



Easton Staff Development Review MEETING AGENDA

Vednesday, January 22, 2025 - 11:00 AM
Council Chambers, Easton Town Office
14 S Harrison Street

1. Discussion Items

- a. **Application Number:** 2025 - 1369 / ESDR 25 - 01
 Applicant: Lane Engineering LLC
 Location: 28580 Mary's Court
 Tax Map 0025, Parcel 0046, Lots 16 & 20

 Zoning District: BC
 Request: Sketch site plan review for the addition of two (2) 3-sided pole buildings with associated stormwater management facilities and other facility improvements.
- b. **Application Number:** 2025 - 1370 / ESDR 25 - 02
 Applicant: Rauch Engineering Inc.
 Location: 505 Brookletts Avenue (Easton Crossing)
 Tax Map 0104, Grid 00EA, Parcels 1823, 1826 & 1833

 Zoning District: BC
 Request: Sketch site plan review for the construction of mixed commercial and residential buildings, parking lots, parks/open space with associated stormwater management facilities.
- c. **Application Number:** 2025 - 1371 / ESDR 25 - 03
 Applicant: Town of Easton
 Location: 801 Port Street (Easton Point Park)
 Tax Map 0034, Parcel 0171

 Zoning District: MXW
 Request: Sketch review of a proposed public boat ramp with associated site improvements including parking, sidewalk, stormwater management facilities and restroom

facilities on the existing Town of Easton
Point Park.



Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

RECEIVED
JAN 02 2025
TOWN OF EASTON

Easton Staff Development Review

Property Information

Address	28520 MARYS COURT							
Tax Map	25	Grid		Parcel	46	Lot	16 & 20	
Deed Reference:	Liber	3111	Folio	84				
Plat Reference:	Liber	4	Folio	35G				
Base Zoning District	A1 & BC		Historic District	Y ☐ N ☒			Planning Redevelopment	Y ☐ N ☒

Purpose of Application / Description of Work:

ADDITION OF TWO 3-SIDED POLE BUILDINGS FOR STORAGE AND ASSOCIATED GRAVEL ACCESS AND STORMWATER MANAGEMENT, REMOVAL OF EXISTING SEPTIC SYSTEM, INSTALLATION OF NEW GRINDER PUMP AND FORCE MAIN SYSTEM, ABANDONMENT OF TWO EXISTING SEWAGE RESERVE AREAS

Owner

Name	SOMERSET WELL DRILLING CO, INC. C/O MIKE HALL		
Mailing Address	P.O. BOX 67, WESTOVER, MD 21871		
Telephone No.	443-783-9950	Email	mike@somersetwell.com

Applicant / Agent

Name	LANE ENGINEERING, LLC C/O BRITTANY WALLACE		
Mailing Address	410-822-8003		
Telephone No.	410-822-8003	Email	BWALLACE@LEINC.COM

Surveyor / Engineer

Name	BRITTANY WALLACE	License No.	60891	Expiration Date	4/13/25
Mailing Address	117 BAY STREET, EASTON, MD 21601				
Telephone No.	410-822-8003	Email	BWALLACE@LEINC.COM		

Any modifications during review shall warrant an updated application.

I do hereby solemnly declare and affirm that the information provided by this application and the documents attached hereto accurately represent the conditions of the request and that submission of an incomplete application will be returned for correction prior to processing.

Signature of Applicant or Agent

Date 12/16/24

Printed Name of Applicant or Agent

BRITTANY M WALLACE

For Office Use Only

Easton Staff Development Review Meeting Required Y ☒ N ☐

Easton Staff Development Review Meeting Date 01/22/2025

ESDR 2025-01 / 2025-1369

Completeness Check Date 01/02/2025

Revisions/Resubmissions Required Y ☐ N ☐ TBD

Resubmission Date

Documents Received Y ☐ N ☐

Staff Determination

Scheduled for January 22, 2025 Easton Staff Development Review

Planning Commission Required Y ☐ N ☐ TBD

BOZA Required Y ☐ N ☐ TBD

Historic District Commission Required Y ☐ N ☒

Resubmission for ESDR Required Y ☐ N ☐ TBD

Staff Signature

Date 01/02/2025

Revised 02-2019

**Town of Easton**

Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

RECEIVED
JAN 02 2025
TOWN OF EASTON

Site Plan, PUD, Planned Healthcare Application**Application Type**

Planned Unit Development ☐ Amendment ☐ Health Care (HC) ☐ Site Plan ☒

Subdivision Information

Name MARY'S COURT / TALBOT COMMERCE PARK
Original Property Size Acres Square Feet
Telephone No. Email

Site Plan Information

Property Size Acres 13.99 AC Square Feet 609,801 SF
Structure's Floor Area 34,000 SF Structure's Square Feet 34,000 SF
Area of Disturbance 147,554 SF Number of Dwelling Units 0

Property Information

Address 28520 MARY'S COURT
Tax Map 25 Grid Parcel 46 Lot 16 & 20
Deed Reference: Liber 3111 Folio 84
Plat Reference: Liber 4 Folio 35G
Base Zoning District BC & A1 Historic Y ☐ N ☒ Planned Redevelopment Y ☐ N ☒
Source of Electricity EASTON

Owner

Name SOMERSET WELL DRILLING CO, INC. C/O MIKE HALL
Mailing Address P.O. BOX 67, WESTOVER, MD 21871
Telephone No. 443-786-9950 Email MIKE@SOMERSETWELL.COM

Applicant or Agent

Name LANE ENGINEERING, LLC C/O BRITTANY WALLACE
Mailing Address 117 BAY STREET, EASTON, MD 21601
Telephone No. 410-822-8003 Email BWALLACE@LEINC.COM

Surveyor / Engineer

Name BRITTANY WALLACE License No. 60891 Expiration Date 4/13/25
Mailing Address 117 BAY STREET, EASTON, MD 21601
Telephone No. 410-822-8003 Email BWALLACE@LEINC.COM

Any modifications during review shall warrant an updated application.

I hereby certify that I have reviewed and satisfied the Town of Easton Development Standards and that submission of an incomplete application will be returned for correction prior to processing.

Signature of Applicant or Agent

Date

12/16/24

Printed Name of Applicant or Agent

BRITTANY M WALLACE

For Office Use Only

Planning Commission Required	Y ☐ N ☐	
Planning Commission Meeting Date	TBD	
Sketch Approval Date		Project No. ESDR 25-01
Prelim/Dev. Approval Date		Application No. 2025-1369
Final Approval Date		Sketch Fee Paid
Recordation Date		Develop. Fee Paid

Revised 02-2019

Date: 01/02/2025 - 11:33am User: twallace Project Manager: TWG
Drawing Path: C:\web\AcPublish\3712_CSK-PLTS-240060.dwg 1 OF 2
XREF File(s): CSK-BASE-240060/HATCH-BASE-240060/PLD-BASE-240060/VSF-BASE-240060/CBS-BASE-2436-240060/PAR-BASE-240060/CEC-BASE-240060/LLP-BASE-240060/XRM-BASE-240060

DEVELOPMENT DATA

PROPERTY: TAX MAP 25, PARCEL 46, LOT 16
PLAT 4/356
28580 MARYS CT
EASTON, MD 21601

TAX MAP 25, PARCEL 46, LOT 20
PLAT 83/190
GOLDSBOROUGH NECK RD
EASTON, MD 21601

OWNER: SOMERSET WELL DRILLING CO, INC.
C/O MICHAEL HALL
P/O BOX 67
WESTOVER, MD 21871
(443) 783-9950

DEVELOPER: SAME AS OWNER

ZONING: BC - BUSINESS COMMERCIAL

SITE AREA: LOT 16 - 6.556 ACRES±
LOT 20 - 7.443 ACRES±
TOTAL - 13.999 ACRES±

*NOTE: A REVISION PLAT TO COMBINE LOTS 16 AND 20 WILL BE REVIEWED BY THE TOWN OF EASTON AS REQUIRED BY THE GROWTH ALLOCATION APPROVAL LETTER DATED NOVEMBER 8, 2024, AS ISSUED TO MIGUEL SALINAS BY ERIC FISHER OF THE MD CRITICAL AREA COMMISSION. THE REVISION PLAT WILL INCLUDE RESPONSES TO THE CONDITIONS ISSUED IN THE APPROVAL LETTER. THE RESULTING SITE AREA IS 13.999 AC±.

BUILDING SETBACKS:	PROPOSED BUILDINGS: A	B	FUTURE BUILDINGS: C	D
FRONT	- 40'	488.8'	484.0'	472.5' 364.0'
REAR	- 30' (OR TO AIRPORT CLEAR ZONE - SEE PLAT 4/356)	219.3'	163.6'	142.2' 246.6'
SIDE	- 10'	202.3'	70.5'	162.9' 155.3'
NTW	- 25'			
SDA	- 20'			
STREAM	- 100'			

EXISTING CONDITIONS: DEVELOPED LOT CONTAINING A 12,150 SF OFFICE BUILDING WITH ASPHALT PARKING LOT AND A 4,800 SF OFFICE BUILDING WITH 8,010 SF OF SEMI-DETACHED WAREHOUSE STORAGE SPACE AND A 25,250 SF CONCRETE PAD FOR EQUIPMENT STORAGE.

PROPOSED DEVELOPMENT: (2) 9,000 SF 3-SIDED POLE BUILDINGS (BUILDINGS 'A' AND 'B') FOR STORAGE AND ASSOCIATED GRAVEL ACCESS AND STORMWATER MANAGEMENT, THE ABANDONMENT OF TWO EXISTING SEWAGE RESERVE AREAS AND REMOVAL OF AN EXISTING SEPTIC SYSTEM TO BE REPLACED WITH A GRINDER PUMP AND FORCE MAIN TO SERVE EXISTING AND PROPOSED BUILDINGS. POSSIBLE FUTURE DEVELOPMENT OF TWO 8,000 SF SINGLE-STORY OFFICE BUILDINGS (BUILDINGS 'C' AND 'D') AND ASSOCIATED PARKING LOTS AND STORMWATER MANAGEMENT AREAS ARE SHOWN FOR CONTEXT.

MINIMUM LOT SIZE: 40,000 SF
MAXIMUM BUILDING HEIGHT: 35'
PROPOSED BUILDING HEIGHT: PROPOSED BUILDING NOT TO EXCEED 35'

TOTAL LOT COVERAGE PERMITTED: 50% (BUILDINGS & STRUCTURES ONLY)

*NOTE: EXISTING AND PROPOSED LOT COVERAGES LISTED BELOW WERE CALCULATED USING THE TOTAL COMBINED SITE AREA OF 13.999 AC±

TOTAL EXISTING LOT COVERAGE:	13.3%
TOTAL LOT COVERAGE: 50% PERMITTED (BUILDINGS & STRUCTURES ONLY)	
BUILDING A (CONSTRUCTION RELATED BUSINESS):	
3-SIDED STORAGE BUILDING:	9,000 SF
3-SIDED STORAGE BUILDING:	9,000 SF
PHASE 2 BUILDING B (CONSTRUCTION RELATED BUSINESS):	
1-STORY OFFICE BUILDING:	8,000 SF
1-STORY OFFICE BUILDING:	8,000 SF
TOTAL BUILDING:	34,000 SF PROPOSED (5.58%)

PHASING NOTE: ALL IMPROVEMENTS AS SHOWN HEREON SHALL BE COMPLETED IN PHASE ONE WITH THE EXCEPTION OF FUTURE BUILDINGS C & D WHICH SHALL BE CONSTRUCTED IN PHASE 2.

PARKING REQUIRED:

PROPOSED BUILDINGS

A & B - CONSTRUCTION RELATED BUSINESS @ 1/1000 GFA: 18,000 SF/1000 = 18 SPACES MINIMUM
CONSTRUCTION RELATED BUSINESS @ 1/200 GFA: 18,000 SF/200 = 90 SPACES MAXIMUM

FUTURE BUILDINGS

C & D - CONSTRUCTION RELATED BUSINESS @ 1/1000 GFA: 16,000 SF/1000 = 16 SPACES MINIMUM
CONSTRUCTION RELATED BUSINESS @ 1/200 GFA: 16,000 SF/200 = 80 SPACES MAXIMUM
TOTAL SPACES REQUIRED = 34 SPACES (MINIMUM)

PARKING PROVIDED: 57 SPACES PROVIDED, INCLUDING 2 ADA SPACES AND 2 VAN ACCESSIBLE ADA SPACES

STORMWATER MANAGEMENT: QUANTITY MANAGEMENT IS ADDRESSED BY AN EXISTING REGIONAL STORMWATER FACILITY. STORMWATER QUALITY MANAGEMENT WILL BE ADDRESSED THROUGH ESD FEATURES AS REQUIRED AND SHOWN HEREON APPROXIMATELY.

FOREST CONSERVATION: PREVIOUSLY SATISFIED UNDER ORIGINAL SUBDIVISION APPROVAL (PLAT PG 4/356)

LIGHTING: ALL LIGHTING WILL BE SCREENED FROM VIEW OR DIRECTED DOWNWARD AND SHIELDED, AT A MAXIMUM HEIGHT OF 18', AND NOT EXCEED LEVELS GREATER THAN 1-FOOT CANDLE AT PROPERTY LINES

SIGNAGE: EXISTING SIGN TO BE UTILIZED, NO NEW SIGNAGE PROPOSED WITH THIS DEVELOPMENT.

PROJECT NOTES

- PROPERTY BOUNDARY AND EXISTING CONDITIONS SURVEYED BY LANE ENGINEERING, LLC ON AUGUST 2023.
- SITE TOPOGRAPHY AS SHOWN HEREIN WAS DERIVED FROM A FIELD SURVEY BY LANE ENGINEERING, LLC DATED AUGUST 2023.
- THE ELEVATIONS SHOWN HEREON ARE NAVD 1988 DATUM.
- THE COORDINATES SHOWN HEREON ARE BASED ON THE MARYLAND STATE PLANE COORDINATE SYSTEM NAD83 (2011).
- THE SITE IS LOCATED PARTIALLY WITHIN OF THE CHESAPEAKE BAY CRITICAL AREA.
- COMPREHENSIVE PLAN DESIGN PRINCIPLES RESPONSE NARRATIVE
- EXISTING SITE IMPROVEMENTS
- PRINCIPLE #1- INTEGRATED USES ARE DESIRABLE- THIS DEVELOPMENT PROPOSAL PROVIDES 7 ADJACENT WATER AND SEWER SERVICES ARE PROVIDED BY THE TOWN OF EASTON PARK
- PRINCIPLE #2- DETERMINATION OF POTENTIALS FOR ADAPTATION SHALL BE REQUIRED FOR EXISTING NATURAL FEATURES; PROPOSED IMPROVEMENTS ARE CONFIGURED TO CREATE COHESIVE SITE LAYOUT UPON COMPLETION AND TAKE ADVANTAGE OF NATURAL DRAINAGE PATTERNS
- PRINCIPLE #3- AUTOMOBILES SHOULD NOT DETERMINE DESIGN- PARKING FOR OFFICE USERS AND CUSTOMERS PROVIDED FOR CONVENIENCE WITH BULK OF PARKING TO FRONT OR REAR OF BUILDING
- PRINCIPLE #4- AMPLIFIED COMMUNITY OPEN SPACE- USABLE OPEN SPACE IS NOT APPLICABLE TO THIS PROJECT
- PRINCIPLE #5- ARCHITECTURE SHOULD RESPECT EASTON'S HISTORICAL DEVELOPMENT- PROPOSED ARCHITECTURE MATCHES EXISTING BUILDINGS IN DESIGN AND IS COMPATIBLE WITH THE COMMERCE PARK'S ARCHITECTURAL PALETTE
- PRINCIPLE #6- SIGNS SHOULD INFORM BUT NOT DOMINATE- NO NEW SIGNAGE IS PROPOSED
- PRINCIPLE #7- NEIGHBORHOODS SHOULD CONTAIN A DIVERSITY OF HOUSING TYPES- NOT APPLICABLE TO THIS PROJECT
- PRINCIPLE #8 RESIDENTIAL NEIGHBORHOODS SHOULD BE INTERESTING PLACES- NOT APPLICABLE TO THIS PROJECT
- PRINCIPLE #9- NEIGHBORHOODS SHOULD CONNECT- NOT APPLICABLE TO THIS PROJECT

CRITICAL AREA LOT COVERAGE CALCULATIONS: LOT 16

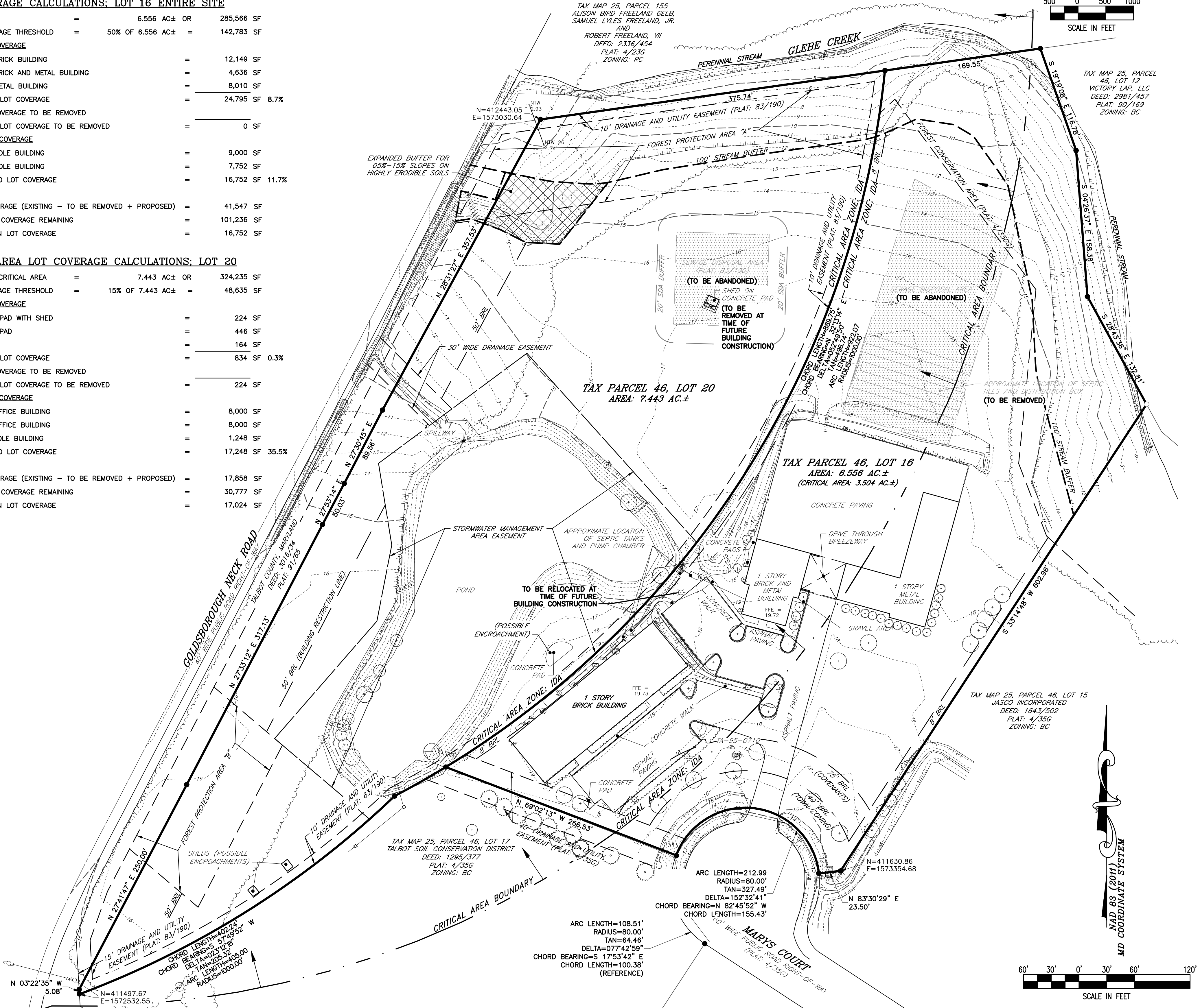
TOTAL AREA IN CRITICAL AREA	=	3,504 AC±	OR	152,633 SF
50% LOT COVERAGE THRESHOLD	=	50% OF 3,504 AC±	=	76,317 SF
EXISTING LOT COVERAGE				
1 STORY BRICK BUILDING	=	12,149 SF		
1 STORY BRICK AND METAL BUILDING	=	4,636 SF		
1 STORY METAL BUILDING	=	438 SF		
TOTAL EXISTING LOT COVERAGE	=	17,223 SF	11.3%	
EXISTING LOT COVERAGE TO BE REMOVED				
TOTAL EXISTING LOT COVERAGE TO BE REMOVED	=	0 SF		
PROPOSED LOT COVERAGE				
3-SIDED POLE BUILDING	=	3,969 SF		
3-SIDED POLE BUILDING	=	7,752 SF		
TOTAL PROPOSED LOT COVERAGE	=	11,721 SF	15.4%	
TOTAL LOT COVERAGE (EXISTING - TO BE REMOVED + PROPOSED)	=	28,944 SF		
ALLOWABLE LOT COVERAGE REMAINING	=	47,373 SF		
NET INCREASE IN LOT COVERAGE	=	11,721 SF		

LOT COVERAGE CALCULATIONS: LOT 16 ENTIRE SITE

TOTAL AREA	=	6,556 AC±	OR	285,566 SF
50% LOT COVERAGE THRESHOLD	=	50% OF 6,556 AC±	=	142,783 SF
EXISTING LOT COVERAGE				
1 STORY BRICK BUILDING	=	12,149 SF		
1 STORY BRICK AND METAL BUILDING	=	4,636 SF		
1 STORY METAL BUILDING	=	8,010 SF		
TOTAL EXISTING LOT COVERAGE	=	24,795 SF	8.7%	
EXISTING LOT COVERAGE TO BE REMOVED				
TOTAL EXISTING LOT COVERAGE TO BE REMOVED	=	0 SF		
PROPOSED LOT COVERAGE				
3-SIDED POLE BUILDING	=	9,000 SF		
3-SIDED POLE BUILDING	=	7,752 SF		
TOTAL PROPOSED LOT COVERAGE	=	16,752 SF	11.7%	
TOTAL LOT COVERAGE (EXISTING - TO BE REMOVED + PROPOSED)	=	41,547 SF		
ALLOWABLE LOT COVERAGE REMAINING	=	101,236 SF		
NET INCREASE IN LOT COVERAGE	=	16,752 SF		

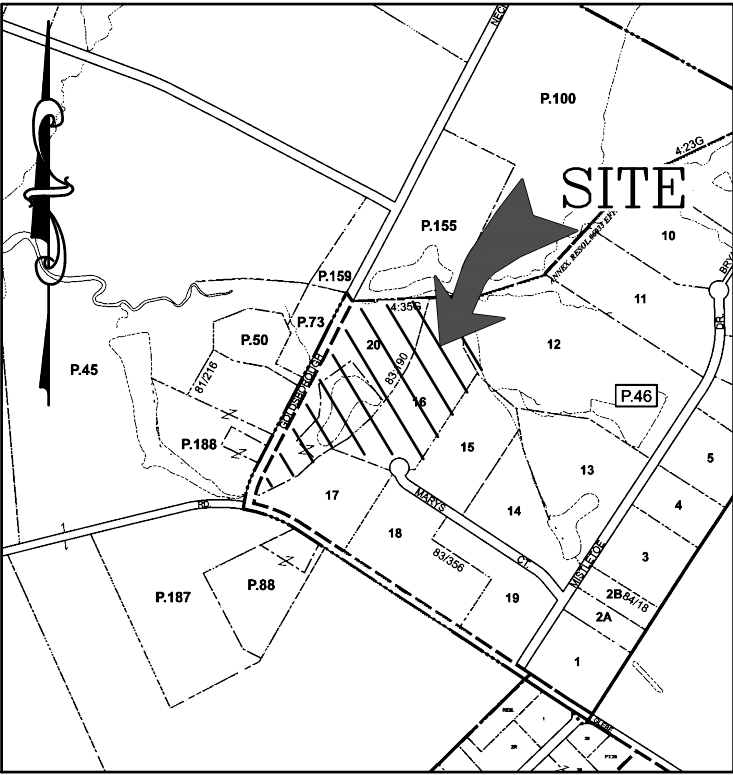
CRITICAL AREA LOT COVERAGE CALCULATIONS: LOT 20

TOTAL AREA IN CRITICAL AREA	=	7,443 AC±	OR	324,235 SF
15% LOT COVERAGE THRESHOLD	=	15% OF 7,443 AC±	=	48,635 SF
EXISTING LOT COVERAGE				
CONCRETE PAD WITH SHED	=	224 SF		
CONCRETE PAD	=	446 SF		
SHEDS	=	164 SF		
TOTAL EXISTING LOT COVERAGE	=	834 SF	0.3%	
EXISTING LOT COVERAGE TO BE REMOVED				
TOTAL EXISTING LOT COVERAGE TO BE REMOVED	=	224 SF		
PROPOSED LOT COVERAGE				
1 STORY OFFICE BUILDING	=	8,000 SF		
1 STORY OFFICE BUILDING	=	8,000 SF		
3 SIDED POLE BUILDING	=	1,248 SF		
TOTAL PROPOSED LOT COVERAGE	=	17,248 SF	35.5%	
TOTAL LOT COVERAGE (EXISTING - TO BE REMOVED + PROPOSED)	=	17,858 SF		
ALLOWABLE LOT COVERAGE REMAINING	=	30,777 SF		
NET INCREASE IN LOT COVERAGE	=	17,024 SF		



LEGEND

- HVAC UNIT
- SANITARY SEWER CLEAN OUT
- SANITARY SEWER MANHOLE
- TELEPHONE PEDESTAL
- FIRE HYDRANT
- DRINKING WATER SUPPLY WELL
- WATER METER
- WATER VALVE
- WATER FAUCET
- ELECTRIC OUTLET
- ELECTRIC TRANSFORMER
- ELECTRIC METER
- ELECTRIC HANDHOLE
- LAMP POLE
- UTILITY POLE
- OVER HEAD UTILITY LINES
- TOP OF BANK
- BOTTOM OF BANK
- MAJOR CONTOUR
- MINOR CONTOUR
- APPROXIMATE TREE LINE
- TOWN ZONING LINE
- COMPUTED POINT
- IRON ROD FOUND
- IRON ROD SET
- SEWAGE DISPOSAL AREA



VICINITY MAP

SCALE: 1" = 1,000'

500' 0' 500' 1000'

SCALE IN FEET

APPROVED: _____

TOWN OF EASTON - TOWN PLANNER _____ DATE _____

ISSUED FOR REVIEW ONLY

TOWN OF EASTON - TOWN ENGINEER _____ DATE _____

APPROVED: _____

EASTON TOWN ENGINEER _____ DATE _____

ISSUED FOR CONSTRUCTION

REVISIONS			
No.	DATE	DESCRIPTION	BY

WARNING!!

THE LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THIS PLAN ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. THE QUANTITIES SHOWN ON THIS PLAN ARE FOR INFORMATIONAL AND PERMITTING PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES TO HIS OWN SATISFACTION PRIOR TO BEGINNING CONSTRUCTION.

THE CONTRACTOR SHALL TEST PIT AND LOCATE EXISTING UNDERGROUND UTILITIES PRIOR TO THE BEGINNING OF ANY WORK ON-SITE. THE CONTRACTOR SHALL NOTIFY DEPT. OF PUBLIC WORKS OF ANY POSSIBLE CONFLICT AND REQUEST THE RELOCATION OF THE EXISTING UNDERGROUND UTILITIES BEFORE BEGINNING ANY WORK ON-SITE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RELOCATION EXPENSE.



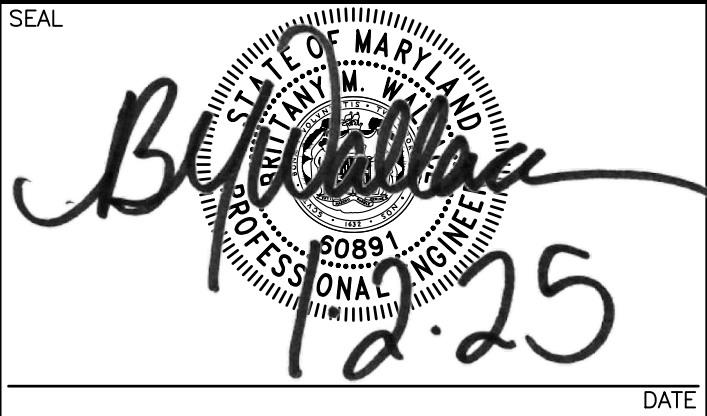
Lane Engineering, LLC

Established 1986
Civil Engineers • Land Planning • Land Surveyors



E-mail: general@lane.com
117 Bay St. Easton, MD 21601 (410) 822-8003
15 Washington St. Centerville, MD 21613 (410) 221-0818
354 Pennsylvania Ave. Centerville, MD 21617 (410) 758-2095

PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 60891. Expiration Date: 04/13/2026.



EXISTING CONDITIONS PLAN

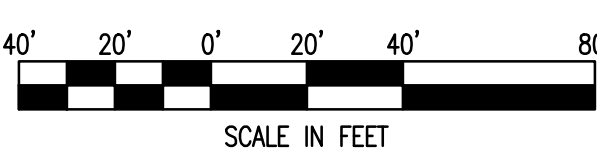
SOMERSET WELL DRILLING
28580 MARYS COURT

IN THE TOWN OF EASTON, WARD 1
TAX MAP 25, PARCEL 46, LOTS 16 & 20

ISSUED FOR: ESDR REVIEW DATE: 01/01/25 BY: JSC

SHEET No. 1 OF 2	DATE: 01/01/25
SCALE: AS NOTED	JOB No. 240060
	FILE No. A037

Date: 01/02/2025 -- 11:38am User: bwallace Project Manager: TWG
Drawing File: J:\2024\00001\240060\CH3D-240060\DWG Plots\CSK-PLT-240060.dwg | 2 OF 2
Xref File(s): CSK-BASE-240060\CH3D-BASE-240060\WLD-BASE-240060\WST-BASE-240060\CRS-BASE-2436-240060\RR-BASE-240060\CEC-BASE-240060\LLP-BASE-240060\XRN-BASE-240060



ESD SUMMARY CHART													
DRAINAGE AREA	TYPE OF ESD PRACTICE	TYPE OF ESD PRACTICE (STRUCTURE NAME)	ON-SITE OR OFF-SITE STRUCTURE	RUNOFF CURVE NUMBER (RCN) WEIGHTED	MARYLAND GRID COORDINATE NAD 83 METERS NORTHING	MARYLAND GRID COORDINATE NAD 83 METERS EASTING	ESD PRACTICE IMPERVIOUS DRAINAGE AREA (ACRES)	ESD PRACTICE IMPERVIOUS DRAINAGE AREA (ACRES)	SURFACE AREA OF ESD PRACTICE (ACRES)	TARGET PE (IN)	ACTUAL PE (IN)	TARGET ESDv (FT')	ACTUAL ESDv (FT')
ORANGE (GSW#1)	M-2	SUBMERGED GRAVEL WETLAND	ON-SITE	89	401492.7738'	1580118.8422'	2.25	1.38	0.23	2	2.4	9,857	11,814
PURPLE (GSW#2)	M-2	SUBMERGED GRAVEL WETLAND	ON-SITE	86	401537.4268'	1579725.9363'	0.86	0.43	0.09	1.8	3.0	2805	4,676

[illegible]

Established 1986

Civil Engineers • Land Planning • Land Surveyors



E-mail: general@leinc.com

117 Bay St. Easton, MD 21601 (410) 822-8003
15 Washington St. Cambridge, MD 21613 (410) 221-0818
354 Pennsylvania Ave. Centreville, MD 21617 (410) 758-2095

PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 60891 . Expiration Date: 04/13/2025.

STATE OF MARYLAND
PROFESSIONAL ENGINEERS
1789

B. Prithvi

12.25

DATE

SOMERSET WELL DRILLING
28580 MARYS COURT

IN THE TOWN OF EASTON, WARD 1
TALBOT COUNTY, MARYLAND
TAX MAP 25, PARCEL 46, LOTS 16 & 2

ISSUED FOR: ESDR REVIEW	DATE: 01/01/25	BY: JSC
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SHEET No. 2 OF 2	DATE: 01/01/25
SCALE: AS NOTED	JOB No. 240060
	FILE No. A037

NEW BUILDING FOR MIKE HALL

28580 MARY'S COURT
EASTON, MARYLAND

W. F. HORN ARCHITECT, INC.
LEWES, DELAWARE

GENERAL CONTRACTOR
POLE BUILDINGS
UNLIMITED

W.F.HORN
ARCHITECT, INC.
30093 W. BARRIER REEF BLVD. LEWES, DELAWARE
PHONE: 302-674-1620 302-231-2176

CODE INFORMATION

CODE INFORMATION

BUILDING AREA -9,750 SQUARE FEET
SHELL BUILDING, UNCONDITIONED

I. INTERNATIONAL BUILDING CODE - 2021

A. OCCUPANCY CLASSIFICATION -
MODERATE HAZARD STORAGE GROUP S-1

B. INCIDENTAL USE AREAS

1. BOILER AND FURNACE ROOMS - NOT APPLICABLE
2. STORAGE ROOMS OVER 100 SQ. FT. - NOT APPLICABLE

C. GENERAL BUILDING HEIGHTS AND AREAS

1. HEIGHT -
GROUP S-1 - 1 STORY, 40' PERMITTED
HEIGHT MODIFICATIONS NOT REQUIRED
2. AREA -
GROUP S-1 - 9,000 SQUARE FEET PERMITTED
OPEN SPACE AT BUILDING PERIMETER = 30 FT. OR GREATER
FRONTAGE INCREASE = $500/500 - .25 \times 30/30 = .75$
 $9000 + (9000 \times .75) = 9000 + 6750 = 15750$
AREA MODIFICATIONS ALLOW 15750 SQUARE FEET

D. TYPE OF CONSTRUCTION - CONSTRUCTION TYPE VB

1. STRUCTURAL FRAME - 0 HOUR
2. BEARING WALLS, EXTERIOR - 0 HOUR
3. BEARING WALLS, INTERIOR - 0 HOUR
4. NONBEARING WALLS, EXTERIOR - 0 HOUR
5. NONBEARING WALLS, INTERIOR - 0 HOUR
6. FLOOR CONSTRUCTION - 0 HOUR
7. ROOF CONSTRUCTION - 0 HOUR
8. FIRE SEPARATION DISTANCE,
GREATER THAN 30 FT. - 0 HOUR
9. UNPROTECTED WALL OPENING,
GREATER THAN 30 FT. - UNLIMITED AREA

E. INTERIOR FINISHES -

1. WALLS AND CEILINGS -
EXIT ACCESS CORRIDORS - CLASS C
ROOMS AND ENCLOSED SPACES - CLASS C
2. FLOOR FINISH - CLASS II
3. DECORATIONS AND TRIM - FLAME RESISTANT

F. MEANS OF EGRESS

1. OCCUPANT LOAD -
WAREHOUSE -
 $500 \text{ SQUARE FEET PER OCCUPANT} = 20 \text{ PEOPLE}$
2. EGRESS WIDTH -
STAIRWAYS - .3" PER OCCUPANT
OTHER EGRESS COMPONENTS - .2" PER OCCUPANT
3. ACCESSIBLE MEANS OF EGRESS -
TWO REQUIRED
TWO PROVIDED
4. SPACES WITH ONE MEANS OF EGRESS -
MAXIMUM OCCUPANT LOAD - 50
MAXIMUM TRAVEL DISTANT - 75'
5. LENGTH OF EXIT ACCESS TRAVEL -
200 FEET MAXIMUM ALLOWED
50 FEET MAXIMUM PROVIDED
6. SIZE OF DOORS - 32 " MINIMUM
EGRESS WIDTH PER OCCUPANT = .2"/PERSON, $34 \times .2" = 170 \text{ PEOPLE PER DOOR}$

7. PANIC HARDWARE - NOT REQUIRED
8. LIGHTED EXIT SIGNS REQUIRED

II. NFPA 101 - 2021

A. CLASSIFICATION OF OCCUPANCY -
STORAGE

B. CLASSIFICATION OF HAZARD OF CONTENTS - ORDINARY HAZARD

C. MINIMUM CONSTRUCTION REQUIREMENTS - NO REQUIREMENT

D. OCCUPANT LOAD - 20 PEOPLE

E. MEANS OF EGRESS -

1. ALL EXITS LOCATED AT LEVEL OF EXIT DISCHARGE
2. TWO EXITS REQUIRED
2. DOORS
 - a. 32" MINIMUM CLEAR WIDTH
 - b. MAXIMUM FLOOR VARIATION BOTH SIDES OF DOOR - 1/2"
 - c. SWING IN DIRECTION OF EGRESS TRAVEL
3. PANIC HARDWARE AT EXIT DOORS FROM BUILDING NOT REQUIRED
4. TRAVEL DISTANCE TO EXITS - 150 FEET MAXIMUM
5. EMERGENCY LIGHTS AND LIGHTED EXIT SIGNS

F. PROTECTION -

1. INTERIOR WALL AND CEILING CLASS A, CLASS B OR CLASS C
2. SMOKE DETECTORS AND FIRE ALARM SYSTEM NOT REQUIRED

IV. ADA

A. ACCESSIBLE SITES -

1. AT LEAST ONE ACCESSIBLE ROUTE PROVIDED
2. ACCESSIBLE PARKING SPACES - EXISTING

B. ACCESSIBLE BUILDING -

1. ONE ACCESSIBLE ROUTE TO ACCESSIBLE SPACES PROVIDED
2. FLOOR SURFACES TO BE SLIP RESISTANT
 - a. CARPET IF PROVIDED - LEVEL LOOP, GLUED INSTALLATION
3. STAIRS - NOT APPLICABLE
4. DOORS -
 - a. CLEAR WIDTH - 32" MINIMUM PROVIDED
 - b. MANEUVERING CLEARANCES - PROVIDED
 - c. THRESHOLDS - 1\2" MAXIMUM HEIGHT PROVIDED
 - d. HARDWARE - LEVER TYPE HARDWARE TO BE PROVIDED
 - e. 50% OF ENTRANCES MUST BE ACCESSIBLE - 100% PROVIDED
5. DRINKING FOUNTAINS - NOT REQUIRED
6. TOILET FACILITIES - NOT REQUIRED

NOTES:

1. ALL DOORS TO BE EQUIPPED WITH LEVER TYPE LOCK AND LATCHSETS.
UNLESS NOTED OTHERWISE

INDEX OF DRAWINGS

- | | |
|------|---|
| T1.1 | TITLE SHEET, INDEX AND CODE INFORMATION |
| A1.1 | FLOOR PLANS AND NOTES |
| A2.1 | ELEVATIONS |
| A2.2 | ELEVATIONS |
| A3.1 | WALL SECTIONS |



PROFESSIONAL CERTIFICATION

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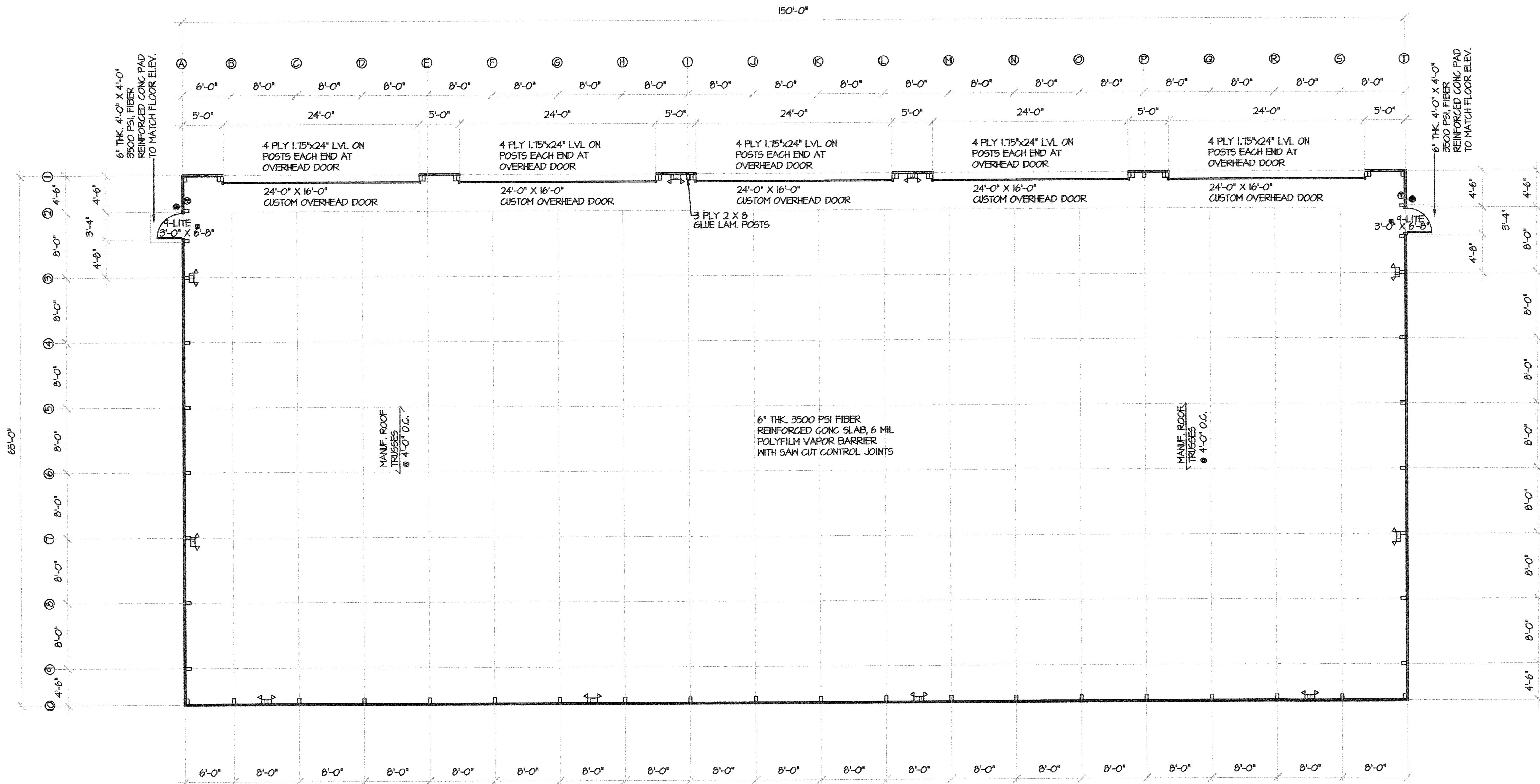
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NEW BUILDING FOR:
MIKE HALL
28580 MARY'S COURT
EASTON, MARYLAND

TITLE SHEET, INDEX
AND CODE INFORMATION

DESIGNED WFH	
DRAWN	PAH
CHECKED	WFH
DATE	12/19/24
PROJ. NO.	32469
SCALE	AS NOTED
SHEET NO.	T1.1



1 FLOOR PLAN
1/8" = 1'-0"

FOUNDATIONS

1. PRESUMPTIVE BEARING CAPACITY: 2000 PSF
2. FOUNDATION DESIGN IS BASED ON SHALLOW SPREAD FOOTINGS BEARING ON SUITABLE NATURAL SOILS AND/OR NEW COMPACTED STRUCTURAL FILL.
3. ALL ORGANIC MATERIALS EXCESSIVELY SOFT OR LOOSE SOILS, TREES, ASPHALT, CONCRETE, DEBRIS AND OTHER DELETERIOUS MATERIALS SHALL BE REMOVED. UNSUITABLE AREAS SHALL BE REMOVED AND REPLACED.
4. AREAS REQUIRING UNDERCUT AND FILL MATERIAL DUE TO THE PRESENCE OF UNSUITABLE MATERIAL SHALL BE BACKFILLED TO THE DESIGN FOOTING SUBGRADE WITH NEW COMPACTED STRUCTURAL FILL.
5. COMPACTED STRUCTURAL FILL FOR BUILDING SUPPORT UTILIZING MATERIAL APPROVED FOR USE INCLUDE:
ON-SITE GRANULAR SOILS INCLUDING GM, GP, GM, SM, SP, ND, SM, CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM (USCS). FURTHERMORE, THE MATERIAL TO BE UTILIZED AS STRUCTURAL FILL SHOULD HAVE A PLASTICITY INDEX (PI) LESS THAN 20.
6. COMPACTED STRUCTURAL FILL BENEATH ALL FOUNDATIONS, SLABS ON GRADE AND ADJACENT TO FOUNDATION WALLS SHALL BE PLACED IN LIFTS NOT EXCEEDING 8 INCHES IN LOOSE THICKNESS AND BE COMPACTED TO 95 PERCENT OF MAXIMUM DRY DENSITY PER ASTM D-1557 MODIFIED PROCTOR TEST.
7. SOILS EXPOSED AT THE BASES OF ALL FOUNDATION EXCAVATIONS SHOULD BE PROTECTED AGAINST ANY DETRIMENTAL CHANGE IN CONDITION, SUCH AS DISTURBANCE FROM RAIN OR FROST. SURFACE RUNOFF SHOULD BE DRAINED AWAY FROM THE EXCAVATIONS AND NOT BE ALLOWED TO POND. FOUNDATION EXCAVATIONS SHOULD BE PROTECTED FROM RAINFALL OR FREEZING CONDITIONS. SLOPE FOOTINGS EXCAVATIONS AS REQUIRED FOR STABILITY AND SAFETY OR PROVIDED SHEETING OR SHORING IN ACCORDANCE WITH OSHA REQUIREMENTS IN THE EVENT THAT THE CONTRACTOR DETERMINES THAT SHEETING OR SHORING IS REQUIRED FOR ESCALATION. THE CONTRACTOR SHALL RETAIN THE SERVICES OF A REGISTERED PROFESSIONAL STRUCTURAL ENGINEER FOR DESIGN AND DOCUMENTATION OF ALL SHEETING AND SHORING REQUIRED FOR THE WORK.
8. UTILITY LINES SHALL NOT PASS UNDER FOOTINGS, STEP FOOTINGS BELOW UTILITY LINES AND SLEEVE WALL.
9. TRENCHES WHICH RUN ADJACENT TO FOOTINGS AND ARE LOWER THAN THE FOOTING BOTTOM AND ARE WITHIN A HORIZONTAL DISTANCE OF 15 TIMES THE ELEVATION DIFFERENCE SHALL BE BACKFILLED WITH 1500 PSI CONCRETE TO THE FOOTING BOTTOM.

CONCRETE

1. ALL CONCRETE WORK SHALL CONFORM TO ACI 318 (LATEST EDITION).
2. CONCRETE COMPRESSIVE STRENGTH AT 28 DAYS SHALL BE:
FOUNDATION: 3500 PSI
FLOOR SLABS: 3500 PSI
EXTERIOR WALKS, STEPS, PADS, RAMPS AND CURBS: 3500 PSI
ALL EXTERIOR CONCRETE SHALL BE AIR-ENTRAINED (6+/-)1%.
3. CONCRETE SHALL NOT BE PLACED IN WATER OR ON FROZEN GROUND.
4. CALCIUM CHLORIDE ADMIXTURES ARE PROHIBITED, USE OF ADMIXTURES SHALL BE SUBJECT TO APPROVAL BY THE ARCHITECT.

GENERAL NOTES

1. EXTERIOR WALLS SHALL BE 2x4 WOOD GIRTS @ 2'-0" O.C. HORIZ. W/ 24 GAUGE GALVALUM PAINTED METAL PANELS.
2. ALL DIMENSIONS ARE TO FACE AND/OR CENTER OF STRUCTURE.
3. 12" OVERHANG EAVES AND GABLES.
4. EXTERIOR FIBERGLASS SMOOTH SKIN PLASTPRO 2000 INSULATED 9 LITE ENTRANCE DOOR AND PLASTPRO PF JAMB W/ LEVER TYPE LOCKSET, ANSI F101.

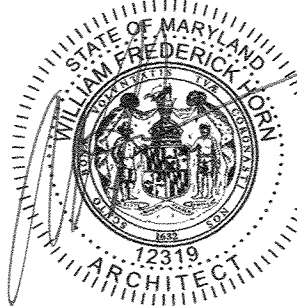
SYMBOLS

- Ⓔ DENOTES FIRE EXTINGUISHER LOCATION. FIRE EXTINGUISHER SHALL BE 2A-10B-C MOUNTED AT 48" TO TOP.
- ⌚ DENOTES EMERGENCY LIGHT WITH BATTERY BACK UP
- ☒ DENOTES LIGHTED EXIT SIGNS
- ⦿ DENOTES EXTERIOR EMERGENCY LIGHT WITH BATTERY BACK UP

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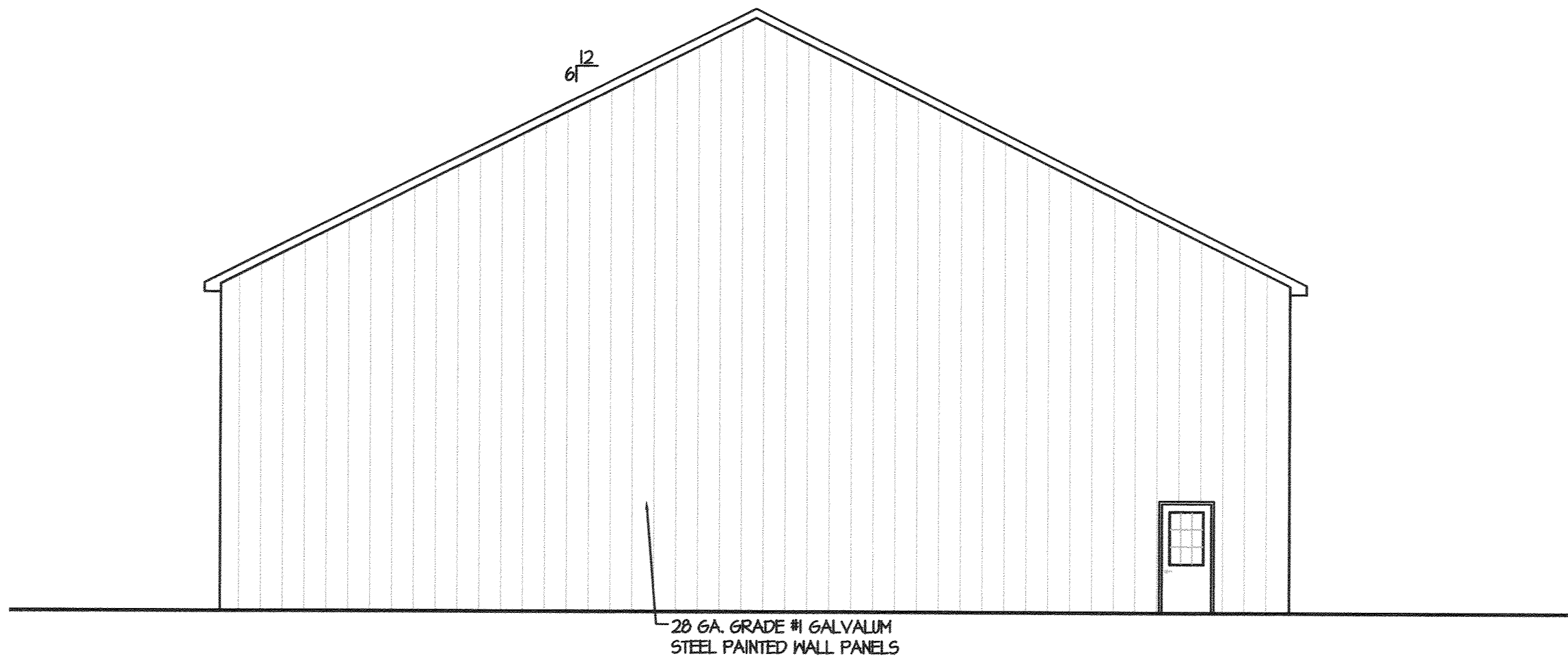
FLOOR PLAN
AND NOTES

DESIGNED WFH
DRAWN PAH
CHECKED WFH
DATE 12/19/24
PROJ. NO. 32469
SCALE AS NOTED
SHEET NO. A1.1

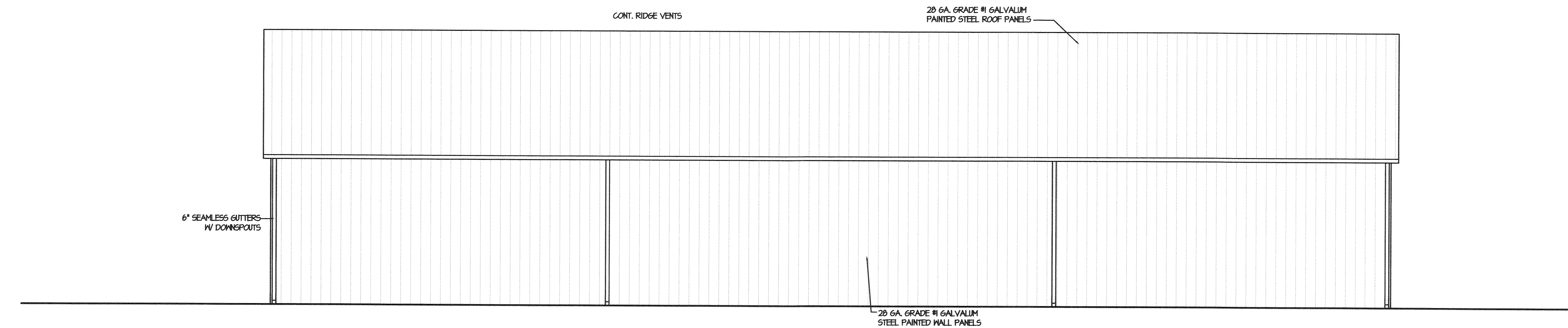
NEW BUILDING FOR:
MIKE HALL
28580 MARYS COURT
EASTON, MARYLAND

W.F. HORN
ARCHITECT, INC.
30093 W. BARRIER REEF BLVD. LEWES, DELAWARE
PHONE: 302-674-1620 302-231-2176

GENERAL CONTRACTOR
POLE BUILDINGS
UNLIMITED



1 FRONT ELEVATION
1/8" = 1'-0"



2 RIGHT SIDE ELEVATION
1/8" = 1'-0"



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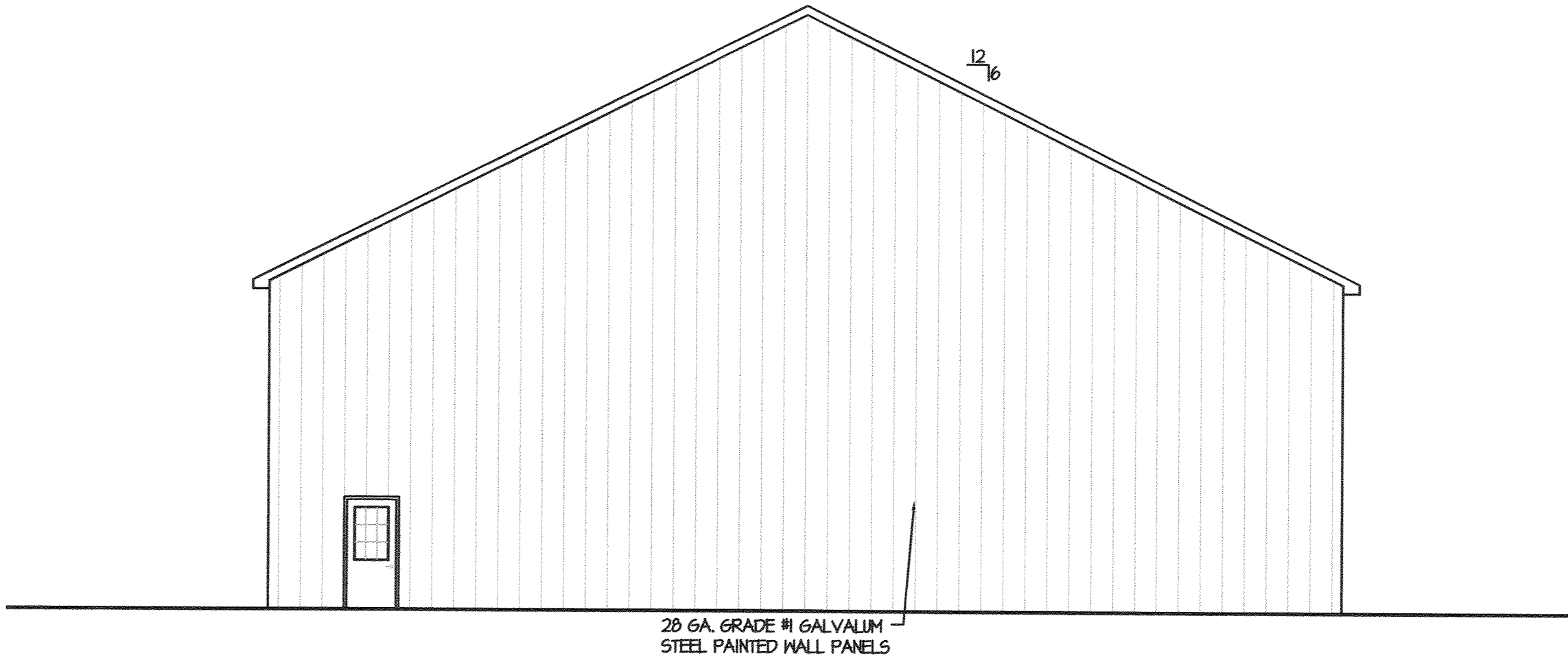
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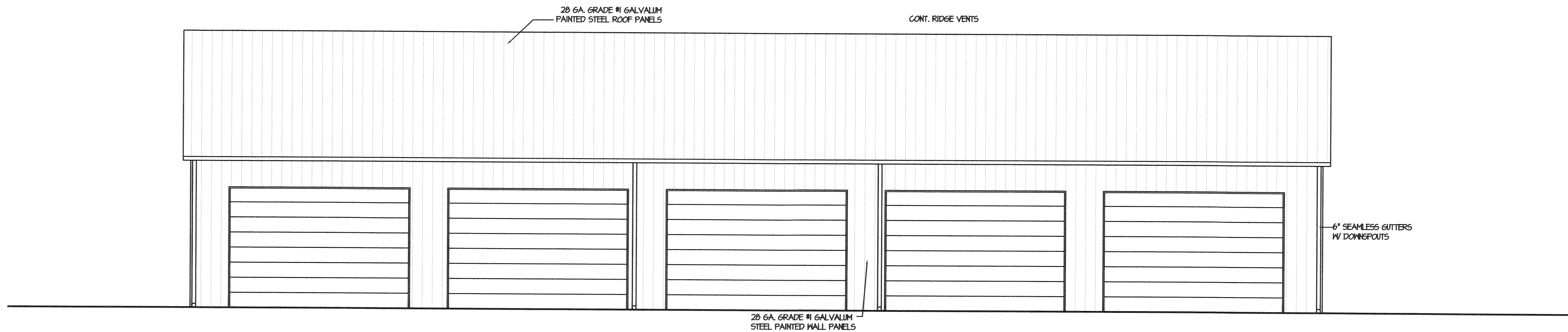
ELEVATIONS

DESIGNED WFH
DRAWN PAH
CHECKED WFH
DATE 12/19/24
PROJ. NO. 32469
SCALE AS NOTED
SHEET NO. **A2.1**

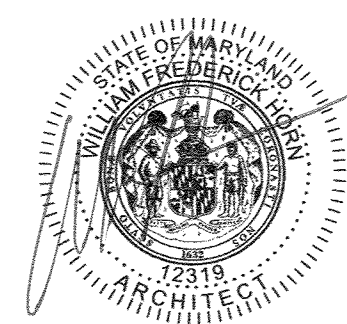
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3 REAR ELEVATION
1/8" = 1'-0"



4 LEFT SIDE ELEVATION
1/8" = 1'-0"



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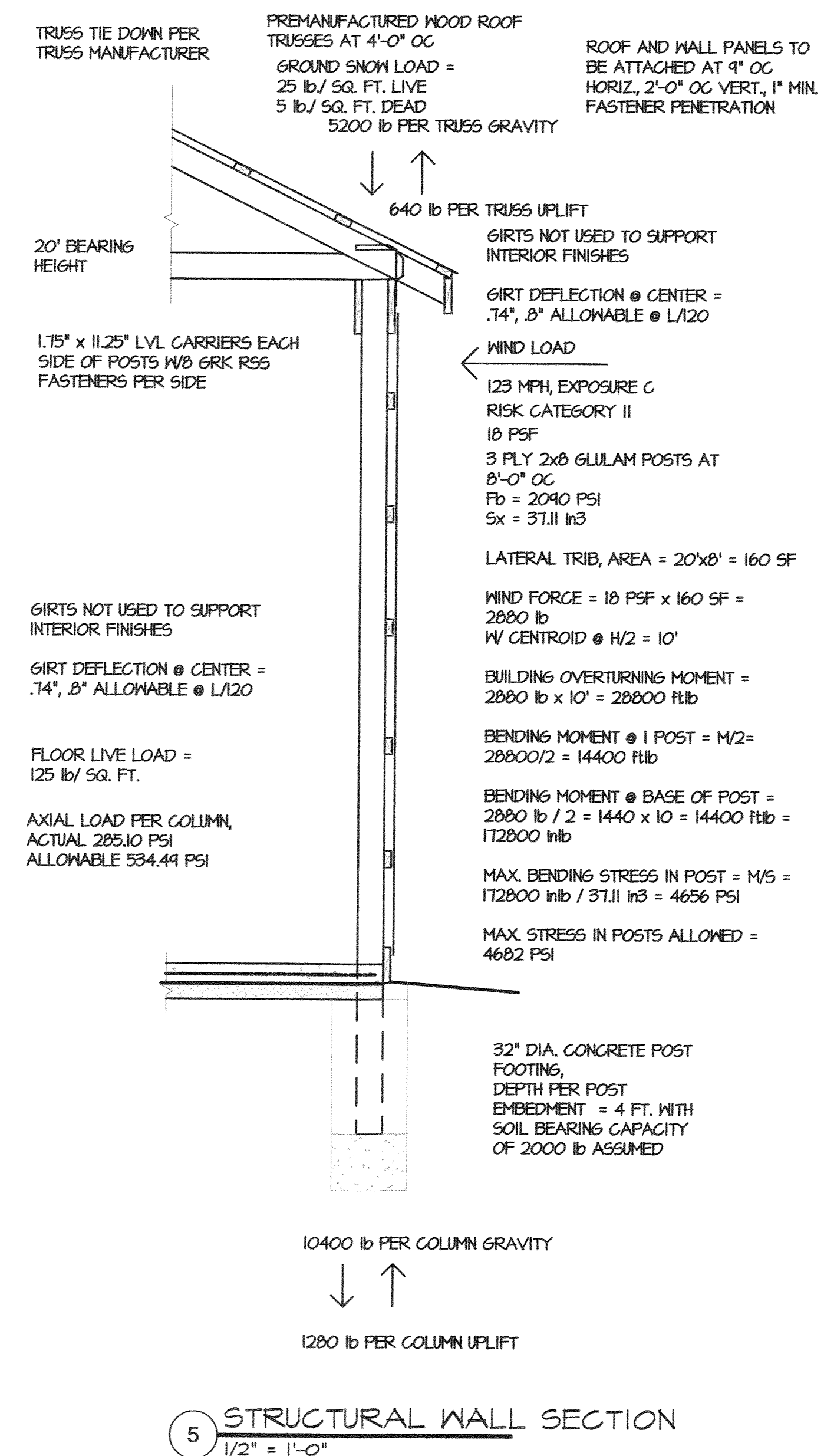
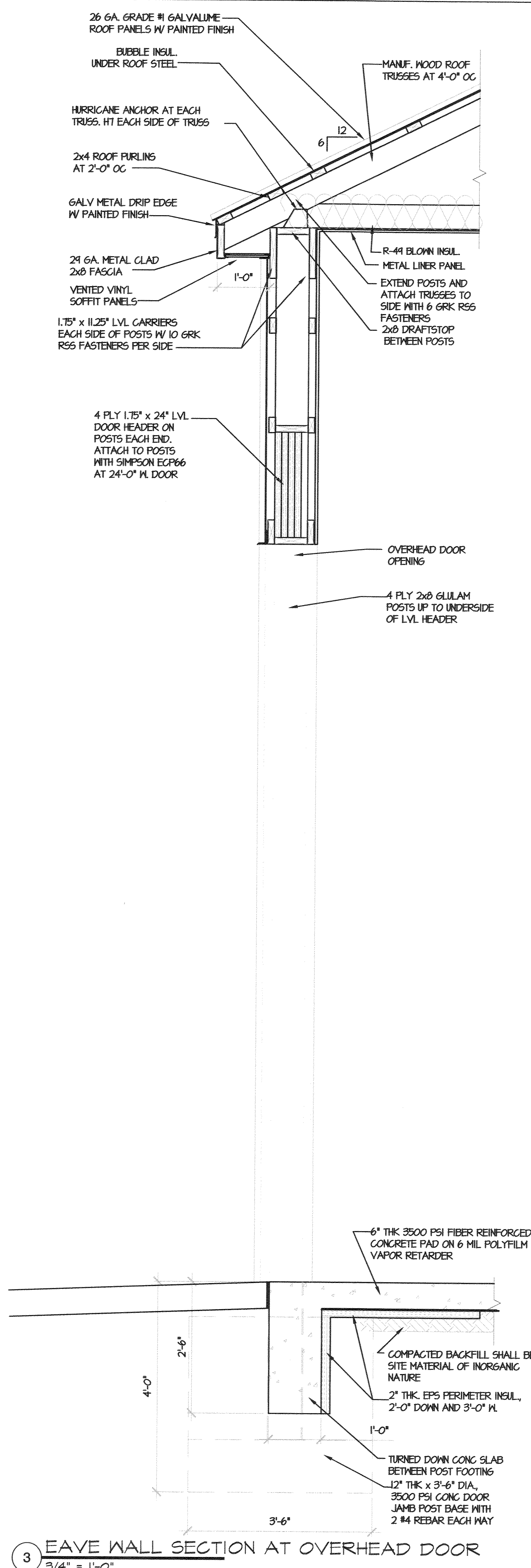
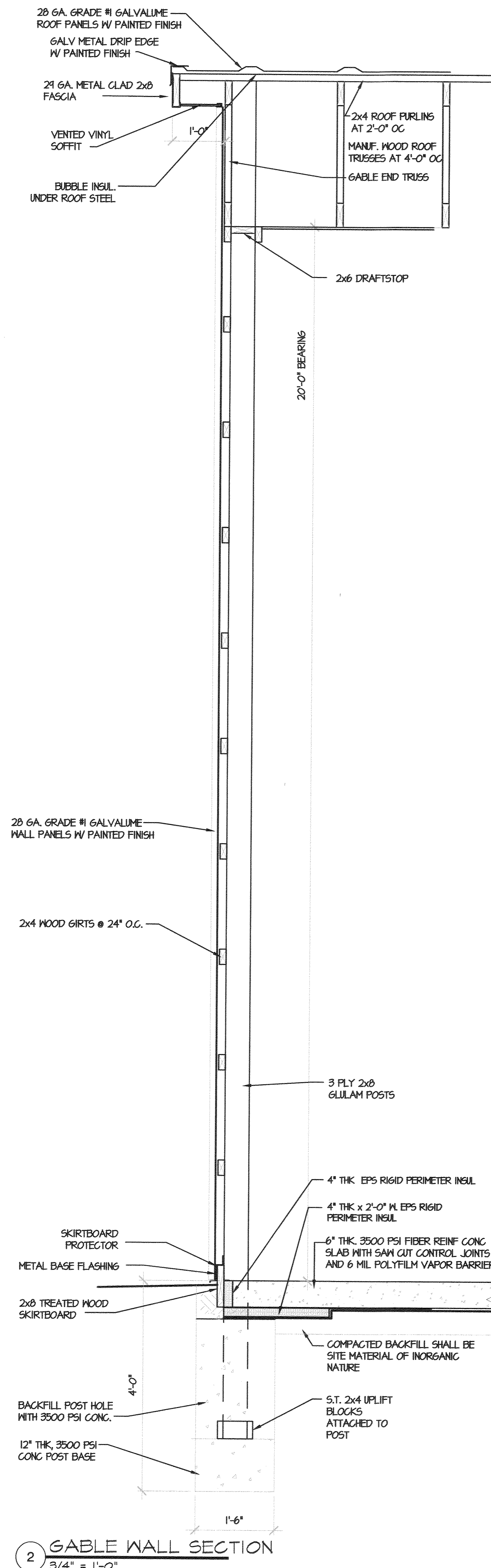
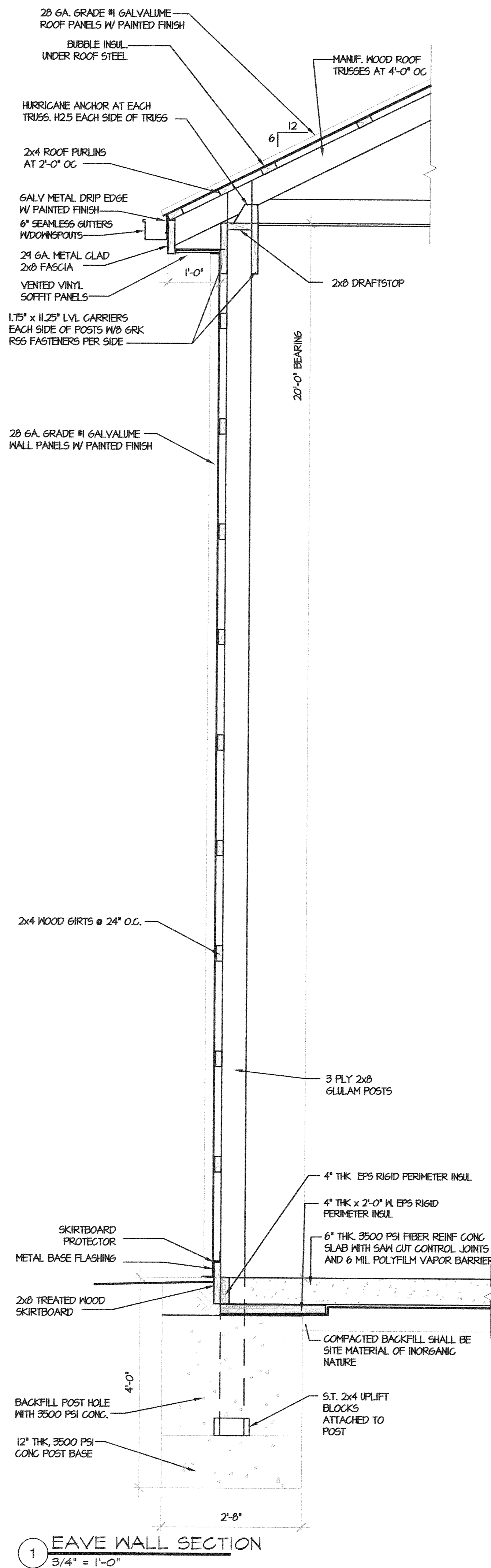
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GENERAL CONTRACTOR
POLE BUILDINGS
UNLIMITED

W.F.HORN
ARCHITECT, INC.

NEW BUILDING FOR:
MIKE HALL
28580 MARY'S COURT
EASTON, MARYLAND

SECTIONS

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CHECKED WFH
DATE 12/19/24
PROJ. NO. 32469
SCALE AS NOTED
SHEET NO. A3.1

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Lane Engineering, LLC



STORMWATER MANAGEMENT REPORT

SOMERSET WELL DRILLING
EASTON, TALBOT COUNTY, MARYLAND

PREPARED FOR:

Somerset Well Drilling
c/o Michael Hall
28580 Marys Court
Easton, Maryland 21601
(443) 783-9950

PREPARED BY:

Brittany Wallace, P.E.

DATE PREPARED:

December 10, 2024



PROFESSIONAL CERTIFICATION: I hereby certify that this document was prepared or approved by me, and that I am a duly licensed Professional Engineer under the laws of the State of Maryland, License No. 23152, Expiration Date: 7/05/2025.

LANE ENGINEERING, LLC
117 BAY STREET
EASTON, MARYLAND 21601
410-822-8003

Table of Contents

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General Site Information.....	3
Existing Conditions.....	4
Proposed Project.....	4
Stormwater Management	5
Stormwater Quantity Management	5
Stormwater Quality Management	5
ESD Practices Evaluation.....	5
Conclusion	6

Appendices

- APPENDIX A : HydroCAD Quantity Management Analysis
- APPENDIX B : ESD Calculations
- APPENDIX C: Drainage Area Maps



Introduction

This report addresses the impacts of stormwater runoff as a result of the proposed improvements on Lots 16 and 20 of the Talbot Commerce Park, located in Easton, MD. The stormwater management plan incorporates the requirements of the 2000 Maryland Stormwater Design Manual Volumes I and II (Manual) as currently updated. This report addresses stormwater requirements and meets the intent of the guidelines and methodologies presented in the MDE document Environmental Site Design (ESD) Process & Computations dated July 2010.

General Site Information

This project is located on Parcel 46, Lots 16 and 20, on Marys Court. The parcel is within Tax Map 25 and is zoned BC – Business Commercial with a combined site area of 13.99 acres± and a Limits of Disturbance (LOD) for all phases of proposed development of 3.39 acres±. The project site is located partially inside the Chesapeake Bay Critical Area.

Figure 1: Aerial View of Site



Existing Conditions

Lots 16 and 20 are both currently developed lots within the Talbot Commerce Park. The central portion of Lot 16 contains a 4,600 square foot office building with approximately 8,010 sf of semi-detached warehouse storage space and a 25,250 concrete pad for equipment storage, as well as a 12,150 sf office building with an asphalt parking lot in the southwest corner of the lot. An existing sewage reserve area, that serves all existing buildings, is located to the north of the equipment storage pad. An existing regional stormwater management pond is located within an easement on the central portion of Lot 20, to the west of the existing office building. To the south of the stormwater pond, the lot is undeveloped. To the north of the pond, the lot is undeveloped save for a small shed on a concrete pad (approximately 800 sf) which is located on an unused sewage disposal area. Lot 20 currently has no vehicular access points from Mary's Court.

It is proposed that both sewage reserve areas on each lot be abandoned. A new grinder pump and force main system is proposed to be installed on Lot 16 to serve both the existing buildings and any future buildings, and will tie to the public sewer system located in Mary's Court. Water is served by a well located on Lot 16.

The entirety of Lot 20 and part of Lot 16 are inside the IDA Critical Area zone. Both lots are subject to stream buffers and an existing forest conservation area on their northern boundaries.

The existing building and equipment pad on Lot 16 act as a high point, directing drainage to the forest conservation area to the north and east before entering Glebe Creek, and to a drainage ditch to the west, which then enters a closed storm drain system direct to the regional stormwater pond on Lot 20. An existing high point is located generally in the east-central portion of the development area on Lot 20, directing drainage via overland flow to the regional stormwater pond to the southwest and the forest conservation area and Glee Creek to the north.

Within the proposed development area are Hydrologic Group C/D soils, per published soil maps for Talbot County.

<i>Symbol</i>	<i>Soils Name</i>	<i>Soil Group</i>
CsA	Crosiadore Silt Loam	C/D
MtA	Mattapex Silt Loam	C
MtB	Mattapex Silt Loam	C
WoA	Woodstown Loam	C
WoB	Woodstown Loam	C
Zk	Zekiah	C/D

Proposed Project

Of the approximately 13.99 acre site, roughly 3.39 acres is proposed to be developed. For development in the immediate future- two 3-sided pole buildings for storage and an associated gravel access drive and parking pad, the removal of an existing septic system to be replaced with a grinder pump and force main, and the abandonment of two existing sewage reserve areas. There is a possibility for additional developments, two single story office buildings with associated parking lots and an access drive providing connection to the existing parking lots on Lot 16, on Lot 20 at some point in the future. Sewer stubs will be installed as part of the current construction to serve the future buildings.

The site LOD encompasses the demolition of existing site features, all proposed construction, including the possible future improvements, and landscaping. Refer to the Site Construction Plans for additional detailed information.



Stormwater Management

The overall project layout includes two submerged gravel wetlands, one located on the northern side of lots 16 and 20, bordering the existing forest conservation area, and one on Lot 20 to the west of the proposed future improvements, to capture runoff for water quality treatment and to provide quantity management. A network of open and closed storm drain systems and overland sheet flow will direct runoff to these facilities. A small portion of the future access road will drain into the existing regional stormwater pond, located in an easement on Lot 20.

The stormwater management quantity and quality computations are based on the overall proposed limits of disturbance (LOD) area, the proposed impervious areas within it, and the soil types present on site, as required.

Stormwater Quantity Management

There are 3 locations where runoff generally exits the site as it exists currently, identified on the drainage area maps as “points of interest” or POI’s, which were used to evaluate the effects on downstream/offsite drainage patterns based on the changes that will occur as part of the proposed construction. Each POI was analyzed for the 2-, 10-, and 100-year storm events per the Delmarva Hydrograph, in both existing and proposed conditions.

The site was analyzed using HydroCAD software, with the following results:

POI	Peak Runoff (cfs)					
	2-year		10-year		100-year	
	Pre	Post	Pre	Post	Pre	Post
1	2.22	0.00	4.69	0.65	7.86	5.38
2	0.45	0.00	0.95	0.10	1.60	2.09
3	0.36	0.39	0.76	0.75	1.27	1.15
Total Runoff Leaving Site	2.94	0.39	6.22	1.50	10.44	8.62

As seen above, the peak runoff exiting the project site will be reduced under proposed conditions for all storm events, and flow velocities for all POIs during all storm events are non-erosive.

Please see Appendix A for quantity management calculations. Please see Appendix c for drainage area maps.

Stormwater Quality Management

A target Environmental Site Design Volume (ESDv) of 14,022 cf was computed based on the project’s LOD, which covers approximately 3.39 acres and includes the possible future improvements. Approximately 58% of the LOD will be an impervious ground cover.

ESD Practices Evaluation

Alternative Surfaces

- Green Rooftops – Not economical for Industrial usage
- Permeable Pavements – Permeable pavements require significant maintenance and are not desirable for commercial applications or areas of repeated heavy equipment loading.
- Reinforced Turf - Reinforced turf areas are commonly used for emergency equipment access or for areas that receive minimal vehicular use. Reinforced turf is not desirable for commercial applications.

Nonstructural practices

- Disconnection of Rooftop Runoff – Insufficient greenspace onsite to meet the required design criterion.
- Disconnection of Non-Rooftop Runoff – Insufficient greenspace onsite to meet the required design criterion.



- Sheetflow to Conservation Area – The configuration of the improvements do not allow for sheetflow discharge to site adjacent forest conservation areas.

Micro-scale practices

- Rainwater Harvesting – Opportunities for on-site reuse of harvested rainwater is limited. Irrigation is not proposed for the site. Operations and maintenance, especially during cold-weather periods, is also a concern.
- **Submerged Gravel Wetlands** – This practice is best suited for sites with a high groundwater table and poor soils. Mapped soils are predominantly C/D soils and ponds of significant excavation are likely to intercept groundwater if placed on the lower elevation portion of the site.
- Landscape Infiltration – It is assumed there is not a significant infiltration potential within the project LOD without additional geotechnical exploration.
- Infiltration Berms – The requirements of the proposed development do not leave enough room for the implementation of this practice.
- Dry Wells – This practice is viewed as undesirable in Talbot County where many sites frequently have seasonal high ground water and other maintenance concerns. Dry wells are typically reserved for the treatment of building rooftops and would therefore require additional practices to supplement.
- Micro-Bioretenention – This practice will provide significant treatment. Maintenance for this practice is reasonable.
- Rain Gardens – This practice is better suited for residential environments.
- Swales – This practice provides the required treatment, is relatively easy to construct and maintain, and will enhance existing site drainage patterns.

Due to the poor in-situ soils, as mapped and observed by field inspection, it appears that Submerged Gravel Wetland represents the most economical form of quality treatment. Gravel wetlands are ideal for large drainage areas that generate significant runoff as they need to maintain a saturated media.

Submerged Gravel Wetlands are proposed to address the ESDv requirement. The total ESDv provided by ponding storage from these practices is 16,490 cf. Refer to Appendix B for calculations. It is proposed that SGW 1 be constructed initially at a size that would satisfy the ESDv requirement for the current development, and later expanded to satisfy the additional ESDv required for the future development.

Conclusion

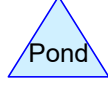
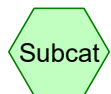
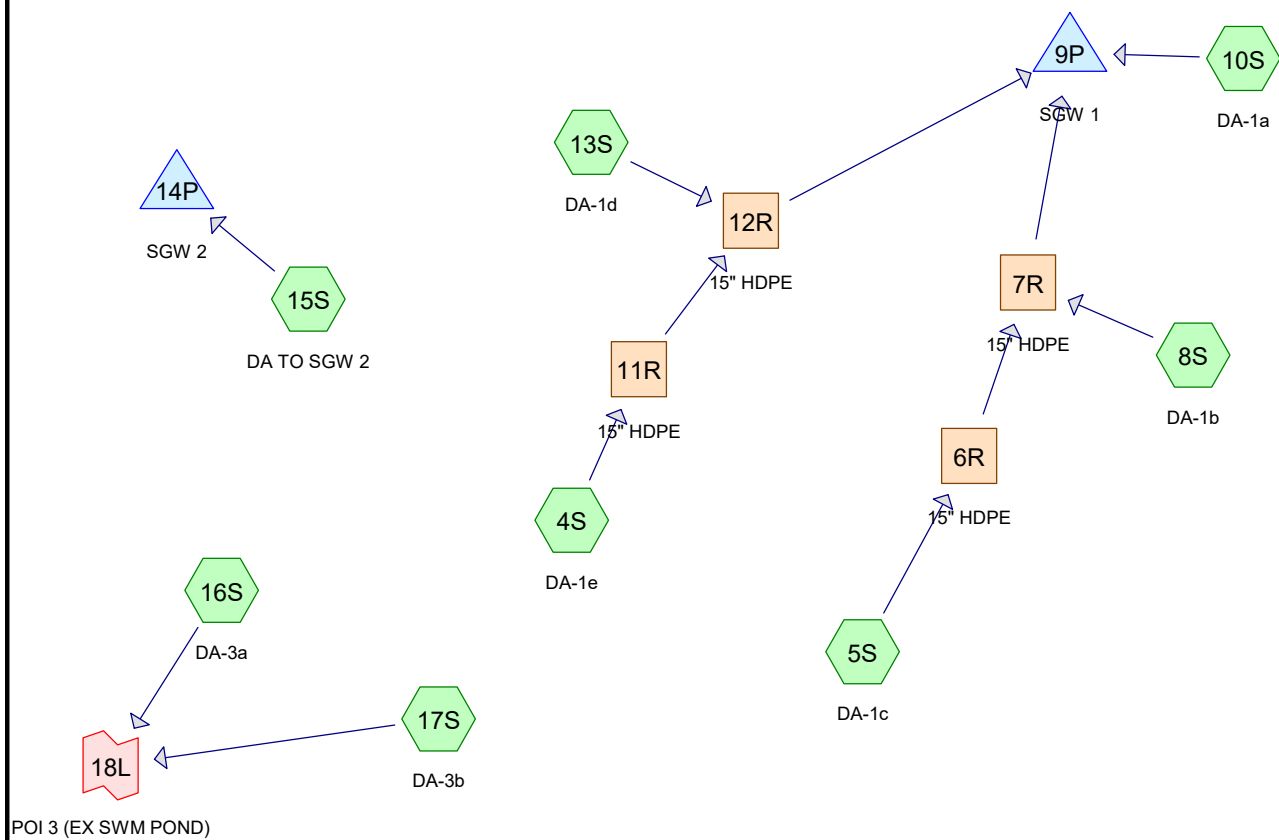
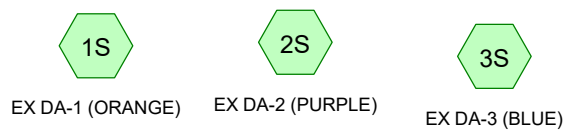
This stormwater management analysis indicates that the proposed design will successfully meet stormwater quality requirements with quantity management being previously satisfied at the time of the industrial park subdivision.



APPENDIX A

HYDROCAD QUANTITY MANAGEMENT ANALYSIS





Routing Diagram for 240060 - Concept
 Prepared by {enter your company name here}, Printed 1/1/2025
 HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

240060 - Concept

Prepared by {enter your company name here}

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 1-YR Rainfall=2.80"

Printed 1/1/2025

Page 2

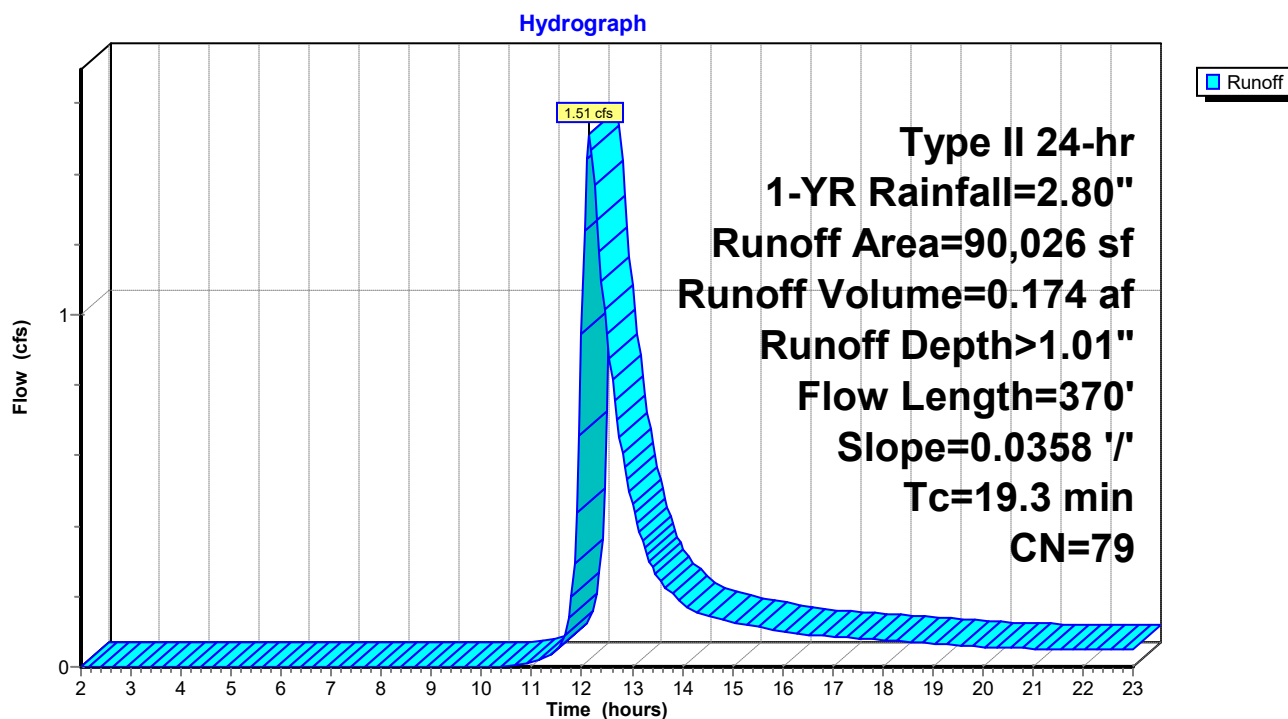
Summary for Subcatchment 1S: EX DA-1 (ORANGE)

Runoff = 1.51 cfs @ 12.15 hrs, Volume= 0.174 af, Depth> 1.01"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YR Rainfall=2.80"

Area (sf)	CN	Description
* 224	98	existing shed
89,802	79	50-75% Grass cover, Fair, HSG C
90,026	79	Weighted Average
89,802		99.75% Pervious Area
224		0.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	150	0.0358	0.14		Sheet Flow, a-b
					Grass: Dense n= 0.240 P2= 2.40"
1.2	220	0.0358	3.05		Shallow Concentrated Flow, b-c
					Unpaved Kv= 16.1 fps
19.3	370	Total			

Subcatchment 1S: EX DA-1 (ORANGE)

240060 - Concept

Prepared by {enter your company name here}

HydroCAD® 10.00-17 s/n 03788 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 1-YR Rainfall=2.80"

Printed 1/1/2025

Page 3

Summary for Subcatchment 2S: EX DA-2 (PURPLE)

Runoff = 0.30 cfs @ 12.30 hrs, Volume= 0.049 af, Depth> 1.00"

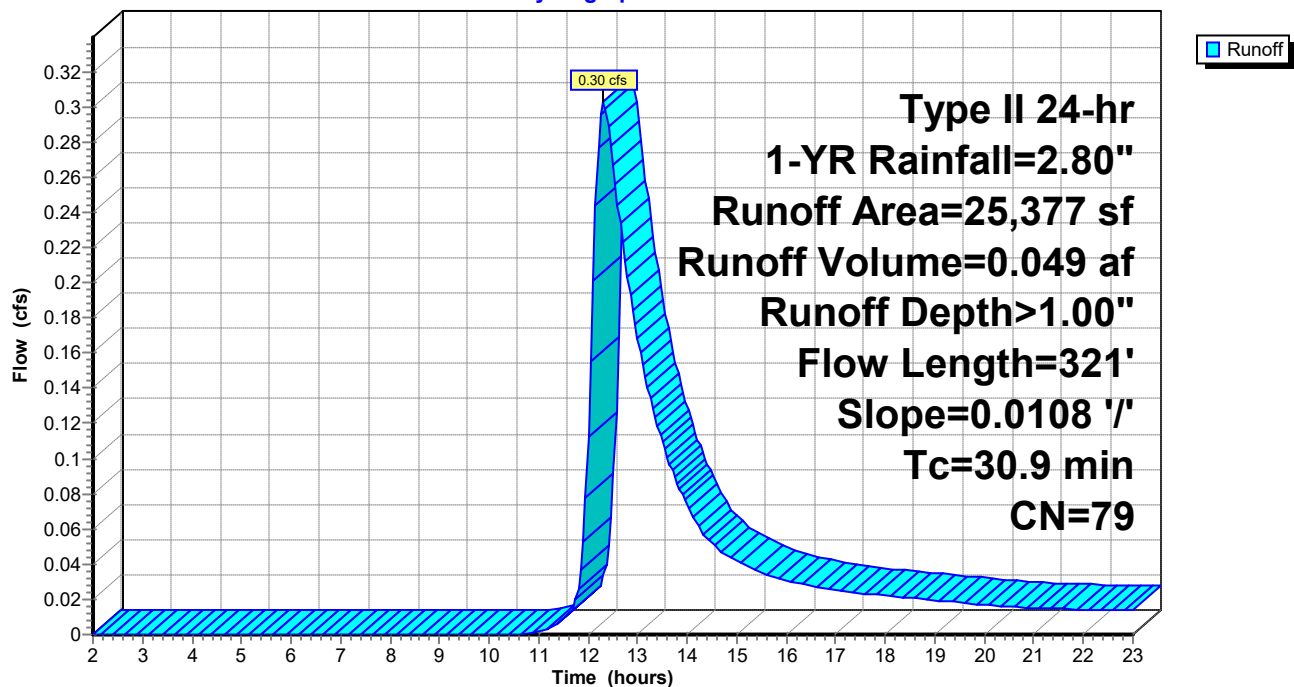
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YR Rainfall=2.80"

Area (sf)	CN	Description
25,377	79	50-75% Grass cover, Fair, HSG C
25,377		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.2	150	0.0108	0.09		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
1.7	171	0.0108	1.67		Shallow Concentrated Flow, B-C
					Unpaved Kv= 16.1 fps
30.9	321	Total			

Subcatchment 2S: EX DA-2 (PURPLE)

Hydrograph



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Type II 24-hr 1-YR Rainfall=2.80"

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Summary for Subcatchment 3S: EX DA-3 (BLUE)

Runoff = 0.25 cfs @ 12.60 hrs, Volume= 0.058 af, Depth> 1.05"

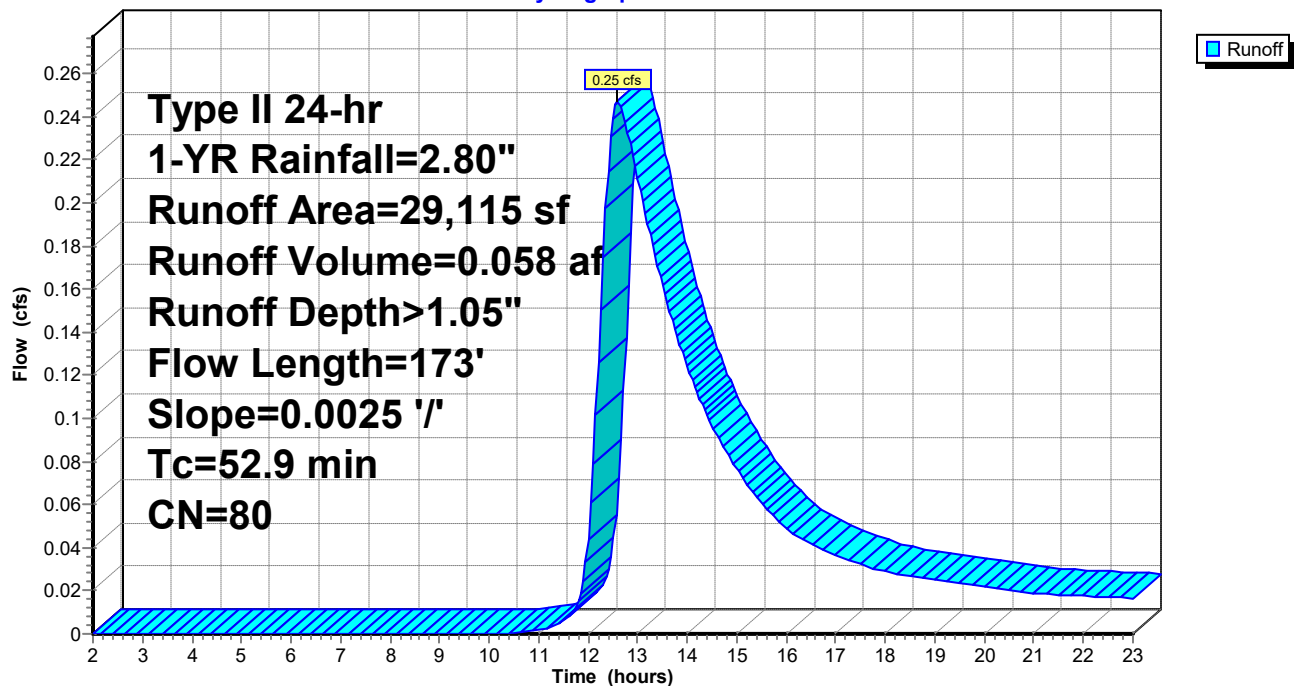
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YR Rainfall=2.80"

Area (sf)	CN	Description
28,117	79	50-75% Grass cover, Fair, HSG C
998	98	Paved parking, HSG C
29,115	80	Weighted Average
28,117		96.57% Pervious Area
998		3.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.4	150	0.0025	0.05		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
0.5	23	0.0025	0.81		Shallow Concentrated Flow, B-C
					Unpaved Kv= 16.1 fps
52.9	173	Total			

Subcatchment 3S: EX DA-3 (BLUE)

Hydrograph



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Type II 24-hr 1-YR Rainfall=2.80"

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Summary for Subcatchment 4S: DA-1e

Runoff = 0.58 cfs @ 11.97 hrs, Volume= 0.034 af, Depth> 2.03"

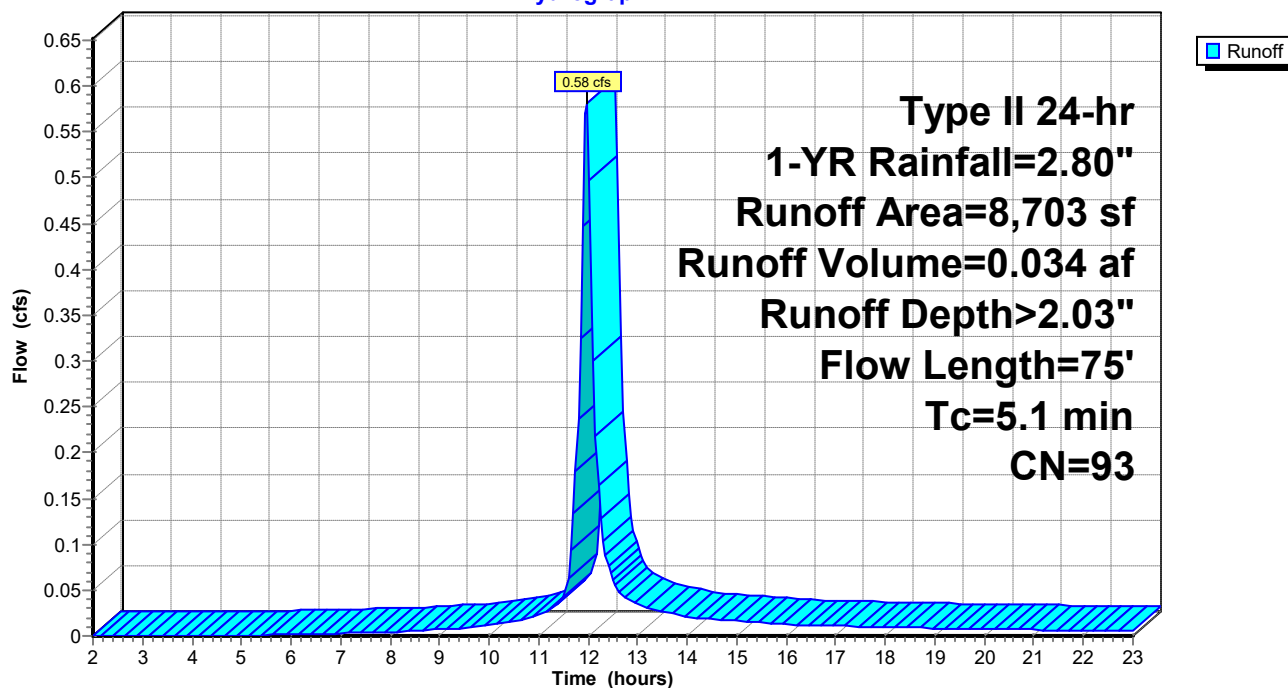
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YR Rainfall=2.80"

Area (sf)	CN	Description
6,909	98	Paved parking, HSG C
1,794	74	>75% Grass cover, Good, HSG C
8,703	93	Weighted Average
1,794		20.61% Pervious Area
6,909		79.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	14	0.0095	0.05		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
0.4	48	0.0134	1.86		Shallow Concentrated Flow, B-C
					Unpaved Kv= 16.1 fps
0.1	13	0.0075	1.76		Shallow Concentrated Flow, C-D
					Paved Kv= 20.3 fps
5.1	75	Total			

Subcatchment 4S: DA-1e

Hydrograph



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Type II 24-hr 1-YR Rainfall=2.80"

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Summary for Subcatchment 5S: DA-1c

Runoff = 0.93 cfs @ 11.94 hrs, Volume= 0.052 af, Depth> 2.53"

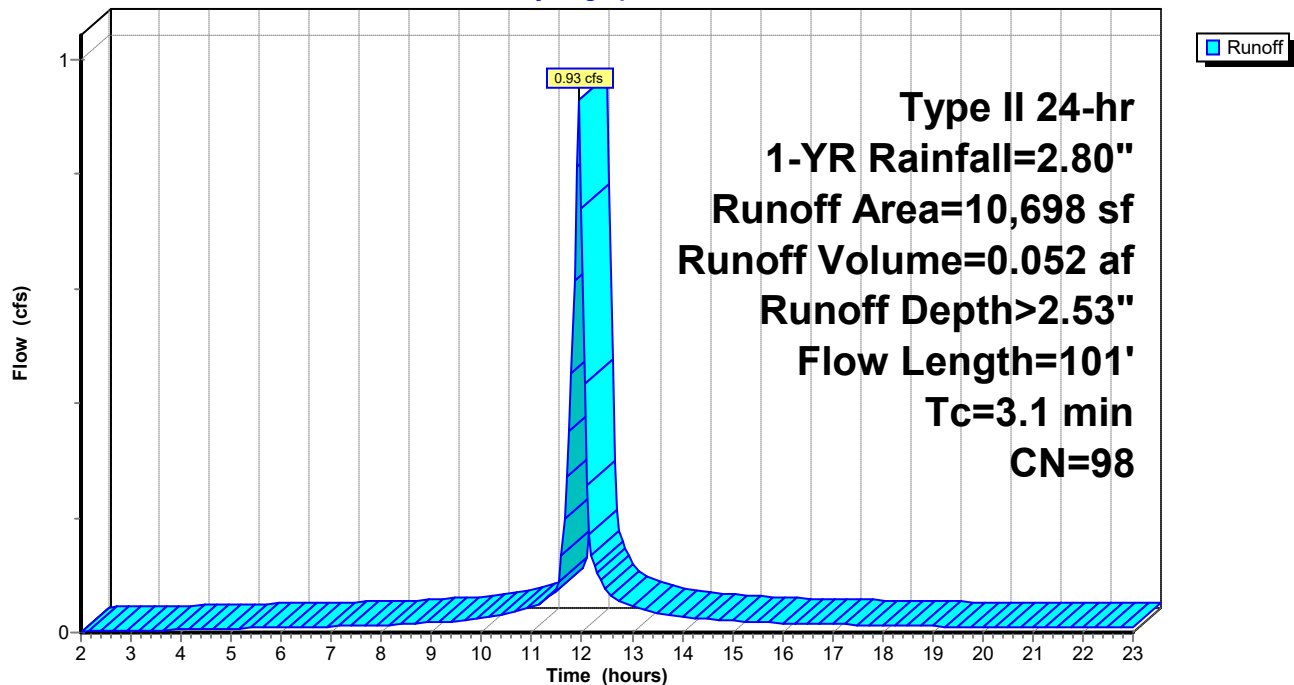
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YR Rainfall=2.80"

