Phillips Lytle LLP

Federal Express and Email

March 15, 2018

Mr. Rick Geiger, Chair
Village of Trumansburg Planning Board
56 East Main Street
Trumansburg, NY 14886

Re: Ithaca Neighborhood Housing Services and Sundial Property Development, LLC/Claudia Brenner's Proposed Project at 46 South Street in the Village of Trumansburg, New York ("Village") **- - Supplemental Information - Response to Comments from MRB Group and Comments from Village Planning Board**

Dear Chairman Geiger and Members of the Village Planning Board:

As you know, we represent Ithaca Neighborhood Housing Services ("**INHS**") in connection with the proposed 46 South Street Project ("**Project**'), which involves the construction of a residential/mixed-use project on a nineteen (19) acre parcel of property located at 46 South Street in the Village of Trumansburg, New York ("**Site**"). INHS and Sundial Property Development LLC/Claudia Brenner ("**Applicant**") are working on the Project together.

On behalf of the Applicant, we hereby submit one (1) original, and five (5) copies of this supplemental submittal: (1) responding to MRB Group's written comments on the proposed Project by letter dated February 19, 2018; and (2) responding to a number of questions posed by the Planning Board in connection with the Project at the January 18 Planning Board meeting. For the convenience of the Planning Board, we have included the text of each comment that the Applicant is providing responses to with Applicant's response to same in italics.

We hereby submit the following exhibits, which are attached hereto, and made part of the Supplemental Submittal and which amend the pending applications:

Exhibit A: Cover Sheet
Exhibit B: Site Plan & Preliminary Plat
Exhibit C: Correspondence from Army Corps of Engineers
Exhibit D: Civil Engineering Plans
Exhibit E: Landscaping Plan

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Exhibit F: Lighting Plan
Exhibit G: Revised Drainage Report
Exhibit H: Photographs of "No Mow" Lawn
Exhibit I: Enlarged Road Plans

Applicant's Response to Comments From MRB Group

SEQRA

1. **The Planning Board declared their "Intent to be Lead Agency" at the January 18, 2018 Planning Board meeting and began the Coordinated Review. Preliminary Applications materials were forwarded to all identified agencies (Involved and Interested) with a request for response. Please note not all identified Involved Agencies have responded to the Planning Boards request and it is suggested that the SEQR and the project application be continued to the March 22, 2018 Planning Board meeting to provide additional time for these agencies to respond.**

Applicant's Response: Acknowledged.

General & Site Materials Plan

2. **The Cover Sheet should be updated to identify the project as being a 'Preliminary Site Plan and Subdivision Plan'. A drawing index is also encouraged.**

Applicant's Response: A cover sheet including drawing index has been added. See Exhibit A, Cover Sheet.

3. **Please incorporate a Site Plan at the same scale as the utility and grading plans into the set. These plans should depict and label all site features including, but not limited to, parking areas, roadways, driveways, walkways, buildings, setbacks, road designations, road stationing, dumpsters, patios, easements and other typical site related**

information. Site Data tables with zoning information such as setback requirements (proposed and required), parking requirements, green space, etc. should also be provided.

Applicant's Response: *The Site Materials Plan has been updated to reflect the same scale as the Utility Plans (40 scale) – two sheets (L-101 & L-102) with match line. Unique and typical features have been labelled and zoning reference data table added.* ***See Exhibit B, Site Plan & Preliminary Plat.***

4. **The proposed buildings should be placed as close to the front setback lines as possible to create a more uniform appearance and minimize impervious surface lengths for driveways and sidewalks.**

Applicant's Response: *Alterations to proposed front yard setbacks to be reviewed with Planning Board for further direction.*

5. **All variances granted by the ZBA are to be detailed on the site plans.**

Applicant's Response: *A note detailing the variance for the reduced width of the right-of-way to Pennsylvania Avenue has been added to the Preliminary Plat.* ***See Exhibit B, Site Plan & Preliminary Plat (Note 6).***

6. **The public road and private drive should have a designation (such as A, B, C), or name on the plans, for discussion and review purposes. This should also be considered for buildings as well with some lots having multiple structures.**

Applicant's Response: *Alphabetic designators have been assigned to all distinct road segments.* ***See Exhibit B, Site Plan & Preliminary Plat.***

7. **All proposed garages and driveway locations should be labeled on the plans. Where garages are located, if shared parking spaces are being proposed, they should be depicted on the plans.**

Applicant's Response: *All garages labelled with associated parking spaces have been identified both graphically, and with annotations. All typical driveway types have been identified.* ***See Exhibit B, Site Plan & Preliminary Plat.***

8. **A typical parking space dimension and driveway dimensions are to be added to the plans. Where feasible, shared driveways should be considered.**

Applicant's Response: Typical dimensions for all driveway types and parking areas have been included. ***See Exhibit B, Site Plan & Preliminary Plat.***

9. **Pedestrian access from the proposed driveway locations to the buildings should be provided on the plans.**

Applicant's Response: Pedestrian access between driveways and buildings shown.

10. **The site plans should demonstrate compliance with the ADA requirements including handicapped parking areas, accessibility, and sidewalk connections. Handicapped parking spaces should be located at locations with the shortest accessible route of travel to the building entrances.**

Applicant's Response: ADA parking spaces shown proximate to building entrances. ***See Exhibit B, Site Plan & Preliminary Plat.***

11. **Method and assurance of perpetual maintenance of common areas, , internal sidewalks, parking areas, private roadways, stormwater mitigation measures including stormwater wetlands, bioretention filter, rain gardens and hydrodynamic separator is to be provided to the Village Attorney for review and approval as part of Final Plan submission.**

Applicant's Response: This comment will be addressed at Final Site Plan Approval. Methods and responsibilities of maintenance will be outlined in the final SWPPP document.

12. **Either the sideway or the dumpster locations associated with the Apartment Complex should be reconfigured to prevent crossing of the sidewalk by a disposal vehicle to access dumpsters. Also the eastern dumpster may need to be relocated due to its close proximately to an**

outdoor gathering area/ patio. Also a dumpster enclosure detail is to be provided on the plans. Are individual totes anticipated for the remaining lots?

Applicant's Response: Dumpster enclosures have intentionally been pulled back from the edge of roadway. Specific to the western dumpster - the concrete sidewalk, which a service vehicle must traverse, shall be designed to support vehicular loads for the full width of the dumpster access drive. Direct sidewalk connection to the dumpsters facilitates safe and convenient access from the apartment building. Dumpster enclosure drawing to be provided. All other lots are to have individual totes.

13. **All correspondences with Army Corps of Engineers (ACOE) regarding their review of the project plans and Wetland Delineation Report are to be forwarded to the Village and MRB.**

Applicant's Response: The requested information has been provided with this Supplemental submittal as ***Exhibit C, Correspondence form Army Corps of Engineers.***

14. **The Site Materials Plan identifies one of the wetlands as "Wetland E" which is labeled as "Wetland F" on the Boundary & Topographic Plan. Please ensure consistent labeling between plans.**

Applicant's Response: Correction completed. ***See Exhibit B, Site Plan & Preliminary Plat.***

15. **The Site Materials Plan is to be updated to identify that a bioretention area is also proposed within the Landscape Buffer Area.**

Applicant's Response: All bioretention areas have been identified. ***See Exhibit B, Site Plan & Preliminary Plat.***

16. **The right-of-way for both terminus points of the public road should be extended beyond the pavement area for maintenance purposes.**

Applicant's Response: Right-of-ways were extended 10' beyond the terminus points of both turn-arounds. ***See Exhibit B, Site Plan & Preliminary Plat; Exhibit D, Civil Engineering Plans; and Exhibit E, Landscaping Plan.***

17. **The Planning Board should determine if a future public road to the southern property is warranted. According to the plans a proposed "Optional Future Road Extension" is provided at the terminus point of the public road at Lot 11. If the Planning Board desires a future connection, then the public right-of-way should be extended to the property line.**

Applicant's Response: *Recommendation to be discussed with Planning Board for further direction.*

18. **The length of the proposed public road and sidewalk areas extending beyond Lot 11 should be shortened to provide only what is necessary to provide access to Lot 11.**

Applicant's Response: *Length of public road has been reduced.* ***See Exhibit B, Site Plan & Preliminary Plat.***

19. **In order to provide legal means for the Village to be able to turnaround the vehicles, an easement is to be provided over a portion of the entrance drive to apartment complex by Lot 15.**

Applicant's Response: *An access easement was added to the plan set.* ***See Exhibit B, Site Plan & Preliminary Plat.***

20. **An evaluation of vehicle turning movements demonstrating that there is adequate space available for emergency vehicles, disposal vehicles, vehicles with trailers, etc. to maneuver around onsite without obstructing the internal traffic flow and emergency access to the site should be provided.**

Applicant's Response: *Autoturn circulation analysis to be documented at Final Site Plan Approval.*

21. **The Village Fire Marshal and Code Enforcement Officer should be satisfied that emergency access is adequate and meets NYS Building**

Code requirements. The marking of fire lanes and the installation of no parking signs should be identified on the plans.

Applicant's Response: *Fire lane markings and no parking signs to be included in Final Site Plan Application.*

22. **Signature lines for the Planning Board Chairman, Engineer, and DPW Supervisor are to be added to the Preliminary Plans.**

Applicant's Response: *Signatory lines have been added.* ***See Exhibit A, Cover Sheet.***

23. **The South Street right-of-way line scales as 60' but is listed as 49.5' on the subdivision plan. Please clarify.**

Applicant's Response: *The South Street right-of-way is 49.5' feet per the Preliminary Plat. Right-of-way lines were corrected on all drawings.* ***See Exhibit B, Site Plan & Preliminary Plat.***

PRELIMINARY PLAT & EXISTING CONDITIONS PLAN

24. **All identified wetlands should be shown on the Plat Plan, as they are referenced in the notes. Please provide more information within the notes regarding the wetlands such as the report date, survey date, who surveyed them and the ACOE Determination (if one was provided).**

Applicant's Response: *Wetlands and report and ACOE determination information requested has been added to the Preliminary Plat.* ***See Exhibit B, Site Plan & Preliminary Plat. (See Note 6).***

25. **The Village Attorney should confirm whether the proposed private drive making connection to South Street can be placed on its own lot (Lot 13), which is a non-confirming lot. This lot may need to be divided between the two neighboring lots (Lot 8 & Lot 14) with a perpetual access easement over to the community.**

Applicant's Response: *Applicant is awaiting Village Attorney determination.*

26. **The Site Data Table should be added to the Subdivision Plat.**

Applicant's Response: *Site Data Table was added to the Preliminary Plat.* ***See Exhibit B, Site Plan & Preliminary Plat.***

27. **The proposed utility easement to the Village of Trumansburg should be widened the full width of the private drive for access.**

Applicant's Response: *The original Lot 13 that included the Private Drive was consolidated with Lot 12. The entire portion of Lot 12 east of the new public roadway is included as a utility easement.* ***See Exhibit B, Site Plan & Preliminary Plat.***

28. **The right-of-ways for both Pennsylvania Ave and South Street are to be labeled on all Plans.**

Applicant's Response: *The right-of-ways have been labeled on the Preliminary Plat.* ***See Exhibit B, Site Plan & Preliminary Plat.***

29. **The boundaries of the wetlands are difficult to read on the Existing Conditions Plans. A different line weight should be considered.**

Applicant's Response: *Wetland boundaries have been enhanced on the Existing Conditions Plan.* ***See Exhibit D, Civil Engineering Plans.***

DRAINAGE PLANS

30. **All building down spouts and leaders are depicted on the plans and labeled. Size, material, and where connected, inverts are to be provided.**

Applicant's Response: *As building designs have not been advanced to a point where downspout locations can be determined a typical downspout design and arrangement has been shown and will apply to all market rate and townhouse buildings. Downspouts for the multi-family building have been added.* ***See Exhibit D, Civil Engineering Plans.***

31. **Please remove the "Rim" and "In" or "Out" designations from the End Section labels. These are misleading as there is no rim and some of the in and out designations appear to be the opposite of the flow direction.**

Applicant's Response: "Rim" and "In" or "Out" designations have been removed from the End Section labels. ***See Exhibit D, Civil Engineering Plans. (Sheets C103 and C104).***

32. **A numerical designation for each drainage structure should be provided for clarity.**

Applicant's Response: Numerical designations have been provided. ***See Exhibit D, Civil Engineering Plans. (Sheets C103 and C104).***

33. **Proposed rain gardens do not appear to be in the primary flow path where they can provide the greatest water quality benefit by collecting runoff from both buildings and driveways. Examples of this include constructing the rain gardens next to, but not within, the swales between Lots 2, 3, 4 & 5.**

Applicant's Response: Grading has been modified to maximize the areas captured by the rain gardens. ***See Exhibit D, Civil Engineering Plans. (Sheets C103 and C104).***

34. **The size and depth of the proposed rain gardens are to be added to the plans. Rain gardens should have an average ponding depth of 6" or less.**

Applicant's Response: The surface areas of the rain gardens have been added to the drawings. The depth of the rain gardens has been modified to 6". ***See Exhibit D, Civil Engineering Plans. (Sheets C103, C104 and C202).***

35. **Some of the proposed piping configurations for the catch basins cannot be built as proposed. These include the structure at station 1+45.69 and inlets that receive piping from bioretention areas. The size of all proposed catch basins are to be added to the plans.**

Applicant's Response: Piping/Structure configurations have been re-examined. All drainage inlets are 2'x2' unless otherwise noted. See drawings C103 and C104. The drainage inlet detail has been modified. ***See Exhibit D, Civil Engineering Plans.***

36. **The storm sewer system draining to the bioretention filter is confusing in its design. It appears as though some storm water is piped to the**

bioretention filter and some is bypassed through Storm Manhole at 1+06.61 to the stormwater wetland. According to the drainage report all water quality volume related storm water from this area shall be conveyed to the bioretention filter prior to it entering the stormwater wetland. Clarification should be provided regarding this design.

Applicant's Response: *The piping configuration is set up to take only the water quality storm event to the bioretention filter (per guidance in section 6.4.2 of the NYSDEC Design Guide). The larger storm events will bypass to the stormwater wetland. This information has been provided in updated drainage calculations narrative. A detail showing the sizing of the diversion structures has been added to Sheet C202.* ***See Exhibit D, Civil Engineering Plans.***

37. **The end section invert elevation of the pipe entering the stormwater wetland from Lot #11 is listed with an elevation of 987.78 below the bottom of the stormwater wetland which is listed at 989.90.**

Applicant's Response: *The invert elevation has been adjusted.* ***See Exhibit D, Civil Engineering Plans. (Sheet C103).***

38. **The 12" pipe exiting from the Storm Manhole at 1+06.61 does not have any cover or the top of the pipe is above grade along portions of its length. Also this pipe terminates at an end section identified as a "Null Structure". Please clarify.**

Applicant's Response: *Grading has been revised to provide proper cover and the null structure tag has been removed.* ***See Exhibit D, Civil Engineering Plans. (Sheet C104).***

39. **The underdrain piping with inverts for the bioretention filter are to be depicted on the plans. Based on an approximate 4' depth to the invert shown on the detail sheet, please verify the pipes can exit to daylight. The bioretention filter should also have an overflow allowing a maximum of 6" ponding depth.**

Applicant's Response: *Underdrain piping with inverts has been shown, an overflow structure included and the pipe invert has been noted.* ***See Exhibit D, Civil Engineering Plans. (Sheets C103 and C104).***

40. **Details of the outlet structures for the stormwater wetland are to be added to the plans. Also the inverts for the end sections are to be provided. Outlet structure inlets should have reverse pitch piping to the permanent pool.**

Applicant's Response: Inverts for all end sections and detail for the outlet structures have been added. See Exhibit D, Civil Engineering Plans. (Sheets C104 and C202).

41. **The applicant should clarify why the two outlet structures for the Lot #12 stormwater wetland are separated by the rip-rap spillway? It would seem practical to keep them closer to one another for inspection and maintenance purposes.**

Applicant's Response: The southern outlet structure has been relocated north of the rip-rap spillway for ease of maintenance.

42. **Outlet Structure #3 and the Drainage Inlet at 5+17.23 appear to be shallow. A detail of these structures are to be provided for review.**

Applicant's Response: Structures have been modified to provide adequate depth. See Exhibit D, Civil Engineering Plans. (Sheets C104 and C202).

43. **The plans should demonstrate how access to the stormwater management areas and outfall structures will be provided as per the NYS Stormwater Management Design Manual (SWDM).**

Applicant's Response: Grading has been revised to allow vehicular access to the stormwater management practices. See Exhibit D, Civil Engineering Plans. (Sheets C105 and C106).

44. **The dimensions and inverts for all emergency spillways are to be labeled on the plans.**

Applicant's Response: Dimensions and inverts have been labeled on the plans. See Exhibit D, Civil Engineering Plans. (Sheets C103 and C104).

45. **The storm piping located on Lot #6 and #7 is missing. Also all piping from the rain gardens to the catch basins are to be labeled with size, materials, and inverts.**

Applicant's Response: *Storm piping has been added to Lots #6 and #7. Piping from rain gardens to drainage inlets have been labeled.* ***See Exhibit D, Civil Engineering Plans. (Sheets C103 and C104).***

46. **Along South Street the right-of-way lines, street name and edge of pavement labels are to be added. Also please clarify the two north-south dashed lines east of the South Street pavement.**

Applicant's Response: *Labels have been added, and the two dashed lines have been removed from all drawings.*

47. **More detail needs to be provided on the twin 30" underground storage pipes near South Street including, how the connection to the pipes is made, how the 30" pipes are connected, and how they are accessed for maintenance. A detail should be provided for this system on the plans.**

Applicant's Response: *This system may change depending on the Planning Board's determination on the South Street drive location. This comment will be addressed in the Final Site Plan Review submission.*

48. **The hydrodynamic separator should be moved outside the South Street public right-of-way as it is a privately owned device.**

Applicant's Response: *This may change depending on the Planning Board's determination on the South Street drive location. This comment will be addressed in the Final Site Plan Review submission.*

49. **A change in direction of storm piping along South Street needs to be accomplished with a cleanout or structure.**

Applicant's Response: *A cleanout has been added to the bend.* ***See Exhibit D, Civil Engineering Plans. (Sheet C104).***

50. Please confirm that an end section can be provided for the 10' x 1' box culvert.

Applicant's Response: The box culvert will be a Contech aluminum box culvert with pre-manufactured aluminum end sections.

51. A number of the proposed catch basins appear to conflict with the proposed watermain location. Proper separation is to be provided.

Applicant's Response: Water mains have been relocated to provide proper separation. See Exhibit D, Civil Engineering Plans. (Sheets C103, C104, C107 and C108).

GRADING PLANS & EROSION AND SEDIMENT CONTROL COMMENTS

52. An erosion and sediment control plan is required. Suggest using NYSDEC standard details for all erosion and sediment control items.

Applicant's Response: See Exhibit D, Civil Engineering Plans. (Sheets C102 and C202).

53. The boundaries of all identified wetlands are to be depicted on the Grading Plans.

Applicant's Response: Wetland areas have been properly delineated. See Exhibit D, Civil Engineering Plans.

54. A portion of 'Wetland A' is filled on Lot 2 but not identified as such on the plans. Adjust labels regarding filling jurisdictional and/or isolated wetlands to reflect the current status of review provided by the Army Corps of Engineers (ACOE).

Applicant's Response: Grading plans show acreage of all jurisdictional wetlands to be filled in. See Exhibit D, Civil Engineering Plans. (Sheets C105 and C106).

55. **Based on the proposed project design and improvements, the existing 'Wetland A' watershed will likely be reduced. The applicant should confirm that this reduction in area will not adversely impact this wetland.**

Applicant's Response: *This comment will be addressed in detail in the Full SWPPP submitted with the Final Site Plan Review submission. Please note the HydroCAD reports show that we are maintaining the water elevations in the wetland during the 1-, 10- and 100-year storm events.*

56. **The proposed 993 contour on Lot 2 needs to be corrected as it shown to dead end and not connect to an existing contour. Also the proposed contours at the southeast end of the public road end abruptly without any connection to an existing contour. It appears as though the continuation of these contours will result in impact to 'Wetland F'. Additional grading appears to be required and any fill areas are to be properly identified.**

Applicant's Response: *Grading Plans has been updated and proposed retaining walls shown.* ***See Exhibit D, Civil Engineering Plans. (Sheets C105 and C106).***

57. **Add end section invert, catch basin grate and manhole rim elevations to the grading plan.**

Applicant's Response: *Storm structure rims and pipe inverts have been added.* ***See Exhibit D, Civil Engineering Plans. (Sheets C105 and C106).***

58. **The plans should demonstrate how the 6" maximum permitted ponding depth within the bioretention filter will be maintained.**

Applicant's Response: *An overflow structure has been added to the bioretention filter to maintain the 6" maximum ponding depth.* ***See Exhibit D, Civil Engineering Plans. (Sheet C104).***

59. **The drainage swales on Lots #10 & #11 are near flat at 0.2% likely resulting in standing water. Drainage swales should be designed at a minimum of 1% slope.**

Applicant's Response: Grading of all drainage swales has been updated to maintain a 1% minimum slope. ***See Exhibit D, Civil Engineering Plans. (Sheets C105 and C106).***

60. **The existing tree line should be shown more clearly along with impacts associated with the grading.**

Applicant's Response: Existing tree lines and a limit of disturbance line have been added to the plans. ***See Exhibit E, Landscaping Plan.***

61. **Some existing contours around the fringe of the project need to be labeled.**

Applicant's Response: Existing contours have been labeled. ***See Exhibit D, Civil Engineering Plans. (Sheets C105 and C106).***

62. **Provide additional spot elevations at critical locations such as ramps, building entrances, curbs and sidewalks.**

Applicant's Response: This comment will be addressed at Final Site Plan Approval submission.

63. **The grading plan should identify the proposed spillway locations and incorporate spot elevations as necessary.**

Applicant's Response: Spillway spot elevations have been added. ***See Exhibit D, Civil Engineering Plans. (Sheets C105 and C106).***

64. **Please clarify the heavy line on Lot #8 above the 997 contour.**

Applicant's Response: The dark line was a feature line from Civil 3D that has been turned off. ***See Exhibit B, Site Plan & Preliminary Plat.***

65. **All grading between lots should be designed to provide positive flow away from building foundations and neighboring properties. The grading around Lot #14 appears to direct drainage flow towards Lot #15.**

Applicant's Response: Cut off swales have been added to all lots. ***See Exhibit D, Civil Engineering Plans. (Sheets C105 and C106).***

66. **All snow storage locations should be identified on the Site Plan and Grading Plan. The proposed locations should minimize offsite drainage to adjacent properties.**

Applicant's Response: Snow storage locations have been identified on the grading plans. ***See Exhibit D, Civil Engineering Plans. (Sheets C105 and C106).***

67. **An Erosion and Sediment Control Plan detailing how the site will be maintained and protected during construction is to be provided.**

Applicant's Response: See Exhibit D, Civil Engineering Plans. (Sheets C102 and C202).

68. **All erosion and sediment control measures and details shall be in accordance with the NYS Standards and Specifications for Erosion and Sediment Control (Blue Book).**

Applicant's Response: All practices shown on the ESC Plan are in accordance with NYS Standards.

69. **Silt fence sections must be joined either with a full section of overlap, or wrapping two ends together. See NYSDEC Blue Book for typical silt fence details. Strongly recommend using NYS DEC Reinforced Silt Fence detail.**

Applicant's Response: See Exhibit D, Civil Engineering Plans. (Sheet C201).

70. **A construction staging area should be identified on the demolition plans to prevent storage of vehicles and equipment from impacting adjacent residential areas or properties.**

Applicant's Response: Construction staging areas have been added. ***See Exhibit D, Civil Engineering Plans. (Sheet C102).***

71. **Topsoil stockpile locations are to be identified on the plans and shown to be properly protected.**

Applicant's Response: Topsoil stockpile areas have been added. ***See Exhibit D, Civil Engineering Plans. (Sheet C102).***

72. **All slope areas of 1 on 3 to be stabilized with a rolled erosion stabilization fabric including the drainage swales. These areas are to be identified on the plans.**

Applicant's Response: Areas requiring stabilization fabric have been added. ***See Exhibit D, Civil Engineering Plans. (Sheet C102).***

73. **A more site specific construction sequence is to be provided detailing when the stormwater management facilities will be installed, the construction of the bioretention area, the installation of utilities, sidewalks, landscaped areas, and construction of certain storm sewers and inlets, etc. Is this project to be constructed all in one phase?**

Applicant's Response: All project site infrastructure work (including roads, utilities, mass grading and stormwater management systems) and certain buildings are planned to be completed in 1 Phase. ***See Exhibit B, Site Plan & Preliminary Plat (Sheet L101,*** *for a table of anticipated building construction. The sequencing notes on the E&SC plan have been tailored to the project.* ***See Exhibit D, Civil Engineering Plans. (Sheet C102).***

74. **If the project will be developed in phases, a phasing plan defining the phase boundaries and associated acreage of each phase should be included with the plans set.**

Applicant's Response: All Project Site infrastructure work (including roads, utilities, mass grading and stormwater management systems) and certain buildings are planned to be completed in 1 Phase. ***See Exhibit B, Site Plan & Preliminary Plat (Sheet L101,*** *for a table*

of anticipated building construction. ***See Exhibit D, Civil Engineering Plans. (Sheets C102).***

75. **The proposed limits of disturbance should be clearly identified on the plans with a boundary line. This area is to include all improvements proposed including work within right-of-ways or offsite.**

Applicant's Response: *A limit of disturbance line has been added to the plans.*

76. **The total acreage of disturbance anticipated for this project at one time should be labeled on the plans. If the total acreage to be disturbed at one time is greater than 5-acres, then a 5-acre waiver from the NYSDEC will be required. All correspondences with NYSDEC will be required to be forwarded to the Village and MRB.**

Applicant's Response: *This comment will be addressed in the Final Site Plan Review submission. It is anticipated that more than five (5) acres will be disturbed at one time, and as a result a waiver will be required from the NYSDEC. This will be addressed in the Full SWPPP and on the Notice of Intent (NOI).*

UTILITY PLANS AND UTILITY PROFILES

77. **The Design Engineer shall coordinate with the associated utility companies regarding the proposed new locations and connections. All correspondences with these utility companies shall be forwarded to the Village of Trumansburg.**

Applicant's Response: *This is an ongoing process and such information will be presented with the Final Site Plan submission.*

78. **The proposed water and sewer improvements and connections are subject to the review and approval of the Village of Trumansburg Public Works Department. Also the proposed water system master meter and RPZ location will require an approval from the Village and DOH. The design engineer should forward copies of all correspondence from DOH to the Village Office and MRB.**

Applicant's Response: The water and sewer are both being dedicated to the Village. As this is not a private system, there will be no master meter & RPZ.

79. **Based on the New York State Fire Code, Chapter 5, a residential/subdivision road constitutes a fire apparatus access road and therefore the minimum approved surface width is 26' where a hydrant is present (20 feet on center of the hydrant). The plans should be updated accordingly.**

Applicant's Response: The roads have been widened to 26' at hydrant locations. These areas have been dimensioned on the Utility Plans. ***See Exhibit D, Civil Engineering Plans. (Sheets C107 and C108).***

80. **On sheet C107, the sanitary sewer lateral extending from Lot #2 is shown crossing the watermain. If possible, the lateral should be connected closer to the manhole to prevent the crossing.**

Applicant's Response: The lateral has been connected directly to the manhole. ***See Exhibit D, Civil Engineering Plans. (Sheets C107).***

81. **In multiple locations, the sanitary sewer and watermain are shown within less than 10 feet of each other and are not close to being perpendicularly aligned. There are many laterals and service connections shown in these areas as well. 10 foot separation needs to be maintained between the watermain and any sewers except at crossings. Crossings should be made at as close to 90 degree angles as possible.**

Applicant's Response: Applicant has modified all mains to maintain 10' of separation and minimized the number of crossings. The locations and profiles have been adjusted. ***See Exhibit D, Civil Engineering Plans. (Sheets C107 and C108).***

82. **At least one section of parallel watermain and sanitary sewer did not meet the 10 foot separation requirement. Verify that separation requirements are met for all watermains on site.**

Applicant's Response: Applicant has modified all mains to maintain 10' of separation. See Exhibit D, Civil Engineering Plans. (Sheets C107 and C108).

83. **The size, materials, length of all watermains and sewers are to be added to the Utility Plan. Slopes should also be labeled for sewers.**

Applicant's Response: This information has been added to the Utility Plans. See Exhibit D, Civil Engineering Plans. (Sheets C107 and C108).

84. **All curb stops and clean out locations should be identified on the plans and shown at the right-of-way beyond the sidewalk. Proper separation is to be provided between the sidewalk and these locations.**

Applicant's Response: The walks were relocated to allow for installation at the right-of-way lines. See Exhibit D, Civil Engineering Plans. (Sheets C107 and C108).

85. **Water and sewer notes regarding installation requirements, materials, testing, and inspections are to be added to the plans.**

Applicant's Response: This information will be provided with the Final Site Plan submission.

86. **Water Profile – A: One 12" storm was found to have less than 18" separation at a crossing. Watermains must maintain 18" minimum separation from any type of sewer crossing.**

Applicant's Response: Crossings were modified to provide 18" separation. See Exhibit D, Civil Engineering Plans.

87. **Water Profile – A: The proposed box culvert at about 13+20 should be labeled with its size, does not appear to be drawn to the correct width and does not have the 18" separation from the watermain.**

Applicant's Response: The correct box culvert dimensions and vertical placement was added to the profile. See Exhibit D, Civil Engineering Plans. (Sheets C301).

88. **Water Profile – B: One 6″ storm was found to have less than 18″ separation at a crossing. Watermains must maintain 18″ minimum separation from any type of sewer crossing.**

Applicant's Response: Crossings were modified to provide 18″ separation. See Exhibit D, Civil Engineering Plans.

89. **Sanitary Profile – C: numerous 1″ copper pipes are shown crossing at the same elevation as the sanitary main.**

Applicant's Response: Notes were added to the Utility plans to maintain 18″ separation between all copper laterals and sewer mains. See Exhibit D, Civil Engineering Plans. (Sheets C107 and C108).

ROAD PROFILES

90. **Add intersecting roads and label on the profiles.**

Applicant's Response: Labels were added. See Exhibit D, Civil Engineering Plans. (Sheets C601 and C602).

91. **Label the ends of roads and add right-of-way lines to the profiles.**

Applicant's Response: Labels were added. See Exhibit D, Civil Engineering Plans. (Sheets C601 and C602).

LANDSCAPING PLAN, SITE LIGHTING & SIGNAGE PLANS & MISCELLANEOUS

92. **The Landscape Plant Lists should be updated to provide the quantity and size of plants and trees to be provided. The landscaping plan is to be updated to identify where these trees and plants are located.**

Applicant's Response: Typical plant and tree sizes and tree quantities to be reflected in Final Site Plan Submission, as was coordinated with MRB.

93. **The Site Lighting Plan should provide manufacturer cut sheets and photometric plan depicting the true foot-candle illumination level. The proposed light fixtures are to be IDA (International Dark-Sky Association) approved. A note is to be added to the plans stating that all site lighting will be dark sky compliant and any replacement of lighting will remain dark sky compliant.**

Applicant's Response: *Note added. Photometric Plan to be included with Final Site Plan Submission.*

94. **Proposed lighting is not very visible on the plans. Please increase the lineweight of any proposed work that is pertinent to this plan sheet.**

Applicant's Response: *Graphic lineweights have been adjusted.* ***See Exhibit F, Lighting Plan.***

95. **The Lighting Schedule identifies a quantity of 21 for street lights, however, only 20 are depicted on the plan. Please update accordingly.**

Applicant's Response: *Light quantities updated.* ***See Exhibit F, Lighting Plan.***

96. **An additional path lighting is encouraged for the path between the private and public road.**

Applicant's Response: *Light levels intentionally kept low in this area due to proximity of adjacent neighboring buildings. To be reviewed with Planning Board for direction.*

97. **Where ADA parking spots are designated, the ADA parking spot pavement markings should be shown on the plans. ADA aisles should show appropriate hatched pavement markings on the plans.**

Applicant's Response: *ADA parking space aisles are shown with appropriate hatches. Spot elevations to be shown in Final Site Plan Submission.*

98. **Suggest adding a sidewalk and marked pedestrian crossing for the ADA parking spots on the north side of the main building.**

Applicant's Response: Pavement marking crossing extension of access aisle shown. ***Exhibit B, Site Plan & Preliminary Plat.***

99. **The applicant should consider relocating the ADA parking spaces closer to the building entrances and sidewalk locations.**

Applicant's Response: ADA spaces located proximate to building entrances in all instances. ***Exhibit B, Site Plan & Preliminary Plat.***

100. **Coordinate with the Village regarding proposed speed limits within the site and access roads.**

Applicant's Response: Speed Limit signage to be reviewed with Village Department of Public Works and provided at Final Site Plan Approval submission.

101. **No parking signs should be placed at all dead ends on the public roads.**

Applicant's Response: No parking signs are shown in these locations.

SWPPP/DRAINAGE REPORT

102. **Calculations supporting the sizing of storm sewers are to be provided in the drainage report.**

Applicant's Response: Calculations have been provided. ***See Exhibit G, Revised Drainage Report.***

103. **As part of Final Plan submission, a SWPPP and NOI are to be provided for review and ultimately will require the approval from NYSDEC.**

Applicant's Response: This comment will be addressed in the Final Site Plan Review submission.

104. The calculations show an increase in the peak rate of runoff to South Street at the north end of the project. If this condition is to remain, an analysis of the existing Village system receiving the runoff will be required to be provided.

Applicant's Response: *Calculations on the capacity of the existing storm piping have been provided.* ***See Exhibit G, Revised Drainage Report.***

105. The drainage report is to be updated to include the off-site contributing impervious areas in the WQv calculations.

Applicant's Response: *The Required WQv was calculated based on the on-site development. The WQv being provided in the stormwater wetlands includes off-site areas, as well as on-site. This has been quantified in the revised drainage report.* ***See Exhibit G, Revised Drainage Report.***

106. Regarding rooftop disconnection the location of the downspouts, and whether they discharge to grade or are connected, should be provided on the plans so the disconnections can be confirmed as meeting standards for WQv area reduction. In Soil Groups A & B disconnection of downspouts is encouraged to promote infiltration. In the area of the site with Soil Group D the disconnection benefit is minimized due to the impermeable nature of the soil which becomes exacerbated due to the compaction associated with construction. To support the credit associated with disconnection within the Soil Group D area we request a supporting letter from a geotechnical engineer determining whether soil enhancement is necessary to promote infiltration in these areas.

Applicant's Response: *As part of the SWPPP for the Project, soil restoration will be required. Per the requirements outlined on page 5-65 of the NYSDEC Design Guide, this is an acceptable method for C/D soils. This will be covered in more detail in the Full SWPPP as part of the Final Site Plan Review submission.*

107. WQv area reduction credit for tree planting should be limited to those potential large trees that are within 10' of an impervious surface. It does not appear as though the trees noted in the drainage report meet that

requirement. The landscaping plan shall be updated to identify the trees that meet this requirement.

Applicant's Response: Calculations have been provided. ***See Exhibit G, Revised Drainage Report.***

108. **Any alterations in impervious cover, rooftop disconnect, and/or tree planting numbers, will impact the RRv calculations. The drainage report may need to be updated accordingly.**

Applicant's Response: Calculations have been provided. ***See Exhibit G, Revised Drainage Report.***

109. **The proposed bioretention filter is an effective method of obtaining WQv treatment. In this project it's designed to meet the minimum RRv required. Rain gardens are also proposed throughout the project site and should be included within the drainage report as they provide additional WQv treatment. The rain gardens should be designed and located to intercept as much impervious runoff as possible and sized to treat this runoff. The WQv provided by the rain gardens can then be added to the drainage calculations.**

Applicant's Response: Calculations have been provided. ***See Exhibit G, Revised Drainage Report.***

110. **Please included sizing calculations for the hydrodynamic separator per Appendix B of the NYS SWDM.**

Applicant's Response: Calculations have been provided. ***See Exhibit G, Revised Drainage Report.***

111. **Design related information should also be included in the WQv calculations for the proposed stormwater wetlands as they appear to provide the remainder of the WQv not provided by the bioretention filter and rain gardens.**

Applicant's Response: Calculations have been provided. ***See Exhibit G, Revised Drainage Report.***

112. The bioretention area soil specifications should be provided on the plans to ensure the soil meets the requirements of the NYS SWDM. The bioretention area shall be design in accordance with the NYS SWDM.

Applicant's Response: See Exhibit D, Civil Engineering Plans. (Sheet C202).

113. Stormwater wetland design shall be in accordance with the NYS SWDM. Stormwater wetlands must meet all requirements of stormwater ponds as well. A forebay must be constructed at each inflow point unless the inflow point provides less than 10% of the total design storm flow. A micropool must be provided at the outlet. Please see sections 6.1 and 6.2 of the NYS SWDM for more information.

Applicant's Response: Forebays and micropools have been added to the Grading Plans. See Exhibit D, Civil Engineering Plans. (Sheet C105 and C106).

114. Watershed maps should show soil hydrologic soil group overlays, label off site contours, clearly depict the features to which the CN factors are contributed and provide directional arrows for time of concentration paths. Please update the reports accordingly.

Applicant's Response: Overlays have been provided. ***See Exhibit G, Revised Drainage Report.***

115. Please include the link path of flow from Watershed #1A through Watershed #1B on the Existing Watershed Boundaries Map.

Applicant's Response: Link path has been provided. ***See Exhibit G, Revised Drainage Report.***

116. On the Proposed Watershed Boundaries Map one time of concentration node appears to be missing from Watershed #1A and the Watershed

#2A area and curve number information does not match the information within the report.

Applicant's Response: Added node and updated curve numbers. ***See Exhibit G, Revised Drainage Report.***

117. **If possible, provide a summary sheet printout from Hydrocad for the existing and proposed watershed with all subcatchments, reaches and links.**

Applicant's Response: Summary sheets have been provided. ***See Exhibit G, Revised Drainage Report.***

118. **In Hydrocad, the Summary for Pond 3P sheet should include the surface area and storage at elevation 992.0 since this is the elevation of the overflow grate. Also, this summary appears to reflect that four (4) overflow grates are proposed when the plans identify only two (2).**

Applicant's Response: The requested information will be provided. The number of grates have been updated to reflect the correct quantities. ***See Exhibit G, Revised Drainage Report.***

119. **In Hydrocad, the Summary for Ponds 3P and 4P show overflow spillways much longer than shown on the plan. The applicant should verify these spillways can be constructed at the invert elevation shown since the inverts are at the top contour elevation of the banks of the ponds.**

Applicant's Response: More detail has been added to the drawings to show the top of embankment elevations. Likewise the spillways have been updated in HydroCAD.

120. **Rating tables for outlet flows at critical stages should be developed for the various existing and proposed ponds incorporated into the drainage calculations.**

Applicant's Response: Stage-Discharge rating tables have been provided. ***See Exhibit G, Revised Drainage Report.***

121. In Hydrocad the method used to combine watershed subcatchments and pond outflows is a Reach. The Reaches should show the inflow hydrograph information listed and graphically.

Applicant's Response: *A reach was added to combine the flows of watersheds #2A, 2B, and 2C.* ***See Exhibit G, Revised Drainage Report.***

122. In Table 3, Hydrograph Modeling Results the Pre-Developed WS #1A 100-yr runoff rate is different from on the Hydrocad calculation pages.

Applicant's Response: *The discrepancy has been fixed.* ***See Exhibit G, Revised Drainage Report.***

TRAFFIC IMPACT STUDY

123. Erdman and Anthony will be providing comments regarding their review of the submitted Traffic Study prepared by SRF on a separate cover once completed.

Applicant's Response: *Acknowledged. Since MRB issued its comment letter on February 19th, we have received Erdman Anthony's evaluation of the Traffic Study. Erdman Anthony's report concludes: "It does not appear that the proposed development will make significant adverse traffic impacts to the study intersections and the recommendation for no mitigation seems appropriate based on the results of the analysis."*

Applicant's Response to Comments From Planning Board

1. Provide a count of parking spaces, including handicapped parking spaces.

Applicant's Response: *Village Code requires 2 parking spaces for every dwelling unit. There are 146 parking spaces for residential use, and an additional 8 parking spaces for the Trumansburg Community Nursery School, totaling 154 parking spaces. Included in that total*

are 5 ADA compliant parking spaces for residential use and 2 ADA compliant parking spaces for the Trumansburg Community Nursery School.

2. Are all buildings slab on grade?

Applicant's Response: *All INHS buildings will be slab-on-grade, as will the Trumansburg Community Nursery School. It is possible that the purchasers of the market rate lots may choose to commission a home with a basement from Claudia Brenner.*

3. Describe the stub driveways in the plan.

Applicant's Response: *All driveways in the revised site plan submission connect to the buildings via sidewalks. It is possible that a purchaser of a market rate lot may choose not to install a sidewalk to connect their driveway to their home, but it has been shown on the plan regardless in order to conservatively calculate the amount of impervious surface across the entire site.*

4. Provide a balance sheet of trees before and after.

Applicant's Response: *Applicant has utilized the site survey as compared against the proposed on-site grading. This allowed the applicant to determine the number and location of all trees with a caliper of 8" or greater as identified on the survey to see which trees might be affected. The current site plan was developed in part to preserve as many mature trees as possible that mostly occur around the perimeter of the site. The count of the current canopy trees that exist on the site, are as follows: 47 deciduous canopy trees and 17 evergreen trees, a total of 64. Due to construction and required associated grading, 33 deciduous canopy trees and 8 evergreen trees will be preserved. To mitigate the tree removals, 180 new deciduous canopy trees and 96 evergreen trees are proposed. This would bring the final after construction tree count to 213 deciduous canopy trees and 104 evergreen trees, a total of 317. Factoring in the current tree count, the total tree count on site would increase by 253 trees.*

5. Describe "no mow" lawn seed mix.

Applicant's Response: *"No Mow" lawn seed mix is an eco-friendly, low maintenance and drought tolerant blend of fine fescue grasses. The fine fescue seed mix establishes quickly to minimize soil erosion. It inhibits invasive plants and weeds. It does not require fertilization or*

irrigation once established. It accommodates foot traffic well while growing only to 6" to 8" and then stops, allowing for a variety of uses. While this seed mix can be mowed, it does not require any maintenance to create the appearance of a well- managed landscape. Photographs depicting "No Mow" lawn have been included as ***Exhibit H, Photographs of "No Mow" Lawn.***

6. **Reexamine the entrance/exit to the nursery school.**

Applicant's Response: *This comment has been addressed in the revised submittal.*

7. **Is there any designated public green space?**

Applicant's Response: *Applicants have opted to allow public access to any green space on Site that is owned by the Applicant. Nearly a mile of walking trails are proposed. There is no green space deeded to the Village, which means that the Village will not be responsible for any maintenance or improvements to the green space.*

8. **Are electric lines underground?**

Applicant's Response: *Electric lines will be buried for aesthetic reasons.*

9. **On the building elevations, some show windows with sills flush with the porch roof surface. Snow will collect against the windows.**

Applicant's Response: *This comment will be addressed when architecture drawings next advance, but we understand the concern and will ensure it is addressed.*

10. **For both access roads, provide the distances from the lot lines and the road to the adjoining buildings; the width of pavement, curb to side yard, and other applicable measurements.**

Applicant's Response: *Distances from lot lines to adjoining buildings, width of pavement and curb width have been delineated on enlarged road plans. Applicant will ensure, through continued consultation with the Department of Public Works, that the road layout and design is compliant with subdivision regulations and is appropriately sized to facilitate traffic and access needs.* ***See Exhibit I, Enlarged Road Plans.***

11. In connection with the proposed access roads, show setbacks for neighboring properties and discuss whether either road will result in adjoining lots being turned into corner lots.

Applicant's Response: *Setback distances for neighboring properties have been delineated on the enlarged road plans. It would appear that the installation of a new public road to Pennsylvania Avenue will create a corner lot for both adjoining lots, which front on Pennsylvania, although we note that such determination would have to be made by the Zoning Officer. That said, Section 707 of the Village Zoning Code provides that setbacks on side yards for corner lots are ½ the front yard setback, which is 50 feet. There are no structures on the lot north of the new road within this setback. There is one structure, a garage, on the lot to the south within this setback but it would simply become a non-conforming structure under Article II of the Village Zoning Code. Nothing in Section 707 suggests that a private road such as the one proposed to connect to South Street would make adjoining lots into corner lots, but again, such a determination would be up to the Zoning Officer.* ***See Exhibit I, Enlarged Road Plans.***

The Applicant is committed to working with the Planning Board to design and develop a Project that will benefit the Village. If you have any questions with the information contained herein, please do not hesitate to contact the undersigned.

Very truly yours,

Phillips Lytle LLP

By

Adam S. Walters

Enclosure(s)

cc: Matt Johnston, Zoning Officer and Planner
Lance Brabant, CPESC, Director of Planning Services, MRB Group
Joseph L. Bowes, Director of Real Estate Development, INHS
Alena Fast, Real Estate Developer, INHS
Claudia Brenner, Architect

Exhibit A

ITHACA NEIGHBORHOOD HOUSING SERVICES & SUNDIAL PROPERTY DEVELOPMENT, LLC

46 SOUTH STREET TRUMANSBURG, NEW YORK

PRELIMINARY SITE PLAN AND SUBDIVISION PLAN

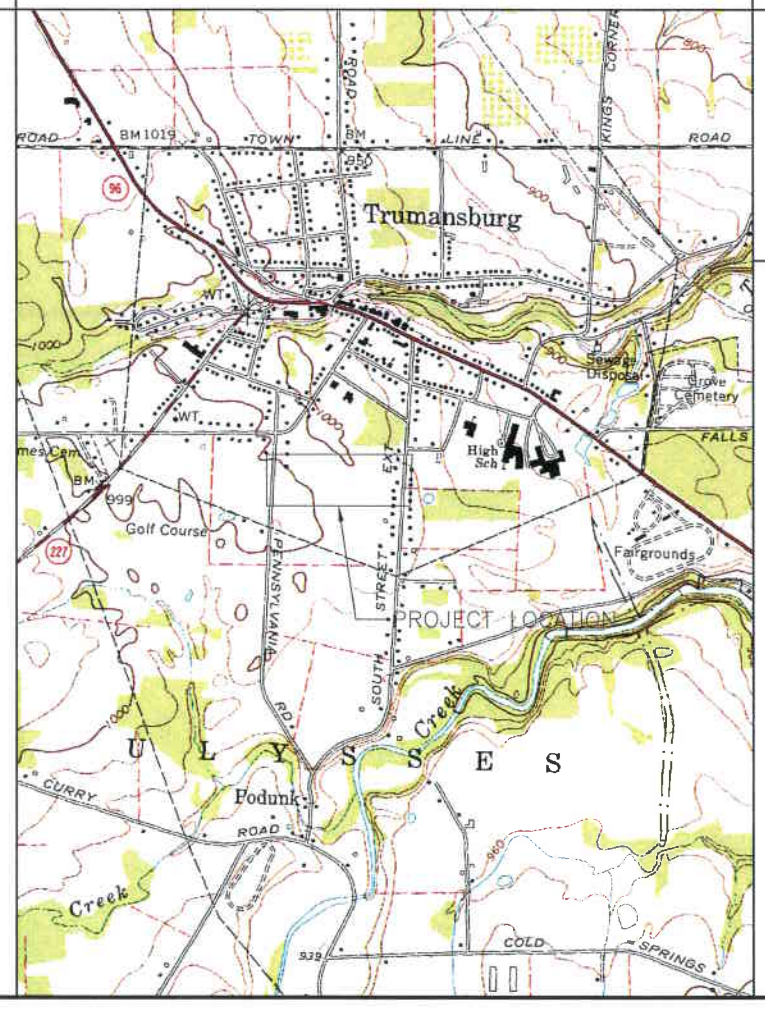
DATE: MARCH 16, 2018

DRAWING INDEX

GENERAL NOTES

- TOPOGRAPHIC INFORMATION SHOWN IS BASED ON MAP TITLED "BOUNDARY & TOPOGRAPHIC MAP SHOWING LANDS OF SUNDIAL PROPERTY DEVELOPMENT, LLC LOCATED AT 46 SOUTH STREET" DATED 4/10/17 AND LAST REVISED 12/13/17 BY T.G. MILLER, P.C. AS WELL AS ADDITIONAL INFORMATION COLLECTED IN FIELD FOLLOWING ISSUANCE OF MAP.
- EXISTING UTILITIES SHOWN ARE IN APPROXIMATE LOCATION ONLY. VERIFY EXACT LOCATION OF ALL UTILITIES BEFORE BEGINNING CONSTRUCTION. NOTIFY DIG SAFELY NEW YORK (D.S.N.Y. 1–800–962–7962) A MINIMUM 3 WORKING DAYS PRIOR TO BEGINNING CONSTRUCTION.
- ALL DIMENSIONS TO BUILDINGS OR CURBS ARE TO EXTERIOR FACE OF BUILDING FOUNDATION WALL OR FACE OF CURB. ALL DIMENSIONS ARE PERPENDICULAR OR PARALLEL TO THE LINES FROM WHICH THEY ARE DRAWN UNLESS OTHERWISE NOTED.
- DATUM OF ELEVATIONS IS APPROXIMATE U.S.G.S.
- COORDINATE ELEVATIONS OF PAVEMENTS AT BUILDING ENTRANCES WITH ARCHITECTURAL DRAWINGS OF BUILDING.
- CONFIRM NO CONFLICTS BETWEEN EXISTING UTILITIES AND PROPOSED SANITARY AND STORM SEWERS PRIOR TO LAYING PIPE OR INSTALLING STRUCTURES.

VICINITY MAP



SIGNATURES

APPROVED BY:

PLANNING BOARD CHAIRMAN _____

VILLAGE ENGINEER _____

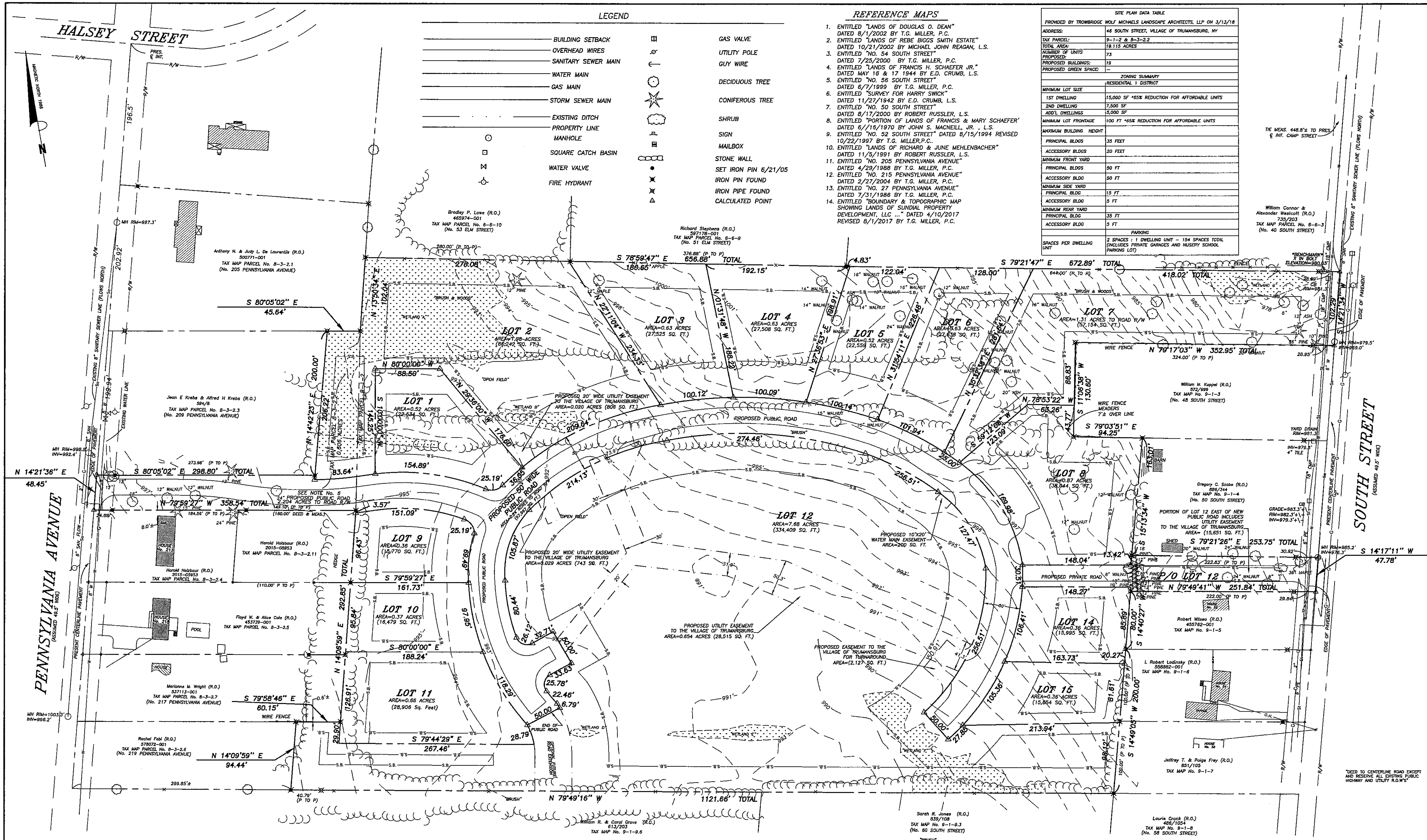
DPW SUPERVISOR _____

TROWBRIDGE WOLF MICHAELS
TWLA
LANDSCAPE ARCHITECTS
1001 W. Seneca St., Ste. 101 Ithaca, NY 14850
607-277-1400 Fax 607-277-6082

HOLT ARCHITECTS
Architecture
Planning
Interior Design
619 W State Street
Ithaca NY 14850
p 607.273.7600 f 607.273.0475

T. G. MILLER P.C.
ENGINEERS AND SURVEYORS
203 NORTH AURORA STREET
P.O. BOX 777
ITHACA, NEW YORK 14851

Exhibit B



LEGEND

BUILDING SETBACK		GAS VALVE	
OVERHEAD WIRES		UTILITY POLE	
SANITARY SEWER MAIN		GUY WIRE	
WATER MAIN		DECIDUOUS TREE	
GAS MAIN		CONIFEROUS TREE	
STORM SEWER MAIN		SHRUB	
EXISTING DITCH		SIGN	
PROPERTY LINE		MAILBOX	
MANHOLE		STONE WALL	
SQUARE CATCH BASIN		SET IRON PIN 6/21/05	
WATER VALVE		IRON PIN FOUND	
FIRE HYDRANT		IRON PIPE FOUND	
		CALCULATED POINT	

REFERENCE MAPS

1. ENTITLED "LANDS OF DOUGLAS O. DEAN" DATED 8/1/2002 BY T.G. MILLER, P.C.
2. ENTITLED "LANDS OF REBE BIGGS SMITH ESTATE" DATED 10/21/2002 BY MICHAEL JOHN REAGAN, L.S.
3. ENTITLED "NO. 54 SOUTH STREET" DATED 7/25/2000 BY T.G. MILLER, P.C.
4. ENTITLED "LANDS OF FRANCIS H. SCHAEFER JR." DATED MAY 16 & 17 1944 BY E.D. CRUMB, L.S.
5. ENTITLED "NO. 56 SOUTH STREET" DATED 6/7/1999 BY T.G. MILLER, P.C.
6. ENTITLED "SURVEY FOR HARRY SWICK" DATED 11/27/1942 BY E.D. CRUMB, L.S.
7. ENTITLED "NO. 50 SOUTH STREET" DATED 8/17/2000 BY ROBERT RUSSLER, L.S.
8. ENTITLED "PORTION OF LANDS OF FRANCIS & MARY SCHAEFER' DATED 6//16/1970 BY JOHN S. MACNEILL, JR. , L.S.
9. ENTITLED "NO. 52 SOUTH STREET" DATED 8/15/1994 REVISED 10/22/1997 BY T.G. MILLER,P.C..
10. ENTITLED "LANDS OF RICHARD & JUNE MEHLENBACHER" DATED 11/5/1991 BY ROBERT RUSSLER, L.S.
11. ENTITLED "NO. 205 PENNSYLVANIA AVENUE" DATED 4/29/1988 BY T.G. MILLER, P.C.
12. ENTITLED "NO. 215 PENNSYLVANIA AVENUE" DATED 2/27/2004 BY T.G. MILLER, P.C.
13. ENTITLED "NO. 27 PENNSYLVANIA AVENUE" DATED 7/31/1986 BY T.G. MILLER, P.C.
14. ENTITLED "BOUNDARY & TOPOGRAPHIC MAP SHOWING LANDS OF SUNDIAL PROPERTY DEVELOPMENT, LLC ..." DATED 4/10/2017 REVISED 8/1/2017 BY T.G. MILLER, P.C.

SITE PLAN DATA TABLE	
PROVIDED BY TROWBRIDGE WOLF MICHAELS LANDSCAPE ARCHITECTS, LLP ON 3/13/18	
ADDRESS:	46 SOUTH STREET, VILLAGE OF TRUMANSBURG, NY
TAX PARCEL:	9-1-2 & 8-3-2.2
TOTAL AREA:	19.115 ACRES
NUMBER OF UNITS PROPOSED:	73
PROPOSED BUILDINGS:	19
PROPOSED GREEN SPACE:	—
ZONING SUMMARY	
	RESIDENTIAL 1 DISTRICT
MINIMUM LOT SIZE	
1ST DWELLING	15,000 SF *65% REDUCTION FOR AFFORDABLE UNITS
2ND DWELLING	7,500 SF
ADD'L DWELLINGS	5,000 SF
MINIMUM LOT FRONTAGE	100 FT *65% REDUCTION FOR AFFORDABLE UNITS
MAXIMUM BUILDING HEIGHT	
PRINCIPAL BLDGS	35 FEET
ACCESSORY BLDGS	20 FEET
MINIMUM FRONT YARD	
PRINCIPAL BLDGS	50 FT
ACCESSORY BLDG	50 FT
MINIMUM SIDE YARD	
PRINCIPAL BLDG	15 FT
ACCESSORY BLDG	5 FT
MINIMUM REAR YARD	
PRINCIPAL BLDG	35 FT
ACCESSORY BLDG	5 FT
PARKING	
SPACES PER DWELLING UNIT	2 SPACES : 1 DWELLING UNIT – 154 SPACES TOTAL (INCLUDES PRIVATE GARAGES AND NUSERY SCHOOL PARKING LOT)

PROPERTY OWNER
SUNDIAL PROPERTY DEVELOPMENT, LLC
421 NORTH AURORA STREET
ITHACA, N.Y. 14850
INSTRUMENT No. 2016-12980
TAX MAP PARCEL No. 9-1-2 & 8-3-2.2
TOTAL AREA = 19.115 ACRES NET TO RD. R/W.'S

60 0 60 120 180
Scale 1" = 60'

NOTES:

1.) HORIZONTAL DATUM OF MAPPING IS MAGNETIC NORTH 1986 AND VERTICAL DATUM IS APPROXIMATE NGVD29.
2.) UNDERGROUND UTILITIES HAVE BEEN LOCATED FROM AVAILABLE RECORDS, FIELD LOCATIONS OF ABOVE GROUND STRUCTURES AND ANY MARKINGS PROVIDED BY THE UTILITY AUTHORITY. THEREFORE, THESE LOCATIONS MUST BE CONSIDERED APPROXIMATE. THERE MAY BE OTHER UNDERGROUND UTILITIES AND/OR STRUCTURES, THE LOCATION AND EXISTENCE OF WHICH IS NOT PRESENTLY KNOWN. LOCATIONS, SIZES AND MATERIALS OF UNDERGROUND UTILITIES ARE BASED ON BEST AVAILABLE EVIDENCE AS NOTED ABOVE. VERIFY ALL UTILITIES PRIOR TO DESIGN OR CONSTRUCTION.
3.) IN THE EVENT THAT THERE IS A DISCREPANCY BETWEEN THE CONTENTS OF THE SIGNED AND SEALED HARD COPY DRAWING AND THE CORRESPONDING DIGITAL DRAWING FILE, THE HARD COPY WITH AN ORIGINAL STAMP AND SIGNATURE SHALL BE THE CONTROLLING DOCUMENT.
4.) WETLAND DELINEATIONS SHOWN HEREON PERFORMED BY LECAIN ENVIRONMENTAL SERVICES, INC. SURVEY DATE JUNE & JULY 2017. REPORT DATE JULY 31, 2017. ACOE DETERMINATION: WETLANDS A,B,C & F JURISDICTIONAL WETLANDS. WETLAND D & E NON-JURISDICTIONAL WETLANDS.
5.) ORIGINAL FIELD WORK PERFORMED ON 8/7/2017.
6.) VARIANCE FOR 48.5' WIDE RIGHT OF WAY TO PENNSYLVANIA AVENUE GRANTED BY THE VILLAGE OF TRUMANSBURG BOARD OF ZONING APPEALS ON MAY 23, 2016.

T. G. MILLER P.C.
ENGINEERS AND SURVEYORS
203 NORTH AURORA STREET
TEL (607) 272-6477
ITHACA, NEW YORK 14850

ITHACA NEIGHBORHOOD HOUSING SERVICES & SUNDIAL PROPERTY DEVELOPMENT LLC
46 SOUTH STREET
VILLAGE OF TRUMANSBURG, TOMPKINS COUNTY, NEW YORK

DATE	REVISION	BY
3/16/18	REVISED PER MRB COMMENTS	JSB

Warning

ALTERATIONS TO THIS MAP NOT CONFORMING TO SECTION 7209, SUBDIVISION 2, NEW YORK STATE EDUCATION LAW, ARE PROHIBITED BY LAW. ALL CERTIFICATIONS HEREON ARE VALID FOR THIS MAP AND COPIES THEREOF ONLY IF SAID MAP OR COPIES BEAR THE IMPRESSION SEAL OF THE LICENSED LAND SURVEYOR WHOSE SIGNATURE APPEARS HEREON.

DARRIN A. BROCK, L.S.
N.Y.S. LICENSE No. 050597

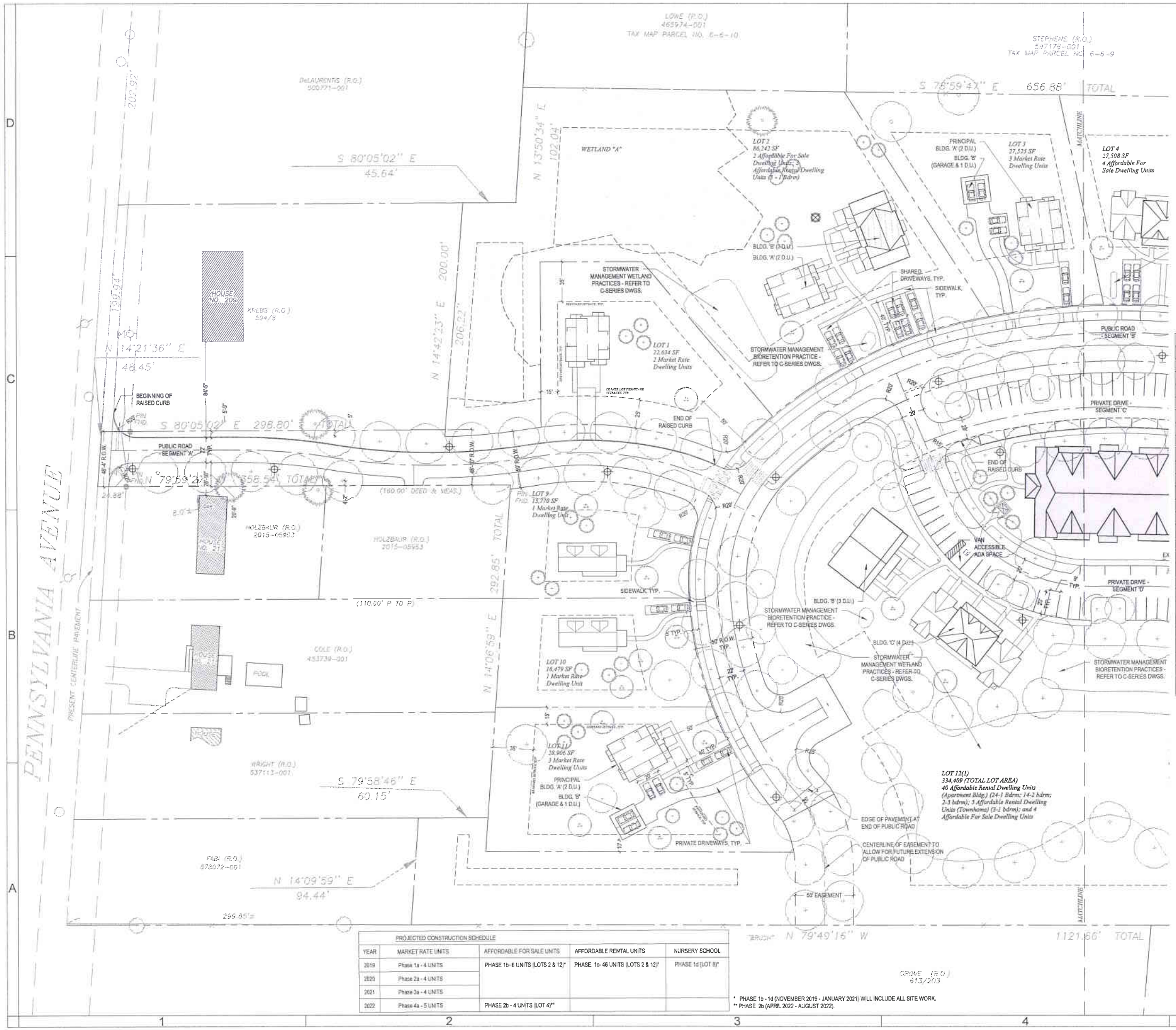
SIGNATURE
LICENSED LAND SURVEYOR

SEAL

PROJECT

SHEET TITLE
PRELIMINARY PLAT

DATE: 12/13/2017	JOB No. S15748B
SCALE: 1"= 60'	
DRAWN BY: DLD	SHEET 1 OF 1
CHECKED: JSB	



PROJECTED CONSTRUCTION SCHEDULE				
YEAR	MARKET RATE UNITS	AFFORDABLE FOR SALE UNITS	AFFORDABLE RENTAL UNITS	NURSERY SCHOOL
2019	Phase 1a - 4 UNITS	PHASE 1b- 6 UNITS (LOTS 2 & 12)*	PHASE 1c- 46 UNITS (LOTS 2 & 12)*	PHASE 1d (LOT 8)*
2020	Phase 2a - 4 UNITS			
2021	Phase 3a - 4 UNITS			
2022	Phase 4a - 5 UNITS	PHASE 2b - 4 UNITS (LOT 4)**		

* PHASE 1b - 1d (NOVEMBER 2019 - JANUARY 2021) WILL INCLUDE ALL SITE WORK.
** PHASE 2b (APRIL 2022 - AUGUST 2022).

