSCAPE ARCHITECT
AGRICULTURE
CHEROKEE
No. 113051
STATE OF TENNESSEE

ALLEN PROPERTY
CONSTRUCTION DOCUMENTS

TURNBERRY HOMES

BRENTWOOD

TENNESSEE

SUBMITTALS / REVISIONS

NO.	DATE	DESCRIPTION

SHEET TITLE

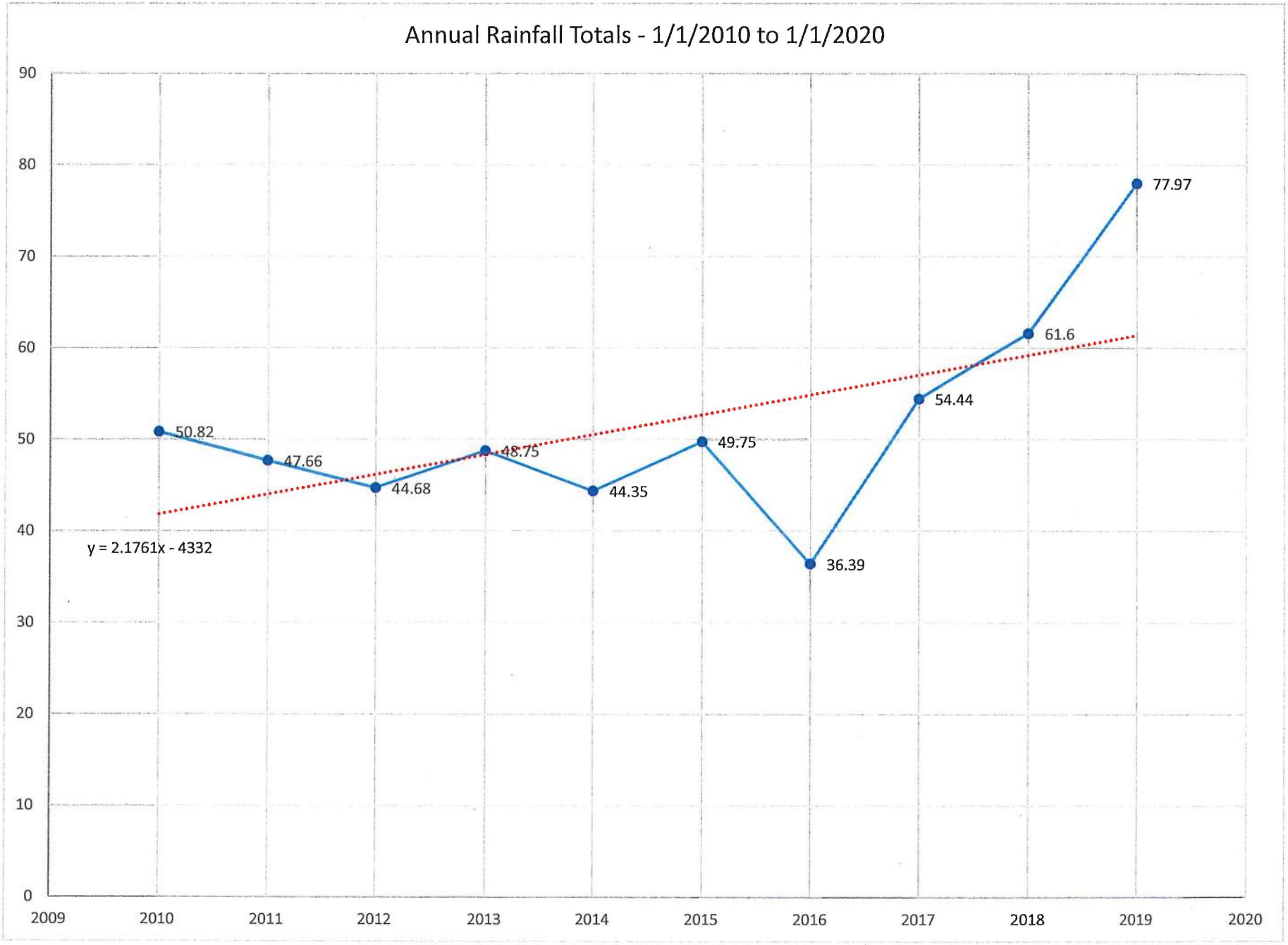
GRADING & DRAINAGE PLAN

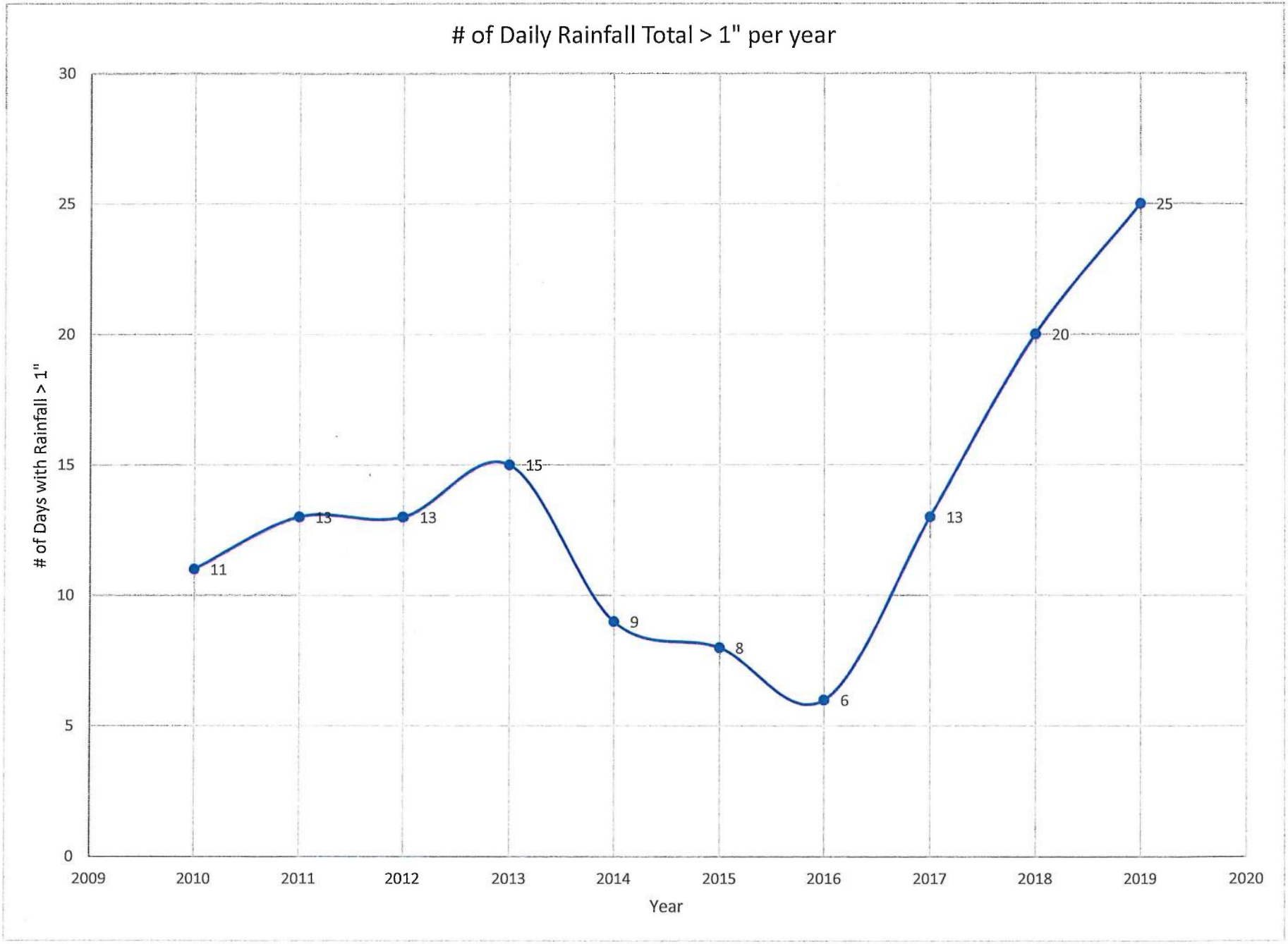
PROJECT NO.	DATE
19182	07/14/2020
DRAWN BY	SCALE
OM	1" = 50'
CHECKED BY	
MB	

SHEET NO.

C2.02

N:\2019\19182_Allen_Property\CAD\01_SHEETS\CONSTRUCTION DOCUMENTS\19182_C2.02_GRADING_SERIES.dwg — Printed on 2020-07-20 at 5:00:28 PM.


Annual Rainfall Totals - 1/1/2010 to 1/1/2020
90
80
70
60
50
40
30
20
10
0
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
50.82
47.66
44.68
48.75
44.35
49.75
36.39
54.44
61.6
77.97
y = 2.1761x - 4332


# of Daily Rainfall Total > 1" per year
# of Days with Rainfall > 1"
Year
30
25
20
15
10
5
0
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
2019
2020
11
13
13
15
9
8
6
13
20
25





BRENTWOOD PLANNING COMMISSION **3.**

Meeting Date: 08/03/2020

Information

PROJECT NUMBER

BPC2007-009

PROJECT DESCRIPTION

Revised Final Plat, Mockingbird Hill Subdivision, Section 1-A, Lot Three 5018 Mountview Place and Section 1-B, Lots Four and Five, 5014 and 5019 Mountview Place

ZONING OF PROPERTY

Zoning R-2

APPLICANT NAME/ADDRESS

Mr. Joey Wilson, Wilson & Associates, P.C., 108 Beasley Drive, Franklin, TN 37064

Attachments

Final Staff Report
Vicinity Map
Revised Final Plat

CITY OF BRENTWOOD
MUNICIPAL PLANNING COMMISSION
PLANNING DEPARTMENT STAFF REPORT
MONDAY, AUGUST 3, 2020 -- 7:00 P.M.
FINAL

REGULAR AGENDA -- ITEM 3:

REQUEST:	***REVISED FINAL PLAT – MOCKINGBIRD HILL SUBDIVISION, LOTS 4, 5, & 12, SECTIONS 1-A & 1-B, 5014, 5018 & 5019 MOUNTVIEW PLACE***
PROJECT NUMBER:	***BPC2007-009***
CURRENT ZONING:	***R-2 -- SUBURBAN RESIDENTIAL***

GENERAL INFORMATION:

Wilson & Associates, P.C. requests approval of a revised final plat that creates a joint-user access easement for a shared driveway for Lots 4, 5 and 12 in the Mockingbird Hills Subdivision.

PROJECT LOCATION:

The subject property is located on Franklin Road near the intersection of Concord.

APPROVAL HISTORY:

There has been no recent Planning Commission action related to the subject property.

CONDITIONS OF APPROVAL:

*Staff recommends that the following **ten** conditions be attached to the approval of the request.*

1. The revised Hillside Protection overlay site plan for Lot 4 has not been approved by the Planning Commission. This proposal must be resubmitted and address all previous outstanding staff comments. The revised plan must be approved before the revised plat will be signed for recording.

2. This plat will void, vacate and supersede all other recorded plats for these lots so the information for each lot must be complete. The widths of all easements and setback lines shall be shown and labeled for all 3 lots.

3. Designate Lot 5 as “Hillside Protection” and as “Transitional”. An “HP” should be added beside the lot number and the standard note for Hillside Protection approvals should be

placed on the plat. Add a "*" beside the lot numbers and add the standard note for transitional lots.

4. Revise the typo in plat note 3.

5. Lots 4 and 5 should have a 15' wide PUDE across the front, adjacent to the right-of-way.

6. The dimension for the 10' wide PUDE on the south line of lot 5 points to the wrong set of lines.

7. The MBSL along the south line of lot 5 and adjacent to lines L6 and L7 should be 20' wide according to PB 54 PG.13 Verify that all other building envelopes and easements are from the most current recorded plat.

8. According the most recent recorded plat (54/13), this new plat doesn't show all the existing improvements on lot 5 (pool, patio, retaining wall(s)). All existing improvements should be shown on all lots for which this plat is being recorded.

9. Label the fire hydrant.

10. Approval of a final plat by the Planning Commission shall become effective upon the date of the last signature required on the plat for recording. The initial vesting period shall be for five years after approval.

STANDARD REQUIREMENTS:

*Staff recommends that the following **seven** standard requirements be attached to the approval of the request.*

1. Add the following note to all pages of the final plat:

   This final plat is subject to a vesting period, during which the development standards in effect on the date of approval will remain the standards applicable to this plan. Upon expiration of the vesting period, development of the property shown on this plat may be subject to standards other than those that were applicable during the vesting period. The vesting period for this plat expires on _____, unless extended by the City of Brentwood. Persons relying on this plat after said date should contact the City of Brentwood to determine if development may continue as depicted on the plan.

