Final Development Plan

Lamplighter Senior Village II

Current Zoning: PUD-R

Proposed Zoning: PUD-R

Description

The proposed plan consists of 60 units of affordable rental housing for residents at or below 60% AMGI, who are 55 years and older. This is a second phase of the Lamplighter Senior Village which opened in late 2013 / early 2014 and currently is 100% occupied. The proposal is placed on 7.8 acres and will have access on Lamplighter Drive and fronts on White Road. Lamplighter Drive will be extended as part of this proposal.

The proposed development consists of thirty-two 905 square foot units located in two two-story buildings with adjacent carports; one space per unit. The remaining units will consist of 28 single story ranch units of 905 sq. feet with attached garages located in four buildings. A community building, Shelter house, Community Garden, and Dog Park will also be incorporated into the development for the residents to use and enjoy.

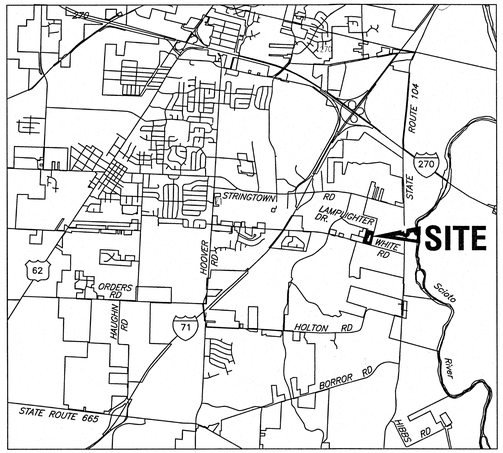
Storm Water run off will be controlled by a retention pond located at the south end of the development along white road. Water and Sewer connections will be located at the Lamplighter drive Extension. It is anticipated that the water and sewer systems on the site will remain private.

GROVE CITY, OHIO

LAMPLIGHTER SENIOR VILLAGE
FINAL DEVELOPMENT PLAN

AUGUST 31, 2015

SHEET INDEX



LOCATION MAP

NOT TO SCALE

BENCHMARKS

FRANKLIN COUNTY ENGINEERS MONUMENT FCGS 0025, ALUMINUM CAP IN PVC ENCASED CONCRETE MONUMENT SET OVER A STONE FOUND AT AN ANGLE POINT IN THE CENTERLINE OF WHITE ROAD, 0.40 MILES WEST OF JACKSON PIKE, ON A P/L NORTH.
ELEVATION 734.917 NAVD 88

BM1:
CHISLED 'X' ON THE NORTH BOLT OF A FIRE HYDRANT LOCATED 21 FEET SOUTH OF THE CENTERLINE OF LAMPLIGHTER DRIVE AND 13 FEET NORTHWEST OF THE NORTHEAST CORNER OF THE LAMPLIGHTER HOLDING CO LLC PARCEL AT 1239 LAMPLIGHTER DRIVE.
ELEVATION 745.49

BM2:
CHISLED 'X' ON THE NORTH BOLT OF A FIRE HYDRANT LOCATED 21 FEET SOUTH OF THE CENTERLINE OF LAMPLIGHTER DRIVE AND 40 FEET WEST OF THE NORTHWEST CORNER OF THE LAMPLIGHTER HOLDING CO LLC PARCEL AT 1239 LAMPLIGHTER DRIVE.
ELEVATION 746.98

APPROVALS

CITY OF GROVE CITY SIGNATURES ON THIS PLAN SIGNIFY ONLY CONCURRENCE WITH THE PURPOSE AND GENERAL LOCATION OF THE PROJECT. ALL TECHNICAL DETAILS REMAIN THE RESPONSIBILITY OF THE ENGINEER PREPARING THE PLANS.

CITY ADMINISTRATOR — DATE
THE CITY OF GROVE CITY, OHIO

SERVICE DIRECTOR — DATE
THE CITY OF GROVE CITY, OHIO

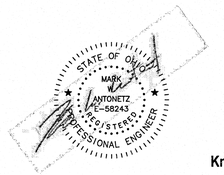
REVIEW FOR THE — DATE
THE CITY OF GROVE CITY, OHIO

JACKSON TOWNSHIP FIRE DEPARTMENT — DATE

RECEIVED
AUG 31 2015
GC PLANNING COMMISSION

FRANKLIN COUNTY PERMIT

THE CONTRACTOR SHALL SECURE A WRITTEN PERMIT FROM THE FRANKLIN COUNTY ENGINEER'S OFFICE, 970 DUBLIN RD., A MINIMUM OF TWO WORKING DAYS PRIOR TO BEGINNING WORK WITHIN FRANKLIN COUNTY R/W. THE CONTRACTOR MAY BE REQUIRED TO POST A BOND WITH THE FRANKLIN COUNTY ENGINEER PRIOR TO ISSUANCE OF THE PERMIT TO INSURE PROPER RESTORATION OF THE PAVEMENT AND R/W. THE CONTRACTOR SHALL PROVIDE THE FRANKLIN COUNTY ENGINEER'S OFFICE A 24-HOUR TELEPHONE NUMBER TO BE USED IN CASE OF AN EMERGENCY.



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740-385-2140

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614-459-6992
Fax: 614-459-6987
Toll Free: 866-277-0600

507 Main Street, Suite 203
Zanesville, OH 43701
740-450-1640

LAMPLIGHTER SENIOR VILLAGE II
FINAL DEVELOPMENT PLAN
GROVE CITY, OHIO

OWNER:
LAMPLIGHTER II SENIOR HOUSING LLC
184 WEST MAIN STREET
ASHVILLE, OHIO 43103
740-983-4566

SCALE: – AS NOTED
DATE: AUGUST 31, 2015 | SHEET: TITLE

SITE KEYNOTES

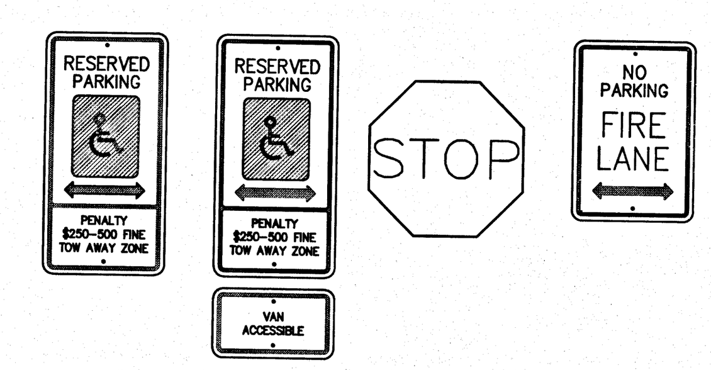
1. DRIVE APPROACH. SEE GROVE CITY DRAWING C-GC-41B.
2. CURB RAMP SEE GROVE CITY DRAWING C-GC-43C.
3. STRAIGHT 18" CURB.
4. DRIVE CONNECTION. CONTRACTOR TO RELOCATE/PREPLACE TREATED WOOD TIMBER GUARD RAIL AND SIDEWALK.
5. PAVEMENT MARKINGS INCLUDING PARKING SPACES, TRANSVERSE LINES, DIRECTIONAL ARROWS, LANE LINES, TEXT & HANDICAPPED PARKING SYMBOLS PER ITEM 641 AND PAINT PER ITEM 642. ALL PAVEMENT MARKING COLORS WILL BE WHITE.
6. CONCRETE WALK. SEE GROVE CITY DRAWING C-GC-46.
7. NO PARKING FIRE LINE SIGN D. SEE DETAIL.
8. STOP SIGN C. SEE DETAIL.
9. ADA SIGN A. SEE DETAIL.
10. ADA SIGN B. SEE DETAIL.
11. SITE LIGHTING. SEE ARCHITECTURAL PLANS FOR DETAILS.
12. FENCED COMMUNITY GARDEN AREA.
13. DUMPSTER ENCLOSURE WITH RECYCLING STORAGE. SEE ARCHITECTURAL PLANS FOR DETAILS.
14. 8' ASPHALT BIKE PATH. SEE GROVE CITY DRAWING C-GC-80.
15. RETENTION POND. POND TO BE CONSTRUCTED PER GROVE CITY STANDARD POND GRADING SECTION EXHIBIT NO. 3.
16. SITE BENCH ACTUAL LOCATIONS MAY VARY.
17. HEAVY DUTY SIDEWALK SECTION (FLUSH WITH PAVEMENT)
18. TAPER CURB FROM FULL HEIGHT TO FLUSH WITH SIDEWALK.
19. FACILITY ENTRY SIGN. SEE LANDSCAPE PLANS.
20. 5' ASPHALT WALK. SEE GROVE CITY DRAWING C-GC-80.
21. ASPHALT CONTAINMENT CURB. SEE DETAIL.
22. STOP BARS PER ITEM 641 AND THERMAL PLASTIC PAVEMENT MARKING ITEM 644.

MISC. NOTES

- ALL STANDARD PARKING SPACES AREA 10' X 20'.
- ALL DESIGNATED PARKING AREAS TO INCLUDE A PRECAST PARKING BLOCK, INCLUDING SPACES WITHIN THE CARPORTS. SEE DETAIL.
- EACH CAR PORT IS STRIPED FOR 8~10' X 22' SPACES.
- COC ITEM NUMBERS REFER TO THE CITY OF COLUMBUS CONSTRUCTION AND MATERIAL SPECIFICATIONS VERSION 2012.

SITE DATA

ASPHALT PAVEMENT/ASPHALT WALK	97,435 SF
CONCRETE PAVEMENT (INCLUDING DUMPSTER & CARPORT)	10,730 SF
CONCRETE WALK	19,048 SF
BUILDINGS	60,673 SF
TOTAL SITE AREA	349,201 SF (8.02 ACRES)
TOTAL IMPERVIOUS	187,887 SF (53.8%)
TOTAL GREEN SPACE	161,314 (46.2%)
TOTAL PARKING (INCLUDING CARPORTS)	80 SPACES.
ZONING CLASSIFICATION	PUD-R
UNITS	60~TWO BEDROOM UNITS
DENSITY	7.48 UNITS / ACRE
COMMUNITY GARDEN	53.38 SF / UNIT
WETLANDS	NO WETLANDS WITHIN 150' OF SITE
PRIME SOILS	YES -OHFA WAIVER FOR PRIME SOILS HAS BEEN GRANTED
CRITICAL HABITAT	NO CRITICAL HABITAT (PER PHASE I)
FLOOD PLAIN	ZONE X (OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN)
SITE TOPOGRAPHY	NO EXISTING SLOPES EXCEEDING 15%



SIGN A SIGN B SIGN C SIGN D

SIGNS SHALL MEET ADAAG, AND OMUTCD STANDARDS WITH PRISMATIC SHEETING TYPE III. INSTALL WITH SQUARE STEEL GALVANIZED POLE AS PER ITEM 730.016. SIGN POSTS AND SIGN BACKING TO BE PAINTED BLACK. OWNER TO APPROVE FINAL SIGN DESIGN PRIOR TO ORDERING.

SITE SIGNAGE (1)

NOT TO SCALE

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ENGINEERS ▪ SURVEYORS

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740-385-2140

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LAMPLIGHTER SENIOR VILLAGE II
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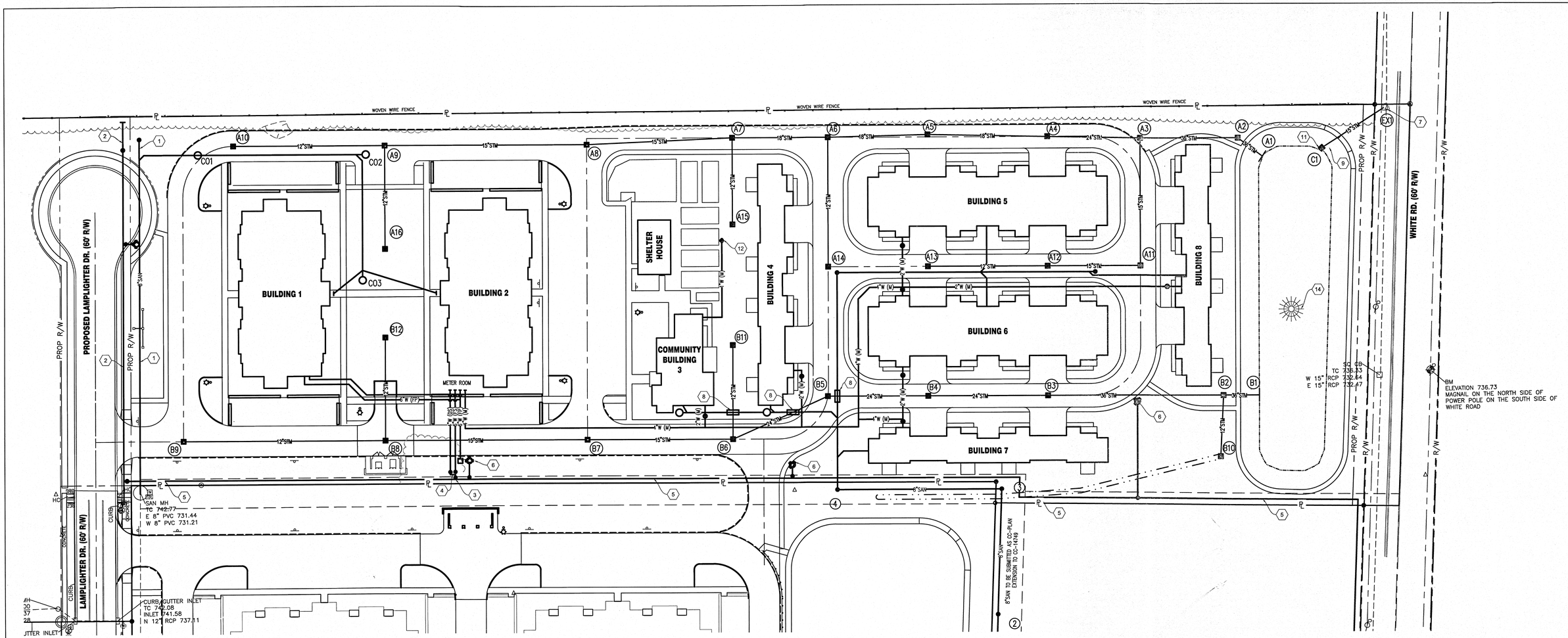
GROVE CITY, OHIO

OWNER:
LAMPLIGHTER II SENIOR HOUSING LLC
184 WEST MAIN STREET
ASHVILLE, OHIO 43103
740-983-4566

SCALE:– AS NOTED

DATE: AUGUST 31, 2015 | SHEET: C1.01

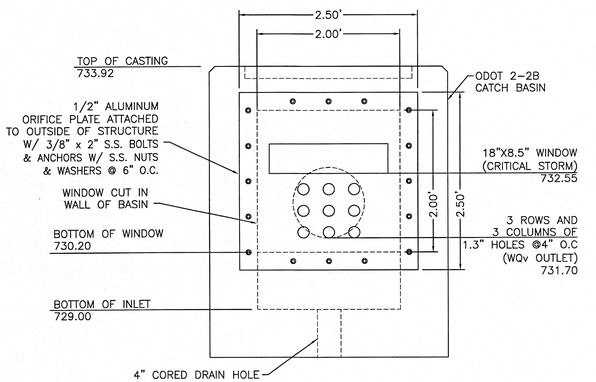


KEYNOTES

1. 8" SANITARY SEWER EXTENSION. (UNDER SEPARATE CONTRACT, CITY OF COLUMBUS CC PLAN).
2. 12" WATERLINE EXTENSION (UNDER SEPARATE CONTRACT, LAMPLIGHTER EXTENSION PLAN).
3. 6" FIRE SERVICE TAP AND VALVE. (SEE CITY OF COLUMBUS WSP PLAN SHEET C3.01)
4. 4" DOMESTIC WATER SERVICE TAP AND VALVE. SEE CITY OF COLUMBUS WSP PLAN SHEET C3.01)
5. WATERLINE LOOP. ACTUAL SIZE AND LOCATION MAY VARY.
6. FIRE HYDRANT AND WATCH VALVE. (2' OFF BACK OF CURB (TYP.)).
7. CONNECT TO EXISTING 18" STORM SEWER.
8. INFILTRATION/INFLOW BARRIER.
9. 3'x10' TREATED LUMBER POND MAINTENANCE ACCESS. SEE DETAIL.
10. PVC DRAIN BASIN. ACTUAL LOCATION MAY VARY. INLET TOP OF CASTING TO BE TRIMMED AT FINAL GRADING. CONTRACTOR TO INSTALL INLET PROTECTION DURING CONSTRUCTION.
11. OUTLET CONTROL STRUCTURE.
12. YARD HYDRANT. SEE SHEET C3.01 FOR ADDITIONAL INFORMATION.
13. ROOF DRAINS. INSTALL AT A MINIMUM OF 1.2%. ACTUAL LOCATIONS MAY VARY.
14. POND AERATOR. POWER TO BE SUPPLIED FROM BUILDING 6. SEE ARCHITECTURAL PLANS FOR DETAILS.

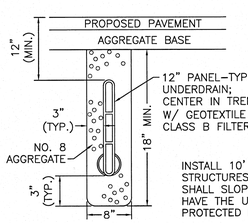
NOTES

- ALL CATCH BASINS INSTALLED IN PAVEMENT WILL HAVE CATCH BASIN FINGER DRAINS INSTALLED. SEE DETAIL.
- FOR ADDITIONAL WATER SERVICE INFORMATION SEE SHEET C3.01 (COC WSP PLAN
- FOR ADDITIONAL SANITARY SEWER INFORMATION SEE SHEETS C4.01–C4.03 (COC CC PLANS).
- ALL ELECTRICAL CONDUITS UNDER PAVEMENT WILL BE SLEEVED.



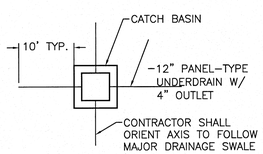
THE OUTLET CONTROL STRUCTURE SHALL BE MAINTAINED FOR THE LIFE OF THE STORM SYSTEM. SEDIMENT SHALL BE REMOVED FROM DETENTION BASIN BEFORE 10% CAPACITY IS REACHED. UNDER NO CIRCUMSTANCES SHALL THE DETENTION BASIN BE PUMPED OR DRAINED INTO THE EXISTING DRAINAGE WAY OR EXISTING STORM SYSTEM WITHOUT PROPER FILTERING TO PREVENT SEDIMENT FROM POLLUTING EXISTING DRAINAGE SYSTEMS.

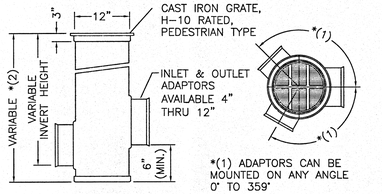
OUTLET CONTROL STRUCTURE SOUTH (CB 6) — NOT TO SCALE — (1)



INSTALL 10' LENGTHS OF 12" PANEL–TYPE UNDERDRAIN AT ALL STRUCTURES WITHIN PAVEMENT AS SHOWN ABOVE. UNDERDRAINS SHALL SLOPE AT 1.0% TOWARD THE STRUCTURE AND SHALL HAVE THE UPSTREAM END PLUGGED. UNDERDRAIN SHALL BE PROTECTED FROM CONSTRUCTION TRAFFIC AFTER INSTALLATION.

CATCH BASIN FINGER DRAINS — NOT TO SCALE — (2)

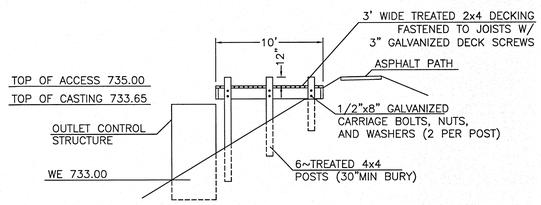




*(1) ADAPTORS CAN BE MOUNTED ON ANY ANGLE 0° TO 359°

*(2) MAXIMUM RECOMMENDED OVERALL HEIGHT 10'

PVC DRAIN BASIN — NOT TO SCALE — (4)



POND MAINTENANCE ACCESS — NOT TO SCALE — (3)

PRELIMINARY PONDING DATA

STORM FREQUENCY YEARS	PRE–DEV RELEASE CFS	ALLOWABLE RELEASE CFS	POST–DEV RELEASE CFS	POND ELEVATION FEET	POND STORAGE CF
1	5.52	5.52	1.51	732.94	21,473
2	6.61	5.52	2.09	733.05	23,683
5	11.09	5.52	4.39	733.51	32,798
10	14.28	5.52	5.42	733.83	39,553
25	17.59	17.59	6.32	734.15	46,483
50	20.64	20.64	7.00	734.43	52,805
100	22.35	22.35	7.34	734.58	56,326

ALLOWABLE RELEASE=CRITICAL STORM (10 YR) TO 1YR PRE–DEVELOPED

WATER QUALITY DATA

OEPA REQUIRED	ENTERPRISE CREEN COMM REQUIRED	WQv VOLUME PROVIDED	BOTTOM ELEVATION	WQv ELEVATION	
10,219 CF	14,211	14,351	731.70	732.55	

PER OHIO EPA: POND IS DESIGNED NOT TO RELEASE MORE THAN HALF THE VOLUME IN 1/3 OF THE TIME (8 HOURS)

NORTH

GRAPHIC SCALE
40 20 0 40
1" = 40'

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TOLL FREE: 866-277-0600

507 MAIN STREET, SUITE 203
ZANESVILLE, OH 43701
740-450-1640

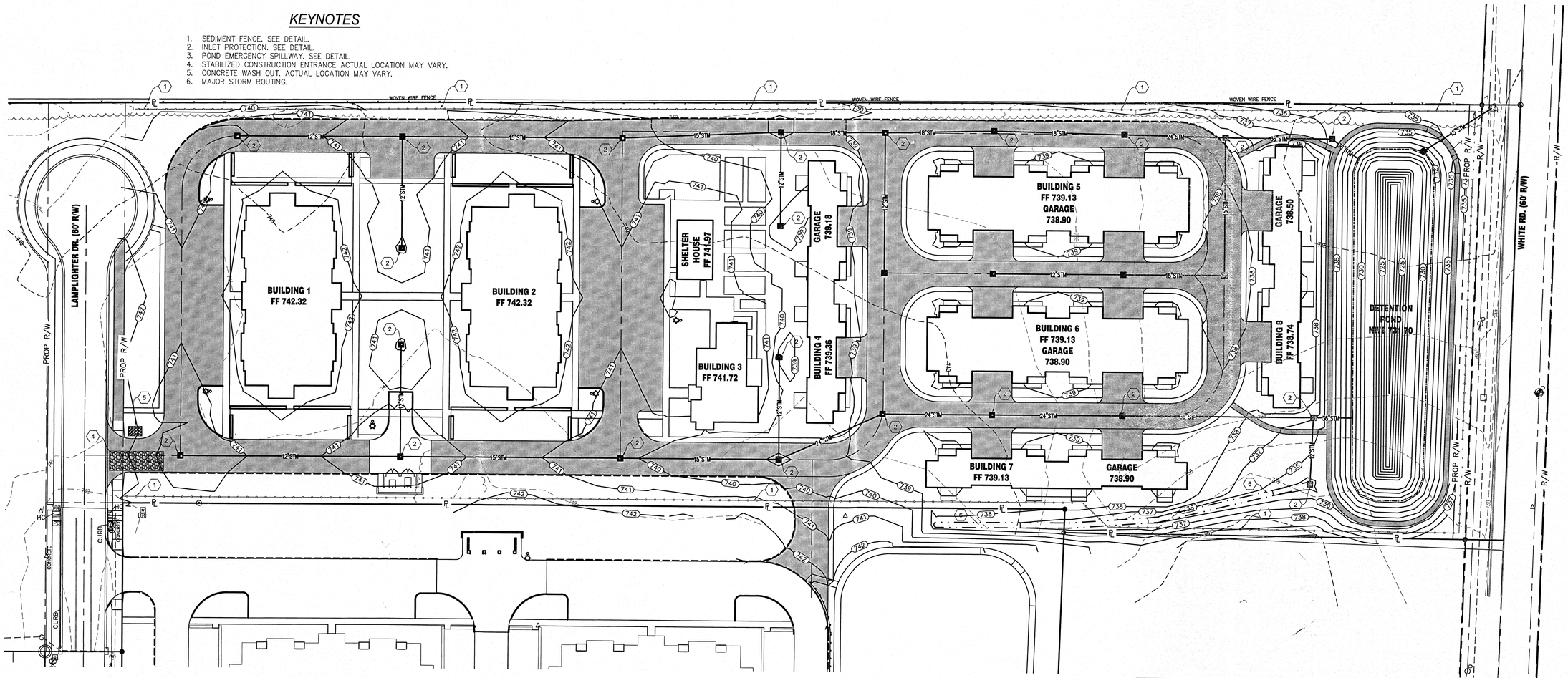
LAMPLIGHTER SENIOR VILLAGE II
FINAL DEVELOPMENT PLAN
GROVE CITY, OHIO

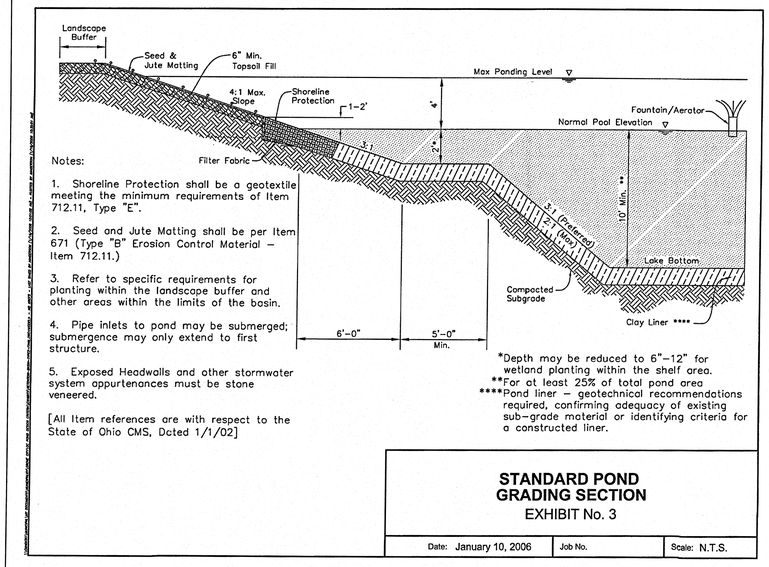
OWNER:
LAMPLIGHTER II SENIOR HOUSING LLC
184 WEST MAIN STREET
ASHVILLE, OHIO 43103
740–983–4566

SCALE:– AS NOTED
DATE: AUGUST 31, 2015 | SHEET: C1.02

KEYNOTES

1. SEDIMENT FENCE. SEE DETAIL.
2. INLET PROTECTION. SEE DETAIL.
3. POND EMERGENCY SPILLWAY. SEE DETAIL.
4. STABILIZED CONSTRUCTION ENTRANCE ACTUAL LOCATION MAY VARY.
5. CONCRETE WASH OUT. ACTUAL LOCATION MAY VARY.
6. MAJOR STORM ROUTING.





Notes:

1. Shoreline Protection shall be a geotextile meeting the minimum requirements of Item 712.11, Type "E".
2. Seed and Jute Matting shall be per Item 671 (Type "B" Erosion Control Material – Item 712.11.)
3. Refer to specific requirements for planting within the landscape buffer and other areas within the limits of the basin.
4. Pipe inlets to pond may be submerged; submergence may only extend to first structure.
5. Exposed Headwalls and other stormwater system appurtenances must be stone veneered.

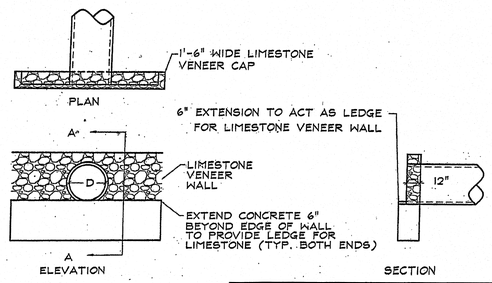
[All Item references are with respect to the State of Ohio CMS, Dcted 1/1/02]

*Depth may be reduced to 6"–12" for wetland planting within the shelf area.
**For at least 25% of total pond area
****Pond liner – geotechnical recommendations required, confirming adequacy of existing sub-grade material or identifying criteria for a constructed liner.

STANDARD POND GRADING SECTION
EXHIBIT No. 3

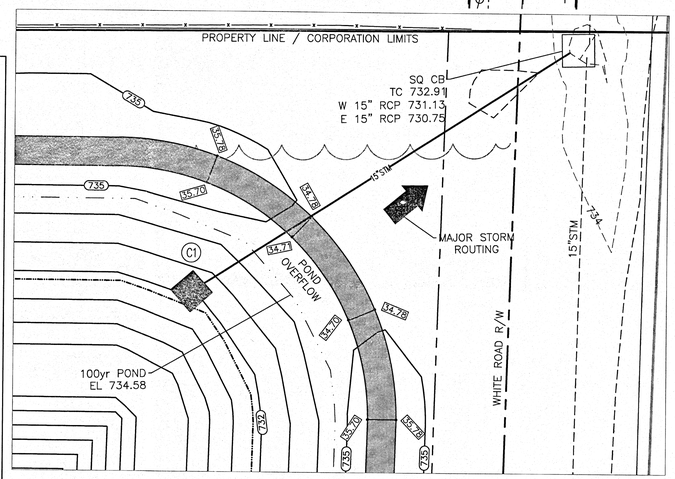
Date: January 10, 2006	Job No.	Scale: N.T.S.

NOTE:
* STONE FACING SHALL BE ON ALL EXPOSED SURFACES OF THE OUTLET STRUCTURES.
* STONE IS TO BE NORTH SHORE BLUFF LIMESTONE. ALTERNATE SELECTIONS MUST BE APPROVED BY THE CITY SERVICE DIRECTOR.
* 1/2" MAX DRY LAID LOOK JOINTS HOLD MORTAR BACK 3" MIN.
* VARY THICKNESS OF ADJACENT HORIZONTAL STONE COURSES. WHENEVER POSSIBLE LAY LARGE CHUNKS AND FILL IN AROUND WITH THINNER STONES.



STONE FACING DETAIL FOR HEADWALLS AND ENDWALLS
EXHIBIT No. 2

Date: January 10, 2006	Job No.	Scale: N.T.S.



POND SPILLWAY DETAIL (1)
1"=10'

NORTH

GRAPHIC SCALE
40 20 0 40
1" = 40'

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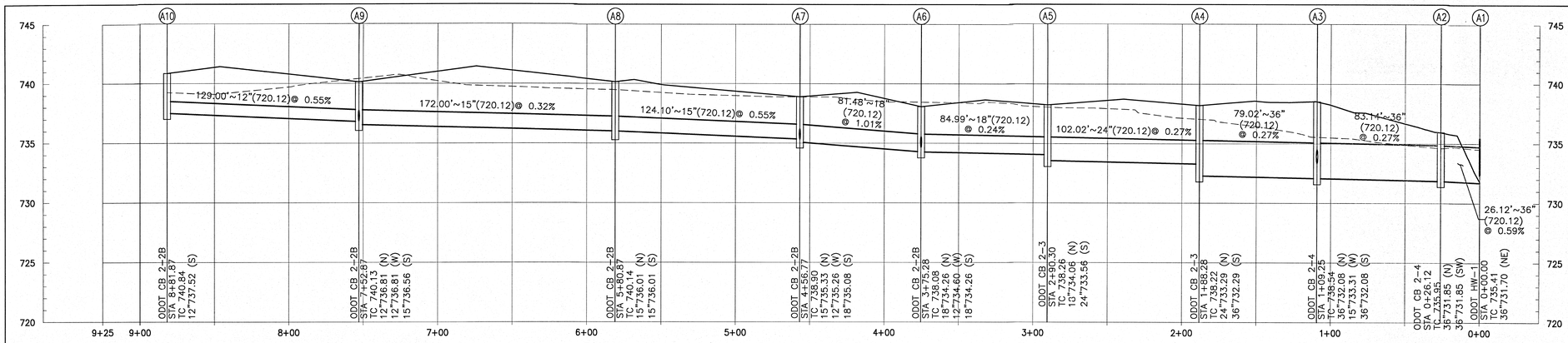
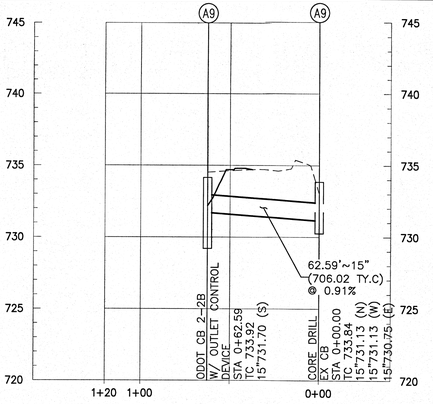
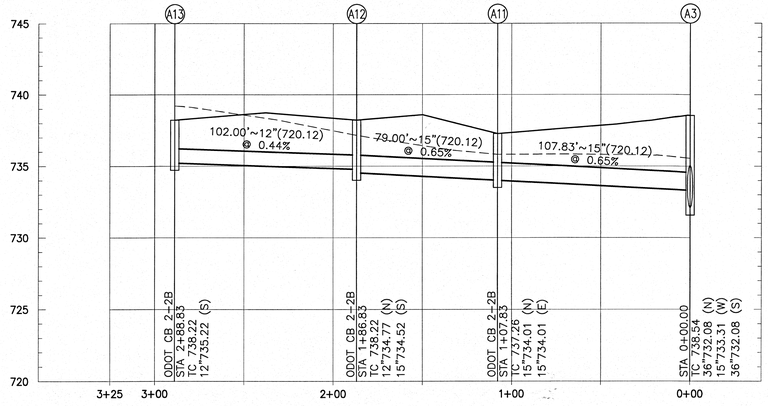
Ashville, Ohio 43103
740-983-4566

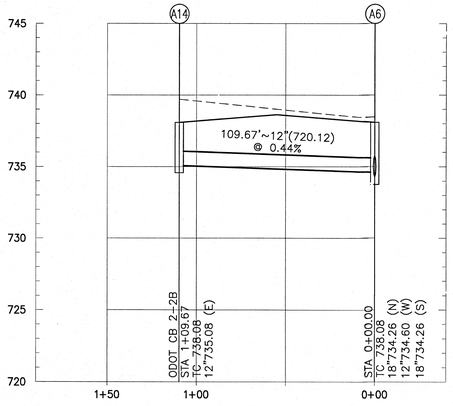
SCALE: – AS NOTED

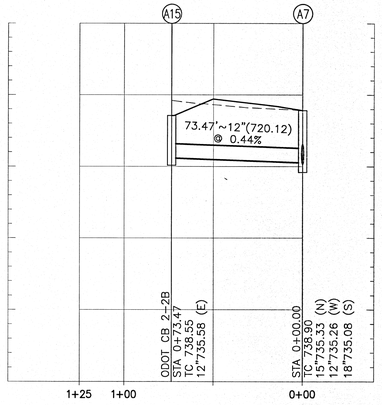
DATE: AUGUST 31, 2015 | SHEET: C1.03

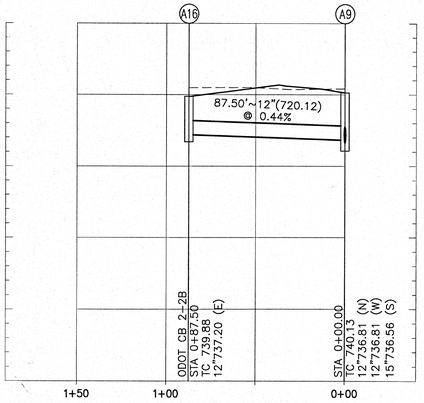


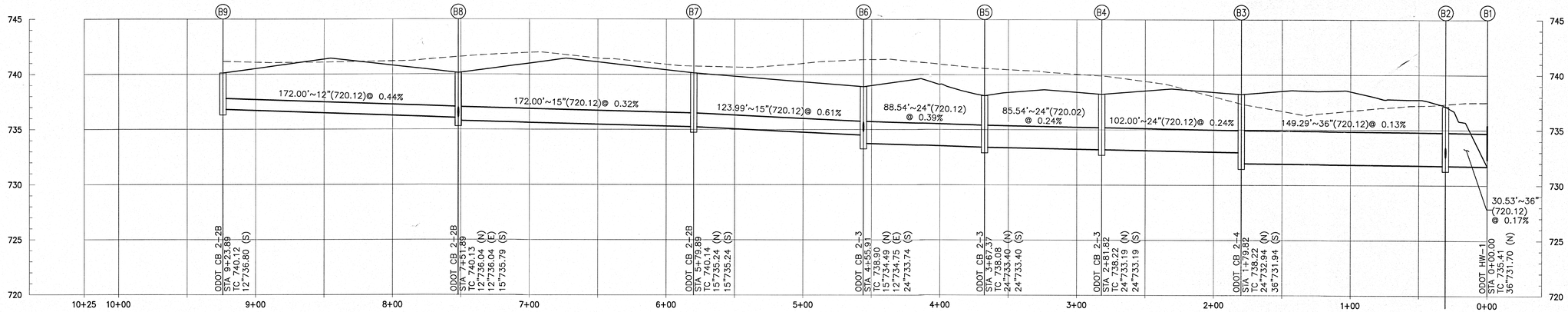


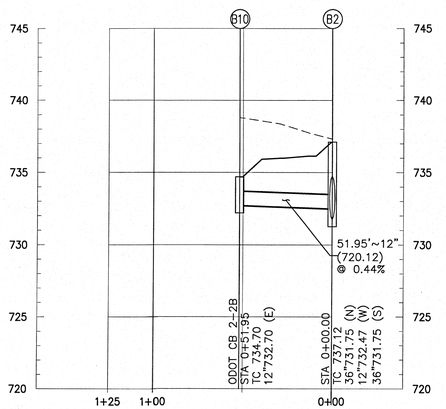


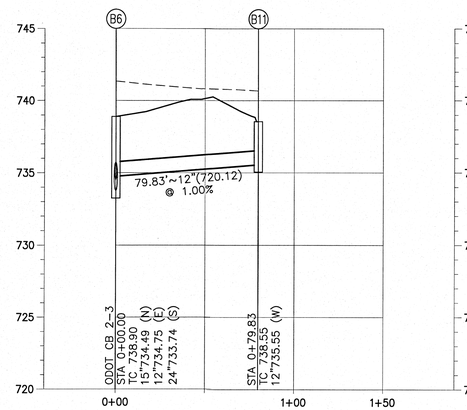


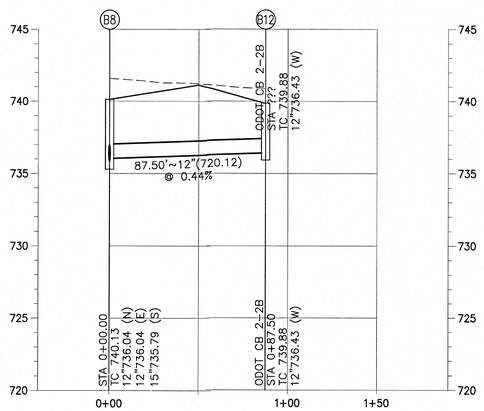












NOTE:
ALL STORM SEWERS SHOWN ON THIS SHEET WILL BE PRIVATELY OWNED AND MAINTAINED.

MINIMUM COVER NOTE:
PRIVATE STORM SEWER MINIMUM COVER PER MANUFACTURERS RECOMMENDATION. (1.0' MINIMUM COVER FROM BOTTOM OF ASPHALT MATERIALS TO TOP OF PIPE.

WATER SEPARATION NOTE:
CONTRACTOR TO PROVIDE A MINIMUM OF 18" CLEARANCE BETWEEN THE PROPOSED WATERLINE AND STORM/SANITARY SEWERS.

GRAPHIC SCALE
40 20 0 40
1" = 40'

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

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Toll Free: 866-277-0600

507 Main Street, Suite 203
Zanesville, OH 43701
740-450-1640

LAMPLIGHTER SENIOR VILLAGE II
FINAL DEVELOPMENT PLAN
GROVE CITY, OHIO

OWNER:
LAMPLIGHTER II SENIOR HOUSING LLC
184 WEST MAIN STREET
ASHVILLE, OHIO 43103
740-983-4566

SCALE: – AS NOTED
DATE: AUGUST 31, 2015
SHEET: C1.04

Street, Storm, and Water General Notes

1. SPECIFICATIONS: The current City of Columbus and Ohio Department of Transportation (ODOT) "Construction and Material Specifications" (CMSC and ODOT CMS respectively) together with the requirements of the City of Grove City, Ohio, including all supplements thereto, in force on the date of the contract shall govern all materials and workmanship involved in the improvements shown on these plans, except as such specifications are modified by the following specifications, or by the construction details set forth herein. In case of any conflict among these identified technical specifications, the greater requirement shall take precedence (as determined by the sole discretion of the City) unless directed otherwise by the City. General provisions of the ODOT and the City of Columbus CMS as modified herein shall not apply. This exclusion includes, but is not necessarily limited to, Division 100 of the ODOT and City of Columbus CMS.
2. Bench marks: The Contractor shall carefully preserve bench marks, property corners, reference points, and stakes. Any bench mark, property corner, or survey marker damaged or disturbed by the Contractor shall be reset by an Ohio Registered Surveyor at the Contractor's expense.
3. SAFETY REQUIREMENTS: The Contractor and any and all Subcontractors shall be solely responsible for complying with all federal, state, and local safety requirements, together with exercising precautions at all times for the protection of persons (including employees) and property. It is also solely the responsibility of the Contractor and Subcontractor to initiate, maintain, and supervise all safety requirements, precautions, and programs in connection with the work, including all OSHA rules and regulations.
4. PERMITS: The Contractor or Developer shall secure and pay for all permits and government fees, licenses, and inspections necessary for the proper execution and completion of the improvements shown on the plans.
5. Notification: The Contractor shall notify the City at least 48 hours in advance (holidays and weekends excluded) of the anticipated start of work requiring inspection, testing, or approval by the City. Work shall not commence until a pre-construction conference is held. The Contractor or Developer shall supply three (3) copies of the approved construction plans, along with one (1) complete set of mylars and one (1) electronic copy of all plan sheets (.tif format), to the City, and one (1) copy of the plans to the Director of Public Service one (1) week prior to the pre-construction conference.
The Contractor shall notify all adjacent landowners a minimum of one (1) week in advance of work near their property. The Contractor shall coordinate with the City for a suggested format for the notice.
6. Inspection: The City of Grove City will provide all construction inspection for this project. No work shall commence until arrangements have been made with the City Engineer and Director of Public Service for inspection services and payment of the inspection fee deposit.
7. Utilities: The identity and locations of existing underground utilities in the construction area have been shown on the approved construction drawings as accurately as provided by the Owner of the underground utility as required by Section 153.64 or Section 3781.27 of the Ohio Revised Code. The City of Grove City assumes no responsibility for the accuracy of locations or depths of underground facilities shown on the approved construction drawings. When unknown or incorrectly located underground utilities are encountered during construction, the Contractor shall immediately notify the utility owner, the City and the Design Engineer.
The Contractor shall notify the Ohio Utilities Protection Service (OUPS) at (1-800-362-2764) at least 48 HOURS, and NO MORE THAN 10 DAYS PRIOR TO excavating, with such time periods not including weekends or holidays. Contractor shall similarly contact all utility owners who are not subscribers to OUPS.
If there are markers or other apparent physical evidence in or near the project area that may indicate the existence of underground petroleum or natural gas pipelines, the Contractor shall additionally contact the Oil & Gas Producers Underground Protection Service (OGPUPS) at 800-925-0988, toll free. Said notification shall be given a minimum of 48 hours prior to the commencement of construction.
The following utilities are known or can be expected to be located within the limits of this project.