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PARKING	
SPACES PER DWELLING UNIT	2 SPACES : 1 DWELLING UNIT - 154 SPACES TOTAL (INCLUDES PRIVATE GARAGES AND NUSERY SCHOOL PARKING LOT)

MATERIALS LEGEND
- SHREDDED MULCH TRAIL
- CONCRETE PAVEMENT
- ASPHALT PAVEMENT
- 6" CURB
- DUMPSTER WITH ENCLOSURE
- 42" HIGH WOOD FENCE AND GATE
- 72" HIGH WOOD PRIVACY FENCE
- STREET LIGHT
- PEDESTRIAN PATH LIGHT
- TRAFFIC SIGN (REFER TO SIGNAGE PLAN)
- CROSSWALK WITH STOP BAR PAVEMENT MARKINGS
- PLAYGROUND WITH WOOD CHIPS

Scale: 1" = 40'-0"

TROWBRIDGE WOLF MICHAELS
TWLA
LANDSCAPE ARCHITECTS
1001 W. Seneca St., Ste 201 Ithaca, NY 14850
607-277-1420 Fax 607-277-8992

HOLT ARCHITECTS
Architecture
Planning
Interior Design
615 W State Street
Ithaca NY 14850
p 607.273.7600 f 607.273.0475

T.G. MILLER, P.C.
ENGINEERS AND SURVEYORS
203 NORTH AURORA STREET
ITHACA, NEW YORK 14850
www.tgmillerpc.com
607-272-6477 tel.
607-273-6322 fax

DATE	REVISION	BY
3/16/18	PER VILLAGE COMMENTS	RK

Ithaca Neighborhood Housing Services &
Sundial Property Development LLC

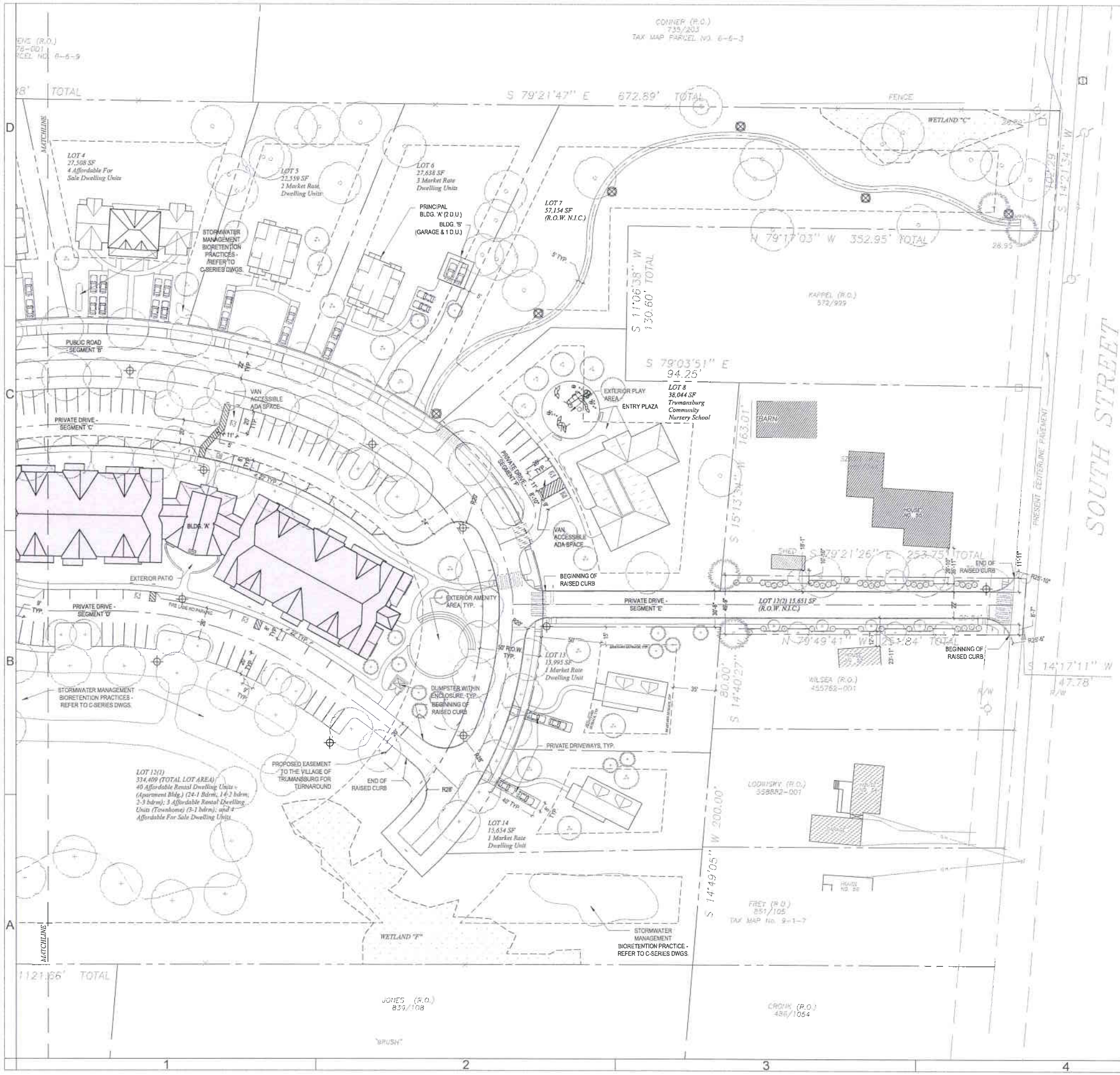
46 South Street

Trumansburg, New York

DATE:	12/13/2017
PROJECT:	17003
DRAWN BY:	RK
CHECKED:	

SITE MATERIALS PLAN - WEST

L-101



PROJECTED CONSTRUCTION SCHEDULE				
YEAR	MARKET RATE UNITS	AFFORDABLE FOR SALE UNITS	AFFORDABLE RENTAL UNITS	NURSERY SCHOOL
2019	Phase 1a - 4 UNITS	PHASE 1b- 6 UNITS (LOTS 2 & 12)*	PHASE 1c- 46 UNITS (LOTS 2 & 12)*	PHASE 1d (LOT 8)*
2020	Phase 2a - 4 UNITS			
2021	Phase 3a - 4 UNITS			
2022	Phase 4a - 5 UNITS	PHASE 2b - 4 UNITS (LOT 4)**		

* PHASE 1b - 1d (NOVEMBER 2019 - JANUARY 2021) WILL INCLUDE ALL SITE WORK.
** PHASE 2b (APRIL 2022 - AUGUST 2022)

PARCEL INFO	
ADDRESS:	46 SOUTH STREET, VILLAGE OF TRUMANSBURG, NY
TAX PARCEL:	9-1-2 & 8-3-2.2
TOTAL AREA:	19.115 ACRES
NUMBER OF UNITS PROPOSED:	73
PROPOSED BUILDINGS:	19
ZONING SUMMARY	
	RESIDENTIAL 1 DISTRICT
MINIMUM LOT SIZE	
1ST DWELLING	15,000 SF *65% REDUCTION FOR AFFORDABLE UNITS
2ND DWELLING	7,500 SF
ADD'L DWELLINGS	5,000 SF
MINIMUM LOT FRONTAGE	100 FT *65% REDUCTION FOR AFFORDABLE UNITS
MAXIMUM BUILDING HEIGHT	
PRINCIPAL BLDGS	35 FEET
ACCESSORY BLDGS	20 FEET
MINIMUM FRONT YARD	
PRINCIPAL BLDGS	50 FT
ACCESSORY BLDG	50 FT
MINIMUM SIDE YARD	
PRINCIPAL BLDG	15 FT
ACCESSORY BLDG	5 FT
MINIMUM REAR YARD	
PRINCIPAL BLDG	35 FT
ACCESSORY BLDG	5 FT
PARKING	
SPACES PER DWELLING UNIT	2 SPACES : 1 DWELLING UNIT - 154 SPACES TOTAL (INCLUDES PRIVATE GARAGES AND NUSERY SCHOOL PARKING LOT)

MATERIALS LEGEND
- SHREDDED MULCH TRAIL
- CONCRETE PAVEMENT
- ASPHALT PAVEMENT
- 6" CURB
- DUMPSTER WITH ENCLOSURE
- 42" HIGH WOOD FENCE AND GATE
- 72" HIGH WOOD PRIVACY FENCE
- STREET LIGHT
- PEDESTRIAN PATH LIGHT
- TRAFFIC SIGN (REFER TO SIGNAGE PLAN)
- CROSSWALK WITH STOP BAR PAVEMENT MARKINGS
- PLAYGROUND WITH WOOD CHIPS

Scale: 1" = 40'-0"

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DATE	REVISION	BY
3/16/18	PER VILLAGE COMMENTS	RK

Ithaca Neighborhood Housing Services &
Sundial Property Development LLC

46 South Street

Trumansburg, New York

DATE:	12/13/2017
PROJECT:	17003
DRAWN BY:	RK
CHECKED:	

SITE MATERIALS PLAN - EAST

L-102

Exhibit C

DEPARTMENT OF THE ARMY
BUFFALO DISTRICT, CORPS OF ENGINEERS
1776 NIAGARA STREET
BUFFALO, NEW YORK 14207-3199

REPLY TO

January 25, 2018

Regulatory Branch
SUBJECT: Preliminary and Approved Jurisdictional Determination Transmittal Letter, File No. 2017-00927

Ithaca Neighborhood Housing Services
115 West Clinton Street
Ithaca, New York 14850
Attn: Joseph Bowes

Dear Mr. Bowes:

I am writing in regard to a request, made on your behalf by Mr. Ron LeCain, for a Jurisdictional Determination (JD) associated with aquatic resources delineated on property located adjacent to the South Street Extension, Village of Trumansburg, Tompkins County, New York.

Preliminary JD: Preliminary JDs are non-binding written indications that there may be WOUS on your parcel and approximate locations of those waters. Preliminary JDs are advisory in nature and may not be appealed.

I have evaluated the wetland delineation map and report and determined that the wetland and water boundaries identified in Review Area 2 accurately represent on-site conditions pertaining to Wetlands A, B, C, and F.

Pursuant to Regulatory Guidance Letter 16-01, any permit application made in reliance on this Preliminary JD will be evaluated as though all wetlands or waters on the site are regulated by the Corps. Further, all waters, including wetlands will be used for purposes of assessing the area of project related impacts and compensatory mitigation. If you require a definitive response regarding Department of the Army jurisdiction for any or all of the waters identified on the submitted drawings, you may request an approved jurisdictional determination from this office. If an approved jurisdictional determination is requested, please be aware that this is often a lengthy process and we may require the submittal of additional information.

I have enclosed the signed Preliminary JD Form dated January 25, 2018, with this letter. The form and attached table identify the extent of waters on the site and specific terms and conditions of the Preliminary JD.

In accordance with Regulatory Guidance Letter 05-02, "Preliminary jurisdictional determinations are not definitive determinations of areas within regulatory jurisdiction and do not have expirations dates." However, I strongly recommend that the boundaries of waters of the United States be re-evaluated by a qualified wetland biologist after five years of the date of this letter. This will ensure that any changes are appropriately identified and you do not inadvertently incur a violation of Federal law while constructing your project or working on your project site.

Regulatory Branch
SUBJECT: Preliminary and Approved Jurisdictional Determination Transmittal Letter, File No. 2017-00927

Approved JD: Based on the information provided, I have determined that there is no clear surface water connection or ecological continuum between Wetlands D and E (Review Area 1) on the parcel and a surface tributary system to a navigable water of the United States.

These wetlands are outside Department of the Army jurisdiction as they do not meet the criteria for a jurisdictional WOUS according to 33 CFR Part 328.3(a)(1-7) as follows:

1. does not/has not supported interstate or foreign commerce;
2. is not an interstate water/wetland;
3. the degradation or destruction of which would not affect interstate or foreign commerce and does not include such waters:
   (i) which are or could be used by interstate or foreign travelers for recreational or other purposes; or
   (ii) from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
   (iii) which are used or could be used for industrial purpose by industries in interstate commerce
4. is not an impoundment of water otherwise defined as WOUS under the definition;
5. is not a tributary of waters identified in paragraphs (a)(1)-(4) of this section;
6. is not a territorial sea;
7. is not wetland adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1)-(6) of this section.

Therefore, these waters are considered isolated, non-navigable, intrastate waters and not regulated under Section 404 of the CWA. Accordingly, Department of the Army authorization is not required to commence work in these areas.

Attached is an Approved JD, dated January 25, 2018 for Wetlands D and E (Review Area 1). If you object to this determination, you may request an administrative appeal under USACE regulations at 33 CFR Part 331. Enclosed you will find a Notification of Appeal Process (NAP) fact sheet and Request for Appeal (RFA) form. If you request to appeal the above determination, you must submit a completed RFA form within 60 days of the date on this letter to the Great Lakes/Ohio River Division Office at the following address:

Review Officer
Great Lakes and Ohio River Division
CELRD-PDS-O
550 Main Street, Room 10524
Cincinnati, OH 45202-3222
Phone: 513-684-6212

In order for an RFA to be accepted, the USACE must determine that it is complete, that it meets the criteria for appeal under 33 CFR Part 331.5, and that it has been received by the Division Office within 60 days of the date of the NAP. Should you decide to submit an RFA form, it must be received at the above address by **March 26, 2018.** It is not necessary to submit an RFA to the Division office if you do not object to the determination in this letter.

Regulatory Branch
SUBJECT: Preliminary and Approved Jurisdictional Determination Transmittal Letter, File No. 2017-00927

Note that this delineation/determination may not be valid for the wetland conservation provisions of the Food Security Act of 1985, as amended. If you or your tenant are USDA program participants, or anticipate participation in USDA programs, you should request a certified wetland determination from the local office of the Natural Resource Conservation Service (NRCS) prior to starting work.

A copy of this correspondence has been sent to Ron LeCain, LeCain Environmental Services, Inc.

Questions pertaining to this matter should be directed to me at 716-879-6330, by writing to the following address: U.S. Army Corps of Engineers, 7413 County House Road, Auburn, New York 13021, or by e-mail at: judy.a.robinson@usace.army.mil.

Sincerely,

Judy Robinson

Judy Robinson, Biologist
Project Manager

Enclosures

APPROVED JURISDICTIONAL DETERMINATION FORM
U.S. Army Corps of Engineers

This form should be completed by following the instructions provided in Section IV of the JD Form Instructional Guidebook.

SECTION I: BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR APPROVED JURISDICTIONAL DETERMINATION (JD): January 25, 2018

B. DISTRICT OFFICE, FILE NAME, AND NUMBER: Buffalo District; Auburn Field Office; Ithaca Housing Services (South Street Extension); File No. 2017-00927

C. PROJECT LOCATION AND BACKGROUND INFORMATION:
State: **New York** County: **Tompkins** City: **Ithaca**
Center coordinates of site (lat/long in degree decimal format): **Lat: 42.53553°N Long: -76.66151°W**
Name of nearest waterbody: **Trumansburg Creek**
Name of nearest Traditional Navigable Water (TNW) into which the aquatic resource flows: **N/A**
Name of watershed or Hydrologic Unit Code (HUC): **4140201**
☒ Check if map/diagram of review area and/or potential jurisdictional areas is/are available upon request.
☐ Check if other sites (e.g., offsite mitigation sites, disposal sites, etc…) are associated with this action and are recorded on a different JD form.

D. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):
☒ Office (Desk) Determination. Date: January 11, 2018
☐ Field Determination. Date(s):

SECTION II: SUMMARY OF FINDINGS

A. RHA SECTION 10 DETERMINATION OF JURISDICTION.

There **ARE NO** *"navigable waters of the U.S."* within Rivers and Harbors Act (RHA) jurisdiction (as defined by 33 CFR part 329) in the review area. [*Required*]
☐ Waters subject to the ebb and flow of the tide.
☐ Waters are presently used, or have been used in the past, or may be susceptible for use to transport interstate or foreign commerce.
Explain:

B. CWA SECTION 404 DETERMINATION OF JURISDICTION.

There **ARE NO** *"waters of the U.S."* within Clean Water Act (CWA) jurisdiction (as defined by 33 CFR part 328) in the review area. [*Required*]

1. **Waters of the U.S.**
   a. **Indicate presence of waters of U.S. in review area (check all that apply):** [1]
   ☐ TNWs, including territorial seas
   ☐ Wetlands adjacent to TNWs
   ☐ Relatively permanent waters[2] (RPWs) that flow directly or indirectly into TNWs
   ☐ Non-RPWs that flow directly or indirectly into TNWs
   ☐ Wetlands directly abutting RPWs that flow directly or indirectly into TNWs
   ☐ Wetlands adjacent to but not directly abutting RPWs that flow directly or indirectly into TNWs
   ☐ Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs
   ☐ Impoundments of jurisdictional waters
   ☐ Isolated (interstate or intrastate) waters, including isolated wetlands

   b. **Identify (estimate) size of waters of the U.S. in the review area:**
   Non-wetland waters: linear feet: width (ft) and/or acres.
   Wetlands: acres.

   c. **Limits (boundaries) of jurisdiction** based on: Field Data
   Elevation of established OHWM (if known):

2. **Non-regulated waters/wetlands (check if applicable):**[3]
   ☒ Potentially jurisdictional waters and/or wetlands were assessed within the review area and determined to be not jurisdictional.
   Explain: **Wetland D Emergent 0.01 acre**
   Wetland E Emergent 0.05 acre

[1] Boxes checked below shall be supported by completing the appropriate sections in Section III below.
[2] For purposes of this form, an RPW is defined as a tributary that is not a TNW and that typically flows year-round or has continuous flow at least "seasonally" (e.g., typically 3 months).
[3] Supporting documentation is presented in Section III.F.

Emergent Wetlands D and E are outside Department of the Army jurisdiction as they not meet the criteria for a jurisdictional water of the United States according to 33 CFR Part 328.3(a)(1-7) as follows:

1. does not/has not supported interstate or foreign commerce;
2. is not an interstate water/wetland;
3. the degradation or destruction of which would not affect interstate or foreign commerce and does not include such waters:
   (i) which are or could be used by interstate or foreign travelers for recreational or other purposes; or
   (ii) from which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
   (iii) which are used or could be used for industrial purpose by industries in interstate commerce
4. is not an impoundment of water otherwise defined as WOUS under the definition;
5. is not a tributary of waters identified in paragraphs (a)(1)-(4) of this section;
6. is not a territorial sea;
7. is not wetland adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (a)(1)-(6) of this section;

In addition these wetlands are both depressional, emergent wetlands within a former agricultural field within an area having a hydric soil rating of 10. Wetland D is approximately 500 feet from the nearest conveyance and Wetland E is approximately 250 feet from the same conveyance, which is an unnamed tributary to Trumansburg Creek, which carries flow from Wetland F. (Note that Wetland F is not within the Approved JD Review Area 1 boundary, and along with Wetlands A, B, and C, is under review as a Preliminary JD). Further, due to topography and distance to the nearest tributary, the presence of a shallow subsurface flow connection is very unlikely.

SECTION III: CWA ANALYSIS

A. TNWs AND WETLANDS ADJACENT TO TNWs

The agencies will assert jurisdiction over TNWs and wetlands adjacent to TNWs. If the aquatic resource is a TNW, complete Section III.A.1 and Section III.D.1. only; if the aquatic resource is a wetland adjacent to a TNW, complete Sections III.A.1 and 2 and Section III.D.1.; otherwise, see Section III.B below.

1. **TNW**
   Identify TNW:
   Summarize rationale supporting determination:

2. **Wetland adjacent to TNW**
   Summarize rationale supporting conclusion that wetland is "adjacent":

B. CHARACTERISTICS OF TRIBUTARY (THAT IS NOT A TNW) AND ITS ADJACENT WETLANDS (IF ANY):

This section summarizes information regarding characteristics of the tributary and its adjacent wetlands, if any, and it helps determine whether or not the standards for jurisdiction established under *Rapanos* have been met.

The agencies will assert jurisdiction over non-navigable tributaries of TNWs where the tributaries are "relatively permanent waters" (RPWs), i.e. tributaries that typically flow year-round or have continuous flow at least seasonally (e.g., typically 3 months). A wetland that directly abuts an RPW is also jurisdictional. If the aquatic resource is not a TNW, but has year-round (perennial) flow, skip to Section III.D.2. If the aquatic resource is a wetland directly abutting a tributary with perennial flow, skip to Section III.D.4.

A wetland that is adjacent to but that does not directly abut an RPW requires a significant nexus evaluation. Corps districts and EPA regions will include in the record any available information that documents the existence of a significant nexus between a relatively permanent tributary that is not perennial (and its adjacent wetlands if any) and a traditional navigable water, even though a significant nexus finding is not required as a matter of law.

If the waterbody[4] is not an RPW, or a wetland directly abutting an RPW, a JD will require additional data to determine if the waterbody has a significant nexus with a TNW. If the tributary has adjacent wetlands, the significant nexus evaluation must consider the tributary in combination with all of its adjacent wetlands. This significant nexus evaluation that combines, for analytical purposes, the tributary and all of its adjacent wetlands is used whether the review area identified in the JD request is the tributary, or its adjacent wetlands, or both. If the JD covers a tributary with adjacent wetlands, complete Section III.B.1 for the tributary, Section III.B.2 for any onsite wetlands, and Section III.B.3 for all wetlands adjacent to that tributary, both onsite and offsite. The determination whether a significant nexus exists is determined in Section III.C below.

[4] Note that the Instructional Guidebook contains additional information regarding swales, ditches, washes, and erosional features generally and in the arid West.

1. Characteristics of non-TNWs that flow directly or indirectly into TNW

(i) General Area Conditions:
Watershed size: Pick List
Drainage area: Pick List
Average annual rainfall: inches

(ii) Physical Characteristics:

(a) Relationship with TNW:
☐ Tributary flows directly into TNW.
☐ Tributary flows through Pick List tributaries before entering TNW
Project waters are Pick List river miles from TNW
Project waters are Pick List river miles from RPW
Project waters are Pick List aerial (straight) miles from TNW
Project waters are Pick List aerial (straight) miles from RPW
Project waters cross or serve as state boundaries. Explain:
Identify flow route to TNW[5]:
Tributary stream order, if known:

(b) General Tributary Characteristics (check all that apply):
Tributary is: ☐ Natural
☐ Artificial (man-made). Explain:
☐ Manipulated (man-altered). Explain:
Tributary properties with respect to top of bank (estimate):
Average width: feet
Average depth: feet
Average side slopes: Pick List
Primary tributary substrate composition (check all that apply):
☐ Silts ☐ Sands ☐ Concrete
☐ Cobbles ☐ Gravel ☐ Muck
☐ Bedrock ☐ Vegetation. Type/% cover:
☐ Other. Explain:
Tributary condition/stability [e.g., highly eroding, sloughing banks]. Explain:
Presence of run/riffle/pool complexes. Explain:
Tributary geometry: Pick List
Tributary gradient (approximate average slope): %

(c) Flow:
Tributary provides for: Pick List
Estimate average number of flow events in review area/year: Pick List
Describe flow regime:
Other information on duration and volume:
Surface flow is: Pick List. Characteristics:
Subsurface flow: Pick List. Explain findings:
☐ Dye (or other) test performed:
Tributary has (check all that apply):
☐ Bed and banks
☐ OHWM[6] (check all indicators that apply):
☐ clear, natural line impressed on the bank ☐ the presence of litter and debris
☐ changes in the character of soil ☐ destruction of terrestrial vegetation
☐ shelving ☐ the presence of wrack line
☐ vegetation matted down, bent, or absent ☐ sediment sorting
☐ leaf litter disturbed or washed away ☐ scour
☐ sediment deposition ☐ multiple observed or predicted flow events
☐ water staining ☐ abrupt change in plant community
☐ other (list):
☐ Discontinuous OHWM.[7] Explain:

[5] Flow route can be described by identifying, e.g., tributary a, which flows through the review area, to flow into tributary b, which then flows into TNW.
[6] A natural or man-made discontinuity in the OHWM does not necessarily sever jurisdiction (e.g., where the stream temporarily flows underground, or where the OHWM has been removed by development or agricultural practices). Where there is a break in the OHWM that is unrelated to the waterbody's flow regime (e.g., flow over a rock outcrop or through a culvert), the agencies will look for indicators of flow above and below the break.
[7] Ibid.

If factors other than the OHWM were used to determine lateral extent of CWA jurisdiction (check all that apply):

☒ High Tide Line indicated by:
- ☐ oil or scum line along shore objects
- ☐ fine shell or debris deposits (foreshore)
- ☐ physical markings/characteristics
- ☐ tidal gauges
- ☐ other (list):

☐ Mean High Water Mark indicated by:
- ☐ survey to available datum;
- ☐ physical markings;
- ☐ vegetation lines/changes in vegetation types.

(iii) Chemical Characteristics:

Characterize tributary (e.g., water color is clear, discolored, oily film; water quality; general watershed characteristics, etc.).
Explain:

Identify specific pollutants, if known:

(iv) Biological Characteristics. Channel supports (check all that apply):

- ☐ Riparian corridor. Characteristics (type, average width):
- ☐ Wetland fringe. Characteristics:
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings:
  - ☐ Fish/spawn areas. Explain findings:
  - ☐ Other environmentally-sensitive species. Explain findings:
  - ☐ Aquatic/wildlife diversity. Explain findings:

2. Characteristics of wetlands adjacent to non-TNW that flow directly or indirectly into TNW

(i) Physical Characteristics:

(a) General Wetland Characteristics:

Properties:
Wetland size: acres
Wetland type. Explain:
Wetland quality. Explain:
Project wetlands cross or serve as state boundaries. Explain:

(b) General Flow Relationship with Non-TNW:

Flow is: Pick List. Explain:
Surface flow is: Pick List
Characteristics:
Subsurface flow: Pick List. Explain findings:
- ☐ Dye (or other) test performed:

(c) Wetland Adjacency Determination with Non-TNW:

- ☐ Directly abutting
- ☐ Not directly abutting
  - ☐ Discrete wetland hydrologic connection. Explain:
  - ☐ Ecological connection. Explain:
  - ☐ Separated by berm/barrier. Explain:

(d) Proximity (Relationship) to TNW

Project wetlands are Pick List river miles from TNW.
Project waters are Pick List aerial (straight) miles from TNW.
Flow is from: Pick List.
Estimate approximate location of wetland as within the Pick List floodplain.

(ii) Chemical Characteristics:

Characterize wetland system (e.g., water color is clear, brown, oil film on surface; water quality; general watershed characteristics; etc.). Explain:

Identify specific pollutants, if known:

(iii) Biological Characteristics. Wetland supports (check all that apply):

- ☐ Riparian buffer. Characteristics (type, average width):
- ☐ Vegetation type/percent cover. Explain:
- ☐ Habitat for:
  - ☐ Federally Listed species. Explain findings:
  - ☐ Fish/spawn areas. Explain findings:
  - ☐ Other environmentally-sensitive species. Explain findings:

☐ Aquatic/wildlife diversity. Explain findings:

3. **Characteristics of all wetlands adjacent to the tributary (if any)**
   All wetland(s) being considered in the cumulative analysis: Pick List
   Approximately ( ) acres in total are being considered in the cumulative analysis.
   For each wetland, specify the following:

Directly abuts? (Y/N)	Size (in acres)	Directly abuts? (Y/N)	Size (in acres)

   Summarize overall biological, chemical and physical functions being performed:

C. SIGNIFICANT NEXUS DETERMINATION

A significant nexus analysis will assess the flow characteristics and functions of the tributary itself and the functions performed by any wetlands adjacent to the tributary to determine if they significantly affect the chemical, physical, and biological integrity of a TNW. For each of the following situations, a significant nexus exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or insubstantial effect on the chemical, physical and/or biological integrity of a TNW. Considerations when evaluating significant nexus include, but are not limited to the volume, duration, and frequency of the flow of water in the tributary and its proximity to a TNW, and the functions performed by the tributary and all its adjacent wetlands. It is not appropriate to determine significant nexus based solely on any specific threshold of distance (e.g. between a tributary and its adjacent wetland or between a tributary and the TNW). Similarly, the fact an adjacent wetland lies within or outside of a floodplain is not solely determinative of significant nexus.

Draw connections between the features documented and the effects on the TNW, as identified in the *Rapanos* Guidance and discussed in the Instructional Guidebook. Factors to consider include, for example:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

Note: the above list of considerations is not inclusive and other functions observed or known to occur should be documented below:

1. **Significant nexus findings for non-RPW that has no adjacent wetlands and flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary itself, then go to Section III.D: .

2. **Significant nexus findings for non-RPW and its adjacent wetlands, where the non-RPW flows directly or indirectly into TNWs.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D: .

3. **Significant nexus findings for wetlands adjacent to an RPW but that do not directly abut the RPW.** Explain findings of presence or absence of significant nexus below, based on the tributary in combination with all of its adjacent wetlands, then go to Section III.D:

D. DETERMINATIONS OF JURISDICTIONAL FINDINGS. THE SUBJECT WATERS/WETLANDS ARE (CHECK ALL THAT APPLY):

1. **TNWs and Adjacent Wetlands.** Check all that apply and provide size estimates in review area:
   ☒ TNWs: linear feet width (ft), Or, acres.
   ☒ Wetlands adjacent to TNWs: acres.

2. **RPWs that flow directly or indirectly into TNWs.**
   ☒ Tributaries of TNWs where tributaries typically flow year-round are jurisdictional. Provide data and rationale indicating that tributary is perennial: .
   ☒ Tributaries of TNW where tributaries have continuous flow "seasonally" (e.g., typically three months each year) are jurisdictional. Data supporting this conclusion is provided at Section III.B. Provide rationale indicating that tributary flows seasonally:
   Provide estimates for jurisdictional waters in the review area (check all that apply):
   ☒ Tributary waters: linear feet width (ft).
   ☒ Other non-wetland waters: acres.

Identify type(s) of waters:

3. **Non-RPWs[8] that flow directly or indirectly into TNWs.**
   ☐ Waterbody that is not a TNW or an RPW, but flows directly or indirectly into a TNW, and it has a significant nexus with a TNW is jurisdictional. Data supporting this conclusion is provided at Section III.C.

   Provide estimates for jurisdictional waters within the review area (check all that apply):
   ☐ Tributary waters: linear feet width (ft).
   ☐ Other non-wetland waters: acres.
   Identify type(s) of waters:

4. **Wetlands directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☒ Wetlands directly abut RPW and thus are jurisdictional as adjacent wetlands.
   ☐ Wetlands directly abutting an RPW where tributaries typically flow year-round. Provide data and rationale indicating that tributary is perennial in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:
   ☒ Wetlands directly abutting an RPW where tributaries typically flow "seasonally." Provide data indicating that tributary is seasonal in Section III.B and rationale in Section III.D.2, above. Provide rationale indicating that wetland is directly abutting an RPW:
   Provide acreage estimates for jurisdictional wetlands in the review area: acres.

5. **Wetlands adjacent to but not directly abutting an RPW that flow directly or indirectly into TNWs.**
   ☐ Wetlands that do not directly abut an RPW, but when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisidictional. Data supporting this conclusion is provided at Section III.C.
   Provide acreage estimates for jurisdictional wetlands in the review area: acres.

6. **Wetlands adjacent to non-RPWs that flow directly or indirectly into TNWs.**
   ☐ Wetlands adjacent to such waters, and have when considered in combination with the tributary to which they are adjacent and with similarly situated adjacent wetlands, have a significant nexus with a TNW are jurisdictional. Data supporting this conclusion is provided at Section III.C.
   Provide estimates for jurisdictional wetlands in the review area: acres.

7. **Impoundments of jurisdictional waters.[9]**
   As a general rule, the impoundment of a jurisdictional tributary remains jurisdictional.
   ☐ Demonstrate that impoundment was created from "waters of the U.S.," or
   ☐ Demonstrate that water meets the criteria for one of the categories presented above (1-6), or
   ☐ Demonstrate that water is isolated with a nexus to commerce (see E below).

E. ISOLATED [INTERSTATE OR INTRA-STATE] WATERS, INCLUDING ISOLATED WETLANDS, THE USE, DEGRADATION OR DESTRUCTION OF WHICH COULD AFFECT INTERSTATE COMMERCE, INCLUDING ANY SUCH WATERS (CHECK ALL THAT APPLY):[10]
☐ which are or could be used by interstate or foreign travelers for recreational or other purposes.
☐ from which fish or shellfish are or could be taken and sold in interstate or foreign commerce.
☐ which are or could be used for industrial purposes by industries in interstate commerce.
☐ Interstate isolated waters. Explain:
☐ Other factors. Explain:
Identify water body and summarize rationale supporting determination:
Provide estimates for jurisdictional waters in the review area (check all that apply):
☐ Tributary waters: linear feet width (ft).
☐ Other non-wetland waters: acres.
Identify type(s) of waters:
☐ Wetlands: acres.

---

[8]See Footnote # 3.
[9] To complete the analysis refer to the key in Section III.D.6 of the Instructional Guidebook.
[10] **Prior to asserting or declining CWA jurisdiction based solely on this category, Corps Districts will elevate the action to Corps and EPA HQ for review consistent with the process described in the Corps/EPA *Memorandum Regarding CWA Act Jurisdiction Following Rapanos.***

F. NON-JURISDICTIONAL WATERS, INCLUDING WETLANDS (CHECK ALL THAT APPLY):

- ☐ If potential wetlands were assessed within the review area, these areas did not meet the criteria in the 1987 Corps of Engineers Wetland Delineation Manual and/or appropriate Regional Supplements.
- ☒ Review area included isolated waters with no substantial nexus to interstate (or foreign) commerce.
  - ☒ Prior to the Jan 2001 Supreme Court decision in "*SWANCC*," the review area would have been regulated based solely on the "Migratory Bird Rule" (MBR).
- ☐ Waters do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction. Explain:
- ☐ Other: (explain, if not covered above):

Provide acreage estimates for non-jurisdictional waters in the review area, where the sole potential basis of jurisdiction is the MBR factors (i.e., presence of migratory birds, presence of endangered species, use of water for irrigated agriculture), using best professional judgment (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): linear feet width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource:
- ☒ Wetlands: **Wetland D Emergent 0.01 acre**
  Wetland E Emergent 0.05 acre

Provide acreage estimates for non-jurisdictional waters in the review area that do not meet the "Significant Nexus" standard, where such a finding is required for jurisdiction (check all that apply):

- ☐ Non-wetland waters (i.e., rivers, streams): linear feet, width (ft).
- ☐ Lakes/ponds: acres.
- ☐ Other non-wetland waters: acres. List type of aquatic resource:
- ☐ Wetlands: acres.

SECTION IV: DATA SOURCES.

A. SUPPORTING DATA. Data reviewed for JD (check all that apply - checked items shall be included in case file and, where checked and requested, appropriately reference sources below):

- ☒ Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant: **Ron LeCain**
- ☒ Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - ☒ Office concurs with data sheets/delineation report.
  - ☐ Office does not concur with data sheets/delineation report.
- ☐ Data sheets prepared by the Corps:
- ☐ Corps navigable waters' study:
- ☐ U.S. Geological Survey Hydrologic Atlas:
  - ☐ USGS NHD data.
  - ☐ USGS 8 and 12 digit HUC maps.
- ☒ U.S. Geological Survey map(s). Cite scale & quad name: **Scale: 24000; Trumansburg, New York Quad**
- ☒ USDA Natural Resources Conservation Service Soil Survey. **Citation: on-line websoil survey**
  The following soils were identified within the review area Hydric Soil Rating

  RkA Rhinebeck silt loam, 0 to 2 percent slopes 10

- ☒ National wetlands inventory map(s). Cite name: **Trumansburg, New York**
- ☒ State/Local wetland inventory map(s): **Trumansburg, New York**
- ☐ FEMA/FIRM maps:
- ☐ 100-year Floodplain Elevation is: (National Geodectic Vertical Datum of 1929)
- ☒ Photographs: ☒ Aerial (Name & Date): **Google Earth 1994 and 2007; NYS Orthos On-Line 2002 and 2007**
  or ☒ Other (Name & Date): **Submitted with delineation report; photos taken June 5, 2017**
- ☐ Previous determination(s). File no. and date of response letter:
- ☐ Applicable/supporting case law:
- ☐ Applicable/supporting scientific literature:
- ☐ Other information (please specify):

B. ADDITIONAL COMMENTS TO SUPPORT JD:

Applicant: Ithaca Neighborhood Housing Services	File Number: 2017-00927	Date: 01/25/18
Attached is:		See Section below
	INITIAL PROFFERED PERMIT (Standard Permit or Letter of Permission)	A
	PROFFERED PERMIT (Standard Permit or Letter of Permission)	B
	PERMIT DENIAL	C
X	APPROVED JURISDICTIONAL DETERMINATION (for wetlands shown in Area 1)	D
	PRELIMINARY JURISDICTIONAL DETERMINATION	E

SECTION I - The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at http://www.usace.army.mil/CECW/Pages/reg_materials.aspx or Corps regulations at 33 CFR Part 331.

A: INITIAL PROFFERED PERMIT: You may accept or object to the permit.

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- OBJECT: If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

B: PROFFERED PERMIT: You may accept or appeal the permit

- ACCEPT: If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- APPEAL: If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

C: PERMIT DENIAL: You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

D: APPROVED JURISDICTIONAL DETERMINATION: You may accept or appeal the approved JD or provide new information.

- ACCEPT: You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- APPEAL: If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

E: PRELIMINARY JURISDICTIONAL DETERMINATION: You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT

REASONS FOR APPEAL OR OBJECTIONS: (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

ADDITIONAL INFORMATION: The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

POINT OF CONTACT FOR QUESTIONS OR INFORMATION:

If you have questions regarding this decision and/or the appeal process you may contact:	If you only have questions regarding the appeal process you may also contact:
Judy A. Robinson U.S. Army Corps of Engineers New York Regulatory Branch Auburn Field Office 7413 County House Road Auburn, New York 13021 716-879-6330 Judy.a.robinson@usace.army.mil	Review Officer Great Lakes and Ohio River Division CELRD-PDS-O 550 Main Street, Room 10524 Cincinnati, OH 45202-3222 Phone: 513-684-6212 Fax: 513-684-2460

RIGHT OF ENTRY: Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

Signature of Appellant or Agent	Date	Telephone Number

Appendix 2 - PRELIMINARY JURISDICTIONAL DETERMINATION (PJD) FORM

BACKGROUND INFORMATION

A. REPORT COMPLETION DATE FOR PJD: January 25, 2018

B. NAME AND ADDRESS OF PERSON REQUESTING PJD:
Ithaca Neighborhood Housing Services
115 West Clinton Street
Ithaca, New York 14850
Attn: Joseph Bowes

C. DISTRICT OFFICE, FILE NAME, AND NUMBER: Buffalo District, Auburn Field Office, Ithaca Neighborhood Housing Services (South Street); File No. 2017-00927

D. PROJECT LOCATION(S) AND BACKGROUND INFORMATION:
Property adjacent to the South Street Extension

State: New York **County:** Tompkins **Village:** Trumansburg

Center coordinates of site (lat/long in degree decimal format):
Lat: 42.53553°N Long: -76.66151°W

Name of nearest waterbody: **unnamed tributary to Trumansburg Creek**

E. REVIEW PERFORMED FOR SITE EVALUATION (CHECK ALL THAT APPLY):

☒ Office (Desk) Determination. Date: January 10, 2018

☐ Field Determination. Date(s):

TABLE OF AQUATIC RESOURCES IN REVIEW AREA WHICH "MAY BE" SUBJECT TO REGULATORY JURISDICTION

Site number	Latitude (decimal degrees)	Longitude (decimal degrees)	Estimated amount of aquatic resource in review area (acreage and linear feet, if applicable)	Type of aquatic resource (i.e., wetland vs. non-wetland waters)	Geographic authority to which the aquatic resource "may be" subject (i.e., Section 404 or Section 10/404)
Wetland A	42.53611	-76.6626	0.88 ac	Scrub-Shrub (PSS)	404
Wetland B	42.53611	-76.6626	0.05 ac	Scrub-Shrub (PSS)	404
Wetland C	42.53678	-76.65905	0.11 ac	Scrub-Shrub (PSS)	404
Wetland F	42.53495	-76.66026	0.24 ac	Scrub-Shrub (PSS)	404

1) The Corps of Engineers believes that there may be jurisdictional aquatic resources in the review area, and the requestor of this PJD is hereby advised of his or her option to request and obtain an approved JD (AJD) for that review area based on an informed decision after having discussed the various types of JDs and their characteristics and circumstances when they may be appropriate.

2) In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "pre-construction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an AJD for the activity, the permit applicant is hereby made aware that:

(1) the permit applicant has elected to seek a permit authorization based on a PJD, which does not make an official determination of jurisdictional aquatic resources;

(2) the applicant has the option to request an AJD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an AJD could possibly result in less compensatory mitigation being required or different special conditions;

(3) the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization;

(4) the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary;

(5) undertaking any activity in reliance upon the subject permit authorization without requesting an AJD constitutes the applicant's acceptance of the use of the PJD;

(6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a PJD constitutes agreement that all aquatic resources in the review area affected in any way by that activity will be treated as jurisdictional, and waives any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and

(7) whether the applicant elects to use either an AJD or a PJD, the JD will be processed as soon as practicable. Further, an AJD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331.

If, during an administrative appeal, it becomes appropriate to make an official determination whether geographic jurisdiction exists over aquatic resources in the review area, or to provide an official delineation of jurisdictional aquatic resources in the review area, the Corps will provide an AJD to accomplish that result, as soon as is practicable.

This PJD finds that there *"may be"* waters of the U.S. and/or that there *"may be"* navigable waters of the U.S. on the subject review area, and identifies all aquatic features in the review area that could be affected by the proposed activity, based on the following information:

SUPPORTING DATA. Data reviewed for PJD (check all that apply)

Checked items should be included in subject file. Appropriately reference sources below where indicated for all checked items:

☒ Maps, plans, plots or plat submitted by or on behalf of the PJD requestor: **LeCain Environmental Services**
Map: NWI, NYSDEC FWW, Soil
☒ Data sheets prepared/submitted by or on behalf of the PJD requestor.
☒ Office concurs with revised data sheets/delineation report.
☐ Office does not concur with data sheets/delineation report. Rationale:
☐ Data sheets prepared by the Corps:
☐ Corps navigable waters' study: _
☐ U.S. Geological Survey Hydrologic Atlas:
☐ USGS NHD data.
☐ USGS 8 and 12 digit HUC maps.
☒ U.S. Geological Survey map(s). Cite scale & quad name: **24000k; Trumansburg, NY**
☒ Natural Resources Conservation Service Soil Survey. Citation: **Web Soil Survey**

	The following soils were identified on the parcel	**Hydric Rating**
HdC	**Howard gravelly loam, 5 to 15 percent simple slopes**	**0**
LbB	**lansing gravelly silt loam, 3 to 8 percent slopes**	**0**
OaA	**ovid silt loam, 0 to 8 percent slopes**	**10**
RkA	**Rhinebeck silt loam, 0 to 2 percent slopes**	**10**

☒ National wetlands inventory map: Cite name: **Trumansburg, NY**
☒ State/local wetland inventory map: **Trumansburg, NY**
☐ FEMA/FIRM maps:
☐ 100-year Floodplain Elevation is: ____. (National Geodetic Vertical Datum of 1929)
☒ Photographs:
☒ Aerial (Name & Date): **Google Earth 1994 and 2007; NYS Orthos On-Line 2002 and 2007**
☒ Other (Name & Date): **Submitted with delineation report; photos taken June 5, 2017**
☐ Previous determination(s). File no. and date of response letter:
☐ Other information (please specify):

IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.

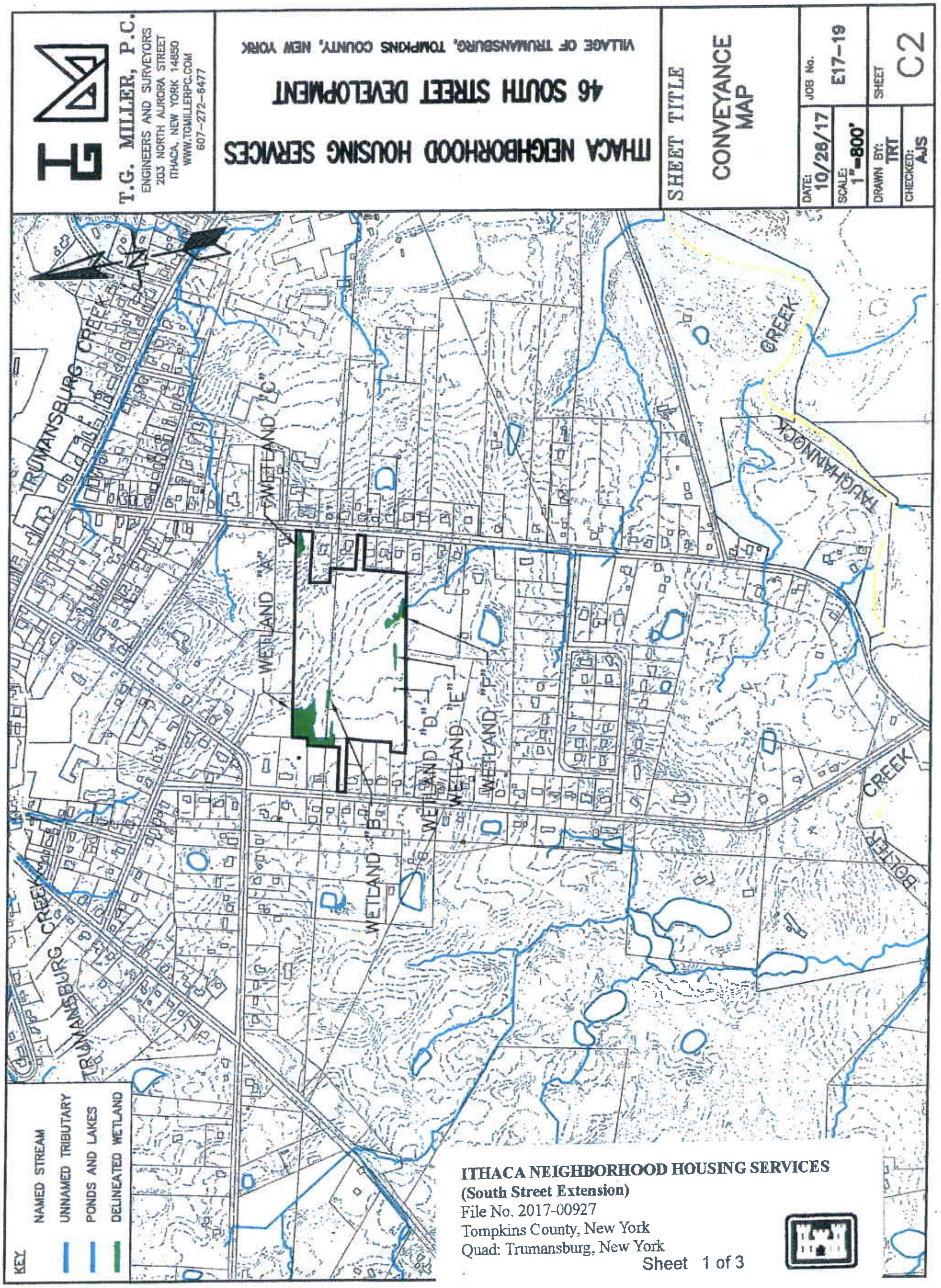
ROBINSONJUDY.A.1284100103
Judy Robinson
Digitally signed by ROBINSONJUDY.A.1284100103
DN: c=US, o=U.S. Government, ou=DoD, ou=PKI, ou=USA, cn=ROBINSONJUDY.A.1284100103
Date: 2018.01.25 12:39:32 -05'00'

Signature and date of Regulatory Project Manager

Joseph L. Bowes

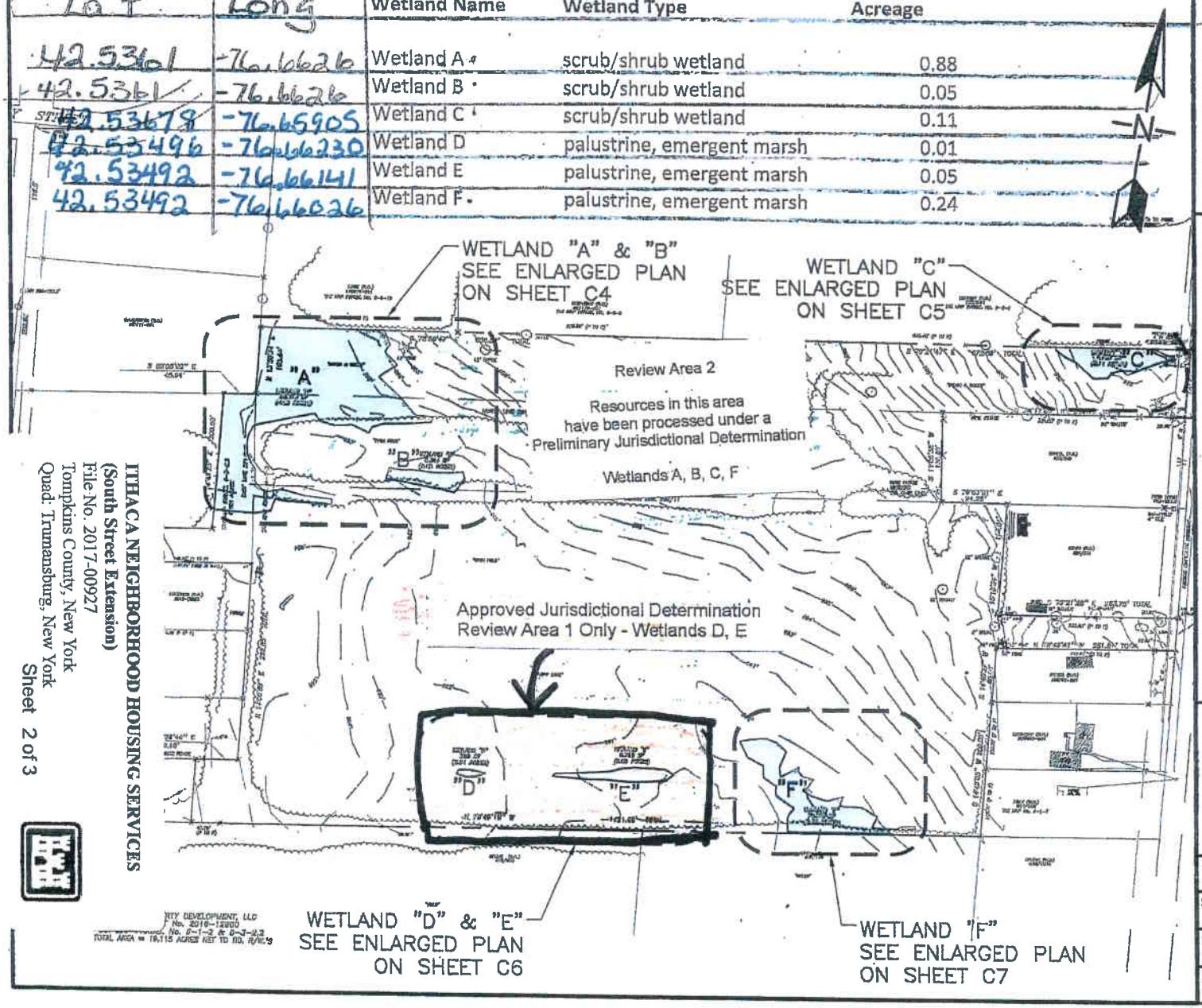
Signature and date of person requesting PJD (REQUIRED, unless obtaining the signature is impracticable)[1]

[1] Districts may establish timeframes for requestor to return signed PJD forms. If the requestor does not respond within the established time frame, the district may presume concurrence and no additional follow up is necessary prior to finalizing an action.



ITHACA NEIGHBORHOOD HOUSING SERVICES
(South Street Extension)
File No. 2017-00927
Tompkins County, New York
Quad: Trumansburg, New York
Sheet 1 of 3

Lat	Long	Wetland Name	Wetland Type	Acreage
42.5361	-76.66226	Wetland A	scrub/shrub wetland	0.88
42.5361	-76.66226	Wetland B	scrub/shrub wetland	0.05
42.53678	-76.65905	Wetland C	scrub/shrub wetland	0.11
42.53496	-76.66230	Wetland D	palustrine, emergent marsh	0.01
42.53492	-76.66141	Wetland E	palustrine, emergent marsh	0.05
42.53492	-76.66026	Wetland F	palustrine, emergent marsh	0.24



ITHACA NEIGHBORHOOD HOUSING SERVICES
(South Street Extension)
File No. 2017-00927
Tompkins County, New York
Quad: Trumansburg, New York

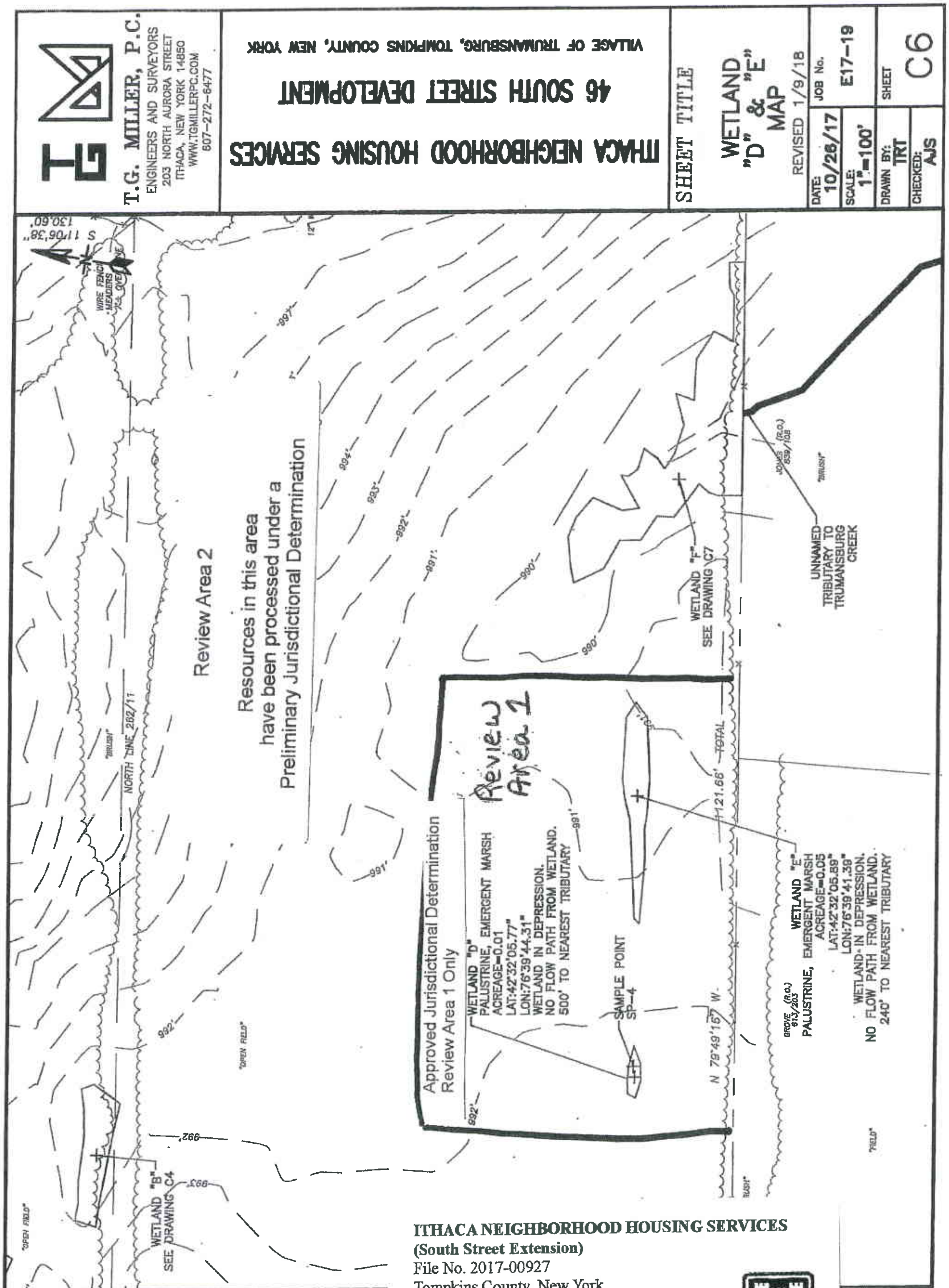
Sheet 2 of 3

T.G. MILLER, P.C.
ENGINEERS AND SURVEYORS
203 NORTH AURORA STREET
ITHACA, NEW YORK 14850
WWW.TGMILLERPC.COM
607-272-6477

ITHACA NEIGHBORHOOD HOUSING SERVICES
46 SOUTH STREET DEVELOPMENT
VILLAGE OF TRUMANSBURG, TOMPKINS COUNTY, NEW YORK

SHEET TITLE
WETLAND KEY MAP

DATE: 10/26/17	JOB No. E17-19
SCALE: 1"=200'	
DRAWN BY: TRT	SHEET C3
CHECKED: AJS	



ITHACA NEIGHBORHOOD HOUSING SERVICES
(South Street Extension)
File No. 2017-00927
Tompkins County, New York
Quad: Trumansburg, New York
Sheet 3 of 3

Exhibit D

HALSEY STREET

PENNSYLVANIA AVENUE

SOUTH STREET

SUNDIAL PROPERTY DEVELOPMENT, LLC
INSTRUMENT No. 2016-12980
TAX MAP PARCEL No. 9-1-2 & 8-3-2.2
TOTAL AREA = 19.115 ACRES NET TO RD. R/W.'S

DATA GRAPHIC SCALE
0 60 120 180

TROWBRIDGE WOLF MICHAELS
TWLA
LANDSCAPE ARCHITECTS
1001 W. Seneca St., Ste. 101 Ithaca, NY 14850
607-277-1400 Fax 607-277-8082

HOLT ARCHITECTS
Architecture
Planning
Interior Design
619 W State Street
Ithaca NY 14850
p 607.273.7600 f 607.273.0475

T.G. MILLER, P.C.
ENGINEERS AND SURVEYORS
203 NORTH AURORA STREET
ITHACA, NEW YORK 14850
www.tgmillerpc.com
607-272-5477 tel.
607-273-6322 fax

DATE	REVISION	BY
2/16/16	REVISED PER VILLAGE COMMENTS	AJS

Ithaca Neighborhood Housing Services &
Sundial Property Development LLC

46 South Street

Trumansburg, New York

DATE:	12/13/2017
PROJECT:	17003
DRAWN BY:	SRR/TRT
CHECKED:	AJS

EXISTING CONDITIONS PLAN

C101

STORMWATER MANAGEMENT & EROSION CONTROL NOTES

SEQUENCING

1. INSTALL INLET FILTERS ON EXISTING INLETS AND COMPOST SOCKS/SILT FENCE IN LOCATIONS SHOWN.
2. INSTALL TRUCK TRACKING PADS AT CONSTRUCTION SITE EXITS.
3. BEGIN BUILDING AND PAVEMENT EARTHWORK OPERATIONS. RUNOFF FROM ANY EXPOSED SOILS TO BE DIRECTED TO COMPOST SOCKS/SILT FENCE. PROVIDE TEMPORARY DIVERSION SWALES AS NECESSARY.
4. INSTALL ROCK CHECK DAMS AFTER ROUGH GRADING SWALES.
5. ROUGH GRADE STORMWATER WETLANDS AND INSTALL TEMPORARY SEDIMENT RISERS.
6. ROUGH GRADE BIORETENTION FILTER BUT DO NOT INSTALL PLANING SOIL.
7. INSTALL UTILITIES.
8. INSTALL INLET PROTECTION ON NEW INLETS.
9. COMPLETE GRADING, PAVEMENTS AND BUILDINGS.
10. INSTALL BIORETENTION FILTER PLANTING SOIL AND COMPOST SOCKS.
11. INSTALL EROSION CONTROL BLANKET, LANDSCAPING, TOPSOIL, SEED AND MULCH.
12. REMOVE SILT AND DEBRIS FROM ALL STORM SEWERS.
13. REMOVE COMPOST SOCKS, SILT FENCE, ROCK CHECK DAMS AND INLET PROTECTION ONLY AFTER VEGETATION HAS REACHED 80% COVER.

GENERAL NOTES

1. COMPOST SOCKS/SILT FENCE TO BE INSTALLED ALONG CONTOURS, NOT CROSSING CONTOURS.
2. SURFACE RUNOFF FROM UPGRADE AREAS SHALL BE DIVERTED OR OTHERWISE PREVENTED FROM FLOWING THROUGH AREAS OF CONSTRUCTION ACTIVITY.
3. RUNOFF FROM DISTURBED AREAS SHALL NOT BE DISCHARGED OFF-SITE WITHOUT FIRST PASSING THROUGH A PROPERLY INSTALLED AND MAINTAINED SEDIMENT CONTROL STRUCTURE.
4. PERMANENT VEGETATION SHALL BE INSTALLED IMMEDIATELY FOLLOWING FINAL GRADING.
5. ALL CONTROL STRUCTURES SHALL BE PERIODICALLY INSPECTED AND MAINTAINED DURING CONSTRUCTION. SEDIMENT SHALL BE CLEANED OUT WHEN SEDIMENT REACHES 25% OF THE HEIGHT OF THE ROCK CHECK DAM, COMPOST SOCK, SILT FENCE OR INLET PROTECTION FABRIC.
6. MAINTAIN TRUCK TRACKING PADS FOR DURATION OF PROJECT. TOP DRESS WITH ADDITIONAL AGGREGATE WHEN SURFACE BECOMES PACKED WITH SEDIMENT.
7. MAINTAIN INLET PROTECTION ON ALL INLETS THROUGH ALL PHASES OF THE PROJECT.
8. APPLY TEMPORARY OR PERMANENT SEED AND MULCH TO DISTURBED AREAS WITHIN 7 DAYS AFTER CLEARING.
9. PLACE COMPOST SOCKS/SILT FENCE AROUND TOPSOIL STOCKPILES AND TEMPORARILY SEED IF LEFT UNDISTURBED FOR GREATER THAN 7 DAYS
10. DISPOSE OF ALL FILL IN A MANNER THAT IS CONSISTENT WITH ALL LOCAL, STATE, AND FEDERAL REGULATIONS.
11. IT IS ANTICIPATED THAT MORE THAN 5 ACRES WILL BE DISTURBED AT ONE TIME. INSPECTIONS TO BE PERFORMED TWICE A WEEK BY A QUALIFIED PROFESSIONAL.
12. AS INDIVIDUAL LOTS ARE DEVELOPED CONTRACTOR TO IMPLEMENT SITE SPECIFIC EASC PLANS. SEE DETAIL 15 SHEET C201.

CONSERVATION SEED MIX

SPRING SEEDINGS

a) ANNUAL RYEGRASS:	0.70 LBS/1000 S.F.
b) SPRING OATS:	2.00 LBS/1000 S.F.
c) ANNUAL RYEGRASS: AND SPRING OATS:	0.35 LBS/1000 S.F 1.50 LBS/1000 S.F
d) PERENNIAL RYEGRASS:	0.70 LBS/1000 S.F.

LATE SPRING & SUMMER SEEDINGS

a) SUDANGRASS:	0.90 LBS/1000 S.F.
b) ANNUAL RYEGRASS:	0.70 LBS/1000 S.F.
c) PERENNIAL RYEGRASS:	0.70 LBS/1000 S.F.

LATE SUMMER & FALL SEEDINGS

a) ANNUAL RYEGRASS (COMMON)	0.70 LBS/1000 S.F.
b) WINTER RYE (AROOSTOOK):	2.50 LBS/1000 S.F.
c) WINTER WHEAT:	2.75 LBS/1000 S.F.
d) PERENNIAL RYEGRASS (PENNFINE):	0.70 LBS/1000 S.F.