Area (sf)	CN	Description
10,698	98	Paved parking, HSG C
10,698		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	67	0.0016	0.40		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 2.40"
0.3	34	0.0100	2.03		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
3.1	101	Total			

Subcatchment 5S: DA-1c

Hydrograph



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Type II 24-hr 1-YR Rainfall=2.80"

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Summary for Subcatchment 8S: DA-1b

Runoff = 0.57 cfs @ 11.91 hrs, Volume= 0.029 af, Depth> 2.54"

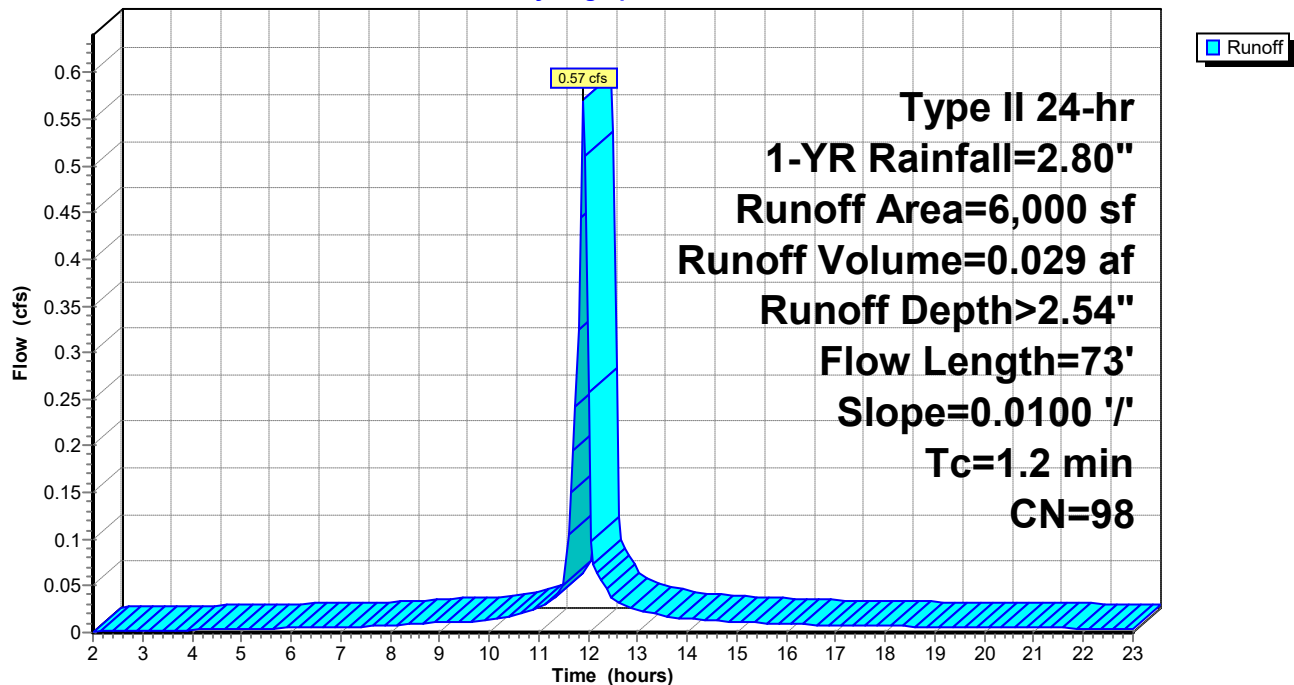
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YR Rainfall=2.80"

Area (sf)	CN	Description
6,000	98	Paved parking, HSG C
6,000		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	39	0.0100	0.75		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 2.40"
0.3	34	0.0100	2.03		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
1.2	73	Total			

Subcatchment 8S: DA-1b

Hydrograph



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Type II 24-hr 1-YR Rainfall=2.80"

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Summary for Subcatchment 10S: DA-1a

Runoff = 3.00 cfs @ 11.99 hrs, Volume= 0.172 af, Depth> 1.39"

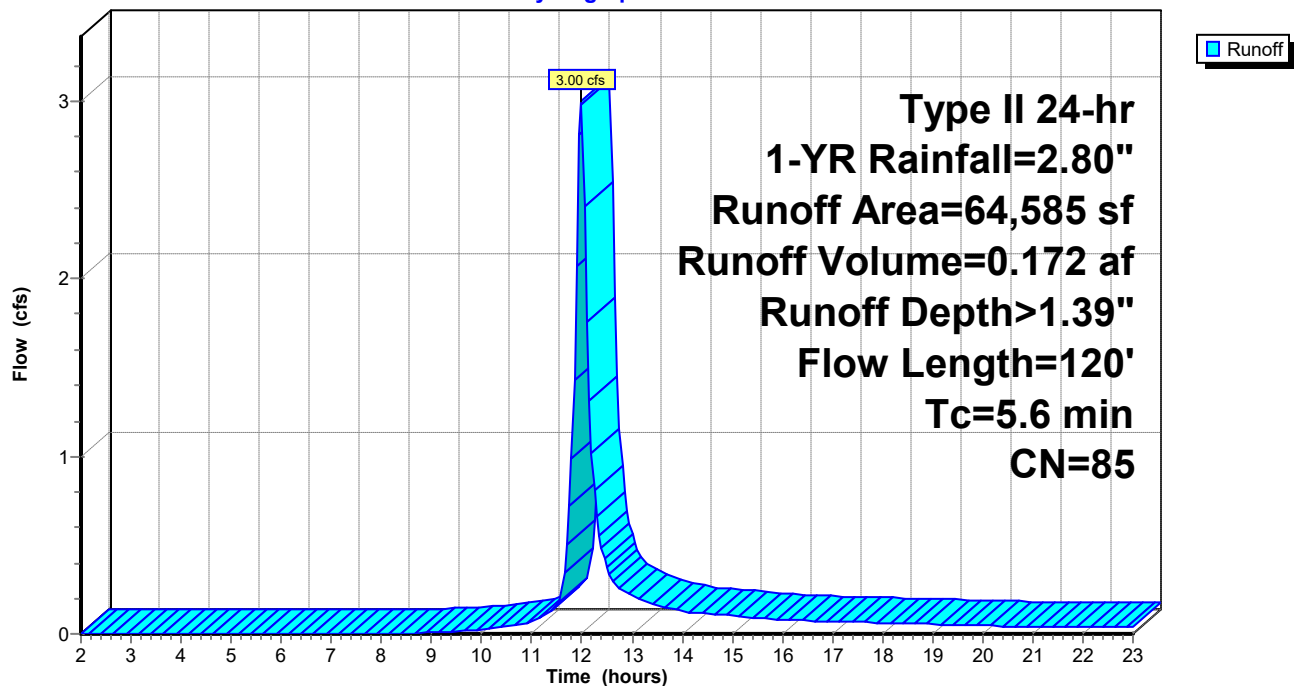
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YR Rainfall=2.80"

Area (sf)	CN	Description
30,489	98	Paved parking, HSG C
34,096	74	>75% Grass cover, Good, HSG C
64,585	85	Weighted Average
34,096		52.79% Pervious Area
30,489		47.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	33	0.0439	0.11		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
0.6	87	0.0253	2.56		Shallow Concentrated Flow, B-C
					Unpaved Kv= 16.1 fps
5.6	120	Total			

Subcatchment 10S: DA-1a

Hydrograph



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Type II 24-hr 1-YR Rainfall=2.80"

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Summary for Subcatchment 13S: DA-1d

Runoff = 0.66 cfs @ 11.92 hrs, Volume= 0.031 af, Depth> 1.94"

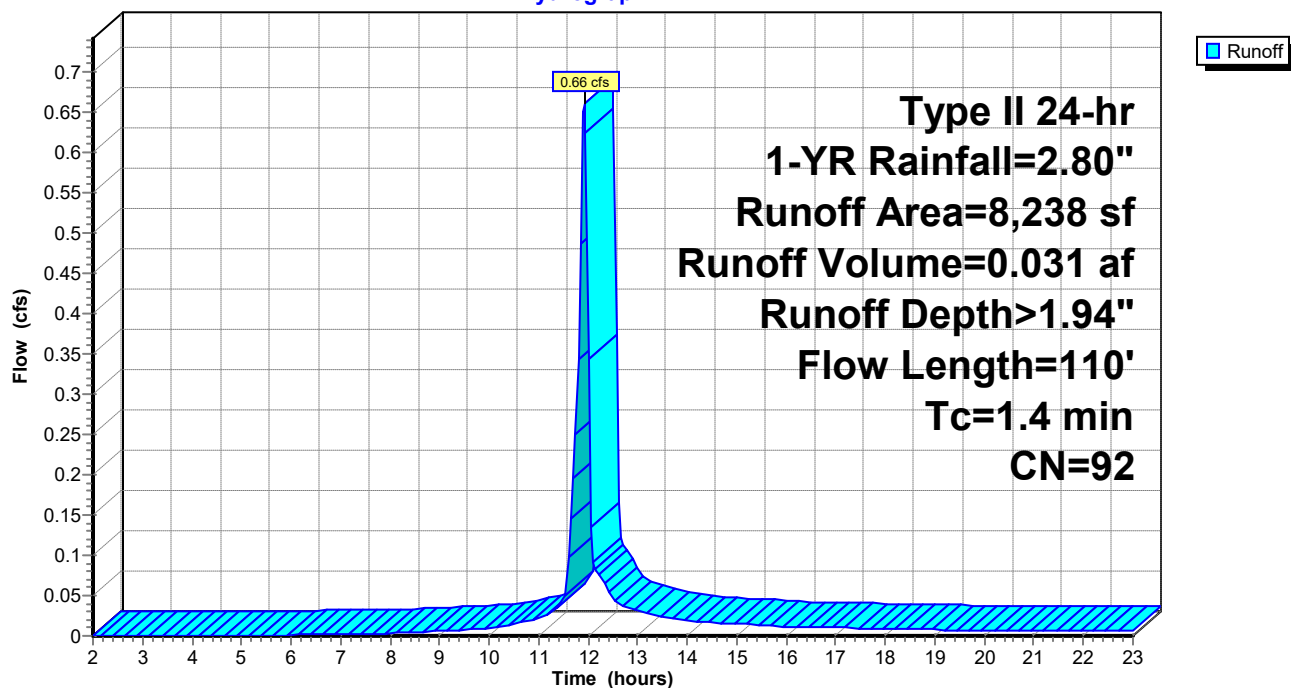
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YR Rainfall=2.80"

Area (sf)	CN	Description
6,157	98	Paved parking, HSG C
2,081	74	>75% Grass cover, Good, HSG C
8,238	92	Weighted Average
2,081		25.26% Pervious Area
6,157		74.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	34	0.0156	0.87		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 2.40"
0.7	76	0.0075	1.76		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
1.4	110	Total			

Subcatchment 13S: DA-1d

Hydrograph



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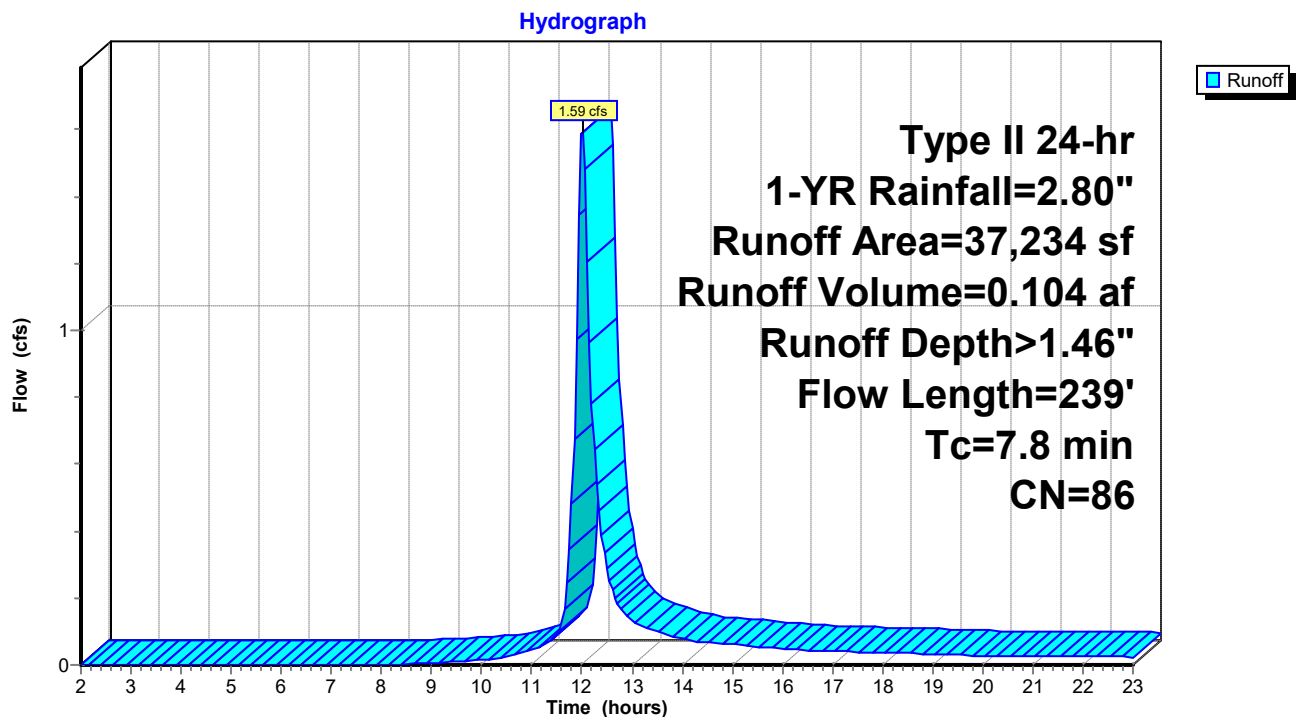
Summary for Subcatchment 15S: DA TO SGW 2

Runoff = 1.59 cfs @ 12.01 hrs, Volume= 0.104 af, Depth> 1.46"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YR Rainfall=2.80"

Area (sf)	CN	Description
18,708	98	Paved parking, HSG C
18,526	74	>75% Grass cover, Good, HSG C
37,234	86	Weighted Average
18,526		49.76% Pervious Area
18,708		50.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	14	0.0095	0.05		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
0.4	35	0.0075	1.39		Shallow Concentrated Flow, B-C
					Unpaved Kv= 16.1 fps
2.8	190	0.0051	1.15		Shallow Concentrated Flow, C-D
					Unpaved Kv= 16.1 fps
7.8	239	Total			

Subcatchment 15S: DA TO SGW 2

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Summary for Subcatchment 16S: DA-3a

Runoff = 0.20 cfs @ 12.07 hrs, Volume= 0.017 af, Depth> 1.61"

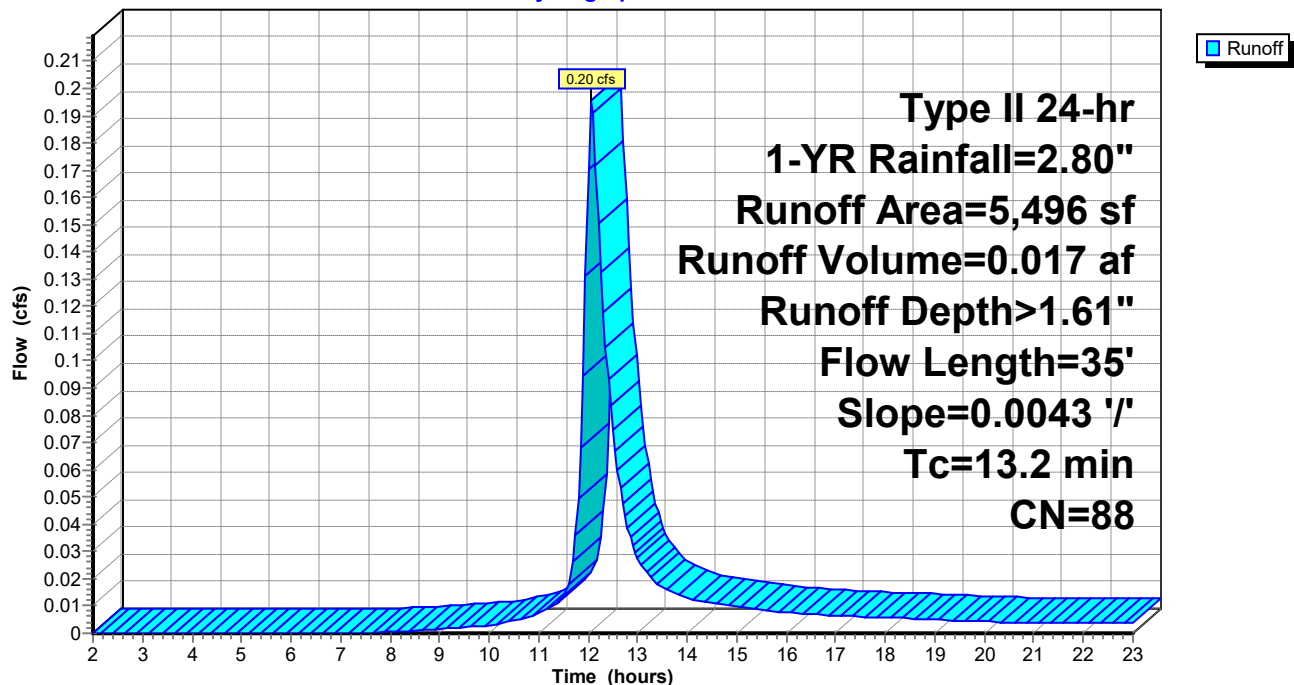
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YR Rainfall=2.80"

Area (sf)	CN	Description
3,166	98	Paved parking, HSG C
2,330	74	>75% Grass cover, Good, HSG C
5,496	88	Weighted Average
2,330		42.39% Pervious Area
3,166		57.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	35	0.0043	0.04		Sheet Flow, A-B
Grass: Dense n= 0.240 P2= 2.40"					

Subcatchment 16S: DA-3a

Hydrograph



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Type II 24-hr 1-YR Rainfall=2.80"

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Summary for Subcatchment 17S: DA-3b

Runoff = 0.09 cfs @ 12.05 hrs, Volume= 0.007 af, Depth> 1.02"

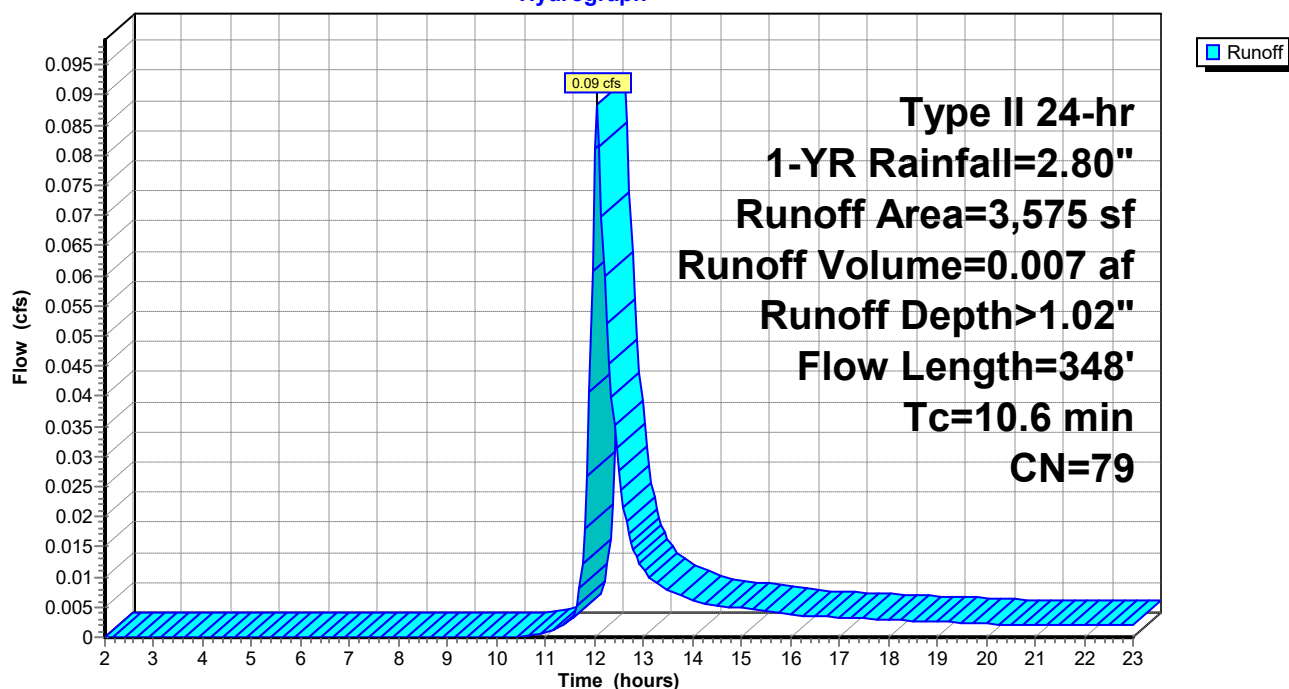
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 1-YR Rainfall=2.80"

Area (sf)	CN	Description
800	98	Paved parking, HSG C
2,775	74	>75% Grass cover, Good, HSG C
3,575	79	Weighted Average
2,775		77.62% Pervious Area
800		22.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	46	0.0222	0.09		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
0.4	100	0.0050	3.79	2.98	Pipe Channel, 12" HDPE
					12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'
					n= 0.011
1.7	202	0.0149	1.97		Shallow Concentrated Flow, EX SWALE TO INLET 4
					Unpaved Kv= 16.1 fps
10.6	348	Total			

Subcatchment 17S: DA-3b

Hydrograph



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Type II 24-hr 1-YR Rainfall=2.80"

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Summary for Reach 6R: 15" HDPE

Inflow Area = 0.246 ac, 100.00% Impervious, Inflow Depth > 2.53" for 1-YR event
Inflow = 0.93 cfs @ 11.94 hrs, Volume= 0.052 af
Outflow = 0.93 cfs @ 11.95 hrs, Volume= 0.052 af, Atten= 1%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.30 fps, Min. Travel Time= 0.4 min

Avg. Velocity = 0.99 fps, Avg. Travel Time= 1.2 min

Peak Storage= 20 cf @ 11.95 hrs

Average Depth at Peak Storage= 0.35'

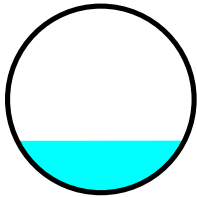
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.44 cfs

15.0" Round Pipe

n= 0.011 PVC, smooth interior

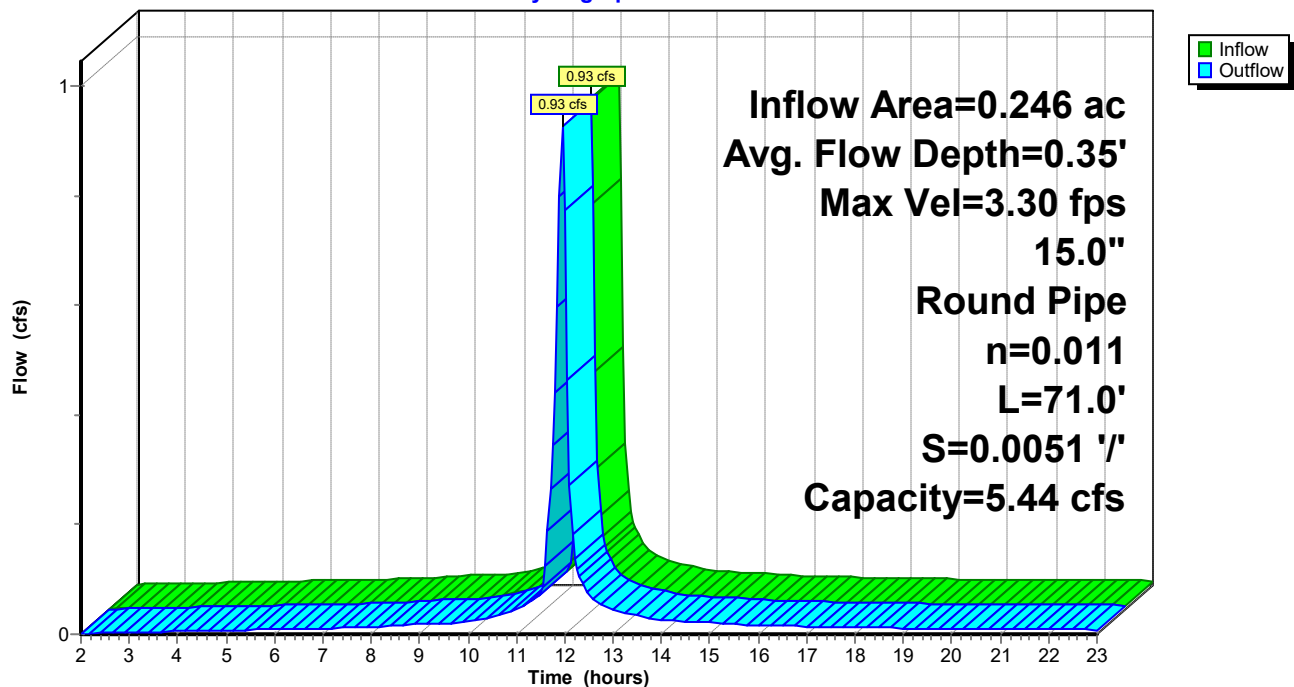
Length= 71.0' Slope= 0.0051 '/

Inlet Invert= 11.16', Outlet Invert= 10.80'



Reach 6R: 15" HDPE

Hydrograph



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Type II 24-hr 1-YR Rainfall=2.80"

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Stage-Area-Storage for Reach 6R: 15" HDPE

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
11.16	0.0	0	12.20	1.1	77
11.18	0.0	0	12.22	1.1	79
11.20	0.0	1	12.24	1.1	80
11.22	0.0	2	12.26	1.1	81
11.24	0.0	2	12.28	1.2	82
11.26	0.0	3	12.30	1.2	83
11.28	0.1	4	12.32	1.2	84
11.30	0.1	5	12.34	1.2	85
11.32	0.1	7	12.36	1.2	86
11.34	0.1	8	12.38	1.2	87
11.36	0.1	9	12.40	1.2	87
11.38	0.1	10			
11.40	0.2	12			
11.42	0.2	13			
11.44	0.2	15			
11.46	0.2	16			
11.48	0.2	18			
11.50	0.3	19			
11.52	0.3	21			
11.54	0.3	22			
11.56	0.3	24			
11.58	0.4	26			
11.60	0.4	27			
11.62	0.4	29			
11.64	0.4	31			
11.66	0.5	33			
11.68	0.5	34			
11.70	0.5	36			
11.72	0.5	38			
11.74	0.6	40			
11.76	0.6	41			
11.78	0.6	43			
11.80	0.6	45			
11.82	0.7	47			
11.84	0.7	48			
11.86	0.7	50			
11.88	0.7	52			
11.90	0.8	54			
11.92	0.8	55			
11.94	0.8	57			
11.96	0.8	59			
11.98	0.9	61			
12.00	0.9	62			
12.02	0.9	64			
12.04	0.9	66			
12.06	0.9	67			
12.08	1.0	69			
12.10	1.0	70			
12.12	1.0	72			
12.14	1.0	73			
12.16	1.1	75			
12.18	1.1	76			

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Type II 24-hr 1-YR Rainfall=2.80"

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Summary for Reach 7R: 15" HDPE

Inflow Area = 0.383 ac, 100.00% Impervious, Inflow Depth > 2.53" for 1-YR event
Inflow = 1.47 cfs @ 11.93 hrs, Volume= 0.081 af
Outflow = 1.46 cfs @ 11.94 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.71 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.12 fps, Avg. Travel Time= 1.1 min

Peak Storage= 28 cf @ 11.94 hrs

Average Depth at Peak Storage= 0.45'

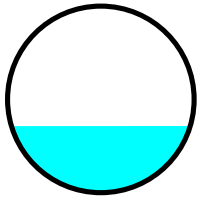
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.36 cfs

15.0" Round Pipe

n= 0.011

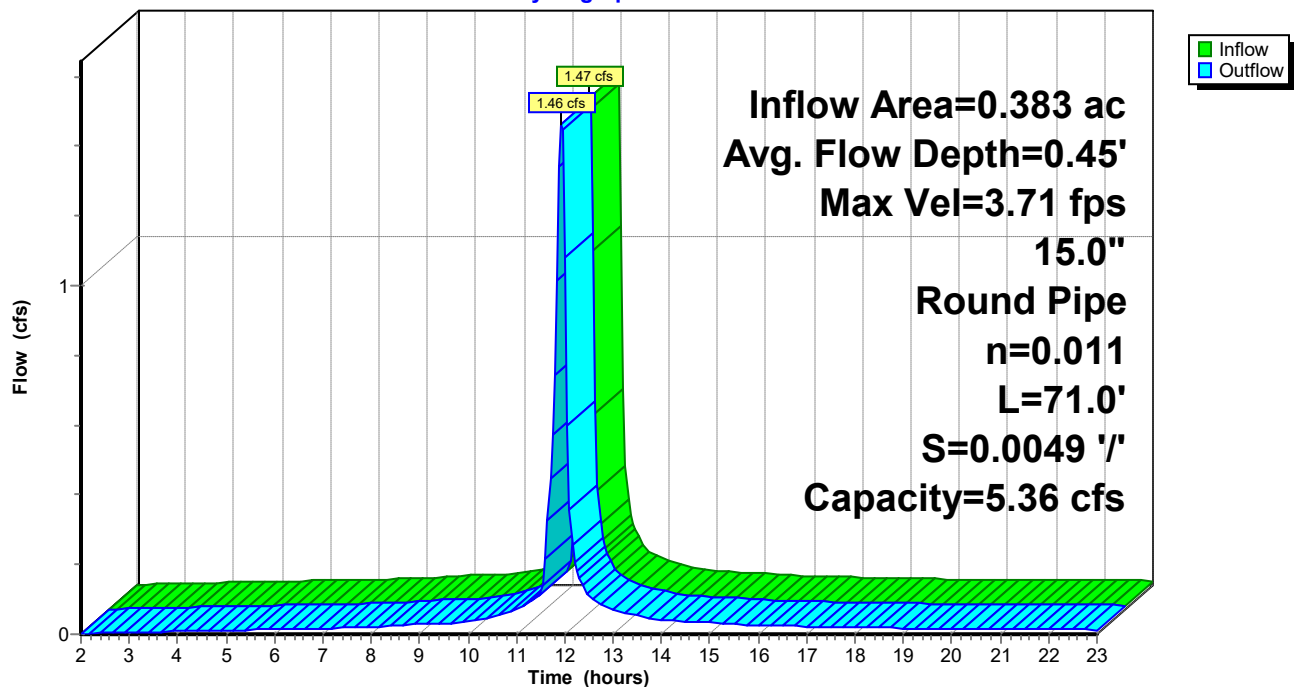
Length= 71.0' Slope= 0.0049 '/

Inlet Invert= 10.80', Outlet Invert= 10.45'



Reach 7R: 15" HDPE

Hydrograph



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Type II 24-hr 1-YR Rainfall=2.80"

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Stage-Area-Storage for Reach 7R: 15" HDPE

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
10.80	0.0	0	11.84	1.1	77
10.82	0.0	0	11.86	1.1	79
10.84	0.0	1	11.88	1.1	80
10.86	0.0	2	11.90	1.1	81
10.88	0.0	2	11.92	1.2	82
10.90	0.0	3	11.94	1.2	83
10.92	0.1	4	11.96	1.2	84
10.94	0.1	5	11.98	1.2	85
10.96	0.1	7	12.00	1.2	86
10.98	0.1	8	12.02	1.2	87
11.00	0.1	9	12.04	1.2	87
11.02	0.1	10			
11.04	0.2	12			
11.06	0.2	13			
11.08	0.2	15			
11.10	0.2	16			
11.12	0.2	18			
11.14	0.3	19			
11.16	0.3	21			
11.18	0.3	22			
11.20	0.3	24			
11.22	0.4	26			
11.24	0.4	27			
11.26	0.4	29			
11.28	0.4	31			
11.30	0.5	33			
11.32	0.5	34			
11.34	0.5	36			
11.36	0.5	38			
11.38	0.6	40			
11.40	0.6	41			
11.42	0.6	43			
11.44	0.6	45			
11.46	0.7	47			
11.48	0.7	48			
11.50	0.7	50			
11.52	0.7	52			
11.54	0.8	54			
11.56	0.8	55			
11.58	0.8	57			
11.60	0.8	59			
11.62	0.9	61			
11.64	0.9	62			
11.66	0.9	64			
11.68	0.9	66			
11.70	0.9	67			
11.72	1.0	69			
11.74	1.0	70			
11.76	1.0	72			
11.78	1.0	73			
11.80	1.1	75			
11.82	1.1	76			

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Type II 24-hr 1-YR Rainfall=2.80"

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Summary for Reach 11R: 15" HDPE

Inflow Area = 0.200 ac, 79.39% Impervious, Inflow Depth > 2.03" for 1-YR event
Inflow = 0.58 cfs @ 11.97 hrs, Volume= 0.034 af
Outflow = 0.58 cfs @ 11.98 hrs, Volume= 0.034 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs

Max. Velocity= 2.89 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 0.90 fps, Avg. Travel Time= 1.1 min

Peak Storage= 12 cf @ 11.98 hrs

Average Depth at Peak Storage= 0.28'

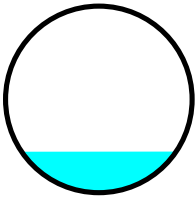
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.49 cfs

15.0" Round Pipe

n= 0.011

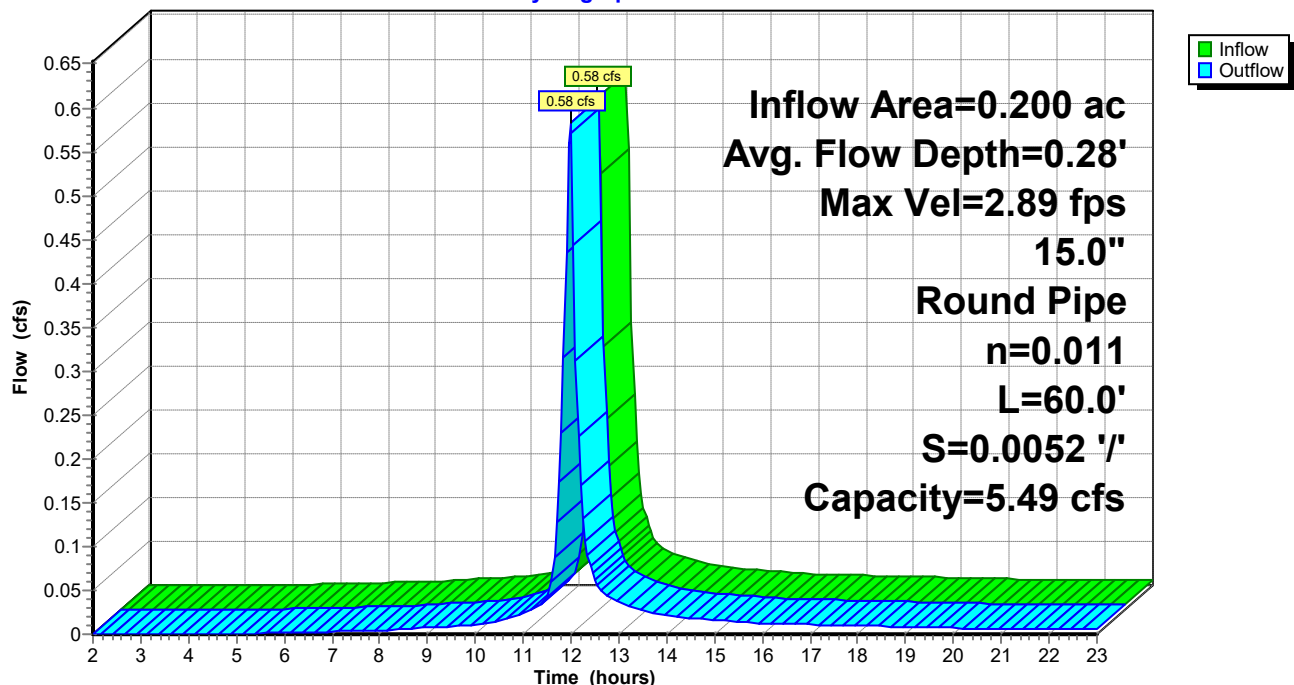
Length= 60.0' Slope= 0.0052 '/

Inlet Invert= 11.82', Outlet Invert= 11.51'



Reach 11R: 15" HDPE

Hydrograph



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Type II 24-hr 1-YR Rainfall=2.80"

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Stage-Area-Storage for Reach 11R: 15" HDPE

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
11.82	0.0	0	12.86	1.1	65
11.84	0.0	0	12.88	1.1	67
11.86	0.0	1	12.90	1.1	68
11.88	0.0	1	12.92	1.1	69
11.90	0.0	2	12.94	1.2	70
11.92	0.0	3	12.96	1.2	70
11.94	0.1	4	12.98	1.2	71
11.96	0.1	5	13.00	1.2	72
11.98	0.1	6	13.02	1.2	73
12.00	0.1	7	13.04	1.2	73
12.02	0.1	8	13.06	1.2	74
12.04	0.1	9			
12.06	0.2	10			
12.08	0.2	11			
12.10	0.2	12			
12.12	0.2	14			
12.14	0.2	15			
12.16	0.3	16			
12.18	0.3	18			
12.20	0.3	19			
12.22	0.3	20			
12.24	0.4	22			
12.26	0.4	23			
12.28	0.4	25			
12.30	0.4	26			
12.32	0.5	28			
12.34	0.5	29			
12.36	0.5	30			
12.38	0.5	32			
12.40	0.6	33			
12.42	0.6	35			
12.44	0.6	36			
12.46	0.6	38			
12.48	0.7	39			
12.50	0.7	41			
12.52	0.7	42			
12.54	0.7	44			
12.56	0.8	45			
12.58	0.8	47			
12.60	0.8	48			
12.62	0.8	50			
12.64	0.9	51			
12.66	0.9	53			
12.68	0.9	54			
12.70	0.9	55			
12.72	0.9	57			
12.74	1.0	58			
12.76	1.0	59			
12.78	1.0	61			
12.80	1.0	62			
12.82	1.1	63			
12.84	1.1	64			

240060 - Concept

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Type II 24-hr 1-YR Rainfall=2.80"

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Summary for Reach 12R: 15" HDPE

Inflow Area = 0.389 ac, 77.13% Impervious, Inflow Depth > 1.99" for 1-YR event
Inflow = 1.19 cfs @ 11.94 hrs, Volume= 0.064 af
Outflow = 1.18 cfs @ 11.95 hrs, Volume= 0.064 af, Atten= 1%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.67 fps, Min. Travel Time= 0.8 min

Avg. Velocity= 1.11 fps, Avg. Travel Time= 2.6 min

Peak Storage= 55 cf @ 11.95 hrs

Average Depth at Peak Storage= 0.39'

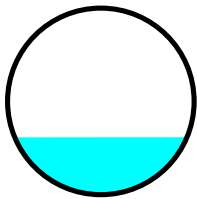
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.72 cfs

15.0" Round Pipe

n= 0.011

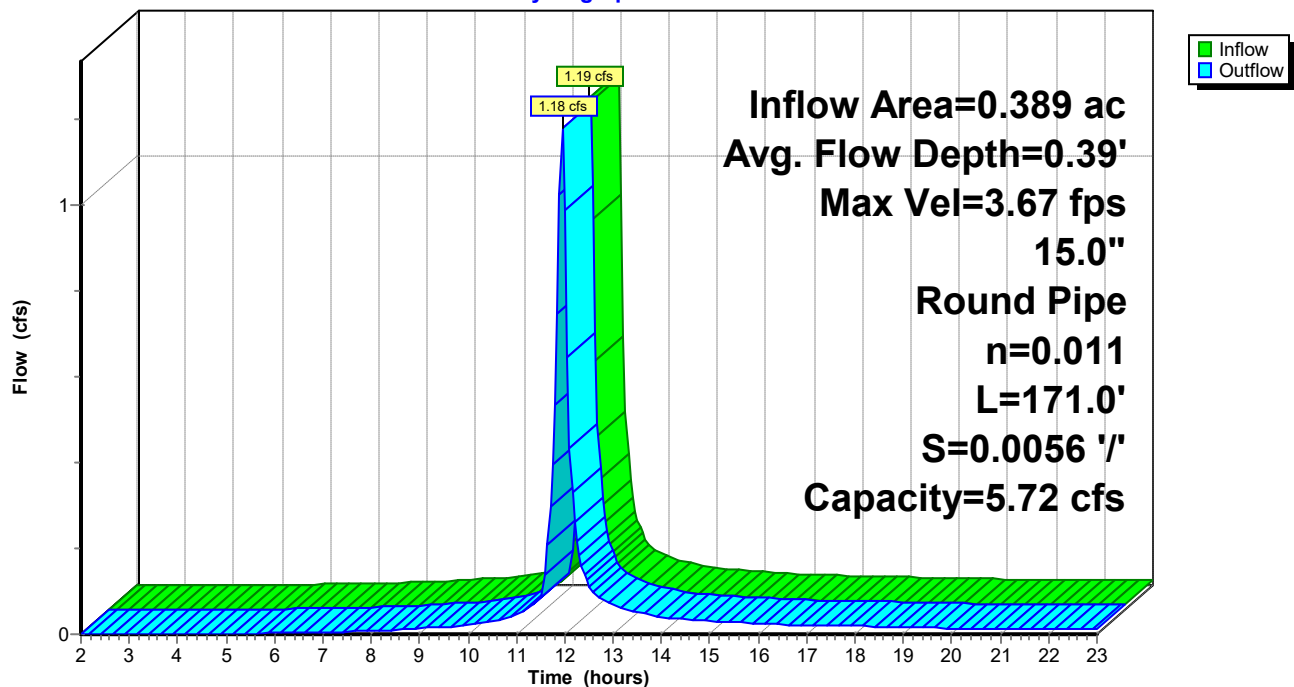
Length= 171.0' Slope= 0.0056 '/

Inlet Invert= 11.41', Outlet Invert= 10.45'



Reach 12R: 15" HDPE

Hydrograph



240060 - Concept

Type II 24-hr 1-YR Rainfall=2.80"

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Stage-Area-Storage for Reach 12R: 15" HDPE

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
11.41	0.0	0	12.45	1.1	187
11.43	0.0	1	12.47	1.1	190
11.45	0.0	2	12.49	1.1	193
11.47	0.0	4	12.51	1.1	196
11.49	0.0	6	12.53	1.2	198
11.51	0.0	8	12.55	1.2	201
11.53	0.1	10	12.57	1.2	203
11.55	0.1	13	12.59	1.2	205
11.57	0.1	16	12.61	1.2	207
11.59	0.1	19	12.63	1.2	209
11.61	0.1	22	12.65	1.2	210
11.63	0.1	25			
11.65	0.2	28			
11.67	0.2	32			
11.69	0.2	35			
11.71	0.2	39			
11.73	0.2	42			
11.75	0.3	46			
11.77	0.3	50			
11.79	0.3	54			
11.81	0.3	58			
11.83	0.4	62			
11.85	0.4	66			
11.87	0.4	70			
11.89	0.4	74			
11.91	0.5	78			
11.93	0.5	83			
11.95	0.5	87			
11.97	0.5	91			
11.99	0.6	95			
12.01	0.6	100			
12.03	0.6	104			
12.05	0.6	108			
12.07	0.7	112			
12.09	0.7	117			
12.11	0.7	121			
12.13	0.7	125			
12.15	0.8	129			
12.17	0.8	134			
12.19	0.8	138			
12.21	0.8	142			
12.23	0.9	146			
12.25	0.9	150			
12.27	0.9	154			
12.29	0.9	158			
12.31	0.9	162			
12.33	1.0	166			
12.35	1.0	169			
12.37	1.0	173			
12.39	1.0	176			
12.41	1.1	180			
12.43	1.1	183			

240060 - Concept

Type II 24-hr 1-YR Rainfall=2.80"

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Summary for Pond 9P: SGW 1

Inflow Area = 2.255 ac, 61.34% Impervious, Inflow Depth > 1.69" for 1-YR event
 Inflow = 5.47 cfs @ 11.96 hrs, Volume= 0.317 af
 Outflow = 0.00 cfs @ 2.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 2.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
 Peak Elev= 10.65' @ 23.00 hrs Surf.Area= 10,137 sf Storage= 13,819 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description			
#1	7.44'	28,534 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
7.44	9,804	575.0	0.0	0	0	9,804
7.45	9,804	575.0	40.0	39	39	9,810
10.44	9,804	575.0	40.0	11,726	11,765	11,529
10.45	9,804	575.0	100.0	98	11,863	11,535
11.45	11,558	594.0	100.0	10,669	22,532	13,396
11.95	12,457	604.0	100.0	6,002	28,534	14,396

Device	Routing	Invert	Outlet Devices
#1	Primary	10.12'	15.0" Round Culvert L= 31.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.12' / 10.00' S= 0.0039 '/' Cc= 0.900 n= 0.011, Flow Area= 1.23 sf
#2	Device 1	11.45'	18.8' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

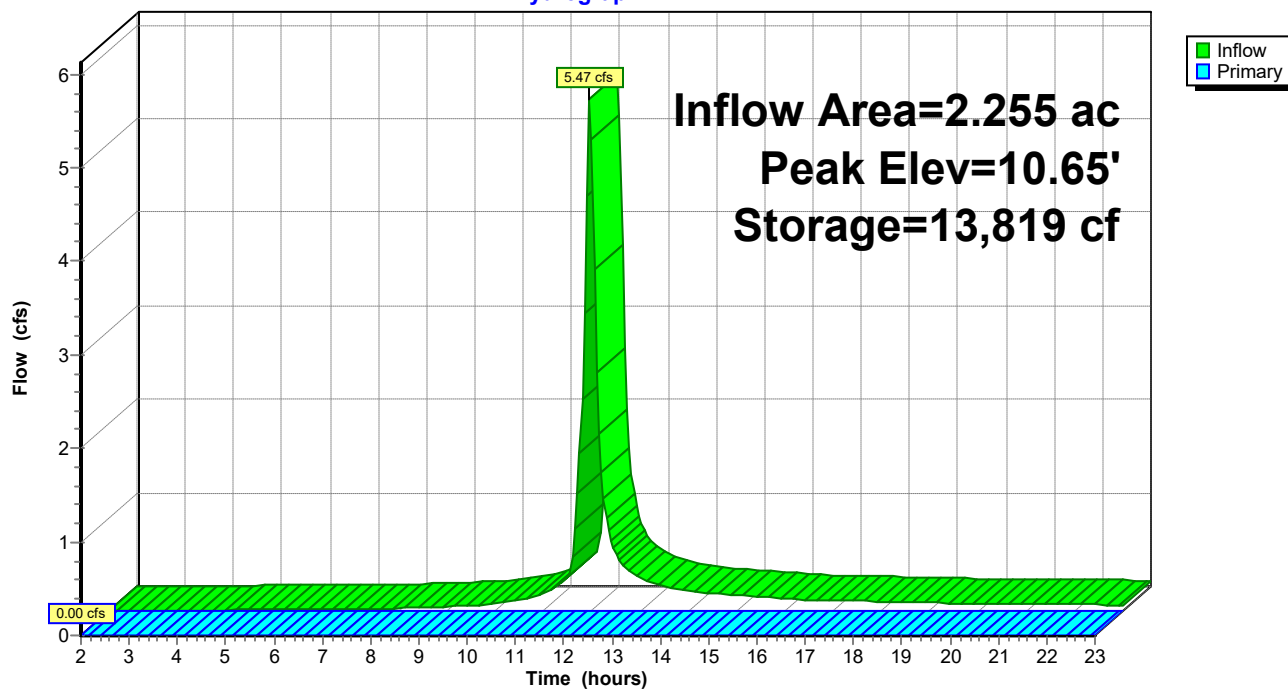
Primary OutFlow Max=0.00 cfs @ 2.00 hrs HW=7.44' (Free Discharge)

↑ **1=Culvert** (Controls 0.00 cfs)

↑ **2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 9P: SGW 1

Hydrograph



240060 - Concept

Type II 24-hr 1-YR Rainfall=2.80"

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Stage-Area-Storage for Pond 9P: SGW 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
7.44	9,804	0	10.04	9,804	10,196
7.49	9,804	196	10.09	9,804	10,392
7.54	9,804	392	10.14	9,804	10,588
7.59	9,804	588	10.19	9,804	10,784
7.64	9,804	784	10.24	9,804	10,980
7.69	9,804	980	10.29	9,804	11,177
7.74	9,804	1,176	10.34	9,804	11,373
7.79	9,804	1,373	10.39	9,804	11,569
7.84	9,804	1,569	10.44	9,804	11,765
7.89	9,804	1,765	10.49	9,871	12,256
7.94	9,804	1,961	10.54	9,956	12,752
7.99	9,804	2,157	10.59	10,041	13,252
8.04	9,804	2,353	10.64	10,126	13,756
8.09	9,804	2,549	10.69	10,212	14,265
8.14	9,804	2,745	10.74	10,298	14,777
8.19	9,804	2,941	10.79	10,384	15,294
8.24	9,804	3,137	10.84	10,471	15,816
8.29	9,804	3,333	10.89	10,558	16,341
8.34	9,804	3,529	10.94	10,645	16,872
8.39	9,804	3,726	10.99	10,733	17,406
8.44	9,804	3,922	11.04	10,821	17,945
8.49	9,804	4,118	11.09	10,910	18,488
8.54	9,804	4,314	11.14	10,999	19,036
8.59	9,804	4,510	11.19	11,088	19,588
8.64	9,804	4,706	11.24	11,178	20,145
8.69	9,804	4,902	11.29	11,268	20,706
8.74	9,804	5,098	11.34	11,358	21,271
8.79	9,804	5,294	11.39	11,449	21,842
8.84	9,804	5,490	11.44	11,540	22,416
8.89	9,804	5,686	11.49	11,629	22,996
8.94	9,804	5,882	11.54	11,717	23,579
8.99	9,804	6,078	11.59	11,806	24,167
9.04	9,804	6,275	11.64	11,896	24,760
9.09	9,804	6,471	11.69	11,985	25,357
9.14	9,804	6,667	11.74	12,075	25,958
9.19	9,804	6,863	11.79	12,166	26,564
9.24	9,804	7,059	11.84	12,256	27,175
9.29	9,804	7,255	11.89	12,347	27,790
9.34	9,804	7,451	11.94	12,439	28,410
9.39	9,804	7,647			
9.44	9,804	7,843			
9.49	9,804	8,039			
9.54	9,804	8,235			
9.59	9,804	8,431			
9.64	9,804	8,628			
9.69	9,804	8,824			
9.74	9,804	9,020			
9.79	9,804	9,216			
9.84	9,804	9,412			
9.89	9,804	9,608			
9.94	9,804	9,804			
9.99	9,804	10,000			

240060 - Concept

Type II 24-hr 1-YR Rainfall=2.80"

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Summary for Pond 14P: SGW 2

Inflow Area = 0.855 ac, 50.24% Impervious, Inflow Depth > 1.46" for 1-YR event
 Inflow = 1.59 cfs @ 12.01 hrs, Volume= 0.104 af
 Outflow = 0.00 cfs @ 2.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 2.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
 Peak Elev= 13.36' @ 23.00 hrs Surf.Area= 4,017 sf Storage= 4,532 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description			
#1	10.54'	12,413 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
10.54	4,017	447.0	0.0	0	0	4,017
10.55	4,017	447.0	40.0	16	16	4,021
13.54	4,017	447.0	40.0	4,804	4,820	5,358
13.55	4,017	447.0	100.0	40	4,861	5,362
14.55	5,386	466.0	100.0	4,685	9,545	6,816
15.05	6,092	475.0	100.0	2,868	12,413	7,530

Device	Routing	Invert	Outlet Devices	
#1	Primary	13.25'	15.0" Round Culvert L= 35.5' Ke= 0.500 Inlet / Outlet Invert= 13.25' / 13.02' S= 0.0065 ' / Cc= 0.900 n= 0.011, Flow Area= 1.23 sf	
#2	Device 1	14.55'	18.8' long Sharp-Crested Rectangular Weir 2 End Contraction(s)	

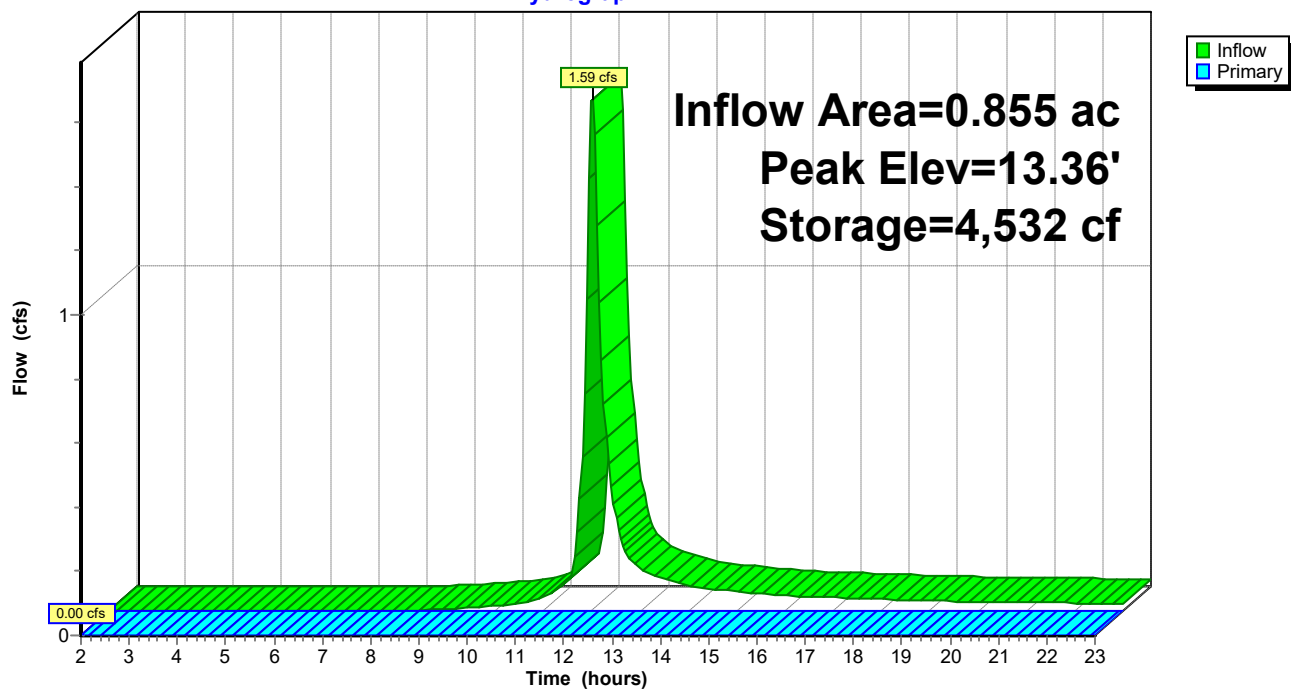
Primary OutFlow Max=0.00 cfs @ 2.00 hrs HW=10.54' (Free Discharge)

↑ **1=Culvert** (Controls 0.00 cfs)

↑ **2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 14P: SGW 2

Hydrograph



240060 - Concept

Type II 24-hr 1-YR Rainfall=2.80"

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Stage-Area-Storage for Pond 14P: SGW 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
10.54	4,017	0	13.14	4,017	4,178
10.59	4,017	80	13.19	4,017	4,258
10.64	4,017	161	13.24	4,017	4,338
10.69	4,017	241	13.29	4,017	4,419
10.74	4,017	321	13.34	4,017	4,499
10.79	4,017	402	13.39	4,017	4,579
10.84	4,017	482	13.44	4,017	4,660
10.89	4,017	562	13.49	4,017	4,740
10.94	4,017	643	13.54	4,017	4,820
10.99	4,017	723	13.59	4,068	5,022
11.04	4,017	803	13.64	4,132	5,227
11.09	4,017	884	13.69	4,197	5,435
11.14	4,017	964	13.74	4,262	5,647
11.19	4,017	1,044	13.79	4,327	5,862
11.24	4,017	1,125	13.84	4,393	6,080
11.29	4,017	1,205	13.89	4,460	6,301
11.34	4,017	1,285	13.94	4,527	6,526
11.39	4,017	1,366	13.99	4,595	6,754
11.44	4,017	1,446	14.04	4,663	6,985
11.49	4,017	1,526	14.09	4,731	7,220
11.54	4,017	1,607	14.14	4,800	7,458
11.59	4,017	1,687	14.19	4,870	7,700
11.64	4,017	1,767	14.24	4,940	7,945
11.69	4,017	1,848	14.29	5,011	8,194
11.74	4,017	1,928	14.34	5,082	8,446
11.79	4,017	2,009	14.39	5,153	8,702
11.84	4,017	2,089	14.44	5,226	8,962
11.89	4,017	2,169	14.49	5,298	9,225
11.94	4,017	2,250	14.54	5,371	9,492
11.99	4,017	2,330	14.59	5,441	9,762
12.04	4,017	2,410	14.64	5,510	10,036
12.09	4,017	2,491	14.69	5,579	10,313
12.14	4,017	2,571	14.74	5,649	10,594
12.19	4,017	2,651	14.79	5,719	10,878
12.24	4,017	2,732	14.84	5,790	11,166
12.29	4,017	2,812	14.89	5,861	11,457
12.34	4,017	2,892	14.94	5,933	11,752
12.39	4,017	2,973	14.99	6,005	12,050
12.44	4,017	3,053	15.04	6,077	12,352
12.49	4,017	3,133			
12.54	4,017	3,214			
12.59	4,017	3,294			
12.64	4,017	3,374			
12.69	4,017	3,455			
12.74	4,017	3,535			
12.79	4,017	3,615			
12.84	4,017	3,696			
12.89	4,017	3,776			
12.94	4,017	3,856			
12.99	4,017	3,937			
13.04	4,017	4,017			
13.09	4,017	4,097			

240060 - Concept

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Type II 24-hr 1-YR Rainfall=2.80"

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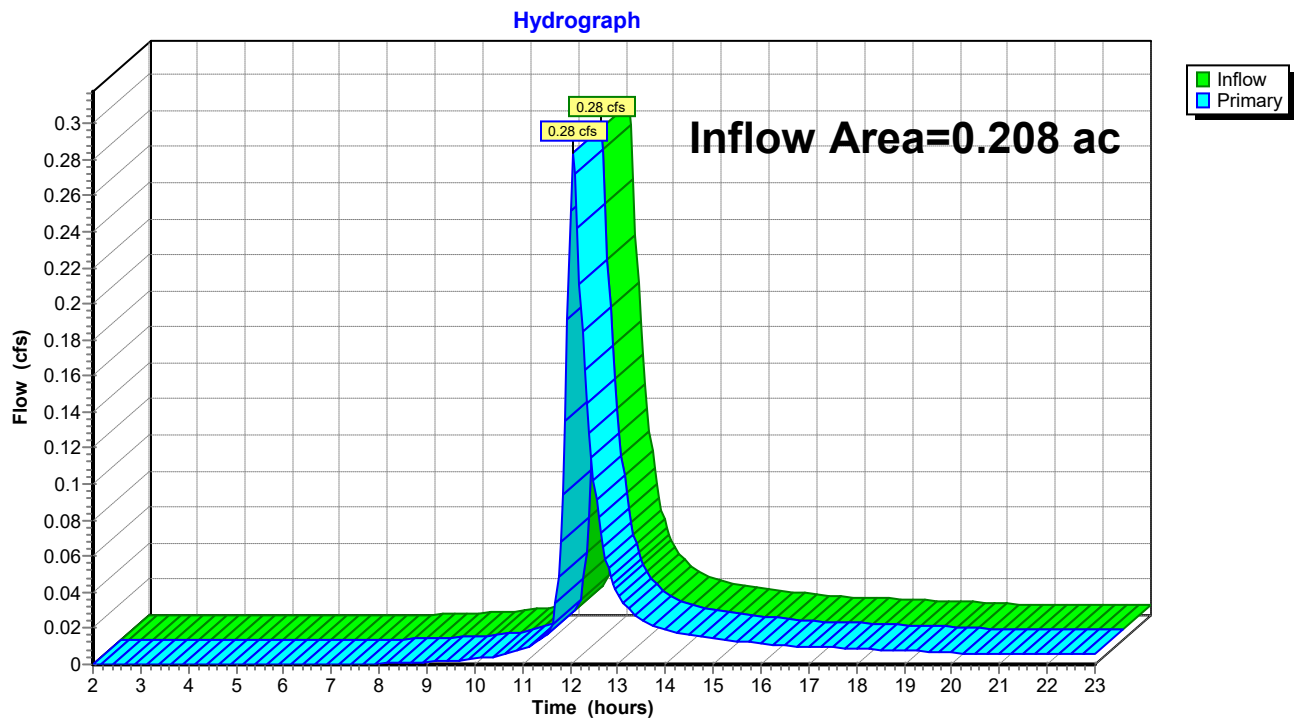
Page 27

Summary for Link 18L: POI 3 (EX SWM POND)

Inflow Area = 0.208 ac, 43.72% Impervious, Inflow Depth > 1.37" for 1-YR event
Inflow = 0.28 cfs @ 12.06 hrs, Volume= 0.024 af
Primary = 0.28 cfs @ 12.06 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs

Link 18L: POI 3 (EX SWM POND)



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Type II 24-hr 2-YR Rainfall=3.40"

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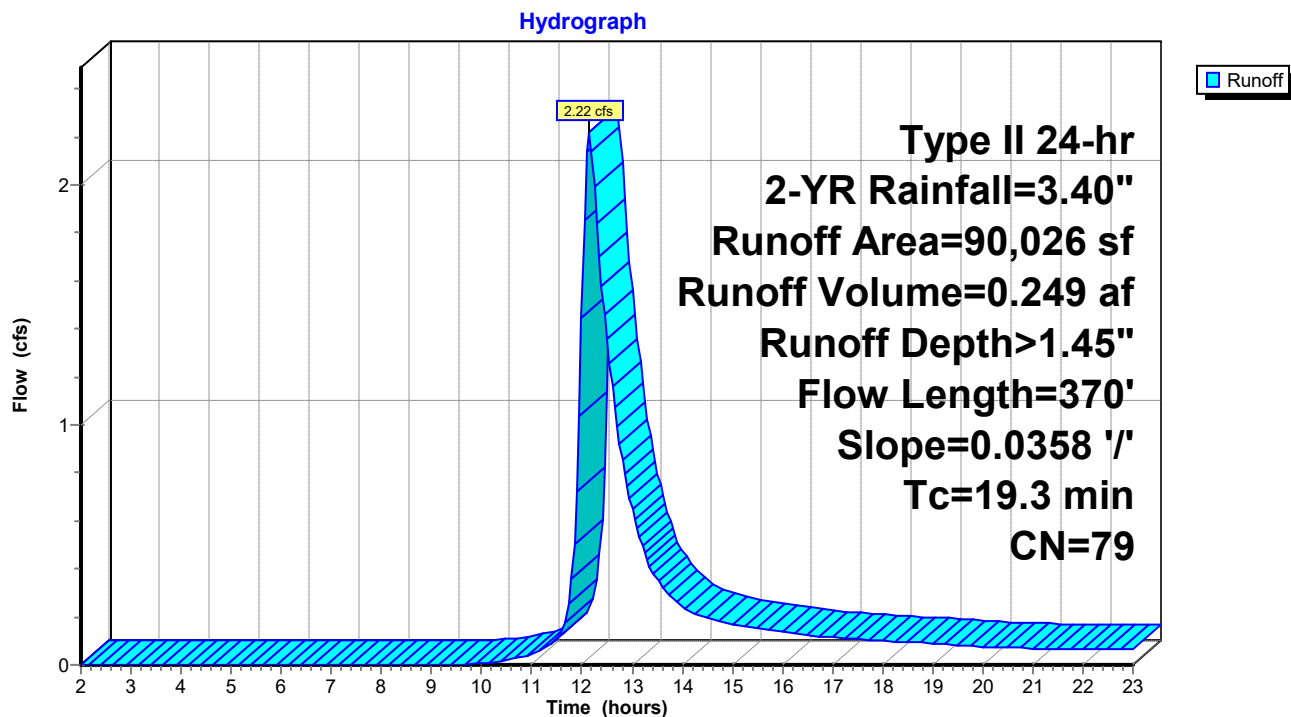
Summary for Subcatchment 1S: EX DA-1 (ORANGE)

Runoff = 2.22 cfs @ 12.15 hrs, Volume= 0.249 af, Depth> 1.45"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR Rainfall=3.40"

	Area (sf)	CN	Description
*	224	98	existing shed
	89,802	79	50-75% Grass cover, Fair, HSG C
	90,026	79	Weighted Average
	89,802		99.75% Pervious Area
	224		0.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	150	0.0358	0.14		Sheet Flow, a-b
					Grass: Dense n= 0.240 P2= 2.40"
1.2	220	0.0358	3.05		Shallow Concentrated Flow, b-c
					Unpaved Kv= 16.1 fps
19.3	370	Total			

Subcatchment 1S: EX DA-1 (ORANGE)

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Type II 24-hr 2-YR Rainfall=3.40"

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Summary for Subcatchment 2S: EX DA-2 (PURPLE)

Runoff = 0.45 cfs @ 12.30 hrs, Volume= 0.070 af, Depth> 1.44"

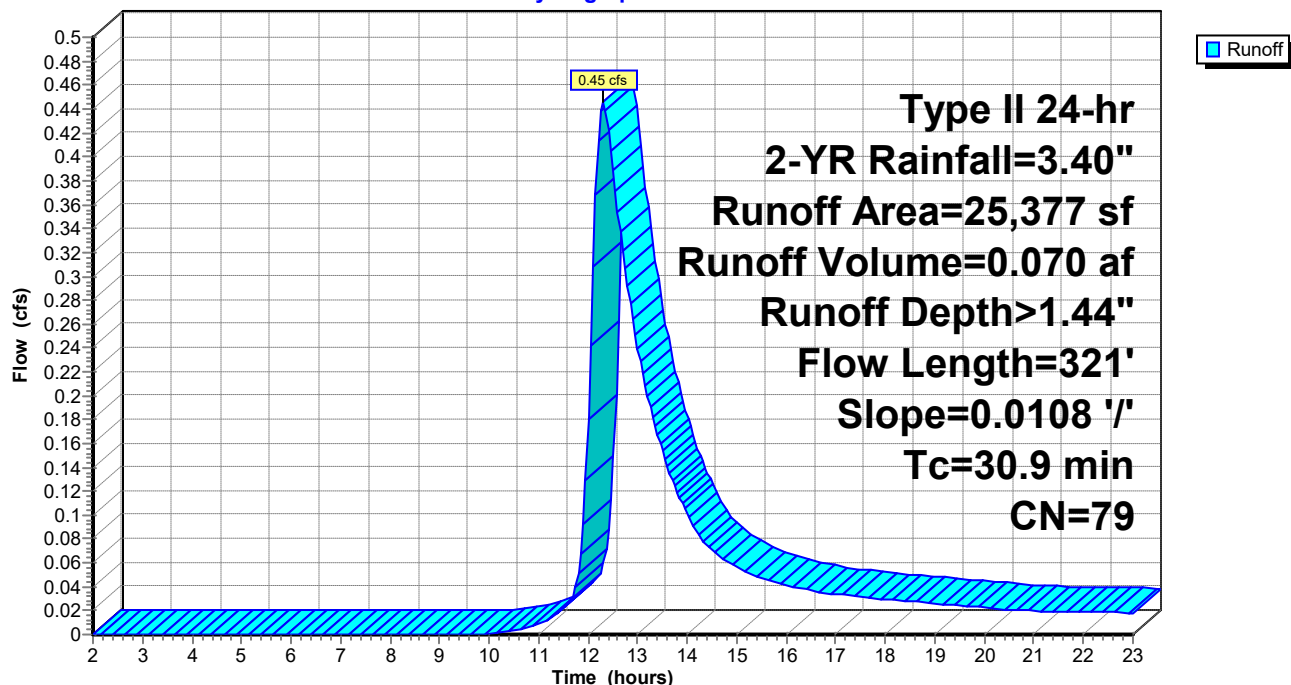
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR Rainfall=3.40"

Area (sf)	CN	Description
25,377	79	50-75% Grass cover, Fair, HSG C
25,377		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.2	150	0.0108	0.09		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
1.7	171	0.0108	1.67		Shallow Concentrated Flow, B-C
					Unpaved Kv= 16.1 fps
30.9	321	Total			

Subcatchment 2S: EX DA-2 (PURPLE)

Hydrograph



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Type II 24-hr 2-YR Rainfall=3.40"

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Summary for Subcatchment 3S: EX DA-3 (BLUE)

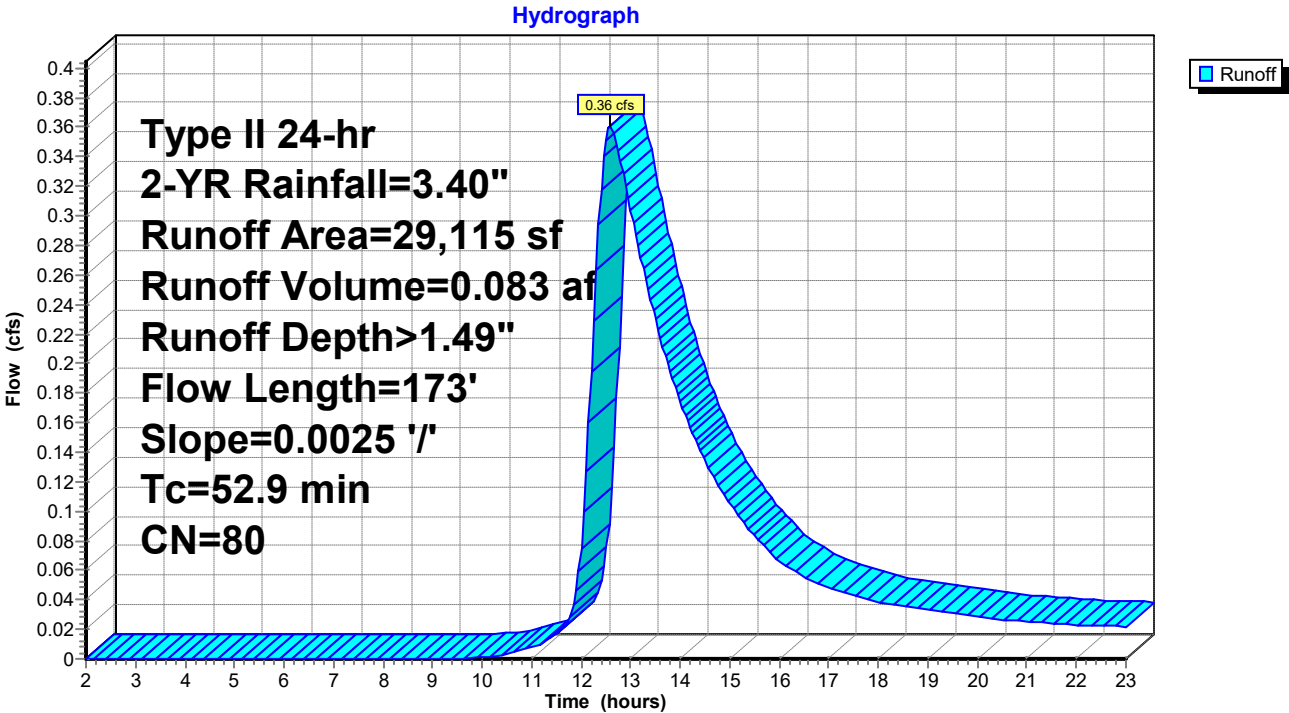
Runoff = 0.36 cfs @ 12.59 hrs, Volume= 0.083 af, Depth> 1.49"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR Rainfall=3.40"

Area (sf)	CN	Description
28,117	79	50-75% Grass cover, Fair, HSG C
998	98	Paved parking, HSG C
29,115	80	Weighted Average
28,117		96.57% Pervious Area
998		3.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.4	150	0.0025	0.05		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
0.5	23	0.0025	0.81		Shallow Concentrated Flow, B-C
					Unpaved Kv= 16.1 fps
52.9	173	Total			

Subcatchment 3S: EX DA-3 (BLUE)



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Type II 24-hr 2-YR Rainfall=3.40"

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Summary for Subcatchment 4S: DA-1e

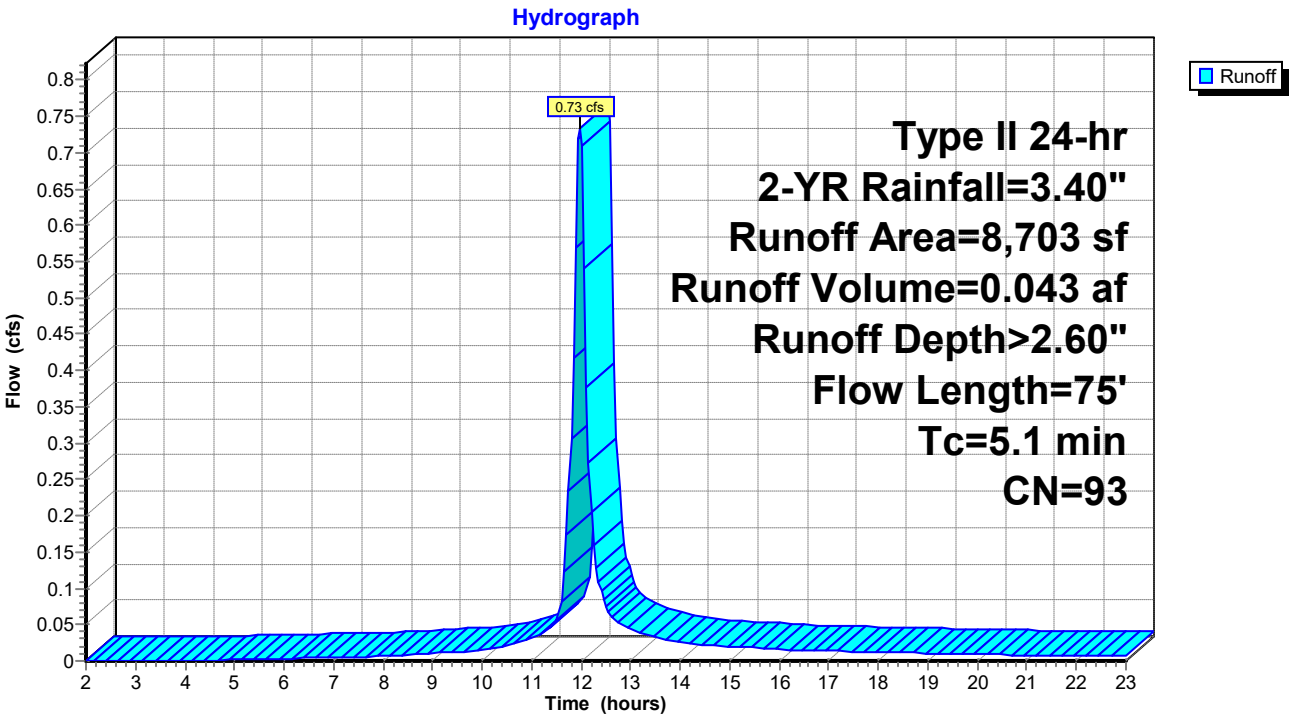
Runoff = 0.73 cfs @ 11.97 hrs, Volume= 0.043 af, Depth> 2.60"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR Rainfall=3.40"

Area (sf)	CN	Description
6,909	98	Paved parking, HSG C
1,794	74	>75% Grass cover, Good, HSG C
8,703	93	Weighted Average
1,794		20.61% Pervious Area
6,909		79.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	14	0.0095	0.05		Sheet Flow, A-B Grass: Dense n= 0.240 P2= 2.40"
0.4	48	0.0134	1.86		Shallow Concentrated Flow, B-C Unpaved Kv= 16.1 fps
0.1	13	0.0075	1.76		Shallow Concentrated Flow, C-D Paved Kv= 20.3 fps
5.1	75	Total			

Subcatchment 4S: DA-1e



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Type II 24-hr 2-YR Rainfall=3.40"

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Summary for Subcatchment 5S: DA-1c

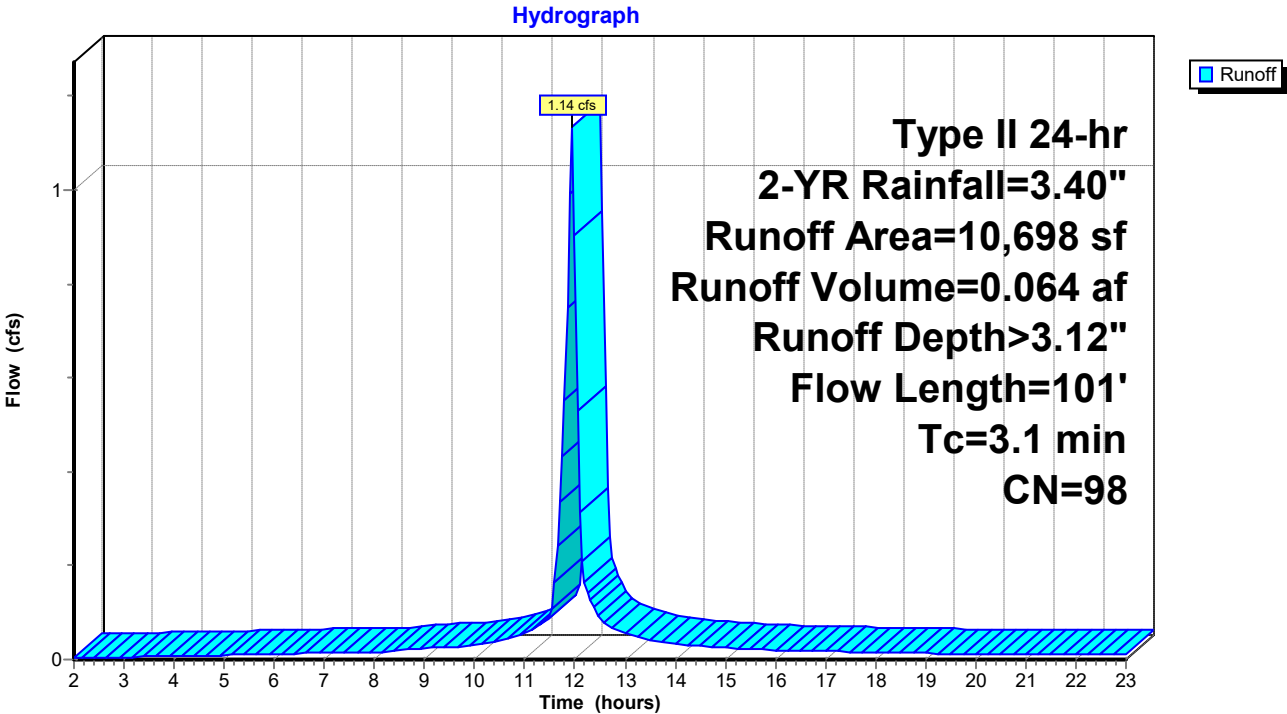
Runoff = 1.14 cfs @ 11.94 hrs, Volume= 0.064 af, Depth> 3.12"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR Rainfall=3.40"

Area (sf)	CN	Description
10,698	98	Paved parking, HSG C
10,698		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	67	0.0016	0.40		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 2.40"
0.3	34	0.0100	2.03		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
3.1	101	Total			

Subcatchment 5S: DA-1c



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Type II 24-hr 2-YR Rainfall=3.40"

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Summary for Subcatchment 8S: DA-1b

Runoff = 0.70 cfs @ 11.91 hrs, Volume= 0.036 af, Depth> 3.12"

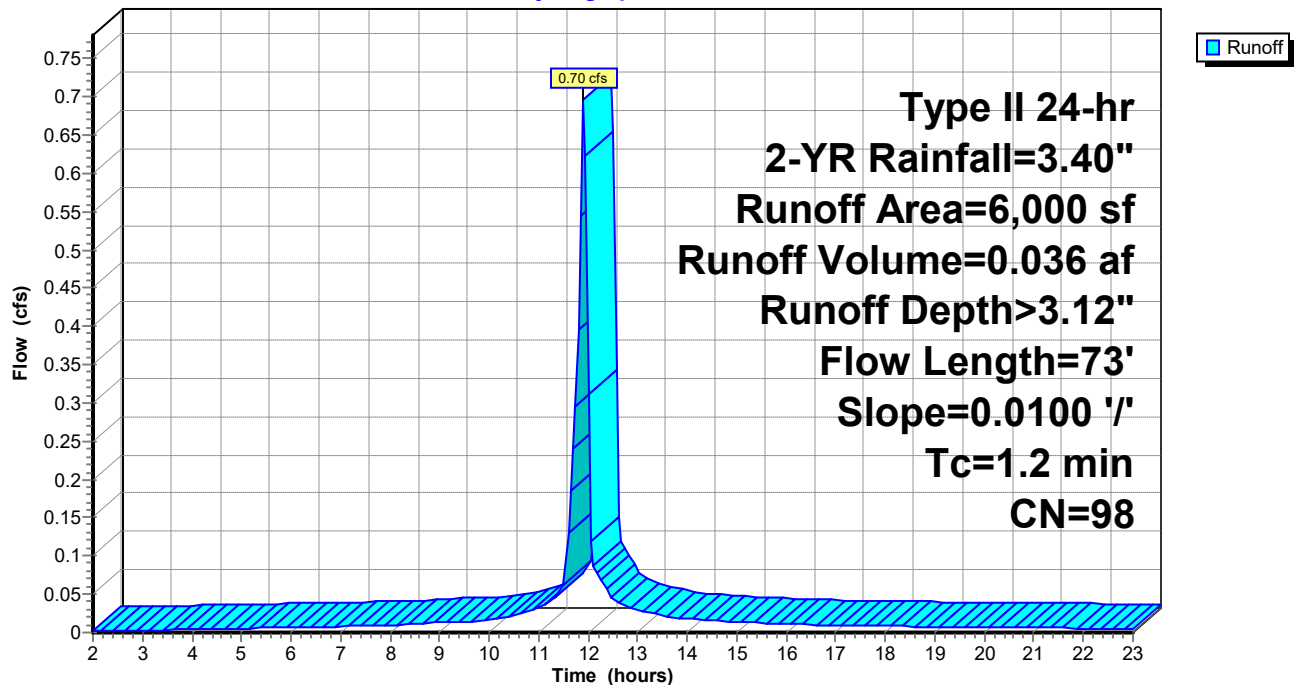
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR Rainfall=3.40"

Area (sf)	CN	Description
6,000	98	Paved parking, HSG C
6,000		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	39	0.0100	0.75		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 2.40"
0.3	34	0.0100	2.03		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
1.2	73	Total			

Subcatchment 8S: DA-1b

Hydrograph



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Type II 24-hr 2-YR Rainfall=3.40"

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Summary for Subcatchment 10S: DA-1a

Runoff = 4.06 cfs @ 11.98 hrs, Volume= 0.234 af, Depth> 1.89"

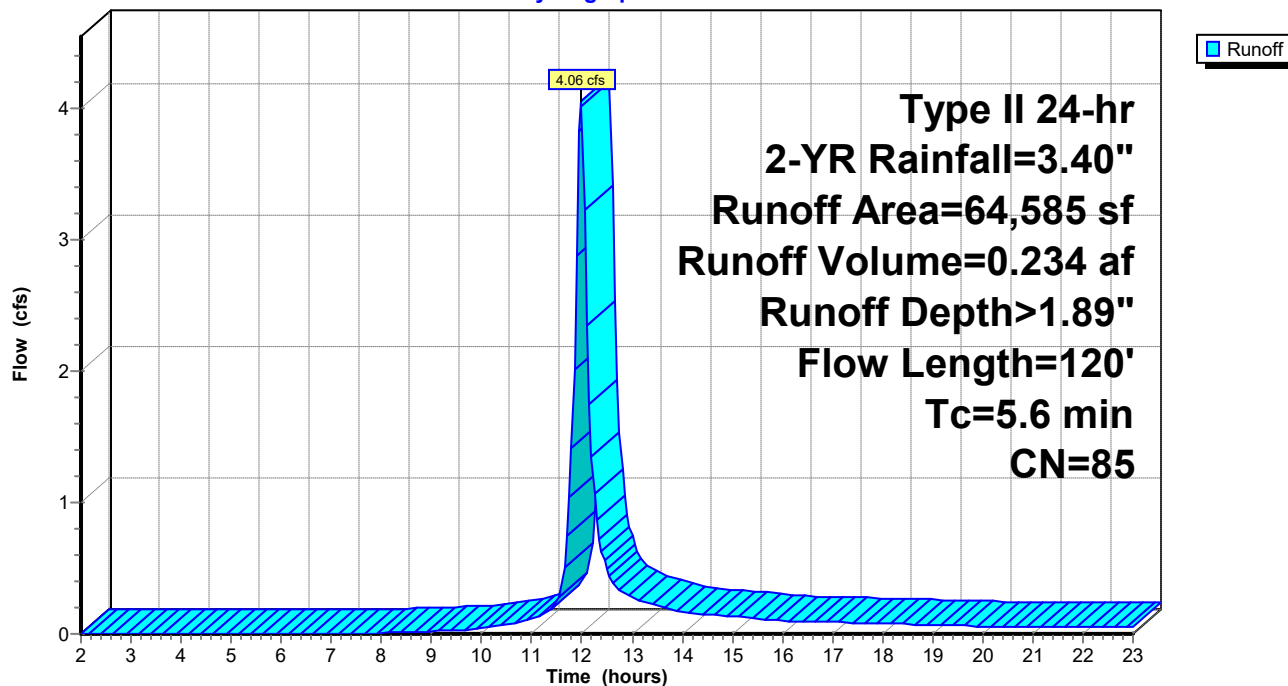
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR Rainfall=3.40"

Area (sf)	CN	Description
30,489	98	Paved parking, HSG C
34,096	74	>75% Grass cover, Good, HSG C
64,585	85	Weighted Average
34,096		52.79% Pervious Area
30,489		47.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	33	0.0439	0.11		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
0.6	87	0.0253	2.56		Shallow Concentrated Flow, B-C
					Unpaved Kv= 16.1 fps
5.6	120	Total			

Subcatchment 10S: DA-1a

Hydrograph



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Type II 24-hr 2-YR Rainfall=3.40"

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Summary for Subcatchment 13S: DA-1d

Runoff = 0.84 cfs @ 11.92 hrs, Volume= 0.039 af, Depth> 2.50"

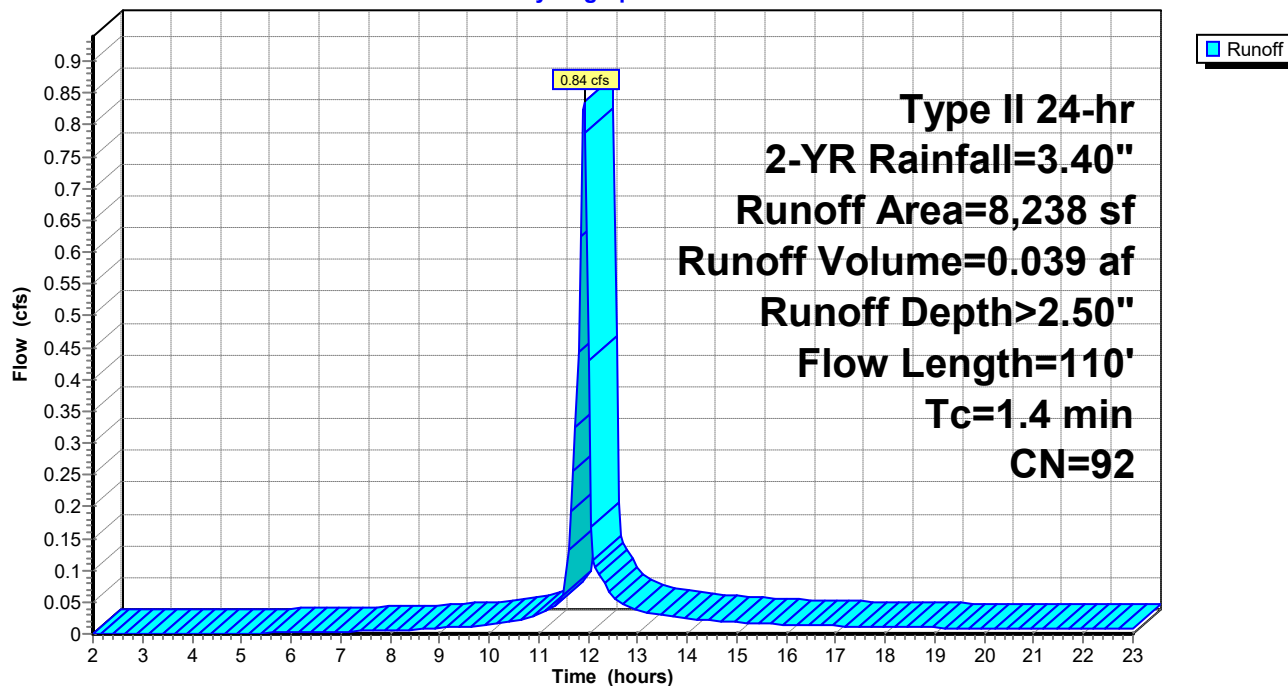
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR Rainfall=3.40"

Area (sf)	CN	Description
6,157	98	Paved parking, HSG C
2,081	74	>75% Grass cover, Good, HSG C
8,238	92	Weighted Average
2,081		25.26% Pervious Area
6,157		74.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	34	0.0156	0.87		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 2.40"
0.7	76	0.0075	1.76		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
1.4	110	Total			

Subcatchment 13S: DA-1d

Hydrograph



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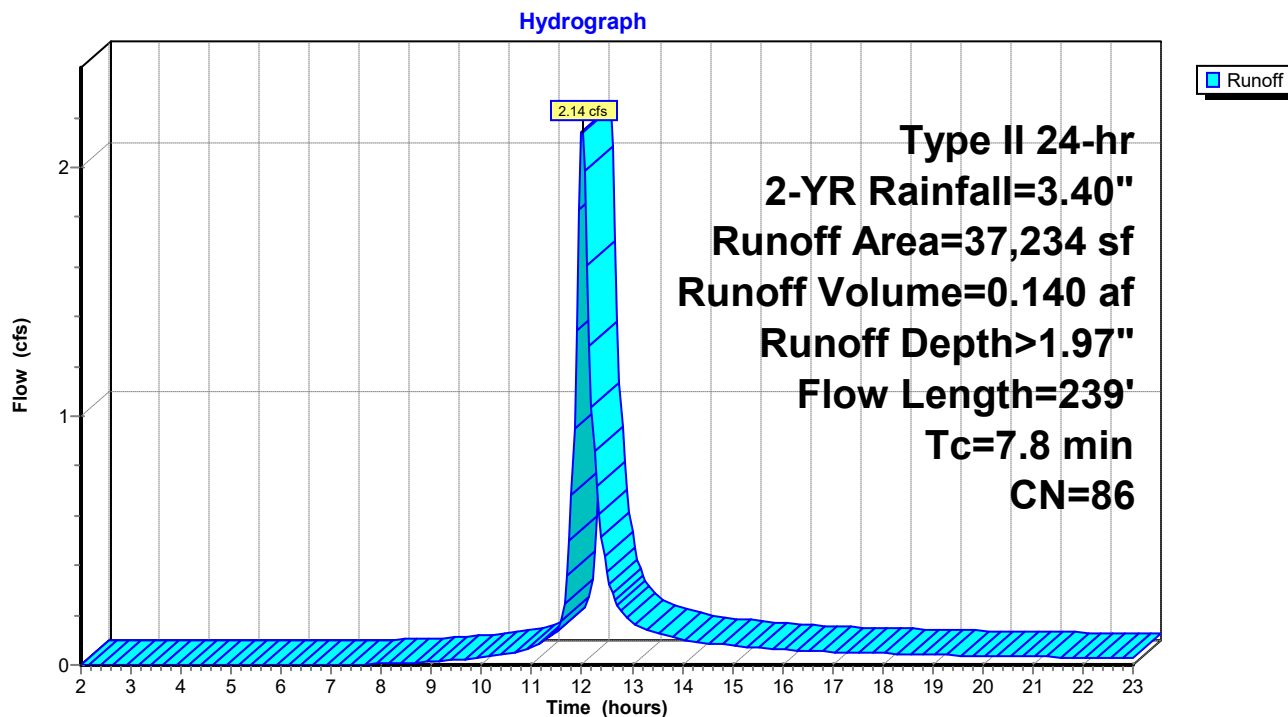
Summary for Subcatchment 15S: DA TO SGW 2

Runoff = 2.14 cfs @ 12.01 hrs, Volume= 0.140 af, Depth> 1.97"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR Rainfall=3.40"

Area (sf)	CN	Description
18,708	98	Paved parking, HSG C
18,526	74	>75% Grass cover, Good, HSG C
37,234	86	Weighted Average
18,526		49.76% Pervious Area
18,708		50.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	14	0.0095	0.05		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
0.4	35	0.0075	1.39		Shallow Concentrated Flow, B-C
					Unpaved Kv= 16.1 fps
2.8	190	0.0051	1.15		Shallow Concentrated Flow, C-D
					Unpaved Kv= 16.1 fps
7.8	239	Total			

Subcatchment 15S: DA TO SGW 2

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Summary for Subcatchment 16S: DA-3a

Runoff = 0.26 cfs @ 12.07 hrs, Volume= 0.022 af, Depth> 2.13"

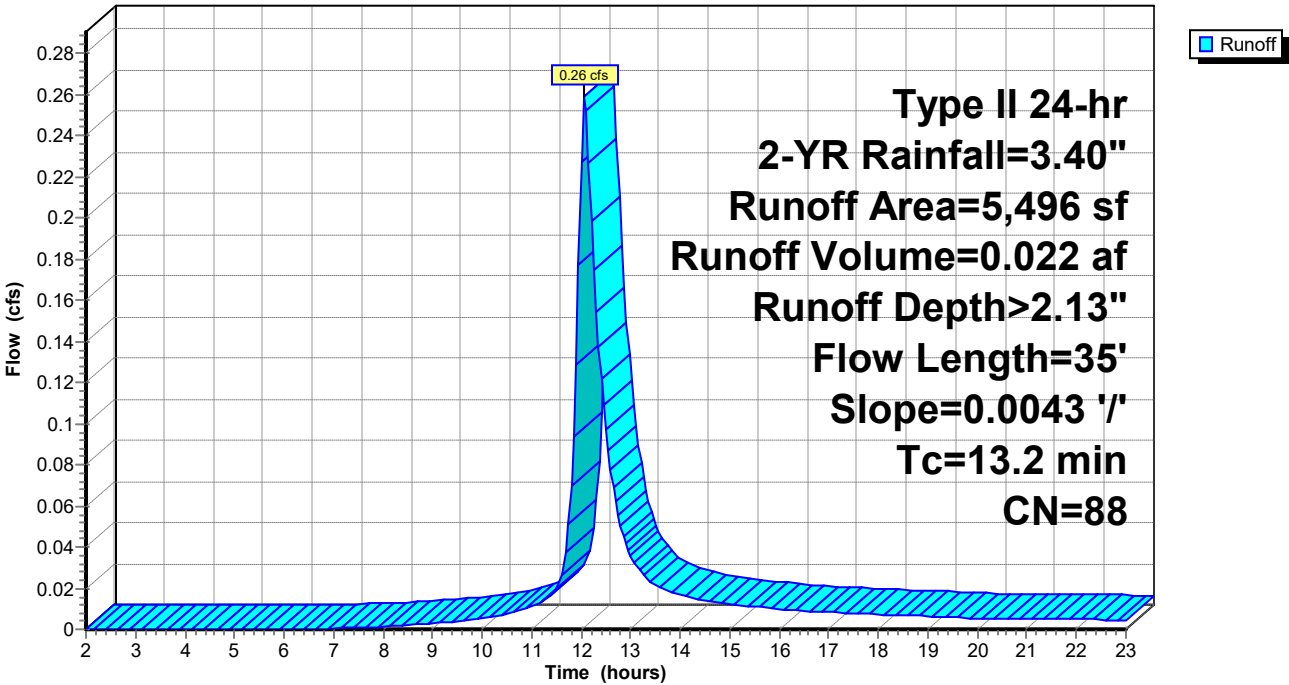
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR Rainfall=3.40"

Area (sf)	CN	Description
3,166	98	Paved parking, HSG C
2,330	74	>75% Grass cover, Good, HSG C
5,496	88	Weighted Average
2,330		42.39% Pervious Area
3,166		57.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	35	0.0043	0.04		Sheet Flow, A-B
Grass: Dense n= 0.240 P2= 2.40"					

Subcatchment 16S: DA-3a

Hydrograph



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Type II 24-hr 2-YR Rainfall=3.40"

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Summary for Subcatchment 17S: DA-3b

Runoff = 0.13 cfs @ 12.05 hrs, Volume= 0.010 af, Depth> 1.45"

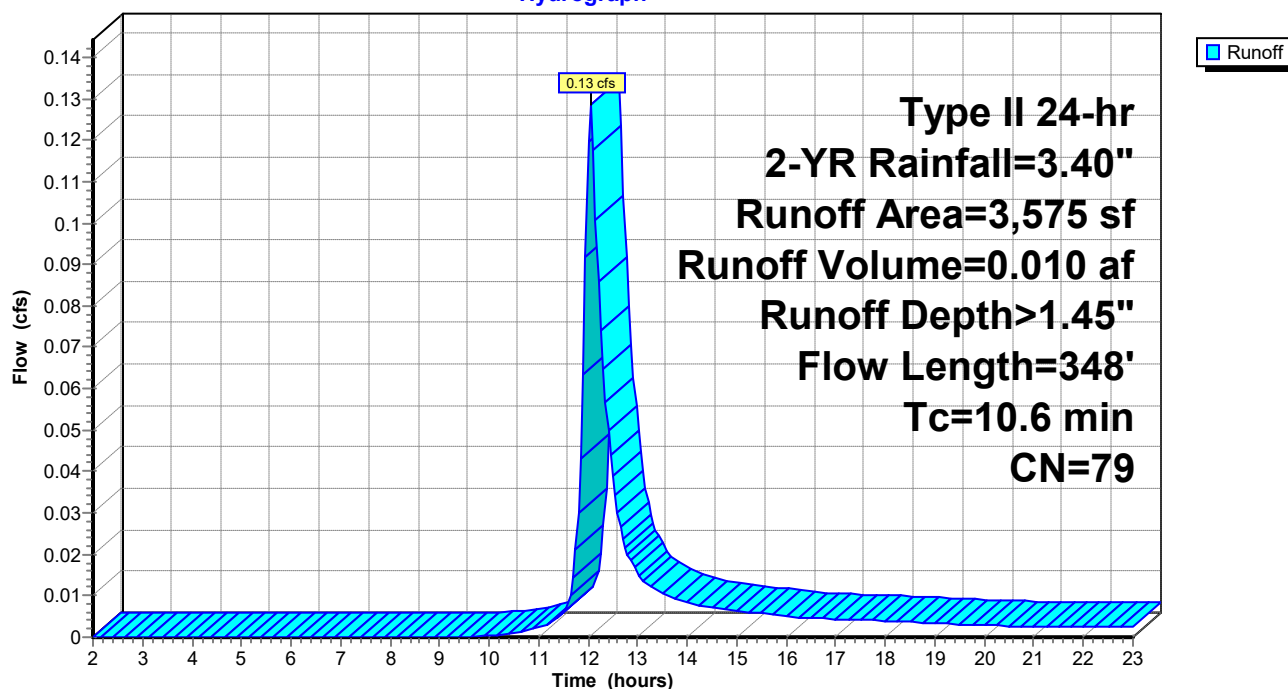
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-YR Rainfall=3.40"

Area (sf)	CN	Description
800	98	Paved parking, HSG C
2,775	74	>75% Grass cover, Good, HSG C
3,575	79	Weighted Average
2,775		77.62% Pervious Area
800		22.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	46	0.0222	0.09		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
0.4	100	0.0050	3.79	2.98	Pipe Channel, 12" HDPE
					12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'
					n= 0.011
1.7	202	0.0149	1.97		Shallow Concentrated Flow, EX SWALE TO INLET 4
					Unpaved Kv= 16.1 fps
10.6	348	Total			

Subcatchment 17S: DA-3b

Hydrograph



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Type II 24-hr 2-YR Rainfall=3.40"

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Summary for Reach 6R: 15" HDPE

Inflow Area = 0.246 ac, 100.00% Impervious, Inflow Depth > 3.12" for 2-YR event
Inflow = 1.14 cfs @ 11.94 hrs, Volume= 0.064 af
Outflow = 1.13 cfs @ 11.95 hrs, Volume= 0.064 af, Atten= 1%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.50 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.06 fps, Avg. Travel Time= 1.1 min

Peak Storage= 23 cf @ 11.95 hrs

Average Depth at Peak Storage= 0.39'