   (Planning and Codes Department staff will insert the expiration year for the plat at the time the plat is ready for recording and may also make changes to the wording of the above note as necessary to carry out the intent of Standard Requirements 1, 2 and 3 below.)

2. Provide the Planning staff with a digital copy of the proposed subdivision. This request is consistent with Article 2.3 of the Brentwood Subdivision Regulations. The file should be in AutoCAD .DWG or .DXF compatible format and CD-ROM. The file shall use the

Tennessee State Plane coordinate system, FIPS Zone 4100, NAD 83 datum. The digital copies must be received before the plat may be recorded.

3. The property owner is responsible for all development fees including water and sewer service and tap fees, building permit fees and Public Works Project Fees. The required fees shall be used for future infrastructure related improvements required by the proposed development.

4. Deviations from the approved plan in the development of a project or the failure to satisfy any standard requirements or special conditions of approval imposed by the planning commission will be considered a violation of the provisions of the Zoning Ordinance, which shall be subject to punishment as provided in Section 1-9 of the Brentwood Municipal Code. The City may also require the applicant to appear before the Planning Commission to address any deficiencies or unapproved modifications. The project may also be subject to delays in issuance of permits, certificates of occupancy, recordation of plats or other project approvals.

5. Any changes to plans approved by the Planning Commission will require staff review and re-approval by the Planning Commission.

6. Development of this project shall comply with all applicable codes and ordinances of the City of Brentwood.

7. Approval of the proposed plan shall be limited to the illustrations and plans presented to the Planning Commission for review and approval on **August 3, 2020 .** Any changes to Planning Commission approved plans and specifications will require staff review and re-approval by the Planning Commission.

RECOMMENDATION:

Staff requests that the Planning Commission vote to approve the proposed revised final plat, subject to the requirements of the staff report.


BRENTWOOD LN
BEAUREGARD LN
JACKSON LN
FRANKLIN RD
FRANKLIN RD
CONCORD RD
MOUNTVIEW PL
FRANKLIN RD
W CONCORD RD
W CONCORD RD
FRANKLIN RD

✱ TRANSITIONAL LOT NOTE

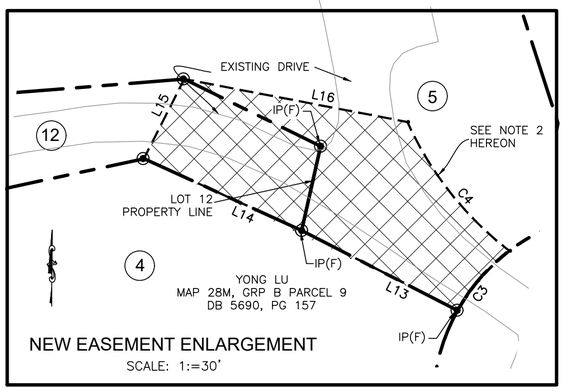
LOTS DESIGNATED WITH AN ASTERISK (✱) HAVE NATURAL SLOPES OF GREATER THAN 15%. PRIOR TO THE ISSUANCE OF A BUILDING PERMIT FOR A RESIDENTIAL LOT WITH A SLOPE OF 15% OR GREATER, A PLAN SHALL BE PREPARED BY A LICENSED PROFESSIONAL ENGINEER FOR APPROVAL BY THE CITY ENGINEER SHOWING EXISTING TOPOGRAPHIC INFORMATION FROM FIELD RUN SURVEY DATA, BOUNDARY AND SETBACK LINES, UTILITY AND DRAINAGE EASEMENTS, EXISTING AND PROPOSED DRAINAGE PIPES, DITCHES, AND SWALES TO BE CONNECTED TO PUBLIC DRAINAGE LINES AND/OR TO DIRECT OR RE-DIRECT STORMWATER RUNOFF, THE PROPOSED BUILDING FOOTPRINT AND THE DRIVEWAY PLAN, INCLUDING THE FINISHED FLOOR ELEVATIONS, AND FINISHED GRADES OF PAVEMENTS AND GROUND LINES, IDENTIFICATION OF EXISTING TREES IN EXCESS OF FOUR-INCH CALIPER AND TREES TO BE PRESERVED, AND THE LOCATION AND TIMING OF INSTALLATION OF EROSION CONTROL FEATURES. NO CLEAR CUTTING OF TREES OR GRADING OF THE LOT SHALL BE PERMITTED UNTIL APPROVAL OF THE SITE PLAN BY THE CITY ENGINEER.

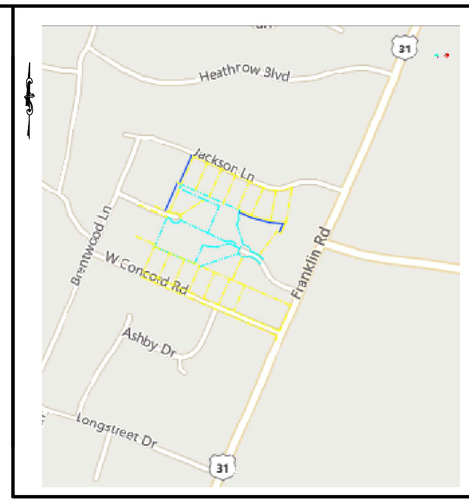
HP LOTS

LOTS DESIGNATED WITH (HP) ARE REQUIRED TO SUBMIT A DETAILED SITE PLAN TO THE CITY ENGINEER AND MUST RECEIVE PLANNING COMMISSION APPROVAL BEFORE A PERMIT IS ISSUED.

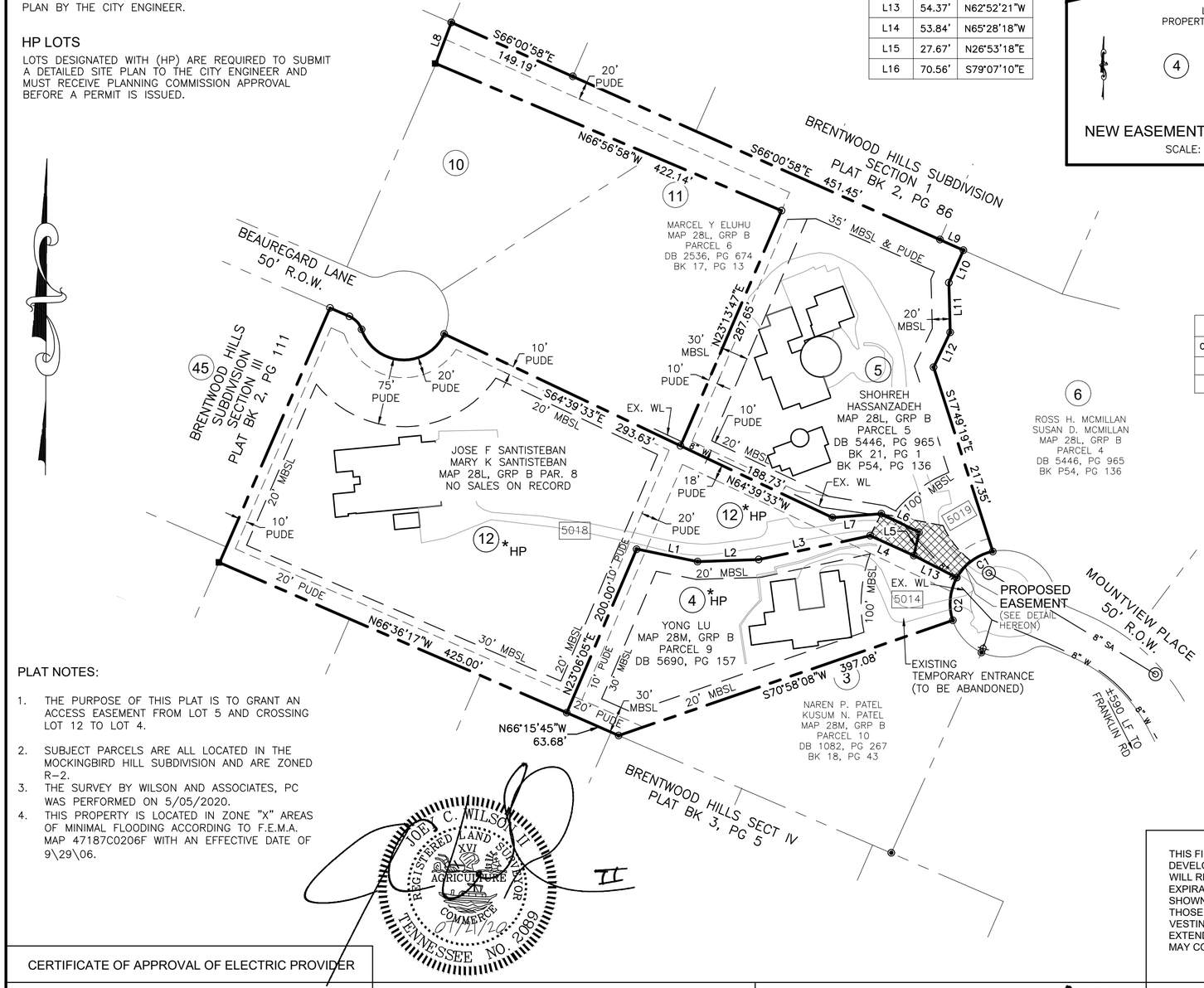
Easement Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C3	24.71'	60.00'	23°35'43"	S40°58'05"W	24.53'
C4	51.51'	104.45'	28°15'10"	S38°22'00"E	50.99'

Easement Line Table		
Line #	Length	Direction
L13	54.37'	N62°52'21"W
L14	53.84'	N65°28'18"W
L15	27.67'	N26°53'18"E
L16	70.56'	S79°07'10"E





VICINITY MAP



Curve Table					
Curve #	Length	Radius	Delta	Chord Direction	Chord Length
C1	51.60'	60.00'	49°16'14"	S53°48'21"W	50.02'
C2	49.62'	60.00'	47°23'00"	S5°28'44"W	48.22'

Line Table		
Line #	Length	Direction
L1	70.00'	S78°26'28"E
L2	68.76'	N88°06'09"E
L3	128.01'	N77°54'14"E
L4	53.84'	S65°28'18"E
L5	26.82'	S12°40'28"W
L6	47.22'	N63°46'33"W
L7	55.16'	N85°27'26"E
L9	28.81'	S66°00'58"E
L10	40.02'	S24°04'13"W
L11	55.69'	S1°36'31"E
L12	43.60'	S25°24'34"W
L13	54.37'	N62°52'21"W

PLAT NOTES:

1. THE PURPOSE OF THIS PLAT IS TO GRANT AN ACCESS EASEMENT FROM LOT 5 AND CROSSING LOT 12 TO LOT 4.
2. SUBJECT PARCELS ARE ALL LOCATED IN THE MOCKINGBIRD HILL SUBDIVISION AND ARE ZONED R-2.
3. THE SURVEY BY WILSON AND ASSOCIATES, PC WAS PERFORMED ON 5/05/2020.
4. THIS PROPERTY IS LOCATED IN ZONE "X" AREAS OF MINIMAL FLOODING ACCORDING TO F.E.M.A. MAP 47187C0206F WITH AN EFFECTIVE DATE OF 9\29\06.