MULCH

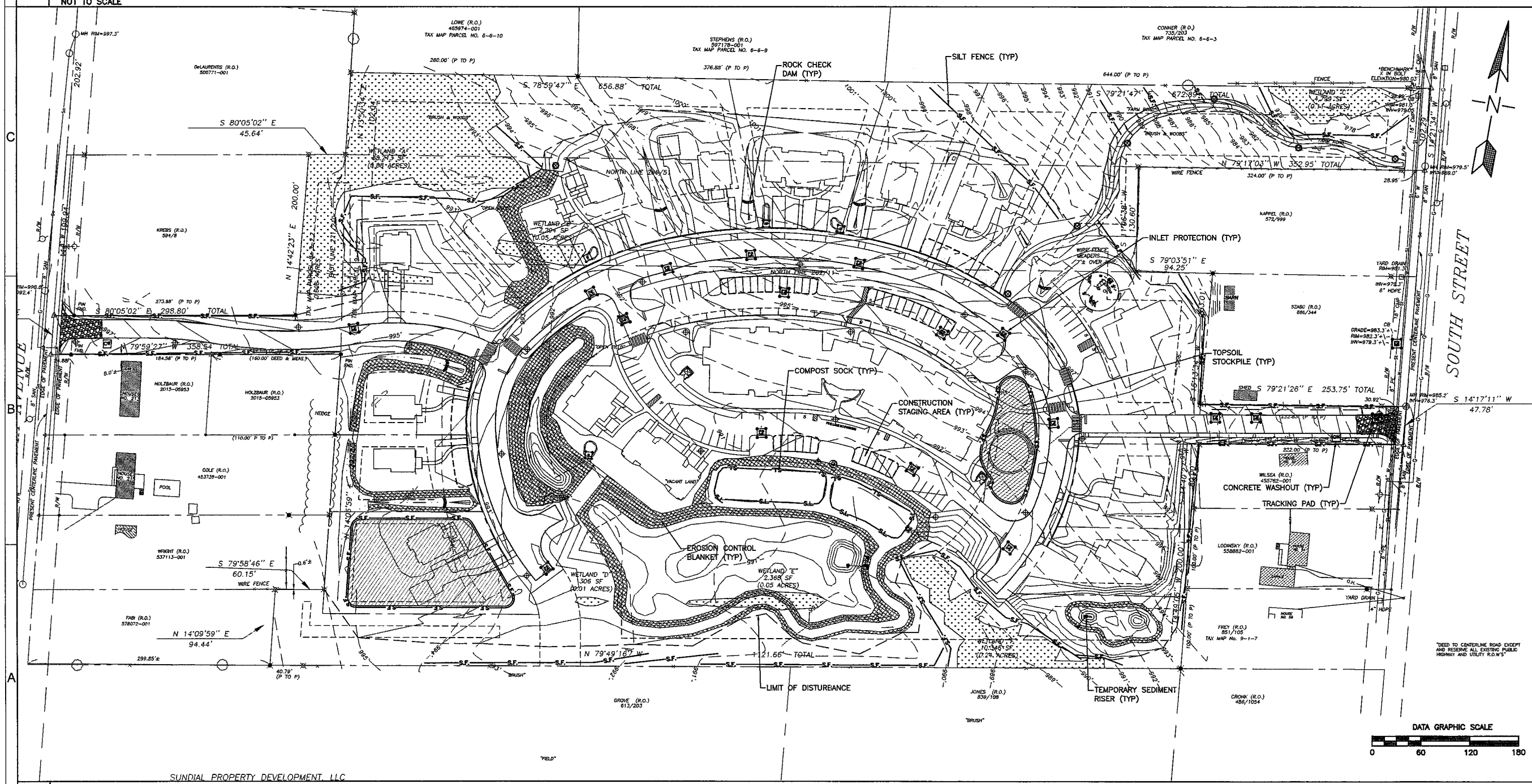
CLEAN STRAW MULCH 100 LBS (2-3 BALES)/1000 S.F.

MULCH SHALL BE APPLIED OVER TEMPORARY OR PERMANENT SEEDING AND SHALL BE ANCHORED USING ONE OF THE FOLLOWING OPTIONS:

A. ON SLOPES <3%, DRIVE TRACKED EQUIPMENT OVER MULCH, WITH TREADS RUNNING PARALLEL TO THE CONTOUR.
B. USE A MULCH ANCHORING TOOL OR SQUARE SHOVEL TO CUT MULCH IN SO THAT MULCH IS TUCKED INTO THE SOIL BY 3"
B. APPLY A TACKIFIER OVER MULCH CONSISTENT WITH MANUFACTURER'S SPECIFICATIONS.
C. APPLY WOOD FIBER MULCH OVER STRAW MULCH AT A RATE OF 400 LBS. PER ACRE.
D. SECURE MULCH IN PLACE WITH BIODEGRADABLE NETTING, OR WITH PEG AND TWINE SECURED BY WOOD STAKES SPACED AT 3' INTERVALS, AND TWINE WOVEN IN A CRISS-CROSS PATTERN.

1 NOTES

NOT TO SCALE



2 EROSION AND SEDIMENT CONTROL PLAN

SCALE: 1"=60'

SUNDIAL PROPERTY DEVELOPMENT, LLC

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46 South Street

Trumansburg, New York

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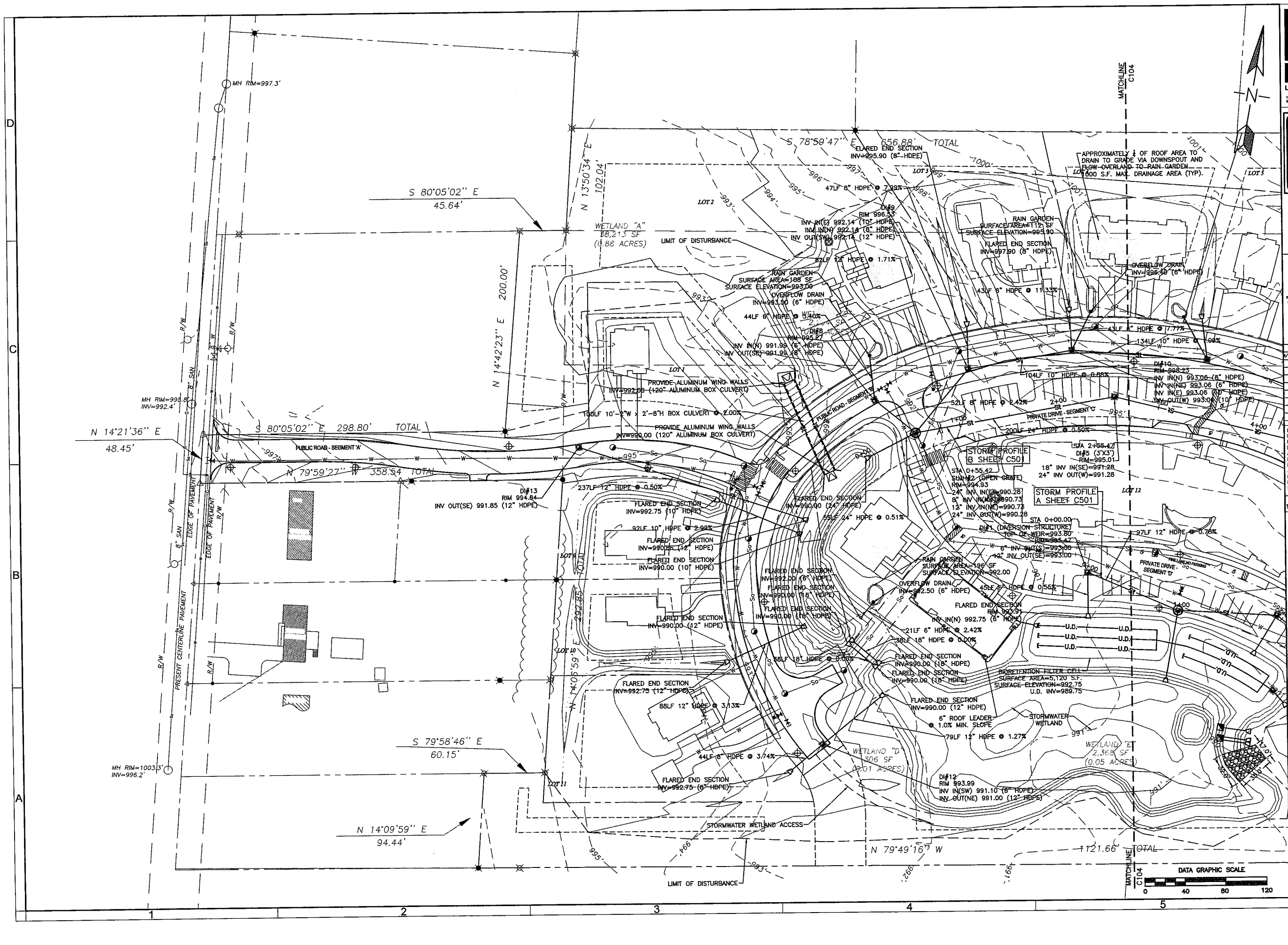
EROSION AND SEDIMENT CONTROL PLAN

C102



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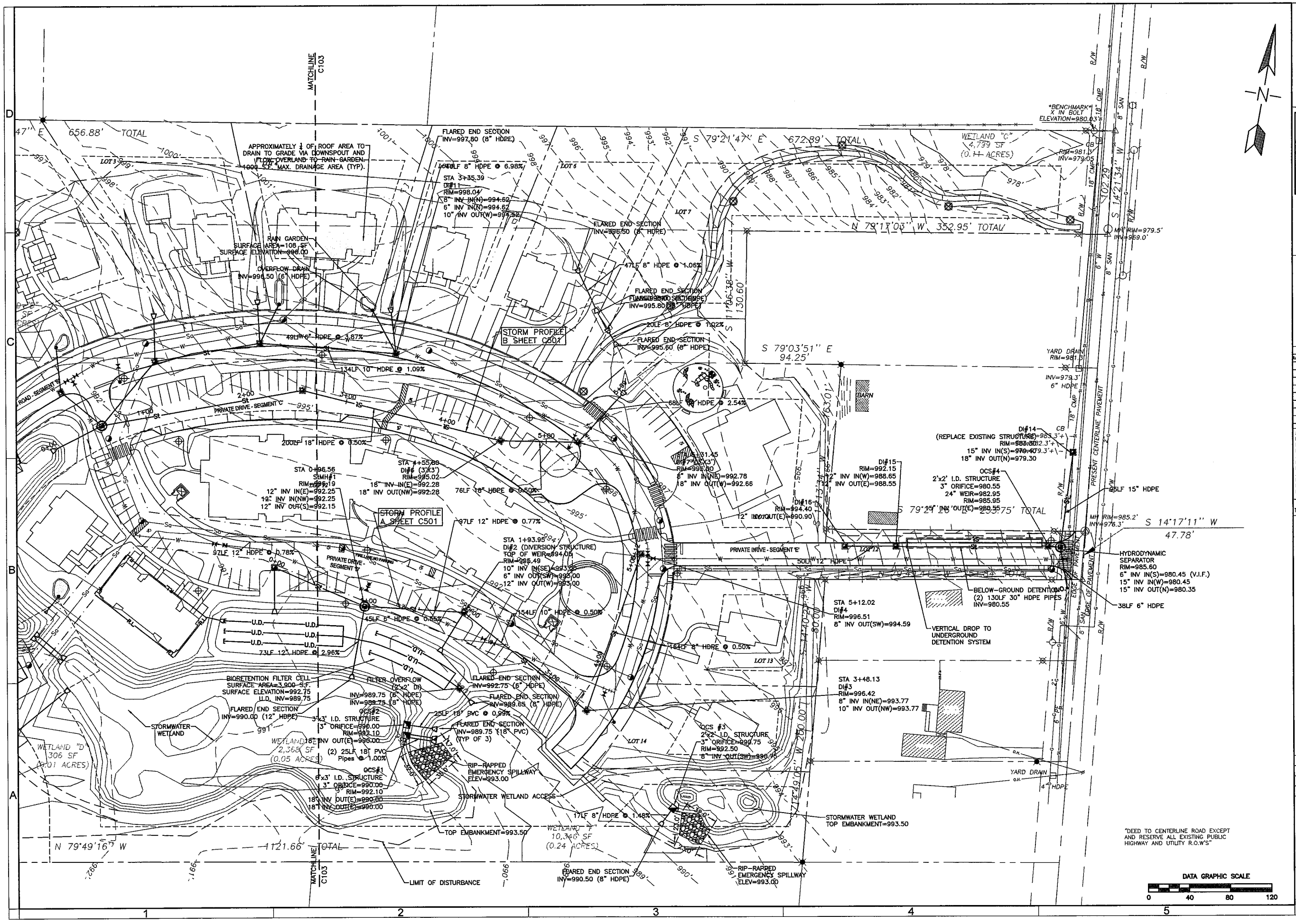
DRAINAGE PLAN

C103



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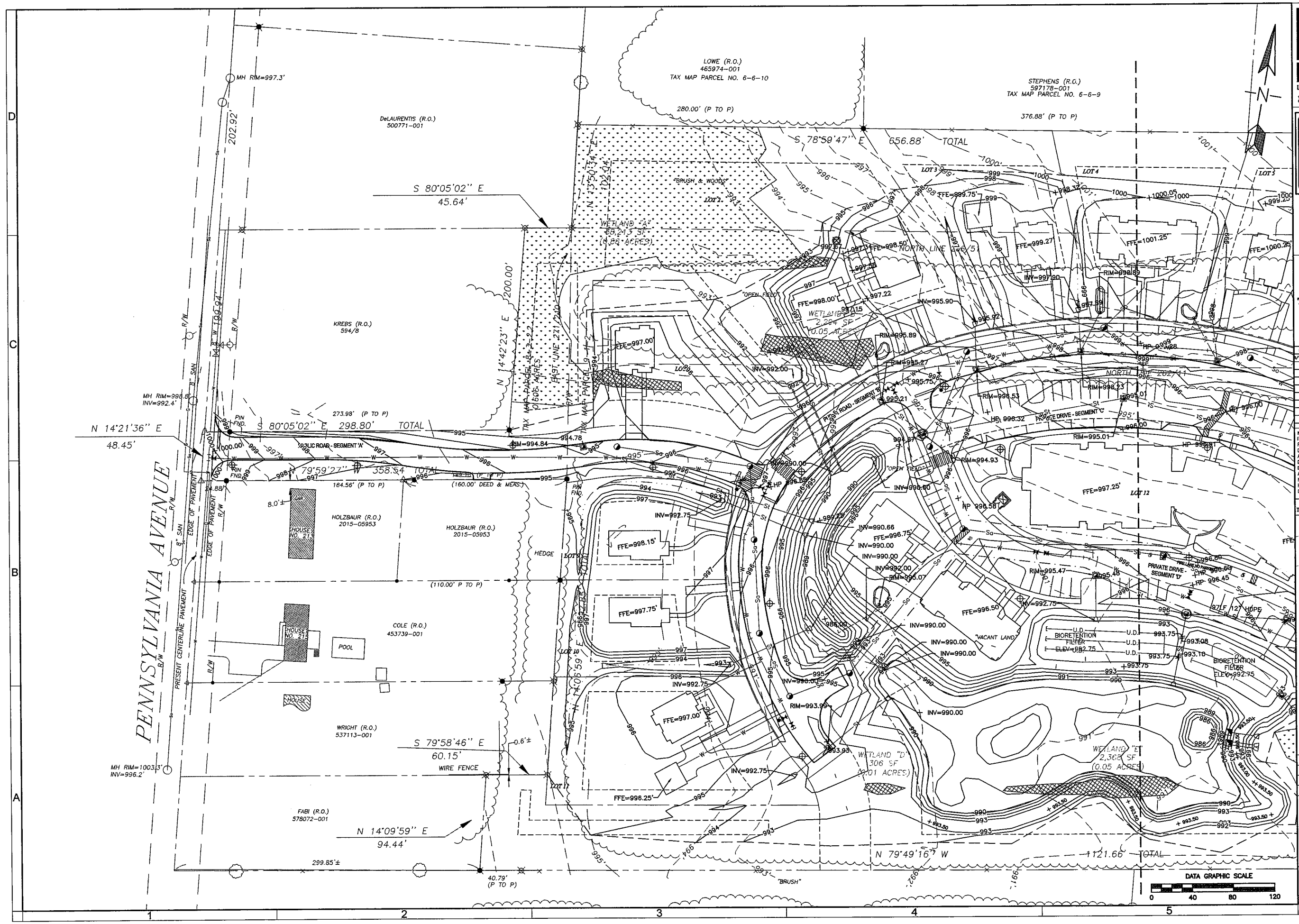
DRAINAGE PLAN

C104



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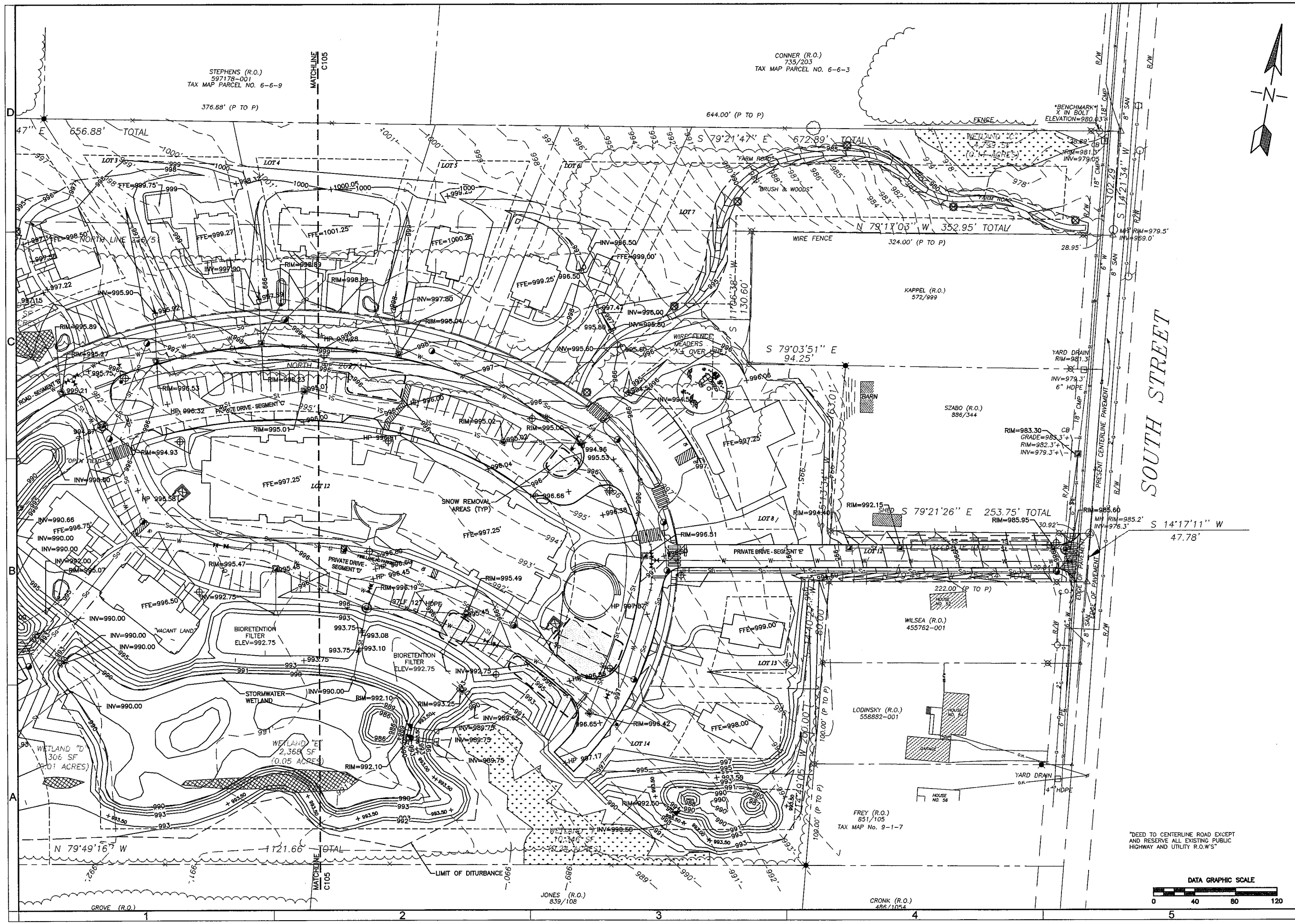
GRADING PLAN

C105



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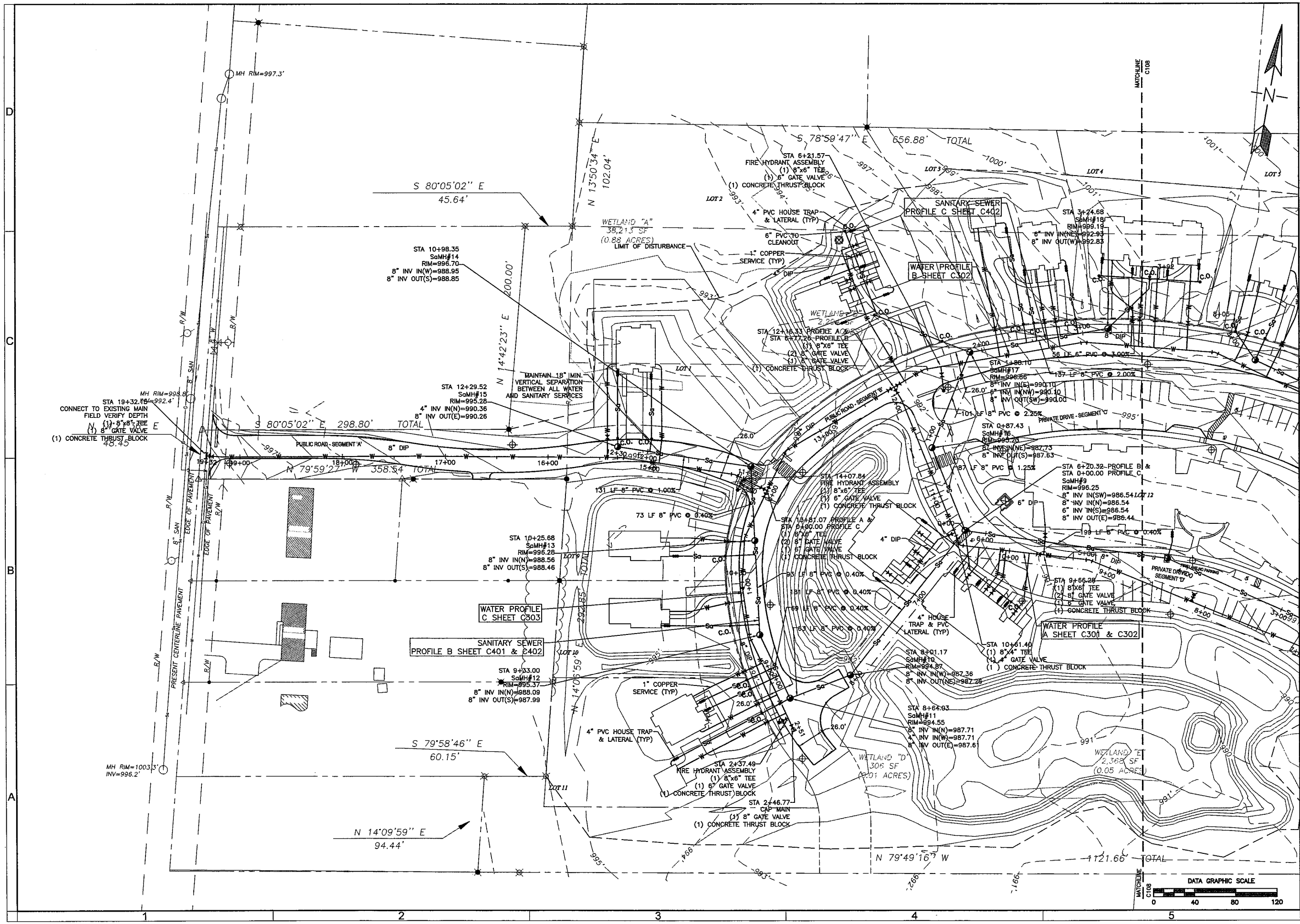
GRADING PLAN

C106



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UTILITY PLAN

C107

MATCHLINE C107

LOT 3 LOT 4 LOT 5 LOT 6 LOT 7 LOT 8 LOT 12 LOT 13 LOT 14

LIMIT OF DISTURBANCE

6" PVC TO CLEANOUT

STA 8+05.01
CLEANOUT
RIM=999.03
6" INV OUT(SE)=993.56

STA 7+71.13
SaMH#5
RIM=997.79
6" INV IN(NW)=992.88
4" INV IN(NE)=992.88
8" INV OUT(SE)=992.78

STA 5+70.66
SaMH#4
RIM=995.72
8" INV IN(NW)=990.27
8" INV OUT(S)=990.17

STA 0+41.44
(1) 8"X6" TEE
(2) 8" GATE VALVE
(1) 6" GATE VALVE
(1) CONCRETE THRUST BLOCK

MAINTAIN 18" MIN. VERTICAL SEPARATION BETWEEN ALL WATER AND SANITARY SERVICES

STA 4+78.16
SaMH#3
RIM=996.54
8" INV IN(N)=988.10
4" INV IN(E)=988.10
8" INV OUT(S)=988.00

1" COPPER SERVICE (TYP)

4" PVC HOUSE TRAP & LATERAL (TYP)

STA 4+30.57 PROFILE A &
STA 0+00.00 PROFILE B
SaMH#2 (3' DIA)
INSIDE DROP
RIM=997.23
8" INV IN(SW)=982.40
8" INV IN(N)=987.28
8" INV OUT(E)=982.30

STA 1+11.97
SaMH#6
RIM=997.37
8" INV IN(SE)=984.20
8" INV IN(NW)=984.20
8" INV OUT(NE)=984.10

STA 5+60.24
FIRE HYDRANT ASSEMBLY
(1) 8"x6" TEE
(1) 6" GATE VALVE
(1) CONCRETE THRUST BLOCK

STA 4+21.54
SaMH#8
RIM=996.49
8" INV IN(W)=985.64
8" INV IN(NE)=985.64
8" INV OUT(SE)=985.54

STA 1+49.26
FIRE HYDRANT ASSEMBLY
(1) 8"x6" TEE
(1) 6" GATE VALVE
(1) CONCRETE THRUST BLOCK

STA 8+14.30
FIRE HYDRANT ASSEMBLY
(1) 8"x6" TEE
(1) 6" GATE VALVE
(1) CONCRETE THRUST BLOCK

STA 6+84.74
(1) 8"X6" TEE
(2) 8" GATE VALVE
(1) 6" GATE VALVE
(1) CONCRETE THRUST BLOCK

STA 0+00.00
EXISTING SANITARY MANHOLE
CORE FOR NEW OPENING
REMOVE AND REPLACE BENCH
RIM 985.20
INV IN(SW) 976.40 (8" PVC)
INV OUT(N) 976.30 (8" PVC)

STA 0+06.01
8' GATE VALVE

STA 0+50.07
SaMH#1
RIM=986.61
8" INV IN(W)=978.50
8" INV OUT(NE)=978.40

STA 0+00.00
CONNECT TO EXISTING MAIN
FIELD VERIFY DEPTH
(1) 6"x8" TEE
(1) CONCRETE THRUST BLOCK

"BENCHMARK"
X IN BOLT
ELEVATION=980.03'

MH RIM=979.5'
INV=969.0'

CB
RIM=981.3'
INV=979.05

YARD DRAIN
RIM=981.3'
INV=979.3'
6" HDPE

CB
GRADE=963.3'+/-
RIM=982.3'+/-
INV=979.3'+/-

YARD DRAIN
RIM=976.3'
4" HDPE

WETLAND "C"
4,739 SF
(0.11 ACRES)

WETLAND "D"
306 SF
(0.01 ACRES)

WETLAND "E"
2,366 SF
(0.05 ACRES)

WETLAND "F"
10,366 SF
(0.24 ACRES)

WATER PROFILE B SHEET C302

SANITARY SEWER PROFILE C SHEET C402

WATER PROFILE A SHEET C301 & C302

SANITARY SEWER PROFILE A SHEET C401

SANITARY SEWER PROFILE B SHEET C401 & C402

34 LF 6" PVC @ 2.00%

200 LF 8" PVC @ 1.25%

32 LF 8" PVC @ 2.24%

48 LF 8" PVC @ 1.50%

181 LF 8" PVC @ 0.40%

380 LF 8" PVC @ 1.00%

50 LF 8" PVC @ 4.00%

12 LF 8" PVC @ 1.52%

128 LF 8" PVC @ 0.40%

8" DIP

6" PVC

8" SAN

6" SAN

18" CMP

6" DIP

PRIVATE DRIVE - SEGMENT 'A'

PRIVATE DRIVE - SEGMENT 'B'

PRIVATE DRIVE - SEGMENT 'C'

PRIVATE DRIVE - SEGMENT 'D'

ROAD - SEGMENT 'B'

PRESENT CENTERLINE PAVEMENT

EDGE OF PAVEMENT

BARN

"DEED TO CENTERLINE ROAD EXCEPT AND RESERVE ALL EXISTING PUBLIC HIGHWAY AND UTILITY R.O.W'S"

DATA GRAPHIC SCALE
0 40 80 120

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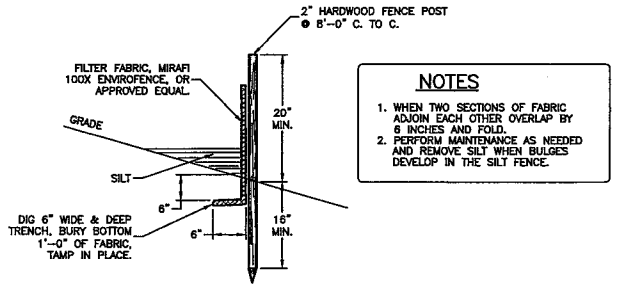
UTILITY PLAN

C108

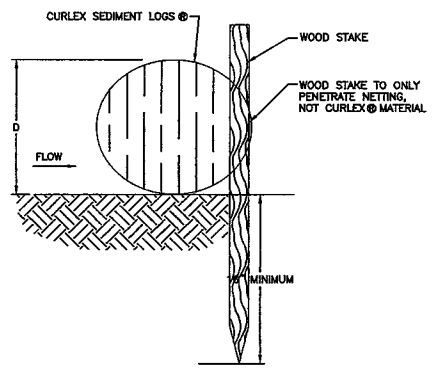


NOTES

1. WHEN TWO SECTIONS OF FABRIC ADJOIN EACH OTHER OVERLAP BY 6 INCHES AND FOLD.
2. PERFORM MAINTENANCE AS NEEDED AND REMOVE SILT WHEN BULGES DEVELOP IN THE SILT FENCE.

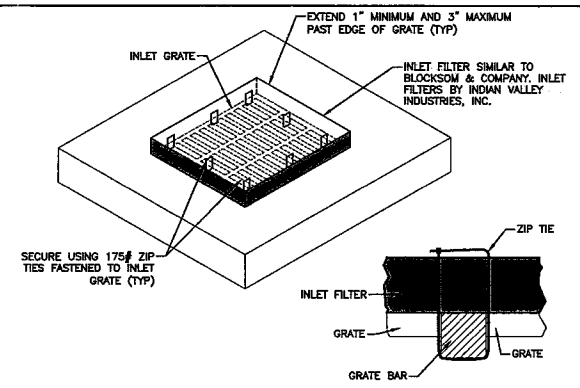
1 SILT FENCE

NOT TO SCALE

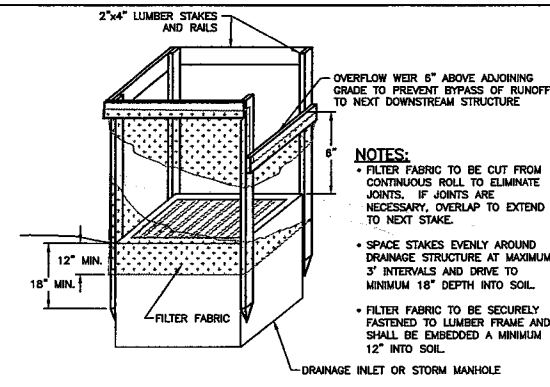


2 SEDIMENT CONTROL LOGS

NOT TO SCALE



IN PAVEMENT



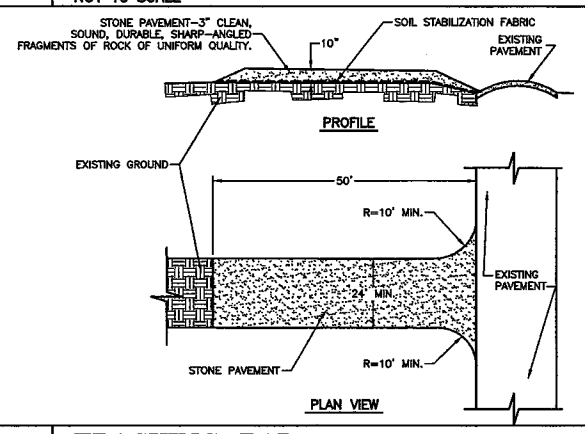
NOTES:

- FILTER FABRIC TO BE CUT FROM CONTINUOUS ROLL TO ELIMINATE JOINTS. IF JOINTS ARE NECESSARY, OVERLAP TO EXTEND TO NEXT STAKE.
- SPACE STAKES EVENLY AROUND DRAINAGE STRUCTURE AT MAXIMUM 3' INTERVALS AND DRIVE TO MINIMUM 18" DEPTH INTO SOIL.
- FILTER FABRIC TO BE SECURELY FASTENED TO LUMBER FRAME AND SHALL BE EMBEDDED A MINIMUM 12" INTO SOIL.

IN LANDSCAPE

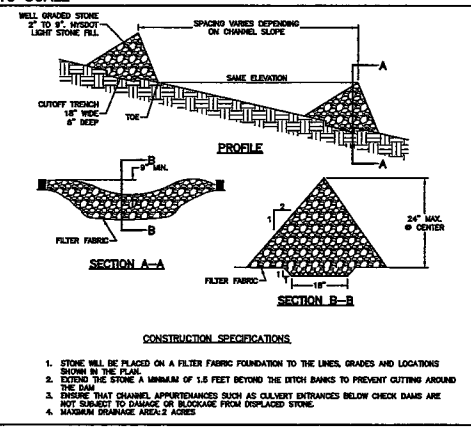
3 INLET FILTERS

NOT TO SCALE



4 TRACKING PAD

NOT TO SCALE

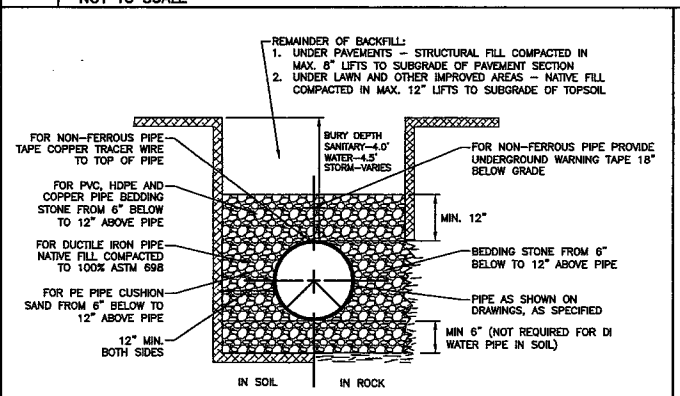


CONSTRUCTION SPECIFICATIONS

1. STONE WILL BE PLACED ON A FILTER FABRIC FOUNDATION TO THE LINES, GRADES AND LOCATIONS SHOWN ON THE PLAN.
2. EXTEND THE STONE A MINIMUM OF 1.5 FEET BEYOND THE DITCH BANKS TO PREVENT CUTTING AROUND THE DAM.
3. ENSURE THAT CHANNEL APPURTENANCES SUCH AS CULVERT ENTRANCES BELOW CHECK DAMS ARE NOT SUBJECT TO DAMAGE OR BLOCKAGE FROM DISPLACED STONE.
4. MAXIMUM DRAINAGE AREA 2 ACRES

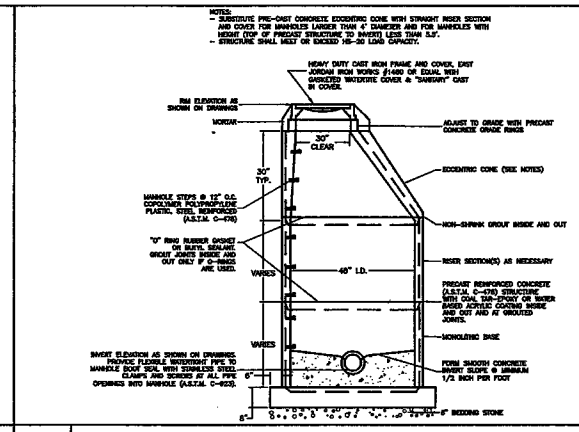
5 ROCK CHECK DAM

NOT TO SCALE



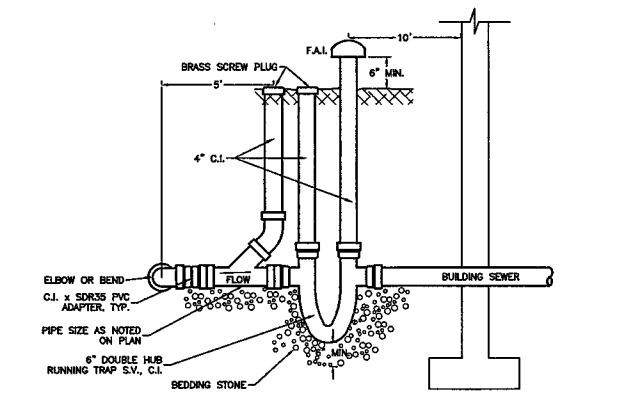
6 TRENCH

NOT TO SCALE



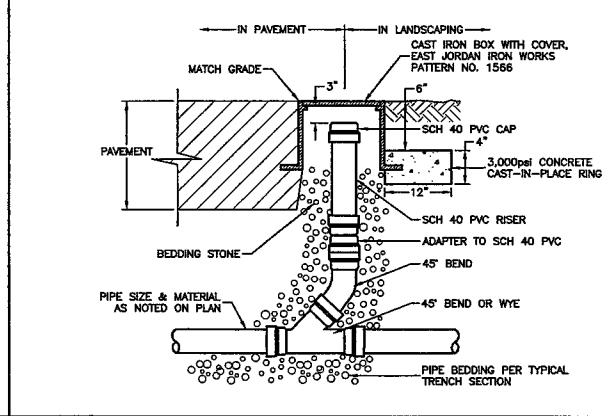
7 SANITARY MANHOLE

NOT TO SCALE



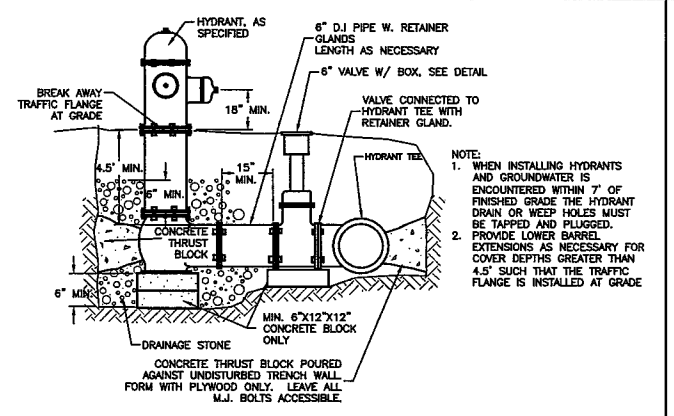
8 SANITARY TRAP

NOT TO SCALE



9 CLEANOUT

NOT TO SCALE

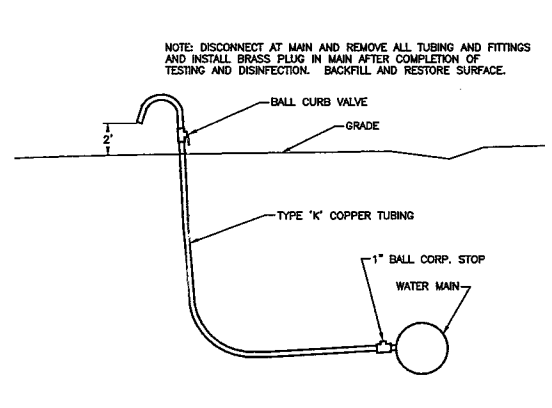


NOTE:

1. WHEN INSTALLING HYDRANTS AND GROUNDWATER IS ENCOUNTERED WITHIN 7' OF FINISHED GRADE THE HYDRANT DRAIN OR WEEP HOLES MUST BE TAPPED AND PLUGGED.
2. PROVIDE LOWER BARREL EXTENSIONS AS NECESSARY FOR COVER DEPTHS GREATER THAN 4.5' SUCH THAT THE TRAFFIC FLANGE IS INSTALLED AT GRADE

10 HYDRANT ASSEMBLY

NOT TO SCALE



11 SAMPLING TAP

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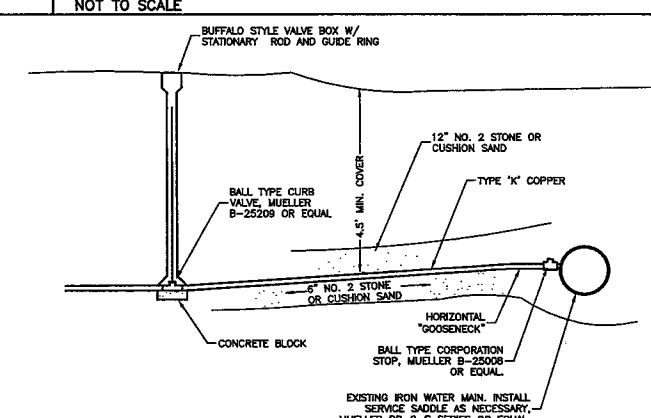
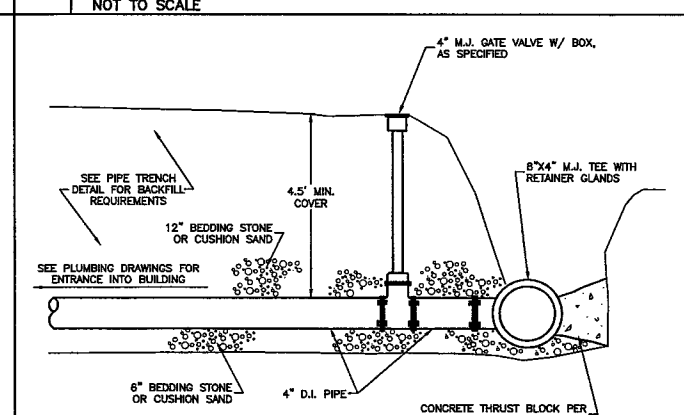


12 SERVICE COPPER

NOT TO SCALE



13 SERVICE LARGE DIAMETER

NOT TO SCALE

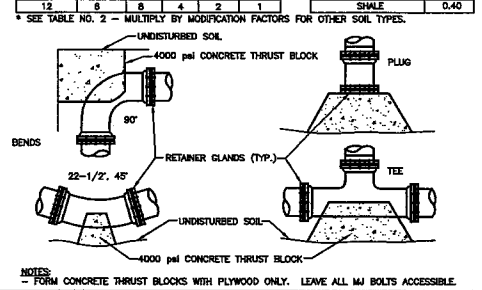
TABLE NO. 1
MINIMUM THRUST BLOCK AREAS REQUIRED AT PIPE FITTINGS IN GRAVEL-SILT-CLAY MIXTURE SOIL TYPES.*

PIPE DIAMETER-INCHES	THRUST BLOCK AREA - S.F. TEE OR PLUG	90° BEND	45° BEND	22-1/2° BEND	11-1/4° BEND
4 – 6	2	2	1	–	–
8	3	3	2	1	1
10	4.5	6	3	2	1
12	6	8	4	2	1

* SEE TABLE NO. 2 – MULTIPLY BY MODIFICATION FACTORS FOR OTHER SOIL TYPES.

TABLE NO. 2
THRUST BLOCK AREA MODIFICATION FACTORS FOR VARIOUS SOILS

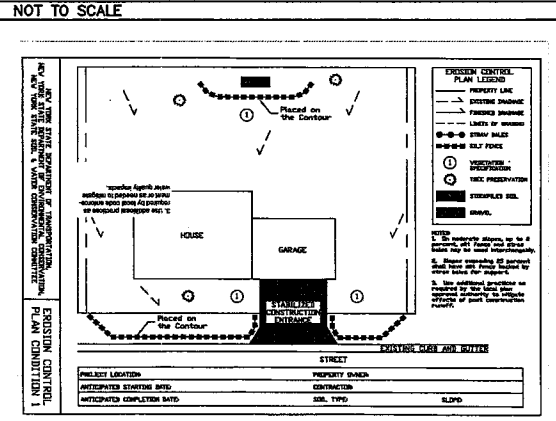
SOIL TYPE	FACTOR
MUCK, PEAT	4.00
SOFT CLAY	2.00
SAND	1.50
SAND & GRAVEL	1.33
GRAVEL-SILT-CLAY MIX	1.00
SHALE	0.40



NOTES:
– FORM CONCRETE THRUST BLOCKS WITH PLYWOOD ONLY. LEAVE ALL MJ BOLTS ACCESSIBLE.

14 THRUST BLOCK

NOT TO SCALE



15 SITE SPECIFIC E&SC PLAN

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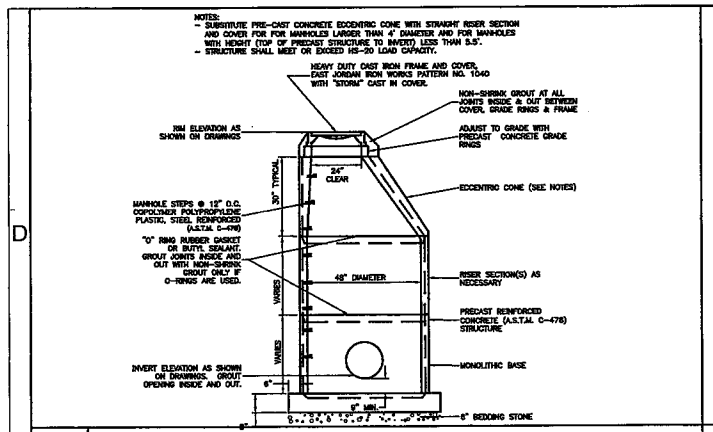
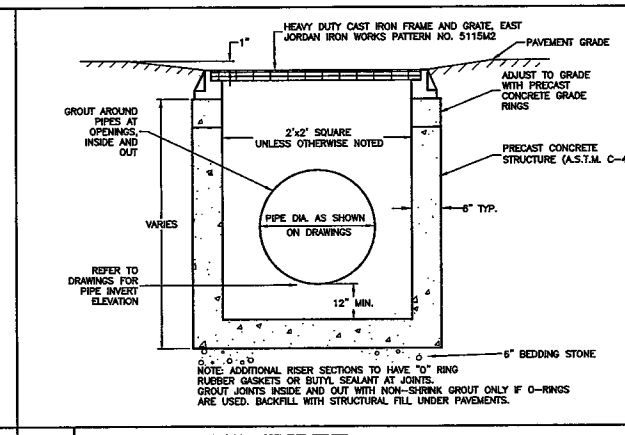
DETAILS

C201



1 **STORM MANHOLE**
NOT TO SCALE



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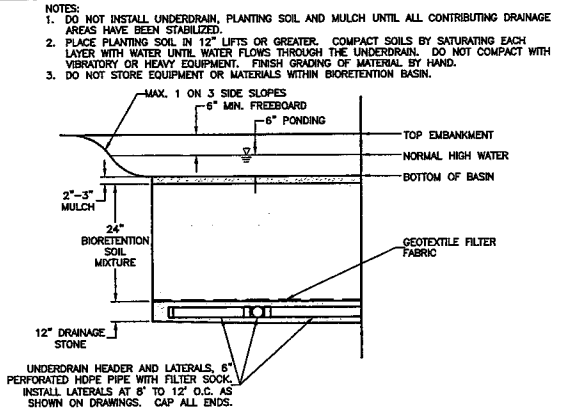
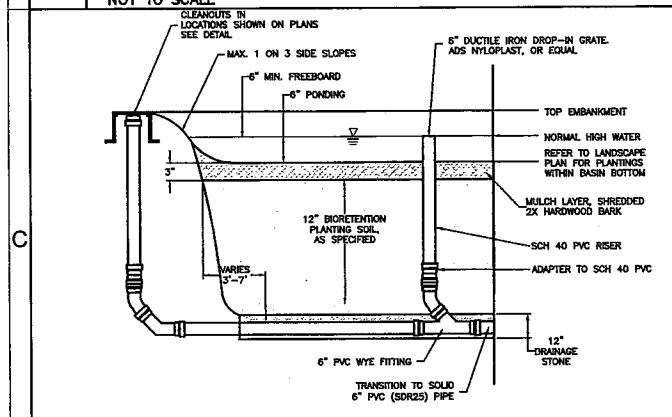
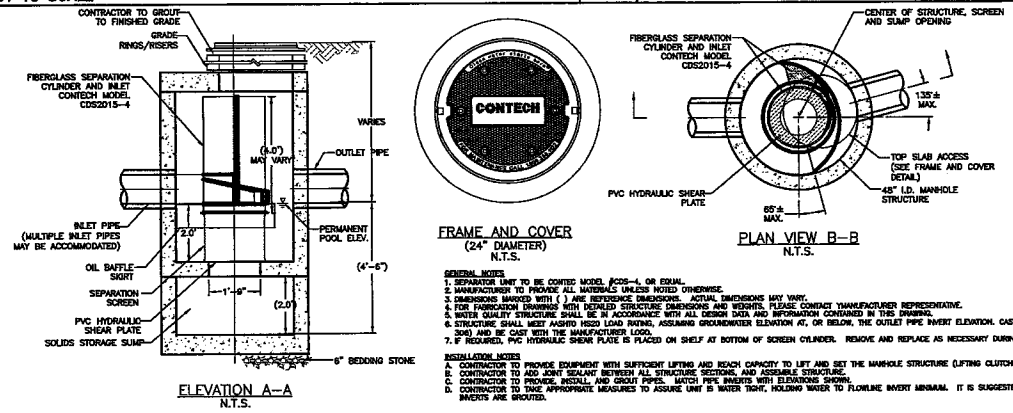
NOT TO SCALE



3 **BIORETENTION FILTER**
NOT TO SCALE



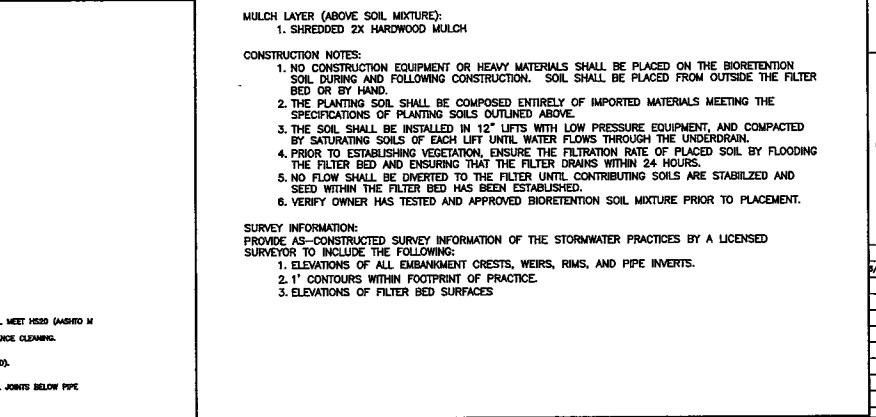
4 **RAIN GARDEN**
NOT TO SCALE



GENERAL NOTES
1. SEPARATOR UNIT TO BE CONTECH MODEL #CDS-4, OR EQUAL.
2. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
3. DIMENSIONS SHOWN TO WITHIN 1 INCH REPRESENT TYPICAL CONDITIONS. ACTUAL DIMENSIONS MAY VARY.
4. CONTACT MANUFACTURER FOR ASSISTANCE WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS. PLEASE CONTACT YOUR MANUFACTURER REPRESENTATIVE.
5. WATER QUALITY STRUCTURE SHALL BE BY ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
6. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. CASTINGS SHALL MEET HS20 (AASHTO M 306) AND BE CAST WITH THE MANUFACTURER'S LOGO.
7. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

INSTALLATION NOTES
A. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
B. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
C. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
D. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

5 **HYDRODYNAMIC SEPARATOR**
NOT TO SCALE



BIORETENTION PLANTING SOIL

PLANTING SOIL MIXTURE:
SOIL MIXTURE SHALL BE A UNIFORM BLEND OF THE FOLLOWING:
- 50% SAND (ASTM C33 FINE AGGREGATE)
- 50% IMPORTED TOPSOIL (SPECIFIED BELOW)

BIORETENTION PLANTING SOIL (BY VOLUME):

A. 50% SAND: ASTM C33 WITH EFFECTIVE SIZE OF 0.25MM TO 1.0MM AND UNIFORMITY COEFFICIENT LESS THAN OR EQUAL TO 4. ALL SAND TO PASS THE ¼"-INCH SIEVE.

B. 50% IMPORTED TOPSOIL (BY VOLUME):

1. ASTM D 5268, PH RANGE OF 5.5 TO 7.0. ORGANIC MATERIAL 4 PERCENT MINIMUM, FREE OF SLUG-SOIL, EARTH CLODS, STICKS, STUMPS, CLAY LUMPS, ROOTS AND STONES 1 INCH (25 MM) OR LARGER IN ANY DIMENSION, AND OTHER EXTRANEOUS MATERIALS HARMFUL TO PLANT GROWTH. TOPSOIL SHALL ALSO BE FREE OF QUACK-GRASS RHIZOMES, ARGRRYRON REPTANS, AND THE NUT-LIKE TUBERS OF NUTGRASS, CYPERUS ESCULENTUS AND ALL OTHER PRIMARY NOXIOUS WEEDS.
2. IMPORTED TOPSOIL SHALL BE SCREENED AND SHALL CONFORM TO THE FOLLOWING GRADATIONS.

	APPROXIMATE PARTICLE DISTRIBUTION	SIZE
GRAVEL	LESS THAN 10%	+2MM
COARSE TO MEDIUM SAND	60-75%	0.25-2MM
FINE SAND	5-10%	0.1-0.25MM
VERY FINE SAND	0-5%	0.05-0.1MM
SILT	10-30%	0.002-0.05M
CLAY	15-20%	MINUS 0.002MM

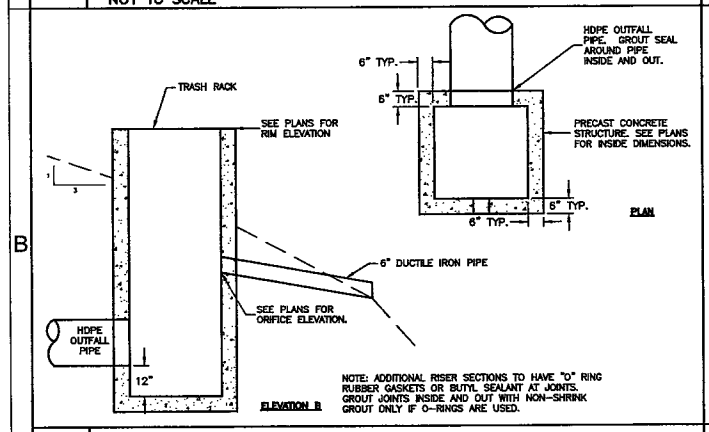
3. IMPORTED TOPSOIL SOURCE: IMPORT TOPSOIL FROM OFF-SITE SOURCES. OBTAIN TOPSOIL FROM NATURALLY WELL-DRAINED SITES WHERE TOPSOIL OCCURS AT LEAST 4 INCHES (100 MM) DEEP; DO NOT OBTAIN FROM BOGS OR MARSHES. IF TOPSOIL CANNOT BE FOUND LOCALLY THAT COMPLIES WITH THE SPECIFICATIONS, THE CONTRACTOR SHOULD BE PREPARED TO CREATE A MANUFACTURED SOIL PRODUCT USING THE AVAILABLE TOPSOIL AS A BASE AND AMENDING AS DIRECTED BY THE ARCHITECT.

MULCH LAYER (ABOVE SOIL MIXTURE):
1. SHREDDED 2X HARDWOOD MULCH

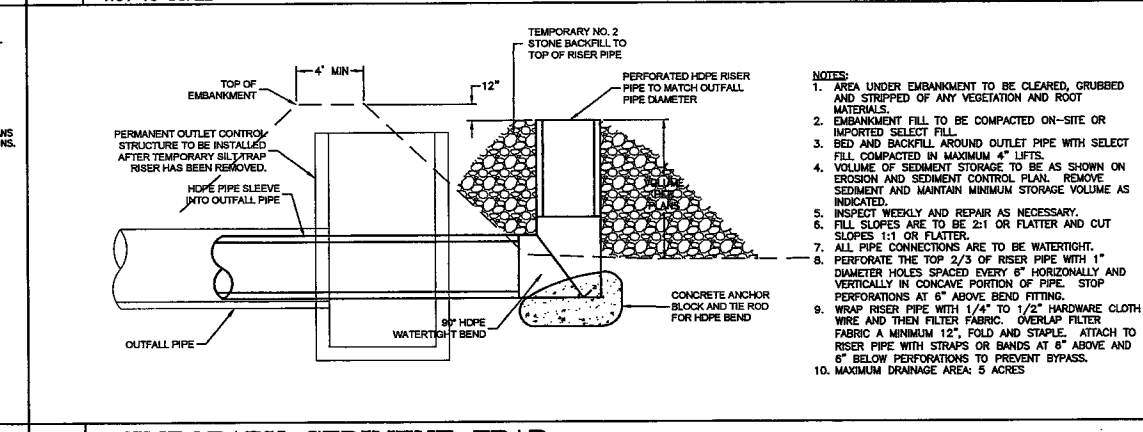
CONSTRUCTION NOTES:
1. NO CONSTRUCTION EQUIPMENT OR HEAVY MATERIALS SHALL BE PLACED ON THE BIORETENTION SOIL DURING AND FOLLOWING CONSTRUCTION. SOIL SHALL BE PLACED FROM OUTSIDE THE FILTER BED OR BY HAND.
2. THE PLANTING SOIL SHALL BE COMPOSED ENTIRELY OF IMPORTED MATERIALS MEETING THE SPECIFICATIONS OF PLANTING SOILS OUTLINED ABOVE.
3. THE SOIL SHALL BE INSTALLED IN 12" LIFTS WITH LOW PRESSURE EQUIPMENT, AND COMPACTED BY SATURATING SOILS OF EACH LIFT UNTIL WATER FLOWS THROUGH THE UNDERDRAIN.
4. PRIOR TO ESTABLISHING VEGETATION, ENSURE THE FILTRATION RATE OF PLACED SOIL BY FLOODING THE FILTER BED AND ENSURING THAT THE FILTER DRAINS WITHIN 24 HOURS.
5. NO FLOW SHALL BE DIVERTED TO THE FILTER UNTIL CONTRIBUTING SOILS ARE STABILIZED AND SEED WITHIN THE FILTER BED HAS BEEN ESTABLISHED.
6. VERIFY OWNER HAS TESTED AND APPROVED BIORETENTION SOIL MIXTURE PRIOR TO PLACEMENT.

SURVEY INFORMATION:
PROVIDE AS-CONSTRUCTED SURVEY INFORMATION OF THE STORMWATER PRACTICES BY A LICENSED SURVEYOR TO INCLUDE THE FOLLOWING:
1. ELEVATIONS OF ALL EMBANKMENT CRESTS, WEIRS, RIMS, AND PIPE INVERTS.
2. 1' CONTOURS WITHIN FOOTPRINT OF PRACTICE.
3. ELEVATIONS OF FILTER BED SURFACES

6 **BIORETENTION SOIL SPECS**
NOT TO SCALE

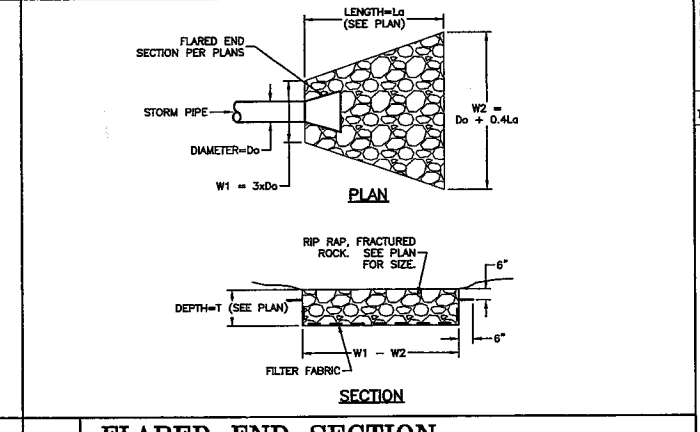


7 **OUTLET CONTROL STRUCTURE**
NOT TO SCALE

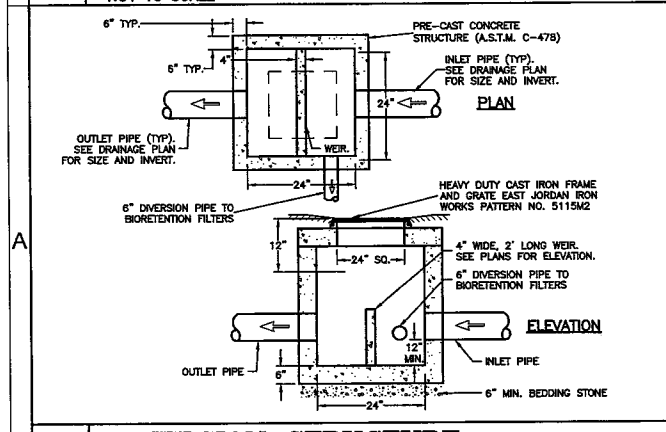


NOTES:
1. AREA UNDER EMBANKMENT TO BE CLEARED, GRUBBED AND STRIPPED OF ANY VEGETATION AND ROOT MATERIALS.
2. EMBANKMENT FILL TO BE COMPACTED ON-SITE OR IMPORTED SELECT FILL.
3. BED AND BACKFILL AROUND OUTLET PIPE WITH SELECT FILL COMPACTED IN MAXIMUM 4" LIFTS.
4. VOLUME OF SEDIMENT STORAGE TO BE AS SHOWN ON EROSION AND SEDIMENT CONTROL PLAN. REMOVE SEDIMENT AND MAINTAIN MINIMUM STORAGE VOLUME AS INDICATED.
5. INSPECT WEEKLY AND REPAIR AS NECESSARY.
6. FILL SLOPES ARE TO BE 2:1 OR FLATTER AND CUT SLOPES 1:1 OR FLATTER.
7. ALL PIPE CONNECTIONS ARE TO BE WATERTIGHT.
8. PERFORATE THE TOP 2/3 OF RISER PIPE WITH 1" DIAMETER HOLES SPACED EVERY 6" HORIZONTALLY AND VERTICALLY IN CONCAVE PORTION OF PIPE. STOP PERFORATIONS AT 6" ABOVE BEND FITTING.
9. WRAP RISER PIPE WITH 1/4" TO 1/2" HARDWARE CLOTH WIRE AND THEN FILTER FABRIC. OVERLAP FILTER FABRIC A MINIMUM 12", FOLD AND STAPLE. ATTACH TO RISER PIPE WITH STRAPS OR BANDS AT 6" ABOVE AND 6" BELOW PERFORATIONS TO PREVENT BYPASS.
10. MAXIMUM DRAINAGE AREA: 5 ACRES

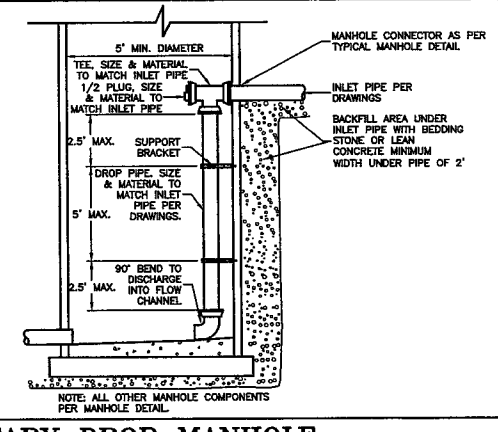
8 **TEMPORARY SEDIMENT TRAP**
NOT TO SCALE



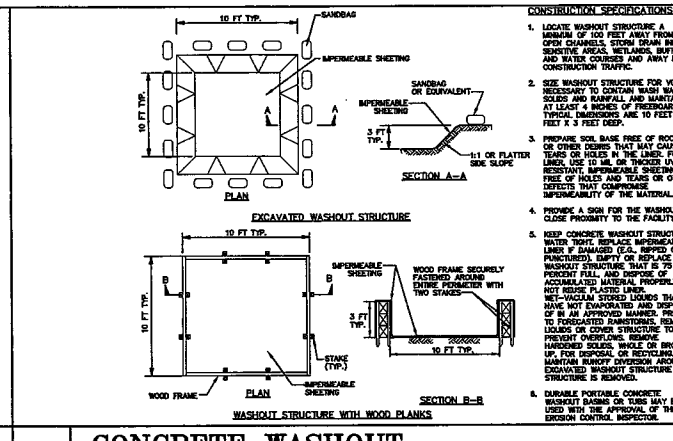
9 **FLARED END SECTION**
NOT TO SCALE



10 **DIVERSION STRUCTURE**
NOT TO SCALE

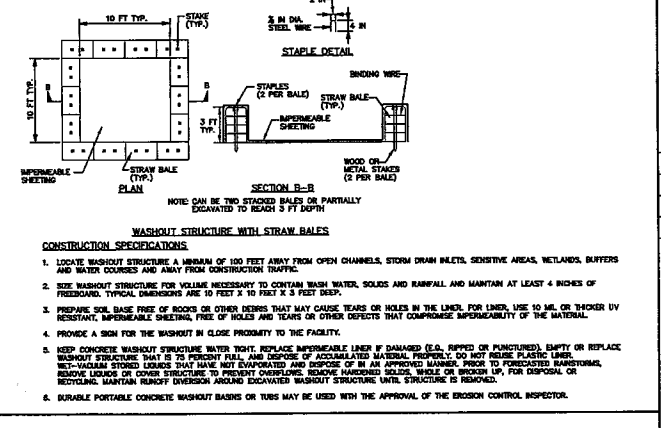


11 **SANITARY DROP MANHOLE**
NOT TO SCALE



CONSTRUCTION SPECIFICATIONS

1. LOCATE WASHOUT STRUCTURE A MINIMUM OF 100 FEET AWAY FROM OPEN CHANNELS, STORM DRAIN INLETS, SENSITIVE AREAS, WETLANDS, BUFFERS AND WATER COURSES AND AWAY FROM CONSTRUCTION TRAFFIC.
2. SIZE WASHOUT STRUCTURE FOR VOLUME NECESSARY TO CONTAIN WASH WATER, SOLIDS AND RAINFALL AND MAINTAIN AT LEAST 4 INCHES OF FREEBOARD. TYPICAL DIMENSIONS ARE 10 FEET X 10 FEET X 3 FEET DEEP.
3. PREPARE SOIL BASE FREE OF ROCKS OR OTHER DEBRIS THAT MAY CAUSE TEARS OR HOLES IN THE LINER. FOR LINER, USE 10 MIL OR THICKER UV RESISTANT, IMPERMEABLE SHEETING, FREE OF HOLES AND TEARS OR OTHER DEFECTS THAT COMPROMISE IMPERMEABILITY OF THE MATERIAL.
4. PROVIDE A SIGN FOR THE WASHOUT IN CLOSE PROXIMITY TO THE FACILITY.
5. KEEP CONCRETE WASHOUT STRUCTURE WATER TIGHT. REPLACE IMPERMEABLE LINER IF DAMAGED (E.G., RIPPED OR PUNCTURED). EMPTY OR REPLACE WASHOUT STRUCTURE THAT IS 75 PERCENT FULL. DISPOSE OF ACCUMULATED MATERIAL PROPERLY. DO NOT REUSE PLASTIC LINERS.
6. PREVENT RUNOFF FROM WASHOUTS THAT HAVE NOT EVAPORATED AND DISPOSE OF IS AN APPROVED MANNER. PRIOR TO FORECASTED RAINSTORMS, REMOVE LIQUIDS OR COVER STRUCTURE TO PREVENT OVERFLOWS. REMOVE HARDENED SOLIDS, WHOLE OR BROKEN UP, FOR DISPOSAL OR RECYCLING. MAINTAIN RUNOFF DIVERSION AROUND EXCAVATED WASHOUT STRUCTURE UNTIL STRUCTURE IS REMOVED.
8. DURABLE PORTABLE CONCRETE WASHOUT BASINS OR TUBS MAY BE USED WITH THE APPROVAL OF THE EROSION CONTROL INSPECTOR.