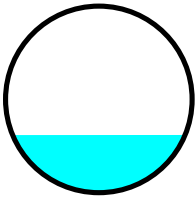
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.44 cfs

15.0" Round Pipe

n= 0.011 PVC, smooth interior

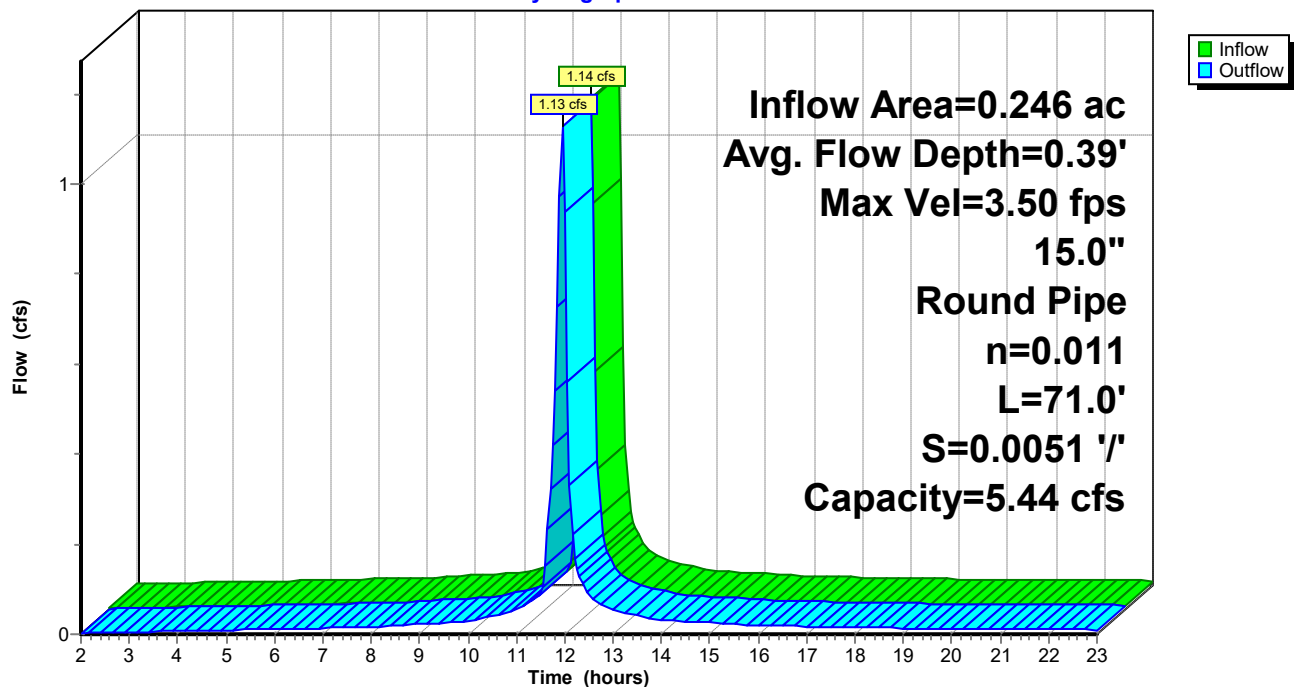
Length= 71.0' Slope= 0.0051 '/

Inlet Invert= 11.16', Outlet Invert= 10.80'



Reach 6R: 15" HDPE

Hydrograph



240060 - Concept

Type II 24-hr 2-YR Rainfall=3.40"

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Stage-Area-Storage for Reach 6R: 15" HDPE

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
11.16	0.0	0	12.20	1.1	77
11.18	0.0	0	12.22	1.1	79
11.20	0.0	1	12.24	1.1	80
11.22	0.0	2	12.26	1.1	81
11.24	0.0	2	12.28	1.2	82
11.26	0.0	3	12.30	1.2	83
11.28	0.1	4	12.32	1.2	84
11.30	0.1	5	12.34	1.2	85
11.32	0.1	7	12.36	1.2	86
11.34	0.1	8	12.38	1.2	87
11.36	0.1	9	12.40	1.2	87
11.38	0.1	10			
11.40	0.2	12			
11.42	0.2	13			
11.44	0.2	15			
11.46	0.2	16			
11.48	0.2	18			
11.50	0.3	19			
11.52	0.3	21			
11.54	0.3	22			
11.56	0.3	24			
11.58	0.4	26			
11.60	0.4	27			
11.62	0.4	29			
11.64	0.4	31			
11.66	0.5	33			
11.68	0.5	34			
11.70	0.5	36			
11.72	0.5	38			
11.74	0.6	40			
11.76	0.6	41			
11.78	0.6	43			
11.80	0.6	45			
11.82	0.7	47			
11.84	0.7	48			
11.86	0.7	50			
11.88	0.7	52			
11.90	0.8	54			
11.92	0.8	55			
11.94	0.8	57			
11.96	0.8	59			
11.98	0.9	61			
12.00	0.9	62			
12.02	0.9	64			
12.04	0.9	66			
12.06	0.9	67			
12.08	1.0	69			
12.10	1.0	70			
12.12	1.0	72			
12.14	1.0	73			
12.16	1.1	75			
12.18	1.1	76			

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Type II 24-hr 2-YR Rainfall=3.40"

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Summary for Reach 7R: 15" HDPE

Inflow Area = 0.383 ac, 100.00% Impervious, Inflow Depth > 3.12" for 2-YR event
Inflow = 1.79 cfs @ 11.93 hrs, Volume= 0.100 af
Outflow = 1.79 cfs @ 11.94 hrs, Volume= 0.100 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.91 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.20 fps, Avg. Travel Time= 1.0 min

Peak Storage= 32 cf @ 11.94 hrs

Average Depth at Peak Storage= 0.50'

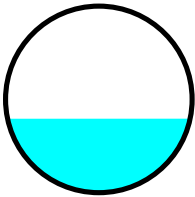
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.36 cfs

15.0" Round Pipe

n= 0.011

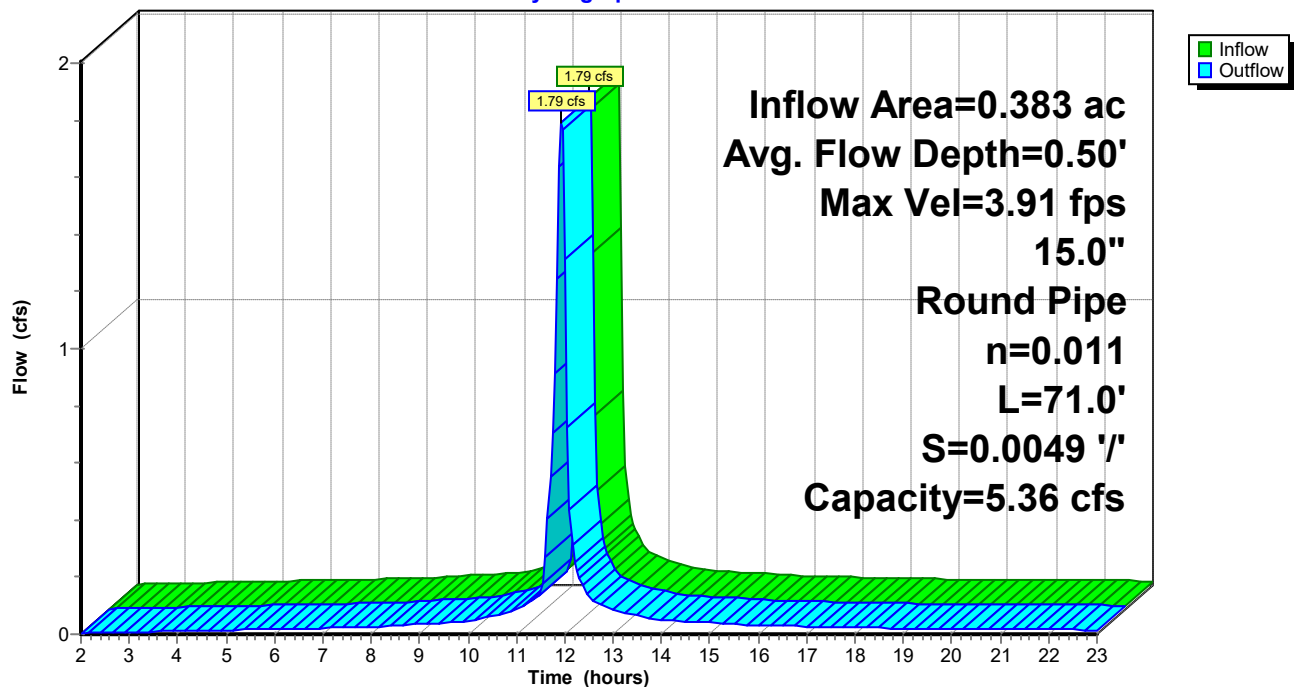
Length= 71.0' Slope= 0.0049 '/

Inlet Invert= 10.80', Outlet Invert= 10.45'



Reach 7R: 15" HDPE

Hydrograph



240060 - Concept

Type II 24-hr 2-YR Rainfall=3.40"

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Stage-Area-Storage for Reach 7R: 15" HDPE

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
10.80	0.0	0	11.84	1.1	77
10.82	0.0	0	11.86	1.1	79
10.84	0.0	1	11.88	1.1	80
10.86	0.0	2	11.90	1.1	81
10.88	0.0	2	11.92	1.2	82
10.90	0.0	3	11.94	1.2	83
10.92	0.1	4	11.96	1.2	84
10.94	0.1	5	11.98	1.2	85
10.96	0.1	7	12.00	1.2	86
10.98	0.1	8	12.02	1.2	87
11.00	0.1	9	12.04	1.2	87
11.02	0.1	10			
11.04	0.2	12			
11.06	0.2	13			
11.08	0.2	15			
11.10	0.2	16			
11.12	0.2	18			
11.14	0.3	19			
11.16	0.3	21			
11.18	0.3	22			
11.20	0.3	24			
11.22	0.4	26			
11.24	0.4	27			
11.26	0.4	29			
11.28	0.4	31			
11.30	0.5	33			
11.32	0.5	34			
11.34	0.5	36			
11.36	0.5	38			
11.38	0.6	40			
11.40	0.6	41			
11.42	0.6	43			
11.44	0.6	45			
11.46	0.7	47			
11.48	0.7	48			
11.50	0.7	50			
11.52	0.7	52			
11.54	0.8	54			
11.56	0.8	55			
11.58	0.8	57			
11.60	0.8	59			
11.62	0.9	61			
11.64	0.9	62			
11.66	0.9	64			
11.68	0.9	66			
11.70	0.9	67			
11.72	1.0	69			
11.74	1.0	70			
11.76	1.0	72			
11.78	1.0	73			
11.80	1.1	75			
11.82	1.1	76			

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Type II 24-hr 2-YR Rainfall=3.40"

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Summary for Reach 11R: 15" HDPE

Inflow Area = 0.200 ac, 79.39% Impervious, Inflow Depth > 2.60" for 2-YR event
Inflow = 0.73 cfs @ 11.97 hrs, Volume= 0.043 af
Outflow = 0.74 cfs @ 11.98 hrs, Volume= 0.043 af, Atten= 0%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.09 fps, Min. Travel Time= 0.3 min

Avg. Velocity = 0.95 fps, Avg. Travel Time= 1.1 min

Peak Storage= 14 cf @ 11.98 hrs

Average Depth at Peak Storage= 0.31'

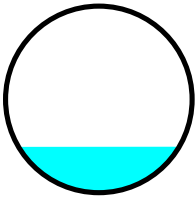
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.49 cfs

15.0" Round Pipe

n= 0.011

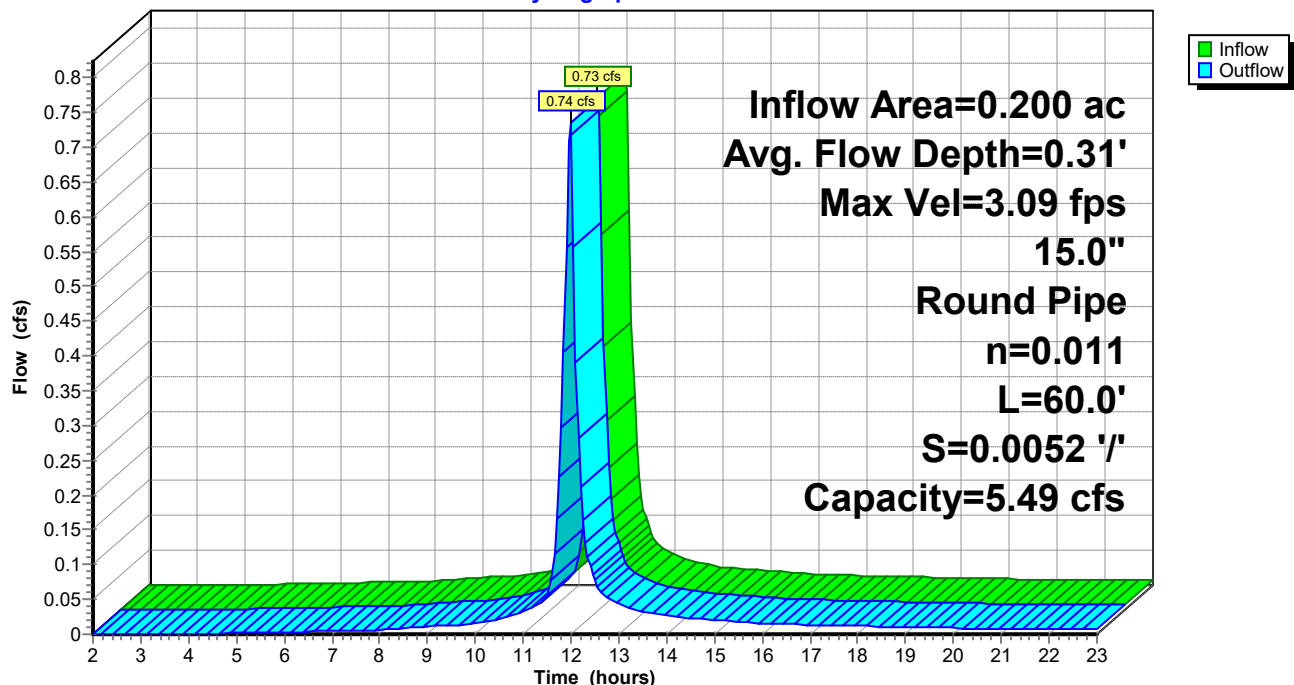
Length= 60.0' Slope= 0.0052 '/

Inlet Invert= 11.82', Outlet Invert= 11.51'



Reach 11R: 15" HDPE

Hydrograph



240060 - Concept

Type II 24-hr 2-YR Rainfall=3.40"

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Stage-Area-Storage for Reach 11R: 15" HDPE

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
11.82	0.0	0	12.86	1.1	65
11.84	0.0	0	12.88	1.1	67
11.86	0.0	1	12.90	1.1	68
11.88	0.0	1	12.92	1.1	69
11.90	0.0	2	12.94	1.2	70
11.92	0.0	3	12.96	1.2	70
11.94	0.1	4	12.98	1.2	71
11.96	0.1	5	13.00	1.2	72
11.98	0.1	6	13.02	1.2	73
12.00	0.1	7	13.04	1.2	73
12.02	0.1	8	13.06	1.2	74
12.04	0.1	9			
12.06	0.2	10			
12.08	0.2	11			
12.10	0.2	12			
12.12	0.2	14			
12.14	0.2	15			
12.16	0.3	16			
12.18	0.3	18			
12.20	0.3	19			
12.22	0.3	20			
12.24	0.4	22			
12.26	0.4	23			
12.28	0.4	25			
12.30	0.4	26			
12.32	0.5	28			
12.34	0.5	29			
12.36	0.5	30			
12.38	0.5	32			
12.40	0.6	33			
12.42	0.6	35			
12.44	0.6	36			
12.46	0.6	38			
12.48	0.7	39			
12.50	0.7	41			
12.52	0.7	42			
12.54	0.7	44			
12.56	0.8	45			
12.58	0.8	47			
12.60	0.8	48			
12.62	0.8	50			
12.64	0.9	51			
12.66	0.9	53			
12.68	0.9	54			
12.70	0.9	55			
12.72	0.9	57			
12.74	1.0	58			
12.76	1.0	59			
12.78	1.0	61			
12.80	1.0	62			
12.82	1.1	63			
12.84	1.1	64			

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Type II 24-hr 2-YR Rainfall=3.40"

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Summary for Reach 12R: 15" HDPE

Inflow Area = 0.389 ac, 77.13% Impervious, Inflow Depth > 2.55" for 2-YR event
Inflow = 1.51 cfs @ 11.94 hrs, Volume= 0.083 af
Outflow = 1.50 cfs @ 11.95 hrs, Volume= 0.083 af, Atten= 1%, Lag= 0.5 min

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.92 fps, Min. Travel Time= 0.7 min

Avg. Velocity= 1.19 fps, Avg. Travel Time= 2.4 min

Peak Storage= 65 cf @ 11.95 hrs

Average Depth at Peak Storage= 0.44'

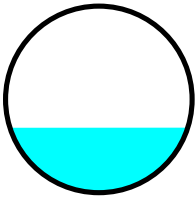
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.72 cfs

15.0" Round Pipe

n= 0.011

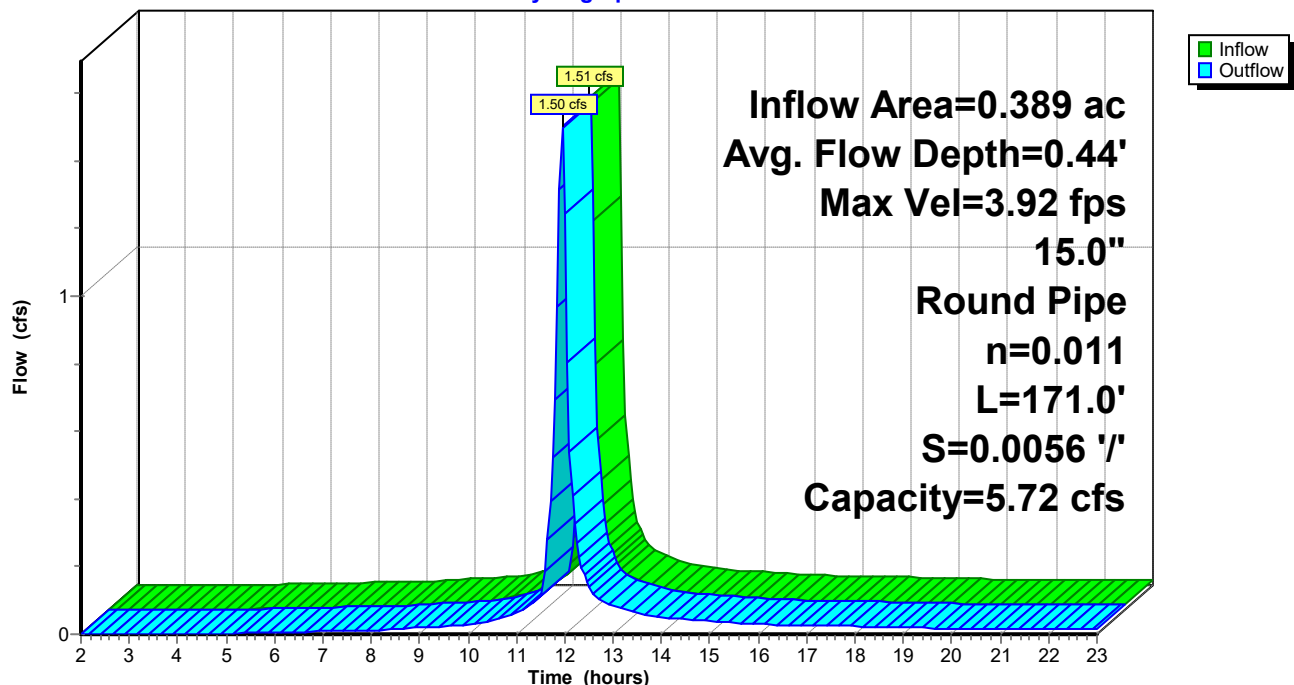
Length= 171.0' Slope= 0.0056 '/

Inlet Invert= 11.41', Outlet Invert= 10.45'



Reach 12R: 15" HDPE

Hydrograph



240060 - Concept

Type II 24-hr 2-YR Rainfall=3.40"

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Stage-Area-Storage for Reach 12R: 15" HDPE

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
11.41	0.0	0	12.45	1.1	187
11.43	0.0	1	12.47	1.1	190
11.45	0.0	2	12.49	1.1	193
11.47	0.0	4	12.51	1.1	196
11.49	0.0	6	12.53	1.2	198
11.51	0.0	8	12.55	1.2	201
11.53	0.1	10	12.57	1.2	203
11.55	0.1	13	12.59	1.2	205
11.57	0.1	16	12.61	1.2	207
11.59	0.1	19	12.63	1.2	209
11.61	0.1	22	12.65	1.2	210
11.63	0.1	25			
11.65	0.2	28			
11.67	0.2	32			
11.69	0.2	35			
11.71	0.2	39			
11.73	0.2	42			
11.75	0.3	46			
11.77	0.3	50			
11.79	0.3	54			
11.81	0.3	58			
11.83	0.4	62			
11.85	0.4	66			
11.87	0.4	70			
11.89	0.4	74			
11.91	0.5	78			
11.93	0.5	83			
11.95	0.5	87			
11.97	0.5	91			
11.99	0.6	95			
12.01	0.6	100			
12.03	0.6	104			
12.05	0.6	108			
12.07	0.7	112			
12.09	0.7	117			
12.11	0.7	121			
12.13	0.7	125			
12.15	0.8	129			
12.17	0.8	134			
12.19	0.8	138			
12.21	0.8	142			
12.23	0.9	146			
12.25	0.9	150			
12.27	0.9	154			
12.29	0.9	158			
12.31	0.9	162			
12.33	1.0	166			
12.35	1.0	169			
12.37	1.0	173			
12.39	1.0	176			
12.41	1.1	180			
12.43	1.1	183			

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Type II 24-hr 2-YR Rainfall=3.40"

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Summary for Pond 9P: SGW 1

Inflow Area = 2.255 ac, 61.34% Impervious, Inflow Depth > 2.21" for 2-YR event
 Inflow = 7.13 cfs @ 11.96 hrs, Volume= 0.416 af
 Outflow = 0.00 cfs @ 2.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 2.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
 Peak Elev= 11.06' @ 23.00 hrs Surf.Area= 10,850 sf Storage= 18,122 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description			
#1	7.44'	28,534 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
7.44	9,804	575.0	0.0	0	0	9,804
7.45	9,804	575.0	40.0	39	39	9,810
10.44	9,804	575.0	40.0	11,726	11,765	11,529
10.45	9,804	575.0	100.0	98	11,863	11,535
11.45	11,558	594.0	100.0	10,669	22,532	13,396
11.95	12,457	604.0	100.0	6,002	28,534	14,396

Device	Routing	Invert	Outlet Devices
#1	Primary	10.12'	15.0" Round Culvert L= 31.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.12' / 10.00' S= 0.0039 '/' Cc= 0.900 n= 0.011, Flow Area= 1.23 sf
#2	Device 1	11.45'	18.8' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

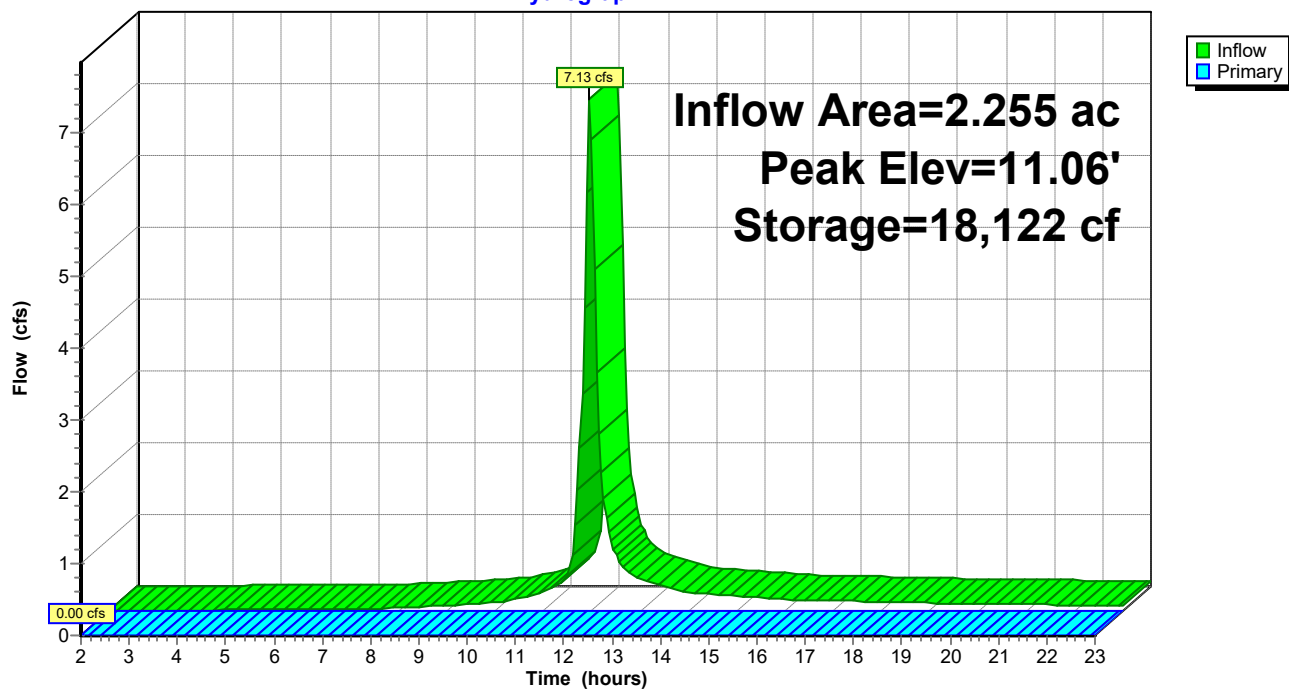
Primary OutFlow Max=0.00 cfs @ 2.00 hrs HW=7.44' (Free Discharge)

↑ **1=Culvert** (Controls 0.00 cfs)

↑ **2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 9P: SGW 1

Hydrograph



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Type II 24-hr 2-YR Rainfall=3.40"

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Stage-Area-Storage for Pond 9P: SGW 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
7.44	9,804	0	10.04	9,804	10,196
7.49	9,804	196	10.09	9,804	10,392
7.54	9,804	392	10.14	9,804	10,588
7.59	9,804	588	10.19	9,804	10,784
7.64	9,804	784	10.24	9,804	10,980
7.69	9,804	980	10.29	9,804	11,177
7.74	9,804	1,176	10.34	9,804	11,373
7.79	9,804	1,373	10.39	9,804	11,569
7.84	9,804	1,569	10.44	9,804	11,765
7.89	9,804	1,765	10.49	9,871	12,256
7.94	9,804	1,961	10.54	9,956	12,752
7.99	9,804	2,157	10.59	10,041	13,252
8.04	9,804	2,353	10.64	10,126	13,756
8.09	9,804	2,549	10.69	10,212	14,265
8.14	9,804	2,745	10.74	10,298	14,777
8.19	9,804	2,941	10.79	10,384	15,294
8.24	9,804	3,137	10.84	10,471	15,816
8.29	9,804	3,333	10.89	10,558	16,341
8.34	9,804	3,529	10.94	10,645	16,872
8.39	9,804	3,726	10.99	10,733	17,406
8.44	9,804	3,922	11.04	10,821	17,945
8.49	9,804	4,118	11.09	10,910	18,488
8.54	9,804	4,314	11.14	10,999	19,036
8.59	9,804	4,510	11.19	11,088	19,588
8.64	9,804	4,706	11.24	11,178	20,145
8.69	9,804	4,902	11.29	11,268	20,706
8.74	9,804	5,098	11.34	11,358	21,271
8.79	9,804	5,294	11.39	11,449	21,842
8.84	9,804	5,490	11.44	11,540	22,416
8.89	9,804	5,686	11.49	11,629	22,996
8.94	9,804	5,882	11.54	11,717	23,579
8.99	9,804	6,078	11.59	11,806	24,167
9.04	9,804	6,275	11.64	11,896	24,760
9.09	9,804	6,471	11.69	11,985	25,357
9.14	9,804	6,667	11.74	12,075	25,958
9.19	9,804	6,863	11.79	12,166	26,564
9.24	9,804	7,059	11.84	12,256	27,175
9.29	9,804	7,255	11.89	12,347	27,790
9.34	9,804	7,451	11.94	12,439	28,410
9.39	9,804	7,647			
9.44	9,804	7,843			
9.49	9,804	8,039			
9.54	9,804	8,235			
9.59	9,804	8,431			
9.64	9,804	8,628			
9.69	9,804	8,824			
9.74	9,804	9,020			
9.79	9,804	9,216			
9.84	9,804	9,412			
9.89	9,804	9,608			
9.94	9,804	9,804			
9.99	9,804	10,000			

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Type II 24-hr 2-YR Rainfall=3.40"

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Summary for Pond 14P: SGW 2

Inflow Area = 0.855 ac, 50.24% Impervious, Inflow Depth > 1.97" for 2-YR event
 Inflow = 2.14 cfs @ 12.01 hrs, Volume= 0.140 af
 Outflow = 0.00 cfs @ 2.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 2.00 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
 Peak Elev= 13.85' @ 23.00 hrs Surf.Area= 4,403 sf Storage= 6,111 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description			
#1	10.54'	12,413 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
10.54	4,017	447.0	0.0	0	0	4,017
10.55	4,017	447.0	40.0	16	16	4,021
13.54	4,017	447.0	40.0	4,804	4,820	5,358
13.55	4,017	447.0	100.0	40	4,861	5,362
14.55	5,386	466.0	100.0	4,685	9,545	6,816
15.05	6,092	475.0	100.0	2,868	12,413	7,530

Device	Routing	Invert	Outlet Devices	
#1	Primary	13.25'	15.0" Round Culvert L= 35.5' Ke= 0.500 Inlet / Outlet Invert= 13.25' / 13.02' S= 0.0065 ' / Cc= 0.900 n= 0.011, Flow Area= 1.23 sf	
#2	Device 1	14.55'	18.8' long Sharp-Crested Rectangular Weir 2 End Contraction(s)	

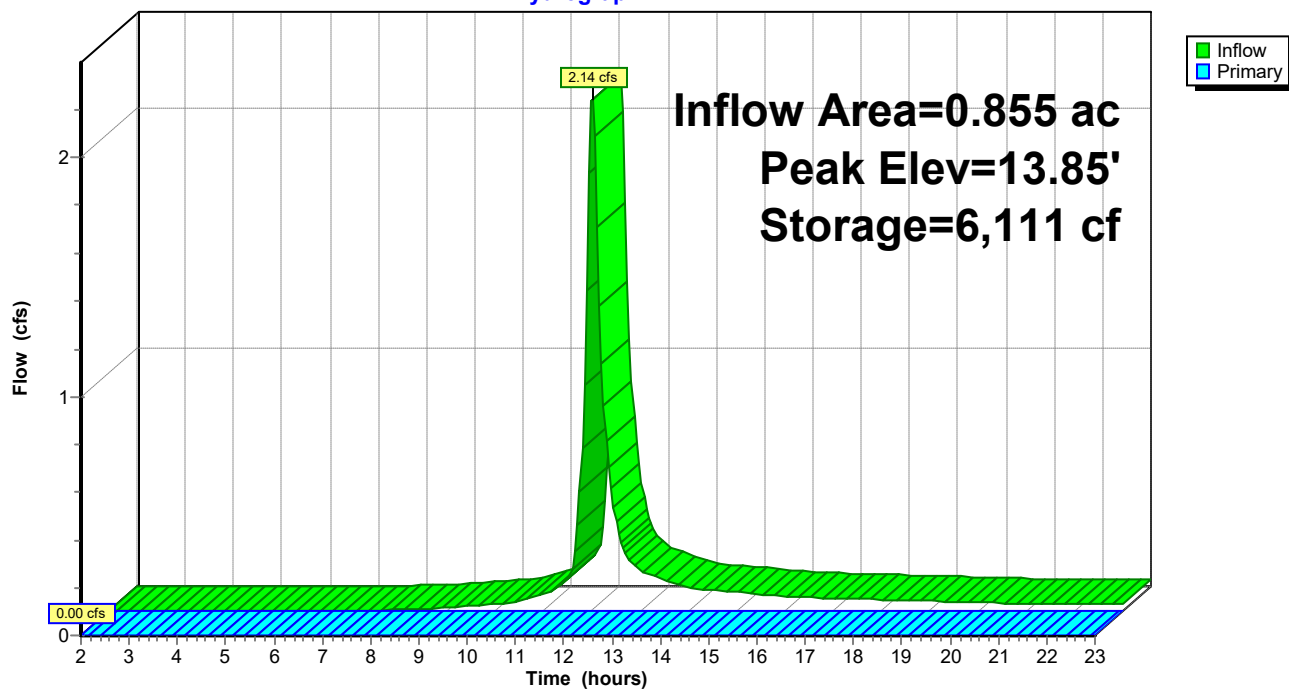
Primary OutFlow Max=0.00 cfs @ 2.00 hrs HW=10.54' (Free Discharge)

↑ **1=Culvert** (Controls 0.00 cfs)

↑ **2=Sharp-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 14P: SGW 2

Hydrograph



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Type II 24-hr 2-YR Rainfall=3.40"

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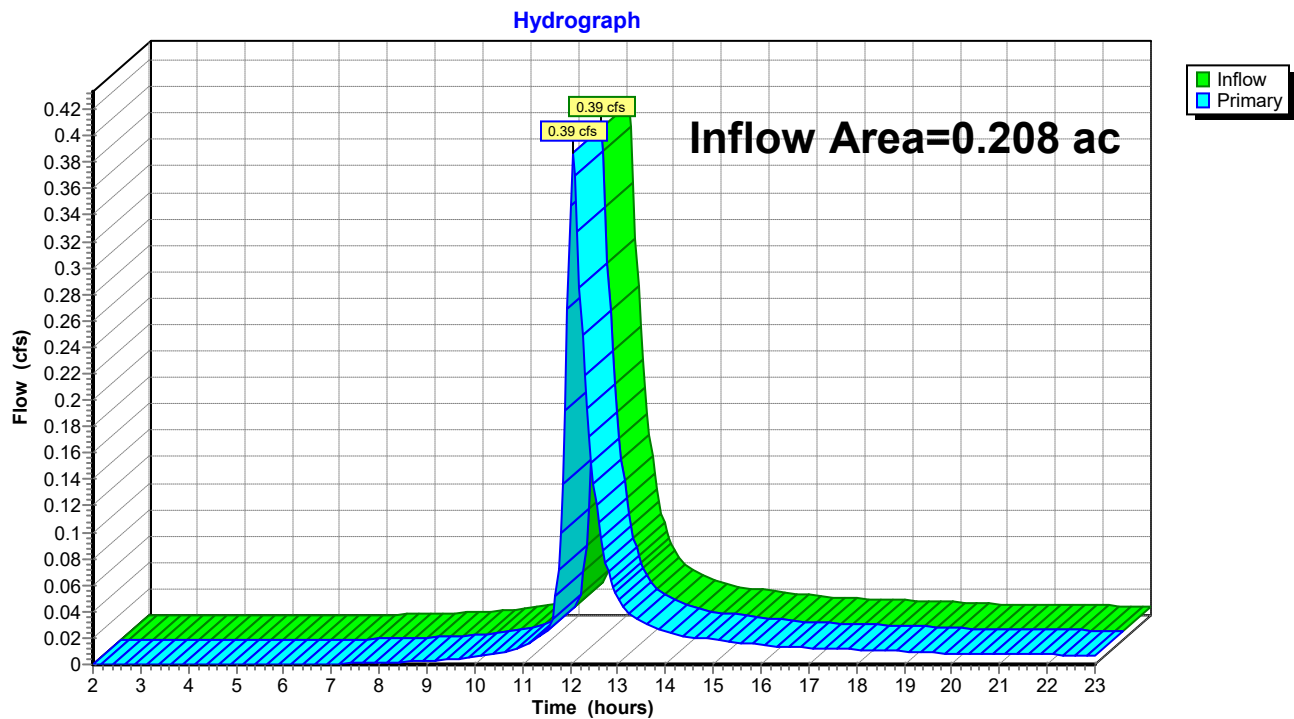
Stage-Area-Storage for Pond 14P: SGW 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
10.54	4,017	0	13.14	4,017	4,178
10.59	4,017	80	13.19	4,017	4,258
10.64	4,017	161	13.24	4,017	4,338
10.69	4,017	241	13.29	4,017	4,419
10.74	4,017	321	13.34	4,017	4,499
10.79	4,017	402	13.39	4,017	4,579
10.84	4,017	482	13.44	4,017	4,660
10.89	4,017	562	13.49	4,017	4,740
10.94	4,017	643	13.54	4,017	4,820
10.99	4,017	723	13.59	4,068	5,022
11.04	4,017	803	13.64	4,132	5,227
11.09	4,017	884	13.69	4,197	5,435
11.14	4,017	964	13.74	4,262	5,647
11.19	4,017	1,044	13.79	4,327	5,862
11.24	4,017	1,125	13.84	4,393	6,080
11.29	4,017	1,205	13.89	4,460	6,301
11.34	4,017	1,285	13.94	4,527	6,526
11.39	4,017	1,366	13.99	4,595	6,754
11.44	4,017	1,446	14.04	4,663	6,985
11.49	4,017	1,526	14.09	4,731	7,220
11.54	4,017	1,607	14.14	4,800	7,458
11.59	4,017	1,687	14.19	4,870	7,700
11.64	4,017	1,767	14.24	4,940	7,945
11.69	4,017	1,848	14.29	5,011	8,194
11.74	4,017	1,928	14.34	5,082	8,446
11.79	4,017	2,009	14.39	5,153	8,702
11.84	4,017	2,089	14.44	5,226	8,962
11.89	4,017	2,169	14.49	5,298	9,225
11.94	4,017	2,250	14.54	5,371	9,492
11.99	4,017	2,330	14.59	5,441	9,762
12.04	4,017	2,410	14.64	5,510	10,036
12.09	4,017	2,491	14.69	5,579	10,313
12.14	4,017	2,571	14.74	5,649	10,594
12.19	4,017	2,651	14.79	5,719	10,878
12.24	4,017	2,732	14.84	5,790	11,166
12.29	4,017	2,812	14.89	5,861	11,457
12.34	4,017	2,892	14.94	5,933	11,752
12.39	4,017	2,973	14.99	6,005	12,050
12.44	4,017	3,053	15.04	6,077	12,352
12.49	4,017	3,133			
12.54	4,017	3,214			
12.59	4,017	3,294			
12.64	4,017	3,374			
12.69	4,017	3,455			
12.74	4,017	3,535			
12.79	4,017	3,615			
12.84	4,017	3,696			
12.89	4,017	3,776			
12.94	4,017	3,856			
12.99	4,017	3,937			
13.04	4,017	4,017			
13.09	4,017	4,097			

Summary for Link 18L: POI 3 (EX SWM POND)

Inflow Area = 0.208 ac, 43.72% Impervious, Inflow Depth > 1.86" for 2-YR event
Inflow = 0.39 cfs @ 12.06 hrs, Volume= 0.032 af
Primary = 0.39 cfs @ 12.06 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs

Link 18L: POI 3 (EX SWM POND)

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Type II 24-hr 10-YR Rainfall=5.30"

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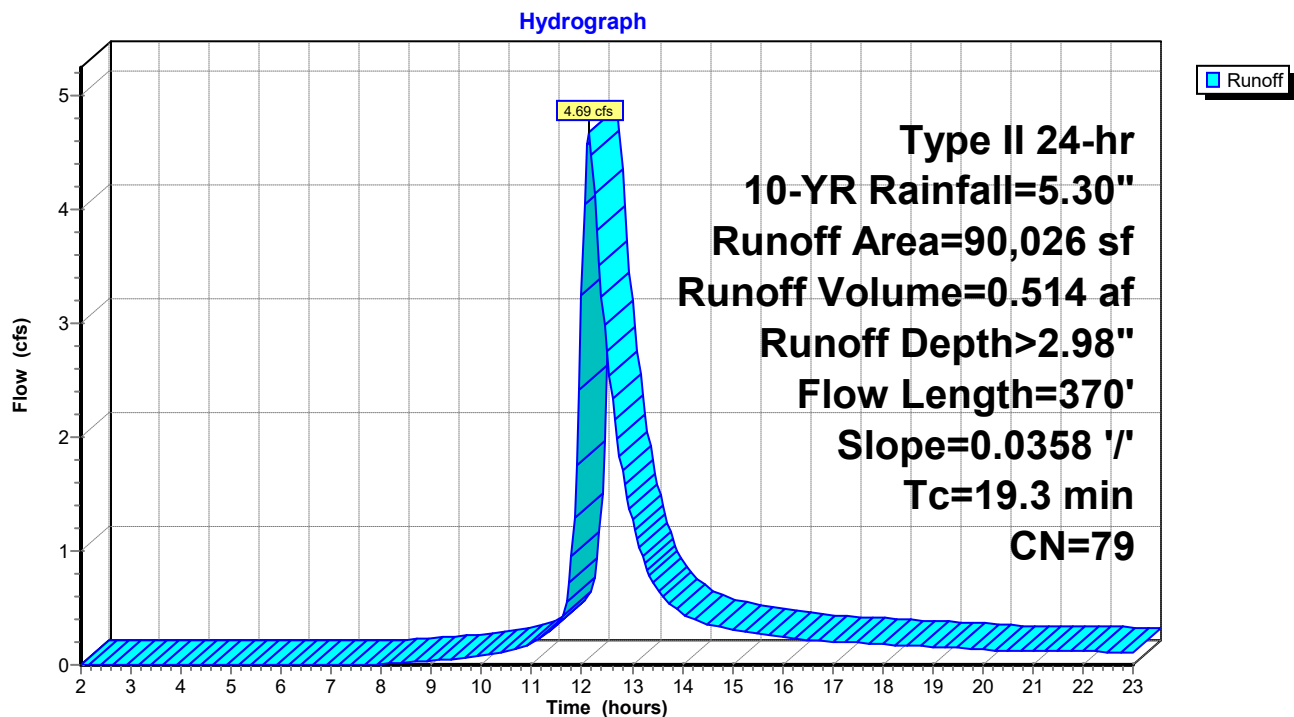
Summary for Subcatchment 1S: EX DA-1 (ORANGE)

Runoff = 4.69 cfs @ 12.14 hrs, Volume= 0.514 af, Depth> 2.98"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=5.30"

Area (sf)	CN	Description
* 224	98	existing shed
89,802	79	50-75% Grass cover, Fair, HSG C
90,026	79	Weighted Average
89,802		99.75% Pervious Area
224		0.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	150	0.0358	0.14		Sheet Flow, a-b
					Grass: Dense n= 0.240 P2= 2.40"
1.2	220	0.0358	3.05		Shallow Concentrated Flow, b-c
					Unpaved Kv= 16.1 fps
19.3	370	Total			

Subcatchment 1S: EX DA-1 (ORANGE)

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Type II 24-hr 10-YR Rainfall=5.30"

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Summary for Subcatchment 2S: EX DA-2 (PURPLE)

Runoff = 0.95 cfs @ 12.29 hrs, Volume= 0.144 af, Depth> 2.97"

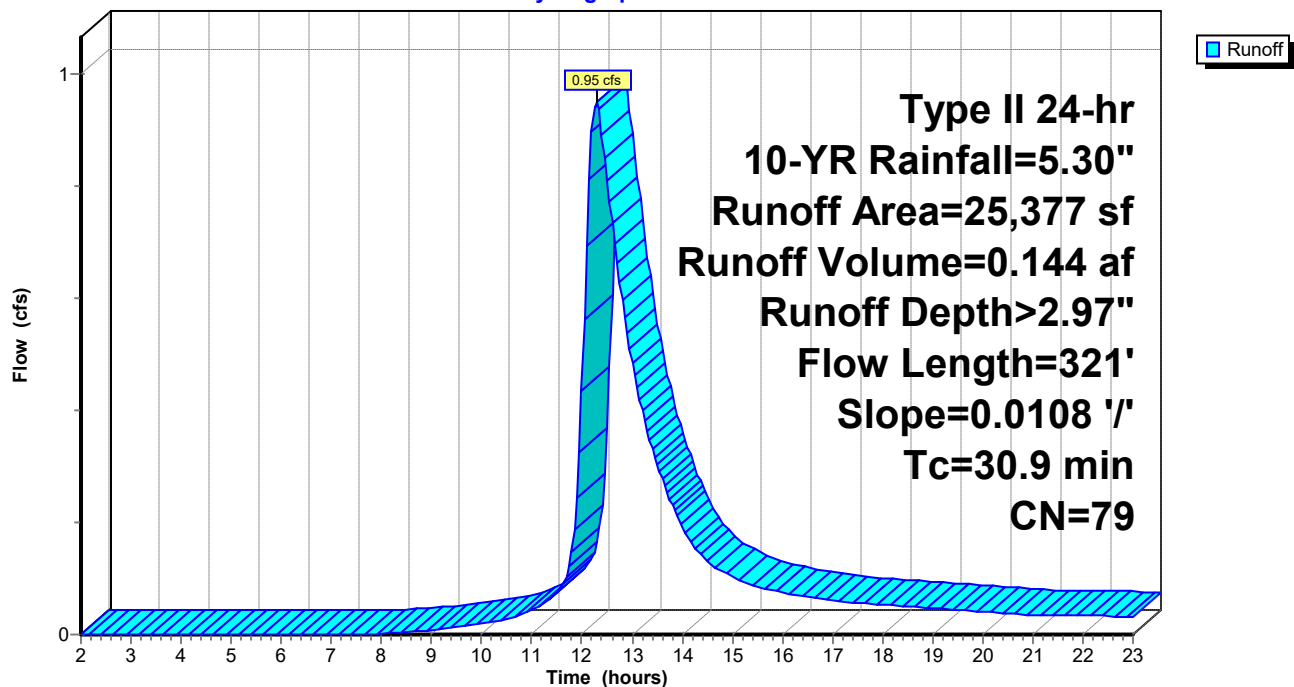
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=5.30"

Area (sf)	CN	Description
25,377	79	50-75% Grass cover, Fair, HSG C
25,377		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.2	150	0.0108	0.09		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
1.7	171	0.0108	1.67		Shallow Concentrated Flow, B-C
					Unpaved Kv= 16.1 fps
30.9	321	Total			

Subcatchment 2S: EX DA-2 (PURPLE)

Hydrograph



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Type II 24-hr 10-YR Rainfall=5.30"

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Summary for Subcatchment 3S: EX DA-3 (BLUE)

Runoff = 0.76 cfs @ 12.58 hrs, Volume= 0.169 af, Depth> 3.03"

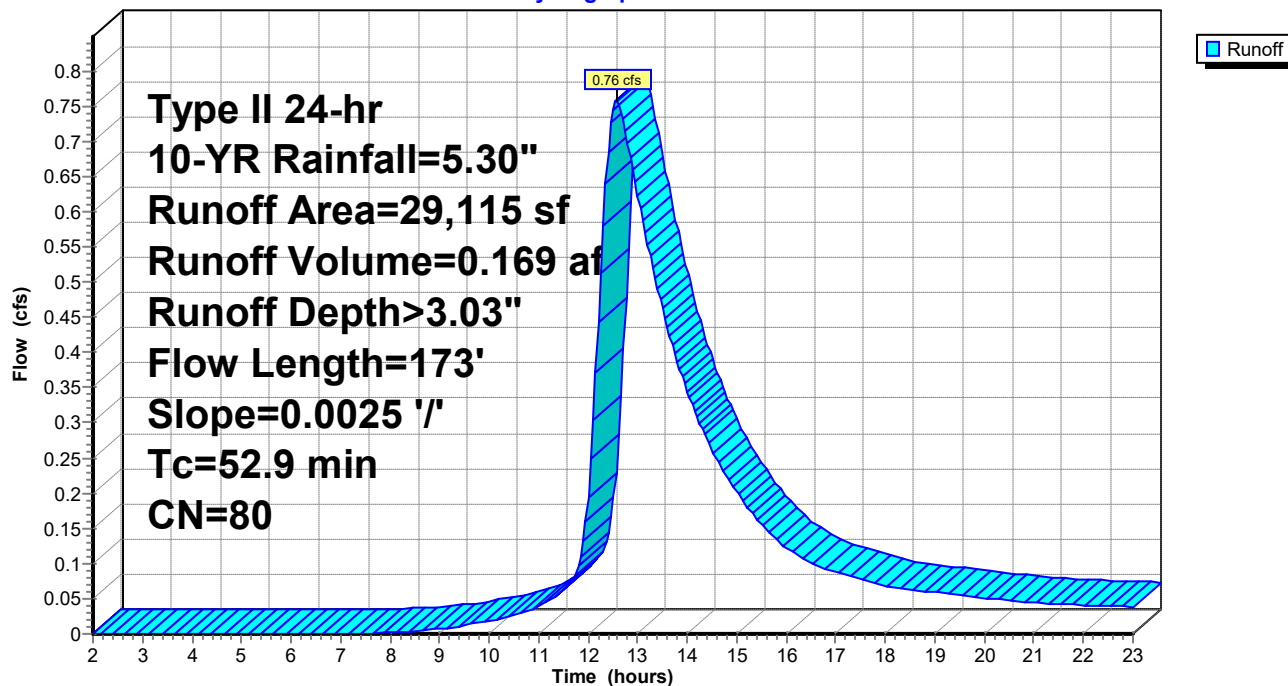
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=5.30"

Area (sf)	CN	Description
28,117	79	50-75% Grass cover, Fair, HSG C
998	98	Paved parking, HSG C
29,115	80	Weighted Average
28,117		96.57% Pervious Area
998		3.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.4	150	0.0025	0.05		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
0.5	23	0.0025	0.81		Shallow Concentrated Flow, B-C
					Unpaved Kv= 16.1 fps
52.9	173	Total			

Subcatchment 3S: EX DA-3 (BLUE)

Hydrograph



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Type II 24-hr 10-YR Rainfall=5.30"

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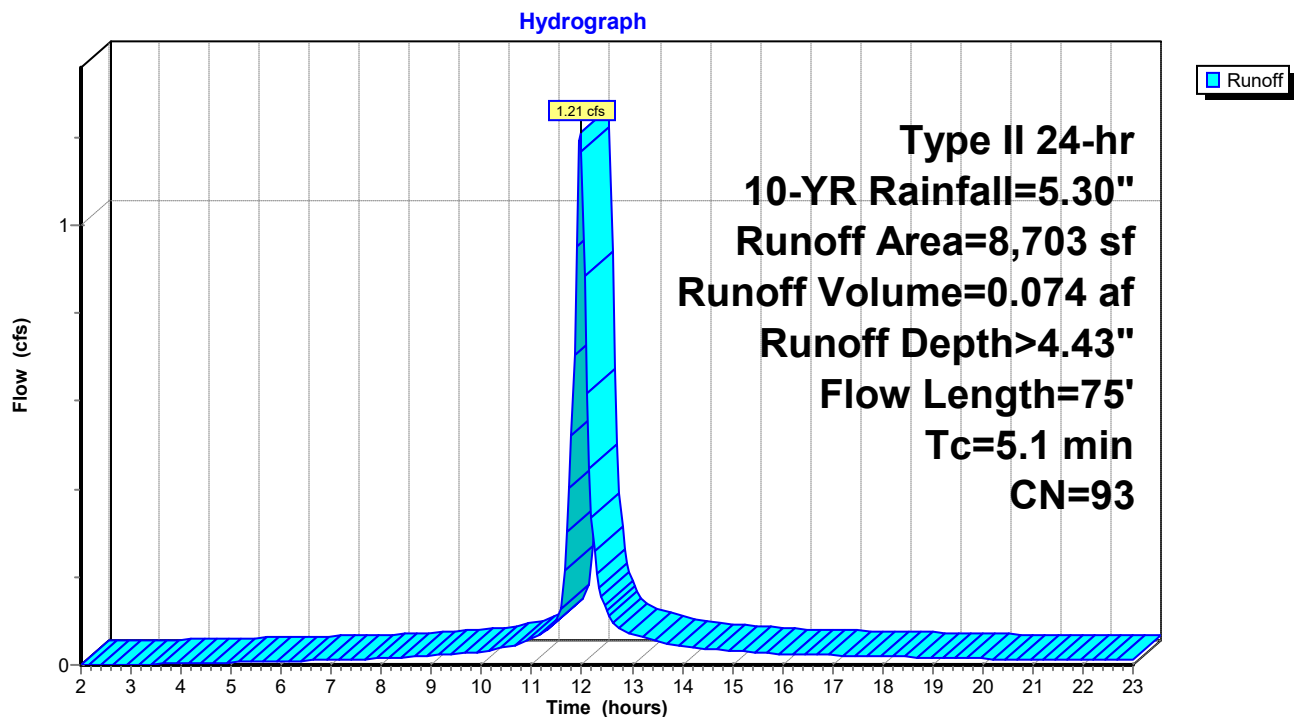
Summary for Subcatchment 4S: DA-1e

Runoff = 1.21 cfs @ 11.97 hrs, Volume= 0.074 af, Depth> 4.43"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=5.30"

Area (sf)	CN	Description
6,909	98	Paved parking, HSG C
1,794	74	>75% Grass cover, Good, HSG C
8,703	93	Weighted Average
1,794		20.61% Pervious Area
6,909		79.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	14	0.0095	0.05		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
0.4	48	0.0134	1.86		Shallow Concentrated Flow, B-C
					Unpaved Kv= 16.1 fps
0.1	13	0.0075	1.76		Shallow Concentrated Flow, C-D
					Paved Kv= 20.3 fps
5.1	75	Total			

Subcatchment 4S: DA-1e

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Type II 24-hr 10-YR Rainfall=5.30"

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Summary for Subcatchment 5S: DA-1c

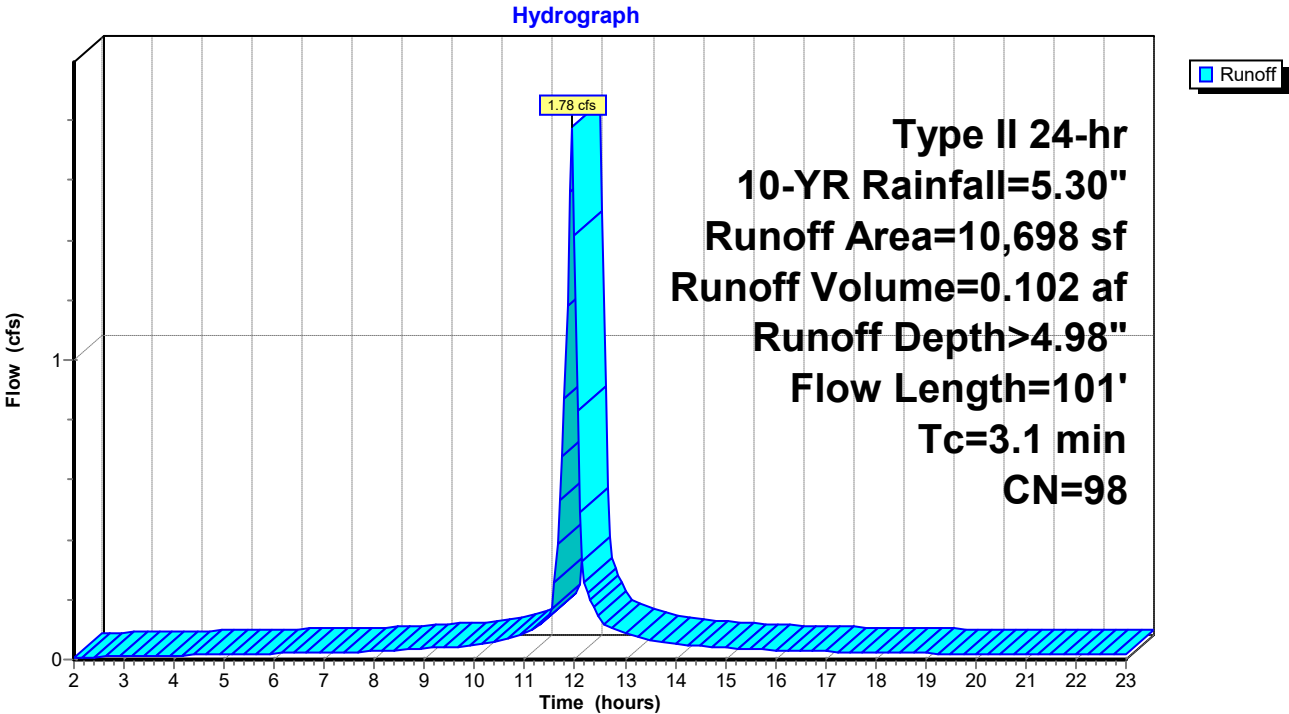
Runoff = 1.78 cfs @ 11.94 hrs, Volume= 0.102 af, Depth> 4.98"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=5.30"

Area (sf)	CN	Description
10,698	98	Paved parking, HSG C
10,698		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	67	0.0016	0.40		Sheet Flow, A-B Smooth surfaces n= 0.011 P2= 2.40"
0.3	34	0.0100	2.03		Shallow Concentrated Flow, B-C Paved Kv= 20.3 fps
3.1	101	Total			

Subcatchment 5S: DA-1c



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Type II 24-hr 10-YR Rainfall=5.30"

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Summary for Subcatchment 8S: DA-1b

Runoff = 1.09 cfs @ 11.91 hrs, Volume= 0.057 af, Depth> 4.98"

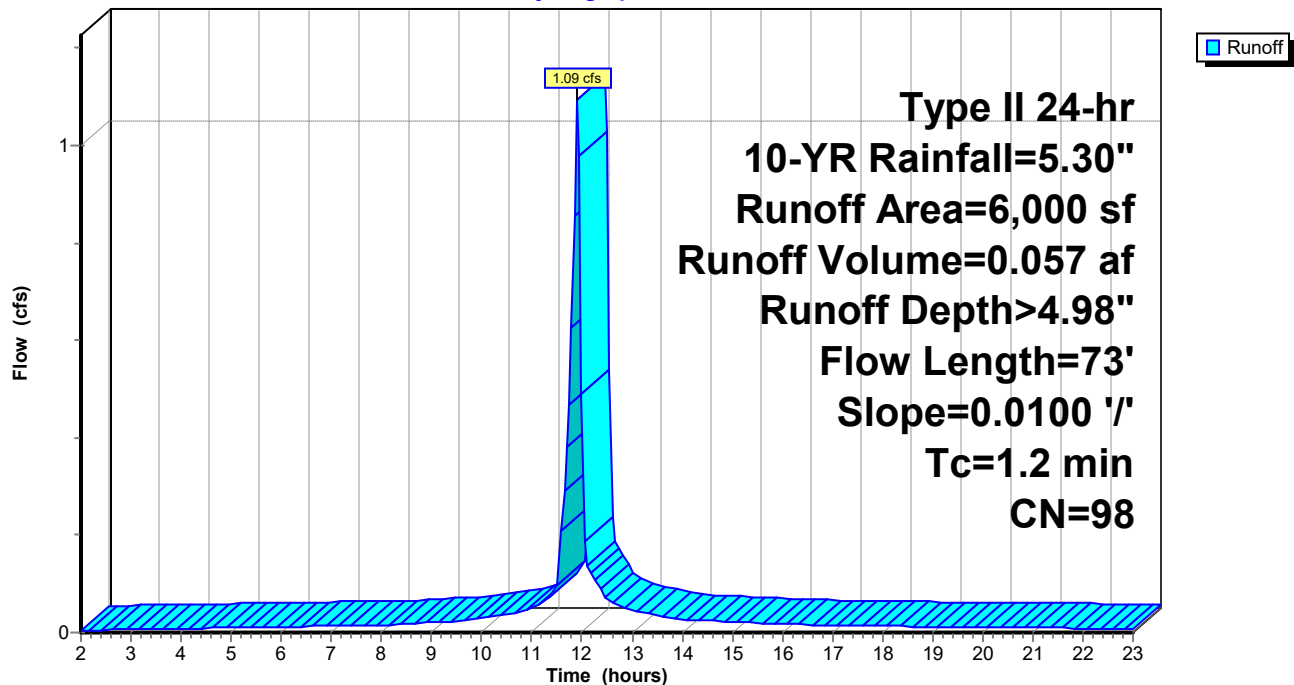
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=5.30"

Area (sf)	CN	Description
6,000	98	Paved parking, HSG C
6,000		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	39	0.0100	0.75		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 2.40"
0.3	34	0.0100	2.03		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
1.2	73	Total			

Subcatchment 8S: DA-1b

Hydrograph



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Type II 24-hr 10-YR Rainfall=5.30"

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Summary for Subcatchment 10S: DA-1a

Runoff = 7.53 cfs @ 11.98 hrs, Volume= 0.443 af, Depth> 3.58"

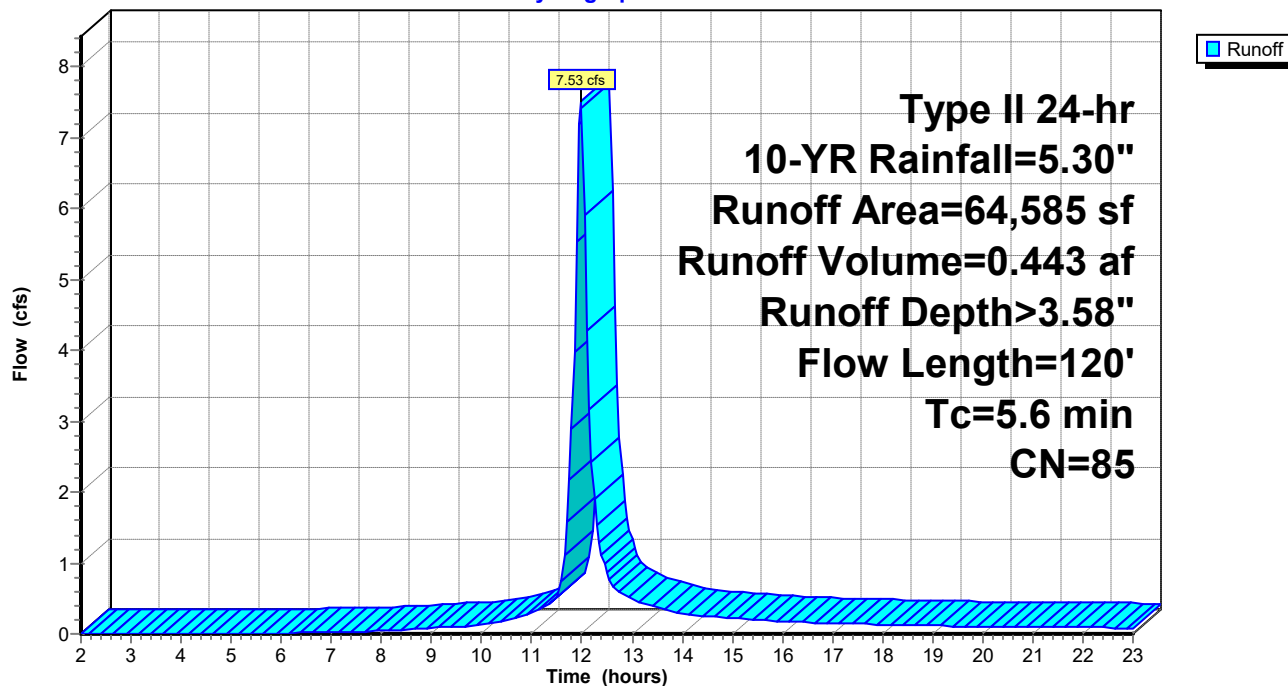
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=5.30"

Area (sf)	CN	Description
30,489	98	Paved parking, HSG C
34,096	74	>75% Grass cover, Good, HSG C
64,585	85	Weighted Average
34,096		52.79% Pervious Area
30,489		47.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	33	0.0439	0.11		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
0.6	87	0.0253	2.56		Shallow Concentrated Flow, B-C
					Unpaved Kv= 16.1 fps
5.6	120	Total			

Subcatchment 10S: DA-1a

Hydrograph



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Type II 24-hr 10-YR Rainfall=5.30"

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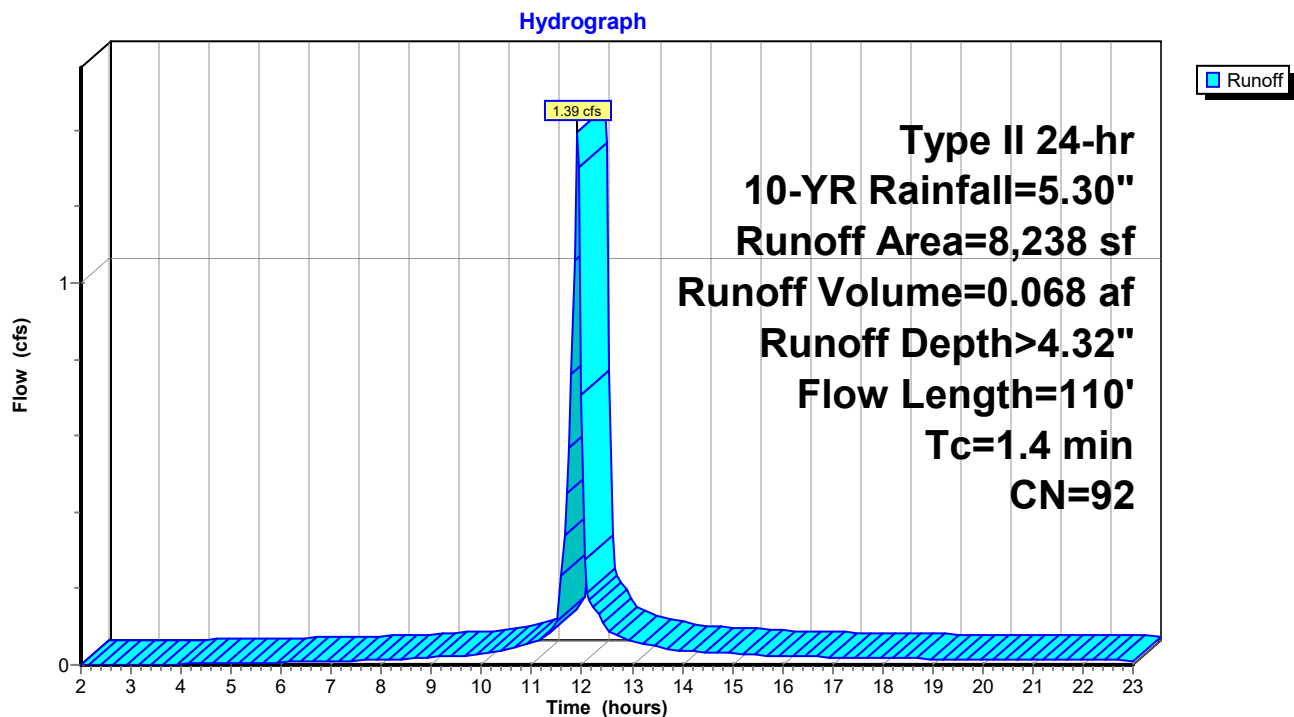
Summary for Subcatchment 13S: DA-1d

Runoff = 1.39 cfs @ 11.92 hrs, Volume= 0.068 af, Depth> 4.32"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=5.30"

Area (sf)	CN	Description
6,157	98	Paved parking, HSG C
2,081	74	>75% Grass cover, Good, HSG C
8,238	92	Weighted Average
2,081		25.26% Pervious Area
6,157		74.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	34	0.0156	0.87		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 2.40"
0.7	76	0.0075	1.76		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
1.4	110	Total			

Subcatchment 13S: DA-1d

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Type II 24-hr 10-YR Rainfall=5.30"

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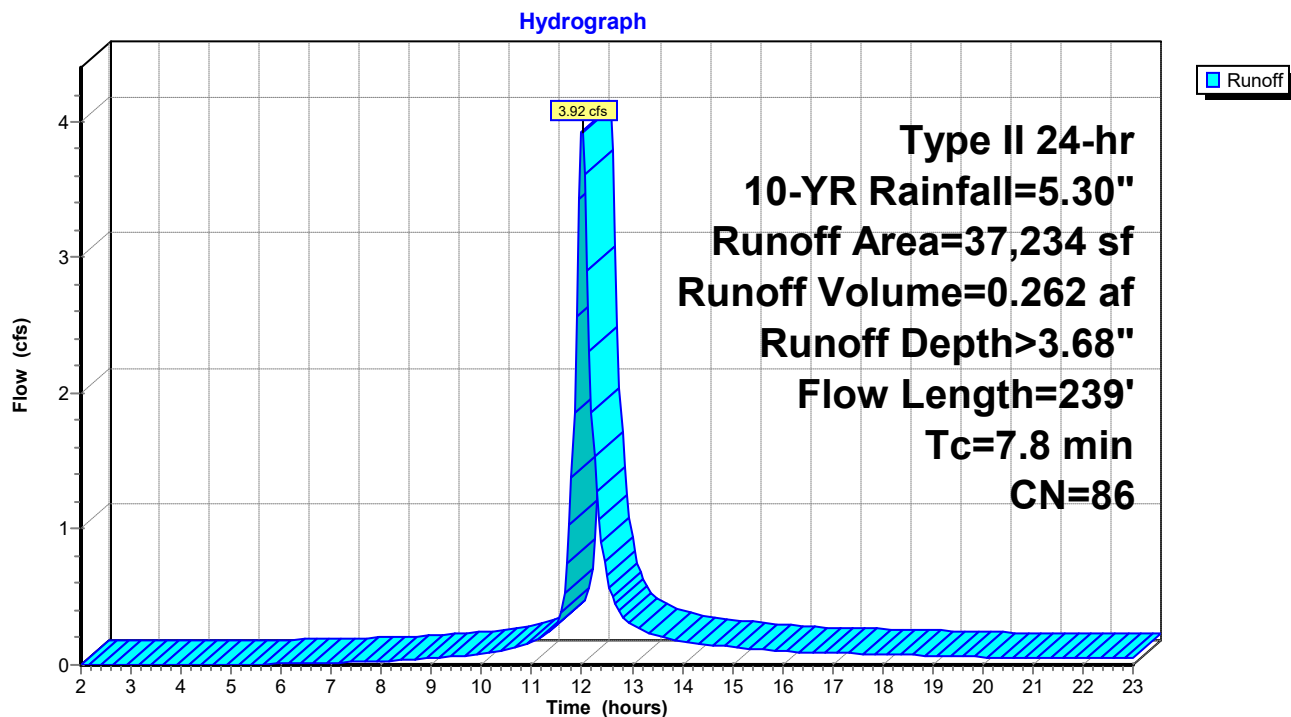
Summary for Subcatchment 15S: DA TO SGW 2

Runoff = 3.92 cfs @ 12.01 hrs, Volume= 0.262 af, Depth> 3.68"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=5.30"

Area (sf)	CN	Description
18,708	98	Paved parking, HSG C
18,526	74	>75% Grass cover, Good, HSG C
37,234	86	Weighted Average
18,526		49.76% Pervious Area
18,708		50.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	14	0.0095	0.05		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
0.4	35	0.0075	1.39		Shallow Concentrated Flow, B-C
					Unpaved Kv= 16.1 fps
2.8	190	0.0051	1.15		Shallow Concentrated Flow, C-D
					Unpaved Kv= 16.1 fps
7.8	239	Total			

Subcatchment 15S: DA TO SGW 2

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Type II 24-hr 10-YR Rainfall=5.30"

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Summary for Subcatchment 16S: DA-3a

Runoff = 0.46 cfs @ 12.07 hrs, Volume= 0.041 af, Depth> 3.88"

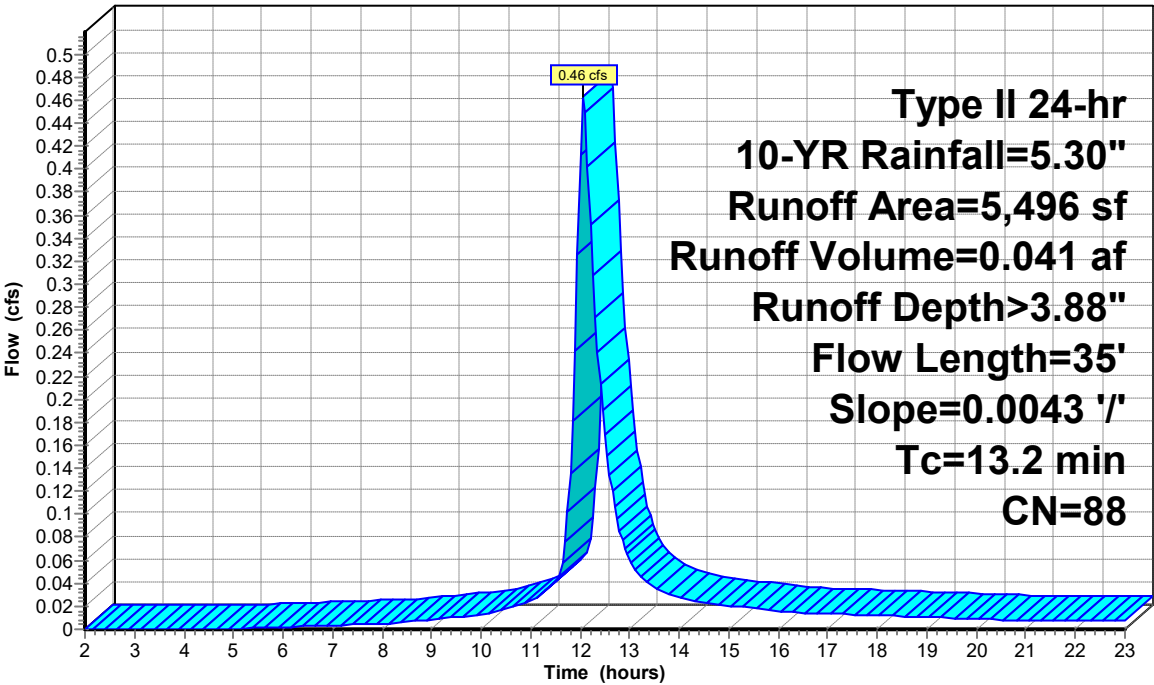
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=5.30"

Area (sf)	CN	Description
3,166	98	Paved parking, HSG C
2,330	74	>75% Grass cover, Good, HSG C
5,496	88	Weighted Average
2,330		42.39% Pervious Area
3,166		57.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	35	0.0043	0.04		Sheet Flow, A-B
Grass: Dense n= 0.240 P2= 2.40"					

Subcatchment 16S: DA-3a

Hydrograph



Runoff

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Type II 24-hr 10-YR Rainfall=5.30"

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Summary for Subcatchment 17S: DA-3b

Runoff = 0.27 cfs @ 12.04 hrs, Volume= 0.020 af, Depth> 3.00"

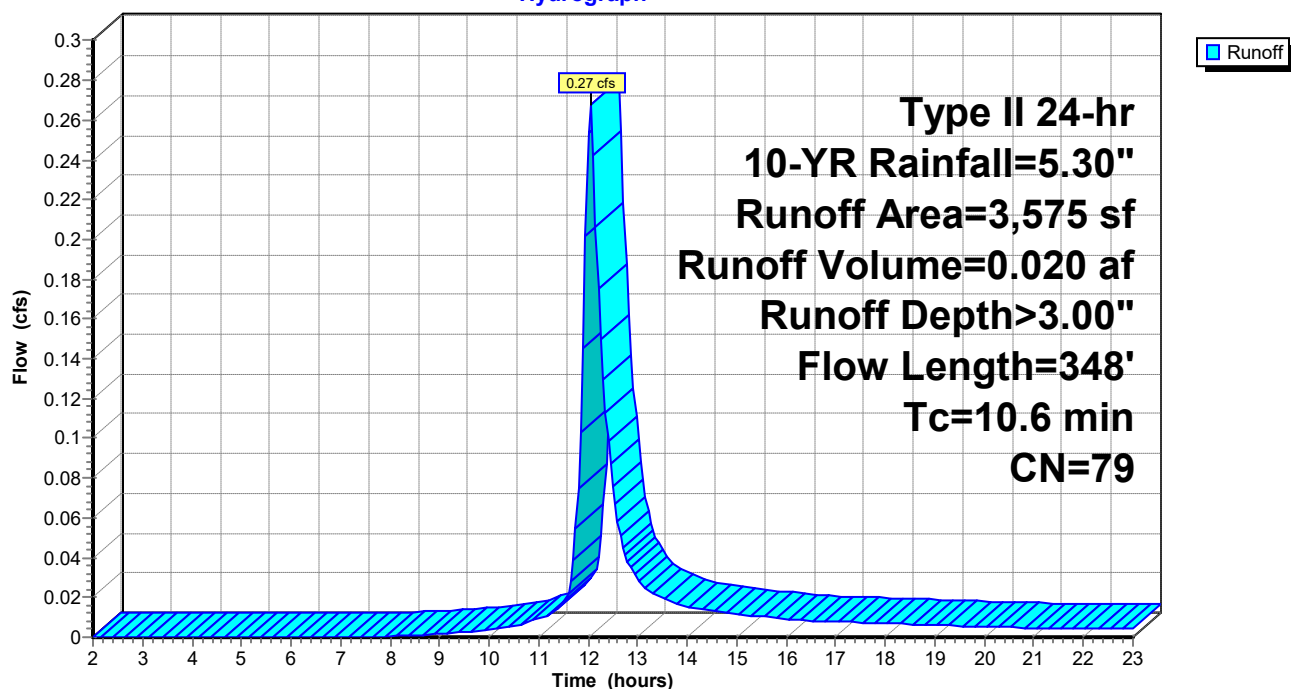
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-YR Rainfall=5.30"

Area (sf)	CN	Description
800	98	Paved parking, HSG C
2,775	74	>75% Grass cover, Good, HSG C
3,575	79	Weighted Average
2,775		77.62% Pervious Area
800		22.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	46	0.0222	0.09		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
0.4	100	0.0050	3.79	2.98	Pipe Channel, 12" HDPE
					12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'
					n= 0.011
1.7	202	0.0149	1.97		Shallow Concentrated Flow, EX SWALE TO INLET 4
					Unpaved Kv= 16.1 fps
10.6	348	Total			

Subcatchment 17S: DA-3b

Hydrograph



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Type II 24-hr 10-YR Rainfall=5.30"

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Summary for Reach 6R: 15" HDPE

Inflow Area = 0.246 ac, 100.00% Impervious, Inflow Depth > 4.98" for 10-YR event
Inflow = 1.78 cfs @ 11.94 hrs, Volume= 0.102 af
Outflow = 1.77 cfs @ 11.95 hrs, Volume= 0.102 af, Atten= 1%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.96 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.23 fps, Avg. Travel Time= 1.0 min

Peak Storage= 32 cf @ 11.95 hrs

Average Depth at Peak Storage= 0.49'

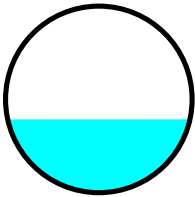
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.44 cfs

15.0" Round Pipe

n= 0.011 PVC, smooth interior

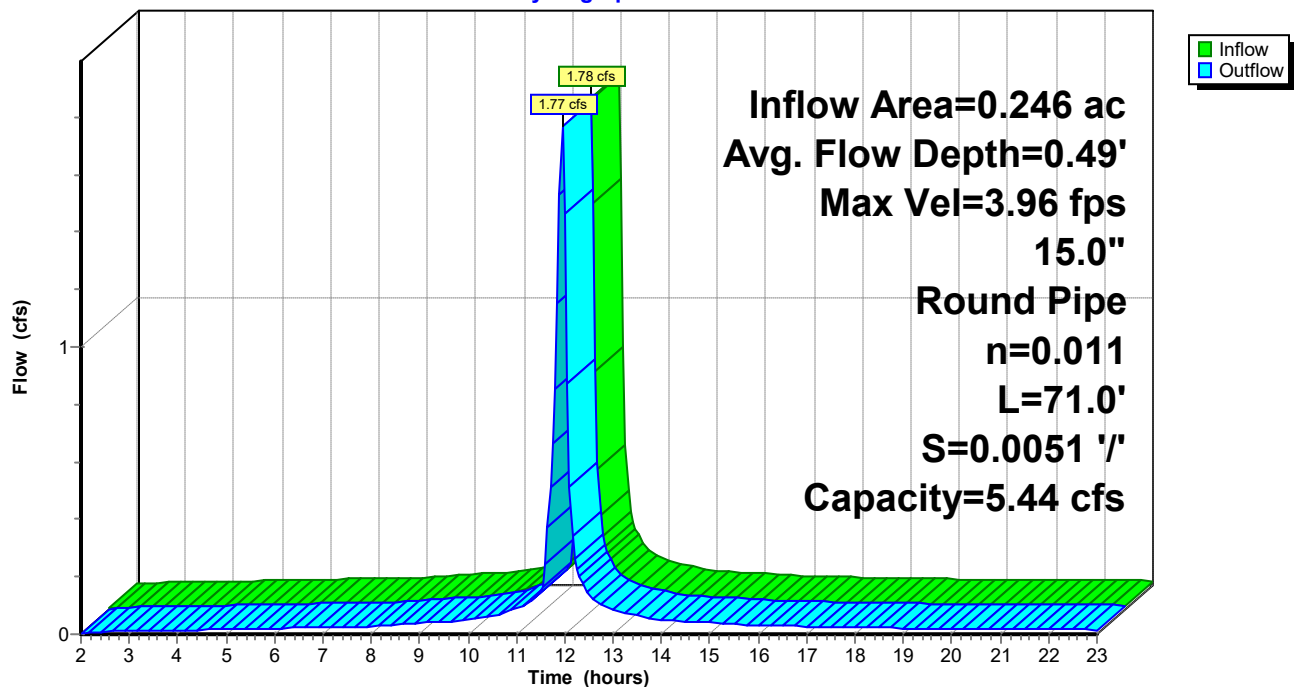
Length= 71.0' Slope= 0.0051 '/

Inlet Invert= 11.16', Outlet Invert= 10.80'



Reach 6R: 15" HDPE

Hydrograph



240060 - Concept*Type II 24-hr 10-YR Rainfall=5.30"*

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Stage-Area-Storage for Reach 6R: 15" HDPE

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
11.16	0.0	0	12.20	1.1	77
11.18	0.0	0	12.22	1.1	79
11.20	0.0	1	12.24	1.1	80
11.22	0.0	2	12.26	1.1	81
11.24	0.0	2	12.28	1.2	82
11.26	0.0	3	12.30	1.2	83
11.28	0.1	4	12.32	1.2	84
11.30	0.1	5	12.34	1.2	85
11.32	0.1	7	12.36	1.2	86
11.34	0.1	8	12.38	1.2	87
11.36	0.1	9	12.40	1.2	87
11.38	0.1	10			
11.40	0.2	12			
11.42	0.2	13			
11.44	0.2	15			
11.46	0.2	16			
11.48	0.2	18			
11.50	0.3	19			
11.52	0.3	21			
11.54	0.3	22			
11.56	0.3	24			
11.58	0.4	26			
11.60	0.4	27			
11.62	0.4	29			
11.64	0.4	31			
11.66	0.5	33			
11.68	0.5	34			
11.70	0.5	36			
11.72	0.5	38			
11.74	0.6	40			
11.76	0.6	41			
11.78	0.6	43			
11.80	0.6	45			
11.82	0.7	47			
11.84	0.7	48			
11.86	0.7	50			
11.88	0.7	52			
11.90	0.8	54			
11.92	0.8	55			
11.94	0.8	57			
11.96	0.8	59			
11.98	0.9	61			
12.00	0.9	62			
12.02	0.9	64			
12.04	0.9	66			
12.06	0.9	67			
12.08	1.0	69			
12.10	1.0	70			
12.12	1.0	72			
12.14	1.0	73			
12.16	1.1	75			
12.18	1.1	76			

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Type II 24-hr 10-YR Rainfall=5.30"

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Summary for Reach 7R: 15" HDPE

Inflow Area = 0.383 ac, 100.00% Impervious, Inflow Depth > 4.98" for 10-YR event
Inflow = 2.81 cfs @ 11.93 hrs, Volume= 0.159 af
Outflow = 2.80 cfs @ 11.94 hrs, Volume= 0.159 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.40 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.40 fps, Avg. Travel Time= 0.8 min

Peak Storage= 45 cf @ 11.93 hrs

Average Depth at Peak Storage= 0.64'

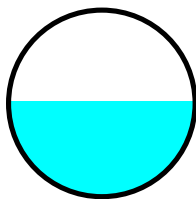
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.36 cfs

15.0" Round Pipe

n= 0.011

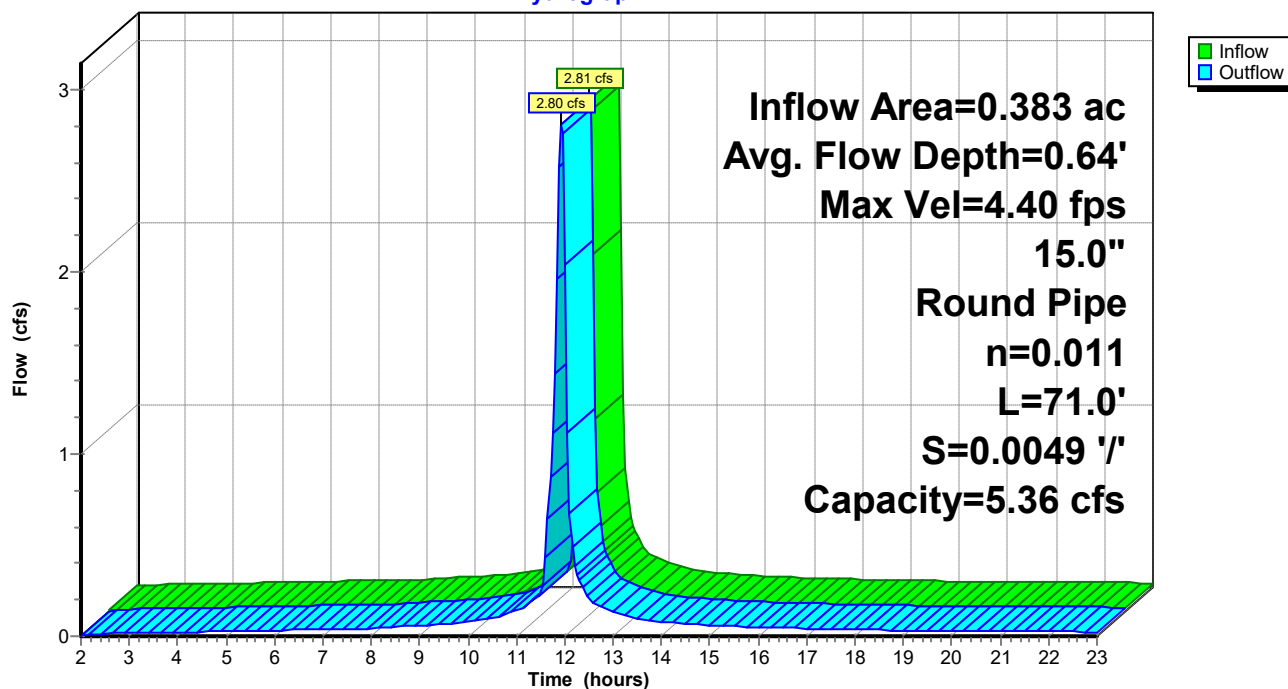
Length= 71.0' Slope= 0.0049 '/

Inlet Invert= 10.80', Outlet Invert= 10.45'



Reach 7R: 15" HDPE

Hydrograph



240060 - Concept*Type II 24-hr 10-YR Rainfall=5.30"*

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Stage-Area-Storage for Reach 7R: 15" HDPE

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
10.80	0.0	0	11.84	1.1	77
10.82	0.0	0	11.86	1.1	79
10.84	0.0	1	11.88	1.1	80
10.86	0.0	2	11.90	1.1	81
10.88	0.0	2	11.92	1.2	82
10.90	0.0	3	11.94	1.2	83
10.92	0.1	4	11.96	1.2	84
10.94	0.1	5	11.98	1.2	85
10.96	0.1	7	12.00	1.2	86
10.98	0.1	8	12.02	1.2	87
11.00	0.1	9	12.04	1.2	87
11.02	0.1	10			
11.04	0.2	12			
11.06	0.2	13			
11.08	0.2	15			
11.10	0.2	16			
11.12	0.2	18			
11.14	0.3	19			
11.16	0.3	21			
11.18	0.3	22			
11.20	0.3	24			
11.22	0.4	26			
11.24	0.4	27			
11.26	0.4	29			
11.28	0.4	31			
11.30	0.5	33			
11.32	0.5	34			
11.34	0.5	36			
11.36	0.5	38			
11.38	0.6	40			
11.40	0.6	41			
11.42	0.6	43			
11.44	0.6	45			
11.46	0.7	47			
11.48	0.7	48			
11.50	0.7	50			
11.52	0.7	52			
11.54	0.8	54			
11.56	0.8	55			
11.58	0.8	57			
11.60	0.8	59			
11.62	0.9	61			
11.64	0.9	62			
11.66	0.9	64			
11.68	0.9	66			
11.70	0.9	67			
11.72	1.0	69			
11.74	1.0	70			
11.76	1.0	72			
11.78	1.0	73			
11.80	1.1	75			
11.82	1.1	76			

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Type II 24-hr 10-YR Rainfall=5.30"

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Summary for Reach 11R: 15" HDPE

Inflow Area = 0.200 ac, 79.39% Impervious, Inflow Depth > 4.43" for 10-YR event
Inflow = 1.21 cfs @ 11.97 hrs, Volume= 0.074 af
Outflow = 1.21 cfs @ 11.98 hrs, Volume= 0.074 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.56 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.10 fps, Avg. Travel Time= 0.9 min

Peak Storage= 20 cf @ 11.98 hrs

Average Depth at Peak Storage= 0.40'

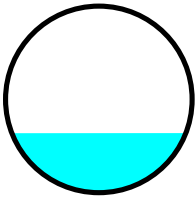
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.49 cfs

15.0" Round Pipe

n= 0.011

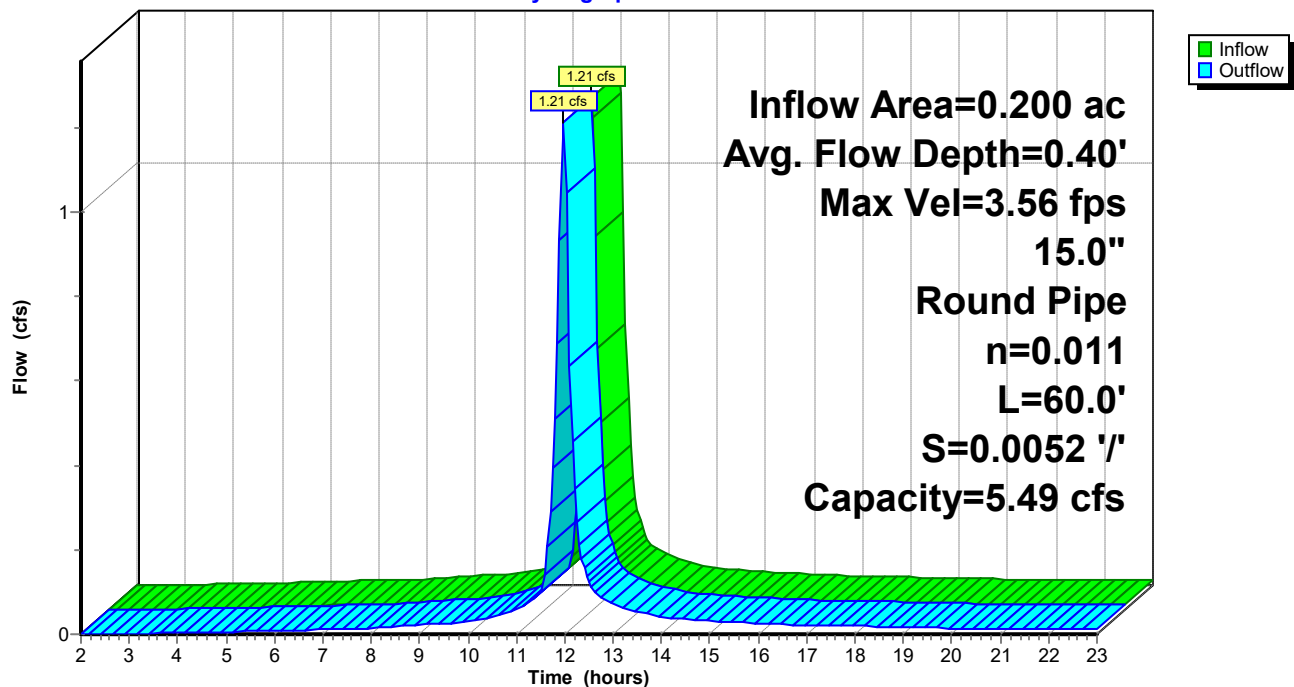
Length= 60.0' Slope= 0.0052 '/

Inlet Invert= 11.82', Outlet Invert= 11.51'



Reach 11R: 15" HDPE

Hydrograph



240060 - Concept

Type II 24-hr 10-YR Rainfall=5.30"

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Stage-Area-Storage for Reach 11R: 15" HDPE

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
11.82	0.0	0	12.86	1.1	65
11.84	0.0	0	12.88	1.1	67
11.86	0.0	1	12.90	1.1	68
11.88	0.0	1	12.92	1.1	69
11.90	0.0	2	12.94	1.2	70
11.92	0.0	3	12.96	1.2	70
11.94	0.1	4	12.98	1.2	71
11.96	0.1	5	13.00	1.2	72
11.98	0.1	6	13.02	1.2	73
12.00	0.1	7	13.04	1.2	73
12.02	0.1	8	13.06	1.2	74
12.04	0.1	9			
12.06	0.2	10			
12.08	0.2	11			
12.10	0.2	12			
12.12	0.2	14			
12.14	0.2	15			
12.16	0.3	16			
12.18	0.3	18			
12.20	0.3	19			
12.22	0.3	20			
12.24	0.4	22			
12.26	0.4	23			
12.28	0.4	25			
12.30	0.4	26			
12.32	0.5	28			
12.34	0.5	29			
12.36	0.5	30			
12.38	0.5	32			
12.40	0.6	33			
12.42	0.6	35			
12.44	0.6	36			
12.46	0.6	38			
12.48	0.7	39			
12.50	0.7	41			
12.52	0.7	42			
12.54	0.7	44			
12.56	0.8	45			
12.58	0.8	47			
12.60	0.8	48			
12.62	0.8	50			
12.64	0.9	51			
12.66	0.9	53			
12.68	0.9	54			
12.70	0.9	55			
12.72	0.9	57			
12.74	1.0	58			
12.76	1.0	59			
12.78	1.0	61			
12.80	1.0	62			
12.82	1.1	63			
12.84	1.1	64			

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Type II 24-hr 10-YR Rainfall=5.30"

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Summary for Reach 12R: 15" HDPE

Inflow Area = 0.389 ac, 77.13% Impervious, Inflow Depth > 4.38" for 10-YR event
Inflow = 2.51 cfs @ 11.94 hrs, Volume= 0.142 af
Outflow = 2.49 cfs @ 11.94 hrs, Volume= 0.142 af, Atten= 1%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.50 fps, Min. Travel Time= 0.6 min

Avg. Velocity= 1.37 fps, Avg. Travel Time= 2.1 min

Peak Storage= 95 cf @ 11.94 hrs

Average Depth at Peak Storage= 0.58'

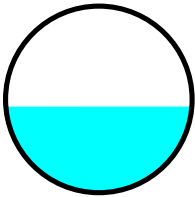
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.72 cfs

15.0" Round Pipe

n= 0.011

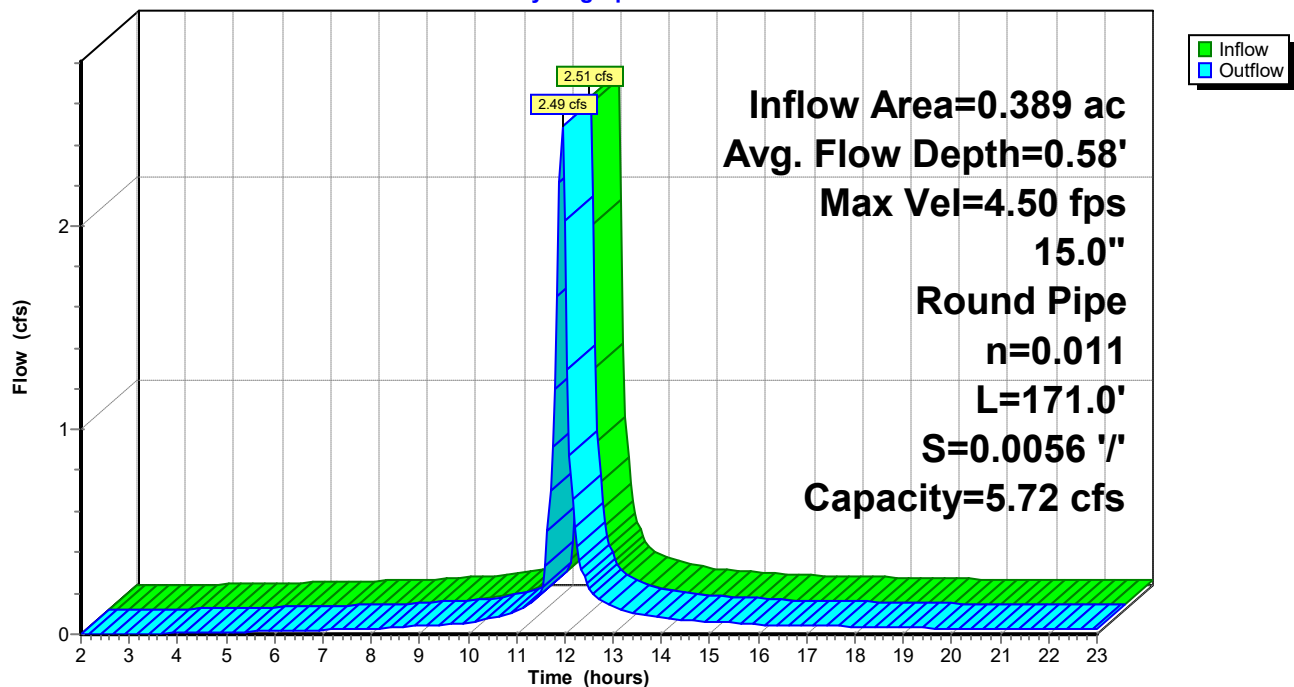
Length= 171.0' Slope= 0.0056 '/

Inlet Invert= 11.41', Outlet Invert= 10.45'



Reach 12R: 15" HDPE

Hydrograph



240060 - Concept*Type II 24-hr 10-YR Rainfall=5.30"*

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Stage-Area-Storage for Reach 12R: 15" HDPE

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
11.41	0.0	0	12.45	1.1	187
11.43	0.0	1	12.47	1.1	190
11.45	0.0	2	12.49	1.1	193
11.47	0.0	4	12.51	1.1	196
11.49	0.0	6	12.53	1.2	198
11.51	0.0	8	12.55	1.2	201
11.53	0.1	10	12.57	1.2	203
11.55	0.1	13	12.59	1.2	205
11.57	0.1	16	12.61	1.2	207
11.59	0.1	19	12.63	1.2	209
11.61	0.1	22	12.65	1.2	210
11.63	0.1	25			
11.65	0.2	28			
11.67	0.2	32			
11.69	0.2	35			
11.71	0.2	39			
11.73	0.2	42			
11.75	0.3	46			
11.77	0.3	50			
11.79	0.3	54			
11.81	0.3	58			
11.83	0.4	62			
11.85	0.4	66			
11.87	0.4	70			
11.89	0.4	74			
11.91	0.5	78			
11.93	0.5	83			
11.95	0.5	87			
11.97	0.5	91			
11.99	0.6	95			
12.01	0.6	100			
12.03	0.6	104			
12.05	0.6	108			
12.07	0.7	112			
12.09	0.7	117			
12.11	0.7	121			
12.13	0.7	125			
12.15	0.8	129			
12.17	0.8	134			
12.19	0.8	138			
12.21	0.8	142			
12.23	0.9	146			
12.25	0.9	150			
12.27	0.9	154			
12.29	0.9	158			
12.31	0.9	162			
12.33	1.0	166			
12.35	1.0	169			
12.37	1.0	173			
12.39	1.0	176			
12.41	1.1	180			
12.43	1.1	183			

240060 - Concept

Type II 24-hr 10-YR Rainfall=5.30"

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Summary for Pond 9P: SGW 1

Inflow Area = 2.255 ac, 61.34% Impervious, Inflow Depth > 3.96" for 10-YR event
 Inflow = 12.49 cfs @ 11.96 hrs, Volume= 0.744 af
 Outflow = 0.65 cfs @ 13.24 hrs, Volume= 0.222 af, Atten= 95%, Lag= 76.8 min
 Primary = 0.65 cfs @ 13.24 hrs, Volume= 0.222 af

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
 Peak Elev= 11.50' @ 13.24 hrs Surf.Area= 11,643 sf Storage= 23,091 cf

Plug-Flow detention time= 356.9 min calculated for 0.221 af (30% of inflow)
 Center-of-Mass det. time= 215.7 min (992.5 - 776.8)