GENERAL NOTES:

1. THE PURPOSE OF THIS PLAT IS TO DEFINE AN INGRESS/EGRESS EASEMENT GRANTED FROM THE OWNERS OF LOT 5 AND LOT 12 TO THE OWNER OF LOT 4.
2. THE RECORDING OF THIS PLAT VOIDS, VACATES, AND SUPERSEDES THE RECORDING OF LOTS 4, 5, AND 12 ON THE FINAL PLAT OF MOCKINGBIRD HILL 1A AS OF RECORD IN BOOK BOOK 17, PAGE 13, ALSO THE FINAL PLAT OF MOCKINGBIRD HILL REVISION OF LOTS 4, 5, & 12 AS OF RECORD IN BOOK 22, PAGE 1, AND FINALLY THE PLAT ENTITLED RESUBDIVISION OF LOTS 5 AND 6 MOCKINGBIRD HILL SUBDIVISION OF RECORD IN BOOK P54, PAGE 136, ALL IN THE REGISTER'S OFFICE OF WILLIAMSON COUNTY, TENNESSEE.
3. THE PLAT OF RECORD IN BOOK 22, PAGE 1 ENTITLED REVISION OF LOTS 4, 5, & 12 SHOWS AND REFERENCES AN INGRESS-EGRESS EASEMENT FOR ONLY LOT 12 ACROSS LOT 5 OF RECORD IN BOOK 1220, PAGE 12, IN SAID REGISTER'S OFFICE OF WILLIAMSON COUNTY, TENNESSEE. SAID
4. OWNER INFORMATION IS AS FOLLOWS:

   LOT 5 (PARCEL 5 ON MAP 28L, GROUP B)
   SHOHREH HASSANZADEH
   5019 MOUNTVIEW PLACE
   DEED BOOK 5446, PAGE 965
   BOOK 21, PAGE 1
   BOOK P54, PAGE 136

   LOT 4 (PARCEL 9 ON MAP 28M, GROUP B)
   YONG LU
   5014 MOUNTVIEW PLACE
   DEED BOOK 5690, PAGE 157

   LOT 12 (PARCEL 8 ON MAP 28L, GROUP B)
   JOSE F. SANTISTEBAN
   MARY K. SANTISTEBAN
   NO SALES ON RECORD
5. SURVEYOR INFORMATION IS AS FOLLOWS:

   WILSON AND ASSOCIATES, PC
   108 BEASLEY DRIVE
   FRANKLIN, TENNESSEE 37064
   JOEY C. WILSON II, TN RLS # 2089
   JWILSON@WILSONPC.COM
   TELEPHONE: 615-794-2275

JOEY C. WILSON II — REGISTERED LAND SURVEYOR — STATE OF TENNESSEE — AGRICULTURE — XVI — SURVEYING — XV — COMMERCE — 07/21/20 — TENNESSEE NO. 2089

THIS FINAL PLAT IS SUBJECT TO A VESTING PERIOD, DURING WHICH THE DEVELOPMENT STANDARDS IN EFFECT ON THE DATE OF THE APPROVAL WILL REMAIN THE STANDARDS APPLICABLE TO THIS PLAN. UPON EXPIRATION OF THE VESTING PERIOD, DEVELOPMENT OF THE PROPERTY SHOWN ON THIS PLAT MAY BE SUBJECT TO STANDARDS OTHER THAN THOSE THAT WERE APPLICABLE DURING THE VESTING PERIOD. THE VESTING PERIOD FOR THIS PLAT EXPIRES ON _____, UNLESS EXTENDED BY THE CITY OF BRENTWOOD TO DETERMINE IF DEVELOPMENT MAY CONTINUE AS DEPICTED ON THE PLAN.

CERTIFICATE OF APPROVAL OF ELECTRIC PROVIDER

I HEREBY CERTIFY THAT ALL OF THE M.T.E.M.C. REGULATIONS, CHECKLISTS, AND GUIDELINES HAVE BEEN MET. ANY APPROVAL IS AT ALL TIMES CONTINGENT UPON CONTINUING COMPLIANCE WITH THE M.T.E.M.C. REQUIREMENTS.

DATE _____ ELECTRIC PROVIDER

CERTIFICATE OF OWNERSHIP AND DEDICATION

I (WE) HEREBY CERTIFY THAT I AM (WE ARE) THE OWNER(S) OF THE PROPERTY SHOWN AND DESCRIBED HEREON AS EVIDENCED HEREON, AND THAT I (WE) HEREBY ADOPT THIS AMENDMENT OF SUBDIVISION WITH MY (OUR) FREE CONSENT, ESTABLISH THE MINIMUM BUILDING RESTRICTION LINES, AND THAT OFFERS OF IRREVOCABLE DEDICATION FOR ALL PUBLIC ROADS, UTILITIES AND OTHER FACILITIES HAVE BEEN FILED AS REQUIRED BY THE BRENTWOOD REGIONAL SUBDIVISION REGULATIONS.

DATE _____ JOSE F. SANTISTEBAN MARY K. SANTISTEBAN

DATE _____ SHOHREH HASSANZADEH, BOOK 5446, PAGE 965

DATE _____ YONG LU, BOOK 5690, PAGE 157

CERTIFICATE OF APPROVAL FOR UTILITY SYSTEMS

I HEREBY CERTIFY THAT THE WATER AND SEWER SYSTEMS OUTLINED OR INDICATED ON THE FINAL SUBDIVISION PLAT ENTITLED "MOCKINGBIRD HILL AMENDMENT TO LOTS 4 , 5, & 12" HAVE BEEN INSTALLED IN ACCORDANCE WITH CURRENT LOCAL AND STATE GOVERNMENT REQUIREMENTS OR A SUFFICIENT SURETY OR CASH HAS BEEN FILED WHICH WILL GUARANTEE SAID INSTALLATION.

DATE _____ WATER SYSTEM SUPERINTENDENT OF PUBLIC UTILITIES, BRENTWOOD, TN

DATE _____ SEWER SYSTEM SUPERINTENDENT OF PUBLIC UTILITIES, BRENTWOOD, TN

CERTIFICATE OF APPROVAL OR SURETY FOR COMPLETION OF ROADS

I HEREBY CERTIFY: (1) THAT ALL DESIGNATED ROADS ON THIS FINAL SUBDIVISION PLAT HAVE BEEN INSTALLED IN AN ACCEPTABLE MANNER AND ACCORDING TO SPECIFICATIONS OF THE BRENTWOOD REGIONAL SUBDIVISION REGULATIONS, OR (2) THAT A PERFORMANCE SURETY HAS BEEN POSTED WITH THE PLANNING COMMISSION TO ASSURE COMPLETION OF ALL REQUIRED IMPROVEMENTS IN CASE OF DEFAULT.

DATE _____ CITY ENGINEER

CERTIFICATE OF ACCURACY

I HEREBY CERTIFY THAT THE PLAN SHOWN AND DESCRIBED HEREON IS A TRUE AND CORRECT SURVEY TO THE ACCURACY REQUIRED BY THE BRENTWOOD REGIONAL PLANNING COMMISSION, AND THAT THE MONUMENTS HAVE BEEN OR WILL BE PLACED, AS SHOWN HEREON, TO THE SPECIFICATIONS IN THESE REGULATIONS.

07/21/20
DATE _____

JOEY C. WILSON II, TN RLS #2089
WILSON & ASSOCIATES, PC
108 BEASLEY DRIVE, FRANKLIN, TN 37064
615-794-2275
JWILSON@WILSONPC.COM

CERTIFICATE OF APPROVAL FOR RECORDING

I HEREBY CERTIFY THAT THE SUBDIVISION PLAT SHOWN HEREON IS A TRUE AND CORRECT SURVEY THAT SATISFIES THE ACCURACY REQUIREMENTS OF THE CITY OF BRENTWOOD, TENNESSEE, REGIONAL PLANNING COMMISSION AND THE STATE BOARD OF EXAMINERS FOR LAND SURVEYORS, AND THAT MONUMENTS HAVE BEEN PLACED AS SHOWN HEREON TO THE BOARD'S SPECIFICATIONS.

DATE _____ SECRETARY, PLANNING COMMISSION OR PLANNING AND CODES DIRECTOR

CERTIFICATE OF APPROVAL OF STREET NAMES

I HEREBY CERTIFY THAT THE WILLIAMSON COUNTY DEPARTMENT OF EMERGENCY COMMUNICATIONS HAS APPROVED THE STREET NAMES .

DATE _____ WILLIAMSON COUNTY DEPARTMENT OF EMERGENCY COMMUNICATIONS

CERTIFICATE OF APPROVAL OF SUBDIVISION NAME

I HEREBY CERTIFY THAT THE CITY OF BRENTWOOD PLANNING DEPARTMENT HAS APPROVED THE SUBDIVISION NAME.

DATE _____ SECRETARY, PLANNING COMMISSION

Mockingbird Hill
Amendment to Lots 4, 5, and 12

15th CIVIL DISTRICT
CITY OF BRENTWOOD, TENNESSEE
WILLIAMSON COUNTY MAP 28M, GROUP B, PARCEL 9
WILLIAMSON COUNTY MAP 28L, GROUP B, PARCELS 5 & 12

FINAL PLAT

CITY OF BRENTWOOD - TENNESSEE

TOTAL ACRES 0.00 TOTAL # OF LOTS 0
ACRES NEW RD/ST 0.00 L.F. OF NEW RD/ST 0.00
ACRES OPEN SPACE 0.00 CIVIL DISTRICT 15th
DRAWN BY JAG CLOSURE ERROR = 1:10,000
SCALE 1" = 100' DATE = 06/25/2020

WA PROJECT # 20-1518 SHEET 1 OF 1

BRENTWOOD PLANNING COMMISSION **1.**

Meeting Date: 08/03/2020

Information

PROJECT NUMBER

PROJECT DESCRIPTION

ZONING OF PROPERTY

APPLICANT NAME/ADDRESS

Attachments

Monthly Security Report -- July 2020

Jeff Dobson
PLANNING AND CODES DIRECTOR

Tim Harrington
BUILDING CODES OFFICIAL

Todd Petrowski
SENIOR CITY PLANNER

Allison Henry
CITY PLANNER

BRENTWOOD
PLANNING AND CODES

PLANNING DEPARTMENT MEMORANDUM
2020-13

TO: Planning Commission Members

FROM: D.J. Dobson, Planning & Codes Director

SUBJECT: SECURITY SUMMARY – JULY 2020

DATE: July 31, 2020

The following securities were received or administered by Planning and Codes Department staff during the month of July 2020.

- **Sneed Manor, RDU W/S & Amenity Improvements** – Staff from the Planning and Codes Department has received an amendment to letter of credit number 403885000, originally issued by the Franklin Synergy Bank and accepts its terms and conditions. The amendment extends the expiration of the letter of credit to **July 18, 2021**. The available amount remains unchanged at **$550,133.00**. The letter of credit includes an automatic renewal clause that requires that the beneficiary (City) be notified, in writing at least 90 days in advance of any action by the issuing bank to not extend the document beyond its current or any future expiry date.

  City staff will retain the letter of credit until all required work within the subdivision has been inspected and accepted for maintenance by the City, where applicable. Inspections of the project will be completed by staff on an annual basis. Reductions will be processed in accordance with the requirements of the Brentwood Subdivision Regulations. Please contact Ms. Lori Lange, City Engineer in June 2021 at 615.371.0080, to coordinate a follow-up inspection of the project. Based upon the results of that inspection, and the considering the improvements that have been completed, regarding the status of the security. Additional extensions to the letter of credit may be required.

  Finally, also be advised that the ongoing maintenance of all improvements within the subdivision remains the responsibility of the developer until the security is released. Any deficiencies identified as a result of any future inspection shall be repaired at the developer's expense before further reductions may be processed or the security released.

- **Whetstone, Section Three, RDU & Sewer** -- staff with the City of Brentwood Planning and Codes Department has verified the new expiry date of the above referenced letter of credit with staff from SunTrust (Truist) Bank, on the date of this letter. Letter of credit

number 70001912 has automatically renewed per the terms and conditions of the original document. The document's new expiry date is **July 20, 2021**. The current amount remains unchanged at $129,358.00. All other terms and conditions of the original letter of credit, including the automatic renewal clause remain unchanged.

The City Engineer is working with Rob McClain with Pulte Homes to complete the punch list for the entire subdivision.

This letter of credit includes an automatic renewal clause that requires that the beneficiary (City) be provided at least 90-days advance notice of any action by the issuing financial institution not to extend the document beyond its current or any future expiration date.

The developer was informed that future reductions to the amount of the letter of credit will be processed in accordance with the requirements of the Brentwood Subdivision Regulations. Please contact the City Engineer at 615.371.0080 in May 2021 to coordinate a follow-up inspection of the project.

Finally, the developer was reminded that the ongoing maintenance of all required improvements within the section remains your responsibility until final acceptance of the infrastructure improvements by the City, where applicable. Any deficiencies identified by staff as a result of any future inspection shall be repaired at the developer's expense before further reductions may be processed or the security released.

- **Whetstone, Section Four, RDU & Sewer** – staff with the City of Brentwood Planning and Codes Department has verified the new expiry date of the above referenced letter of credit with staff from SunTrust (Truist) Bank, on the date of this letter. Letter of credit number 70001913 has automatically renewed per the terms and conditions of the original document. The document's new expiry date is **July 20, 2021**. The current amount remains unchanged at $170,214.00. All other terms and conditions of the original letter of credit, including the automatic renewal clause remain unchanged.

  The City Engineer is working with Rob McClain with Pulte Homes to complete the punch list for the entire subdivision.

  This letter of credit includes an automatic renewal clause that requires that the beneficiary (City) be provided at least 90-days advance notice of any action by the issuing financial institution not to extend the document beyond its current or any future expiration date.

  The developer was informed that future reductions to the amount of the letter of credit will be processed in accordance with the requirements of the Brentwood Subdivision Regulations. Please contact the City Engineer at 615.371.0080 in May 2021 to coordinate a follow-up inspection of the project.