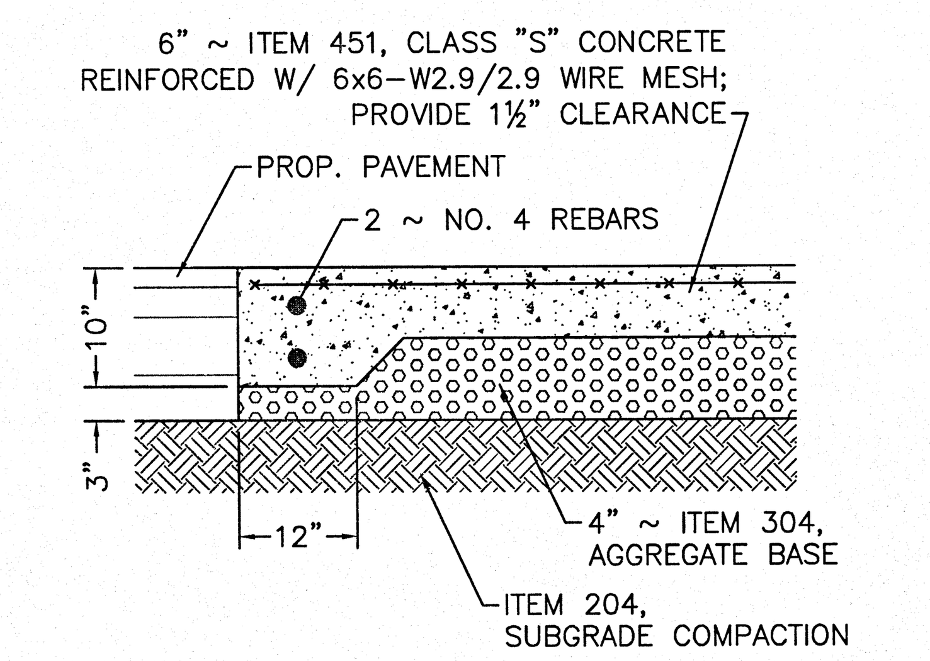
UTILITY	OWNER	TELEPHONE
Water, Sanitary, Storm and Street Lighting Facilities	City of Grove City 4035 Broadway Grove City, Ohio 43123	614-277-1100

LIST UTILITIES	
Columbia Gas of Ohio Matt Coyne 1-614-818-2107	1-866-632-6243
AEP/Columbus Southern Brent Gates 1-614-883-6802	1-800-277-2177
AT&T	1-800-248-3632
Columbus Department of Utilities	1-614-645-8276
Time Warner Cable	1-800-617-4311
Franklin County Engineers	1-614-525-3030
Pioneer Energy Management	1-614-442-7100
Marathon Pipe Line	1-740-522-8448

The Contractor is responsible for the investigation, location, support, protection and restoration of all existing utilities and appurtenances whether shown on the plans or not. The Contractor shall proceed with the work and protect all underground utilities in a manner at least as cautious and protective of safety and underground utilities as those methods identified in Sections 3781.25 through 3781.30 of the Ohio Revised Code.
All private utility relocation (gas, electric, phone, etc.) will be the responsibility of the utility owners. The Contractor is responsible for coordinating the relocation and/or protection of any utilities as required by the plan with the owner of the affected utility.
8. EXPOSE EXISTING UTILITY: Where potential grade and alignment conflicts might occur with existing utilities, or as specifically called out on the plans, the Contractor shall expose utilities or structures sufficiently in advance of laying pipe for the Design Engineer to verify the vertical and horizontal effect on the proposed construction. Any discrepancy with the plans shall be coordinated with the City to ensure that there are no construction or conflict issues associated with said discrepancy. The cost of this work shall be included in the unit price bid for the various improvement items if a specific bid item is not provided in the estimate of quantities.
9. CONFLICTS: In all conflicts in elevation between the water main and gravity sewers, the water main shall be lowered during construction, unless otherwise directed by the City.
10. House Service Lines: The Contractor shall assume that each house has at least one (1) water and one (1) gas service line unless more are marked by the utility company. It is the Contractor's responsibility to locate and support these service lines. Cost for location and support shall be included in the cost bid for various items. Where service lines are cut or broken, the lines are to be restored to the standards of the utility owner at the Contractor's expense within 12 hours of the cutting or breaking of the service line.
11. Site Visit: The Contractor shall perform field reconnaissance to become acquainted with the existing site conditions and the potential effects upon the scope of work.
12. Rights-of-Way: In addition to the direct requirements of the contract specifications, the Contractor shall observe and conform to the specific requirements of all Rights-of-Way, including easements, court entries, rights-of-entry, or action filed in court in accordance with the code of the applicable governing agency. The cost of the operations necessary to fulfill such requirements shall be included in the price bid for the various items of the contract unless specific provision is made in the contract specifications for such cost under specific Items of the contract.
13. EASEMENTS: Approval of this plan is contingent upon all easements required for the construction of the work being secured and submitted to the City of Grove City for recording prior to commencement of the work, and no work which requires an easement will be allowed to proceed until this has been done.
14. Work Limits: The Contractor is responsible for containing all performed work and all equipment, materials, vehicles, etc., used to complete the work within the rights-of-way of the streets, roadways, permanent easements and the property boundaries of the project improvements, as shown on these plans.
The Contractor is responsible for cost of restoration for any area outside of the right-of-way, permanent easement or project property boundaries to former condition or better and to the satisfaction of the Property Owner and the City.
15. Contract Work Performed by the City: In the event that it becomes necessary for the City to perform work of an immediate nature (such as the placement of barricades or replacement of signs or other warning or protective devices) required of the Contractor by this contract because of failure or refusal of the Contractor to perform such work, the Contractor/Developer shall reimburse the City at the rate of 2.5 times the actual cost of labor, materials and equipment necessary to perform such work.
16. Convenience Facilities: The Contractor shall furnish and maintain sanitary convenience facilities for the workmen and inspectors for the duration of the work. Cost shall be included in the price bid for the various items.
17. NON-RUBBER TIRED VEHICLES: No non-rubber tired vehicles shall be moved on City streets, existing private roadways or parking lots. Exceptions may be granted by the City of Grove City, for public roadways only, where short distances and special circumstances are involved. Granting of exceptions must be in writing, and any damage must be repaired by the Contractor to the satisfaction of the City of Grove City.
18. Signs, Mailboxes, Fences, Etc.: The Contractor shall be responsible for restoring all signs, mailboxes, fences, guardrail, shrubs, property, drainage structures, or other physical features disturbed or damaged during construction, whether shown on the plans or not, to their original or better condition and location and to the satisfaction of the Property Owner and the City of Grove City. Cost to be included in the price bid for the various items.
19. Pruning: Branches or growth which interferes with the free construction of the project may be removed from trees/bushes that are to be saved by the use of pruning tools with prior approval from the City's Urban Forester. All pruning tools used and methods employed shall meet the approval of the City's Urban Forester. The branches shall be removed with a good clean cut made flush with the parent trunk or, if having a good healthy lateral branch, the cut shall be a good clean slanting cut close to and beyond the healthy branch. All pruning cuts shall be painted with an accepted pruning preservative. The cost of all work and expenses connected with tree pruning shall be included in the price bid for CMSC Item 201, Clearing and Grubbing. No extra payment shall be made.
Trees damaged or destroyed that were not designated for removal or approved by the City for removal shall be replaced at the Contractor's expense.
20. Dewatering: The Contractor is solely responsible to the Ohio Department of Natural Resources (ODNR) for registry, maintenance, and abandonment of any withdrawal devices used in the construction of this project.
Installation of any well, well point, pit or other device used for the purpose of lowering the groundwater level to facilitate construction of this project shall be properly abandoned in accordance with the provisions of Section 3745-9-10 of the Ohio Administrative Code or as directed by the Director or his representatives.
The Contractor shall be required to complete and file a Well Log and a Drilling Report Form with ODNR, Division of Water, within 30 days of the completion of installation of any well, well point, pit or other device used for the purpose of removing groundwater from an aquifer, in accordance with Sections 1521.01 and 1521.05 of the Ohio Revised Code. In addition, any such facility that has a capacity to withdraw waters of the State in an amount greater than 100,000 gallons per day from all sources shall be registered by the Contractor with the Chief of the ODNR, Division of Water, within three (3) months of the completion of the facility in accordance with Section 1521.16 of the Ohio Revised Code. Copies of the necessary paperwork can be obtained at ODNR, Division of Water, Fountain Square, Columbus, OH, 43224-1387 - Phone: (614) 265-6717.
The Contractor shall furnish and operate suitable pumping equipment of such capacity, adequate to dewater the trench, should water be encountered. The trench shall be sufficiently dewatered so that the placement of bedding and the laying and joining of pipe is made on firm, dry ground. If dewatering cannot produce acceptable subgrade, and only as directed by the Engineer, unsuitable materials shall be removed and replaced by CMSC Item 906, stone foundation.
The Contractor shall convey all trench water to a natural drainage channel or storm sewer without damage to property. The Contractor shall be responsible to place and maintain the necessary sediment and erosion control measures to filter the dewatering discharge and to prevent erosion at the discharge location. Cost for the above shall be included in the bid price for the various improvement items.
The cost of any dewatering operations required for the construction of the project improvements shall be included in the price bid for the various improvement items.
21. REPLACEMENT OF DRAIN TILES AND STORM SEWERS: All drain tile and storm sewers damaged, disturbed, or removed as a result of the Contractor's operations shall be replaced with the same quality pipe or better, maintaining the same gradient as existing. Replaced drain tile shall be laid on compacted bedding equal in density to surrounding stratum. If possible, the drain tile and/or storm sewer shall be connected to a storm sewer structure, curb underdrain or outlet into the roadway ditch as applicable. Replacement shall be done at the time of the backfill operation. Cost of this work to be included in the price bid for the various items.
22. MAINTAIN DRAINAGE: The flow in all sewers, drains and watercourses encountered shall be maintained by the Contractor at his own expense, and whenever such watercourses and drains are disturbed or destroyed during the prosecution of the work, they shall be restored by the Contractor at his own cost and expense, unless specific provision is made within the Contract Documents for the measure of and payment for such cost specific items, to a condition satisfactory to the City.
23. Inlet Protection: The Contractor is responsible to keep all storm sewer inlets protected from excessive amounts of sediments using adequate filtering devices as approved by the City.
24. Erosion & Sedimentation Control: The Contractor shall provide sediment control at all points where stormwater runoff leaves the project including waterways, overland sheet flow and storm sewers. Erosion and sediment control shall be provided as per the requirements of the City of Grove City and the Standards and Specifications of the "Rainwater and Land Development" manual of the ODNR.
Erosion control measures are to be installed per NPDES permit regulations or as directed by the City, and are to be maintained until such time that they are no longer required by the permit and the City. Cost for erosion and sedimentation control shall be included in the price bid for CMSC Item 207.
All land disturbing activities shall be subject to inspection and site investigation by the City of Grove City and/or the Ohio EPA. Failure to comply with these regulations is subject to legal enforcement action.
The Contractor is responsible to notify the City of Grove City 48 hours prior to commencement of initial site land disturbance on any site of one (1) or more acres. This includes site clearing, grubbing and any earth moving. Primary erosion and sediment control practices are mandated by regulations to be in place from the beginning of the construction activity.
All denuded areas shall have soil stabilization applied within seven (7) days of completion of grading operations if said areas are to remain undisturbed for more than forty-five (45) days.
It is the Contractor's responsibility to maintain the sediment and erosion control features used on this project. The site shall be inspected periodically and within 24 hours of a significant rainfall event. Records of these inspections shall be kept and made available to jurisdictional agencies if requested. Any sediment or debris which has reduced the efficiency of a structure shall be removed immediately. Should a structure or feature become damaged, the Contractor shall repair or replace it at no additional cost to the Owner.
25. Soil Stockpiles: The Contractor shall be responsible for keeping all soil stockpiles, including trench excavation stockpiles, protected from erosion. The areas surrounding the stockpiles are to be protected from sediment with the use of perimeter control devices such as earth or straw bale devices or silt fences. These perimeter control devices shall be maintained for the duration of the project.
26. Disposal of Excess Excavation: The Contractor shall dispose of all excess excavation at an off-site location as approved by the Engineer. For disposal outside the limits of the project the Contractor shall provide a copy of the signed, written agreement between the Contractor and the offsite Landowner before such disposal occurs. This written agreement shall clearly state the purpose of the agreement and indicate the Landowner's permission for such use. Excess excavation material shall not be disposed of within any floodplain area, unless any and all necessary approvals to do so have been obtained.
27. CleanUp: The Contractor shall be responsible for the immediate cleanup of any debris, mud or dirt tracked or spilled on City and/or public streets or private drives whether inside or outside the project area. The Contractor is responsible for the cost of any services contracted and/or completed by the City of Grove City in the cleanup of any tracking or spillage anytime during project construction. The Engineer may require the Contractor to perform weekly street cleaning if excessive amounts of dirt and mud are left along the street. This may include removal by sweeping, power cleaning, or manual methods. The cost of this work shall be included in the various contract items, unless otherwise specified
28. Construction Debris: All debris, rubble, unusable materials, and items not salvaged by the Owner shall become the property of the Contractor and shall be removed from the site by the Contractor and disposed of properly.
29. Maintenance of Traffic Notes: All temporary traffic control devices shall be furnished, erected, maintained and removed by the Contractor in accordance with the Ohio Manual of Uniform Traffic Control Devices for Construction and Maintenance Operations (current edition), copies of which are available from the Ohio Dept. of Transportation, Bureau of Traffic, 1980 West Broad St., Columbus, OH 43223.
Steady-burning, Type "C" lights shall be required on all barricades, drums, and similar traffic control devices in use at night. Cones are NOT approved for use at night.
All trenches within the road right-of-way shall be backfilled or securely plated during non-working hours.
Access to all properties within the project area shall be maintained at all times.
All traffic lanes shall be fully open to traffic from 7:00 a.m. to 9:00 a.m. and 4:00 to 6:00 p.m. weekdays on all roadways within the project area. One lane may be closed to traffic during working hours.
FOR MAJOR THOROUGHFARES AND COLLECTORS:
Two-way, one-lane traffic shall be maintained during construction operations in accordance with page C-18 of the Ohio Manual. A uniformed officer shall be substituted for each flagman shown on that page and such officers shall be present whenever two-way, one-lane operation is in effect.
FOR LOCAL STREETS:
Police Officers are not needed, unless a hazard develops, for two-way, one-lane traffic maintained during construction operations on all local roadways within the project area. If a hazard develops, an off-duty officer may be assigned by the City to the project at the Contractor's expense.
All permanent traffic controls not in conflict with the temporary traffic controls shall be maintained through this project by the Contractor. Permanent traffic controls may be temporarily relocated as approved by the Engineer. The Contractor shall assume all liability for missing, damaged, and improperly placed signs.
Any work done by the City, including installation, modification, removal and/or replacement of permanent traffic control devices as a result of work done by the Contractor or as a result of the negligence of the Contractor shall be at the expense of the Contractor.
All permanent pavement markings and traffic control signs as shown on this plan shall be installed by the Contractor at the Developer's expense. The City of Grove City shall be notified a minimum of forty-eight (48) hours (excluding weekends and holidays) prior to the installation of permanent markings to inspect and approve pavement marking layout before markings are placed.
30. CONCRETE PIPE AND STRUCTURE INSPECTION: All precast concrete products shall be inspected at the location of manufacture. All concrete pipe, storm, and sanitary sewer structures shall be stamped or have such identification noting that said pipe, storm, and sanitary structures have been inspected by the City of Columbus and meets their specifications. Installation of pipe and structures without proper identification shall not be permitted.
31. The installation of all sewer pipe on this project shall be in accordance with Section 901 of the CMSC, unless specifically indicated otherwise, with materials conforming to the appropriate referenced section of CMSC or ODOT CMS. The following pipe materials will be permitted for use for public sewers.
SANITARY SEWER PIPE
<u>Outside of R/W Limits</u>
Flexible Pipe (PVC Pipe per CMSC 720.08 only, ASTM D-3034, SDR 35) will be allowed for sewers up to and including 15" diameter that have a minimum of 4' coverage and a maximum 20' coverage.
Flexible Pipe (PVC Pipe per CMSC 720.08 only, ASTM D-3034, SDR 26) will be allowed for sewers 8"-10" diameter that exceed 20' in depth.
Rigid Pipe will be required for all sewers greater than 15" (Reinforced Concrete Pipe 706.02, Vitrified Clay Pipe 706.08, Ductile Iron 801.03) and for any sewers greater than 10" diameter that will have less than 4' of coverage or more than 20' of coverage.
<u>Within R/W</u>
Flexible Pipe will be allowed for sewers up to an including 15" diameter (PVC Pipe per CMSC 720.08 only, ASTM D-3034, SDR 35) that have a minimum of 4' coverage and a maximum of 20' coverage.
Flexible Pipe (PVC Pipe per CMSC 720.08 only, ASTM D-3034, SDR 26) will be allowed for sewers 8"-10" diameter that exceed 20' in depth.
Rigid Pipe will be required for all sewers greater that 12" (Reinforced Concrete Pipe 706.02, Vitrified Clay Pipe 706.08, Ductile Iron 801.03) and for any sewers greater than 10" diameter that will have less than 4' of coverage or more than 20' coverage.
<u>STORM SEWER PIPE</u>
<u>Outside of Pavement Limits</u>
Flexible Pipe according to the following specifications:
- Polyvinyl Chloride (PVC) pipe <= 15□ diameter with minimum of 4 feet coverage and a maximum of 15 feet coverage shall conform to ODOT CMS 707.45.
- High Density Polyethylene (HDPE) pipe between 12□ and 36□ diameter conforming to ODOT CMS 707.33 with a maximum 15 feet coverage and a minimum 2 feet coverage. Mandrel testing shall be performed per CMSC 901.21

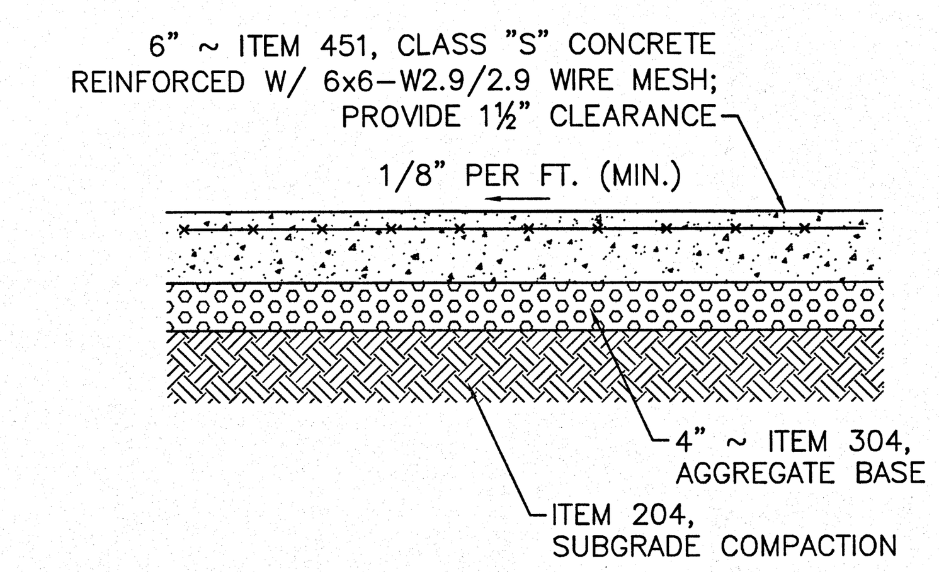
Rigid Pipe will be required for all sewers greater than 36□ diameter (Reinforced Concrete Pipe CMSC 706.02, Concrete Box CMSC 706.05) and is also permitted on all sewers between 12□ and 36□ diameter.
<u>Within Pavement Limits</u>
Flexible Pipe according to the following specifications:
- Flexible pipe which conforms to ODOT CMS 605 may be used for 4□ and 6□ drain tiles.
- High Density Polyethylene (HDPE) pipe of <= 15□ diameter conforming to ODOT CMS 707.33 with a maximum 15 feet coverage and a minimum 2 feet coverage. Mandrel testing shall be performed per CMSC 901.21. Concrete encasement shall be provided when the coverage between the top of pipe and the subgrade is less than 30 inches.

Rigid Pipe will be required for all sewers greater than 15□ (Reinforced Concrete Pipe 706.02. Concrete Box 706.05) and is also permitted for use on 12□ to 15□ sewers.
32. Trench Backfill: Trenches within a 1:1 influence of the roadway and/or pavement, including all points to within 3' behind the curb or edge of pavement, shall be filled and compacted per Type A backfill. Trenches within the right-of-way, but outside the road influence, shall be filled and compacted as per Type B backfill. All other trenches shall be filled and compacted as per Type C backfill at a minimum, or as otherwise indicated within these plans.
All item numbers shown below refer to City of Columbus Construction and Material Specifications (CMSC) item numbers.
<u>Type A backfill</u> shall be granular material, conforming to Item 703.01 No. 4 coarse aggregate or Item 304, as directed by the Engineer, compacted as stipulated in Item 912.03. In all cases granular material shall be used around all manholes, structures and cleanouts. CDF is not permitted unless specifically requested by the City and in such case will be Type I or Type II
<u>Type B backfill</u> shall be natural soil free from stones larger than two inches (2") across their greatest dimension, topsoil, vegetation, debris, rubbish or frozen material, compacted to 95% of its maximum laboratory dry weight and placed per Item 901.17.
<u>Type C backfill</u> shall be natural soil free from stones larger than six inches (6") across their greatest dimension, vegetation, debris, rubbish or frozen material, compacted to 90% of its maximum laboratory dry weight. When approved by the Engineer, rocks no larger than one cubic foot may be deposited at least three feet above the top of the sewer. Aggregate for bedding shall be No. 57 or No. 8, as per Item 703.
The excavated trench width twelve inches (12") above the conduit may be increased without extra compensation.
33. TRENCHES: All trenches shall be maintained as safe as possible by the Contractor at all times and backfilled as soon as practical. All trenches during non-working hours require traffic plates, and/or lighted barricades and construction fence.
34. Water Main Separation: The Contractor shall maintain eighteen inches (18") vertical and ten feet (10') horizontal separations between any water main and sanitary and storm sewers.
35. Deflection Testing: All flexible sewers are subject to Mandrel Testing and video inspection as directed by the City Engineer. Testing shall be performed no sooner than 30 days after the pipe trench has been backfilled and all roadway and site fills over the sewers constructed. The testing shall be completed in conformance with the requirements of CMSC Item 901.21. Maximum deflection shall not exceed 5% of the base inside diameter. Cost of the testing shall be at the expense of the Contractor.
36. Grade Checks: The Contractor shall ensure there is a surveyor's level and rod on the project for use in performing grade checks whenever sewer line structures or pipe are being installed. The Contractor shall make this equipment available for the use of, and assist, the City Inspector in performing grade checks when requested by the Inspector. The Inspector will make all reasonable attempts to confine requests for assistance in performing grade checks to a time convenient to the Contractor.
These checks will be performed to ensure the following:
A. Proper placement of each structure.
B. Proper installation of initial runs of pipe from a structure.
C. Grade, after an overnight or longer shutdown.
D. Grade, at any other time the Inspector has reason to question grade of installation.
A grade check performed by the City Inspector in no way relieves the Contractor from the ultimate responsibility to ensure construction to the plan grade.
37. Grade Changes: If it is determined that the elevation of the existing sewer, or existing appurtenance to be connected to, differs from the plan elevation or results in a change in the plan sewer slope, the Design Engineer shall be notified before starting construction of any portion of the proposed sewer which will be affected by the variance in the existing elevations.
If it is determined that the proposed sewer will intersect an existing sewer or underground utility if constructed as shown on the plan, the Design Engineer shall be notified before starting construction of any portion of the proposed sewer which would be affected by the interference with an existing facility.
Grades and elevations shown on the plans shall not be revised under any circumstances without first obtaining written approval from the City.
38. Structure Adjustment: The Contractor shall field verify the top of casting elevation of all proposed manholes. If precast structures are utilized, a minimum of the top 6" and a maximum of 12" shall be field placed either with grade rings or brick and mortar to allow for field adjustment.
39. TEMPORARY BULKHEAD: The Contractor shall install a temporary bulkhead, where directed on the plans, prior to construction of the proposed sewers and shall maintain same until said sewers are accepted by the City.
40. City Water: The Contractor shall obtain from the City of Columbus, Division of Power and Water (645-8270) a water usage permit and a fire hydrant permit from the Jackson Township Fire Department (875-5588) prior to connection of their water supply lines to any fire hydrant. The Contractor shall provide all the necessary gate valves, backflow preventers, and flow meter for each hydrant location. All equipment, fittings, and valves shall be in accordance with Division of Power and Water Standards. The Contractor shall pay for water at the current City Rates. Use of water from fire hydrants and associated fees are outlined in the City of Grove City Rule and Regulation #93.3. A copy of this regulation is available from the Division of Power and Water, Permit Office, 614-645-7695.
41. WATER PLAN APPROVAL: No person shall begin construction or installation of a public water main until the plans have been approved by the State of Ohio Environmental Protection Agency (OEPA).
42. WATER CONTRACTOR LICENSE: It shall be unlawful for any person to perform any work on City of Columbus waterline systems without first securing a license to engage in such work, as indicated in Columbus City Code Section 1103.02 and 1103.06. This work includes any attachments, additions to or alterations to any city service pipe or appurtenances (including water service lines and taps). This requirement may be met by utilization of a subcontractor who holds a City of Columbus Water Contractor License or a Combined Water/Sewer Contractor License to perform this work. Utilization of a subcontractor must meet the licensing requirements of City of Columbus Building Code, in particular Section 4114.119 and 4114.529.
43. Interruption of Water Service: The Contractor shall give written notice to all affected property owners at least 24 hours, but not more than 72 hours prior to any temporary interruption of water service. Interruption of water service shall be held to a minimum and shall be approved by the City of Grove City.
44. WATER MAIN MATERIALS: All water main material on this project shall be in accordance with Item 801 of the CMSC. All water main installation and testing shall be in accordance with the current rules and regulations of the City of Columbus, Division of Power and Water.
45. EXISTING VALVES: All existing valves shall be operated by City of Columbus, Division of Power and Water personnel only, as stated in Chapter 1113 of the Columbus City Code.
46. WATER MAIN CLEANING AND FLUSHING: All water mains shall be cleaned and flushed in accordance with section 801.11 of the City of Columbus, Construction and Material Specifications. Additionally, water main 12-inch and larger must also be properly pigged.
47. TESTING PROCEDURE: All water mains shall be hydrostatically tested in accordance with Item 801.12 of the CMSC. Cost of this work is to be included in the unit price bid for the respective pipe under CMSC Item 801.
Each valved section of water main shall be tested independently of one another unless otherwise approved by the City Engineer. Pressure test shall be conducted with all watch valves open and hydrant foot valves closed.
Any testing performed against existing valves shall be at the Contractor's risk and in strict compliance with the requirements of the City. If satisfactory results cannot be obtained against an existing valve, the new line shall be disconnected from the existing valve, plugged and retested. Disconnection from the existing water main and any repairs necessary because of damage caused to the existing lines, valves and service connections shall be at the Contractor's expense.
48. DISINFECTION: All water mains shall be disinfected in accordance with Section 801.13 of the City of Columbus Construction and Material Specifications (CMSC). Special attention is directed to applicable sections of AWWA C-651, particularly for flushing (Section 5) and for chlorinating valves and fire hydrants (Section 7). The Contractor shall be responsible for all costs associated with all water mains constructed under this plan.
49. HAND SWABBING: The Contractor shall hand swab all pipes and fittings that are not otherwise disinfected. The amount of chlorine to be used during hand swabbing operations will be determined by the City of Grove City.
50. SERVICE TRANSFER AND WATERLINE ABANDONMENT: Where indicated on plans, the existing waterlines shall be abandoned and existing water services off these lines, indicated on the plans and shown by house number, shall be transferred to the new waterline.
Prior to abandonment of existing waterlines, the proposed new waterlines shall be tested and chlorinated and then the existing services shall be transferred to the new waterlines. The Contractor shall maintain water service to all water customers affected by transfer of service.
The disposition of all other existing services shown on the plans and not indicated as transfers shall be coordinated with the City prior to any action.
To ensure that all existing water services are transferred to the new waterline, no waterline shall be abandoned until all affected water services have been transferred; the new waterline is put in service; and the existing waterline to be abandoned has been shut down for 24 hours.
All visible valve and service boxes on the waterline to be abandoned, which will no longer be in service, shall be removed.
The required surface restoration shall be paid for under the appropriate bid Item(s).
51. SERVICE CONNECTION PERMITS: No service connection permits shall be issued or connection made to any service taps until the waterline has been disinfected by the City of Columbus, Division of Power and Water.
52. BLOCKING: All fittings shall be adequately restrained with concrete blocking per the City of Columbus standard construction drawings. All fittings to be backed must be thoroughly wrapped in a plastic sheeting prior to placing concrete.
53. EXISTING PLUGS, CAPS, ETC.: Plugs and caps removed from existing waterlines shall be delivered to the Water Services Center, 4035 Broadway, Grove City, Ohio, unless otherwise directed by the City Engineer. No additional payment will be made for this delivery.
54. FIRE HYDRANT REPLACED OR RELOCATED: No existing fire hydrants to be replaced or relocated shall be removed, or taken out of service, until the new waterlines are in service and the new fire hydrants are accepted by the Jackson Township Fire Department.
55. WATER SERVICES: Where and as shown on the plans, the water services shall be extended from the normal locations of the permanent box and curb stop to its terminus point with Copper Type K and a temporary box set at the end of the extension.
56. WATER METERS: All water meters associated with this project shall be installed inside the proposed structure unless a meter pit is approved by the Administrator of the Division of Power and Water, City of Columbus. All meter pits must conform to Standard Drawing L-7103, A & B for 5/8" through 1" meters or L-6317, A & B for 1 1/2" or larger meters.
57. POLYETHYLENE ENCASEMENT: Contractor shall wrap all ductile iron pipe with tube style 8 mil linear low density polyethylene (LLDPE) film made from virgin polyethylene only (no recycled material) per AWWA C-105. The color shall be black with nominal 2% carbon black UV inhibitor and printed per the AWWA C-105 standard. Installation shall be done in accordance with the "Polyethylene Encasement Installation Guide" written by the Ductile Iron Pipe Research Association (DIPRA).
All lumps of clay, mud, cinders, etc., on the pipe surface shall be removed before the pipe is covered with polyethylene. When lifting polyethylene-encased pipe use a fabric type sling or padded cable. Joints shall be overlapped and taped. Fold excess slack over the top of the pipe and tape every three (3) feet. Small holes or tears shall be repaired with a piece of tape place over the hole. Large holes or tears should be repaired by taping another piece of polyethylene over the hole. To avoid damage during backfilling allow adequate slack in the film tube at joints. Backfill material shall be free of cinders, rocks, boulders, nails, sticks or other material that will damage the polyethylene sleeve.
Appurtenances such as bolted joints, valves, service taps shall also be wrapped. For service taps, wrap two/three layers of tape completely around the polyethylene-encased pipe to cover the area where tapping machine will contact the pipe. Install corporation stop directly through the tape and polyethylene. Wrap copper service at least three feet (3') back from installation with tape and additional polyethylene film to prevent electrolysis.
All work necessary to furnish and install the polyethylene encasement shall be included in the price bid for Item 801.
58. BACKFILL TESTING: Prior to construction of the public roadway, soil density tests shall be made on all sanitary sewer and designated storm sewer trenches which cross the proposed pavements or which lie such that the proposed pavements are located within any part of the influence line of said trench. Where said results indicate that the trench backfill does not meet the compaction requirements of Item 912.03 of the Construction ad Material Specifications (CMSC), all backfill material shall be removed, replaced, and re-tested until compaction meets said requirements of Item 912.03.
59. RECORD PLANS: The Developer is responsible for providing "Record Plan" construction drawings to the City of Grove City after the project has been completed. The plans must include top of casting and invert elevations for all sanitary and storm structures and identify any and all field modifications to, and deviations from, the approved plan set. A redline set of plans reflecting the "Record Plan" information shall be kept by the project Inspector and provided to the City Engineer for review and subsequent preparation of the record plan drawings. If the redline plans are incomplete or missing information, the Developer shall be responsible for supplying the missing information by field survey or other means to facilitate a complete set of record drawings.

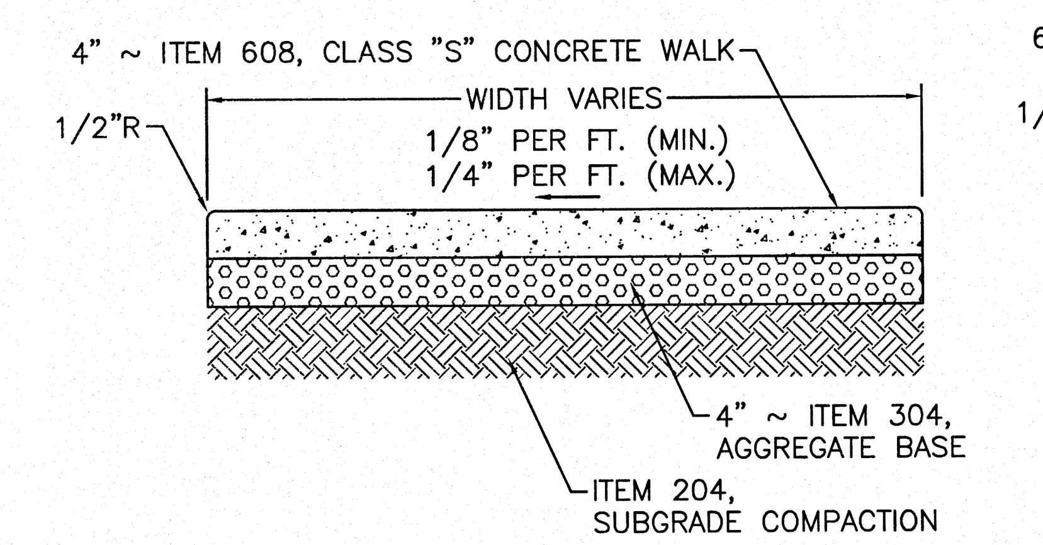


12"x12" THICKENED SLAB AND REBAR TO BE PROVIDED AROUND ENTIRE PERIMETER

DUMPSTER APPROACH (5)
NOT TO SCALE

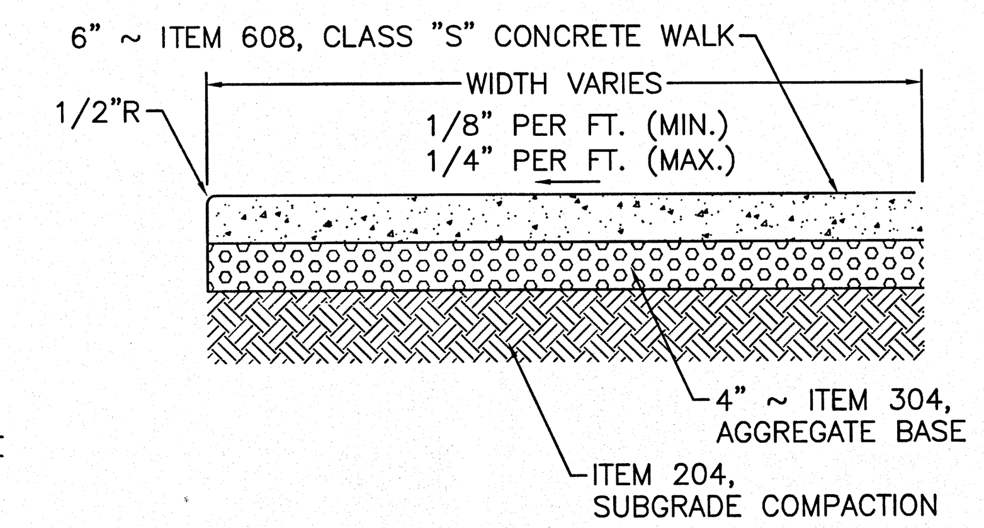


CONCRETE PAVEMENT/ DUMPSTER PAD (7)
NOT TO SCALE



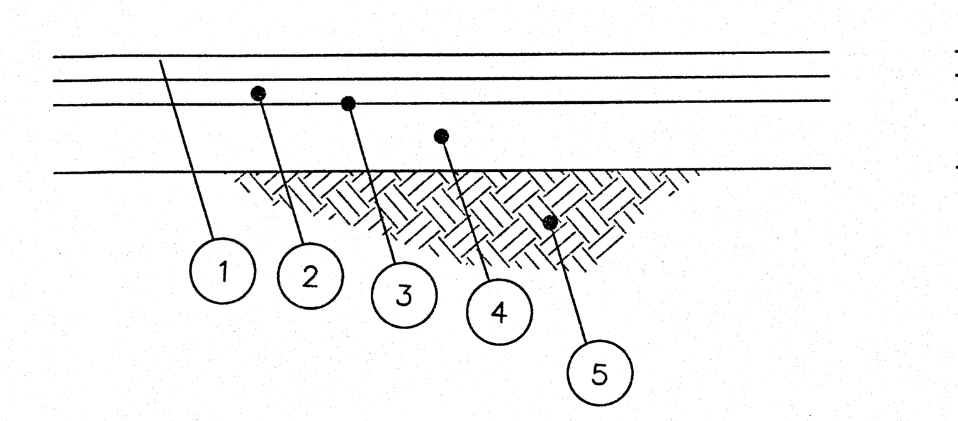
FOR SIDEWALK WITHIN THE RIGHT-OF-WAY, SEE GROVE CITY DRAWING C-GC-46.

STD. CONCRETE SIDEWALK (6)
NOT TO SCALE



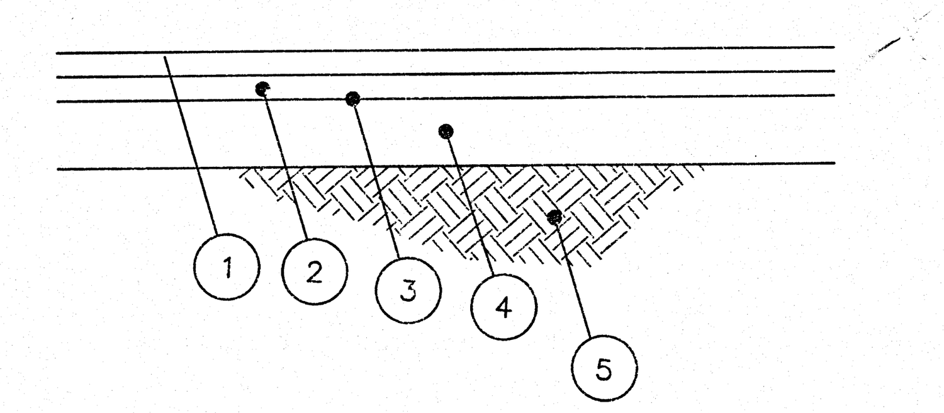
FOR SIDEWALK WITHIN THE RIGHT-OF-WAY, SEE GROVE CITY DRAWING C-GC-46.

HEAVY DUTY CONCRETE SIDEWALK (8)
NOT TO SCALE



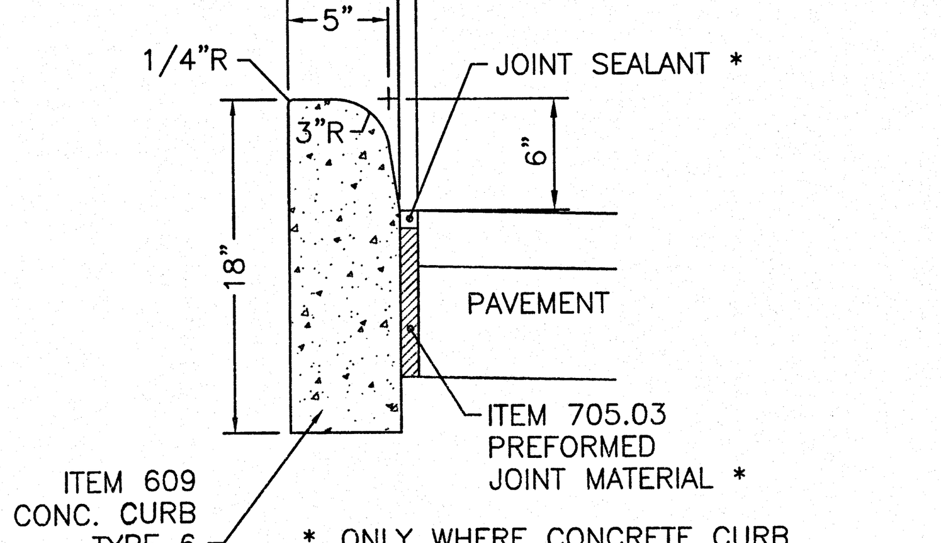
1. 1 1/2" ~ ITEM 448, ASPHALT CONCRETE, SURFACE COURSE TYPE 1, PG-64-22
2. 1 1/2" ~ ITEM 448, ASPHALT CONCRETE, INTERMEDIATE COURSE TYPE 2, PG-64-22
3. ITEM 408, PRIME COAT (0.35 GAL/SY)
4. 8" ~ ITEM 304, AGGREGATE BASE
5. ITEM 204, SUBGRADE COMPACTION

STANDARD DUTY PAVEMENT (1)
NOT TO SCALE



1. 1 1/2" ~ ITEM 448, ASPHALT CONCRETE, SURFACE COURSE TYPE 1, PG-64-22
2. 2 1/2" ~ ITEM 448, ASPHALT CONCRETE, INTERMEDIATE COURSE TYPE 2, PG-64-22
3. ITEM 408, PRIME COAT (0.35 GAL/SY)
4. 10" ~ ITEM 304, AGGREGATE BASE
5. ITEM 204, SUBGRADE COMPACTION

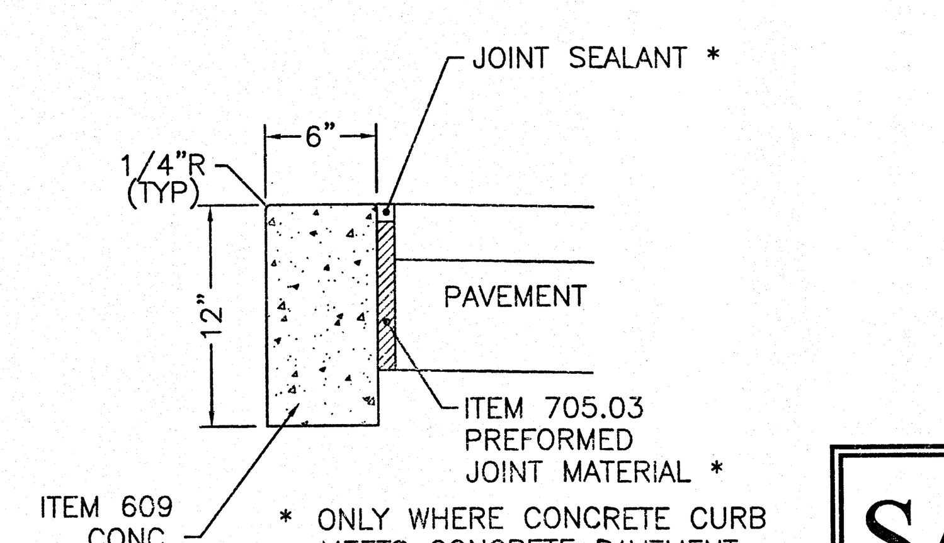
HEAVY DUTY PAVEMENT (3)
NOT TO SCALE



* ONLY WHERE CONCRETE CURB MEETS CONCRETE PAVEMENT

FOR CURB WITHIN THE RIGHT-OF-WAY, SEE SEE GROVE CITY DRAWING C-GC-58.