Volume	Invert	Avail.Storage	Storage Description			
#1	7.44'	28,534 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
7.44	9,804	575.0	0.0	0	0	9,804
7.45	9,804	575.0	40.0	39	39	9,810
10.44	9,804	575.0	40.0	11,726	11,765	11,529
10.45	9,804	575.0	100.0	98	11,863	11,535
11.45	11,558	594.0	100.0	10,669	22,532	13,396
11.95	12,457	604.0	100.0	6,002	28,534	14,396

Device	Routing	Invert	Outlet Devices	
#1	Primary	10.12'	15.0" Round Culvert L= 31.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.12' / 10.00' S= 0.0039 '/' Cc= 0.900 n= 0.011, Flow Area= 1.23 sf	
#2	Device 1	11.45'	18.8' long Sharp-Crested Rectangular Weir 2 End Contraction(s)	

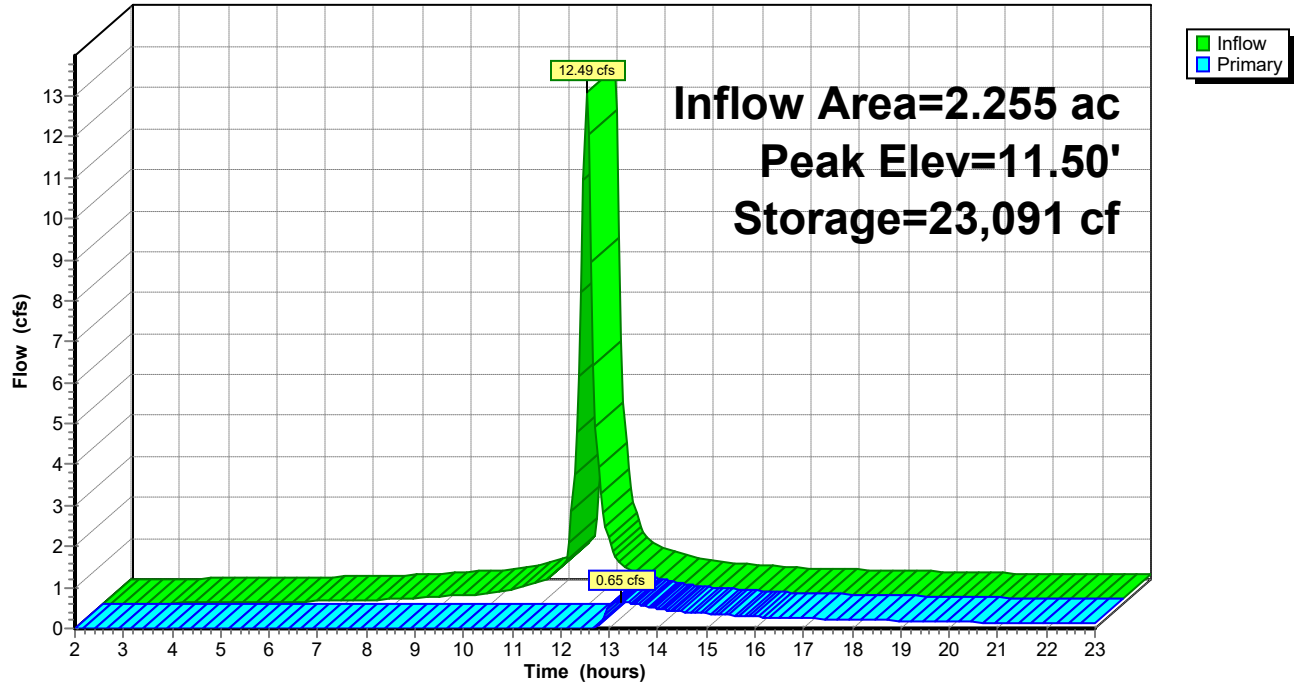
Primary OutFlow Max=0.65 cfs @ 13.24 hrs HW=11.50' (Free Discharge)

↑ **1=Culvert** (Passes 0.65 cfs of 4.31 cfs potential flow)

↑ **2=Sharp-Crested Rectangular Weir** (Weir Controls 0.65 cfs @ 0.72 fps)

Pond 9P: SGW 1

Hydrograph



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Type II 24-hr 10-YR Rainfall=5.30"

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Stage-Area-Storage for Pond 9P: SGW 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
7.44	9,804	0	10.04	9,804	10,196
7.49	9,804	196	10.09	9,804	10,392
7.54	9,804	392	10.14	9,804	10,588
7.59	9,804	588	10.19	9,804	10,784
7.64	9,804	784	10.24	9,804	10,980
7.69	9,804	980	10.29	9,804	11,177
7.74	9,804	1,176	10.34	9,804	11,373
7.79	9,804	1,373	10.39	9,804	11,569
7.84	9,804	1,569	10.44	9,804	11,765
7.89	9,804	1,765	10.49	9,871	12,256
7.94	9,804	1,961	10.54	9,956	12,752
7.99	9,804	2,157	10.59	10,041	13,252
8.04	9,804	2,353	10.64	10,126	13,756
8.09	9,804	2,549	10.69	10,212	14,265
8.14	9,804	2,745	10.74	10,298	14,777
8.19	9,804	2,941	10.79	10,384	15,294
8.24	9,804	3,137	10.84	10,471	15,816
8.29	9,804	3,333	10.89	10,558	16,341
8.34	9,804	3,529	10.94	10,645	16,872
8.39	9,804	3,726	10.99	10,733	17,406
8.44	9,804	3,922	11.04	10,821	17,945
8.49	9,804	4,118	11.09	10,910	18,488
8.54	9,804	4,314	11.14	10,999	19,036
8.59	9,804	4,510	11.19	11,088	19,588
8.64	9,804	4,706	11.24	11,178	20,145
8.69	9,804	4,902	11.29	11,268	20,706
8.74	9,804	5,098	11.34	11,358	21,271
8.79	9,804	5,294	11.39	11,449	21,842
8.84	9,804	5,490	11.44	11,540	22,416
8.89	9,804	5,686	11.49	11,629	22,996
8.94	9,804	5,882	11.54	11,717	23,579
8.99	9,804	6,078	11.59	11,806	24,167
9.04	9,804	6,275	11.64	11,896	24,760
9.09	9,804	6,471	11.69	11,985	25,357
9.14	9,804	6,667	11.74	12,075	25,958
9.19	9,804	6,863	11.79	12,166	26,564
9.24	9,804	7,059	11.84	12,256	27,175
9.29	9,804	7,255	11.89	12,347	27,790
9.34	9,804	7,451	11.94	12,439	28,410
9.39	9,804	7,647			
9.44	9,804	7,843			
9.49	9,804	8,039			
9.54	9,804	8,235			
9.59	9,804	8,431			
9.64	9,804	8,628			
9.69	9,804	8,824			
9.74	9,804	9,020			
9.79	9,804	9,216			
9.84	9,804	9,412			
9.89	9,804	9,608			
9.94	9,804	9,804			
9.99	9,804	10,000			

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Type II 24-hr 10-YR Rainfall=5.30"

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Summary for Pond 14P: SGW 2

Inflow Area = 0.855 ac, 50.24% Impervious, Inflow Depth > 3.68" for 10-YR event
 Inflow = 3.92 cfs @ 12.01 hrs, Volume= 0.262 af
 Outflow = 0.10 cfs @ 16.12 hrs, Volume= 0.042 af, Atten= 97%, Lag= 247.0 min
 Primary = 0.10 cfs @ 16.12 hrs, Volume= 0.042 af

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
 Peak Elev= 14.56' @ 16.12 hrs Surf.Area= 5,405 sf Storage= 9,620 cf

Plug-Flow detention time= 501.4 min calculated for 0.042 af (16% of inflow)
 Center-of-Mass det. time= 338.3 min (1,132.9 - 794.6)

Volume	Invert	Avail.Storage	Storage Description			
#1	10.54'	12,413 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
10.54	4,017	447.0	0.0	0	0	4,017
10.55	4,017	447.0	40.0	16	16	4,021
13.54	4,017	447.0	40.0	4,804	4,820	5,358
13.55	4,017	447.0	100.0	40	4,861	5,362
14.55	5,386	466.0	100.0	4,685	9,545	6,816
15.05	6,092	475.0	100.0	2,868	12,413	7,530

Device	Routing	Invert	Outlet Devices	
#1	Primary	13.25'	15.0" Round Culvert L= 35.5' Ke= 0.500 Inlet / Outlet Invert= 13.25' / 13.02' S= 0.0065 ' / Cc= 0.900 n= 0.011, Flow Area= 1.23 sf	
#2	Device 1	14.55'	18.8' long Sharp-Crested Rectangular Weir 2 End Contraction(s)	

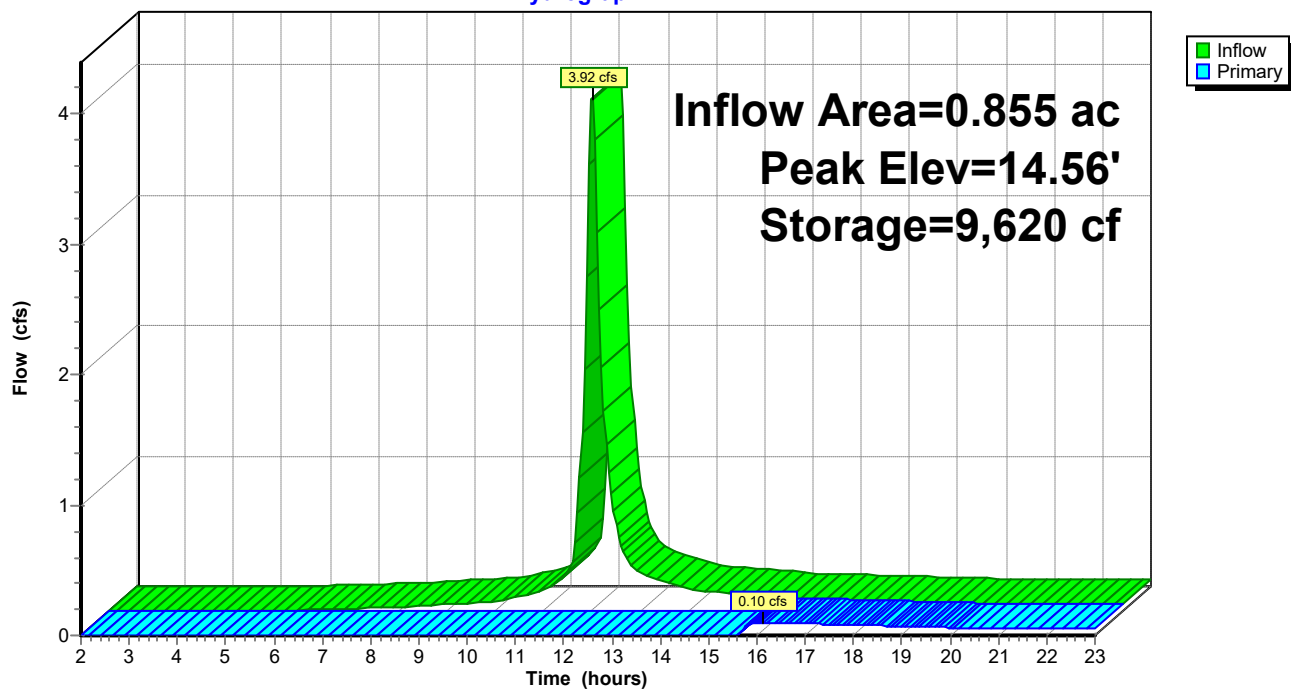
Primary OutFlow Max=0.10 cfs @ 16.12 hrs HW=14.56' (Free Discharge)

↑ **1=Culvert** (Passes 0.10 cfs of 4.45 cfs potential flow)

↑ **2=Sharp-Crested Rectangular Weir** (Weir Controls 0.10 cfs @ 0.38 fps)

Pond 14P: SGW 2

Hydrograph



240060 - Concept

Type II 24-hr 10-YR Rainfall=5.30"

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Stage-Area-Storage for Pond 14P: SGW 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
10.54	4,017	0	13.14	4,017	4,178
10.59	4,017	80	13.19	4,017	4,258
10.64	4,017	161	13.24	4,017	4,338
10.69	4,017	241	13.29	4,017	4,419
10.74	4,017	321	13.34	4,017	4,499
10.79	4,017	402	13.39	4,017	4,579
10.84	4,017	482	13.44	4,017	4,660
10.89	4,017	562	13.49	4,017	4,740
10.94	4,017	643	13.54	4,017	4,820
10.99	4,017	723	13.59	4,068	5,022
11.04	4,017	803	13.64	4,132	5,227
11.09	4,017	884	13.69	4,197	5,435
11.14	4,017	964	13.74	4,262	5,647
11.19	4,017	1,044	13.79	4,327	5,862
11.24	4,017	1,125	13.84	4,393	6,080
11.29	4,017	1,205	13.89	4,460	6,301
11.34	4,017	1,285	13.94	4,527	6,526
11.39	4,017	1,366	13.99	4,595	6,754
11.44	4,017	1,446	14.04	4,663	6,985
11.49	4,017	1,526	14.09	4,731	7,220
11.54	4,017	1,607	14.14	4,800	7,458
11.59	4,017	1,687	14.19	4,870	7,700
11.64	4,017	1,767	14.24	4,940	7,945
11.69	4,017	1,848	14.29	5,011	8,194
11.74	4,017	1,928	14.34	5,082	8,446
11.79	4,017	2,009	14.39	5,153	8,702
11.84	4,017	2,089	14.44	5,226	8,962
11.89	4,017	2,169	14.49	5,298	9,225
11.94	4,017	2,250	14.54	5,371	9,492
11.99	4,017	2,330	14.59	5,441	9,762
12.04	4,017	2,410	14.64	5,510	10,036
12.09	4,017	2,491	14.69	5,579	10,313
12.14	4,017	2,571	14.74	5,649	10,594
12.19	4,017	2,651	14.79	5,719	10,878
12.24	4,017	2,732	14.84	5,790	11,166
12.29	4,017	2,812	14.89	5,861	11,457
12.34	4,017	2,892	14.94	5,933	11,752
12.39	4,017	2,973	14.99	6,005	12,050
12.44	4,017	3,053	15.04	6,077	12,352
12.49	4,017	3,133			
12.54	4,017	3,214			
12.59	4,017	3,294			
12.64	4,017	3,374			
12.69	4,017	3,455			
12.74	4,017	3,535			
12.79	4,017	3,615			
12.84	4,017	3,696			
12.89	4,017	3,776			
12.94	4,017	3,856			
12.99	4,017	3,937			
13.04	4,017	4,017			
13.09	4,017	4,097			

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Type II 24-hr 10-YR Rainfall=5.30"

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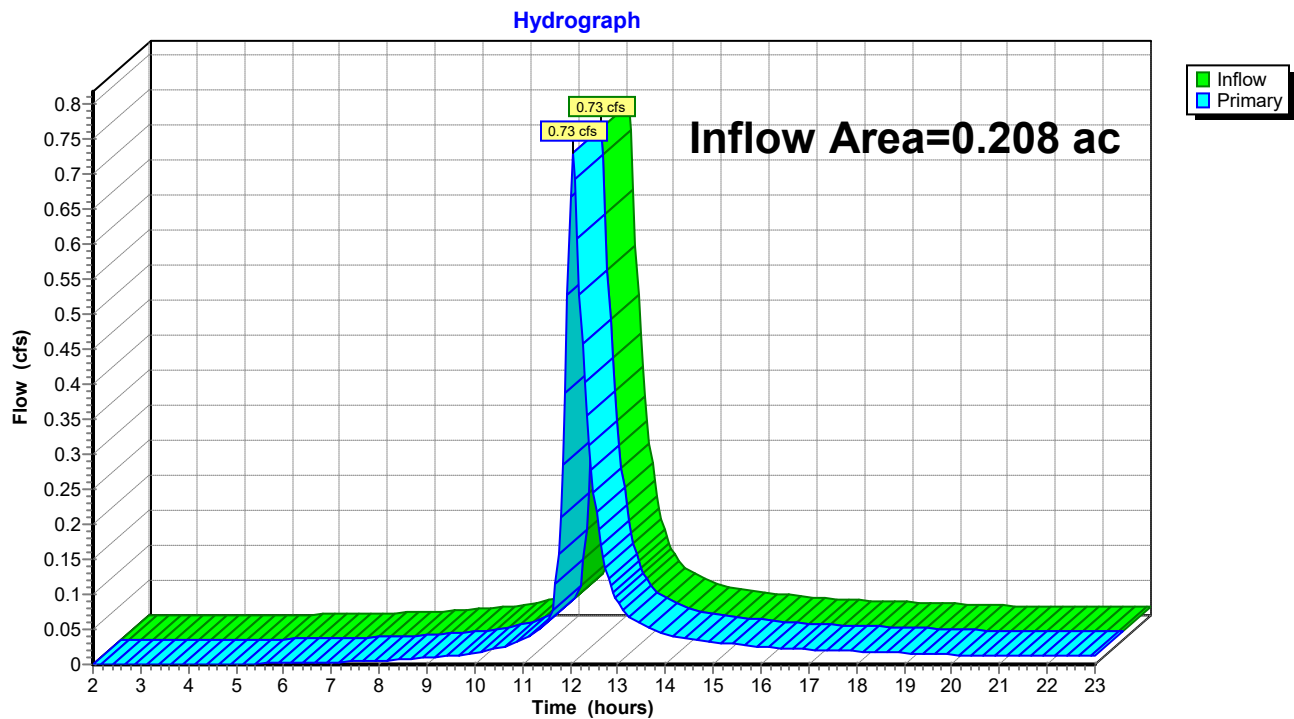
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Summary for Link 18L: POI 3 (EX SWM POND)

Inflow Area = 0.208 ac, 43.72% Impervious, Inflow Depth > 3.53" for 10-YR event
Inflow = 0.73 cfs @ 12.06 hrs, Volume= 0.061 af
Primary = 0.73 cfs @ 12.06 hrs, Volume= 0.061 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs

Link 18L: POI 3 (EX SWM POND)



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Type II 24-hr 100-YR Rainfall=7.60"

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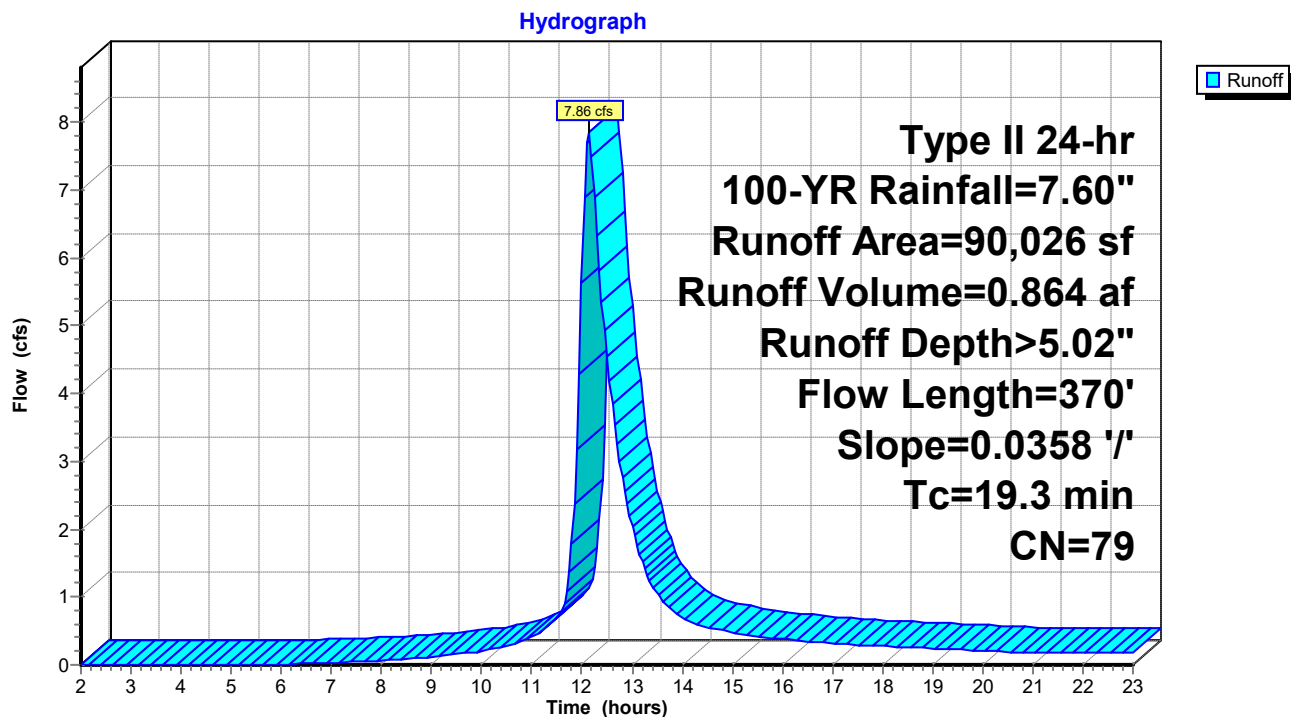
Summary for Subcatchment 1S: EX DA-1 (ORANGE)

Runoff = 7.86 cfs @ 12.14 hrs, Volume= 0.864 af, Depth> 5.02"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YR Rainfall=7.60"

	Area (sf)	CN	Description
*	224	98	existing shed
	89,802	79	50-75% Grass cover, Fair, HSG C
	90,026	79	Weighted Average
	89,802		99.75% Pervious Area
	224		0.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
18.1	150	0.0358	0.14		Sheet Flow, a-b
					Grass: Dense n= 0.240 P2= 2.40"
1.2	220	0.0358	3.05		Shallow Concentrated Flow, b-c
					Unpaved Kv= 16.1 fps
19.3	370	Total			

Subcatchment 1S: EX DA-1 (ORANGE)

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Type II 24-hr 100-YR Rainfall=7.60"

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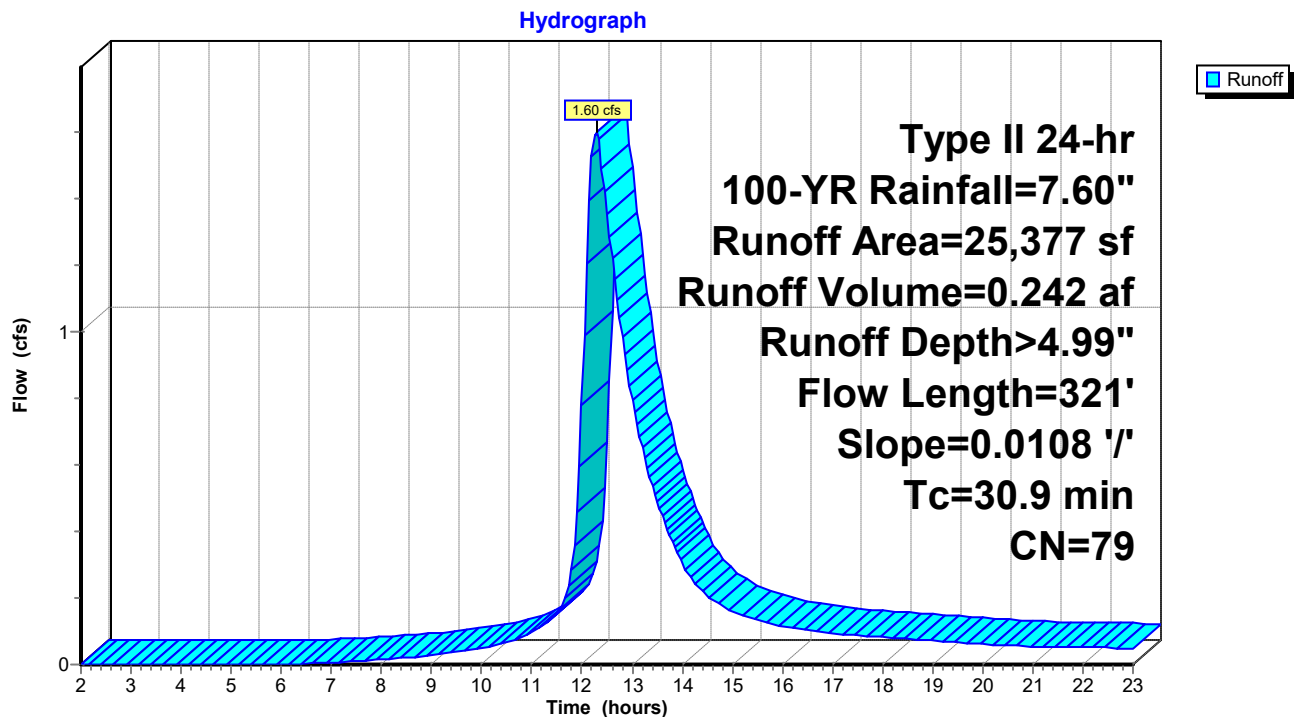
Summary for Subcatchment 2S: EX DA-2 (PURPLE)

Runoff = 1.60 cfs @ 12.28 hrs, Volume= 0.242 af, Depth> 4.99"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YR Rainfall=7.60"

Area (sf)	CN	Description
25,377	79	50-75% Grass cover, Fair, HSG C
25,377		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
29.2	150	0.0108	0.09		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
1.7	171	0.0108	1.67		Shallow Concentrated Flow, B-C
					Unpaved Kv= 16.1 fps
30.9	321	Total			

Subcatchment 2S: EX DA-2 (PURPLE)

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Type II 24-hr 100-YR Rainfall=7.60"

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Summary for Subcatchment 3S: EX DA-3 (BLUE)

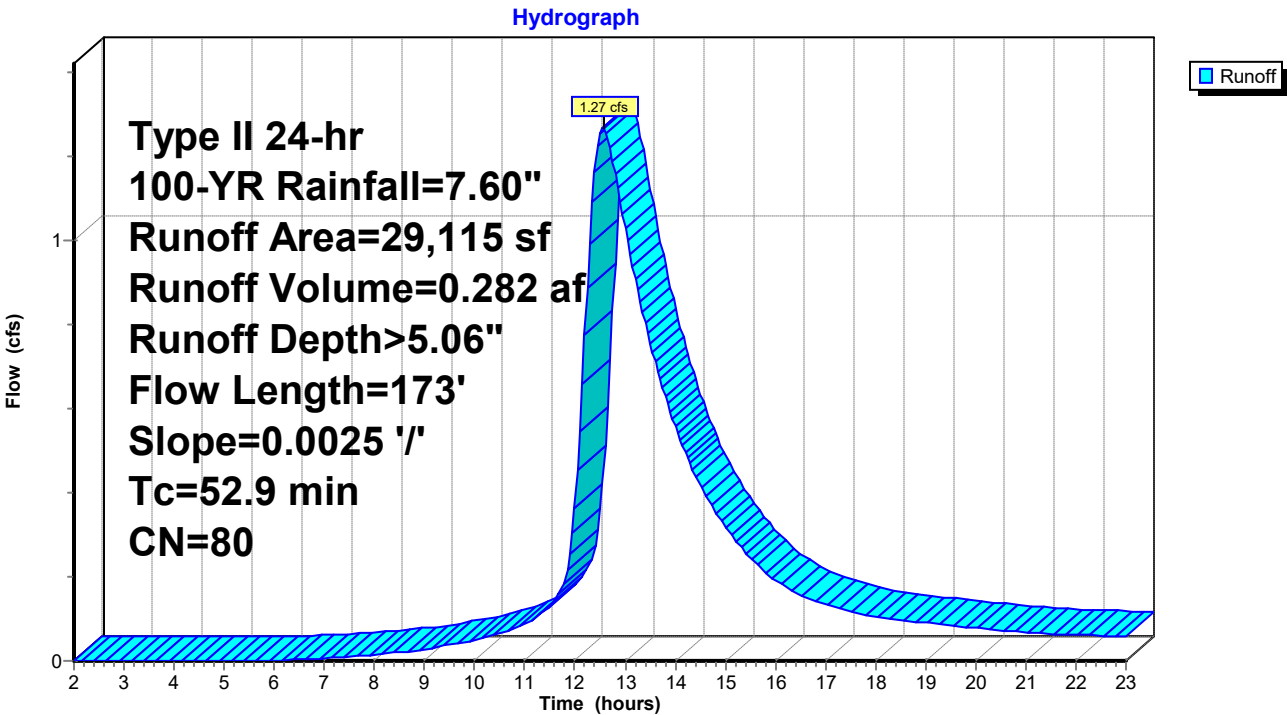
Runoff = 1.27 cfs @ 12.57 hrs, Volume= 0.282 af, Depth> 5.06"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YR Rainfall=7.60"

Area (sf)	CN	Description
28,117	79	50-75% Grass cover, Fair, HSG C
998	98	Paved parking, HSG C
29,115	80	Weighted Average
28,117		96.57% Pervious Area
998		3.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
52.4	150	0.0025	0.05		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
0.5	23	0.0025	0.81		Shallow Concentrated Flow, B-C
					Unpaved Kv= 16.1 fps
52.9	173	Total			

Subcatchment 3S: EX DA-3 (BLUE)



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Type II 24-hr 100-YR Rainfall=7.60"

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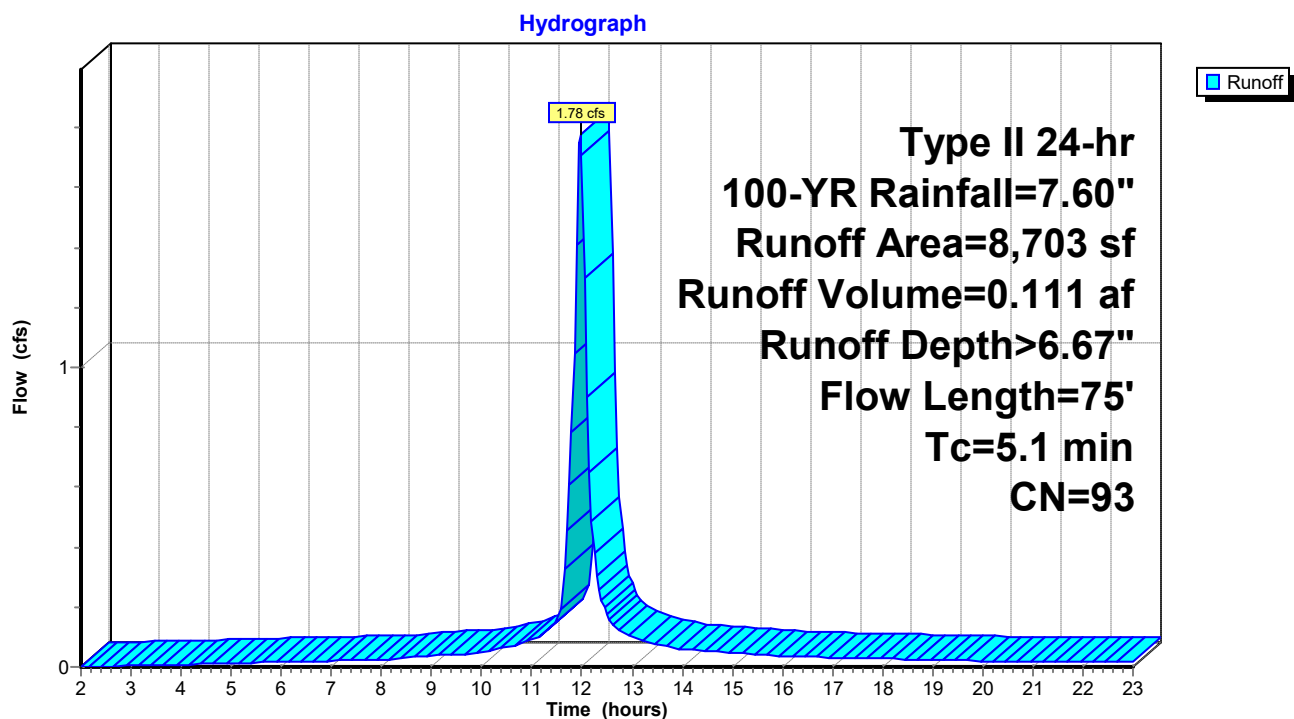
Summary for Subcatchment 4S: DA-1e

Runoff = 1.78 cfs @ 11.97 hrs, Volume= 0.111 af, Depth> 6.67"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YR Rainfall=7.60"

Area (sf)	CN	Description
6,909	98	Paved parking, HSG C
1,794	74	>75% Grass cover, Good, HSG C
8,703	93	Weighted Average
1,794		20.61% Pervious Area
6,909		79.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	14	0.0095	0.05		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
0.4	48	0.0134	1.86		Shallow Concentrated Flow, B-C
					Unpaved Kv= 16.1 fps
0.1	13	0.0075	1.76		Shallow Concentrated Flow, C-D
					Paved Kv= 20.3 fps
5.1	75	Total			

Subcatchment 4S: DA-1e

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Type II 24-hr 100-YR Rainfall=7.60"

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Summary for Subcatchment 5S: DA-1c

Runoff = 2.56 cfs @ 11.94 hrs, Volume= 0.148 af, Depth> 7.23"

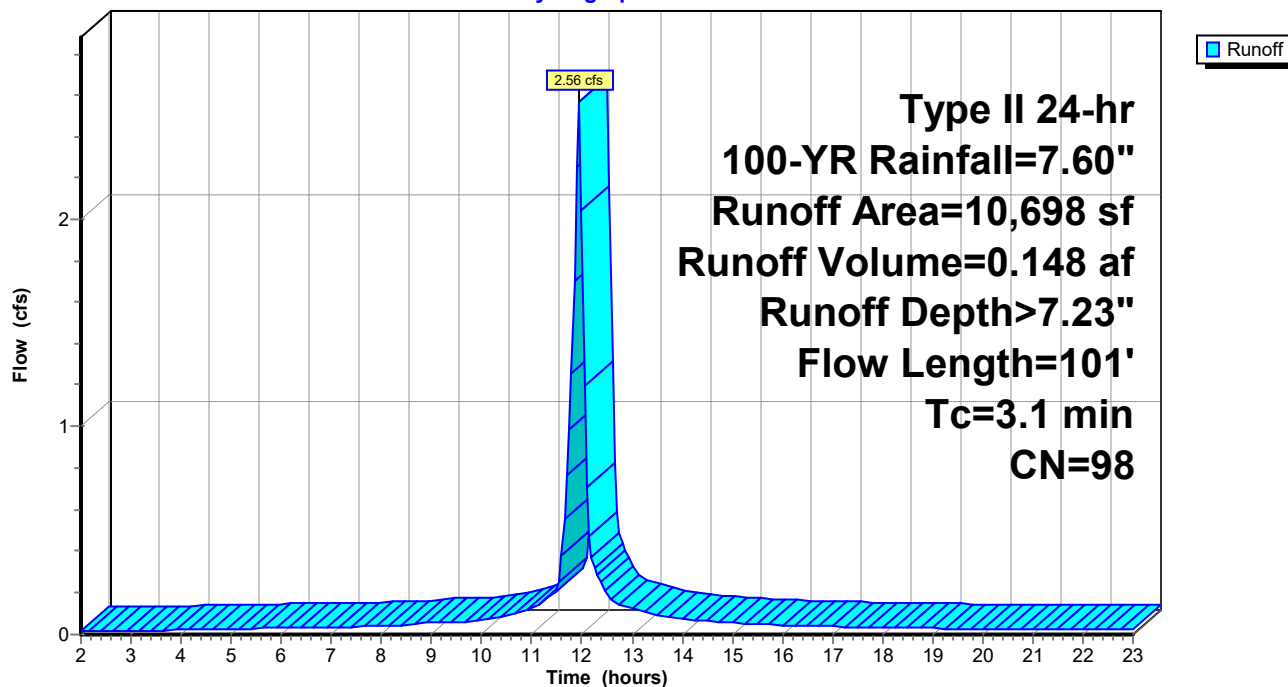
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YR Rainfall=7.60"

Area (sf)	CN	Description
10,698	98	Paved parking, HSG C
10,698		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.8	67	0.0016	0.40		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 2.40"
0.3	34	0.0100	2.03		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
3.1	101	Total			

Subcatchment 5S: DA-1c

Hydrograph



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Type II 24-hr 100-YR Rainfall=7.60"

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Summary for Subcatchment 8S: DA-1b

Runoff = 1.57 cfs @ 11.91 hrs, Volume= 0.083 af, Depth> 7.23"

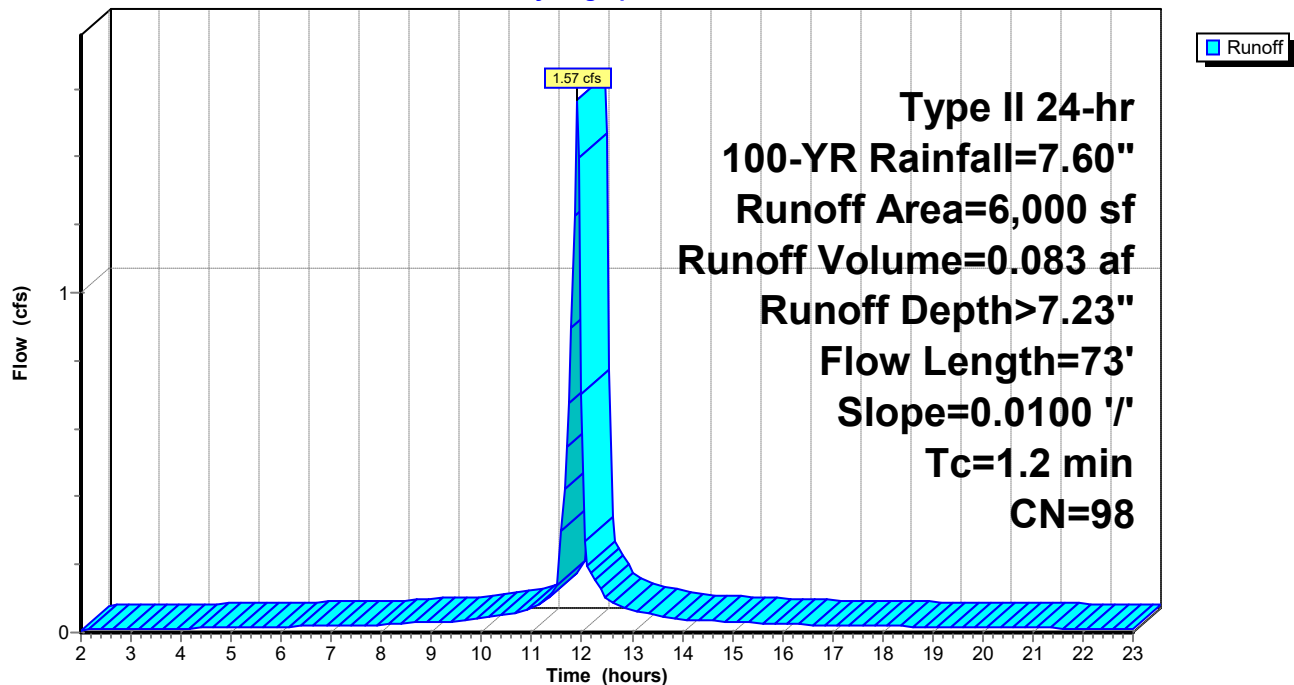
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YR Rainfall=7.60"

Area (sf)	CN	Description
6,000	98	Paved parking, HSG C
6,000		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.9	39	0.0100	0.75		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 2.40"
0.3	34	0.0100	2.03		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
1.2	73	Total			

Subcatchment 8S: DA-1b

Hydrograph



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Type II 24-hr 100-YR Rainfall=7.60"

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Summary for Subcatchment 10S: DA-1a

Runoff = 11.75 cfs @ 11.98 hrs, Volume= 0.709 af, Depth> 5.74"

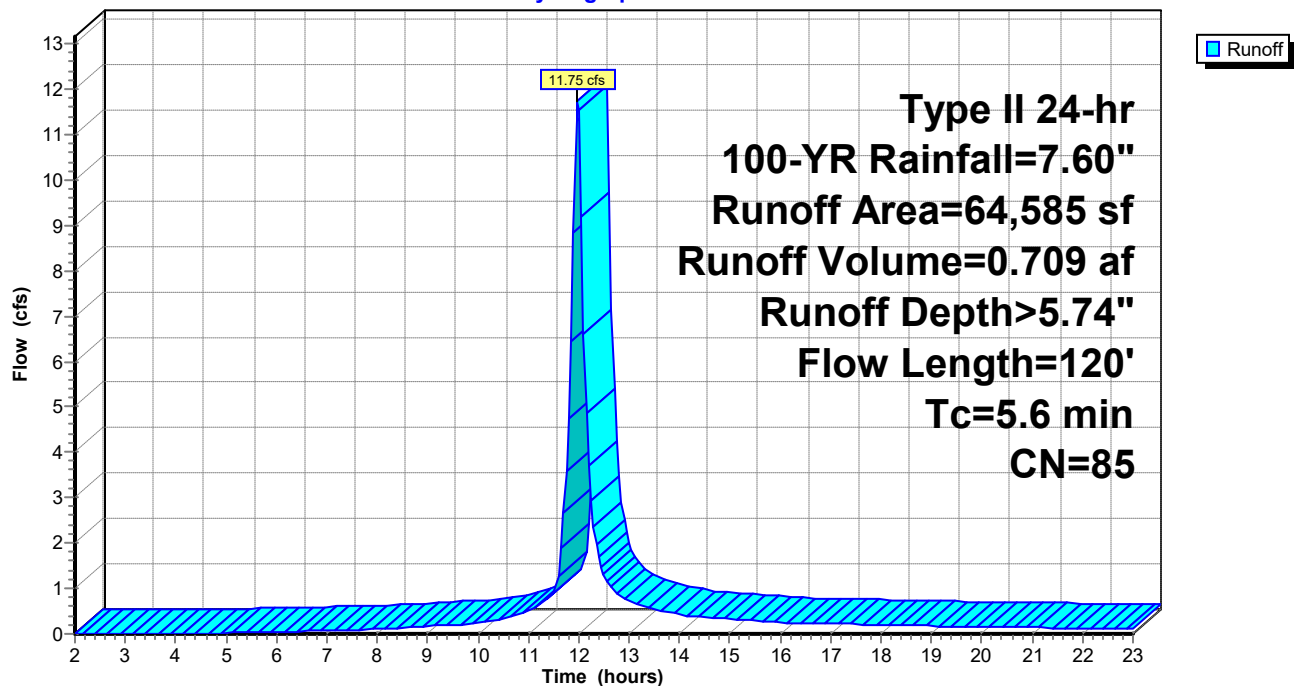
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YR Rainfall=7.60"

Area (sf)	CN	Description
30,489	98	Paved parking, HSG C
34,096	74	>75% Grass cover, Good, HSG C
64,585	85	Weighted Average
34,096		52.79% Pervious Area
30,489		47.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.0	33	0.0439	0.11		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
0.6	87	0.0253	2.56		Shallow Concentrated Flow, B-C
					Unpaved Kv= 16.1 fps
5.6	120	Total			

Subcatchment 10S: DA-1a

Hydrograph



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Type II 24-hr 100-YR Rainfall=7.60"

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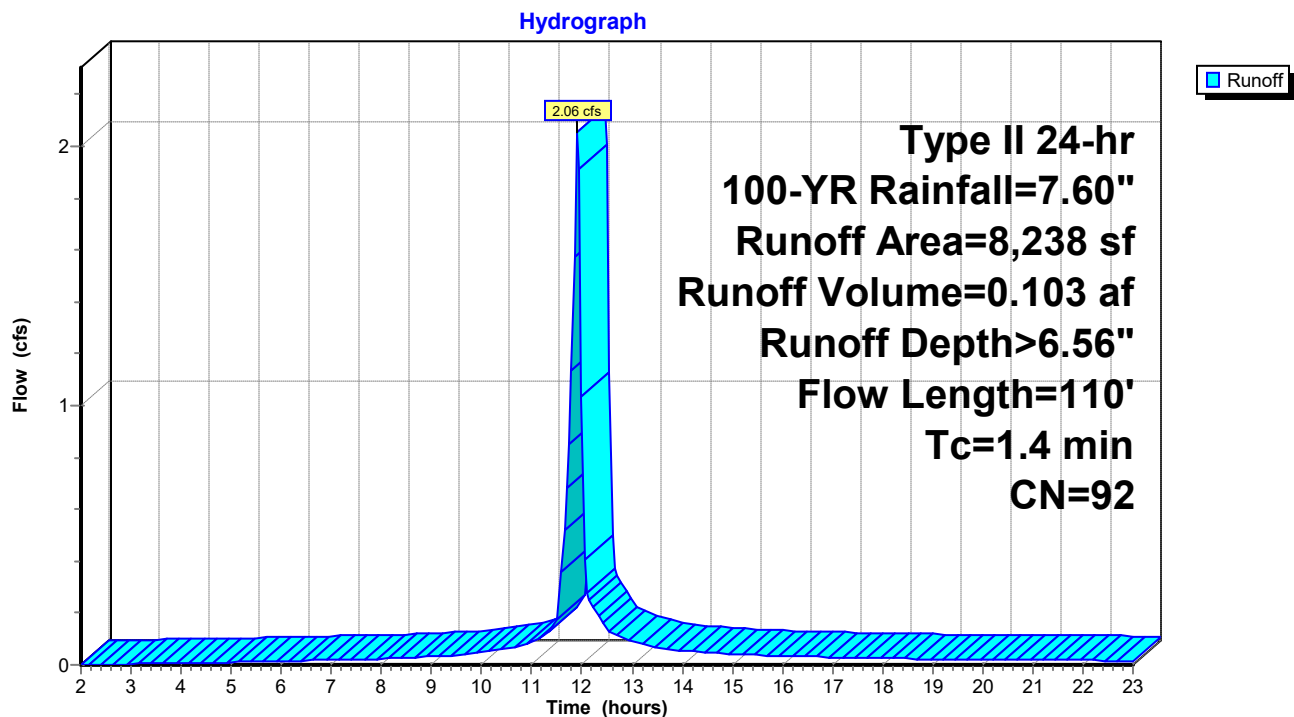
Summary for Subcatchment 13S: DA-1d

Runoff = 2.06 cfs @ 11.91 hrs, Volume= 0.103 af, Depth> 6.56"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YR Rainfall=7.60"

Area (sf)	CN	Description
6,157	98	Paved parking, HSG C
2,081	74	>75% Grass cover, Good, HSG C
8,238	92	Weighted Average
2,081		25.26% Pervious Area
6,157		74.74% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.7	34	0.0156	0.87		Sheet Flow, A-B
					Smooth surfaces n= 0.011 P2= 2.40"
0.7	76	0.0075	1.76		Shallow Concentrated Flow, B-C
					Paved Kv= 20.3 fps
1.4	110	Total			

Subcatchment 13S: DA-1d

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Type II 24-hr 100-YR Rainfall=7.60"

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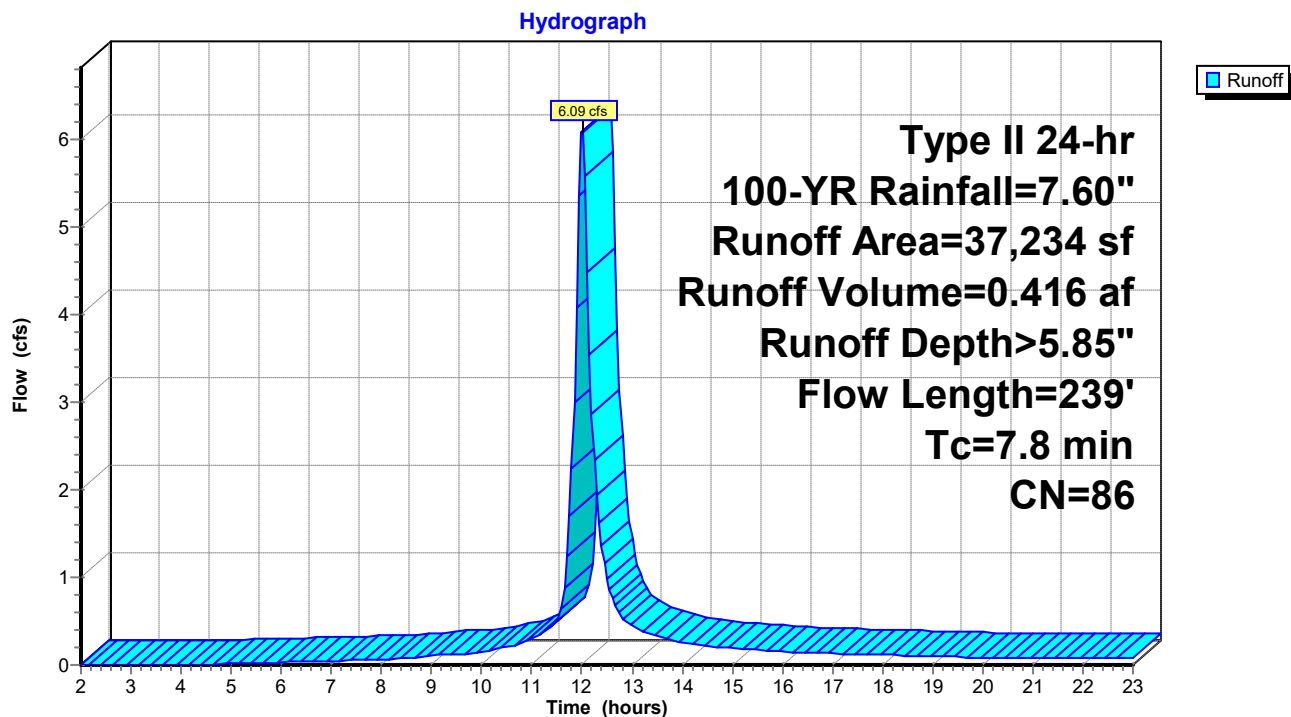
Summary for Subcatchment 15S: DA TO SGW 2

Runoff = 6.09 cfs @ 12.00 hrs, Volume= 0.416 af, Depth> 5.85"

Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YR Rainfall=7.60"

Area (sf)	CN	Description
18,708	98	Paved parking, HSG C
18,526	74	>75% Grass cover, Good, HSG C
37,234	86	Weighted Average
18,526		49.76% Pervious Area
18,708		50.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.6	14	0.0095	0.05		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
0.4	35	0.0075	1.39		Shallow Concentrated Flow, B-C
					Unpaved Kv= 16.1 fps
2.8	190	0.0051	1.15		Shallow Concentrated Flow, C-D
					Unpaved Kv= 16.1 fps
7.8	239	Total			

Subcatchment 15S: DA TO SGW 2

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Type II 24-hr 100-YR Rainfall=7.60"

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Summary for Subcatchment 16S: DA-3a

Runoff = 0.71 cfs @ 12.06 hrs, Volume= 0.064 af, Depth> 6.07"

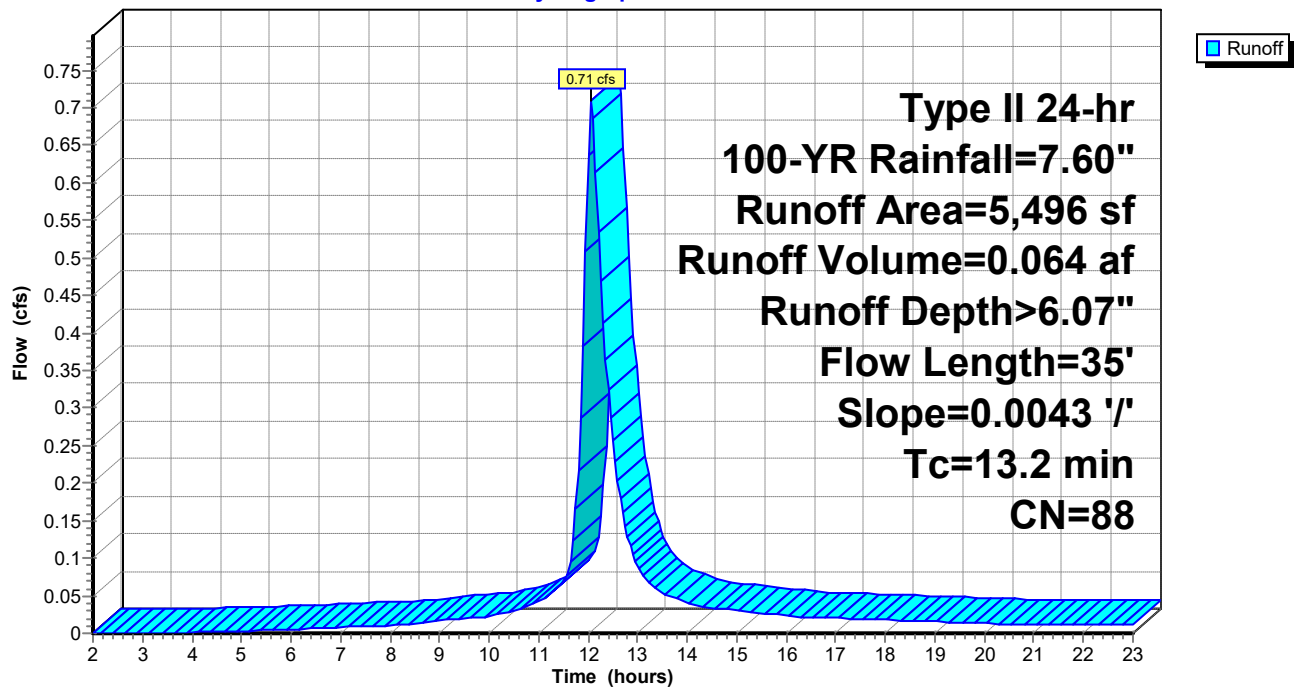
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YR Rainfall=7.60"

Area (sf)	CN	Description
3,166	98	Paved parking, HSG C
2,330	74	>75% Grass cover, Good, HSG C
5,496	88	Weighted Average
2,330		42.39% Pervious Area
3,166		57.61% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.2	35	0.0043	0.04		Sheet Flow, A-B Grass: Dense n= 0.240 P2= 2.40"

Subcatchment 16S: DA-3a

Hydrograph



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Type II 24-hr 100-YR Rainfall=7.60"

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Summary for Subcatchment 17S: DA-3b

Runoff = 0.45 cfs @ 12.04 hrs, Volume= 0.034 af, Depth> 5.04"

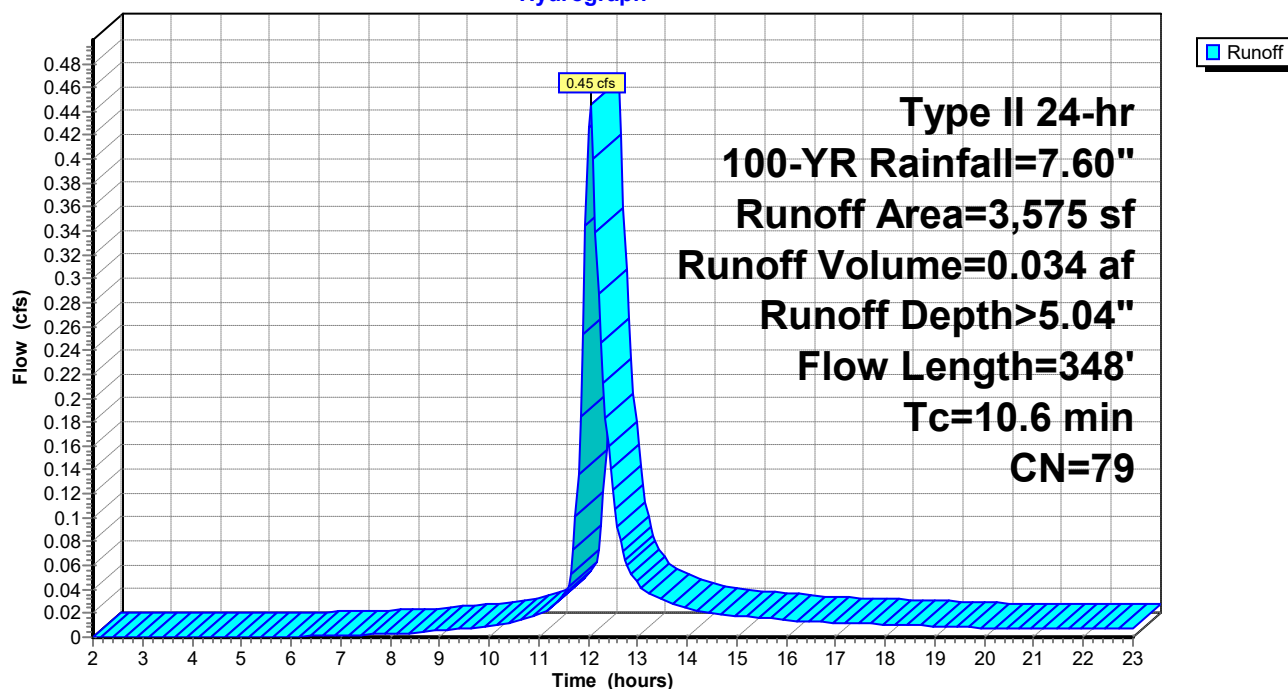
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-YR Rainfall=7.60"

Area (sf)	CN	Description
800	98	Paved parking, HSG C
2,775	74	>75% Grass cover, Good, HSG C
3,575	79	Weighted Average
2,775		77.62% Pervious Area
800		22.38% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.5	46	0.0222	0.09		Sheet Flow, A-B
					Grass: Dense n= 0.240 P2= 2.40"
0.4	100	0.0050	3.79	2.98	Pipe Channel, 12" HDPE
					12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25'
					n= 0.011
1.7	202	0.0149	1.97		Shallow Concentrated Flow, EX SWALE TO INLET 4
					Unpaved Kv= 16.1 fps
10.6	348	Total			

Subcatchment 17S: DA-3b

Hydrograph



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Type II 24-hr 100-YR Rainfall=7.60"

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Summary for Reach 6R: 15" HDPE

Inflow Area = 0.246 ac, 100.00% Impervious, Inflow Depth > 7.23" for 100-YR event
Inflow = 2.56 cfs @ 11.94 hrs, Volume= 0.148 af
Outflow = 2.55 cfs @ 11.95 hrs, Volume= 0.148 af, Atten= 1%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.36 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.39 fps, Avg. Travel Time= 0.9 min

Peak Storage= 42 cf @ 11.95 hrs

Average Depth at Peak Storage= 0.60'

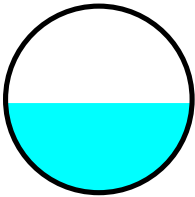
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.44 cfs

15.0" Round Pipe

n= 0.011 PVC, smooth interior

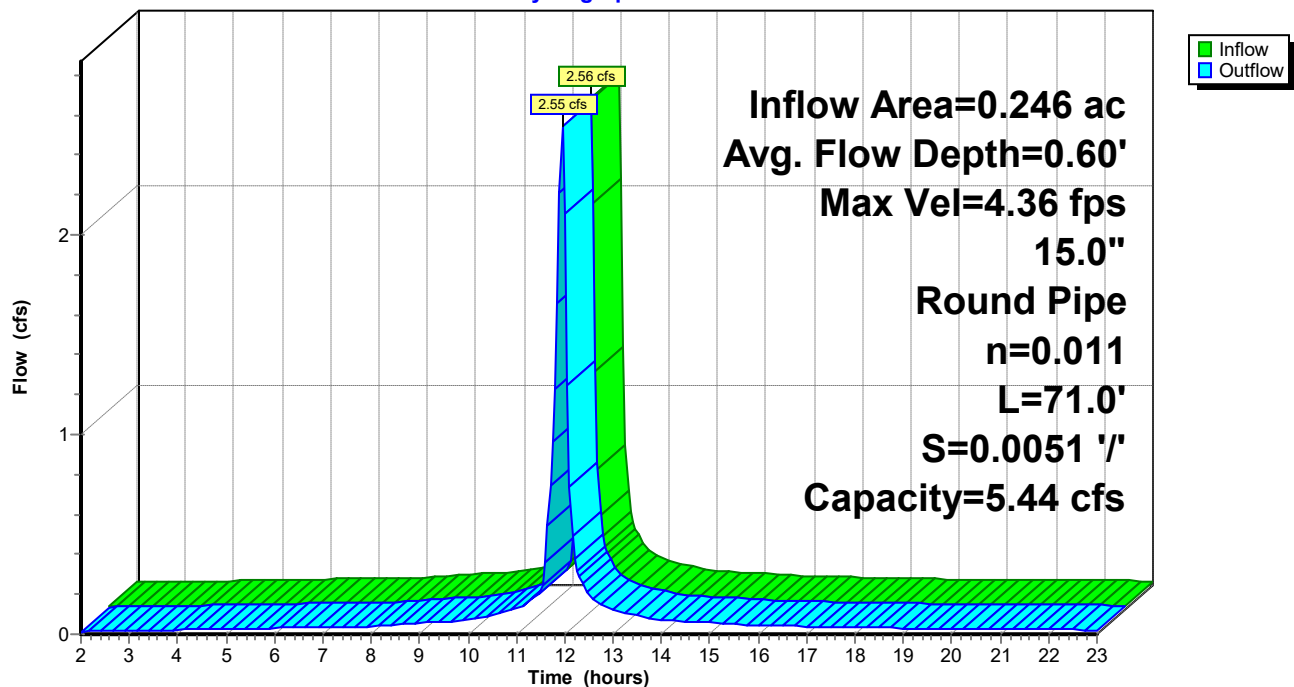
Length= 71.0' Slope= 0.0051 '/

Inlet Invert= 11.16', Outlet Invert= 10.80'



Reach 6R: 15" HDPE

Hydrograph



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Stage-Area-Storage for Reach 6R: 15" HDPE

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
11.16	0.0	0	12.20	1.1	77
11.18	0.0	0	12.22	1.1	79
11.20	0.0	1	12.24	1.1	80
11.22	0.0	2	12.26	1.1	81
11.24	0.0	2	12.28	1.2	82
11.26	0.0	3	12.30	1.2	83
11.28	0.1	4	12.32	1.2	84
11.30	0.1	5	12.34	1.2	85
11.32	0.1	7	12.36	1.2	86
11.34	0.1	8	12.38	1.2	87
11.36	0.1	9	12.40	1.2	87
11.38	0.1	10			
11.40	0.2	12			
11.42	0.2	13			
11.44	0.2	15			
11.46	0.2	16			
11.48	0.2	18			
11.50	0.3	19			
11.52	0.3	21			
11.54	0.3	22			
11.56	0.3	24			
11.58	0.4	26			
11.60	0.4	27			
11.62	0.4	29			
11.64	0.4	31			
11.66	0.5	33			
11.68	0.5	34			
11.70	0.5	36			
11.72	0.5	38			
11.74	0.6	40			
11.76	0.6	41			
11.78	0.6	43			
11.80	0.6	45			
11.82	0.7	47			
11.84	0.7	48			
11.86	0.7	50			
11.88	0.7	52			
11.90	0.8	54			
11.92	0.8	55			
11.94	0.8	57			
11.96	0.8	59			
11.98	0.9	61			
12.00	0.9	62			
12.02	0.9	64			
12.04	0.9	66			
12.06	0.9	67			
12.08	1.0	69			
12.10	1.0	70			
12.12	1.0	72			
12.14	1.0	73			
12.16	1.1	75			
12.18	1.1	76			

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Type II 24-hr 100-YR Rainfall=7.60"

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Summary for Reach 7R: 15" HDPE

Inflow Area = 0.383 ac, 100.00% Impervious, Inflow Depth > 7.23" for 100-YR event
Inflow = 4.04 cfs @ 11.93 hrs, Volume= 0.231 af
Outflow = 4.03 cfs @ 11.93 hrs, Volume= 0.231 af, Atten= 0%, Lag= 0.2 min

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.78 fps, Min. Travel Time= 0.2 min

Avg. Velocity= 1.57 fps, Avg. Travel Time= 0.8 min

Peak Storage= 60 cf @ 11.93 hrs

Average Depth at Peak Storage= 0.81'

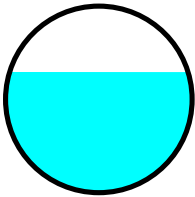
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.36 cfs

15.0" Round Pipe

n= 0.011

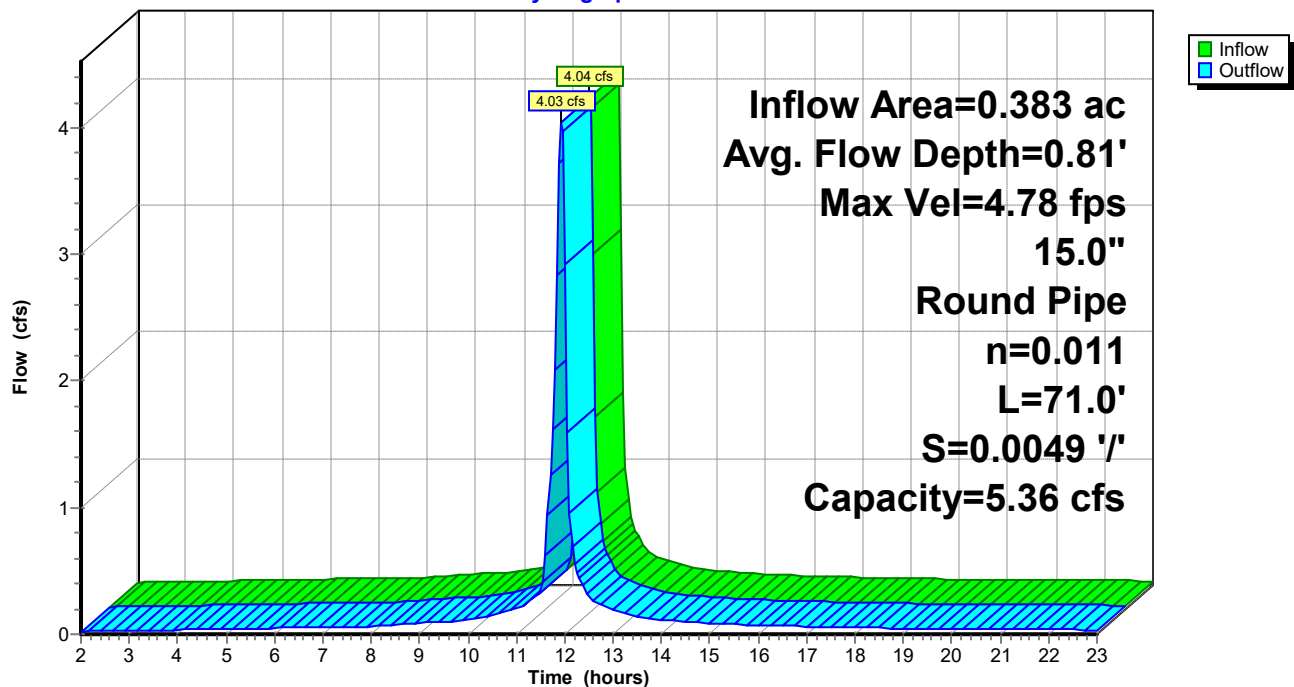
Length= 71.0' Slope= 0.0049 '/

Inlet Invert= 10.80', Outlet Invert= 10.45'



Reach 7R: 15" HDPE

Hydrograph



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Stage-Area-Storage for Reach 7R: 15" HDPE

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
10.80	0.0	0	11.84	1.1	77
10.82	0.0	0	11.86	1.1	79
10.84	0.0	1	11.88	1.1	80
10.86	0.0	2	11.90	1.1	81
10.88	0.0	2	11.92	1.2	82
10.90	0.0	3	11.94	1.2	83
10.92	0.1	4	11.96	1.2	84
10.94	0.1	5	11.98	1.2	85
10.96	0.1	7	12.00	1.2	86
10.98	0.1	8	12.02	1.2	87
11.00	0.1	9	12.04	1.2	87
11.02	0.1	10			
11.04	0.2	12			
11.06	0.2	13			
11.08	0.2	15			
11.10	0.2	16			
11.12	0.2	18			
11.14	0.3	19			
11.16	0.3	21			
11.18	0.3	22			
11.20	0.3	24			
11.22	0.4	26			
11.24	0.4	27			
11.26	0.4	29			
11.28	0.4	31			
11.30	0.5	33			
11.32	0.5	34			
11.34	0.5	36			
11.36	0.5	38			
11.38	0.6	40			
11.40	0.6	41			
11.42	0.6	43			
11.44	0.6	45			
11.46	0.7	47			
11.48	0.7	48			
11.50	0.7	50			
11.52	0.7	52			
11.54	0.8	54			
11.56	0.8	55			
11.58	0.8	57			
11.60	0.8	59			
11.62	0.9	61			
11.64	0.9	62			
11.66	0.9	64			
11.68	0.9	66			
11.70	0.9	67			
11.72	1.0	69			
11.74	1.0	70			
11.76	1.0	72			
11.78	1.0	73			
11.80	1.1	75			
11.82	1.1	76			

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Type II 24-hr 100-YR Rainfall=7.60"

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Summary for Reach 11R: 15" HDPE

Inflow Area = 0.200 ac, 79.39% Impervious, Inflow Depth > 6.67" for 100-YR event
Inflow = 1.78 cfs @ 11.97 hrs, Volume= 0.111 af
Outflow = 1.78 cfs @ 11.97 hrs, Volume= 0.111 af, Atten= 0%, Lag= 0.3 min

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs

Max. Velocity= 3.96 fps, Min. Travel Time= 0.3 min

Avg. Velocity= 1.24 fps, Avg. Travel Time= 0.8 min

Peak Storage= 27 cf @ 11.97 hrs

Average Depth at Peak Storage= 0.49'

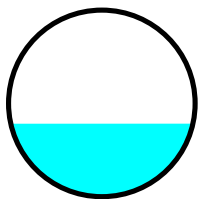
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.49 cfs

15.0" Round Pipe

n= 0.011

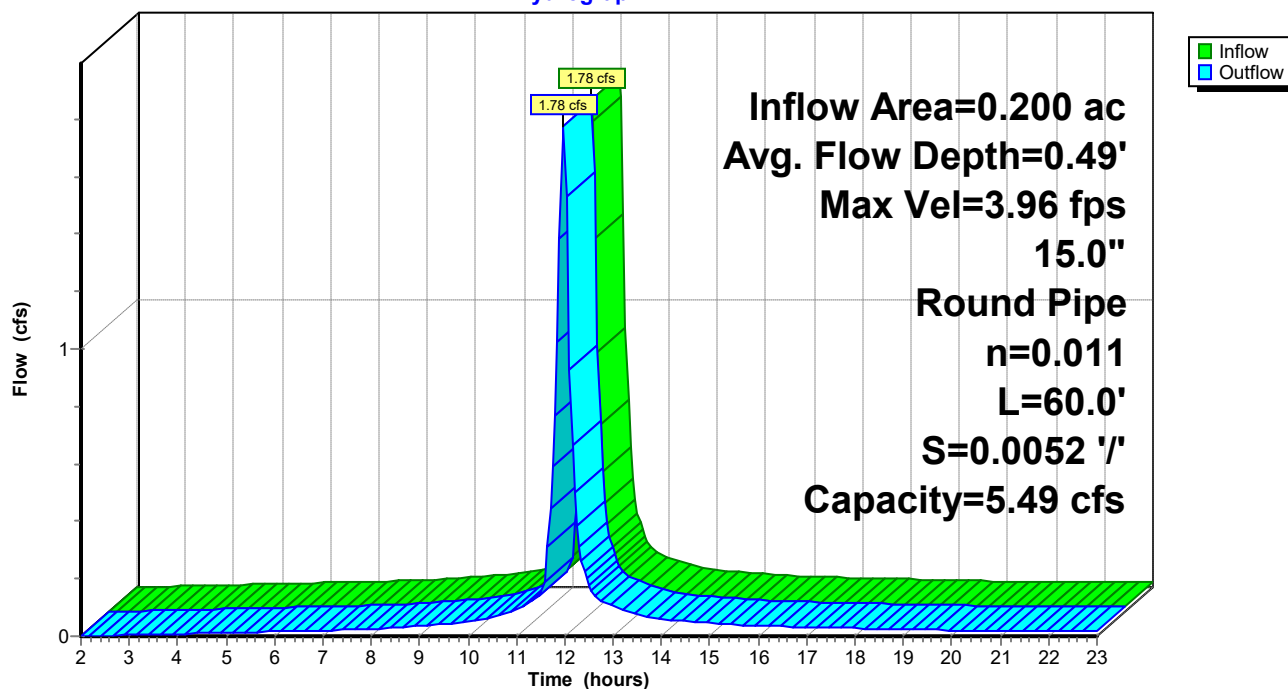
Length= 60.0' Slope= 0.0052 '/

Inlet Invert= 11.82', Outlet Invert= 11.51'



Reach 11R: 15" HDPE

Hydrograph



240060 - Concept*Type II 24-hr 100-YR Rainfall=7.60"*

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Stage-Area-Storage for Reach 11R: 15" HDPE

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
11.82	0.0	0	12.86	1.1	65
11.84	0.0	0	12.88	1.1	67
11.86	0.0	1	12.90	1.1	68
11.88	0.0	1	12.92	1.1	69
11.90	0.0	2	12.94	1.2	70
11.92	0.0	3	12.96	1.2	70
11.94	0.1	4	12.98	1.2	71
11.96	0.1	5	13.00	1.2	72
11.98	0.1	6	13.02	1.2	73
12.00	0.1	7	13.04	1.2	73
12.02	0.1	8	13.06	1.2	74
12.04	0.1	9			
12.06	0.2	10			
12.08	0.2	11			
12.10	0.2	12			
12.12	0.2	14			
12.14	0.2	15			
12.16	0.3	16			
12.18	0.3	18			
12.20	0.3	19			
12.22	0.3	20			
12.24	0.4	22			
12.26	0.4	23			
12.28	0.4	25			
12.30	0.4	26			
12.32	0.5	28			
12.34	0.5	29			
12.36	0.5	30			
12.38	0.5	32			
12.40	0.6	33			
12.42	0.6	35			
12.44	0.6	36			
12.46	0.6	38			
12.48	0.7	39			
12.50	0.7	41			
12.52	0.7	42			
12.54	0.7	44			
12.56	0.8	45			
12.58	0.8	47			
12.60	0.8	48			
12.62	0.8	50			
12.64	0.9	51			
12.66	0.9	53			
12.68	0.9	54			
12.70	0.9	55			
12.72	0.9	57			
12.74	1.0	58			
12.76	1.0	59			
12.78	1.0	61			
12.80	1.0	62			
12.82	1.1	63			
12.84	1.1	64			

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Type II 24-hr 100-YR Rainfall=7.60"

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Summary for Reach 12R: 15" HDPE

Inflow Area = 0.389 ac, 77.13% Impervious, Inflow Depth > 6.62" for 100-YR event
Inflow = 3.69 cfs @ 11.94 hrs, Volume= 0.214 af
Outflow = 3.67 cfs @ 11.94 hrs, Volume= 0.214 af, Atten= 1%, Lag= 0.4 min

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs

Max. Velocity= 4.95 fps, Min. Travel Time= 0.6 min

Avg. Velocity= 1.55 fps, Avg. Travel Time= 1.8 min

Peak Storage= 127 cf @ 11.94 hrs

Average Depth at Peak Storage= 0.73'

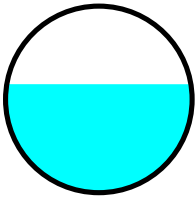
Bank-Full Depth= 1.25' Flow Area= 1.2 sf, Capacity= 5.72 cfs

15.0" Round Pipe

n= 0.011

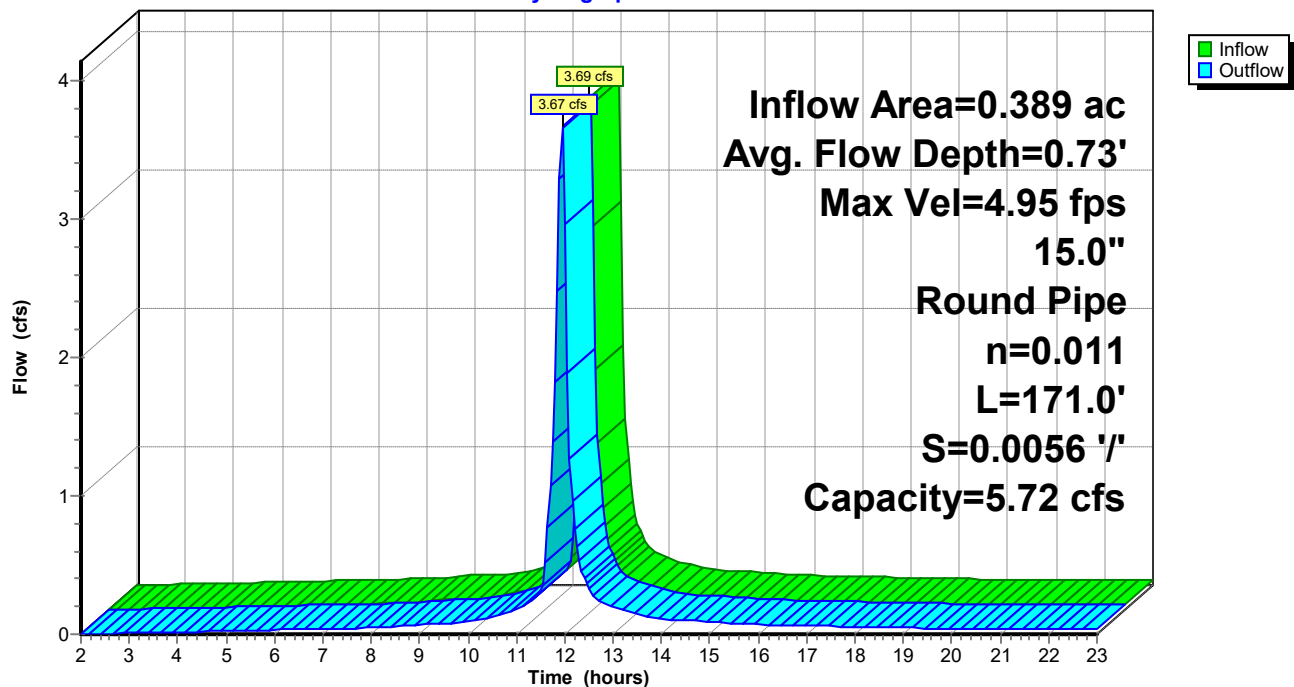
Length= 171.0' Slope= 0.0056 '/

Inlet Invert= 11.41', Outlet Invert= 10.45'



Reach 12R: 15" HDPE

Hydrograph



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Type II 24-hr 100-YR Rainfall=7.60"

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Stage-Area-Storage for Reach 12R: 15" HDPE

Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)	Elevation (feet)	End-Area (sq-ft)	Storage (cubic-feet)
11.41	0.0	0	12.45	1.1	187
11.43	0.0	1	12.47	1.1	190
11.45	0.0	2	12.49	1.1	193
11.47	0.0	4	12.51	1.1	196
11.49	0.0	6	12.53	1.2	198
11.51	0.0	8	12.55	1.2	201
11.53	0.1	10	12.57	1.2	203
11.55	0.1	13	12.59	1.2	205
11.57	0.1	16	12.61	1.2	207
11.59	0.1	19	12.63	1.2	209
11.61	0.1	22	12.65	1.2	210
11.63	0.1	25			
11.65	0.2	28			
11.67	0.2	32			
11.69	0.2	35			
11.71	0.2	39			
11.73	0.2	42			
11.75	0.3	46			
11.77	0.3	50			
11.79	0.3	54			
11.81	0.3	58			
11.83	0.4	62			
11.85	0.4	66			
11.87	0.4	70			
11.89	0.4	74			
11.91	0.5	78			
11.93	0.5	83			
11.95	0.5	87			
11.97	0.5	91			
11.99	0.6	95			
12.01	0.6	100			
12.03	0.6	104			
12.05	0.6	108			
12.07	0.7	112			
12.09	0.7	117			
12.11	0.7	121			
12.13	0.7	125			
12.15	0.8	129			
12.17	0.8	134			
12.19	0.8	138			
12.21	0.8	142			
12.23	0.9	146			
12.25	0.9	150			
12.27	0.9	154			
12.29	0.9	158			
12.31	0.9	162			
12.33	1.0	166			
12.35	1.0	169			
12.37	1.0	173			
12.39	1.0	176			
12.41	1.1	180			
12.43	1.1	183			

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Type II 24-hr 100-YR Rainfall=7.60"

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Summary for Pond 9P: SGW 1

Inflow Area = 2.255 ac, 61.34% Impervious, Inflow Depth > 6.14" for 100-YR event
 Inflow = 19.00 cfs @ 11.96 hrs, Volume= 1.154 af
 Outflow = 5.38 cfs @ 12.19 hrs, Volume= 0.631 af, Atten= 72%, Lag= 14.0 min
 Primary = 5.38 cfs @ 12.19 hrs, Volume= 0.631 af

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
 Peak Elev= 11.85' @ 12.19 hrs Surf.Area= 12,280 sf Storage= 27,334 cf

Plug-Flow detention time= 207.7 min calculated for 0.629 af (55% of inflow)
 Center-of-Mass det. time= 104.5 min (871.8 - 767.3)

Volume	Invert	Avail.Storage	Storage Description			
#1	7.44'	28,534 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
7.44	9,804	575.0	0.0	0	0	9,804
7.45	9,804	575.0	40.0	39	39	9,810
10.44	9,804	575.0	40.0	11,726	11,765	11,529
10.45	9,804	575.0	100.0	98	11,863	11,535
11.45	11,558	594.0	100.0	10,669	22,532	13,396
11.95	12,457	604.0	100.0	6,002	28,534	14,396

Device	Routing	Invert	Outlet Devices
#1	Primary	10.12'	15.0" Round Culvert L= 31.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 10.12' / 10.00' S= 0.0039 '/' Cc= 0.900 n= 0.011, Flow Area= 1.23 sf
#2	Device 1	11.45'	18.8' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

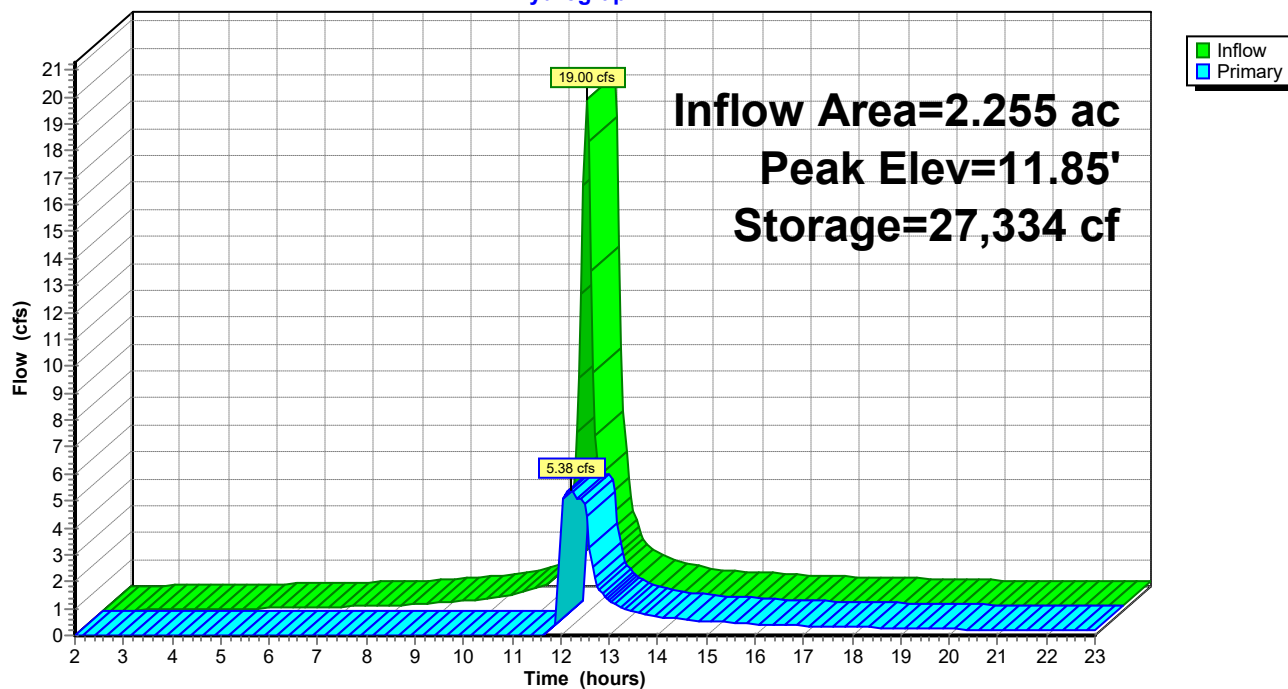
Primary OutFlow Max=5.38 cfs @ 12.19 hrs HW=11.85' (Free Discharge)

↑ **1=Culvert** (Barrel Controls 5.38 cfs @ 4.38 fps)

↑ **2=Sharp-Crested Rectangular Weir** (Passes 5.38 cfs of 15.59 cfs potential flow)

Pond 9P: SGW 1

Hydrograph



240060 - Concept

Type II 24-hr 100-YR Rainfall=7.60"

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Stage-Area-Storage for Pond 9P: SGW 1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
7.44	9,804	0	10.04	9,804	10,196
7.49	9,804	196	10.09	9,804	10,392
7.54	9,804	392	10.14	9,804	10,588
7.59	9,804	588	10.19	9,804	10,784
7.64	9,804	784	10.24	9,804	10,980
7.69	9,804	980	10.29	9,804	11,177
7.74	9,804	1,176	10.34	9,804	11,373
7.79	9,804	1,373	10.39	9,804	11,569
7.84	9,804	1,569	10.44	9,804	11,765
7.89	9,804	1,765	10.49	9,871	12,256
7.94	9,804	1,961	10.54	9,956	12,752
7.99	9,804	2,157	10.59	10,041	13,252
8.04	9,804	2,353	10.64	10,126	13,756
8.09	9,804	2,549	10.69	10,212	14,265
8.14	9,804	2,745	10.74	10,298	14,777
8.19	9,804	2,941	10.79	10,384	15,294
8.24	9,804	3,137	10.84	10,471	15,816
8.29	9,804	3,333	10.89	10,558	16,341
8.34	9,804	3,529	10.94	10,645	16,872
8.39	9,804	3,726	10.99	10,733	17,406
8.44	9,804	3,922	11.04	10,821	17,945
8.49	9,804	4,118	11.09	10,910	18,488
8.54	9,804	4,314	11.14	10,999	19,036
8.59	9,804	4,510	11.19	11,088	19,588
8.64	9,804	4,706	11.24	11,178	20,145
8.69	9,804	4,902	11.29	11,268	20,706
8.74	9,804	5,098	11.34	11,358	21,271
8.79	9,804	5,294	11.39	11,449	21,842
8.84	9,804	5,490	11.44	11,540	22,416
8.89	9,804	5,686	11.49	11,629	22,996
8.94	9,804	5,882	11.54	11,717	23,579
8.99	9,804	6,078	11.59	11,806	24,167
9.04	9,804	6,275	11.64	11,896	24,760
9.09	9,804	6,471	11.69	11,985	25,357
9.14	9,804	6,667	11.74	12,075	25,958
9.19	9,804	6,863	11.79	12,166	26,564
9.24	9,804	7,059	11.84	12,256	27,175
9.29	9,804	7,255	11.89	12,347	27,790
9.34	9,804	7,451	11.94	12,439	28,410
9.39	9,804	7,647			
9.44	9,804	7,843			
9.49	9,804	8,039			
9.54	9,804	8,235			
9.59	9,804	8,431			
9.64	9,804	8,628			
9.69	9,804	8,824			
9.74	9,804	9,020			
9.79	9,804	9,216			
9.84	9,804	9,412			
9.89	9,804	9,608			
9.94	9,804	9,804			
9.99	9,804	10,000			

240060 - Concept

Type II 24-hr 100-YR Rainfall=7.60"

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Summary for Pond 14P: SGW 2

Inflow Area = 0.855 ac, 50.24% Impervious, Inflow Depth > 5.85" for 100-YR event
 Inflow = 6.09 cfs @ 12.00 hrs, Volume= 0.416 af
 Outflow = 2.09 cfs @ 12.29 hrs, Volume= 0.196 af, Atten= 66%, Lag= 17.2 min
 Primary = 2.09 cfs @ 12.29 hrs, Volume= 0.196 af

Routing by Dyn-Stor-Ind method, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs
 Peak Elev= 14.66' @ 12.29 hrs Surf.Area= 5,531 sf Storage= 10,120 cf

Plug-Flow detention time= 225.7 min calculated for 0.195 af (47% of inflow)
 Center-of-Mass det. time= 119.1 min (901.4 - 782.3)

Volume	Invert	Avail.Storage	Storage Description			
#1	10.54'	12,413 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
10.54	4,017	447.0	0.0	0	0	4,017
10.55	4,017	447.0	40.0	16	16	4,021
13.54	4,017	447.0	40.0	4,804	4,820	5,358
13.55	4,017	447.0	100.0	40	4,861	5,362
14.55	5,386	466.0	100.0	4,685	9,545	6,816
15.05	6,092	475.0	100.0	2,868	12,413	7,530

Device	Routing	Invert	Outlet Devices			
#1	Primary	13.25'	15.0" Round Culvert L= 35.5' Ke= 0.500 Inlet / Outlet Invert= 13.25' / 13.02' S= 0.0065 ' / Cc= 0.900 n= 0.011, Flow Area= 1.23 sf			
#2	Device 1	14.55'	18.8' long Sharp-Crested Rectangular Weir 2 End Contraction(s)			

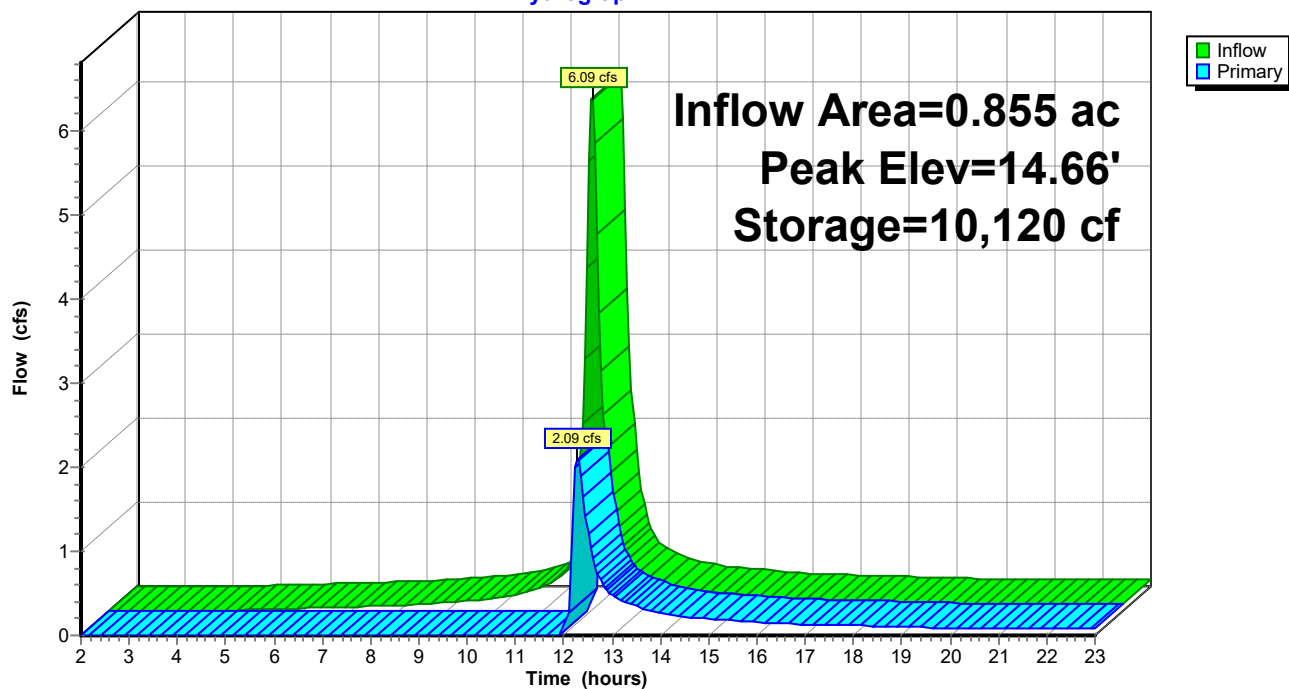
Primary OutFlow Max=2.07 cfs @ 12.29 hrs HW=14.65' (Free Discharge)

↑ **1=Culvert** (Passes 2.07 cfs of 4.83 cfs potential flow)

↑ **2=Sharp-Crested Rectangular Weir** (Weir Controls 2.07 cfs @ 1.06 fps)

Pond 14P: SGW 2

Hydrograph



240060 - Concept

Type II 24-hr 100-YR Rainfall=7.60"

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Page 104

Stage-Area-Storage for Pond 14P: SGW 2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
10.54	4,017	0	13.14	4,017	4,178
10.59	4,017	80	13.19	4,017	4,258
10.64	4,017	161	13.24	4,017	4,338
10.69	4,017	241	13.29	4,017	4,419
10.74	4,017	321	13.34	4,017	4,499
10.79	4,017	402	13.39	4,017	4,579
10.84	4,017	482	13.44	4,017	4,660
10.89	4,017	562	13.49	4,017	4,740
10.94	4,017	643	13.54	4,017	4,820
10.99	4,017	723	13.59	4,068	5,022
11.04	4,017	803	13.64	4,132	5,227
11.09	4,017	884	13.69	4,197	5,435
11.14	4,017	964	13.74	4,262	5,647
11.19	4,017	1,044	13.79	4,327	5,862
11.24	4,017	1,125	13.84	4,393	6,080
11.29	4,017	1,205	13.89	4,460	6,301
11.34	4,017	1,285	13.94	4,527	6,526
11.39	4,017	1,366	13.99	4,595	6,754
11.44	4,017	1,446	14.04	4,663	6,985
11.49	4,017	1,526	14.09	4,731	7,220
11.54	4,017	1,607	14.14	4,800	7,458
11.59	4,017	1,687	14.19	4,870	7,700
11.64	4,017	1,767	14.24	4,940	7,945
11.69	4,017	1,848	14.29	5,011	8,194
11.74	4,017	1,928	14.34	5,082	8,446
11.79	4,017	2,009	14.39	5,153	8,702
11.84	4,017	2,089	14.44	5,226	8,962
11.89	4,017	2,169	14.49	5,298	9,225
11.94	4,017	2,250	14.54	5,371	9,492
11.99	4,017	2,330	14.59	5,441	9,762
12.04	4,017	2,410	14.64	5,510	10,036
12.09	4,017	2,491	14.69	5,579	10,313
12.14	4,017	2,571	14.74	5,649	10,594
12.19	4,017	2,651	14.79	5,719	10,878
12.24	4,017	2,732	14.84	5,790	11,166
12.29	4,017	2,812	14.89	5,861	11,457
12.34	4,017	2,892	14.94	5,933	11,752
12.39	4,017	2,973	14.99	6,005	12,050
12.44	4,017	3,053	15.04	6,077	12,352
12.49	4,017	3,133			
12.54	4,017	3,214			
12.59	4,017	3,294			
12.64	4,017	3,374			
12.69	4,017	3,455			
12.74	4,017	3,535			
12.79	4,017	3,615			
12.84	4,017	3,696			
12.89	4,017	3,776			
12.94	4,017	3,856			
12.99	4,017	3,937			
13.04	4,017	4,017			
13.09	4,017	4,097			

240060 - Concept

Prepared by {enter your company name here}

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Type II 24-hr 100-YR Rainfall=7.60"

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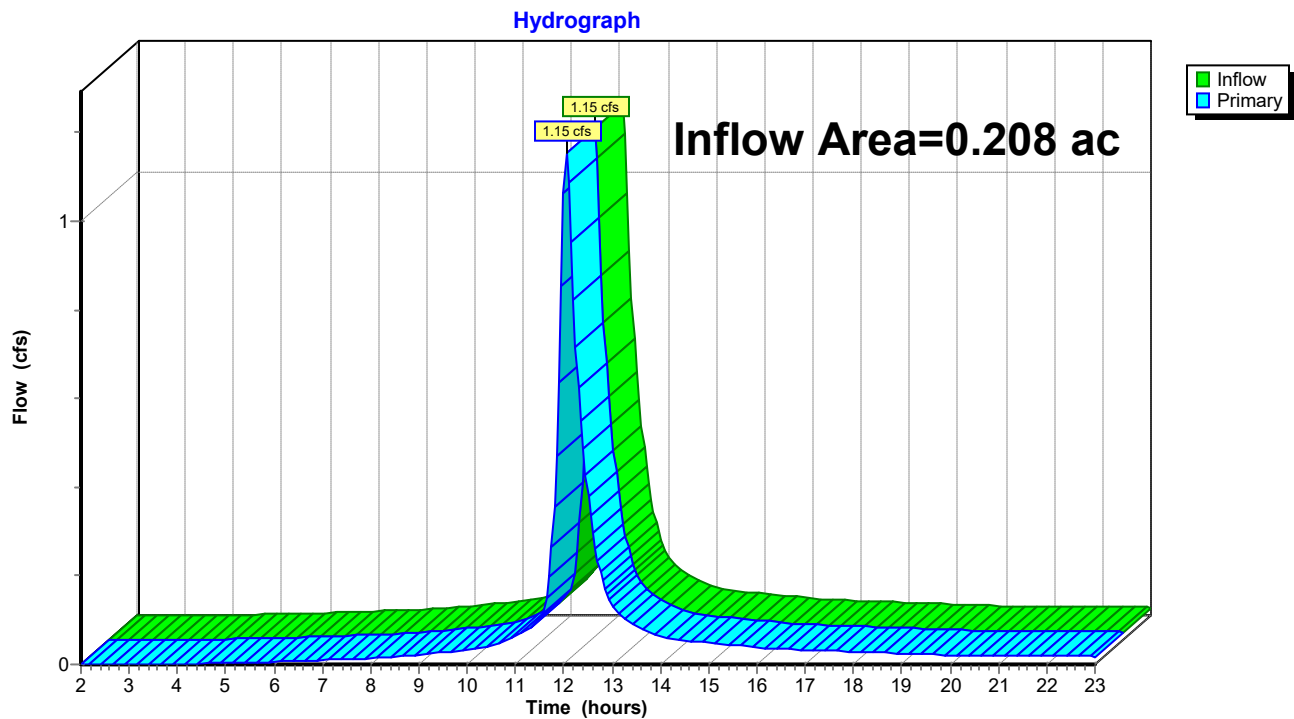
Page 105

Summary for Link 18L: POI 3 (EX SWM POND)

Inflow Area = 0.208 ac, 43.72% Impervious, Inflow Depth > 5.66" for 100-YR event
Inflow = 1.15 cfs @ 12.05 hrs, Volume= 0.098 af
Primary = 1.15 cfs @ 12.05 hrs, Volume= 0.098 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 2.00-23.00 hrs, dt= 0.05 hrs

Link 18L: POI 3 (EX SWM POND)



APPENDIX B

ESD CALCULATIONS



Project: Somerset Well
 Location: 28580 Marys Ct, Easton, MD
 Job No.: 240060
 File No.: A037

Designed By: BMW
 Date: 12/12/2024

Lane Engineering, LLC



DESIGN PHASE:

CONCEPT

PRELIMINARY

FINAL

MARYLAND ENVIRONMENTAL SITE DESIGN (ESD) CALCULATIONS

Site Data

Total Disturbance Area (A) = 147,534 sf
 Proposed Impervious Area (A_i) = 85,285 sf → Percent Impervious (I) = 58 %

Site Soils				
HSG	A	B	C	D
Area (sf)			147,534	
% of Area	0%	0%	100%	0%

INPUT
 CONSTANT
 CALCULATED

Determine RCN for Woods in Good Condition

HSG	A	B	C	D
Area (sf)	-	-	147,534	-
% of Area	0%	0%	100%	0%
RCN	38	55	70	77

Weighted RCN = 70

Determine Target ESD_v for Entire Site

Volumetric Runoff Coefficient (R_v) = 0.57
 Percent Impervious (I) = 58 % → use 60 % (from Table 5.3)
 $R_v = 0.05 + 0.009 (I)$

HSG	A	B	C	D
Area (sf)	-	-	147,534	-
Target P_E (in)	2.0	2.0	2.0	1.8

Composite Target P_E = 2.0 in

Target ESD_v = 14,022 cf $ESD_v = [(P_E)(A)(R_v)]/12$

M-2: SUBMERGED GRAVEL WETLAND DESIGN CALCULATIONS

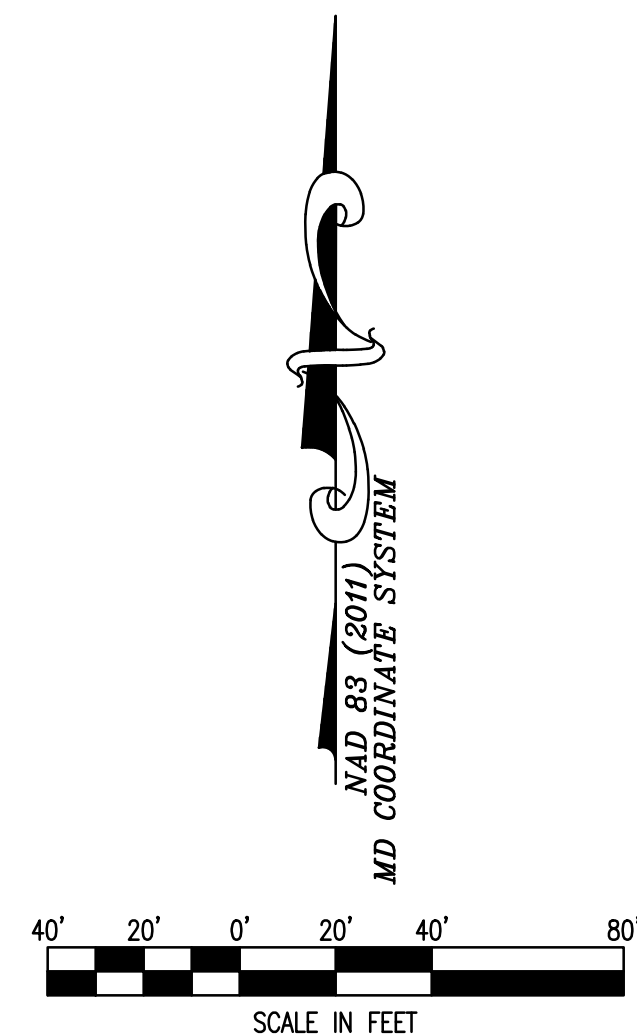
SWM Feature No. 1		
Contributing Drainage Area Data		
Total Contributing Area (A) =	99,840 sf	INPUT
Contributing Impervious Area (A _i) =	58,266 sf	CONSTANT
Percent Impervious (I) =	58 %	CALCULATED
Volumetric Runoff Coefficient (R _v) =	0.58	$R_v = 0.05 + 0.009 (I)$
Target P _E =	1.8 in	
Target ESD _v =	8,615 cf	$ESD_v = [(P_E)(A)(R_v)]/12$
Determine Limiting Storage Volume		
The maximum treatment volume that can be credited to this practice is limited to the lesser of the amount of: a) runoff from the 1-year 24-hour storm (the Cp _v storm=3.0 in) draining to it, or b) the computed ESD _v provided.		
1-yr, 24-hr ESDV=	14,358 cf	$Limiting ESD_v = [(3.0)(A)(R_v)]/12$
Determine Storage Volume Provided		
Temporary ponding depth =	1 ft	
Provided ESD _v =	11,814 cf	$Provided ESD_v = \text{Ponding storage volume as determined by HydroCAD model}$
The volume of runoff treated by this feature is 11,814 cf		

SWM Feature No. 2		
Contributing Drainage Area Data		
Total Contributing Area (A) =	37,244 sf	INPUT
Contributing Impervious Area (A _i) =	18,711 sf	CONSTANT
Percent Impervious (I) =	50 %	CALCULATED
Volumetric Runoff Coefficient (R _v) =	0.50	$R_v = 0.05 + 0.009 (I)$
Target P _E =	2 in	
Target ESD _v =	3,117 cf	$ESD_v = [(P_E)(A)(R_v)]/12$
Determine Limiting Storage Volume		
The maximum treatment volume that can be credited to this practice is limited to the lesser of the amount of: a) runoff from the 1-year 24-hour storm (the Cp _v storm=3.0 in) draining to it, or b) the computed ESD _v provided.		
1-yr, 24-hr ESDV=	4,676 cf	$Limiting ESD_v = [(3.0)(A)(R_v)]/12$
Determine Storage Volume Provided		
Temporary ponding depth =	1 ft	
Provided ESD _v =	4,832 cf	$Provided ESD_v = \text{Ponding storage volume as determined by HydroCAD model}$
The volume of runoff treated by this feature is 4,676 cf		

APPENDIX C

DRAINAGE AREA MAPS





STUDY POINT	Q ₂	Q ₁₀	Q ₁₀₀
1	2.22	4.69	7.86
2	0.45	0.95	1.60
3	0.36	0.76	1.27

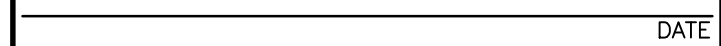
[illegible]

MISS UTILITY

DIG WITH CARE
CALL MISS UTILITY
KEEP MARYLAND SAFE

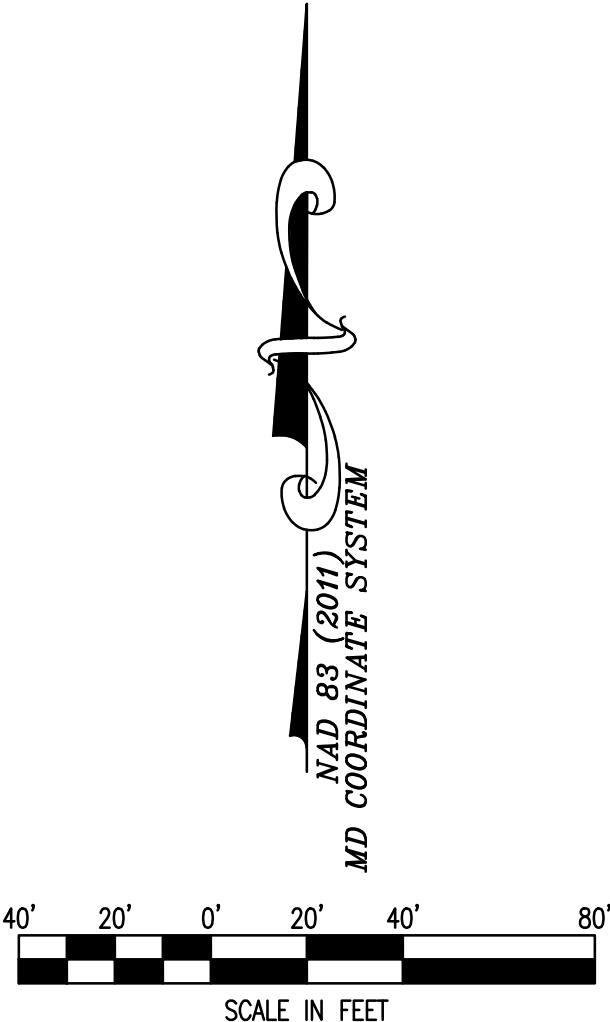
BEFORE YOU DIG CALL
1-800-441-8355 OR 811
PROTECT YOURSELF, GIVE
TWO WORKING DAYS NOTICE

PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 60891 . Expiration Date: 04/13/2025.