  Finally, the developer was reminded that the ongoing maintenance of all required improvements within the section remains your responsibility until final acceptance of the infrastructure improvements by the City, where applicable. Any deficiencies identified by

staff as a result of any future inspection shall be repaired at the developer's expense before further reductions may be processed or the security released.

- **Whetstone, Section Five, RDU & Sewer** -- staff with the City of Brentwood Planning and Codes Department has verified the new expiry date of the above referenced letter of credit with staff from SunTrust (Truist) Bank, on the date of this letter. Letter of credit number 70001914 has automatically renewed per the terms and conditions of the original document. The document's new expiry date is **July 20, 2021**. The current amount remains unchanged at $174,880.00. All other terms and conditions of the original letter of credit, including the automatic renewal clause remain unchanged.

  The City Engineer is working with Rob McClain with Pulte Homes to complete the punch list for the entire subdivision.

  This letter of credit includes an automatic renewal clause that requires that the beneficiary (City) be provided at least 90-days advance notice of any action by the issuing financial institution not to extend the document beyond its current or any future expiration date.

  The developer was informed that future reductions to the amount of the letter of credit will be processed in accordance with the requirements of the Brentwood Subdivision Regulations. Please contact the City Engineer at 615.371.0080 in May 2021 to coordinate a follow-up inspection of the project.

  Finally, the developer was reminded that the ongoing maintenance of all required improvements within the section remains your responsibility until final acceptance of the infrastructure improvements by the City, where applicable. Any deficiencies identified by staff as a result of any future inspection shall be repaired at the developer's expense before further reductions may be processed or the security released.

- **Whetstone, Section Six, RDU & Sewer --** staff with the City of Brentwood Planning and Codes Department has verified the new expiry date of the above referenced letter of credit with staff from the Bank of America, on the date of this letter. Letter of credit number 3121592, has automatically renewed per the terms and conditions of the original document. The document's new expiry date is **July 20, 2021**. The current amount remains unchanged at $279,092.00. All other terms and conditions of the original letter of credit, including the automatic renewal clause remain unchanged.

  The City Engineer is working with Rob McClain with Pulte Homes to complete the punch list for the entire subdivision.

  This letter of credit includes an automatic renewal clause that requires that the beneficiary (City) be provided at least 90-days advance notice of any action by the issuing financial institution not to extend the document beyond its current or any future expiration date.

  The developer was reminded that future reductions to the amount of the letter of credit will be processed in accordance with the requirements of the Brentwood Subdivision

Regulations. Please contact the City Engineer at 615.371.0080 in May 2021 to coordinate a follow-up inspection of the project.

Finally, the developer was reminded that the ongoing maintenance of all required improvements within the section remains your responsibility until final acceptance of the infrastructure improvements by the City, where applicable. Any deficiencies identified by staff as a result of any future inspection shall be repaired at the developer's expense before further reductions may be processed or the security released.

- **Parkside at Brenthaven, Phase II, Section One RDU & W/S** -- Staff with the Planning and Codes Department has verified the new expiry date of letter of credit number 600053020 with staff from the Pinnacle Bank. The letter of credit has automatically renewed per the terms and conditions of the original document. The document's new expiry date is **July 12, 2021**. The current amount remains unchanged at $167,002.00. All other terms and conditions of the original letter of credit, including the automatic renewal clause remain unchanged.

  As noted above, this letter of credit includes an automatic renewal clause that requires that the beneficiary (City) be provided at least 60-days advance notice of any action by the issuing financial institution not to extend the document beyond its current or any future expiration date.

  The developer was reminded that future reductions to the amount of the letter of credit will be processed in accordance with the requirements of the Brentwood Subdivision Regulations. Please contact Ms. Lori Lange, City Engineer at 615.371.0080 in May 2021 to coordinate a follow-up inspection of the project.

  The developer was also advised that the ongoing maintenance of all required improvements within the project remains your responsibility until final acceptance of the infrastructure improvements by the City, where applicable. Deficiencies identified by staff as a result of any future inspection shall be repaired at the developer's expense before further reductions may be processed or the security released.

- **Bella Terra Subdivision, RDU & W/S** – **Belle Terra, RDU & W/S** – Previously, staff from the Engineering and Water Services Departments completed a review of the approved construction plans and conducted a site inspection of the project. Based upon these staff reviews, and considering the quantity of work completed, staff has recommended that the amount of letter of credit number 5094, issued by Texas First Bank and confirmed by the Franklin Synergy Bank be reduced a total of $121,578.00, or from the current total of $169,684.00 to a new total of **$48,106.00**.

  The developer was reminded that City staff will hold the new amount until all required improvements have been completed, inspected and accepted for maintenance by the City where applicable.

  Due to the changes in the letter of credit, the Performance Agreement must also be revised. A copy of the agreement is attached.

The developer was asked to have prepared an amendment (Amendment One) to original letter of credit number 5094 reducing its available amount to **$48,106.00**. All other terms and conditions of the original letter of credit including the automatic renewal clause shall remain unchanged. Additionally, the confirmation from Franklin Synergy Bank must also be amended showing the new amount of $48,106.00. Please forward the original amendment, the confirmation and the signed and notarized performance agreement to my attention on or before **March 20, 2020**.

Staff with the Planning and Codes Department received an amendment to letter of credit number 5094 from the Texas First Bank and confirmed by the Franklin Synergy Bank and the developer. The document's new expiry date is **July 22, 2021**. The current amount is shown as being $48,106.00. Planning and Codes Department staff notified the developer of its acceptance of the terms and conditions of the security.

This letter of credit includes an automatic renewal clause that requires that the beneficiary (City) be provided at least 90-days advance notice of any action by the issuing financial institution not to extend the document beyond its current or any future expiration date.

The developer was reminded that future reductions to the amount of the letter of credit will be processed in accordance with the requirements of the Brentwood Subdivision Regulations. Please contact Ms. Lori Lange, City Engineer at 615.371.0080 in May 2021 to coordinate a follow-up inspection of the project.

The developer was also advised that the ongoing maintenance of all required improvements within the project remains your responsibility until final acceptance of the infrastructure improvements by the City, where applicable. Deficiencies identified by staff as a result of any future inspection shall be repaired at the developer's expense before further reductions may be processed or the security released.

Should you have any questions or require additional information, please feel free to contact me in the Planning and Codes Department offices.

SECURITY REPORT

CITY OF BRENTWOOD

BY EXPIRATION DATE

JULY 2020

PROJECT NAME	SECURITY NUMBER	AMOUNT OF SECURITY	DESIGNATED IMPROVEMENT	P/M	ISSUING BANK	SECURITY TYPE	EXP. NOTICE DATE	ACTUAL EXPIRY DATE	LAST STAFF ACTION	AUTO RENEW	KROLL (LACE) RATING Q2 2019
Bell Self-Storage	13379-15-100	$71,750.00	LAND	P	Capstar Bank	LOC	7/7/2020	8/7/2020	9/28/2018	YES	B
Taramore, Subdivision Ph.10	IS0333349U	$102,511.00	RDL, W/S	P	Wells Fargo Bank	LOC	8/3/2020	9/3/2020	11/18/2019	YES	B+
Stonecrest Subdivision	1250006408	$154,105.00	RDL, W/S	P	FirstBank	LOC	8/9/2020	9/9/2020	9/27/2019	YES	B
Holy Family Catholic Church	S293263	$27,500.00	LAND	P	First Tennessee Bank	LOC	8/19/2020	9/19/2020	8/31/2019	YES	B
Morgan Farms, Sec. Five	SYND-69366643-713	$257,719.00	RDL, W/S	P	Synovus Bank	LOC	8/21/2020	9/21/2020	9/30/2019	YES	B+
American Tower	3029729	$20,000.00	TOWER REM.	P	Bank of America	LOC	8/26/2020	9/26/2020	9/30/2019	YES	B
Taramore, Subdivision Ph. 11	IS0342670U	$285,603.00	RDL,W/S	P	Wells Fargo Bank	LOC	9/13/2020	10/13/2020	9/30/2019	YES	B+
Glen Abbey Subdivision, Section One	157337735	$130,279.00	LAND	P	Synovus Bank	LOC	9/16/2020	10/30/2020	10/31/2019	YES	B+
The Heritage at Brentwood, Phase IV	90018410	$137,500.00	LAND	P	Pinnacle National Bank	LOC	9/17/2020	10/17/2020	7/19/2019	YES	B
Beech Creek Hill -- ***PERPETUAL***	403822500	$152,333.00	RDU & S	P	Franklin Synergy Bank	LOC	9/18/2020	10/18/2020	11/19/2018	YES	B
Witherspoon Subdivision, Sec. Three	90018701	$127,045.00	RDL, W/S & LAND	P	Pinnacle National Bank	LOC	9/19/2020	10/19/2020	10/31/2020	YES	B
Hill Center Brentrwood, Phase II	70003590	$491,425.00	LAND/HARDSCAPE	P	SunTrust Bank	LOC	9/20/2020	10/20/2020	10/30/2018	YES	B
Glen Abbey Subdivision, Sec. Three	157341419	$176,914.00	RDL,W/S	P	Synovus Bank	LOC	9/23/2020	10/23/2020	10/31/2019	YES	B+
Glen Abbey Subdivision, Sec. One	1653304279	$115,790.00	RDL,W/S	M	Synovus Bank	LOC	9/30/2020	10/30/2020	10/31/2019	YES	B+
Glen Abbey Subdivision, Sec. Two	1653293803	$108,944.00	RDL, W/S	M	Synovus Bank	LOC	9/30/2020	10/30/2020	10/31/2019	YES	B+
Witherspoon Subdivision, Sec. One	90012705	$323,427.00	RDL, W&S, AMENITY & LAND	P	Pinnacle National Bank	LOC	10/7/2020	11/7/2020	11/29/2019	YES	B
East Park Office Building 2	90242725	$80,850.00	LAND/HARDSCAPE	P	Pinnacle National Bank	LOC	10/7/2020	11/7/2020	11/30/2018	YES	B
Springhill Suites -- ***PERPETUAL***	402719900	$311,605.00	RDL, LAND	P	Franklin Synergy Bank	LOC	10/14/2020	11/14/2020	11/30/2019	YES	B
Morgan Farms, Sec. Two	SYND-69366643-708	$127,992.00	RDL, W/S	P	Synovus Bank	LOC	10/21/2020	11/21/2020	11/30/2019	YES	B+
Morgan Farms, Sec. Four	SYND-69366643-707	$112,544.00	RDL, W/S	P	Synovus Bank	LOC	10/21/2020	11/21/2020	11/30/2019	YES	B+
Brentwood Lights -- Delamar -- ***PERPETUAL***	404321500	$15,000.00	CURBS/DETENTION POND	P	Franklin Synergy Bank	LOC	10/21/2020	11/21/2020	12/31/2019	YES	B
Morgan Farms, Sec. One	69366530-701	$200,000.00	RDL, W/S	M	Synovus Bank	LOC	11/17/2020	12/17/2020	1/19/2020	YES	B+
Johnson Cove Subdivision	161000898802	$35,946.00	RDL,W/S	M	BancorpSouth Bank	LOC	12/4/2020	1/4/2021	10/31/2019	YES	B
Morgan Farms, Sec. Seven	69368327-817	$288,206.00	RDL, W/S	P	Synovus Bank	LOC	12/8/2020	1/8/2021	1/31/2019	YES	B+
Fox Crest -- aka McClendon Acres	1226	$66,163.00	RDL & S	M	Wilson Bank & Trust	LOC	12/13/2020	1/13/2021	1/19/2020	YES	B-
Witherspoon Subdivision, Sec. Four	90020122	$480,097.00	RDL, W/S & LAND	P	Pinnacle National Bank	LOC	12/20/2020	1/24/2021	1/31/2020	YES	B
Taramore Subdivision, Ph. 14	70002305	$53,267.00	RDL, W/S	P	SunTrust Bank	LOC	12/30/2020	1/30/2021	11/18/2019	YES	B
Witherspoon Subdivision, Sec. Two	90014269	501,533.00	RDL, W/S & LAND	P	Pinnacle National Bank	LOC	1/2/2021	2/1/2021	1/31/2020	YES	B
Avery Subdivision	161000931391	$501,049.00	RDL, SEWER & LAND	P	BancorpSouth Bank	LOC	1/7/2021	2/7/2021	2/28/2020	YES	B
Witherspoon, Subdivision Sec. Five	90359703	$431,243.00	RDL, W/S & LAND	P	Pinnacle National Bank	LOC	1/22/2021	2/22/2021	2/28/2019	YES	B
Morgan Farms, Sec. Three	69366643-800	$165,255.00	RDL,W/S	P	Synovus Bank	LOC	2/8/2021	3/8/2021	12/28/2019	YES	B+
Tuscany Hills Sec. Seven	1250031750	$177,575.00	RDL,W/S	P	FirstBank	LOC	2/15/2021	3/15/2021	3/31/2019	YES	B
Small Cell Node Removal -- Verizon	68145854	$15,000.00	SMALL CELL REMOVAL	P	Bank of America	LOC	2/22/2021	3/22/2021	5/3/2019	YES	B
Reserve at Raintree Forest, Sec. Four	90412148	$834,074.00	RDU, W/S	P	Pinnacle National Bank	LOC	3/15/2021	4/15/2021	4/30/2019	YES	B
Cromwell, Sec. One	69408855-711	$168,415.00	RDL, W/S & LAND	M	Synovus Bank	LOC	3/28/2021	4/28/2021	4/30/2020	YES	B+
Cromwell, Sec. Two	69408855-712	$127,457.00	RDL, W/S	M	Synovus Bank	LOC	3/30/2021	4/30/2021	4/30/2020	YES	B+
Tuscany Hills, Sec. Six -- ***PERPETUAL***	401325100	$92,225.00	RDL, W/S	M	Franklin Synergy Bank	LOC	4/3/2021	5/3/2021	5/31/2020	YES	B
ParkCenter Buildings	45479176060	$50,000.00	LAND	P	Pinnacle National Bank	LOC	4/10/2021	5/10/2021	5/31/2019	YES	B
Morgan Farms, Sec. Six	SYND-69366643-716	$368,327.00	RDL, W/S	P	Synovus Bank	LOC	4/15/2021	5/15/2021	5/31/2020	YES	B+
Taramore, Subdivision, Ph. 15	70002531	$124,027.00	RDL, W/S	P	SunTrust Bank	LOC	4/18/2021	5/18/2021	5/31/2020	YES	B
Whetstone, Sec. One	3070938	$76,768.00	W/S	P	Bank of America	LOC	5/14/2021	6/14/2021	6/30/2019	YES	B
Whetstone, Sec. One	3070935	$103,609.00	RDL	P	Bank of America	LOC	5/14/2021	6/14/2021	6/30/2019	YES	B
Whetstone, Sec. Two	3070937	$34,722.00	W/S	P	Bank of America	LOC	5/14/2021	6/14/2021	6/30/2019	YES	B