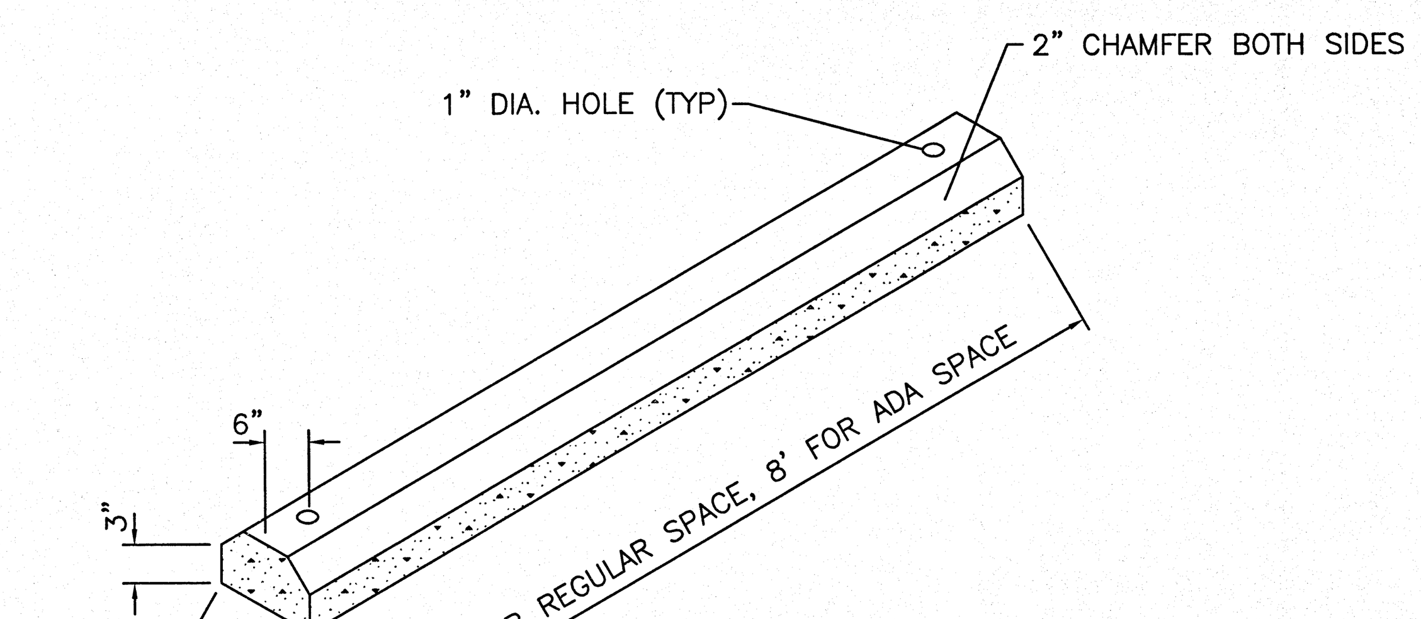
STANDARD CONCRETE CURB (2)
NOT TO SCALE



* ONLY WHERE CONCRETE CURB MEETS CONCRETE PAVEMENT

USE THIS SECTION IN ALL AREAS WHERE ASPHALT DOES NOT MEET CONCRETE PAVEMENT OR SIDEWALK.

ASPHALT CONTAINMENT CURB (4)
NOT TO SCALE



NOTES:
1. PARKING BLOCK REQURED FOR ALL PARKING SPACES SHOWN ON THE PLANS, INCLUDING SPACES WITHIN THE CARPORTS.

2. REQUIRES 2 5/8"x2'-0" STEEL BAR STAKES FOR EACH CURB SECTION. CURB REINF. W/2 #3 REBARS. LOCATE PARKING CURB 3' FROM FACE OF SIDEWALK HEADER OR EDGE OF PAVEMENT.

PRECAST PARKING BLOCK (9)
NOT TO SCALE

GROVE CITY STANDARD DRAWINGS

C-GC-30
C-GC-37
C-GC-38
C-GC-41B
C-GC-43C
C-GC-46
C-GC-58
C-GC-80

ODOT STANDARD DRAWINGS

CB1.2 - CB 2-3

CITY OF COLUMBUS

L-7401

SANDS DECKER CPS
ENGINEERS ▪ SURVEYORS

11 WEST MAIN ST
PO BOX 188
LOGAN, OH 43138
740-385-2140

1495 OLD HENDERSON RD
COLUMBUS, OH 43220
614-459-6992
FAX: 614-459-6987
TOLL FREE: 866-277-0600

507 MAIN STREET, SUITE 203
ZANESVILLE, OH 43701
740-450-1640

LAMPLIGHTER SENIOR VILLAGE II
FINAL DEVELOPMENT PLAN
GROVE CITY, OHIO

OWNER:
LAMPLIGHTER II SENIOR HOUSING LLC
184 WEST MAIN STREET
ASHVILLE, OHIO 43103
740-983-4566

SCALE: - AS NOTED

DATE: AUGUST 31, 2015	SHEET: C1.05

THE STORM WATER POLLUTION PREVENTION PLAN (SWP3) FOR THIS PROJECT IS COMPOSED OF THESE DRAWINGS (AND THE NPDES CONSTRUCTION STORM WATER GENERAL PERMIT, INCLUDING ALL REQUIREMENTS THEREIN, THE PROJECT DRAWINGS, AND ALL SUPPLEMENTAL INFORMATION INCLUDED/ADDED BY THE CONTRACTOR(S) AS APPROVED/ACCEPTED BY THE ENGINEER. THIS PLAN SHALL NOT BE CONSIDERED ALL INCLUSIVE AS THE GENERAL CONTRACTOR SHALL TAKE ALL NECESSARY PRECAUTIONS TO PREVENT SOIL SEDIMENT FROM LEAVING THE SITE.

ADDITIONAL EROSION AND SEDIMENT CONTROL PRACTICES NOT ALREADY SPECIFIED ON THIS PLAN MAY BE NECESSARY DUE TO UNFORESEEN ENVIRONMENTAL CONDITIONS AND/OR CHANGES IN DRAINAGE PATTERNS CAUSED BY EARTH-DISTURBING ACTIVITY.

FACILITY:
LAMPLIGHTER SENIOR VILLAGE II
GROVE CITY, OHIO 43123
OWNER/OPERATOR:
LAMPLIGHTER SENIOR VILLAGE II LLC.
184 WEST MAIN STREET
ASHVILLE, OH 43103
TODD VALENTINE
PHONE (740) 983-4566

SITE DESCRIPTION:
A. PROJECT CONSISTS OF THE CONSTRUCTION OF A MULTI UNIT SENIOR LIVING COMMUNITY & ASSOCIATED INFRASTRUCTURE, DRIVES & PARKING.
B. TOTAL AREA OF SITE – 7.80 ACRES
TOTAL AREA DISTURBED – 7.8 ACRES
C. PRE-CONSTRUCTION RUNOFF COEFFICIENT – 0.79
POST-CONSTRUCTION RUNOFF COEFFICIENT – 0.89
D. IMPERVIOUS AREA CREATED BY CONSTRUCTION ACTIVITY – 3.59 ACRES
PERCENT OF IMPERVIOUSNESS – 51.57%
E. EXISTING SOIL DATA SHOWN FROM USDA/NCRS WEB SOIL SURVEY: CrA – CROSBY SILT LOAM 0-2% SLOPES.
STORM WATER DISCHARGE QUALITY INFORMATION NOT AVAILABLE.
F. PRIOR LAND USE AT THE SITE – AGRICULTURAL.
G. SEE TIMING OF SEDIMENT-TRAPPING PRACTICES, INSPECTION SCHEDULE & OTHER EROSION CONTROL NOTES FOR IMPLEMENTATION SEQUENCING.
H. SITE STORM WATER IS TRIBUTARY TO AN UN-NAMED TRIBUTARY TO THE SCIOTO RIVER.

CONTRACTOR/CONSTRUCTION MANAGER RESPONSIBILITY:
A. THE CONTRACTOR SHALL COMPLY WITH ALL STATE AND LOCAL ORDINANCES THAT APPLY AND IS RESPONSIBLE FOR COMPLYING WITH ALL REQUIREMENTS OF THE NPDES CONSTRUCTION STORM WATER GENERAL PERMIT.
B. THE SWP3, INCLUDING COPIES OF THE NOI, THE LETTER GRANTING PERMIT COVERAGE AND THE NPDES CONSTRUCTION STORM WATER GENERAL PERMIT SHALL BE MAINTAINED ON-SITE FOR THE DURATION OF THE PROJECT. THE SWP3 MUST BE SIGNED BY THE PERMITTEE OR A DULY AUTHORIZED REPRESENTATIVE, AS DEFINED IN THE GENERAL PERMIT (PART V.G).

CERTIFICATION:
I HEREBY CERTIFY UNDER PENALTY OF LAW THAT THIS DOCUMENT AND ALL ATTACHMENTS WERE PREPARED UNDER MY DIRECTION OR SUPERVISION IN ACCORDANCE WITH A SYSTEM DESIGNED TO ASSURE THAT QUALIFIED PERSONNEL PROPERLY GATHERED AND EVALUATED THE INFORMATION SUBMITTED. BASED ON MY INQUIRY OF THE PERSON OR PERSONS WHO MANAGE THE SYSTEM OR THOSE PERSONS DIRECTLY RESPONSIBLE FOR GATHERING THE INFORMATION, THE INFORMATION SUBMITTED IS TO THE BEST OF MY KNOWLEDGE AND BELIEF, TRUE, ACCURATE AND COMPLETE. I AM AWARE THAT THERE ARE SIGNIFICANT PENALTIES FOR SUBMITTING FALSE INFORMATION, INCLUDING THE POSSIBILITY OF FINE AND IMPRISONMENT FOR KNOWING VIOLATIONS.

_____ _____
PERMITTEE DATE

TIMING OF SEDIMENT-TRAPPING PRACTICES: SEDIMENT CONTROL PRACTICES SHALL BE FUNCTIONAL THROUGHOUT ANY SITE DEMOLITION AND/OR EARTH-DISTURBING ACTIVITY.

PERIMETER CONTROLS & OTHER PRACTICES INTENDED TO TRAP SEDIMENT SHALL BE IMPLEMENTED WITHIN 7 DAYS FROM THE START OF GRUBBING. THEY SHALL CONTINUE TO FUNCTION UNTIL THE UPSLOPE DEVELOPMENT AREA IS RESTABILIZED.

FOR DISTURBED AREAS WITHIN 50 FEET OF A STREAM REMAINING DORMANT FOR OVER 21 DAYS, TEMPORARY EROSION CONTROLS SHALL BE APPLIED WITHIN 2 DAYS.

FOR DISTURBED AREAS OVER 50 FEET FROM A STREAM REMAINING DORMANT FOR OVER 21 DAYS, TEMPORARY EROSION CONTROLS SHALL BE APPLIED WITHIN 7 DAYS.

FOR DISTURBED AREAS THAT WILL BE LEFT IDLE OVER WINTER, TEMPORARY EROSION CONTROLS SHALL BE APPLIED PRIOR TO ONSET OF WINTER WEATHER.

FOR DISTURBED AREAS WITHIN 50 FEET OF A STREAM, AT FINAL GRADE, PERMANENT EROSION CONTROLS SHALL BE APPLIED WITHIN 2 DAYS OF REACHING FINAL GRADE.

FOR DISTURBED AREAS REMAINING DORMANT FOR OVER 1 YEAR OR AT FINAL GRADE, PERMANENT EROSION CONTROLS SHALL BE APPLIED WITHIN 7 DAYS.

SEDIMENT CONTROL DEVICES SHALL BE IMPLEMENTED FOR ALL AREAS REMAINING DISTURBED FOR OVER 14 DAYS.

SEDIMENT BARRIERS: SHEET FLOW RUNOFF FROM DENUDED AREAS SHALL BE FILTERED OR DIVERTED TO A SETTLING FACILITY.

SEDIMENT BARRIERS SUCH AS SEDIMENT FENCE OR DIVERSIONS TO SETTLING FACILITIES SHALL PROTECT ADJACENT PROPERTIES & WATER RESOURCES FROM SEDIMENT TRANSPORTED BY SHEET FLOW.

TEMPORARY EROSION CONTROL FEATURES SHALL BE ACCEPTABLY MAINTAINED & SHALL BE REMOVED OR REPLACED WHEN DIRECTED BY THE ENGINEER AT NO COST TO THE OWNER. ALL WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE SPECIFICATIONS.

ALL CONCENTRATED WATER SOURCES SHALL DISCHARGE INTO A VIABLE SEDIMENT BASIN.

SEDIMENT BASINS SHALL BE CLEANED OUT ANY TIME ACCUMULATED SILT OCCUPIES 40% OF THE BASIN DEPTH.

ALL WATER SOURCES SHALL DISCHARGE IN A NON-EROSIVE MANNER.

ALL SOIL STOCKPILES SHALL BE PROTECTED FROM EROSION BY PERIMETER CONTROL DEVICES SUCH AS STRAW BALE DIKES OR SILT FENCES. THESE PERIMETER CONTROL DEVICES SHALL BE MAINTAINED THROUGHOUT THE LIFE OF THE PROJECT.

PERMANENT VEGETATION SHALL NOT BE CONSIDERED ESTABLISHED UNTIL GROUND COVER IS ACHIEVED WHICH, IN THE OPINION OF THE ENGINEER, PROVIDES ADEQUATE COVER & IS MATURE ENOUGH TO CONTROL SOIL EROSION SATISFACTORILY & TO SURVIVE ADVERSE WEATHER CONDITIONS.

INSPECTION SCHEDULE:
1. DIVERSION SWALE & STRUCTURAL PROTECTION – INSPECT EVERY 15 DAYS OR AFTER EACH RAINSTORM PRODUCING RUNOFF. REPAIR AS REQUIRED.

2. INLET PROTECTION – INSPECT FOR SEDIMENT ACCUMULATION AFTER EACH RAINFALL & DAILY DURING CONTINUED RAINFALL. REPAIR OR REPLACE WHEN WATER FLOW IS RESTRICTED BY SEDIMENT.

3. VEGETATIVE PLANTING – INSPECT AFTER SPROUTING OCCURS & REPLANT BARE AREAS. INSPECT ESTABLISHED COVER EVERY 15 DAYS FOR DAMAGE. REPLANT AS REQUIRED. MAINTAIN ESTABLISHED COVER AT MAXIMUM 6" HEIGHT. IRRIGATE AS REQUIRED DURING DRY PERIODS TO MAINTAIN LIVE VEGETATION.

NON-SEDIMENT POLLUTANT CONTROLS: HAZARDOUS/TOXIC WASTES SHALL NOT BE DISPOSED OF ON-SITE OR DUMPED INTO SEWERS, DRAINS OR CATCH BASINS. ANY HAZARDOUS/TOXIC WASTE SHALL BE DISPOSED OF OFF-SITE AT AN APPROVED LOCATION AND/OR TAKEN TO AN APPROVED RECYCLING CENTER.

CONSTRUCTION SEQUENCE:

1. THE CONTRACTOR SHALL ESTABLISH A STABILIZED CONSTRUCTION ENTRANCE.
2. THE CONTRACTOR SHALL PLACE THE REQUIRED SEDIMENT FENCE, DITCH CHECKS AND OTHER PERIMETER CONTROLS.
3. THE CONTRACTOR SHALL ESTABLISH ALL SEDIMENT BASINS AND SEDIMENT CONTROL STRUCTURES INCLUDING THE DETENTION POND AND OUTLET STRUCTURE PRIOR TO DENUDING.
4. THE CONTRACTOR SHALL PERFORM SITE EARTHWORK OPERATIONS IN ACCORDANCE WITH THE PLAN DETAILS AND NOTES. PROVISIONS FOR INLET PROTECTION SHALL BE ESTABLISHED AS REFERENCED BY THE DETAILS SHOWN HEREIN. THE CONTRACTOR SHALL APPLY WATER OR DUST PALLIATIVE ON DISTURBED AREAS DURING CONSTRUCTION TO ALLEVIATE OR PREVENT DUST NUISANCE PER ITEM 616. DUST PALLIATIVE SHALL CONSIST OF CALCIUM CHLORIDE MEETING THE REQUIREMENTS OF SECTION 712.02. THE WATER OR CALCIUM CHLORIDE SHALL BE SPREAD UNIFORMLY OVER THE SURFACE OF THE DISTURBED AREAS.
5. EXPOSED SLOPES SHALL BE STABILIZED AS SOON AS THEY ARE CONSTRUCTED.
6. THE CONTRACTOR SHALL PLACE SEEDING AND MULCHING AS NECESSARY TO STABILIZE ALL DENUDED AREAS. ALL DENUDED AREAS SHALL HAVE SOIL STABILIZATION APPLIED WITHIN SEVEN (7) DAYS OF DISTURBANCE IF THEY ARE TO BE SUBSTANTIALLY UNWORKED FOR MORE THAN 21 DAYS OR IF THEY ARE AT FINAL GRADE.
7. THE CONTRACTOR SHALL REMOVE AND DISPOSE OF THE EROSION CONTROL DEVICES ONLY AFTER ALL AREAS HAVE ESTABLISHED VEGETATIVE COVER.
8. AFTER REMOVAL OF EROSION CONTROL DEVICES, THE CONTRACTOR SHALL CLEAN ALL INLETS AND STORM PIPES OF ALL SEDIMENT INCURRED DURING CONSTRUCTION. THE CONTRACTOR SHALL DREDGE ALL SEDIMENT DEPOSITED WITHIN THE RETENTION POND AND PROVIDE CONFIRMATION THAT THE BASIN HAS BEEN RESTORED TO ITS DESIGN GRADE THROUGH THE COMPLETION OF A BASIN VERIFICATION SURVEY.

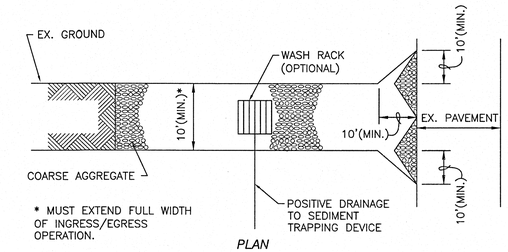
THE PERMITTEE OR HIS/HER AGENT SHALL MAKE REGULAR INSPECTIONS OF ALL CONTROL MEASURES IN ACCORDANCE WITH THE INSPECTION SCHEDULE OUTLINED ON THE APPROVED EROSION AND SEDIMENT CONTROL PLAN(S). THE PURPOSE OF SUCH INSPECTIONS WILL BE TO DETERMINE THE OVERALL EFFECTIVENESS OF THE CONTROL PLAN AND THE NEED FOR ADDITIONAL CONTROL MEASURES. ALL INSPECTIONS SHALL BE DOCUMENTED IN WRITTEN FORM.

OEPA NOTICE OF INTENT (NOI): DEVELOPER SHALL OBTAIN A NOI FROM THE OEPA AND MAINTAIN SWP3 PROVISIONS THROUGHOUT THE DURATION OF THE PROJECT. NO CONSTRUCTION WORK SHALL BEGIN WITHOUT AN APPROVED AND CURRENT OHIO EPA NOTICE OF INTENT (NOI).

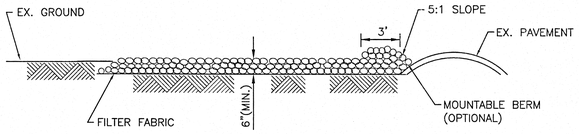
EROSION CONTROL FABRIC: JUTE MATTING, EXCELSIOR MATTING OR A SIMILAR PRODUCT IS TO BE APPLIED ON SLOPES OF 2:1 OR GREATER. INSTALL MATTING PER MANUFACTURER AND INDUSTRY STANDARDS.

CONCRETE WASHOUT AREA: THE CONTRACTOR SHALL PROVIDE FOR AN ISOLATED CONCRETE WASHOUT AREA ONSITE. THIS LOCATION SHALL BE SHOWN ON THE CONSTRUCTION DRAWINGS OR, IF NOT SHOWN, THE LOCATION SHALL BE DETERMINED AT THE PRECONSTRUCTION CONFERENCE. NO CONCRETE DISPENSING VEHICLES SHALL BE PERMITTED TO DISCHARGE WASH WATER INTO A PRIVATE OR PUBLIC STORM SEWER SYSTEM.

ALL CONSTRUCTION AND DEMOLITION DEBRIS WASTE SHALL BE RECYCLED OR DISPOSED OF IN AN OHIO EPA APPROVED CONSTRUCTION AND DEMOLITION DEBRIS LANDFILL AS REQUIRED BY OHIO REVISED CODE 3714.



PLAN



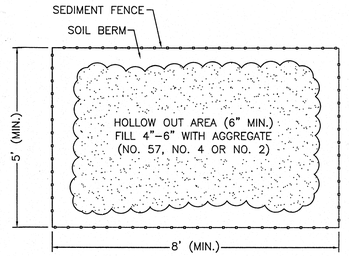
SECTION

CONSTRUCTION SPECIFICATIONS

1. STONE SIZE – USE 2" STONE OR RECLAIMED/RECYCLED CONCRETE EQUIVALENT.
2. LENGTH – AS REQUIRED.
3. THICKNESS – NOT LESS THAN 6".
4. WIDTH – 10' MINIMUM, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
5. FILTER CLOTH – WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER – ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL, A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE – THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHT-OF-WAY. THIS MAY REQUIRE TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND & REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WASHING – WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAYS. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE.
9. PERIODIC INSPECTION & NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.
10. CONTRACTOR TO DETERMINE LOCATION AS NEEDED.

TEMPORARY CONSTRUCTION ENTRANCE 4

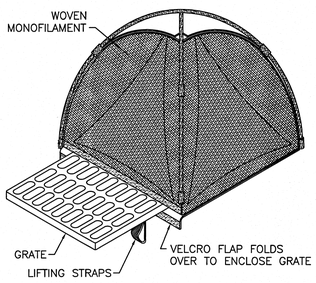
NOT TO SCALE



CONTRACTOR TO DETERMINE LOCATION AS NEEDED.

CONCRETE WASHOUT AREA 5

NOT TO SCALE

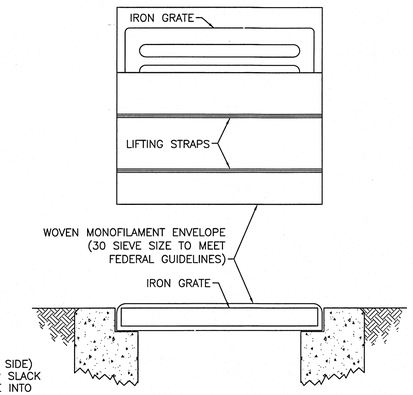


INSTALLATION: OPEN UNIT NEAR THE INLET. IF USING OPTIONAL OIL ABSORBENTS, PLACE ABSORBENT PILLOW ON BOTTOM (BELOW-GRADE SIDE) OF UNIT. REMOVE GRATE FROM FRAME & PLACE INTO UNIT. PULL UP SLACK & SEAL TO ENCLOSE GRATE. HOLDING LIFTING STRAPS, INSERT GRATE INTO INLET MAKING SURE THAT GRATE SEATS COMPLETELY IN FRAME.

MAINTENANCE: REMOVE ALL ACCUMULATED SEDIMENT & DEBRIS FROM PANELS, SURFACE & VICINITY OF UNIT AFTER EACH RAIN EVENT. REMOVE SEDIMENT THAT HAS ACCUMULATED WITHIN CONTAINMENT AREA OF UNIT AS NEEDED. IF USING OPTIONAL OIL ABSORBENTS, REMOVE & REPLACE ABSORBENT PILLOW WHEN NEAR SATURATION.

INLET PROTECTION (LAWN AREAS) 1

NOT TO SCALE



TO INSPECT CATCH BASIN: REMOVE UNIT WITH GRATE INSIDE, INSPECT BASIN AND REPLACE UNIT.

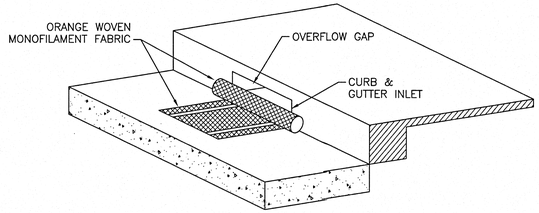
MAINTENANCE: REMOVE DRIED SEDIMENT FROM SURFACE OF UNIT AS NEEDED WITH STIFF BROOM OR SQUARE SHOVEL. REMOVE FINE MATERIAL FROM INSIDE ENVELOPE AS NEEDED.

INLET PROTECTION (PAVEMENT AREAS) 2

NOT TO SCALE

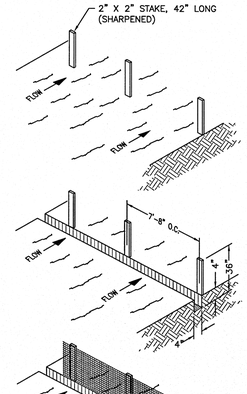
INSTALLATION: THE EMPTY INLET PROTECTION UNIT SHOULD BE PLACED OVER THE GRATE AS THE GRATE STANDS ON END. IF USING OPTIONAL OIL ABSORBENTS; PLACE ABSORBENT PILLOW ON POUCH, ON THE BOTTOM (BELOW-GRATE SIDE) OF THE UNIT. ATTACH ABSORBENT PILLOW TO TETHER LOOP. TUCK THE ENCLOSURE FLAP INSIDE TO COMPLETELY ENCLOSE THE GRATE. HOLDING THE LIFTING DEVICES (DO NOT RELY ON LIFTING DEVICES TO SUPPORT THE ENTIRE WEIGHT OF THE GRATE), PLACE THE GRATE INTO ITS FRAME (STREET SIDE FIRST), THEN LOWER BACK EDGE WITH DAM INTO PLACE. THE UNIT SHOULD BE PARTIALLY BLOCKING THE CURB HOOD WHEN INSTALLED PROPERLY.

MAINTENANCE: REMOVE ALL ACCUMULATED SEDIMENT & DEBRIS FROM SURFACE & VICINITY OF UNIT AFTER EACH STORM EVENT. REMOVE SEDIMENT THAT HAS ACCUMULATED WITHIN THE CONTAINMENT AREA OF THE UNIT AS NEEDED. IF USING OPTIONAL OIL ABSORBENTS, REMOVE & REPLACE ABSORBENT PILLOW WHEN NEAR SATURATION.



INLET PROTECTION (CURB & GUTTER INLETS) 3

NOT TO SCALE



SILT FENCE: THIS SEDIMENT BARRIER UTILIZES STANDARD STRENGTH OR EXTRA STRENGTH SYNTHETIC FILTER FABRIC & IS DESIGNED FOR SITUATIONS IN WHICH ONLY SHEET OR OVERLAND FLOWS ARE EXPECTED.

1. HEIGHT OF SILT FENCE SHALL NOT EXCEED 36". HIGHER FENCES MAY IMPOUND VOLUMES OF WATER SUFFICIENT TO CAUSE FAILURE OF THE STRUCTURE.

2. FILTER FABRIC SHALL BE PURCHASED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE BARRIER TO AVOID THE USE OF JOINTS. WHEN JOINTS ARE NECESSARY, FILTER CLOTH SHALL BE SPLICED TOGETHER ONLY AT A SUPPORT POST, WITH A MINIMUM 6" OVERLAP, & SECURELY SEALED.

3. POSTS SHALL BE SPACED AT 10' (MAX.) APART AT THE BARRIER LOCATION & DRIVEN SECURELY INTO THE GROUND 12" (MIN.). WHEN EXTRA STRENGTH FABRIC IS USED WITHOUT THE WIRE SUPPORT FENCE, POST SPACING SHALL NOT EXCEED 6'.

4. A TRENCH SHALL BE EXCAVATED APPROXIMATELY 4" WIDE & 4" DEEP ALONG THE LINE OF POSTS & UP-SLOPE FROM THE BARRIER.

5. WHEN STANDARD STRENGTH FILTER FABRIC IS USED, A WIRE MESH SUPPORT FENCE SHALL BE FASTENED SECURELY TO THE UP-SLOPE SIDE OF THE POSTS USING HEAVY DUTY WIRE STAPLES AT LEAST 1" LONG, TIE WIRES OR HOG RINGS. THE WIRE SHALL EXTEND INTO THE TRENCH 2" (MIN.) & SHALL NOT EXTEND MORE THAN 36" ABOVE THE ORIGINAL GROUND SURFACE.

6. STANDARD STRENGTH FILTER FABRIC SHALL BE STAPLED OR WIRED TO THE FENCE, & 8" OF THE FABRIC SHALL BE EXTENDED INTO THE TRENCH. FABRIC SHALL NOT EXTEND MORE THAN 36" ABOVE THE ORIGINAL GROUND SURFACE. FILTER FABRIC SHALL NOT BE STAPLED TO EXISTING TREES.

7. WHEN EXTRA STRENGTH FILTER FABRIC & CLOSER POST SPACING ARE USED, THE WIRE MESH SUPPORT FENCE MAY BE ELIMINATED. IN SUCH CASE, FILTER FABRIC IS STAPLED OR WIRED DIRECTLY TO POSTS WITH ALL OTHER PROVISIONS OF ITEM NO. 6 APPLYING.

8. THE TRENCH SHALL BE BACKFILLED & SOIL COMPACTED OVER THE FILTER FABRIC.

9. SILT FENCES SHALL BE REMOVED WHEN THEY HAVE SERVED THEIR USEFUL PURPOSE, BUT NOT BEFORE THE UP-SLOPE AREA HAS BEEN PERMANENTLY STABILIZED.

MAINTENANCE:

SILT FENCES & FILTER BARRIERS SHALL BE INSPECTED IMMEDIATELY AFTER EACH RAINFALL & AT LEAST DAILY DURING PROLONGED RAINFALL. ANY REQUIRED REPAIRS SHALL BE MADE IMMEDIATELY.

SHOULD THE FABRIC ON A SILT FENCE OR FILTER BARRIER DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE & THE BARRIER IS STILL NECESSARY, THE FABRIC SHALL BE REPLACED PROMPTLY.

SEDIMENT DEPOSITS SHOULD BE REMOVED AFTER EACH STORM EVENT. THEY MUST BE REMOVED WHEN DEPOSITS REACH APPROXIMATELY ONE-HALF THE HEIGHT OF THE BARRIER.

ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE OR FILTER BARRIER IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM WITH THE EXISTING GRADE, PREPARED & SEEDED.

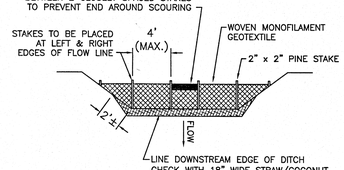
DESIGN CAPACITY CHART:

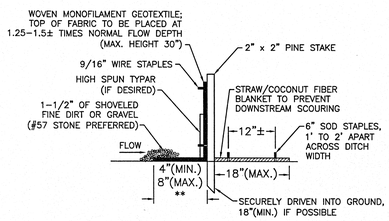
MAX. DRAINAGE AREA PER 100 LF OF FENCE	RANGE OF SLOPE PER DRAINAGE AREA
0.5 AC.	<2%
0.25 AC.	≥2% BUT <20%
0.125 AC.	≥20% BUT <50%

SEDIMENT FENCE 6

NOT TO SCALE

WHERE PONDING AVAILABILITY & DITCH HEIGHT IS LIMITED, A NOTCH OVER FLOW LINE MAY BE CUT INTO FABRIC BETWEEN 2 CLOSELY SPACED STAKES TO PREVENT END AROUND SCOURING





** LEADING EDGE MUST LAY FLAT ON THE BOTTOM OF THE DITCH & ALONG BANK SIDES; REMOVE ALL VISIBLE ROCK UNDER THE LEADING EDGE

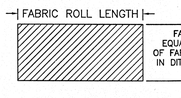
DITCH CHECK 7

NOT TO SCALE

MATERIALS GUIDE
1. 2" x 2" PINE STAKES, SHARPENED.
2. WOVEN MONOFILAMENT GEOTEXTILE FABRIC (100-250 GPM/SF FLOW RATE) OR HIGH FLOW FABRIC (HIGH SPUN TYPAR FOR ADDITIONAL PONDING).
3. 9/16" WIRE STAPLES & 6" SOD STAPLES.
4. STRAW/COCONUT FIBER BLANKET.
5. #57 STONE (ODOTCMS).

INSTALLATION GUIDE
1. DETERMINE REQUIRED HEIGHT OF FABRIC – IN GENERAL, REQUIRED HEIGHT EQUALS 1.25 TO 1.5 TIMES NORMAL FLOW DEPTH OF DITCH.
2. INSTALL STAKES PER DIAGRAMS.
3. USE 4' CARPENTER'S LEVEL TO MARK STAKES AT TOP OF FABRIC LOCATION. TOP OF FABRIC TO BE LEVEL ALONG THE WIDTH OF DITCH.
4. STAPLE TOP EDGE OF FABRIC TO STAKES AT LEVEL MARKS.
5. TRIM EXCESS FABRIC TO PROVIDE A LEADING EDGE THAT LIES FLAT & FLUSH WITH DITCH BOTTOM.
6. HIGH SPUN TYPAR FABRIC MAY BE ADDED AT UPSTREAM END IF ADDITIONAL PONDING IS DESIRED OR IF SUPERFINES ARE OF CONCERN.
7. STAPLE BOTTOM OF FABRIC AT DITCH BOTTOM; CHECK TO ENSURE A TIGHT FIT.
8. SHOVEL DIRT OR GRAVEL TO COMPLETELY COVER LEADING EDGE.
9. PLACE STRAW/COCONUT FIBER AT DOWNSTREAM END. SECURE WITH SOD STAPLES. TRIM EXCESS MATERIAL SO THAT IT LIES FLAT & FLUSH WITH DITCH BOTTOM.
10. FABRIC ROLL DIMENSIONS TO BE BASED ON INSTALLATION REQUIREMENTS – ALL EXCESS TO BE TRIMMED WITH SHARP UTILITY KNIFE OR SCISSORS.
11. ANY INSTALLATION FOLDS MUST BE CAREFULLY TRIMMED & OVERLAPPED TO AVOID WRINKLES OR UNDESIRABLE IRREGULARITIES.

MAINTENANCE GUIDE
1. AFTER FIRST RAIN, REPLACE ANY MISSING ROCK & DIRT AT LEADING EDGE.
2. INSPECT DITCH CHECKS AFTER HEAVY RAINS.
3. REMOVE SEDIMENT DEPOSITS FROM DITCH CHECKS WHEN TOP OF SEDIMENT REACHES 75% OF FABRIC HEIGHT.



NOTE: WHERE DESIRED HEIGHT EXCEEDS FABRIC ROLL WIDTH, FABRIC TO BE OVERLAPPED BY A MINIMUM OF 12". PLACE 2" X 6" OR 4" X 4" BOARD BEHIND OVERLAP

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ENGINEERS ▪ SURVEYORS

11 WEST MAIN ST
PO BOX 188
LOGAN, OH 43138
740-385-2140

1495 OLD HENDERSON RD
COLUMBUS, OH 43220
614-459-6992
FAX: 614-459-6987
TOLL FREE: 866-277-0600

507 MAIN STREET, SUITE 203
ZANESVILLE, OH 43701
740-450-1640

LAMPLIGHTER SENIOR VILLAGE II
FINAL DEVELOPMENT PLAN
GROVE CITY, OHIO

OWNER:
LAMPLIGHTER II SENIOR HOUSING LLC
184 WEST MAIN STREET
ASHVILLE, OHIO 43103
740-983-4566

SCALE: – AS NOTED

DATE: AUGUST 31, 2015 | SHEET: C1.06

COMMON NAME	SIZE	QUANTITY
DECIDUOUS TREES		
AUTUMN FANTASY MAPLE	2"	16
SKYLINE HONEYLOCUST	2"	5
MORAINE SWEETGUM	2"	6
TULIP POPLAR	2"	22
REDMOND LINDEN	2"	10
EVERGREEN TREES		
COLORADO BLUE SPRUCE	6'	21
EASTERN WHITE PINE	6'	11
EMERALD GREEN ARBORVITEA	6'	19
SHRUBS		
BLACKHAW VIBURNUM	30"	69
CRIMSON PYGMY BARBERRY	# 3	14
KNOCKOUT ROSE	# 3	10
DENSE YEW	18–24"	63
SPILLED WINE WIEGELA	# 3	14
PERENNIALS		
ROZANNE GERANIUM	# 1	20
STELLA D'ORO DAYLILY	# 1	18
VARIEGATED LIRIOPE	# 1	18
21,320 sq ft		

GENERAL PLANTING NOTES

1. EACH CONTRACTOR IS TO VERIFY WITH OWNER AND UTILITY COMPANIES THE LOCATIONS OF ALL UTILITIES PRIOR TO CONSTRUCTION, TO DETERMINE IN THE FIELD THE ACTUAL LOCATIONS AND ELEVATIONS OF ALL EXISTING UTILITIES.

2. EXAMINE FINISH SURFACE, GRADES, TOPSOIL QUALITY AND DEPTH. DO NOT START ANY WORK UNTIL UNSATISFACTORY CONDITIONS HAVE BEEN CORRECTED. VERIFY LIMITS OF WORK BEFORE STARTING.

3. CONTRACTOR RESPONSIBLE FOR COST OF REPAIRS TO EXISTING SITE CONDITIONS WHEN DAMAGED BY CONTRACTOR. REPAIR TO THE SATISFACTION OF THE OWNER.

4. ALL PLANT MASSES TO BE CONTAINED WITHIN 3" DEEP HARDWOOD BARK MULCH BED. ALL PLANT MASSES TO BE INCORPORATED BY CONTINUOUS MULCH BED TO LIMITS SHOWN.

5. CONTRACTOR SHALL MAINTAIN POSITIVE DRAINAGE IN LAWN & PLANTING BED AREAS.

6. FINE GRADE LAWN AREAS TO PROVIDE A SMOOTH AND CONTINUAL GRADE FREE OF IRREGULARITIES OR DEPRESSIONS.

7. CONTRACTOR SHALL SOD/SEED ALL AREAS DISTURBED DURING CONSTRUCTION.

8. ALL PLANTS SHALL MEET OR EXCEED STANDARDS SET IN THE USA STANDARD FOR NURSERY STOCK

9. ALL PLANTING OPERATIONS SHALL ADHERE TO THE AMERICAN ASSOCIATION OF NURSERYMEN STANDARDS.

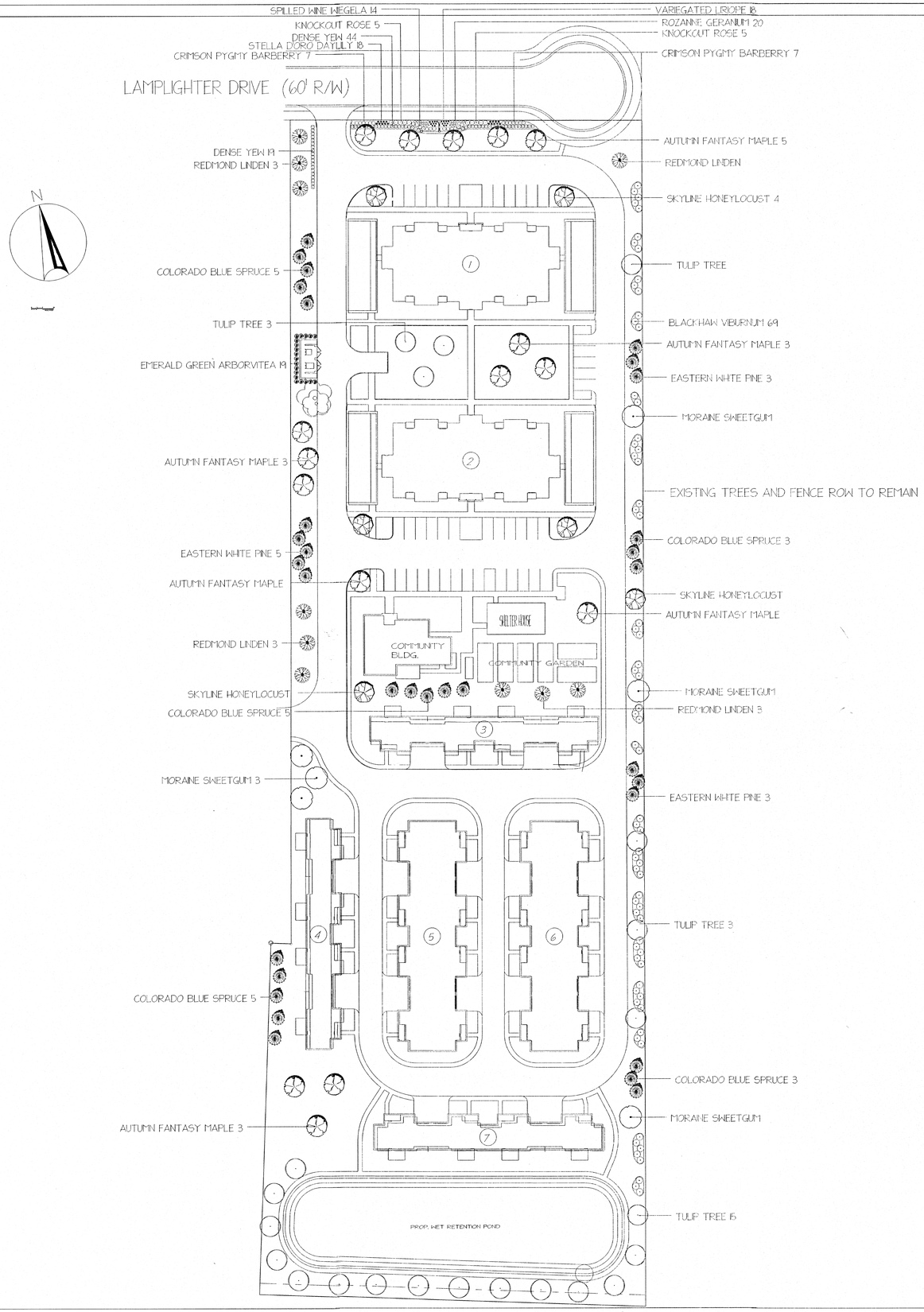
10. CONTRACTOR IS RESPONSIBLE FOR ALL PLANTS DRAWN ON PLANS. PLANT MATERIALS LIST QUANTITIES ARE FOR CONVENIENCE ONLY.