SOMERSET WELL DRILLING
28580 MARYS COURT

ISSUED FOR:	DATE:	BY:
-------------	-------	-----



STUDY POINT	Q ₂	Q ₁₀	Q ₁₀₀
1	0.00	0.65	5.38
2	0.00	0.10	2.09
3	0.39	0.75	1.15

STORMWATER MANAGEMENT DRAINAGE AREA TABLE				
AREA #	AREA (SF)	TOTAL Tc (MINUTES)	IMPERVIOUS (%)	DESCRIPTION
DA-1a	64,585	5.60	47.20	PARKING LOT, POLE BUILDINGS & SWM FEATURE
DA-1b	6,000	1.20	100.00	GRAVEL ACCESS/ PARKING PAD
DA-1c	10,698	3.10	100.00	GRAVEL ACCESS/ PARKING PAD
DA-1d	8,238	1.40	74.74	FUTURE OFFICE BUILDING & PARKING LOT
DA-1e	8,703	5.10	79.39	FUTURE OFFICE BUILDING & PARKING LOT
DA-2	37,234	7.80	50.24	FUTURE OFFICE BUILDING & PARKING LOT
DA-3a	5,496	13.20	57.61	FUTURE ACCESS DRIVE
DA-3b	3,575	10.60	22.38	LOD TO EX INLET 4

APPROVED:	
PLANS ARE	
TOWN OF EASTON	TOWN PLANNER
DATE	
APPROVED:	
ISSUED FOR	
REVIEW ONLY	
TOWN OF EASTON - TOWN ENGINEER	DATE
APPROVED:	
PLANS ARE NOT	
EASTON TOWN ENGINEER	DATE
APPROVED FOR	
CONSTRUCTION	

[illegible]

WARNING!!
THE LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THIS PLAN ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. THE QUANTITIES SHOWN ON THIS PLAN ARE FOR INFORMATIONAL AND PERMITTING PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES TO HIS OWN SATISFACTION PRIOR TO BEGINNING CONSTRUCTION.

THE CONTRACTOR SHALL TEST PIT AND LOCATE EXISTING UNDERGROUND UTILITIES PRIOR TO THE BEGINNING OF CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE DEPT. OF PUBLIC WORKS OF ANY POSSIBLE CONFLICT AND REQUEST THE RELOCATION OF THE EXISTING UNDERGROUND UTILITY BEFORE BEGINNING ANY WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RELOCATION EXPENSE.

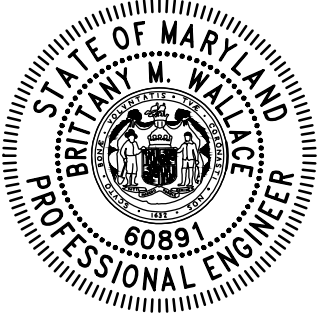


Lane Engineering, LLC
Established 1986
Civil Engineers • Land Planning • Land Surveyors



E-mail: general@lenc.com
117 Bay St. Easton, MD 21601 (410) 822-8003
15 Washington St. Cambridge, MD 21613 (410) 221-0818
354 Pennsylvania Ave. Centerville, MD 21617 (410) 758-2095

PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 60891 . Expiration Date: 04/13/2025.



POST-DEVELOPMENT DRAINAGE AREA MAP

SOMERSET WELL DRILLING
28580 MARYS COURT

IN THE TOWN OF EASTON, WARD 1
TALBOT COUNTY, MARYLAND
TAX MAP 25, PARCEL 46, LOTS 16 & 20

ISSUED FOR:	DATE:	BY:
-------------	-------	-----

SHEET No. 1 OF 1	DATE: 7/18/24
SCALE: AS NOTED	JOB No. 240060
	FILE No. A037



Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

RECEIVED
JAN 02 2025
TOWN OF EASTON

Easton Staff Development Review

Property Information

Address 505 Brookletts Avenue, Easton, MD 21601
Tax Map 0104 000 Grid EA Parcel 1823, 1826, 1833 Lot
Deed Reference: Liber 03025, 03025, 03114 Folio 00066, 00066, 00180
Plat Reference: Liber Folio
Base Zoning District BC Historic District Y ☐ N ☒ Planning Redevelopment Y ☒ N ☐
Purpose of Application / Description of Work:

The project is for the construction of mixed commercial and residential buildings, parking lots, parks/open space, utilities, and stormwater management features.

Owner

Name Easton Crossing, LLC
Mailing Address 999 Corporate Drive, Linthicum, MD 21090
Telephone No. 410-384-4022 Email gdaniels@ccdmaryland.org

Applicant / Agent

Name Same as above
Mailing Address
Telephone No. Email

Surveyor / Engineer

Name Robert Rauch License No. 11024 Expiration Date 7/24/2026
Mailing Address 106 N. Harrison St, Easton, MD, 21601
Telephone No. 410-770-9081 Email robert@raucheng.com; brian@raucheng.com

Any modifications during review shall warrant an updated application.

I do hereby solemnly declare and affirm that the information provided by this application and the documents attached hereto accurately represent the conditions of the request and that submission of an incomplete application will be returned for correction prior to processing.

Signature of Applicant or Agent

Date

Gavin Daniels
C=US, E=gdaniels@ccdmaryland.org,
O=Chesapeake Community Development,
CN=Gavin Daniels
2025.01.02 08:44:14-05'00'

Printed Name of Applicant or Agent

Gavin Daniels

For Office Use Only

Easton Staff Development Review Meeting Required Y ☒ N ☐

Easton Staff Development Review Meeting Date **01/22/2025**

2025 - 1370 / ESDR 25 - 02

Completeness Check Date **01/02/2025**

Revisions/Resubmissions Required Y ☐ N ☐ TBD

Resubmission Date

Documents Received Y ☐ N ☐

Staff Determination

Scheduled for January 22, 2025 Easton Staff Development Review.

Planning Commission Required Y ☐ N ☐ TBD

BOZA Required Y ☐ N ☐ TBD

Historic District Commission Required Y ☐ N ☒

Resubmission for ESDR Required Y ☐ N ☐ TBD

Staff Signature *Samantha N. Smith*

Date **01/02/2025**

Revised 02-2019



Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

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TOWN OF EASTON

Planning Commission Concept, Use, and Design Application

Site Information

Structure's Floor Area	69,618	Structure's Square Feet	243,480
Area of Disturbance	7.08 AC	Number of Dwelling Units	123
Property Size	Acres 6.92	Square Feet	301,435.2
Address	505 Brookletts Avenue, Easton, MD 21601		
Tax Map	0104	Grid 000EA	Parcel 1823, 1826, 1833 Lot
Zoning District	BC	Historic District Y ☐ N ☒	PRD Y ☒ N ☐
Other Information			
Existing Use	Commercial/Industrial		

Owner

Name	Easton Crossing, LLC		
Mailing Address	999 Corporate Drive, Linthicum, MD 21090		
Telephone No.	410-384-4022	Email	gdaniels@ccdmaryland.org

Applicant / Agent

Name	Same as above		
Mailing Address			
Telephone No.		Email	

General Information:

The project is for the construction of mixed commercial and residential buildings, parking lots, parks/open space, utilities, and stormwater management features.

Any modifications during review shall warrant an updated application.

I do hereby solemnly declare and affirm that the information provided by this application and the documents attached hereto accurately represent the conditions of the request and that submission of an incomplete application will be returned for correction prior to processing.

Signature of Applicant or Agent

Date

Gavin Daniels
C=US, E=gdaniels@ccdmaryland.org,
O=Chesapeake Community Development,
CN=Gavin Daniels
2025.01.02 08:44:49-05'00'

Printed Name of Applicant or Agent

Gavin Daniels

For Office Use Only

Planned Commission Meeting Date	TBD
Review Fee Amount	\$250.00
Review Fee Paid Date	2025 - 1370 / ESDR 25 - 02
ESDR Y / N Date	01/22/2025

Revised 02-2019



Town of Easton
Engineering, Planning and Zoning
14 South Harrison Street, Easton, MD 21601

RECEIVED
JAN 02 2025
TOWN OF EASTON

2025 - 1370 / W 25 - 01

Supplemental Waiver Request Application

Waiver Request Type

Sidewalk ☐ Parking Spaces ☐ Parking/Aisle Dimension ☐
Landscaping & Buffering ☒ Signage ☐ Other ☐

Project Information

Address	505 Brookletts Avenue, Easton, MD 21601				
Tax Map	0104	Grid	000EA	Parcel	1823, 1826, 1833
Zoning District	BC - PRD	PC Meeting Date	2/20/2025	Historic District	Yes ☐ No ☒
Owner or Agent	Easton Crossing, LLC				
Mailing Address	999 Corporate Drive, Linthicum, MD 21090				
Telephone No.	410-384-4022	Email	gdaniels@ccdmaryland.org		

Request Details

Please attach a detailed description of the waiver request(s) being made and the justification(s) for requesting said waiver(s).

Waiver Requests: (SEE PAGE 2 OF THIS APPLICATION)
Justification: Project is in PRD district with 40 units/ac density and Town aims to have diverse housing types with more apartment units. In order to develop this site and achieve higher density, there needs to be larger building footprints and more parking areas. While the PRD does not require parking, the project proposes 1 parking space per dwelling unit which is within the town + 1 parking space per 340 gsf of commercial. These are similar to established town guidelines. Building facades create a street front and the building facades are in similar plane with adjacent commercial buildings. The 29% of green/open space has been distributed throughout the project in a more thoughtful, efficient manner.

☐ Ordinance Section Supporting Waiver Request.

Any modifications during review shall warrant an updated application.

I do hereby solemnly declare and affirm that the information provided by this application and the documents attached hereto accurately represent the conditions of the request and that submission of an incomplete application will be returned for correction prior to processing.

Signature of Applicant or Agent

Date

Printed Name of Applicant or Agent

Gavin Daniels
C=US, E=gdaniels@ccdmaryland.org,
O=Chesapeake Community Development,
CN=Gavin Daniels
2025.01.02 08:45:41-05'00'

LANDSCAPE IMPROVEMENTS - §§28-1014.6

OVERALL TREES REQUIRED:

FINAL QUANTITY TO BE DETERMINED BY THE LANDSCAPE ARCHITECT; NO LESS THAN THE REQUIRED AMOUNT WILL BE PROVIDED

STREET TREES PROVIDED:

FINAL QUANTITY TO BE DETERMINED BY THE LANDSCAPE ARCHITECT; NO LESS THAN THE REQUIRED AMOUNT WILL BE PROVIDED

PARKING LOT TREES PROVIDED:

FINAL QUANTITY TO BE DETERMINED BY THE LANDSCAPE ARCHITECT; NO LESS THAN THE REQUIRED AMOUNT WILL BE PROVIDED

PARKING LOT SCREENING:

- SITE SHALL MEET REQUIREMENT EXCEPT FOR THE WAIVERS REQUIRED:
- FOR BUILDING 411 PARKING LOT FRONTAGE TO BROOKLETTS AVENUE
 - FOR BUILDING 505 PARKING LOT FRONTAGE KEMP LANE

BUILDING FACADE PLANTINGS:

- SITE SHALL MEET REQUIREMENT EXCEPT FOR THE WAIVERS REQUIRED:
- FOR BUILDING 411 ENTRANCE
 - FOR BUILDING 505 ENTRANCE

SERVICE/LOADING AREAS:

SERVICE/LOADING AREAS SHALL BE SCREENED AS REQUIRED IN THIS SECTION

SHRUB AND GROUND COVER PLANTINGS:

SHRUBS AND GROUND COVERS SHALL BE INTEGRATED INTO THE FINAL SITE AND FINAL LANDSCAPE PLAN AS REQUIRED IN THIS SECTION

BUFFERYARD STANDARDS - §§28-1014.7

PROPERTY LINE FRONTING SOUTH STREET:

BUFFERYARD "C" - 20' WIDTH - 1 SHADE/CANOPY TREE, 2 EVERGREEN TREES & 5 LARGE SHRUBS PER 50 LF
WAIVER REQUIRED - YES, PARTIAL WAIVER FOR WIDTH ONLY

PROPERTY LINE WEST SIDE FROM SOUTH STREET TO HIGGINS STREET:

BUFFERYARD "E" - 10' WIDTH - PRIVACY FENCE & 3 LARGE SHRUBS PER 50 LF
WAIVER REQUIRED - NO

PROPERTY LINE FRONTING HIGGINS STREET:

BUFFERYARD "C" - 20' WIDTH - 1 SHADE/CANOPY TREE, 2 EVERGREEN TREES & 5 LARGE SHRUBS PER 50 LF
WAIVER REQUIRED - NO

PROPERTY LINE FROM HIGGINS STREET TO BROOKLETTS AVENUE:

BUFFERYARD "E" - 10' WIDTH - PRIVACY FENCE & 3 LARGE SHRUBS PER 50 LF
WAIVER REQUIRED - NO

PROPERTY LINE PARCEL(S) 1833 AND 1826 FRONTING BROOKLETTS AVENUE:

BUFFERYARD "C" - 20' WIDTH - 1 SHADE/CANOPY TREE, 2 EVERGREEN TREES & 5 LARGE SHRUBS PER 50 LF
WAIVER REQUIRED - NO, NOT REQUIRED AS PRIMARY ROAD FRONTAGE

PROPERTY LINE PARCEL 1823 FRONTING BROOKLETTS AVENUE:

BUFFERYARD "C" - 20' WIDTH - 1 SHADE/CANOPY TREE, 2 EVERGREEN TREES & 5 LARGE SHRUBS PER 50 LF
WAIVER REQUIRED - NO, NOT REQUIRED AS PRIMARY ROAD FRONTAGE

PROPERTY LINE FRONTING KEMP LANE:

BUFFERYARD "C" - 20' WIDTH - 1 SHADE/CANOPY TREE, 2 EVERGREEN TREES & 5 LARGE SHRUBS PER 50 LF
WAIVER REQUIRED - YES, PARTIAL WAIVER FOR WIDTH AND PLANT QUANTITY

PROPERTY LINE FROM KEMP LANE TO RAILS-TO-TRAILS:

BUFFERYARD "E" - 10' WIDTH - PRIVACY FENCE & 3 LARGE SHRUBS PER 50 LF
WAIVER REQUIRED - YES, PARTIAL FOR WIDTH & LARGE SHRUBS

PROPERTY LINE PARCEL 1826 FRONTING RAILS-TO-TRAILS:

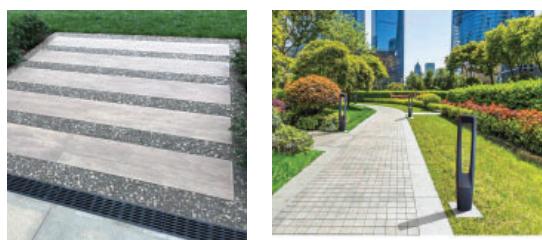
BUFFERYARD "E" - 10' WIDTH - PRIVACY FENCE & 3 LARGE SHRUBS PER 50 LF
WAIVER REQUIRED - YES, PARTIAL WAIVER FOR WIDTH, SHRUBS PLACED INSIDE VS OUTSIDE OF FENCING, AND FOR PLANT QUANTITY

PROPERTY LINE PARCEL 1823 FRONTING RAILS-TO-TRAILS:

BUFFERYARD "E" - 10' WIDTH - PRIVACY FENCE & 3 LARGE SHRUBS PER 50 LF
WAIVER REQUIRED - YES, PARTIAL WAIVER FOR WIDTH, SHRUBS PLACED INSIDE VS OUTSIDE OF FENCING, AND FOR PLANT QUANTITY



EASTON STAFF DEVELOPMENT REVIEW



SERPENTINE BRIDGE
SHUTTLE SHELTER WAITING AREA
WATERSIDE DECK

EASTON'S RAILS-TO-TRAILS
LANDSCAPE BUFFER ALONG COMMERCIAL AREA
LAWN GAMES AREA
CIRCULAR FLEX SEATING AREAS
EXPANDED BUILDING OUTDOOR LIVING SPACE
OPEN LAWN AREA
CIRULAR PERFORMANCE AREA
EXISTING CONVEYOR BELT STRUCTURE ABOVE PERFORMANCE SPACE
PLAY AREA OBSERVATION SEATING
PLAY AREA WITH ROLLING BERMS
VEHICULAR DROP-OFF AREA
8'-10' WIDE COMMERCIAL FRONTAGE WALKS
8'-10' WIDE CONNECTING WALKWAYS
10' SQUARE FLEXIBLE PADS FOR SPECIAL EVENTS AND TEMPORARY SEATING
OUTDOOR SEATING ALONG COMMERCIAL AREAS

ILLUSTRATIVE SITE PLAN

This Illustrative Site Plan is for illustration purposes only, and is to be used for design intent only. Location of all hardscape and planting elements shown may be modified during final construction documentation to avoid conflicts with utilities and other site conditions.



LEGEND



- PARKING AREAS
- CHESAPEAKE BAY NATIVE PLANTS
 - POLLINATOR MEADOW EDGES FOR COLOR
 - GRASSES
 - PARKING LOT SCREENING



- BUFFERYARD 'C' OPTIONS (PER 50' SECTION):
- 1 SHADE TREE, 2 EVERGREEN TREES AND 5 SHRUBS
 - 1 SHADE TREE AND 3 EVERGREEN TREES
 - 1 SHADE TREE AND 15 EVERGREEN SHRUBS

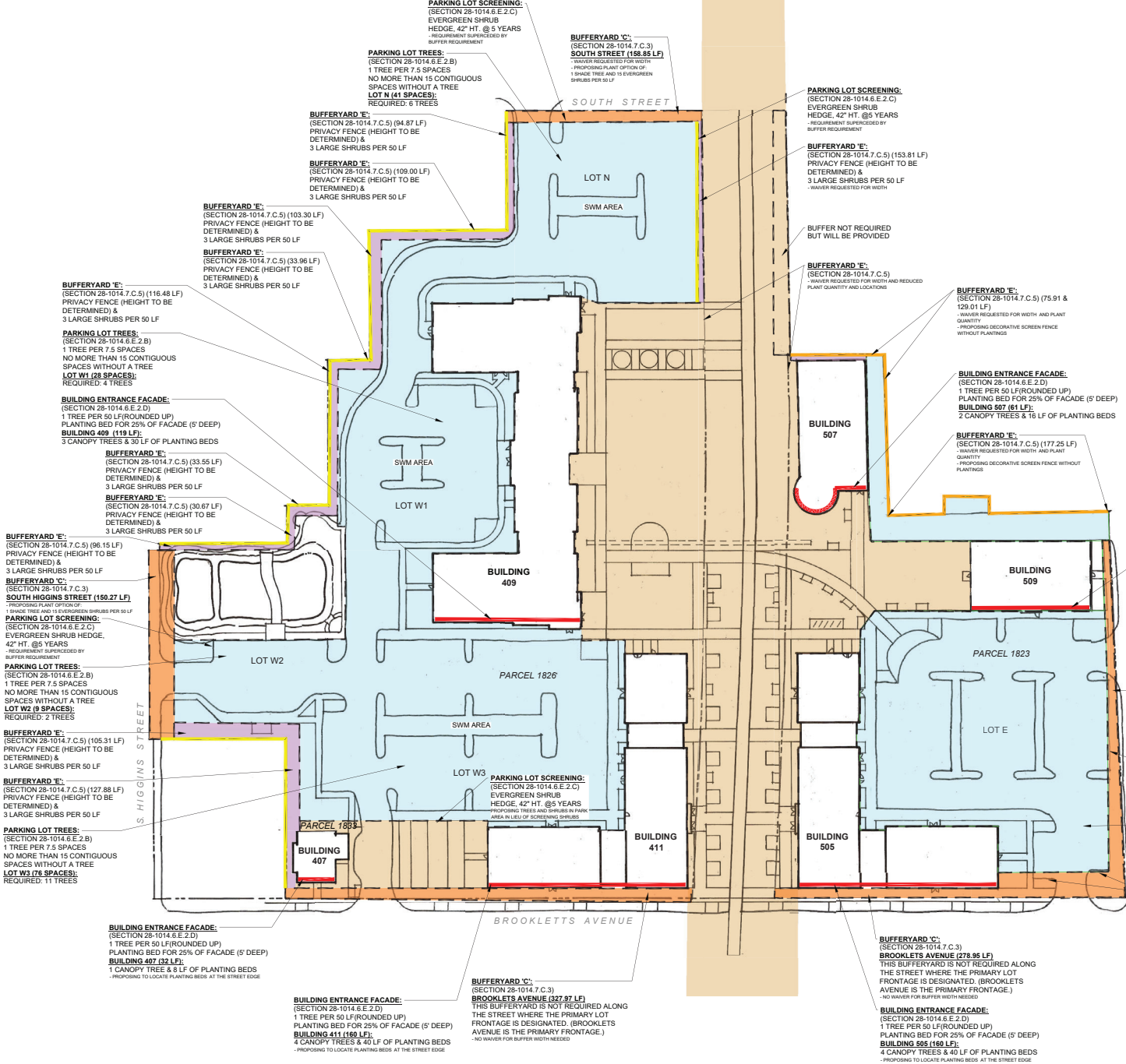


- BUFFERYARD 'E' OPTIONS (PER 50' SECTION):
- 1 SHADE TREE AND 3 EVERGREEN TREES
 - 2 SHADE TREES AND 8 LARGE EVERGREEN SHRUBS
 - 4 EVERGREEN TREES
 - WALL/FENCE AND 3 LARGE EVERGREEN SHRUBS



- BUILDING ENTRANCE FACADE
- 1 TREE PER 50 LF (ROUNDED UP) & PLANTING BED FOR 25% OF FACADE (5' DEEP)

SECTION 28-1014.6 LANDSCAPE IMPROVEMENTS SECTION E., E. SERVICE / LOADING AREAS, "IN LIEU OF 50% PLANTING REQUIREMENT, WALL OR FENCE SHALL BE A DECORATIVE ARCHITECTURAL STATEMENT COMPATIBLE WITH THE ARCHITECTURAL DESIGN OF THE ADJOINING STRUCTURE"



LANDSCAPE IMPROVEMENTS - §§28-1014.6

OVERALL TREES REQUIRED:
FINAL QUANTITY TO BE DETERMINED BY THE LANDSCAPE ARCHITECT; NO LESS THAN THE REQUIRED AMOUNT WILL BE PROVIDED

STREET TREES PROVIDED:
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SITE SHALL MEET REQUIREMENT EXCEPT FOR THE WAIVERS REQUIRED:
• FOR BUILDING 411 PARKING LOT FRONTAGE TO BROOKLETTS AVENUE
• FOR BUILDING 505 PARKING LOT FRONTAGE KEMP LANE

BUILDING FACADE PLANTINGS:
SITE SHALL MEET REQUIREMENT EXCEPT FOR THE WAIVERS REQUIRED:
• FOR BUILDING 411 ENTRANCE
• FOR BUILDING 505 ENTRANCE

SERVICE/LOADING AREAS:
SERVICE/LOADING AREAS SHALL BE SCREENED AS REQUIRED IN THIS SECTION

SHRUB AND GROUND COVER PLANTINGS:
SHRUBS AND GROUNDCOVERS SHALL BE INTEGRATED INTO THE FINAL SITE AND FINAL LANDSCAPE PLAN AS REQUIRED IN THIS SECTION

BUFFERYARD STANDARDS - §§28-1014.7

PROPERTY LINE FRONTING SOUTH STREET:
BUFFERYARD 'C' - 20' WIDTH - 1 SHADE/CANOPY TREE, 2 EVERGREEN TREES & 5 LARGE SHRUBS PER 50 LF
WAIVER REQUIRED - YES, PARTIAL WAIVER FOR WIDTH ONLY

PROPERTY LINE WEST SIDE FROM SOUTH STREET TO HIGGINS STREET:
BUFFERYARD 'E' - 10' WIDTH - PRIVACY FENCE & 3 LARGE SHRUBS PER 50 LF
WAIVER REQUIRED - NO

PROPERTY LINE FRONTING HIGGINS STREET:
BUFFERYARD 'C' - 20' WIDTH - 1 SHADE/CANOPY TREE, 2 EVERGREEN TREES & 5 LARGE SHRUBS PER 50 LF
WAIVER REQUIRED - NO

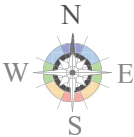
PROPERTY LINE FROM KEMP LANE TO BROOKLETTS AVENUE:
BUFFERYARD 'E' - 10' WIDTH - PRIVACY FENCE & 3 LARGE SHRUBS PER 50 LF
WAIVER REQUIRED - NO

PROPERTY LINE FROM KEMP LANE TO BROOKLETTS AVENUE:
BUFFERYARD 'C' - 20' WIDTH - 1 SHADE/CANOPY TREE, 2 EVERGREEN TREES & 5 LARGE SHRUBS PER 50 LF
WAIVER REQUIRED - NO, NOT REQUIRED AS PRIMARY ROAD FRONTAGE

PROPERTY LINE PARCEL 1223 FRONTING BROOKLETTS AVENUE:
BUFFERYARD 'C' - 20' WIDTH - 1 SHADE/CANOPY TREE, 2 EVERGREEN TREES & 5 LARGE SHRUBS PER 50 LF
WAIVER REQUIRED - NO, NOT REQUIRED AS PRIMARY ROAD FRONTAGE

PROPERTY LINE PARCEL 1223 FRONTING BROOKLETTS AVENUE:
BUFFERYARD 'C' - 20' WIDTH - 1 SHADE/CANOPY TREE, 2 EVERGREEN TREES & 5 LARGE SHRUBS PER 50 LF
WAIVER REQUIRED - NO, NOT REQUIRED AS PRIMARY ROAD FRONTAGE

ZONING (BC) BUSINESS COMMERCIAL (PRD) PLANNED REDEVELOPMENT DISTRICT
CODE-MINIMUM LANDSCAPE REQUIREMENTS





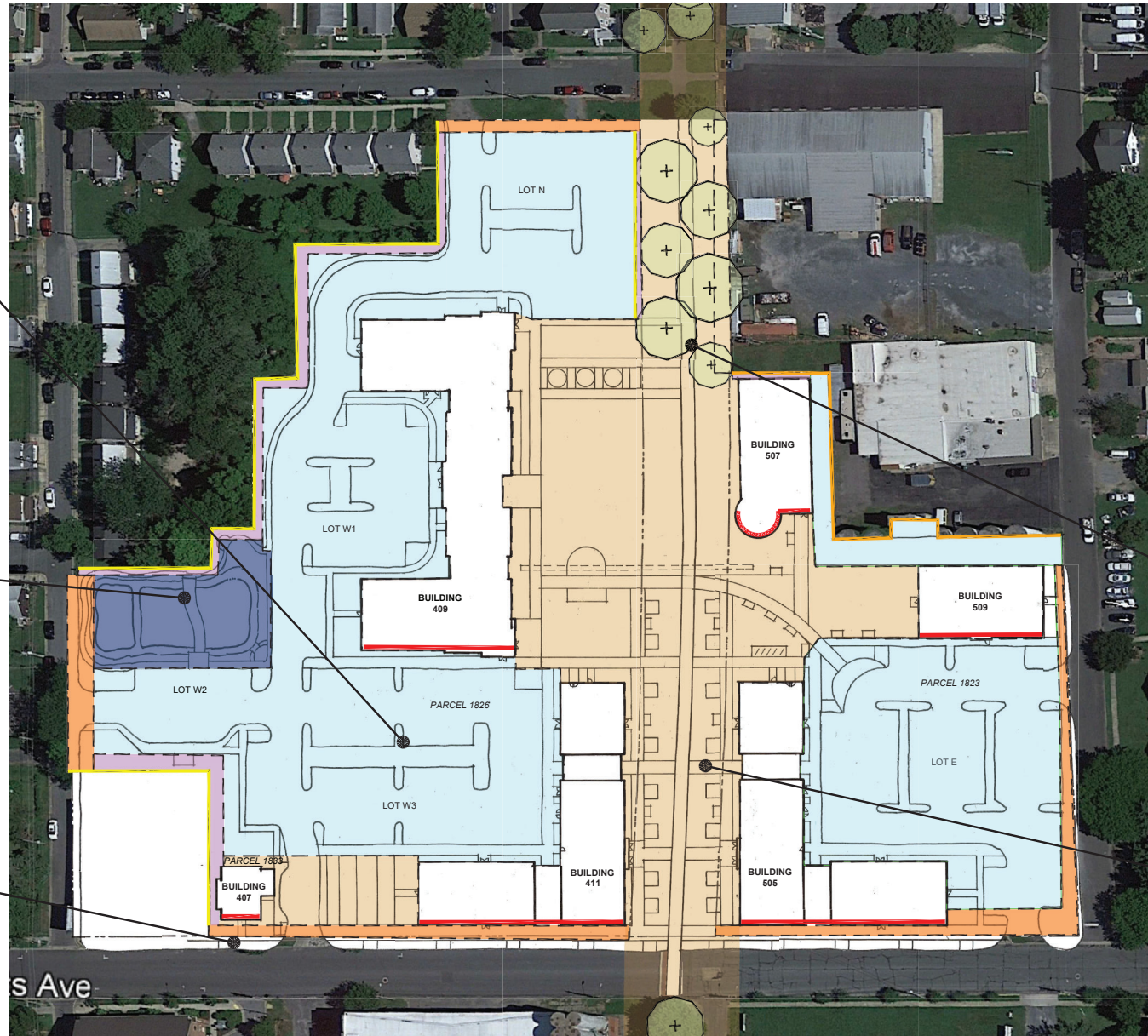
**PARKING LOT STORMWATER AREA
BALD CYPRESS & NORTHERN SEA OATS**

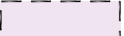


POND EDGE



**STREETSCAPE
AMERICAN ELM & GROUNDCOVER**



- LEGEND**
-  EXISTING TREE
 -  PROGRAMMED SPACE / GREENWAY
 -  PARKING AREAS
 - CHESAPEAKE BAY NATIVE PLANTS
 - POLLINATOR MEADOW EDGES FOR COLOR
 - GRASSES
 - PARKING LOT SCREENING
 -  STORMWATER MANAGEMENT POND
 -  BUFFERYARD 'C'
 -  BUFFERYARD 'E'
 - BUFFERYARD 'E' OPTION WITH SCREEN FENCE AND SHRUBS
 -  BUILDING ENTRANCE FACADE



NORTH GREENWAY - EXISTING WILLOW OAKS



**SOUTH GREENWAY
CAT MINT & SWITCHGRASS**

PLANTING ZONE STUDY



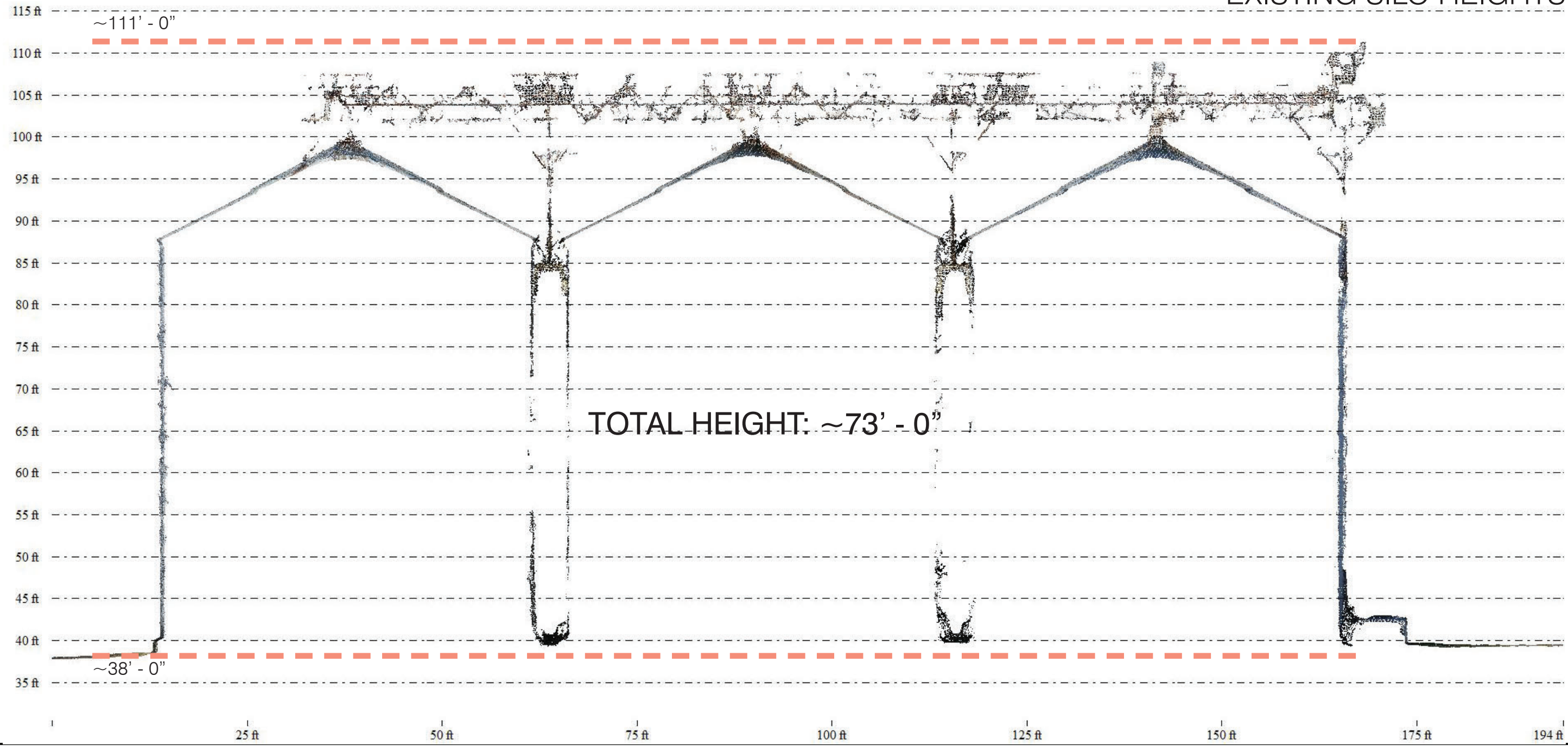








EXISTING SILO HEIGHTS

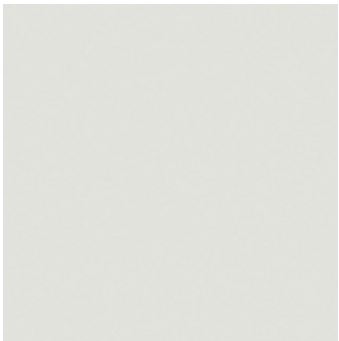


BROOKLETTS BUILDING



ELEVATIONS PHASE 1

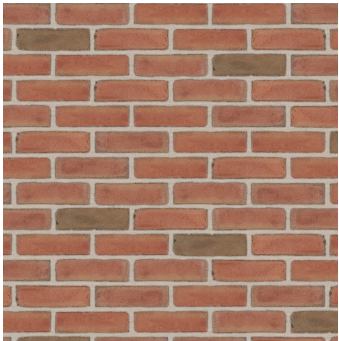
MATERIALS TYP.



ALUCOBOND CLADDING
BONE WHITE



JAMES HARDIE SIDING
IRON GRAY



GLEN-GERY BRICK
ROSE FULL RANGE



BLDG 509 - SOUTH (KEMP LN. PARKING LOT)



BLDG 509 - WEST (RAILS TO TRAILS)

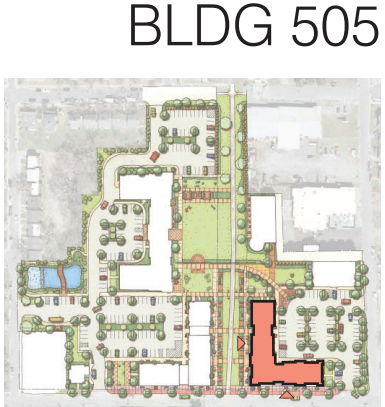
BLDG 509





BLDG 505 - SOUTH (BROOKLETTS AVE.)

- Tower Roof 55'-0"
- Roof 48'-0"
- Level 4 37'-0"
- Level 3 26'-0"
- Level 2 15'-0"
- Level 1 0'-0"



BLDG 505



BLDG 505 - WEST (RAILS TO TRAILS)

- Tower Roof 55'-0"
- Roof 48'-0"
- Level 4 37'-0"
- Level 3 26'-0"
- Level 2 15'-0"
- Level 1 0'-0"

BROOKLETTS AVE



Tower Roof
55'-0"

Roof
48'-0"

Level 4
37'-0"

Level 3
26'-0"

Level 2
15'-0"

Level 1
0'-0"

BLDG 505



BLDG 505 - NORTH (KEMP LN. PARKING LOT)



Tower Roof
55'-0"

Roof
48'-0"

Level 4
37'-0"

Level 3
26'-0"

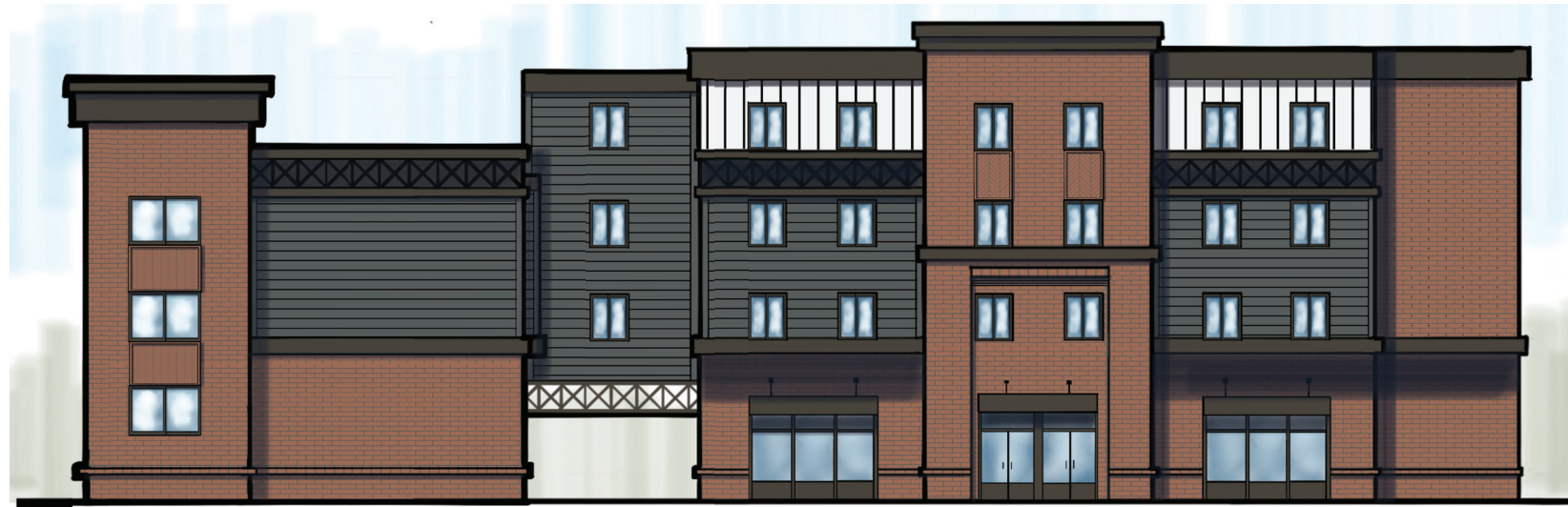
Level 2
15'-0"

Level 1
0'-0"

BROOKLETT'S AVE

BLDG 505 - EAST (KEMP LN. PARKING LOT)

ELEVATIONS PHASE 2



Tower Roof
55'-0"

Roof
48'-0"

Level 4
37'-0"

Level 3
26'-0"

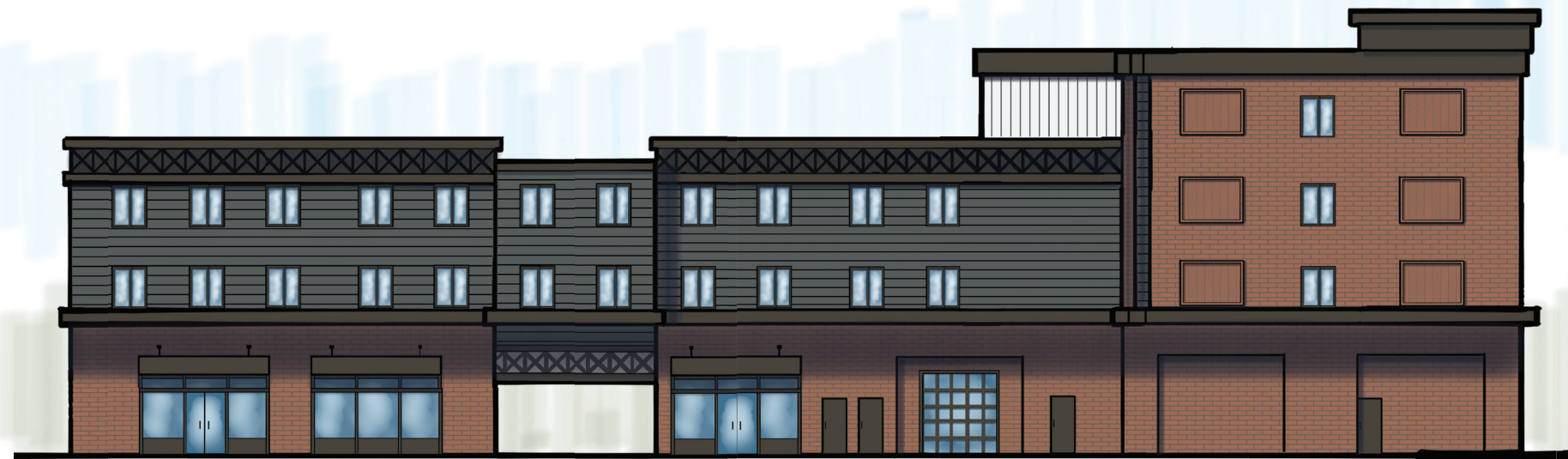
Level 2
15'-0"

Level 1
0'-0"

BLDG 411
(MIRRORED 505)



BLDG 411 - NORTH (BROOKLETTS AVE. PARKING LOT)



BROOKLETTS AVE

Tower Roof
55'-0"

Roof
48'-0"

Level 4
37'-0"

Level 3
26'-0"

Level 2
15'-0"

Level 1
0'-0"

BLDG 411 - WEST (BROOKLETTS AVE. PARKING LOT)



BLDG 411 - SOUTH (BROOKLETTS AVE.)

BLDG 411
(MIRRORED 505)

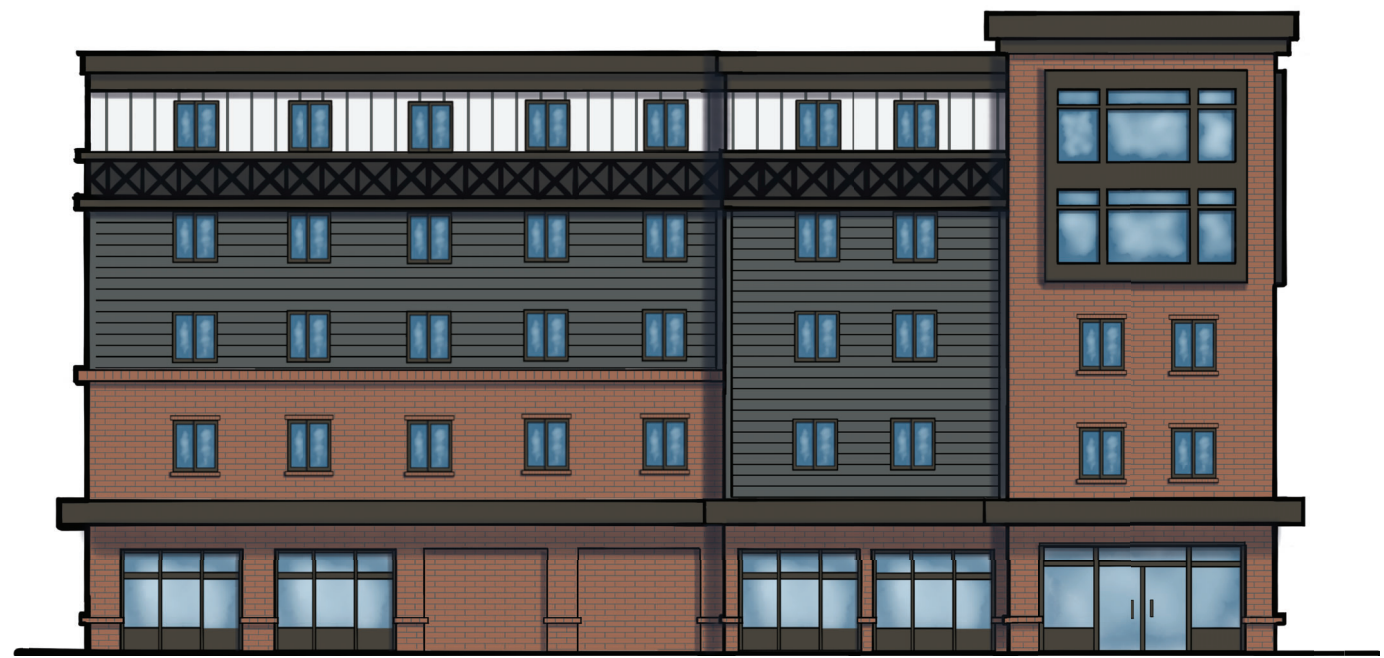


- Tower Roof 55'-0"
- Roof 48'-0"
- Level 4 37'-0"
- Level 3 26'-0"
- Level 2 15'-0"
- Level 1 0'-0"



BLDG 411 - EAST (RAILS TO TRAILS)

- Tower Roof 55'-0"
- Roof 48'-0"
- Level 4 37'-0"
- Level 3 26'-0"
- Level 2 15'-0"
- Level 1 0'-0"



BLDG 409 - SOUTH (BROOKLETTS AVE. PARKING LOT)

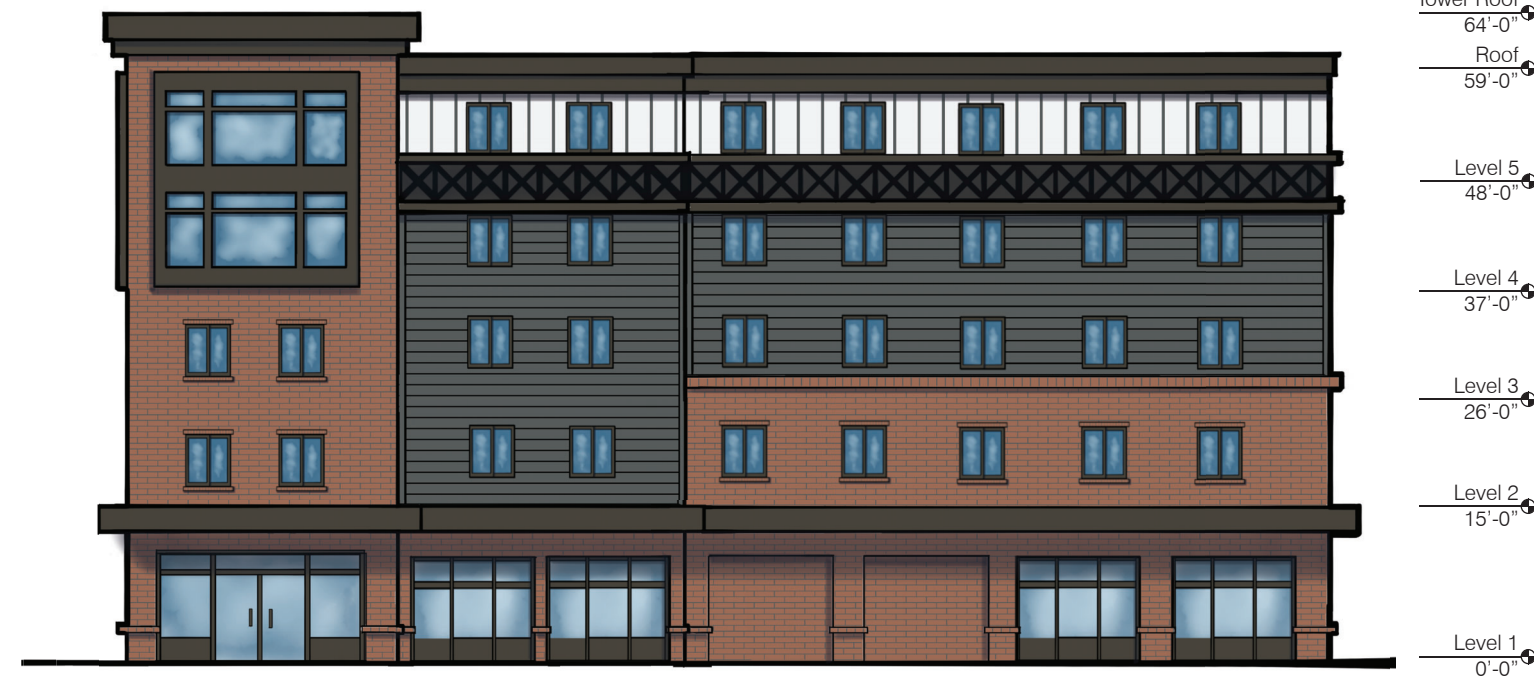
- Tower Roof 64'-0"
- Roof 59'-0"
- Level 5 48'-0"
- Level 4 37'-0"
- Level 3 26'-0"
- Level 2 15'-0"
- Level 1 0'-0"

BLDG 409



BLDG 409 - EAST (RAILS TO TRAILS)

- Tower Roof 64'-0"
- Roof 59'-0"
- Level 5 48'-0"
- Level 4 37'-0"
- Level 3 26'-0"
- Level 2 15'-0"
- Level 1 0'-0"

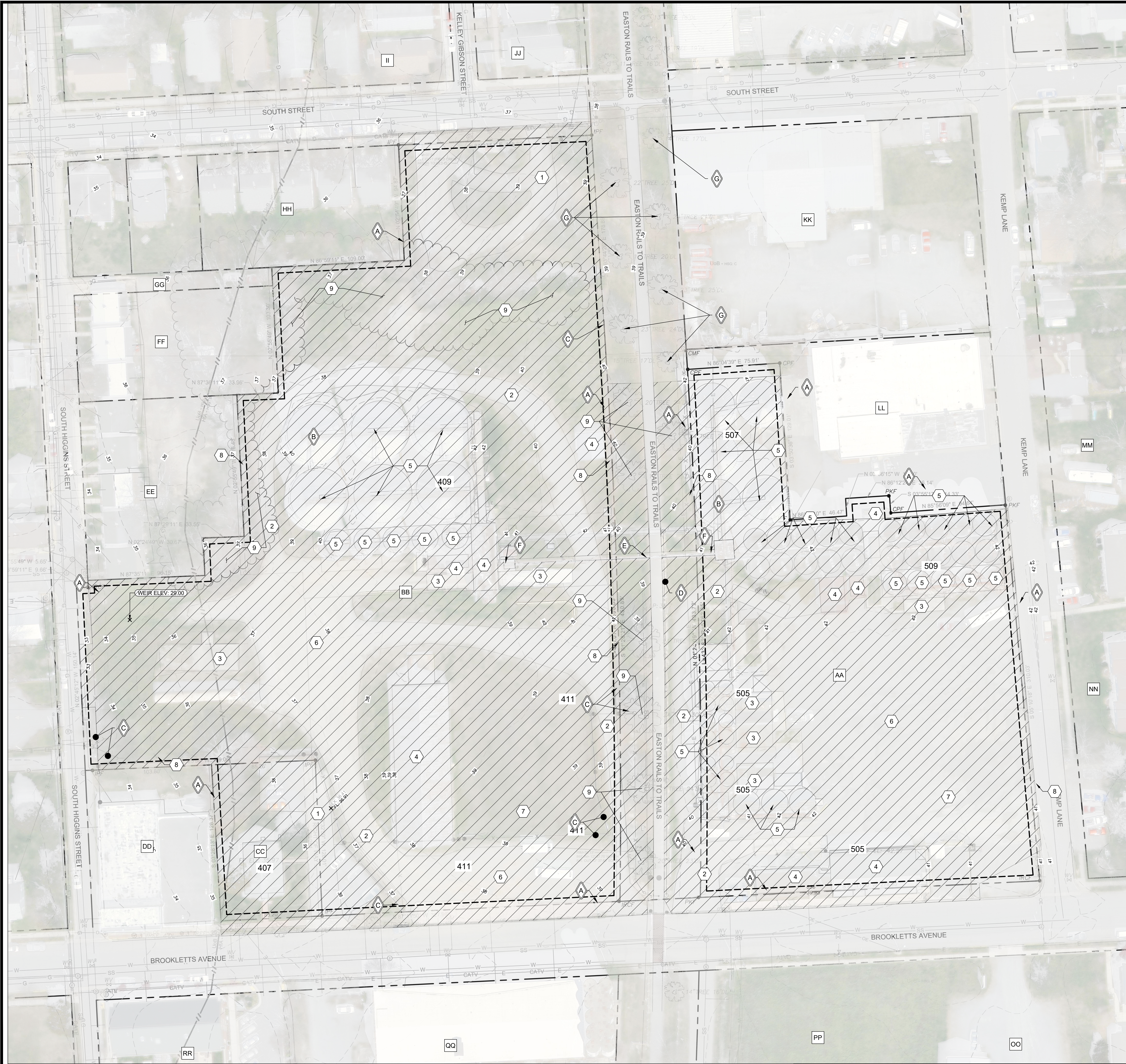


BLDG 409 - NORTH (SOUTH ST. PARKING LOT)

BLDG 409



BLDG 409 - WEST (S. HIGGINS ST. PARKING LOT)



EXISTING FEATURES

- A PROPERTY LINE
- B EXISTING SILO TO SALVAGE. DISASSEMBLE AND SAVE FOR REUSE.
- C EXISTING CHAIN LINK FENCE TO STAY
- D EXISTING WOODEN FENCE TO STAY
- E EXISTING OVERHEAD CONVEYOR TO STAY
- F TEMPORARY SHORING
- G EXISTING TREES TO REMAIN

DEMOLITION FEATURES

- 1 EXISTING ASPHALT ROAD TO BE DEMOLISHED
- 2 EXISTING GRAVEL ROAD TO BE DEMOLISHED
- 3 EXISTING CONCRETE PAD TO BE DEMOLISHED
- 4 EXISTING BUILDING TO BE DEMOLISHED
- 5 EXISTING SILO TO BE DEMOLISHED
- 6 EXISTING GRAVEL PARKING LOT TO BE DEMOLISHED
- 7 STABILIZED CONSTRUCTION ENTRANCE. SEE DETAIL ON SHEET V-105.01
- 8 SILT FENCE. SEE DETAIL ON SHEET V-105.01
- 9 EXISTING TREES TO BE REMOVED.

PROPERTY DATA

AA	EASTON CROSSING LLC M/G/P: 0104/000EA/1823 - B/P: 03117/00288	JJ	MICHAEL STUART, MEGHAN STUART M/G/P: 0104/0000/1618 - B/P: 02899/00298
BB	EASTON CROSSING LLC M/G/P: 0104/000ea/1826 - B/P: 03117/00288	KK	HELEN M PRITCHETT M/G/P: 0104/000EA/1821 - B/P: 02609/00464
CC	EASTON CROSSING LLC M/G/P: 0104/000EA/1833 - B/P: 03114/00180	LL	125 KEMP LLC M/G/P: 0104/000EA/1822 - B/P: 02734/00473
DD	401 BROOKLETTS LLC M/G/P: 0104/000EA/1834 - B/P: 02325/00109	MM	MICHAEL J SPARACINO M/G/P: 0104/000EA/1814 - B/P: 00780/00334
EE	MARVEL PROPERTIES L L C M/G/P: 0104/000EA/1831 - B/P: 00782/00168	NN	BROOKLETT COMMONS HOMEOWNERS ASSOCIATION INC M/G/P: 0104/0000/1812 - B/P: 00829/00629
FF	MARVEL PROPERTIES L L C M/G/P: 0104/000EA/1830 - B/P: 00782/00168	OO	411 NEEDWOOD LLC M/G/P: 0105/000EA/1824 - B/P: 03091/00291
GG	ROW M/G/P: -/- - B/P: -/-	PP	DONALD D FOSTER INC M/G/P: 0105/000EA/2206 - B/P: 00499/00522
HH	G M RENTALS L L C M/G/P: 0104/000EA/1827 - B/P: 00786/00443	QQ	SHAW KENNETH L, SHAW BARBARA H M/G/P: 0105/000EA/2205 - B/P: 02656/00470
II	BEVERLY LEWIS M/G/P: 0104/0000/1622 - B/P: 00890/00787	RR	TALBOT COUNTY MARYLAND M/G/P: 0105/000EA/2204 - B/P: 00613/00105

SOIL DATA				
Map Unit Symbol	Name	Hydrologic Soil Group	K-Factor	Hydric?
HfA	Hambrook-Sassafras complex, 0 to 2 percent slopes	B	0.32	No
UoB	Udorthents, loamy, 0 to 5 percent slopes	C	0.37	No

*NOTE: ANY WATER TO BE USED CAN COME OFF HYDRANT ON SOUTH HIGGINS STREET AFTER APPLYING FOR TEMPORARY WATER METER FROM EUC.

APPROVED:	APPROVED:	APPROVED:	APPROVED:
TOWN OF EASTON - TOWN ENGINEER	TOWN OF EASTON PLANNING AND ZONING	EASTON UTILITIES - ENGINEER	TALBOT SOIL CONSERVATION DISTRICT MANAGER
DATE	DATE	DATE	DATE

EXISTING CONDITIONS & DEMOLITION PLAN

FOR

EASTON CROSSING. LLC

TAX MAP 0104, GRIDS 000EA/0000, PARCELS 1823, 1826, 1833

EASTON, TALBOT COUNTY, MARYLAND

PREPARED FOR: EASTON CROSSING, LLC

RAUCH

Engineering | Survey | Architecture | Environmental

Main Office: 106 N Harrison St - Easton, MD 21601
Web: www.rauch-inc.com | Email: design@raucheng.com
Phone: 410 770 8081 | Fax: 410 770 3887

Professional Certification.

I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

12/28/2024

License No. 11024

Expiration Date: July 24, 2026

REVISIONS

REV. #	DATE	DESCRIPTION

DESIGNED BY: AF

APPROVED BY:

SHEET NO.: **V-101**

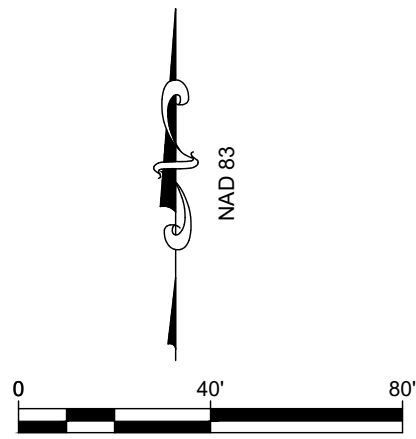
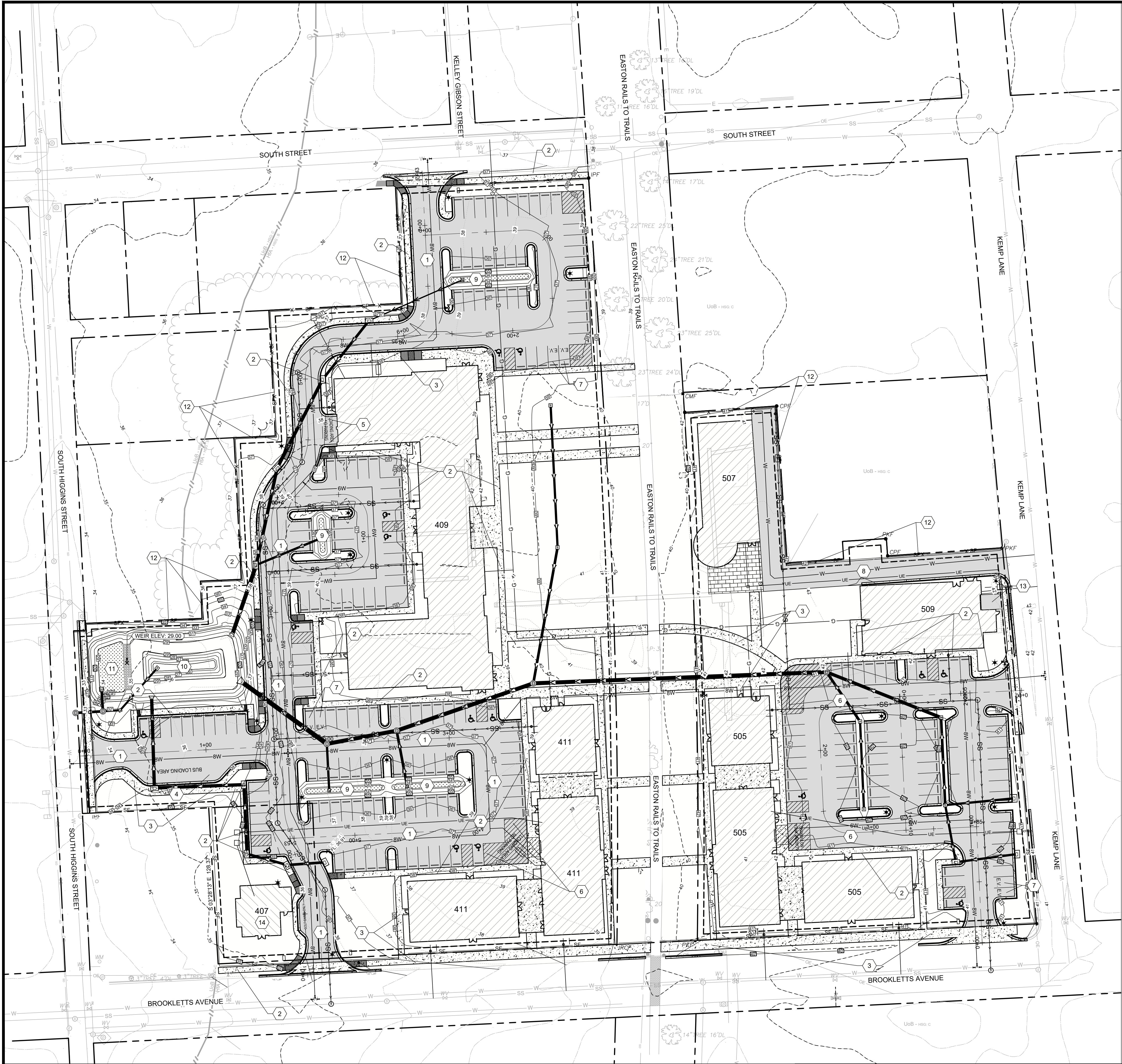
FOR REVIEW

MARYLAND PROFESSIONAL ENGINEER

811

DATE: 12/26/2024

SCALE: 1" = 40'



PROPOSED FEATURES

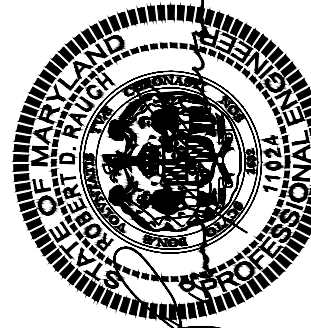
- 1 24' WIDE THRU-WAY
- 2 5' WIDE CONCRETE SIDEWALK
- 3 8' WIDE CONCRETE SIDEWALK
- 4 15' WIDE x 60' LONG BUS PULL-OFF/LOADING AREA
- 5 9.5' WIDE x 26' LONG GARAGE ACCESS/LOADING AREA
- 6 DROP-OFF/LOADING AREA
- 7 E.V. CHARGING STATION STALL
- 8 20' WIDE ACCESS LANE
- 9 BIO-RETENTION STRUCTURE FOR STORMWATER MANAGEMENT. TOP OF BANK VARIES
- 10 SUBMERGED GRAVEL WETLAND AND FOREBAY
FOREBAY TOP OF BANK ELEV: 31.50', FOREBAY FLOOR ELEV: 25.00'
- 11 SUBMERGED GRAVEL WETLAND AND FOREBAY
SGW TOP OF BANK ELEV: 31.50', SGW FLOOR ELEV: 29.00'
- 12 PROPOSED PRIVACY FENCE. HEIGHT AND TYPE TO BE DETERMINED
- 13 TRASH ROOM EXTERIOR ACCESS
- 14 BUILDING 407 RENOVATED UNDER PREVIOUS PLAN

OVERALL SITE PLAN

FOR
EASTON CROSSING. LLC
TAX MAP 0104, GRIDS 000EA0000, PARCELS 1823, 1826, 1833
EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC



Main Office: 106 N Harrison St - Easton, MD 21601
Web: www.rauch-inc.com | Email: design@raucheng.com
Phone: 410 770 8081 | Fax: 410 770 3887



Professional Certification.
I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.

License No. 11024
Expiration Date: July 24, 2026

REVISIONS

REV. #	DATE	DESCRIPTION



DATE: 12/26/2024
SCALE: 1" = 40'
DRAWN BY: AF
DESIGNED BY:
APPROVED BY:

SHEET NO.:
C-100.01

FOR REVIEW

APPROVED:

TOWN OF EASTON - TOWN ENGINEER

DATE

APPROVED:

TOWN OF EASTON PLANNING AND ZONING

DATE

APPROVED:

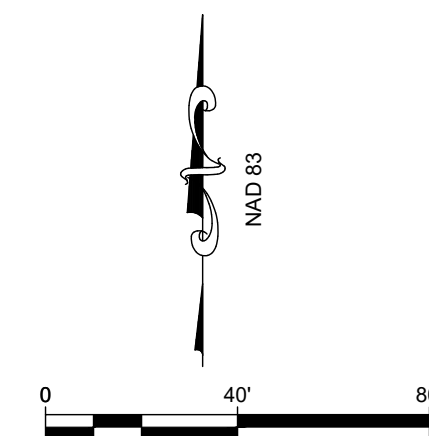
EASTON UTILITIES - ENGINEER

DATE

APPROVED:

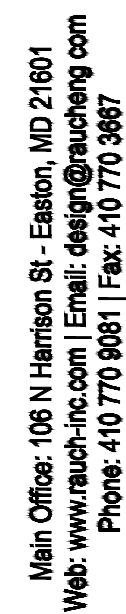
TALBOT SOIL CONSERVATION DISTRICT MANAGER

DATE



- 1 24' WIDE THRU-WAY
- 2 5' WIDE CONCRETE SIDEWALK
- 3 8' WIDE CONCRETE SIDEWALK
- 4 15' WIDE x 60' LONG BUS PULL-OFF/LOADING AREA
- 5 9.5' WIDE x 26' LONG GARAGE ACCESS/LOADING AREA
- 6 DROP-OFF/LOADING AREA
- 7 E.V. CHARGING STATION STALL
- 8 20' WIDE ACCESS LANE
- 9 BIO-RETENTION STRUCTURE FOR STORMWATER MANAGEMENT. TOP OF BANK VARIES
- 10 SUBMERGED GRAVEL WETLAND AND FOREBAY
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- 11 SUBMERGED GRAVEL WETLAND AND FOREBAY
SGW TOP OF BANK ELEV: 31.50', SGW FLOOR ELEV: 29.00
- 12 PROPOSED PRIVACY FENCE. HEIGHT AND TYPE TO BE DETERMINED
- 13 TRASH ROOM EXTERIOR ACCESS

FOR
EASTON CROSSING
EASTON CROSSING. LLC
TAX MAP 0104, GRIDS 000EAJ0000, PARCELS 1823, 1826, 1833
EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC



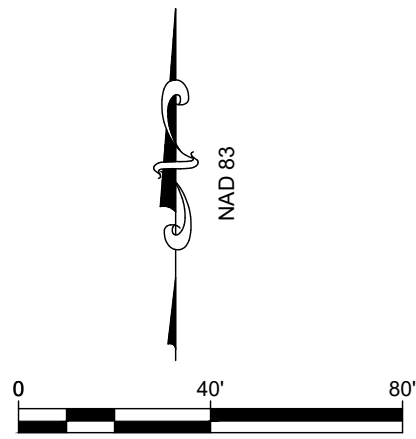
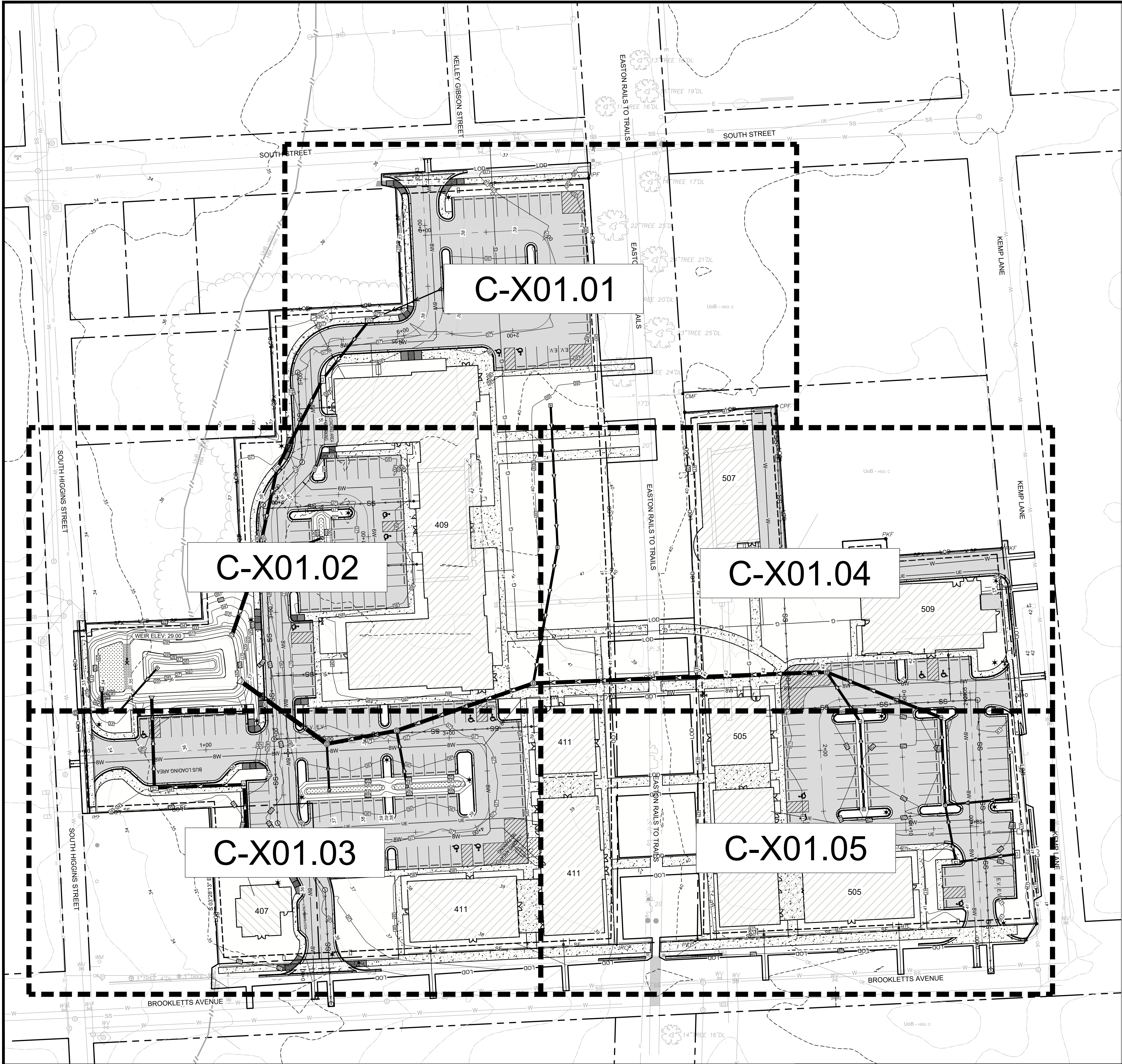
License No. 11024
Expiration Date: July 24, 2026



**FOR
REVIEW**

APPROVED:

TALBOT SOIL CONSERVATION DISTRICT MANAGER



APPROVED:

TOWN OF EASTON - TOWN ENGINEER

DATE

APPROVED:

TOWN OF EASTON PLANNING AND ZONING

DATE

APPROVED:

EASTON UTILITIES - ENGINEER

DATE

APPROVED:

TALBOT SOIL CONSERVATION DISTRICT MANAGER

DATE

REVISIONS

DESCRIPTION

REV. #

DATE

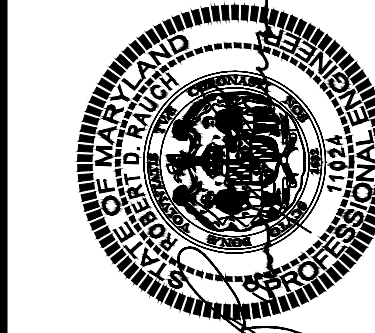


DATE: 12/26/2024
SCALE: 1" = 40'
DRAWN BY: AF
DESIGNED BY:
APPROVED BY:

SHEET NO.: C-100.03

FOR REVIEW

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License No. 11024
Expiration Date: July 24, 2026

Main Office: 106 N Harrison St - Easton, MD 21601
Web: www.rauch-inc.com | Email: design@raucheng.com
Phone: 410 770 8081 | Fax: 410 770 3887

KEY SHEET

FOR
EASTON CROSSING. LLC
TAX MAP 0104, GRIDS 000EA0000, PARCELS 1823, 1826, 1833
EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC

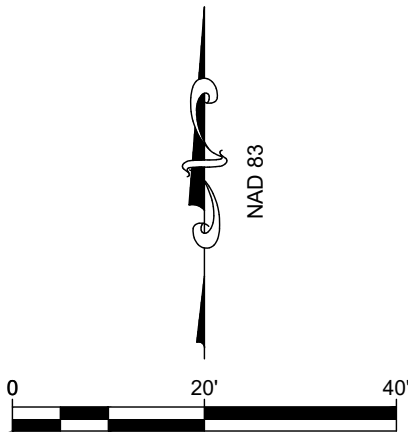
EROSION & SEDIMENT CONTROL FEATURES

- A AT-GRADE INLET PROTECTION PER DETAIL ON C-205.01
- B CURB INLET PROTECTION PER DETAIL ON C-205.01
- C SILT FENCE PER DETAIL ON C-205.01

STORMWATER MANAGEMENT FEATURES

- 1 BIO-RETENTION #1
TOP OF BANK ELEV: 35.35
FLOOR ELEV: 33.35
- 2 2' WIDE CURB CUT
ELEV: 37.85
- 3 2' WIDE CURB CUT
ELEV: 36.29

SOIL DATA				
Map Unit Symbol	Name	Hydrologic Soil Group	K-Factor	Hydric?
HfA	Hambrook-Sassafras complex, 0 to 2 percent slopes	B	0.32	No
UoB	Udorthents, loamy, 0 to 5 percent slopes	C	0.37	No

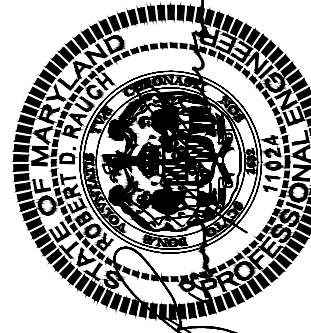


ESC AND SWM PLAN

FOR
EASTON CROSSING. LLC
EASTON CROSSING. LLC
TAX MAP 0104, GRIDS 000EA0000, PARCELS 1823, 1826, 1833
EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC

RAUCH
Engineering | Survey | Architecture | Environmental

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License No. 11024
Expiration Date: July 24, 2026

REVISIONS

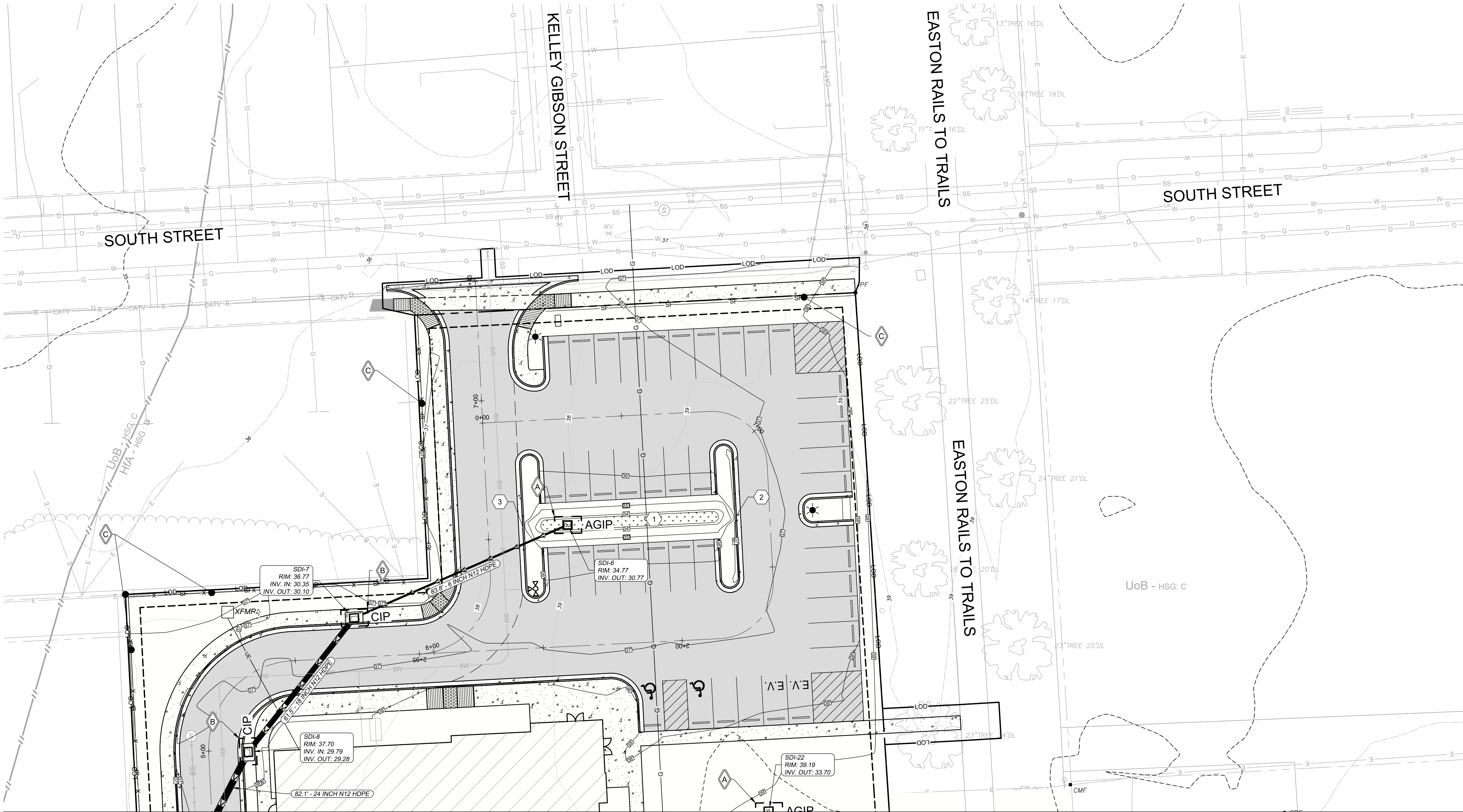
REV. #	DATE	DESCRIPTION



DATE: 12/26/2024
SCALE: 1" = 20'
DRAWN BY: AF
DESIGNED BY:
APPROVED BY:

SHEET NO.:
C-201.01

FOR
REVIEW



CONTINUATION - SEE SHEET C-201.02

CONTINUATION - SEE SHEET C-201.04

APPROVED: _____
TOWN OF EASTON - TOWN ENGINEER DATE

APPROVED: _____
TOWN OF EASTON PLANNING AND ZONING DATE

APPROVED: _____
EASTON UTILITIES - ENGINEER DATE

APPROVED: _____
TALBOT SOIL CONSERVATION DISTRICT MANAGER DATE

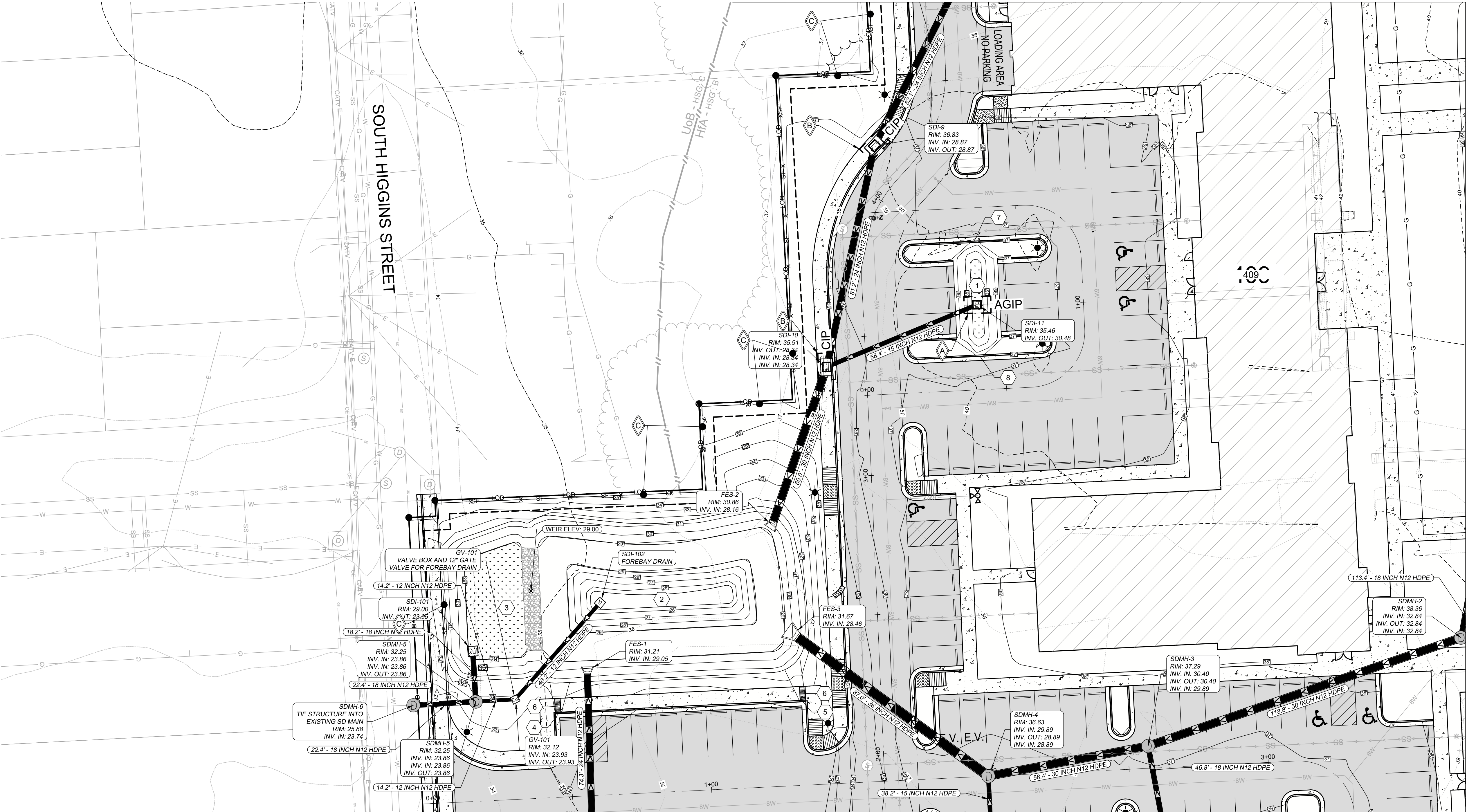
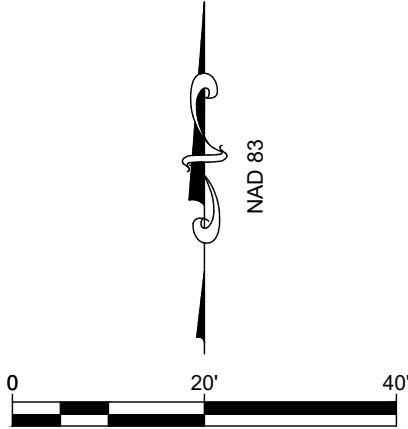
EROSION & SEDIMENT CONTROL FEATURES

- A AT-GRADE INLET PROTECTION PER DETAIL ON C-205.01
- B CURB INLET PROTECTION PER DETAIL ON C-205.01
- C SILT FENCE PER DETAIL ON C-205.01

STORMWATER MANAGEMENT FEATURES

- 1 BIO-RETENTION #2
TOP OF BANK ELEV: 36.46
FLOOR ELEV: 34.46
- 2 FOREBAY #1
TOP OF BANK ELEV: 31.50
FLOOR ELEV: 25.00
- 3 SUBMERGED GRAVEL WETLAND #1
TOP OF BANK ELEV: 31.50
FLOOR ELEV: 29.00
- 4 2' WIDE CURB CUT
ELEV: 32.73
- 5 2' WIDE CURB CUT
ELEV: 32.95
- 6 2' WIDE SIDEWALK OPENING W/ GRATE COVERING
- 7 2' WIDE CURB CUT
ELEV: 36.78
- 8 2' WIDE CURB CUT
ELEV: 36.80

SOIL DATA				
Map Unit Symbol	Name	Hydrologic Soil Group	K-Factor	Hydric?
HfA	Hambrook-Sassafras complex, 0 to 2 percent slopes	B	0.32	No
UoB	Udorthents, loamy, 0 to 5 percent slopes	C	0.37	No



CONTINUATION - SEE SHEET C-201.03

CONTINUATION - SEE SHEET C-201.01

CONTINUATION - SEE SHEET C-201.04

APPROVED: _____
TOWN OF EASTON - TOWN ENGINEER DATE

APPROVED: _____
TOWN OF EASTON PLANNING AND ZONING DATE

APPROVED: _____
EASTON UTILITIES - ENGINEER DATE

APPROVED: _____
TALBOT SOIL CONSERVATION DISTRICT MANAGER DATE

REVISIONS

REV. #	DATE	DESCRIPTION



DATE: 12/26/2024
SCALE: 1" = 20'
DRAWN BY: AF
DESIGNED BY:
APPROVED BY:

SHEET NO.: C-201.02

FOR REVIEW

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License No. 11024
Expiration Date: July 24, 2026



ESC AND SWM PLAN

FOR
EASTON CROSSING. LLC
TAX MAP 0104, GRIDS 000EA0000, PARCELS 1823, 1826, 1833

EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC

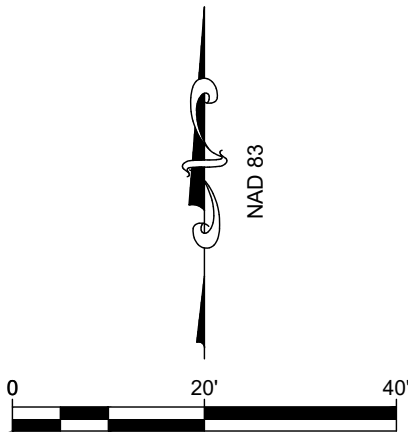
EROSION & SEDIMENT CONTROL FEATURES

- A AT-GRADE INLET PROTECTION PER DETAIL ON C-205.01
- B CURB INLET PROTECTION PER DETAIL ON C-205.01
- C SILT FENCE PER DETAIL ON C-205.01

STORMWATER MANAGEMENT FEATURES

- 1 BIO-RETENTION #3
TOP OF BANK ELEV: 35.71
FLOOR ELEV: 33.71
- 2 BIO-RETENTION #4
TOP OF BANK ELEV: 35.71
FLOOR ELEV: 33.71
- 3 2' WIDE CURB CUT
ELEV: 35.99
- 4 2' WIDE CURB CUT
ELEV: 36.22
- 5 NOTE
- 6 NOTE

SOIL DATA				
Map Unit Symbol	Name	Hydrologic Soil Group	K-Factor	Hydric?
HfA	Hambrook-Sassafras complex, 0 to 2 percent slopes	B	0.32	No
UoB	Udorthents, loamy, 0 to 5 percent slopes	C	0.37	No

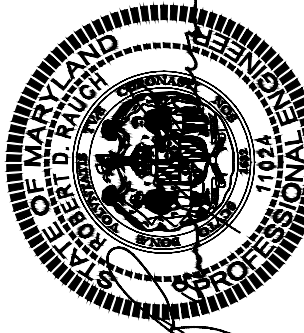


ESC AND SWM PLAN

FOR
EASTON CROSSING. LLC
TAX MAP 0104, GRIDS 000EA0000, PARCELS 1823, 1826, 1833
EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC

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Engineering | Survey | Architecture | Environmental

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License No. 11024
Expiration Date: July 24, 2026

REVISIONS

REV. #	DATE	DESCRIPTION



DATE: 12/26/2024
SCALE: 1" = 20'
DRAWN BY: AF
DESIGNED BY:
APPROVED BY:

SHEET NO.:
C-201.03

FOR
REVIEW

APPROVED:

TOWN OF EASTON - TOWN ENGINEER

DATE

APPROVED:

TOWN OF EASTON PLANNING AND ZONING

DATE

APPROVED:

EASTON UTILITIES - ENGINEER

DATE

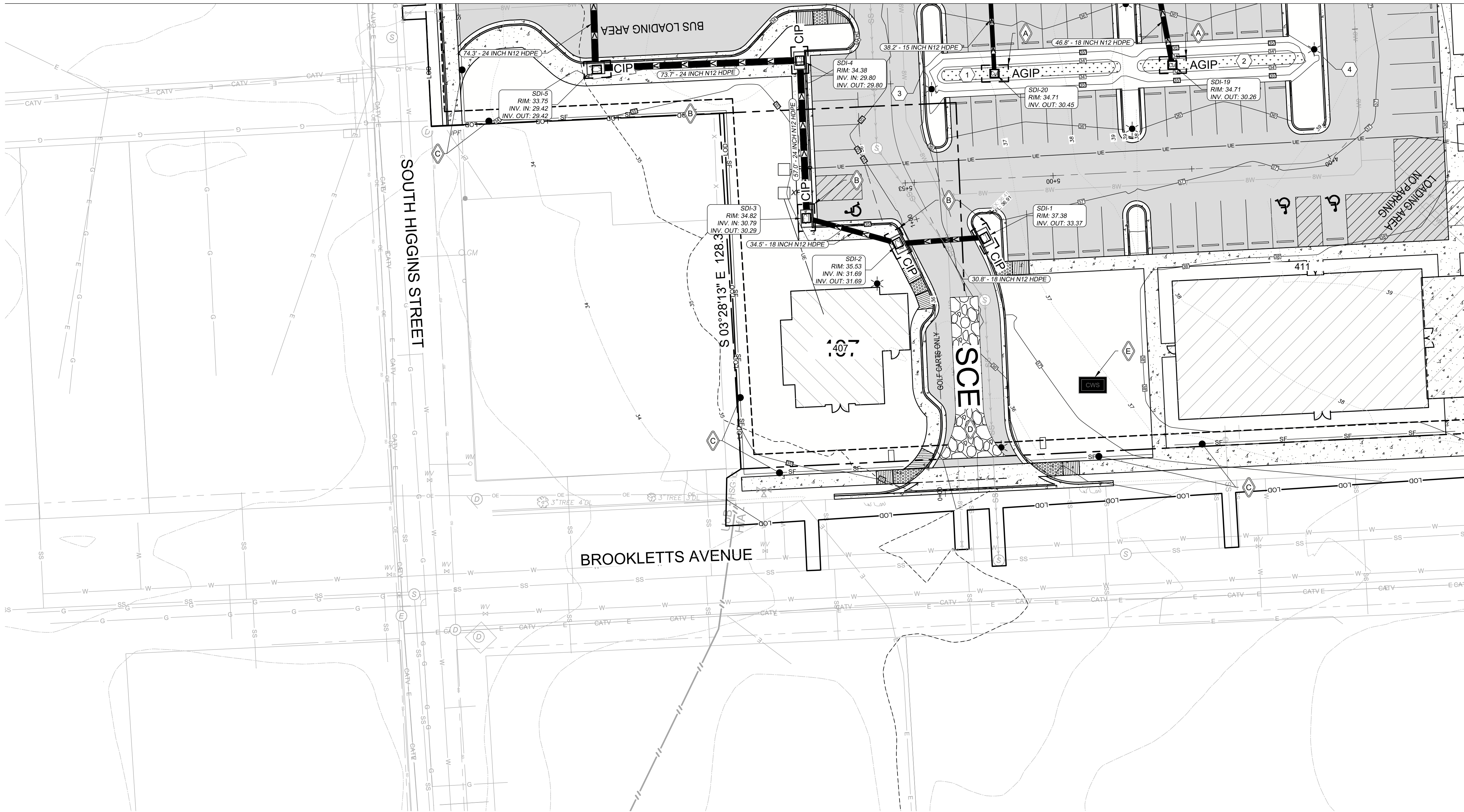
APPROVED:

TALBOT SOIL CONSERVATION DISTRICT MANAGER

DATE

CONTINUATION - SEE SHEET C-201.02

CONTINUATION - SEE SHEET C-201.05



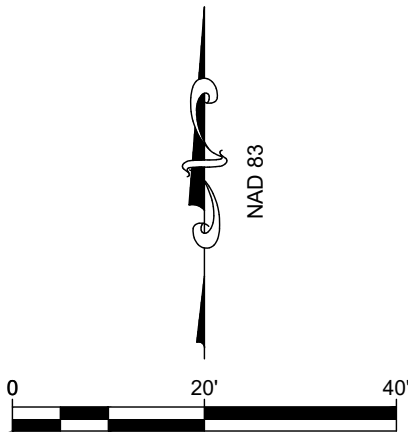
EROSION & SEDIMENT CONTROL FEATURES

- A AT-GRADE INLET PROTECTION PER DETAIL ON C-205.01
- B SILT FENCE PER DETAIL ON C-205.01

STORMWATER MANAGEMENT FEATURES

- 1 2' WIDE CURB CUT
ELEV: 39.85
- 2 2' WIDE CURB CUT
ELEV: 39.95
- 3 2' WIDE CURB CUT
ELEV: 39.94
- 4 NOTE
- 5 NOTE

SOIL DATA				
Map Unit Symbol	Name	Hydrologic Soil Group	K-Factor	Hydric?
UoB	Udorthents, loamy, 0 to 5 percent slopes	C	0.37	No

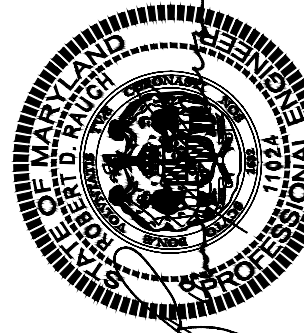


ESC AND SWM PLAN

FOR
EASTON CROSSING. LLC
EASTON CROSSING. LLC
TAX MAP 0104, GRIDS 000EA0000, PARCELS 1823, 1826, 1833
EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC

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Engineering | Survey | Architecture | Environmental