P/M = PERFORMANCE/MAINTENANCE, RDL = ROADS, DRAINAGE AND LIGHTING, W/S = WATER AND SEWER, LAND = LANDSCAPING, DRAIN = DRAINAGE, EROSION = EROSION CONTROL

SECURITY REPORT

CITY OF BRENTWOOD

BY EXPIRATION DATE

JULY 2020

PROJECT NAME	SECURITY NUMBER	AMOUNT OF SECURITY	DESIGNATED IMPROVEMENT	P/M	ISSUING BANK	SECURITY TYPE	EXP. NOTICE DATE	ACTUAL EXPIRY DATE	LAST STAFF ACTION	AUTO RENEW	KROLL (LACE) RATING Q2 2019
Whetstone, Sec. Two	3070936	$85,782.00	RDL	P	Bank of America	LOC	5/14/2021	6/14/2021	6/30/2019	YES	B
Taramore, Subdivision, Ph 13	IS0432338U	$60,709.00	RDL,W/S	P	Wells Fargo Bank	LOC	5/16/2021	6/16/2021	11/18/2019	YES	B+
Valley View Subdivsion	36536	$287,761.00	RDL,W/S	P	Servis 1st Bank	LOC	5/22/2021	6/22/2021	7/30/2018	YES	B
Parkside at Brenthaven, Ph. 2, Sec. 1	600053020	$167,002.00	RDL, W/S	P	Pinnacle National Bank	LOC	6/12/2021	7/12/2021	7/31/2020	YES	B
Sneed Manor	403088500	$550,133.00	RDU, W/S, AMENITY	P	Franklin Synergy Bank	LOC	6/18/2021	7/18/2021	7/16/2020	YES	B
Whetstone, Sec. Three	70001912	$129,358.00	RDL,W/S	P	SunTrust Bank	LOC	6/20/2021	7/20/2021	7/31/2020	YES	B
Whetstone, Sec. Four	70001913	$170,214.00	RDL, W/S	P	SunTrust Bank	LOC	6/20/2021	7/20/2021	7/31/2020	YES	B
Whetstone, Sec. Five	70001914	$174,880.00	RDL, W/S	P	SunTrust Bank	LOC	6/20/2021	7/20/2021	7/31/2020	YES	B
Belle Terra Subdivision	5094	$48,106.00	RDL, W/S	P	Franklin Synergy Bank	LOC	6/22/2021	7/22/2021	7/31/2020	YES	B
Witherspoon, Sec. Six	90444632	$311,371.00	RDU, W/S & STREET TREES	P	Pinnacle National Bank	LOC	6/26/2021	7/26/2021	8/8/2019	YES	B
Whetstone, Sec. Six	3121592	$279,092.00	RDL & S	M	Bank of America	LOC	6/30/2021	7/31/2021	7/31/2020	YES	B
The Heights	SLCMMSP09551	$203,034.70	RDU & BUFER LAND	P	U.S. Bank	LOC	6/30/2021	7/31/2021	8/1/2019	YES	Aa3*
Virginia Springs, Phase II	S293199	$204,017.00	TRANS & LAND	P	First Tennessee Bank	LOC	7/2/2021	8/2/2021	8/31/2019	YES	B
Terrabrooke Subdivision	5098	$188,230.00	RDL,W/S & LAND	P	Franklin Synergy Bank	LOC	7/20/2021	8/20/2021	8/8/2019	YES	B
Taramore, Subdivision, Ph. 12	70004240	$533,063.00	RDU, W/S	P	SunTrust Bank	LOC	8/7/2021	9/7/2021	9/30/2019	YES	B
Oman Subdivision	1250038637	$1,323,611.00	RDL,W/S & LAND	P	FirstBank	LOC	8/19/2021	9/19/2021	9/30/2019	YES	B
Journey Church -- 1600 Wilson Pike	90471383	$36,624.00	LAND	P	Pinnacle National Bank	LOC	10/1/2021	11/1/2021	8/8/2019	YES	B
Marshall Place	1378	$300,000.00	RDL, W/S & LAND	P	First Citizens Nat. Bank	LOC	10/5/2021	11/5/2021	11/6/2019	YES	B
1537 Franklin Road	161000010701	$45,435.50	LAND	P	BancorpSouth Bank	LOC	11/11/2021	11/22/2021	11/30/2019	YES	B
Paw Pals	9081643	$7,913.40	LAND	P	Reliant Bank	LOC	12/28//2021	1/28/2022	4/30/2020	YES	B
AC Marriott Hotel	4034	$30,800.00	LAND	P	Renasant Bank	LOC	12/30//2021	1/30/2022	4/30/2020	YES	B
Andrews Transportation	90542697	$143,467.00	LAND	P	Pinnacle National Bank	LOC	5/8//2022	6/8/2022	6/30/2020	YES	B
TOTAL	**$13,506,397.60**										
***Moody's Rating -- Aa3, Fitch Rating -- AA**											

P/M = PERFORMANCE/MAINTENANCE, RDL = ROADS, DRAINAGE AND LIGHTING, W/S = WATER AND SEWER, LAND = LANDSCAPING, DRAIN = DRAINAGE, EROSION = EROSION CONTROL

SECURITY REPORT

CITY OF BRENTWOOD

AMOUNTS HELD IN ESCROW

JULY 2020

PROJECT NAME	*AMOUNT OF ESCROW*	*DESIGNATED IMPROVEMENT*	*P/M*	*ORIGINAL CASHIERS CHECK NUMBER*	*DATE RECEIVED*
Inglehame Farms, Section 5	$44,384.00	RDL & W/S	M	N/A	6/2010
YMCA Parking Lot Rennovations	$4,000.00	LAND	P	334290	6/2010
Local Taco Restaurant	$1,000.00	LAND	M	34725	6/2010
Clearwire Co-Location – Chenoweth	$7,750.00	LAND	M	695110938	6/1/2010
Brookfield, Section 19 – Fence	$1,300.00	FENCE	P	5192	7/1/2010
Inglehame Farms, Section 7	$123,006.50	RDL & W/S	P	7030834893	12/30/2010
Brentwood Country Club	$4,400.00	LAND	M	0905385	2/22/2011
Princeton Hills, Sections 3, 4, & 5	$50,000.00	DRAINAGE	M	7031641428	3/2011
Parklane Building Renovations – Land	$13,447.50	LAND	M	7038763389	3/2011
Peartree Village Revised Site Plan	$5,410.90	LAND	P	1603114238	6/6/2011
HG Hills S/C – Dumpster Area Land.	$2,130.00	LAND	P	N/A	5/4/2012
YMCA Landscaping Improvements	$4,000.00	LAND	P	0999045	8/6/2012
Franklin SynergyBank	$5,950.00	LAND	P	10242067	3/31/2015
Greys Meadow Subdivision	$11,000.00	SEWER	P	5500382399	8/23/2013
PWSF – 8217 Alamo Drive	$5,747.50	LAND	P	5501777477	4/24/2014
Huskey-Byram Plat	$5,000.00	SEWER	P	0897902166	5/30/2014
Tomlinson Subdivision	$15,000.00	LAND	P	8732105553	4/10/2015
Crossings at Brentwood –– Harmony	$39,000.00	LAND	M	144273	1/31/2017
Traditions Section 1	$782,833.00	RDU & W/S	P	001060	3/31/2017
Windstone, Sec 2	$3,487.50	SIDEWALK	P	72000112	3/31/2017
Elmbrooke, Sec. 1	$5,000.00	RDU & LAND	M	201755368	6/8/2017
122 Franklin Road	$23,346.00	LAND, ST. FURN.	P	5504232802	2/2/2018
8117A Alamo Dr. – PWSF	$9,982.50	LAND	P	5531363512	8/6/2018
Traditions Section 2	$555,459.00	RDU & W/S	P	003273	8/16/2018
1648 Westgate Circle	$5,000.00	LAND	P	18244	8/15/2018
Hidden Creek Sections 1 & 2	$25,000.00	LAND	M	001402	8/8/2018
Edenbrook Estates	$83,031.00	RDU & SEWER	M	835807015	11/30/2018
Small Cell Node Removal – Murray & Fisher	$49,500.00	TOWER REMOVAL	M	165804	12/7/2018
Small Cell Node Removal – 7101B Crossroads	$5,000.00	TOWER REMOVAL	M	1019362782	10/25/2018
Repairs to Ravello Way – Tuscany	$2,500.00	ROAD REPAIRS	P	6840702043	8/9/2019
Traditions, Section 3	$703,066.80	RDU & W/S	M	004736	10/4/2019
Traditions, Section 5	$398,475.00	RDU & W/S	P	005159	2/11/2020
Traditions, Section 4	$346,044.00	RDU & W/S	P	005392	4/20/2020
Preserve at Arden Woods	$108,139.00	RDU & W/S	P	5301576623	3/30/2020

TOTAL ESCROW ACCOUNT HOLDINGS	**$3,448,390.20**
TOTAL AMOUT OF ALL SECURITIES HELD BY THE CITY	**$16,954,787.80**

BRENTWOOD PLANNING COMMISSION **2.**

Meeting Date: 08/03/2020

Information

PROJECT NUMBER

PROJECT DESCRIPTION

ZONING OF PROPERTY

APPLICANT NAME/ADDRESS

Attachments

No file(s) attached.

BRENTWOOD PLANNING COMMISSION **1.**

Meeting Date: 08/03/2020

Information

PROJECT NUMBER

PROJECT DESCRIPTION

ZONING OF PROPERTY

APPLICANT NAME/ADDRESS

Attachments

Planning & Codes Department Monthly Report -- June 2020

Jeff Dobson
PLANNING AND CODES DIRECTOR

Tim Harrington
BUILDING CODES OFFICIAL

Todd Petrowski
SENIOR CITY PLANNER

Allison Henry
CITY PLANNER

BRENTWOOD
PLANNING AND CODES

PLANNING DEPARTMENT MEMORANDUM
2020-14

TO: HONORABLE MAYOR AND MEMBERS OF THE BOARD OF COMMISSIONERS

THROUGH: KIRK BEDNAR, CITY MANAGER

FROM: JEFF DOBSON, PLANNING & CODES DIRECTOR

SUBJECT: June 2020 MONTHLY REPORT

DATE: July 17, 2020

YEAR IN REVIEW – FY 2020

Planning Commission Cases Reviewed	110
Board of Zoning Appeals Cases Reviewed	18
Single-Family Permits Issued	121
Single-Family Permit Valuation	$63,861,520.00
Single Family Permits – Fees Received	$235,209.12
Total Permits Issued – All Types	2100*
Valuation of All Permits Issued	$225,216,994.07*
Total Building Permit Fees Received	$1,291,811.07
Total PWPF Received	$580,531.97
Total Water & Sewer Tap Fees Received	$792,287.00
Inspections Completed	9,895

* Totals reported above do not include water and sewer tap fees.