WASHOUT STRUCTURE WITH STRAW BALES

CONSTRUCTION SPECIFICATIONS

1. LOCATE WASHOUT STRUCTURE A MINIMUM OF 100 FEET AWAY FROM OPEN CHANNELS, STORM DRAIN INLETS, SENSITIVE AREAS, WETLANDS, BUFFERS AND WATER COURSES AND AWAY FROM CONSTRUCTION TRAFFIC.
2. SIZE WASHOUT STRUCTURE FOR VOLUME NECESSARY TO CONTAIN WASH WATER, SOLIDS AND RAINFALL AND MAINTAIN AT LEAST 4 INCHES OF FREEBOARD. TYPICAL DIMENSIONS ARE 10 FEET X 10 FEET X 3 FEET DEEP.
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6. PREVENT RUNOFF FROM WASHOUTS THAT HAVE NOT EVAPORATED AND DISPOSE OF IS AN APPROVED MANNER. PRIOR TO FORECASTED RAINSTORMS, REMOVE LIQUIDS OR COVER STRUCTURE TO PREVENT OVERFLOWS. REMOVE HARDENED SOLIDS, WHOLE OR BROKEN UP, FOR DISPOSAL OR RECYCLING. MAINTAIN RUNOFF DIVERSION AROUND EXCAVATED WASHOUT STRUCTURE UNTIL STRUCTURE IS REMOVED.
8. DURABLE PORTABLE CONCRETE WASHOUT BASINS OR TUBS MAY BE USED WITH THE APPROVAL OF THE EROSION CONTROL INSPECTOR.

12 **CONCRETE WASHOUT**
NOT TO SCALE

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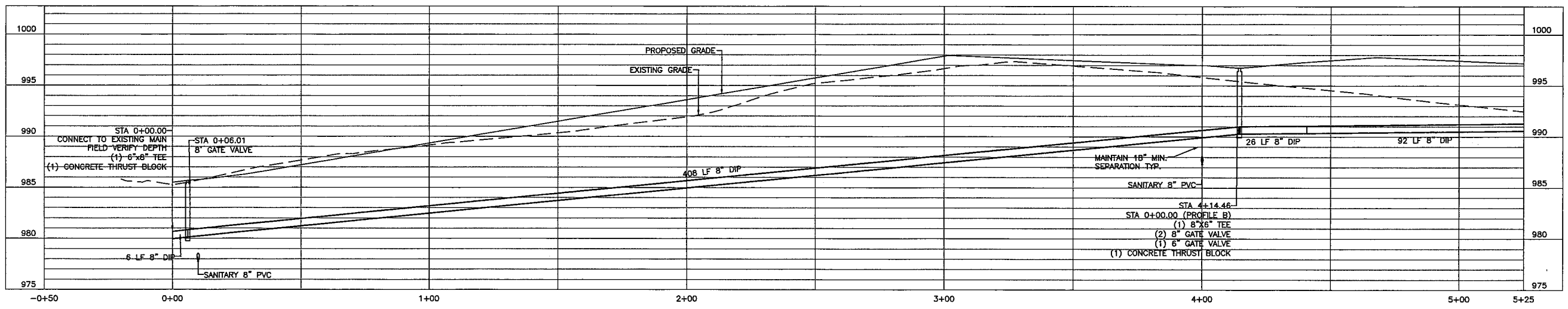
DATE	REVISION	BY
5/16/18	REVISED PER VILLAGE COMMENTS	AJS

Ithaca Neighborhood Housing Services &
Sundial Property Development LLC
46 South Street
Trumansburg, New York

DATE:	12/13/2017
PROJECT:	17003
DRAWN BY:	SRR/TRT
CHECKED:	AJS

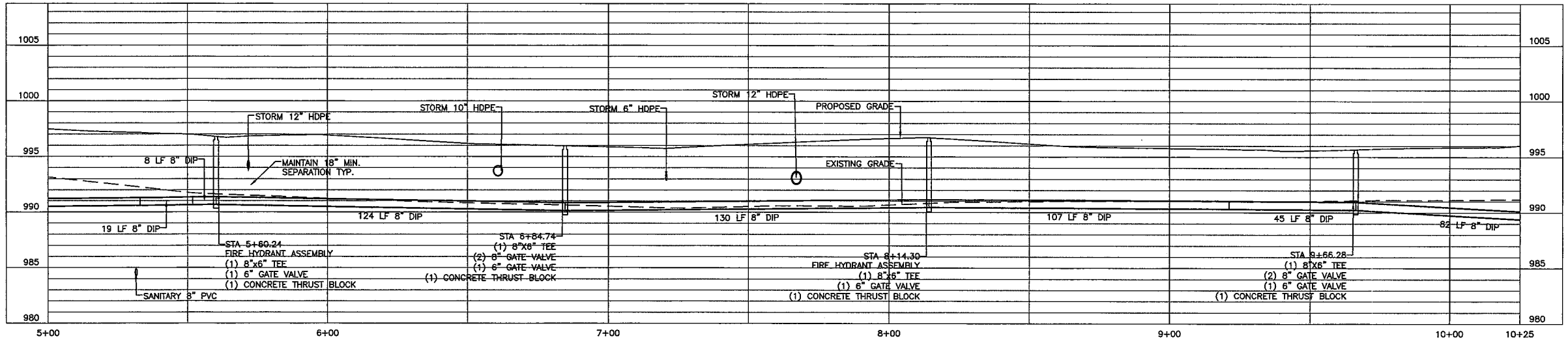
DETAILS

C202



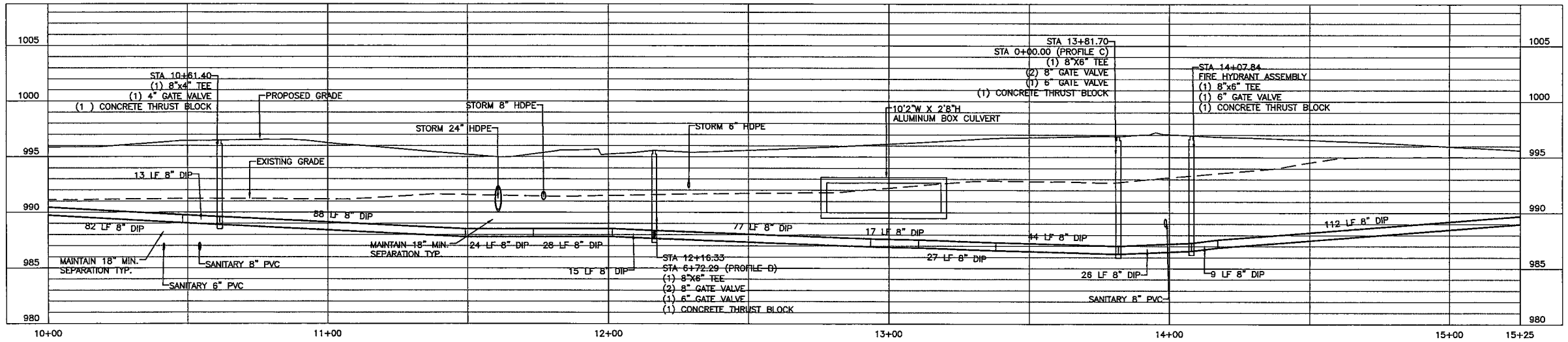
1 **WATER PROFILE – A**

SCALE: 1"=20' HORZ; 1"=5' VERT



2 **WATER PROFILE – A**

SCALE: 1"=20' HORZ; 1"=5' VERT



3 **WATER PROFILE – A**

SCALE: 1"=20' HORZ; 1"=5' VERT

1 2 3 4 5

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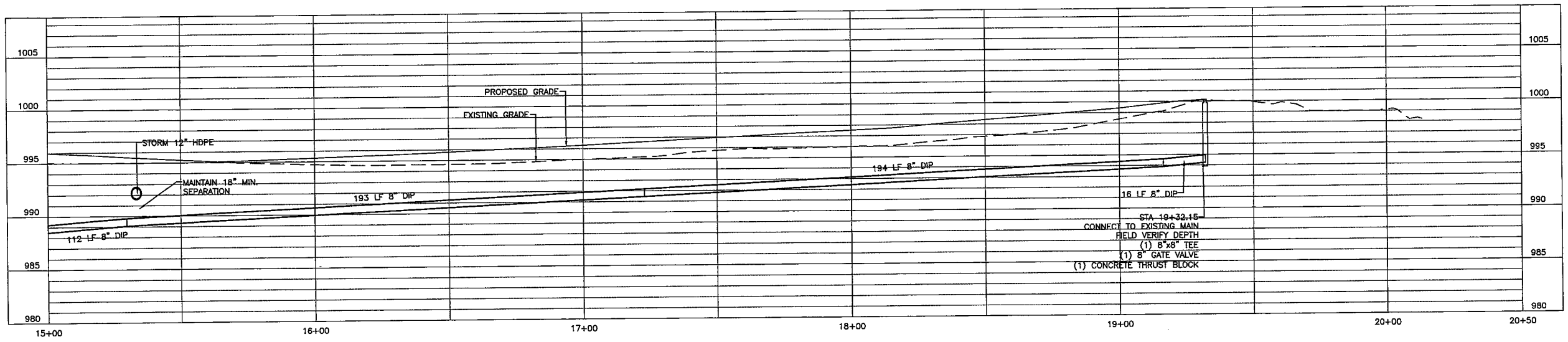
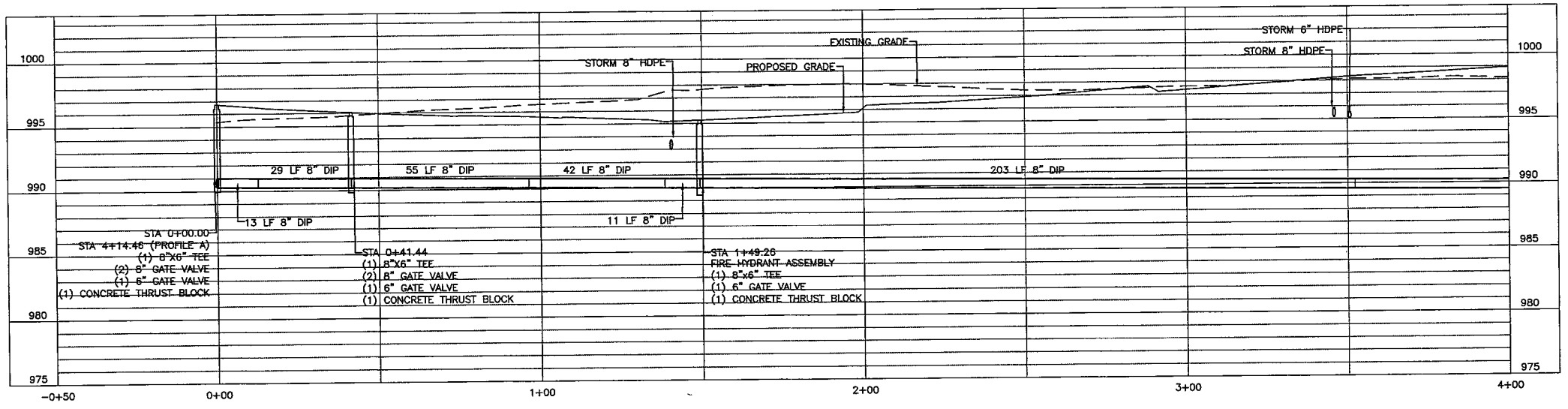
WATER PROFILES

C301



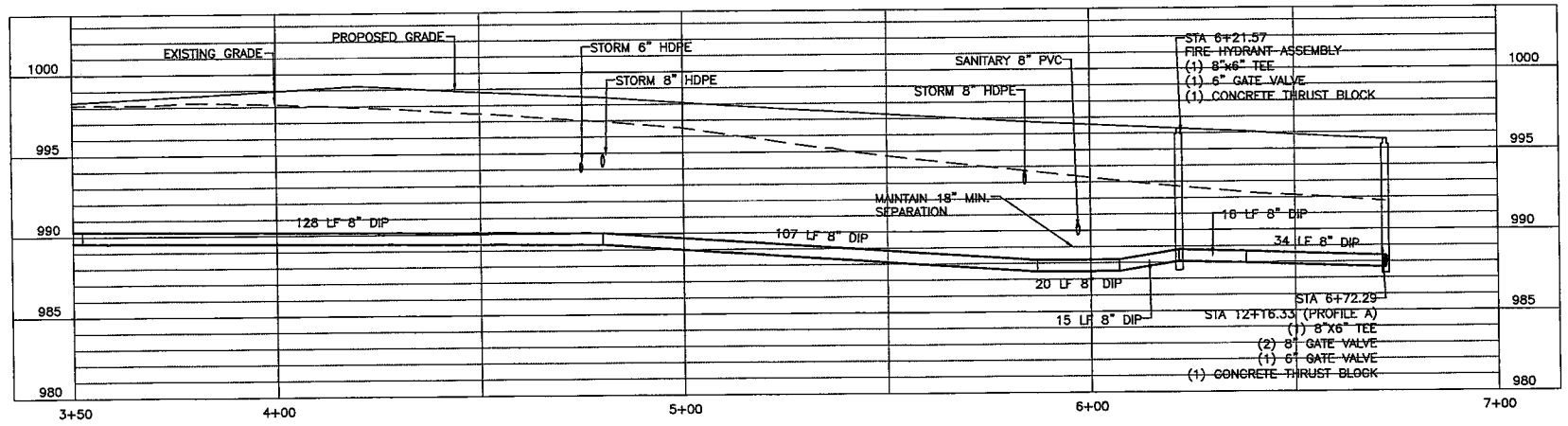
1 **WATER PROFILE – A**

SCALE: 1"=20' HORZ; 1"=5' VERT



2 **WATER PROFILE – B**

SCALE: 1"=20' HORZ; 1"=5' VERT



3 **WATER PROFILE – B**

SCALE: 1"=20' HORZ; 1"=5' VERT

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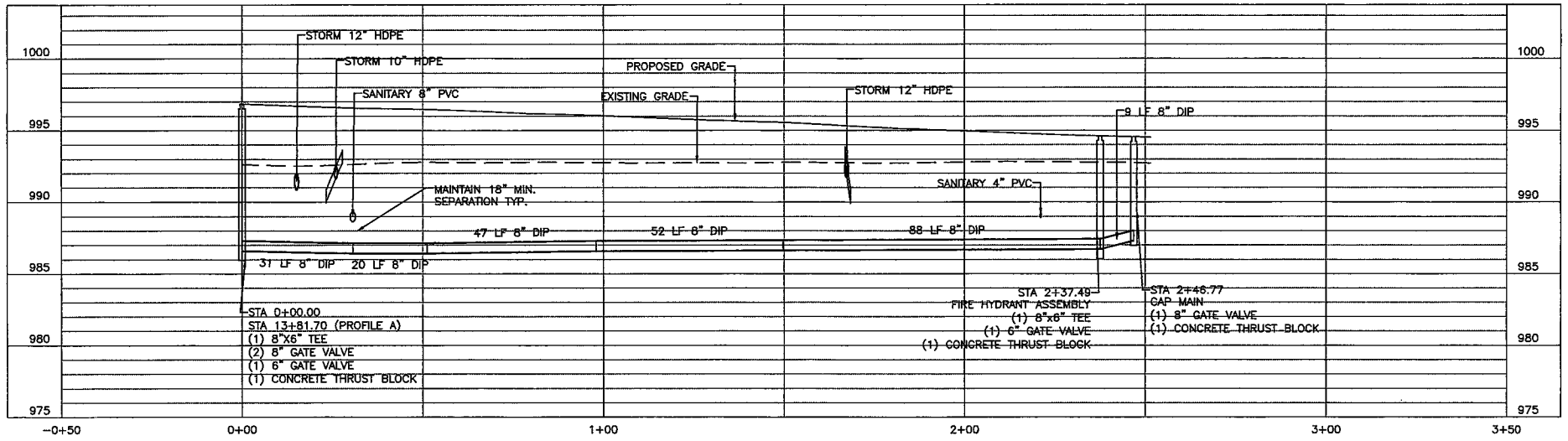
WATER PROFILES

C302



1 **WATER PROFILE – C**

SCALE: 1"=20' HORZ; 1"=5' VERT

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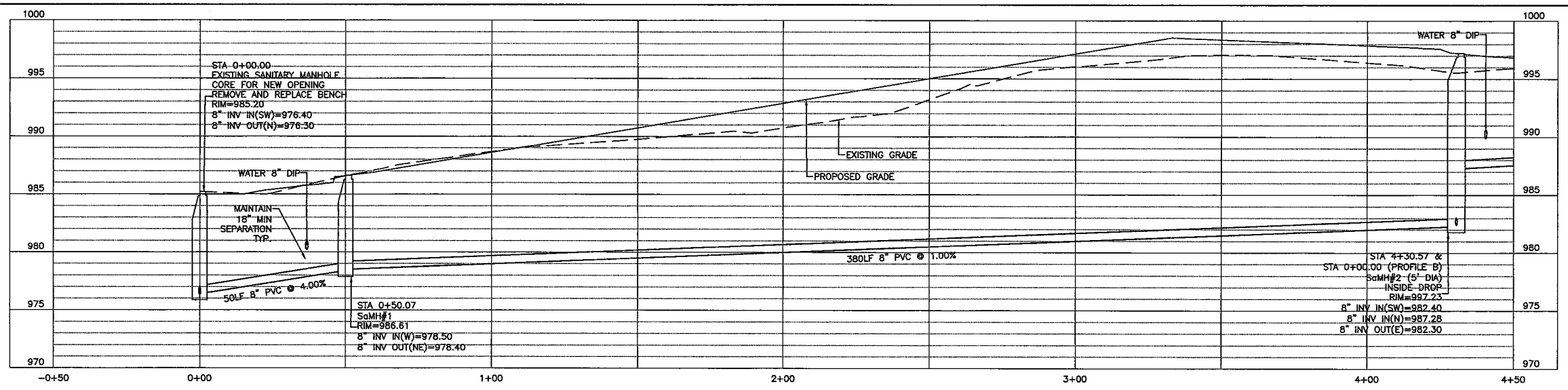
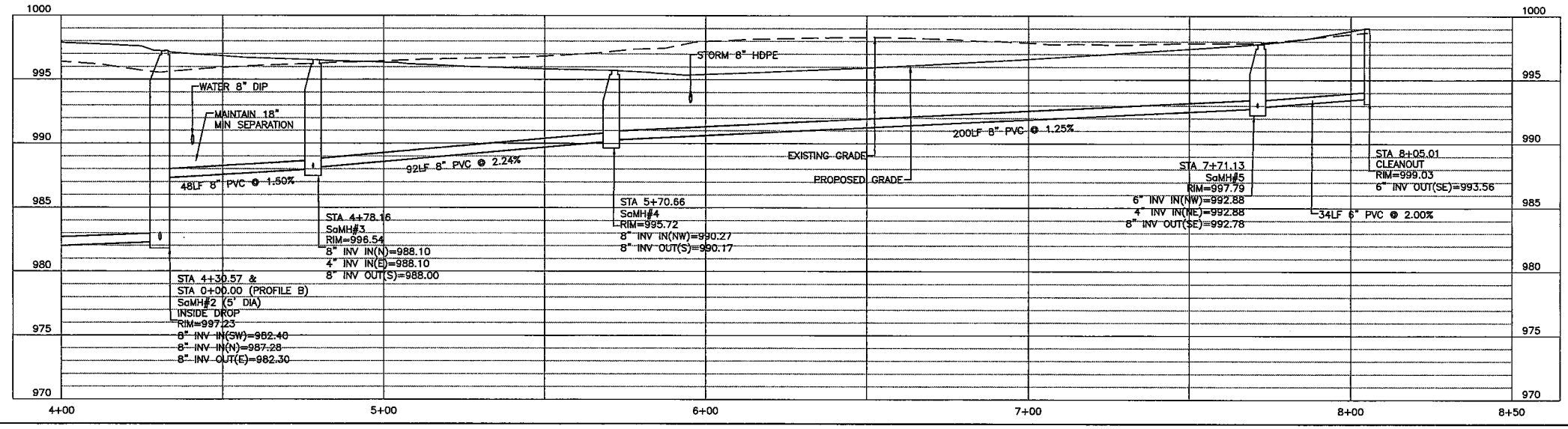
WATER PROFILES

C303



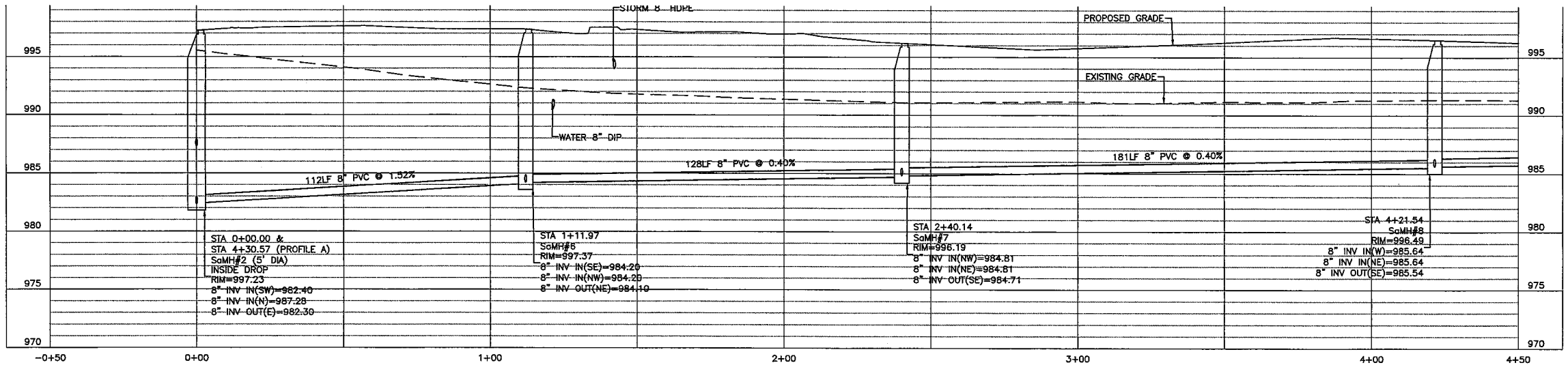
1 **SANITARY PROFILE – A**

SCALE: 1"=20' HORZ; 1"=5' VERT



2 **SANITARY PROFILE – A**

SCALE: 1"=20' HORZ; 1"=5' VERT



3 **SANITARY PROFILE – B**

SCALE: 1"=20' HORZ; 1"=5' VERT

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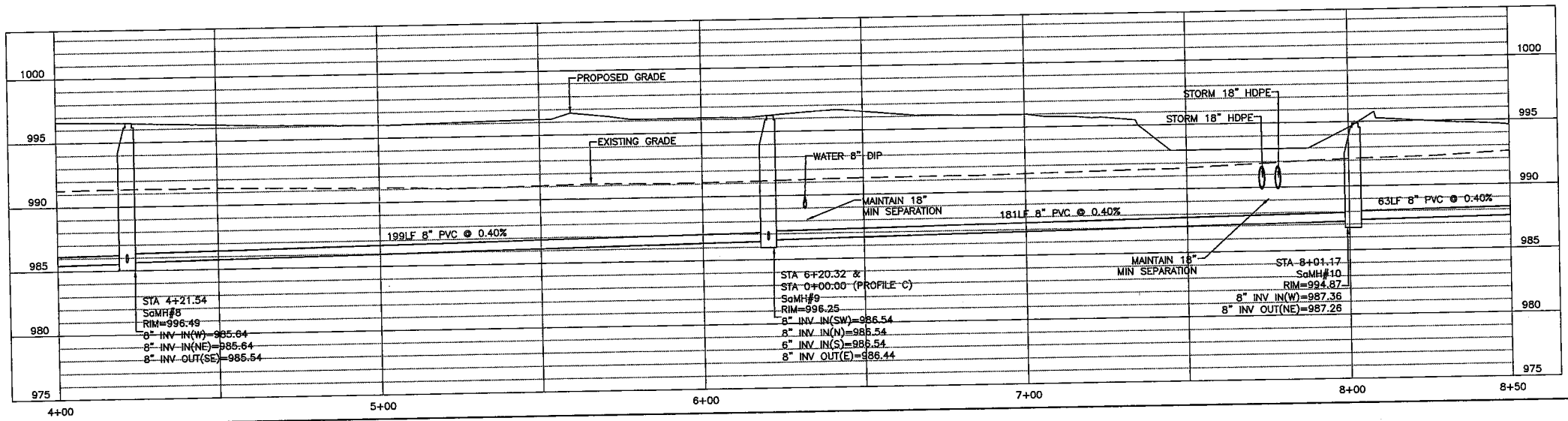
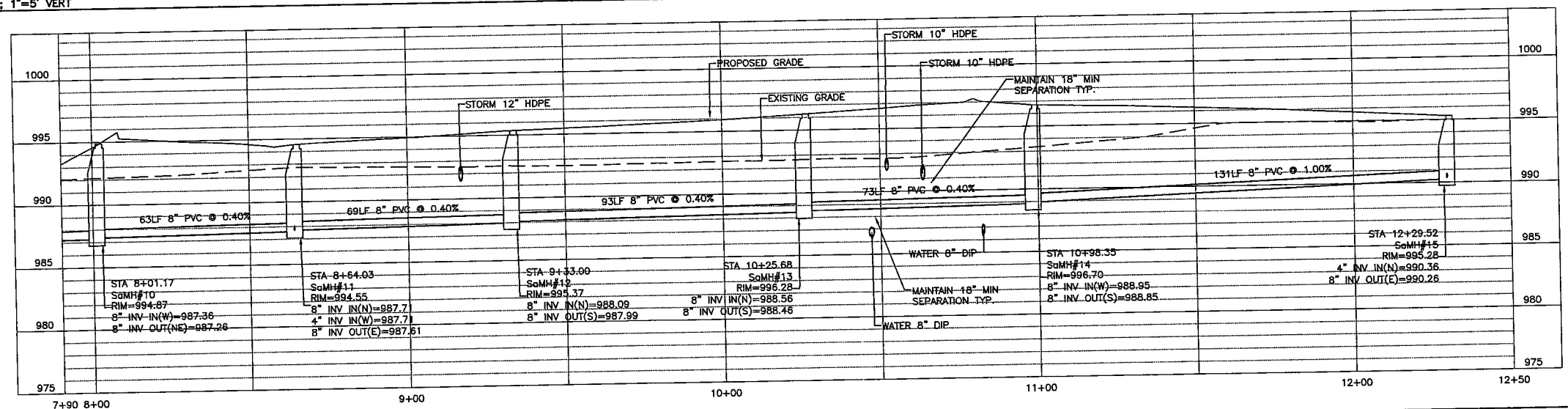
SANITARY PROFILES

C401



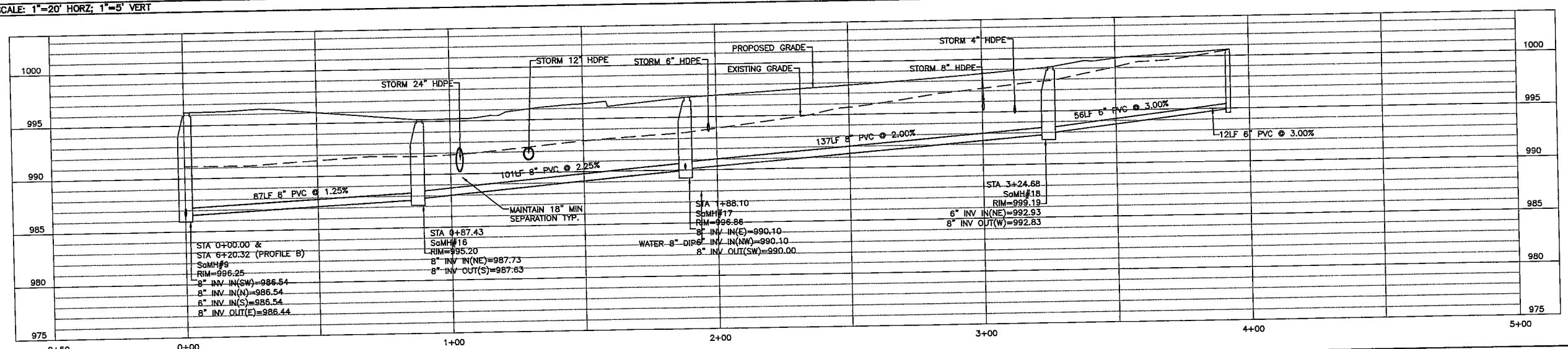
1 **SANITARY PROFILE – B**

SCALE: 1"=20' HORZ; 1"=5' VERT



2 **SANITARY PROFILE – B**

SCALE: 1"=20' HORZ; 1"=5' VERT



3 **SANITARY PROFILE – C**

SCALE: 1"=20' HORZ; 1"=5' VERT

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46 South Street

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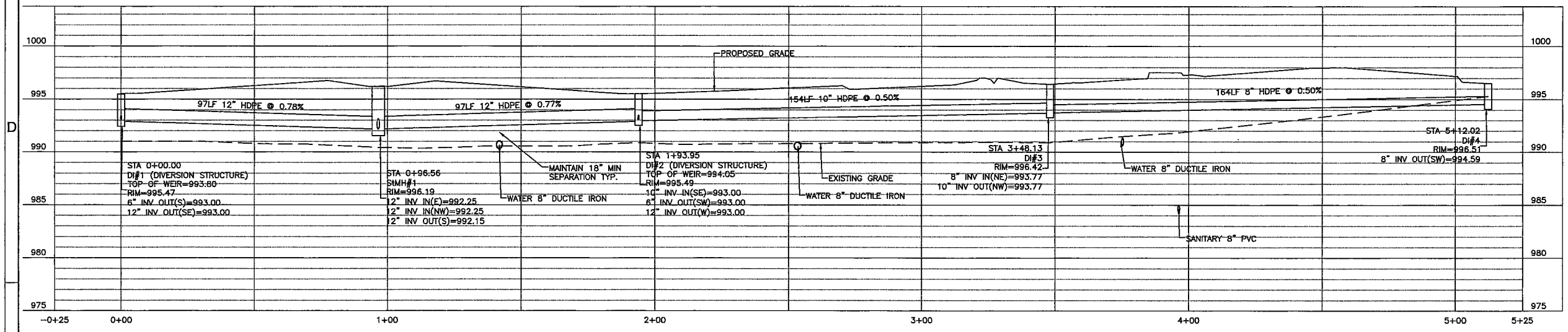
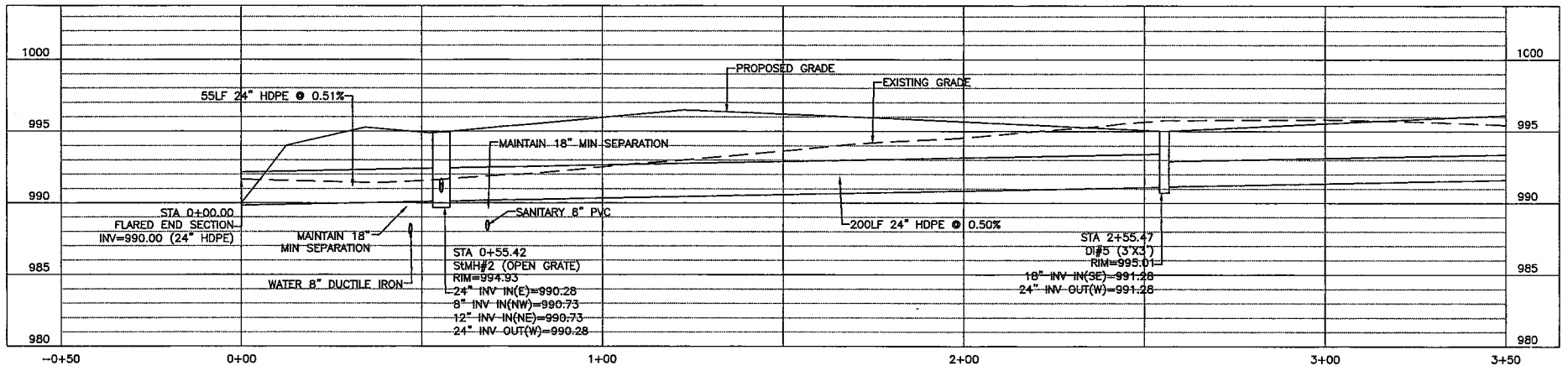
SANITARY PROFILES

C402



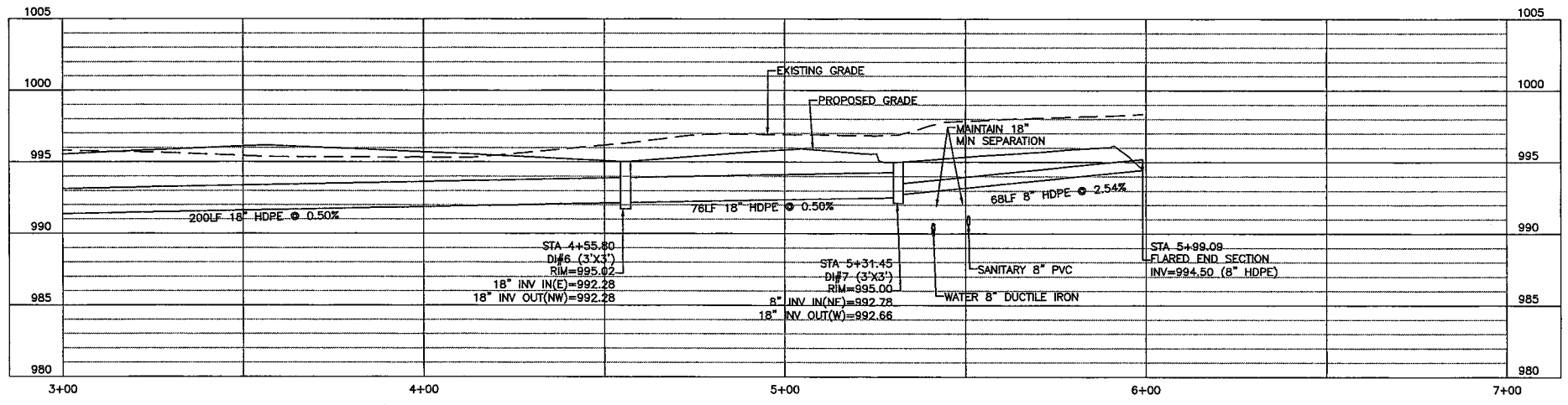
1 STORM PROFILE – A

SCALE: 1"=20' HORZ; 1"=5' VERT



2 STORM PROFILE – B

SCALE: 1"=20' HORZ; 1"=5' VERT



3 STORM PROFILE – B

SCALE: 1"=20' HORZ; 1"=5' VERT

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NOTICE:
IT IS A VIOLATION OF LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED LANDSCAPE ARCHITECT TO ALTER ANY ITEM ON THIS DOCUMENT WHO ALTERS THIS DOCUMENT IS REQUIRED BY LAW TO AFFIX HIS OR HER SEAL AND THE NOTATION "ALTERED BY" FOLLOWED BY HIS OR HER SIGNATURE AND A SPECIFIC DESCRIPTION OF ALTERATIONS.

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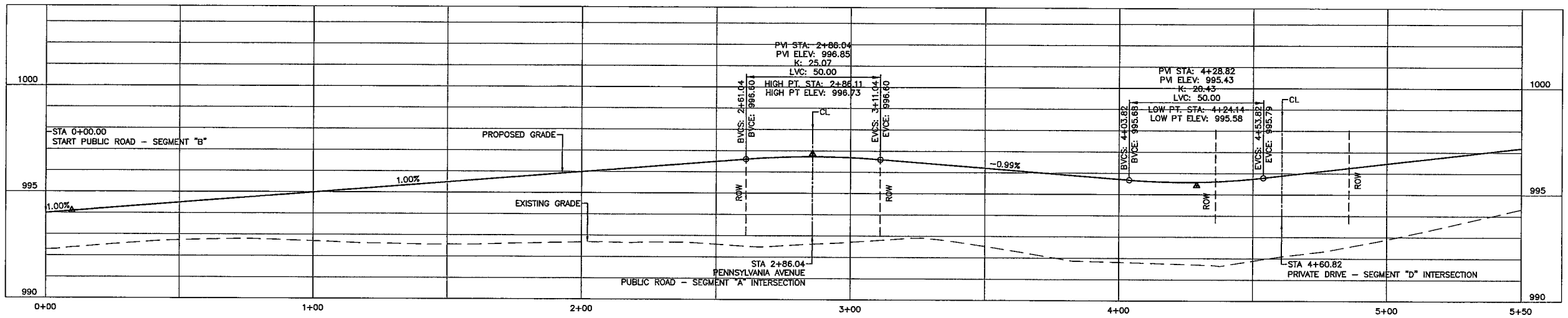
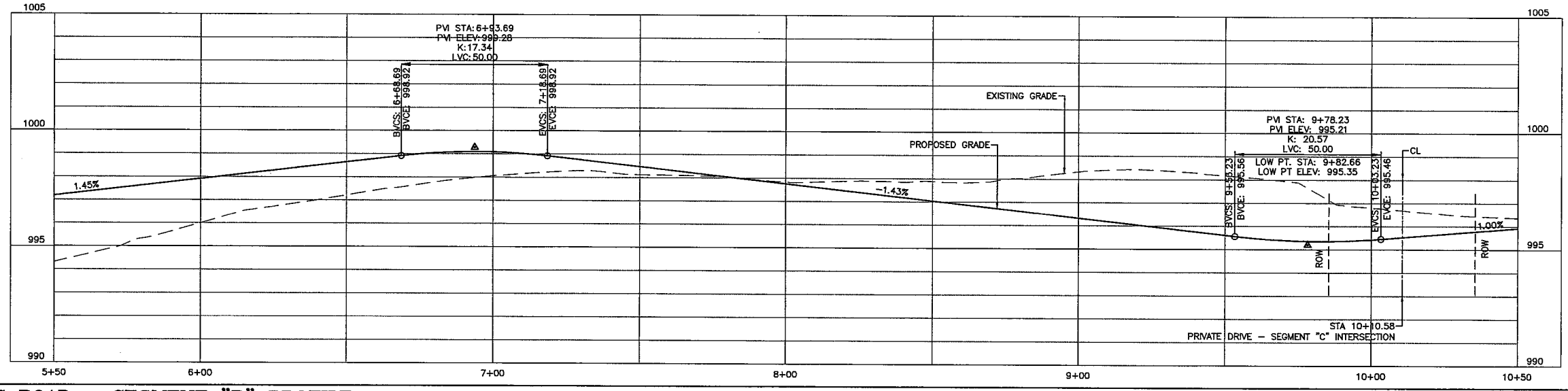
STORM PROFILES

C501



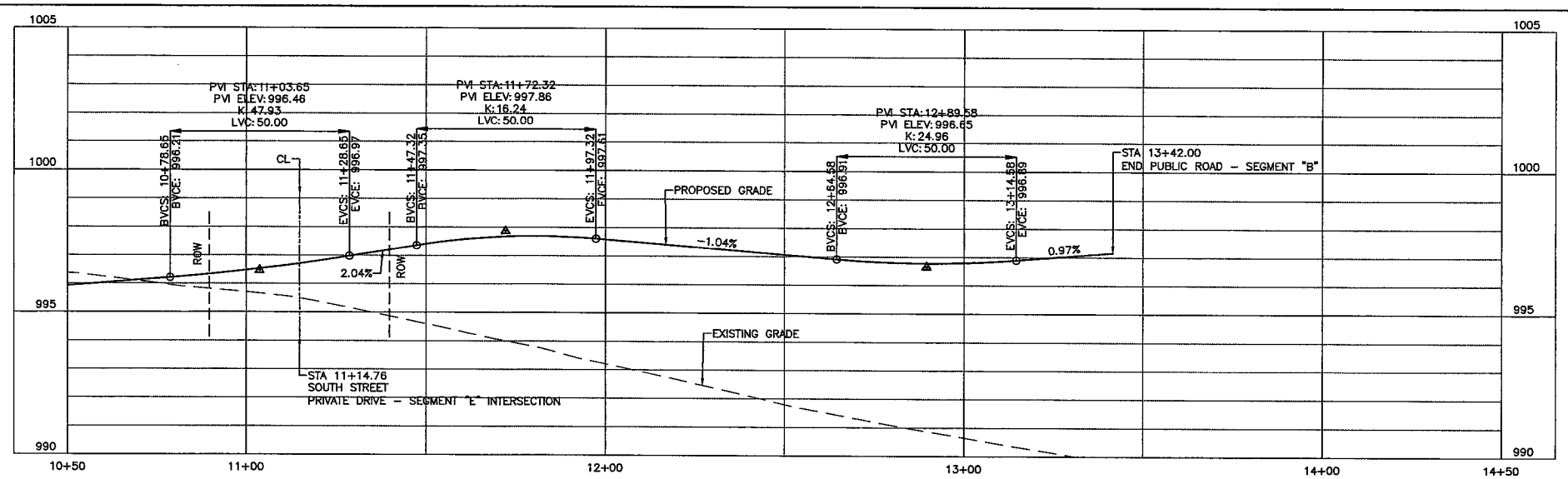
1 **PUBLIC ROAD – SEGMENT "B" PROFILE**

SCALE: 1"=20' HORZ; 1"=5' VERT



2 **PUBLIC ROAD – SEGMENT "B" PROFILE**

SCALE: 1"=20' HORZ; 1"=5' VERT



3 **PUBLIC ROAD – SEGMENT "B" PROFILE**

SCALE: 1"=20' HORZ; 1"=5' VERT

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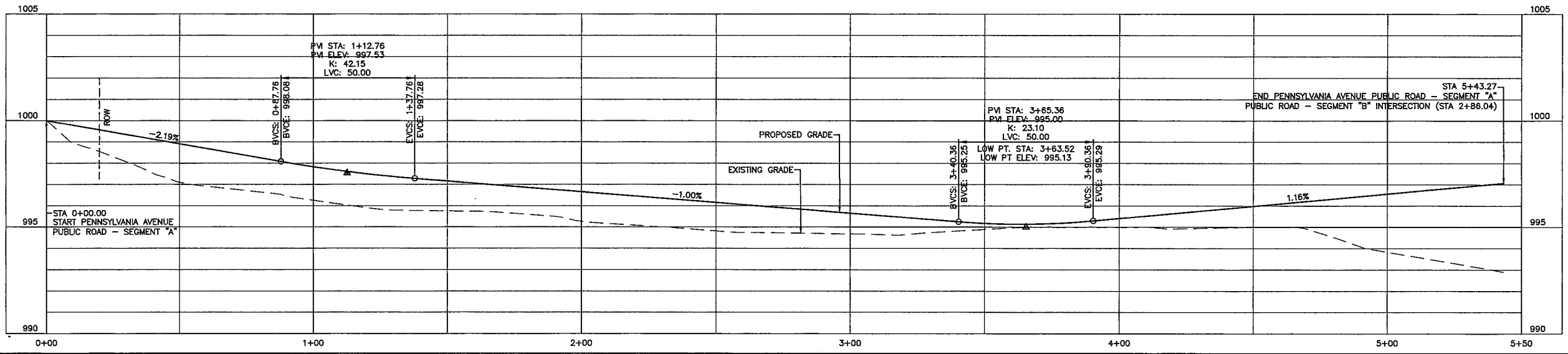
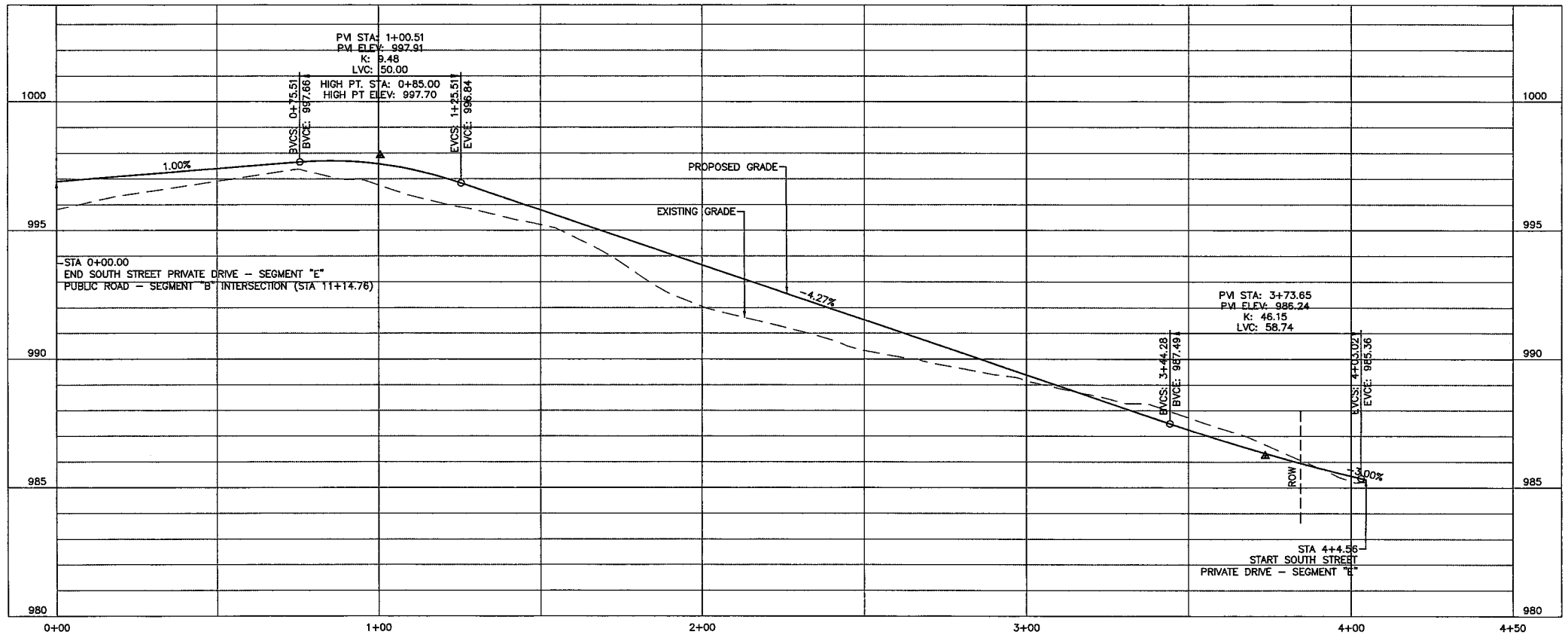
ROAD PROFILES

C601



1 **PENNSYLVANIA AVENUE PUBLIC ROAD – SEGMENT "A" PROFILE**

SCALE: 1"=20' HORZ; 1"=5' VERT



2 **SOUTH STREET PRIVATE DRIVE – SEGMENT "E" PROFILE**

SCALE: 1"=20' HORZ; 1"=5' VERT

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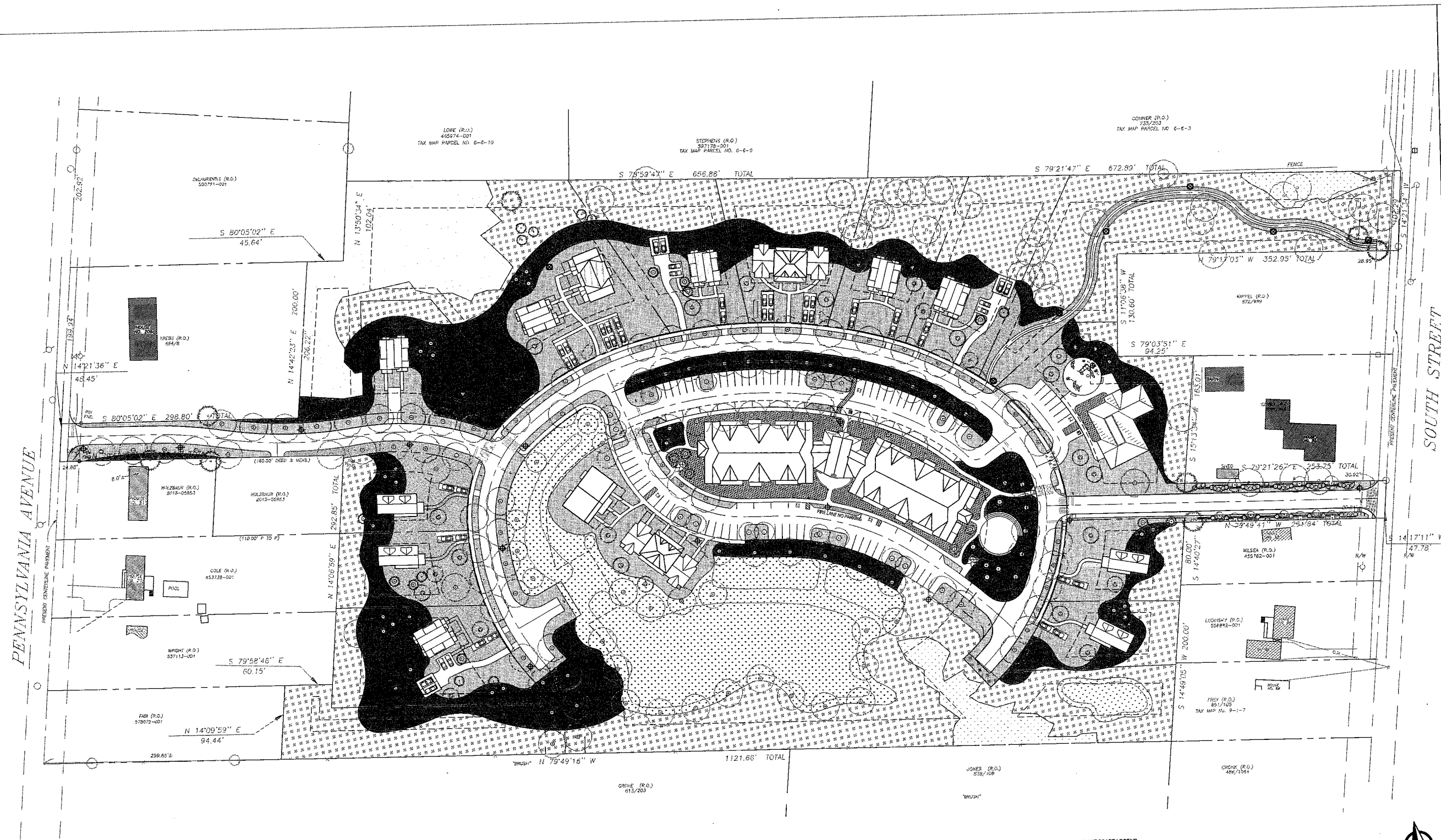
ROAD PROFILES

C602

Exhibit E



LANDSCAPE LEGEND

- EXISTING SHADE TREE (8" CALIPER OR GREATER)
- EXISTING EVERGREEN TREE (8" CALIPER OR GREATER)
- STREET AND SHADE TREES
- ORNAMENTAL TREES
- EVERGREEN TREES
- NO-MOW LAWN SEED MIX ZONE
- WILDFLOWER MEADOW SEED MIX ZONE
- WOODLAND EDGE SEED MIX WITH NATURALIZED PLANTINGS AND INTER-PLANTED WITH SHADE TREES ZONE
- STORMWATER MEADOW SEED MIX ZONE
- FOUNDATION PLANTINGS

DRAWING NOTES:

1. REFER TO L-105 FOR LISTS OF TYPICAL PLANT MATERIAL SPECIFIC TO ZONE.

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LANDSCAPE PLAN

L-104

Native status and frequency in the Cayuga region is taken from: Wesley, F. R., S. Gardescu, and P. L. Marks. 2008. Vascular plant species of the Cayuga Region of New York State. Cornell University. Ithaca, NY. <http:

STREET AND SHADE TREES

BOTANICAL NAME	COMMON NAME	MATURE HEIGHT	MATURE WIDTH	Species native to Cayuga region?	Species frequency in Cayuga region?
Acer rubrum 'Frank Jr.'	Redpointe® Red Maple	45'	30'	Native	Common
Acer saccharum 'Bailtitia'	Fall Fiesta® Sugar Maple	50'	40'	Native	Common
Acer x freemanii 'Celzam'	Celebration® Freeman Maple	50'	40'	Native	Frequent
Catalpa speciosa 'Hiawatha 2'	Heartland® Catalpa	50'	25'	Non-native	Scarce
Gymnocladus dioicus 'J.C. McDaniel'	Prairie Titan® Kentucky Coffee-tree	50'	40'	Non-native	Rare
Liriodendron tulipifera 'JFS-Oz'	Emerald Cloud® Tulip Tree	55'	25'	Native	Frequent
Quercus bicolor 'JFS-KW12'	American Dream® Swamp White Oak	50'	40'	Native	Scarce
Quercus shumardii	Shumard Oak	50'	40'		
Taxodium distichum 'Prairie Sentinel'	Prairie Sentinel Pond Cypress	60'	15'		
Tilia americana 'DTR 123'	Legend® American Linden	40'	30'	Native	Common

ORNAMENTAL TREES

BOTANICAL NAME	COMMON NAME	MATURE HEIGHT	MATURE WIDTH	Species native to Cayuga region?	Species frequency in Cayuga region?
Amelanchier laevis 'JFS-Arb'	Spring Flurry® Serviceberry	35'	20'	Native	Common
Cercis canadensis 'Northern Strain'	Northern Strain Redbud	25'	25'	Non-native	Frequent
Cercis canadensis 'Royal White'	Royal White Redbud	25'	25'	Non-native	Frequent
Cornus x 'KN 30-8'	Venus® Dogwood	25'	20'		
Crataegus crus-galli 'Cruzam'	Crusader® Hawthorn	15'	15'	Native	Frequent
Magnolia virginiana 'Northern Belle'	Northern Belle Sweetbay Magnolia	20'	20'		
Malus x zumi 'Calocarpa'	Zumi Calocarpa Crabapple	20'	24'		

EVERGREEN TREES

BOTANICAL NAME	COMMON NAME	MATURE HEIGHT	MATURE WIDTH	Species native to Cayuga region?	Species frequency in Cayuga region?
Abies concolor	White Fir	40'	20'		
Juniperus virginiana 'Idyllwild'	Idyllwild Juniper	15'	5'	Native	Frequent
Pinus flexilis 'Vanderwolf's Pyramid'	Vanderwolf's Pyramid Pine	40'	20'		
Pinus strobus	Eastern White Pine	50'	25'	Native	Common

FOUNDATION PLANTINGS

BOTANICAL NAME	COMMON NAME	MATURE HEIGHT	MATURE WIDTH	Species native to Cayuga region?	Species frequency in Cayuga region?
Amelanchier canadensis 'Glenform'	Rainbow Pillar Serviceberry	20'	15'		
Betula nigra 'Little King'	Fox Valley® Dwarf River Birch	10'	10'	Native	Rare
Callicarpa x 'NCCX2'	Pearl Glam® Beautyberry	4'	4'		
Calycanthus 'Aphrodite'	Aphrodite Sweetshrub	6'	6'		
Cornus racemosa 'Huntzam'	Hunzar™ Grey Dogwood	4'	4'	Native	Common
Cornus stolonifera 'Farrow'	Arctic Fire™ Red Twig Dogwood	4'	4'	Native	Common
Cotoneaster procumbens 'Gerald'	Little Dipper® Cotoneaster	1'	4'		
Diervilla lonicera 'Copper'	Copper Bush Honeysuckle	3'	3'	Native	Common
Hydrangea arborescens 'Haas' Halo'	Haas' Halo Smooth Hydrangea	4'	4'	Native	Rare
Ilex glabra 'Ilexfarrowfracey'	Strongbox™ Inkberry Holly	3'	3'		
Ilex virginica 'SMNIVDFD'	Scarlandia™ Virginia Sweetspire	3'	3'		
Juniperus virginiana 'Grey Owl'	Grey Owl Juniper	3'	6'	Native	Frequent
Myrica pensylvanica 'Morton' & 'Morton Male'	Silver Sprite™ Bayberry & pollinator	5'	5'	Native	Rare
Panicum virgatum 'Shenandoah'	Shenandoah Switchgrass	2'	2'	Native	Scarce
Physocarpus opulifolius 'SMPDTW'	Tiny Wine® Ninebark	4'	4'	Native	Scarce
Schizachyrium scoparium 'Standing Ovation'	Standing Ovation Little bluestem	3'	1.5'	Native	Frequent
Solidago rugosa 'Fireworks'	Fireworks Wrinkleleaf Goldenrod	3'	3'	Native	Common

NATURALIZATION PLANTINGS

BOTANICAL NAME	COMMON NAME	MATURE HEIGHT	MATURE WIDTH	Species native to Cayuga region?	Species frequency in Cayuga region?
Aesculus parviflora	Bottlebrush buckeye	10'	10'		
Aesculus pavia	Red Buckeye	10'	10'		
Cephalanthus occidentalis 'SMCOSS'	Sugar Shack® Buttonbush	3'	3'	Native	Frequent
Ilex verticillata 'Sonsay' & 'FarrowMP'	Berry Heavy® Winterberry & Mr. Poppins® po	6'	6'	Native	Frequent
Lindera benzoin	Spicebush	8'	8'	Native	Frequent
Populus tremuloides 'NE Art'	Prairie Gold® Aspen	40'	15'	Native	Common
Rhus aromatica 'Gro-Low'	Gro-Low Aromatic Sumac	2'	6'	Native	Frequent
Rhus copallina 'Morten'	Prairie Flame ™ Sumac	6'	6'	Native	Rare
Rhus typhina 'Dissecta'	Cut-Leaf Staghorn Sumac	~15'	~15'	Native	Common
Sassafras albidum	Sassafras	40'	30'	Native	Frequent
Symphoricarpos albus	Snowberry	~4'	~4'	Native	Scarce

VINES

BOTANICAL NAME	COMMON NAME	MATURE HEIGHT	MATURE WIDTH	Species native to Cayuga region?	Species frequency in Cayuga region?
Celastrus scandens 'Bellumi'	Autumn Revolution™ Bittersweet			Native	Scarce
Parthenocissus quinquefolia 'Troki'	Red Wall® Virginia Creeper			Native	Common
Wisteria macrostachya 'Blue Moon'	Blue Moon Wisteria				

Native status and frequency in the Cayuga region is taken from: Wesley, F. R., S. Gardescu, and P. L. Marks. 2008. Vascular plant species of the Cayuga Region of New York State. Cornell University. Ithaca, NY. <http:

STORMWATER MEADOW SEED MIX*

BOTANICAL NAME	COMMON NAME	Species native to Cayuga region?	Species frequency in
Agrostis scabra	Rough Bentgrass/Tickegrass	Native	Frequent
Asclepias incarnata	Swamp Milkweed	Native	Frequent
Aster novae-angliae (Symphyotrichum novae-angliae)	New England Aster	Native	Common
Bidens aristosa	Tickseed Sunflower/Bur Marigold	Non-native	Rare
Carex lurida	Lurid Sedge	Native	Common
Carex scoparia	Blunt Broom Sedge	Native	Common
Cornus amomum	Silky Dogwood	Native	Common
Elymus riparius	Riverbank Wild Rye	Native	Frequent
Elymus virginicus	Virginia Wild Rye	Native	Frequent
Eupatorium maculatum (Eutrochium maculatum)	Spotted Joe Pye Weed	Native	Common
Eupatorium perfoliatum	Boneset	Native	Common
Festuca rubra	Creeping Red Fescue	Non-native	Frequent
Helenium autumnale	Common Sneezeweed	Native	Frequent
Panicum dichotomiflorum	Smooth Panic Grass	Native	Common
Panicum virgatum	Switch Grass	Native	Scarce
Sambucus canadensis	American Elderberry	Native	Common
Scirpus atrovirens	Green Bulrush	Native	Common
Verbena hastata	Blue Vervain	Native	Common
Viburnum dentatum	Arrow Wood Viburnum	Native	Common

*"New England Roadside Matrix Wet Meadow Seed Mix" from New England Wetland Plants, Inc. Mix can be customized as needed to provide desired

WILDFLOWER MEADOW SEED MIX*

BOTANICAL NAME	COMMON NAME	Species native to Cayuga region?	Species frequency in
Asclepias syriaca	Common Milkweed	Native	Common
Aster laevis (Symphyotrichum laeve)	Smooth Blue Aster	Native	Frequent
Aster novae-angliae (Symphyotrichum novae-angliae)	New England Aster	Native	Common
Baptisia australis	Wild Blue False Indigo		
Chamaecrista fasciculata	Partridge Pea		
Coreopsis lanceolata	Lance Leaved Coreopsis	Non-native	Scarce
Desmodium canadense	Showy Tick Trefoil	Native	Frequent
Elymus canadensis	Canada Wild Rye	Native	Frequent
Elymus virginicus	Virginia Wild Rye	Native	Frequent
Eupatorium maculatum (Eutrochium maculatum)	Spotted Joe Pye Weed	Native	Common
Eupatorium purpureum (Eutrochium purpureum)	Purple Joe Pye Weed	Native	Frequent
Euthamia graminifolia (Solidago graminifolia)	Grass Leaved Goldenrod	Native	Common
Festuca rubra	Creeping Red Fescue	Non-native	Frequent
Helenium autumnale	Common Sneezeweed	Native	Frequent
Heliopsis helianthoides	Ox Eye Sunflower	Native	Frequent
Liatris spicata	Spiked Gayfeather/Marsh Blazing Star		
Monarda fistulosa	Wild Bergamot	Native	Frequent
Penstemon digitalis	Beard Tongue	Non-native	Common
Rutheckia hirta	Black Eyed Susan	Non-native	Common
Schizachyrium scoparium	Little Bluestem	Native	Frequent
Solidago juncea	Early Goldenrod	Native	Common
Sorghastrum nutans	Indian Grass	Native	Scarce
Tradescantia ohiensis	Ohio Spiderwort		
Verbena hastata	Blue Vervain	Native	Common
Zizia aurea	Golden Alexanders	Native	Frequent

*"New England Showy Wildflower Seed Mix" from New England Wetland Plants, Inc. Mix can be customized as needed to provide desired species

WOODLAND EDGE SEED MIX*

BOTANICAL NAME	COMMON NAME	Species native to Cayuga region?	Species frequency in
Agrostis perennans	Upland Bentgrass	Native	Common
Aquilegia canadensis	Eastern Columbine	Native	Frequent
Asclepias syriaca	Common Milkweed	Native	Common
Aster cordifolius (Symphyotrichum cordifolium)	Blue Wood Aster	Native	Common
Chamaecrista fasciculata	Partridge Pea		
Desmodium canadense	Showy ticktrefoil	Native	Frequent
Elymus canadensis	Canada Wild Rye	Native	Frequent
Elymus virginicus	Virginia Wildrye	Native	Frequent
Eupatorium maculatum (Eutrochium maculatum)	Spotted Joe Pye Weed	Native	Common
Euthamia graminifolia (Solidago graminifolia)	Grass Leaved Goldenrod	Native	Common
Festuca rubra	Creeping Red Fescue	Non-native	Frequent
Geum canadense	White Avens	Native	Common
Helianthus helianthoides	Ox Eye Sunflower	Native	Frequent
Panicum clandestinum	Deer Tongue	Native	Rare
Penstemon digitalis	Beard Tongue	Non-native	Common
Solidago caesia	Blue Stem Goldenrod	Native	Common
Zizia aurea	Golden Alexanders	Native	Frequent

*"New England Semi-Shade Grass and Forbs Mix" from New England Wetland Plants, Inc. Mix can be customized as needed to provide desired species

NO MOW LAWN SEED MIX*

BOTANICAL NAME	COMMON NAME	Species native to Cayuga region?	Species frequency in
Festuca brevipila	Hard Fescue		
Festuca ovina	Sheep Fescue	Non-native	Frequent
Festuca rubra	Red Fescue	Non-native	Frequent
Festuca rubra subs. fallax	Chewings Fescue	Non-native	Frequent
Festuca rubra var. rubra	Creeping Red Fescue	Non-native	Frequent

*"No Mow Lawn Seed Mix" from Prairie Nursery, Inc. Mix can be customized as needed to provide desired species composition

DRAWING NOTES:
1. REFER TO L-104 FOR PLANTING ZONES.