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REVISIONS

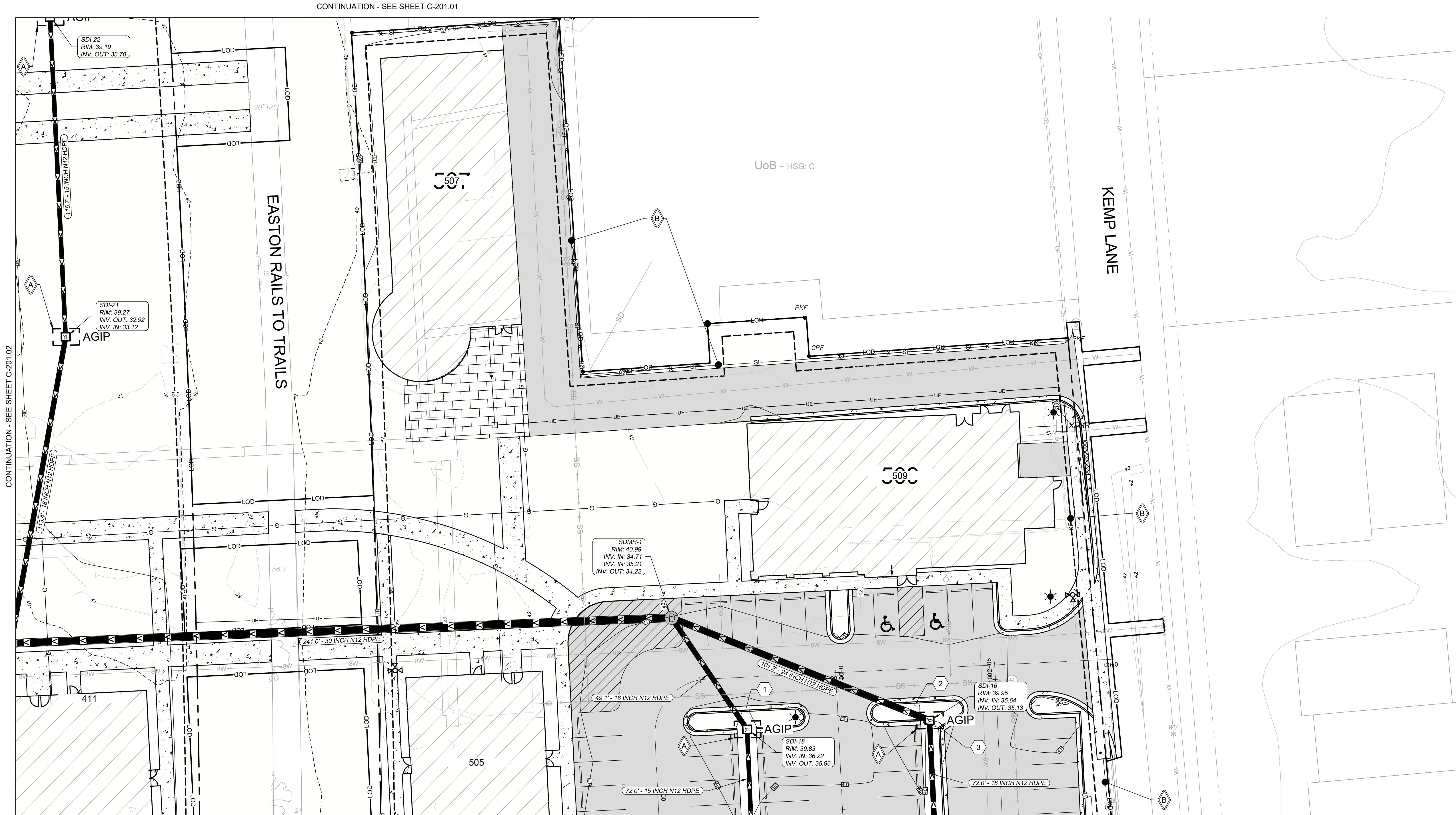
REV. #	DATE	DESCRIPTION



DATE: 12/26/2024
SCALE: 1" = 20'
DRAWN BY: AF
DESIGNED BY:
APPROVED BY:

SHEET NO.:
C-201.04

FOR
REVIEW



CONTINUATION - SEE SHEET C-201.05

APPROVED:

TOWN OF EASTON - TOWN ENGINEER

DATE

APPROVED:

TOWN OF EASTON PLANNING AND ZONING

DATE

APPROVED:

EASTON UTILITIES - ENGINEER

DATE

APPROVED:

TALBOT SOIL CONSERVATION DISTRICT MANAGER

DATE

EROSION & SEDIMENT CONTROL FEATURES

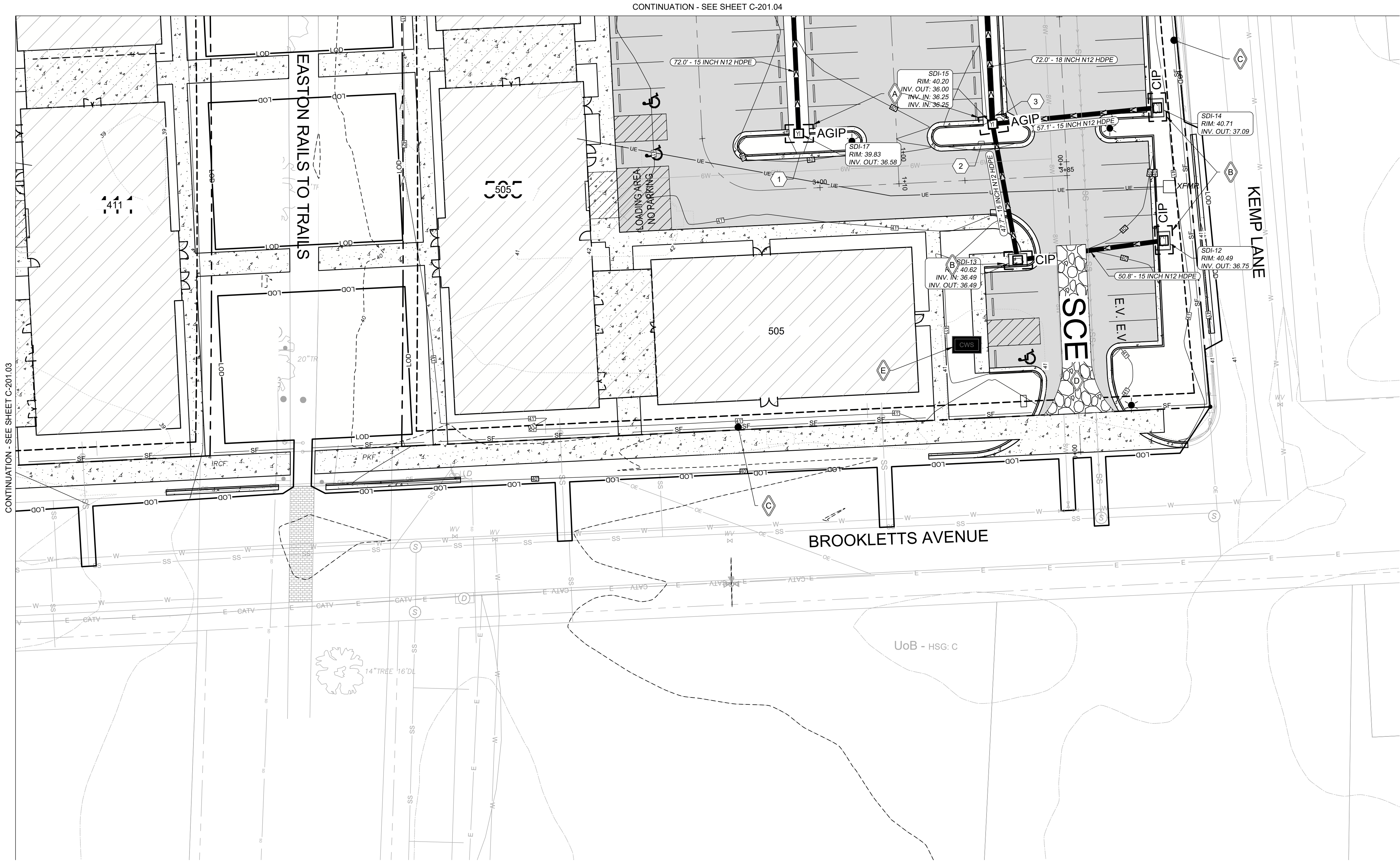
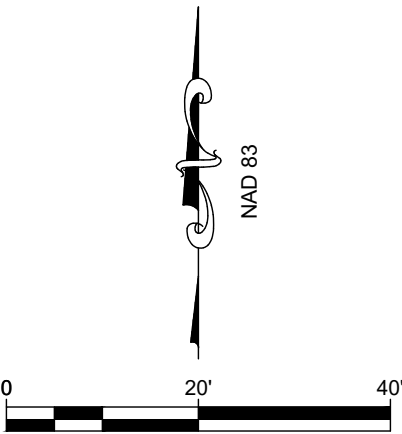
- A AT-GRADE INLET PROTECTION PER DETAIL ON C-205.01
- B CURB INLET PROTECTION PER DETAIL ON C-205.01
- C SILT FENCE PER DETAIL ON C-205.01
- D STABILIZED CONSTRUCTION ENTRANCE PER DETAIL ON C-205.01
- E ON-SITE CONCRETE WASHOUT STRUCTURE PER DETAIL ON C-205.01

STORMWATER MANAGEMENT FEATURES

- 1 2' CURB CUT
ELEV: 39.85
- 2 2' CURB CUT
ELEV: 39.95
- 3 2' CURB CUT
ELEV: 39.94

SOIL DATA

Map Unit Symbol	Name	Hydrologic Soil Group	K-Factor	Hydric?
UoB	Udorthents, loamy, 0 to 5 percent slopes	C	0.37	No



APPROVED:

TOWN OF EASTON - TOWN ENGINEER

DATE

APPROVED:

TOWN OF EASTON PLANNING AND ZONING

DATE

APPROVED:

EASTON UTILITIES - ENGINEER

DATE

APPROVED:

TALBOT SOIL CONSERVATION DISTRICT MANAGER

DATE

REVISIONS

DESCRIPTION

REV. #

DATE



DATE: 12/26/2024
SCALE: 1" = 20'
DRAWN BY: AF
DESIGNED BY:
APPROVED BY:

SHEET NO.:

C-201.05

FOR
REVIEW

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Phone: 410 770 9081 | Fax: 410 770 3987

ESC AND SWM PLAN

FOR
EASTON CROSSING. LLC
TAX MAP 0104, GRIDS 000EA0000, PARCELS 1823, 1826, 1833

EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC

RESERVED FOR
SWM PROFILES

APPROVED:	APPROVED:	APPROVED:	APPROVED:
TOWN OF EASTON - TOWN ENGINEER	TOWN OF EASTON PLANNING AND ZONING	EASTON UTILITIES - ENGINEER	TALBOT SOIL CONSERVATION DISTRICT MANAGER
DATE	DATE	DATE	DATE



DATE: 12/26/2024
SCALE: AS SHOWN
DRAWN BY: AF
DESIGNED BY:
APPROVED BY:

SHEET NO.: C-203

FOR REVIEW

REVISIONS		
REV. #	DATE	DESCRIPTION



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Expiration Date: July 24, 2026

12/26/2024

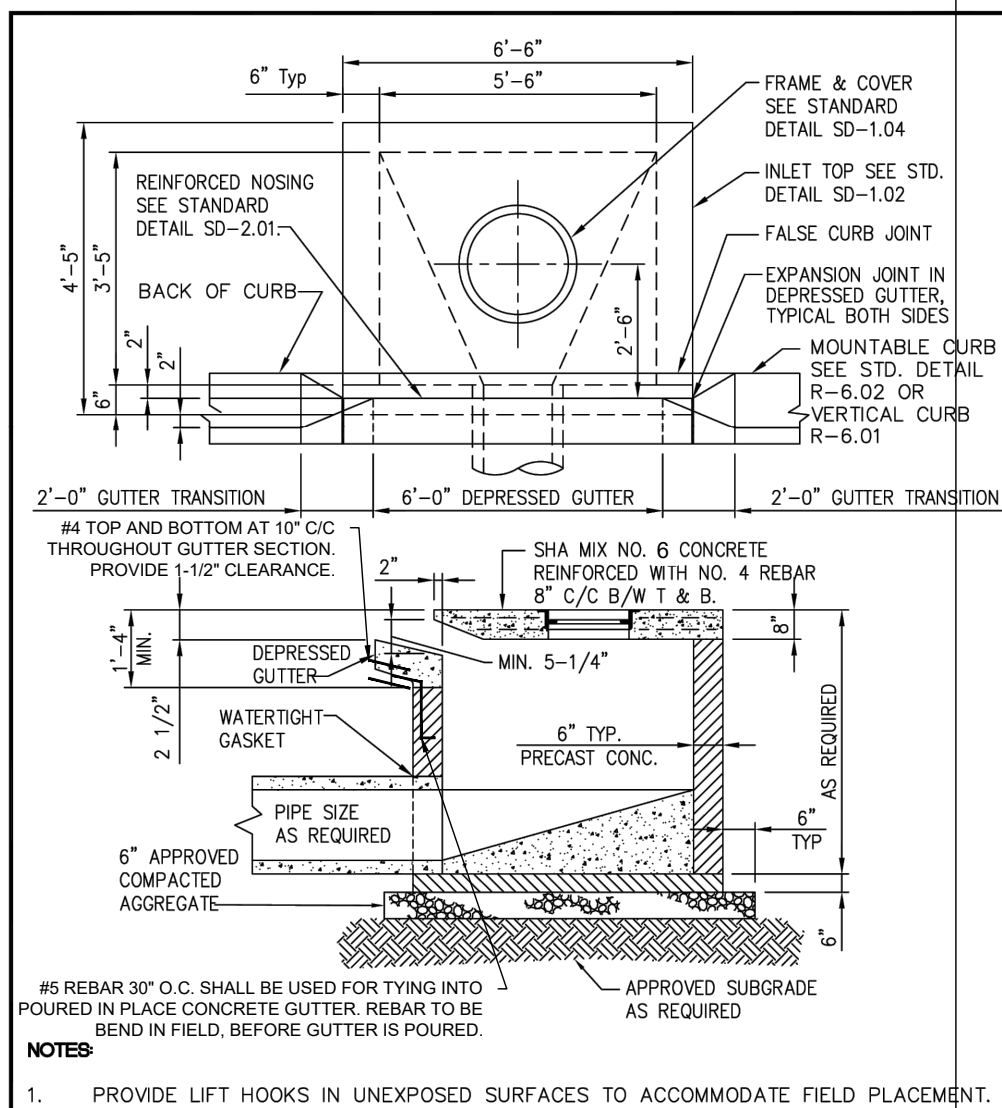


Engineering | Survey | Architecture | Environmental

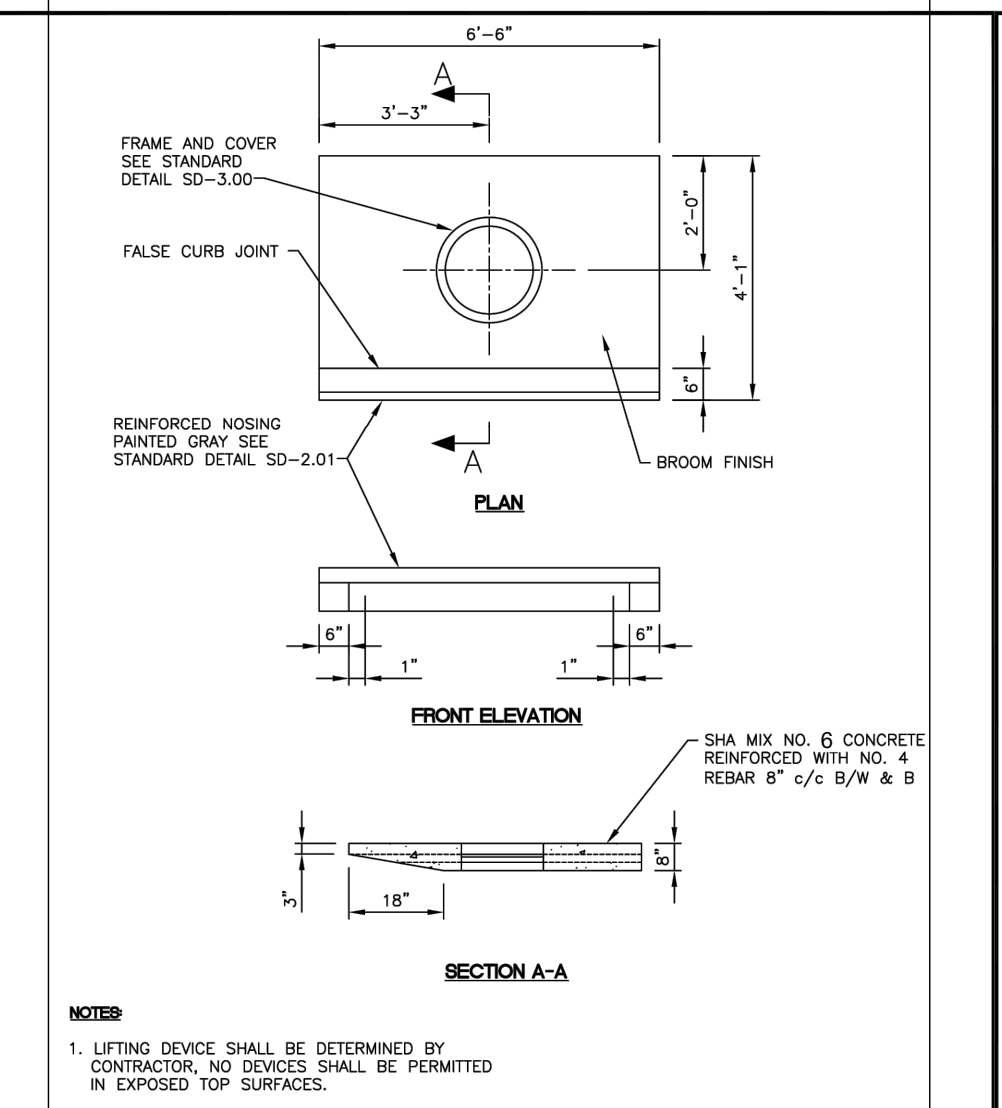
Main Office: 106 N. Harrison St. - Easton, MD 21601
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Phone: 410 770 9081 | Fax: 410 770 3987

STORMWATER MANAGEMENT PROFILES

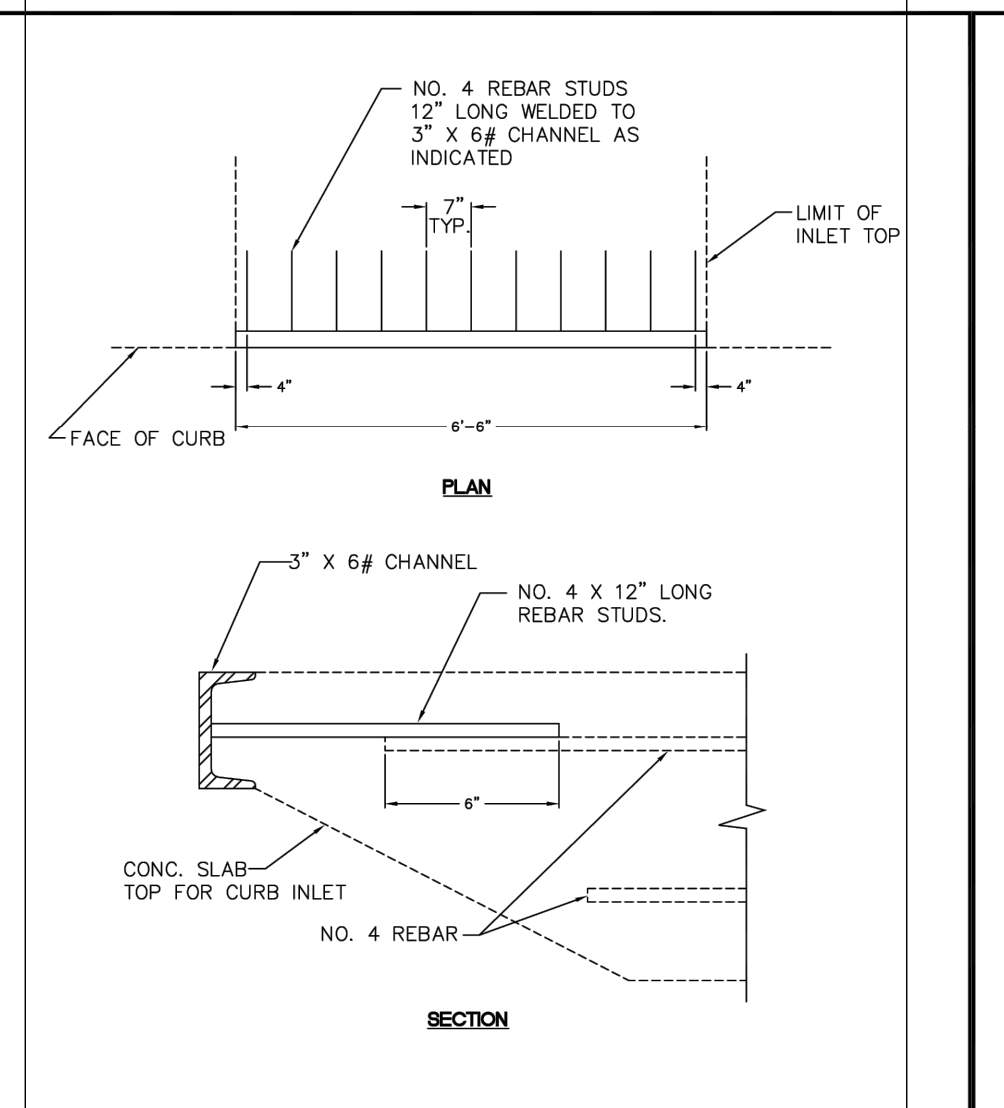
FOR
EASTON CROSSING. LLC
EASTON CROSSING. LLC
TAX MAP 0104, GRIDS 000EA0000, PARCELS 1823, 1826, 1833
EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC



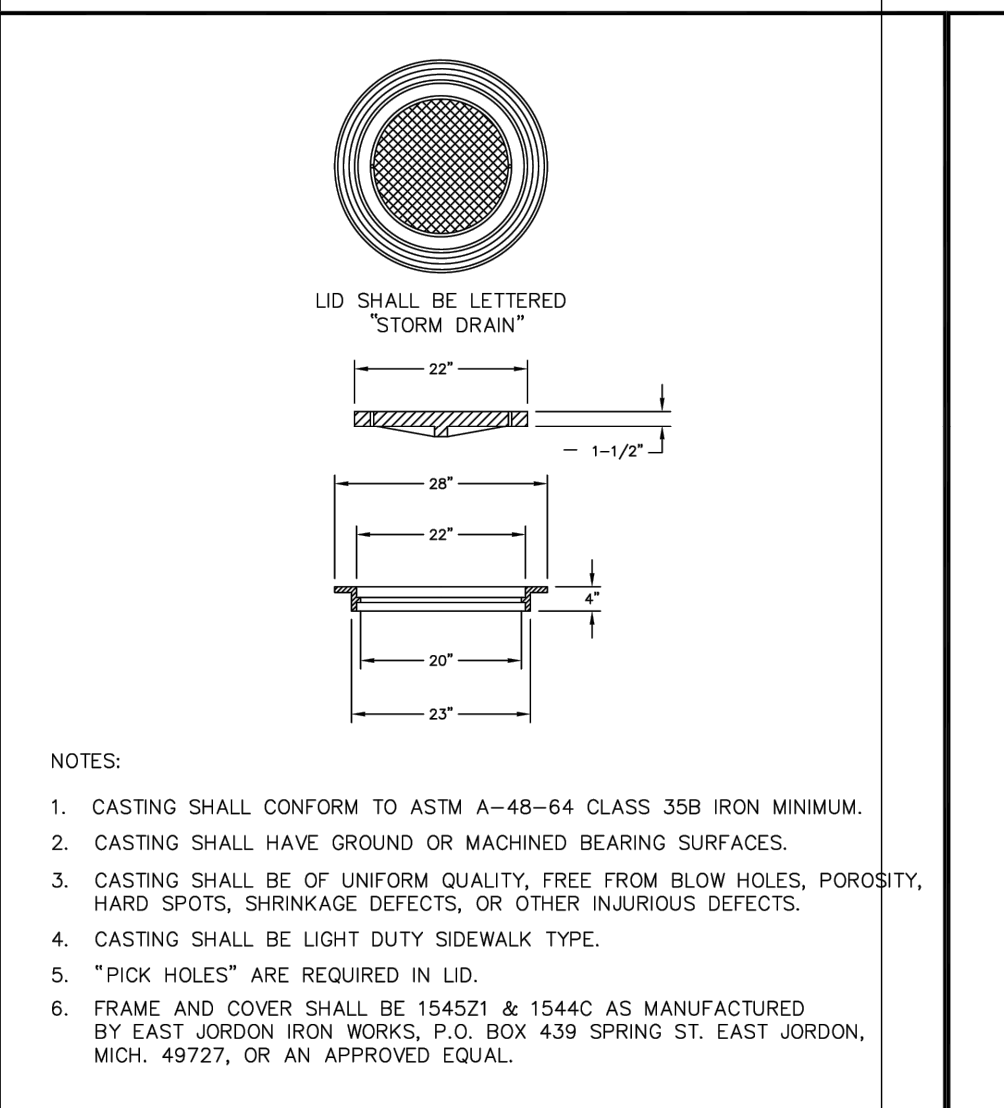
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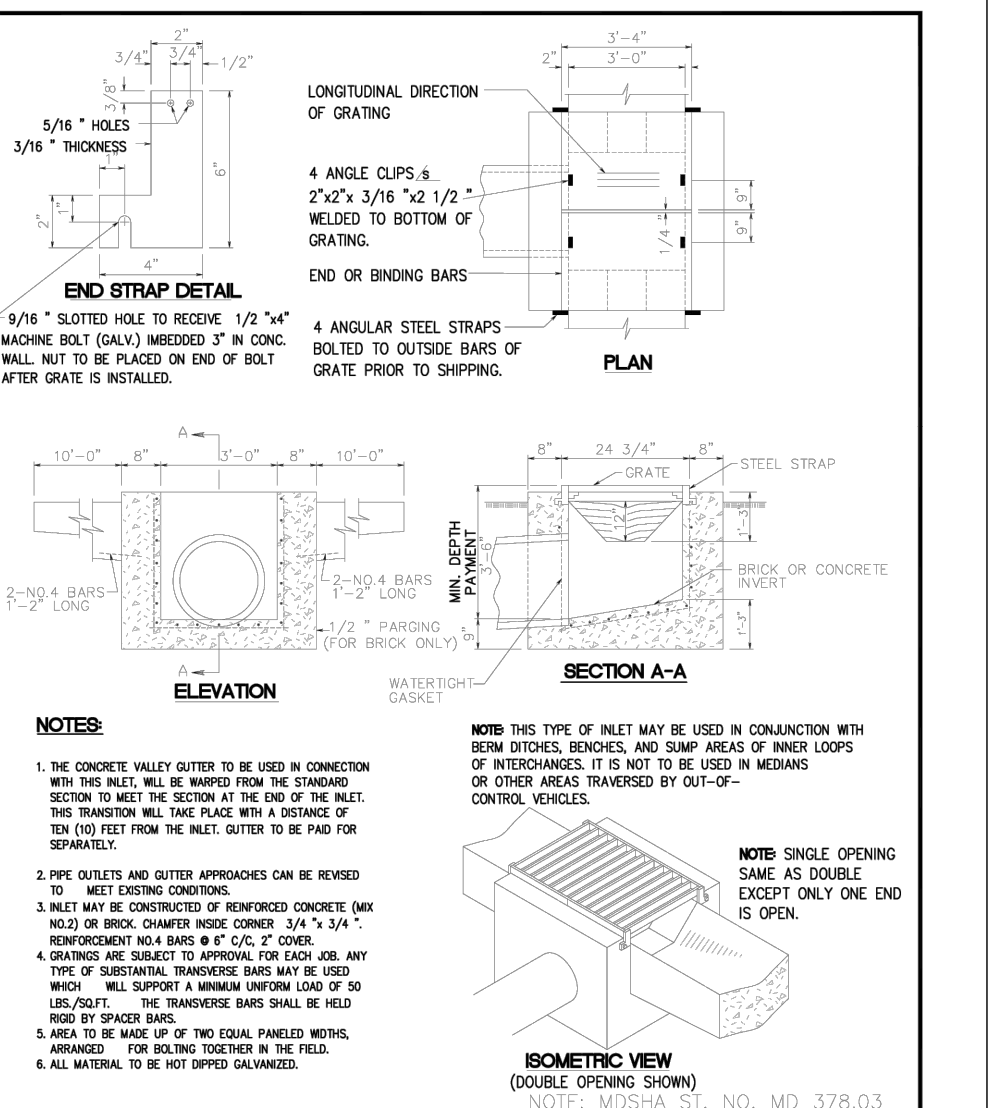
	 TOWN ENGINEER DATE: 1/1/2020	TOWN OF EASTON STANDARD DETAILS INLET TOP
	ISSUED: JANUARY 2020	STANDARD NO.: TOE-SD-102



	 TOWN ENGINEER DATE: 1/1/2020	TOWN OF EASTON STANDARD DETAILS REINFORCED NOSING
	ISSUED: JANUARY 2020	STANDARD NO.: TOE-SD-103

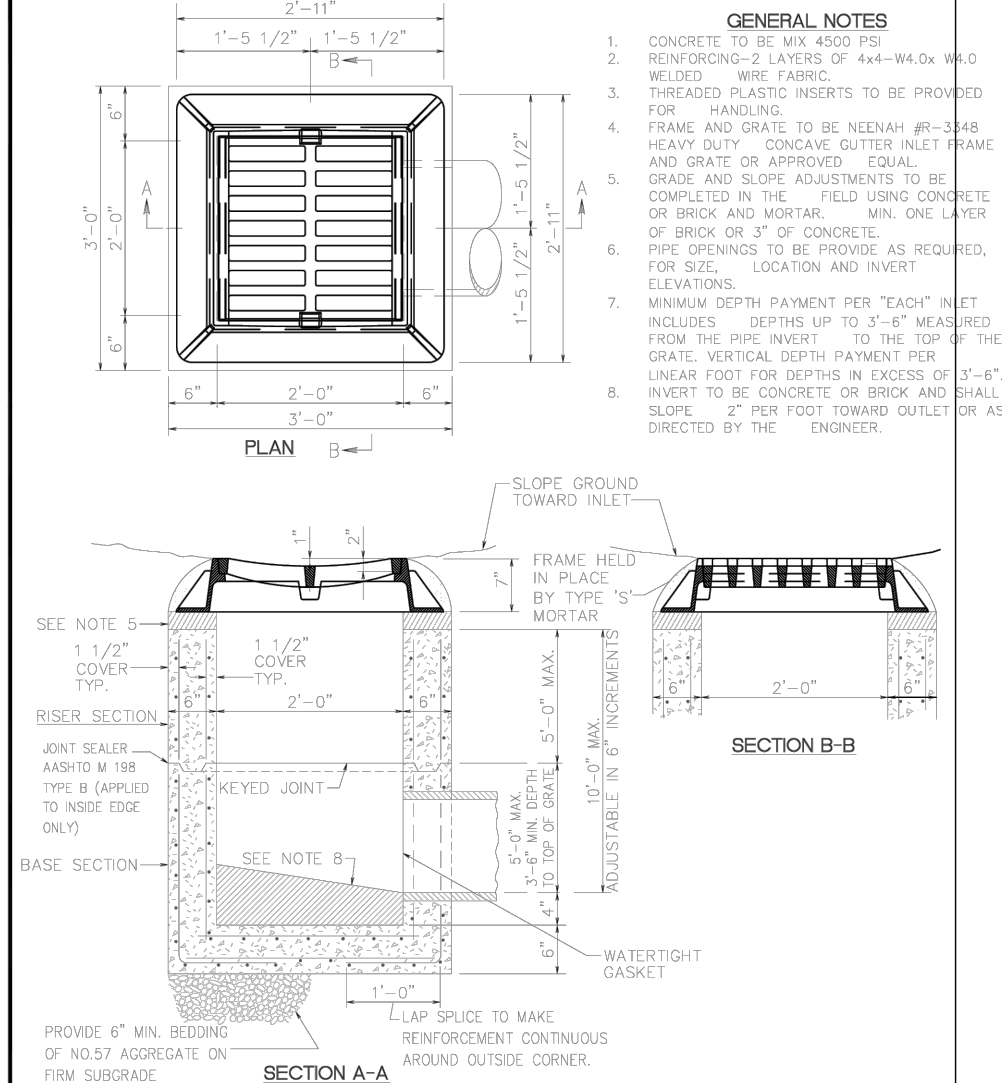


	 TOWN ENGINEER DATE: 1/1/2020	TOWN OF EASTON STANDARD DETAILS INLET FRAME AND COVER
	ISSUED: JANUARY 2020	STANDARD NO.: TOE-SD-104

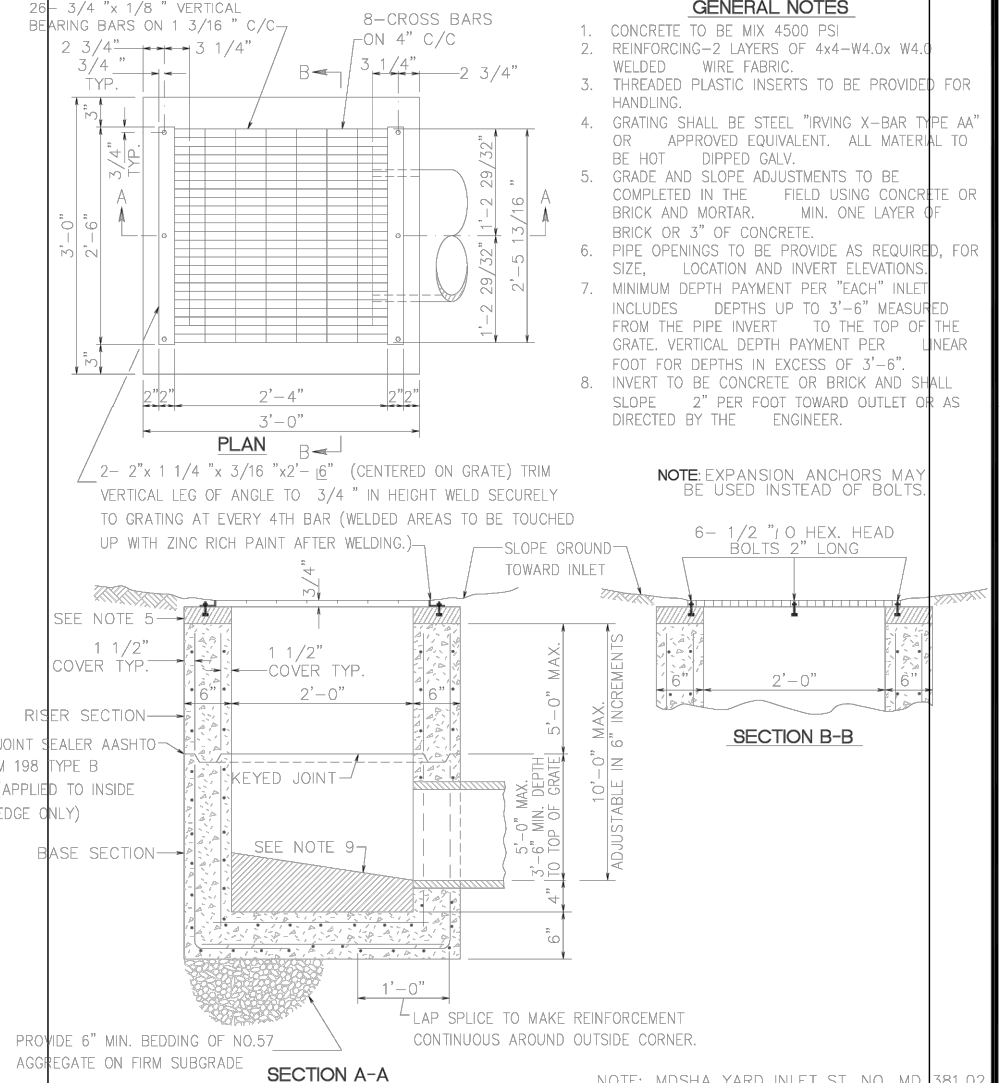


	 TOWN ENGINEER DATE: 1/1/2020	TOWN OF EASTON STANDARD DETAILS INLET FRAME AND COVER
	ISSUED: JANUARY 2020	STANDARD NO.: TOE-SD-105

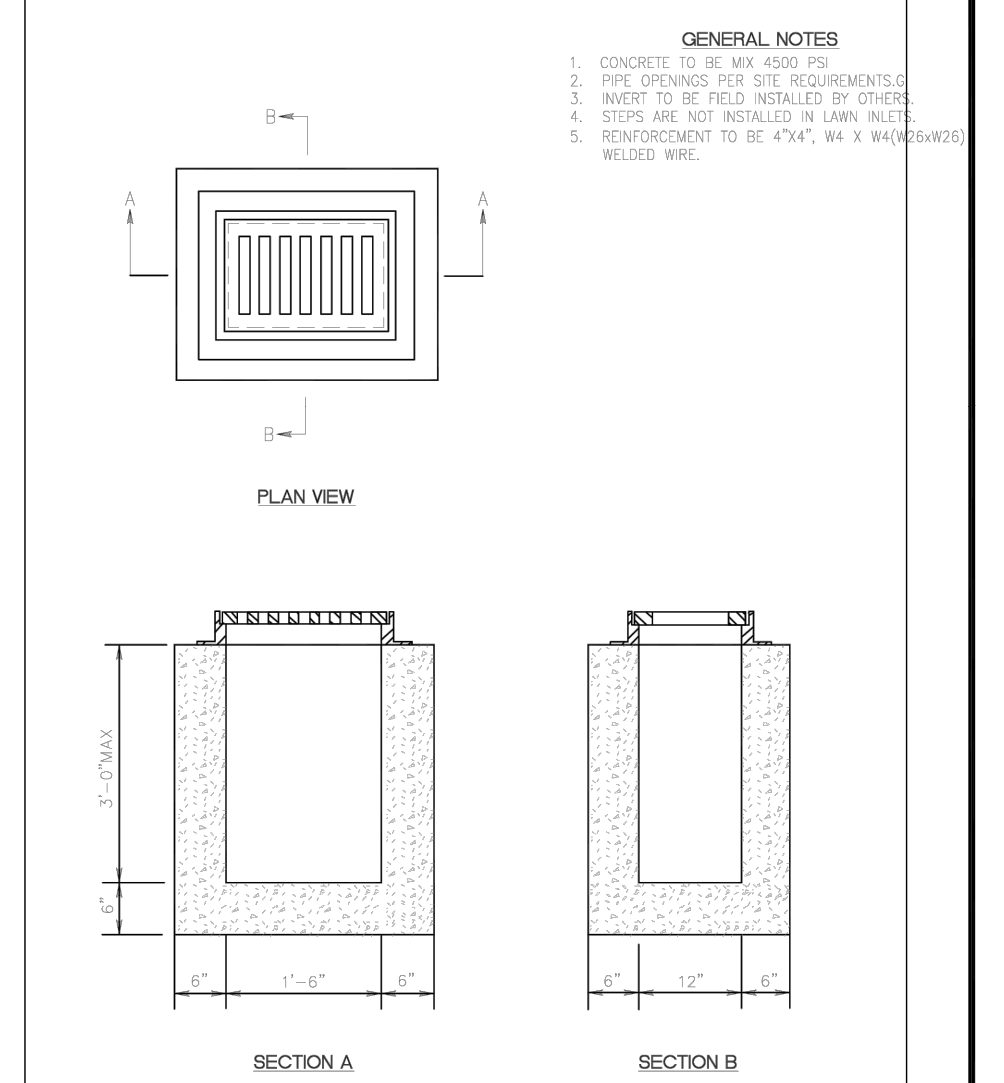
CURB INLET
DETAIL SD-1.01



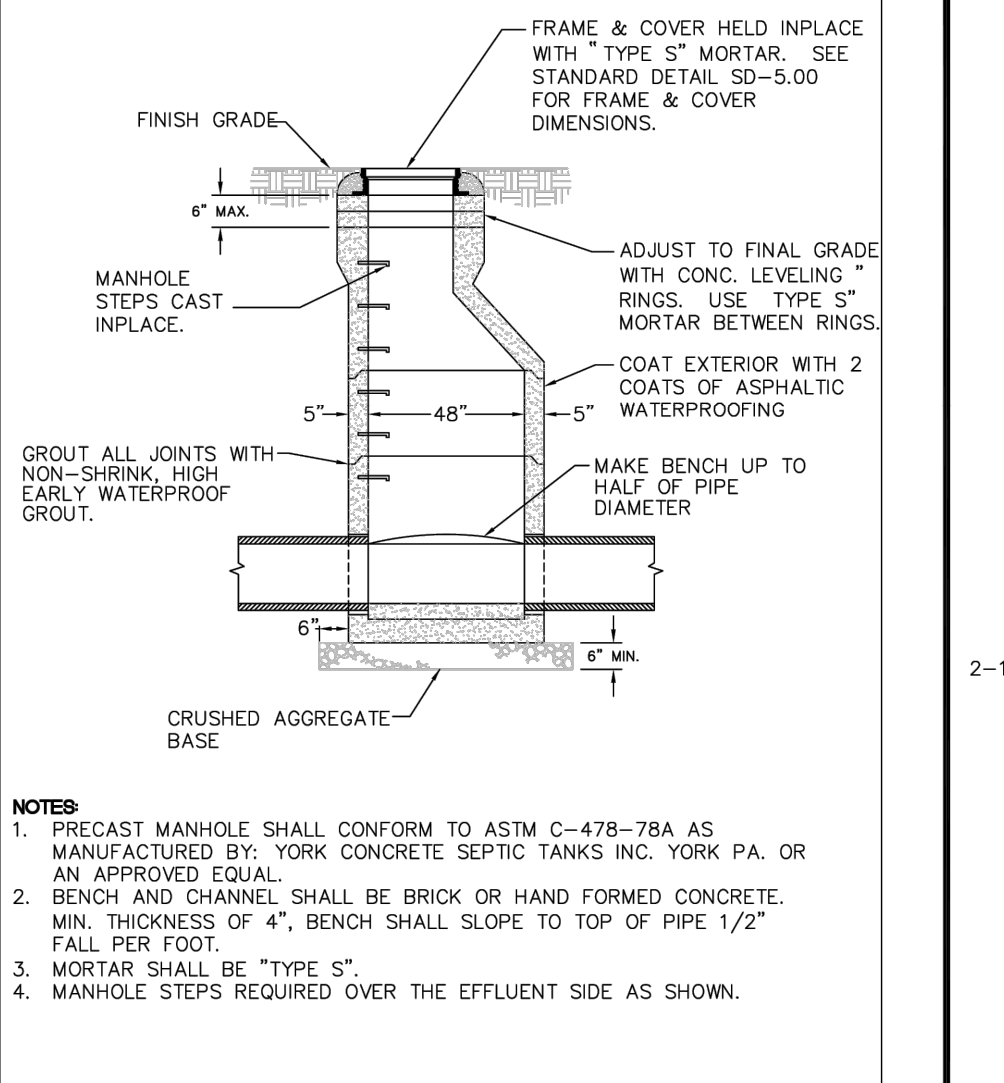
	 TOWN ENGINEER DATE: 1/1/2020	TOWN OF EASTON STANDARD DETAILS TRAFFIC BEARING YARD INLET
	ISSUED: JANUARY 2020	STANDARD NO.: TOE-SD-106



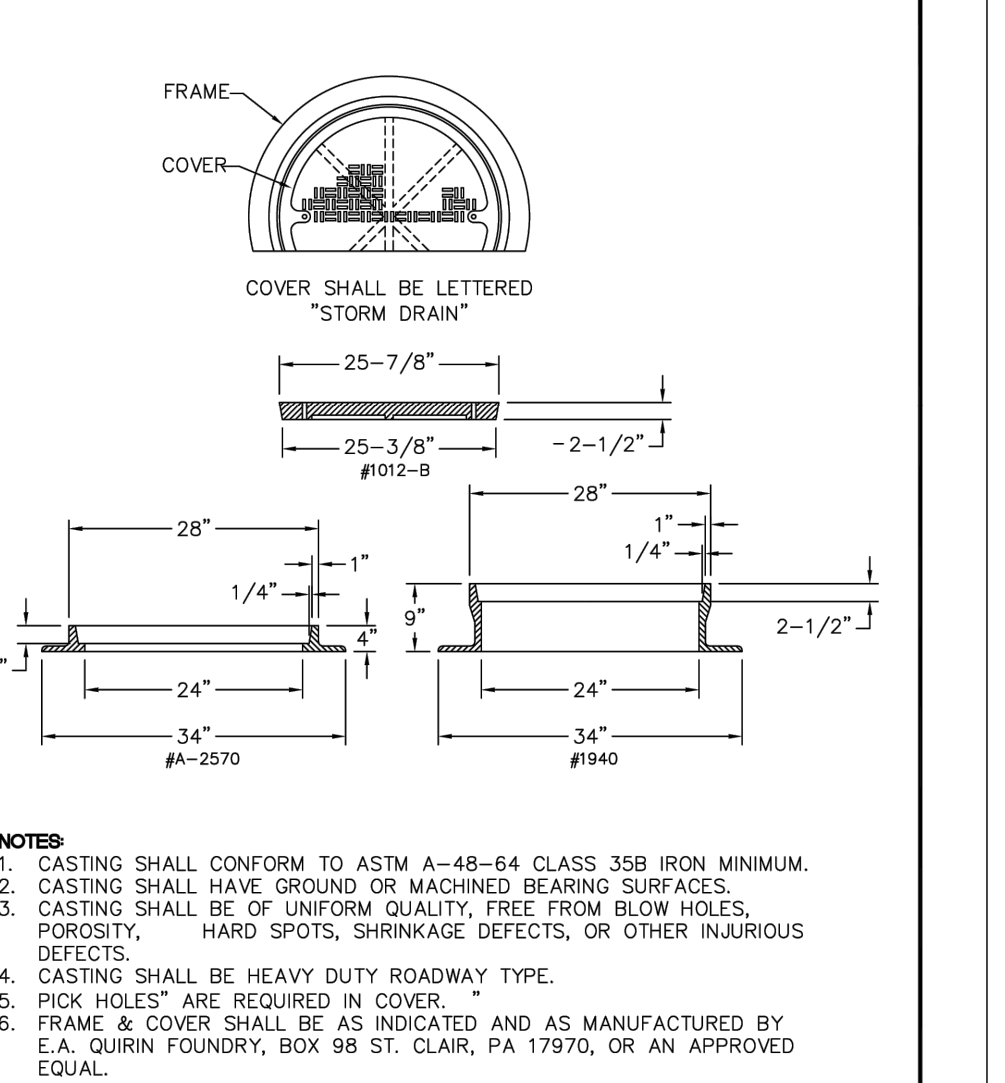
	 TOWN ENGINEER DATE: 1/1/2020	TOWN OF EASTON STANDARD DETAILS NON-TRAFFIC BEARING YARD INLET
	ISSUED: JANUARY 2020	STANDARD NO.: TOE-SD-107



	 TOWN ENGINEER DATE: 1/1/2020	TOWN OF EASTON STANDARD DETAILS LAWN INLET BOX W/ LAWN BASIC FRAME AND GRATE
	ISSUED: JANUARY 2020	STANDARD NO.: TOE-SD-108



	 TOWN ENGINEER DATE: 1/1/2020	TOWN OF EASTON STANDARD DETAILS PRECAST CONCRETE MANHOLE
	ISSUED: JANUARY 2020	STANDARD NO.: TOE-SD-201

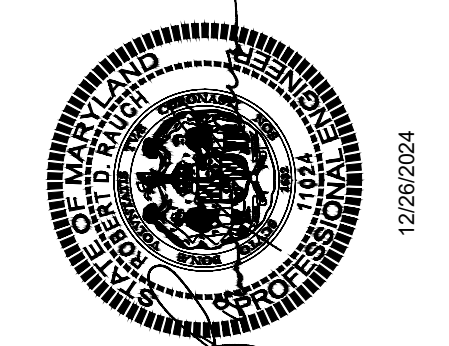


	 TOWN ENGINEER DATE: 1/1/2020	TOWN OF EASTON STANDARD DETAILS MANHOLE FRAME AND COVER
	ISSUED: JANUARY 2020	STANDARD NO.: TOE-D-202

STORMWATER MANAGEMENT DETAILS

FOR
EASTON CROSSING
TAX MAP 0104, GRIDS 000EA0000, PARCELS 1823, 1826, 1833
EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC

RAUCH
Engineering Survey/Architecture/Environmental
Main Office: 106 N Harrison St - Easton, MD 21601
Web: www.rauch-inc.com | Email: design@raucheng.com
Phone: 410 770 8081 | Fax: 410 770 8087



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I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland.
License No. 11024
Expiration Date: July 24, 2026

REVISIONS	DESCRIPTION	DATE	REV. #

DATE: 12/26/2024
SCALE: N/A
DRAWN BY: AF
DESIGNED BY:
APPROVED BY:
SHEET NO.: C-205.03
FOR REVIEW

APPROVED:	APPROVED:	APPROVED:	APPROVED:
TOWN OF EASTON - TOWN ENGINEER	TOWN OF EASTON PLANNING AND ZONING	EASTON UTILITIES - ENGINEER	TALBOT SOIL CONSERVATION DISTRICT MANAGER
DATE	DATE	DATE	DATE

SITE AND GRADING FEATURES

- 1

5' SIDEWALK PER DETAIL ON C-305
- 2

8' SIDEWALK PER DETAIL ON C-305
- 3

CONCRETE PATIO. INSTALL CONCRETE PER SIDEWALK DETAIL ON C-305
- 4

CURB RAMP WITH DETECTABLE WARNING SURFACES PER DETAILS ON C-305
- 5

STANDARD CURB PER DETAIL ON C-305
- 6

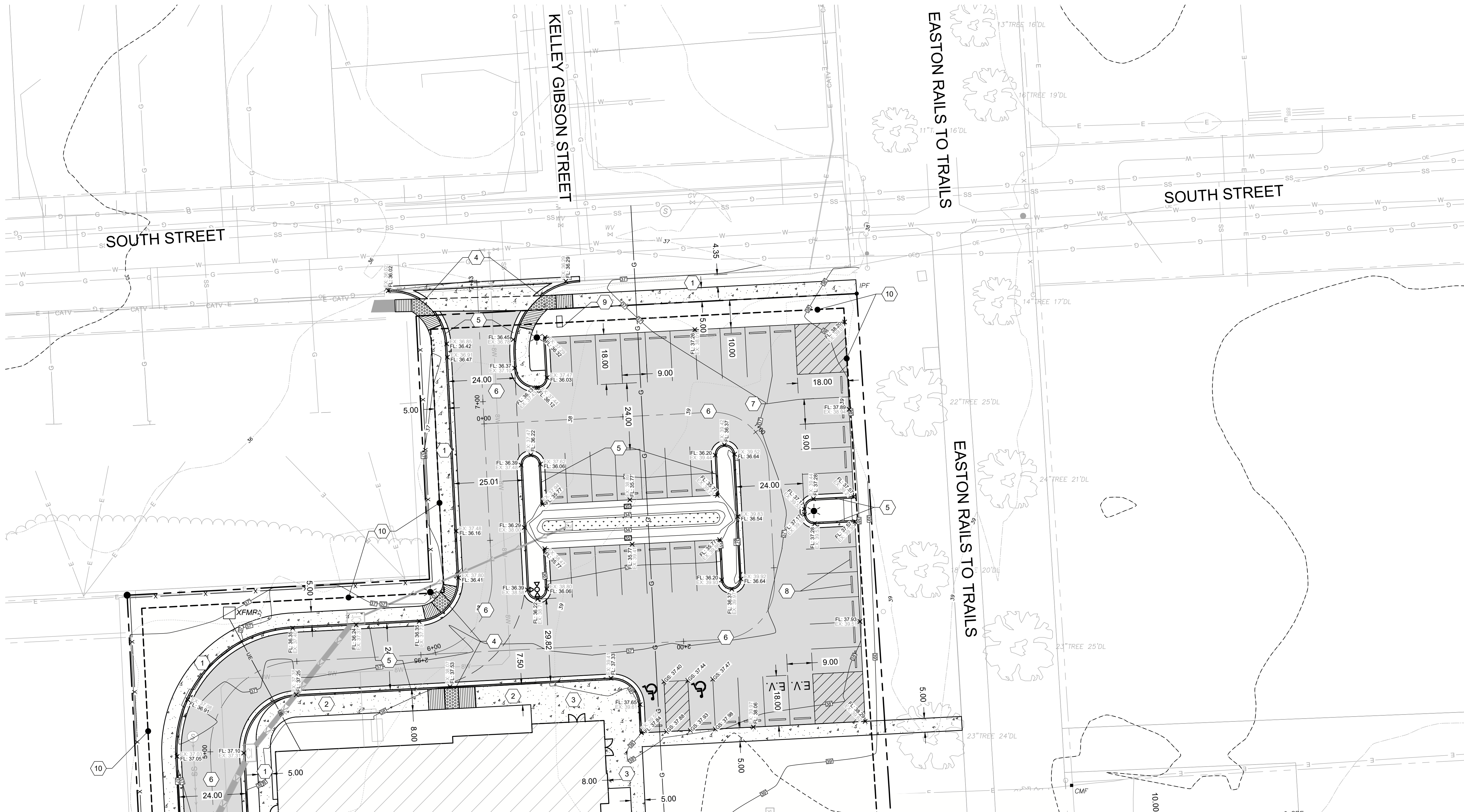
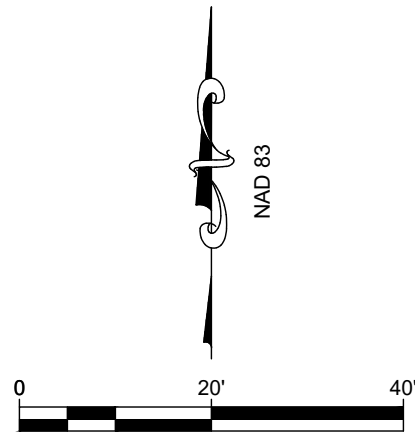
ASPHALT PAVEMENT PER DETAIL ON C-305
- 7

PARKING STALL STRIPING (TYP) PER DETAIL ON C-305
- 8

6' WIDE WHEEL STOP (TYP) PER DETAIL ON C-305
- 9

MONUMENT SIGN PER DETAIL ON C-305
- 10

SETBACK LINE



CONTINUATION - SEE SHEET C-301.02

CONTINUATION - SEE SHEET C-301.04

APPROVED:
TOWN OF EASTON - TOWN ENGINEER
DATE

APPROVED:
TOWN OF EASTON PLANNING AND ZONING
DATE

APPROVED:
EASTON UTILITIES - ENGINEER
DATE

APPROVED:
TALBOT SOIL CONSERVATION DISTRICT MANAGER
DATE

REVISIONS

REV. #	DATE	DESCRIPTION



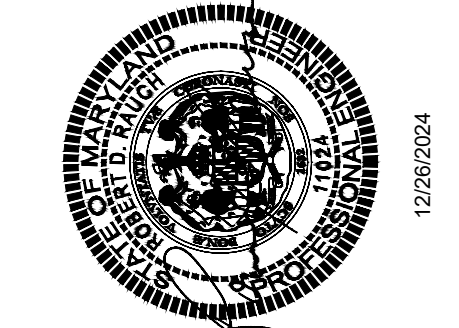
DATE: 12/26/2024
SCALE: 1" = 20'
DRAWN BY: AF
DESIGNED BY:
APPROVED BY:

SHEET NO.:
C-301.01

FOR
REVIEW



FOR
EASTON CROSSING. LLC
TAX MAP 0104, GRIDS 000EA0000, PARCELS 1823, 1826, 1833
EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC



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SITE AND GRADING FEATURES

- 1

5' SIDEWALK PER DETAIL ON C-305
- 2

8' SIDEWALK PER DETAIL ON C-305
- 3

CURB RAMP WITH DETECTABLE WARNING SURFACES PER DETAILS ON C-305
- 4

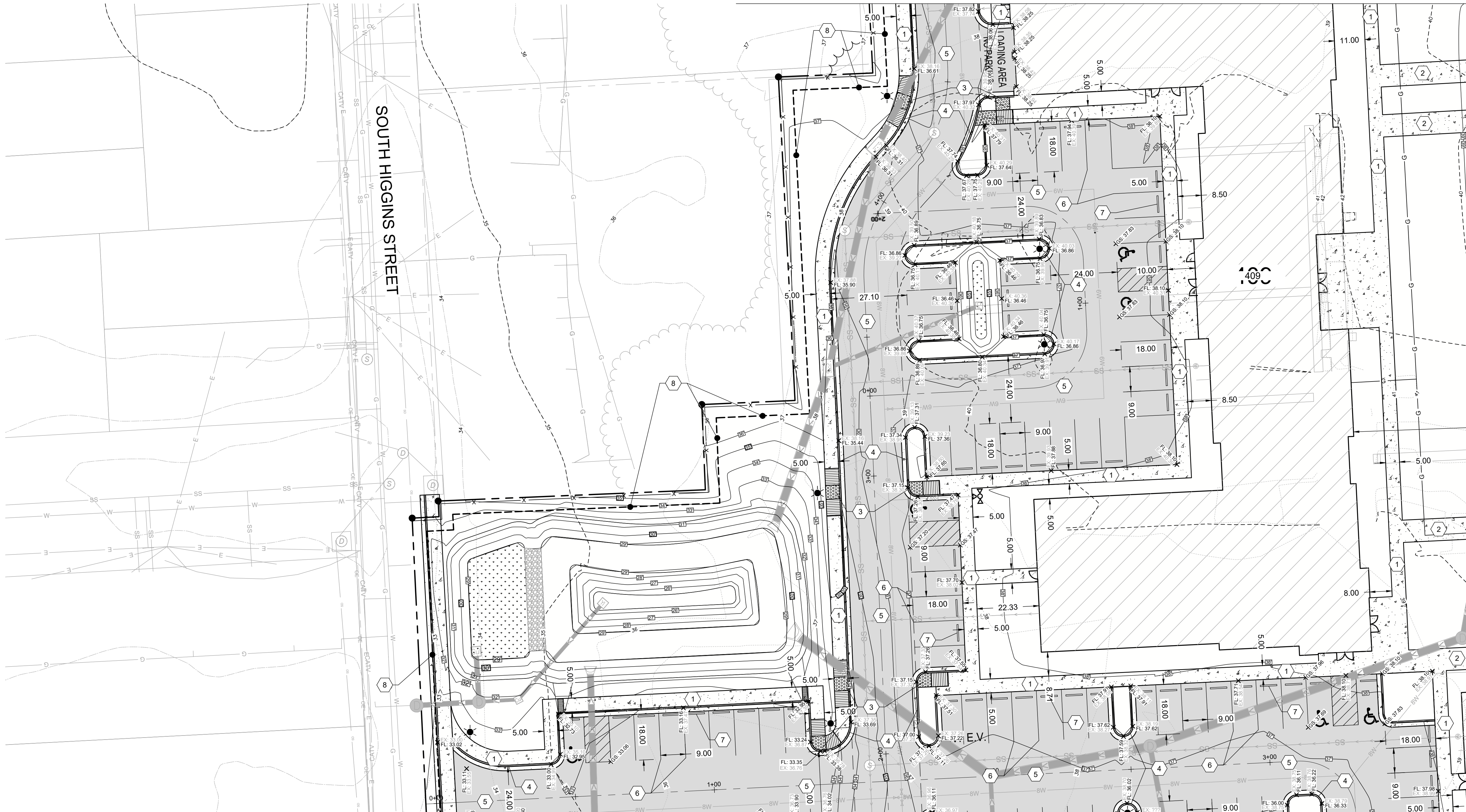
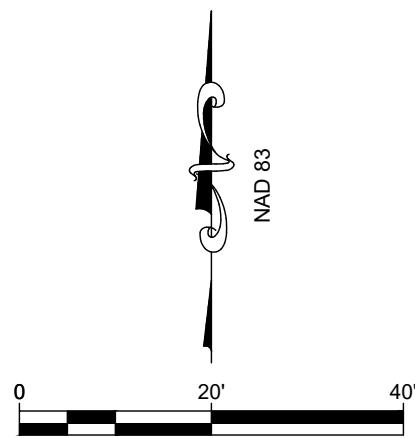
STANDARD CURB PER DETAIL ON C-305
- 5

ASPHALT PAVEMENT PER DETAIL ON C-305
- 6

PARKING STALL STRIPING (TYP) PER DETAIL ON C-305
- 7

6' WIDE WHEEL STOP (TYP) PER DETAIL ON C-305
- 8

SETBACK LINE



CONTINUATION - SEE SHEET C-301.01

CONTINUATION - SEE SHEET C-301.04

CONTINUATION - SEE SHEET C-301.03

APPROVED:

TOWN OF EASTON - TOWN ENGINEER

DATE

APPROVED:

TOWN OF EASTON PLANNING AND ZONING

DATE

APPROVED:

EASTON UTILITIES - ENGINEER

DATE

APPROVED:

TALBOT SOIL CONSERVATION DISTRICT MANAGER

DATE

REVISIONS

DESCRIPTION

REV. #

DATE



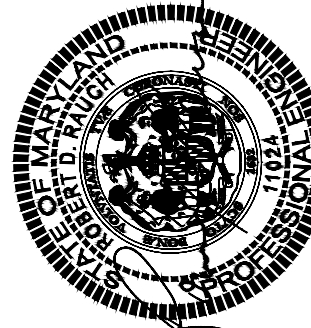
DATE: 12/26/2024
SCALE: 1" = 20'
DRAWN BY: AF
DESIGNED BY:
APPROVED BY:

SHEET NO.:

C-301.02

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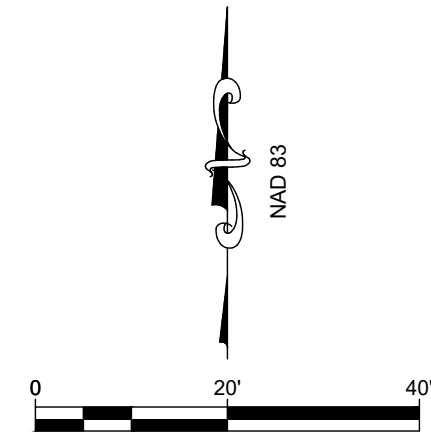
Main Office: 106 N Harrison St - Easton, MD 21601
Web: www.rauch-inc.com | Email: design@raucheng.com
Phone: 410 770 8081 | Fax: 410 770 3687

SITE AND GRADING PLAN

FOR
EASTON CROSSING. LLC
TAX MAP 0104, GRIDS 000EA0000, PARCELS 1823, 1826, 1833

EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC

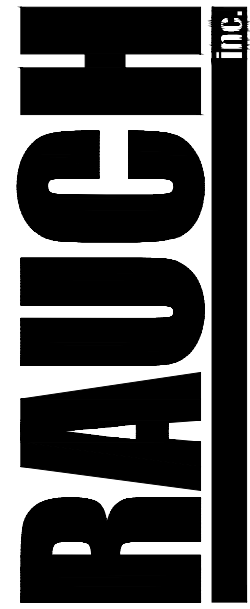
- 1 5' SIDEWALK PER DETAIL ON C-305
- 2 8' SIDEWALK PER DETAIL ON C-305
- 3 CURB RAMP WITH DETECTABLE WARNING SURFACES PER DETAILS ON C-305
- 4 STANDARD CURB PER DETAIL ON C-305
- 5 ASPHALT PAVEMENT PER DETAIL ON C-305
- 6 PARKING STALL STRIPING (TYP) PER DETAIL ON C-305



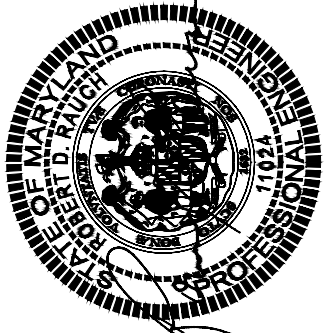
CONTINUATION - SEE SHEET C-301.05

TALBOT SOIL CONSERVATION DISTRICT MANAGER

FOR
EASTON CROSSING
EASTON CROSSING. LLC
TAX MAP 0104, GRIDS 000EA0000, PARCELS 1823, 1826, 1833
EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC



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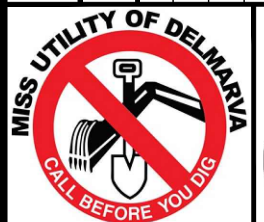


12/26/2024

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License No. 11024
Expiration Date: July 24, 2026

REVISIONS

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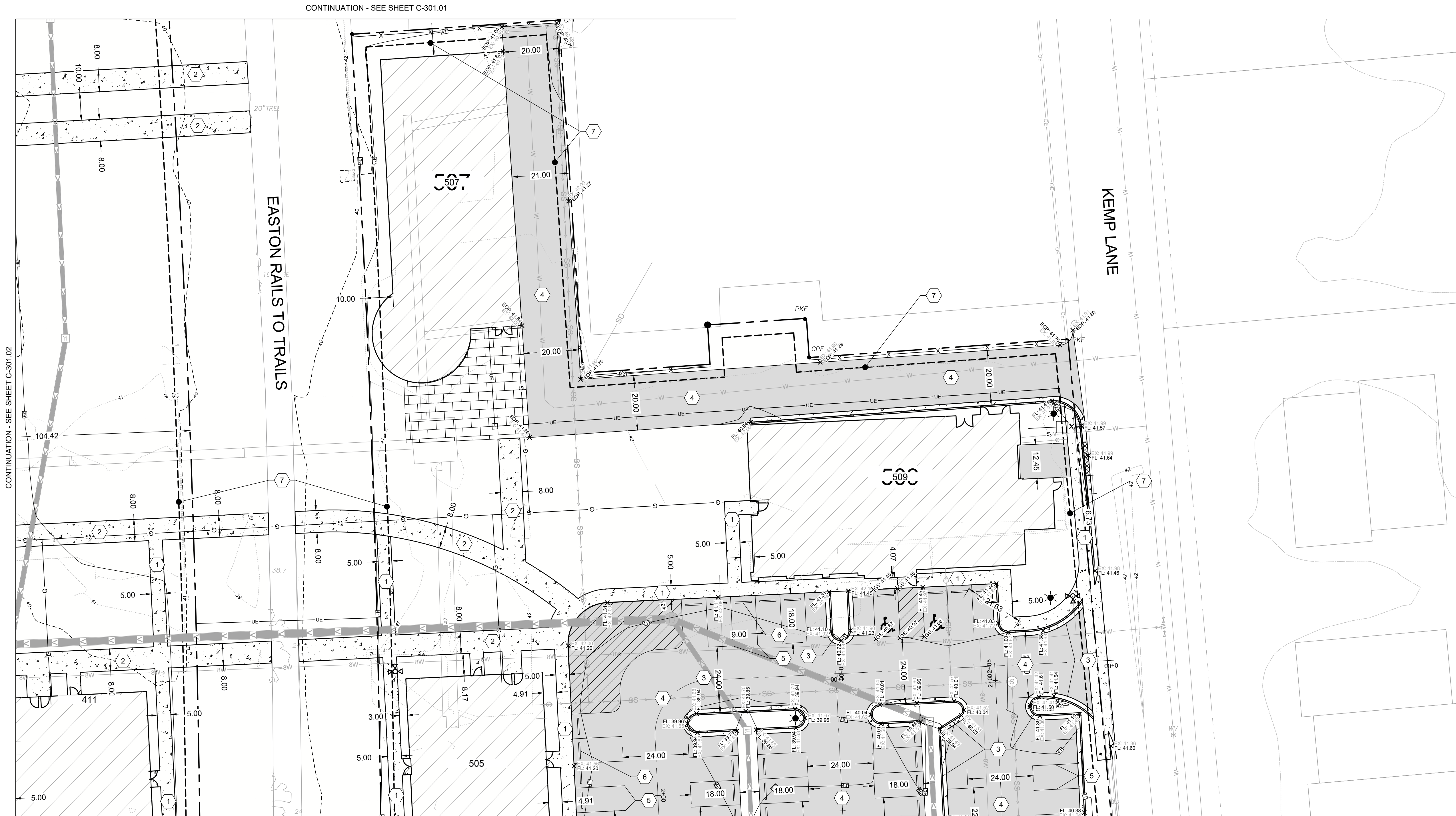
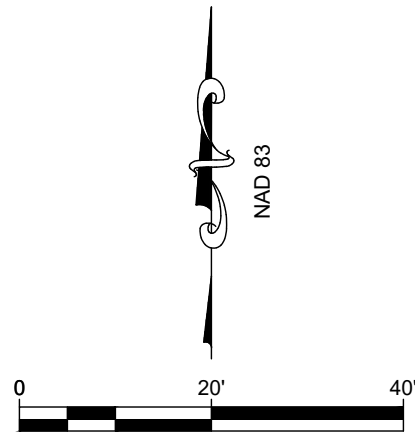
DATE:	12/26/2024
SCALE:	1" = 20'
DRAWN BY:	AF
DESIGNED BY:	
APPROVED BY:	

SHEET NO.:
C-301.03

**FOR
REVIEW**

SITE AND GRADING FEATURES

- 1 5' SIDEWALK PER DETAIL ON C-305
- 2 8' SIDEWALK PER DETAIL ON C-305
- 3 STANDARD CURB PER DETAIL ON C-305
- 4 ASPHALT PAVEMENT PER DETAIL ON C-305
- 5 PARKING STALL STRIPING (TYP) PER DETAIL ON C-305
- 6 6' WIDE WHEEL STOP (TYP) PER DETAIL ON C-305
- 7 SETBACK LINE



CONTINUATION - SEE SHEET C-301.01

CONTINUATION - SEE SHEET C-301.02

CONTINUATION - SEE SHEET C-301.05

APPROVED:

TOWN OF EASTON - TOWN ENGINEER

DATE

APPROVED:

TOWN OF EASTON PLANNING AND ZONING

DATE

APPROVED:

EASTON UTILITIES - ENGINEER

DATE

APPROVED:

TALBOT SOIL CONSERVATION DISTRICT MANAGER

DATE

REVISIONS

DESCRIPTION

REV. #

DATE

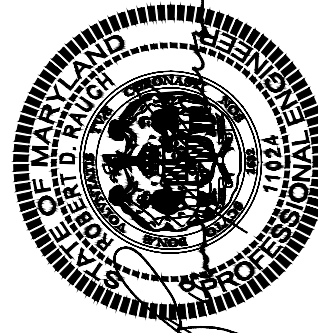


DATE: 12/26/2024
SCALE: 1" = 20'
DRAWN BY: AF
DESIGNED BY:
APPROVED BY:

SHEET NO.: C-301.04

FOR REVIEW

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Expiration Date: July 24, 2026

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FOR
EASTON CROSSING. LLC
TAX MAP 0104, GRIDS 000EA0000, PARCELS 1823, 1826, 1833
EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC

SITE AND GRADING PLAN

SITE AND GRADING FEATURES

- 1

5' SIDEWALK PER DETAIL ON C-305
- 2

8' SIDEWALK PER DETAIL ON C-305
- 3

CURB RAMP WITH DETECTABLE WARNING SURFACES PER DETAILS ON C-305
- 4

STANDARD CURB PER DETAIL ON C-305
- 5

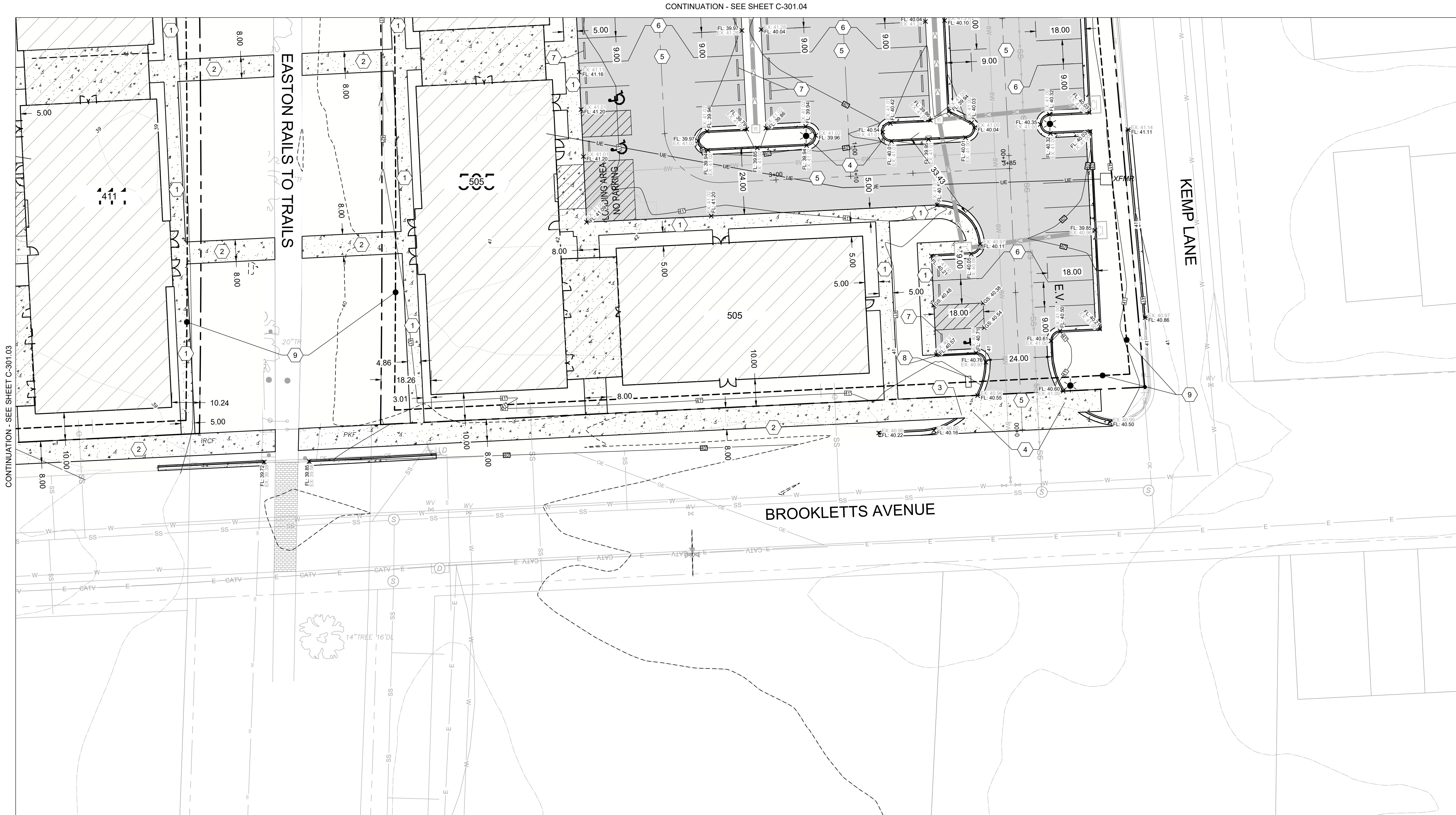
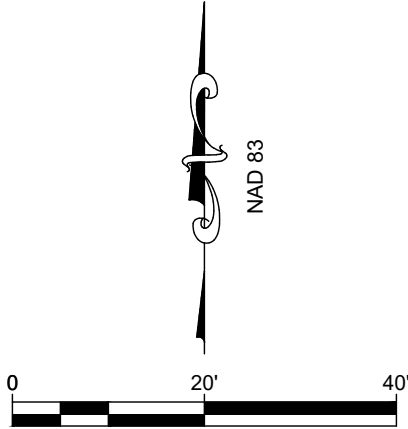
ASPHALT PAVEMENT PER DETAIL ON C-305
- 6

PARKING STALL STRIPING (TYP) PER DETAIL ON C-305
- 7

6' WIDE WHEEL STOP (TYP) PER DETAIL ON C-305
- 8

MONUMENT SIGN PER DETAIL ON C-305
- 9

SETBACK LINE



CONTINUATION - SEE SHEET C-301.04

CONTINUATION - SEE SHEET C-301.03

BROOKLETTS AVENUE

KEMP LANE

APPROVED:

TOWN OF EASTON - TOWN ENGINEER

DATE

APPROVED:

TOWN OF EASTON PLANNING AND ZONING

DATE

APPROVED:

EASTON UTILITIES - ENGINEER

DATE

APPROVED:

TALBOT SOIL CONSERVATION DISTRICT MANAGER

DATE

REVISIONS

DESCRIPTION

REV. #

DATE



DATE: 12/26/2024
SCALE: 1" = 20'
DRAWN BY: AF
DESIGNED BY:
APPROVED BY:

SHEET NO.:

C-301.05

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Expiration Date: July 24, 2026

SITE AND GRADING PLAN

FOR
EASTON CROSSING. LLC
TAX MAP 0104, GRIDS 000EA0000, PARCELS 1823, 1826, 1833
EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC

RESERVED FOR
GRADING PROFILES

APPROVED:	APPROVED:	APPROVED:	APPROVED:
TOWN OF EASTON - TOWN ENGINEER	TOWN OF EASTON PLANNING AND ZONING	EASTON UTILITIES - ENGINEER	TALBOT SOIL CONSERVATION DISTRICT MANAGER
DATE	DATE	DATE	DATE



DATE: 12/26/2024

SCALE: N/A

DRAWN BY: AF

DESIGNED BY:

APPROVED BY:

SHEET NO.: C-303

FOR REVIEW

REVISIONS		
REV. #	DATE	DESCRIPTION



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Phone: 410 770 9081 | Fax: 410 770 3987

SITE AND GRADING PROFILES

FOR
EASTON CROSSING. LLC
EASTON CROSSING. LLC
TAX MAP 0104, GRIDS 000EA0000, PARCELS 1823, 1826, 1833
EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC

RESERVED FOR
GRADING DETAILS

APPROVED:	APPROVED:	APPROVED:	APPROVED:
TOWN OF EASTON - TOWN ENGINEER	TOWN OF EASTON PLANNING AND ZONING	EASTON UTILITIES - ENGINEER	TALBOT SOIL CONSERVATION DISTRICT MANAGER
DATE	DATE	DATE	DATE

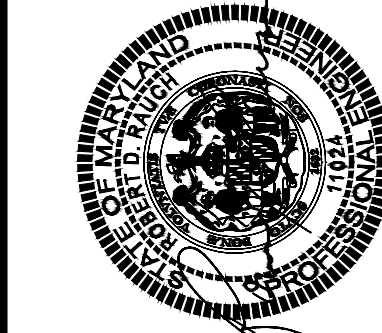


DATE: 12/26/2024
SCALE: N/A
DRAWN BY: AF
DESIGNED BY:
APPROVED BY:

SHEET NO.: C-305

FOR REVIEW

REVISIONS		
REV. #	DATE	DESCRIPTION



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License No. 11024
Expiration Date: July 24, 2026



12/26/2024



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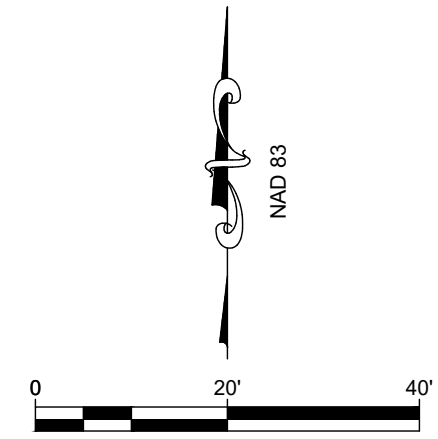
Main Office: 106 N. Harrison St. - Easton, MD 21601
Web: www.rauch-inc.com | Email: design@raucheng.com
Phone: 410 770 9081 | Fax: 410 770 3987

SITE AND GRADING DETAILS

FOR
EASTON CROSSING. LLC
TAX MAP 0104, GRIDS 000EA0000, PARCELS 1823, 1826, 1833
EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC

- ① 8" SEWER MAIN AND 48" DIA. SANITARY MANHOLE PER DETAIL ON C-405
- ② 8" WATER MAIN PER DETAIL ON C-405
- ③ 6" WATER LATERAL BRANCH TO PROVIDE 6" FIRE SUPPRESSION SERVICE AND 4" DOMESTIC WATER SERVICE TO BUILDING.
- ④ 4" DOMESTIC WATER METER PIT PER DETAIL ON C-405
- ⑤ 6-4" CONDUITS FOR ELECTRICAL AND COMMUNICATIONS UTILITIES. SEE UTILITY TRENCH DETAIL ON C-405
- ⑥ **X KVA** TRANSFORMER PER DETAIL ON C-405

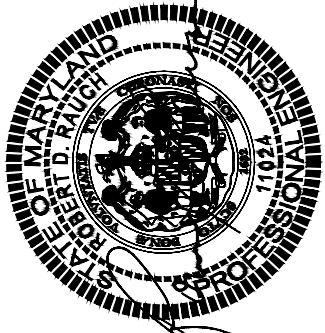
- 7 **STYLE** POLE MOUNTED LAMP PER DETAIL ON C-405
- 8 CONNECT NEW WATER MAIN TO EXISTING MAIN IN SOUTH STREET.
- 9 TAP INTO EXISTING 6" GAS MAIN IN SOUTH STREET WITH A 2" BRANCH LINE TO SERVICE PROPERTY
- 10 2" GAS BRANCH LINE
- 11 NOTE
- 12 NOTE



UTILITY PLAN

FOR
EASTON CROSSING
EASTON CROSSING. LLC
TAX MAP 0104, GRIDS 000EA00000, PARCELS 1823, 1826, 1833
EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC

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INC.
Engineering | Survey | Architecture | Environmental

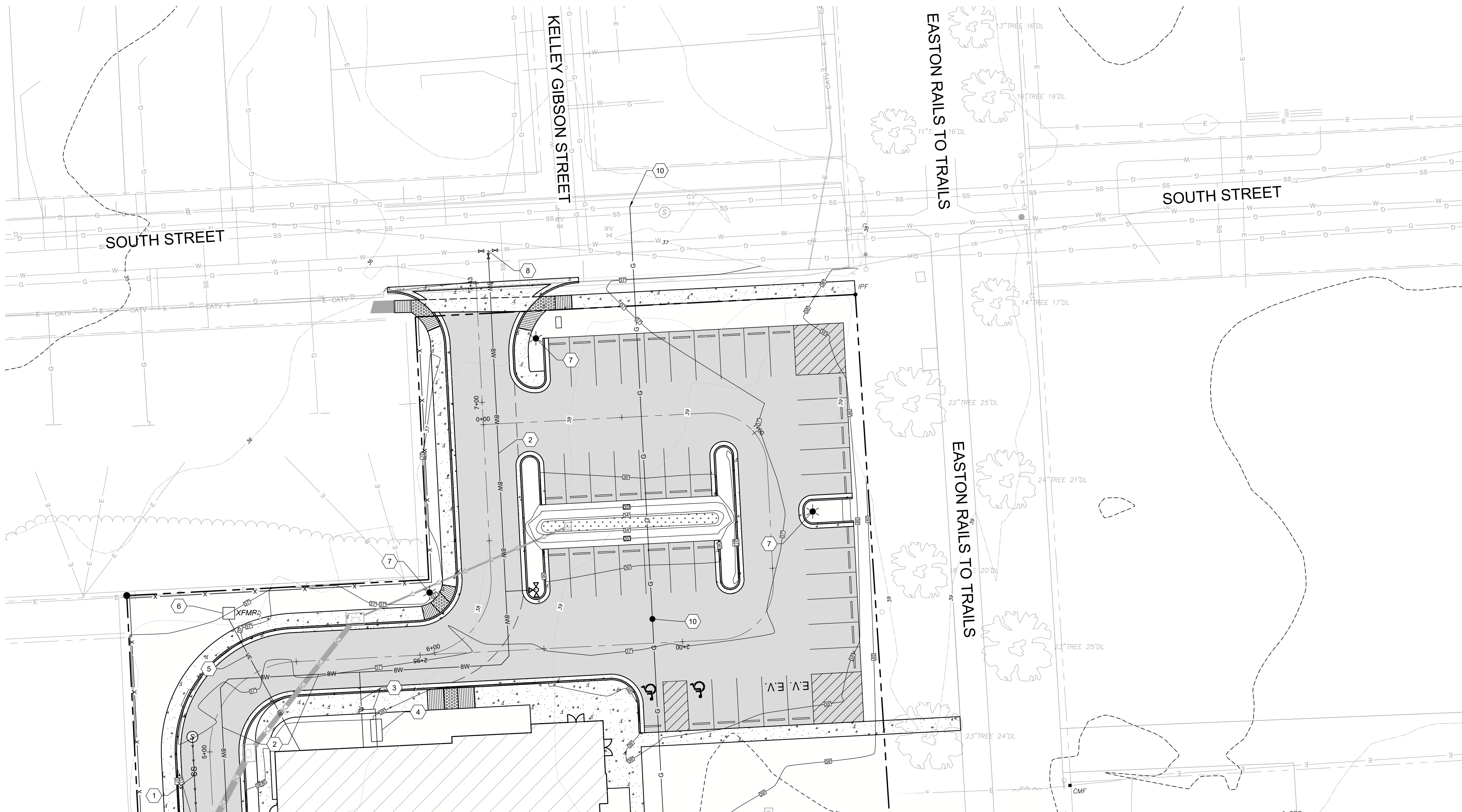


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12/26/2024

REVISIONS		DESCRIPTION										
REV #	DATE											



CONTINUATION - SEE SHEET C-401.02

CONTINUATION - SEE SHEET C-401.04

APPROVED:	APPROVED:	APPROVED:	APPROVED:
TOWN OF EASTON - TOWN ENGINEER DATE	TOWN OF EASTON PLANNING AND ZONING DATE	EASTON UTILITIES - ENGINEER DATE	TALBOT SOIL CONSERVATION DISTRICT MANAGER DATE

**FOR
REVIEW**

UTILITY FEATURES

- 1

6" SEWER LATERAL AND CLEANOUT PER DETAIL ON C-405

7
- 2

8" SEWER MAIN AND 48" DIA. SANITARY MANHOLE PER DETAIL ON C-405

8
- 3

8" WATER MAIN PER DETAIL ON C-405

9
- 4

STYLE POLE MOUNTED LAMP PER DETAIL ON C-405

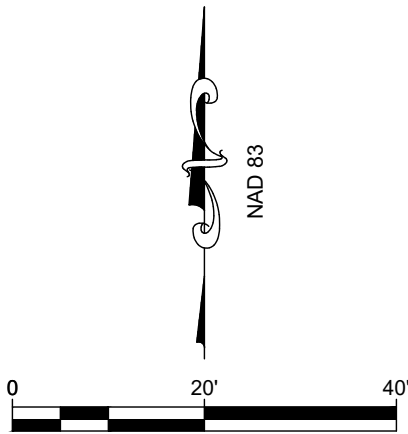
10
- 5

2" GAS BRANCH LINE

11
- 6

2" GAS SERVICE TO BUILDING

12



CONTINUATION - SEE SHEET C-401.01

CONTINUATION - SEE SHEET C-401.04

CONTINUATION - SEE SHEET C-401.03

APPROVED:
TOWN OF EASTON - TOWN ENGINEER
DATE

APPROVED:
TOWN OF EASTON PLANNING AND ZONING
DATE

APPROVED:
EASTON UTILITIES - ENGINEER
DATE

APPROVED:
TALBOT SOIL CONSERVATION DISTRICT MANAGER
DATE

REVISIONS

REV. #	DATE	DESCRIPTION



DATE: 12/26/2024
SCALE: 1" = 20'
DRAWN BY: AF
DESIGNED BY:
APPROVED BY:

SHEET NO.:
C-401.02

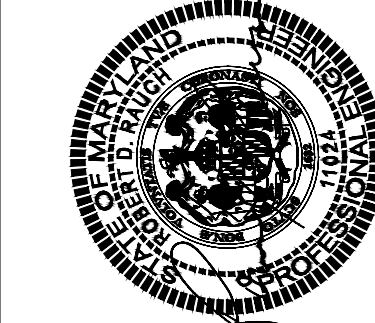
FOR
REVIEW



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12/26/2024

UTILITY PLAN

FOR
EASTON CROSSING. LLC
TAX MAP 0104, GRIDS 000EA0000, PARCELS 1823, 1826, 1833
EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC

UTILITY FEATURES

- 1

6" SEWER LATERAL AND CLEANOUT PER DETAIL ON C-405
- 2

8" SEWER MAIN AND 48" DIA. SANITARY MANHOLE PER DETAIL ON C-405
- 3

8" WATER MAIN PER DETAIL ON C-405
- 4

6" WATER LATERAL, BRANCH TO PROVIDE 6" FIRE SUPPRESSION SERVICE AND 4" DOMESTIC WATER SERVICE TO BUILDING.
- 5

4" DOMESTIC WATER METER PIT PER DETAIL ON C-405
- 6

2-2" CONDUITS FOR ELECTRICAL AND COMMUNICATIONS UTILITIES. SEE UTILITY TRENCH DETAIL ON C-405
- 7

3-4" CONDUITS FOR ELECTRICAL AND COMMUNICATIONS UTILITIES. SEE UTILITY TRENCH DETAIL ON C-405
- 8

1500 kVA 208/120 V 3-PH TRANSFORMER PER DETAIL ON C-405
- 9

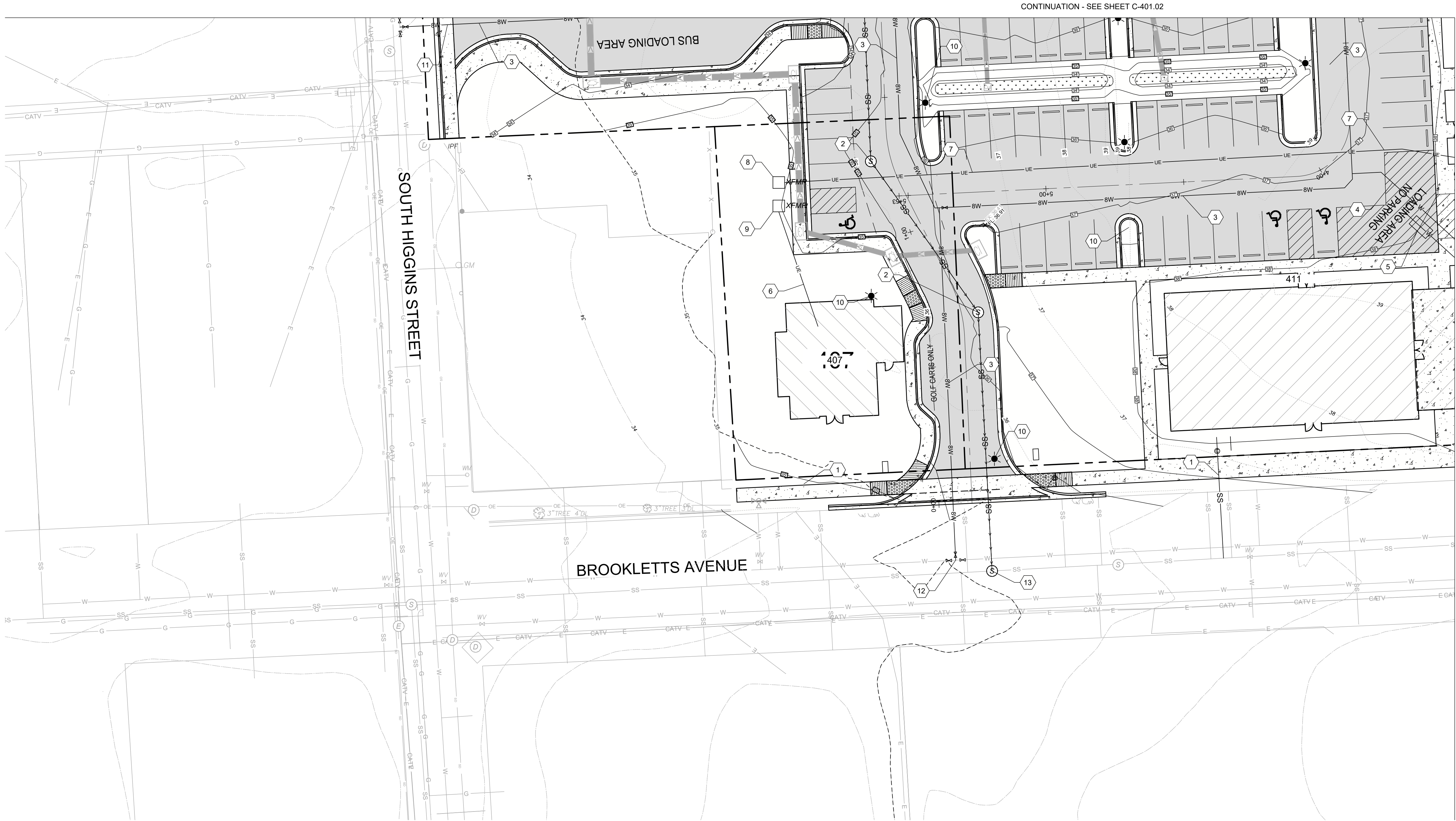
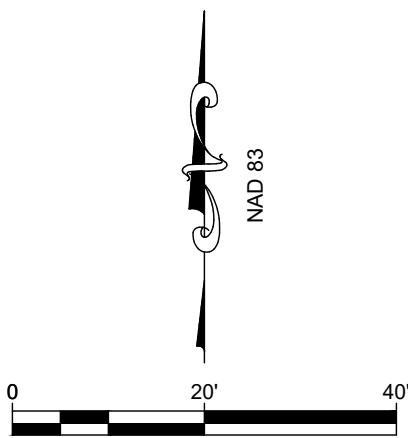
75 kVA 208/120V 3-PH TRANSFORMER PER DETAIL ON C-405
- 10

STYLE POLE MOUNTED LAMP PER DETAIL ON C-405
- 11

CONNECT NEW WATER MAIN TO EXISTING MAIN IN HIGGINS STREET.
- 12

CONNECT NEW WATER MAIN TO EXISTING MAIN IN BROOKLETTS AVENUE.
- 13

48" DIA. DOGHOUSE SANITARY MANHOLE PER DETAIL ON C-405



APPROVED:	APPROVED:	APPROVED:	APPROVED:
TOWN OF EASTON - TOWN ENGINEER	TOWN OF EASTON PLANNING AND ZONING	EASTON UTILITIES - ENGINEER	TALBOT SOIL CONSERVATION DISTRICT MANAGER
DATE	DATE	DATE	DATE

UTILITY PLAN

FOR

EASTON CROSSING. LLC

TAX MAP 0104, GRIDS 000EA0000, PARCELS 1823, 1826, 1833

EASTON, TALBOT COUNTY, MARYLAND

PREPARED FOR: EASTON CROSSING, LLC

RAUCH

Engineering | Survey | Architecture | Environmental

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REV. #	DESCRIPTION



DATE: 12/26/2024
SCALE: 1" = 20'
DRAWN BY: AF
DESIGNED BY:
APPROVED BY:

SHEET NO.: **C-401.03**

FOR REVIEW

UTILITY FEATURES

- 1

6" SEWER LATERAL AND CLEANOUT PER DETAIL ON C-405
- 2

8" SEWER MAIN AND 48" DIA. SANITARY MANHOLE PER DETAIL ON C-405
- 3

8" WATER MAIN PER DETAIL ON C-405
- 4

6" WATER LATERAL, BRANCH TO PROVIDE 6" FIRE SUPPRESSION SERVICE AND 2" DOMESTIC WATER SERVICE TO BUILDING.
- 5

2" DOMESTIC WATER METER PIT PER DETAIL ON C-405
- 6

ELECTRICAL PULL BOX AS REQUIRED FOR CONDUIT INSTALLATION PER DETAIL ON C-405
- 7

2-4" CONDUITS FOR ELECTRICAL AND COMMUNICATIONS UTILITIES. SEE UTILITY TRENCH DETAIL ON C-405
- 8

500 kVA 208/120V 3-PH TRANSFORMER PER DETAIL ON C-405
- 9

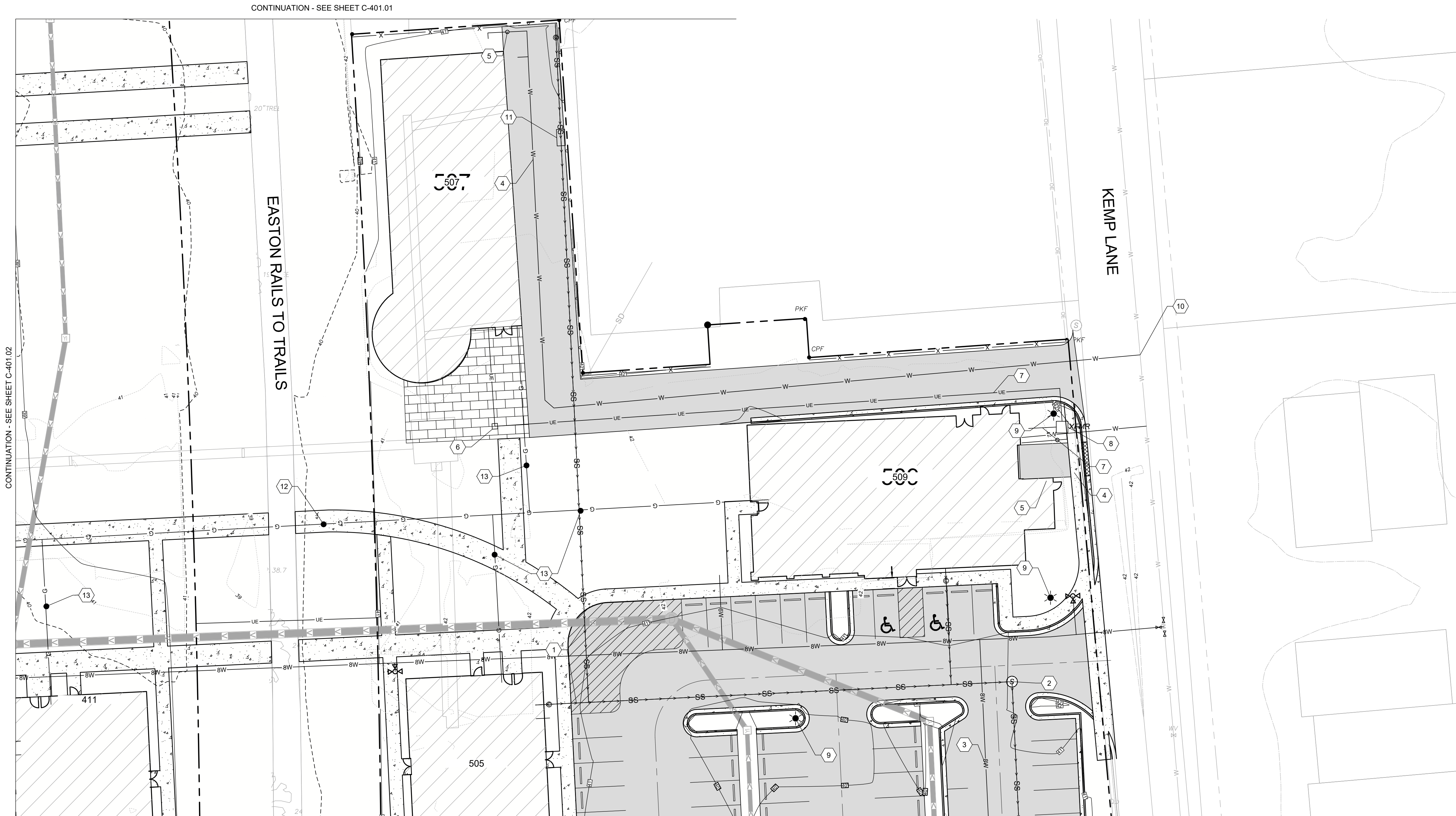
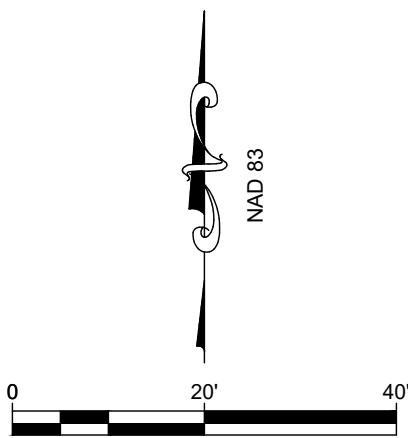
STYLE POLE MOUNTED LAMP PER DETAIL ON C-405
- 10

CONNECT NEW WATER MAIN TO EXISTING MAIN IN KEMP LANE.
- 11

GREASE TRAP PER DETAIL ON C-405
- 12

2" GAS BRANCH LINE
- 13

2" GAS SERVICE TO BUILDING

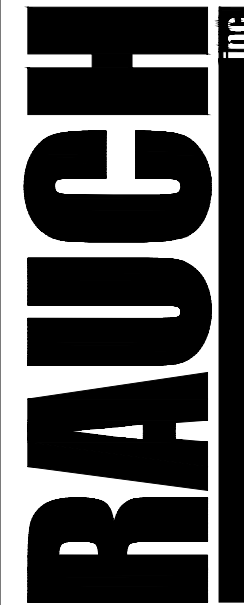


CONTINUATION - SEE SHEET C-401.05

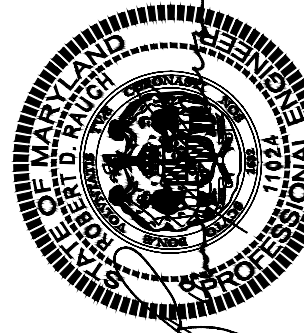
APPROVED:	APPROVED:	APPROVED:	APPROVED:
TOWN OF EASTON - TOWN ENGINEER	TOWN OF EASTON PLANNING AND ZONING	EASTON UTILITIES - ENGINEER	TALBOT SOIL CONSERVATION DISTRICT MANAGER
DATE	DATE	DATE	DATE

UTILITY PLAN

FOR
EASTON CROSSING. LLC
TAX MAP 0104, GRIDS 000EA0000, PARCELS 1823, 1826, 1833
EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC



Main Office: 106 N Harrison St - Easton, MD 21601
Web: www.rauch-inc.com | Email: design@raucheng.com
Phone: 410 770 9081 | Fax: 410 770 3987



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REV. #	DATE	DESCRIPTION



DATE: 12/26/2024
SCALE: 1" = 20'
DRAWN BY: AF
DESIGNED BY:
APPROVED BY:

SHEET NO.:
C-401.04

FOR
REVIEW

UTILITY FEATURES

- 1

6" SEWER LATERAL AND CLEANOUT PER DETAIL ON C-405
- 2

8" SEWER MAIN AND 48" DIA. DOGHOUSE SANITARY MANHOLE PER DETAIL ON C-405
- 3

8" WATER MAIN PER DETAIL ON C-405
- 4

6" WATER LATERAL, BRANCH TO PROVIDE 6" FIRE SUPPRESSION SERVICE AND 4" DOMESTIC WATER SERVICE TO BUILDING.
- 5

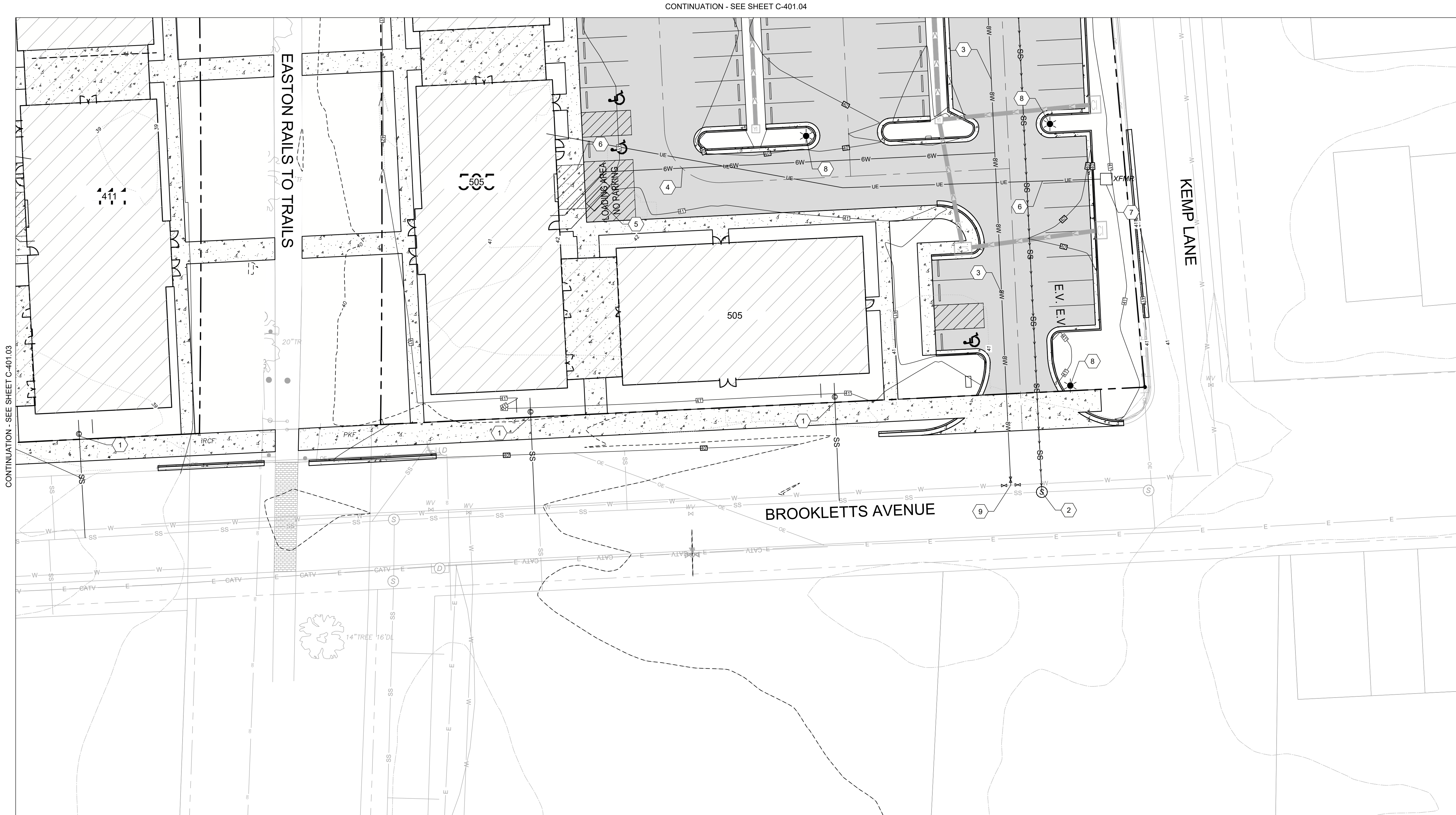
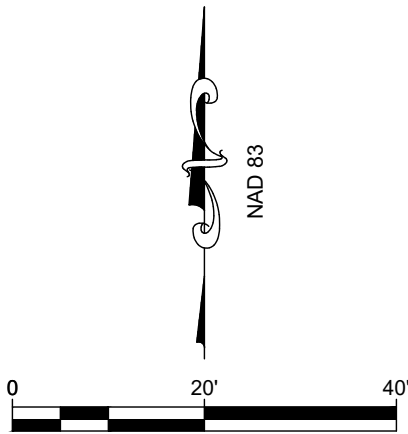
4" DOMESTIC WATER METER PIT PER DETAIL ON C-405
- 6

3-4" CONDUITS FOR ELECTRICAL AND COMMUNICATIONS UTILITIES. SEE UTILITY TRENCH DETAIL ON C-405
- 7

1500 KVA 208/120V 3-PH TRANSFORMER PER DETAIL ON C-405
- 8

STYLE POLE MOUNTED LAMP PER DETAIL ON C-405
- 9

CONNECT NEW WATER MAIN TO EXISTING MAIN IN BROOKLETTS AVENUE.