Subdivision Regulations

Staff completed is review and revision of the Subdivision Regulations during FY 2020. The draft was presented to the Planning Commission at their June 1st regular meeting. Ther draft was unanimously approved. The effective date is July 1, 2020.

Public Works Project Fees

Staff completed The FY 2020 non-routine work plan for the Planning and Codes Department includes continuation of the review and update of Chapter 14 of the Municipal Code regarding Public Works Projects. Public Works Project Fees (PWPF) are intended to address the additional traffic demands of new development and are assessed on each new building, addition, or change of

use within an existing structure. Ordinance 2019-10 was approved by the Board of Commissioners on November 25, 2019. The new fees became effective on January 1, 2020.

Banners On Parking Lot Light Poles

Staff completed revisions to the Sign Ordinance allowing banners to be hung from parking lot light poles in commercial and service institution zoning districts. Ordinance 2019-07 was approved by the Board of Commissioners on August 26, 2019, with an effective date of September 1, 2019.

Permitting And Development Management Software

Staff continues to participate in weekly meetings with the Davenport Group USA, (LAMA), our permitting and development management software provider. in the design of the new software system for the City. The LAMA software will replace the aging TrakIT system that staff has been using since 2003.

Staff completed the custom design of over 70+ permit/project types in all modules. On-site testing of the software, which included the staff designed screens for all modules was conducted from May 18th ,through May 20th.

On-site training in the use of the software was conducted June 15th through 17th .

Software implementation and "Go-Live" is scheduled to begin on July 13th .

PLANNING COMMISSION

The Planning Commission conducted their regular monthly meeting, remotely on June 1, 2020. The following table presents a summary of the Planning Commission case file review, completed by staff to date in FY 2020.

PLANNING COMMISSION CASE FILE REVIEW -- SUMMARY -- FY 2020

REVIEW TYPE	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	YTD	TOTAL
FINAL PLAT	1	3		1		2		1					8	
FOOD TRUCK RALLY								1					1	
HILLSIDE PROTECTION SITE PLAN					1				2		6	1	10	
LIMITED DURATION EVENT	2	1	2					1	1				7	
MASTER GRADING PLAN													0	
ORDINANCE		1							1			1	3	
PLAN RECOMMENDATIONS				1									1	
PRELIMINARY PLAN								1					1	
PUBLIC HEARING -- FOUR-STORY BLDG													0	
REVISED BUILDING ELEVATIONS	2	1		1	2	2	1	1	1	1	3		15	
REVISED FINAL PLAT	1		2		1	2	5	1				1	13	
REVISED HILLSIDE PROTECTION SITE PLAN		1									2		3	
REVISED PRELIMINARY PLAN	1		1		2	1	1		1		1	1	9	
REVISED SITE PLAN	2	3	1	4	2	1		1		3	2	1	20	
SITE PLAN		3									1		4	
SMALL CELL WIRELESS FACILITIES		3											3	
REVISED PWSF SITE PLAN		3				2							5	
TEMPORARY MODEL HOME		3			1					2			6	
REVISIONS TO SUBDIVISION REGULATIONS												1	1	
MONTLY TOTAL	9	22	6	7	9	10	7	7	6	6	15	6	110	

BOARD OF ZONING APPEALS

The Board of Zoning Appeals did not meet in June 2020. The following table presents a summary of the Board of Zoning Appeals case file review, completed by staff during FY 2020.

BOARD OF ZONING APPEALS -- CASE FILE REVIEW SUMMARY-- FY 2020													
REVIEW TYPE	Jul-19	Aug-19	Sep-19	Oct-19	Nov-19	Dec-19	Jan-20	Feb-20	Mar-20	Apr-20	May-20	Jun-20	YTD TOTAL
ACCESSORY STRUCTURE	1	2	0	1	0	3	0	3	0	3	3	0	**16**
HOME OCCUPATION	0	0	0	0	0	0	0	0	0	0		0	**0**
SPECIAL EXCEPTION	0	0	0	0	0	0	0	0	0	0		0	**0**
VARIANCE	0	0	0	0	0	1	0	0	0	0	1	0	**2**
TOTALS	***1***	***2***	***0***	***1***	***0***	***4***	***0***	***3***	***0***	*3*	***4***	***0***	***18***

AMENDMENTS TO THE ZONING ORDINANCE

Planning staff, in coordination with other departments continues to work on various zoning ordinance amendments.

Fences

Staff continues to work on draft amendments to Section 78-10 of the zoning ordinance regarding fence standards in all zoning districts. The proposed amendments would require the issuance of a permit to erect a fence in residential districts. Erection of fences in commercial districts would be addressed by the Planning Commission as part of a revised site plan review. Additional locational standards are also included as part of the amendments.

Rezonings

Planning and Codes Department staff continue to review and process three rezoning applications. Additionally, staff also began review of two requests for annexation and zoning assignment. The requests are summarized below

A request to rezone the property located at 502 and 506 Franklin Road from AR to SI-3. The request was originally scheduled scheduled the case for review by the Board of Commissioners at their June 8 regular meeting. The properties are located at the intersection of Wilson Pike Circle and Franklin Road and were previously owned by Mrs. Sarah Wall. The proposal envisions construction of a tennis facility on the corner. The proposal includes a total of twelve courts, six inside and six outside and associated parking. At their June 8 meeting the Board of Commission voted to defer the item, at the request of the applicant to their August 10th meeting.

A second request was also received to rezone approximately 58 acres located in the NE quadrant of the City, at the end of Singleton Lane in the Stonecrest Subdivision. The requested change is from R-2 to OSRD. The plan proposes a total of 43 lots. Singleton Lane, which is a temporary dead-end street will be extended to provide one point of access. A second access to will also be provided to Walnut Hills Drive.

The hearing schedule for the application is tentatively set to begin at the Board of Commissioners meeting on August 10, 2020 with first reading.

The public hearing for Ordinance 2020-01 was conducted on June 8th. The ordinance was approved by the Board of Commissioners on June 22nd. The property included ap[proximately 28 acres, the proposed zone change was from R-2 to OSRD.

Staff is reviewing a request was also received to annex and assign zoning for approximately 25 acres located at the end of New Bristol Lane in the Taramore Subdivision. The proposed zone change requested is from MGA-1 (County zoning classification) to R-1. All lots meet or exceed the two-acre minimum lot size for the proposed zoning classification. The applicant is in the process of revising the plans. No hearing schedule has been established at this time.

Finally, a request to annex and assign zoning for approximately 5.7 acres of land located in the SE quadrant of the intersection of North Berry's Chapel Road and Holly Tree Gap Road. More specifically the property is located at 2500 North Berry's Chapel Road. The property is currently zoned MGA-1 in the County. The requested change is to the R-2 zoning district. Staff has developing the hearing schedule and finalizing the required plan of services. There is a small parcel located within the property owned by the Mallory Valley Utility district. The applicant has communicated with MVUD as to the possibility of inclining this parcel as part of the annexation request. The issue will have to be presented to their board sometime in July.

BUILDING PERMIT RECAP

SUMMARY -- PERMIT VALUATION/FEES COLLECTED -- FY 2020			
MONTH	***PERMITS ISSUED***	***VALUATION***	***FEES COLLECTED***
JULY	164	$9,402,247.59	$45,004.15
AUGUST	207	$17,460,158.22	$72,921.80
SEPTEMBER	164	$31,906,571.57	$90,989.77
OCTOBER	209	$15,526,274.47	$80,505.54
NOVEMBER	176	$17,302,943.85	$81,523.94
DECEMBER	141	$37,337,041.82	$62,585.90
JANUARY	262	$16,390,110.97	$97,195.26
FEBRUARY	229	$14,021,123.50	$138,240.71
MARCH	126	$35,923,698.82	$301,199.59
APRIL	120	$11,940,426.51	$89,531.90
MAY	142	$10,816,119.00	$74,874.51
JUNE	**160**	**$7,185,277.75**	**$157,238.00**
TOTAL FY 2020	**2100**	**$225,211,994.07**	**$1,291,811.07**
			(PERM130)

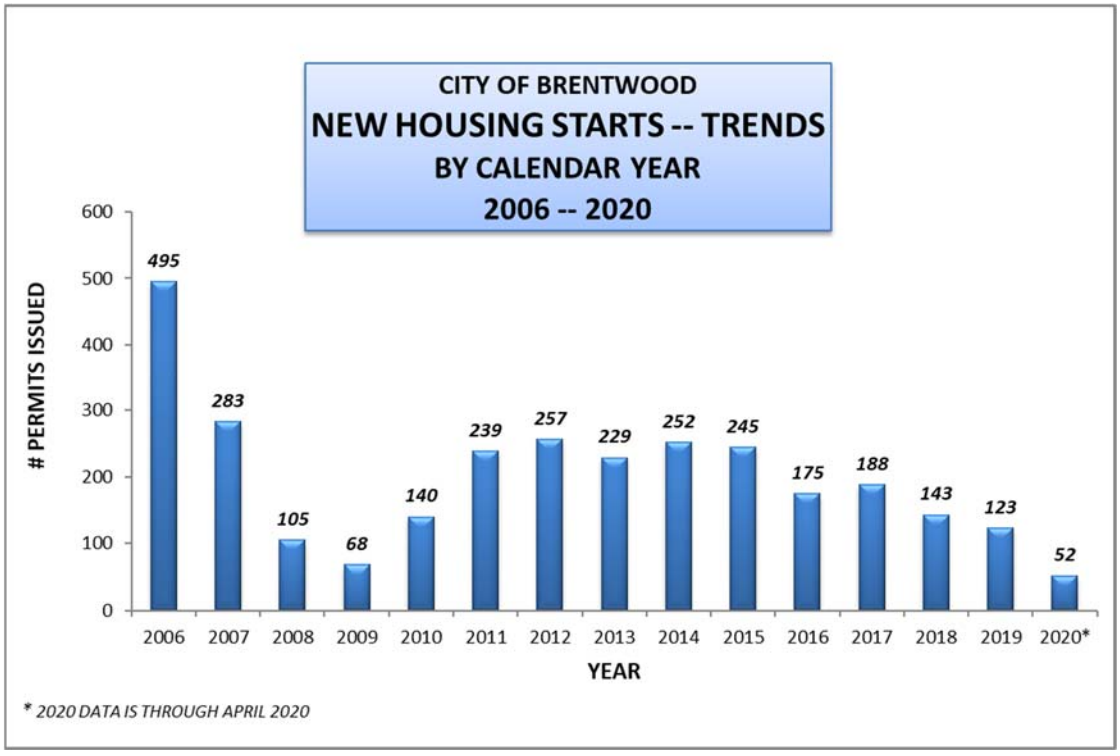
The totals reported above do not include water and sewer tap fees, which are treated as permits and issued as such. Those numbers are detailed later in this report.

PERMITS ISSUED JUNE 2020							
PERMIT TYPE	**# ISSUED**	**VALUATION**	**FEES**	**PERMIT TYPE**	**# ISSUED**	**VALUATION**	**FEES**
ACCESSORY STRUCTURE	4	$247,650.00	$137.50	IRR C	1	$5,000.00	$27.50
BASEMENT	1	$70,000.00	$377.75	IRR R	9	$52,000.00	$247.50
COMMERCIAL ADDITION	0	$0.00	$0.00	IRRIGATION	0	$0.00	$0.00
COMMERCIAL FOUNDATION	0	$0.00	$0.00	LIMITED DURATION EVENT	0	$0.00	$0.00
COMMERCIAL GRADING PLAN	1	$0.00	$225.00	MECHANICAL	45	$661,591.75	$3,026.50
COMMERCIAL RENOVATION	3	$133,500.00	$1,092.38	MISCELLANEOUS BUILDING	0	$0.00	$0.00
COMMERCIAL ROOFING	1	$99,420.00	$675.38	NEW COMMERCIAL	0	$0.00	$0.00
COMMERCIAL SHELL	0	$0.00	$0.00	PLUMBING	19	$309,310.00	$1,062.50
COVERED PORCH	6	$182,375.00	$1,132.75	PUBLIC WORKS	8	$0.00	$121,088.62
DECK	5	$73,750.00	$647.25	REMODEL	4	$78,000.00	$626.00
DEMOLITION	1	$0.00	$250.00	RES ADDITION	5	$196,000.00	$1,111.25
FENCE ADMINISTRATIVE	11	$0.00	$0.00	SINGLE FAMILY	7	$3,135,500.00	$12,617.25
FIRE SUPRESSION	0	$0.00	$0.00	SWIMMING POOL	12	$1,086,811.00	$4,948.25
FOOD TRUCKS	3	$0.00	$150.00	TENANT FINISH	4	$799,948.00	$4,275.77
FOUNDATION	0	$0.00	$0.00	WELL DRILLING	0	$0.00	$0.00
GARAGE	1	$43,953.00	$240.25	WINDOW REPLACEMENT	3	$15,469.00	$240.50
GRADING	5	$0.00	$1,250.00				
GRINDER PUMP	1	$0.00	$1,900.00	***TOTALS***	***160***	***$7,185,277.75***	***$157,238.00***
							(PERM190)

Staff issued a total of seven single-family residential permits for the month of June. The total valuation of the SF permits was **$3,135,500.00.** The total permit fees received was **$12,617.25**. This compares with seven permits issued in June 2019.