11. CONTRACTOR TO PROVIDE A COMPLETE 1 YEAR WARRANTY OF PLANT MATERIAL INCLUDING PLANTS AS VIABLE AND THRIVING.

12. ANY SUBSTITUTIONS OF PLANT MATERIAL OR CHANGES TO THE DESIGN SHALL BE AUTHORIZED BY THE LANDSCAPE ARCHITECT.

13. NATIVE OR ADAPTIVE PLANTS HAVE BEEN SELECTED FOR THE ENTIRE PROJECT. NO IRRIGATION WILL BE NECESSARY ONCE THE PLANTS ARE ESTABLISHED.

14. SERVICE STRUCTURES INCLUDING BUT NOT LIMITED TO PROPANE TANKS, TRASH DUMPSTERS, GROUND MOUNTED TRANSFORMERS, AIR CONDITIONERS, HEAT PUMPS, UTILITY VAULTS WHICH EXTEND ABOVE GRADE AND OTHER EQUIPMENT AND ELEMENTS PROVIDING SERVICE TO A BUILDING SHALL BE SCREENED ON ALL SIDES OF THE BUILDINGS.



NOTES

No.	Date	Description
REVISIONS		

RHOADS LANDSCAPING
1051 STATE ROUTE 56 EAST
CIRCLEVILLE, OH 4313
(740) 474-2028
(800) 378-8934

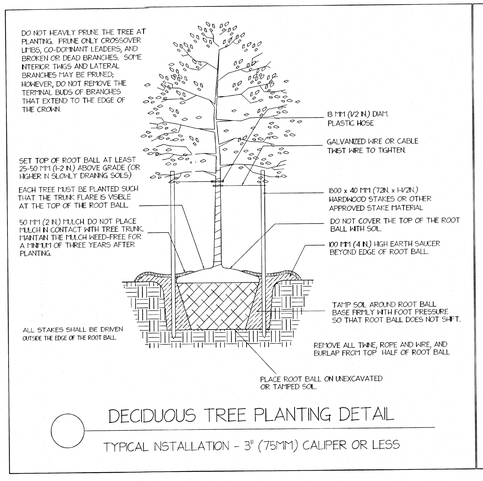
LAMPLIGHTER SENIOR VILLAS
PHASE 2

GROVE CITY, OHIO

SCALE	1" = 50'
DRAWN BY	ERIN PANCAKE
CHECKED BY	JEREMY NEFF
DATE	10/22/2014
DATE OF PRINT	

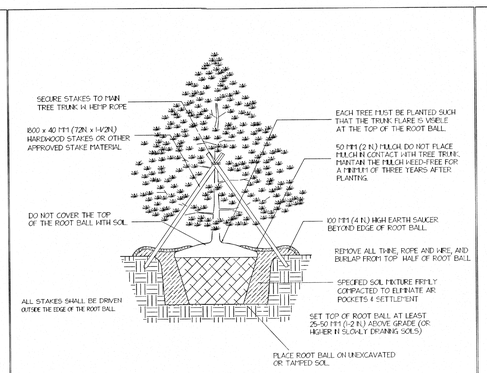
PROJECT NO.

SHEET NO.
L 1



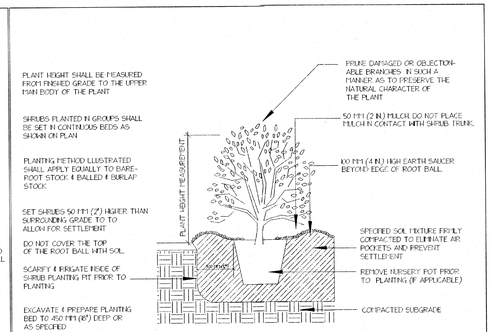
DECIDUOUS TREE PLANTING DETAIL

TYPICAL INSTALLATION - 3" (75MM) CALIPER OR LESS



CONIFEROUS TREE PLANTING DETAIL

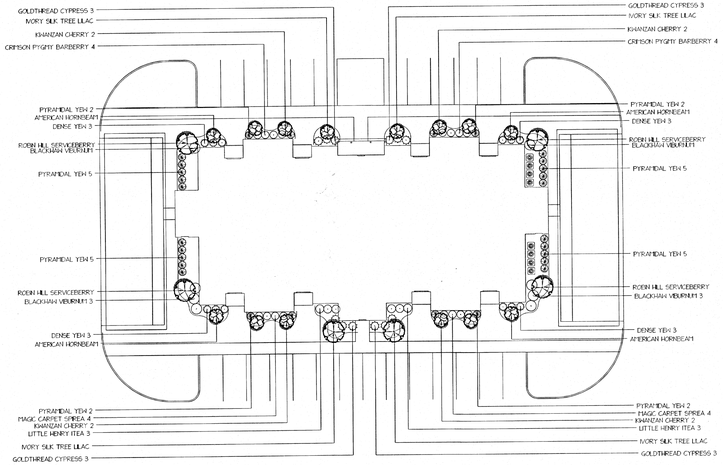
TYPICAL INSTALLATION - 66" (200CM) OR LESS



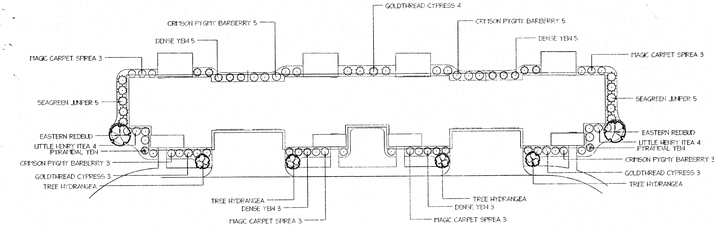
SHRUB PLANTING DETAIL

TYPICAL INSTALLATION

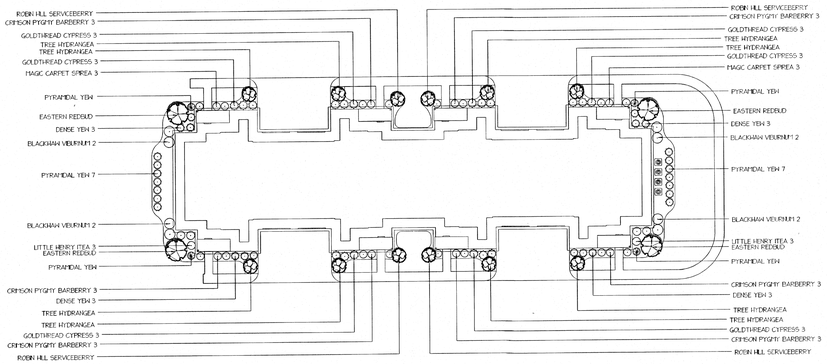
COMMON NAME	SIZE	QUANTITY
DECIDUOUS TREES		
ROBIN HILL SERVICEBERRY	2"	17
AMERICAN HORNBEAM	2"	8
EASTERN REDBUD	2"	15
TREE HYDRANGEA	2"	22
KWANZAN CHERRY	2"	16
IVORY SILK JAPANESE LILAC TREE	2"	8
SHRUBS		
CRIMSON PYGMY BARBERRY	# 3	109
GOLDTHREAD CYPRESS	# 3	90
LITTLE HENRY ITEA	# 3	55
SEA GREEN JUNIPER	# 3	36
KNOCKOUT ROSE	# 3	4
MAGIC CARPET SPIREA	# 3	68
DENSE YEW	24"	104
PYRAMIDAL YEW	3'	102
BLACKHAW VIBURNUM	# 5	35
PERENNIALS		
ROZANNE GERANIUM	# 1	6
VARIEGATED LIRIOPE	# 1	3
19,765 SQ FT		



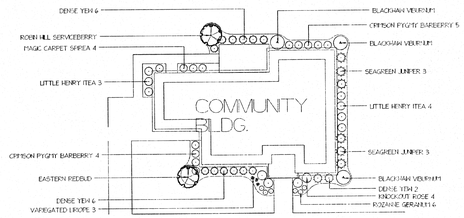
BUILDINGS 1 & 2



BUILDINGS 3, 4, & 7



BUILDINGS 5 & 6



COMMUNITY BUILDING

NOTES

No.	Date	Description

REVISIONS

RHOADS LANDSCAPING
1051 STATE ROUTE 56 EAST
CIRCLEVILLE, OH 43113
(740) 474-2028
(800) 378-8934

LAMPLIGHTER SENIOR VILLAS PHASE 2

GROVE CITY, OH

SCALE	1" = 30'
DRAWN BY	ERIN PANCAKE
CHECKED BY	JEREMY NEFF
DATE	10/22/2014
DATE OF PRINT	

PROJECT NO.

SHEET NO. L2

GAIL L. COSTA
OFFICIAL RECORD 14914 I13
INSTR. 200603270056438
5.83 ACRES

WOVEN WIRE FENCE

S 13°08'39" E 1050.23'

30.02'

SQ CB
TC 733.06
W 15" RCP 730.57
E 15" RCP 730.57

SQ CB
TC 732.91
W 15" RCP 731.13
E 15" RCP 730.75

150.00'

PROPOSED R/W DEDICATION

N 74°47'24" W 339.51'

N 74°47'24" W 340.12'

SQ CB
TC 736.33
W 15" RCP 732.64
E 15" RCP 732.47

BM
ELEVATION 736.73
MAGNAIL ON THE NORTH SIDE OF
POWER POLE ON THE SOUTH SIDE OF
WHITE ROAD

60' LAMPLIGHTER DR. R/W DEDICATION

S 76°32'11" E 312.46'

ELIZABETH T. MORBITZER, TR
RICHARD L. MORBITZER, TR
INSTR. 200601040001335
PARCEL IV
34.114 ACRES (ORIGINAL)
17.896 AC. REMAINING BY AUDITOR

S 13°27'36" W 736.84'

S 74°43'50" E 18.18'

N 14°00'48 E 303.61'

3/4" IRON PIPE FOUND
W/SDCPS CAP

3/4" IRON PIPE FOUND
W/SDCPS CAP
BENT NW

SAN MH
TC 742.77
E 8" PVC 731.44
W 8" PVC 731.21

3/4" IRON PIPE W/
EMHT CAP FOUND

STM MH
TC 742.00
SW 12" CPP 736.37
N 12" CPP 736.28

CURB/GUTTER INLET
TC 742.16
INLET 741.69
S 12" RCP 736.86
NE 12" CPP 736.79

CURB/GUTTER INLET
TC 742.08
INLET 741.58
N 12" RCP 737.11

60'

62'

30.01'

200.00'

(60' R/W)

ELIZABETH T. MORBITZER,TR
RICHARD L. MORBITZER, TR
PARCEL I
INSTR. 200601040001335
5.001 ACRES

NORTH

GRAPHIC SCALE
40 20 0 40
1" = 40'

Know what's below.
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FAX: 614-459-6987
Toll Free: 866-277-0600

507 Main Street, Suite 203
Zanesville, OH 43701
740-450-1640

LAMPLIGHTER SENIOR VILLAGE II
FINAL DEVELOPMENT PLAN
GROVE CITY, OHIO

OWNER:
LAMPLIGHTER II SENIOR HOUSING LLC
184 WEST MAIN STREET
ASHVILLE, OHIO 43103
740-983-4566

SCALE: – AS NOTED

DATE: AUGUST 31, 2015 | SHEET: S1.01

PRELIMINARY STORMWATER MANAGEMENT SUMMARY

CITY OF GROVE CITY
FRANKLIN COUNTY, OHIO

Prepared for:

HOMEWOOD CORPORATION

Prepared by:

CIVIL & ENVIRONMENTAL CONSULTANTS, INC.
COLUMBUS, OHIO

HOLTON PARK
CEC Project 152-743

AUGUST 2015

Civil & Environmental Consultants, Inc.

Columbus 250 Old Wilson Bridge Road, Suite 250 | Worthington, Ohio 43085 | p: 614-540-6633 f: 614-540-6638 | www.cecinc.com

TABLE OF CONTENTS

APPENDICES

1.0 BACKGROUND

Holton Park is located on the north side of Orders Road in the City of Grove City, Franklin County, Ohio. The site is bordered on the east by Southern Grove Estates and the north and south by agricultural land. The entire site drains to Holton Run which flows through the site from west to east and separates the project site into north and south drainage areas.

The proposed Holton Park development consists of 81 single-family homes, utilities, streets and associated storm water management facilities on 35.25 acres. Two (2) stormwater management basins will be designed onsite to control runoff from the proposed development. The design of the basins will meet current requirements set forth by the City of Grove City (City) and the Ohio EPA General Permit OHC00004.

2.0 PRE-DEVELOPED CONDITIONS

Holton Park is naturally split into north and south drainage areas by Hoton Run which runs from west to east through the middle of the site. Each subarea drains directly to Holton Run. The existing site is undeveloped with mostly Type C soils and gradual slopes towards the creek. The point of analysis for the pre-developed conditions will be taken where Holton Run crosses at the east property line of the project site.

Pre-Developed North Watershed Characteristics

A= 17.78 Acres

CN= 78

Tc- 36.7 minutes

Pre-Developed South Watershed Characteristics

A= 16.54 Acres

CN= 78

Tc- 24.1 minutes

Refer to Appendix A for the pre-developed flows and tributary area map.

3.0 POST-DEVELOPED SUMMARY

The post-developed detention was based on the requirements of the City. The critical storm method was used to determine the allowable post-developed detained peak rate of runoff for the 1-year thru 100-year storm event: the critical year storm will be detained to the existing 1-year runoff release rate and storms less frequent than the critical year storm will be detained to the existing release rate for the corresponding storm event. The north and south subareas will each have extended detention basins constructed for stormwater quantity and quality treatment. The development consists of ¼ acre lots corresponding to a runoff curve number of 83 for Type C soils. Refer to Appendix B for the critical storm calculations and allowable post-developed peak flow rates.

Post-Developed North Watershed Characteristics

A= 17.78 Acres

CN= 83 (1/4 acre lots, Type C soil)

Tc- 15.2 minutes

Post-Developed South Watershed Characteristics

A= 16.54 Acres

CN= 83 (1/4 acre lots, Type C soil)

Tc- 15.2 minutes

The proposed basins will be designed using HydroCAD software to accomplish the detention and water quality requirements for the development. The 5-year storm was calculated as the critical storm. An SCS Type II 24-hour storm will be modeled using rainfall depths obtained from the City. The allowable and actual releases for the basins will be provided during final engineering. Refer to Appendix B for the post-developed hydrographs.

Table 1: Allowable Site Discharge Summary

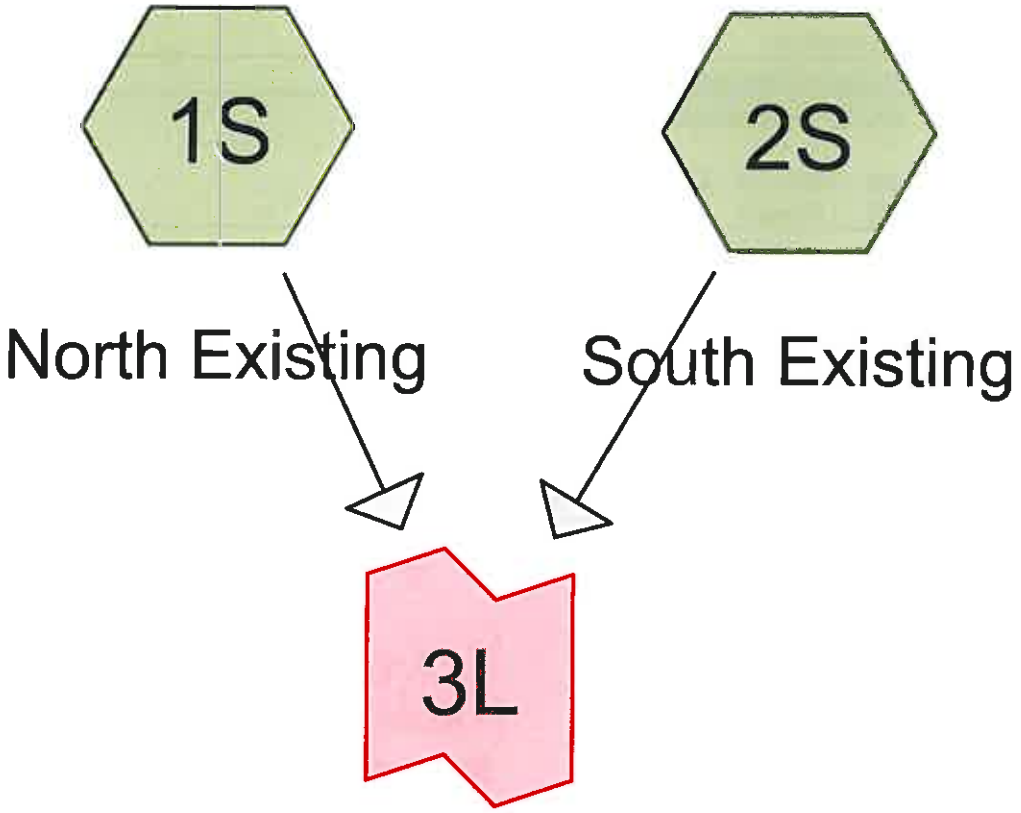
Storm Event (year)	$Q_{existing}$ (cfs)	Allowable Q (cfs)	Q_{actual} (cfs)
1	14.83	14.83	2.34
2	22.79	14.83	4.31
5	**35.30**	14.83	9.57
10	46.29	46.29	22.64
25	62.45	62.45	48.37
50	76.32	76.32	69.09
100	91.36	91.36	85.18

4.0 CONCLUSION

CEC has designed the proposed basins to meet the requirements of the City and the Ohio EPA General Permit OHC00004 for the proposed Holton Park development. For each storm event, CEC is proposing a release rate that is less than or equal to the calculated allowable release rate. The north and south basins will contain approximately 2.18 acre-feet and 1.76 acre-feet of storage for water quantity and quality control. The proposed storm water system should not pose a threat to property and public safety downstream of the proposed development.

APPENDIX A

PRE-DEVELOPED FLOWS & PRE-DEVELOPED TRIBUTARY AREA MAP



Subcat Reach Pond Link

Routing Diagram for 152-743 Preliminary SWM
Prepared by CEC, Inc., Printed 8/30/2015
HydroCAD® 10.00-13 s/n 03447 © 2014 HydroCAD Software Solutions LLC

Summary for Subcatchment 1S: North Existing

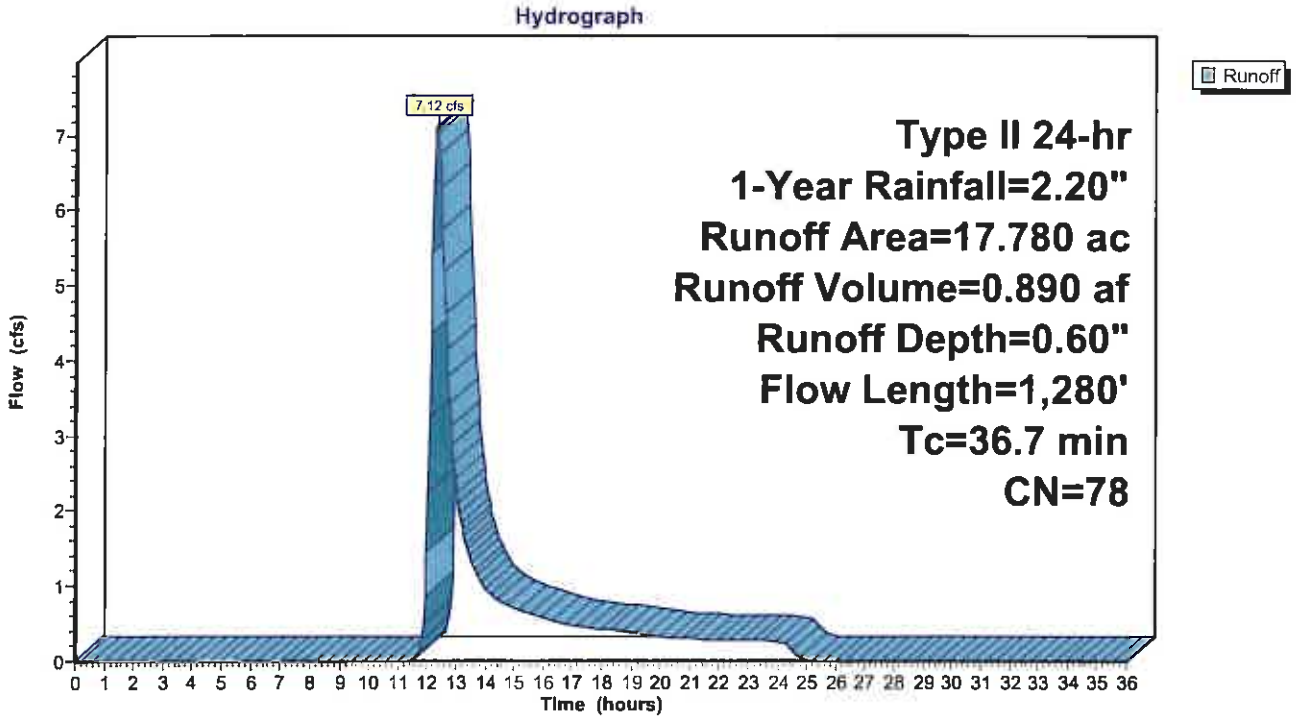
Runoff = 7.12 cfs @ 12.36 hrs, Volume= 0.890 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.20"

	Area (ac)	CN	Description
*	17.780	78	Pasture/grassland/range, Fair, HSG C
	17.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0120	0.30		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
31.2	1,180	0.0049	0.63		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
36.7	1,280	Total			

Subcatchment 1S: North Existing



Summary for Subcatchment 2S: South Existing

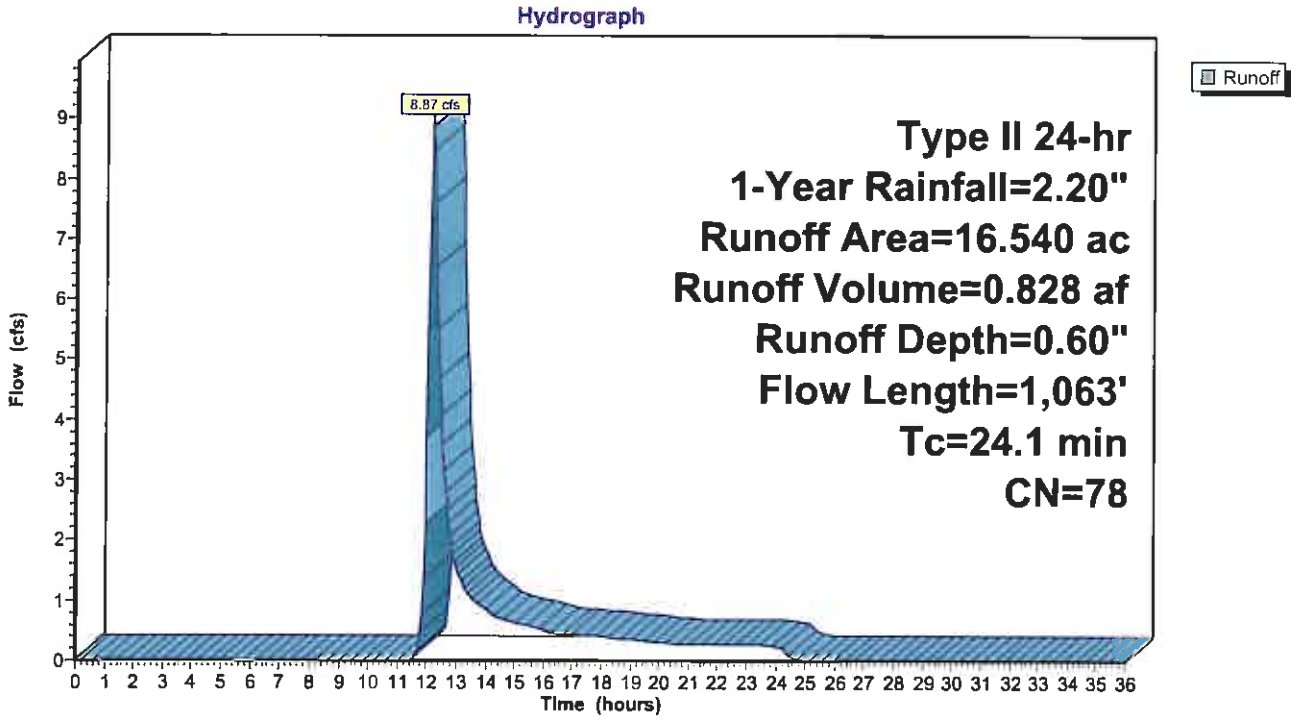
Runoff = 8.87 cfs @ 12.20 hrs, Volume= 0.828 af, Depth= 0.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.20"

	Area (ac)	CN	Description
*	16.540	78	Pasture/grassland/range, Fair, HSG C
	16.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	100	0.0200	0.37		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
19.6	963	0.0083	0.82		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
24.1	1,063	Total			

Subcatchment 2S: South Existing

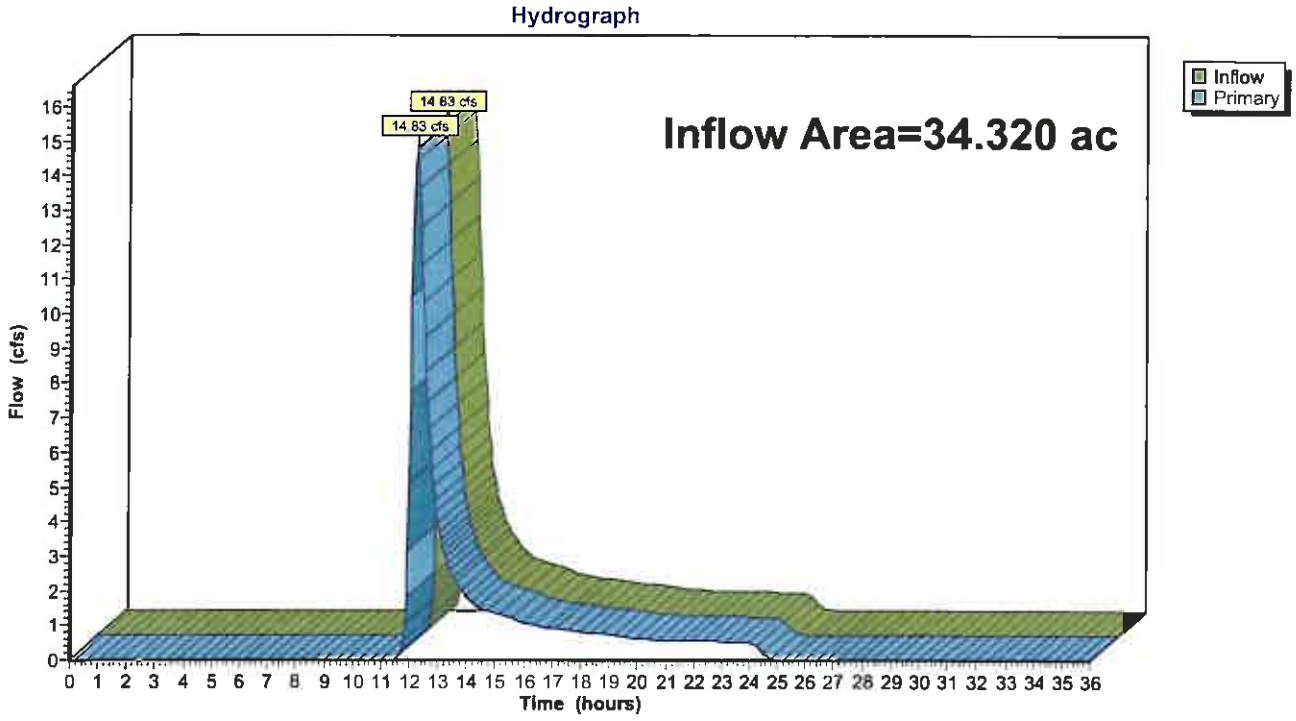


Summary for Link 3L: Holton Run Existing

Inflow Area = 34.320 ac, 0.00% Impervious, Inflow Depth = 0.60" for 1-Year event
Inflow = 14.83 cfs @ 12.26 hrs, Volume= 1.717 af
Primary = 14.83 cfs @ 12.26 hrs, Volume= 1.717 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 3L: Holton Run Existing



Summary for Subcatchment 1S: North Existing

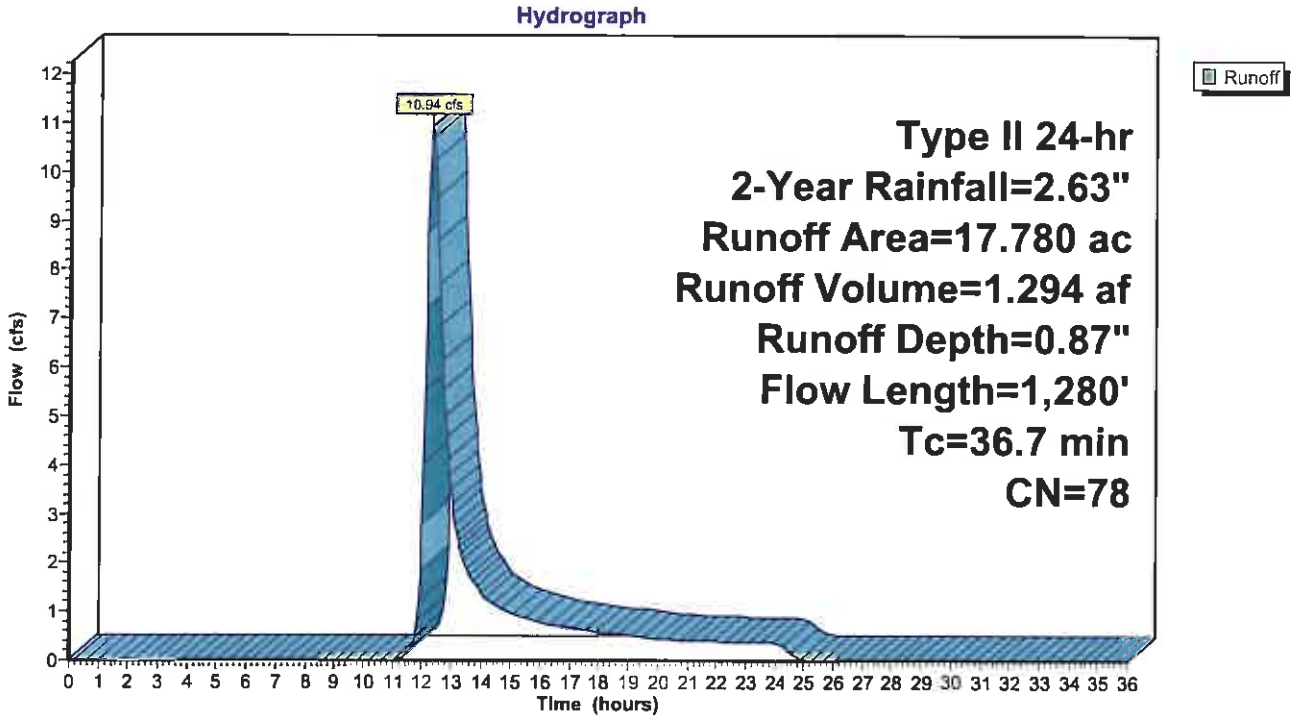
Runoff = 10.94 cfs @ 12.35 hrs, Volume= 1.294 af, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.63"

	Area (ac)	CN	Description
*	17.780	78	Pasture/grassland/range, Fair, HSG C
	17.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0120	0.30		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
31.2	1,180	0.0049	0.63		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
36.7	1,280	Total			

Subcatchment 1S: North Existing



Summary for Subcatchment 2S: South Existing

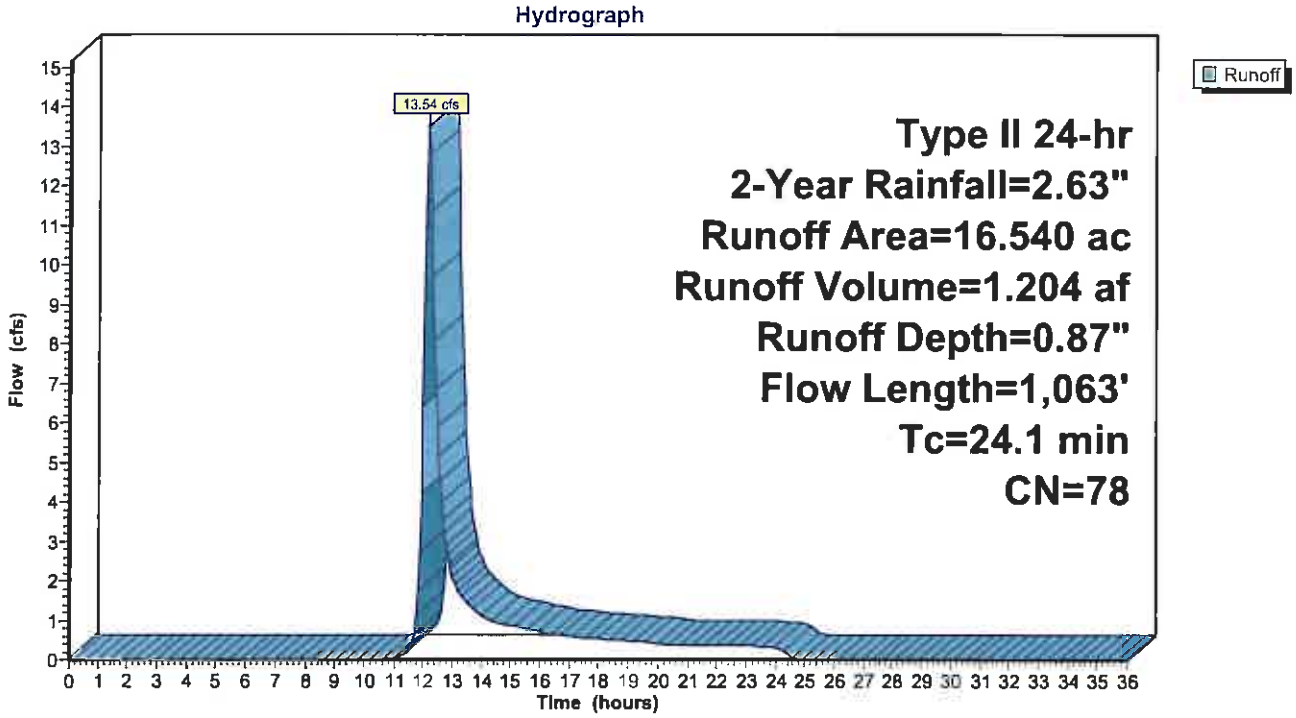
Runoff = 13.54 cfs @ 12.19 hrs, Volume= 1.204 af, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.63"

	Area (ac)	CN	Description
*	16.540	78	Pasture/grassland/range, Fair, HSG C
	16.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	100	0.0200	0.37		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
19.6	963	0.0083	0.82		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
24.1	1,063	Total			

Subcatchment 2S: South Existing

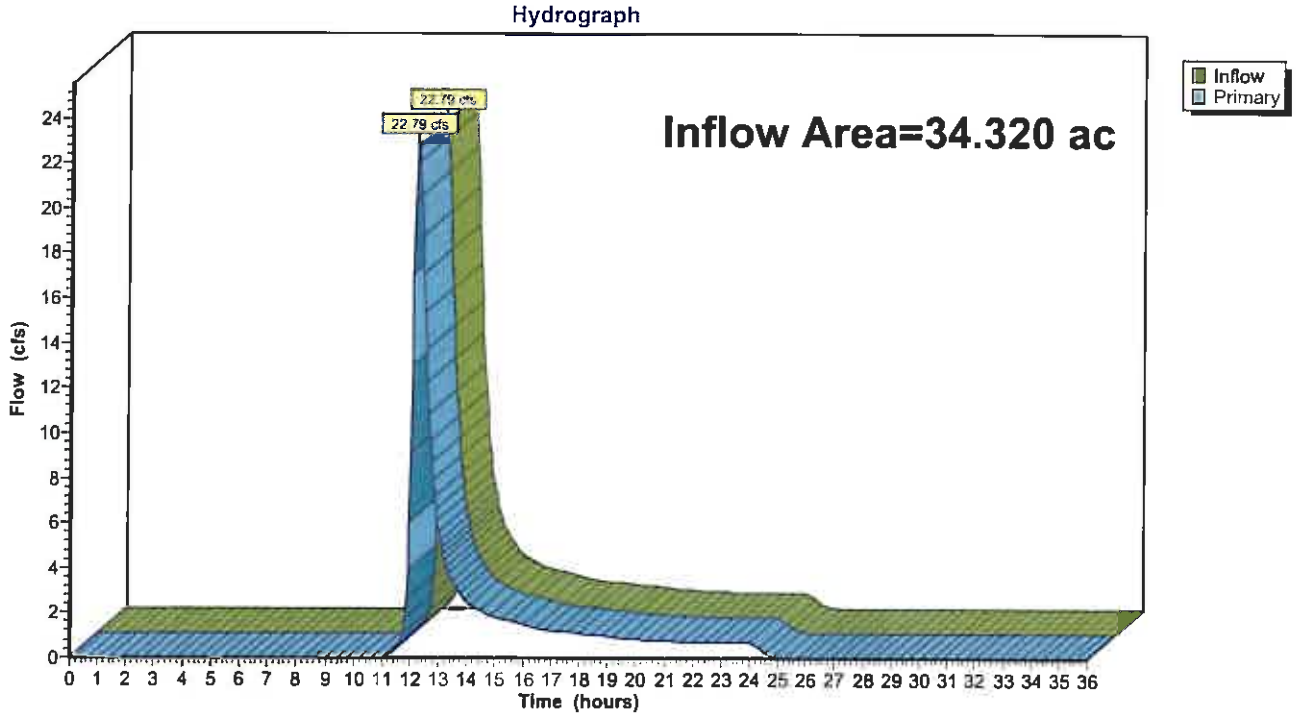


Summary for Link 3L: Holton Run Existing

Inflow Area = 34.320 ac, 0.00% Impervious, Inflow Depth = 0.87" for 2-Year event
Inflow = 22.79 cfs @ 12.25 hrs, Volume= 2.498 af
Primary = 22.79 cfs @ 12.25 hrs, Volume= 2.498 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 3L: Holton Run Existing



Summary for Subcatchment 1S: North Existing

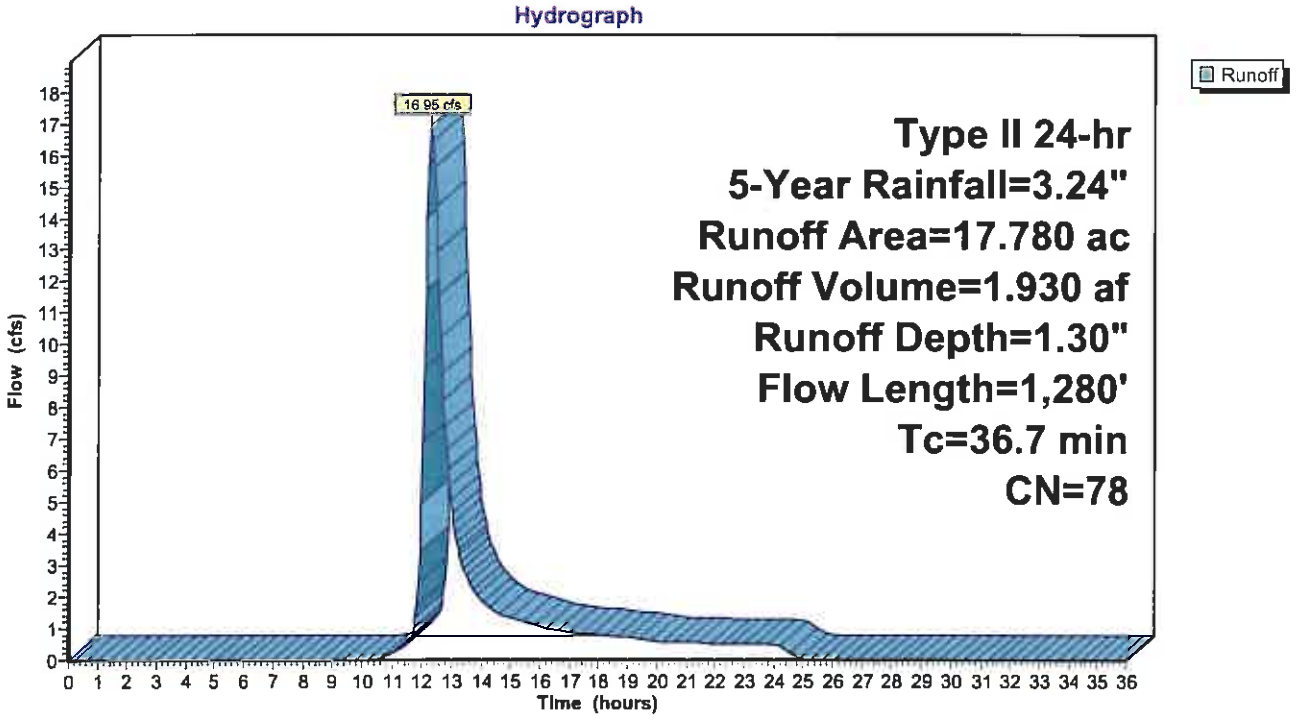
Runoff = 16.95 cfs @ 12.34 hrs, Volume= 1.930 af, Depth= 1.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.24"