CONTINUATION - SEE SHEET C-401.04

CONTINUATION - SEE SHEET C-401.03

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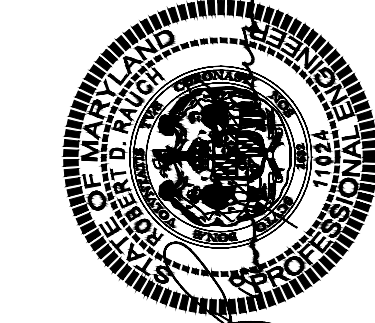
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SHEET NO.: C-401.05

FOR REVIEW



FOR
EASTON CROSSING. LLC
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EASTON, TALBOT COUNTY, MARYLAND
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RESERVED FOR
UTILITY PROFILES

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DATE	DATE	DATE	DATE

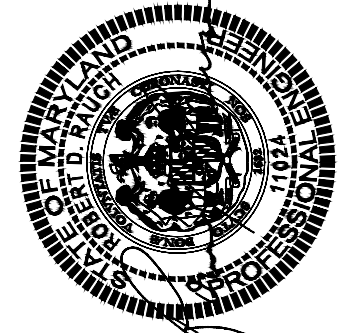


DATE: 12/26/2024
SCALE: AS SHOWN
DRAWN BY: AF
DESIGNED BY:
APPROVED BY:

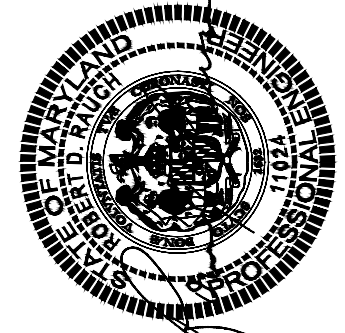
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FOR REVIEW

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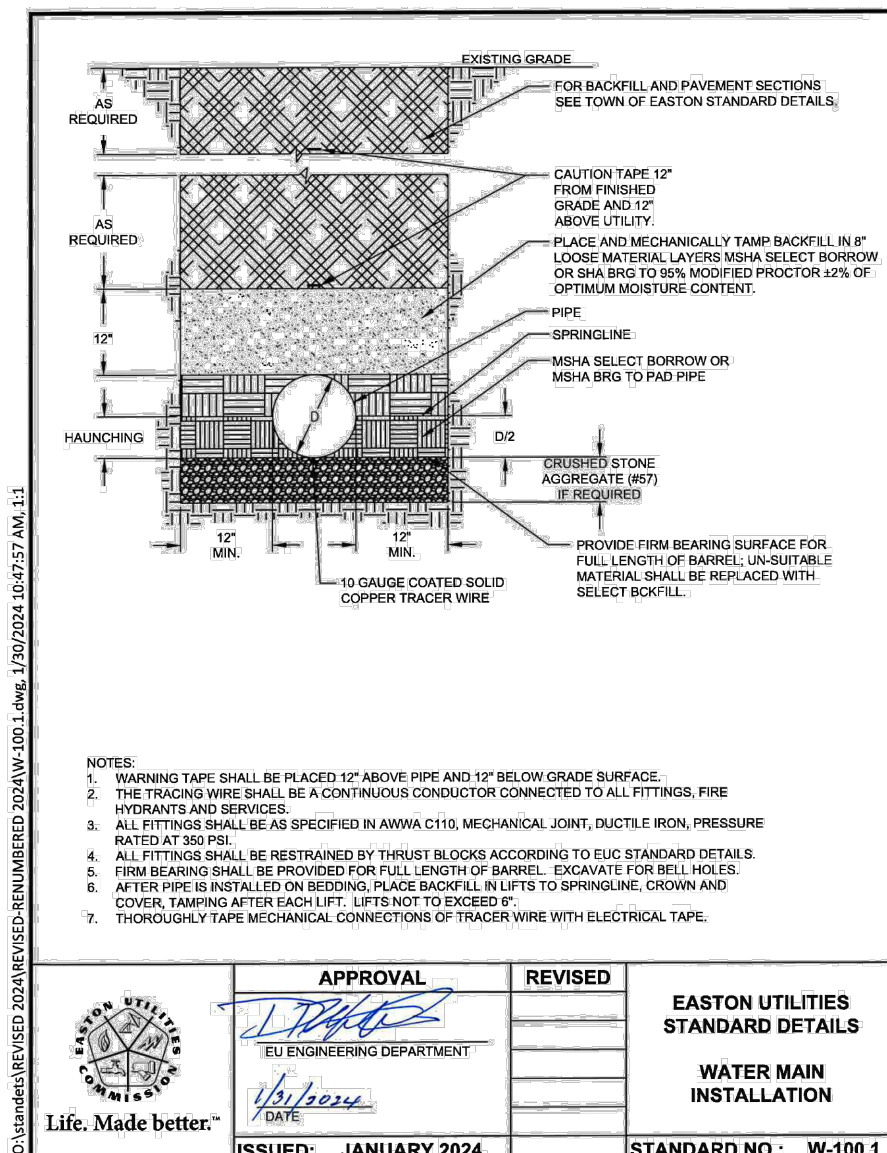
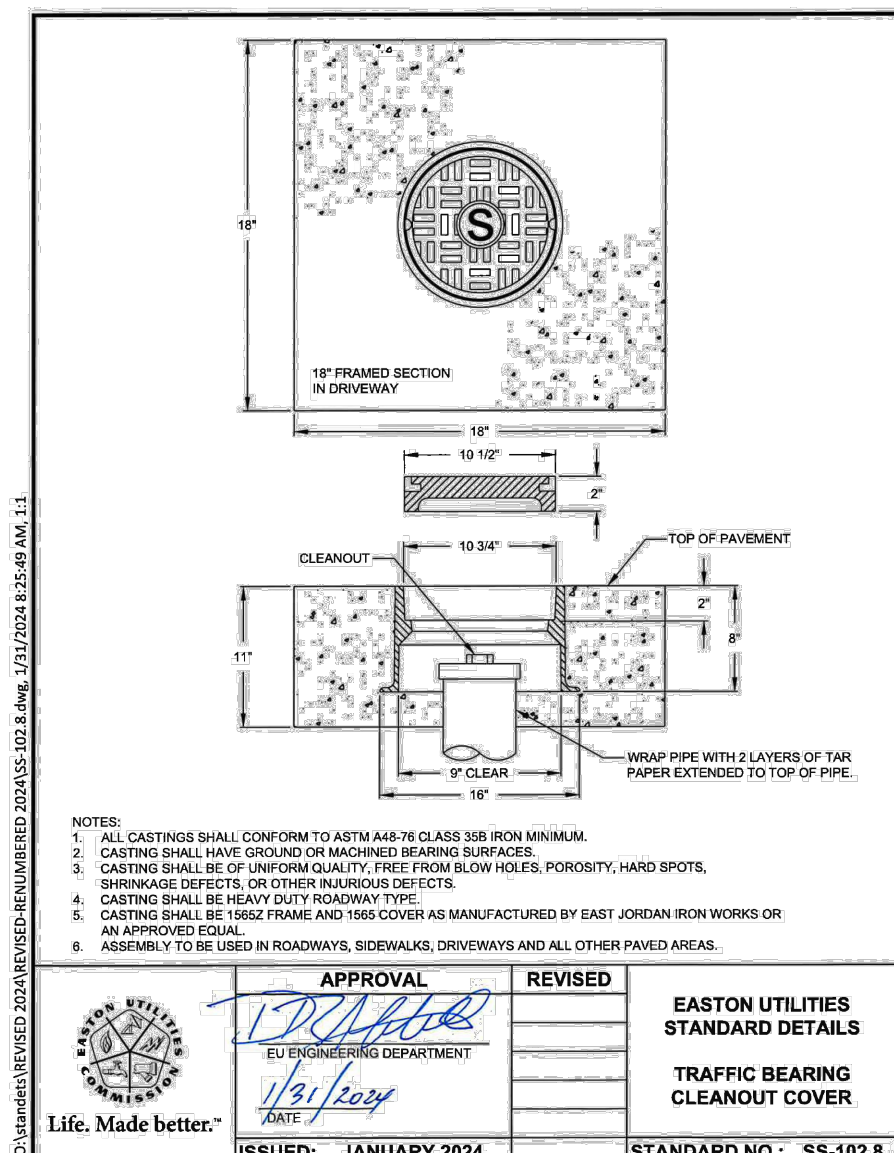
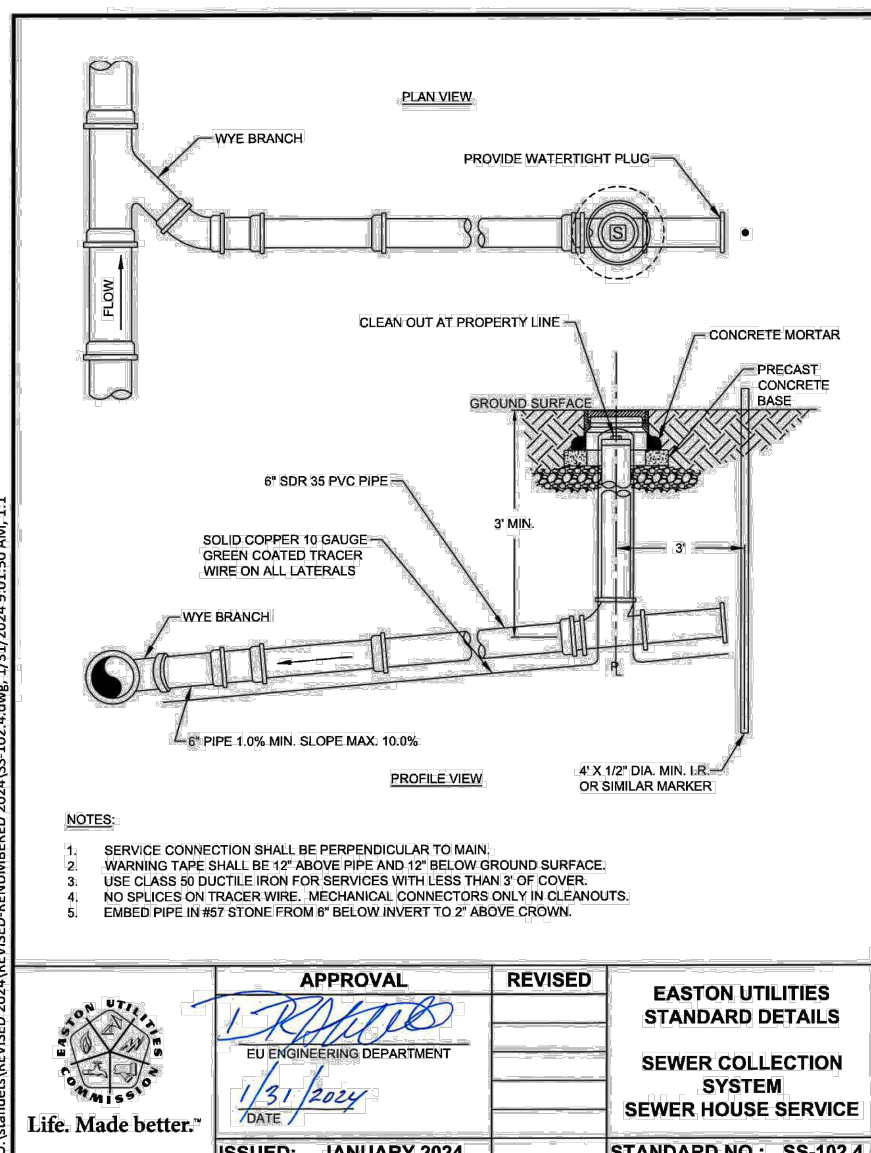
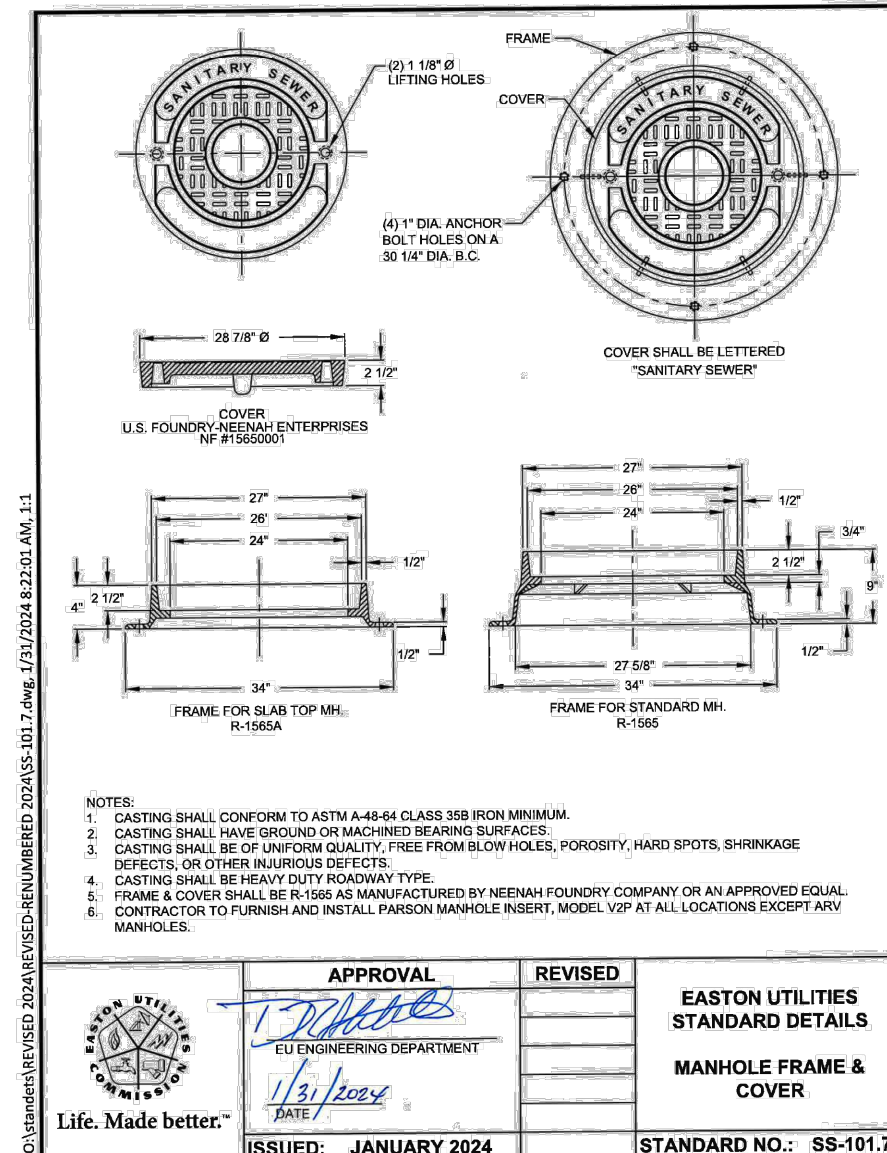
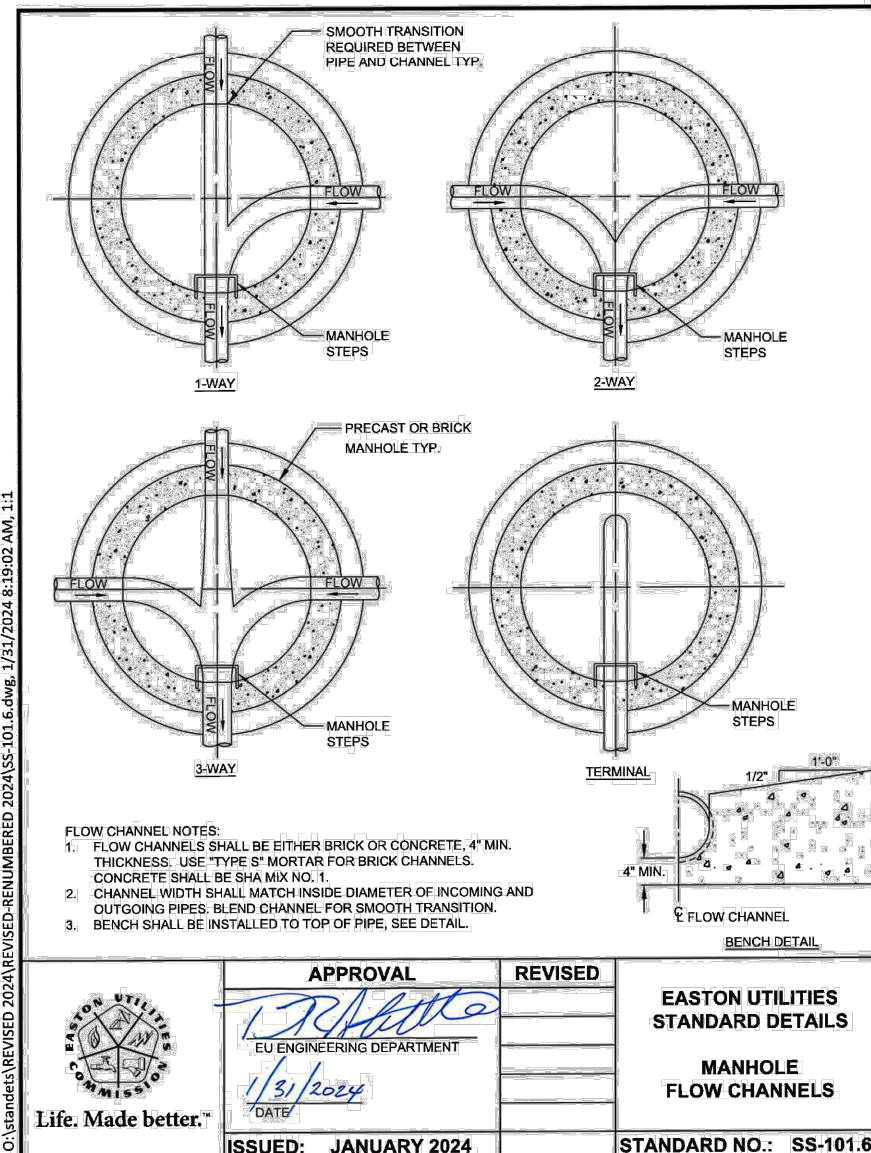
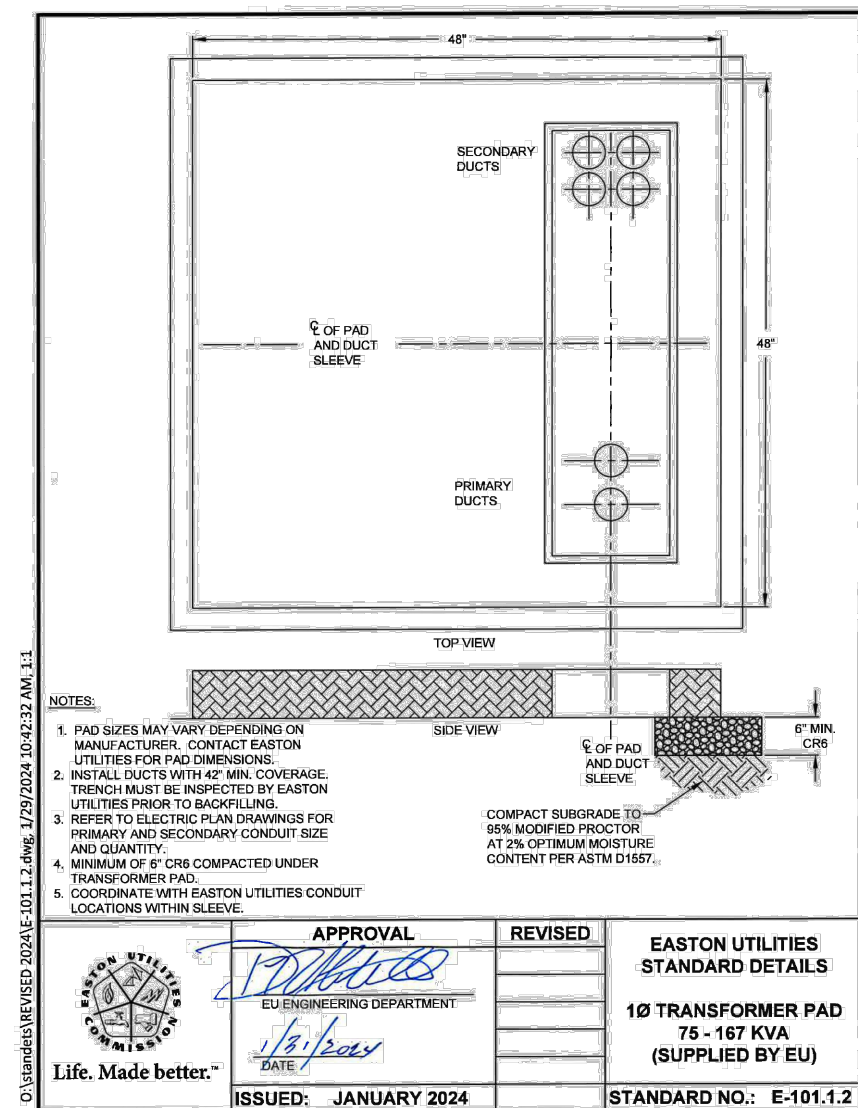


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UTILITY PROFILES

FOR
EASTON CROSSING. LLC
EASTON CROSSING. LLC
TAX MAP 0104, GRIDS 000EA0000, PARCELS 1823, 1826, 1833
EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC



DIMENSION TABLE							
PIPE DIA. IN.	TABLE PRESSURE PSI	BEND ANGLE (DEG.)	CONCRETE VOLUME (CY)	CUBE SIZE (FT.)	STIRRUP DIA. (IN.)	STIRRUP EMBEDMENT (IN.)	STIRRUP BAR #
4"	250	11.25	0.21	1.8	5/8	17	5
		22.5	0.43	2.3			
		45	0.77	2.8			
6"	250	11.25	0.48	2.4	5/8	17	5
		22.5	0.95	3.0			
		45	1.72	3.6			
8"	250	11.25	0.86	3.0	5/8	17	5
		22.5	1.65	3.5			
		45	3.22	4.4			
10"	250	11.25	1.50	3.3	5/8	17	5
		22.5	2.82	4.1			
		45	4.23	4.8			
12"	250	11.25	1.94	3.7	5/8	17	5
		22.5	3.91	4.7			
		45	6.89	5.7			
14"	250	11.25	2.62	4.1	5/8	24	7
		22.5	5.26	5.2			
		45	9.70	6.4			
16"	250	11.25	3.44	4.5	5/8	24	7
		22.5	6.89	5.7			
		45	12.63	7.0			



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APPROVAL



ED ENGINEERING DEPARTMENT

11/19/2024

11/19/2024

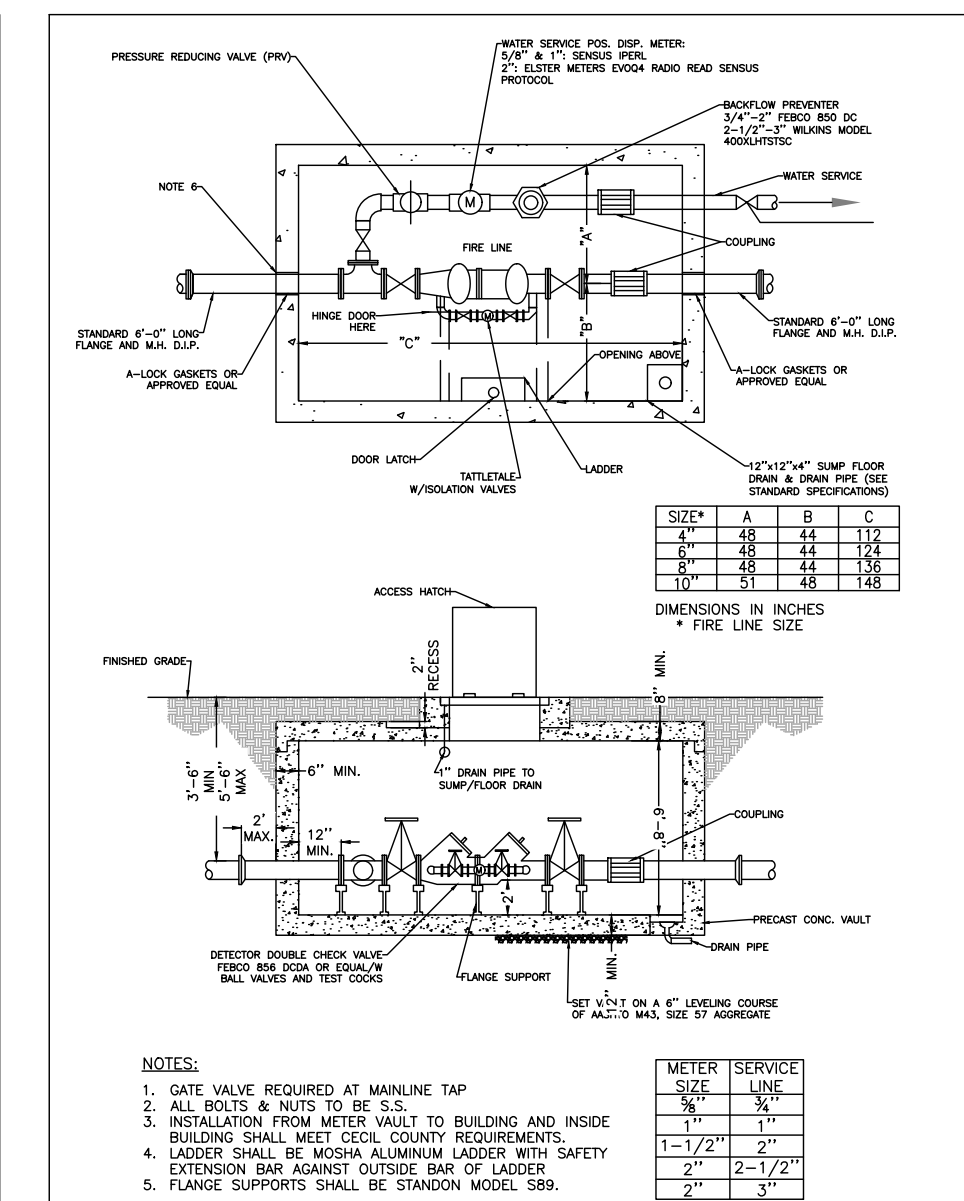
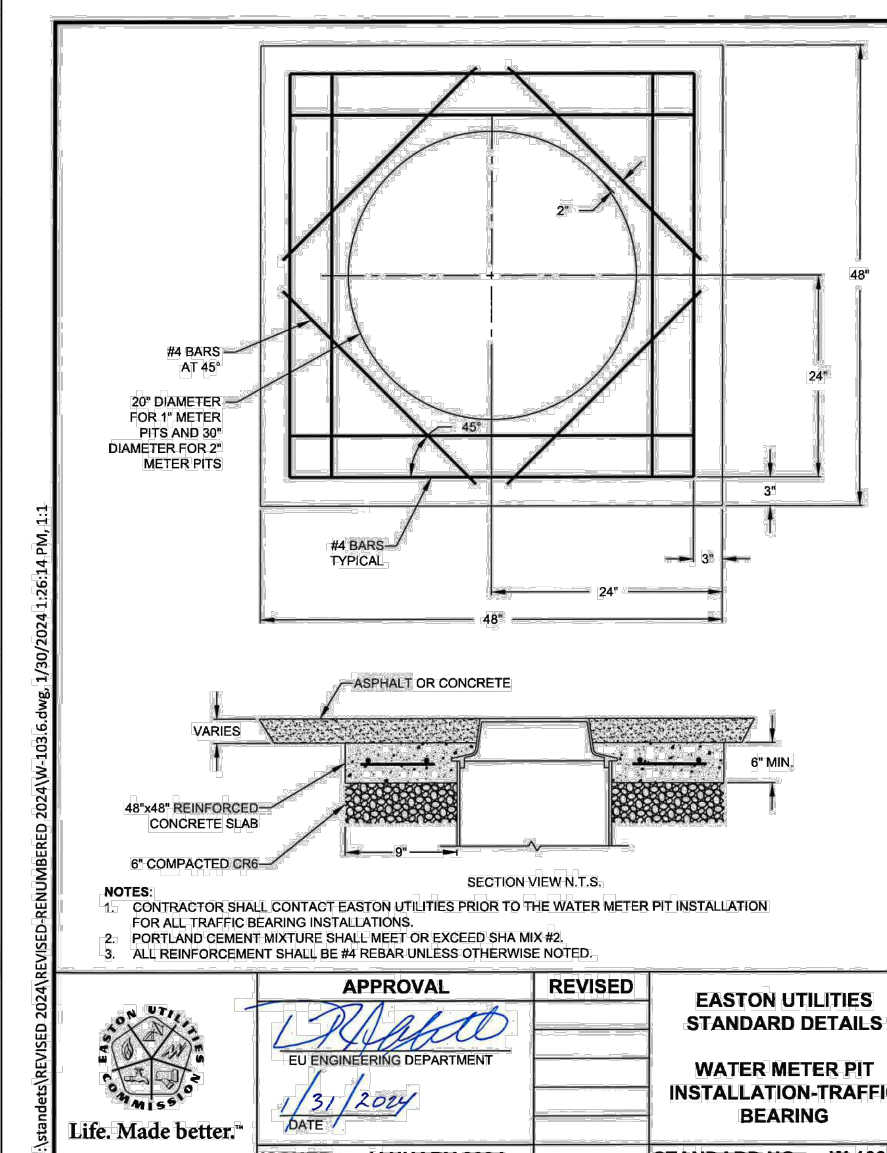
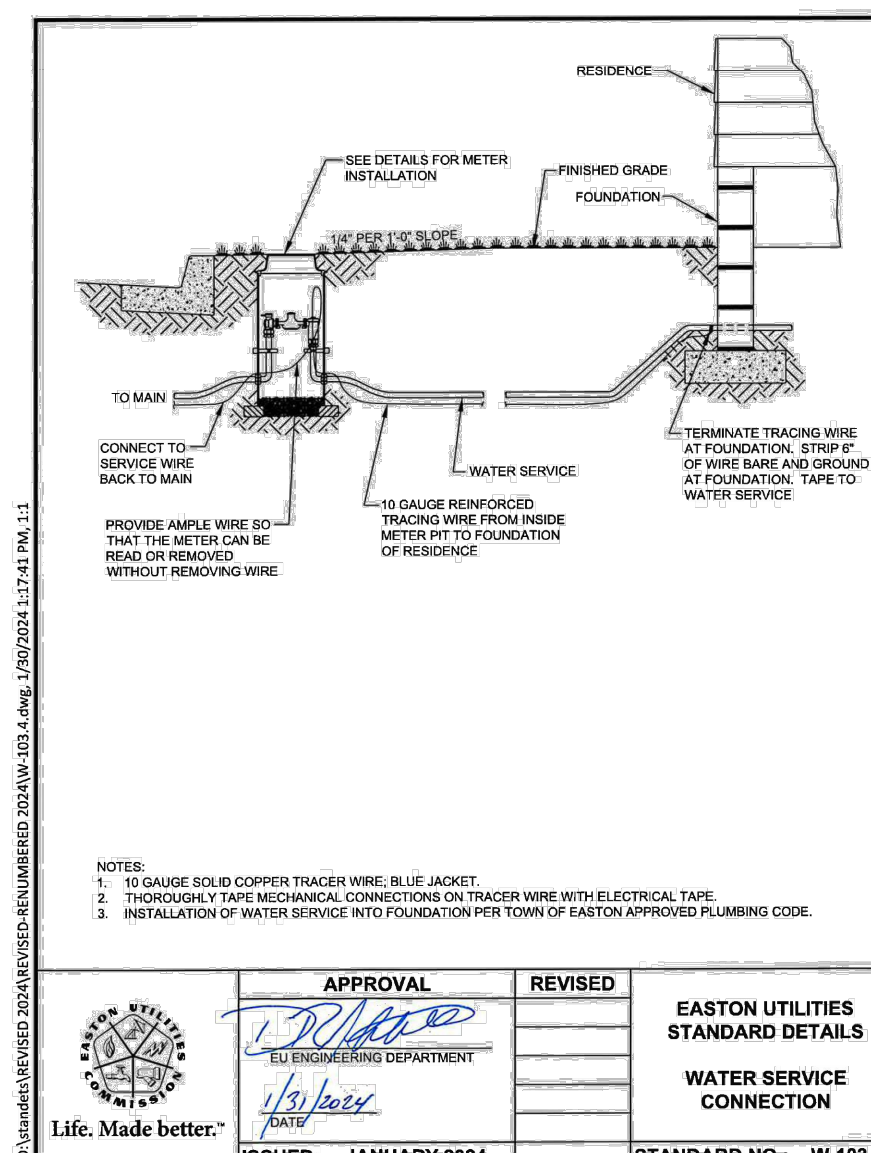
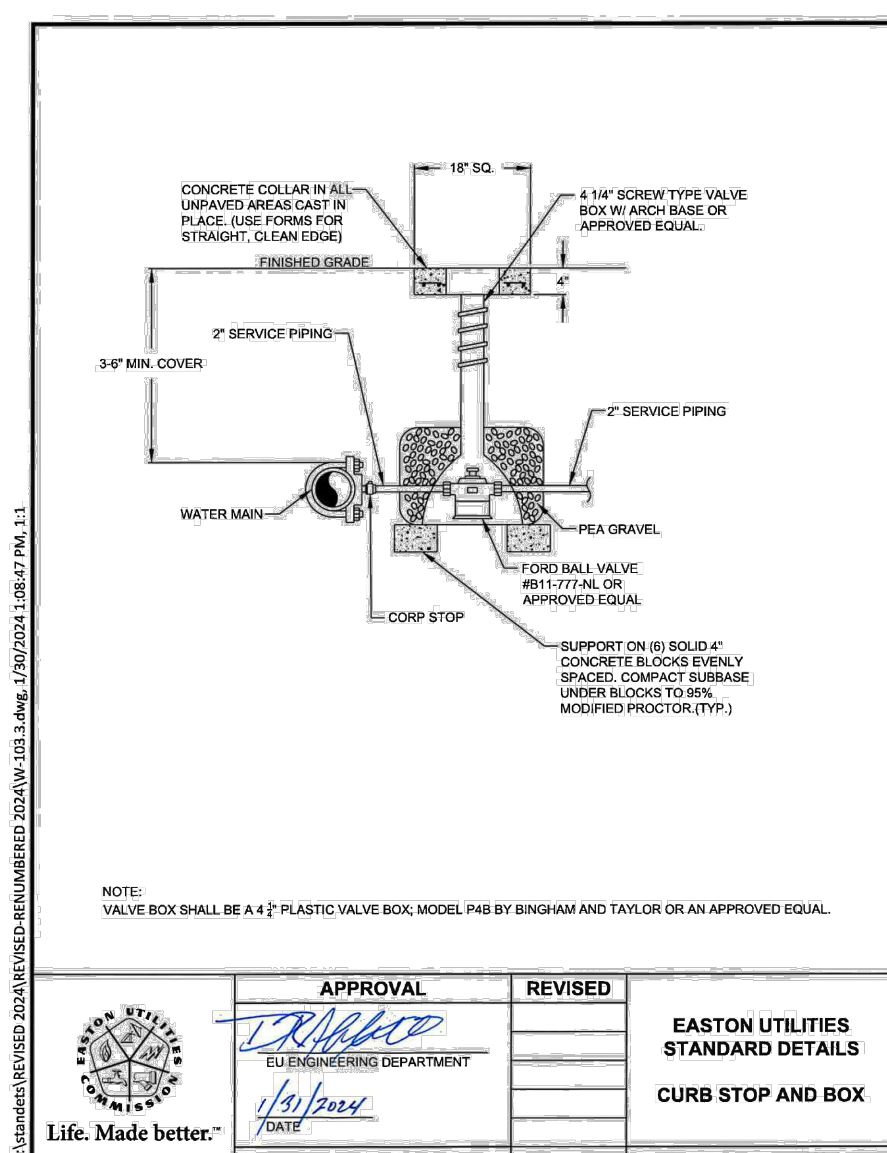
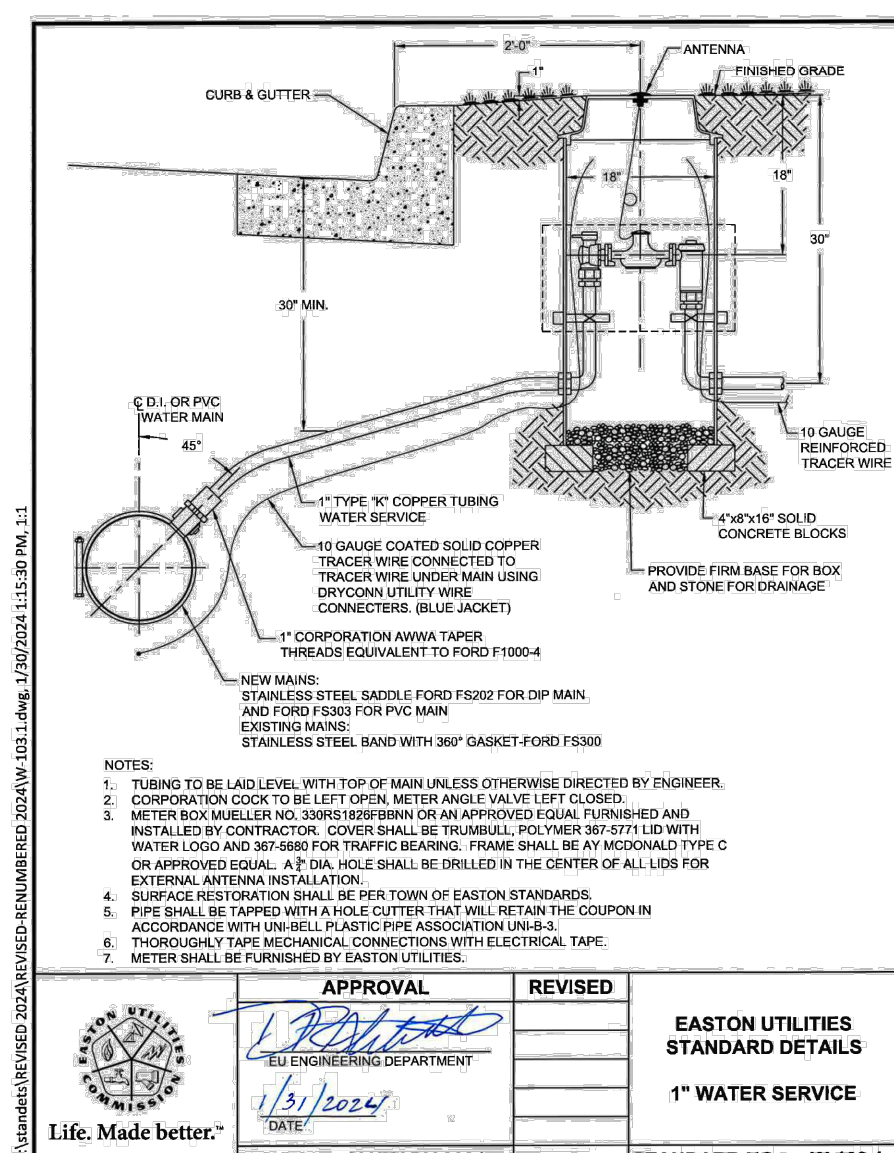
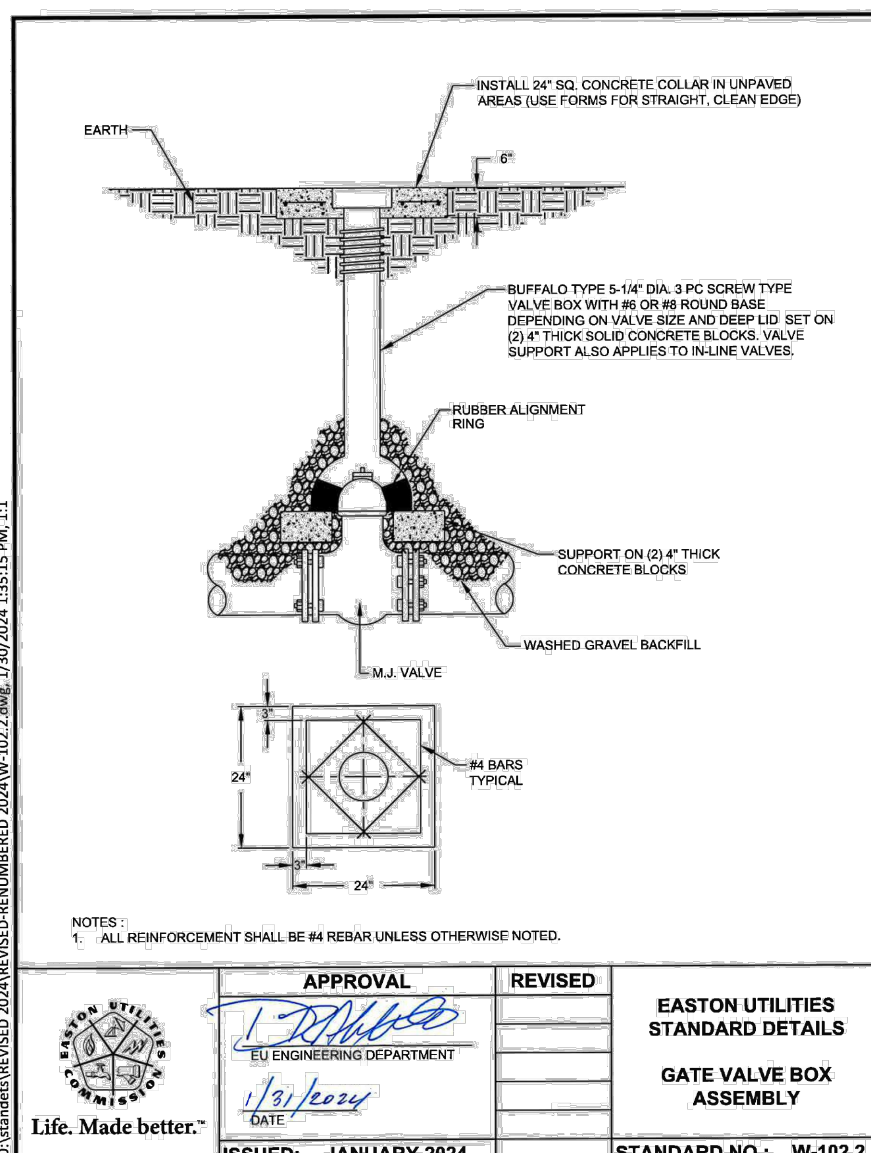
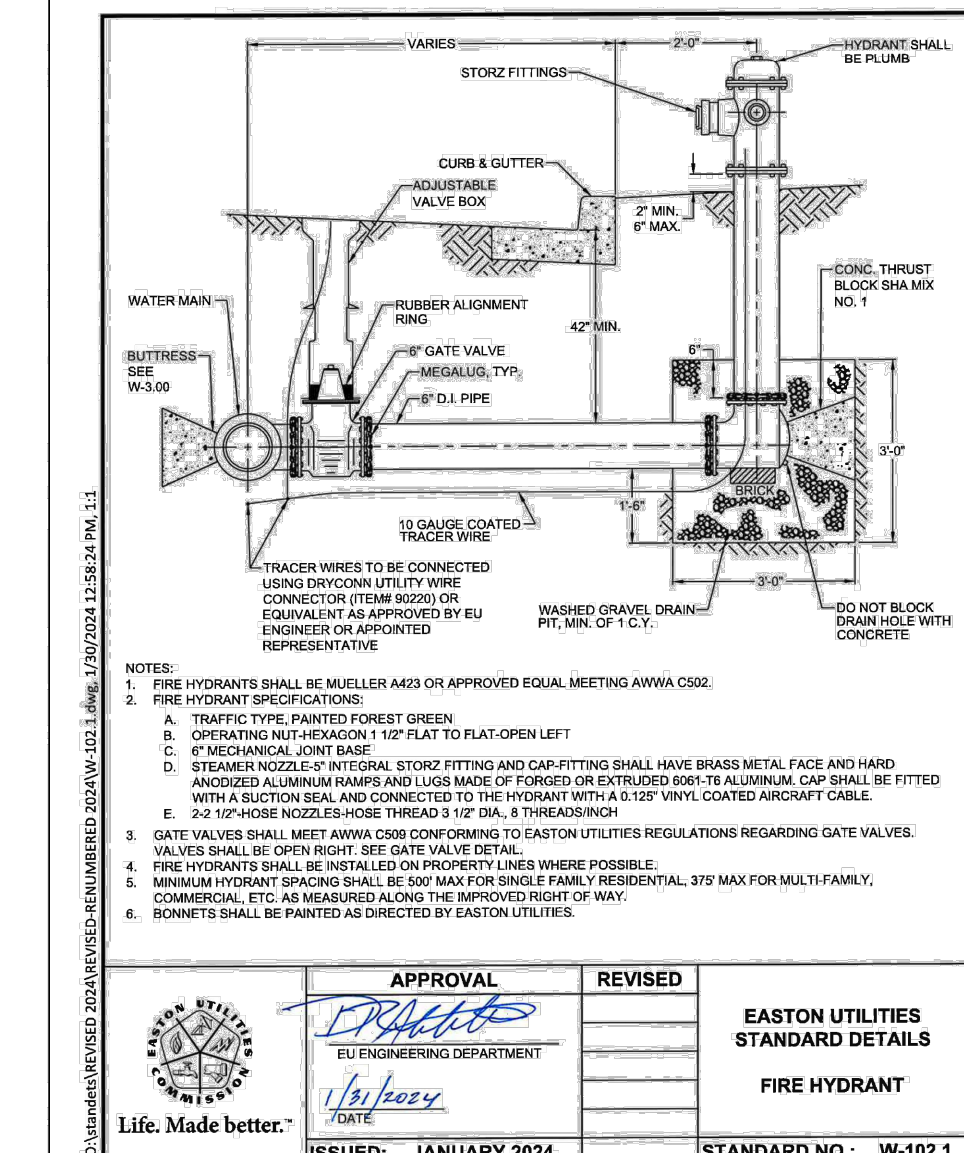
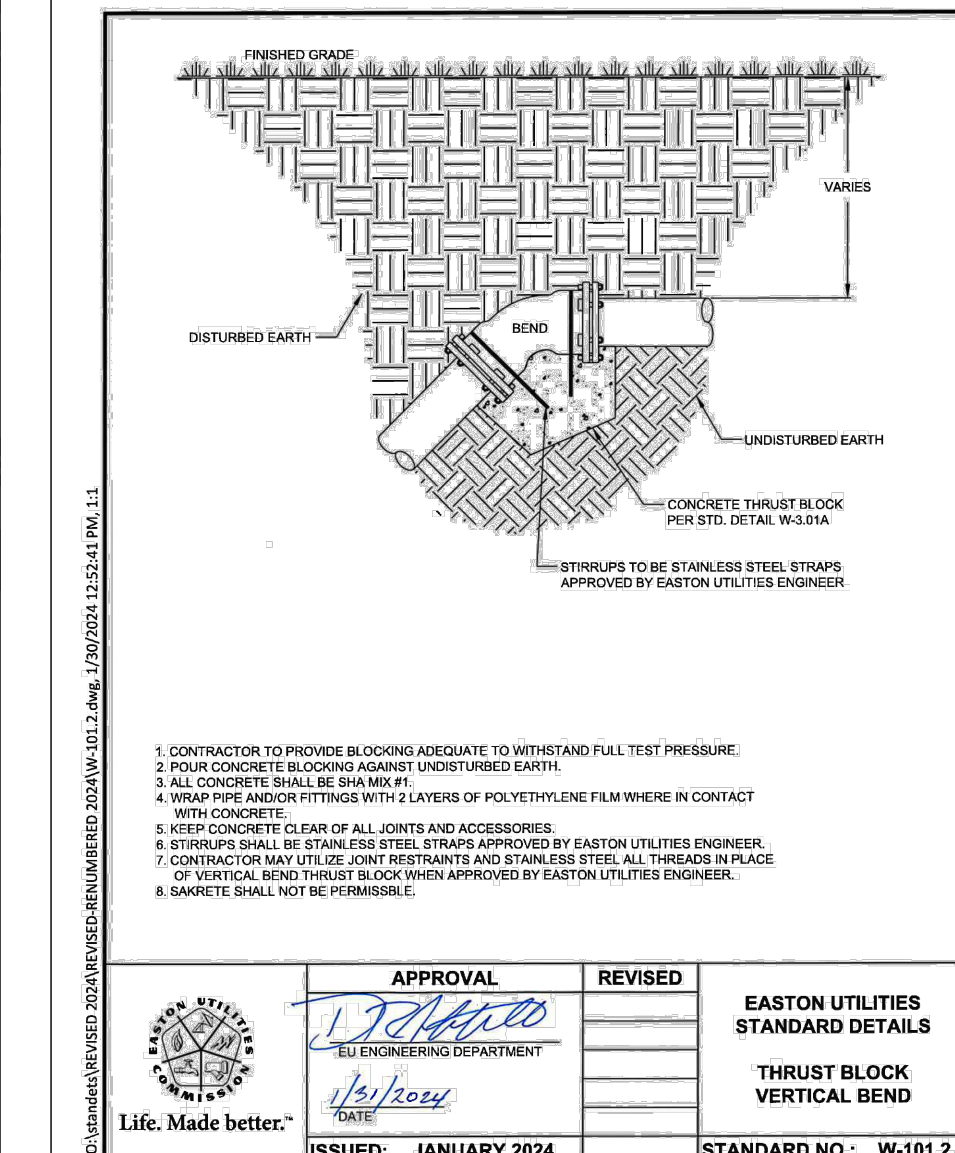
REVISED

**EASTON UTILITIES
STANDARD DETAILS**

**THURST BLOCK
VERTICAL BEND
DIMENSION TABLE**

ISSUED: JANUARY 2024

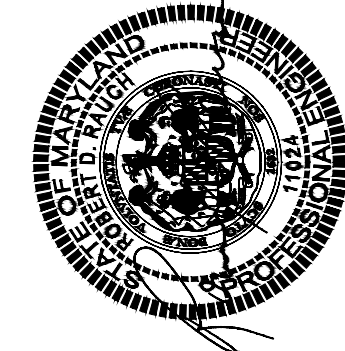
STANDARD NO.: W-5101



	REVISIONS						DESCRIPTION
	REV #	DATE					
<							

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Expiration Date: July 24, 2025



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Expiration Date: July 24, 2026

12/26/2024

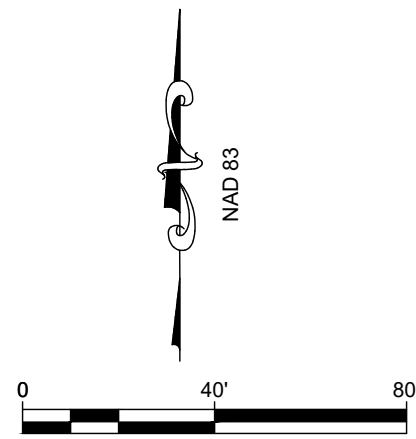
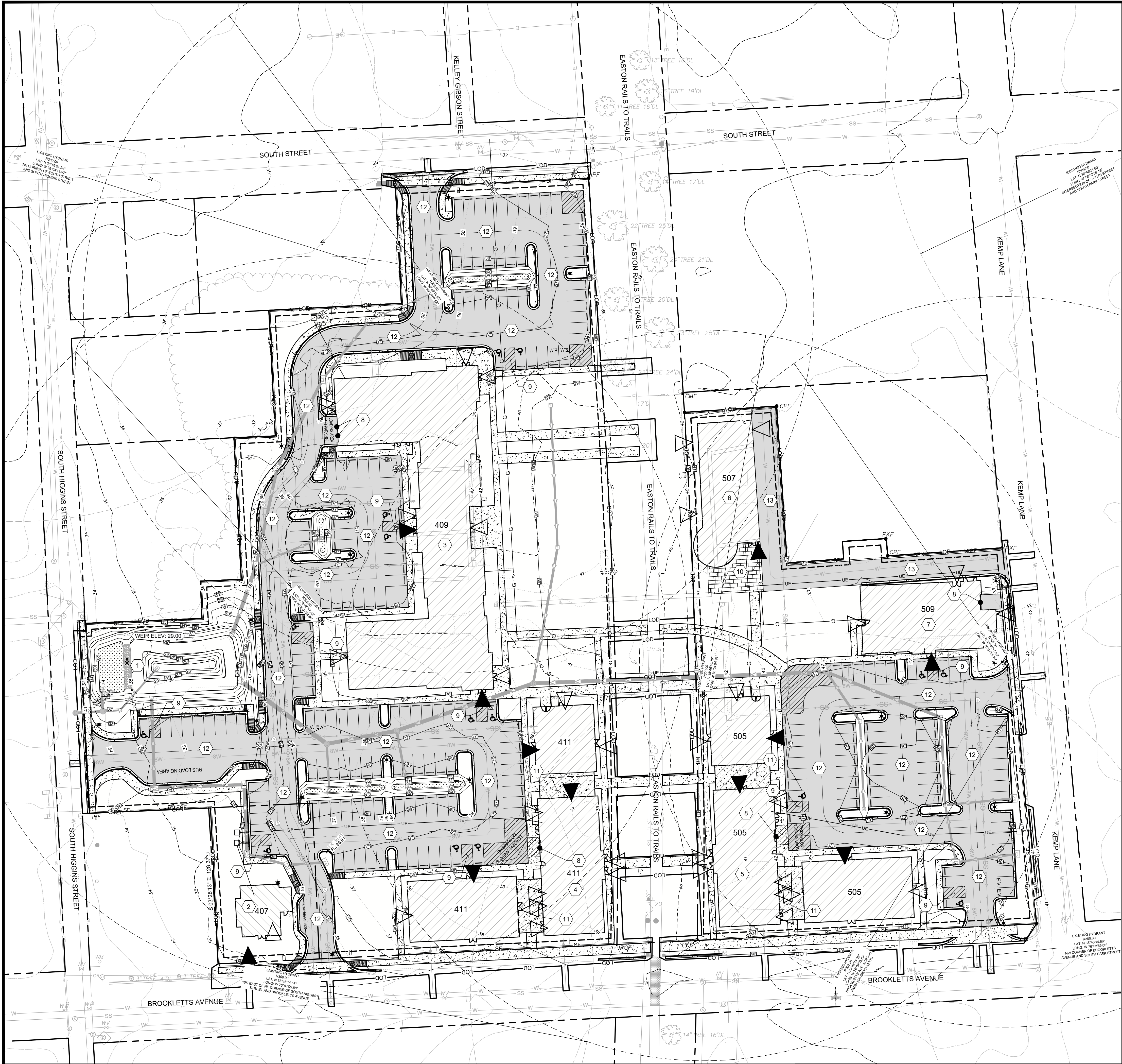
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UTILITY DETAILS

**EASTON CROSSING
EASTON CROSSING. LLC**

EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC



PROPOSED FEATURES

- 1 SUBMERGED GRAVEL WETLAND WITH FOREBAY
- 2 BUILDING 407 - COMMERCIAL OFFICE SPACE
- 3 BUILDING 409 - MIXED RETAIL/RESIDENTIAL
- 4 BUILDING 411 - MIXED RETAIL/RESIDENTIAL
- 5 BUILDING 505 - MIXED RETAIL/RESIDENTIAL
- 6 BUILDING 507 - FUTURE RESTAURANT
- 7 BUILDING 509 - GROUP RESIDENCE
- 8 INTERIOR REFUSE/RECYCLING CONTAINER ROOM ACCESS POINT
- 9 ADA ACCESS: PROVIDE ADA ACCESSIBLE PATH FROM PARKING LOT TO FRONT ENTRANCE OF BUILDING. ADA PATH SHALL MEET ALL ADA REQUIREMENTS.
- 10 AT-GRADE PAVEMENT: PROVIDE AESTHETIC PAVEMENT AT-GRADE TO ALLOW FOR DELIVERY/FIRE TRUCK TURNING MOVEMENTS
- 11 BREEZEWAY: PASS-THROUGH TO ALLOW FOOT TRAFFIC ACCESS TO BUILDING AND WALKING TRAIL. RESIDENTIAL UNITS LOCATED ABOVE
- 12 FIRE LANE: MINIMUM 24' WIDE FIRE LANE
- 13 FIRE LANE: MINIMUM 20' WIDE FIRE LANE

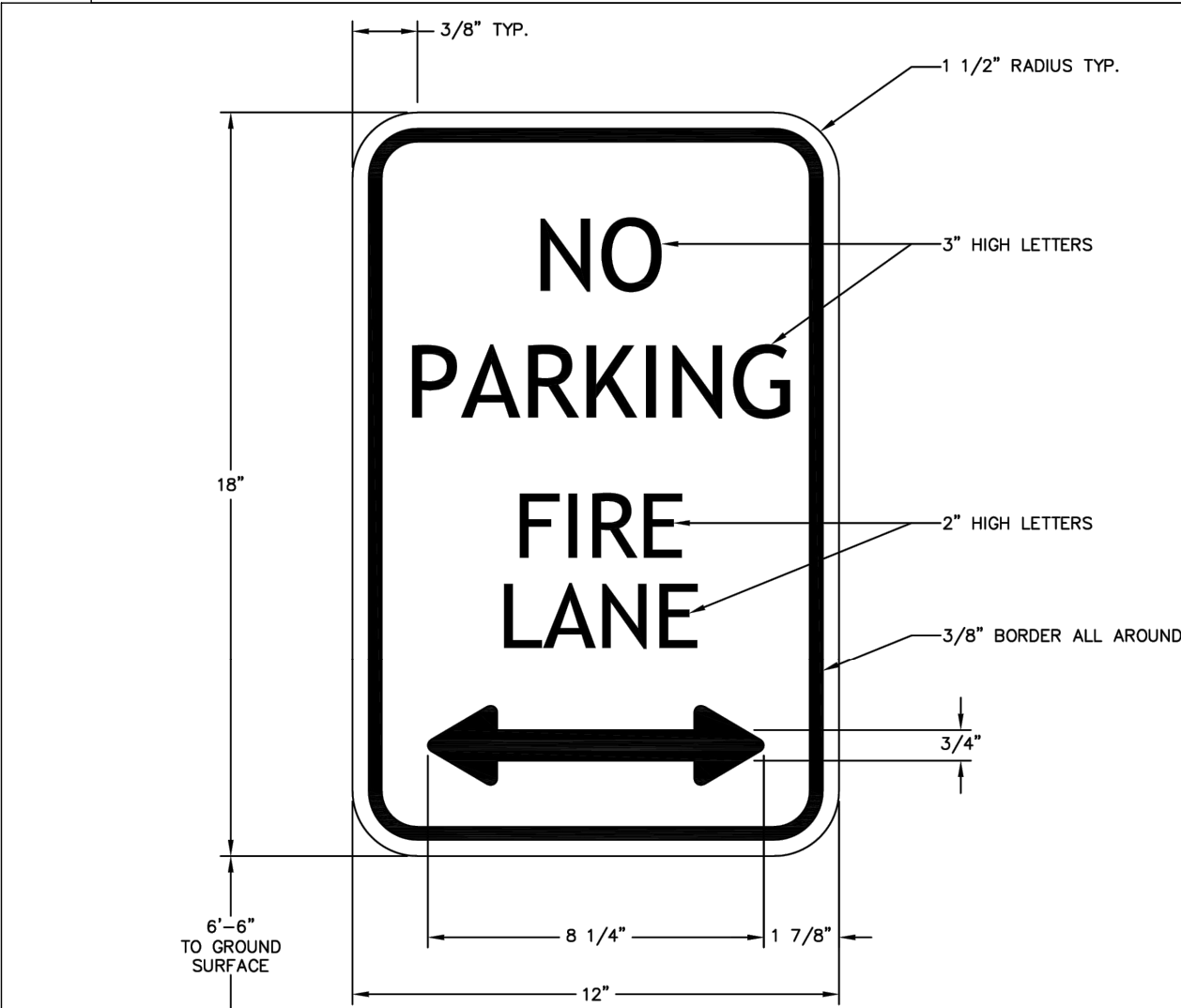
- 24' FIRE DEPT. ACCESS LANE
- MAIN EXTERIOR DOORS
- BUILDING EGRESS
- FIRE HYDRANT
- FDC CONNECTION
- FDC CONNECTION SIGN
- NO PARKING - FIRE LANE SIGN

FIRE DEPARTMENT CONNECTION

1. THE SIGN SHALL BE METAL, 12"x18" WHITE SCOTCHLITE BACKGROUND WITH RED LETTERS

2. ALL LETTERING SHALL BE MINIMUM 3" IN HEIGHT CENTERED JUSTIFIED READING "FIRE DEPARTMENT CONNECTION" IN ALL CAPS WITH EACH WORD ON ITS OWN LINE.

3. THE SIGN SHALL BE LOCATED BY THE FIRE DEPARTMENT CONNECTION AND BE CLEARLY VISIBLE FROM THE FIRE LANE



- NOTES:
- 1. ALL LETTERS, ARROW AND BORDER SHALL BE PAINTED RED ON A WHITE BACKGROUND.
 - 2. ALL LETTERS AND ARROW SHALL BE CENTERED BOTH VERTICALLY AND HORIZONTALLY.
 - 3. THE DISTANCE BETWEEN ANY 2 FIRE SIGNS IS 40'.

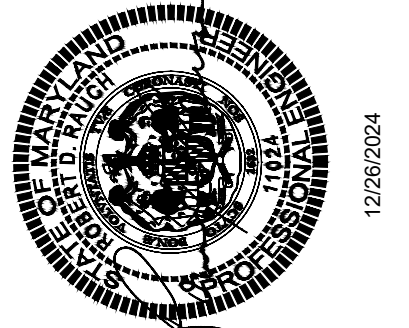
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TOWN OF EASTON - TOWN ENGINEER	TOWN OF EASTON PLANNING AND ZONING	EASTON UTILITIES - ENGINEER	TALBOT SOIL CONSERVATION DISTRICT MANAGER
DATE	DATE	DATE	DATE

FIRE MARSHAL PLAN

FOR
EASTON CROSSING. LLC
TAX MAP 0104, GRIDS 000EA0000, PARCELS 1823, 1826, 1833
EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC



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DATE:	12/26/2024
SCALE:	1" = 40'
DRAWN BY:	AF
DESIGNED BY:	
APPROVED BY:	

SHEET NO.: **C-501**

FOR REVIEW

TRAFFIC IMPACT ANALYSIS

FOR

THE ARC – EASTON CROSSING

Prepared by:

LENHART TRAFFIC CONSULTING, INC.
TRAFFIC ENGINEERING & TRANSPORTATION PLANNING

December 4, 2024



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- A Supplemental Info, Turning Movement Counts
- B Level of Service (LOS) Worksheets
- C Background Developments

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Section 1 Introduction

1.1 Project Description

This Traffic Impact Analysis (TIA) has been prepared for the proposed The Arc – Easton Crossing development. The subject site is located in Easton, Maryland, and is proposed to be accessed via multiple driveways that provide access to the various buildings within the development. It should be noted that the Easton Rails-To-Trails shared use path cuts through the middle of the site. A concept plan is provided in Appendix A of the report. **Exhibit 1** shows the location of the site.

The site is proposed to be developed with the following:

- Building 409 – 56 multifamily units and 9,892 sq. ft. of retail space
- Building 411 - 26 multifamily units and 9,599 sq. ft. of retail space
- Building 505 - 26 multifamily units and 9,599 sq. ft. of retail space
- Building 509 - 15 multifamily units
- Building 507 – 10,000 sq. ft. restaurant

This results in a total proposed development of 123 multifamily units, 29,090 square feet of retail space, and the 10,000 square foot restaurant.

1.2 Scope of Study

This TIA has been prepared in accordance with the scoping correspondence submitted to the Town of Easton. The Highway Capacity Manual (HCM) and Critical Lane Volume (CLV) methodologies were utilized to evaluate the study intersections per Town of Easton requirements.



Traffic Impact Analysis	Site Location Map	Exhibit 1
 LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com		

Section 2 Existing Conditions

2.1 Description of Road Network

The key roads in the study area are:

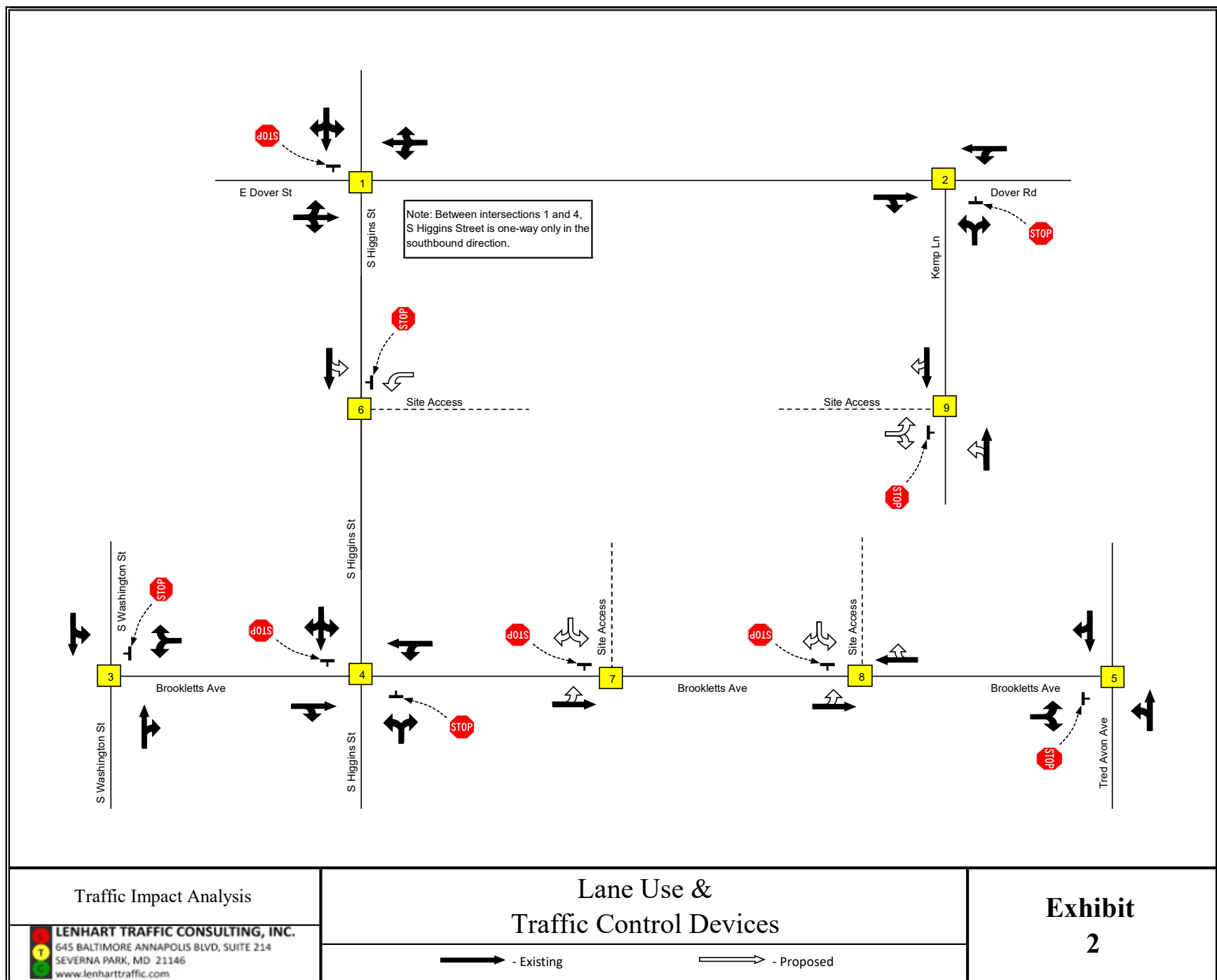
- Dover Road – a two-lane roadway with a posted speed limit of 25 MPH.
- Higgins Street – a two-lane roadway with a posted speed limit of 25 MPH.
- Brookletts Avenue – a two-lane roadway with a posted speed limit of 25 MPH.
- Washington Street – a two-lane roadway with a posted speed limit of 25 MPH.

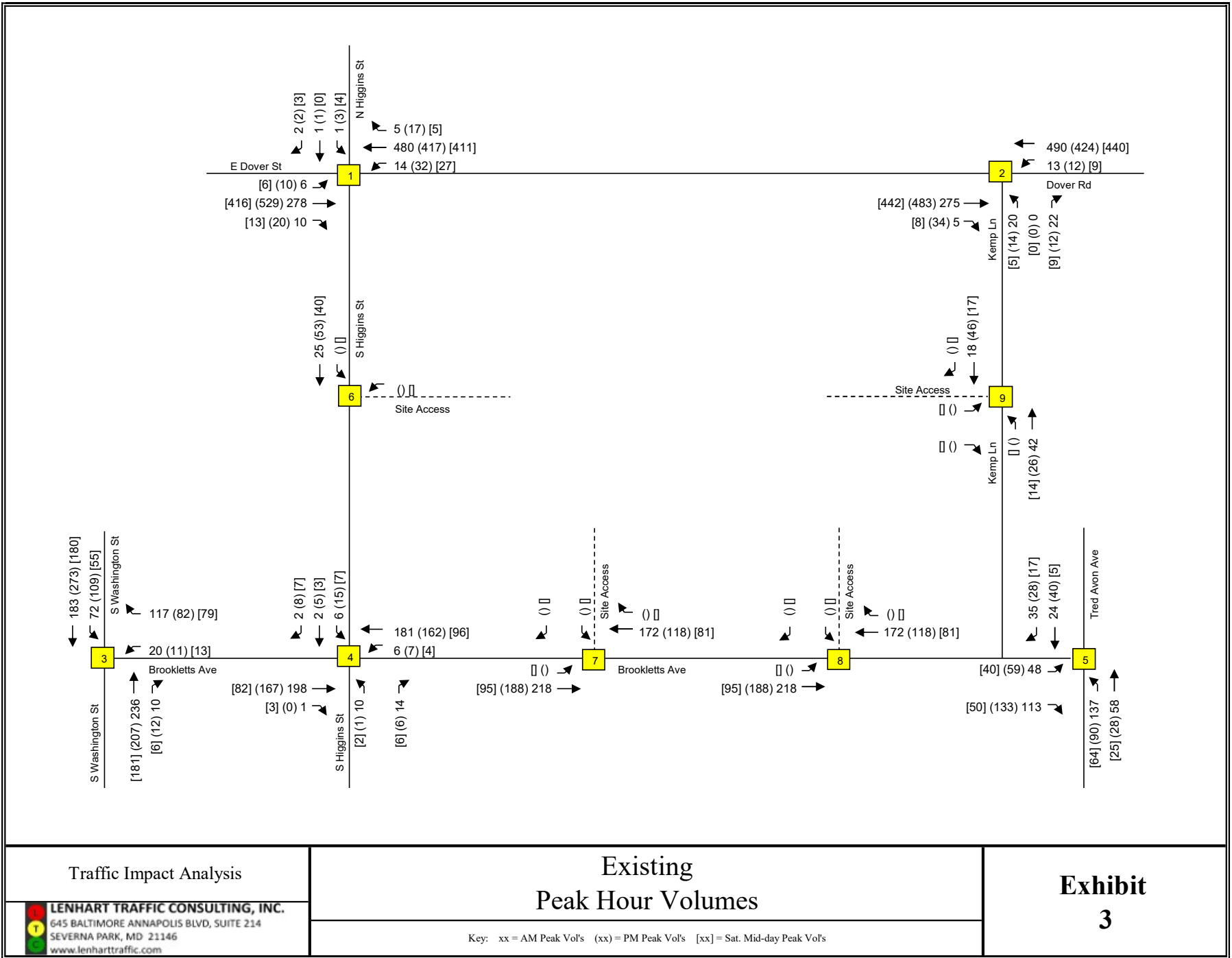
2.2 Existing Lane Configurations

The Lane Use & Traffic Control Devices are shown on **Exhibit 2**.

2.3 Existing Traffic Counts

Peak hour turning movement counts were conducted and are shown on **Exhibit 3**.





Section 3 Background Conditions

3.1 Annual Growth

A 1.5% growth rate was confirmed for use in the scoping coordination for this report. However, in order to account for any additional traffic at the study intersections due to approved but unbuilt developments, a more conservative 2% growth rate was applied to the study intersections for three years. The resulting base peak hour volumes are shown on **Exhibit 4a**.

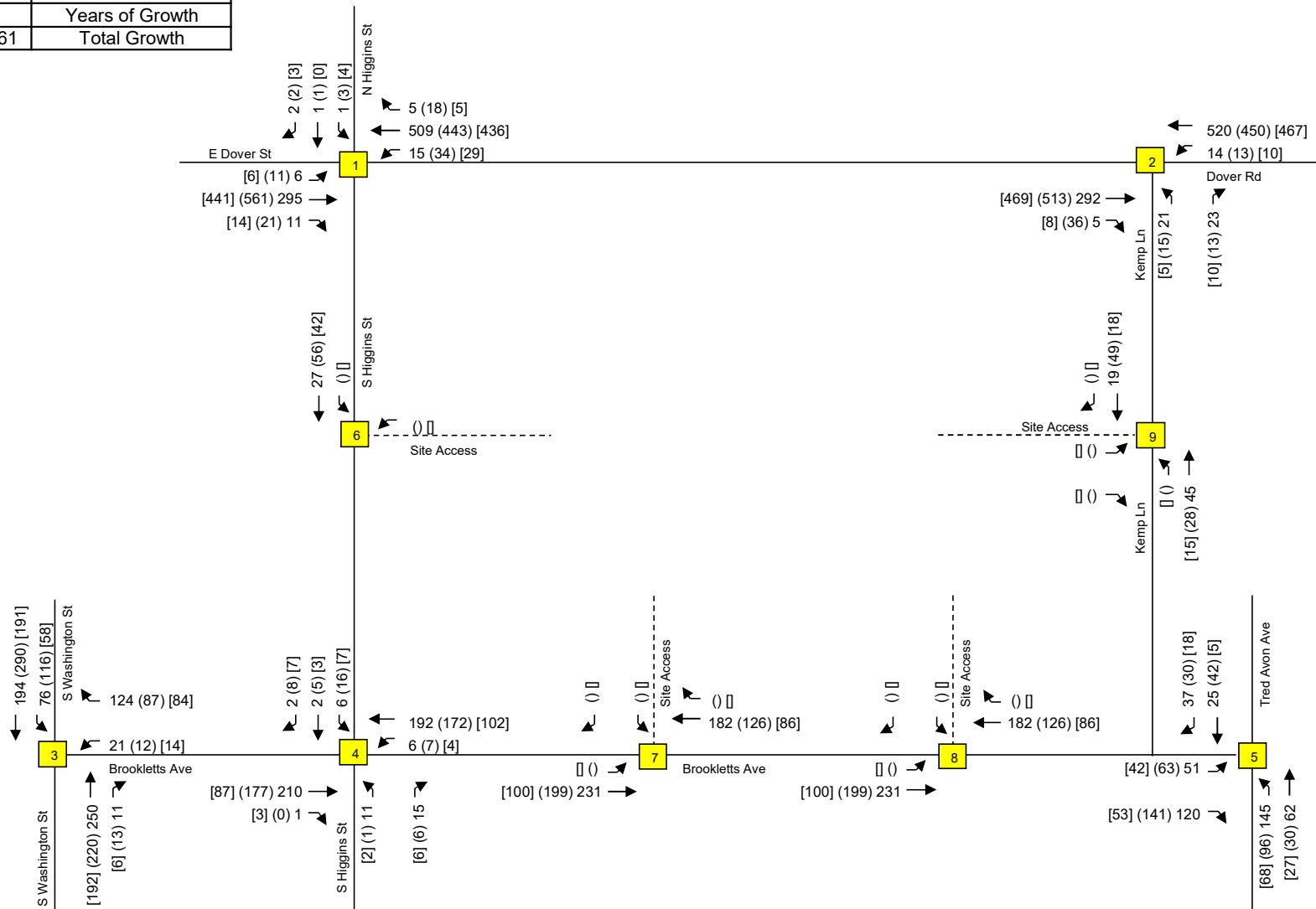
3.2 Background Developments

Background developments were included based on input from the Town of Easton and include Silo Square and 350 N Washington. The trip generation and assignment for the background developments is included in Appendix C.

3.3 Background Peak Hour Volumes

Exhibit 5 shows the background peak hour volumes which combine the base peak hour volumes and the trips associated with the background developments. Results of the LOS analyses for the background peak hour volumes are shown on Exhibits 9 and 10.

2%	Growth Rate
3	Years of Growth
1.061	Total Growth



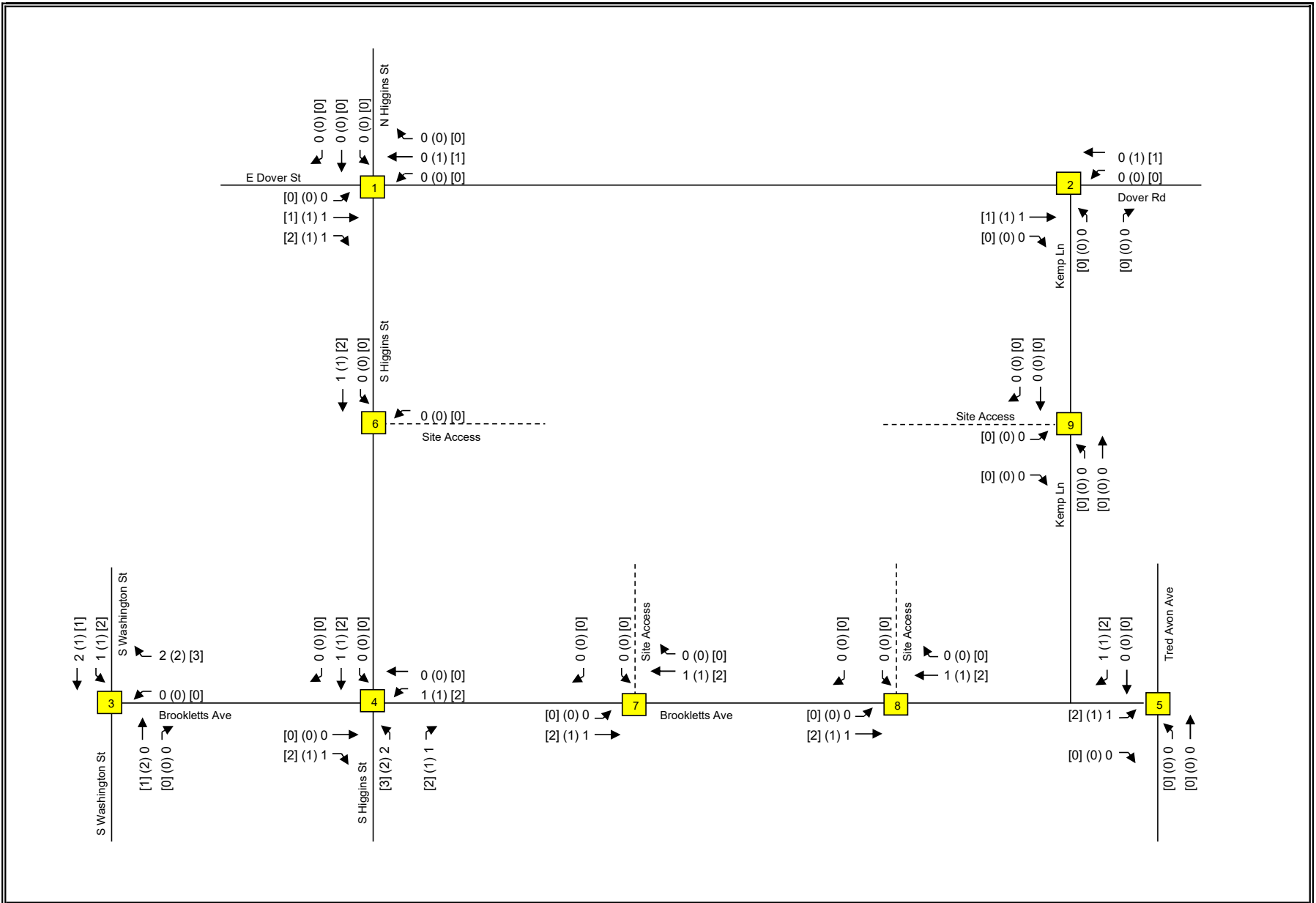
Traffic Impact Analysis



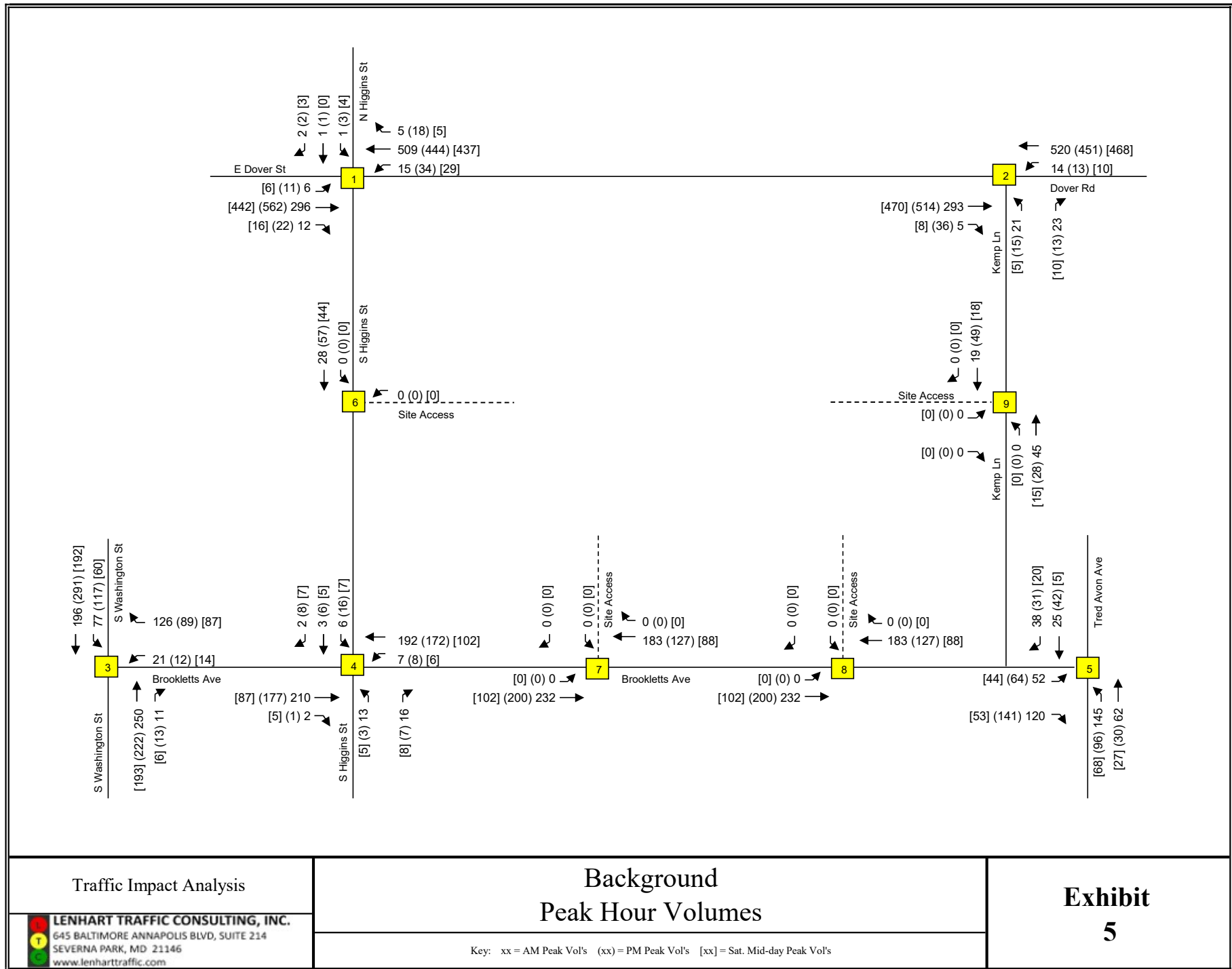
Base Peak Hour Volumes

Key: xx = AM Peak Vol's (xx) = PM Peak Vol's [xx] = Sat. Mid-day Peak Vol's

**Exhibit
4a**



Traffic Impact Analysis LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com	Combined Trips from Background Developments Key: xx = AM Peak Vol's (xx) = PM Peak Vol's [xx] = Sat. Mid-day Peak Vol's	Exhibit 4b
--	---	------------------------------



Section 4 Projected Conditions with Site

4.1 Site Trip Generation

The site is proposed to be developed with 123 multifamily apartments and a 3,000 square foot fast casual restaurant. The trip generation for the proposed development is detailed on **Exhibit 6a**. Trip generation rates were obtained from the ITE Trip Generation Manual, 11th Edition.

For reference, **Exhibit 6b** details the layout of the site with the building numbers identified. The site is proposed to be developed with the following:

- Building 409 – 56 multifamily units and 9,892 sq. ft. of retail space
- Building 411 - 26 multifamily units and 9,599 sq. ft. of retail space
- Building 505 - 26 multifamily units and 9,599 sq. ft. of retail space
- Building 509 - 15 multifamily units
- Building 507 – 10,000 sq. ft. restaurant

This results in a total proposed development of 123 multifamily units, 29,090 square feet of retail space, and the 10,000 square foot restaurant.

4.2 Site Trip Distribution & Trip Assignment

The trip distribution and assignment for the various buildings and the pass-by trips associated with the site are shown on **Exhibits 7a – 7d**.

4.3 Total Traffic Volumes

The Total Peak Hour Volumes are shown on **Exhibit 8**.

4.4 Project Level of Service

The total peak hour traffic volumes shown on Exhibit 8 were evaluated using the CLV and HCM methodologies. The results of the CLV analyses are shown on **Exhibit 9** and indicate that all intersections operate at LOS A under total conditions. The results of the HCM analyses are shown on **Exhibit 10** and indicate that each study intersection operates with LOS A, and each stop-controlled approach operates with LOS C or better. The results of the CLV and HCM analyses show that the proposed redevelopment will have negligible impact on the operation of the study intersections.

The trip assignment on Exhibits 7a-7d shows how much vehicular traffic the proposed redevelopment will add on each roadway and intersection in the study area.

The table below shows the total number of vehicles passing through each study intersection during the background (without the proposed development) and total (with the proposed development) conditions, along with the net increase in volume at each intersection due to the redevelopment.

Intersection		Peak Hour		
		AM	PM	Sat
Int 1	Total	875	1136	990
	Background	847	1097	942
	Net	28	39	48
Int 2	Total	943	1119	1063
	Background	876	1042	971
	Net	67	77	92
Int 3	Total	724	794	615
	Background	681	744	552
	Net	43	50	63
Int 4	Total	508	462	311
	Background	451	398	232
	Net	57	64	79
Int 5	Total	468	439	261
	Background	442	404	217
	Net	26	35	44

As shown, the maximum increase in vehicular traffic at any of the study intersections is 92 vehicles, which occurs at Study Intersection 2 during the Saturday peak hour. For context, 92 additional vehicles per hour averages to approximately 1.5 additional vehicle every minute during the peak hour. The majority of the other intersections are anticipated to see an increase of ~ 45-65 vehicles which averages to approximately .75 – 1 additional vehicle every minute during the peak hours.

Based on the results of the level of service analyses shown on Exhibits 9 and 10, and the minimal increases in traffic volume expected with the redevelopment of the site, the proposed redevelopment will have minimal impact on the surrounding roadway and will not degrade the level of service at the study intersections. The traffic from the proposed development is consistent with the design of the local roads and the proposed use is not expected to generate heavy vehicle trips. In comparison, the existing use includes multiple grain storage silos or similar use and

generated heavy trucks that are oversized compared to the design vehicle of the local roadways within the Town of Easton. The widths of the existing roadways combined with the presence of parked vehicles on one or both sides of the roadway resulted in significant difficulty in these heavy vehicles to maneuver.

4.5 Pedestrian Consideration and Rails-to-Trails Connection

Exhibit 11 details the proposed concept plan and details the connections to the Rails-to-Trails from the site. As shown, there are sidewalk improvements along the site frontage and internal to the site that will provide connections to the Trail. These sidewalk improvements will improve connections to the Trail for all users within the proposed site and provide an improved path to the Trail for users from other locations within the Town of Easton.