The total number of single-family permits issued this **calendar year**, through June 2020 is **53**. The total number of permits issued last calendar year through June was **55**. A total of **120** single-family building permits have been issued to date in FY 2020. This number compares to **114** permits issued in FY 2019.

A total of **34** permits were issued for residential improvements (basement build outs, covered porches, decks, garages, remodel, residential addition, and swimming pools). The total valuation for these permits was **$1,730,889.00**, while the permit fees received was **$9,043.50.**



PUBLIC WORKS PROJECT FEE SUMMARY

SUMMARY PUBLIC WORKS PROJECT FEES COLLECTED FY 2020		
MONTH	***PERMITS ISSUED***	***FEES COLLECTED***
JULY	3	$3,690.00
AUGUST	8	$9,840.00
SEPTEMBER	7	$8,610.00
OCTOBER	10	$12,300.00
NOVEMBER	11	$13,530.00
DECEMBER	15	$17,220.00
JANUARY	10	$21,295.00
FEBRUARY	14	$74,832.43
MARCH	6	$214,837.55
APRIL	9	$46,191.37
MAY	7	$37,097.00
JUNE	**8**	**$121,088.62**
TOTAL FY 2020	**108**	**$580,531.97**
		(PERM130)

Revisions to the Public Works Project fee Ordinance, which includes the fee schedule became effective on January 1, 2020

WATER AND SEWER TAP FEE SUMMARY

SUMMARY WATER & SEWER TAP FEE PERMITS ISSUED -- FY 2020						
MONTH	***SEWER TAP FEES***	***SEWER PERMITS ISSUED***	***WATER TAP FEES***	***WATER PERMITS ISSUED***	***TOTAL PERMITS ISSUED***	***TOTAL FEES RECEIVED***
JULY	$15,060.00	4	$5,100.00	4	8	$20,164.00
AUGUST	$35,120.00	8	$32,275.00	9	17	$67,403.00
SEPTEMBER	$30,105.00	7	$25,175.00	7	14	$55,287.00
OCTOBER	$57,165.00	12	$63,325.00	13	25	$120,502.00
NOVEMBER	$77,819.00	16	$20,275.00	11	27	$98,110.00
DECEMBER	$75,225.00	16	$39,325.00	14	30	$114,566.00
JANUARY	$45,135.00	9	$17,225.00	9	18	$62,369.00
FEBRUARY	$53,002.00	13	$22,250.00	11	24	$75,265.00
MARCH	$35,245.00	4	$12,075.00	3	7	$47,324.00
APRIL	$40,120.00	8	$20,175.00	7	15	$60,303.00
MAY	$35,105.00	7	$36,175.00	7	14	$71,287.00
JUNE	**$30,090.00**	**6**	**$5,100.00**	**4**	**10**	**$35,196.00**
TOTALS	**$529,191.00**	**110**	**$298,475.00**	**99**	**209**	**$827,776.00**
						(PERM 130)

INSPECTION RECAP

The number of inspections conducted by staff in June for all building projects increased over the previous three months of the fiscal year. While the number of permits issued may be down, the number of inspections completed has increased. Please also note there is one Building Inspector position remains vacant. All inspections are being completed by five inspectors instead of six. The number of inspections completed in June was 944. The total number of all inspections completed so far during FY 2020 is 8,933.

INSPECTIONS COMPLETED BY TYPE JUNE 2020				
FINAL	69		GAS LINE INSPECTION	15
DECK FINAL	4		GREASE TRAP INTERCEPTOR	0
MECHANICAL FINAL	43		GRINDER PUMP FINAL	1
PLUMBING FINAL	34		GRINDER PUMP ROUGH-IN	7
POOL FINAL	16		HOUSE WRAP & FLASH.	26
RE-FINAL	23		HVAC CHANGEOUT	0
ABOVE CEILING	16		INFRASTRUCTURE	2
BACKFLOW DEVICE INSP.	14		INSULATION	44
BACKFLOW TEST	32		LIFE SAFETY	8
COMMERCIAL WATER LINE	0		MECHANICAL	32
COMMERCIAL SEWER LINE	0		NO FRAMING/STOP WORK ORDER	6
COMPLAINT	0		PARTIAL FINAL INSP.	0
COURTESY INSP.	45		PLUMBING	69
CRAWL SPACE INSP.	13		POOL SAFETY BARRIER	9
DECK FOOTING	1		PROGRESS	0
DRIVEWAY	0		RE ROUGH-IN	50
DRAINAGE FINAL	0		ROUGH-IN POOL	0
ENGINEER LETTER	18		ROUGH-IN FINAL	69
ENGINEERING FINAL (RECEIPT)	24		SITE INSP.	73
EROSION CONTROL	15		SLAB/RADON	15
FIRE LINE U/G	4		STATUS REVIEWS	87
FIRE SUPPRESSION INT	12		STORM DRAIN LINE	0
FOOTING	42		WATER & SEWER	26
FOUNDATION WATER PROOF	1		***TOTAL***	***962***
FOUNDATION SURVEY	12			
GAS	0			(INSP63)

MONTHLY COMPARISON OF INSPECTIONS COMPLETED -- 2010 - 2020											
	2010	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
January	927	1201	1332	1485	1099	1273	1098	1032	879	829	721
February	1032	1156	1423	1334	1233	1165	1175	966	896	774	766
March	1289	1530	1384	1472	1332	1473	1255	1147	1138	983	824
April	1165	1504	1598	1678	1400	1620	1158	1039	944	779	944
May	1074	1709	2025	1792	1350	1451	1355	1315	912	775	924
June	1497	1840	1693	1648	1423	1622	1323	1165	1057	764	962
July	1448	1599	1768	1830	1602	1495	1109	1119	1117	881	
August	1583	1765	2014	1757	1466	1446	1538	1198	1087	896	
September	1695	1712	1801	1562	1575	1595	1270	1153	1124	736	
October	1493	1337	1918	1717	1522	1365	1270	1111	986	869	
November	1464	1331	1440	1397	1281	1120	1305	1051	743	635	
December	1167	1402	1384	1516	1455	1188	1071	994	729	737	
TOTAL	**15,834**	**18,086**	**19,780**	**19,188**	**16,738**	**16,813**	**14,927**	**13,290**	**11,612**	**9,658**	**5141**

ROUTINE TASKS AND RESPONSIBILITIES

- Short Term Rentals -- Planning staff continues to monitor listings in Brentwood from several web sites that promote short term property rentals.
- Maintenance/update of the city-wide Commercial and Residential land use inventory;
- Site inspections for residential and commercial projects for issuance of final Certificates of Occupancy;
- Field inspections on former and current Planning Commission cases;
- Interpretation and enforcement of Ordinances and Codes for the public;
- Processed/reviewed applications plans for items to be included on the City Commission, Planning Commission and the Board of Zoning Appeals agendas;
- Monitored parade and special events in the City;
- Determined whether properties were in floodways areas for contractors and homeowners for zero residential properties;
- Updated & maintained the department's portion of the city's website as needed;
- Updated, created and maintained electronic forms for multiple permits;
- Revised documentation and permit applications;

CODES ENFORCEMENT

Planning and Codes Department staff investigated a total of five new code enforcement case and complaints during the month of June 2020 (CODE20).

HOME OCCUPATIONS

New home occupations require a fee of $25.00, while yearly renewals are $10.00. Currently, there are 771 active home occupation permits within the City. (BUS12)

SUMMARY OF FEES -- HOME OCCUPATIONS FY 2020			
MONTH	*INITIAL*	*RENEWAL*	*TOTAL*
JULY 2019	$300.00	$500.00	$800.00
AUGUST 2019	$275.00	$180.00	$455.00
SEPTEMBER 2019	$275.00	$545.00	$820.00
OCTOBER 2019	$275.00	$485.00	$760.00
NOVEMBER 2019	$200.00	$360.00	$560.00
DECEMBER 2019	$275.00	$100.00	$375.00
JANUARY 2020	$500.00	$260.00	$760.00
FEBRUARY 2020	$375.00	$280.00	$655.00
MARCH 2020	$150.00	$460.00	$610.00
APRIL 2020	$175.00	$440.00	$615.00
MAY 2020	$250.00	$180.00	$430.00
JUNE 2020	**$350.00**	**$620.00**	**$970.00**
TOTAL -- FY 2020	***$3,400.00***	***$4,410.00***	***$7,810.00***
			(ACCT45)