	Area (ac)	CN	Description
*	17.780	78	Pasture/grassland/range, Fair, HSG C
	17.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0120	0.30		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
31.2	1,180	0.0049	0.63		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
36.7	1,280	Total			

Subcatchment 1S: North Existing



Summary for Subcatchment 2S: South Existing

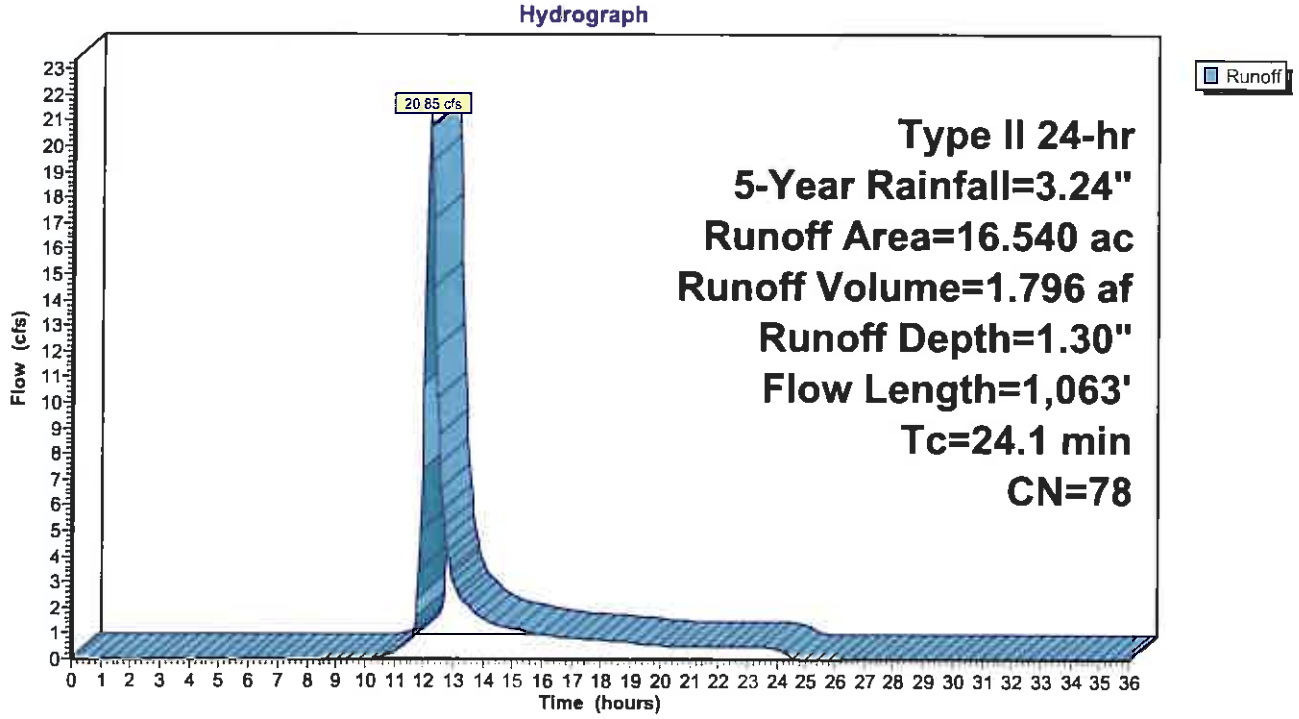
Runoff = 20.85 cfs @ 12.19 hrs, Volume= 1.796 af, Depth= 1.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.24"

	Area (ac)	CN	Description
*	16.540	78	Pasture/grassland/range, Fair, HSG C
	16.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	100	0.0200	0.37		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
19.6	963	0.0083	0.82		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
24.1	1,063	Total			

Subcatchment 2S: South Existing

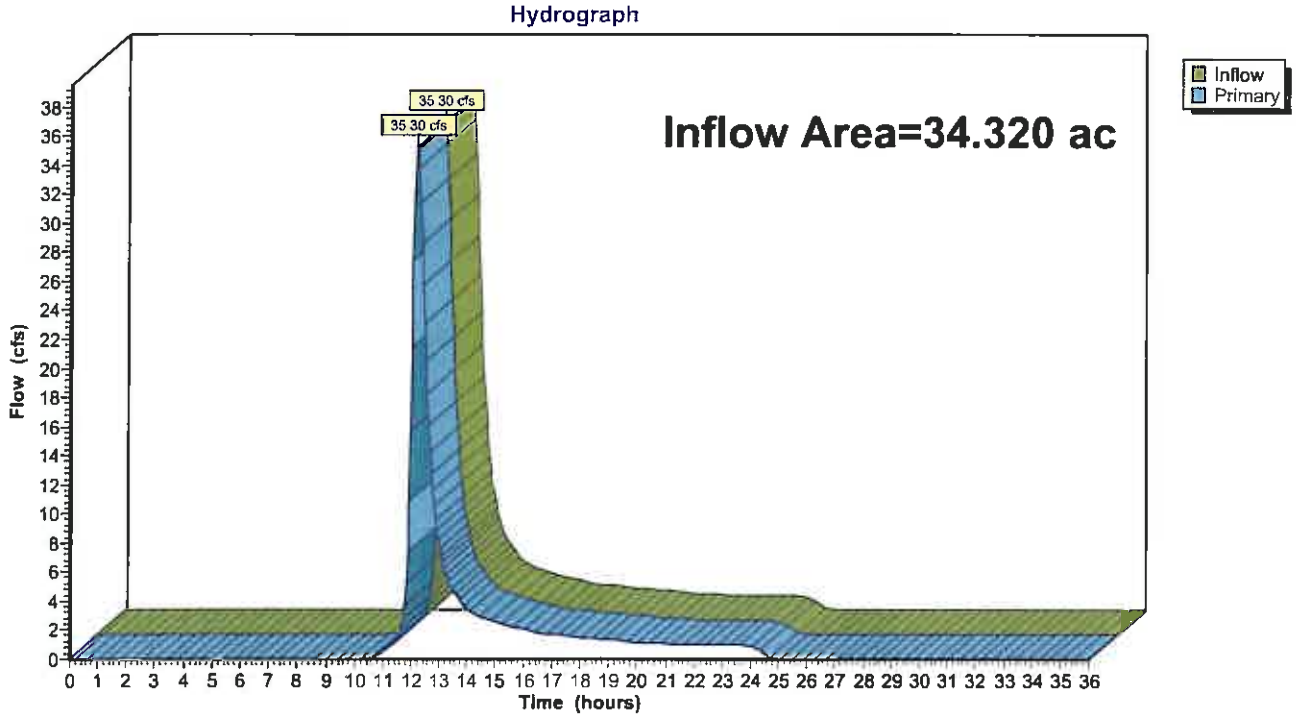


Summary for Link 3L: Holton Run Existing

Inflow Area = 34.320 ac, 0.00% Impervious, Inflow Depth = 1.30" for 5-Year event
Inflow = 35.30 cfs @ 12.24 hrs, Volume= 3.726 af
Primary = 35.30 cfs @ 12.24 hrs, Volume= 3.726 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 3L: Holton Run Existing



Summary for Subcatchment 1S: North Existing

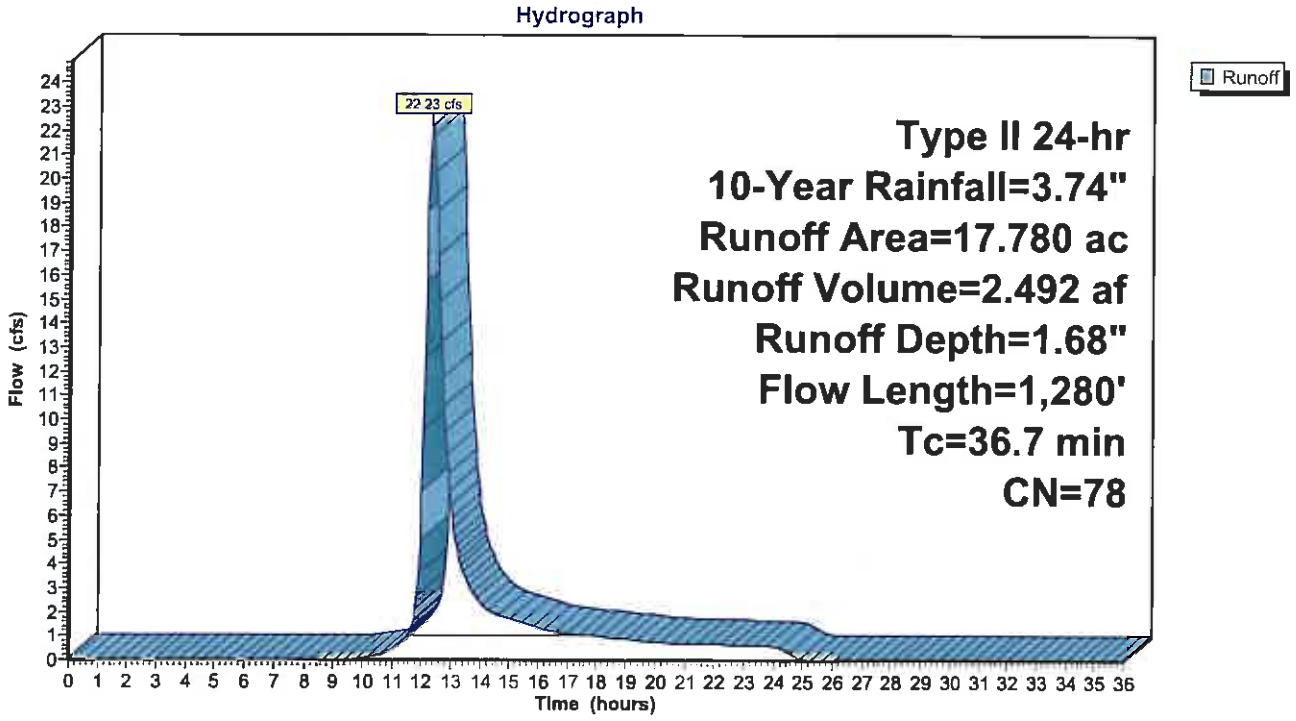
Runoff = 22.23 cfs @ 12.34 hrs, Volume= 2.492 af, Depth= 1.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.74"

	Area (ac)	CN	Description
*	17.780	78	Pasture/grassland/range, Fair, HSG C
	17.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0120	0.30		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
31.2	1,180	0.0049	0.63		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
36.7	1,280	Total			

Subcatchment 1S: North Existing



Summary for Subcatchment 2S: South Existing

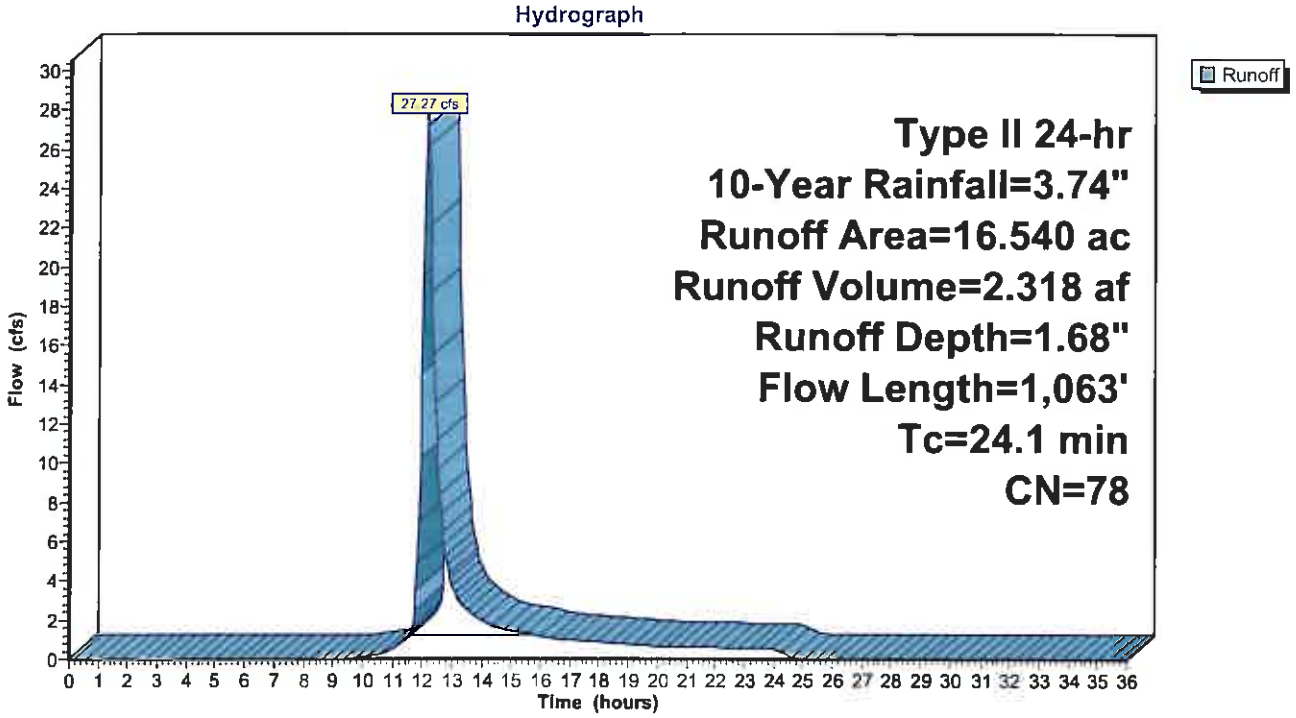
Runoff = 27.27 cfs @ 12.18 hrs, Volume= 2.318 af, Depth= 1.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.74"

	Area (ac)	CN	Description
*	16.540	78	Pasture/grassland/range, Fair, HSG C
	16.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	100	0.0200	0.37		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
19.6	963	0.0083	0.82		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
24.1	1,063	Total			

Subcatchment 2S: South Existing

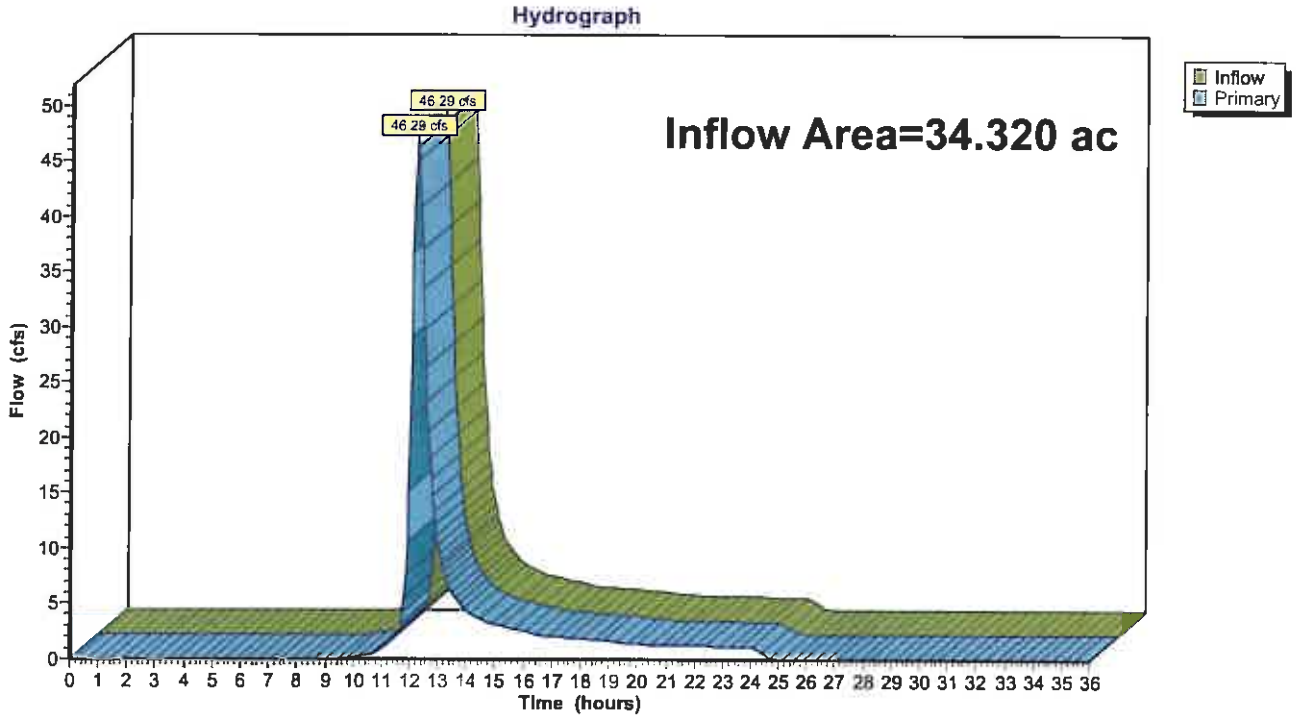


Summary for Link 3L: Holton Run Existing

Inflow Area = 34.320 ac, 0.00% Impervious, Inflow Depth = 1.68" for 10-Year event
Inflow = 46.29 cfs @ 12.23 hrs, Volume= 4.811 af
Primary = 46.29 cfs @ 12.23 hrs, Volume= 4.811 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 3L: Holton Run Existing



Summary for Subcatchment 1S: North Existing

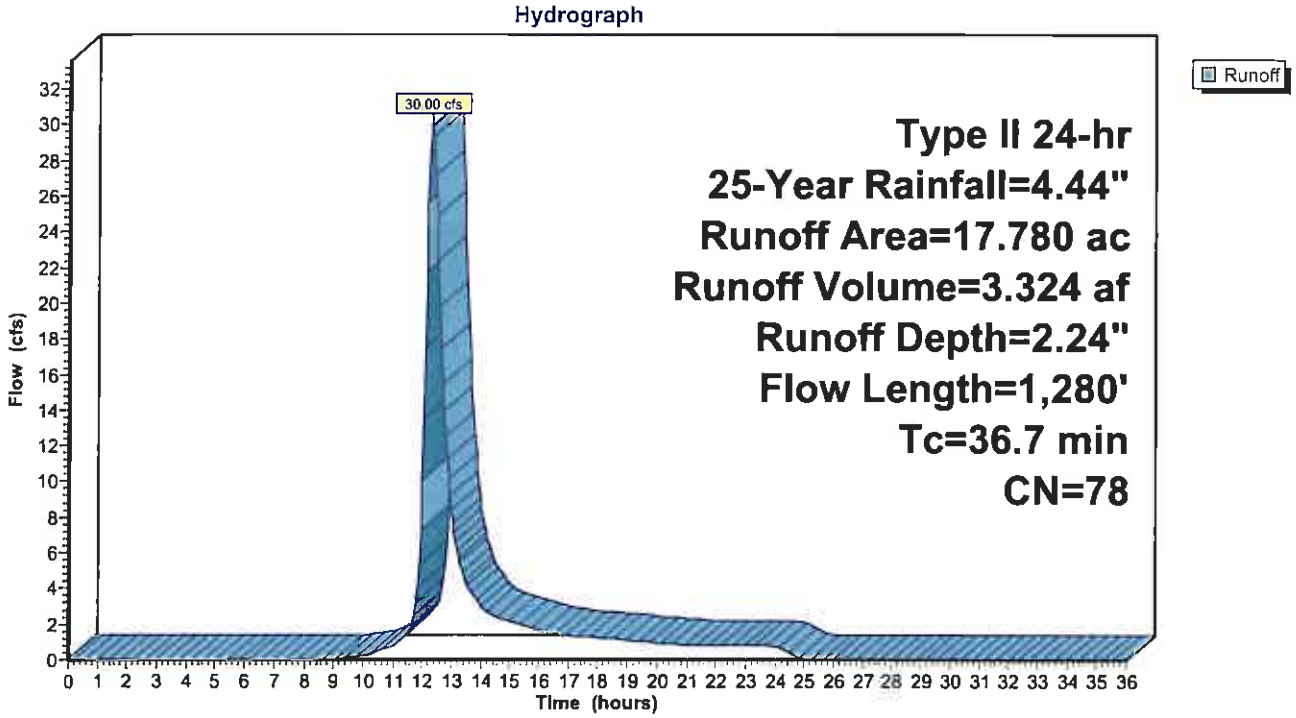
Runoff = 30.00 cfs @ 12.33 hrs, Volume= 3.324 af, Depth= 2.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.44"

	Area (ac)	CN	Description
*	17.780	78	Pasture/grassland/range, Fair, HSG C
	17.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0120	0.30		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
31.2	1,180	0.0049	0.63		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
36.7	1,280	Total			

Subcatchment 1S: North Existing



Summary for Subcatchment 2S: South Existing

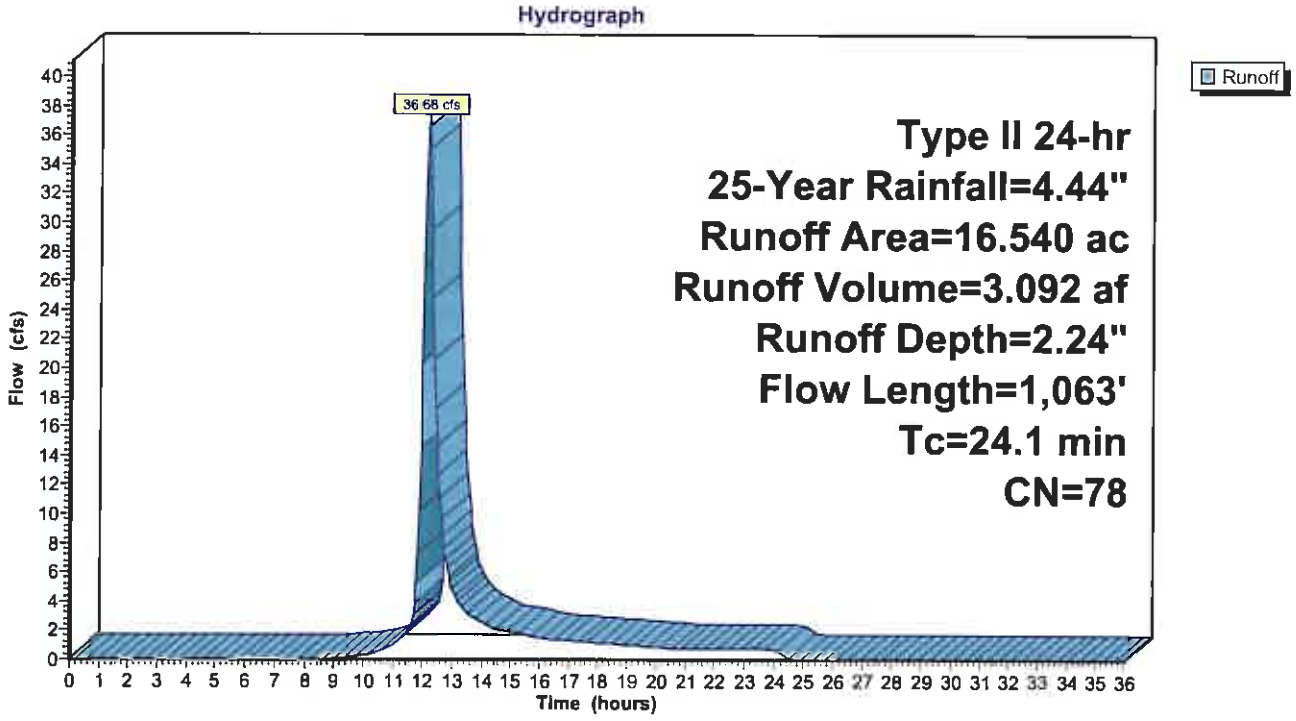
Runoff = 36.68 cfs @ 12.18 hrs, Volume= 3.092 af, Depth= 2.24"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.44"

	Area (ac)	CN	Description
*	16.540	78	Pasture/grassland/range, Fair, HSG C
	16.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	100	0.0200	0.37		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
19.6	963	0.0083	0.82		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
24.1	1,063	Total			

Subcatchment 2S: South Existing

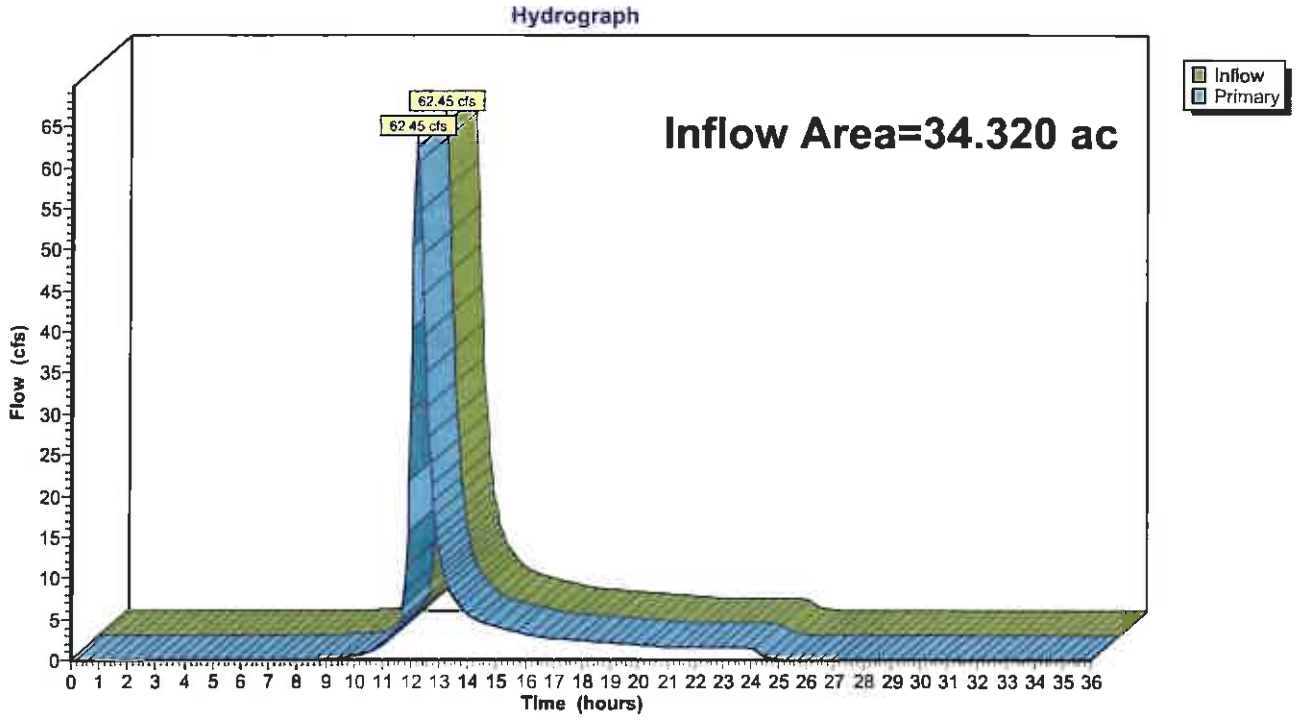


Summary for Link 3L: Holton Run Existing

Inflow Area = 34.320 ac, 0.00% Impervious, Inflow Depth = 2.24" for 25-Year event
Inflow = 62.45 cfs @ 12.23 hrs, Volume= 6.416 af
Primary = 62.45 cfs @ 12.23 hrs, Volume= 6.416 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 3L: Holton Run Existing



Summary for Subcatchment 1S: North Existing

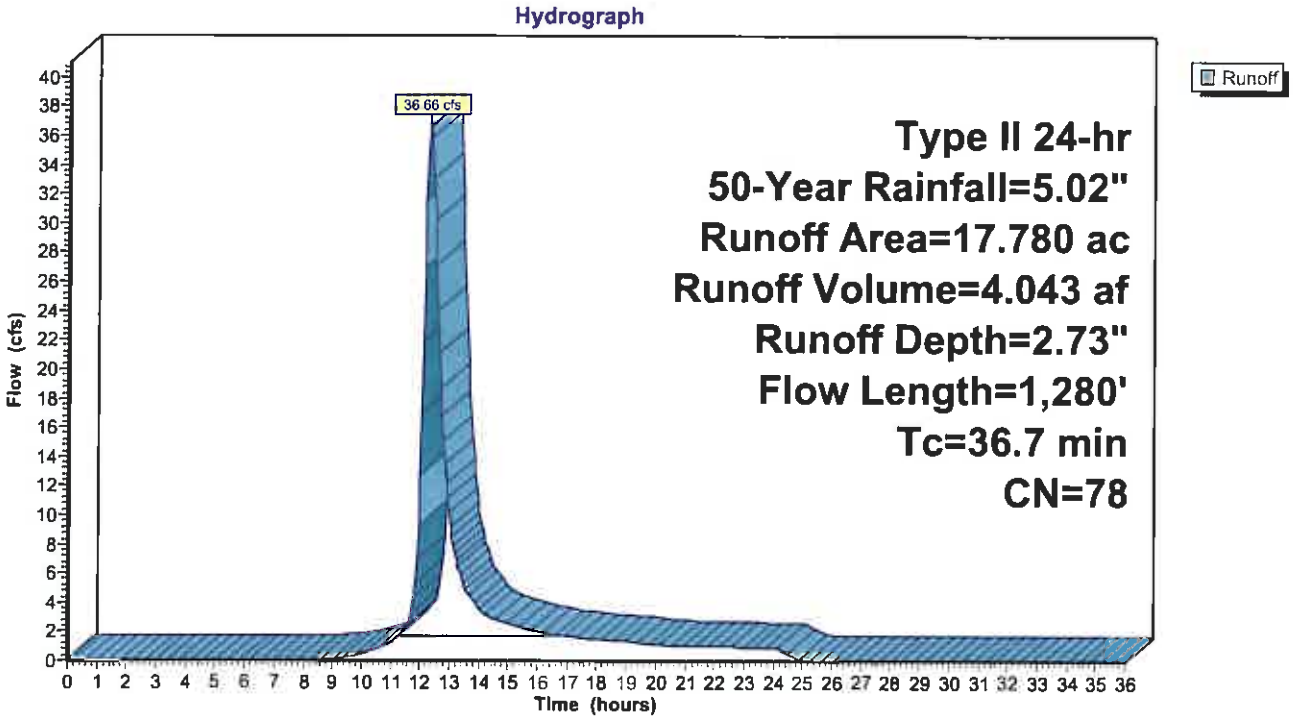
Runoff = 36.66 cfs @ 12.33 hrs, Volume= 4.043 af, Depth= 2.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=5.02"

	Area (ac)	CN	Description
*	17.780	78	Pasture/grassland/range, Fair, HSG C
	17.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0120	0.30		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
31.2	1,180	0.0049	0.63		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
36.7	1,280	Total			

Subcatchment 1S: North Existing



Summary for Subcatchment 2S: South Existing

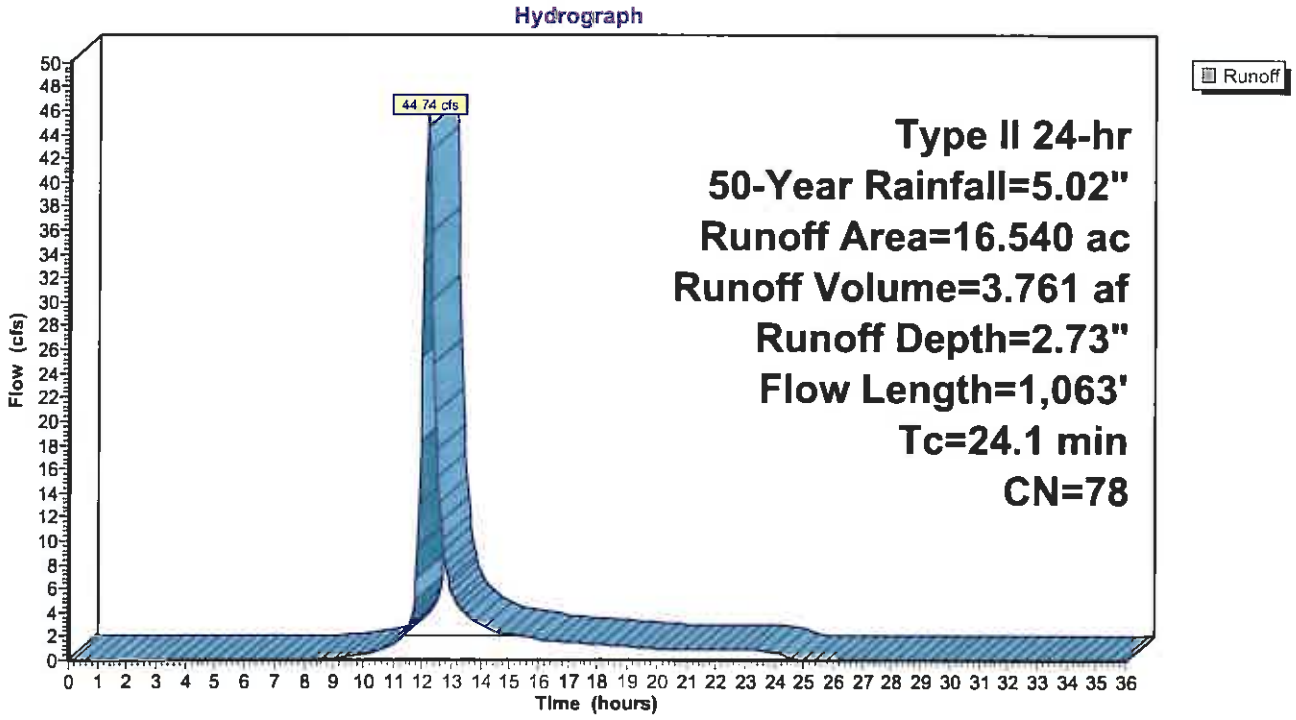
Runoff = 44.74 cfs @ 12.18 hrs, Volume= 3.761 af, Depth= 2.73"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=5.02"

	Area (ac)	CN	Description
*	16.540	78	Pasture/grassland/range, Fair, HSG C
	16.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	100	0.0200	0.37		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
19.6	963	0.0083	0.82		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
24.1	1,063	Total			

Subcatchment 2S: South Existing

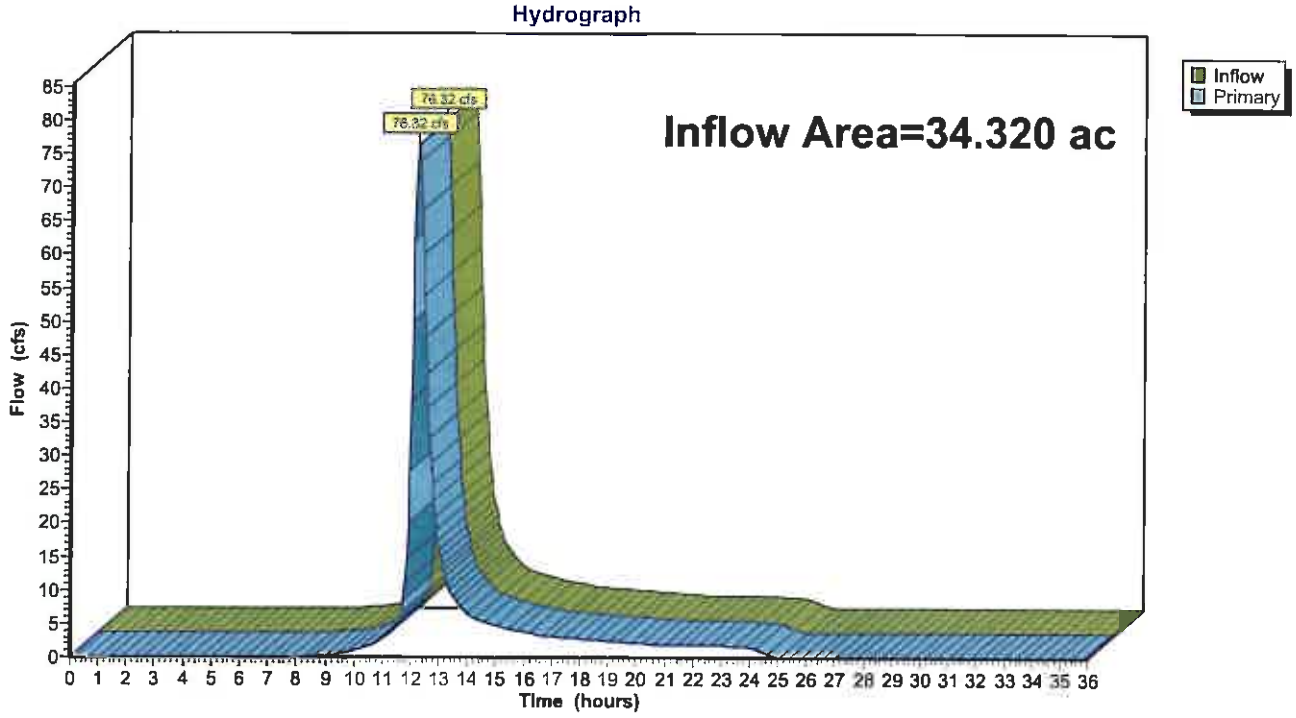


Summary for Link 3L: Holton Run Existing

Inflow Area = 34.320 ac, 0.00% Impervious, Inflow Depth = 2.73" for 50-Year event
Inflow = 76.32 cfs @ 12.23 hrs, Volume= 7.804 af
Primary = 76.32 cfs @ 12.23 hrs, Volume= 7.804 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 3L: Holton Run Existing



Summary for Subcatchment 1S: North Existing

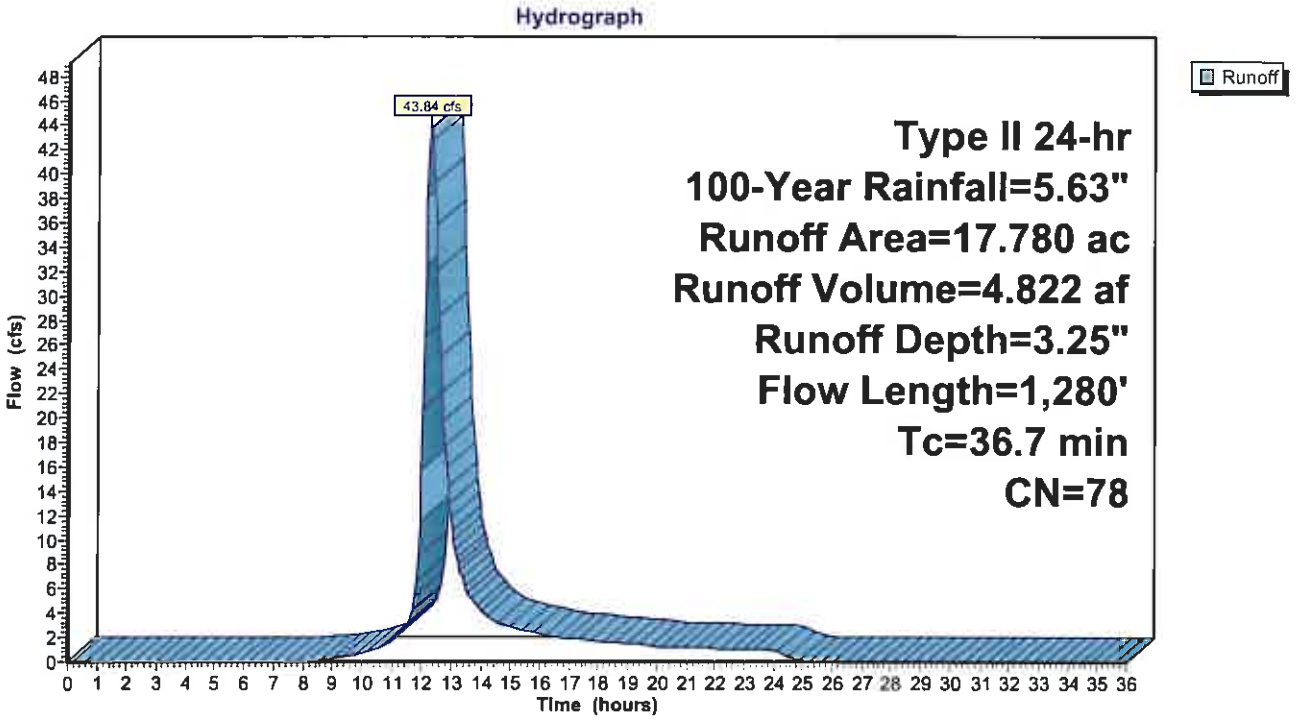
Runoff = 43.84 cfs @ 12.32 hrs, Volume= 4.822 af, Depth= 3.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.63"

	Area (ac)	CN	Description
*	17.780	78	Pasture/grassland/range, Fair, HSG C
	17.780		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.5	100	0.0120	0.30		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
31.2	1,180	0.0049	0.63		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
36.7	1,280	Total			

Subcatchment 1S: North Existing



Summary for Subcatchment 2S: South Existing

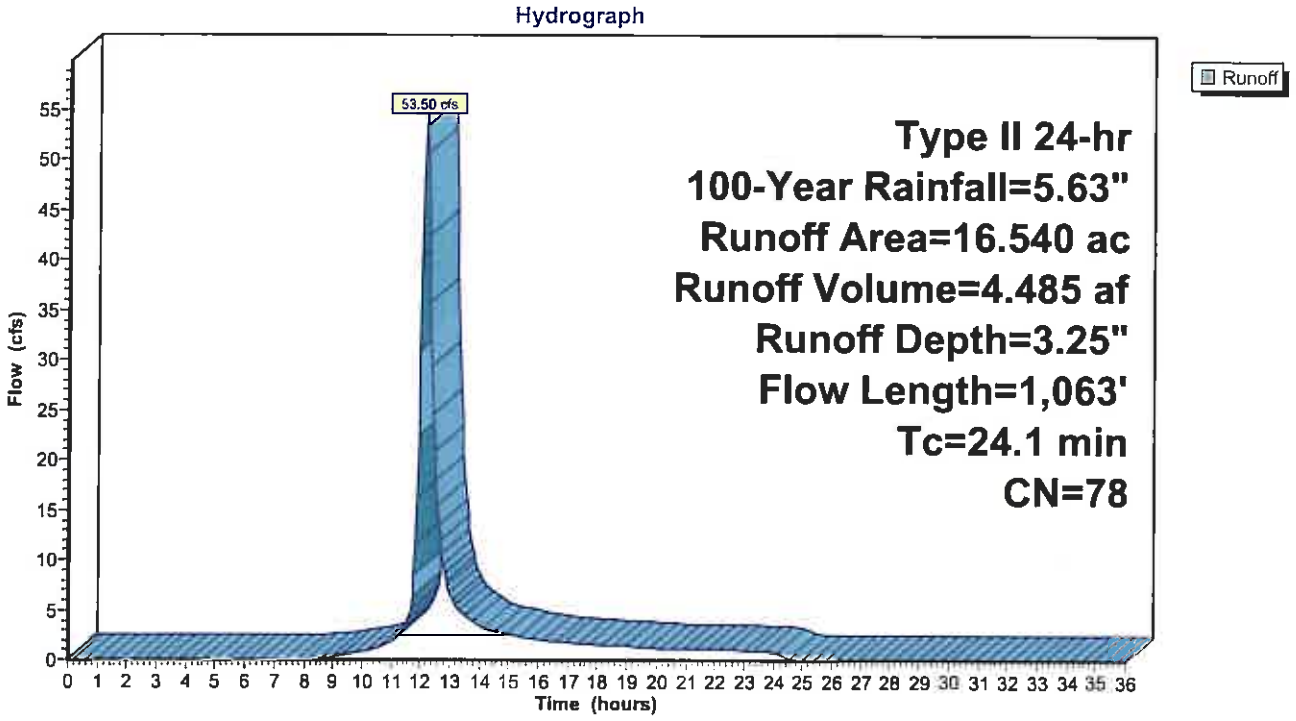
Runoff = 53.50 cfs @ 12.17 hrs, Volume= 4.485 af, Depth= 3.25"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.63"