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LANDSCAPE
PLANT LISTS

L-105

Native status and frequency in the Cayuga region is taken from: Wesley, F. R., S. Gardescu, and P. L. Marks. 2008. Vascular plant species of the Cayuga Region of New York State. Cornell University. Ithaca, NY. <http:

STREET AND SHADE TREES

BOTANICAL NAME	COMMON NAME	MATURE HEIGHT	MATURE WIDTH	Species native to Cayuga region?	Species frequency in Cayuga region?
Acer rubrum 'Frank Jr.'	Redpointe® Red Maple	45'	30'	Native	Common
Acer saccharum 'Bailtitle'	Fall Fiesta® Sugar Maple	50'	40'	Native	Common
Acer x freemanii 'Celzam'	Celebration® Freeman Maple	50'	40'	Native	Frequent
Catalpa speciosa 'Hiawatha 2'	Heartland® Catalpa	50'	25'	Non-native	Scarce
Gymnocladus dioicus 'J. C. McDaniel'	Prairie Titan® Kentucky Coffee-tree	50'	40'	Non-native	Rare
Liriodendron tulipifera 'JFS-Ot'	Emerald City® Tulip Tree	55'	25'	Native	Frequent
Quercus bicolor 'JFS-KW12'	American Dream® Swamp White Oak	50'	40'	Native	Scarce
Quercus shumardii	Shumard Oak	50'	40'		
Taxodium distichum 'Prairie Sentinel'	Prairie Sentinel Pond Cypress	60'	15'		
Tilia americana 'DTR 123'	Legend® American Linden	40'	30'	Native	Common

ORNAMENTAL TREES

BOTANICAL NAME	COMMON NAME	MATURE HEIGHT	MATURE WIDTH	Species native to Cayuga region?	Species frequency in Cayuga region?
Amelanchier laevis 'JFS-Arb'	Spring Flurry® Serviceberry	28'	20'	Native	Common
Cercis canadensis 'Northern Strain'	Northern Strain Redbud	25'	25'	Non-native	Frequent
Cercis canadensis 'Royal White'	Royal White Redbud	25'	25'	Non-native	Frequent
Cornus x 'KN 30-8'	Venus® Dogwood	25'	20'		
Crataegus crus-galli 'Cruzam'	Crusader® Hawthorn	15'	15'	Native	Frequent
Magnolia virginiana 'Northern Belle'	Northern Belle Sweetbay Magnolia	20'	20'		
Malus x zumi 'Calocarpa'	Zumi Calocarpa Crabapple	20'	24'		

EVERGREEN TREES

BOTANICAL NAME	COMMON NAME	MATURE HEIGHT	MATURE WIDTH	Species native to Cayuga region?	Species frequency in Cayuga region?
Abies concolor	White Fir	40'	20'		
Juniperus virginiana 'Idyllwild'	Idyllwild Juniper	15'	5'	Native	Frequent
Pinus flexilis 'Vanderwolf's Pyramid'	Vanderwolf's Pyramid Pine	40'	20'		
Pinus strobus	Eastern White Pine	50'	25'	Native	Common

FOUNDATION PLANTINGS

BOTANICAL NAME	COMMON NAME	MATURE HEIGHT	MATURE WIDTH	Species native to Cayuga region?	Species frequency in Cayuga region?
Amelanchier canadensis 'Glenform'	Rainbow Pillar Serviceberry	20'	15'		
Betula nigra 'Little King'	Fox Valley® Dwarf River Birch	10'	10'	Native	Rare
Callicarpa x 'NCCX2'	Pearl Glam® Beautyberry	4'	4'		
Calycanthus 'Aphrodite'	Aphrodite Sweetshrub	6'	6'		
Cornus racemosa 'Hurzam'	Huron™ Grey Dogwood	4'	4'	Native	Common
Cornus sibirica 'Farrow'	Arctic Fire™ Red Twig Dogwood	4'	4'	Native	Common
Cotoneaster procumbens 'Gerald'	Little Dipper® Cotoneaster	1'	4'		
Diervilla lonicera 'Copper'	Copper Bush Honeysuckle	3'	3'	Native	Common
Hydrangea arborescens 'Haas' Halo'	Haas' Halo Smooth Hydrangea	4'	4'	Native	Rare
Ilex glabra 'Ilesfarrowtracey'	Strongbox™ Inkberry Holly	3'	3'		
Ilea virginica 'SMNVDFC'	Scentlandia™ Virginia Sweetspire	3'	3'		
Juniperus virginiana 'Grey Owl'	Grey Owl Juniper	3'	6'	Native	Frequent
Myrica pensylvanica 'Morton' & 'Morton Male'	Silver Sprite™ Bayberry & pollinator	5'	6'	Native	Rare
Panicum virgatum 'Shenandoah'	Shenandoah Switchgrass	2'	2'	Native	Scarce
Physocarpus opulifolius 'SMPOTW'	Tiny Wine® Ninebark	4'	4'	Native	Scarce
Schizachyrium scoparium 'Standing Ovation'	Standing Ovation Little bluestem	3'	1.5'	Native	Frequent
Solidago rugosa 'Fireworks'	Fireworks Wrinkleleaf Goldenrod	3'	3'	Native	Common

NATURALIZATION PLANTINGS

BOTANICAL NAME	COMMON NAME	MATURE HEIGHT	MATURE WIDTH	Species native to Cayuga region?	Species frequency in Cayuga region?
Aesculus parviflora	Bottlebrush buckeye	10'	10'		
Aesculus pavia	Red Buckeye	10'	10'		
Cephalanthus occidentalis 'SMCOSS'	Sugar Shack® Buttonbush	3'	3'	Native	Frequent
Ilex verticillata 'Scravy' & 'FarrowMP'	Berry Heavy® Winterberry & Mr. Poppins® po	6'	6'	Native	Frequent
Lindera benzoin	Spicebush	8'	8'	Native	Frequent
Populus tremuloides 'NE Arb'	Prairie Gold® Aspen	40'	15'	Native	Common
Rhus aromatica 'Gro-Low'	Gro-Low Aromatic Sumac	2'	6'	Native	Frequent
Rhus copallina 'Morton'	Prairie Flame™ Sumac	6'	6'	Native	Rare
Rhus typhina 'Dissecta'	Cut-Leaf Staghorn Sumac	~15'	~15'	Native	Common
Sassafras albidum	Sassafras	40'	30'	Native	Frequent
Symphoricarpos albus	Snowberry	~4'	~4'	Native	Scarce

VINES

BOTANICAL NAME	COMMON NAME	MATURE HEIGHT	MATURE WIDTH	Species native to Cayuga region?	Species frequency in Cayuga region?
Celastrus scandens 'Balkumm'	Autumn Revolution™ Bittersweet			Native	Scarce
Parthenocissus quinquefolia 'Troki'	Red Wall® Virginia Creeper			Native	Common
Wisteria macrostachya 'Blue Moon'	Blue Moon Wisteria				

Native status and frequency in the Cayuga region is taken from: Wesley, F. R., S. Gardescu, and P. L. Marks. 2008. Vascular plant species of the Cayuga Region of New York State. Cornell University. Ithaca, NY. <http:

STORMWATER MEADOW SEED MIX*

BOTANICAL NAME	COMMON NAME	Species native to Cayuga region?	Species frequency in
Agrostis scabra	Rough Bentgrass/Tickelgrass	Native	Frequent
Asclepias incarnata	Swamp Milkweed	Native	Frequent
Aster novae-angliae (Symphyotrichum novae-angliae)	New England Aster	Native	Common
Bidens aristosa	Tickseed Sunflower/Bur Marigold	Non-native	Rare
Carex lurida	Lurid Sedge	Native	Common
Carex scoparia	Blunt Broom Sedge	Native	Common
Cornus amomum	Silky Dogwood	Native	Common
Elymus riparius	Riverbank Wild Rye	Native	Frequent
Elymus virginicus	Virginia Wild Rye	Native	Frequent
Eupatorium maculatum (Eutrochium maculatum)	Spotted Joe Pye Weed	Native	Common
Eupatorium perfoliatum	Boneset	Native	Common
Festuca rubra	Creeping Red Fescue	Non-native	Frequent
Helenium autumnale	Common Sneezeweed	Native	Frequent
Panicum dichotomiflorum	Smooth Panic Grass	Native	Common
Panicum virgatum	Switch Grass	Native	Scarce
Sambucus canadensis	American Elderberry	Native	Common
Scirpus atrovirens	Green Bulrush	Native	Common
Verbena hastata	Blue Vervain	Native	Common
Viburnum dentatum	Arrow Wood Viburnum	Native	Common

***New England Roadside Matrix Wet Meadow Seed Mix* from New England Wetland Plants, Inc. Mix can be customized as needed to provide desired*

WILDFLOWER MEADOW SEED MIX*

BOTANICAL NAME	COMMON NAME	Species native to Cayuga region?	Species frequency in
Asclepias syriaca	Common Milkweed	Native	Common
Aster laevis (Symphyotrichum laeve)	Smooth Blue Aster	Native	Frequent
Aster novae-angliae (Symphyotrichum novae-angliae)	New England Aster	Native	Common
Baptisia australis	Wild Blue False Indigo		
Chamaecrista fasciculata	Partridge Pea		
Coreopsis lanceolata	Lance Leaved Coreopsis	Non-native	Scarce
Desmodium canadense	Showy Tick Trefoil	Native	Frequent
Elymus canadensis	Canada Wild Rye	Native	Frequent
Elymus virginicus	Virginia Wild Rye	Native	Frequent
Eupatorium maculatum (Eutrochium maculatum)	Spotted Joe Pye Weed	Native	Common
Eupatorium purpureum (Eutrochium purpureum)	Purple Joe Pye Weed	Native	Frequent
Euthamia graminifolia (Solidago graminifolia)	Grass Leaved Goldenrod	Native	Common
Festuca rubra	Creeping Red Fescue	Non-native	Frequent
Helenium autumnale	Common Sneezeweed	Native	Frequent
Heliopsis helianthoides	Ox Eye Sunflower	Native	Frequent
Liatris spicata	Spiked Gayfeather/Marsh Blazing Star		
Monarda fistulosa	Wild Bergamot	Native	Frequent
Penstemon digitalis	Beard Tongue	Non-native	Common
Rudbeckia hirta	Black Eyed Susan	Non-native	Common
Schizachyrium scoparium	Little Bluestem	Native	Frequent
Solidago juncea	Early Goldenrod	Native	Common
Sorghastrum nutans	Indian Grass	Native	Scarce
Tradescantia chiensis	Ohio Spiderwort		
Verbena hastata	Blue Vervain	Native	Common
Zizia aurea	Golden Alexanders	Native	Frequent

**New England Showy Wildflower Seed Mix* from New England Wetland Plants, Inc. Mix can be customized as needed to provide desired species*

WOODLAND EDGE SEED MIX*

BOTANICAL NAME	COMMON NAME	Species native to Cayuga region?	Species frequency in
Agrostis perennans	Upland Bentgrass	Native	Common
Aquilegia canadensis	Eastern Columbine	Native	Frequent
Asclepias syriaca	Common Milkweed	Native	Common
Aster cordifolius (Symphyotrichum cordifolium)	Blue Wood Aster	Native	Common
Chamaecrista fasciculata	Partridge Pea		
Desmodium canadense	Showy ticktrefoil	Native	Frequent
Elymus canadensis	Canada Wild Rye	Native	Frequent
Elymus virginicus	Virginia Wildrye	Native	Frequent
Eupatorium maculatum (Eutrochium maculatum)	Spotted Joe Pye Weed	Native	Common
Euthamia graminifolia (Solicago graminifolia)	Grass Leaved Goldenrod	Native	Common
Festuca rubra	Creeping Red Fescue	Non-native	Frequent
Geum canadense	White Avens	Native	Common
Helianthus helianthoides	Ox Eye Sunflower	Native	Frequent
Panicum clandestinum	Deer Tongue	Native	Rare
Penstemon digitalis	Beard Tongue	Non-native	Common
Solidago caesia	Blue Stem Goldenrod	Native	Common
Zizia aurea	Golden Alexanders	Native	Frequent

***New England Semi-Shade Grass and Forbs Mix* from New England Wetland Plants, Inc. Mix can be customized as needed to provide desired species*

NO MOW LAWN SEED MIX*

BOTANICAL NAME	COMMON NAME	Species native to Cayuga region?	Species frequency in
Festuca brevipila	Hard Fescue		
Festuca ovina	Sheep Fescue	Non-native	Frequent
Festuca rubra	Red Fescue	Non-native	Frequent
Festuca rubra subs. fallax	Chewings Fescue	Non-native	Frequent
Festuca rubra var. rubra	Creeping Red Fescue	Non-native	Frequent

***No Mow Lawn Seed Mix* from Prairie Nursery, Inc. Mix can be customized as needed to provide desired species composition*

DRAWING NOTES:

1. REFER TO L-104 FOR PLANTING ZONES.

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DATE	REVISION	BY
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Ithaca Neighborhood Housing Services &
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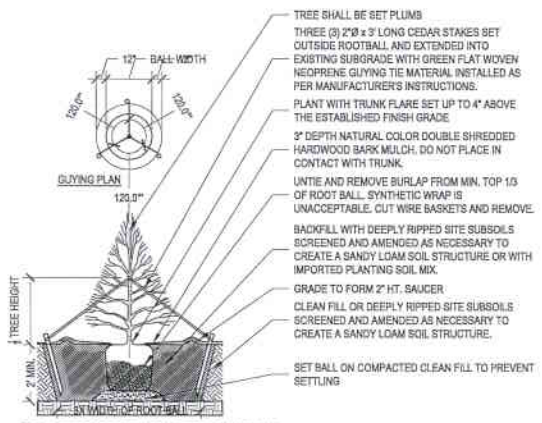
46 South Street
Trumansburg, New York

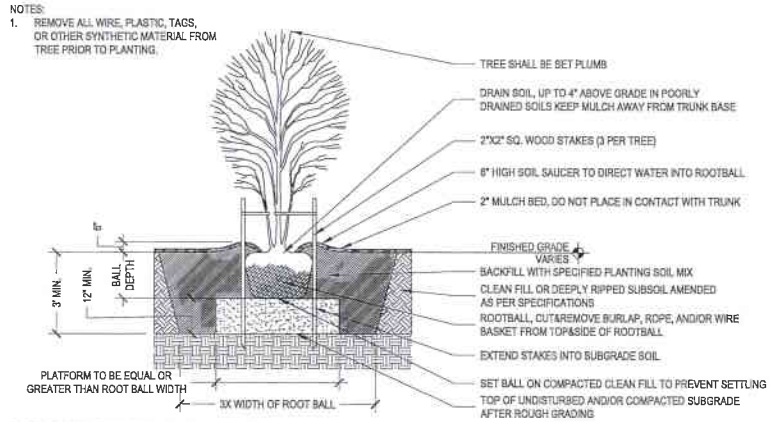
DATE:	12/13/2017
PROJECT:	17003
DRAWN BY:	RK
CHECKED:	

LANDSCAPE PLANT LISTS

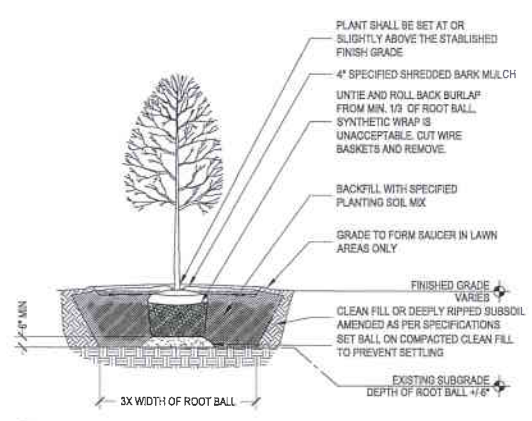
L-105



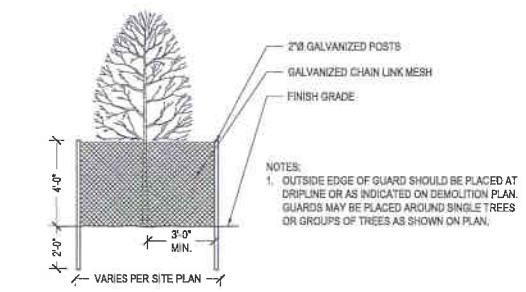
14 EVERGREEN SHRUB/TREE PLANTING
Scale: 1/4"=1'-0"



13 MULTI-STEM ORNAMENTAL TREE/SHRUB PLANTING
Scale: 1/4"=1'-0"



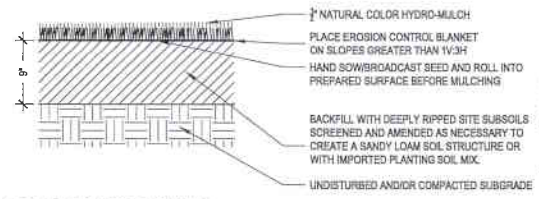
12 DECIDUOUS TREE PLANTING
Scale: 1/4"=1'-0"



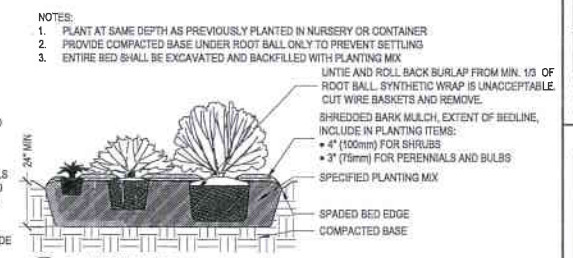
NOTES:
1. OUTSIDE EDGE OF GUARD SHOULD BE PLACED AT DRIPLINE OR AS INDICATED ON DEMOLITION PLAN. GUARDS MAY BE PLACED AROUND SINGLE TREES OR GROUPS OF TREES AS SHOWN ON PLAN.

11 TREE PROTECTION
Scale: 1/4"=1'-0"

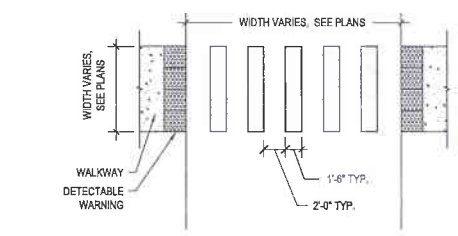
17 NO MOW LAWN
Scale: 1"=1'-0"



16 MEADOW ESTABLISHMENT
Scale: 1"=1'-0"

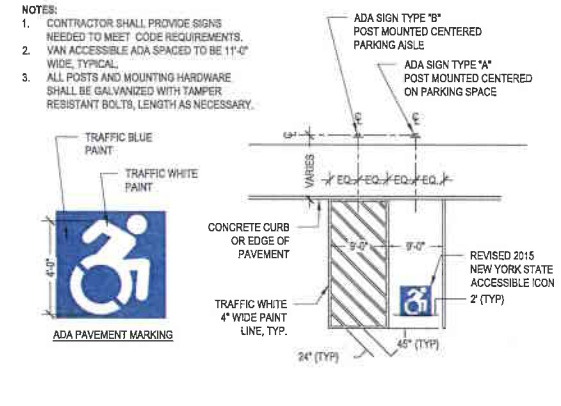


15 SHRUB PLANTING
Scale: 1/4"=1'-0"

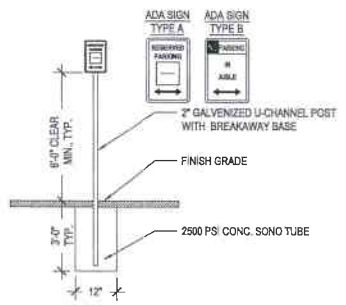


10 CROSSWALK MARKINGS
1/8" = 1'-0"

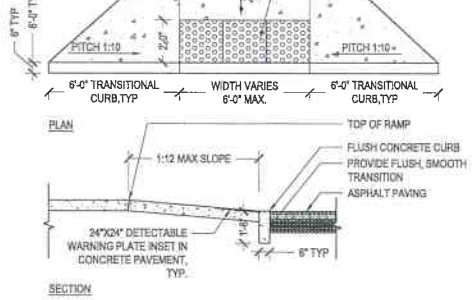
NOTES:
1. MARKING FOR CROSSWALKS SHALL BE ACCORDING TO REQUIREMENTS AS OUTLINED IN SECTION 3B OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS.
2. CROSSWALKS WIDTH SHALL BE A MINIMUM OF 8' OR EQUAL TO THE WIDTH OF THE SIDEWALK IT CONNECTS.
3. MARKINGS ARE TO BE PAINTED WHITE.
4. CONTRACTOR SHALL PROVIDE ALL NEW SIGNS NEEDED TO MEET CODE REQUIREMENTS.
5. SEE L-102 FOR LOCATIONS



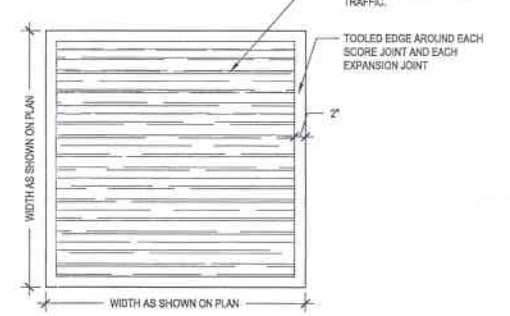
9 ADA PAVEMENT MARKINGS
Scale: N.T.S.



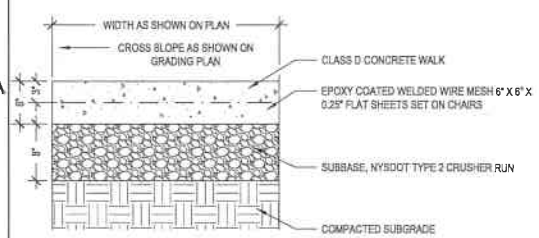
8 SITE SIGNAGE
Scale: 1/4"=1'-0"



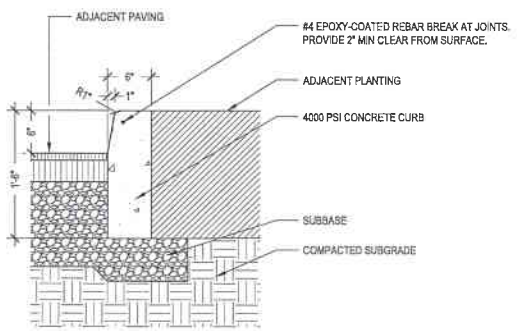
7 CURB RAMP
Scale: 1/4"=1'-0"



6 TYPICAL CONCRETE BROOM FINISH DETAIL
Scale: 3/4"=1'-0"

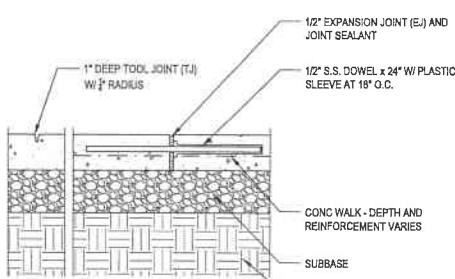


5 HEAVY DUTY CONCRETE PAVEMENT
Scale: 1"=1'-0"



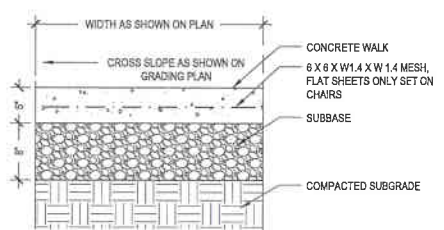
4 6" CONCRETE CURB
Scale: 1"=1'-0"

NOTES:
1. OVERLAP MESH SHEETS 1'-0" MIN.

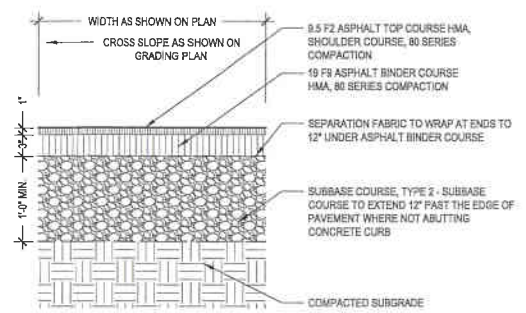


3 TYPICAL CONCRETE JOINTS
Scale: 1"=1'-0"

NOTES:
1. SEE PLANS FOR TOOL JOINTS, LAYOUT WIDTHS, RADII AND FINISHES.
2. CONCRETE SIDEWALK TO BE WET CURED.
3. APPLY SLANE CURING COMPOUND TO WALKS FOLLOWING WET CURE PER SPECIFICATIONS.



2 CONCRETE PAVEMENT
Scale: 1"=1'-0"



1 ASPHALT PAVEMENT
Scale: 1"=1'-0"

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DATE	REVISION	BY
3/16/18	PER VILLAGE COMMENTS	RK

Ithaca Neighborhood Housing Services &
Sundial Property Development LLC

46 South Street

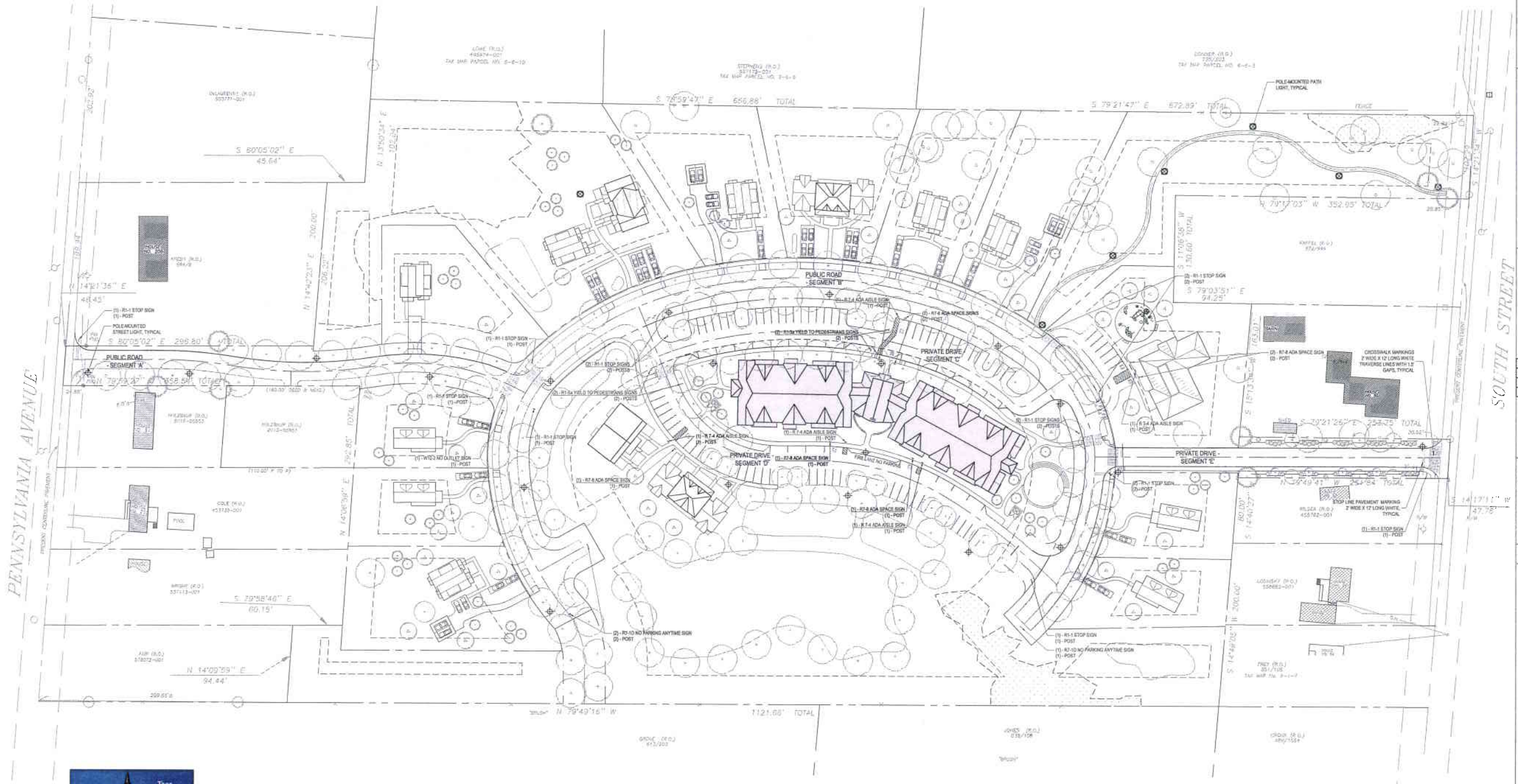
Trumansburg, New York

DATE:	12/13/2017
PROJECT:	17003
DRAWN BY:	RK
CHECKED:	

SITE DETAILS

L-106

Exhibit F



1914LED LIBERTYVILLE SERIES POLE-MOUNTED STREET & PATH LIGHTS
FABRICATED BY STERNBERG LIGHTING
LUMINAIRE MODEL:1914LED-RLM731-G (35" H x 31" W)
20' HT. POLE (STREET) / 12' POLE (PATH)
(TRADITIONAL FLUTED STRAIGHT SHAFT)

LIGHTING AND SIGNAGE SCHEDULE

QTY.	SYMBOL	TYPE	DESCRIPTION
20	⊕	STREET LIGHT	APPROX. 20' HT., HPS OR MH LAMPING, ASYMMETRICAL DISTRIBUTION
7	⊗	PATH LIGHT	APPROX. 12' HT., HPS OR MH LAMPING, SYMMETRICAL DISTRIBUTION
12		STOP SIGN	MUTCD R1-1 SIGN MOUNTED ON GALVANIZED POLE
4		YIELD TO PEDESTRIANS SIGN	MUTCD R1-5a STANDARD SIGN MOUNTED ON GALVANIZED POLE
7/5		ADA PARKING SIGNS	MUTCD R7-8 (SPACE), R7-4 (AISLE) STANDARD SIGNS MOUNTED ON GALVANIZED POLE
1		NO OUTLET SIGN	MUTCD W12-2 STANDARD SIGN MOUNTED ON GALVANIZED POLE
3		NO PARKING ANY TIME SIGN	MUTCD R7-1D STANDARD SIGN MOUNTED ON GALVANIZED POLE

NOTE:
1. ALL PROPOSED LIGHT FIXTURES TO BE IDA APPROVED AND ANY REPLACEMENT OF LIGHTING SHALL REMAIN DARK SKY COMPLIANT.

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Ithaca Neighborhood Housing Services &
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46 South Street
Trumansburg, New York

DATE:	12/13/2017
PROJECT:	17003
DRAWN BY:	RK
CHECKED	

SITE LIGHTING & SIGNAGE PLAN

L-103

Exhibit G

46 South Street

Preliminary Stormwater Calculations

Summary

Village of Trumansburg
Tompkins County, New York

Prepared for:

Ithaca Neighborhood Housing Services &
Sundial Property Development LLC
115 West Clinton Street
Ithaca, NY 14850

Prepared by:

T.G. Miller P.C.
203 North Aurora Street
Ithaca, New York 14850
(607) 272-6477

March 16, 2018

TABLE OF CONTENTS

PROJECT DESCRIPTION

Purpose and Extent of Proposed Development

The 46 South Street project is located in the Village of Trumansburg, Tompkins County, New York (Tax Map Parcels 9.-1-2 & 8.-3-2.2). The project includes the consolidation of the two parcels then the subdivision of the 19.115 acres into 15 parcels that will include market rate for-sale units, affordable for-sale townhomes, affordable rental townhomes, rental apartments and a nursery school. The project will also include various amenities such roads, parking and walkways.

The stormwater management objectives for the project focus on treatment of runoff from the post-developed site. As a townhome and multifamily residential property disturbing greater than one acre of land, a full Stormwater Pollution Prevention Plan (SWPPP) is required, including both temporary erosion controls and permanent stormwater management practices under the regulations of the Village of Trumansburg and New York State Department of Environmental Conservation (DEC). Stormwater management objectives for the site include:

- Providing water quality treatment by means of stormwater wetlands, a bioretention filter, and rain gardens.
- Provide Runoff Reduction by means of rain gardens and a bioretention filter.
- Providing stormwater detention to meet DEC's standards for mitigating runoff from the 1-, 10-, and 100-year storm events.

Project Disturbance Area

Total Disturbed Area:	14.91 acres
Existing Impervious Area:	0.00 acres
Proposed Impervious Area:	4.69 acres
Increase in Impervious Area:	4.69 acres

Description and Limitations of On-Site Soils

On-site soils consist of Howard gravelly loam (33.7%), Lansing gravelly silt loam (7.6%), Ovid silt loam (13.7%) and Rhinebeck silt loam (45.0%) based on the USDA Soil Surveys of Tompkins County. Based upon the classification of soils defined by the Natural Resource Conservation Service, the site contains 33% HSG "A" 8% HSG "B" and 59% HSG "D" soils.

A geotechnical investigation to determine the soil types and properties for the on-site soils was conducted by the geotechnical consultant, Empire Geo-Services Inc., in August 2017. The report shows higher groundwater in the areas associated with "D" soils in the USDA report.

POST-CONSTRUCTION STORMWATER MANAGEMENT

Existing Conditions

The project site is best characterized as undeveloped land, and will disturb approximately 14.91 acres. 100% of the existing site cover is pervious.

There are two watersheds in the vicinity of the project site that will be impacted by the proposed project. The western watershed (WS#1) has been divided into two subareas (WS#1A and WS#1B).

Water Quality Controls

The water quality strategy is designed to improve water quality by capturing and treating 90% of the average annual stormwater runoff volume. The required water quality volume is calculated from the following equation:

WQ_v = P*(0.05+0.009*I)*A / 12

Where:

P	=	90% rainfall event (inches)
	=	1.00 inches (Ithaca, NY)
Rv	=	(0.05+0.009*I) (minimum allowed value = 0.20)
I	=	Imperviousness (%)
A	=	Drainage Area (s.f.)
	=	19.12 acres (site acreage was used to determine requirements)

Therefore:

I	=	4.69 acres / 19.12 acres
	=	25%
Rv	=	(0.05+0.009*25%)
	=	0.27
Required WQ_v	=	1.00"* 0.27 * 19.12/ 12
	=	0.431 acre feet
	=	18,795 cubic feet

The project plans to utilize both rooftop disconnection and tree planting credits towards the water quality and runoff reduction requirements. These credits are applied by recalculating the WQv and RRv requirements while counting the disconnected rooftop portions and up to 100 square feet of impervious cover per tree as pervious surfaces.

Rooftop disconnections: Most of the buildings were counted towards this credit. The large multifamily building, half of the nursery, and half of the two buildings adjacent to existing Wetland "A" were not counted, as their roof runoff is unable to be directed to vegetated areas that meet the NYSDEC requirements. 0.74 acres of roofs are counted in this credit. Although the site soils are mostly HSG "D," soil restoration will be applied throughout the site where soils have been disturbed. Soil restoration is applied in the cleanup, restoration, and landscaping phase of construction followed by the permanent establishment of an appropriate, deep-rooted groundcover to help maintain the restored soil structure. The required measures of soil restoration will be outlined in greater detail in the Full SWPPP.

Tree Planting: Only trees along roads, having canopies greater than 16 feet in diameter were counted for this credit. If the tree canopies did not cover adequate impervious cover, they were not counted. 104 trees were counted, with 100 square feet of impervious cover being credited per tree (for a total of 0.24 acres).

The recalculated water quality volume is as shown as follows:

P	=	90% rainfall event (inches)
	=	1.00 inches (Ithaca, NY)
Rv	=	(0.05+0.009*I) (minimum allowed value = 0.20)

Water Quantity Controls

The water quantity practice is designed to reduce peak discharges for the 1, 10, and 100-year storms to below pre-developed rates at the point of analysis. In Watershed 1A some small storage will be continue to be provided in existing Wetland "A." However, Watersheds #1A and #1B will both drain to the proposed Stormwater Wetlands to attenuate post-developed peak flows. Watershed #1C will be mitigated by means of a separate Stormwater Wetland, and Watershed #1D is not captured and sheet drains off the site.

Watershed #2C contains the South Street drive, the majority of which will be captured by underground detention and then treated by a hydrodynamic separator unit. Watersheds #2A and #2C will remain largely unchanged, with some small areas of woods and meadow being converted to lawn prior to draining off of the site.

Table 3 summarizes resulting peak discharge rates from within each of these watersheds.

The existing 18" culvert along South Street will receive runoff from Watershed #2B and 2C. To ensure that the increase in rates of runoff to South Street will not negatively impact the culvert, it was analyzed in the HydroCAD model. The model results show that the pipe passes the 25-year storm without any issues. The 100-year storm would surcharge DI #14's grate and spill into the road. As most municipal road storm sewers are designed for 25-year storm events, this result was not unexpected. The pipe was not modeled in the existing conditions, as all of the structures contributing to the pipe are buried or the rims are higher than adjacent grades. Currently there is little, if any, stormwater entering the pipe through existing structures.

Practice Sizing

Bioretention Filter

The filter will capture and treat runoff from a portion of Watershed #1B. The filter is sized using Darcy's Law as presented in the New York State Stormwater Management Design Manual, using the following equation:

$A_f = WQ_v (d_f)/[(k)(T)(d_f+h_f)]$

Where:

A_f	=	Filter Area (sf)
d_f	=	Filter Depth (feet) = 2.0 feet
h_f	=	Average Head Above Filter (feet) = 0.5 feet
T_f	=	Filtering Time (days) = 2 days
k	=	Soil Permeability (ft/day) = 0.5ft/day
WQ_v	=	Water Quality Volume (cf)

Therefore:

P	=	90% rainfall event (inches)
	=	1.00 inches (Ithaca, NY)
Rv	=	(0.05+0.009*I) (minimum allowed value = 0.20)
I	=	Imperviousness (%)
A	=	Drainage Area (s.f.)
	=	1.67 acres (site acreage was used to determine requirements)

Therefore:

I	=	(1.15 acres) / 1.67 acres
	=	69%
Required WQ_v	=	1.00"*(0.05+0.009*69%)* 1.67/ 12
	=	0.093 acre feet
	=	4,060 cubic feet

Therefore:

Af	=	4,060*2.0 / [(0.5)(2)(2+0.5)]
Af	=	3,609 square feet ***required***

As bioretention filters in "C/D" soils only provide 40% RRv, the filter will be oversized by 2.5 to provide enough surface area to provide 100% RRv for the drainage area.

Af	=	2.5* 3,609 = 9,020 square feet ***required***
Af	=	9,020 square feet ***provided***

Two of the filters are located in HSG "A" soils and two in HSG "D" soils. Similar to bioretention filters, 100% of WQv treated is counted towards RRv in HSG "A/B" soils and 40% in HSG "C/D" soils. The RRv provided is as follows:

HSG "A" gardens	RRv	=	100% x 90 cubic feet x 2 filters
	RRv	=	180 cubic feet ***provided***
HSG "C" gardens	RRv	=	40% x 90 cubic feet x 2 filters
	RRv	=	72 cubic feet ***provided***

The RRv provided by the Rain Gardens added to the RRv provided by the Bioretention Filter meets the minimum RRv requirements for the site:

Bioretention RRv	=	4,060 cubic feet
Rain Garden RRv	=	180 cubic feet + 72 cubic feet
Total RRv	=	4,312 cubic feet ***provided***
Required RRv	=	4,196 cubic feet (See attached calculations)

Hydrodynamic Separator

A hydrodynamic separator unit will be used to treat runoff from the South Street drive, before it enters the existing South Street storm sewer. See attached calculations for small storm hydrology calculations. These calculations, along with the HydroCAD data, was given to Contech in order to size the unit. Their sizing calculations are attached.

Stormwater Wetlands

The wetland practices are designed to mitigate stormwater discharges for the 1-, 10- and 100-year storm events, while provided WQv treatment for areas not treated by the bioretention filter (see attached calculations). The large stormwater wetland that treats WS#1B will have two outlet control structures, with three 18-inch culverts that discharge to existing Wetland "F" which is the Point of Analysis for Watershed #1. The smaller stormwater wetland practice will have a single outlet control structure with one 8-inch culvert that discharges to Wetland "F." Both practices have 3-inch orifices to provide Chanel Protection.

The wetland practices were sized using HydroCAD, as can be seen in the attached calculations.

Existing Wetland "A" will remain largely unchanged. While the watershed is being reduced in size, HydroCAD was used to ensure that water elevations in the wetland were maintained during the 1-, 10- and 100-year storm events.

Underground Detention System

To manage runoff from the South Street drive, underground pipe storage is being proposed to mitigate the 1-, 10- and 100-year storm events. The piping has been sized in HydroCAD and includes and outlet control structure with a 3-inch orifice for channel protection and a weir to detain water in the upstream pipes.

46 South Street

Preliminary Stormwater Calculations

Summary

Village of Trumansburg
Tompkins County, New York

Prepared for:

Ithaca Neighborhood Housing Services &
Sundial Property Development LLC
115 West Clinton Street
Ithaca, NY 14850

Prepared by:

T.G. Miller P.C.
203 North Aurora Street
Ithaca, New York 14850
(607) 272-6477

March 16, 2018

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PROJECT DESCRIPTION

Purpose and Extent of Proposed Development

The 46 South Street project is located in the Village of Trumansburg, Tompkins County, New York (Tax Map Parcels 9.-1-2 & 8.-3-2.2). The project includes the consolidation of the two parcels then the subdivision of the 19.115 acres into 15 parcels that will include market rate for-sale units, affordable for-sale townhomes, affordable rental townhomes, rental apartments and a nursery school. The project will also include various amenities such roads, parking and walkways.

The stormwater management objectives for the project focus on treatment of runoff from the post-developed site. As a townhome and multifamily residential property disturbing greater than one acre of land, a full Stormwater Pollution Prevention Plan (SWPPP) is required, including both temporary erosion controls and permanent stormwater management practices under the regulations of the Village of Trumansburg and New York State Department of Environmental Conservation (DEC). Stormwater management objectives for the site include:

- Providing water quality treatment by means of stormwater wetlands, a bioretention filter, and rain gardens.
- Provide Runoff Reduction by means of rain gardens and a bioretention filter.
- Providing stormwater detention to meet DEC's standards for mitigating runoff from the 1-, 10-, and 100-year storm events.

Project Disturbance Area

Total Disturbed Area:	14.91 acres
Existing Impervious Area:	0.00 acres
Proposed Impervious Area:	4.69 acres
Increase in Impervious Area:	4.69 acres

Description and Limitations of On-Site Soils

On-site soils consist of Howard gravelly loam (33.7%), Lansing gravelly silt loam (7.6%), Ovid silt loam (13.7%) and Rhinebeck silt loam (45.0%) based on the USDA Soil Surveys of Tompkins County. Based upon the classification of soils defined by the Natural Resource Conservation Service, the site contains 33% HSG "A" 8% HSG "B" and 59% HSG "D" soils.

A geotechnical investigation to determine the soil types and properties for the on-site soils was conducted by the geotechnical consultant, Empire Geo-Services Inc., in August 2017. The report shows higher groundwater in the areas associated with "D" soils in the USDA report.

POST-CONSTRUCTION STORMWATER MANAGEMENT

Existing Conditions

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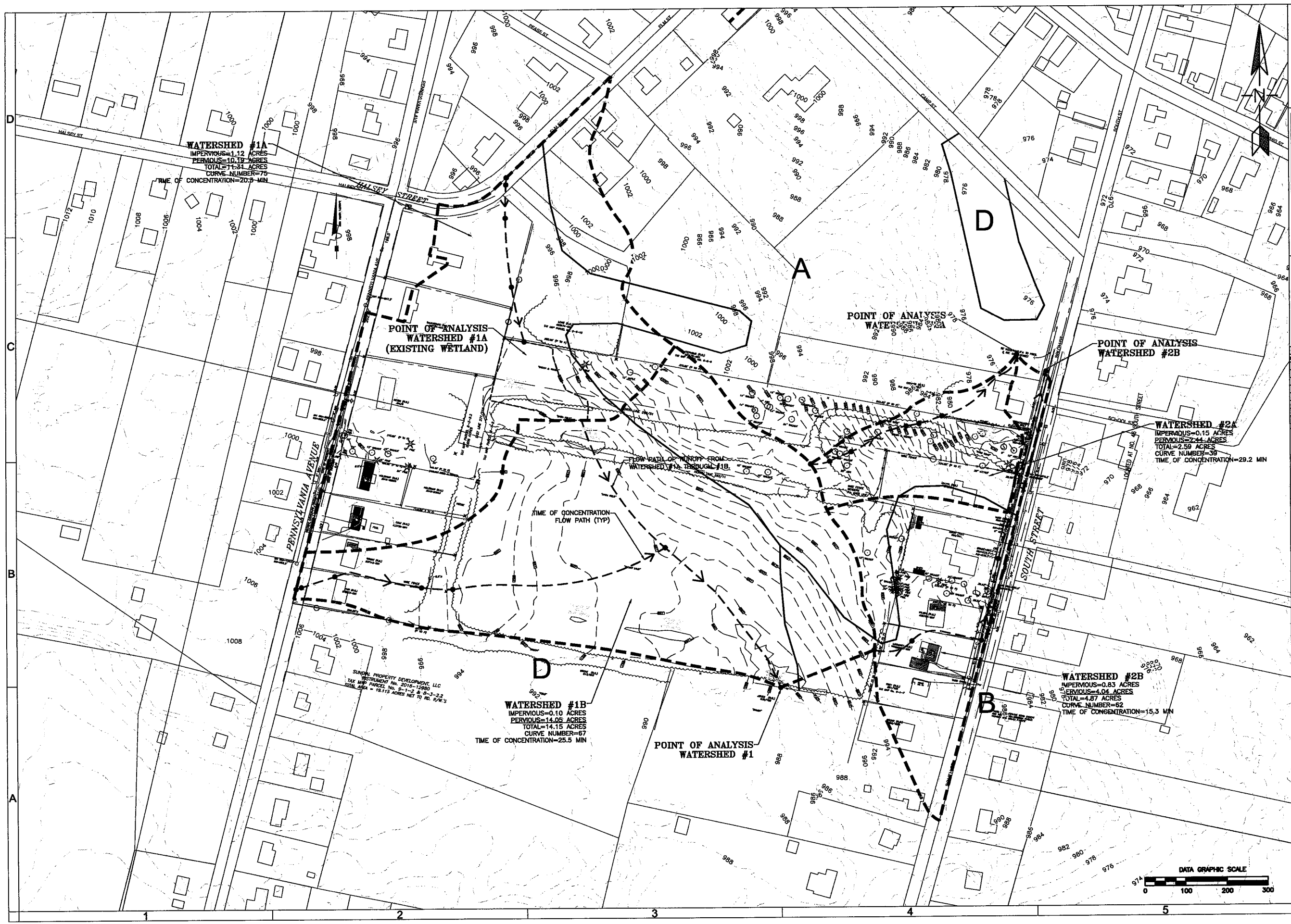

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DATE	REVISION	BY
2/16/18	REVISED PER VILLAGE COMMENTS	AJS

Ithaca Neighborhood Housing Services &
Sundial Property Development LLC

46 South Street

Trumansburg, New York

DATE:	12/13/2017
PROJECT:	17003
DRAWN BY:	SRR/TRT
CHECKED:	AJS

EXISTING
WATERSHED
BOUNDARIES

1of2

WATERSHED #1A
IMPERVIOUS=0.89 ACRES
PERVIOUS=8.08 ACRES
TOTAL=8.97 ACRES
CURVE NUMBER=75
TIME OF CONCENTRATION=20.3 MIN

POINT OF ANALYSIS
WATERSHED #1A
(EXISTING WETLAND)

POINT OF ANALYSIS
WATERSHED #2A

POINT OF ANALYSIS
WATERSHED #2B

WATERSHED #2A
IMPERVIOUS=0.20 ACRES
PERVIOUS=2.58 ACRES
TOTAL=2.78 ACRES
CURVE NUMBER=42
TIME OF CONCENTRATION=23.8 MIN

WATERSHED #2C
IMPERVIOUS=0.15 ACRES
PERVIOUS=0.02 ACRES
TOTAL=0.17 ACRES
CURVE NUMBER=94
TIME OF CONCENTRATION=6.0 MIN

WATERSHED #2B
IMPERVIOUS=0.85 ACRES
PERVIOUS=3.36 ACRES
TOTAL=4.21 ACRES
CURVE NUMBER=66
TIME OF CONCENTRATION=15.3 MIN

TIME OF CONCENTRATION
FLOW PATH (TYP)

BIORETENTION
SUB-WATERSHED
IMPERVIOUS=1.15 ACRES
PERVIOUS=0.42 ACRES
TOTAL=1.67 ACRES

WATERSHED #1B
IMPERVIOUS=4.68 ACRES
PERVIOUS=10.77 ACRES
TOTAL=15.45 ACRES
CURVE NUMBER=78
TIME OF CONCENTRATION=16.0 MIN

WATERSHED #1D
IMPERVIOUS=0.00 ACRES
PERVIOUS=1.32 ACRES
TOTAL=1.32 ACRES
CURVE NUMBER=79
TIME OF CONCENTRATION=7.4 MIN

POINT OF ANALYSIS
WATERSHED #1

WATERSHED #1C
IMPERVIOUS=0.08 ACRES
PERVIOUS=0.92 ACRES
TOTAL=1.00 ACRES
CURVE NUMBER=57
TIME OF CONCENTRATION=13.9 MIN

DATA GRAPHIC SCALE
0 100 200 300

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Ithaca Neighborhood Housing Services &
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46 South Street

Trumansburg, New York

DATE:	12/13/2017
PROJECT:	17003
DRAWN BY:	SRR/TRT
CHECKED:	AJS

PROPOSED
WATERSHED
BOUNDARIES

2of2

Site Water Quality Volume

*WQv = P * Rv * A / 12*
*Where: Rv = (0.05+0.009 * I) (min 0.20)*

Impervious Cover (acres):	4.69
Site Area (acres):	19.12
Imperviousness, I (%):	25%
WQ Storm, P (in):	1.0
Rv:	0.27
WQ Volume Required (acre-feet):	0.431
WQ Volume Required (cubic feet):	18,795

Site Runoff Reduction Calculations

RRv = (P) (Rv) (Ai) / 12*
Where: Ai = (S) (Aic)

Impervious Cover (acres), Aic:	4.69
WQ Storm, P:	1.0
HSG Reduction Factor, S:	0.33
Impervious Cover targeted for RRv, Ai:	1.54
Rv*:	0.95
Minimum RRv (acre-feet):	0.122
Minimum RRv (cubic feet):	5,300

HSG:

A	6.15 Ac	(32%)
B	1.55 Ac	(8%)
C	0.00 Ac	(0%)
D	11.42 Ac	(60%)

Site Water Quality Volume Recalculated After Accounting for Tree Plantings

*WQv = P * Rv * A / 12*
*Where: Rv = (0.05+0.009 * I) (min 0.20)*

Impervious Cover (acres):	3.71	minus 104 trees x 100sf (0.24 acres)
Drainage Area (acres):	19.12	
Imperviousness, I (%):	19%	
WQ Storm, P (in):	1.0	
Rv:	0.225	
WQ Volume Required (acre-feet):	0,358	
WQ Volume Required (cubic feet):	15,590	

Site Runoff Reduction Calculations After Accounting for Tree Plantings

RRv = (P) (Rv) (Ai) / 12*
Where: Ai = (S) (Aic)

Impervious Cover (acres), Aic:	3.71			
WQ Storm, P:	1.0			
HSG Reduction Factor, S:	0.33			
Impervious Cover targeted for RRv, Ai:	1.22			
Rv*:	0.95	**HSG:**		
		A	6.15 Ac	(615%)
Minimum RRv (acre-feet):	0.096	**B**	1.55 Ac	(155%)
		C	0.00 Ac	(0%)
Minimum RRv (cubic feet):	4,196	**D**	11.42 Ac	(1142%)

Rain Garden Design

Water Quality Volume

*WQv = P * Rv * A / 12*
*Where: Rv = (0.05+0.009 * I)*

Impervious Cover (acres):	0.023
Drainage Area (acres):	0.023
Imperviousness, I (%):	100%
WQ Storm, P (in):	1.00
Rv:	0.95
WQ Volume Required (acre-feet):	0.002
WQ Volume Required (cubic feet):	80

Rain Garden Sizing

*V = Vsm + Vdl + (dp * A)*

*Vsm = A * dsm * nsm*

*Vdl = A * ddl * ndl*

WQv (cf):	80
Rain Garden Surface Area, agr (s.f.):	100
Depth of Soil Media. dsm (ft):	1.00
Depth of Drainage Layer, ddl (ft):	0.50
Depth of Ponding, dp (ft):	0.50
Porosity of Soil Media, nsm:	0.20
Porosity of Drainage Layer, ndl:	0.40
Volume of Soil Layer, Vsm (ft):	20

Small Storm Hydrology Calculations - Hydrodynamic Separator

Water Quality Volume

*WQv = P * Rv * A / 12*
*Where: Rv = (0.05+0.009 * I) (min 0.20)*

Impervious Cover (acres):	0.150
Drainage Area, A (acres):	0.170
Imperviousness, I (%):	88%
WQ Storm, P (in):	1.00
Rv:	0.84
WQ Volume Required (acre-feet):	0.012
WQ Volume Required (cubic feet):	520

Small Storm Hydrology

CN = 1000/[10 + 5P +10Q - 10(Q^2 + 1.25 QP)^1/2]
*Q = WQv * 12 / DA*
*Qp = qu * A* WQv*
A = Drainge Area/640 = square miles

WQv (ac-ft):	0.012	
Runoff Volume, Q (in):	0.84	
Adjusted Curve Number, CN:	99	
Initial Abstracton, Ia:	0.041	*(from TR-55, Table 4-I)*
WQ Storm, P (in):	1.00	
Ia/P:	0.041	
Unit Peak Discharge, qu (cfs/sq mi/inch):	1,000	*(from TR-55, Exhibit 4-II)*
Drainage Area, A (sq mi)	0.00027	
Qp:	0.22	

Small Storm Hydrology Calculations - DI #2

Water Quality Volume

*WQv = P * Rv * A / 12*
*Where: Rv = (0.05+0.009 * I) (min 0.20)*

Impervious Cover (acres):	0.570
Drainage Area, A (acres):	0.900
Imperviousness, I (%):	63%
WQ Storm, P (in):	1.00
Rv:	0.62
WQ Volume Required (acre-feet):	0.047
WQ Volume Required (cubic feet):	2,025

Small Storm Hydrology

CN = 1000/[10 + 5P +10Q - 10(Q^2 + 1.25 QP)^1/2]
*Q = WQv * 12 / DA*
*Qp = qu * A* WQv*
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WQv (ac-ft):	0.047	
Runoff Volume, Q (in):	0.62	
Adjusted Curve Number, CN:	96	
Initial Abstracton, Ia:	0.083	*(from TR-55, Table 4-I)*
WQ Storm, P (in):	1.00	
Ia/P:	0.083	
Unit Peak Discharge, qu (cfs/sq mi/inch):	1,000	*(from TR-55, Exhibit 4-II)*
Drainage Area, A (sq mi)	0.00141	
Qp:	0.87	

Hydrologic Soil Group—Tompkins County, New York
(Hamilton Square)

Map Scale: 1:2,790 if printed on A landscape (11" x 8.5") sheet.

N

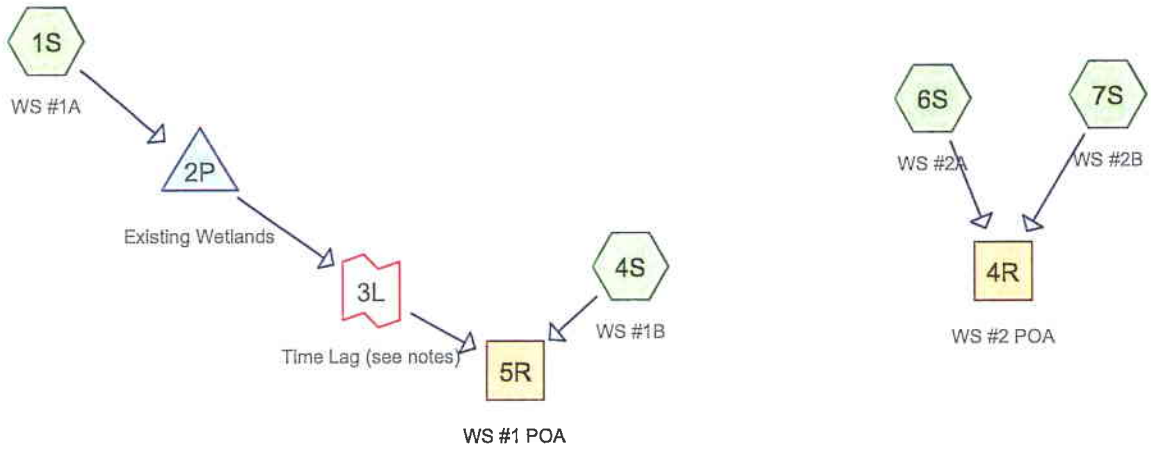
Meters: 0 40 80 160 240

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 18N WGS84

Hydrologic Soil Group

Hydrologic Soil Group— Summary by Map Unit — Tompkins County, New York (NY109)				
Map unit symbol	**Map unit name**	**Rating**	**Acres in AOI**	**Percent of AOI**
HdC	Howard gravelly loam, 5 to 15 percent simple slopes	A	7.5	33.7%
LbB	Lansing gravelly silt loam, 3 to 8 percent slopes	B	1.7	7.6%
OaA	Ovid silt loam, 0 to 6 percent slopes	C/D	3.1	13.7%
RkA	Rhinebeck silt loam, 0 to 2 percent slopes	C/D	10.1	45.0%
Totals for Area of Interest			**22.4**	**100.0%**



Existing Condition Summaries

Subcat Reach Pond Link

Routing Diagram for Existing
Prepared by Microsoft, Printed 3/15/2018

Summary for Subcatchment 1S: WS #1A

Runoff = 3.52 cfs @ 12.17 hrs, Volume= 0.296 af, Depth> 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=1.96"

Area (ac)	CN	Description
1.120	98	Paved parking, HSG D
0.580	30	Woods, Good, HSG A
2.000	77	Woods, Good, HSG D
0.490	78	Meadow, non-grazed, HSG D
1.100	39	>75% Grass cover, Good, HSG A
6.020	80	>75% Grass cover, Good, HSG D
11.310	75	Weighted Average
10.190		90.10% Pervious Area
1.120		9.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	18	0.0100	0.63		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.31"
13.0	82	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.9	171	0.0090	1.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.9	140	0.0090	0.47		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.3	411	Total			

Summary for Subcatchment 4S: WS #1B

Runoff = 0.87 cfs @ 12.32 hrs, Volume= 0.154 af, Depth> 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=1.96"

Area (ac)	CN	Description
0.100	98	Paved parking, HSG D
1.210	30	Woods, Good, HSG A
0.790	77	Woods, Good, HSG D
8.460	78	Meadow, non-grazed, HSG D
1.710	30	Meadow, non-grazed, HSG A
0.850	58	Meadow, non-grazed, HSG B
1.030	80	>75% Grass cover, Good, HSG D
14.150	67	Weighted Average
14.050		99.29% Pervious Area
0.100		0.71% Impervious Area

Summary for Subcatchment 7S: WS #2B

Runoff = 0.07 cfs @ 12.51 hrs, Volume= 0.024 af, Depth> 0.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=1.96"

Area (ac)	CN	Description
0.830	98	Paved parking, HSG D
0.100	30	Woods, Good, HSG A
0.580	30	Meadow, non-grazed, HSG A
0.140	58	Meadow, non-grazed, HSG B
0.300	39	>75% Grass cover, Good, HSG A
2.920	61	>75% Grass cover, Good, HSG B
4.870	62	Weighted Average
4.040		82.96% Pervious Area
0.830		17.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.3	180	0.0210	2.33		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	206	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	470	0.0100	3.09	5.46	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal
15.3	956	Total			

Summary for Reach 4R: WS #2 POA

Inflow Area = 7.460 ac, 13.14% Impervious, Inflow Depth > 0.04" for 1-yr event
Inflow = 0.07 cfs @ 12.51 hrs, Volume= 0.024 af
Outflow = 0.07 cfs @ 12.51 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach 5R: WS #1 POA

Inflow Area = 25.460 ac, 4.79% Impervious, Inflow Depth > 0.18" for 1-yr event
Inflow = 2.13 cfs @ 12.92 hrs, Volume= 0.381 af
Outflow = 2.13 cfs @ 12.92 hrs, Volume= 0.381 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 1S: WS #1A

Runoff = 14.41 cfs @ 12.14 hrs, Volume= 1.022 af, Depth> 1.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.36"

Area (ac)	CN	Description
1.120	98	Paved parking, HSG D
0.580	30	Woods, Good, HSG A
2.000	77	Woods, Good, HSG D
0.490	78	Meadow, non-grazed, HSG D
1.100	39	>75% Grass cover, Good, HSG A
6.020	80	>75% Grass cover, Good, HSG D
11.310	75	Weighted Average
10.190		90.10% Pervious Area
1.120		9.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	18	0.0100	0.63		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.31"
13.0	82	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.9	171	0.0090	1.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.9	140	0.0090	0.47		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.3	411	Total			

Summary for Subcatchment 4S: WS #1B

Runoff = 8.86 cfs @ 12.22 hrs, Volume= 0.799 af, Depth> 0.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.36"

Area (ac)	CN	Description
0.100	98	Paved parking, HSG D
1.210	30	Woods, Good, HSG A
0.790	77	Woods, Good, HSG D
8.460	78	Meadow, non-grazed, HSG D
1.710	30	Meadow, non-grazed, HSG A
0.850	58	Meadow, non-grazed, HSG B
1.030	80	>75% Grass cover, Good, HSG D
14.150	67	Weighted Average
14.050		99.29% Pervious Area
0.100		0.71% Impervious Area

Summary for Subcatchment 7S: WS #2B

Runoff = 2.61 cfs @ 12.11 hrs, Volume= 0.193 af, Depth> 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.36"

Area (ac)	CN	Description
0.830	98	Paved parking, HSG D
0.100	30	Woods, Good, HSG A
0.580	30	Meadow, non-grazed, HSG A
0.140	58	Meadow, non-grazed, HSG B
0.300	39	>75% Grass cover, Good, HSG A
2.920	61	>75% Grass cover, Good, HSG B
4.870	62	Weighted Average
4.040		82.96% Pervious Area
0.830		17.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.3	180	0.0210	2.33		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	206	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	470	0.0100	3.09	5.46	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal
15.3	956	Total			

Summary for Reach 4R: WS #2 POA

Inflow Area = 7.460 ac, 13.14% Impervious, Inflow Depth > 0.31" for 10-yr event
Inflow = 2.61 cfs @ 12.11 hrs, Volume= 0.193 af
Outflow = 2.61 cfs @ 12.11 hrs, Volume= 0.193 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach 5R: WS #1 POA

Inflow Area = 25.460 ac, 4.79% Impervious, Inflow Depth > 0.82" for 10-yr event
Inflow = 16.79 cfs @ 12.67 hrs, Volume= 1.738 af
Outflow = 16.79 cfs @ 12.67 hrs, Volume= 1.738 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Subcatchment 1S: WS #1A

Runoff = 37.85 cfs @ 12.13 hrs, Volume= 2.643 af, Depth> 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.73"

Area (ac)	CN	Description
1.120	98	Paved parking, HSG D
0.580	30	Woods, Good, HSG A
2.000	77	Woods, Good, HSG D
0.490	78	Meadow, non-grazed, HSG D
1.100	39	>75% Grass cover, Good, HSG A
6.020	80	>75% Grass cover, Good, HSG D
11.310	75	Weighted Average
10.190		90.10% Pervious Area
1.120		9.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	18	0.0100	0.63		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.31"
13.0	82	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.9	171	0.0090	1.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.9	140	0.0090	0.47		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.3	411	Total			

Summary for Subcatchment 4S: WS #1B

Runoff = 30.82 cfs @ 12.20 hrs, Volume= 2.483 af, Depth> 2.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.73"

Area (ac)	CN	Description
0.100	98	Paved parking, HSG D
1.210	30	Woods, Good, HSG A
0.790	77	Woods, Good, HSG D
8.460	78	Meadow, non-grazed, HSG D
1.710	30	Meadow, non-grazed, HSG A
0.850	58	Meadow, non-grazed, HSG B
1.030	80	>75% Grass cover, Good, HSG D
14.150	67	Weighted Average
14.050		99.29% Pervious Area
0.100		0.71% Impervious Area

Summary for Subcatchment 7S: WS #2B

Runoff = 11.39 cfs @ 12.09 hrs, Volume= 0.697 af, Depth> 1.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.73"

Area (ac)	CN	Description
0.830	98	Paved parking, HSG D
0.100	30	Woods, Good, HSG A
0.580	30	Meadow, non-grazed, HSG A
0.140	58	Meadow, non-grazed, HSG B
0.300	39	>75% Grass cover, Good, HSG A
2.920	61	>75% Grass cover, Good, HSG B
4.870	62	Weighted Average
4.040		82.96% Pervious Area
0.830		17.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.3	180	0.0210	2.33		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	206	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	470	0.0100	3.09	5.46	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal
15.3	956	Total			

Summary for Reach 4R: WS #2 POA

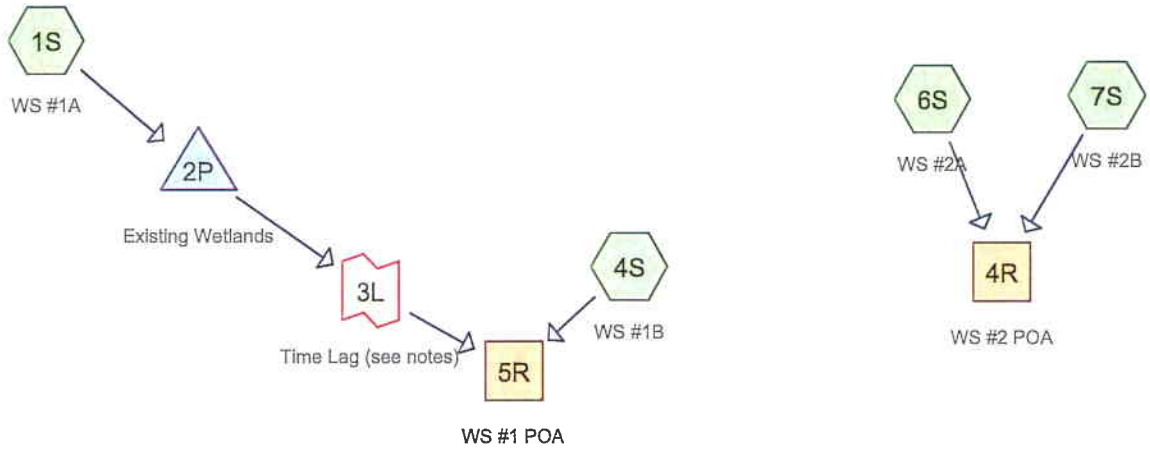
Inflow Area = 7.460 ac, 13.14% Impervious, Inflow Depth > 1.22" for 100-yr event
Inflow = 11.43 cfs @ 12.09 hrs, Volume= 0.760 af
Outflow = 11.43 cfs @ 12.09 hrs, Volume= 0.760 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach 5R: WS #1 POA