CITY OF BRENTWOOD

SUMMARY OF VACANT RESIDENTIAL LOTS

JUNE 2020

SUBDIVISON NAME	GENERAL LOCATION	# OF APPROVED LOTS	# LOTS PLATTED TO DATE	# PERMITS ISSUED	# LOTS UNDER DEVELOPMENT, NOT PLATTED	# VACANT PLATTED LOTS REMAINING	UNDEVELOPED LOTS REMAINING PER PLAN	AREA (AC)	PLANNING AREA	COMMENTS
ANNANDALE	OLD SMYRNA RD.	168	168	168	0	0	0	208.00	4	All Sections Recorded
ARDEN WOODS	JOHNSON CHAPEL RD.	30	30	27	0	3	0	41.38	1	All Sections Recorded
ARLINGTON HEIGHTS	PINKERTON RD.	43	43	43	0	0	0	56.04	5	All Sections Recorded
AVERY SUBDIVISION	MURRAY LN.	23	23	21	0	2	0	32.14	1	Recorded
BEECH CREEK HILL	BEECH CREEK RD.	6	6	6	0	0	6	10.68	1	Final Plat approved by PC -- 6/4/2018
BELLA COLLINA	CONCORD RD.	8	0	0	8	0	8	17.71	6	Prelim. Plan Appr -- 10/1/2018 & 3/2/2020
BELLE TERRA	CONCORD RD.	5	5	4	0	1	0	8.67	6	Recorded
BERKLEY WALK	EDMONDSON PK.	25	25	25	0	0	0	25.05	5	All Sections Recorded
BERRYMAN PROPERTY	MURRAY LN.	2	0	0	2	0	1	40.45	6	Final Plat not yet Recorded
BORGATA	WILSON PK.	27	27	27	0	0	0	40.67	4	All Sections Recorded
BOYD SUBDIVISION	CONCORD RD.	2	0	0	0	0	1	4.53	6	Preliminary Plan only
BRASS LANTERN FARMS	MURRAY LN.	9	9	9	0	0	0	15.06	1	All Sections Recorded
BREITHORN	SUNNYBROOK DR.	8	8	6	0	2	0	11.00	5	All Sections Recorded
BRENTHAVEN PLACE	LIPSCOMB DR.	20	20	19	0	1	0	28.62	3	All Sections Recorded
BRENTWOOD CLOSE	WILSON PK.	29	29	29	0	0	0	34.02	4	All Sections Recorded
BRENTWOOD FARMS	SOUTHERN WOODS	13	0	0	0	0	13	16.52	5	Prelim. Plan App -- 5-1-2017
BRENTWOOD GLEN	WILSON PK.	47	47	47	0	0	0	52.40	6	All Sections Recorded
BRENTWOOD LIGHTS	WILDWOOD DR.	13	13	9	0	4	0	41.24	1	All Sections Recorded
BRIDGETON PARK	CONCORD RD.	146	146	146	0	0	0	77.53	5	All Sections Recorded
BROAD OAKS (LAWSON)	WILSON PIKE	8	0	0	8	0	8	23.96	6	Rev. Prelim. Plan Approved by PC -- 5-2020
BROOKFIELD	SUNSET RD.	472	472	472	0	0	0	273.00	5	All Sections Recorded
CANNON SUBDIVISION	MURRAY LN.	2	2	1	0	1	0	9.24	1	Recorded -- PB P72, PG 30
CHEVOIT HILLS	HUNTERBORO DR.	16	16	16	0	0	0	17.98	4	All Sections Recorded
CONCORD RIDGE	CONCORD PASS	11	11	11	0	0	0	10.02	5	All Sections Recorded
COURTSIDE AT SOUTHERN WOODS WEST	SUNSET RD.	255	255	255	0	0	0	159.00	5	All Sections Recorded
CROCKETT FORGE ESTATES	CROCKETT RD.	2	2	1	0	1	0	3.92	6	All Sections Recorded
CROMWELL SUBDIVISION (LOMBARDY EST.)	SPLIT LOG RD.	62	62	60	0	2	0	70.67	5	All Sections Recorded
CROSS POINTE	SPLIT LOG RD.	14	14	13	0	1	0	21.49	6	Includes the Historic Fly House
EDENBROOK	LIBERTY CHURCH RD.	13	13	10	0	3	0	19.63	5	All Sections Recorded
ELMBROOKE	CONCORD RD.	47	47	47	0	0	0	55.26	6	All Sections Recorded
ESTATES AT MAGNOLIA VALE	SUNSET RD.	8	8	8	0	0	0	9.10	5	All Sections Recorded
FOUNTAINBROOKE	PINKERTON RD.	188	188	186	0	2	0	151.00	5	All Sections Recorded
FOXCREST SUBDIVISION	CONCORD RD.	6	6	6	0	0	0	8.28	3	Plan Approved -- 8-3-2015. Plat Recorded 4/11/2018
FOXVIEW ESTATES	OLD SMYRNA RD.	2	2	2	0	0	0	3.00	4	Approved March 2013
GLEN ABBEY	SPLIT LOG RD.	75	75	75	0	0	0	100.41	5	All Sections Recorded
GLENELLEN ESTATES	RAGSDALE RD.	66	66	66	0	0	0	81.75	5	All Sections Recorded
GLENSHADOWS SUBDIVISION	EDMONDSON PK.	5	5	5	0	0	0	7.25	4	Plat Recorded -- 4-12-2015 -- Includes Existing Home
GOVERNORS CLUB	CONCORD RD.	424	424	412	0	12	0	610.00	5	All Sections Recorded -- Private Streets
HALCYON ESTATES	HAROGATE DR.	8	8	8	0	0	0	9.96	4	Recorded
HAMPTON RESERVE	CONCORD RD.	91	91	89	0	2	0	105.47	6	All Sections Recorded -- Private Streets
HIDDEN CREEK	PINKERTON RD.	25	25	25	0	0	0	28.92	5	All Sections Recorded
HIGH POINT	CONCORD RD.	5	5	1	0	4	0	7.43	5	All Sections Recorded
INGLEHAME FARMS	SPLIT LOG RD.	170	170	170	0	0	0	205.62	6	All Sections Recorded
JOHNSON COVE	JOHNSON CHAPEL RD.	4	4	4	0	0	0	7.16	1	Recorded
KINGS CROSSING	WIKLE RD. WEST	39	39	39	0	0	0	43.00	1	All Sections Recorded
LAURELS WEST	CHARITY DR.	19	19	18	0	1	0	25.44	6	All Sections Recorded
LENOX PARK	HILLSBORO RD.	40	40	37	0	3	0	65.77	1	All Sections Recorded
LIBERTY FARM	CONCORD RD.	6	6	4	0	2	0	32.36	5	All Sections Recorded
MAGNOLIA VALE	STANFIELD RD.	60	60	55	0	5	0	68.64	5	All Sections Recorded
MARSHALL PLACE	WILSON PK.	10	10	3	0	7	0	13.72	4	Private Streets -- Plat Recorded -- 2/2018
MCGAVOCK FARMS	MURRAY LN.	192	192	192	0	0	0	211.00	1	All Sections Recorded
MORGAN FARMS, (AZALEA PARK)	SPLIT LOG RD.	173	173	169	0	4	0	209.00	5	All Sections Recorded
MOTHERALL SUBDIVISION	LIBERTY CHURCH RD.	2	2	0	0	2	0	6.32	1	Lot 1 includes an existing home
NICHOLSON SUBDIVISION	BEECH CREEK RD.	2	0	0	0	0	1	4.92	1	Preliminary Plan Approval Only
OLD TOWNE	MURRAY LN.	21	21	21	0	0	0	26.78	1	All Sections Recorded
OLSEN PROPERTY	PANARAMA DR.	4	4	4	0	0	0	19.82	1	Recorded
OMAN SUBDIVISION	FRANKLIN RD.	21	21	8	0	13	0	33.66	1	Recorded -- 9-2019
OWL CREEK, ALL PHASES	CONCORD RD.	85	85	77	0	8	0	87.60	5	All Sections Recorded
PARKSIDE AT BRENTHAVEN PH. II, SEC. I	DEVENS DR.	69	69	40	0	29	0	210.00	3	Phase II Not Recorded

CITY OF BRENTWOOD

SUMMARY OF VACANT RESIDENTIAL LOTS

JUNE 2020

SUBDIVISON NAME	GENERAL LOCATION	# OF APPROVED LOTS	# LOTS PLATTED TO DATE	# PERMITS ISSUED	# LOTS UNDER DEVELOPMENT, NOT PLATTED	# VACANT PLATTED LOTS REMAINING	UNDEVELOPED LOTS REMAINING PER PLAN	AREA (AC)	PLANNING AREA	COMMENTS
PARKSIDE DOWNS	WILSON PK.	8	8	6	0	2	0	40.00	3	Recorded
PENA ESTATES	CONCORD PASS	2	2	2	0	0	0	5.19	5	Recorded
PRESERVE AT ARDEN WOODS	FISCHER CT.	4	4	0	0	4	0	10.17	1	Prelim Plan App – 6-6-2017 -- Final Plat Recorded 3/30/2020
PRESERVE AT CONCORD	CONCORD RD.	22	22	21	0	1	0	25.10	4	All Sections Recorded
PRINCETON HILLS	MURRAY LN.	162	162	161	0	1	0	224.00	1	All Sections Recorded
PRIMM FARM	MOORES LANE	24	0	0	0	0	24	29.00		Prelim Plan Approve by PC -- 12-3-2018
RAGSDALE SUBDIVISION	RAGSDALE RD.	71	0	0	0	0	71	115.29	5	Rev. Plan Approved – 6-6-2017
RAINTREE FOREST	CROCKETT RD.	222	222	222	0	0	0	240.00	6	All Sections Recorded
RAINTREE FOREST SOUTH (HIGHLAND PARK)	RAINTREE PARKWAY	235	235	235	0	0	0	272.48	6	All Sections Recorded
RESERVE AT MAGNOLIA VALE	SUNSET RD.	5	5	5	0	0	0	7.04	5	All Sections Recorded
RESERVE AT RAINTREE FOREST, SEC 1-3	EASTWOOD DR.	100	100	97	0	3	0	272.00	6	All Sections Recorded
RESERVE AT RAINTREE FOREST, SEC 4-10	EASTWOOD DR.	113	27	4	0	23	86	282.00	6	Prelim Plan App – 6-6-2017 -- Construction on-going -- Sec 4 – Recorded
RESERVE AT SONOMA	SPLIT LOG RD.	9	9	9	0	0	0	19.57	5	All Sections Recorded
ROY D. MAYNARD SUBDIVISION	WALLER RD.	2	2	2	0	0	0	5.87	5	Existing home on Lot 1
SHADOW CREEK AT SOUTHERN WOODS WEST	SUNSET RD.	145	145	145	0	0	0	79.30	5	All Sections Recorded
SHERIDAN PARK	SADDLEWOOD LN.	22	22	22	0	0	0	24.50	4	Recorded – Private Streets
SNEED MANOR	OLD SMYRNA RD.	6	6	1	0	5	0	31.42	4	Private Streets -- Plan Approved -- 11-2-2015 -- Plat Recorded – 7-18-2017
SONOMA	SPLIT LOG RD.	66	66	66	0	0	0	84.50	5	All Sections Recorded
STONECREST	BLUFF RD.	29	29	29	0	0	0	36.00	5	Recorded
TERRABROOKE	SPLIT LOG RD.	8	8	4	0	4	0	13.12	5	Recorded
THE HEIGHTS	CONCORD RD.	7	7	2	0	5	0	7.36	5	Preliminary Plan Last APP by PC 4/3/2018 -- Recorded -- 9-2019
TARAMORE	SPLIT LOG RD.	275	275	256	0	19	0	312.00	5	All Phases Recorded
THOMAS PROPERTY	MAUPIN RD.	2	2	1	0	1	0	5.01	5	Revised Final Plat App. by PC -- 1/3/2017
TRADITIONS	WILSON PK.	127	127	63	0	64	0	146.74	5	Sections 1, 2, 3, 4 & 5 – Recorded
TUSCANY HILLS	SPLIT LOG RD.	125	125	119	0	6	0	97.70	5	Sections 1 - 7 -- Recorded
VALLE VERDE	MOORES LN.	40	40	40	0	0	0	75.05	2	Recorded – Private Streets
VALLEY VIEW SUBDIVISION	OLD SMYRNA RD.	11	11	7	0	4	0	14.00	4	Recorded
WITHERSPOON SUBDIVISION	CROCKETT RD.	154	125	97	29	28	29	260.72	6	Sec. 1, 2, 3, 4, 5, 6 & R-2 Lot Recorded.
WETHERBROOK	LIBERTY CHURCH RD.	55	55	55	0	0	0	62.21	5	All Sections Recorded
WHETSTONE	EDMONDSON PK.	141	141	141	0	0	0	167.00	4	All Sections Recorded
WILLIAMS GROVE	OLD SMYRNA RD.	63	63	63	0	0	0	78.09	4	All Sections Recorded
WILLOWMET	CONCORD RD.	129	129	129	0	0	0	132.00	6	All Sections Recorded
WINDSTONE	MURRAY LN.	108	108	105	0	3	0	197.00	6	All Sections Recorded – Private Streets
WILSON PROPERTY	MURRAY LN.	2	0	0	2	0	2	5.60	6	Final Plat not yet Recorded – Lot 1 Inc. Existing Home
WOODLANDS AT COPPERSTONE	SUNSET RD.	119	119	119	0	0	0	75.87	5	All Sections Recorded
TOTALS		***5,959***	***5,712***	***5,424***	***49***	***288***	***250***	***7,272***		
TOTAL VACANT LOTS IN CITY						***Available ****	***W/Plans *****			
						337	***587***			
PROJECTED SUPPLY OF LOTS -- BY YEAR (VARIOUS BUILD-OUT SCENARIOS)										
- 50 new homes annually						6.7	11.7			
- 75 new homes annually						4.5	7.8			
- 100 new homes annually						**3.4**	**5.9**			
- 150 new homes annually						2.2	3.9			
- 175 new homes annually						1.9	3.4			
- 200 new homes annually						1.7	2.9			
- 250 new homes annually						1.3	2.3			
- 300 new homes annually						1.1	2.0			
- 350 new homes annually						1.0	1.7			
- 400 new homes annually						0.8	1.5			
- 450 new homes annually						0.7	1.3			
- 500 new homes annually						0.7	1.2			

** Equals "Lots Under Development (F)" + "Vacant Platted Lots (G)"*

*** Equals "Lots Under Development (F)" + "Vacant Platted Lots (G)" + "Undeveloped Lots Per Plan (H)"*

BRENTWOOD PLANNING COMMISSION **2.**

Meeting Date: 08/03/2020

Information

PROJECT NUMBER

PROJECT DESCRIPTION

ZONING OF PROPERTY

APPLICANT NAME/ADDRESS

Attachments

City Calendar -- August 2020



AUGUST 2020

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	**3** 5:30 pm Park Board meeting 7:00 pm Planning Commission meeting	**4** 8:00 am City Court 4:00 pm Juvenile Traffic Court	**5**	**6** 8:00 am City Court 9:00 am City Commission Informational meeting	**7**	**8**
9	**10** 7:00 pm City Commission meeting	**11**	**12** 9:00 am Library Board meeting	**13**	**14**	**15**
16 2:00 PM Open House at Boiling Spring Academy	**17** 5:30 pm Board of Zoning Appeals meeting	**18** 7:30 am Tree Board meeting 12:00 pm Library Board Strategic Planning Committee meeting	**19**	**20** 9:00 am City Commission Informational meeting	**21** 9:30 am Historic Commission meeting	**22**
23	**24** 7:00 pm City Commission meeting	**25**	**26**	**27**	**28**	**29**
30	**31**					