	Area (ac)	CN	Description
*	16.540	78	Pasture/grassland/range, Fair, HSG C
	16.540		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	100	0.0200	0.37		**Sheet Flow,** Fallow n= 0.050 P2= 2.63"
19.6	963	0.0083	0.82		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
24.1	1,063	Total			

Subcatchment 2S: South Existing

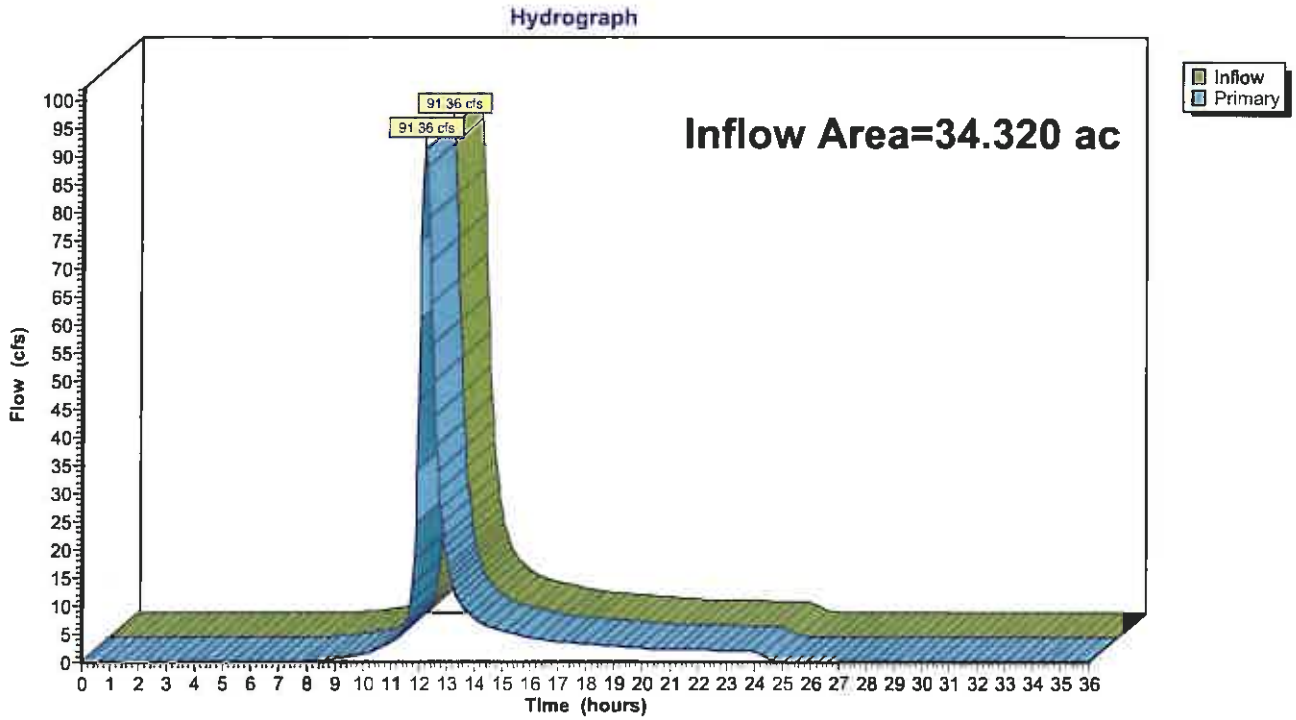


Summary for Link 3L: Holton Run Existing

Inflow Area = 34.320 ac, 0.00% Impervious, Inflow Depth = 3.25" for 100-Year event
Inflow = 91.36 cfs @ 12.22 hrs, Volume= 9.307 af
Primary = 91.36 cfs @ 12.22 hrs, Volume= 9.307 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 3L: Holton Run Existing



APPENDIX B

POST-DEVELOPED FLOWS

Summary for Subcatchment 4S: North Proposed

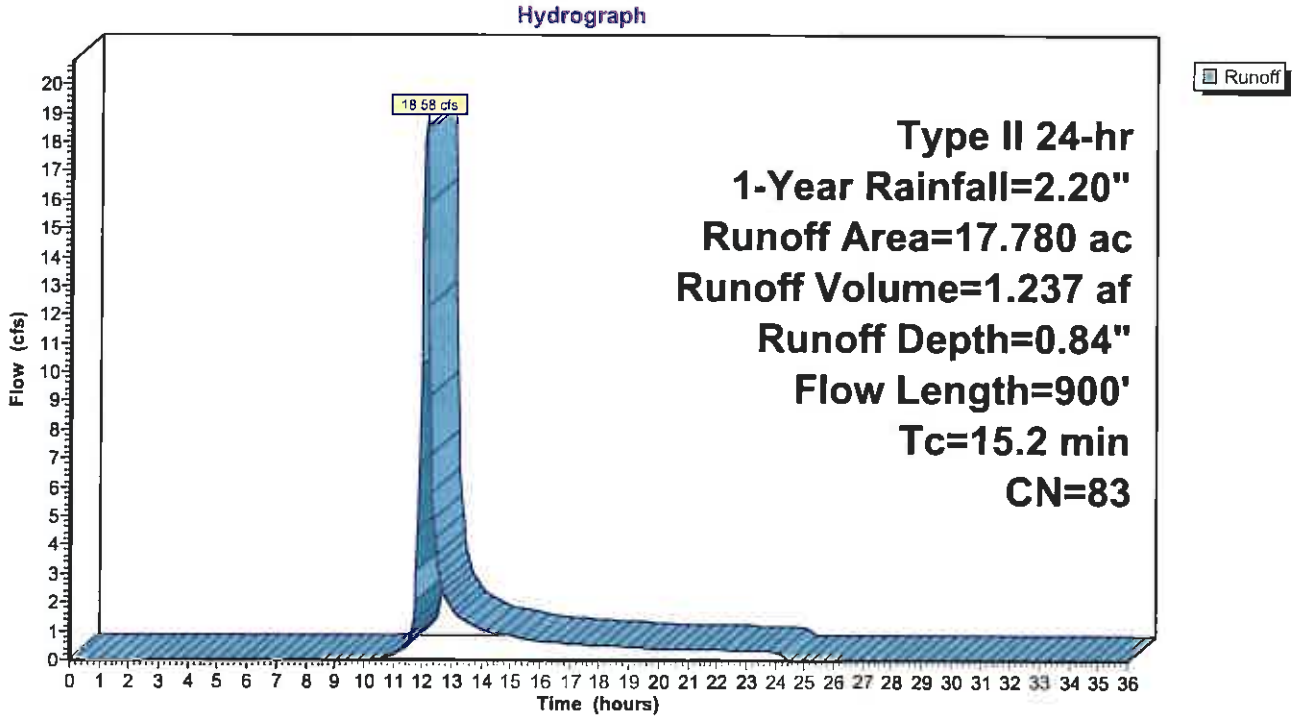
Runoff = 18.58 cfs @ 12.08 hrs, Volume= 1.237 af, Depth= 0.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.20"

Area (ac)	CN	Description
17.780	83	1/4 acre lots, 38% imp, HSG C
11.024		62.00% Pervious Area
6.756		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 4S: North Proposed



Summary for Subcatchment 5S: South Proposed

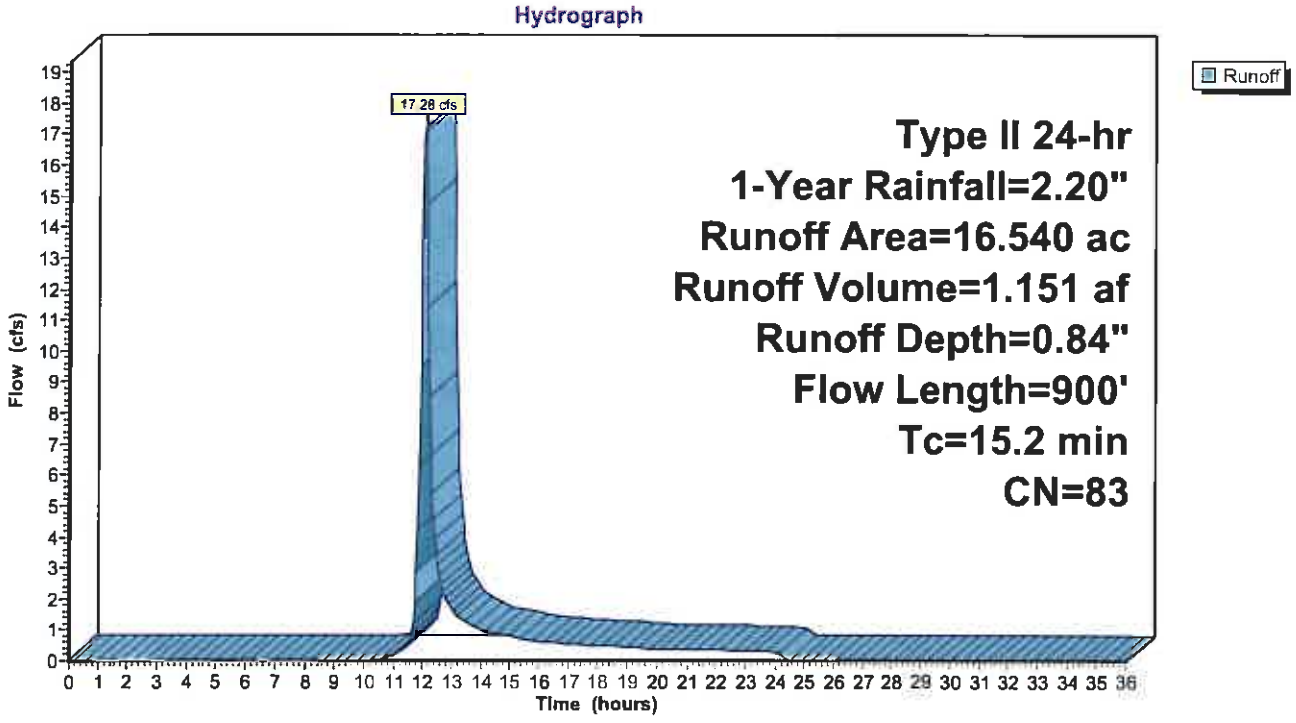
Runoff = 17.28 cfs @ 12.08 hrs, Volume= 1.151 af, Depth= 0.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-Year Rainfall=2.20"

Area (ac)	CN	Description
16.540	83	1/4 acre lots, 38% imp, HSG C
10.255		62.00% Pervious Area
6.285		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 5S: South Proposed



Summary for Pond 7P: North Pond

Inflow Area = 17.780 ac, 38.00% Impervious, Inflow Depth = 0.84" for 1-Year event
Inflow = 18.58 cfs @ 12.08 hrs, Volume= 1.237 af
Outflow = 1.00 cfs @ 14.12 hrs, Volume= 1.046 af, Atten= 95%, Lag= 122.6 min
Primary = 1.00 cfs @ 14.12 hrs, Volume= 1.046 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 853.47' @ 14.12 hrs Surf.Area= 22,671 sf Storage= 29,835 cf

Plug-Flow detention time= 475.6 min calculated for 1.045 af (84% of inflow)
Center-of-Mass det. time= 404.5 min (1,261.9 - 857.4)

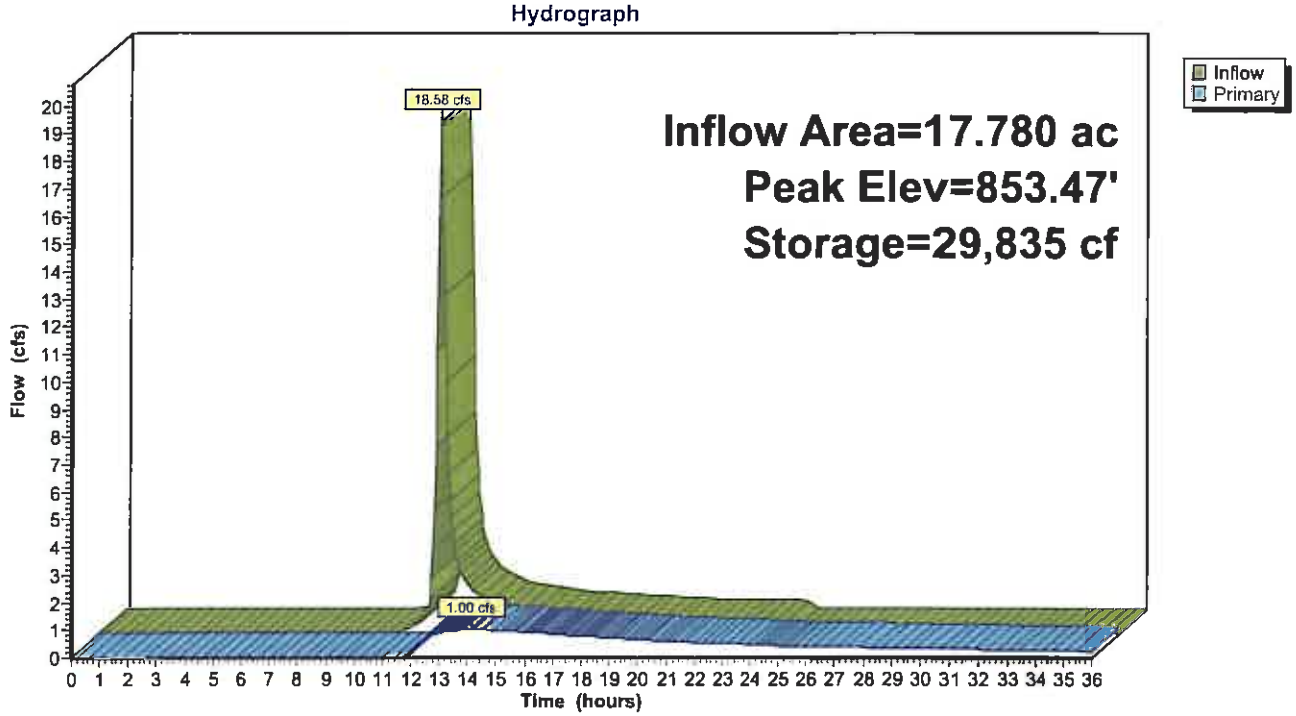
Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	129,209 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	17,950	0	0
853.00	21,130	19,540	19,540
854.00	24,409	22,770	42,310
855.00	27,790	26,100	68,409
856.00	31,270	29,530	97,939
857.00	31,270	31,270	129,209

Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	**42.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	853.00'	**6.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	854.50'	**48.0" W x 12.0" H Vert. Orifice/Grate X 2.00** C= 0.600

Primary OutFlow Max=1.00 cfs @ 14.12 hrs HW=853.47' (Free Discharge)
↑—**1=Culvert** (Passes 1.00 cfs of 15.83 cfs potential flow)
↑—**2=Orifice/Grate** (Orifice Controls 0.48 cfs @ 5.50 fps)
—**3=Orifice/Grate** (Orifice Controls 0.52 cfs @ 2.20 fps)
—**4=Orifice/Grate** (Controls 0.00 cfs)

Pond 7P: North Pond



Summary for Pond 8P: South Pond

Inflow Area = 16.540 ac, 38.00% Impervious, Inflow Depth = 0.84" for 1-Year event
Inflow = 17.28 cfs @ 12.08 hrs, Volume= 1.151 af
Outflow = 1.37 cfs @ 13.29 hrs, Volume= 1.070 af, Atten= 92%, Lag= 72.7 min
Primary = 1.37 cfs @ 13.29 hrs, Volume= 1.070 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 853.66' @ 13.29 hrs Surf.Area= 17,447 sf Storage= 24,988 cf

Plug-Flow detention time= 372.0 min calculated for 1.070 af (93% of inflow)
Center-of-Mass det. time= 334.4 min (1,191.8 - 857.4)

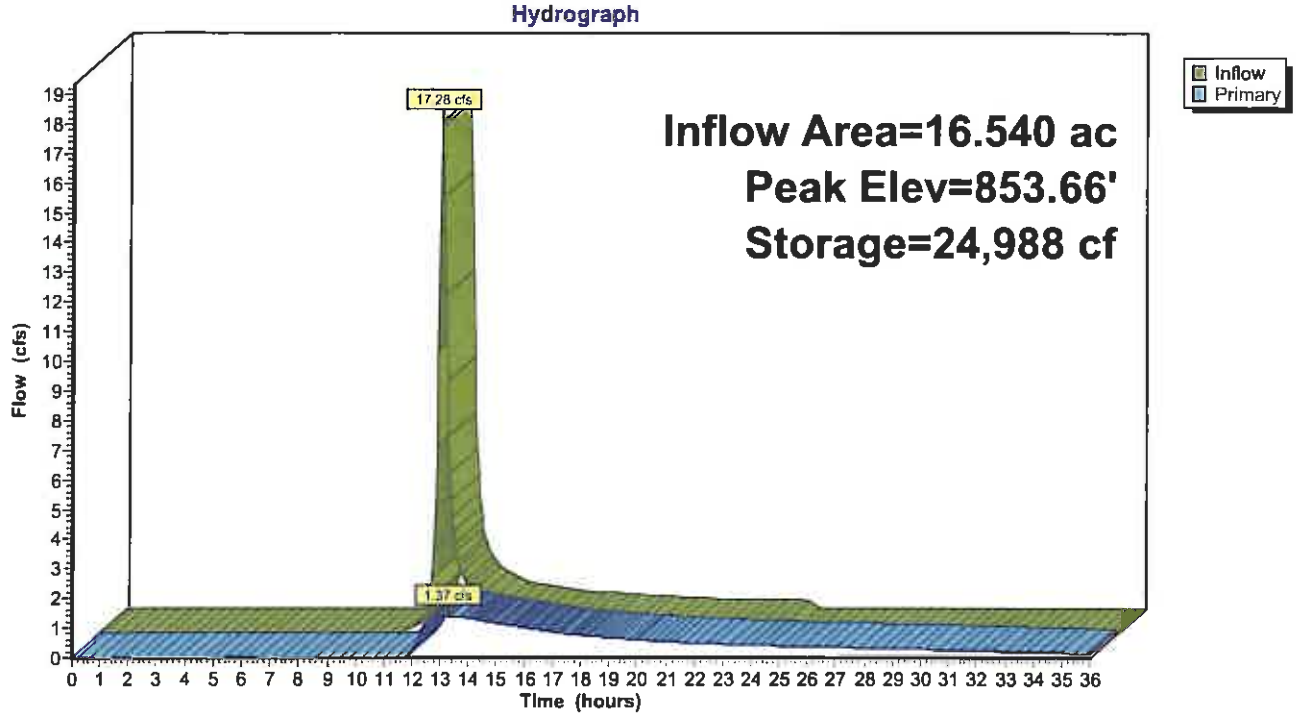
Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	98,638 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	12,704	0	0
853.00	15,521	14,113	14,113
854.00	18,440	16,981	31,093
855.00	21,458	19,949	51,042
856.00	24,578	23,018	74,060
857.00	24,578	24,578	98,638

Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	**42.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	853.00'	**6.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	854.50'	**48.0" W x 12.0" H Vert. Orifice/Grate X 2.00** C= 0.600

Primary OutFlow Max=1.37 cfs @ 13.29 hrs HW=853.66' (Free Discharge)
↑—**1=Culvert** (Passes 1.37 cfs of 19.72 cfs potential flow)
↑—**2=Orifice/Grate** (Orifice Controls 0.51 cfs @ 5.88 fps)
—**3=Orifice/Grate** (Orifice Controls 0.86 cfs @ 2.61 fps)
—**4=Orifice/Grate** (Controls 0.00 cfs)

Pond 8P: South Pond

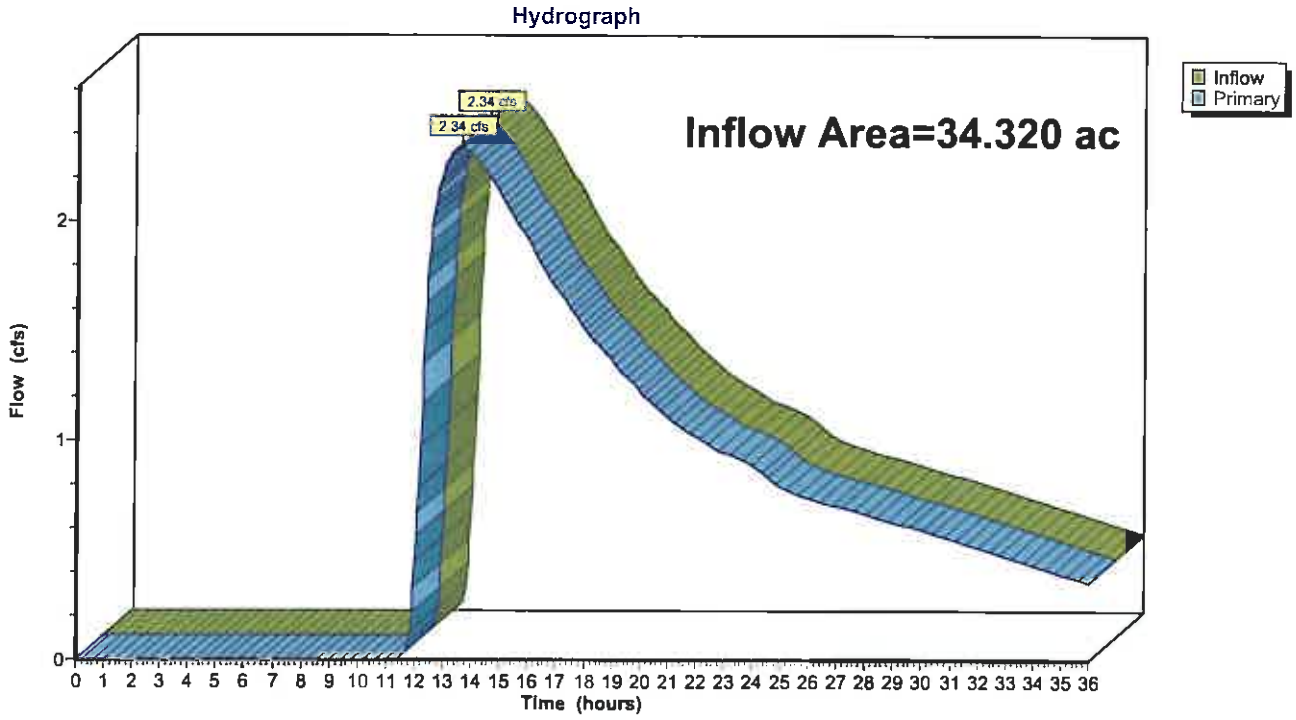


Summary for Link 6L: Holton Run Proposed

Inflow Area = 34.320 ac, 38.00% Impervious, Inflow Depth > 0.74" for 1-Year event
Inflow = 2.34 cfs @ 13.61 hrs, Volume= 2.117 af
Primary = 2.34 cfs @ 13.61 hrs, Volume= 2.117 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 6L: Holton Run Proposed



Summary for Subcatchment 4S: North Proposed

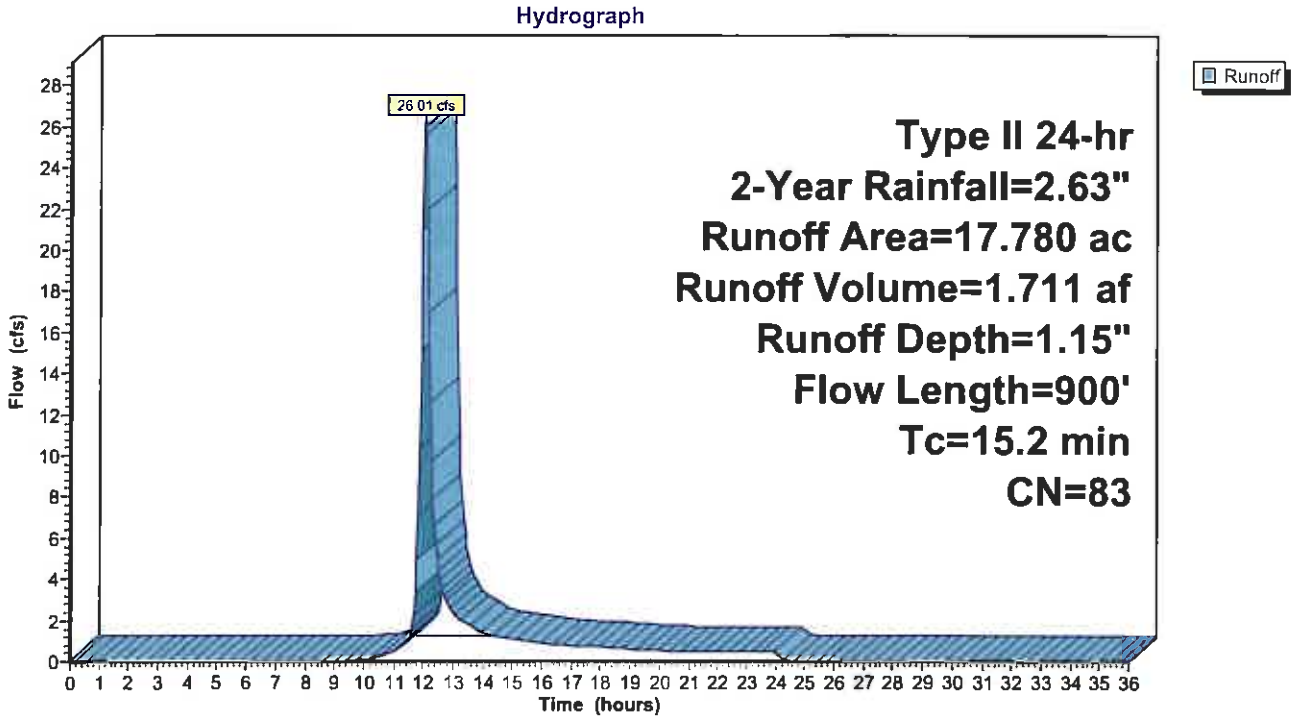
Runoff = 26.01 cfs @ 12.08 hrs, Volume= 1.711 af, Depth= 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.63"

Area (ac)	CN	Description
17.780	83	1/4 acre lots, 38% imp, HSG C
11.024		62.00% Pervious Area
6.756		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 4S: North Proposed



Summary for Subcatchment 5S: South Proposed

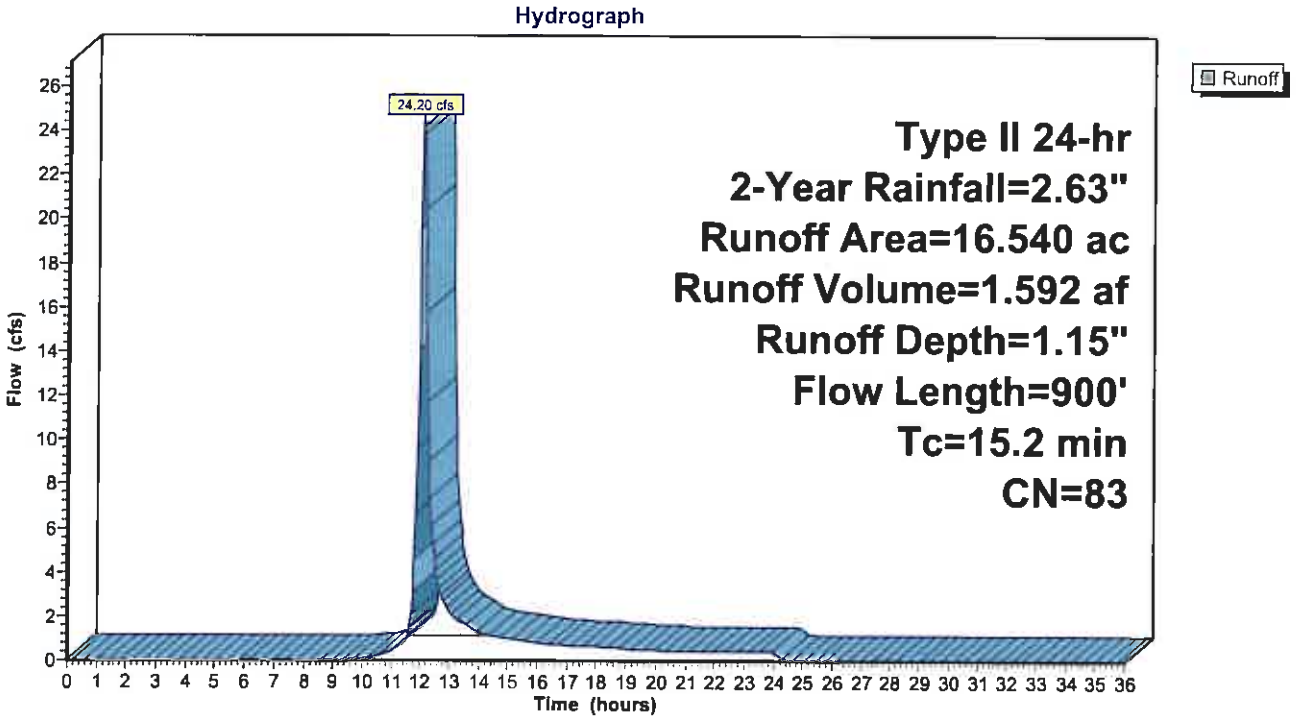
Runoff = 24.20 cfs @ 12.08 hrs, Volume= 1.592 af, Depth= 1.15"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-Year Rainfall=2.63"

Area (ac)	CN	Description
16.540	83	1/4 acre lots, 38% imp, HSG C
10.255		62.00% Pervious Area
6.285		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 5S: South Proposed



Summary for Pond 7P: North Pond

Inflow Area = 17.780 ac, 38.00% Impervious, Inflow Depth = 1.15" for 2-Year event
Inflow = 26.01 cfs @ 12.08 hrs, Volume= 1.711 af
Outflow = 1.88 cfs @ 13.37 hrs, Volume= 1.498 af, Atten= 93%, Lag= 77.2 min
Primary = 1.88 cfs @ 13.37 hrs, Volume= 1.498 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 853.88' @ 13.37 hrs Surf.Area= 24,022 sf Storage= 39,448 cf

Plug-Flow detention time= 397.3 min calculated for 1.496 af (87% of inflow)
Center-of-Mass det. time= 337.2 min (1,185.1 - 847.8)

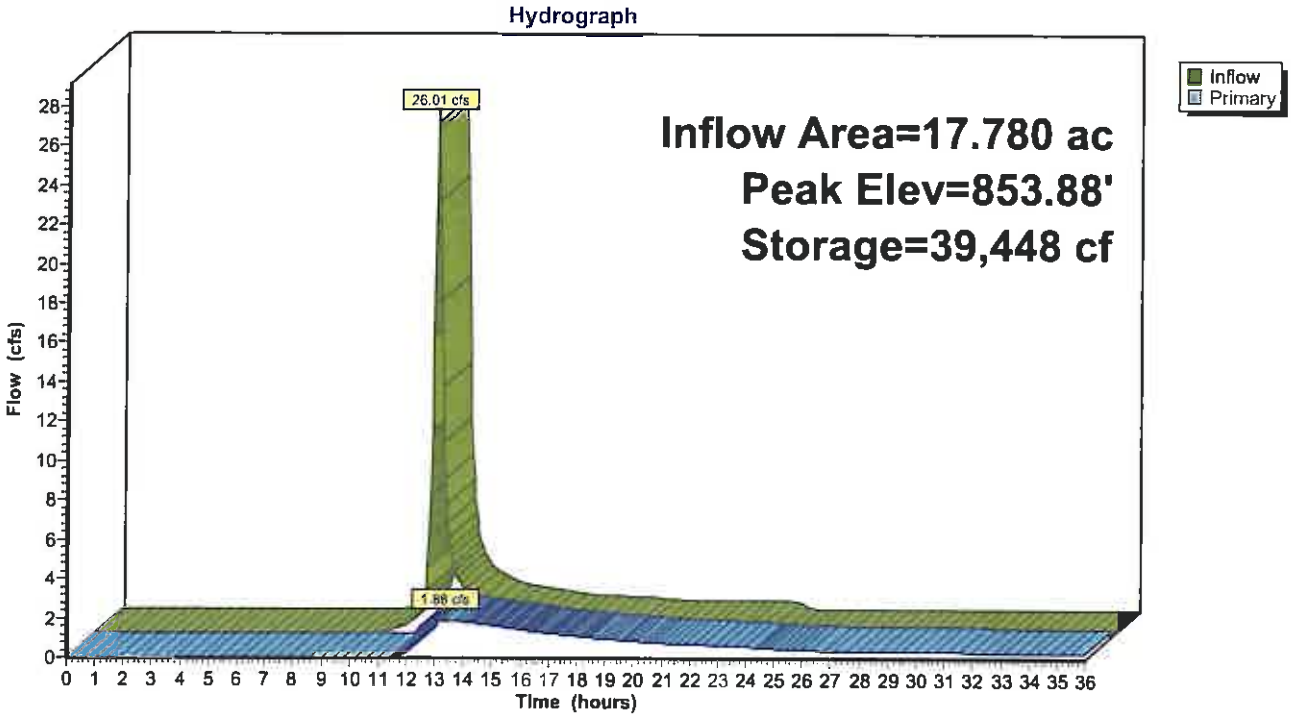
Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	129,209 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	17,950	0	0
853.00	21,130	19,540	19,540
854.00	24,409	22,770	42,310
855.00	27,790	26,100	68,409
856.00	31,270	29,530	97,939
857.00	31,270	31,270	129,209

Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	**42.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	853.00'	**6.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	854.50'	**48.0" W x 12.0" H Vert. Orifice/Grate X 2.00** C= 0.600

Primary **OutFlow** Max=1.88 cfs @ 13.37 hrs HW=853.88' (Free Discharge)
└**1=Culvert** (Passes 1.88 cfs of 24.62 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.55 cfs @ 6.31 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.33 cfs @ 3.01 fps)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Pond 7P: North Pond



Summary for Pond 8P: South Pond

Inflow Area = 16.540 ac, 38.00% Impervious, Inflow Depth = 1.15" for 2-Year event
Inflow = 24.20 cfs @ 12.08 hrs, Volume= 1.592 af
Outflow = 2.47 cfs @ 12.85 hrs, Volume= 1.501 af, Atten= 90%, Lag= 46.5 min
Primary = 2.47 cfs @ 12.85 hrs, Volume= 1.501 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 854.14' @ 12.85 hrs Surf.Area= 18,875 sf Storage= 33,784 cf

Plug-Flow detention time= 311.3 min calculated for 1.499 af (94% of inflow)
Center-of-Mass det. time= 280.5 min (1,128.4 - 847.8)

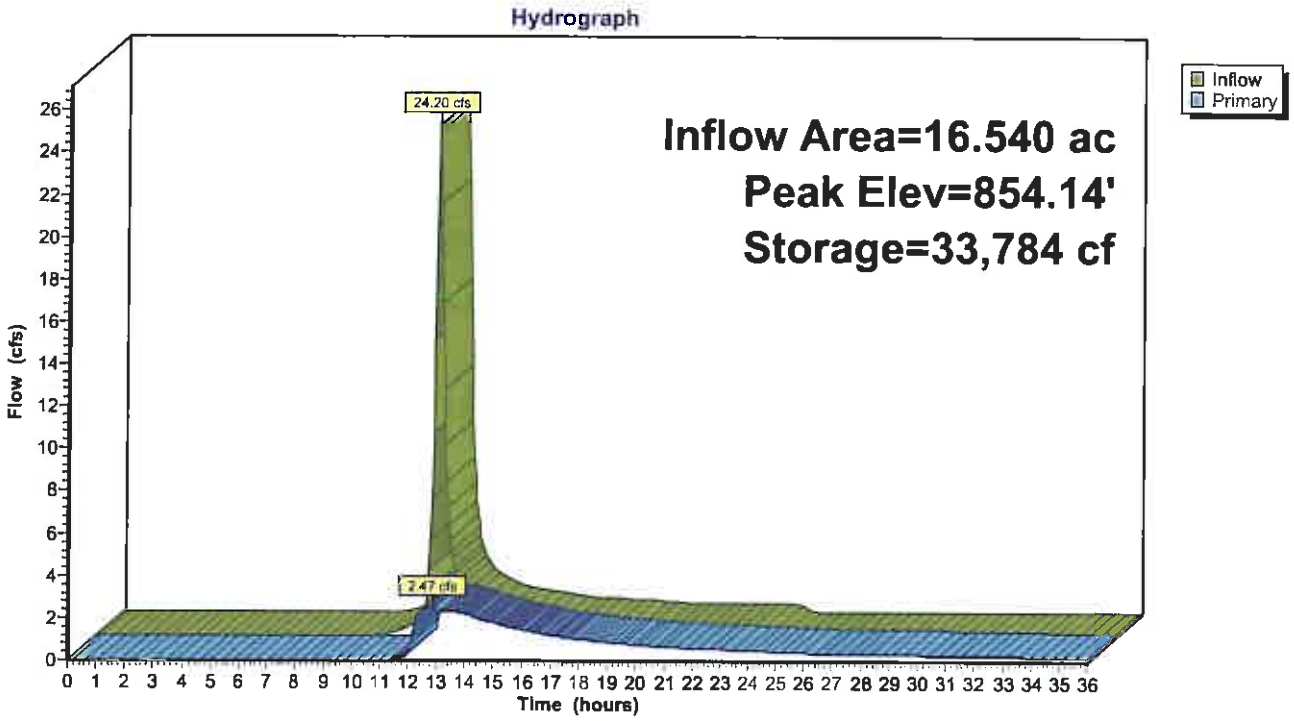
Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	98,638 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	12,704	0	0
853.00	15,521	14,113	14,113
854.00	18,440	16,981	31,093
855.00	21,458	19,949	51,042
856.00	24,578	23,018	74,060
857.00	24,578	24,578	98,638

Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	**42.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	853.00'	**6.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	854.50'	**48.0" W x 12.0" H Vert. Orifice/Grate X 2.00** C= 0.600

Primary OutFlow Max=2.47 cfs @ 12.85 hrs HW=854.14' (Free Discharge)
└**1=Culvert** (Passes 2.47 cfs of 30.80 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.59 cfs @ 6.77 fps)
  ├**3=Orifice/Grate** (Orifice Controls 1.88 cfs @ 3.75 fps)
  └**4=Orifice/Grate** (Controls 0.00 cfs)

Pond 8P: South Pond



Summary for Subcatchment 5S: South Proposed

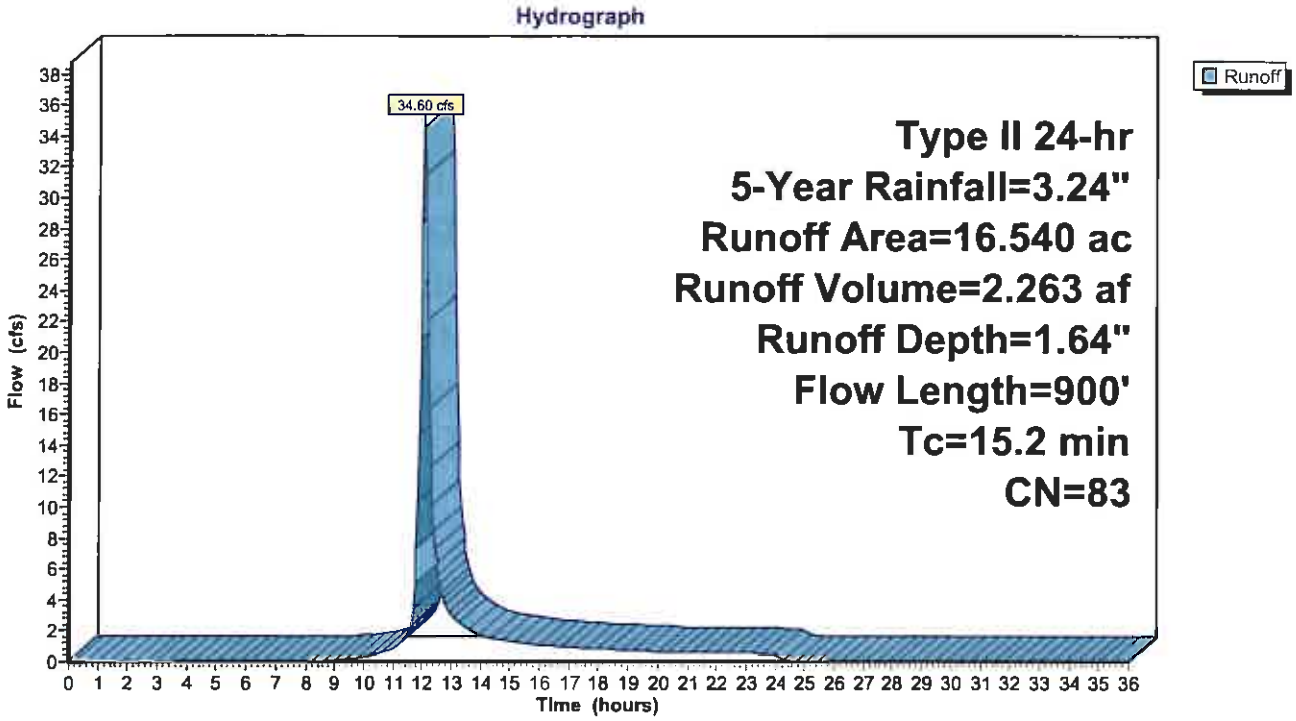
Runoff = 34.60 cfs @ 12.08 hrs, Volume= 2.263 af, Depth= 1.64"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 5-Year Rainfall=3.24"

Area (ac)	CN	Description
16.540	83	1/4 acre lots, 38% imp, HSG C
10.255		62.00% Pervious Area
6.285		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 5S: South Proposed



Summary for Pond 7P: North Pond

Inflow Area = 17.780 ac, 38.00% Impervious, Inflow Depth = 1.64" for 5-Year event
Inflow = 37.19 cfs @ 12.08 hrs, Volume= 2.433 af
Outflow = 3.22 cfs @ 12.99 hrs, Volume= 2.196 af, Atten= 91%, Lag= 55.2 min
Primary = 3.22 cfs @ 12.99 hrs, Volume= 2.196 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 854.53' @ 12.99 hrs Surf.Area= 26,193 sf Storage= 55,661 cf