Inflow Area = 25.460 ac, 4.79% Impervious, Inflow Depth > 2.37" for 100-yr event
Inflow = 46.33 cfs @ 12.64 hrs, Volume= 5.022 af
Outflow = 46.33 cfs @ 12.64 hrs, Volume= 5.022 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs



Subcat Reach Pond Link

Routing Diagram for Existing
Prepared by Microsoft, Printed 3/15/2018

Summary for Subcatchment 1S: WS #1A

Runoff = 3.52 cfs @ 12.17 hrs, Volume= 0.296 af, Depth> 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=1.96"

Area (ac)	CN	Description
1.120	98	Paved parking, HSG D
0.580	30	Woods, Good, HSG A
2.000	77	Woods, Good, HSG D
0.490	78	Meadow, non-grazed, HSG D
1.100	39	>75% Grass cover, Good, HSG A
6.020	80	>75% Grass cover, Good, HSG D
11.310	75	Weighted Average
10.190		90.10% Pervious Area
1.120		9.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	18	0.0100	0.63		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.31"
13.0	82	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.9	171	0.0090	1.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.9	140	0.0090	0.47		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.3	411	Total			

Summary for Subcatchment 4S: WS #1B

Runoff = 0.87 cfs @ 12.32 hrs, Volume= 0.154 af, Depth> 0.13"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=1.96"

Area (ac)	CN	Description
0.100	98	Paved parking, HSG D
1.210	30	Woods, Good, HSG A
0.790	77	Woods, Good, HSG D
8.460	78	Meadow, non-grazed, HSG D
1.710	30	Meadow, non-grazed, HSG A
0.850	58	Meadow, non-grazed, HSG B
1.030	80	>75% Grass cover, Good, HSG D
14.150	67	Weighted Average
14.050		99.29% Pervious Area
0.100		0.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	14	0.0100	0.60		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.31"
9.3	86	0.0250	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.7	218	0.0180	2.16		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.9	77	0.0180	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.2	539	0.0080	1.44		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
6.0	452	0.0060	1.25		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
25.5	1,386	Total			

Summary for Subcatchment 6S: WS #2A

[45] Hint: Runoff=Zero

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=1.96"

Area (ac)	CN	Description
0.150	98	Paved parking, HSG D
1.220	30	Woods, Good, HSG A
1.100	39	>75% Grass cover, Good, HSG A
0.120	61	>75% Grass cover, Good, HSG B
2.590	39	Weighted Average
2.440		94.21% Pervious Area
0.150		5.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	43	0.0120	0.07		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.31"
11.8	57	0.0440	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.31"
2.0	151	0.0660	1.28		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	32	0.0660	4.14		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.8	60	0.0660	1.28		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.0	188	0.0240	0.77		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
29.2	531	Total			

Summary for Subcatchment 7S: WS #2B

Runoff = 0.07 cfs @ 12.51 hrs, Volume= 0.024 af, Depth> 0.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=1.96"

Area (ac)	CN	Description
0.830	98	Paved parking, HSG D
0.100	30	Woods, Good, HSG A
0.580	30	Meadow, non-grazed, HSG A
0.140	58	Meadow, non-grazed, HSG B
0.300	39	>75% Grass cover, Good, HSG A
2.920	61	>75% Grass cover, Good, HSG B
4.870	62	Weighted Average
4.040		82.96% Pervious Area
0.830		17.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.3	180	0.0210	2.33		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	206	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	470	0.0100	3.09	5.46	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal
15.3	956	Total			

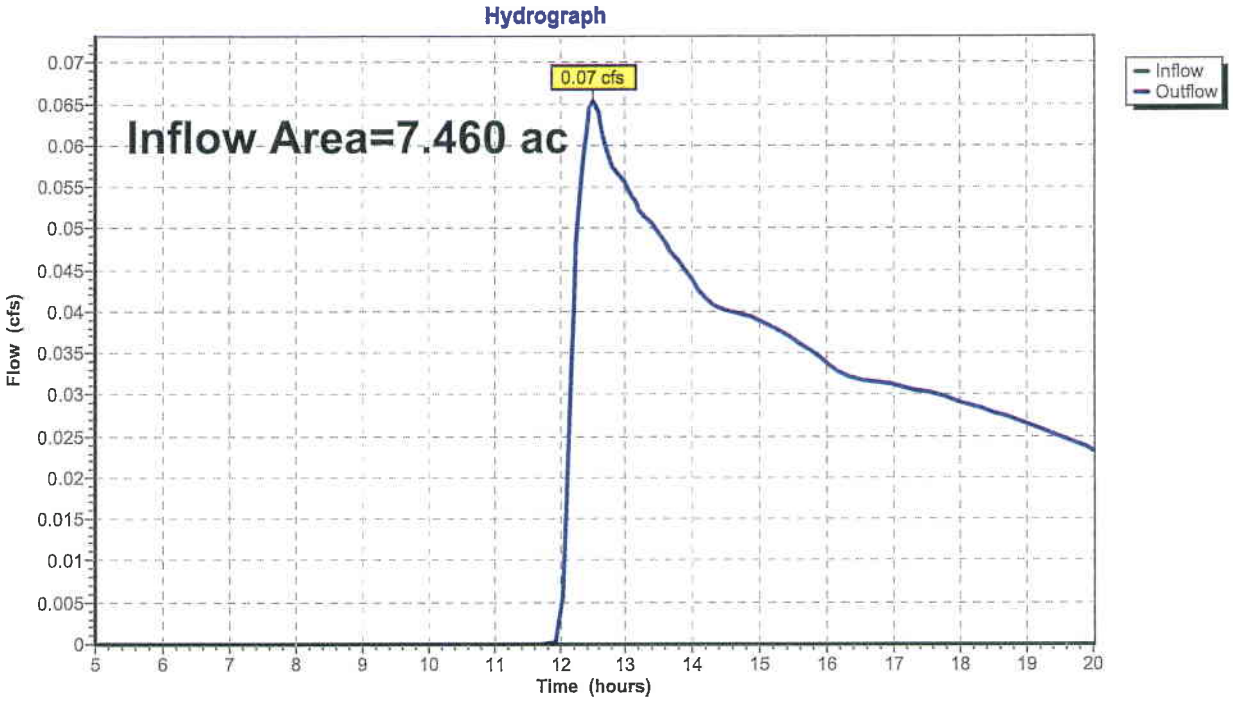
Summary for Reach 4R: WS #2 POA

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.460 ac, 13.14% Impervious, Inflow Depth > 0.04" for 1-yr event
Inflow = 0.07 cfs @ 12.51 hrs, Volume= 0.024 af
Outflow = 0.07 cfs @ 12.51 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 4R: WS #2 POA



Summary for Pond 2P: Existing Wetlands

Inflow Area = 11.310 ac, 9.90% Impervious, Inflow Depth > 0.31" for 1-yr event
Inflow = 3.52 cfs @ 12.17 hrs, Volume= 0.296 af
Outflow = 1.69 cfs @ 12.43 hrs, Volume= 0.233 af, Atten= 52%, Lag= 15.7 min
Primary = 1.69 cfs @ 12.43 hrs, Volume= 0.233 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 992.53' @ 12.43 hrs Surf.Area= 13,368 sf Storage= 3,552 cf

Plug-Flow detention time= 99.1 min calculated for 0.232 af (79% of inflow)
Center-of-Mass det. time= 39.1 min (882.5 - 843.5)

Volume	Invert	Avail.Storage	Storage Description
#1	991.90'	14,723 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
991.90	0	0	0
992.00	539	27	27
992.50	12,019	3,140	3,166
993.00	34,207	11,557	14,723

Device	Routing	Invert	Outlet Devices
#1	Primary	992.42'	**Asymmetrical Weir, C= 3.27** Offset (feet) -82.00 -58.00 0.00 51.00 Height (feet) 0.58 0.25 0.00 0.58

Primary OutFlow Max=1.68 cfs @ 12.43 hrs HW=992.53' TW=0.00' (Dynamic Tailwater)
↑—**1=Asymmetrical Weir** (Weir Controls 1.68 cfs @ 0.43 fps)

Stage-Discharge for Pond 2P: Existing Wetlands

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
991.90	0.00	992.43	0.00	992.96	80.24
991.91	0.00	992.44	0.02	992.97	83.61
991.92	0.00	992.45	0.07	992.98	87.06
991.93	0.00	992.46	0.13	992.99	90.58
991.94	0.00	992.47	0.23	993.00	**94.18**
991.95	0.00	992.48	0.37		
991.96	0.00	992.49	0.54		
991.97	0.00	992.50	0.76		
991.98	0.00	992.51	1.02		
991.99	0.00	992.52	1.32		
992.00	0.00	992.53	1.68		
992.01	0.00	992.54	2.09		
992.02	0.00	992.55	2.55		
992.03	0.00	992.56	3.07		
992.04	0.00	992.57	3.65		
992.05	0.00	992.58	4.29		
992.06	0.00	992.59	4.99		
992.07	0.00	992.60	5.75		
992.08	0.00	992.61	6.58		
992.09	0.00	992.62	7.49		
992.10	0.00	992.63	8.46		
992.11	0.00	992.64	9.50		
992.12	0.00	992.65	10.62		
992.13	0.00	992.66	11.81		
992.14	0.00	992.67	13.08		
992.15	0.00	992.68	14.42		
992.16	0.00	992.69	15.84		
992.17	0.00	992.70	17.33		
992.18	0.00	992.71	18.89		
992.19	0.00	992.72	20.51		
992.20	0.00	992.73	22.21		
992.21	0.00	992.74	23.97		
992.22	0.00	992.75	25.80		
992.23	0.00	992.76	27.70		
992.24	0.00	992.77	29.67		
992.25	0.00	992.78	31.70		
992.26	0.00	992.79	33.81		
992.27	0.00	992.80	35.98		
992.28	0.00	992.81	38.22		
992.29	0.00	992.82	40.53		
992.30	0.00	992.83	42.91		
992.31	0.00	992.84	45.36		
992.32	0.00	992.85	47.87		
992.33	0.00	992.86	50.46		
992.34	0.00	992.87	53.12		
992.35	0.00	992.88	55.85		
992.36	0.00	992.89	58.64		
992.37	0.00	992.90	61.51		
992.38	0.00	992.91	64.45		
992.39	0.00	992.92	67.47		
992.40	0.00	992.93	70.55		
992.41	0.00	992.94	73.71		
992.42	0.00	992.95	76.93		

Summary for Subcatchment 1S: WS #1A

Runoff = 14.41 cfs @ 12.14 hrs, Volume= 1.022 af, Depth> 1.08"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.36"

Area (ac)	CN	Description
1.120	98	Paved parking, HSG D
0.580	30	Woods, Good, HSG A
2.000	77	Woods, Good, HSG D
0.490	78	Meadow, non-grazed, HSG D
1.100	39	>75% Grass cover, Good, HSG A
6.020	80	>75% Grass cover, Good, HSG D
11.310	75	Weighted Average
10.190		90.10% Pervious Area
1.120		9.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	18	0.0100	0.63		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.31"
13.0	82	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.9	171	0.0090	1.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.9	140	0.0090	0.47		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.3	411	Total			

Summary for Subcatchment 4S: WS #1B

Runoff = 8.86 cfs @ 12.22 hrs, Volume= 0.799 af, Depth> 0.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.36"

Area (ac)	CN	Description
0.100	98	Paved parking, HSG D
1.210	30	Woods, Good, HSG A
0.790	77	Woods, Good, HSG D
8.460	78	Meadow, non-grazed, HSG D
1.710	30	Meadow, non-grazed, HSG A
0.850	58	Meadow, non-grazed, HSG B
1.030	80	>75% Grass cover, Good, HSG D
14.150	67	Weighted Average
14.050		99.29% Pervious Area
0.100		0.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	14	0.0100	0.60		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.31"
9.3	86	0.0250	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.7	218	0.0180	2.16		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.9	77	0.0180	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.2	539	0.0080	1.44		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
6.0	452	0.0060	1.25		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
25.5	1,386	Total			

Summary for Subcatchment 6S: WS #2A

[73] Warning: Peak may fall outside time span

Runoff = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af, Depth> 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.36"

Area (ac)	CN	Description
0.150	98	Paved parking, HSG D
1.220	30	Woods, Good, HSG A
1.100	39	>75% Grass cover, Good, HSG A
0.120	61	>75% Grass cover, Good, HSG B
2.590	39	Weighted Average
2.440		94.21% Pervious Area
0.150		5.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	43	0.0120	0.07		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.31"
11.8	57	0.0440	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.31"
2.0	151	0.0660	1.28		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	32	0.0660	4.14		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.8	60	0.0660	1.28		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.0	188	0.0240	0.77		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
29.2	531	Total			

Summary for Subcatchment 7S: WS #2B

Runoff = 2.61 cfs @ 12.11 hrs, Volume= 0.193 af, Depth> 0.48"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.36"

Area (ac)	CN	Description
0.830	98	Paved parking, HSG D
0.100	30	Woods, Good, HSG A
0.580	30	Meadow, non-grazed, HSG A
0.140	58	Meadow, non-grazed, HSG B
0.300	39	>75% Grass cover, Good, HSG A
2.920	61	>75% Grass cover, Good, HSG B
4.870	62	Weighted Average
4.040		82.96% Pervious Area
0.830		17.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.3	180	0.0210	2.33		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	206	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	470	0.0100	3.09	5.46	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal
15.3	956	Total			

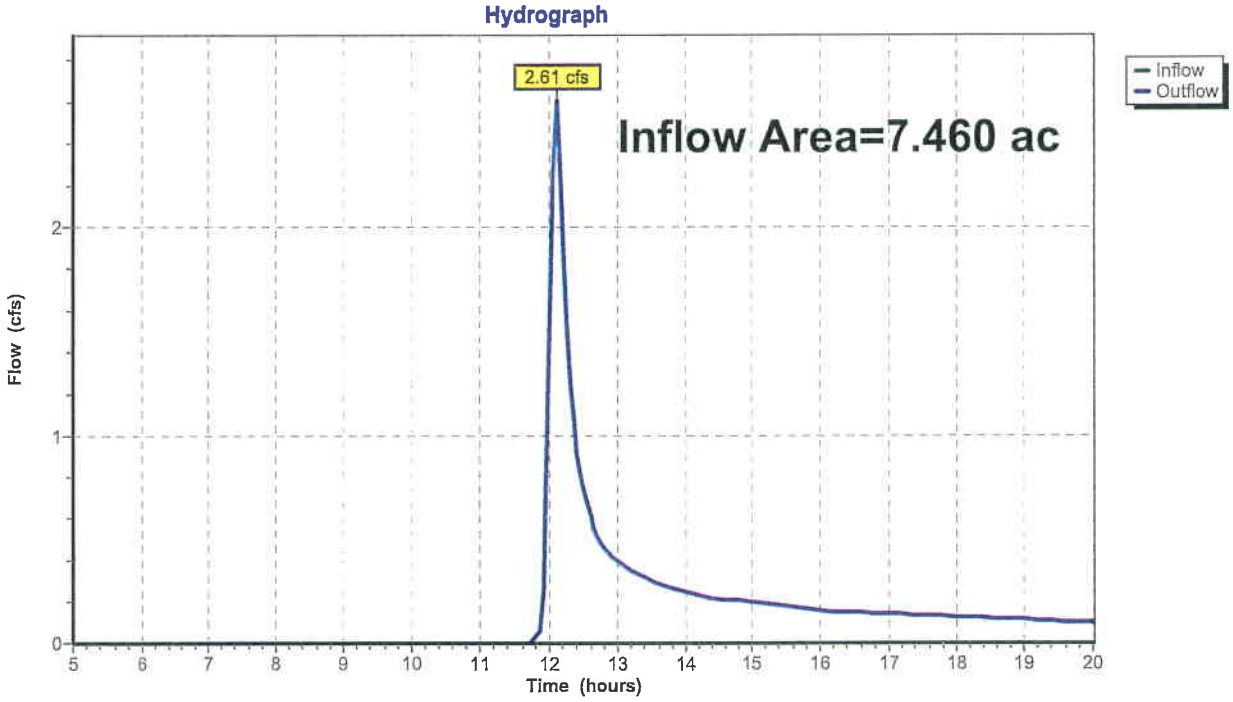
Summary for Reach 4R: WS #2 POA

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.460 ac, 13.14% Impervious, Inflow Depth > 0.31" for 10-yr event
Inflow = 2.61 cfs @ 12.11 hrs, Volume= 0.193 af
Outflow = 2.61 cfs @ 12.11 hrs, Volume= 0.193 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 4R: WS #2 POA



Summary for Pond 2P: Existing Wetlands

Inflow Area = 11.310 ac, 9.90% Impervious, Inflow Depth > 1.08" for 10-yr event
Inflow = 14.41 cfs @ 12.14 hrs, Volume= 1.022 af
Outflow = 13.76 cfs @ 12.19 hrs, Volume= 0.955 af, Atten= 5%, Lag= 2.9 min
Primary = 13.76 cfs @ 12.19 hrs, Volume= 0.955 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 992.68' @ 12.19 hrs Surf.Area= 19,790 sf Storage= 5,952 cf

Plug-Flow detention time= 34.7 min calculated for 0.951 af (93% of inflow)
Center-of-Mass det. time= 12.2 min (827.2 - 815.0)

Volume	Invert	Avail.Storage	Storage Description
#1	991.90'	14,723 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
991.90	0	0	0
992.00	539	27	27
992.50	12,019	3,140	3,166
993.00	34,207	11,557	14,723

Device	Routing	Invert	Outlet Devices
#1	Primary	992.42'	**Asymmetrical Weir, C= 3.27** Offset (feet) -82.00 -58.00 0.00 51.00 Height (feet) 0.58 0.25 0.00 0.58

Primary OutFlow Max=13.65 cfs @ 12.19 hrs HW=992.67' TW=0.00' (Dynamic Tailwater)
↑—**1=Asymmetrical Weir** (Weir Controls 13.65 cfs @ 0.67 fps)

Stage-Discharge for Pond 2P: Existing Wetlands

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
991.90	0.00	992.43	0.00	992.96	80.24
991.91	0.00	992.44	0.02	992.97	83.61
991.92	0.00	992.45	0.07	992.98	87.06
991.93	0.00	992.46	0.13	992.99	90.58
991.94	0.00	992.47	0.23	993.00	**94.18**
991.95	0.00	992.48	0.37		
991.96	0.00	992.49	0.54		
991.97	0.00	992.50	0.76		
991.98	0.00	992.51	1.02		
991.99	0.00	992.52	1.32		
992.00	0.00	992.53	1.68		
992.01	0.00	992.54	2.09		
992.02	0.00	992.55	2.55		
992.03	0.00	992.56	3.07		
992.04	0.00	992.57	3.65		
992.05	0.00	992.58	4.29		
992.06	0.00	992.59	4.99		
992.07	0.00	992.60	5.75		
992.08	0.00	992.61	6.58		
992.09	0.00	992.62	7.49		
992.10	0.00	992.63	8.46		
992.11	0.00	992.64	9.50		
992.12	0.00	992.65	10.62		
992.13	0.00	992.66	11.81		
992.14	0.00	992.67	13.08		
992.15	0.00	992.68	14.42		
992.16	0.00	992.69	15.84		
992.17	0.00	992.70	17.33		
992.18	0.00	992.71	18.89		
992.19	0.00	992.72	20.51		
992.20	0.00	992.73	22.21		
992.21	0.00	992.74	23.97		
992.22	0.00	992.75	25.80		
992.23	0.00	992.76	27.70		
992.24	0.00	992.77	29.67		
992.25	0.00	992.78	31.70		
992.26	0.00	992.79	33.81		
992.27	0.00	992.80	35.98		
992.28	0.00	992.81	38.22		
992.29	0.00	992.82	40.53		
992.30	0.00	992.83	42.91		
992.31	0.00	992.84	45.36		
992.32	0.00	992.85	47.87		
992.33	0.00	992.86	50.46		
992.34	0.00	992.87	53.12		
992.35	0.00	992.88	55.85		
992.36	0.00	992.89	58.64		
992.37	0.00	992.90	61.51		
992.38	0.00	992.91	64.45		
992.39	0.00	992.92	67.47		
992.40	0.00	992.93	70.55		
992.41	0.00	992.94	73.71		
992.42	0.00	992.95	76.93		

Summary for Subcatchment 1S: WS #1A

Runoff = 37.85 cfs @ 12.13 hrs, Volume= 2.643 af, Depth> 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.73"

Area (ac)	CN	Description
1.120	98	Paved parking, HSG D
0.580	30	Woods, Good, HSG A
2.000	77	Woods, Good, HSG D
0.490	78	Meadow, non-grazed, HSG D
1.100	39	>75% Grass cover, Good, HSG A
6.020	80	>75% Grass cover, Good, HSG D
11.310	75	Weighted Average
10.190		90.10% Pervious Area
1.120		9.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	18	0.0100	0.63		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.31"
13.0	82	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.9	171	0.0090	1.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.9	140	0.0090	0.47		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.3	411	Total			

Summary for Subcatchment 4S: WS #1B

Runoff = 30.82 cfs @ 12.20 hrs, Volume= 2.483 af, Depth> 2.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.73"

Area (ac)	CN	Description
0.100	98	Paved parking, HSG D
1.210	30	Woods, Good, HSG A
0.790	77	Woods, Good, HSG D
8.460	78	Meadow, non-grazed, HSG D
1.710	30	Meadow, non-grazed, HSG A
0.850	58	Meadow, non-grazed, HSG B
1.030	80	>75% Grass cover, Good, HSG D
14.150	67	Weighted Average
14.050		99.29% Pervious Area
0.100		0.71% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	14	0.0100	0.60		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.31"
9.3	86	0.0250	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.7	218	0.0180	2.16		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.9	77	0.0180	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
6.2	539	0.0080	1.44		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
6.0	452	0.0060	1.25		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
25.5	1,386	Total			

Summary for Subcatchment 6S: WS #2A

Runoff = 0.26 cfs @ 12.44 hrs, Volume= 0.063 af, Depth> 0.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.73"

Area (ac)	CN	Description
0.150	98	Paved parking, HSG D
1.220	30	Woods, Good, HSG A
1.100	39	>75% Grass cover, Good, HSG A
0.120	61	>75% Grass cover, Good, HSG B
2.590	39	Weighted Average
2.440		94.21% Pervious Area
0.150		5.79% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.5	43	0.0120	0.07		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.31"
11.8	57	0.0440	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.31"
2.0	151	0.0660	1.28		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.1	32	0.0660	4.14		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
0.8	60	0.0660	1.28		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.0	188	0.0240	0.77		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
29.2	531	Total			

Summary for Subcatchment 7S: WS #2B

Runoff = 11.39 cfs @ 12.09 hrs, Volume= 0.697 af, Depth> 1.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.73"

Area (ac)	CN	Description
0.830	98	Paved parking, HSG D
0.100	30	Woods, Good, HSG A
0.580	30	Meadow, non-grazed, HSG A
0.140	58	Meadow, non-grazed, HSG B
0.300	39	>75% Grass cover, Good, HSG A
2.920	61	>75% Grass cover, Good, HSG B
4.870	62	Weighted Average
4.040		82.96% Pervious Area
0.830		17.04% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.3	180	0.0210	2.33		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	206	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	470	0.0100	3.09	5.46	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal
15.3	956	Total			

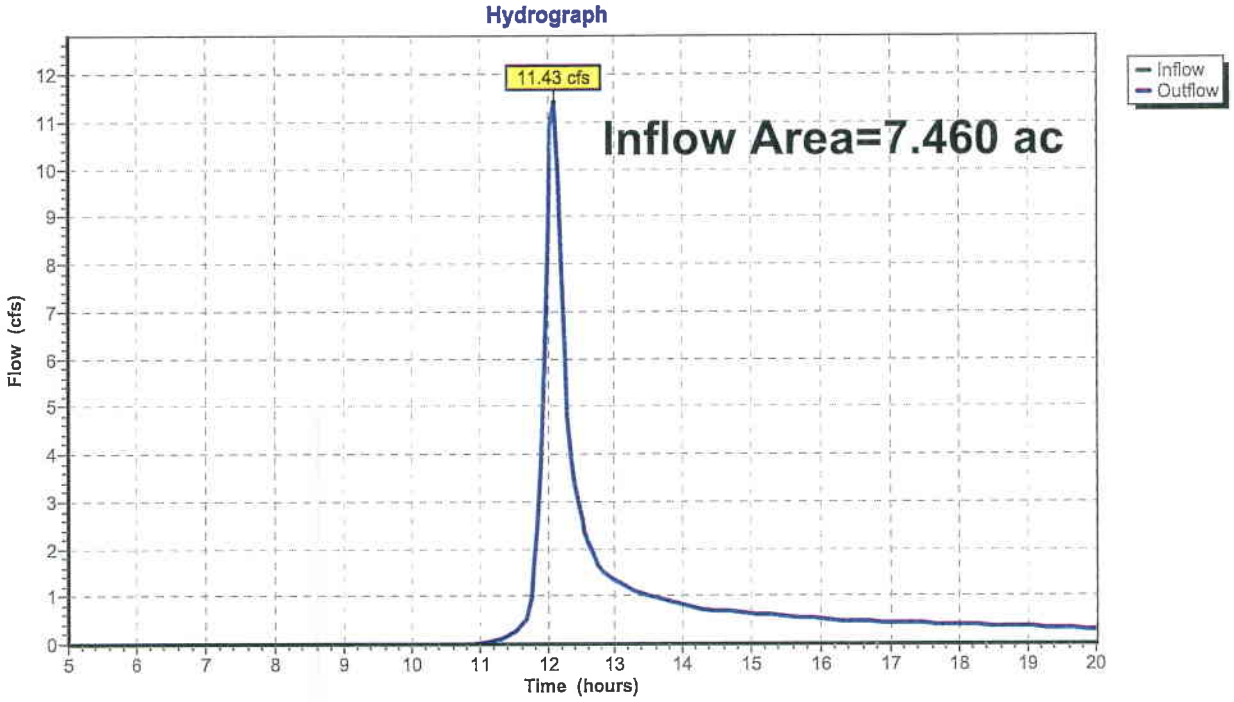
Summary for Reach 4R: WS #2 POA

[40] Hint: Not Described (Outflow=Inflow)

Inflow Area = 7.460 ac, 13.14% Impervious, Inflow Depth > 1.22" for 100-yr event
Inflow = 11.43 cfs @ 12.09 hrs, Volume= 0.760 af
Outflow = 11.43 cfs @ 12.09 hrs, Volume= 0.760 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 4R: WS #2 POA



Summary for Pond 2P: Existing Wetlands

Inflow Area = 11.310 ac, 9.90% Impervious, Inflow Depth > 2.80" for 100-yr event
Inflow = 37.85 cfs @ 12.13 hrs, Volume= 2.643 af
Outflow = 37.06 cfs @ 12.17 hrs, Volume= 2.571 af, Atten= 2%, Lag= 2.0 min
Primary = 37.06 cfs @ 12.17 hrs, Volume= 2.571 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 992.80' @ 12.17 hrs Surf.Area= 25,548 sf Storage= 8,893 cf

Plug-Flow detention time= 18.6 min calculated for 2.562 af (97% of inflow)
Center-of-Mass det. time= 8.4 min (803.7 - 795.3)

Volume	Invert	Avail.Storage	Storage Description
#1	991.90'	14,723 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

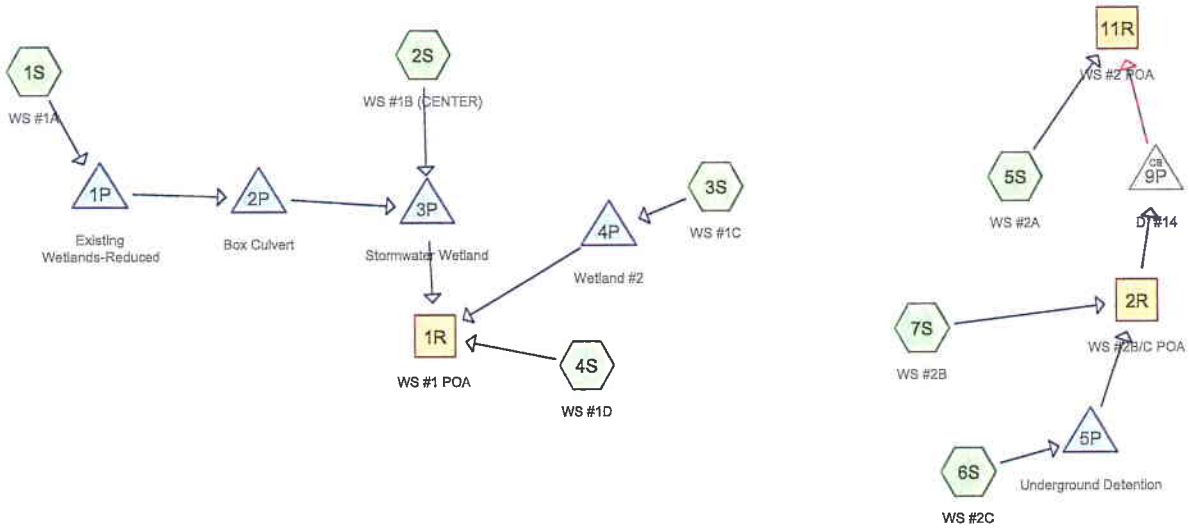
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
991.90	0	0	0
992.00	539	27	27
992.50	12,019	3,140	3,166
993.00	34,207	11,557	14,723

Device	Routing	Invert	Outlet Devices
#1	Primary	992.42'	**Asymmetrical Weir, C= 3.27** Offset (feet) -82.00 -58.00 0.00 51.00 Height (feet) 0.58 0.25 0.00 0.58

Primary OutFlow Max=36.63 cfs @ 12.17 hrs HW=992.80' TW=0.00' (Dynamic Tailwater)
↑—**1=Asymmetrical Weir** (Weir Controls 36.63 cfs @ 1.01 fps)

Stage-Discharge for Pond 2P: Existing Wetlands

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
991.90	0.00	992.43	0.00	992.96	80.24
991.91	0.00	992.44	0.02	992.97	83.61
991.92	0.00	992.45	0.07	992.98	87.06
991.93	0.00	992.46	0.13	992.99	90.58
991.94	0.00	992.47	0.23	993.00	**94.18**
991.95	0.00	992.48	0.37		
991.96	0.00	992.49	0.54		
991.97	0.00	992.50	0.76		
991.98	0.00	992.51	1.02		
991.99	0.00	992.52	1.32		
992.00	0.00	992.53	1.68		
992.01	0.00	992.54	2.09		
992.02	0.00	992.55	2.55		
992.03	0.00	992.56	3.07		
992.04	0.00	992.57	3.65		
992.05	0.00	992.58	4.29		
992.06	0.00	992.59	4.99		
992.07	0.00	992.60	5.75		
992.08	0.00	992.61	6.58		
992.09	0.00	992.62	7.49		
992.10	0.00	992.63	8.46		
992.11	0.00	992.64	9.50		
992.12	0.00	992.65	10.62		
992.13	0.00	992.66	11.81		
992.14	0.00	992.67	13.08		
992.15	0.00	992.68	14.42		
992.16	0.00	992.69	15.84		
992.17	0.00	992.70	17.33		
992.18	0.00	992.71	18.89		
992.19	0.00	992.72	20.51		
992.20	0.00	992.73	22.21		
992.21	0.00	992.74	23.97		
992.22	0.00	992.75	25.80		
992.23	0.00	992.76	27.70		
992.24	0.00	992.77	29.67		
992.25	0.00	992.78	31.70		
992.26	0.00	992.79	33.81		
992.27	0.00	992.80	35.98		
992.28	0.00	992.81	38.22		
992.29	0.00	992.82	40.53		
992.30	0.00	992.83	42.91		
992.31	0.00	992.84	45.36		
992.32	0.00	992.85	47.87		
992.33	0.00	992.86	50.46		
992.34	0.00	992.87	53.12		
992.35	0.00	992.88	55.85		
992.36	0.00	992.89	58.64		
992.37	0.00	992.90	61.51		
992.38	0.00	992.91	64.45		
992.39	0.00	992.92	67.47		
992.40	0.00	992.93	70.55		
992.41	0.00	992.94	73.71		
992.42	0.00	992.95	76.93		



Subcat Reach Pond Link

Proposed Condition Summaries

Routing Diagram for Proposed
Prepared by Microsoft, Printed 3/15/2018

Summary for Subcatchment 1S: WS #1A

Runoff = 2.79 cfs @ 12.17 hrs, Volume= 0.235 af, Depth> 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=1.96"

Area (ac)	CN	Description
0.890	98	Paved parking, HSG D
0.260	30	Woods, Good, HSG A
1.580	77	Woods, Good, HSG D
1.100	39	>75% Grass cover, Good, HSG A
5.140	80	>75% Grass cover, Good, HSG D
8.970	75	Weighted Average
8.080		90.08% Pervious Area
0.890		9.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	18	0.0100	0.63		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.31"
13.0	82	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.9	171	0.0090	1.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.9	140	0.0090	0.47		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.3	411	Total			

Summary for Subcatchment 2S: WS #1B (CENTER)

Runoff = 7.89 cfs @ 12.10 hrs, Volume= 0.525 af, Depth> 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=1.96"

Area (ac)	CN	Description
4.680	98	Paved parking, HSG D
2.190	39	>75% Grass cover, Good, HSG A
0.210	61	>75% Grass cover, Good, HSG B
7.610	80	>75% Grass cover, Good, HSG D
0.470	30	Woods, Good, HSG A
0.290	77	Woods, Good, HSG D
15.450	78	Weighted Average
10.770		69.71% Pervious Area
4.680		30.29% Impervious Area

Area (ac)	CN	Description
0.680	78	Meadow, non-grazed, HSG D
0.640	80	>75% Grass cover, Good, HSG D
1.320	79	Weighted Average
1.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	65	0.0900	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
2.9	186	0.0044	1.07		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.4	251	Total			

Summary for Subcatchment 5S: WS #2A

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=1.96"

Area (ac)	CN	Description
0.200	98	Paved parking, HSG D
0.940	30	Woods, Good, HSG A
1.120	39	>75% Grass cover, Good, HSG A
0.120	61	>75% Grass cover, Good, HSG B
2.380	42	Weighted Average
2.180		91.60% Pervious Area
0.200		8.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	40	0.0250	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
12.3	60	0.0440	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.31"
0.8	60	0.0660	1.28		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	95	0.0660	4.14		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.2	90	0.0660	1.28		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.0	188	0.0240	0.77		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.8	533	Total			

15.3 956 Total

Summary for Reach 1R: WS #1 POA

Inflow Area = 26.740 ac, 21.13% Impervious, Inflow Depth > 0.10" for 1-yr event
Inflow = 1.06 cfs @ 12.00 hrs, Volume= 0.228 af
Outflow = 1.06 cfs @ 12.00 hrs, Volume= 0.228 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach 2R: WS #2B/C POA

Inflow Area = 4.380 ac, 22.83% Impervious, Inflow Depth > 0.16" for 1-yr event
Inflow = 0.41 cfs @ 12.16 hrs, Volume= 0.058 af
Outflow = 0.41 cfs @ 12.16 hrs, Volume= 0.058 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach 11R: WS #2 POA

Inflow Area = 6.760 ac, 17.75% Impervious, Inflow Depth > 0.10" for 1-yr event
Inflow = 0.41 cfs @ 12.16 hrs, Volume= 0.058 af
Outflow = 0.41 cfs @ 12.16 hrs, Volume= 0.058 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Existing Wetlands-Reduced

Inflow Area = 8.970 ac, 9.92% Impervious, Inflow Depth > 0.31" for 1-yr event
Inflow = 2.79 cfs @ 12.17 hrs, Volume= 0.235 af
Outflow = 1.05 cfs @ 12.53 hrs, Volume= 0.173 af, Atten= 62%, Lag= 21.5 min
Primary = 1.05 cfs @ 12.53 hrs, Volume= 0.173 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 992.51' @ 12.53 hrs Surf.Area= 12,324 sf Storage= 3,267 cf

Plug-Flow detention time= 119.5 min calculated for 0.173 af (74% of inflow)
Center-of-Mass det. time= 49.2 min (892.7 - 843.5)

Volume	Invert	Avail.Storage	Storage Description
#1	991.90'	21,366 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
991.90	0	0	0
992.00	539	27	27
992.50	12,019	3,140	3,166
993.00	30,390	10,602	13,769
993.25	30,390	7,598	21,366

Peak Elev= 990.55' @ 20.00 hrs Surf.Area= 42,095 sf Storage= 22,531 cf

Plug-Flow detention time= 257.3 min calculated for 0.179 af (26% of inflow)
Center-of-Mass det. time= 136.0 min (982.5 - 846.5)

Volume	Invert	Avail.Storage	Storage Description
#1	990.00'	169,355 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
990.00	39,300	0	0
993.00	54,445	140,618	140,618
993.50	60,505	28,738	169,355

Device	Routing	Invert	Outlet Devices
#1	Primary	990.00'	**18.0" Round Culvert x3 X 3.00** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 990.00' / 989.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	990.00'	**3.0" Vert. Orificex2 X 2.00** C= 0.600
#3	Device 1	992.00'	**36.0" x 36.0" Horiz. Grate#1** C= 0.600 Limited to weir flow at low heads
#4	Device 1	992.00'	**36.0" x 60.0" Horiz. Grate#2** C= 0.600 Limited to weir flow at low heads
#5	Secondary	993.00'	**32.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.31 cfs @ 20.00 hrs HW=990.55' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert x3** (Passes 0.31 cfs of 3.17 cfs potential flow)
  ├─**2=Orificex2** (Orifice Controls 0.31 cfs @ 3.15 fps)
  ├─**3=Grate#1** (Controls 0.00 cfs)
  └─**4=Grate#2** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=990.00' (Free Discharge)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 4P: Wetland #2

Inflow Area = 1.000 ac, 8.00% Impervious, Inflow Depth > 0.02" for 1-yr event
Inflow = 0.00 cfs @ 17.70 hrs, Volume= 0.001 af
Outflow = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af, Atten= 78%, Lag= 138.1 min
Primary = 0.00 cfs @ 20.00 hrs, Volume= 0.000 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 990.77' @ 20.00 hrs Surf.Area= 3,221 sf Storage= 52 cf

Plug-Flow detention time= 275.7 min calculated for 0.000 af (8% of inflow)
Center-of-Mass det. time= 92.2 min (1,105.8 - 1,013.5)

n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

#2	Device 1	980.55'	**3.0" Vert. Orifice** C= 0.600
#3	Device 1	982.95'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.15 cfs @ 12.09 hrs HW=981.10' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.15 cfs of 1.80 cfs potential flow)
  └─**2=Orifice** (Orifice Controls 0.15 cfs @ 3.14 fps)
  └─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 9P: DI #14

Inflow Area =	4.380 ac, 22.83% Impervious, Inflow Depth >	0.16"	for 1-yr event	
Inflow =	0.41 cfs @	12.16 hrs, Volume=	0.058 af	
Outflow =	0.41 cfs @	12.16 hrs, Volume=	0.058 af,	Atten= 0%, Lag= 0.0 min
Primary =	0.41 cfs @	12.16 hrs, Volume=	0.058 af	
Secondary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 979.93' @ 12.16 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	979.30'	**18.0" Round Existing Culvert** L= 308.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 979.30' / 979.05' S= 0.0008 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	983.30'	**17.2" x 17.2" Horiz. Grate EJIW 5115M2** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.41 cfs @ 12.16 hrs HW=979.93' TW=0.00' (Dynamic Tailwater)
└─**1=Existing Culvert** (Barrel Controls 0.41 cfs @ 0.87 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=979.30' TW=0.00' (Dynamic Tailwater)
└─**2=Grate EJIW 5115M2** (Controls 0.00 cfs)

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	14	0.0100	0.60		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.31"
9.3	86	0.0250	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.7	218	0.0180	2.16		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.5	62	0.0180	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	60	0.0330	2.92		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.7	250	0.0025	1.56	15.55	**Trap/Vee/Rect Channel Flow,** Bot.W=0.00' D=1.00' Z= 10.0 '/' Top.W=20.00' n= 0.030 Short grass
0.1	77	0.0480	9.94	7.81	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.0	767	Total			

Summary for Subcatchment 3S: WS #1C

Runoff = 0.28 cfs @ 12.11 hrs, Volume= 0.026 af, Depth> 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.36"

Area (ac)	CN	Description
0.080	98	Paved parking, HSG D
0.320	39	>75% Grass cover, Good, HSG A
0.600	61	>75% Grass cover, Good, HSG B
1.000	57	Weighted Average
0.920		92.00% Pervious Area
0.080		8.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	100	0.0150	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.0	100	0.0100	1.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
13.9	200	Total			

Summary for Subcatchment 4S: WS #1D

Runoff = 3.22 cfs @ 11.99 hrs, Volume= 0.147 af, Depth> 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.36"

Summary for Subcatchment 6S: WS #2C

Runoff = 0.73 cfs @ 11.96 hrs, Volume= 0.036 af, Depth> 2.53"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.36"

Area (ac)	CN	Description
0.150	98	Paved parking, HSG B
0.020	61	>75% Grass cover, Good, HSG B
0.170	94	Weighted Average
0.020		11.76% Pervious Area
0.150		88.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0350	1.46		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.31"
0.6	140	0.0350	3.80		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3					**Direct Entry,**
6.0	240	Total			

Summary for Subcatchment 7S: WS #2B

Runoff = 3.36 cfs @ 12.10 hrs, Volume= 0.224 af, Depth> 0.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.36"

Area (ac)	CN	Description
0.850	98	Paved parking, HSG D
0.100	30	Woods, Good, HSG A
0.350	39	>75% Grass cover, Good, HSG A
2.910	61	>75% Grass cover, Good, HSG B
4.210	66	Weighted Average
3.360		79.81% Pervious Area
0.850		20.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.3	180	0.0210	2.33		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	206	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	470	0.0100	3.09	5.46	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal

Device	Routing	Invert	Outlet Devices
#1	Primary	992.42'	**Asymmetrical Weir, C= 3.27** Offset (feet) -26.27 -25.00 0.00 20.00 26.27 Height (feet) 0.58 0.13 0.00 0.13 0.58

Primary OutFlow Max=10.57 cfs @ 12.20 hrs HW=992.65' TW=992.45' (Dynamic Tailwater)
↑—**1=Asymmetrical Weir** (Weir Controls 10.57 cfs @ 0.98 fps)

Summary for Pond 2P: Box Culvert

Inflow Area = 8.970 ac, 9.92% Impervious, Inflow Depth > 1.00" for 10-yr event
Inflow = 10.62 cfs @ 12.20 hrs, Volume= 0.745 af
Outflow = 10.29 cfs @ 12.25 hrs, Volume= 0.739 af, Atten= 3%, Lag= 2.5 min
Primary = 10.29 cfs @ 12.25 hrs, Volume= 0.739 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 992.46' @ 12.25 hrs Surf.Area= 4,119 sf Storage= 1,818 cf

Plug-Flow detention time= 5.9 min calculated for 0.736 af (99% of inflow)
Center-of-Mass det. time= 2.9 min (832.2 - 829.3)

Volume	Invert	Avail.Storage	Storage Description
#1	992.00'	4,045 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
992.00	3,730	0	0
992.50	4,150	1,970	1,970
993.00	4,150	2,075	4,045

Device	Routing	Invert	Outlet Devices
#1	Primary	992.00'	**122.0" W x 32.0" H Box Culvert** L= 150.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 992.00' / 990.00' S= 0.0133 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 27.11 sf

Primary OutFlow Max=10.24 cfs @ 12.25 hrs HW=992.46' TW=990.86' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 10.24 cfs @ 2.18 fps)

Summary for Pond 3P: Stormwater Wetland

Inflow Area = 24.420 ac, 22.81% Impervious, Inflow Depth > 1.16" for 10-yr event
Inflow = 31.58 cfs @ 12.13 hrs, Volume= 2.368 af
Outflow = 0.64 cfs @ 20.00 hrs, Volume= 0.394 af, Atten= 98%, Lag= 472.1 min
Primary = 0.64 cfs @ 20.00 hrs, Volume= 0.394 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Volume	Invert	Avail.Storage	Storage Description
#1	990.75'	10,990 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
990.75	3,160	0	0
991.00	4,100	908	908
992.00	5,025	4,563	5,470
993.00	6,015	5,520	10,990

Device	Routing	Invert	Outlet Devices
#1	Primary	990.75'	**8.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 990.75' / 990.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	990.75'	**3.0" Vert. Orifice** C= 0.600
#3	Device 1	992.50'	**36.0" x 36.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	993.00'	**32.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.03 cfs @ 14.35 hrs HW=990.88' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.03 cfs of 0.05 cfs potential flow)
  ├─**2=Orifice** (Orifice Controls 0.03 cfs @ 1.24 fps)
  └─**3=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=990.75' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 5P: Underground Detention

Inflow Area = 0.170 ac, 88.24% Impervious, Inflow Depth > 2.53" for 10-yr event
Inflow = 0.73 cfs @ 11.96 hrs, Volume= 0.036 af
Outflow = 0.22 cfs @ 12.11 hrs, Volume= 0.036 af, Atten= 70%, Lag= 8.7 min
Primary = 0.22 cfs @ 12.11 hrs, Volume= 0.036 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 981.55' @ 12.11 hrs Surf.Area= 0.015 ac Storage= 0.011 af

Plug-Flow detention time= 21.6 min calculated for 0.036 af (99% of inflow)
Center-of-Mass det. time= 19.2 min (769.2 - 750.0)

Volume	Invert	Avail.Storage	Storage Description
#1	980.55'	0.029 af	**30.0" Round Pipe Storage** x 2 L= 130.0'

Device	Routing	Invert	Outlet Devices
#1	Primary	980.35'	**15.0" Round Culvert** L= 95.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 980.35' / 979.30' S= 0.0111 '/' Cc= 0.900

Summary for Subcatchment 1S: WS #1A

Runoff = 30.02 cfs @ 12.13 hrs, Volume= 2.096 af, Depth> 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.73"

Area (ac)	CN	Description
0.890	98	Paved parking, HSG D
0.260	30	Woods, Good, HSG A
1.580	77	Woods, Good, HSG D
1.100	39	>75% Grass cover, Good, HSG A
5.140	80	>75% Grass cover, Good, HSG D
8.970	75	Weighted Average
8.080		90.08% Pervious Area
0.890		9.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	18	0.0100	0.63		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.31"
13.0	82	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.9	171	0.0090	1.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.9	140	0.0090	0.47		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.3	411	Total			

Summary for Subcatchment 2S: WS #1B (CENTER)

Runoff = 64.12 cfs @ 12.08 hrs, Volume= 3.975 af, Depth> 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.73"

Area (ac)	CN	Description
4.680	98	Paved parking, HSG D
2.190	39	>75% Grass cover, Good, HSG A
0.210	61	>75% Grass cover, Good, HSG B
7.610	80	>75% Grass cover, Good, HSG D
0.470	30	Woods, Good, HSG A
0.290	77	Woods, Good, HSG D
15.450	78	Weighted Average
10.770		69.71% Pervious Area
4.680		30.29% Impervious Area

Area (ac)	CN	Description
0.680	78	Meadow, non-grazed, HSG D
0.640	80	>75% Grass cover, Good, HSG D
1.320	79	Weighted Average
1.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	65	0.0900	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
2.9	186	0.0044	1.07		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.4	251	Total			

Summary for Subcatchment 5S: WS #2A

Runoff = 0.56 cfs @ 12.27 hrs, Volume= 0.086 af, Depth> 0.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.73"

Area (ac)	CN	Description
0.200	98	Paved parking, HSG D
0.940	30	Woods, Good, HSG A
1.120	39	>75% Grass cover, Good, HSG A
0.120	61	>75% Grass cover, Good, HSG B
2.380	42	Weighted Average
2.180		91.60% Pervious Area
0.200		8.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	40	0.0250	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
12.3	60	0.0440	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.31"
0.8	60	0.0660	1.28		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	95	0.0660	4.14		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.2	90	0.0660	1.28		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.0	188	0.0240	0.77		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.8	533	Total			

15.3 956 Total

Summary for Reach 1R: WS #1 POA

Inflow Area = 26.740 ac, 21.13% Impervious, Inflow Depth > 1.94" for 100-yr event
Inflow = 28.18 cfs @ 12.42 hrs, Volume= 4.332 af
Outflow = 28.18 cfs @ 12.42 hrs, Volume= 4.332 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach 2R: WS #2B/C POA

Inflow Area = 4.380 ac, 22.83% Impervious, Inflow Depth > 2.14" for 100-yr event
Inflow = 12.11 cfs @ 12.08 hrs, Volume= 0.779 af
Outflow = 12.11 cfs @ 12.08 hrs, Volume= 0.779 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Reach 11R: WS #2 POA

Inflow Area = 6.760 ac, 17.75% Impervious, Inflow Depth > 1.54" for 100-yr event
Inflow = 12.35 cfs @ 12.09 hrs, Volume= 0.865 af
Outflow = 12.35 cfs @ 12.09 hrs, Volume= 0.865 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 1P: Existing Wetlands-Reduced

Inflow Area = 8.970 ac, 9.92% Impervious, Inflow Depth > 2.80" for 100-yr event
Inflow = 30.02 cfs @ 12.13 hrs, Volume= 2.096 af
Outflow = 24.60 cfs @ 12.20 hrs, Volume= 2.026 af, Atten= 18%, Lag= 4.3 min
Primary = 24.60 cfs @ 12.20 hrs, Volume= 2.026 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 992.88' @ 12.25 hrs Surf.Area= 26,162 sf Storage= 10,515 cf

Plug-Flow detention time= 23.1 min calculated for 2.019 af (96% of inflow)
Center-of-Mass det. time= 10.8 min (806.2 - 795.3)

Volume	Invert	Avail.Storage	Storage Description
#1	991.90'	21,366 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
991.90	0	0	0
992.00	539	27	27
992.50	12,019	3,140	3,166
993.00	30,390	10,602	13,769
993.25	30,390	7,598	21,366

Peak Elev= 992.58' @ 12.46 hrs Surf.Area= 52,305 sf Storage= 117,990 cf

Plug-Flow detention time= 129.3 min calculated for 3.893 af (65% of inflow)
Center-of-Mass det. time= 58.8 min (853.1 - 794.2)

Volume	Invert	Avail.Storage	Storage Description
#1	990.00'	169,355 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
990.00	39,300	0	0
993.00	54,445	140,618	140,618
993.50	60,505	28,738	169,355

Device	Routing	Invert	Outlet Devices
#1	Primary	990.00'	**18.0" Round Culvert x3 X 3.00** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 990.00' / 989.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	990.00'	**3.0" Vert. Orificex2 X 2.00** C= 0.600
#3	Device 1	992.00'	**36.0" x 36.0" Horiz. Grate#1** C= 0.600 Limited to weir flow at low heads
#4	Device 1	992.00'	**36.0" x 60.0" Horiz. Grate#2** C= 0.600 Limited to weir flow at low heads
#5	Secondary	993.00'	**32.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=27.23 cfs @ 12.46 hrs HW=992.58' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert x3** (Inlet Controls 27.23 cfs @ 5.14 fps)
  ↑—**2=Orificex2** (Passes < 0.74 cfs potential flow)
  —**3=Grate#1** (Passes < 17.13 cfs potential flow)
  —**4=Grate#2** (Passes < 22.84 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=990.00' (Free Discharge)
↑—**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 4P: Wetland #2

Inflow Area = 1.000 ac, 8.00% Impervious, Inflow Depth > 1.35" for 100-yr event
Inflow = 1.87 cfs @ 12.07 hrs, Volume= 0.112 af
Outflow = 0.16 cfs @ 13.36 hrs, Volume= 0.089 af, Atten= 91%, Lag= 77.3 min
Primary = 0.16 cfs @ 13.36 hrs, Volume= 0.089 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 991.33' @ 13.36 hrs Surf.Area= 4,406 sf Storage= 2,316 cf

Plug-Flow detention time= 179.6 min calculated for 0.089 af (79% of inflow)
Center-of-Mass det. time= 119.5 min (942.7 - 823.2)

n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf

#2	Device 1	980.55'	**3.0" Vert. Orifice** C= 0.600
#3	Device 1	982.95'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.30 cfs @ 12.13 hrs HW=982.33' TW=0.00' (Dynamic Tailwater)
↑—**1=Culvert** (Passes 0.30 cfs of 5.43 cfs potential flow)
↑—**2=Orifice** (Orifice Controls 0.30 cfs @ 6.20 fps)
—**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Pond 9P: DI #14

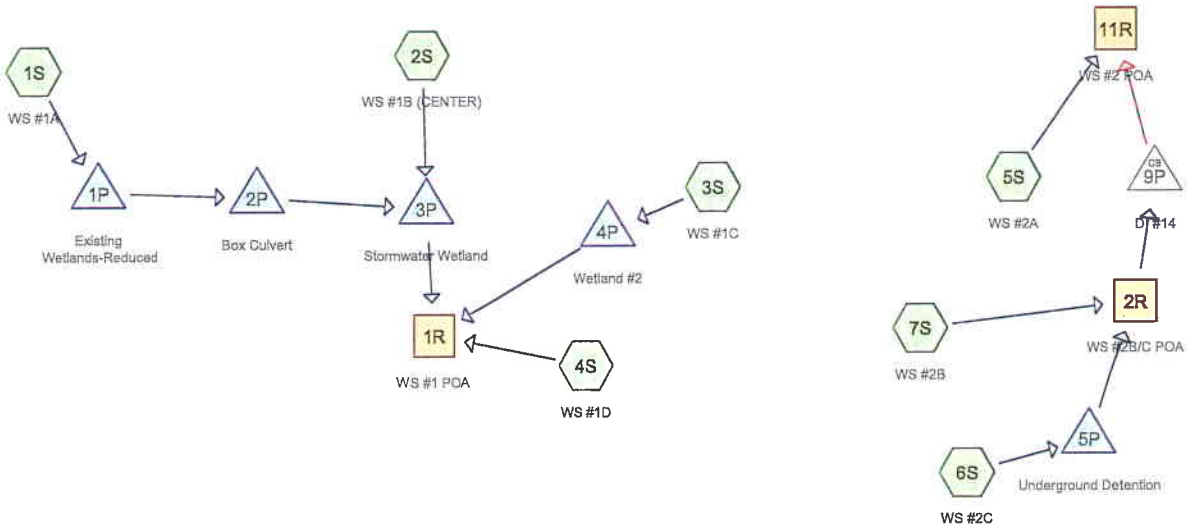
Inflow Area =	4.380 ac,	22.83% Impervious,	Inflow Depth >	2.14" for 100-yr event
Inflow =	12.11 cfs @	12.08 hrs, Volume=	0.779 af	
Outflow =	12.11 cfs @	12.08 hrs, Volume=	0.779 af,	Atten= 0%, Lag= 0.0 min
Primary =	5.37 cfs @	12.08 hrs, Volume=	0.663 af	
Secondary =	6.74 cfs @	12.08 hrs, Volume=	0.116 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 983.81' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	979.30'	**18.0" Round Existing Culvert** L= 308.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 979.30' / 979.05' S= 0.0008 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	983.30'	**17.2" x 17.2" Horiz. Grate EJIW 5115M2** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.36 cfs @ 12.08 hrs HW=983.80' TW=0.00' (Dynamic Tailwater)
↑—**1=Existing Culvert** (Barrel Controls 5.36 cfs @ 3.03 fps)

Secondary OutFlow Max=6.54 cfs @ 12.08 hrs HW=983.80' TW=0.00' (Dynamic Tailwater)
↑—**2=Grate EJIW 5115M2** (Weir Controls 6.54 cfs @ 2.30 fps)



Subcat Reach Pond Link

Routing Diagram for Proposed
Prepared by Microsoft, Printed 3/15/2018

Summary for Subcatchment 1S: WS #1A

Runoff = 2.79 cfs @ 12.17 hrs, Volume= 0.235 af, Depth> 0.31"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=1.96"

Area (ac)	CN	Description
0.890	98	Paved parking, HSG D
0.260	30	Woods, Good, HSG A
1.580	77	Woods, Good, HSG D
1.100	39	>75% Grass cover, Good, HSG A
5.140	80	>75% Grass cover, Good, HSG D
8.970	75	Weighted Average
8.080		90.08% Pervious Area
0.890		9.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	18	0.0100	0.63		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.31"
13.0	82	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.9	171	0.0090	1.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.9	140	0.0090	0.47		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.3	411	Total			

Summary for Subcatchment 2S: WS #1B (CENTER)

Runoff = 7.89 cfs @ 12.10 hrs, Volume= 0.525 af, Depth> 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=1.96"

Area (ac)	CN	Description
4.680	98	Paved parking, HSG D
2.190	39	>75% Grass cover, Good, HSG A
0.210	61	>75% Grass cover, Good, HSG B
7.610	80	>75% Grass cover, Good, HSG D
0.470	30	Woods, Good, HSG A
0.290	77	Woods, Good, HSG D
15.450	78	Weighted Average
10.770		69.71% Pervious Area
4.680		30.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	14	0.0100	0.60		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.31"
9.3	86	0.0250	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.7	218	0.0180	2.16		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.5	62	0.0180	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	60	0.0330	2.92		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.7	250	0.0025	1.56	15.55	**Trap/Vee/Rect Channel Flow,** Bot.W=0.00' D=1.00' Z= 10.0 '/' Top.W=20.00' n= 0.030 Short grass
0.1	77	0.0480	9.94	7.81	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.0	767	Total			

Summary for Subcatchment 3S: WS #1C

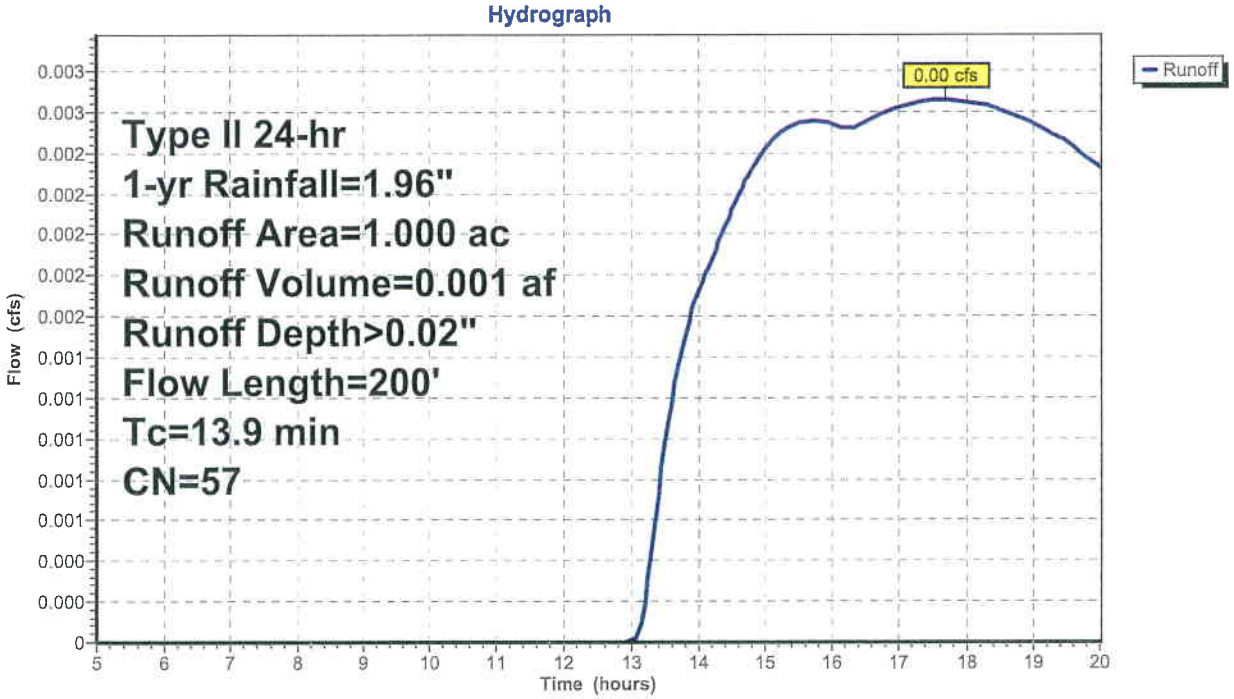
Runoff = 0.00 cfs @ 17.70 hrs, Volume= 0.001 af, Depth> 0.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=1.96"

Area (ac)	CN	Description
0.080	98	Paved parking, HSG D
0.320	39	>75% Grass cover, Good, HSG A
0.600	61	>75% Grass cover, Good, HSG B
1.000	57	Weighted Average
0.920		92.00% Pervious Area
0.080		8.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	100	0.0150	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.0	100	0.0100	1.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
13.9	200	Total			

Subcatchment 3S: WS #1C



Summary for Subcatchment 5S: WS #2A

Runoff = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Depth= 0.00"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=1.96"

Area (ac)	CN	Description
0.200	98	Paved parking, HSG D
0.940	30	Woods, Good, HSG A
1.120	39	>75% Grass cover, Good, HSG A
0.120	61	>75% Grass cover, Good, HSG B
2.380	42	Weighted Average
2.180		91.60% Pervious Area
0.200		8.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	40	0.0250	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
12.3	60	0.0440	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.31"
0.8	60	0.0660	1.28		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	95	0.0660	4.14		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.2	90	0.0660	1.28		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.0	188	0.0240	0.77		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.8	533	Total			

Summary for Subcatchment 6S: WS #2C

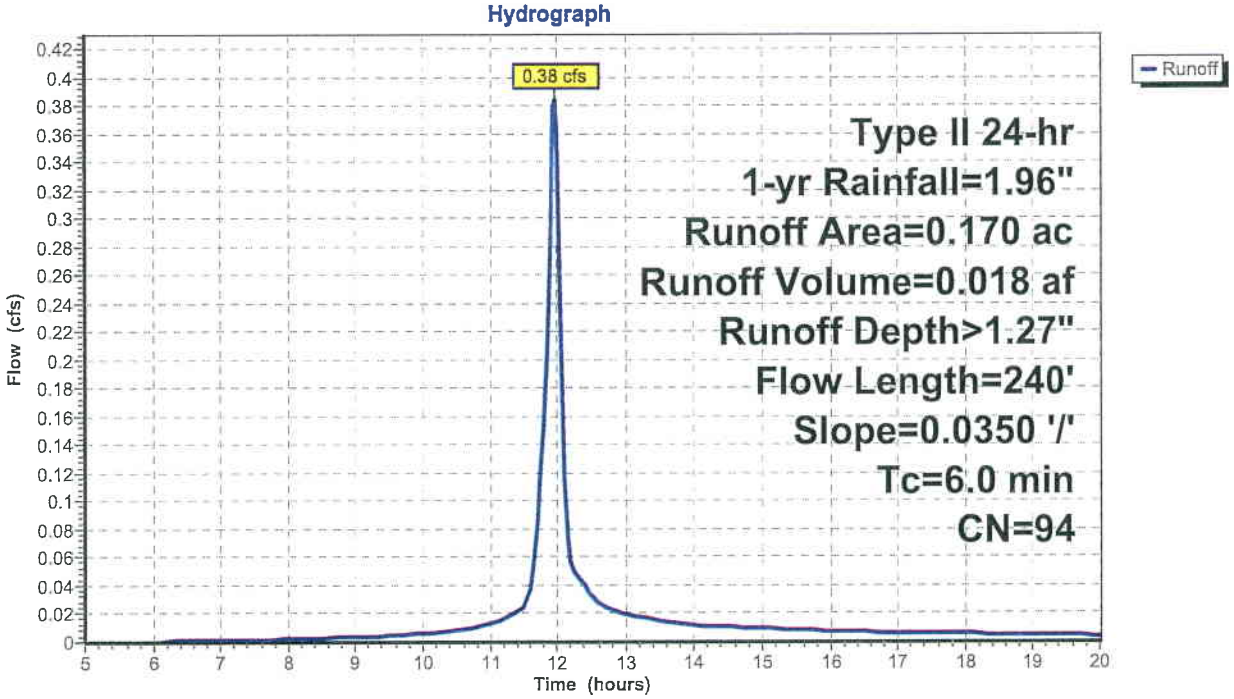
Runoff = 0.38 cfs @ 11.97 hrs, Volume= 0.018 af, Depth> 1.27"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-yr Rainfall=1.96"