Plug-Flow detention time= 337.9 min calculated for 2.196 af (90% of inflow)
Center-of-Mass det. time= 288.0 min (1,125.7 - 837.7)

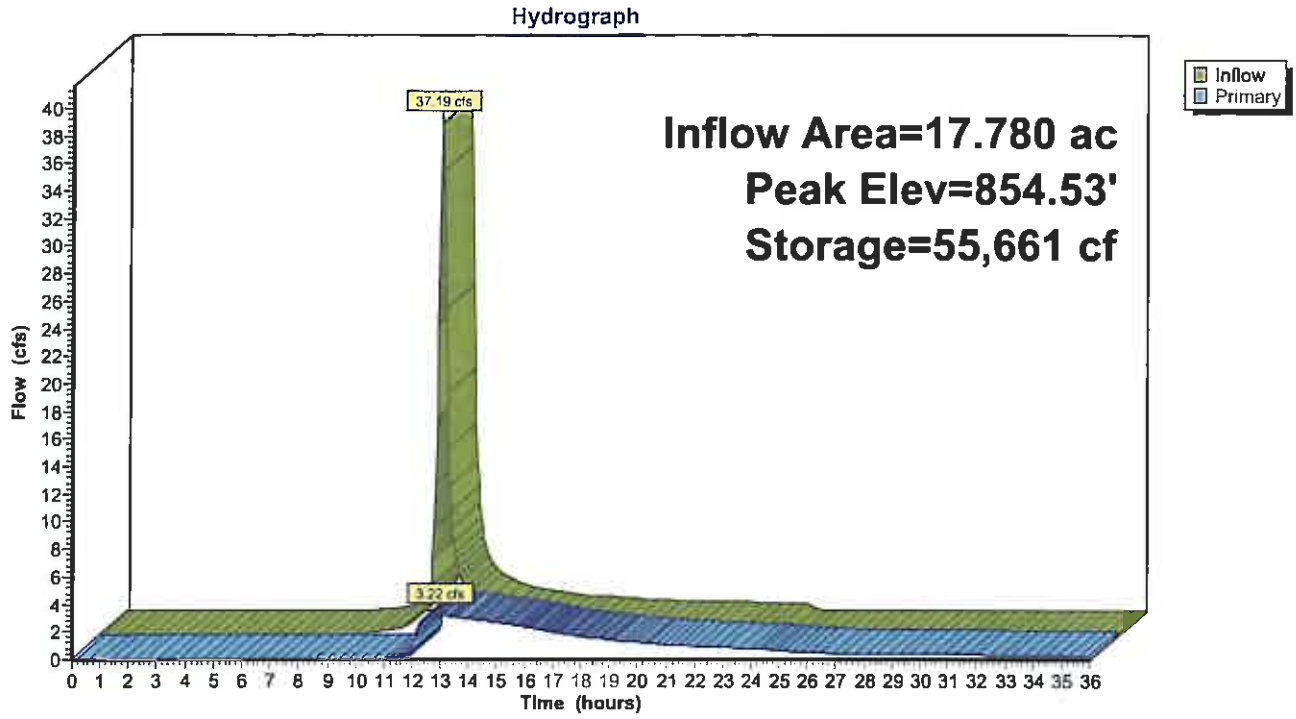
Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	129,209 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	17,950	0	0
853.00	21,130	19,540	19,540
854.00	24,409	22,770	42,310
855.00	27,790	26,100	68,409
856.00	31,270	29,530	97,939
857.00	31,270	31,270	129,209

Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	**42.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	853.00'	**6.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	854.50'	**48.0" W x 12.0" H Vert. Orifice/Grate X 2.00** C= 0.600

Primary **OutFlow** Max=3.18 cfs @ 12.99 hrs HW=854.53' (Free Discharge)
└**1=Culvert** (Passes 3.18 cfs of 40.27 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.65 cfs @ 7.40 fps)
  ├**3=Orifice/Grate** (Orifice Controls 2.42 cfs @ 4.83 fps)
  └**4=Orifice/Grate** (Orifice Controls 0.12 cfs @ 0.53 fps)

Pond 7P: North Pond



Summary for Pond 8P: South Pond

Inflow Area = 16.540 ac, 38.00% Impervious, Inflow Depth = 1.64" for 5-Year event
Inflow = 34.60 cfs @ 12.08 hrs, Volume= 2.263 af
Outflow = 6.64 cfs @ 12.48 hrs, Volume= 2.161 af, Atten= 81%, Lag= 24.6 min
Primary = 6.64 cfs @ 12.48 hrs, Volume= 2.161 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 854.75' @ 12.48 hrs Surf.Area= 20,715 sf Storage= 45,849 cf

Plug-Flow detention time= 256.6 min calculated for 2.158 af (95% of inflow)
Center-of-Mass det. time= 231.8 min (1,069.5 - 837.7)

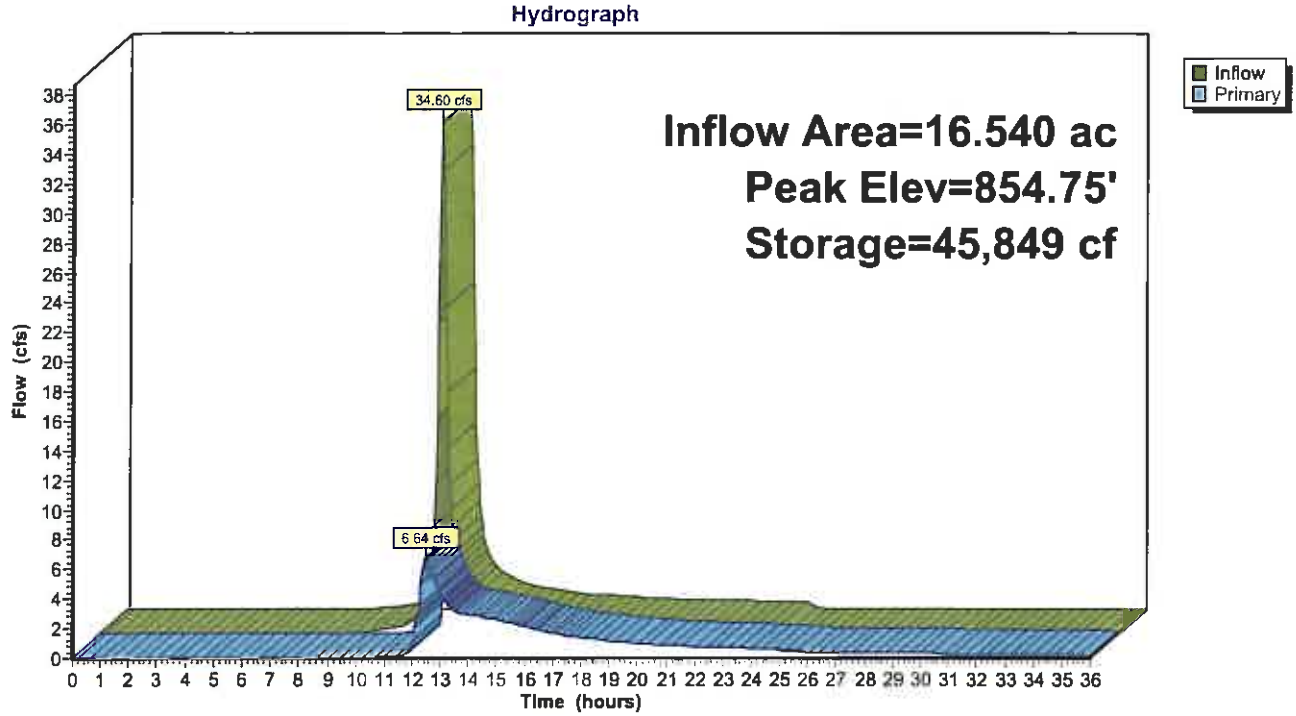
Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	98,638 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	12,704	0	0
853.00	15,521	14,113	14,113
854.00	18,440	16,981	31,093
855.00	21,458	19,949	51,042
856.00	24,578	23,018	74,060
857.00	24,578	24,578	98,638

Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	**42.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	853.00'	**6.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	854.50'	**48.0" W x 12.0" H Vert. Orifice/Grate X 2.00** C= 0.600

Primary OutFlow Max=6.62 cfs @ 12.48 hrs HW=854.75' (Free Discharge)
└**1=Culvert** (Passes 6.62 cfs of 45.86 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.68 cfs @ 7.74 fps)
├**3=Orifice/Grate** (Orifice Controls 2.68 cfs @ 5.35 fps)
└**4=Orifice/Grate** (Orifice Controls 3.27 cfs @ 1.61 fps)

Pond 8P: South Pond

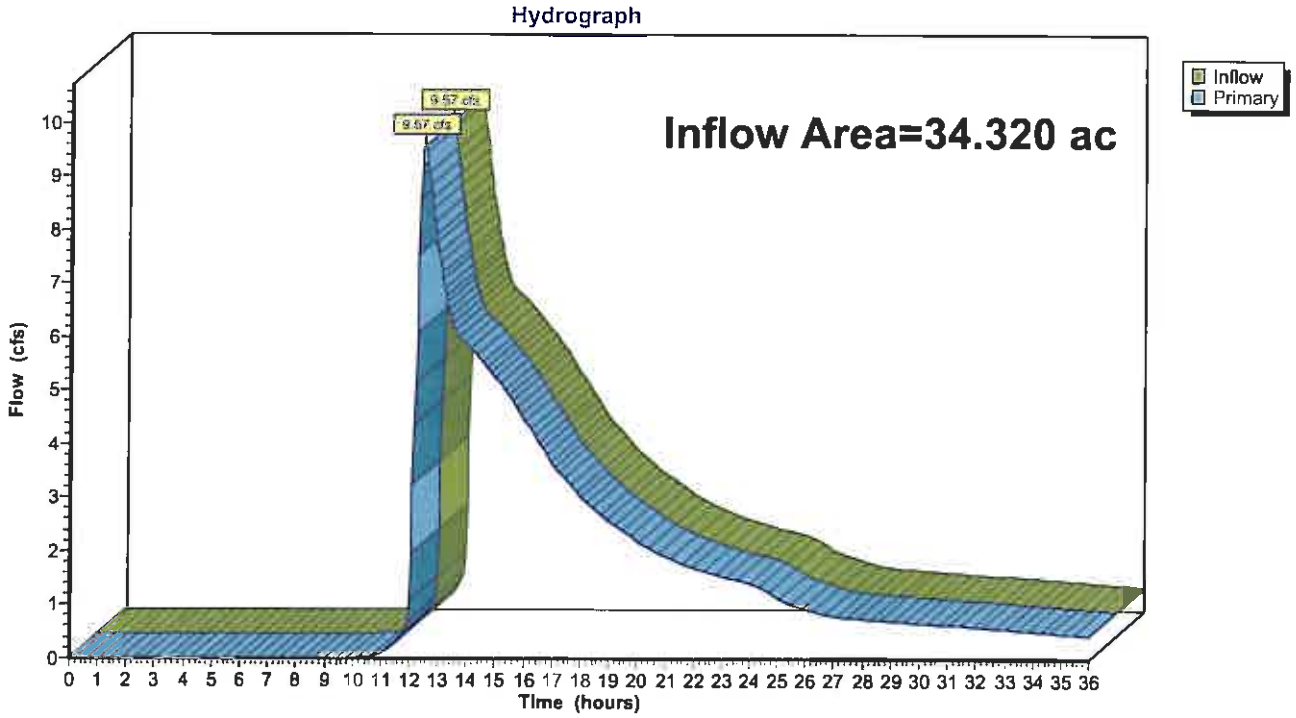


Summary for Link 6L: Holton Run Proposed

Inflow Area = 34.320 ac, 38.00% Impervious, Inflow Depth > 1.52" for 5-Year event
Inflow = 9.57 cfs @ 12.50 hrs, Volume= 4.357 af
Primary = 9.57 cfs @ 12.50 hrs, Volume= 4.357 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 6L: Holton Run Proposed



Summary for Subcatchment 4S: North Proposed

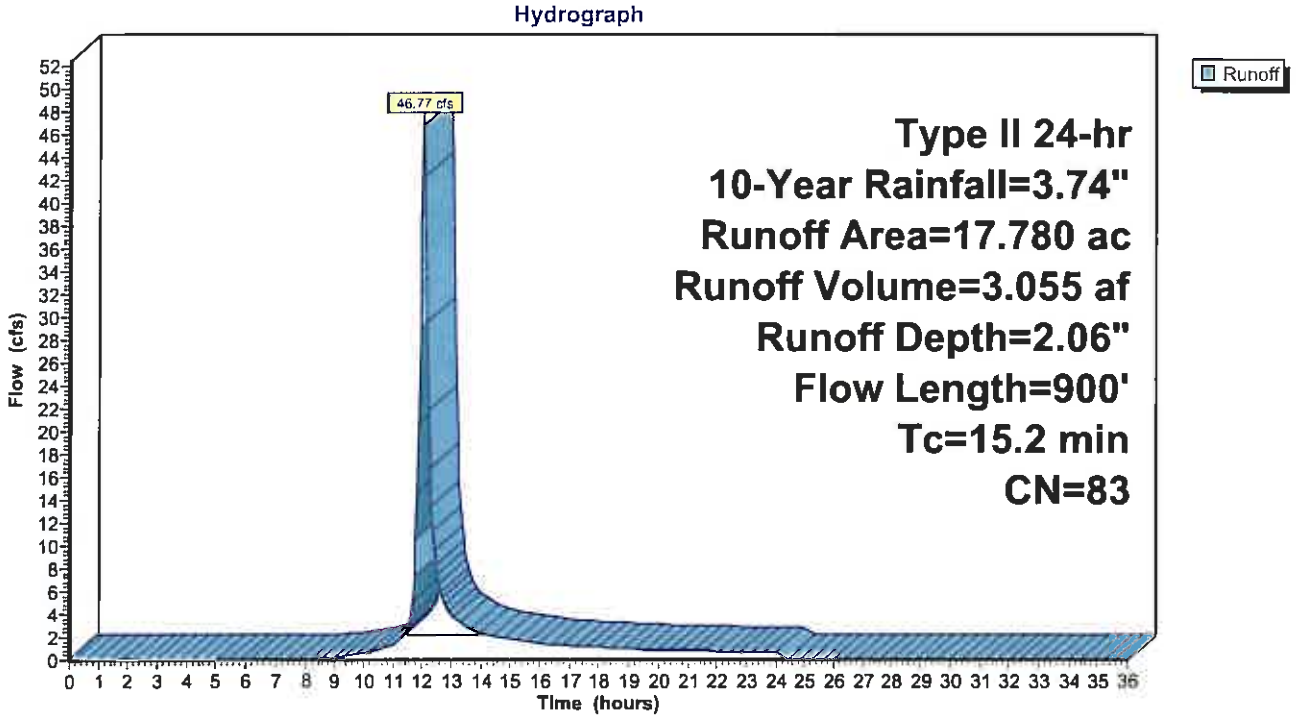
Runoff = 46.77 cfs @ 12.07 hrs, Volume= 3.055 af, Depth= 2.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.74"

Area (ac)	CN	Description
17.780	83	1/4 acre lots, 38% imp, HSG C
11.024		62.00% Pervious Area
6.756		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 4S: North Proposed



Summary for Subcatchment 5S: South Proposed

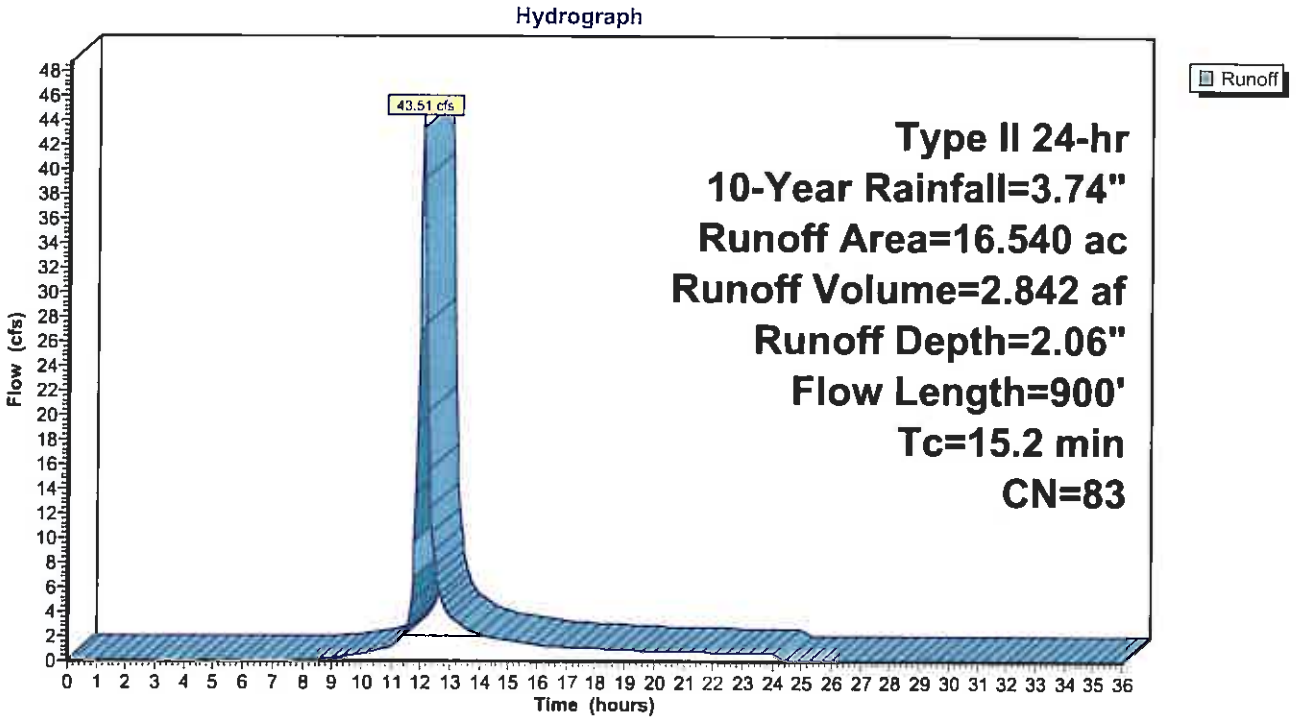
Runoff = 43.51 cfs @ 12.07 hrs, Volume= 2.842 af, Depth= 2.06"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-Year Rainfall=3.74"

Area (ac)	CN	Description
16.540	83	1/4 acre lots, 38% imp, HSG C
10.255		62.00% Pervious Area
6.285		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 5S: South Proposed



Summary for Pond 7P: North Pond

Inflow Area = 17.780 ac, 38.00% Impervious, Inflow Depth = 2.06" for 10-Year event
Inflow = 46.77 cfs @ 12.07 hrs, Volume= 3.055 af
Outflow = 8.92 cfs @ 12.48 hrs, Volume= 2.807 af, Atten= 81%, Lag= 24.2 min
Primary = 8.92 cfs @ 12.48 hrs, Volume= 2.807 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 854.86' @ 12.48 hrs Surf.Area= 27,301 sf Storage= 64,423 cf

Plug-Flow detention time= 286.8 min calculated for 2.803 af (92% of inflow)
Center-of-Mass det. time= 244.6 min (1,075.8 - 831.2)

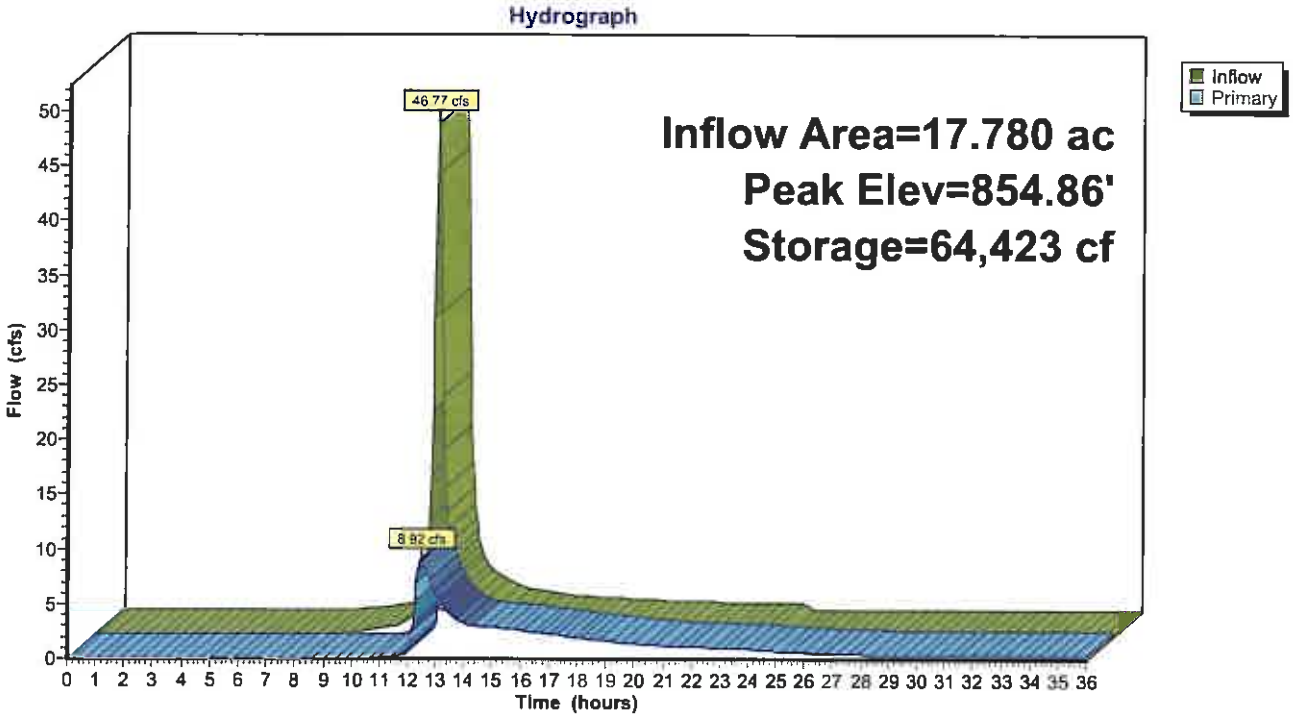
Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	129,209 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	17,950	0	0
853.00	21,130	19,540	19,540
854.00	24,409	22,770	42,310
855.00	27,790	26,100	68,409
856.00	31,270	29,530	97,939
857.00	31,270	31,270	129,209

Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	**42.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	853.00'	**6.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	854.50'	**48.0" W x 12.0" H Vert. Orifice/Grate X 2.00** C= 0.600

Primary OutFlow Max=8.89 cfs @ 12.48 hrs HW=854.85' (Free Discharge)
└**1=Culvert** (Passes 8.89 cfs of 48.33 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.69 cfs @ 7.89 fps)
├**3=Orifice/Grate** (Orifice Controls 2.79 cfs @ 5.57 fps)
└**4=Orifice/Grate** (Orifice Controls 5.42 cfs @ 1.91 fps)

Pond 7P: North Pond



Summary for Pond 8P: South Pond

Inflow Area = 16.540 ac, 38.00% Impervious, Inflow Depth = 2.06" for 10-Year event
Inflow = 43.51 cfs @ 12.07 hrs, Volume= 2.842 af
Outflow = 14.71 cfs @ 12.32 hrs, Volume= 2.733 af, Atten= 66%, Lag= 14.7 min
Primary = 14.71 cfs @ 12.32 hrs, Volume= 2.733 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 855.07' @ 12.32 hrs Surf.Area= 21,669 sf Storage= 52,503 cf

Plug-Flow detention time= 217.9 min calculated for 2.729 af (96% of inflow)
Center-of-Mass det. time= 196.5 min (1,027.7 - 831.2)

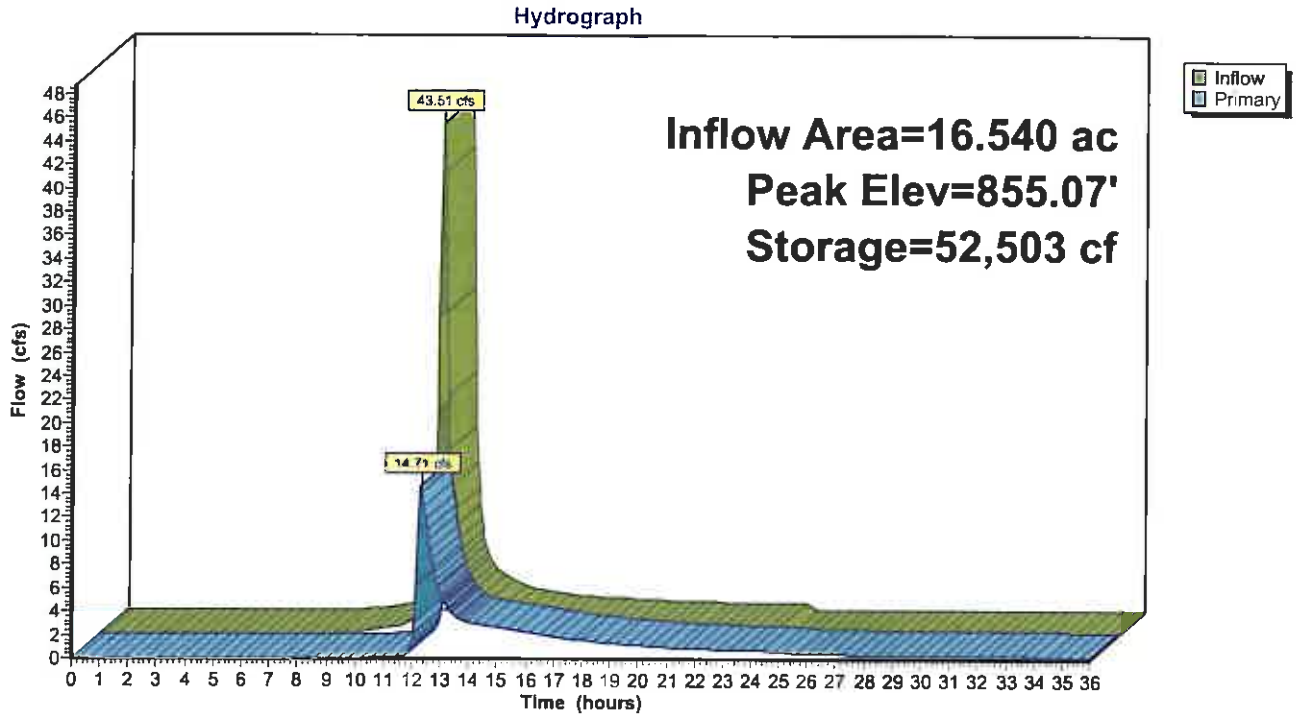
Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	98,638 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	12,704	0	0
853.00	15,521	14,113	14,113
854.00	18,440	16,981	31,093
855.00	21,458	19,949	51,042
856.00	24,578	23,018	74,060
857.00	24,578	24,578	98,638

Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	**42.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	853.00'	**6.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	854.50'	**48.0" W x 12.0" H Vert. Orifice/Grate X 2.00** C= 0.600

Primary OutFlow Max=14.58 cfs @ 12.32 hrs HW=855.06' (Free Discharge)
└**1=Culvert** (Passes 14.58 cfs of 53.21 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.72 cfs @ 8.20 fps)
  ├**3=Orifice/Grate** (Orifice Controls 3.00 cfs @ 5.99 fps)
  └**4=Orifice/Grate** (Orifice Controls 10.86 cfs @ 2.41 fps)

Pond 8P: South Pond

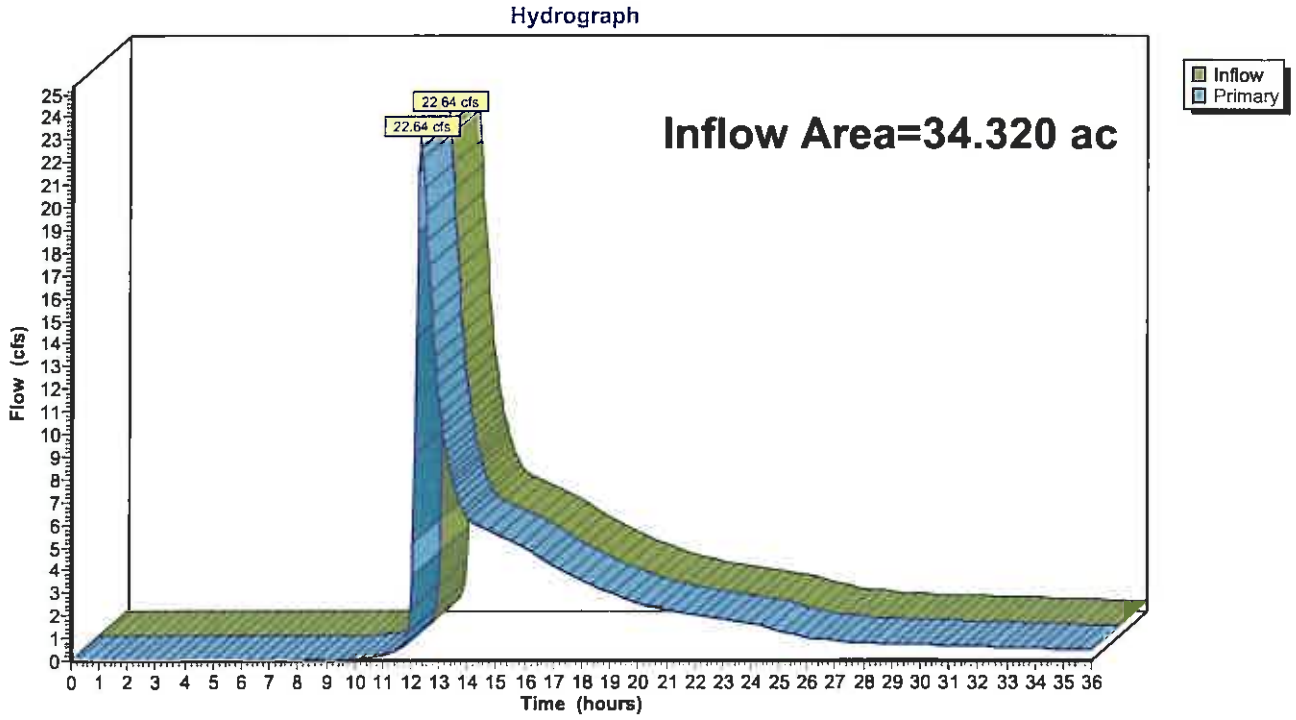


Summary for Link 6L: Holton Run Proposed

Inflow Area = 34.320 ac, 38.00% Impervious, Inflow Depth > 1.94" for 10-Year event
Inflow = 22.64 cfs @ 12.37 hrs, Volume= 5.540 af
Primary = 22.64 cfs @ 12.37 hrs, Volume= 5.540 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 6L: Holton Run Proposed



Summary for Subcatchment 4S: North Proposed

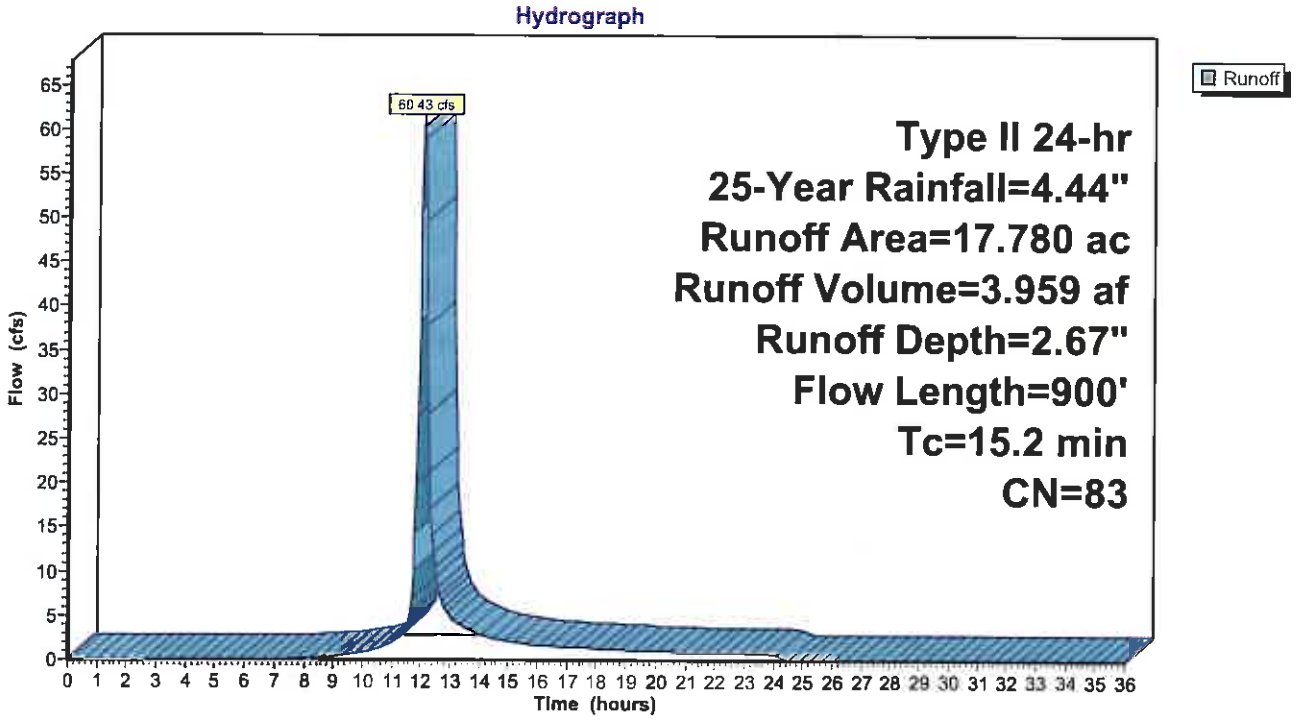
Runoff = 60.43 cfs @ 12.07 hrs, Volume= 3.959 af, Depth= 2.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.44"

Area (ac)	CN	Description
17.780	83	1/4 acre lots, 38% imp, HSG C
11.024		62.00% Pervious Area
6.756		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 4S: North Proposed



Summary for Subcatchment 5S: South Proposed

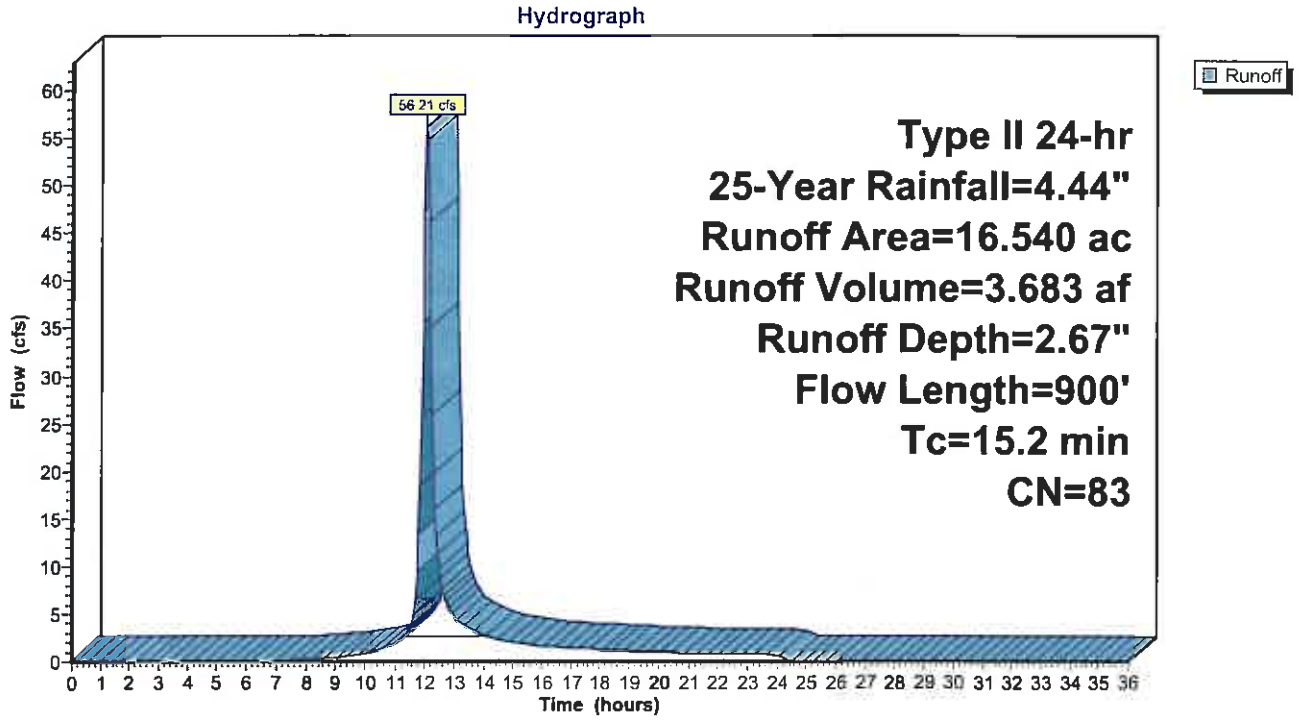
Runoff = 56.21 cfs @ 12.07 hrs, Volume= 3.683 af, Depth= 2.67"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 25-Year Rainfall=4.44"

Area (ac)	CN	Description
16.540	83	1/4 acre lots, 38% imp, HSG C
10.255		62.00% Pervious Area
6.285		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 5S: South Proposed



Summary for Pond 7P: North Pond

Inflow Area = 17.780 ac, 38.00% Impervious, Inflow Depth = 2.67" for 25-Year event
Inflow = 60.43 cfs @ 12.07 hrs, Volume= 3.959 af
Outflow = 20.79 cfs @ 12.31 hrs, Volume= 3.697 af, Atten= 66%, Lag= 14.5 min
Primary = 20.79 cfs @ 12.31 hrs, Volume= 3.697 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 855.26' @ 12.31 hrs Surf.Area= 28,679 sf Storage= 75,626 cf

Plug-Flow detention time= 236.9 min calculated for 3.692 af (93% of inflow)
Center-of-Mass det. time= 201.5 min (1,025.3 - 823.8)

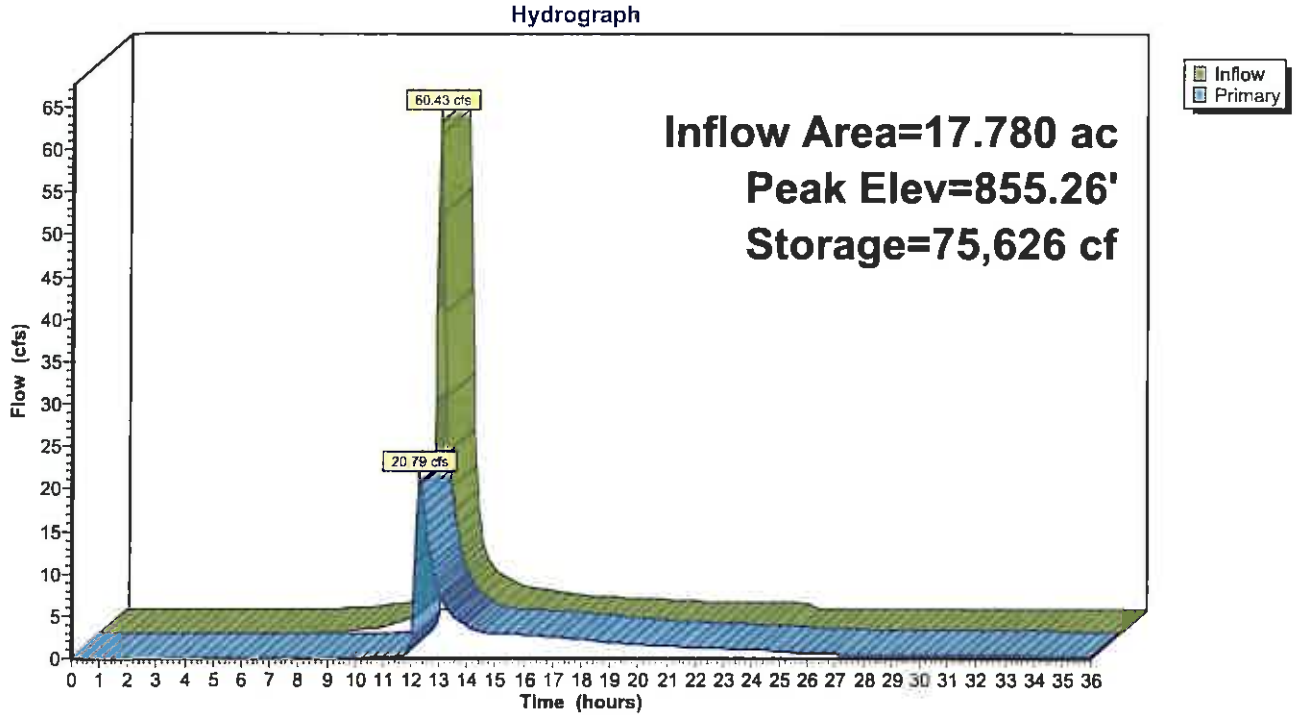
Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	129,209 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	17,950	0	0
853.00	21,130	19,540	19,540
854.00	24,409	22,770	42,310
855.00	27,790	26,100	68,409
856.00	31,270	29,530	97,939
857.00	31,270	31,270	129,209

Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	**42.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	853.00'	**6.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	854.50'	**48.0" W x 12.0" H Vert. Orifice/Grate X 2.00** C= 0.600

Primary OutFlow Max=20.67 cfs @ 12.31 hrs HW=855.25' (Free Discharge)
↑—**1=Culvert** (Passes 20.67 cfs of 57.23 cfs potential flow)
↑—**2=Orifice/Grate** (Orifice Controls 0.74 cfs @ 8.46 fps)
—**3=Orifice/Grate** (Orifice Controls 3.18 cfs @ 6.35 fps)
—**4=Orifice/Grate** (Orifice Controls 16.75 cfs @ 2.78 fps)

Pond 7P: North Pond



Summary for Pond 8P: South Pond

Inflow Area = 16.540 ac, 38.00% Impervious, Inflow Depth = 2.67" for 25-Year event
Inflow = 56.21 cfs @ 12.07 hrs, Volume= 3.683 af
Outflow = 28.24 cfs @ 12.24 hrs, Volume= 3.566 af, Atten= 50%, Lag= 10.3 min
Primary = 28.24 cfs @ 12.24 hrs, Volume= 3.566 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 855.46' @ 12.24 hrs Surf.Area= 22,890 sf Storage= 61,216 cf

Plug-Flow detention time= 181.7 min calculated for 3.561 af (97% of inflow)
Center-of-Mass det. time= 163.8 min (987.6 - 823.8)

Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	98,638 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

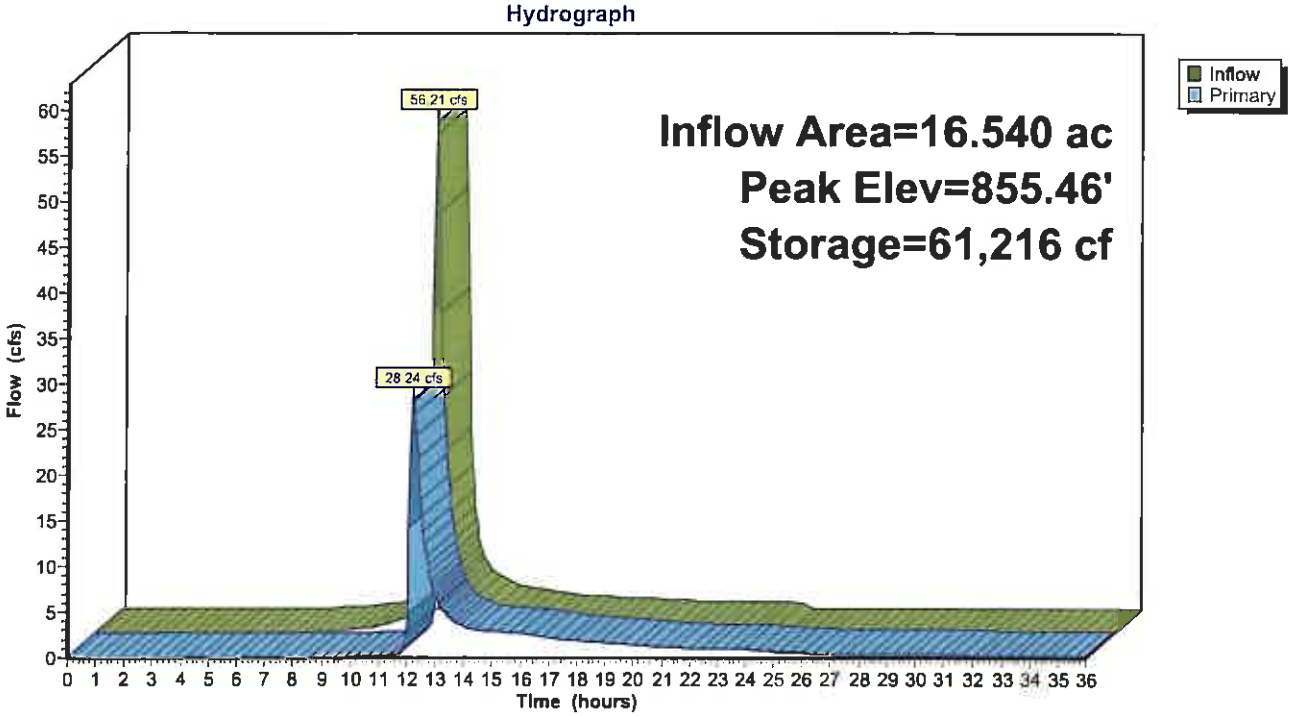
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	12,704	0	0
853.00	15,521	14,113	14,113
854.00	18,440	16,981	31,093
855.00	21,458	19,949	51,042
856.00	24,578	23,018	74,060
857.00	24,578	24,578	98,638

Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	**42.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	853.00'	**6.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	854.50'	**48.0" W x 12.0" H Vert. Orifice/Grate X 2.00** C= 0.600

Primary OutFlow Max=28.11 cfs @ 12.24 hrs HW=855.46' (Free Discharge)
└**1=Culvert** (Passes 28.11 cfs of 60.75 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.76 cfs @ 8.73 fps)
  ├**3=Orifice/Grate** (Orifice Controls 3.36 cfs @ 6.71 fps)
  └**4=Orifice/Grate** (Orifice Controls 23.99 cfs @ 3.14 fps)

Pond 8P: South Pond

Hydrograph

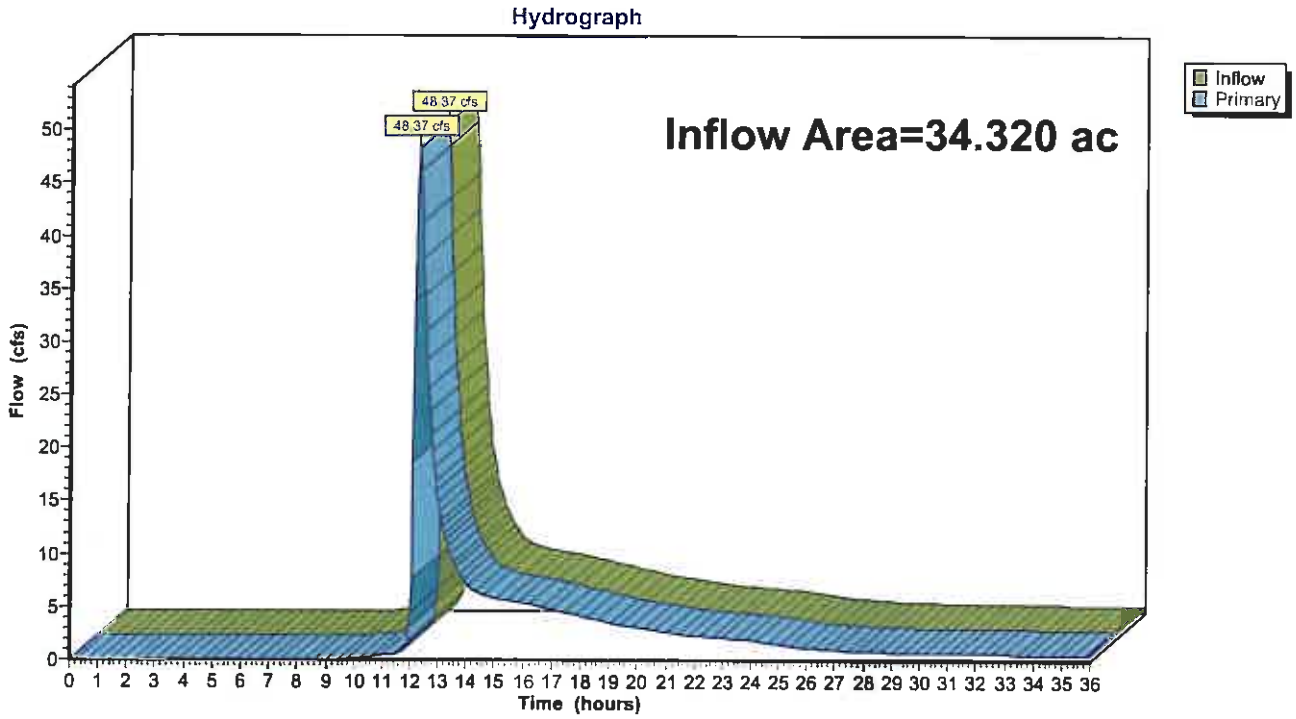


Summary for Link 6L: Holton Run Proposed

Inflow Area = 34.320 ac, 38.00% Impervious, Inflow Depth > 2.54" for 25-Year event
Inflow = 48.37 cfs @ 12.27 hrs, Volume= 7.263 af
Primary = 48.37 cfs @ 12.27 hrs, Volume= 7.263 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 6L: Holton Run Proposed



Summary for Subcatchment 4S: North Proposed

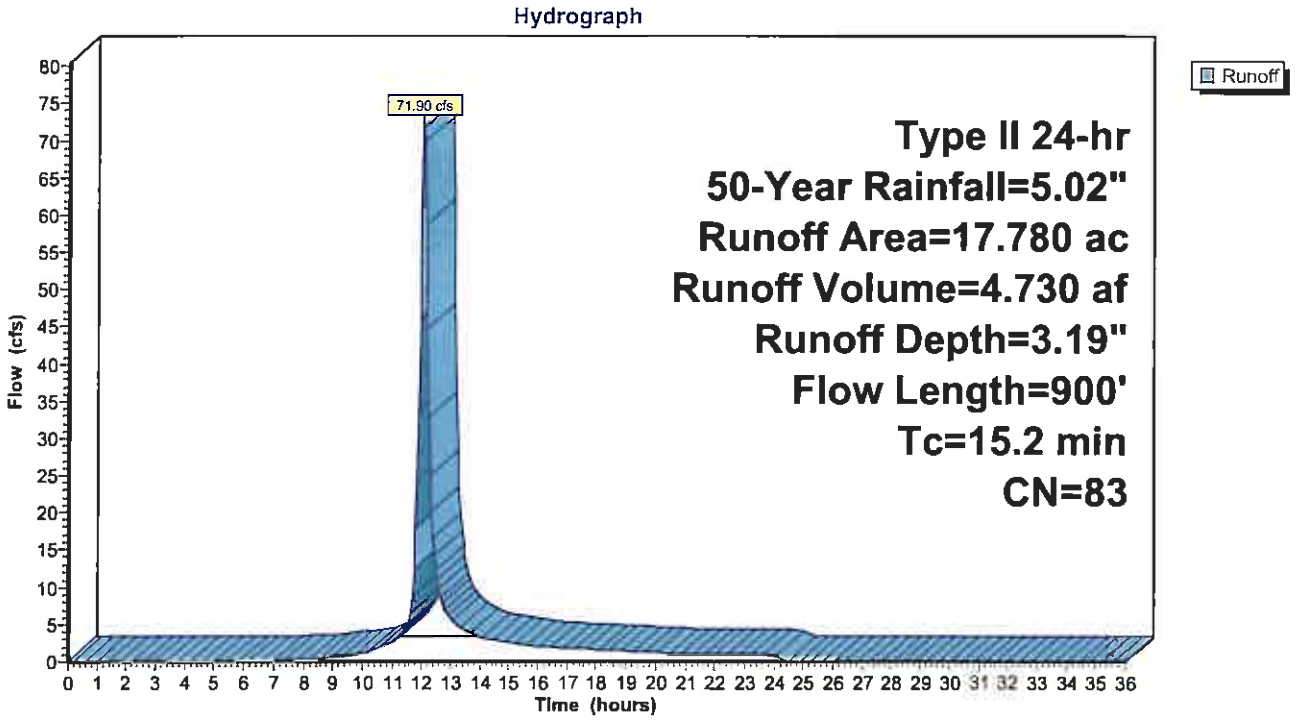
Runoff = 71.90 cfs @ 12.07 hrs, Volume= 4.730 af, Depth= 3.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=5.02"

Area (ac)	CN	Description
17.780	83	1/4 acre lots, 38% imp, HSG C
11.024		62.00% Pervious Area
6.756		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 4S: North Proposed



Summary for Subcatchment 5S: South Proposed

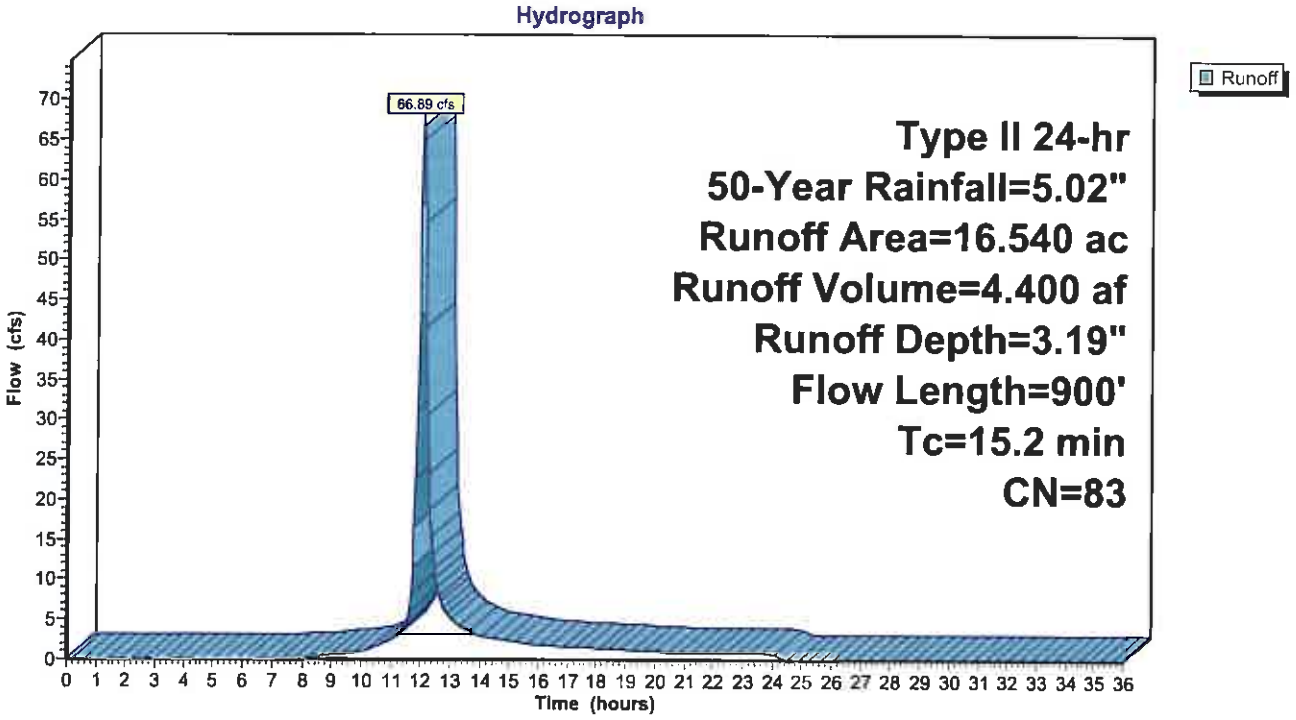
Runoff = 66.89 cfs @ 12.07 hrs, Volume= 4.400 af, Depth= 3.19"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 50-Year Rainfall=5.02"

Area (ac)	CN	Description
16.540	83	1/4 acre lots, 38% imp, HSG C
10.255		62.00% Pervious Area
6.285		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 5S: South Proposed



Summary for Pond 7P: North Pond

Inflow Area = 17.780 ac, 38.00% Impervious, Inflow Depth = 3.19" for 50-Year event
Inflow = 71.90 cfs @ 12.07 hrs, Volume= 4.730 af
Outflow = 31.95 cfs @ 12.26 hrs, Volume= 4.458 af, Atten= 56%, Lag= 11.6 min
Primary = 31.95 cfs @ 12.26 hrs, Volume= 4.458 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 855.56' @ 12.26 hrs Surf.Area= 29,748 sf Storage= 84,593 cf

Plug-Flow detention time= 208.8 min calculated for 4.452 af (94% of inflow)
Center-of-Mass det. time= 177.5 min (996.3 - 818.7)

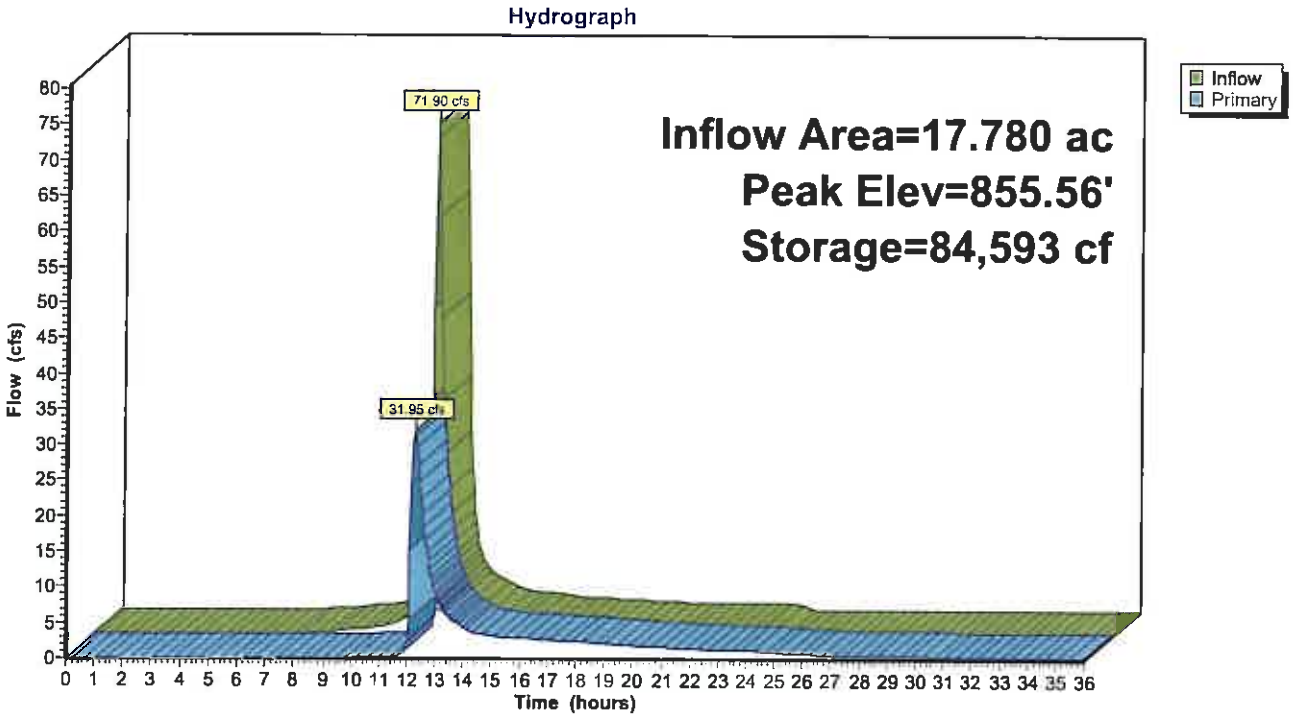
Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	129,209 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	17,950	0	0
853.00	21,130	19,540	19,540
854.00	24,409	22,770	42,310
855.00	27,790	26,100	68,409
856.00	31,270	29,530	97,939
857.00	31,270	31,270	129,209

Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	**42.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	853.00'	**6.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	854.50'	**48.0" W x 12.0" H Vert. Orifice/Grate X 2.00** C= 0.600

Primary OutFlow Max=31.76 cfs @ 12.26 hrs HW=855.56' (Free Discharge)
└1=**Culvert** (Passes 31.76 cfs of 62.27 cfs potential flow)
  ├2=**Orifice/Grate** (Orifice Controls 0.77 cfs @ 8.87 fps)
  ├3=**Orifice/Grate** (Orifice Controls 3.44 cfs @ 6.89 fps)
  └4=**Orifice/Grate** (Orifice Controls 27.54 cfs @ 3.44 fps)

Pond 7P: North Pond



Summary for Pond 8P: South Pond

Inflow Area = 16.540 ac, 38.00% Impervious, Inflow Depth = 3.19" for 50-Year event
Inflow = 66.89 cfs @ 12.07 hrs, Volume= 4.400 af
Outflow = 37.61 cfs @ 12.22 hrs, Volume= 4.277 af, Atten= 44%, Lag= 9.0 min
Primary = 37.61 cfs @ 12.22 hrs, Volume= 4.277 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 855.77' @ 12.22 hrs Surf.Area= 23,865 sf Storage= 68,527 cf

Plug-Flow detention time= 161.4 min calculated for 4.271 af (97% of inflow)
Center-of-Mass det. time= 145.6 min (964.3 - 818.7)

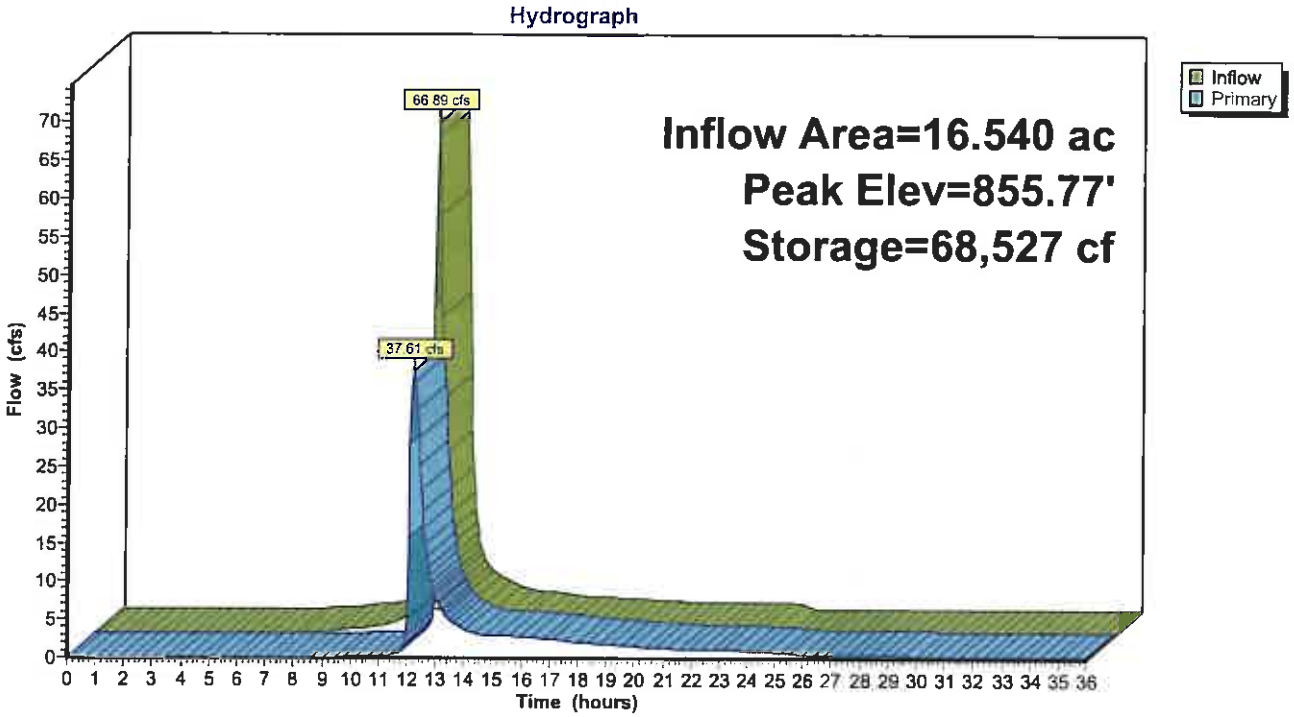
Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	98,638 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	12,704	0	0
853.00	15,521	14,113	14,113
854.00	18,440	16,981	31,093
855.00	21,458	19,949	51,042
856.00	24,578	23,018	74,060
857.00	24,578	24,578	98,638

Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	**42.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	853.00'	**6.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	854.50'	**48.0" W x 12.0" H Vert. Orifice/Grate X 2.00** C= 0.600

Primary **OutFlow** Max=37.31 cfs @ 12.22 hrs HW=855.76' (Free Discharge)
└**1=Culvert** (Passes 37.31 cfs of 65.67 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.80 cfs @ 9.13 fps)
  ├**3=Orifice/Grate** (Orifice Controls 3.61 cfs @ 7.22 fps)
  └**4=Orifice/Grate** (Orifice Controls 32.90 cfs @ 4.11 fps)

Pond 8P: South Pond

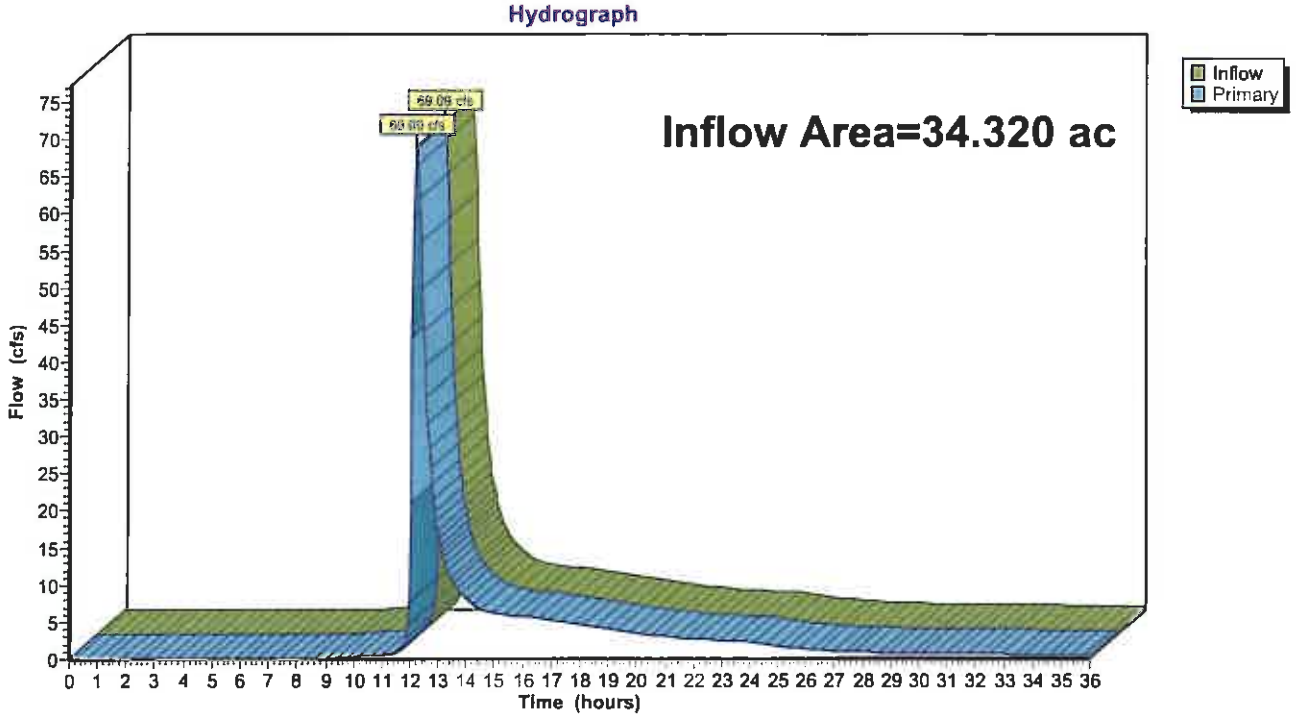


Summary for Link 6L: Holton Run Proposed

Inflow Area = 34.320 ac, 38.00% Impervious, Inflow Depth > 3.05" for 50-Year event
Inflow = 69.09 cfs @ 12.24 hrs, Volume= 8.735 af
Primary = 69.09 cfs @ 12.24 hrs, Volume= 8.735 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 6L: Holton Run Proposed



Summary for Subcatchment 4S: North Proposed

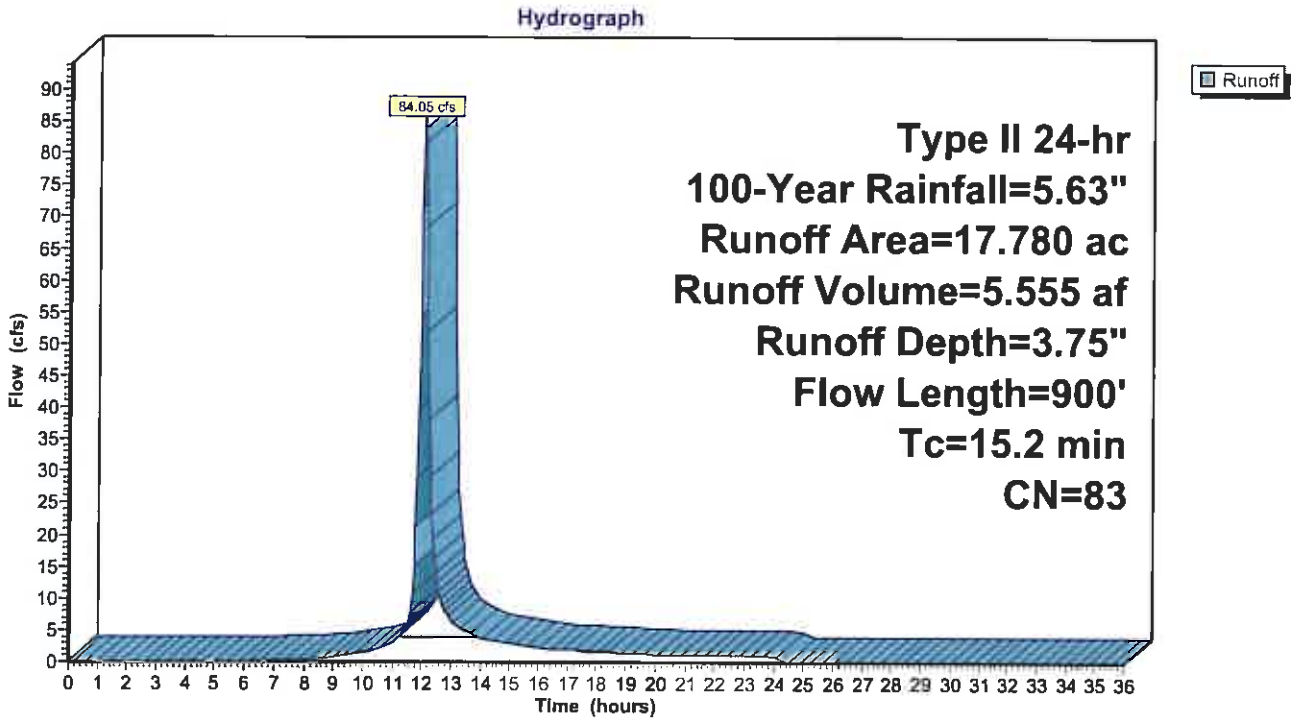
Runoff = 84.05 cfs @ 12.07 hrs, Volume= 5.555 af, Depth= 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.63"

Area (ac)	CN	Description
17.780	83	1/4 acre lots, 38% imp, HSG C
11.024		62.00% Pervious Area
6.756		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 4S: North Proposed



Summary for Subcatchment 5S: South Proposed

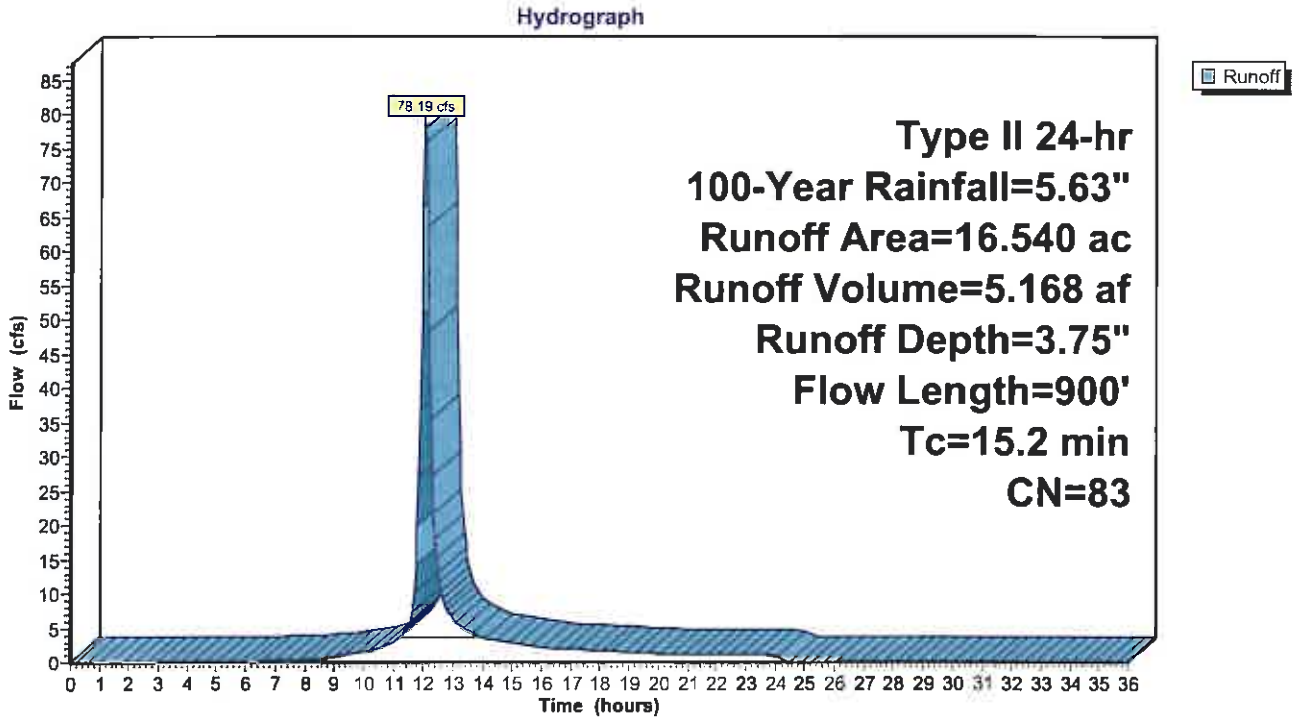
Runoff = 78.19 cfs @ 12.07 hrs, Volume= 5.168 af, Depth= 3.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-Year Rainfall=5.63"

Area (ac)	CN	Description
16.540	83	1/4 acre lots, 38% imp, HSG C
10.255		62.00% Pervious Area
6.285		38.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.8	100	0.0200	0.15		**Sheet Flow,** Grass: Short n= 0.150 P2= 2.63"
4.4	800	0.0045	3.04	2.39	**Pipe Channel,** 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.013
15.2	900	Total			

Subcatchment 5S: South Proposed



Summary for Pond 7P: North Pond

Inflow Area = 17.780 ac, 38.00% Impervious, Inflow Depth = 3.75" for 100-Year event
Inflow = 84.05 cfs @ 12.07 hrs, Volume= 5.555 af
Outflow = 40.46 cfs @ 12.25 hrs, Volume= 5.275 af, Atten= 52%, Lag= 10.7 min
Primary = 40.46 cfs @ 12.25 hrs, Volume= 5.275 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 855.89' @ 12.25 hrs Surf.Area= 30,904 sf Storage= 94,667 cf

Plug-Flow detention time= 187.2 min calculated for 5.268 af (95% of inflow)
Center-of-Mass det. time= 159.4 min (973.5 - 814.2)

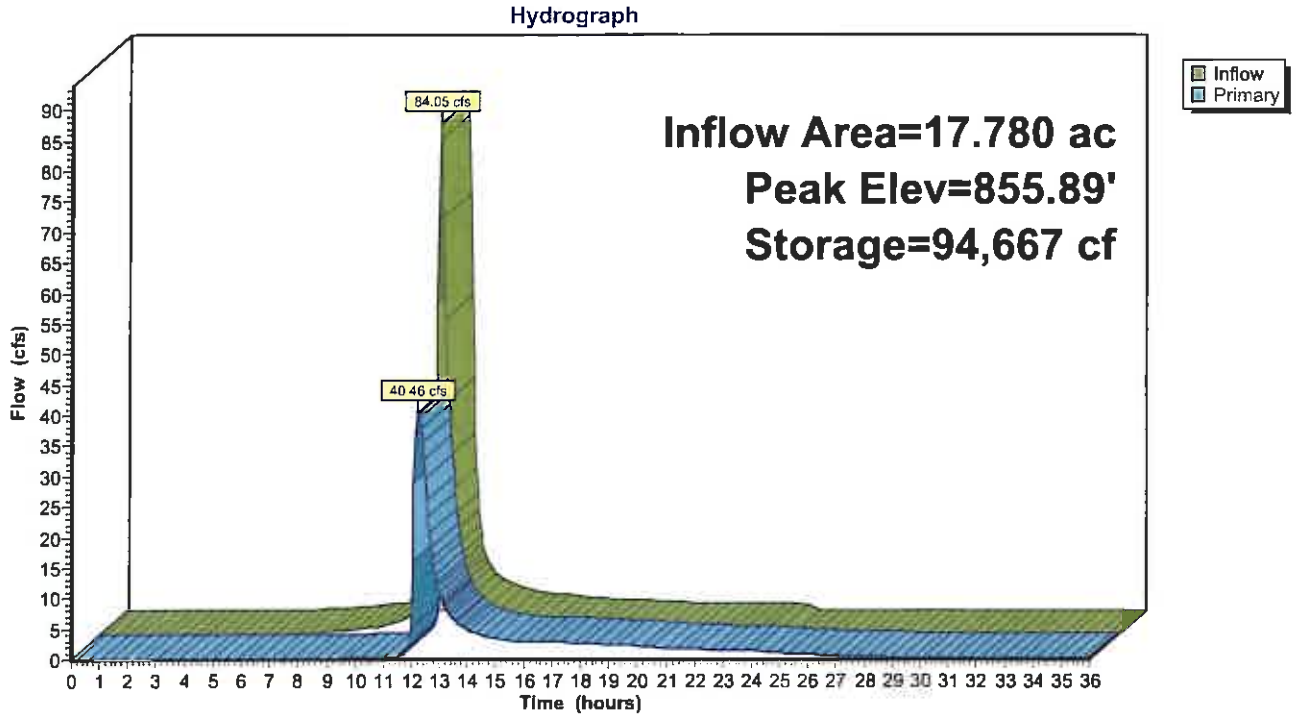
Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	129,209 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	17,950	0	0
853.00	21,130	19,540	19,540
854.00	24,409	22,770	42,310
855.00	27,790	26,100	68,409
856.00	31,270	29,530	97,939
857.00	31,270	31,270	129,209

Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	**42.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	853.00'	**6.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	854.50'	**48.0" W x 12.0" H Vert. Orifice/Grate X 2.00** C= 0.600

Primary OutFlow Max=40.42 cfs @ 12.25 hrs HW=855.89' (Free Discharge)
└**1=Culvert** (Passes 40.42 cfs of 67.81 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.81 cfs @ 9.29 fps)
  ├**3=Orifice/Grate** (Orifice Controls 3.72 cfs @ 7.43 fps)
  └**4=Orifice/Grate** (Orifice Controls 35.89 cfs @ 4.49 fps)

Pond 7P: North Pond



Summary for Pond 8P: South Pond

Inflow Area = 16.540 ac, 38.00% Impervious, Inflow Depth = 3.75" for 100-Year event
Inflow = 78.19 cfs @ 12.07 hrs, Volume= 5.168 af
Outflow = 44.98 cfs @ 12.22 hrs, Volume= 5.040 af, Atten= 42%, Lag= 8.8 min
Primary = 44.98 cfs @ 12.22 hrs, Volume= 5.040 af

Routing by Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs
Peak Elev= 856.11' @ 12.22 hrs Surf.Area= 24,578 sf Storage= 76,811 cf

Plug-Flow detention time= 145.8 min calculated for 5.033 af (97% of inflow)
Center-of-Mass det. time= 131.7 min (945.9 - 814.2)

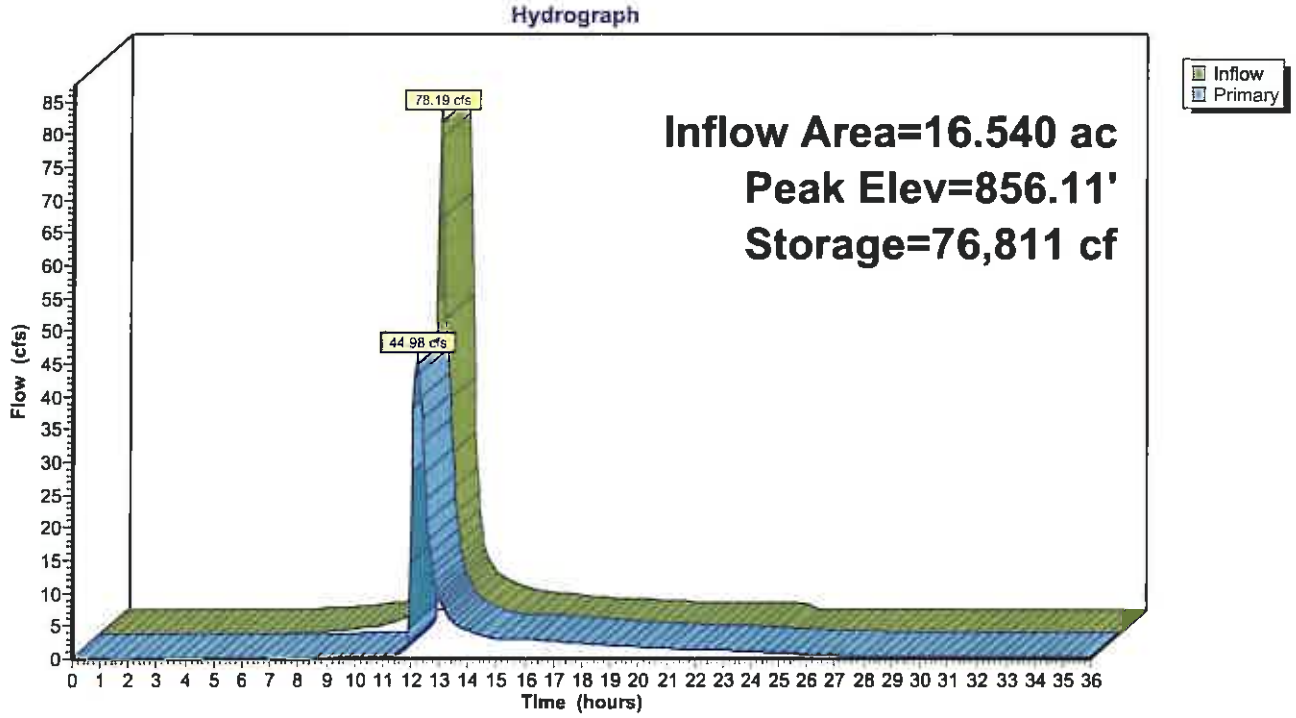
Volume	Invert	Avail.Storage	Storage Description
#1	852.00'	98,638 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
852.00	12,704	0	0
853.00	15,521	14,113	14,113
854.00	18,440	16,981	31,093
855.00	21,458	19,949	51,042
856.00	24,578	23,018	74,060
857.00	24,578	24,578	98,638

Device	Routing	Invert	Outlet Devices
#1	Primary	852.00'	**42.0" Round Culvert** L= 50.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 852.00' / 850.00' S= 0.0400 '/' Cc= 0.900 n= 0.013, Flow Area= 9.62 sf
#2	Device 1	852.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	853.00'	**6.0" W x 12.0" H Vert. Orifice/Grate** C= 0.600
#4	Device 1	854.50'	**48.0" W x 12.0" H Vert. Orifice/Grate X 2.00** C= 0.600

Primary OutFlow Max=44.75 cfs @ 12.22 hrs HW=856.10' (Free Discharge)
└**1=Culvert** (Passes 44.75 cfs of 71.02 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.83 cfs @ 9.55 fps)
  ├**3=Orifice/Grate** (Orifice Controls 3.88 cfs @ 7.75 fps)
  └**4=Orifice/Grate** (Orifice Controls 40.04 cfs @ 5.01 fps)

Pond 8P: South Pond



Summary for Link 6L: Holton Run Proposed

Inflow Area = 34.320 ac, 38.00% Impervious, Inflow Depth > 3.61" for 100-Year event
Inflow = 85.18 cfs @ 12.23 hrs, Volume= 10.315 af
Primary = 85.18 cfs @ 12.23 hrs, Volume= 10.315 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.05 hrs

Link 6L: Holton Run Proposed