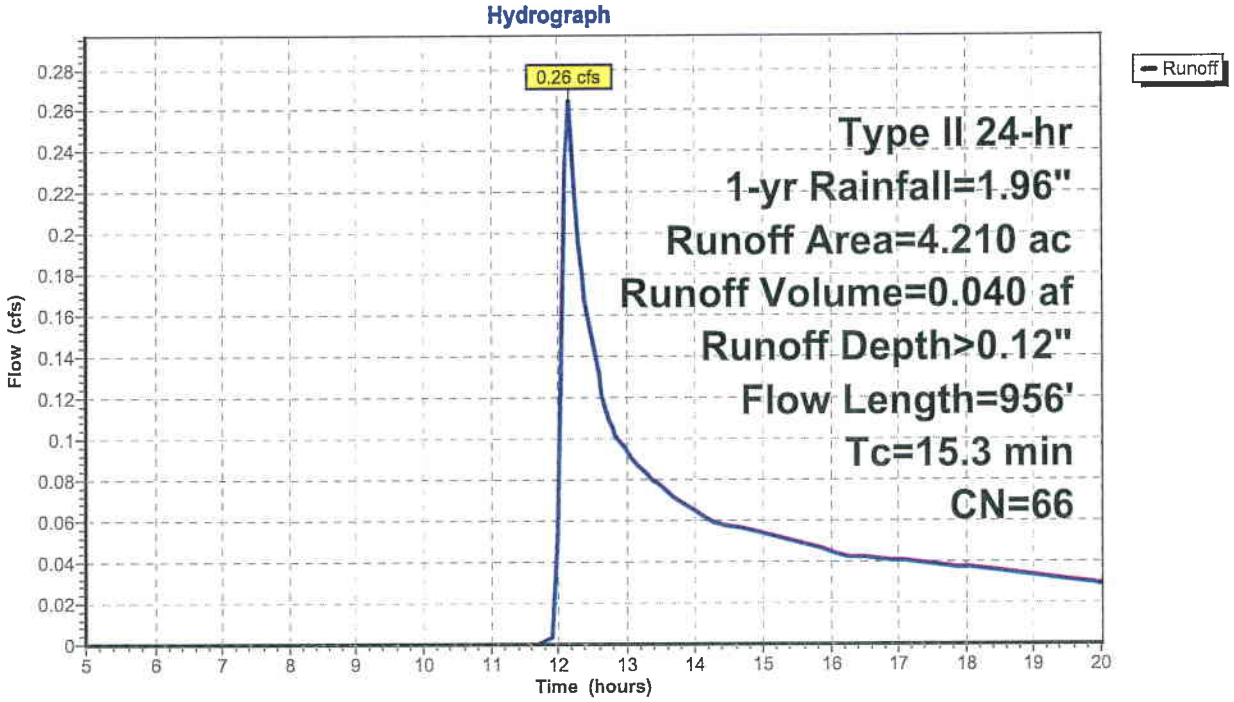
Area (ac)	CN	Description
0.150	98	Paved parking, HSG B
0.020	61	>75% Grass cover, Good, HSG B
0.170	94	Weighted Average
0.020		11.76% Pervious Area
0.150		88.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0350	1.46		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.31"
0.6	140	0.0350	3.80		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3					**Direct Entry,**
6.0	240	Total			

Subcatchment 6S: WS #2C



Subcatchment 7S: WS #2B

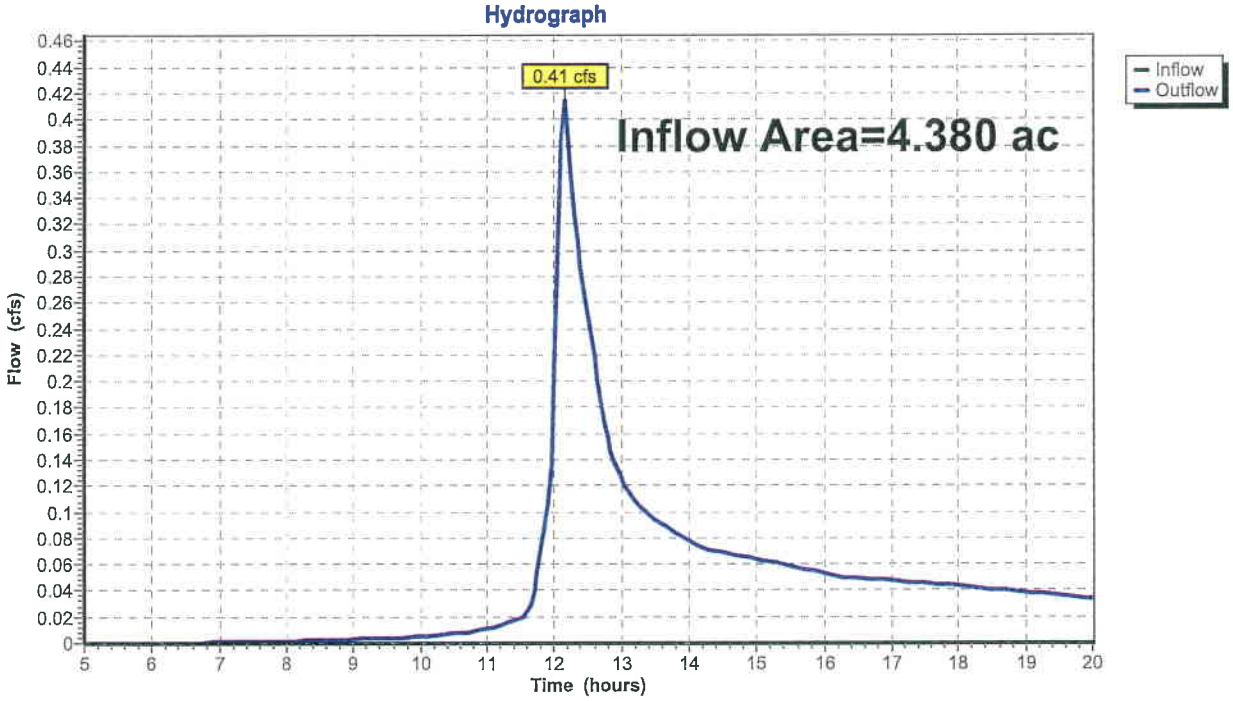


Summary for Reach 2R: WS #2B/C POA

Inflow Area = 4.380 ac, 22.83% Impervious, Inflow Depth > 0.16" for 1-yr event
Inflow = 0.41 cfs @ 12.16 hrs, Volume= 0.058 af
Outflow = 0.41 cfs @ 12.16 hrs, Volume= 0.058 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: WS #2B/C POA



Summary for Pond 1P: Existing Wetlands-Reduced

Inflow Area = 8.970 ac, 9.92% Impervious, Inflow Depth > 0.31" for 1-yr event
Inflow = 2.79 cfs @ 12.17 hrs, Volume= 0.235 af
Outflow = 1.05 cfs @ 12.53 hrs, Volume= 0.173 af, Atten= 62%, Lag= 21.5 min
Primary = 1.05 cfs @ 12.53 hrs, Volume= 0.173 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 992.51' @ 12.53 hrs Surf.Area= 12,324 sf Storage= 3,267 cf

Plug-Flow detention time= 119.5 min calculated for 0.173 af (74% of inflow)
Center-of-Mass det. time= 49.2 min (892.7 - 843.5)

Volume	Invert	Avail.Storage	Storage Description
#1	991.90'	21,366 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
991.90	0	0	0
992.00	539	27	27
992.50	12,019	3,140	3,166
993.00	30,390	10,602	13,769
993.25	30,390	7,598	21,366

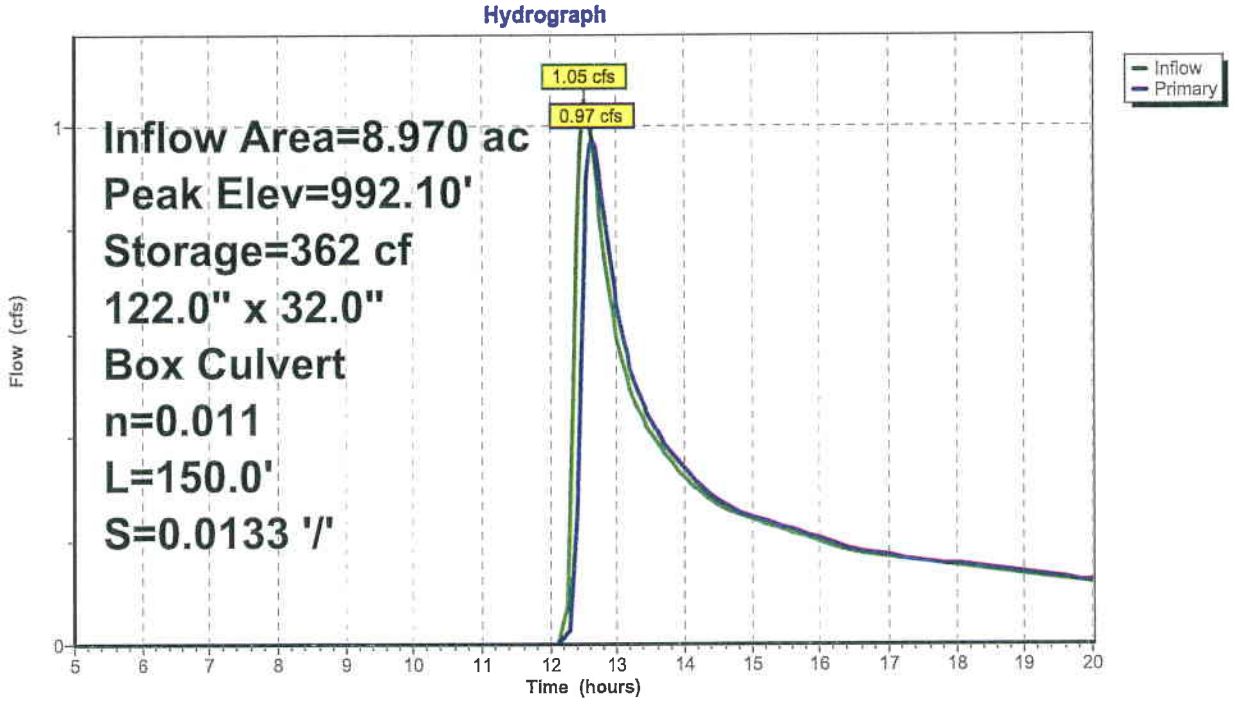
Device	Routing	Invert	Outlet Devices
#1	Primary	992.42'	**Asymmetrical Weir, C= 3.27** Offset (feet) -26.27 -25.00 0.00 20.00 26.27 Height (feet) 0.58 0.13 0.00 0.13 0.58

Primary OutFlow Max=1.04 cfs @ 12.53 hrs HW=992.51' TW=992.09' (Dynamic Tailwater)
↑—**1=Asymmetrical Weir** (Weir Controls 1.04 cfs @ 0.39 fps)

Stage-Discharge for Pond 1P: Existing Wetlands-Reduced

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
991.90	0.00	992.43	0.00	992.96	50.64
991.91	0.00	992.44	0.03	992.97	52.32
991.92	0.00	992.45	0.07	992.98	54.01
991.93	0.00	992.46	0.14	992.99	55.73
991.94	0.00	992.47	0.25	993.00	57.47
991.95	0.00	992.48	0.40	993.01	59.06
991.96	0.00	992.49	0.59	993.02	60.52
991.97	0.00	992.50	0.82	993.03	61.91
991.98	0.00	992.51	1.10	993.04	63.25
991.99	0.00	992.52	1.43	993.05	64.54
992.00	0.00	992.53	1.82	993.06	65.79
992.01	0.00	992.54	2.26	993.07	67.01
992.02	0.00	992.55	2.76	993.08	68.19
992.03	0.00	992.56	3.32	993.09	69.35
992.04	0.00	992.57	3.92	993.10	70.48
992.05	0.00	992.58	4.57	993.11	71.59
992.06	0.00	992.59	5.26	993.12	72.68
992.07	0.00	992.60	5.98	993.13	73.75
992.08	0.00	992.61	6.74	993.14	74.80
992.09	0.00	992.62	7.54	993.15	75.83
992.10	0.00	992.63	8.37	993.16	76.85
992.11	0.00	992.64	9.23	993.17	77.85
992.12	0.00	992.65	10.12	993.18	78.83
992.13	0.00	992.66	11.05	993.19	79.81
992.14	0.00	992.67	12.00	993.20	80.76
992.15	0.00	992.68	12.98	993.21	81.71
992.16	0.00	992.69	13.99	993.22	82.64
992.17	0.00	992.70	15.03	993.23	83.56
992.18	0.00	992.71	16.09	993.24	84.47
992.19	0.00	992.72	17.19	993.25	**85.37**
992.20	0.00	992.73	18.30		
992.21	0.00	992.74	19.45		
992.22	0.00	992.75	20.62		
992.23	0.00	992.76	21.81		
992.24	0.00	992.77	23.03		
992.25	0.00	992.78	24.28		
992.26	0.00	992.79	25.55		
992.27	0.00	992.80	26.84		
992.28	0.00	992.81	28.16		
992.29	0.00	992.82	29.50		
992.30	0.00	992.83	30.86		
992.31	0.00	992.84	32.25		
992.32	0.00	992.85	33.66		
992.33	0.00	992.86	35.09		
992.34	0.00	992.87	36.55		
992.35	0.00	992.88	38.03		
992.36	0.00	992.89	39.53		
992.37	0.00	992.90	41.05		
992.38	0.00	992.91	42.59		
992.39	0.00	992.92	44.16		
992.40	0.00	992.93	45.75		
992.41	0.00	992.94	47.36		
992.42	0.00	992.95	48.99		

Pond 2P: Box Culvert



Summary for Pond 3P: Stormwater Wetland

Inflow Area =	24.420 ac,	22.81% Impervious,	Inflow Depth >	0.34" for 1-yr event
Inflow =	7.89 cfs @	12.10 hrs, Volume=	0.697 af	
Outflow =	0.31 cfs @	20.00 hrs, Volume=	0.179 af,	Atten= 96%, Lag= 473.8 min
Primary =	0.31 cfs @	20.00 hrs, Volume=	0.179 af	
Secondary =	0.00 cfs @	5.00 hrs, Volume=	0.000 af	

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 990.55' @ 20.00 hrs Surf.Area= 42,095 sf Storage= 22,531 cf

Plug-Flow detention time= 257.3 min calculated for 0.179 af (26% of inflow)
Center-of-Mass det. time= 136.0 min (982.5 - 846.5)

Volume	Invert	Avail.Storage	Storage Description
#1	990.00'	169,355 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
990.00	39,300	0	0
993.00	54,445	140,618	140,618
993.50	60,505	28,738	169,355

Device	Routing	Invert	Outlet Devices
#1	Primary	990.00'	**18.0" Round Culvert x3 X 3.00** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 990.00' / 989.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	990.00'	**3.0" Vert. Orificex2 X 2.00** C= 0.600
#3	Device 1	992.00'	**36.0" x 36.0" Horiz. Grate#1** C= 0.600 Limited to weir flow at low heads
#4	Device 1	992.00'	**36.0" x 60.0" Horiz. Grate#2** C= 0.600 Limited to weir flow at low heads
#5	Secondary	993.00'	**32.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

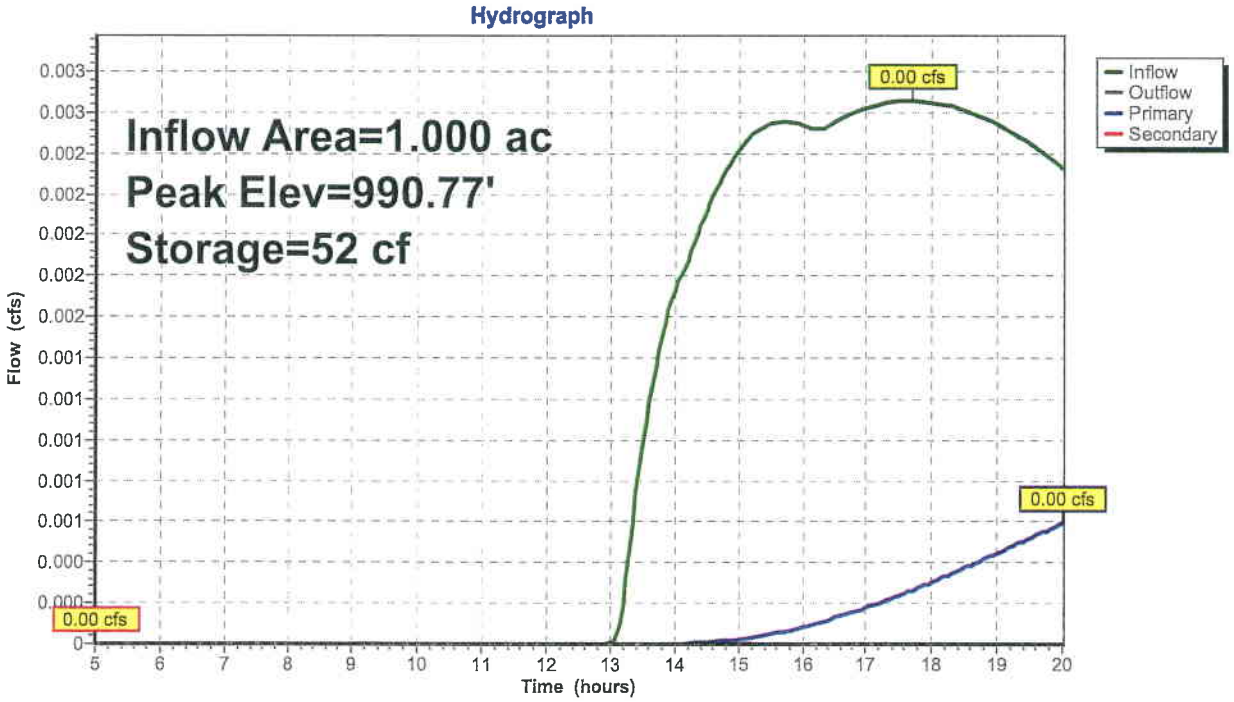
Primary OutFlow Max=0.31 cfs @ 20.00 hrs HW=990.55' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert x3** (Passes 0.31 cfs of 3.17 cfs potential flow)
  ├─**2=Orificex2** (Orifice Controls 0.31 cfs @ 3.15 fps)
  ├─**3=Grate#1** (Controls 0.00 cfs)
  └─**4=Grate#2** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=990.00' (Free Discharge)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Discharge for Pond 3P: Stormwater Wetland

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
990.00	0.00	0.00	0.00
990.05	0.01	0.01	0.00
990.10	0.04	0.04	0.00
990.15	0.08	0.08	0.00
990.20	0.13	0.13	0.00
990.25	0.17	0.17	0.00
990.30	0.20	0.20	0.00
990.35	0.22	0.22	0.00
990.40	0.25	0.25	0.00
990.45	0.27	0.27	0.00
990.50	0.29	0.29	0.00
990.55	0.31	0.31	0.00
990.60	0.33	0.33	0.00
990.65	0.34	0.34	0.00
990.70	0.36	0.36	0.00
990.75	0.37	0.37	0.00
990.80	0.39	0.39	0.00
990.85	0.40	0.40	0.00
990.90	0.42	0.42	0.00
990.95	0.43	0.43	0.00
991.00	0.44	0.44	0.00
991.05	0.45	0.45	0.00
991.10	0.47	0.47	0.00
991.15	0.48	0.48	0.00
991.20	0.49	0.49	0.00
991.25	0.50	0.50	0.00
991.30	0.51	0.51	0.00
991.35	0.52	0.52	0.00
991.40	0.53	0.53	0.00
991.45	0.54	0.54	0.00
991.50	0.55	0.55	0.00
991.55	0.56	0.56	0.00
991.60	0.57	0.57	0.00
991.65	0.58	0.58	0.00
991.70	0.59	0.59	0.00
991.75	0.60	0.60	0.00
991.80	0.61	0.61	0.00
991.85	0.62	0.62	0.00
991.90	0.63	0.63	0.00
991.95	0.64	0.64	0.00
992.00	0.65	0.65	0.00
992.05	1.68	1.68	0.00
992.10	3.56	3.56	0.00
992.15	5.99	5.99	0.00
992.20	8.87	8.87	0.00
992.25	12.13	12.13	0.00
992.30	15.74	15.74	0.00
992.35	19.66	19.66	0.00
992.40	23.88	23.88	0.00
992.45	26.28	26.28	0.00
992.50	26.66	26.66	0.00
992.55	27.04	27.04	0.00
992.60	27.41	27.41	0.00
992.65	27.78	27.78	0.00
992.70	28.14	28.14	0.00
992.75	28.50	28.50	0.00
992.80	28.85	28.85	0.00
992.85	29.20	29.20	0.00
992.90	29.55	29.55	0.00
992.95	29.89	29.89	0.00
993.00	30.23	30.23	0.00
993.05	31.45	30.56	0.89
993.10	33.41	30.89	2.52
993.15	35.85	31.22	4.63
993.20	38.67	31.54	7.13
993.25	41.89	31.86	10.03
993.30	45.46	32.18	13.28
993.35	49.34	32.49	16.85
993.40	53.53	32.81	20.72
993.45	58.18	33.11	25.07
993.50	**63.17**	**33.42**	**29.76**

Pond 4P: Wetland #2



Summary for Pond 5P: Underground Detention

Inflow Area = 0.170 ac, 88.24% Impervious, Inflow Depth > 1.27" for 1-yr event
Inflow = 0.38 cfs @ 11.97 hrs, Volume= 0.018 af
Outflow = 0.15 cfs @ 12.09 hrs, Volume= 0.018 af, Atten= 60%, Lag= 7.2 min
Primary = 0.15 cfs @ 12.09 hrs, Volume= 0.018 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 981.10' @ 12.09 hrs Surf.Area= 0.012 ac Storage= 0.005 af

Plug-Flow detention time= 17.1 min calculated for 0.018 af (99% of inflow)
Center-of-Mass det. time= 14.4 min (779.3 - 764.9)

Volume	Invert	Avail.Storage	Storage Description
#1	980.55'	0.029 af	**30.0" Round Pipe Storage** x 2 L= 130.0'

Device	Routing	Invert	Outlet Devices
#1	Primary	980.35'	**15.0" Round Culvert** L= 95.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 980.35' / 979.30' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	980.55'	**3.0" Vert. Orifice** C= 0.600
#3	Device 1	982.95'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.15 cfs @ 12.09 hrs HW=981.10' TW=0.00' (Dynamic Tailwater)
↑└─**1=Culvert** (Passes 0.15 cfs of 1.80 cfs potential flow)
↑ ├─**2=Orifice** (Orifice Controls 0.15 cfs @ 3.14 fps)
 └─**3=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

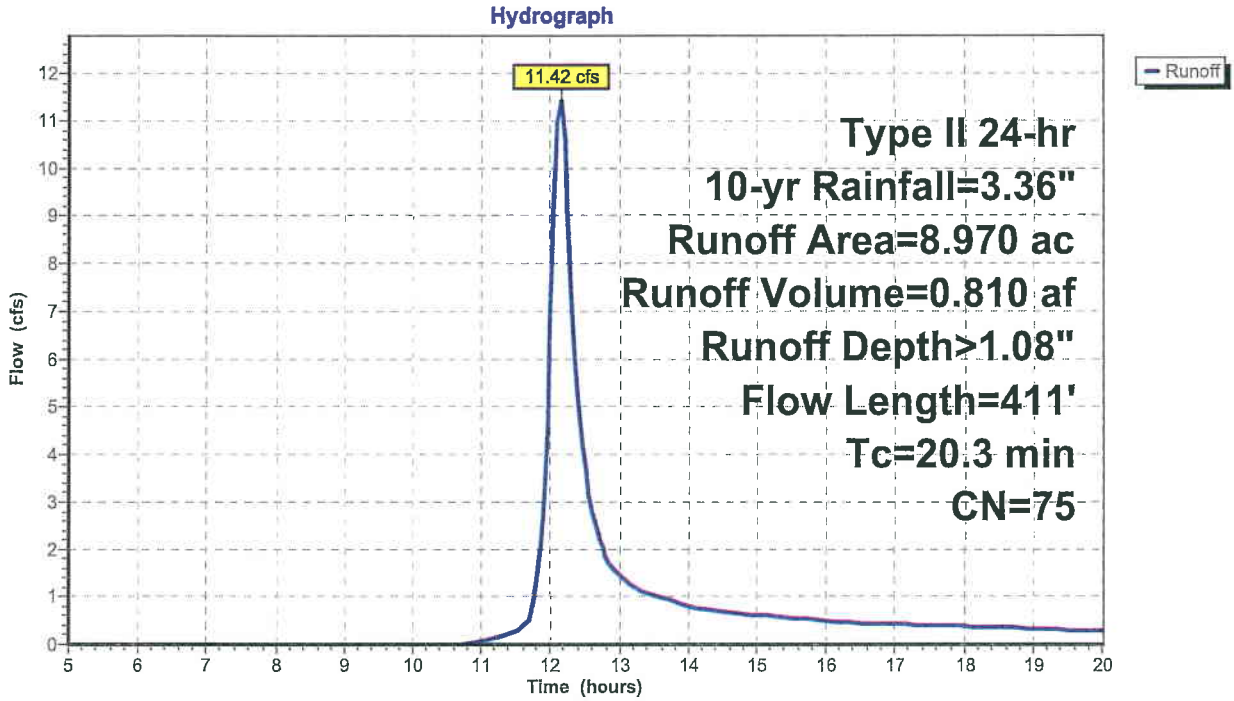
Stage-Discharge for Pond 5P: Underground Detention

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
980.55	0.00	981.61	0.23	982.67	0.33
980.57	0.00	981.63	0.23	982.69	0.34
980.59	0.00	981.65	0.23	982.71	0.34
980.61	0.01	981.67	0.24	982.73	0.34
980.63	0.01	981.69	0.24	982.75	0.34
980.65	0.02	981.71	0.24	982.77	0.34
980.67	0.03	981.73	0.24	982.79	0.34
980.69	0.04	981.75	0.25	982.81	0.35
980.71	0.05	981.77	0.25	982.83	0.35
980.73	0.05	981.79	0.25	982.85	0.35
980.75	0.06	981.81	0.25	982.87	0.35
980.77	0.07	981.83	0.25	982.89	0.35
980.79	0.08	981.85	0.26	982.91	0.35
980.81	0.09	981.87	0.26	982.93	0.35
980.83	0.09	981.89	0.26	982.95	0.36
980.85	0.10	981.91	0.26	982.97	0.38
980.87	0.10	981.93	0.26	982.99	0.41
980.89	0.11	981.95	0.27	983.01	0.46
980.91	0.11	981.97	0.27	983.03	0.51
980.93	0.12	981.99	0.27	983.05	**0.57**
980.95	0.12	982.01	0.27		
980.97	0.13	982.03	0.28		
980.99	0.13	982.05	0.28		
981.01	0.14	982.07	0.28		
981.03	0.14	982.09	0.28		
981.05	0.14	982.11	0.28		
981.07	0.15	982.13	0.29		
981.09	0.15	982.15	0.29		
981.11	0.16	982.17	0.29		
981.13	0.16	982.19	0.29		
981.15	0.16	982.21	0.29		
981.17	0.17	982.23	0.29		
981.19	0.17	982.25	0.30		
981.21	0.17	982.27	0.30		
981.23	0.18	982.29	0.30		
981.25	0.18	982.31	0.30		
981.27	0.18	982.33	0.30		
981.29	0.19	982.35	0.31		
981.31	0.19	982.37	0.31		
981.33	0.19	982.39	0.31		
981.35	0.19	982.41	0.31		
981.37	0.20	982.43	0.31		
981.39	0.20	982.45	0.31		
981.41	0.20	982.47	0.32		
981.43	0.21	982.49	0.32		
981.45	0.21	982.51	0.32		
981.47	0.21	982.53	0.32		
981.49	0.21	982.55	0.32		
981.51	0.22	982.57	0.33		
981.53	0.22	982.59	0.33		
981.55	0.22	982.61	0.33		
981.57	0.22	982.63	0.33		
981.59	0.23	982.65	0.33		

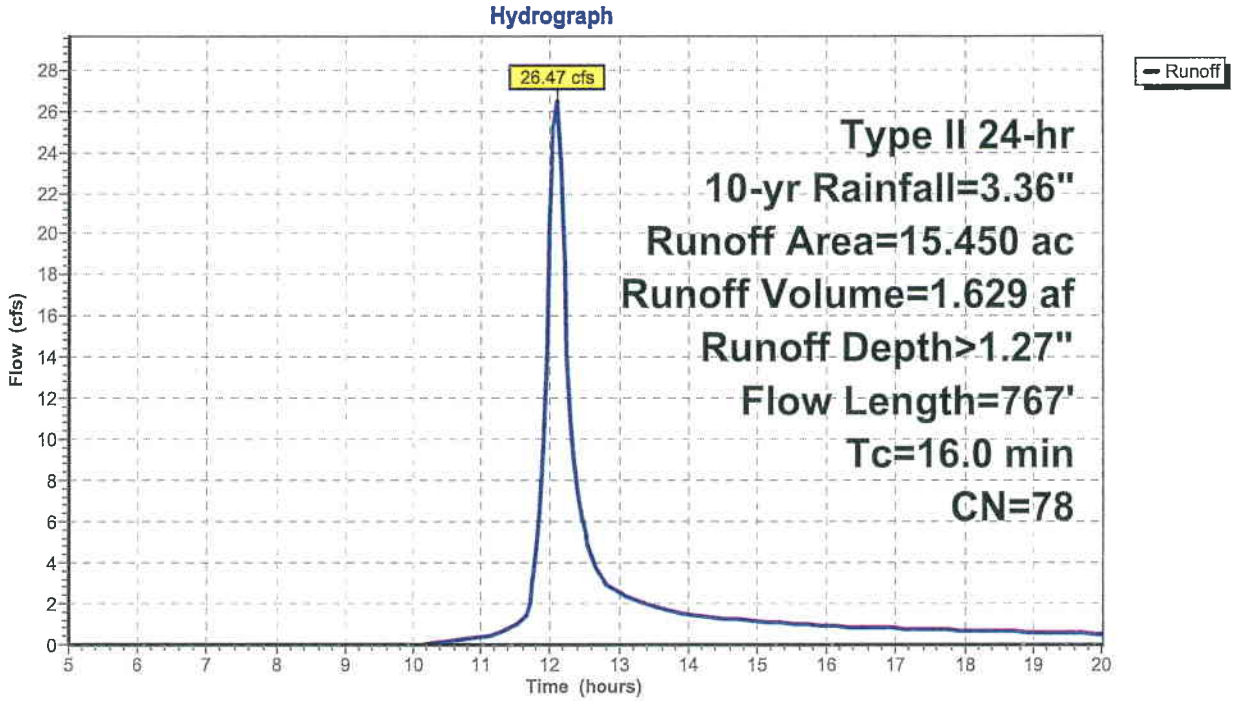
Stage-Discharge for Pond 9P: DI #14

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
979.30	0.00	0.00	**0.00**
979.35	0.00	0.00	0.00
979.40	0.01	0.01	0.00
979.45	0.02	0.02	0.00
979.50	0.04	0.04	0.00
979.55	0.06	0.06	0.00
979.60	0.09	0.09	0.00
979.65	0.12	0.12	0.00
979.70	0.16	0.16	0.00
979.75	0.20	0.20	0.00
979.80	0.26	0.26	0.00
979.85	0.31	0.31	0.00
979.90	0.37	0.37	0.00
979.95	0.44	0.44	0.00
980.00	0.52	0.52	0.00
980.05	0.59	0.59	0.00
980.10	0.68	0.68	0.00
980.15	0.77	0.77	0.00
980.20	0.86	0.86	0.00
980.25	0.95	0.95	0.00
980.30	1.05	1.05	0.00
980.35	1.15	1.15	0.00
980.40	1.26	1.26	0.00
980.45	1.36	1.36	0.00
980.50	1.47	1.47	0.00
980.55	1.58	1.58	0.00
980.60	1.69	1.69	0.00
980.65	1.80	1.80	0.00
980.70	1.91	1.91	0.00
980.75	2.02	2.02	0.00
980.80	2.12	2.12	0.00
980.85	2.22	2.22	0.00
980.90	2.32	2.32	0.00
980.95	2.41	2.41	0.00
981.00	2.49	2.49	0.00
981.05	2.56	2.56	0.00
981.10	2.62	2.62	0.00
981.15	2.67	2.67	0.00
981.20	2.70	2.70	0.00
981.25	2.70	2.70	0.00
981.30	2.58	2.58	0.00
981.35	2.66	2.66	0.00
981.40	2.74	2.74	0.00
981.45	2.82	2.82	0.00
981.50	2.90	2.90	0.00
981.55	2.97	2.97	0.00
981.60	3.05	3.05	0.00
981.65	3.12	3.12	0.00
981.70	3.19	3.19	0.00
981.75	3.26	3.26	0.00
981.80	3.33	3.33	0.00
981.85	3.39	3.39	0.00
981.90	3.46	3.46	0.00
981.95	3.52	3.52	0.00
982.00	3.58	3.58	0.00
982.05	3.64	3.64	0.00
982.10	3.70	3.70	0.00
982.15	3.76	3.76	0.00
982.20	3.82	3.82	0.00
982.25	3.88	3.88	0.00
982.30	3.93	3.93	0.00
982.35	3.99	3.99	0.00
982.40	4.05	4.05	0.00
982.45	4.10	4.10	0.00
982.50	4.15	4.15	0.00
982.55	4.21	4.21	0.00
982.60	4.26	4.26	0.00
982.65	4.31	4.31	0.00
982.70	4.36	4.36	0.00
982.75	4.41	4.41	0.00
982.80	4.46	4.46	0.00
982.85	4.51	4.51	0.00
982.90	4.56	4.56	0.00
982.95	4.61	4.61	0.00
983.00	4.66	4.66	0.00
983.05	4.70	4.70	0.00
983.10	4.75	4.75	0.00
983.15	4.80	4.80	0.00
983.20	4.84	4.84	0.00
983.25	4.89	4.89	0.00
983.30	**4.93**	**4.93**	0.00

Subcatchment 1S: WS #1A



Subcatchment 2S: WS #1B (CENTER)



Summary for Subcatchment 4S: WS #1D

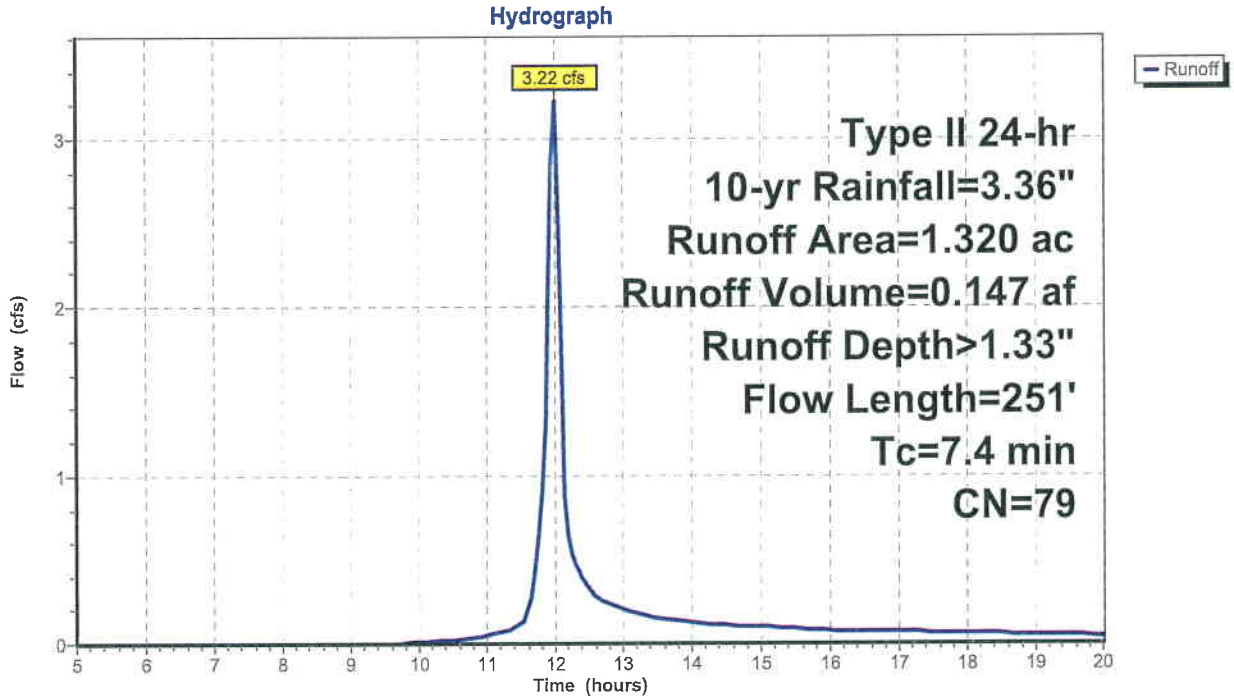
Runoff = 3.22 cfs @ 11.99 hrs, Volume= 0.147 af, Depth> 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.36"

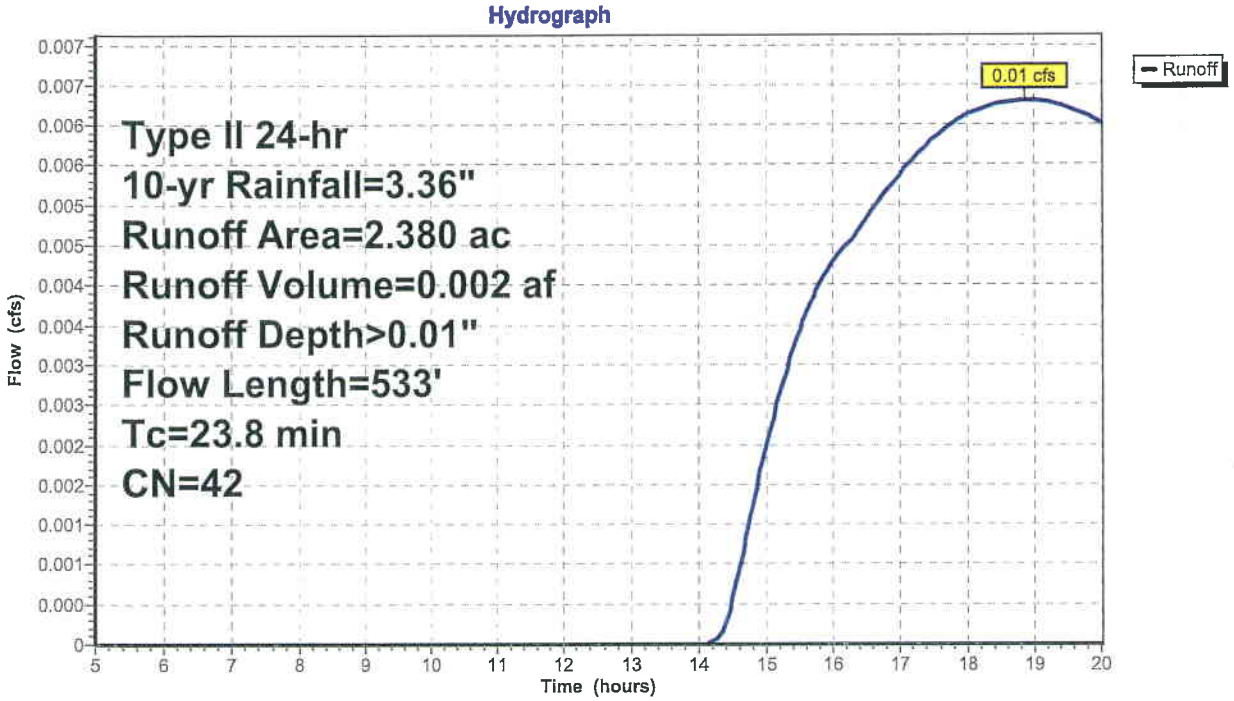
Area (ac)	CN	Description
0.680	78	Meadow, non-grazed, HSG D
0.640	80	>75% Grass cover, Good, HSG D
1.320	79	Weighted Average
1.320		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	65	0.0900	0.24		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
2.9	186	0.0044	1.07		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
7.4	251	Total			

Subcatchment 4S: WS #1D



Subcatchment 5S: WS #2A



Summary for Subcatchment 7S: WS #2B

Runoff = 3.36 cfs @ 12.10 hrs, Volume= 0.224 af, Depth> 0.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=3.36"

Area (ac)	CN	Description
0.850	98	Paved parking, HSG D
0.100	30	Woods, Good, HSG A
0.350	39	>75% Grass cover, Good, HSG A
2.910	61	>75% Grass cover, Good, HSG B
4.210	66	Weighted Average
3.360		79.81% Pervious Area
0.850		20.19% Impervious Area

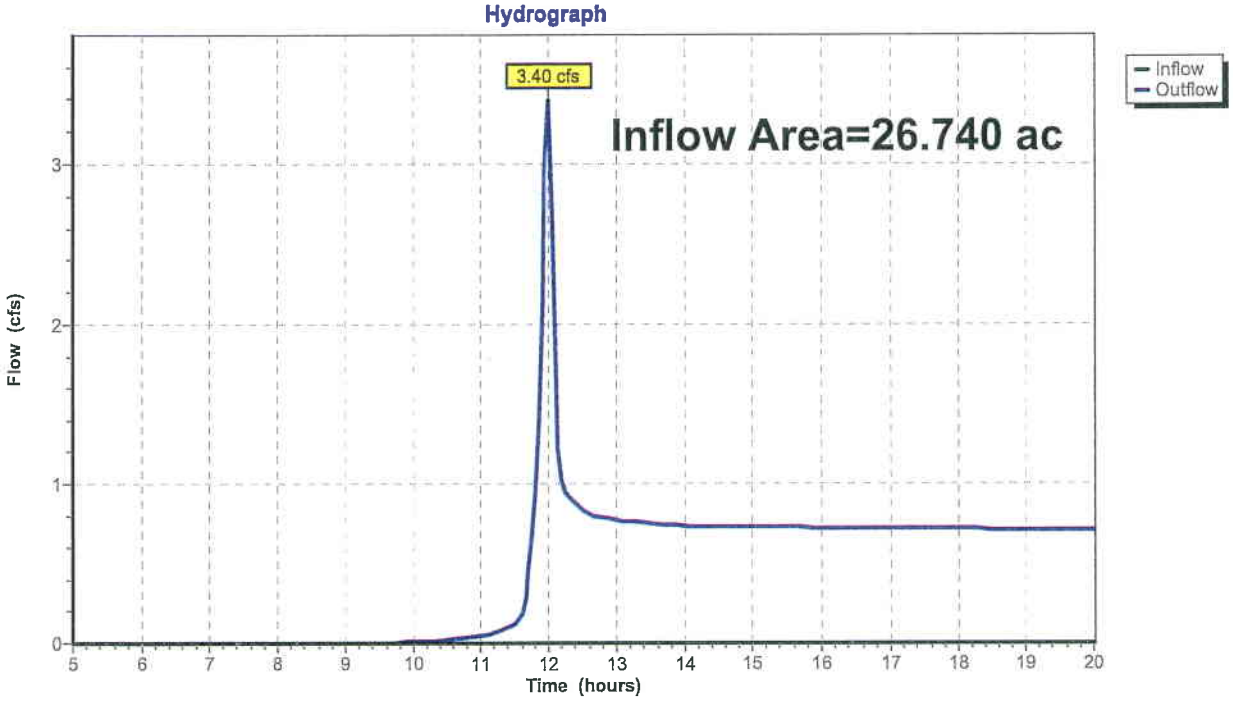
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.8	100	0.0300	0.17		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.3	180	0.0210	2.33		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.7	206	0.0100	2.03		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
2.5	470	0.0100	3.09	5.46	**Pipe Channel,** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.025 Corrugated metal
15.3	956	Total			

Summary for Reach 1R: WS #1 POA

Inflow Area = 26.740 ac, 21.13% Impervious, Inflow Depth > 0.25" for 10-yr event
Inflow = 3.40 cfs @ 11.99 hrs, Volume= 0.558 af
Outflow = 3.40 cfs @ 11.99 hrs, Volume= 0.558 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 1R: WS #1 POA

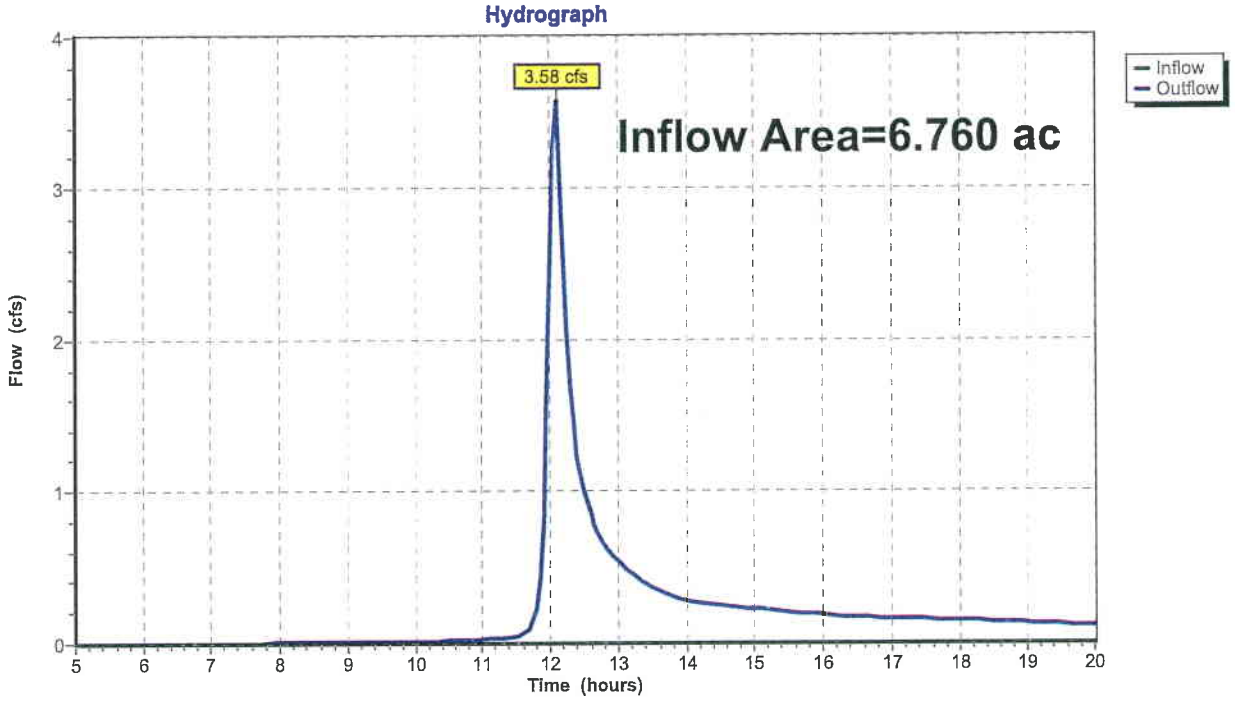


Summary for Reach 11R: WS #2 POA

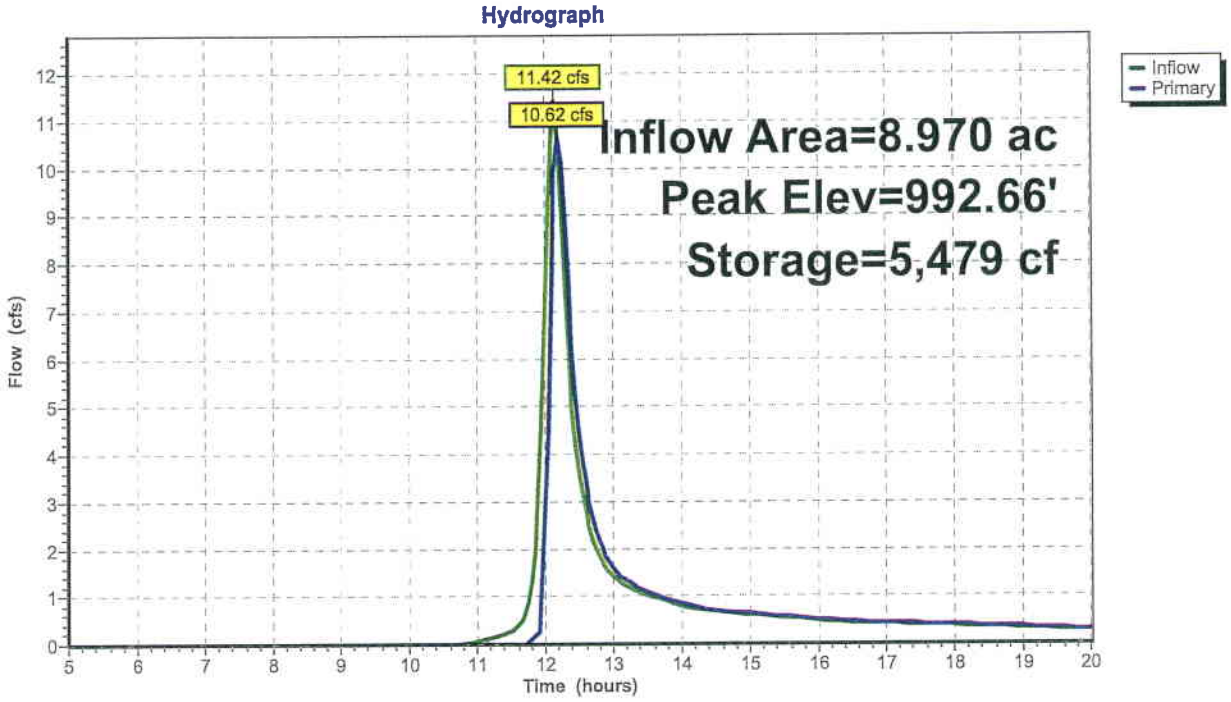
Inflow Area = 6.760 ac, 17.75% Impervious, Inflow Depth > 0.46" for 10-yr event
Inflow = 3.58 cfs @ 12.10 hrs, Volume= 0.262 af
Outflow = 3.58 cfs @ 12.10 hrs, Volume= 0.262 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 11R: WS #2 POA



Pond 1P: Existing Wetlands-Reduced



Summary for Pond 2P: Box Culvert

Inflow Area = 8.970 ac, 9.92% Impervious, Inflow Depth > 1.00" for 10-yr event
Inflow = 10.62 cfs @ 12.20 hrs, Volume= 0.745 af
Outflow = 10.29 cfs @ 12.25 hrs, Volume= 0.739 af, Atten= 3%, Lag= 2.5 min
Primary = 10.29 cfs @ 12.25 hrs, Volume= 0.739 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 992.46' @ 12.25 hrs Surf.Area= 4,119 sf Storage= 1,818 cf

Plug-Flow detention time= 5.9 min calculated for 0.736 af (99% of inflow)
Center-of-Mass det. time= 2.9 min (832.2 - 829.3)

Volume	Invert	Avail.Storage	Storage Description
#1	992.00'	4,045 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
992.00	3,730	0	0
992.50	4,150	1,970	1,970
993.00	4,150	2,075	4,045

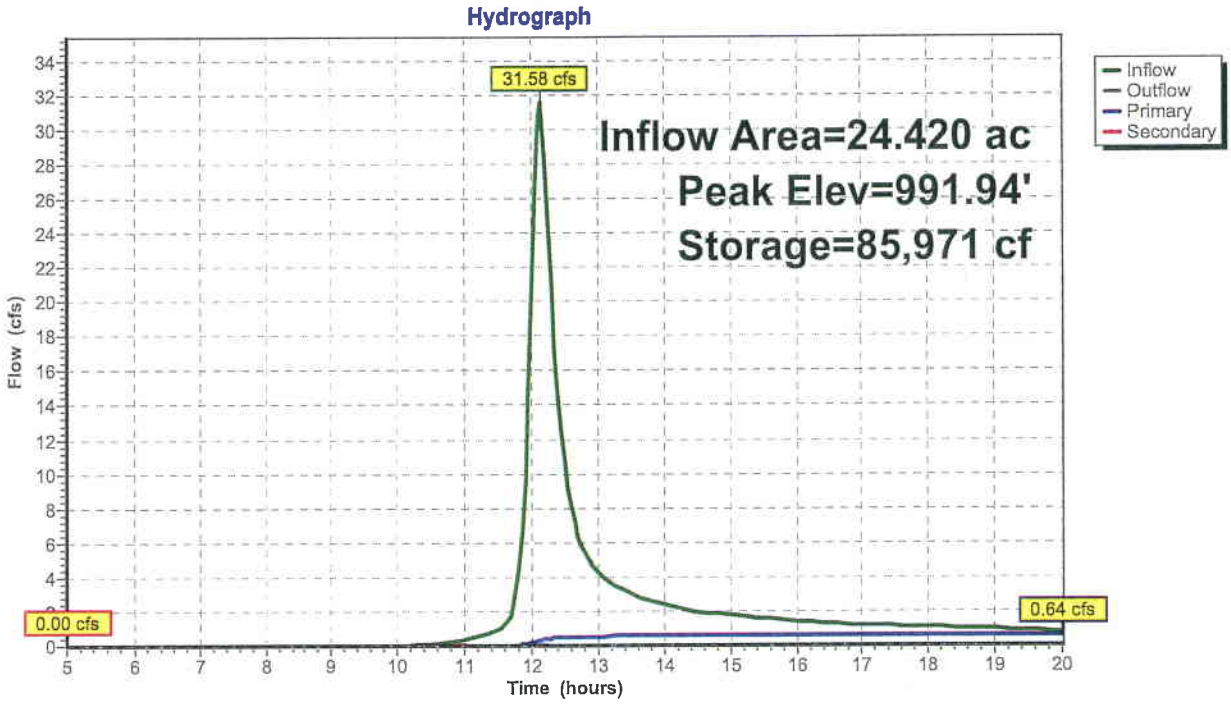
Device	Routing	Invert	Outlet Devices
#1	Primary	992.00'	**122.0" W x 32.0" H Box Culvert** L= 150.0' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 992.00' / 990.00' S= 0.0133 '/' Cc= 0.900 n= 0.011 Concrete pipe, straight & clean, Flow Area= 27.11 sf

Primary OutFlow Max=10.24 cfs @ 12.25 hrs HW=992.46' TW=990.86' (Dynamic Tailwater)
↑—**1=Culvert** (Inlet Controls 10.24 cfs @ 2.18 fps)

Stage-Discharge for Pond 2P: Box Culvert

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
992.00	0.00	993.06	35.62	994.12	100.74
992.02	0.09	993.08	36.63	994.14	102.17
992.04	0.26	993.10	37.65	994.16	103.60
992.06	0.48	993.12	38.68	994.18	105.04
992.08	0.74	993.14	39.72	994.20	106.49
992.10	1.03	993.16	40.77	994.22	107.95
992.12	1.36	993.18	41.83	994.24	109.41
992.14	1.71	993.20	42.90	994.26	110.88
992.16	2.09	993.22	43.98	994.28	112.35
992.18	2.49	993.24	45.06	994.30	113.83
992.20	2.92	993.26	46.16	994.32	115.32
992.22	3.37	993.28	47.26	994.34	116.82
992.24	3.84	993.30	48.37	994.36	118.32
992.26	4.33	993.32	49.49	994.38	119.82
992.28	4.84	993.34	50.62	994.40	121.34
992.30	5.36	993.36	51.76	994.42	122.86
992.32	5.91	993.38	52.91	994.44	124.38
992.34	6.47	993.40	54.06	994.46	125.92
992.36	7.05	993.42	55.22	994.48	127.46
992.38	7.64	993.44	56.39	994.50	129.00
992.40	8.26	993.46	57.57	994.52	130.55
992.42	8.88	993.48	58.76	994.54	132.11
992.44	9.52	993.50	59.95	994.56	133.67
992.46	10.18	993.52	61.16	994.58	135.24
992.48	10.85	993.54	62.37	994.60	136.82
992.50	11.54	993.56	63.59	994.62	138.40
992.52	12.24	993.58	64.81	994.64	139.99
992.54	12.95	993.60	66.05	994.66	**141.58**
992.56	13.68	993.62	67.29		
992.58	14.42	993.64	68.54		
992.60	15.17	993.66	69.80		
992.62	15.93	993.68	71.06		
992.64	16.71	993.70	72.34		
992.66	17.50	993.72	73.62		
992.68	18.30	993.74	74.90		
992.70	19.11	993.76	76.20		
992.72	19.94	993.78	77.50		
992.74	20.77	993.80	78.81		
992.76	21.62	993.82	80.13		
992.78	22.48	993.84	81.45		
992.80	23.35	993.86	82.78		
992.82	24.23	993.88	84.12		
992.84	25.12	993.90	85.47		
992.86	26.03	993.92	86.82		
992.88	26.94	993.94	88.18		
992.90	27.86	993.96	89.55		
992.92	28.80	993.98	90.92		
992.94	29.74	994.00	92.31		
992.96	30.70	994.02	93.69		
992.98	31.66	994.04	95.09		
993.00	32.63	994.06	96.49		
993.02	33.62	994.08	97.90		
993.04	34.61	994.10	99.31		

Pond 3P: Stormwater Wetland



Summary for Pond 4P: Wetland #2

Inflow Area = 1.000 ac, 8.00% Impervious, Inflow Depth > 0.31" for 10-yr event
Inflow = 0.28 cfs @ 12.11 hrs, Volume= 0.026 af
Outflow = 0.03 cfs @ 14.35 hrs, Volume= 0.018 af, Atten= 88%, Lag= 134.3 min
Primary = 0.03 cfs @ 14.35 hrs, Volume= 0.018 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 990.88' @ 14.35 hrs Surf.Area= 3,657 sf Storage= 451 cf

Plug-Flow detention time= 178.6 min calculated for 0.018 af (69% of inflow)
Center-of-Mass det. time= 95.5 min (960.4 - 864.9)

Volume	Invert	Avail.Storage	Storage Description
#1	990.75'	10,990 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
990.75	3,160	0	0
991.00	4,100	908	908
992.00	5,025	4,563	5,470
993.00	6,015	5,520	10,990

Device	Routing	Invert	Outlet Devices
#1	Primary	990.75'	**8.0" Round Culvert** L= 25.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 990.75' / 990.50' S= 0.0100 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.35 sf
#2	Device 1	990.75'	**3.0" Vert. Orifice** C= 0.600
#3	Device 1	992.50'	**36.0" x 36.0" Horiz. Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	993.00'	**32.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

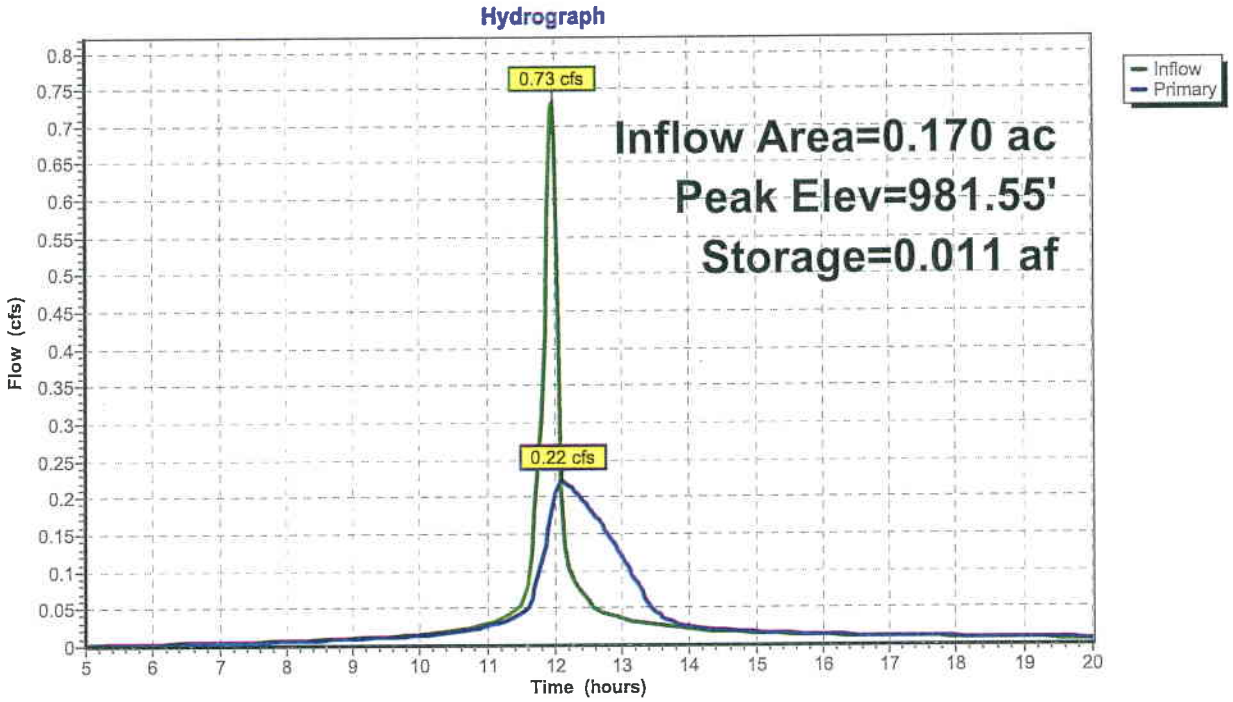
Primary OutFlow Max=0.03 cfs @ 14.35 hrs HW=990.88' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.03 cfs of 0.05 cfs potential flow)
  └─**2=Orifice** (Orifice Controls 0.03 cfs @ 1.24 fps)
  └─**3=Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=990.75' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Discharge for Pond 4P: Wetland #2

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
990.75	0.00	0.00	**0.00**
990.80	0.01	0.01	0.00
990.85	0.02	0.02	0.00
990.90	0.04	0.04	0.00
990.95	0.06	0.06	0.00
991.00	0.08	0.08	0.00
991.05	0.10	0.10	0.00
991.10	0.11	0.11	0.00
991.15	0.12	0.12	0.00
991.20	0.13	0.13	0.00
991.25	0.14	0.14	0.00
991.30	0.15	0.15	0.00
991.35	0.16	0.16	0.00
991.40	0.17	0.17	0.00
991.45	0.18	0.18	0.00
991.50	0.19	0.19	0.00
991.55	0.19	0.19	0.00
991.60	0.20	0.20	0.00
991.65	0.21	0.21	0.00
991.70	0.21	0.21	0.00
991.75	0.22	0.22	0.00
991.80	0.23	0.23	0.00
991.85	0.23	0.23	0.00
991.90	0.24	0.24	0.00
991.95	0.25	0.25	0.00
992.00	0.25	0.25	0.00
992.05	0.26	0.26	0.00
992.10	0.26	0.26	0.00
992.15	0.27	0.27	0.00
992.20	0.27	0.27	0.00
992.25	0.28	0.28	0.00
992.30	0.28	0.28	0.00
992.35	0.29	0.29	0.00
992.40	0.29	0.29	0.00
992.45	0.30	0.30	0.00
992.50	0.30	0.30	0.00
992.55	0.74	0.74	0.00
992.60	1.55	1.55	0.00
992.65	1.66	1.66	0.00
992.70	1.69	1.69	0.00
992.75	1.71	1.71	0.00
992.80	1.74	1.74	0.00
992.85	1.76	1.76	0.00
992.90	1.79	1.79	0.00
992.95	1.81	1.81	0.00
993.00	**1.84**	**1.84**	0.00

Pond 5P: Underground Detention



Summary for Pond 9P: DI #14

Inflow Area = 4.380 ac, 22.83% Impervious, Inflow Depth > 0.71" for 10-yr event
Inflow = 3.58 cfs @ 12.10 hrs, Volume= 0.259 af
Outflow = 3.58 cfs @ 12.10 hrs, Volume= 0.259 af, Atten= 0%, Lag= 0.0 min
Primary = 3.58 cfs @ 12.10 hrs, Volume= 0.259 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

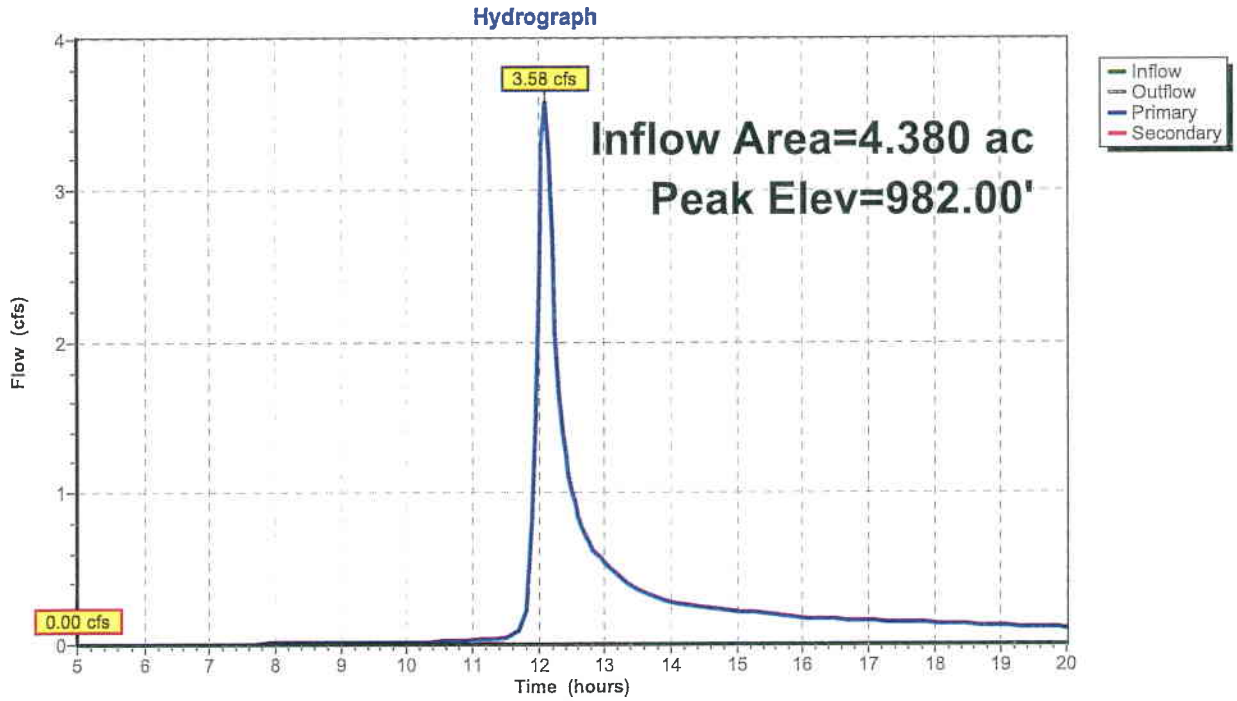
Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 982.00' @ 12.10 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	979.30'	**18.0" Round Existing Culvert** L= 308.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 979.30' / 979.05' S= 0.0008 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	983.30'	**17.2" x 17.2" Horiz. Grate EJIW 5115M2** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=3.58 cfs @ 12.10 hrs HW=981.99' TW=0.00' (Dynamic Tailwater)
└─**1=Existing Culvert** (Barrel Controls 3.58 cfs @ 2.02 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=979.31' TW=0.00' (Dynamic Tailwater)
└─**2=Grate EJIW 5115M2** (Controls 0.00 cfs)

Pond 9P: DI #14



Summary for Subcatchment 1S: WS #1A

Runoff = 30.02 cfs @ 12.13 hrs, Volume= 2.096 af, Depth> 2.80"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.73"

Area (ac)	CN	Description
0.890	98	Paved parking, HSG D
0.260	30	Woods, Good, HSG A
1.580	77	Woods, Good, HSG D
1.100	39	>75% Grass cover, Good, HSG A
5.140	80	>75% Grass cover, Good, HSG D
8.970	75	Weighted Average
8.080		90.08% Pervious Area
0.890		9.92% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.5	18	0.0100	0.63		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.31"
13.0	82	0.0100	0.11		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.9	171	0.0090	1.53		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
4.9	140	0.0090	0.47		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
20.3	411	Total			

Summary for Subcatchment 2S: WS #1B (CENTER)

Runoff = 64.12 cfs @ 12.08 hrs, Volume= 3.975 af, Depth> 3.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.73"

Area (ac)	CN	Description
4.680	98	Paved parking, HSG D
2.190	39	>75% Grass cover, Good, HSG A
0.210	61	>75% Grass cover, Good, HSG B
7.610	80	>75% Grass cover, Good, HSG D
0.470	30	Woods, Good, HSG A
0.290	77	Woods, Good, HSG D
15.450	78	Weighted Average
10.770		69.71% Pervious Area
4.680		30.29% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.4	14	0.0100	0.60		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.31"
9.3	86	0.0250	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.7	218	0.0180	2.16		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.5	62	0.0180	0.67		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.3	60	0.0330	2.92		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
2.7	250	0.0025	1.56	15.55	**Trap/Vee/Rect Channel Flow,** Bot.W=0.00' D=1.00' Z= 10.0 '/' Top.W=20.00' n= 0.030 Short grass
0.1	77	0.0480	9.94	7.81	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013 Corrugated PE, smooth interior
16.0	767	Total			

Summary for Subcatchment 3S: WS #1C

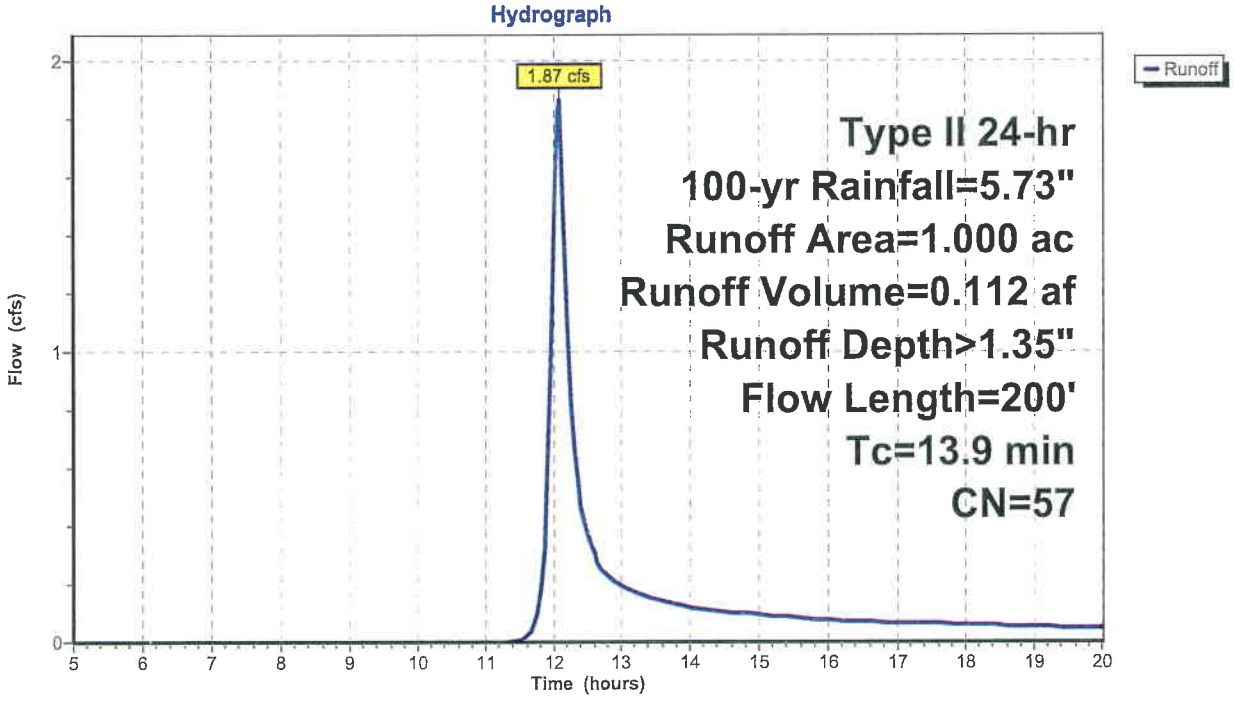
Runoff = 1.87 cfs @ 12.07 hrs, Volume= 0.112 af, Depth> 1.35"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.73"

Area (ac)	CN	Description
0.080	98	Paved parking, HSG D
0.320	39	>75% Grass cover, Good, HSG A
0.600	61	>75% Grass cover, Good, HSG B
1.000	57	Weighted Average
0.920		92.00% Pervious Area
0.080		8.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.9	100	0.0150	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
1.0	100	0.0100	1.61		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
13.9	200	Total			

Subcatchment 3S: WS #1C



Summary for Subcatchment 5S: WS #2A

Runoff = 0.56 cfs @ 12.27 hrs, Volume= 0.086 af, Depth> 0.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.73"

Area (ac)	CN	Description
0.200	98	Paved parking, HSG D
0.940	30	Woods, Good, HSG A
1.120	39	>75% Grass cover, Good, HSG A
0.120	61	>75% Grass cover, Good, HSG B
2.380	42	Weighted Average
2.180		91.60% Pervious Area
0.200		8.40% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	40	0.0250	0.13		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.31"
12.3	60	0.0440	0.08		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.31"
0.8	60	0.0660	1.28		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
0.4	95	0.0660	4.14		**Shallow Concentrated Flow,** Unpaved Kv= 16.1 fps
1.2	90	0.0660	1.28		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
4.0	188	0.0240	0.77		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
23.8	533	Total			

Summary for Subcatchment 6S: WS #2C

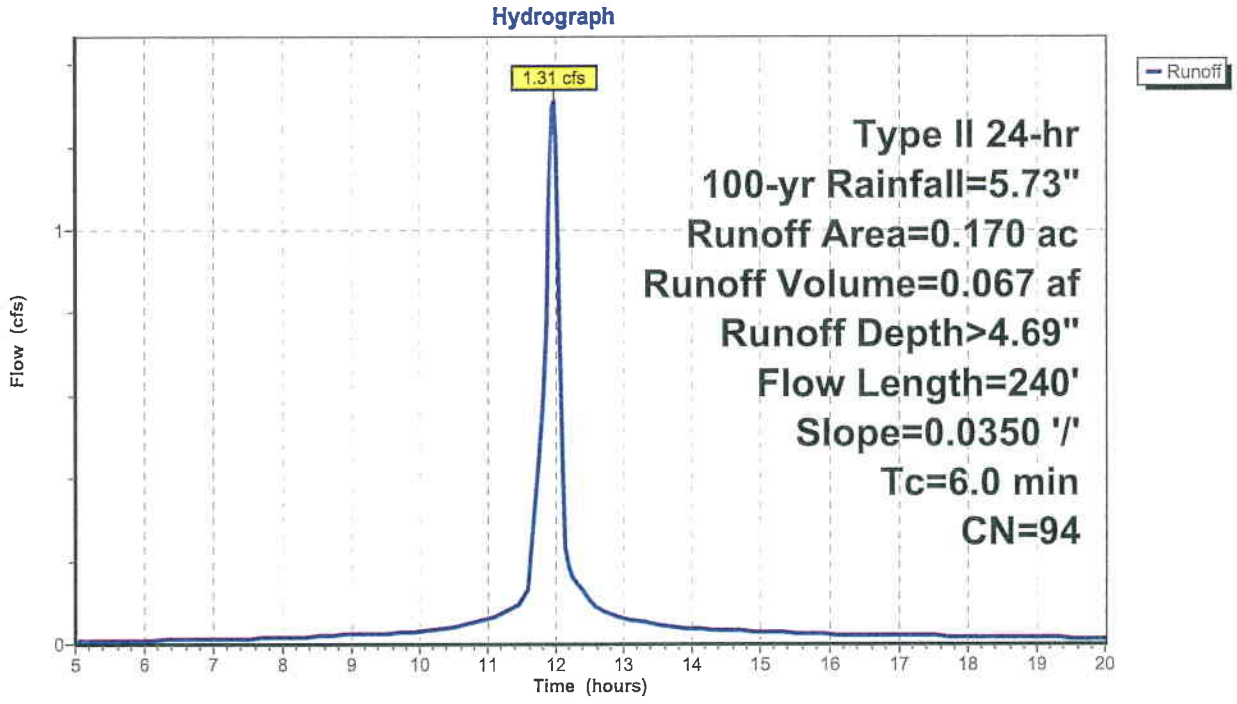
Runoff = 1.31 cfs @ 11.96 hrs, Volume= 0.067 af, Depth> 4.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=5.73"

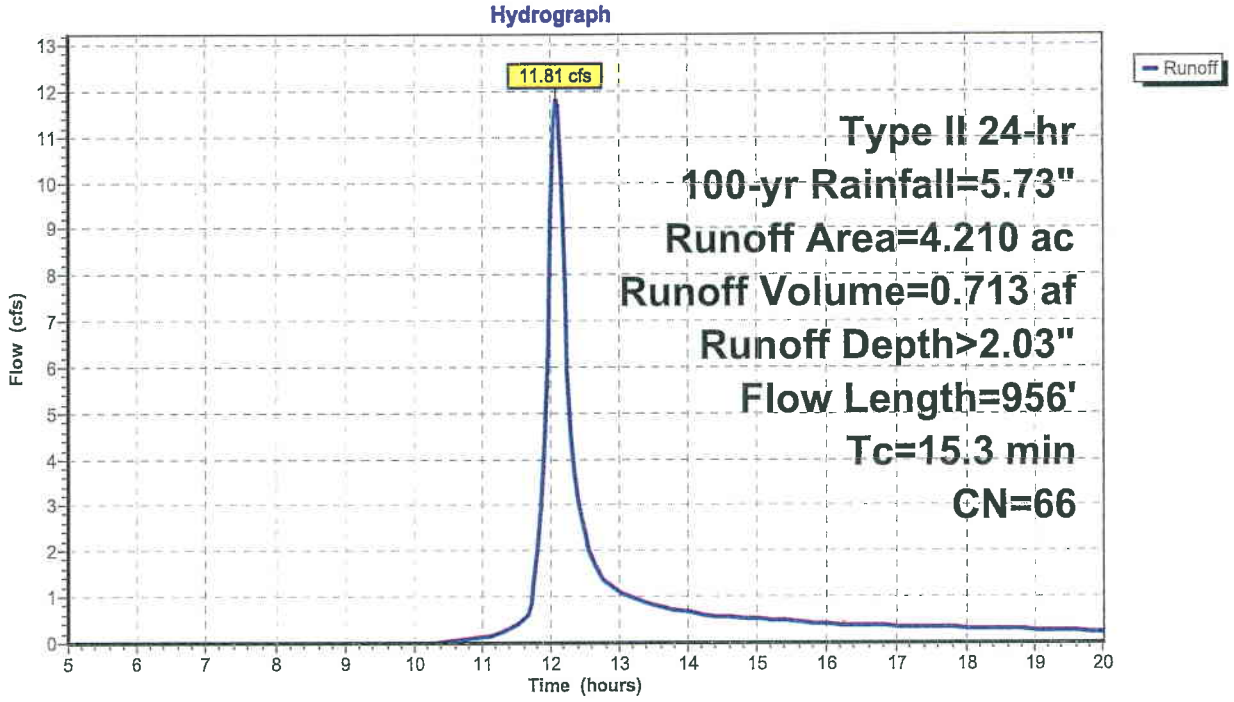
Area (ac)	CN	Description
0.150	98	Paved parking, HSG B
0.020	61	>75% Grass cover, Good, HSG B
0.170	94	Weighted Average
0.020		11.76% Pervious Area
0.150		88.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	100	0.0350	1.46		**Sheet Flow,** Smooth surfaces n= 0.011 P2= 2.31"
0.6	140	0.0350	3.80		**Shallow Concentrated Flow,** Paved Kv= 20.3 fps
4.3					**Direct Entry,**
6.0	240	Total			

Subcatchment 6S: WS #2C



Subcatchment 7S: WS #2B

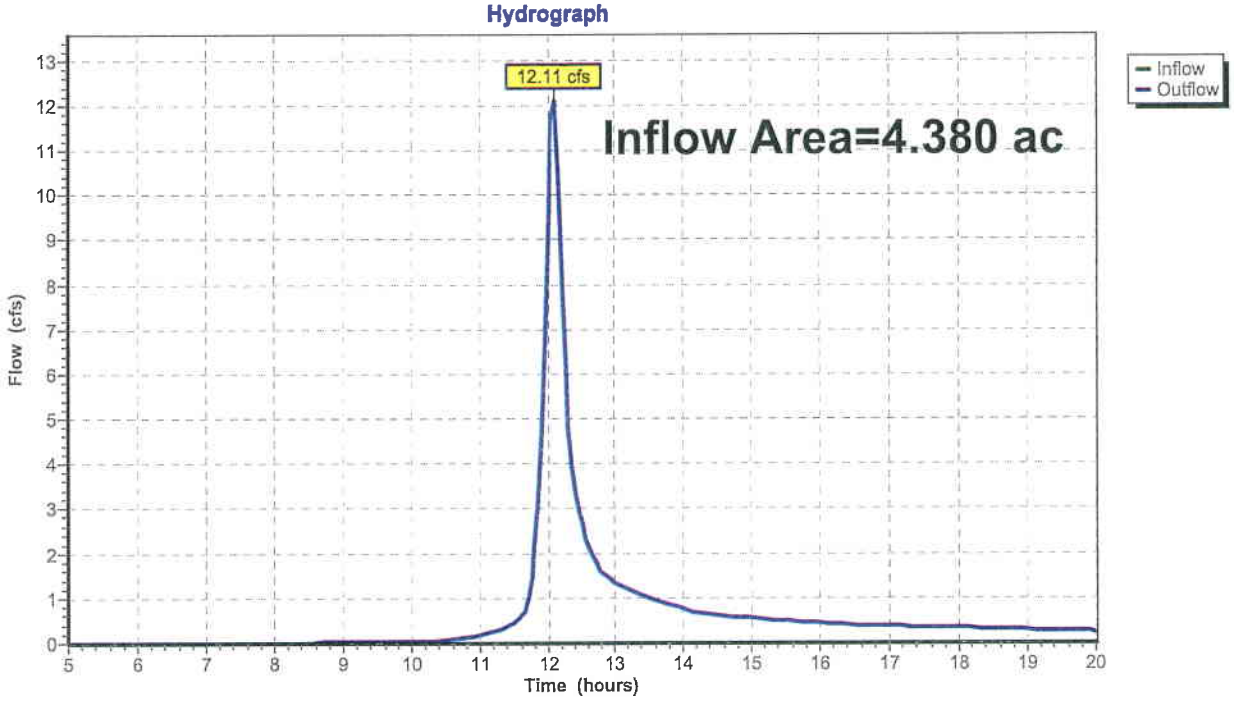


Summary for Reach 2R: WS #2B/C POA

Inflow Area = 4.380 ac, 22.83% Impervious, Inflow Depth > 2.14" for 100-yr event
Inflow = 12.11 cfs @ 12.08 hrs, Volume= 0.779 af
Outflow = 12.11 cfs @ 12.08 hrs, Volume= 0.779 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Reach 2R: WS #2B/C POA



Summary for Pond 1P: Existing Wetlands-Reduced

Inflow Area = 8.970 ac, 9.92% Impervious, Inflow Depth > 2.80" for 100-yr event
Inflow = 30.02 cfs @ 12.13 hrs, Volume= 2.096 af
Outflow = 24.60 cfs @ 12.20 hrs, Volume= 2.026 af, Atten= 18%, Lag= 4.3 min
Primary = 24.60 cfs @ 12.20 hrs, Volume= 2.026 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 992.88' @ 12.25 hrs Surf.Area= 26,162 sf Storage= 10,515 cf

Plug-Flow detention time= 23.1 min calculated for 2.019 af (96% of inflow)
Center-of-Mass det. time= 10.8 min (806.2 - 795.3)

Volume	Invert	Avail.Storage	Storage Description
#1	991.90'	21,366 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
991.90	0	0	0
992.00	539	27	27
992.50	12,019	3,140	3,166
993.00	30,390	10,602	13,769
993.25	30,390	7,598	21,366

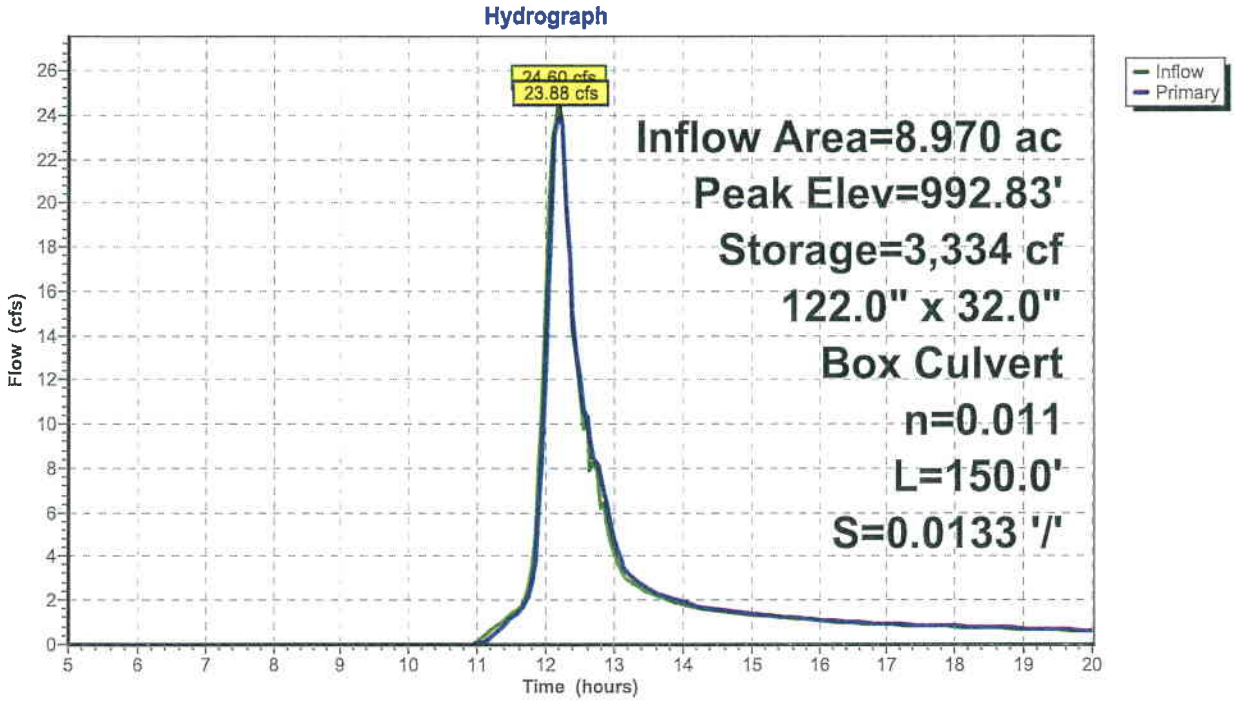
Device	Routing	Invert	Outlet Devices
#1	Primary	992.42'	**Asymmetrical Weir, C= 3.27** Offset (feet) -26.27 -25.00 0.00 20.00 26.27 Height (feet) 0.58 0.13 0.00 0.13 0.58

Primary OutFlow Max=22.02 cfs @ 12.20 hrs HW=992.88' TW=992.81' (Dynamic Tailwater)
↑—**1=Asymmetrical Weir** (Weir Controls 22.02 cfs @ 0.98 fps)

Stage-Discharge for Pond 1P: Existing Wetlands-Reduced

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
991.90	0.00	992.43	0.00	992.96	50.64
991.91	0.00	992.44	0.03	992.97	52.32
991.92	0.00	992.45	0.07	992.98	54.01
991.93	0.00	992.46	0.14	992.99	55.73
991.94	0.00	992.47	0.25	993.00	57.47
991.95	0.00	992.48	0.40	993.01	59.06
991.96	0.00	992.49	0.59	993.02	60.52
991.97	0.00	992.50	0.82	993.03	61.91
991.98	0.00	992.51	1.10	993.04	63.25
991.99	0.00	992.52	1.43	993.05	64.54
992.00	0.00	992.53	1.82	993.06	65.79
992.01	0.00	992.54	2.26	993.07	67.01
992.02	0.00	992.55	2.76	993.08	68.19
992.03	0.00	992.56	3.32	993.09	69.35
992.04	0.00	992.57	3.92	993.10	70.48
992.05	0.00	992.58	4.57	993.11	71.59
992.06	0.00	992.59	5.26	993.12	72.68
992.07	0.00	992.60	5.98	993.13	73.75
992.08	0.00	992.61	6.74	993.14	74.80
992.09	0.00	992.62	7.54	993.15	75.83
992.10	0.00	992.63	8.37	993.16	76.85
992.11	0.00	992.64	9.23	993.17	77.85
992.12	0.00	992.65	10.12	993.18	78.83
992.13	0.00	992.66	11.05	993.19	79.81
992.14	0.00	992.67	12.00	993.20	80.76
992.15	0.00	992.68	12.98	993.21	81.71
992.16	0.00	992.69	13.99	993.22	82.64
992.17	0.00	992.70	15.03	993.23	83.56
992.18	0.00	992.71	16.09	993.24	84.47
992.19	0.00	992.72	17.19	993.25	**85.37**
992.20	0.00	992.73	18.30		
992.21	0.00	992.74	19.45		
992.22	0.00	992.75	20.62		
992.23	0.00	992.76	21.81		
992.24	0.00	992.77	23.03		
992.25	0.00	992.78	24.28		
992.26	0.00	992.79	25.55		
992.27	0.00	992.80	26.84		
992.28	0.00	992.81	28.16		
992.29	0.00	992.82	29.50		
992.30	0.00	992.83	30.86		
992.31	0.00	992.84	32.25		
992.32	0.00	992.85	33.66		
992.33	0.00	992.86	35.09		
992.34	0.00	992.87	36.55		
992.35	0.00	992.88	38.03		
992.36	0.00	992.89	39.53		
992.37	0.00	992.90	41.05		
992.38	0.00	992.91	42.59		
992.39	0.00	992.92	44.16		
992.40	0.00	992.93	45.75		
992.41	0.00	992.94	47.36		
992.42	0.00	992.95	48.99		

Pond 2P: Box Culvert



Summary for Pond 3P: Stormwater Wetland

Inflow Area = 24.420 ac, 22.81% Impervious, Inflow Depth > 2.94" for 100-yr event
Inflow = 84.73 cfs @ 12.10 hrs, Volume= 5.990 af
Outflow = 27.23 cfs @ 12.46 hrs, Volume= 3.893 af, Atten= 68%, Lag= 21.4 min
Primary = 27.23 cfs @ 12.46 hrs, Volume= 3.893 af
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 992.58' @ 12.46 hrs Surf.Area= 52,305 sf Storage= 117,990 cf

Plug-Flow detention time= 129.3 min calculated for 3.893 af (65% of inflow)
Center-of-Mass det. time= 58.8 min (853.1 - 794.2)

Volume	Invert	Avail.Storage	Storage Description
#1	990.00'	169,355 cf	**Custom Stage Data (Prismatic)**Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
990.00	39,300	0	0
993.00	54,445	140,618	140,618
993.50	60,505	28,738	169,355

Device	Routing	Invert	Outlet Devices
#1	Primary	990.00'	**18.0" Round Culvert x3 X 3.00** L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 990.00' / 989.75' S= 0.0050 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	990.00'	**3.0" Vert. Orificex2 X 2.00** C= 0.600
#3	Device 1	992.00'	**36.0" x 36.0" Horiz. Grate#1** C= 0.600 Limited to weir flow at low heads
#4	Device 1	992.00'	**36.0" x 60.0" Horiz. Grate#2** C= 0.600 Limited to weir flow at low heads
#5	Secondary	993.00'	**32.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

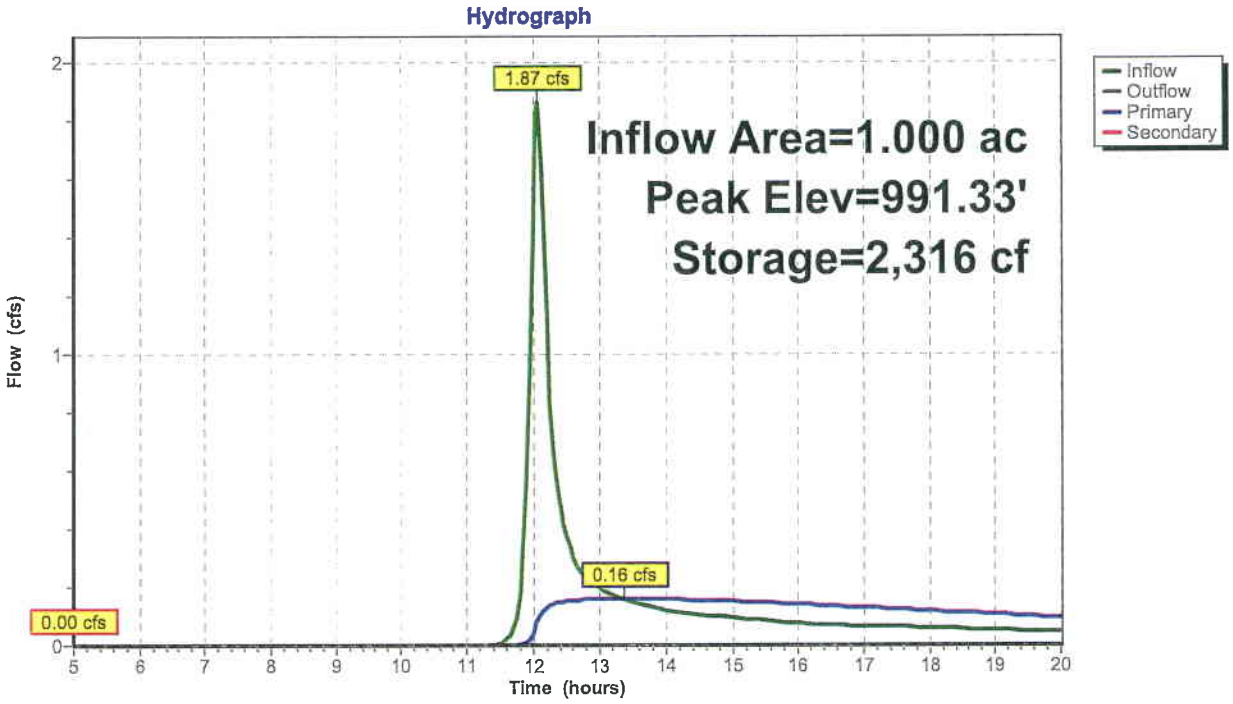
Primary OutFlow Max=27.23 cfs @ 12.46 hrs HW=992.58' TW=0.00' (Dynamic Tailwater)
└1=**Culvert x3** (Inlet Controls 27.23 cfs @ 5.14 fps)
  ├2=**Orificex2** (Passes < 0.74 cfs potential flow)
  ├3=**Grate#1** (Passes < 17.13 cfs potential flow)
  └4=**Grate#2** (Passes < 22.84 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=990.00' (Free Discharge)
└5=**Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Stage-Discharge for Pond 3P: Stormwater Wetland

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
990.00	0.00	0.00	0.00
990.05	0.01	0.01	0.00
990.10	0.04	0.04	0.00
990.15	0.08	0.08	0.00
990.20	0.13	0.13	0.00
990.25	0.17	0.17	0.00
990.30	0.20	0.20	0.00
990.35	0.22	0.22	0.00
990.40	0.25	0.25	0.00
990.45	0.27	0.27	0.00
990.50	0.29	0.29	0.00
990.55	0.31	0.31	0.00
990.60	0.33	0.33	0.00
990.65	0.34	0.34	0.00
990.70	0.36	0.36	0.00
990.75	0.37	0.37	0.00
990.80	0.39	0.39	0.00
990.85	0.40	0.40	0.00
990.90	0.42	0.42	0.00
990.95	0.43	0.43	0.00
991.00	0.44	0.44	0.00
991.05	0.45	0.45	0.00
991.10	0.47	0.47	0.00
991.15	0.48	0.48	0.00
991.20	0.49	0.49	0.00
991.25	0.50	0.50	0.00
991.30	0.51	0.51	0.00
991.35	0.52	0.52	0.00
991.40	0.53	0.53	0.00
991.45	0.54	0.54	0.00
991.50	0.55	0.55	0.00
991.55	0.56	0.56	0.00
991.60	0.57	0.57	0.00
991.65	0.58	0.58	0.00
991.70	0.59	0.59	0.00
991.75	0.60	0.60	0.00
991.80	0.61	0.61	0.00
991.85	0.62	0.62	0.00
991.90	0.63	0.63	0.00
991.95	0.64	0.64	0.00
992.00	0.65	0.65	0.00
992.05	1.68	1.68	0.00
992.10	3.56	3.56	0.00
992.15	5.99	5.99	0.00
992.20	8.87	8.87	0.00
992.25	12.13	12.13	0.00
992.30	15.74	15.74	0.00
992.35	19.66	19.66	0.00
992.40	23.88	23.88	0.00
992.45	26.28	26.28	0.00
992.50	26.66	26.66	0.00
992.55	27.04	27.04	0.00
992.60	27.41	27.41	0.00
992.65	27.78	27.78	0.00
992.70	28.14	28.14	0.00
992.75	28.50	28.50	0.00
992.80	28.85	28.85	0.00
992.85	29.20	29.20	0.00
992.90	29.55	29.55	0.00
992.95	29.89	29.89	0.00
993.00	30.23	30.23	0.00
993.05	31.45	30.56	0.89
993.10	33.41	30.89	2.52
993.15	35.85	31.22	4.63
993.20	38.67	31.54	7.13
993.25	41.89	31.86	10.03
993.30	45.46	32.18	13.28
993.35	49.34	32.49	16.85
993.40	53.53	32.81	20.72
993.45	58.18	33.11	25.07
993.50	**63.17**	**33.42**	**29.76**

Pond 4P: Wetland #2



Summary for Pond 5P: Underground Detention

Inflow Area = 0.170 ac, 88.24% Impervious, Inflow Depth > 4.69" for 100-yr event
Inflow = 1.31 cfs @ 11.96 hrs, Volume= 0.067 af
Outflow = 0.30 cfs @ 12.13 hrs, Volume= 0.066 af, Atten= 77%, Lag= 9.8 min
Primary = 0.30 cfs @ 12.13 hrs, Volume= 0.066 af

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 982.34' @ 12.13 hrs Surf.Area= 0.013 ac Storage= 0.022 af

Plug-Flow detention time= 29.1 min calculated for 0.066 af (100% of inflow)
Center-of-Mass det. time= 27.0 min (766.9 - 739.9)

Volume	Invert	Avail.Storage	Storage Description
#1	980.55'	0.029 af	**30.0" Round Pipe Storage** x 2 L= 130.0'

Device	Routing	Invert	Outlet Devices
#1	Primary	980.35'	**15.0" Round Culvert** L= 95.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 980.35' / 979.30' S= 0.0111 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.23 sf
#2	Device 1	980.55'	**3.0" Vert. Orifice** C= 0.600
#3	Device 1	982.95'	**2.0' long Sharp-Crested Rectangular Weir** 2 End Contraction(s)

Primary OutFlow Max=0.30 cfs @ 12.13 hrs HW=982.33' TW=0.00' (Dynamic Tailwater)
↑**1=Culvert** (Passes 0.30 cfs of 5.43 cfs potential flow)
↑**2=Orifice** (Orifice Controls 0.30 cfs @ 6.20 fps)
3=Sharp-Crested Rectangular Weir (Controls 0.00 cfs)

Stage-Discharge for Pond 5P: Underground Detention

Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)	Elevation (feet)	Primary (cfs)
980.55	0.00	981.61	0.23	982.67	0.33
980.57	0.00	981.63	0.23	982.69	0.34
980.59	0.00	981.65	0.23	982.71	0.34
980.61	0.01	981.67	0.24	982.73	0.34
980.63	0.01	981.69	0.24	982.75	0.34
980.65	0.02	981.71	0.24	982.77	0.34
980.67	0.03	981.73	0.24	982.79	0.34
980.69	0.04	981.75	0.25	982.81	0.35
980.71	0.05	981.77	0.25	982.83	0.35
980.73	0.05	981.79	0.25	982.85	0.35
980.75	0.06	981.81	0.25	982.87	0.35
980.77	0.07	981.83	0.25	982.89	0.35
980.79	0.08	981.85	0.26	982.91	0.35
980.81	0.09	981.87	0.26	982.93	0.35
980.83	0.09	981.89	0.26	982.95	0.36
980.85	0.10	981.91	0.26	982.97	0.38
980.87	0.10	981.93	0.26	982.99	0.41
980.89	0.11	981.95	0.27	983.01	0.46
980.91	0.11	981.97	0.27	983.03	0.51
980.93	0.12	981.99	0.27	983.05	**0.57**
980.95	0.12	982.01	0.27		
980.97	0.13	982.03	0.28		
980.99	0.13	982.05	0.28		
981.01	0.14	982.07	0.28		
981.03	0.14	982.09	0.28		
981.05	0.14	982.11	0.28		
981.07	0.15	982.13	0.29		
981.09	0.15	982.15	0.29		
981.11	0.16	982.17	0.29		
981.13	0.16	982.19	0.29		
981.15	0.16	982.21	0.29		
981.17	0.17	982.23	0.29		
981.19	0.17	982.25	0.30		
981.21	0.17	982.27	0.30		
981.23	0.18	982.29	0.30		
981.25	0.18	982.31	0.30		
981.27	0.18	982.33	0.30		
981.29	0.19	982.35	0.31		
981.31	0.19	982.37	0.31		
981.33	0.19	982.39	0.31		
981.35	0.19	982.41	0.31		
981.37	0.20	982.43	0.31		
981.39	0.20	982.45	0.31		
981.41	0.20	982.47	0.32		
981.43	0.21	982.49	0.32		
981.45	0.21	982.51	0.32		
981.47	0.21	982.53	0.32		
981.49	0.21	982.55	0.32		
981.51	0.22	982.57	0.33		
981.53	0.22	982.59	0.33		
981.55	0.22	982.61	0.33		
981.57	0.22	982.63	0.33		
981.59	0.23	982.65	0.33		

Stage-Discharge for Pond 9P: DI #14

Elevation (feet)	Discharge (cfs)	Primary (cfs)	Secondary (cfs)
979.30	0.00	0.00	0.00
979.35	0.00	0.00	0.00
979.40	0.01	0.01	0.00
979.45	0.02	0.02	0.00
979.50	0.04	0.04	0.00
979.55	0.06	0.06	0.00
979.60	0.09	0.09	0.00
979.65	0.12	0.12	0.00
979.70	0.16	0.16	0.00
979.75	0.20	0.20	0.00
979.80	0.26	0.26	0.00
979.85	0.31	0.31	0.00
979.90	0.37	0.37	0.00
979.95	0.44	0.44	0.00
980.00	0.52	0.52	0.00
980.05	0.59	0.59	0.00
980.10	0.68	0.68	0.00
980.15	0.77	0.77	0.00
980.20	0.86	0.86	0.00
980.25	0.95	0.95	0.00
980.30	1.05	1.05	0.00
980.35	1.15	1.15	0.00
980.40	1.26	1.26	0.00
980.45	1.36	1.36	0.00
980.50	1.47	1.47	0.00
980.55	1.58	1.58	0.00
980.60	1.69	1.69	0.00
980.65	1.80	1.80	0.00
980.70	1.91	1.91	0.00
980.75	2.02	2.02	0.00
980.80	2.12	2.12	0.00
980.85	2.22	2.22	0.00
980.90	2.32	2.32	0.00
980.95	2.41	2.41	0.00
981.00	2.49	2.49	0.00
981.05	2.56	2.56	0.00
981.10	2.62	2.62	0.00
981.15	2.67	2.67	0.00
981.20	2.70	2.70	0.00
981.25	2.70	2.70	0.00
981.30	2.58	2.58	0.00
981.35	2.66	2.66	0.00
981.40	2.74	2.74	0.00
981.45	2.82	2.82	0.00
981.50	2.90	2.90	0.00
981.55	2.97	2.97	0.00
981.60	3.05	3.05	0.00
981.65	3.12	3.12	0.00
981.70	3.19	3.19	0.00
981.75	3.26	3.26	0.00
981.80	3.33	3.33	0.00
981.85	3.39	3.39	0.00
981.90	3.46	3.46	0.00
981.95	3.52	3.52	0.00
982.00	3.58	3.58	0.00
982.05	3.64	3.64	0.00
982.10	3.70	3.70	0.00
982.15	3.76	3.76	0.00
982.20	3.82	3.82	0.00
982.25	3.88	3.88	0.00
982.30	3.93	3.93	0.00
982.35	3.99	3.99	0.00
982.40	4.05	4.05	0.00
982.45	4.10	4.10	0.00
982.50	4.15	4.15	0.00
982.55	4.21	4.21	0.00
982.60	4.26	4.26	0.00
982.65	4.31	4.31	0.00
982.70	4.36	4.36	0.00
982.75	4.41	4.41	0.00
982.80	4.46	4.46	0.00
982.85	4.51	4.51	0.00
982.90	4.56	4.56	0.00
982.95	4.61	4.61	0.00
983.00	4.66	4.66	0.00
983.05	4.70	4.70	0.00
983.10	4.75	4.75	0.00
983.15	4.80	4.80	0.00
983.20	4.84	4.84	0.00
983.25	4.89	4.89	0.00
983.30	4.93	4.93	0.00
983.35	5.19	4.98	0.21
983.40	5.61	5.02	0.59
983.45	6.15	5.07	1.09
983.50	6.79	5.11	1.68
983.55	7.50	5.15	2.34
983.60	8.28	5.19	3.08
983.65	9.12	5.24	3.88
983.70	10.02	5.28	4.74
983.75	10.98	5.32	5.66
983.80	**11.99**	**5.36**	**6.63**

PROJECT: 46 South St

LOCATION: Trumansburg, NY

JOB NUMBER: E17-19

Tc = Time of Concentration (min)

i = 25 year storm intensity (in/hr)

c = Coefficient of Runoff

Notes:

- MIN COVER(ft) 1.00

- All Piping is (HDPE) High Density Polyethelene (n =0.010)

		REFERENCE POINTS		L O C A L				PREVIOUS cA's			TOTAL	Cont.		Q	PIPE			LENGTI	SLOPE	CAP	VEL	TIME
SUBAREA		FROM	TO	Tc	c	A(ac)	cA	from sa	Tc	cA	cA	Tc	i	cfs	dia	mat'l	n	ft	%	cfs	fps	min
DI #4	DS	DI #4	DI #3		0.35	0.01	0.00															
(START RUN)	TG				0.90	0.04	0.04															
	INV			6.00		TOTAL	0.04		NONE		0.04	6.00	6.26	0.2	8	HDPE	0.010	164	0.50	1.1	3.2	0.86
		REFERENCE POINTS		L O C A L				PREVIOUS cA's			TOTAL	Cont.		Q	PIPE			LENGTI	SLOPE	CAP	VEL	TIME
SUBAREA		FROM	TO	Tc	c	A(ac)	cA	from sa	Tc	cA	cA	Tc	i	cfs	dia	mat'l	n	ft	%	cfs	fps	min
DI #3	DS	DI #3	StMH #1		0.35	0.12	0.04	DI #4	6.86	0.04												
	TG				0.90	0.15	0.14															
	INV			6.00		TOTAL	0.18		6.86	0.04	0.22	6.86	6.26	1.4	10	HDPE	0.010	154	0.50	2.0	3.7	0.70
		REFERENCE POINTS		L O C A L				PREVIOUS cA's			TOTAL	Cont.		Q	PIPE			LENGTI	SLOPE	CAP	VEL	TIME
SUBAREA		FROM	TO	Tc	c	A(ac)	cA	from sa	Tc	cA	cA	Tc	i	cfs	dia	mat'l	n	ft	%	cfs	fps	min
DI #2	DS	DI #2	DI #1		0.35	0.20	0.07	DI #3	7.55	0.22												
	TG				0.90	0.38	0.34															
	INV			6.00		TOTAL	0.41		7.55	0.22	0.63	7.55	6.26	3.9	12	HDPE	0.010	97	1.00	4.6	5.9	0.27
		REFERENCE POINTS		L O C A L				PREVIOUS cA's			TOTAL	Cont.		Q	PIPE			LENGTI	SLOPE	CAP	VEL	TIME
SUBAREA		FROM	TO	Tc	c	A(ac)	cA	from sa	Tc	cA	cA	Tc	i	cfs	dia	mat'l	n	ft	%	cfs	fps	min
DI #1	DS	DI #1	StMH #1		0.35	0.20	0.07															
(START RUN)	TG				0.90	0.48	0.43															
	INV			6.00		TOTAL	0.50		6.00	0.00	0.50	6.00	6.26	3.1	12	HDPE	0.010	97	1.20	5.1	6.5	0.25
		REFERENCE POINTS		L O C A L				PREVIOUS cA's			TOTAL	Cont.		Q	PIPE			LENGTI	SLOPE	CAP	VEL	TIME
SUBAREA		FROM	TO	Tc	c	A(ac)	cA	from sa	Tc	cA	cA	Tc	i	cfs	dia	mat'l	n	ft	%	cfs	fps	min
StMH #1	DS	StMH #1	Wetland		0.35	0.00	0.00	DI #1	6.25	0.50												
	TG				0.90	0.00	0.00	DI #2	7.83	0.63												
	INV			6.00		TOTAL	0.00		7.83	1.13	1.13	7.83	6.26	7.1	12	HDPE	0.010	73	2.96	8.0	10.1	0.12

		REFERENCE POINTS		L O C A L				PREVIOUS cA's			TOTAL	Cont.		Q	PIPE			LENGTI	SLOPE	CAP	VEL	TIME
SUBAREA		FROM	TO	Tc	c	A(ac)	cA	from sa	Tc	cA	cA	Tc	i	cfs	dia	mat'l	n	ft	%	cfs	fps	min
Lot 4/5 Culvert	DS	Lot 4/5 Culvert	DI #11		0.35	0.24	0.08															
(START RUN)	TG				0.90	0.03	0.03															
	INV			6.00		TOTAL	0.11		6.00		0.11	6.00	6.26	0.7	8	HDPE	0.010	47	1.00	1.6	4.5	0.17
		REFERENCE POINTS		L O C A L				PREVIOUS cA's			TOTAL	Cont.		Q	PIPE			LENGTI	SLOPE	CAP	VEL	TIME
SUBAREA		FROM	TO	Tc	c	A(ac)	cA	from sa	Tc	cA	cA	Tc	i	cfs	dia	mat'l	n	ft	%	cfs	fps	min
Lot 3/4 Culvert	DS	Lot 3/4 Culvert	DI #10		0.35	0.23	0.08															
(START RUN)	TG				0.90	0.03	0.03															
	INV			6.00		TOTAL	0.11		6.00	0.00	0.11	6.00	6.26	0.7	8	HDPE	0.010	46	7.00	4.2	11.9	0.06
		REFERENCE POINTS		L O C A L				PREVIOUS cA's			TOTAL	Cont.		Q	PIPE			LENGTI	SLOPE	CAP	VEL	TIME
SUBAREA		FROM	TO	Tc	c	A(ac)	cA	from sa	Tc	cA	cA	Tc	i	cfs	dia	mat'l	n	ft	%	cfs	fps	min
Lot 2/3 Culvert	DS	Lot 2/3 Culvert	DI #9		0.35	0.62	0.22															
(START RUN)	TG				0.90	0.08	0.07															
	INV			6.00		TOTAL	0.29		6.00	0.00	0.29	6.00	6.26	1.8	8	HDPE	0.010	45	11.30	5.3	15.1	0.05
		REFERENCE POINTS		L O C A L				PREVIOUS cA's			TOTAL	Cont.		Q	PIPE			LENGTI	SLOPE	CAP	VEL	TIME
SUBAREA		FROM	TO	Tc	c	A(ac)	cA	from sa	Tc	cA	cA	Tc	i	cfs	dia	mat'l	n	ft	%	cfs	fps	min
DI #11	DS	DI #11	DI #10		0.35	0.06	0.02	Lot 4/5 C	6.17	0.11												
	TG				0.90	0.10	0.09															
	INV			6.00		TOTAL	0.11		6.17	0.11	0.22	6.17	6.26	1.4	10	HDPE	0.010	134	1.10	3.0	5.5	0.41
		REFERENCE POINTS		L O C A L				PREVIOUS cA's			TOTAL	Cont.		Q	PIPE			LENGTI	SLOPE	CAP	VEL	TIME
SUBAREA		FROM	TO	Tc	c	A(ac)	cA	from sa	Tc	cA	cA	Tc	i	cfs	dia	mat'l	n	ft	%	cfs	fps	min
DI #10	DS	DI #10	DI #9		0.35	0.05	0.02	Lot 3/4 C	6.41	0.11												
	TG				0.90	0.08	0.07	DI #11	6.58	0.22												
	INV			6.00		TOTAL	0.09		6.58	0.33	0.42	6.58	6.26	2.6	10	HDPE	0.010	104	0.88	2.7	4.9	0.35
		REFERENCE POINTS		L O C A L				PREVIOUS cA's			TOTAL	Cont.		Q	PIPE			LENGTI	SLOPE	CAP	VEL	TIME
SUBAREA		FROM	TO	Tc	c	A(ac)	cA	from sa	Tc	cA	cA	Tc	i	cfs	dia	mat'l	n	ft	%	cfs	fps	min
DI #9	DS	DI #9	DI #8		0.35	0.04	0.01	Lot 2/3 C	6.05	0.29												
	TG				0.90	0.09	0.08	DI #10	6.94	0.42												
	INV			6.00		TOTAL	0.10		6.94	0.71	0.80	6.94	6.26	5.0	12	HDPE	0.010	82	1.70	6.0	7.7	0.18

		REFERENCE POINTS		L O C A L				PREVIOUS cA's			TOTAL	Cont.		Q	PIPE			LENGTI	SLOPE	CAP	VEL	TIME
SUBAREA		FROM	TO	Tc	c	A(ac)	cA	from sa	Tc	cA	cA	Tc	I	cfs	dia	mat'l	n	ft	%	cfs	fps	min
DI #13	DS	DI #13	Wetland		0.35	0.26	0.09															
(START RUN)	TG				0.90	0.35	0.32															
	INV			6.00		TOTAL	0.41		6.00	0.00	0.41	6.00	6.26	2.5	12	HDPE	0.010	237	0.50	3.3	4.2	0.95

CONTECH ENGINEERED SOLUTIONS

Sizing Estimate

Prepared by Josh Stackhouse on March 14, 2018

Stormwater Treatment System Design Summary
46 South Street
Village of Trumansburg, NY

Information provided by Steven Rowe, PE (T.G. Miller, P.C.)

Site information:

Structure ID	Area (ac)	Percent Impervious	Tc (min)	WQF- 90% Average Runoff Flow (cfs)	Peak Flow (100-Yr) (cfs)
CDS	0.17	88.2%	6	0.22	1.31

Assumptions:

- NYSDEC has adopted the NJCAT/NJDEP verified flow rates for the CDS system. NYSDEC has effectively created three categories of treatment, new development (standalone), redevelopment and pretreatment. Specific approval and sizing criteria are applied to each category. Per the specifying engineer, this project falls under **Redevelopment.**

CDS System Sizing:

The CDS Stormwater Treatment System is a high-performance hydrodynamic separator. Using patented continuous deflective separation technology, the CDS system screens, separates and traps debris, sediment, and oil and grease from stormwater runoff. The indirect screening capability of the system allows for 100% removal of floatables and neutrally buoyant material without blinding. Flow and screening controls physically separate captured solids, preventing re-suspension and release of previously trapped pollutants.

Contech typically selects the CDS model that based on the NJCAT/NJDEP verified flow rates meets or exceeds the Water Quality Flow generated by the Water Quality Volume. The NJCAT/NJDEP verification uses the TARP protocol and as such meets the requirement laid out by NYSDEC on page 9-8 of the New York State Stormwater Management Design Manual for redevelopment projects. No such specification exists for pretreatment projects, but in the best interest of the environment Contech holds to those flows for pretreatment projects as well. Based on the flows above, Contech recommends:

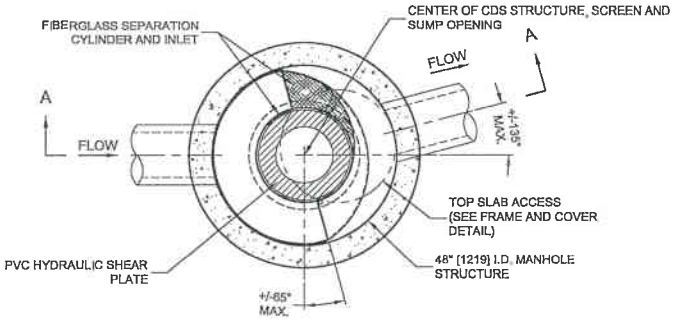
Structure ID	Treatment Device	NYSDEC Approved Treatment Flow (cfs)
CDS	CDS2015-4 (CDS-4)	0.93

Maintenance:

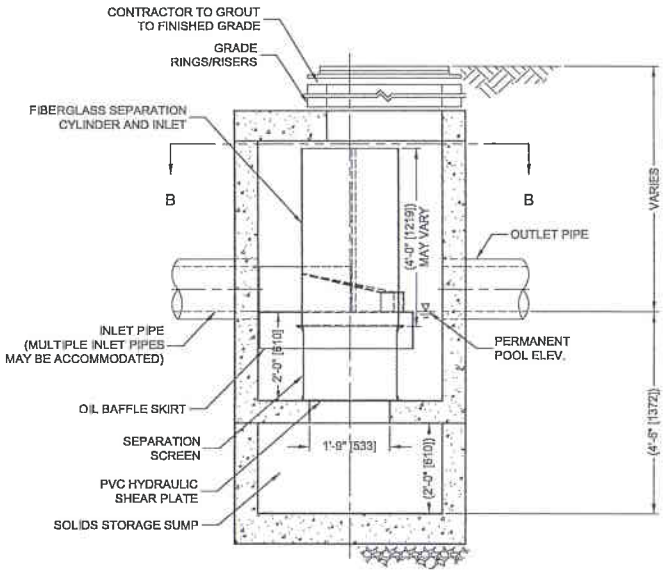
Like any stormwater best management practice, the CDS system requires regular inspection and maintenance to ensure optimal performance. Maintenance frequency will be driven by site conditions. Quarterly visual inspections are recommended, at which time the accumulation of pollutants can be determined. On average, the CDS system requires annual removal of accumulated pollutants.

Please contact us if you have any questions or need any additional information. Again, thank you for your interest in the CDS system. We look forward to receiving your feedback and working with you.

71 U.S. Route One Suite F, Scarborough ME 04074
Toll-free: 877.907.8676 Fax: 207.885.9825



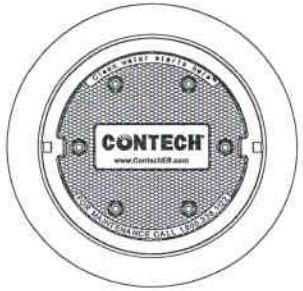
PLAN VIEW B-B
N.T.S.



ELEVATION A-A
N.T.S.

CDS-4-C (CDS2015-4) DESIGN NOTES

CDS-4-C (CDS2015-4) RATED TREATMENT CAPACITY IS 0.93 CFS. IF THE SITE CONDITIONS EXCEED MAXIMUM HYDRAULIC INTERNAL BYPASS CAPACITY, AN UPSTREAM BYPASS STRUCTURE IS REQUIRED.



FRAME AND COVER
(DIAMETER VARIES)
N.T.S.

SITE SPECIFIC DATA REQUIREMENTS

STRUCTURE ID			
WATER QUALITY FLOW RATE (CFS OR L/s)			*
PEAK FLOW RATE (CFS OR L/s)			*
RETURN PERIOD OF PEAK FLOW (YRS)			*
SCREEN APERTURE (2400)			*
PIPE DATA:	I.E.	MATERIAL	DIAMETER
INLET PIPE 1	*	*	*
INLET PIPE 2	*	*	*
OUTLET PIPE	*	*	*
RIM ELEVATION			*
ANTI-FLOTATION BALLAST		WIDTH	HEIGHT
		*	*

NOTES/SPECIAL REQUIREMENTS:

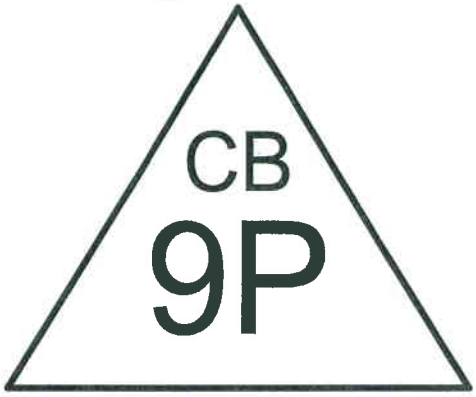
* PER ENGINEER OF RECORD

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. CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
5. STRUCTURE SHALL MEET AASHTO HS20 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION. CASTINGS SHALL MEET HS20 (AASHTO M 306) AND BE CAST WITH THE CONTECH LOGO.
6. IF REQUIRED, PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

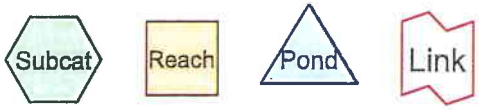
INSTALLATION NOTES
A. ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
B. CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
C. CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
D. CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
E. CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

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

CDS-4-C (CDS2015-4)
ONLINE CDS
STANDARD DETAIL



DI #14



South Street Culvert Analysis

Routing Diagram for Proposed
Prepared by Microsoft, Printed 3/15/2018

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	9P	979.30	979.05	308.0	0.0008	0.025	18.0	0.0	0.0

Summary for Pond 9P: DI #14

[57] Hint: Peaked at 983.81' (Flood elevation advised)

Inflow Area =	4.380 ac, 22.83% Impervious, Inflow Depth > 2.14" for 100-yr event			
Inflow =	12.11 cfs @ 12.08 hrs, Volume=	0.779 af		
Outflow =	12.11 cfs @ 12.08 hrs, Volume=	0.779 af, Atten= 0%, Lag= 0.0 min		
Primary =	5.37 cfs @ 12.08 hrs, Volume=	0.663 af	Pipe system overflows through grate during 100-year event	
Secondary =	6.74 cfs @ 12.08 hrs, Volume=	0.116 af		

Routing by Dyn-Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 983.81' @ 12.08 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	979.30'	**18.0" Round Existing Culvert** L= 308.0' CMP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 979.30' / 979.05' S= 0.0008 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf
#2	Secondary	983.30'	**17.2" x 17.2" Horiz. Grate EJIW 5115M2** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.36 cfs @ 12.08 hrs HW=983.80' TW=0.00' (Dynamic Tailwater)
↑—**1=Existing Culvert** (Barrel Controls 5.36 cfs @ 3.03 fps)

Secondary OutFlow Max=6.54 cfs @ 12.08 hrs HW=983.80' TW=0.00' (Dynamic Tailwater)
↑—**2=Grate EJIW 5115M2** (Weir Controls 6.54 cfs @ 2.30 fps)

Pond 9P: DI #14

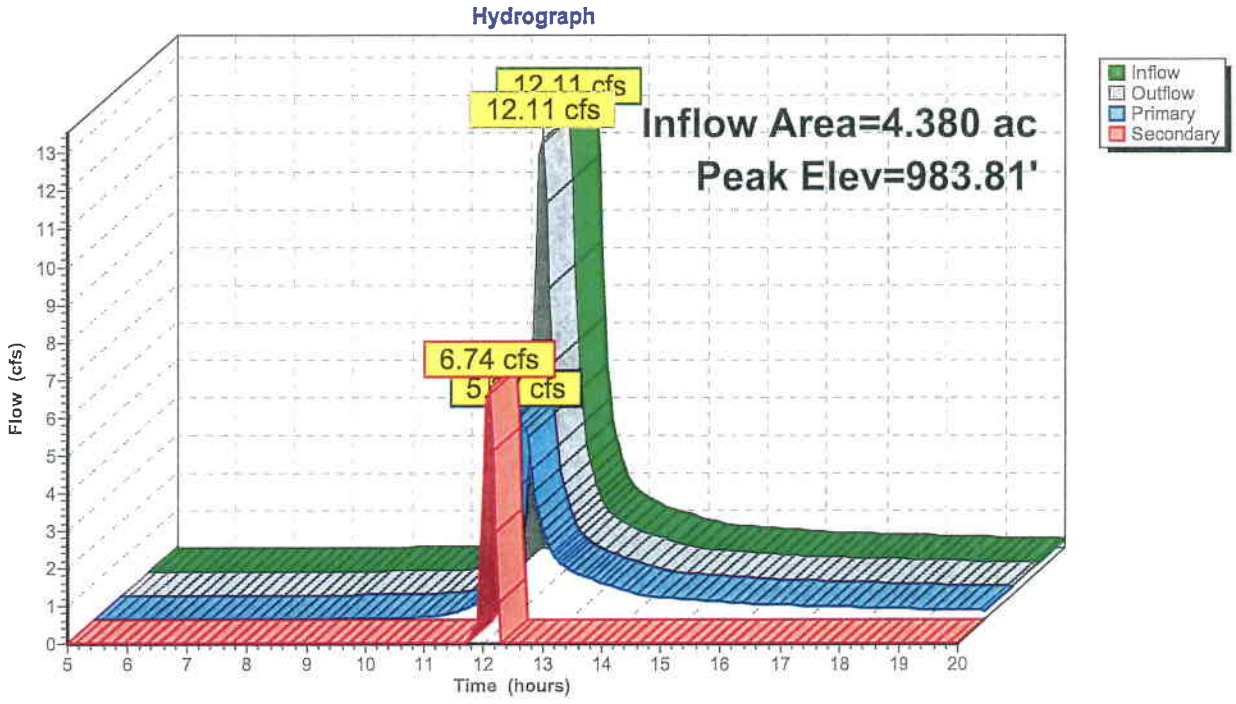
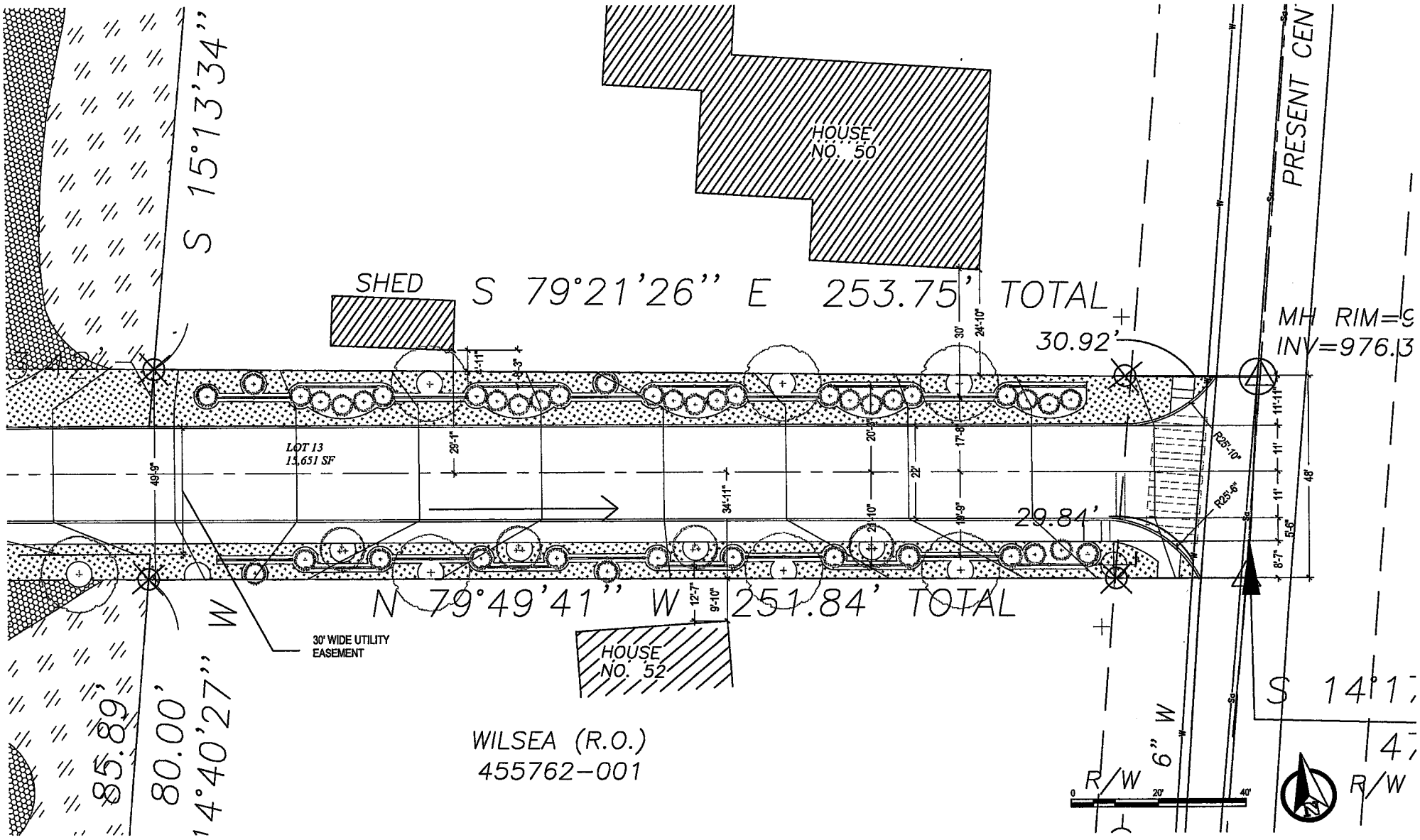


Exhibit H

Exhibit I



Private Drive Dimensions
46 South Street
Ithaca Neighborhood Housing Services & Sundial Property Development LLC

January 25, 2018
1" = 20'
17003

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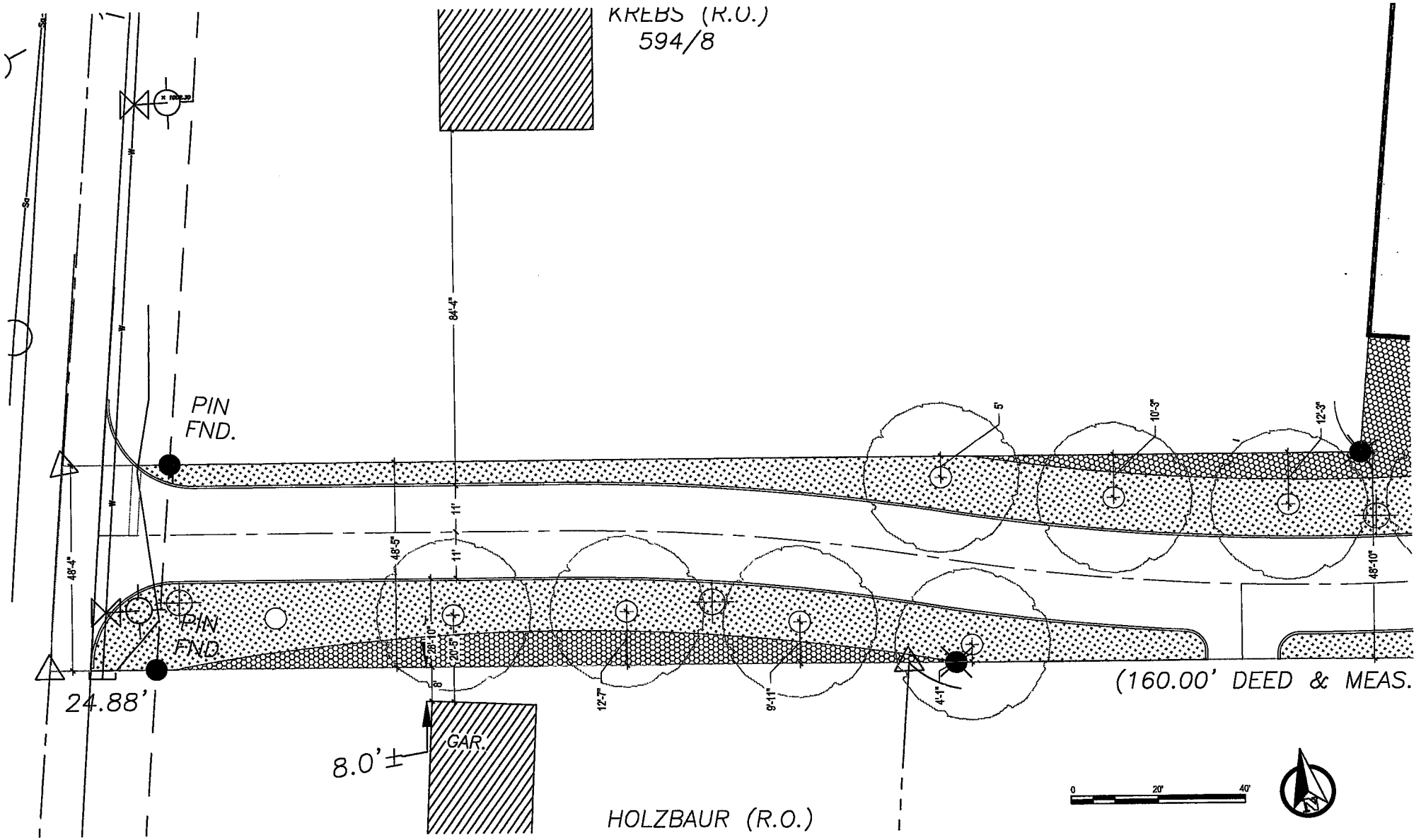

TWLA

Private Drive Dimensions
46 South Street
Ithaca Neighborhood Housing Services & Sundial Property Development LLC

January 25, 2018
1" = 20'
17003

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