Trip Generation Rates

Multifamily Housing, Mid-Rise (ITE-221, Units) [Not Close to Rail Transit]

Morning Trips = $0.44 \times \text{Units} - 11.61$

Evening Trips = $0.39 \times \text{Units} + 0.34$

$\text{Ln}(\text{Midday Sat. Trips}) = 1.00 \times \text{Ln}(\text{Units}) - 0.91$

Strip Retail Plaza (<40k) (ksf, ITE-822)

$\text{Ln}(\text{Morning Trips}) = 0.66 \times \text{Ln}(\text{ksf}) + 1.84$

$\text{Ln}(\text{Evening Trips}) = 0.71 \times \text{Ln}(\text{ksf}) + 2.72$

Midday Sat. Trips = $6.57 \times \text{ksf}$

High Turnover (Sit-Down) Rest. (ksf, ITE-932)

Morning Trips = $9.57 \times \text{ksf}$

Evening Trips = $9.05 \times \text{ksf}$

Midday Sat. Trips = $11.19 \times \text{ksf}$

Trip Distribution (In/Out)

23/77

61/39

51/49

60/40

50/50

51/49

55/45

61/39

51/49

Trip Generation Totals

			AM Peak			PM Peak			Sat. Mid-day Peak		
			In	Out	Total	In	Out	Total	In	Out	Total
Building 409	Multifamily Housing, Mid-Rise (ITE-221, Urban/Suburban, Units) [Not Close to Rail Transit]	56 units	6	14	20	13	9	22	12	11	23
	Strip Retail Plaza (<40k) (ksf, ITE-822)	9,892 sq.ft.	12	8	20	28	28	56	33	32	65
	Passby Rates: AM Peak Hour = 20%, PM Peak Hour = 40%, Sat. Mid-Day Peak Hour = 31%		-2	-2	-4	-11	-11	-22	-10	-10	-20
Building 411	Multifamily Housing, Mid-Rise (ITE-221, Urban/Suburban, Units) [Not Close to Rail Transit]	26 units	2	7	9	6	4	10	5	6	11
	Strip Retail Plaza (<40k) (ksf, ITE-822)	9,599 sq.ft.	11	8	19	27	28	55	32	31	63
	Passby Rates: AM Peak Hour = 20%, PM Peak Hour = 40%, Sat. Mid-Day Peak Hour = 31%		-2	-2	-4	-11	-11	-22	-10	-10	-20
Building 505	Multifamily Housing, Mid-Rise (ITE-221, Urban/Suburban, Units) [Not Close to Rail Transit]	26 units	2	7	9	6	4	10	5	6	11
	Strip Retail Plaza (<40k) (ksf, ITE-822)	9,599 sq.ft.	11	8	19	28	27	55	32	31	63
	Passby Rates: AM Peak Hour = 20%, PM Peak Hour = 40%, Sat. Mid-Day Peak Hour = 31%		-2	-2	-4	-11	-11	-22	-10	-9	-19
Building 509	Multifamily Housing, Mid-Rise (ITE-221, Urban/Suburban, Units) [Not Close to Rail Transit]	15 units	1	4	5	4	2	6	3	2	5
Building 507	High Turnover (Sit-Down) Rest. (ksf, ITE-932)	10,000 sq.ft.	53	43	96	56	35	91	57	55	112
	Passby Rates: AM Peak Hour = 21.5%, PM Peak Hour = 43%, Sat. Mid-Day Peak Hour = 43%		-11	-10	-21	-24	-15	-39	-25	-23	-48
Total Trips:			98	99	197	168	137	305	179	174	353
Primary Trips:			81	83	164	111	89	200	124	122	246
Passby Trips:			17	16	33	57	48	105	55	52	107

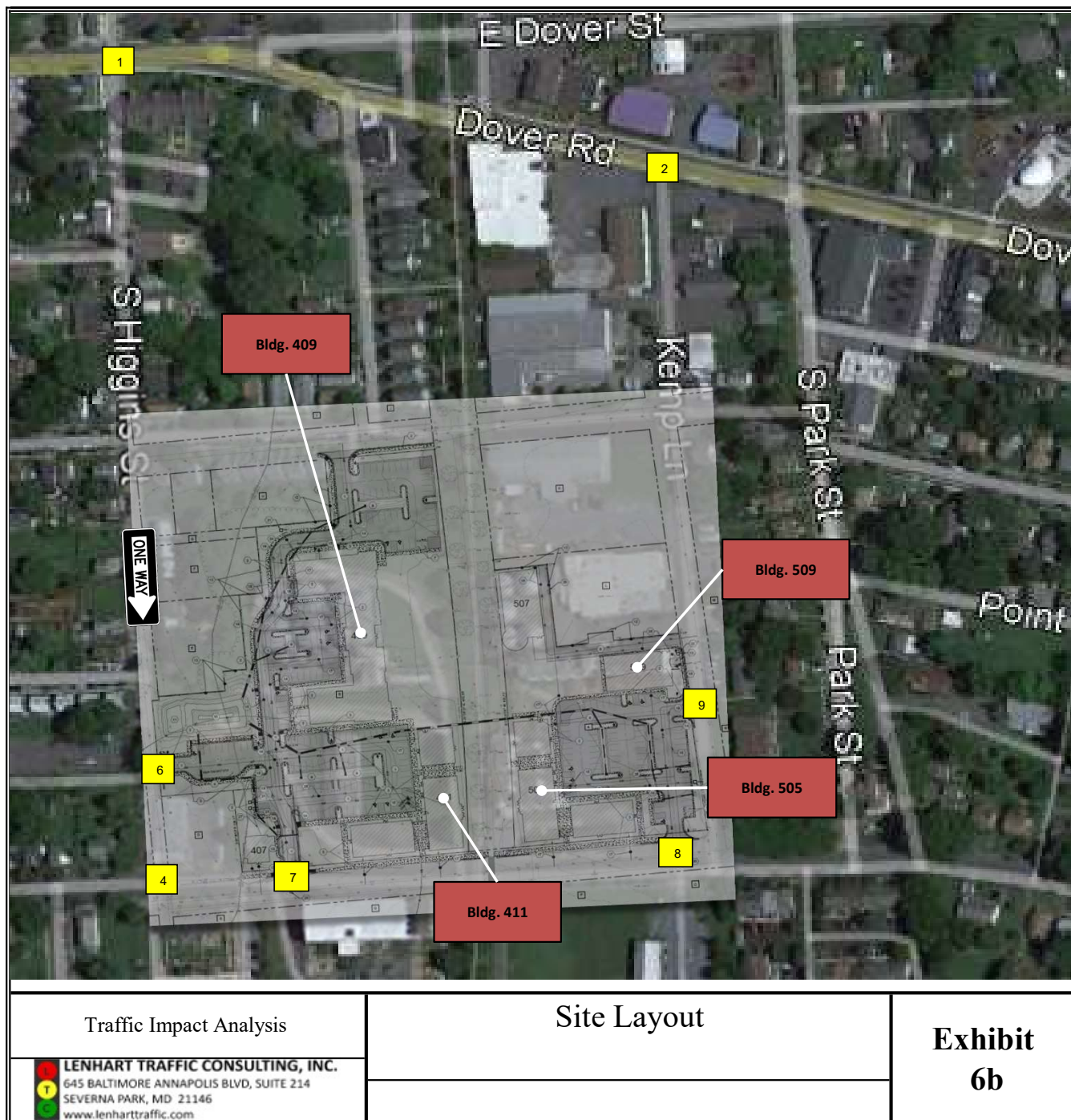
NOTE: Trip Generation Rates obtained from the ITE Trip Generation Manual, 11th Edition

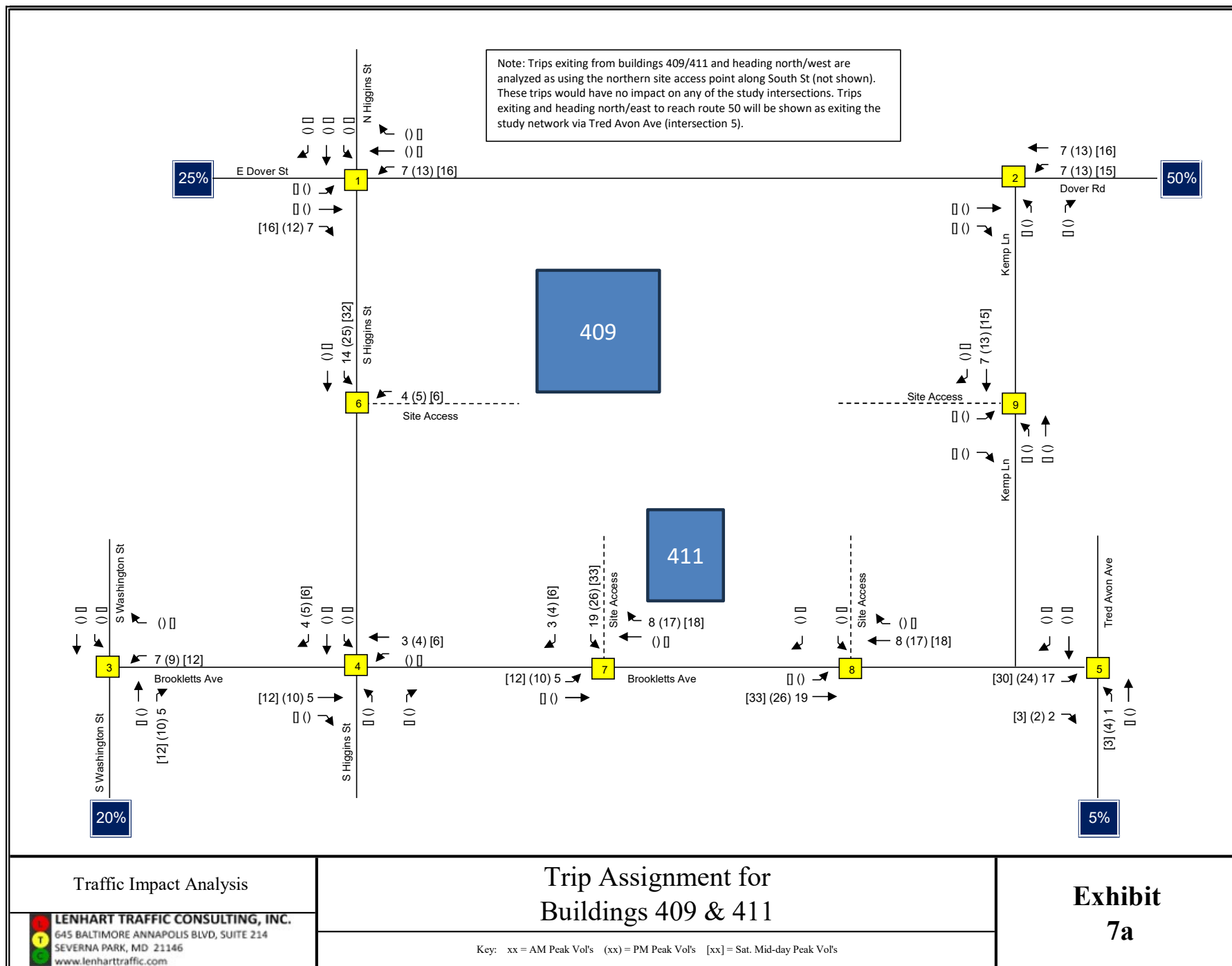
Traffic Impact Analysis

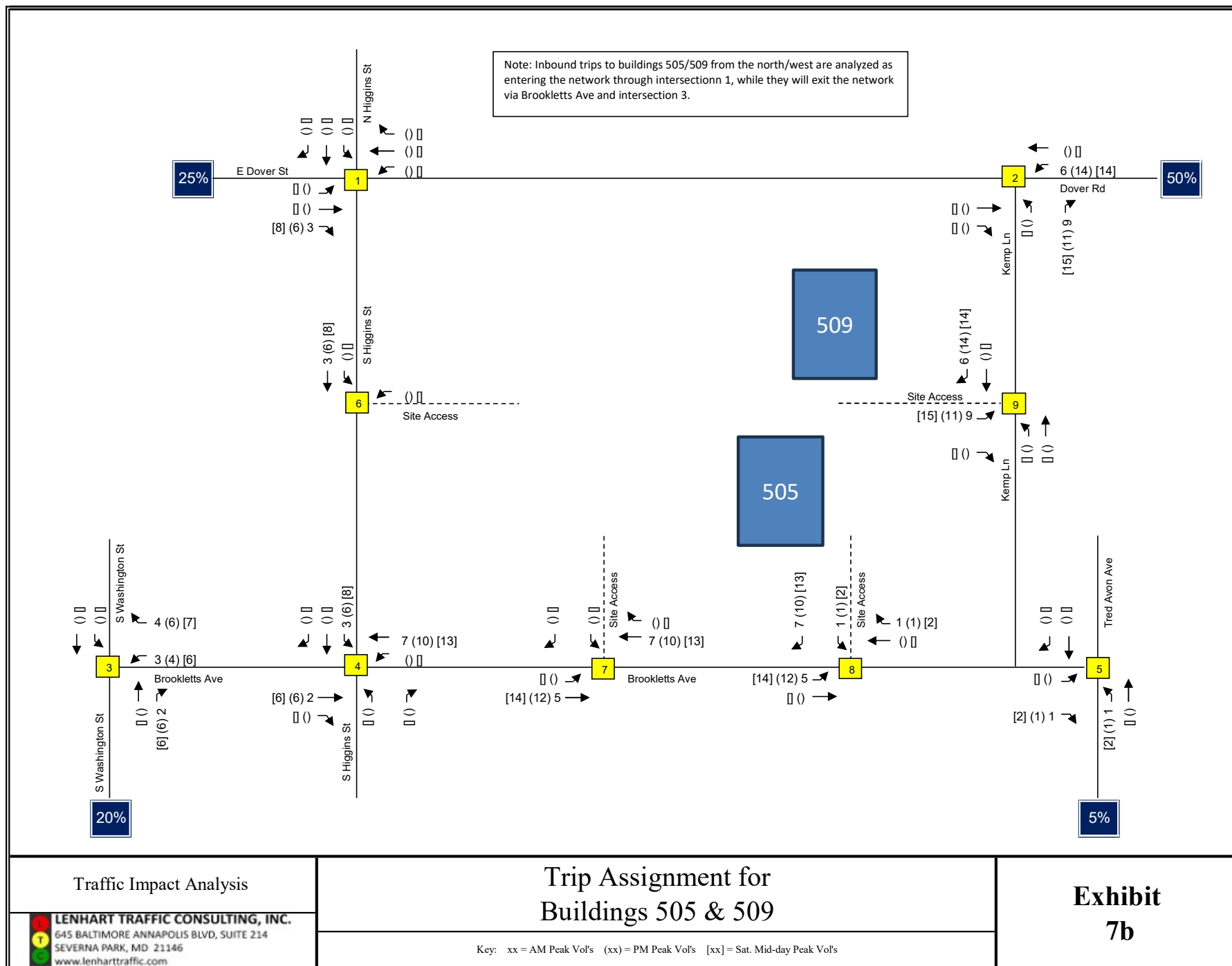
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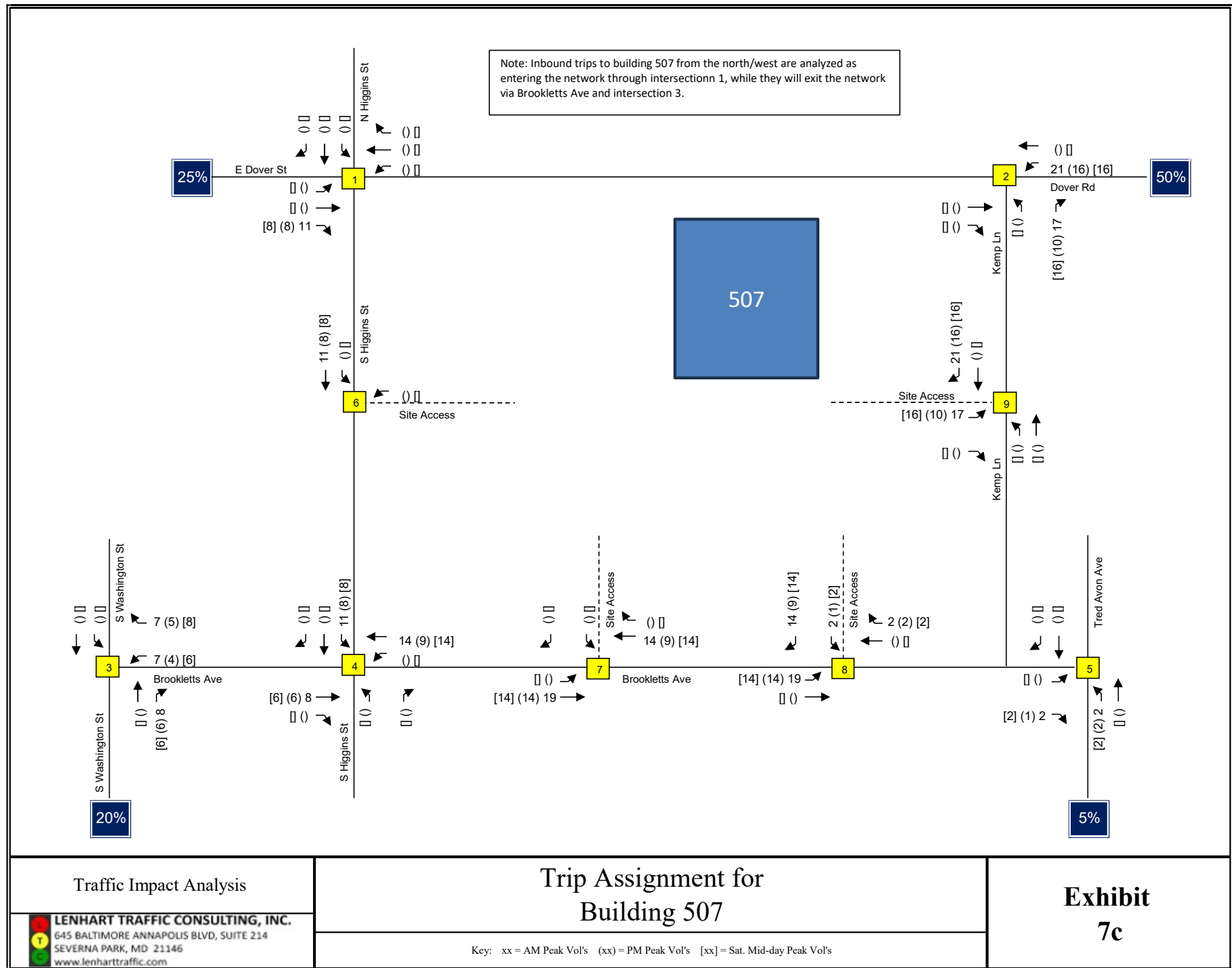
Trip Generation for
Site

**Exhibit
6a**

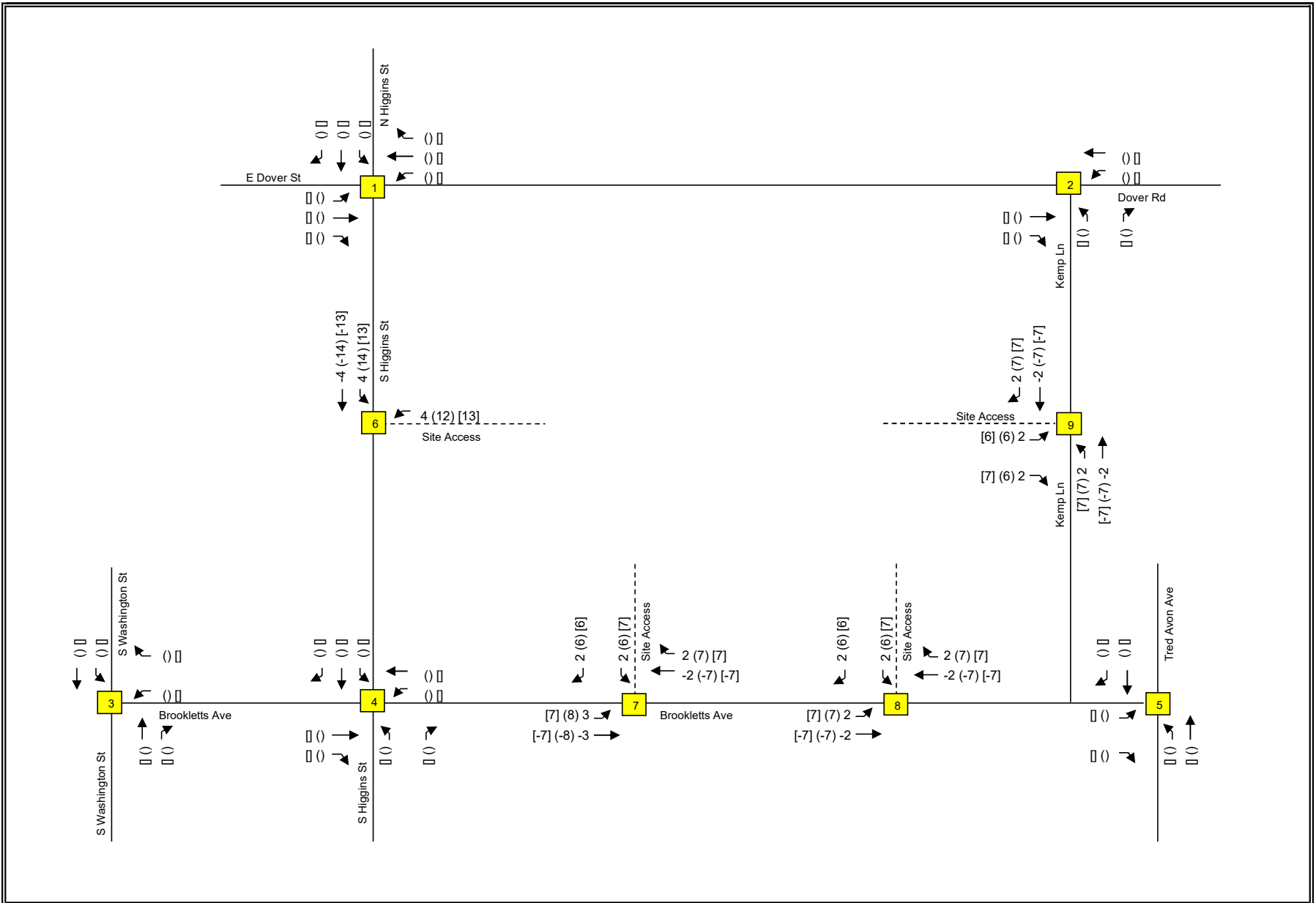




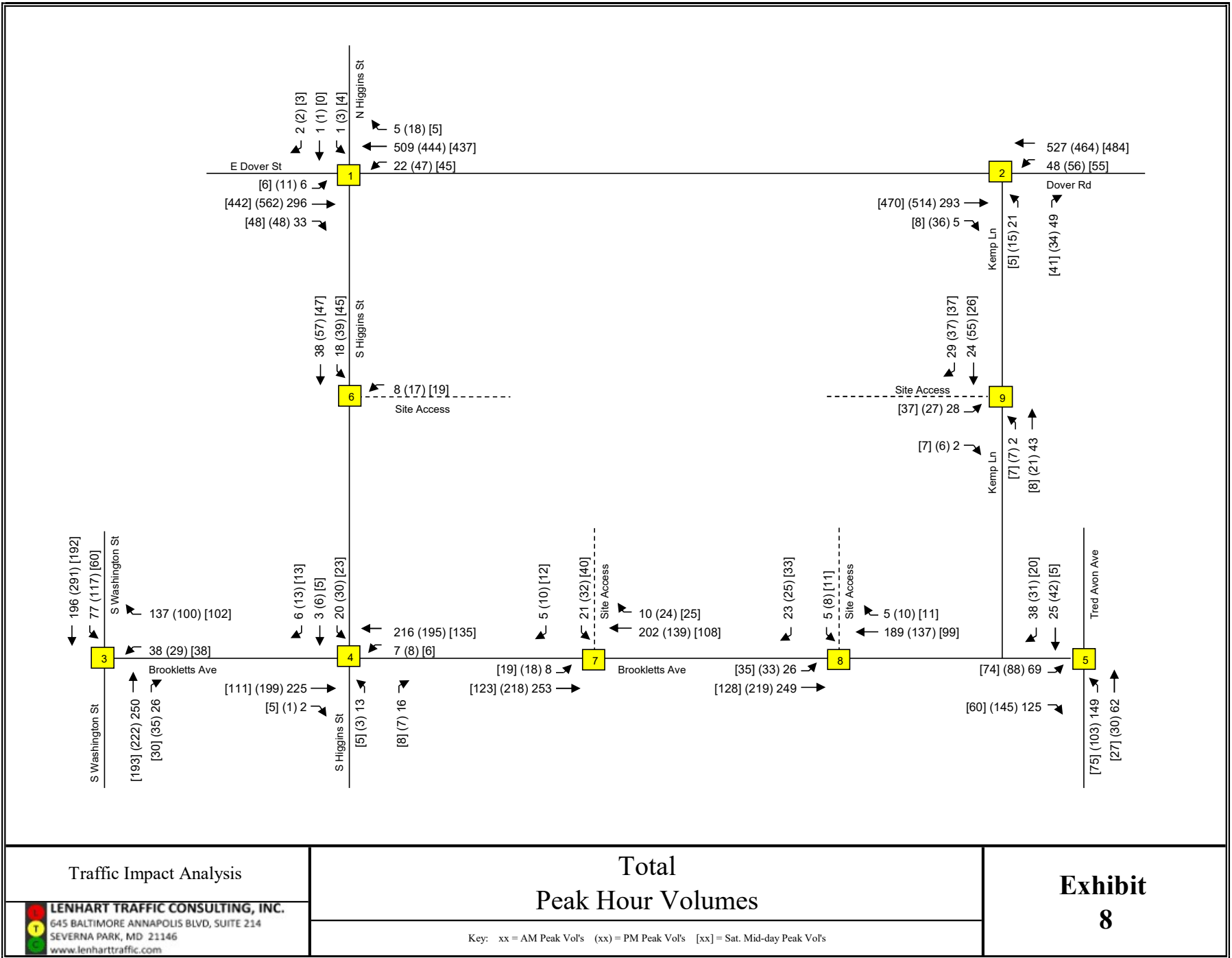




Traffic Impact Analysis LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com	Trip Assignment for Building 507 Key: xx = AM Peak Vol's (xx) = PM Peak Vol's [xx] = Sat. Mid-day Peak Vol's	Exhibit 7c
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Traffic Impact Analysis		Trip Assignment for Pass-by Trips		Exhibit 7d
	LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com	Key: xx = AM Peak Vol's (xx) = PM Peak Vol's [xx] = Sat. Mid-day Peak Vol's		



Critical Lane Volume (CLV) Level-of-Service Results

Morning Peak Hour	Existing CLV	Background CLV	Total CLV	LOS D or better?
1). E Dover Street & S Higgins Street	A / 523	A / 554	A / 568	Y
2). E Dover Street & Kemp Lane	A / 558	A / 592	A / 693	Y
3). S Washington Street & Brookletts Avenue	A / 464	A / 497	A / 528	Y
4). Brookletts Avenue & S Higgins Street	A / 216	A / 231	A / 265	Y
5). Brookletts Avenue & Tred Avon Avenue	A / 370	A / 394	A / 420	Y
6). S Higgins Street & Site Access	n/a	n/a	A / 64	Y
7). Brookletts Avenue & Site Access	n/a	n/a	A / 287	Y
8). Brookletts Avenue & Site Access	n/a	n/a	A / 303	Y
9). Kemp Lane & Site Access	n/a	n/a	A / 85	Y
Evening Peak Hour	Existing CLV	Background CLV	Total CLV	LOS D or better?
1). E Dover Street & S Higgins Street	A / 607	A / 646	A / 685	Y
2). E Dover Street & Kemp Lane	A / 555	A / 591	A / 655	Y
3). S Washington Street & Brookletts Avenue	A / 584	A / 626	A / 654	Y
4). Brookletts Avenue & S Higgins Street	A / 204	A / 218	A / 263	Y
5). Brookletts Avenue & Tred Avon Avenue	A / 350	A / 374	A / 409	Y
6). S Higgins Street & Site Access	n/a	n/a	A / 113	Y
7). Brookletts Avenue & Site Access	n/a	n/a	A / 278	Y
8). Brookletts Avenue & Site Access	n/a	n/a	A / 285	Y
9). Kemp Lane & Site Access	n/a	n/a	A / 132	Y
Midday Saturday Peak Hour	Existing CLV	Background CLV	Total CLV	LOS D or better?
1). E Dover Street & S Higgins Street	A / 483	A / 513	A / 554	Y
2). E Dover Street & Kemp Lane	A / 473	A / 503	A / 640	Y
3). S Washington Street & Brookletts Avenue	A / 334	A / 413	A / 452	Y
4). Brookletts Avenue & S Higgins Street	A / 118	A / 129	A / 185	Y
5). Brookletts Avenue & Tred Avon Avenue	A / 185	A / 199	A / 244	Y
6). S Higgins Street & Site Access	n/a	n/a	A / 111	Y
7). Brookletts Avenue & Site Access	n/a	n/a	A / 204	Y
8). Brookletts Avenue & Site Access	n/a	n/a	A / 207	Y
9). Kemp Lane & Site Access	n/a	n/a	A / 114	Y

Traffic Impact Analysis	Results of CLV Level-of-Service Analyses	Exhibit 9
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Highway Capacity Manual (HCM) Level-of-Service Results

Morning Peak Hour	Existing Delay	Background Delay	Total Delay	LOS D or better?
1). E Dover Street & S Higgins Street Southbound Approach	A / 0.4 B / 15.0	A / 0.4 C / 15.7	A / 0.5 C / 16.1	Y
2). E Dover Street & Kemp Lane Northbound Approach	A / 0.9 B / 13.8	A / 0.9 B / 14.4	A / 1.7 B / 14.2	Y
3). S Washington Street & Brookletts Avenue Westbound Approach	A / 3.5 B / 11.6	A / 3.7 B / 12.0	A / 4.2 B / 13.2	Y
4). Brookletts Avenue & S Higgins Street Northbound Approach	A / 1.0 B / 10.6	A / 1.1 B / 10.9	A / 1.5 B / 11.3	Y
4). Brookletts Avenue & S Higgins Street Southbound Approach	B / 11.6	B / 12.0	B / 12.6	Y
5). Brookletts Avenue & Tred Avon Avenue Eastbound Approach	A / 6.7 B / 10.7	A / 6.9 B / 11.0	A / 7.4 B / 11.6	Y
6). S Higgins Street & Site Access Westbound Approach	n/a n/a	n/a n/a	A / 3.3 A / 9.0	Y
7). Brookletts Avenue & Tred Avon Avenue Southbound Approach	n/a n/a	n/a n/a	A / 0.8 B / 11.9	Y
8). Brookletts Avenue & Tred Avon Avenue Southbound Approach	n/a n/a	n/a n/a	A / 1.1 A / 10.0	Y
9). Brookletts Avenue & Tred Avon Avenue Eastbound Approach	n/a n/a	n/a n/a	A / 2.2 A / 9.1	Y
Evening Peak Hour	Existing Delay	Background Delay	Total Delay	LOS D or better?
1). E Dover Street & S Higgins Street Southbound Approach	A / 0.7 C / 21.1	A / 0.8 C / 23.0	A / 1 C / 24.4	Y
2). E Dover Street & Kemp Lane Northbound Approach	A / 0.6 C / 16.6	A / 0.7 C / 17.7	A / 1.5 C / 17.5	Y
3). S Washington Street & Brookletts Avenue Westbound Approach	A / 3.1 B / 11.1	A / 3.2 B / 11.4	A / 3.7 B / 13.2	Y
4). Brookletts Avenue & S Higgins Street Northbound Approach	A / 1.2 A / 9.5	A / 1.3 A / 10.0	A / 1.7 B / 10.3	Y
4). Brookletts Avenue & S Higgins Street Southbound Approach	B / 11.0	B / 11.3	B / 12.1	Y
5). Brookletts Avenue & Tred Avon Avenue Eastbound Approach	A / 7.2 B / 10.5	A / 7.3 B / 10.7	A / 7.9 B / 11.4	Y
6). S Higgins Street & Site Access Westbound Approach	n/a n/a	n/a n/a	A / 4.0 A / 9.5	Y
7). Brookletts Avenue & Tred Avon Avenue Southbound Approach	n/a n/a	n/a n/a	A / 1.5 B / 11.3	Y
8). Brookletts Avenue & Tred Avon Avenue Southbound Approach	n/a n/a	n/a n/a	A / 1.5 A / 9.9	Y
9). Brookletts Avenue & Tred Avon Avenue Eastbound Approach	n/a n/a	n/a n/a	A / 2.3 A / 9.2	Y
Midday Saturday Peak Hour	Existing Delay	Background Delay	Total Delay	LOS D or better?
1). E Dover Street & S Higgins Street Southbound Approach	A / 0.6 C / 17.0	A / 0.7 C / 18.2	A / 0.9 C / 19.2	Y
2). E Dover Street & Kemp Lane Northbound Approach	A / 0.3 B / 13.8	A / 0.4 A / 14.3	A / 1.4 B / 13.4	Y
3). S Washington Street & Brookletts Avenue Westbound Approach	A / 2.8 B / 10.4	A / 2.9 B / 10.6	A / 3.6 B / 11.9	Y
4). Brookletts Avenue & S Higgins Street Northbound Approach	A / 1.3 A / 9.0	A / 1.5 A / 9.3	A / 1.9 A / 9.6	Y
4). Brookletts Avenue & S Higgins Street Southbound Approach	A / 9.6	A / 9.8	B / 10.4	Y
5). Brookletts Avenue & Tred Avon Avenue Eastbound Approach	A / 6.6 A / 9.4	A / 6.6 A / 9.5	A / 7.3 B / 10.1	Y
6). S Higgins Street & Site Access Westbound Approach	n/a n/a	n/a n/a	A / 4.7 A / 9.5	Y
7). Brookletts Avenue & Tred Avon Avenue Southbound Approach	n/a n/a	n/a n/a	A / 2.1 B / 10.4	Y
8). Brookletts Avenue & Tred Avon Avenue Southbound Approach	n/a n/a	n/a n/a	A / 2.2 A / 9.5	Y
9). Brookletts Avenue & Tred Avon Avenue Eastbound Approach	n/a n/a	n/a n/a	A / 3.7 A / 9.0	Y

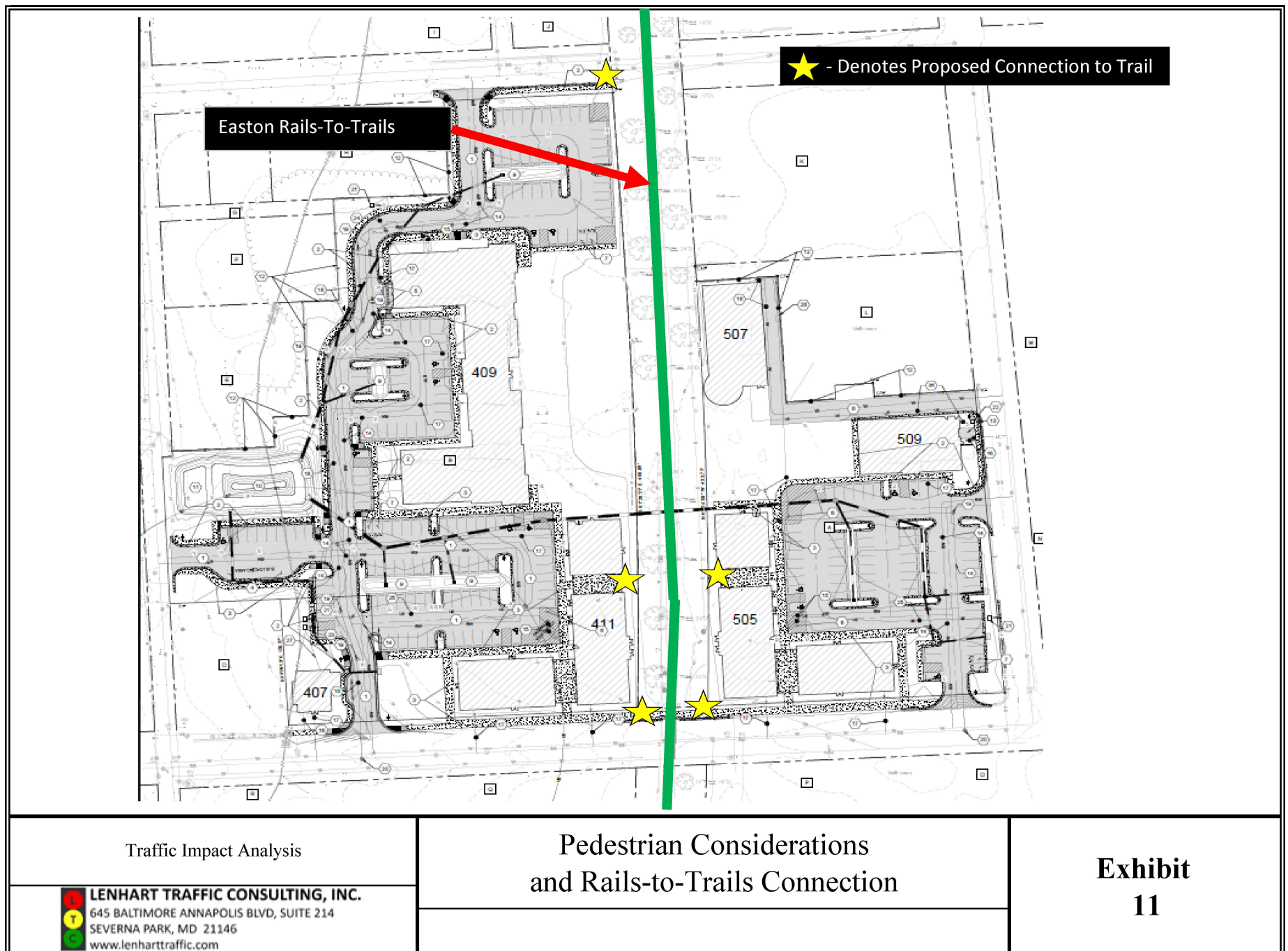
Traffic Impact Analysis



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Results of HCM
Level-of-Service Analyses

**Exhibit
10**



Section 5 Conclusions / Recommendations

5.1 Results of Analyses

This Traffic Impact Analysis (TIA) has been prepared for the proposed The Arc – Easton Crossing development. The subject site is located in Easton, Maryland, and is proposed to be accessed via multiple driveways that provide access to the various buildings within the development. It should be noted that the Easton Rails-To-Trails shared use path cuts through the middle of the site. A concept plan is provided in Appendix A of the report. **Exhibit 1** shows the location of the site.

The site is proposed to be developed with the following:

- Building 409 – 56 multifamily units and 9,892 sq. ft. of retail space
- Building 411 - 26 multifamily units and 9,599 sq. ft. of retail space
- Building 505 - 26 multifamily units and 9,599 sq. ft. of retail space
- Building 509 - 15 multifamily units
- Building 507 – 10,000 sq. ft. restaurant

This results in a total proposed development of 123 multifamily units, 29,090 square feet of retail space, and the 10,000 square foot restaurant.

Based on the analyses contained in this report:

- All study intersections operate at LOS A under existing, background, and total conditions using the CLV methodology.
- All study intersections operate at LOS A and each stop-controlled approach operates with LOS C or better under existing, background, and total conditions using the HCM methodology.
- As demonstrated, the proposed redevelopment does not degrade the level of service at the study intersections, and therefore meets the Town of Easton requirements.
- The proposed redevelopment will not significantly increase traffic volume on any road segment or intersection within the study area and will reduce the number of heavy vehicles on the local roadways compared to the existing use on the site.
- The proposed development will improve access to the Easton Rails-to-Trails path which will benefit both the residents of the proposed site as well as users from the Town of Easton.

In light of the findings contained in this report, the proposed redevelopment meets the adequacy requirements of the Town of Easton and has minimal impact on the surrounding road network. It is recommended that the proposed development is approved.

Appendix A

Supplemental Information
Turning Movement Counts

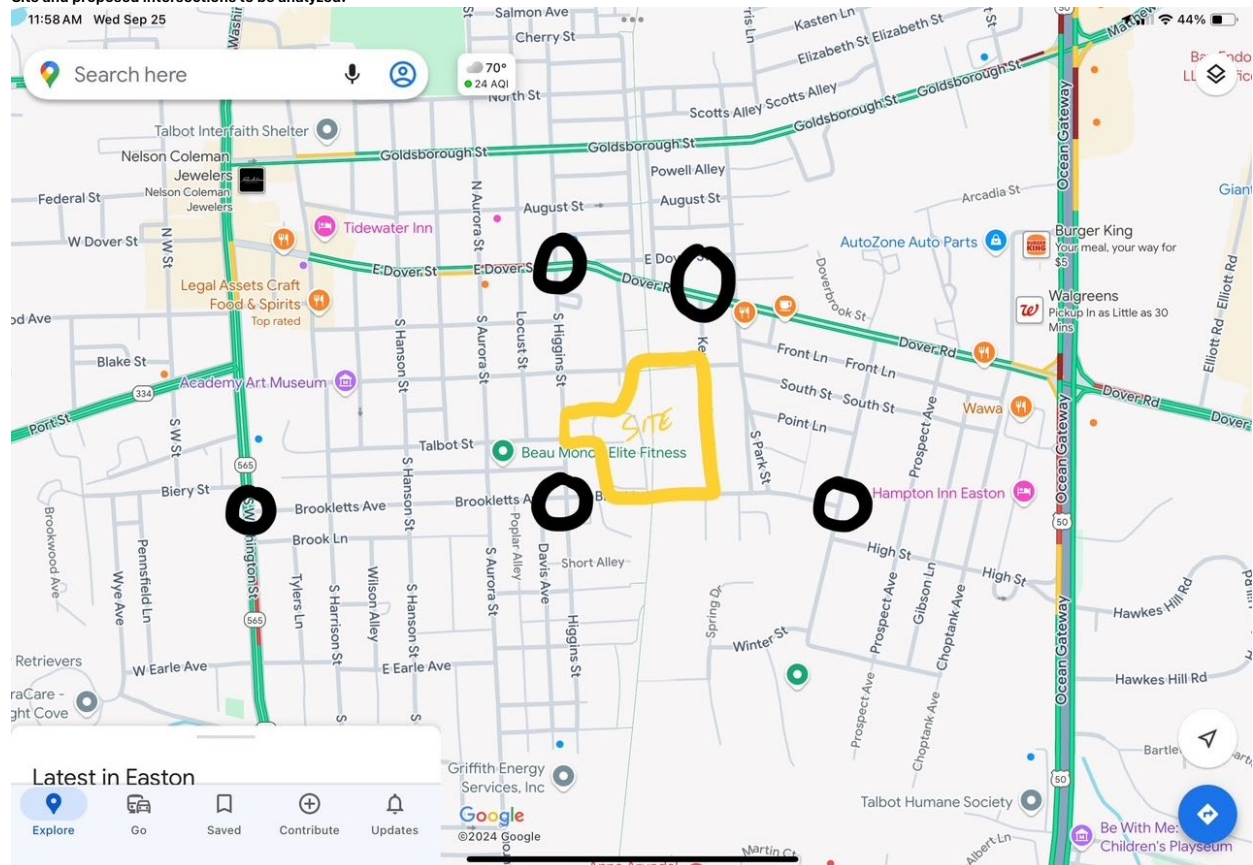
From: [milenhart](#)
To: [Rick VanEmburgh](#)
Cc: [Virginia Richardson](#); [Paul Rogers](#); [Casey Bauch](#); [Brian Fitzgerald](#); [milenhart](#); [Nick Drihan](#)
Subject: The Arc - Easton Crossing - Traffic Impact Study scoping confirmation
Date: Tuesday, October 22, 2024 11:00:14 AM
Attachments: [image001.png](#)
[image002.png](#)

Hi Rick,

We are under contract to prepare the Traffic Impact Study for this project and are providing this email as the confirmation of the scope of work.

1. Anticipated traffic flows for mixed use (general commercial & 130 rental residential apartment) during the school year.
 - a. Bldg 407 - 2400sf leasing office
 - b. Bldg 5 Restaurant
 - c. Currently we show 206 off street parking
 2. The former use was industrial poultry grain silos. We will include traffic comparisons of the prior use compared to the proposed use.
 3. Identify any traffic safety concerns and recommendations
 4. Identify pedestrians along South & Brookletts Streets to Rails To Trails from this project and surrounding neighbors
 5. Separate (addendum) to the main report would be to identify actual parking usage throughout the area to include day, business hours and weekend
 6. Include Silo Square as an approved background development in this report
- We will conduct traffic counts during a normal school day and on a Saturday.

Site and proposed intersections to be analyzed:



Thanks,
Mike

Mike Lenhart, P.E., PTOE
President

Office: (410) 216-3333 (Ext. 1)
Mobile: (410) 980-2367

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PROPERTY DATA

A	EASTON CROSSING LLC M/G/P: 0104/000EA/1823 - B/P: 03117/00288	E	MARVEL PROPERTIES L L C M/G/P: 0104/000EA/1831 - B/P: 00782/00168	I	BEVERLY LEWIS M/G/P: 0104/0000/1622 - B/P: 00890/00787	M	MICHAEL J SPARACINO M/G/P: 0104/000EA/1814 - B/P: 00780/00334	Q	SHAW KENNETH L, SHAW BARBARA H M/G/P: 0105/000EA/2205 - B/P: 02656/00470
B	EASTON CROSSING LLC M/G/P: 0104/000EA/1626 - B/P: 03117/00288	F	MARVEL PROPERTIES L L C M/G/P: 0104/000EA/1830 - B/P: 00782/00168	J	MICHAEL STUART, MEGHAN STUART M/G/P: 0104/0000/1618 - B/P: 02899/00298	N	BROOKLETT COMMONS HOMEOWNERS ASSOCIATION INC M/G/P: 0104/0000/1812 - B/P: 00829/00629	R	TALBOT COUNTY MARYLAND M/G/P: 0105/000EA/2204 - B/P: 00613/00105
C	EASTON CROSSING LLC M/G/P: 0104/000EA/1833 - B/P: 03114/00180	G	ROW M/G/P: -/- - B/P: -/-	K	HELEN M PRITCHETT M/G/P: 0104/000EA/1821 - B/P: 02809/00464	O	411 NEEDWOOD LLC M/G/P: 0105/000EA/1824 - B/P: 03091/00291		
D	401 BROOKLETT'S LLC M/G/P: 0104/000EA/1834 - B/P: 02325/00109	H	G M RENTALS L L C M/G/P: 0104/000EA/1827 - B/P: 00786/00443	L	125 KEMP LLC M/G/P: 0104/000EA/1822 - B/P: 02734/00473	P	DONALD D FOSTER INC M/G/P: 0105/000EA/2206 - B/P: 00499/00522		

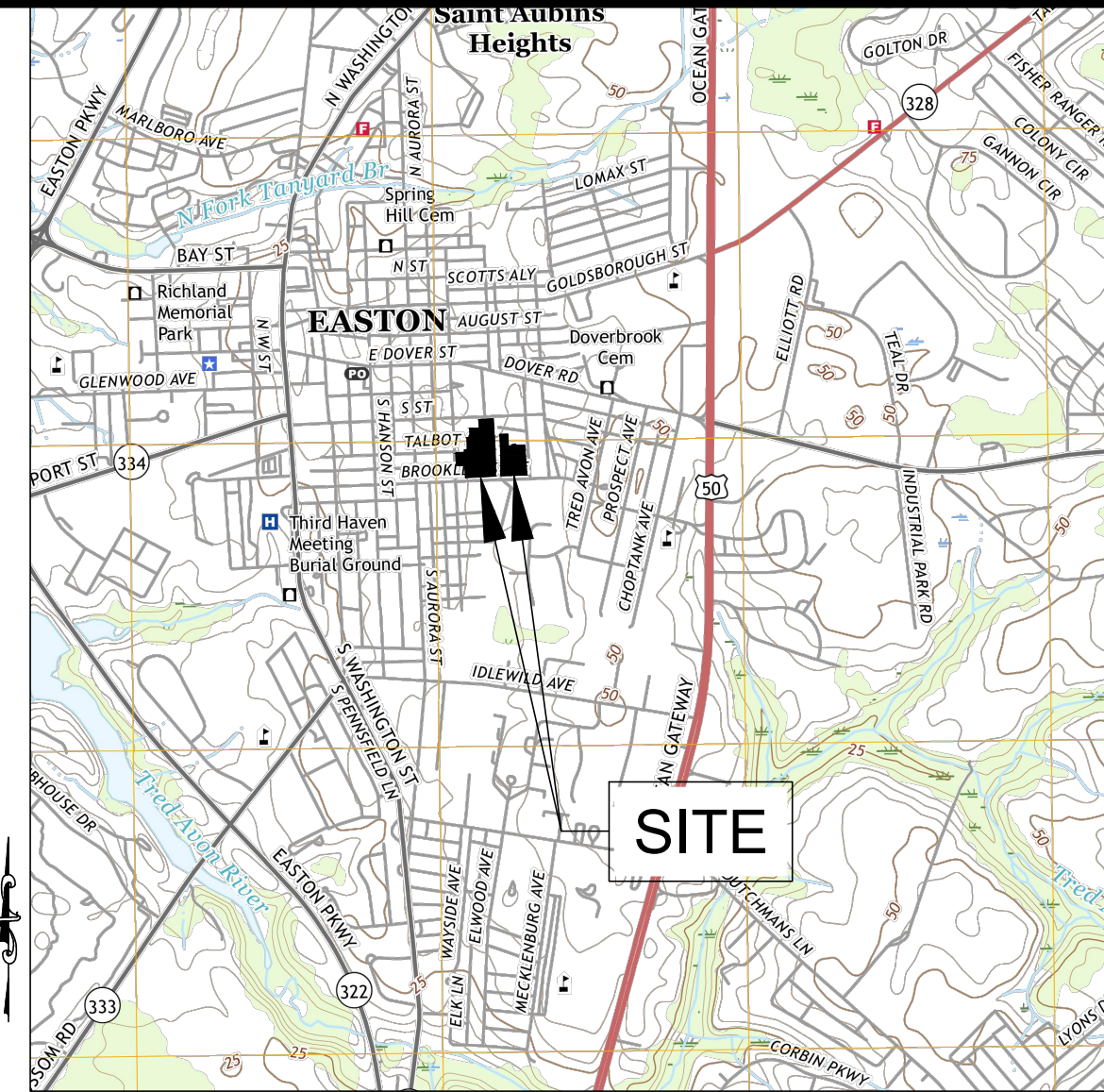
SOIL DATA

Map Unit Symbol	Name	Hydrologic Soil Group	K-Factor	Hydric?
HfA	Hambrook-Sassafras complex, 0 to 2 percent slopes	B	0.32	No
UoB	Udorthents, loamy, 0 to 5 percent slopes	C	0.37	No

CONTACT INFORMATION

OWNER/DEVELOPER: EASTON CROSSING, LLC
999 CORPORATE DRIVE,
LINTHICUM, MD 21090
(410) 384-4022

ENGINEER: RAUCH Inc.
106 N HARRISON ST
EASTON, MARYLAND 21301
(410) 770-9081



VICINITY MAP

SCALE: 1" = 2000'

SITE DATA:

PROPERTY ADDRESS:	505 BROOKLETT'S AVENUE EASTON, MD 21601	FOREST CONSERVATION:	EXEMPT PER SECTION 31-3.2 FROM THE TOWN OF EASTON FOREST CONSERVATION ORDINANCE #718 "THE PROPOSED ACTIVITY IS ON A PREVIOUSLY DEVELOPED AREA COVERED BY IMPERVIOUS SURFACE AND IS LOCATED WITHIN THE PRIORITY FUNDING AREA"
LATITUDE:	38° 46' 16.7" N	OVERALL TREES REQUIRED:	3 PER RESIDENTIAL UNIT (84 TREES)
LONGITUDE:	-76° 04' 03.5" W	STREET TREES PROVIDED:	28 TREES
PRESENT ZONING CLASSIFICATION:	BUSINESS COMMERCIAL DISTRICT PRD BOUNDARY PUD INFILL BOUNDARY	PARKING LOT TREES PROVIDED:	7 TREES
PRESENT USE:	BUSINESS COMMERCIAL	TOTAL TREES PROVIDED:	108
FUTURE USE:	MIXED USE - COMMERCIAL AND RESIDENTIAL	PARKING SPACES REQUIRED:	N/A AS THIS IS IN THE PRD BOUNDARY
TAX MAPS:	0104, 0104	PARKING SPACES PROVIDED:	220 PARKING SPACES
GRIDS:	0104, 0204	OFFSTREET PARKING:	INCLUDES 8 EV CHARGING STATION INCLUDES 16 ADA SPACES WITH AISLE
PARCELS:	1823, 1826		
DEED REFERENCE:	03025/00066, 03025/00066	BUFFERYARD: REQUIRED:	20' PLANT WIDTH (1) SHADE/CANOPY TREE, 2 EVERGREEN TREES, 5 SHRUBS SUBSTITUTE 1 EVERGREEN TREE FOR 5 SHRUBS NOTE: WHEN BUFFERYARD IS LOCATED BETWEEN A PARKING LOT AND STREET R/W, DELETE SHRUB REQUIREMENT
PROPERTY AREA:	6.92 ACRES	OPTION:	(1) SHADE/CANOPY TREE, 3 EVERGREEN TREES
LIMITS OF DISTURBANCE:	7.08 ACRES		
CUT:	12,715 SF		
FILL:	660 SF		
NET CUT/FILL:	12,055 SF (CUT)		
EXISTING IMPERVIOUS:	X%		
PROPOSED IMPERVIOUS:	X%		
FEMA FLOOD MAP:	PANEL 24041C0179E	PROVIDED:	10' PLANT WIDTH (1) SHADE/CANOPY TREE, 3 EVERGREEN TREES (2) SHADE /CANOPY TREE AND 8 EVERGREEN SHRUBS - OR - 4 EVERGREEN TREES - OR - WALL/FENCE WITH 3 EVERGREEN SHRUBS
WATERSHED:	LOWER CHOPTANK	REQUIRED:	FENCE WITH 3 EVERGREEN SHRUBS
NO PORTION OF THIS PROJECT SITE IS LOCATED WITHIN THE 100-YR FLOOD PLAIN		BUFFERYARD "C": TREES REQUIRED:	
NO PORTION OF THIS PROJECT SITE IS LOCATED WITHIN THE CHESAPEAKE BAY CRITICAL AREA		BUFFERYARD "E": TREES REQUIRED:	
DENSITY REQUIRED:	LESS THAN 40 UNITS PER ACRE	OPTION:	
DENSITY PROVIDED:	11.9 UNITS PER ACRE		
PRD SETBACKS:	FRONT: 10 FT FROM PROPERTY LINE SIDE: 5 FT FROM PROPERTY LINE REAR: NONE PRESENT	PROVIDED:	
LOT SIZE:	N/A - NO INTENT TO SUBDIVIDE	BUFFERYARD "E": SURVEY DATUM: HORIZONTAL: VERTICAL: DATE OF SURVEY:	NAD83 NAVD88 10/10/2024
EXISTING LOT COVERAGE:	X%	NOTE:	ALL ON-SITE LIGHTING UNLESS APPROVED OTHERWISE BY PLANNING AND ZONING COMMISSION SHALL BE LOW CUT-OFF SHIELDED LUMINAIRES AT 18" HEIGHT AND LIGHT SHALL NOT SHINE OFF-SITE AT LEVEL GREATER THAN 1-FOOT CANDLE.
REQUIRED LOT COVERAGE:	NOT TO EXCEED 65%		
ACTUAL PR LOT COVERAGE:	X%		
REQUIRED MAX BUILDING HEIGHT:	35'		
MAX PROPOSED BUILDING HEIGHT:	32'		

PROPOSED FEATURES

- | | | | |
|----|---|----|---|
| 1 | 24" WIDE THRU-WAY | 15 | PROPOSED 6" WATER SERVICE BRANCHED TO
PROVIDE 6" FIRE SUPPRESSION SERVICE AND
4" DOMESTIC WATER SERVICE |
| 2 | 5' WIDE CONCRETE SIDEWALK | 16 | PROPOSED 6" WATER SERVICE BRANCHED TO
PROVIDE 6" FIRE SUPPRESSION SERVICE AND
2" DOMESTIC WATER SERVICE |
| 3 | 8' WIDE CONCRETE SIDEWALK | 17 | PROPOSED 6" SANITARY SEWER LATERAL AND
CLEANOUT |
| 4 | 15' WIDE x 60' LONG BUS PULL-OFF/LOADING
AREA | 18 | PROPOSED 8" SANITARY SEWER MAIN |
| 5 | 9.5' WIDE x 26' LONG GARAGE ACCESS/LOADING
AREA | 19 | PROPOSED 48" DIA. PRECAST SANITARY
MANHOLE PER TOWN STANDARD DETAIL |
| 6 | DROP-OFF/LOADING AREA | 20 | PROPOSED 48" DIA. DOGHOUSE SANITARY
MANHOLE PER TOWN STANDARD DETAIL |
| 7 | E.V. CHARGING STATION STALL | 21 | 1500 KVA 208/120V 3-PH PAD MOUNTED
TRANSFORMER |
| 8 | 20' WIDE ACCESS LANE | 22 | 500 KVA 208/120V 3-PH PAD MOUNTED
TRANSFORMER |
| 9 | BIO-RETENTION STRUCTURE FOR
STORMWATER MANAGEMENT. TOP OF BANK
VARIES | 23 | 75KVA 208/120V 3-PH PAD MOUNTED
TRANSFORMER |
| 10 | SUBMERGED GRAVEL WETLAND AND FOREBAY
FOREBAY TOP OF BANK ELEV: 31.50', FOREBAY
FLOOR ELEV: 25.00' | 24 | (6) 4" SCH. 40 CONDUITS FOR POWER AND
COMMUNICATION SERVICE TO BUILDING |
| 11 | SUBMERGED GRAVEL WETLAND AND FOREBAY
SGW TOP OF BANK ELEV: 31.50', SGW FLOOR
ELEV: 25.00' | 25 | (3) 4" SCH. 40 CONDUITS FOR POWER AND
COMMUNICATION SERVICE TO BUILDING |
| 12 | PROPOSED PRIVACY FENCE. HEIGHT AND TYPE
TO BE DETERMINED | 26 | (2) 4" SCH. 40 CONDUITS FOR POWER AND
COMMUNICATION SERVICE TO BUILDING |
| 13 | TRASH ROOM EXTERIOR ACCESS | 27 | (2) 2" SCH. 40 CONDUITS FOR POWER AND
COMMUNICATION SERVICE TO BUILDING |
| 14 | PROPOSED 6" WATER MAIN | 28 | PROPOSED GREASE TRAP |

OVERALL SITE CONCEPT PLAN

OF THE LANDS OF

EASTON CROSSING, LLC

TAX MAP 0104, GRIDS 000EA/0000, PARCELS 1823, 1826

EASTON, TALBOT COUNTY, MARYLAND

PREPARED FOR: EASTON CROSSING, LLC

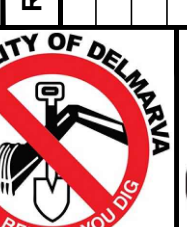
RAUCH
Engineering | Survey | Architecture | Environmental

Main Office: 106 N Harrison St - Easton, MD 21601
Web: www.rauch-inc.com | Email: design@raucheng.com
Phone: 410 770 9081 | Fax: 410 770 3987

REVISIONS

REV. #

DATE



DATE: 11/14/2024

SCALE: 1" = 40'

DRAWN BY: AF

DESIGNED BY:

APPROVED BY:

SHEET NO.:

C-100

FOR REVIEW

	Weekday Morning Peak Hour (6:30 am - 9:30 am)																					
	S Higgins St Northbound					S Higgins St Southbound					E Dover St Eastbound					E Dover St Westbound						
Time:	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	Total	
6:30-6:45	0	0	0	0	0	0	1	0	0	0	1	0	0	46	2	0	0	2	60	1	0	112
6:45-7:00	0	0	0	0	5	0	0	0	0	1	0	0	50	1	1	0	1	85	0	0	137	
7:00-7:15	0	0	0	0	2	0	0	0	0	2	0	0	36	1	0	0	1	71	0	2	109	
7:15-7:30	0	0	0	0	2	0	0	0	0	0	0	0	63	2	1	0	3	88	2	0	158	
7:30-7:45	0	0	0	0	4	0	1	1	1	1	0	0	61	1	0	0	5	113	0	0	183	
7:45-8:00	0	0	0	0	0	0	0	0	0	1	0	4	72	1	3	0	3	147	3	0	230	
8:00-8:15	0	0	0	0	3	0	0	0	1	9	0	0	68	1	2	0	1	102	2	0	175	
8:15-8:30	0	0	0	0	7	0	1	1	1	0	0	0	70	3	0	0	6	104	0	0	186	
8:30-8:45	0	0	0	0	2	0	0	0	0	2	0	2	68	5	0	0	4	127	0	0	206	
8:45-9:00	0	0	0	0	3	0	0	0	1	1	0	1	84	0	1	0	2	101	0	1	189	
9:00-9:15	0	0	0	0	3	0	0	1	0	4	0	0	69	0	0	0	4	81	0	0	155	
9:15-9:30	0	0	0	0	4	0	0	1	1	1	0	0	80	1	1	0	8	87	1	0	179	

Hourly Totals																					
6:30-7:30	0	0	0	0	9	0	1	0	0	4	0	0	195	6	2	0	7	304	3	2	533
6:45-7:45	0	0	0	0	13	0	1	1	1	4	0	0	210	5	2	0	10	357	2	2	608
7:00-8:00	0	0	0	0	8	0	1	1	1	4	0	4	232	5	4	0	12	419	5	2	698
7:15-8:15	0	0	0	0	9	0	1	1	2	11	0	4	264	5	6	0	12	450	7	0	772
7:30-8:30	0	0	0	0	14	0	2	2	3	11	0	4	271	6	5	0	15	466	5	0	804
7:45-8:45	0	0	0	0	12	0	1	1	2	12	0	6	278	10	5	0	14	480	5	0	826
8:00-9:00	0	0	0	0	15	0	1	1	3	12	0	3	290	9	3	0	13	434	2	1	787
8:15-9:15	0	0	0	0	15	0	1	2	2	7	0	3	291	8	1	0	16	413	0	1	760
8:30-9:30	0	0	0	0	12	0	0	2	2	8	0	3	301	6	2	0	18	396	1	1	752
AM	Northbound					Southbound					Eastbound					Westbound					
Peak Hour	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	Total
7:45-8:45	0	0	0	0	12	0	1	1	2	12	0	6	278	10	5	0	14	480	5	0	826

Time:	Weekday Evening Peak Hour (4 pm - 7 pm)																				
	S Higgins St Northbound					S Higgins St Southbound					E Dover St Eastbound					E Dover St Westbound					Total
	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	
4:00-4:15	0	0	0	0	1	0	0	0	1	1	0	3	143	6	0	0	13	104	4	0	274
4:15-4:30	0	0	0	0	0	0	0	0	0	3	0	4	115	1	2	0	6	94	4	2	224
4:30-4:45	0	0	0	0	1	0	1	0	0	4	0	2	143	5	3	0	6	103	4	0	264
4:45-5:00	0	0	0	0	12	0	2	1	1	1	0	1	128	8	2	0	7	116	5	0	269
5:00-5:15	0	0	0	0	3	0	1	2	3	3	0	0	114	5	2	0	8	105	1	0	239
5:15-5:30	0	0	0	0	1	0	0	1	1	2	0	2	115	5	1	0	10	94	2	0	230
5:30-5:45	0	0	0	0	1	0	1	1	2	0	0	0	91	2	0	0	9	83	0	0	189
5:45-6:00	0	0	0	0	4	0	0	0	3	0	0	2	107	6	2	0	9	83	6	1	216
6:00-6:15	0	0	0	0	4	0	0	1	0	6	0	2	98	3	1	0	9	68	0	0	181
6:15-6:30	0	0	0	0	4	0	0	1	0	3	0	2	110	7	0	0	7	79	2	1	208
6:30-6:45	0	0	0	0	3	0	0	0	2	4	0	1	89	3	2	0	13	80	4	0	192
6:45-7:00	0	0	0	0	8	0	0	0	0	4	0	2	108	7	1	0	5	76	3	3	201

Hourly Totals																					
4:00-5:00	0	0	0	0	14	0	3	1	2	9	0	10	529	20	7	0	32	417	17	2	1063
4:15-5:15	0	0	0	0	16	0	4	3	4	11	0	7	500	19	9	0	27	418	14	2	1034
4:30-5:30	0	0	0	0	17	0	4	4	5	10	0	5	500	23	8	0	31	418	12	0	1037
4:45-5:45	0	0	0	0	17	0	4	5	7	6	0	3	448	20	5	0	34	398	8	0	955
5:00-6:00	0	0	0	0	9	0	2	4	9	5	0	4	427	18	5	0	36	365	9	1	894
5:15-6:15	0	0	0	0	10	0	1	3	6	8	0	6	411	16	4	0	37	328	8	1	839
5:30-6:30	0	0	0	0	13	0	1	3	5	9	0	6	406	18	3	0	34	313	8	2	821
5:45-6:45	0	0	0	0	15	0	0	2	5	13	0	7	404	19	5	0	38	310	12	2	832
6:00-7:00	0	0	0	0	19	0	0	2	2	17	0	7	405	20	4	0	34	303	9	4	826
PM	Northbound					Southbound					Eastbound					Westbound					
Peak Hour	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	Total
4:00-5:00	0	0	0	0	14	0	3	1	2	9	0	10	529	20	7	0	32	417	17	2	1063

Peak Hour
Turning Movement Count



LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Intersection: S Higgins St & E Dover St
Weather: Clear
Count by: Count Cam DSS
Count Day/Date: Friday, October 25, 2024
Jurisdiction: Talbot County

	Weekend Peak Hour (10:00 am - 2:00 pm)																				
	S Higgins St Northbound					S Higgins St Southbound					E Dover St Eastbound					E Dover St Westbound					Total
Time:	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	
10:00-10:15	0	0	0	0	5	0	0	0	1	9	0	0	81	2	1	0	6	99	3	0	192
10:15-10:30	0	0	0	0	7	0	1	0	0	6	0	1	89	1	0	0	7	81	2	0	182
10:30-10:45	0	0	0	0	9	0	0	1	0	1	0	1	98	5	0	0	8	87	1	0	201
10:45-11:00	0	0	0	0	2	0	1	0	0	4	0	0	103	6	1	0	5	99	3	0	217
11:00-11:15	0	0	0	0	10	0	0	0	0	1	0	3	118	3	1	0	3	96	2	0	225
11:15-11:30	0	0	0	0	3	0	0	0	0	2	0	0	103	2	3	0	3	100	1	0	209
11:30-11:45	0	0	0	0	3	0	1	0	0	5	0	5	100	2	3	0	5	119	1	0	233
11:45-12:00	0	0	0	0	3	0	2	0	1	5	0	1	105	2	1	0	8	102	1	0	222
12:00-12:15	0	0	0	0	17	0	1	0	1	5	0	0	103	1	0	0	6	93	2	0	207
12:15-12:30	0	0	0	0	7	0	0	0	1	9	0	0	108	8	1	0	8	97	1	0	223
12:30-12:45	0	0	0	0	6	0	0	1	0	6	0	0	86	1	1	0	3	105	5	0	201
12:45-1:00	0	0	0	0	1	0	0	0	2	0	0	1	89	3	1	0	4	85	2	0	186
1:00-1:15	0	0	0	0	6	0	1	0	0	8	0	0	99	1	4	0	5	91	1	0	198
1:15-1:30	0	0	0	0	6	0	0	2	2	6	0	1	106	3	1	0	5	102	5	0	226
1:30-1:45	0	0	0	0	7	0	0	0	1	10	0	0	86	4	6	0	7	80	2	2	180
1:45-2:00	0	0	0	0	4	0	0	0	0	3	0	1	81	1	3	0	10	82	7	0	182

Hourly Totals																					
10:00-11:00	0	0	0	0	23	0	2	1	1	20	0	2	371	14	2	0	26	366	9	0	837
10:15-11:15	0	0	0	0	28	0	2	1	0	12	0	5	408	15	2	0	23	363	8	0	867
10:30-11:30	0	0	0	0	24	0	1	1	0	8	0	4	422	16	5	0	19	382	7	0	889
10:45-11:45	0	0	0	0	18	0	2	0	0	12	0	8	424	13	8	0	16	414	7	0	922
11:00-12:00	0	0	0	0	19	0	3	0	1	13	0	9	426	9	8	0	19	417	5	0	929
11:15-12:15	0	0	0	0	26	0	4	0	2	17	0	6	411	7	7	0	22	414	5	0	921
11:30-12:30	0	0	0	0	30	0	4	0	3	24	0	6	416	13	5	0	27	411	5	0	944
11:45-12:45	0	0	0	0	33	0	3	1	3	25	0	1	402	12	3	0	25	397	9	0	914
12:00-1:00	0	0	0	0	31	0	1	1	4	20	0	1	386	13	3	0	21	380	10	0	871
12:15-1:15	0	0	0	0	20	0	1	1	3	23	0	1	382	13	7	0	20	378	9	0	858
12:30-1:30	0	0	0	0	19	0	1	3	4	20	0	2	380	8	7	0	17	383	13	0	857
12:45-1:45	0	0	0	0	20	0	1	2	5	24	0	2	380	11	12	0	21	358	10	2	848
1:00-2:00	0	0	0	0	23	0	1	2	3	27	0	2	372	9	14	0	27	355	15	2	852
PM	Northbound					Southbound					Eastbound					Westbound					
Peak Hour	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	Total
11:30-12:30	0	0	0	0	30	0	4	0	3	24	0	6	416	13	5	0	27	411	5	0	944

Peak Hour
Turning Movement Count



LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Intersection: S Higgins St & E Dover St
Weather: Clear
Count by: Count Cam DSS
Count Day/Date: Saturday, October 26, 2024
County: Talbot County

Time:	Weekday Morning Peak Hour (6:30 am - 9:30 am)																				Total
	Kemp Ln Northbound					N/A Southbound					E Dover St Eastbound					E Dover St Westbound					
	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	
6:30-6:45	0	3	0	1	0	0	0	0	0	0	0	0	49	0	0	0	10	62	0	0	125
6:45-7:00	0	2	0	3	1	0	0	0	0	0	0	0	52	2	0	0	14	86	0	0	159
7:00-7:15	0	0	0	3	3	0	0	0	0	0	0	0	41	2	0	0	8	72	0	1	126
7:15-7:30	0	8	0	8	3	0	0	0	0	0	0	0	63	1	0	0	3	85	0	0	168
7:30-7:45	0	3	0	4	1	0	0	0	0	0	0	0	67	1	0	0	2	100	0	0	177
7:45-8:00	0	7	0	7	0	0	0	0	0	0	0	0	69	3	0	0	3	153	0	0	242
8:00-8:15	0	5	0	8	7	0	0	0	0	0	0	0	64	1	0	0	1	105	0	0	184
8:15-8:30	0	6	0	4	0	0	0	0	0	0	0	0	81	0	0	0	6	106	0	0	203
8:30-8:45	0	2	0	3	0	0	0	0	0	0	0	0	61	1	0	0	3	126	0	0	196
8:45-9:00	0	3	0	4	2	0	0	0	0	0	0	0	80	3	0	0	1	94	0	0	185
9:00-9:15	0	5	0	7	10	0	0	0	0	0	0	0	64	3	0	0	2	86	0	0	167
9:15-9:30	0	1	0	2	2	0	0	0	0	0	0	0	81	1	0	0	3	92	0	0	180

Time:	Weekday Evening Peak Hour (4 pm - 7 pm)																				Total
	Kemp Ln Northbound					N/A Southbound					E Dover St Eastbound					E Dover St Westbound					
	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	
4:00-4:15	0	2	0	5	1	0	0	0	0	0	0	0	140	10	0	0	4	119	0	0	280
4:15-4:30	0	6	0	3	1	0	0	0	0	0	0	0	107	8	0	0	3	97	0	0	224
4:30-4:45	0	4	0	2	3	0	0	0	0	0	0	0	130	7	0	0	3	100	0	0	246
4:45-5:00	0	2	0	2	0	0	0	0	0	0	0	0	106	9	0	0	2	108	0	0	229
5:00-5:15	0	0	0	4	3	0	0	0	0	0	0	0	110	3	0	0	1	104	0	1	222
5:15-5:30	0	1	0	1	0	0	0	0	0	0	0	0	107	2	0	0	1	103	0	0	215
5:30-5:45	0	3	0	2	4	0	0	0	0	0	0	0	97	1	0	0	3	86	0	0	192
5:45-6:00	0	2	0	3	0	0	0	0	0	0	0	0	104	2	0	0	1	80	0	0	192
6:00-6:15	0	0	0	4	2	0	0	0	0	0	0	0	96	4	0	0	1	79	0	0	184
6:15-6:30	0	3	0	4	3	0	0	0	0	0	0	0	114	3	0	0	0	80	0	0	204
6:30-6:45	0	6	0	0	1	0	0	0	0	0	0	0	89	2	0	0	0	88	0	0	185
6:45-7:00	0	4	0	1	3	0	0	0	0	0	0	0	99	1	0	0	3	84	0	0	192

Peak Hour	Turning Movement Count
07:00-08:00	100
08:00-09:00	120
09:00-10:00	150
10:00-11:00	180
11:00-12:00	200
12:00-13:00	180
13:00-14:00	150
14:00-15:00	120
15:00-16:00	100
16:00-17:00	80
17:00-18:00	60
18:00-19:00	40
19:00-20:00	20
20:00-21:00	10
21:00-22:00	5
22:00-23:00	2
23:00-00:00	1



LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Intersection: Kemp Ln & E Dover St
Weather: Clear
Count by: Count Cam DSS
Count Day/Date: Friday, October 25, 2024
Jurisdiction: Talbot County

Time:	Weekend Peak Hour (10:00 am - 2:00 pm)																				Total
	Kemp Ln Northbound					N/A Southbound					E Dover St Eastbound					E Dover St Westbound					
	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	
10:00-10:15	0	4	0	1	3	0	0	0	0	0	0	0	78	3	0	0	2	99	0	0	187
10:15-10:30	0	1	0	1	4	0	0	0	0	0	0	0	85	2	0	0	0	105	0	0	194
10:30-10:45	0	2	0	4	18	0	0	0	0	0	0	0	96	3	0	0	1	98	0	0	204
10:45-11:00	0	4	0	1	2	0	0	0	0	0	0	0	109	1	0	0	4	95	0	0	214
11:00-11:15	0	1	0	1	0	0	0	0	0	0	0	0	125	3	0	0	1	101	0	0	232
11:15-11:30	0	0	0	4	3	0	0	0	0	0	0	0	116	3	0	0	4	103	0	0	230
11:30-11:45	0	3	0	2	2	0	0	0	0	0	0	0	91	1	0	0	0	125	0	0	222
11:45-12:00	0	1	0	2	3	0	0	0	0	0	0	0	110	1	0	0	4	111	0	3	229
12:00-12:15	0	2	0	3	3	0	0	0	0	0	0	0	99	4	0	0	3	96	0	0	207
12:15-12:30	0	2	0	5	8	0	0	0	0	0	0	0	107	3	0	0	3	119	0	0	239
12:30-12:45	0	1	0	4	2	0	0	0	0	0	0	0	90	1	0	0	2	104	0	0	202
12:45-1:00	0	1	0	4	0	0	0	0	0	0	0	0	95	4	0	0	1	100	0	0	205
1:00-1:15	0	4	0	3	6	0	0	0	0	0	0	0	101	2	0	0	1	90	0	0	201
1:15-1:30	0	2	0	0	8	0	0	0	0	0	0	0	103	2	0	0	1	114	0	0	222
1:30-1:45	0	5	0	3	2	0	0	0	0	0	0	0	97	1	0	0	1	77	0	0	184
1:45-2:00	0	2	0	1	0	0	0	0	0	0	0	0	76	1	0	0	0	95	0	0	175

Hourly Totals																					
10:00-11:00	0	11	0	7	27	0	0	0	0	0	0	0	368	9	0	0	7	397	0	0	826
10:15-11:15	0	8	0	7	24	0	0	0	0	0	0	0	415	9	0	0	6	399	0	0	868
10:30-11:30	0	7	0	10	23	0	0	0	0	0	0	0	446	10	0	0	10	397	0	0	903
10:45-11:45	0	8	0	8	7	0	0	0	0	0	0	0	441	8	0	0	9	424	0	0	905
11:00-12:00	0	5	0	9	8	0	0	0	0	0	0	0	442	8	0	0	9	440	0	3	924
11:15-12:15	0	6	0	11	11	0	0	0	0	0	0	0	416	9	0	0	11	435	0	3	902
11:30-12:30	0	8	0	12	16	0	0	0	0	0	0	0	407	9	0	0	10	451	0	3	916
11:45-12:45	0	6	0	14	16	0	0	0	0	0	0	0	406	9	0	0	12	430	0	3	896
12:00-1:00	0	6	0	16	13	0	0	0	0	0	0	0	391	12	0	0	9	419	0	0	866
12:15-1:15	0	8	0	16	16	0	0	0	0	0	0	0	393	10	0	0	7	413	0	0	863
12:30-1:30	0	8	0	11	16	0	0	0	0	0	0	0	389	9	0	0	5	408	0	0	846
12:45-1:45	0	12	0	10	16	0	0	0	0	0	0	0	396	9	0	0	4	381	0	0	828
1:00-2:00	0	13	0	7	16	0	0	0	0	0	0	0	377	6	0	0	3	376	0	0	798
PM	Northbound					Southbound					Eastbound					Westbound					
Peak Hour	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	Total
11:00-12:00	0	5	0	9	8	0	0	0	0	0	0	0	442	8	0	0	9	440	0	3	924

Peak Hour
Turning Movement Count



LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Intersection: Kemp Ln & E Dover St
Weather: Clear
Count by: Count Cam DSS
Count Day/Date: Saturday, October 26, 2024
County: Talbot County

Time:	Weekday Morning Peak Hour (6:30 am - 9:30 am)																				Total
	S Washington St Northbound					S Washington St Southbound					N/A Eastbound					Brookletts Ave Westbound					
	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	
6:30-6:45	0	0	28	1	0	0	3	20	0	0	0	0	0	0	0	0	2	0	15	0	69
6:45-7:00	0	0	33	2	0	0	10	30	0	0	0	0	0	0	0	0	5	0	33	2	113
7:00-7:15	0	0	28	5	0	0	9	28	0	0	0	0	0	0	0	0	2	0	19	1	91
7:15-7:30	0	0	36	1	0	0	12	36	0	0	0	0	0	0	0	0	6	0	23	0	114
7:30-7:45	0	0	42	3	1	0	24	48	0	0	0	0	0	0	0	0	3	0	25	1	145
7:45-8:00	0	0	73	1	0	0	22	49	0	0	0	0	0	0	0	0	3	0	35	0	183
8:00-8:15	0	0	60	3	0	0	20	41	0	0	0	0	0	0	0	0	4	0	37	0	165
8:15-8:30	0	0	41	5	0	0	17	34	0	0	0	0	0	0	0	0	5	0	22	0	124
8:30-8:45	0	0	62	1	0	0	13	59	0	1	0	0	0	0	0	0	8	0	23	0	166
8:45-9:00	0	0	55	0	0	0	16	65	0	0	0	0	0	0	0	0	3	0	21	3	160
9:00-9:15	0	0	57	2	0	0	8	34	0	0	0	0	0	0	0	0	1	0	15	2	117
9:15-9:30	0	0	55	2	0	0	6	42	0	0	0	0	0	0	0	0	5	0	6	0	116

Hourly Totals																					
6:30-7:30	0	0	125	9	0	0	34	114	0	0	0	0	0	0	0	0	15	0	90	3	390
6:45-7:45	0	0	139	11	1	0	55	142	0	0	0	0	0	0	0	0	16	0	100	4	468
7:00-8:00	0	0	179	10	1	0	67	161	0	0	0	0	0	0	0	0	14	0	102	2	536
7:15-8:15	0	0	211	8	1	0	78	174	0	0	0	0	0	0	0	0	16	0	120	1	609
7:30-8:30	0	0	216	12	1	0	83	172	0	0	0	0	0	0	0	0	15	0	119	1	619
7:45-8:45	0	0	236	10	0	0	72	183	0	1	0	0	0	0	0	0	20	0	117	0	639
8:00-9:00	0	0	218	9	0	0	66	199	0	1	0	0	0	0	0	0	20	0	103	3	619
8:15-9:15	0	0	215	8	0	0	54	192	0	1	0	0	0	0	0	0	17	0	81	5	573
8:30-9:30	0	0	229	5	0	0	43	200	0	1	0	0	0	0	0	0	17	0	65	5	565
AM	Northbound					Southbound					Eastbound					Westbound					Total
Peak Hour	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	
7:45-8:45	0	0	236	10	0	0	72	183	0	1	0	0	0	0	0	0	20	0	117	0	

Time:	Weekday Evening Peak Hour (4 pm - 7 pm)																				Total
	S Washington St Northbound					S Washington St Southbound					N/A Eastbound					Brookletts Ave Westbound					
	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	
4:00-4:15	0	0	52	3	1	0	33	78	0	0	0	0	0	0	0	0	0	0	15	1	181
4:15-4:30	0	0	45	2	0	0	25	69	0	0	0	0	0	0	0	0	3	0	19	0	163
4:30-4:45	0	0	53	1	0	1	26	71	0	0	0	0	0	0	0	0	4	0	18	1	174
4:45-5:00	0	0	57	6	0	0	24	55	0	0	0	0	0	0	0	0	4	0	30	1	176
5:00-5:15	0	0	42	2	0	0	25	67	0	0	0	0	0	0	0	0	3	0	26	0	165
5:15-5:30	0	0	47	3	0	0	9	58	0	0	0	0	0	0	0	0	2	0	28	0	147
5:30-5:45	0	0	51	3	0	1	30	57	0	0	0	0	0	0	0	0	0	0	17	0	159
5:45-6:00	0	0	48	1	0	0	19	53	0	0	0	0	0	0	0	0	2	0	17	0	140
6:00-6:15	0	0	44	3	0	0	26	60	0	0	0	0	0	0	0	0	3	0	15	0	151
6:15-6:30	0	0	45	0	0	0	15	42	0	0	0	0	0	0	0	0	5	0	14	2	121
6:30-6:45	0	0	39	2	0	0	13	44	0	0	0	0	0	0	0	0	2	0	27	0	127
6:45-7:00	0	0	40	2	0	0	23	44	0	0	0	0	0	0	0	0	5	0	20	0	134

Hourly Totals																					
4:00-5:00	0	0	207	12	1	1	108	273	0	0	0	0	0	0	0	11	0	82	3	698	
4:15-5:15	0	0	197	11	0	1	100	262	0	0	0	0	0	0	0	14	0	93	2	680	
4:30-5:30	0	0	199	12	0	1	84	251	0	0	0	0	0	0	0	13	0	102	2	664	
4:45-5:45	0	0	197	14	0	1	88	237	0	0	0	0	0	0	0	9	0	101	1	648	
5:00-6:00	0	0	188	9	0	1	83	235	0	0	0	0	0	0	0	7	0	88	0	611	
5:15-6:15	0	0	190	10	0	1	84	228	0	0	0	0	0	0	0	7	0	77	0	597	
5:30-6:30	0	0	188	7	0	1	90	212	0	0	0	0	0	0	0	10	0	63	2	573	
5:45-6:45	0	0	176	6	0	0	73	199	0	0	0	0	0	0	0	12	0	73	2	541	
6:00-7:00	0	0	168	7	0	0	77	190	0	0	0	0	0	0	0	15	0	76	2	535	
PM	Northbound					Southbound					Eastbound					Westbound					Total
Peak Hour	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	
4:00-5:00	0	0	207	12	1	1	108	273	0	0	0	0	0	0	0	0	11	0	82	3	

Peak Hour
Turning Movement Count



LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Intersection: S Washington St & Brookletts Ave
Weather: Clear
Count by: Count Cam DSS
Count Day/Date: Friday, October 25, 2024
Jurisdiction: Talbot County

Weekend Peak Hour (10:00 am - 2:00 pm)																				
Time:	S Washington St Northbound					S Washington St Southbound					N/A Eastbound					Brookletts Ave Westbound				
	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds
10:00-10:15	0	0	51	1	0	0	7	28	0	0	0	0	0	0	0	0	4	0	10	0
10:15-10:30	0	0	48	4	0	0	14	47	0	0	0	0	0	0	0	0	3	0	14	0
10:30-10:45	0	0	42	1	0	0	26	32	0	0	0	0	0	0	0	0	1	0	16	0
10:45-11:00	0	0	56	3	0	0	17	34	0	0	0	0	0	0	0	0	2	0	27	3
11:00-11:15	0	0	44	2	0	0	15	37	0	0	0	0	0	0	0	0	2	0	15	0
11:15-11:30	0	0	38	0	0	1	15	39	0	0	0	0	0	0	0	0	1	0	21	0
11:30-11:45	0	0	43	3	0	0	20	42	0	0	0	0	0	0	0	0	0	0	24	0
11:45-12:00	0	0	44	1	0	0	15	40	0	1	0	0	0	0	0	0	2	0	25	1
12:00-12:15	0	0	43	3	0	0	17	46	0	0	0	0	0	0	0	0	6	0	18	0
12:15-12:30	0	0	49	1	0	0	7	48	0	0	0	0	0	0	0	0	4	0	15	0
12:30-12:45	0	0	45	1	0	0	16	46	0	0	0	0	0	0	0	0	1	0	21	5
12:45-1:00	0	0	39	5	0	0	11	38	0	0	0	0	0	0	0	0	4	0	18	0
1:00-1:15	0	0	28	1	0	0	13	42	0	0	0	0	0	0	0	0	2	0	17	0
1:15-1:30	0	0	31	2	0	0	15	37	0	0	0	0	0	0	0	0	3	0	19	1
1:30-1:45	0	0	37	6	0	0	13	33	0	0	0	0	0	0	0	0	1	0	19	0
1:45-2:00	0	0	30	1	0	0	13	41	0	0	0	0	0	0	0	0	2	0	20	0

Hourly Totals																				
10:00-11:00	0	0	197	9	0	0	64	141	0	0	0	0	0	0	0	0	10	0	67	3
10:15-11:15	0	0	190	10	0	0	72	150	0	0	0	0	0	0	0	0	8	0	72	3
10:30-11:30	0	0	180	6	0	1	73	142	0	0	0	0	0	0	0	0	6	0	79	3
10:45-11:45	0	0	181	8	0	1	67	152	0	0	0	0	0	0	0	0	5	0	87	3
11:00-12:00	0	0	169	6	0	1	65	158	0	1	0	0	0	0	0	0	5	0	85	1
11:15-12:15	0	0	168	7	0	1	67	167	0	1	0	0	0	0	0	0	9	0	88	1
11:30-12:30	0	0	179	8	0	0	59	176	0	1	0	0	0	0	0	0	12	0	82	1
11:45-12:45	0	0	181	6	0	0	55	180	0	1	0	0	0	0	0	0	13	0	79	6
12:00-1:00	0	0	176	10	0	0	51	178	0	0	0	0	0	0	0	0	15	0	72	5
12:15-1:15	0	0	161	8	0	0	47	174	0	0	0	0	0	0	0	0	11	0	71	5
12:30-1:30	0	0	143	9	0	0	55	163	0	0	0	0	0	0	0	0	10	0	75	6
12:45-1:45	0	0	135	14	0	0	52	150	0	0	0	0	0	0	0	0	10	0	73	1
1:00-2:00	0	0	126	10	0	0	54	153	0	0	0	0	0	0	0	0	8	0	75	1
PM																				
Northbound					Southbound					Eastbound					Westbound					Total
U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	
0	0	181	6	0	0	55	180	0	1	0	0	0	0	0	0	13	0	79	6	521

Peak Hour
Turning Movement Count



LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Intersection: S Washington St & N/A
Weather: Clear
Count by: Count Cam DSS
Count Day/Date: Saturday, October 26, 2024
County: Talbot County

	Weekday Morning Peak Hour (6:30 am - 9:30 am)																				
	S Higgins St Northbound					S Higgins St Southbound					Brookletts Ave Eastbound					Brookletts Ave Westbound					
Time:	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	Total
6:30-6:45	0	1	0	0	0	0	2	1	2	0	0	0	9	0	0	0	1	21	0	0	37
6:45-7:00	0	0	0	2	0	0	2	0	1	0	0	0	16	0	0	0	0	38	0	0	59
7:00-7:15	0	0	0	0	2	0	0	2	0	0	0	0	19	0	0	0	1	30	0	0	52
7:15-7:30	0	0	0	4	0	0	4	1	4	0	1	0	20	0	1	0	0	47	0	1	81
7:30-7:45	0	1	0	3	1	0	1	0	1	0	0	0	31	0	0	0	1	48	0	0	86
7:45-8:00	0	4	0	4	1	0	4	2	1	0	0	0	48	0	0	0	0	32	0	0	95
8:00-8:15	0	2	0	3	0	0	0	0	0	0	0	0	54	1	0	0	2	57	0	0	119
8:15-8:30	0	3	0	4	0	0	1	0	0	0	0	0	65	0	5	0	3	44	0	0	120
8:30-8:45	0	1	0	3	1	0	2	0	1	0	0	0	30	0	0	0	0	48	0	0	85
8:45-9:00	0	2	0	4	1	0	2	0	1	0	0	0	21	0	0	0	3	34	0	0	67
9:00-9:15	0	4	0	3	0	0	1	0	1	0	0	0	21	1	0	0	0	28	0	0	59
9:15-9:30	0	2	0	2	0	0	2	0	1	1	0	0	12	0	0	0	0	12	0	0	31

Hourly Totals																					
6:30-7:30	0	1	0	6	2	0	8	4	7	0	1	0	64	0	1	0	2	136	0	1	233
6:45-7:45	0	1	0	9	3	0	7	3	6	0	1	0	86	0	1	0	2	163	0	1	283
7:00-8:00	0	5	0	11	4	0	9	5	6	0	1	0	118	0	1	0	2	157	0	1	320
7:15-8:15	0	7	0	14	2	0	9	3	6	0	1	0	153	1	1	0	3	184	0	1	385
7:30-8:30	0	10	0	14	2	0	6	2	2	0	0	0	198	1	5	0	6	181	0	0	427
7:45-8:45	0	10	0	14	2	0	7	2	2	0	0	0	197	1	5	0	5	181	0	0	426
8:00-9:00	0	8	0	14	2	0	5	0	2	0	0	0	170	1	5	0	8	183	0	0	398
8:15-9:15	0	10	0	14	2	0	6	0	3	0	0	0	137	1	5	0	6	154	0	0	338
8:30-9:30	0	9	0	12	2	0	7	0	4	1	0	0	84	1	0	0	3	122	0	0	245
AM	Northbound					Southbound					Eastbound					Westbound					Total
Peak Hour	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	
7:30-8:30	0	10	0	14	2	0	6	2	2	0	0	0	198	1	5	0	6	181	0	0	

Time:	Weekday Evening Peak Hour (4 pm - 7 pm)																					
	S Higgins St Northbound					S Higgins St Southbound					Brookletts Ave Eastbound					Brookletts Ave Westbound					Total	
	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds		
4:00-4:15	0	0	0	1	0	0	7	1	3	0	0	0	52	0	0	0	2	48	0	0	114	
4:15-4:30	0	0	0	2	1	0	2	1	2	0	0	0	34	0	0	0	0	33	0	0	74	
4:30-4:45	0	1	0	3	1	0	1	1	1	1	0	0	40	0	0	0	0	1	38	0	2	86
4:45-5:00	0	0	0	0	0	0	5	2	2	0	0	0	41	0	0	0	0	4	43	0	0	97
5:00-5:15	0	0	0	3	0	0	1	1	6	0	0	0	25	0	1	0	2	38	0	2	76	
5:15-5:30	0	0	0	0	1	0	2	1	4	0	0	0	17	0	0	0	2	39	0	0	65	
5:30-5:45	0	1	0	0	0	0	3	1	5	0	0	0	32	0	1	0	0	26	0	0	68	
5:45-6:00	0	0	0	2	9	0	2	0	2	0	0	0	17	0	0	0	2	27	0	0	52	
6:00-6:15	0	1	0	1	0	0	2	2	2	0	0	0	34	1	0	0	2	18	0	0	63	
6:15-6:30	0	0	0	0	0	0	1	0	4	0	0	0	30	0	0	0	1	32	0	0	68	
6:30-6:45	0	0	0	3	0	0	2	1	0	1	0	0	21	0	0	0	0	31	0	0	58	
6:45-7:00	0	0	0	0	0	0	3	0	3	0	0	0	22	1	0	0	0	26	0	0	55	

Hourly Totals																					
4:00-5:00	0	1	0	6	2	0	15	5	8	1	0	0	167	0	0	0	7	162	0	2	376
4:15-5:15	0	1	0	8	2	0	9	5	11	1	0	0	140	0	1	0	7	152	0	4	341
4:30-5:30	0	1	0	6	2	0	9	5	13	1	0	0	123	0	1	0	9	158	0	4	332
4:45-5:45	0	1	0	3	1	0	11	5	17	0	0	0	115	0	2	0	8	146	0	2	311
5:00-6:00	0	1	0	5	10	0	8	3	17	0	0	0	91	0	2	0	6	130	0	2	275
5:15-6:15	0	2	0	3	10	0	9	4	13	0	0	0	100	1	1	0	6	110	0	0	259
5:30-6:30	0	2	0	3	9	0	8	3	13	0	0	0	113	1	1	0	5	103	0	0	261
5:45-6:45	0	1	0	6	9	0	7	3	8	1	0	0	102	1	0	0	5	108	0	0	251
6:00-7:00	0	1	0	4	0	0	8	3	9	1	0	0	107	2	0	0	3	107	0	0	245
PM	Northbound					Southbound					Eastbound					Westbound					Total
Peak Hour	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	
4:00-5:00	0	1	0	6	2	0	15	5	8	1	0	0	167	0	0	0	7	162	0	2	376

Peak Hour
Turning Movement Count



LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Intersection: S Higgins St & Brookletts Ave
Weather: Clear
Count by: Count Cam DSS
Count Day/Date: Friday, October 25, 2024
Jurisdiction: Talbot County

	Weekend Peak Hour (10:00 am - 2:00 pm)																				
	S Higgins St Northbound					S Higgins St Southbound					Brookletts Ave Eastbound					Brookletts Ave Westbound					
Time:	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	Total
10:00-10:15	0	0	0	2	2	0	4	0	3	0	0	0	12	0	0	0	1	20	0	0	42
10:15-10:30	0	0	0	1	1	0	0	0	1	0	0	0	22	0	0	0	1	28	0	0	53
10:30-10:45	0	2	0	2	0	0	2	3	3	0	0	0	19	1	0	0	1	23	0	0	56
10:45-11:00	0	0	0	2	0	0	2	0	2	2	0	0	24	1	0	0	1	24	0	2	56
11:00-11:15	0	0	0	1	1	0	2	0	1	0	0	0	15	1	0	0	1	21	0	0	42
11:15-11:30	0	0	0	1	0	0	1	0	1	1	0	0	24	0	0	0	1	28	0	0	56
11:30-11:45	0	0	0	0	3	0	1	0	0	0	0	0	16	0	0	0	1	18	0	0	36
11:45-12:00	0	0	0	0	0	0	3	1	2	0	0	0	22	0	0	0	0	17	0	0	45
12:00-12:15	0	0	0	1	3	0	0	0	0	0	0	0	12	0	0	0	0	20	0	0	33
12:15-12:30	0	0	0	2	0	0	2	1	4	0	0	0	28	0	0	0	2	24	0	0	63
12:30-12:45	0	0	0	0	1	0	3	0	0	2	0	0	19	0	0	0	0	17	0	1	39
12:45-1:00	0	0	0	0	0	0	0	0	2	0	0	0	18	0	0	0	0	22	0	0	42
1:00-1:15	0	0	0	0	0	0	3	1	2	0	0	0	12	0	0	0	0	25	0	0	43
1:15-1:30	0	0	0	0	0	0	3	1	2	0	0	0	22	0	0	0	0	25	0	0	53
1:30-1:45	0	0	0	1	1	0	2	1	3	0	0	0	14	0	0	0	0	12	0	2	33
1:45-2:00	0	0	0	1	1	0	2	0	1	0	0	0	0	0	0	0	1	17	0	0	22

Hourly Totals																					
10:00-11:00	0	2	0	7	3	0	8	3	9	2	0	0	77	2	0	0	4	95	0	2	214
10:15-11:15	0	2	0	6	2	0	6	3	7	2	0	0	80	3	0	0	4	96	0	2	213
10:30-11:30	0	2	0	6	1	0	7	3	7	3	0	0	82	3	0	0	4	96	0	2	216
10:45-11:45	0	0	0	4	4	0	6	0	4	3	0	0	79	2	0	0	4	91	0	2	199
11:00-12:00	0	0	0	2	4	0	7	1	4	1	0	0	77	1	0	0	3	84	0	0	184
11:15-12:15	0	0	0	2	6	0	5	1	3	1	0	0	74	0	0	0	2	83	0	0	177
11:30-12:30	0	0	0	3	6	0	6	2	6	0	0	0	78	0	0	0	3	79	0	0	183
11:45-12:45	0	0	0	3	4	0	8	2	6	2	0	0	81	0	0	0	2	78	0	1	187
12:00-1:00	0	0	0	3	4	0	5	1	6	2	0	0	77	0	0	0	2	83	0	1	184
12:15-1:15	0	0	0	2	1	0	8	2	8	2	0	0	77	0	0	0	2	88	0	1	191
12:30-1:30	0	0	0	0	1	0	9	2	6	2	0	0	71	0	0	0	0	89	0	1	181
12:45-1:45	0	0	0	1	1	0	8	3	9	0	0	0	66	0	0	0	0	84	0	2	174
1:00-2:00	0	0	0	2	2	0	10	3	8	0	0	0	48	0	0	0	1	79	0	2	155
PM	Northbound					Southbound					Eastbound					Westbound					
Peak Hour	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	Total
10:30-11:30	0	2	0	6	1	0	7	3	7	3	0	0	82	3	0	0	4	96	0	2	216

Peak Hour
Turning Movement Count



LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Intersection: S Higgins St & Brookletts Ave
Weather: Clear
Count by: Count Cam DSS
Count Day/Date: Saturday, October 26, 2024
County: Talbot County

	Weekday Morning Peak Hour (6:30 am - 9:30 am)																				
	Tred Avon Ave Northbound					Tred Avon Ave Southbound					Brookletts Ave Eastbound					N/A Westbound					
Time:	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	Total
6:30-6:45	0	12	3	0	0	0	0	1	8	0	0	4	0	5	0	0	0	0	0	0	33
6:45-7:00	0	20	4	0	0	0	0	0	19	0	0	11	0	9	0	0	0	0	0	0	63
7:00-7:15	0	25	12	0	0	0	0	3	5	0	0	11	0	10	0	0	0	0	0	0	66
7:15-7:30	0	21	5	0	0	0	0	1	7	0	0	10	0	13	0	0	0	0	0	0	57
7:30-7:45	0	20	10	0	0	0	0	1	12	0	0	10	0	16	0	0	0	0	0	0	69
7:45-8:00	0	19	14	0	0	0	0	4	9	0	0	12	0	25	0	0	0	0	0	0	83
8:00-8:15	0	35	15	0	0	0	0	11	13	0	0	11	0	34	0	0	0	0	0	0	119
8:15-8:30	0	45	16	0	0	0	0	6	7	0	0	15	0	40	0	0	0	0	0	0	129
8:30-8:45	0	38	13	0	0	0	0	3	6	0	0	10	0	14	0	0	0	0	0	0	84
8:45-9:00	0	29	7	0	0	0	0	2	11	0	0	6	0	9	0	0	0	0	0	0	64
9:00-9:15	0	16	4	0	0	0	0	2	6	0	1	5	0	6	0	0	0	0	0	0	40
9:15-9:30	0	9	4	0	0	0	0	1	2	0	0	6	0	4	0	0	0	0	0	0	26

Hourly Totals																					
6:30-7:30	0	78	24	0	0	0	0	5	39	0	0	36	0	37	0	0	0	0	0	0	219
6:45-7:45	0	86	31	0	0	0	0	5	43	0	0	42	0	48	0	0	0	0	0	0	255
7:00-8:00	0	85	41	0	0	0	0	9	33	0	0	43	0	64	0	0	0	0	0	0	275
7:15-8:15	0	95	44	0	0	0	0	17	41	0	0	43	0	88	0	0	0	0	0	0	328
7:30-8:30	0	119	55	0	0	0	0	22	41	0	0	48	0	115	0	0	0	0	0	0	400
7:45-8:45	0	137	58	0	0	0	0	24	35	0	0	48	0	113	0	0	0	0	0	0	415
8:00-9:00	0	147	51	0	0	0	0	22	37	0	0	42	0	97	0	0	0	0	0	0	396
8:15-9:15	0	128	40	0	0	0	0	13	30	0	1	36	0	69	0	0	0	0	0	0	317
8:30-9:30	0	92	28	0	0	0	0	8	25	0	1	27	0	33	0	0	0	0	0	0	214
AM	Northbound					Southbound					Eastbound					Westbound					
Peak Hour	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	Total
7:45-8:45	0	137	58	0	0	0	0	24	35	0	0	48	0	113	0	0	0	0	0	0	415

Time:	Weekday Evening Peak Hour (4 pm - 7 pm)																				Total
	Tred Avon Ave Northbound					Tred Avon Ave Southbound					Brookletts Ave Eastbound					N/A Westbound					
	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	
4:00-4:15	0	27	7	0	0	0	0	9	5	0	0	17	0	38	0	0	0	0	0	0	103
4:15-4:30	0	17	6	0	0	0	0	9	8	0	0	12	0	34	0	0	0	0	0	0	86
4:30-4:45	0	14	8	0	0	0	0	15	11	0	0	11	0	27	0	0	0	0	0	0	86
4:45-5:00	0	32	7	0	0	0	0	7	4	0	0	19	0	34	0	0	0	0	0	0	103
5:00-5:15	0	22	7	0	0	0	0	8	10	0	0	9	0	25	0	0	0	0	0	0	81
5:15-5:30	1	32	2	0	0	0	0	10	2	0	0	5	0	13	1	0	0	0	0	0	65
5:30-5:45	0	9	10	0	0	0	0	6	7	0	0	13	0	19	0	0	0	0	0	0	64
5:45-6:00	0	19	6	0	0	0	0	3	4	0	0	8	0	10	0	0	0	0	0	0	50
6:00-6:15	0	13	4	0	0	0	0	2	5	0	0	8	0	22	0	0	0	0	0	0	54
6:15-6:30	0	17	9	0	0	0	0	4	6	0	0	10	0	19	1	0	0	0	0	0	65
6:30-6:45	0	22	9	0	0	0	0	3	10	0	0	8	0	13	0	0	0	0	0	0	65
6:45-7:00	0	14	7	0	0	0	0	2	9	0	0	2	0	16	0	0	0	0	0	0	50

Hourly Totals																					
4:00-5:00	0	90	28	0	0	0	0	40	28	0	0	59	0	133	0	0	0	0	0	0	378
4:15-5:15	0	85	28	0	0	0	0	39	33	0	0	51	0	120	0	0	0	0	0	0	356
4:30-5:30	1	100	24	0	0	0	0	40	27	0	0	44	0	99	1	0	0	0	0	0	336
4:45-5:45	1	95	26	0	0	0	0	31	23	0	0	46	0	91	1	0	0	0	0	0	314
5:00-6:00	1	82	25	0	0	0	0	27	23	0	0	35	0	67	1	0	0	0	0	0	261
5:15-6:15	1	73	22	0	0	0	0	21	18	0	0	34	0	64	1	0	0	0	0	0	234
5:30-6:30	0	58	29	0	0	0	0	15	22	0	0	39	0	70	1	0	0	0	0	0	234
5:45-6:45	0	71	28	0	0	0	0	12	25	0	0	34	0	64	1	0	0	0	0	0	235
6:00-7:00	0	66	29	0	0	0	0	11	30	0	0	28	0	70	1	0	0	0	0	0	235
PM	Northbound					Southbound					Eastbound					Westbound					
Peak Hour	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	Total
4:00-5:00	0	90	28	0	0	0	0	40	28	0	0	59	0	133	0	0	0	0	0	0	378

Peak Hour
Turning Movement Count



LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Intersection: Tred Avon Ave & Brookletts Ave
Weather: Clear
Count by: Count Cam DSS
Count Day/Date: Friday, October 25, 2024
Jurisdiction: Talbot County

Time:	Weekend Peak Hour (10:00 am - 2:00 pm)																				Total
	Tred Avon Ave Northbound					Tred Avon Ave Southbound					Brookletts Ave Eastbound					N/A Westbound					
	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	
10:00-10:15	0	16	9	0	0	0	0	4	3	0	0	9	0	6	0	0	0	0	0	0	47
10:15-10:30	0	16	3	0	0	0	0	0	6	0	0	17	0	8	0	0	0	0	0	0	50
10:30-10:45	0	16	7	0	0	0	0	0	2	0	0	8	0	14	0	0	0	0	0	0	47
10:45-11:00	0	18	9	0	0	0	0	2	6	0	0	7	0	14	0	0	0	0	0	0	56
11:00-11:15	0	14	6	0	0	0	0	3	3	0	0	8	0	14	0	0	0	0	0	0	48
11:15-11:30	0	15	4	0	0	0	0	3	6	0	0	8	0	10	0	0	0	0	0	0	46
11:30-11:45	0	12	8	0	0	0	0	4	3	0	0	9	0	13	0	0	0	0	0	0	49
11:45-12:00	0	6	6	0	0	0	0	1	5	0	0	8	0	8	0	0	0	0	0	0	34
12:00-12:15	0	16	5	0	0	0	0	3	6	0	0	4	0	15	0	0	0	0	0	0	49
12:15-12:30	0	18	9	0	0	0	0	1	3	0	0	6	0	9	0	0	0	0	0	0	46
12:30-12:45	0	8	3	0	0	0	0	0	2	0	0	9	0	11	0	0	0	0	0	0	33
12:45-1:00	0	13	6	0	4	0	0	1	6	0	0	10	0	7	0	0	0	0	0	0	43
1:00-1:15	0	13	2	0	0	0	0	2	6	0	0	5	0	10	0	0	0	0	0	0	38
1:15-1:30	0	17	6	0	0	0	0	4	6	0	0	9	0	5	0	0	0	0	0	0	47
1:30-1:45	0	8	4	0	0	0	0	1	1	0	0	11	0	8	0	0	0	0	0	0	33
1:45-2:00	0	11	7	0	0	0	0	3	7	1	0	5	0	9	1	0	0	0	0	0	42

Hourly Totals																					
10:00-11:00	0	66	28	0	0	0	0	6	17	0	0	41	0	42	0	0	0	0	0	200	
10:15-11:15	0	64	25	0	0	0	0	5	17	0	0	40	0	50	0	0	0	0	0	201	
10:30-11:30	0	63	26	0	0	0	0	8	17	0	0	31	0	52	0	0	0	0	0	197	
10:45-11:45	0	59	27	0	0	0	0	12	18	0	0	32	0	51	0	0	0	0	0	199	
11:00-12:00	0	47	24	0	0	0	0	11	17	0	0	33	0	45	0	0	0	0	0	177	
11:15-12:15	0	49	23	0	0	0	0	11	20	0	0	29	0	46	0	0	0	0	0	178	
11:30-12:30	0	52	28	0	0	0	0	9	17	0	0	27	0	45	0	0	0	0	0	178	
11:45-12:45	0	48	23	0	0	0	0	5	16	0	0	27	0	43	0	0	0	0	0	162	
12:00-1:00	0	55	23	0	4	0	0	5	17	0	0	29	0	42	0	0	0	0	0	175	
12:15-1:15	0	52	20	0	4	0	0	4	17	0	0	30	0	37	0	0	0	0	0	164	
12:30-1:30	0	51	17	0	4	0	0	7	20	0	0	33	0	33	0	0	0	0	0	165	
12:45-1:45	0	51	18	0	4	0	0	8	19	0	0	35	0	30	0	0	0	0	0	165	
1:00-2:00	0	49	19	0	0	0	0	10	20	1	0	30	0	32	1	0	0	0	0	162	
PM	Northbound					Southbound					Eastbound					Westbound					
Peak Hour	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	U-Turn	Left	Thru	Right	Peds	Total
10:15-11:15	0	64	25	0	0	0	0	5	17	0	0	40	0	50	0	0	0	0	0	0	201

Peak Hour
Turning Movement Count



LENHART TRAFFIC CONSULTING, INC.
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SEVERNA PARK, MD 21146
www.lenharttraffic.com

Intersection: Tred Avon Ave & Brookletts Ave
Weather: Clear
Count by: Count Cam DSS
Count Day/Date: Saturday, October 26, 2024
County: Talbot County

Appendix B

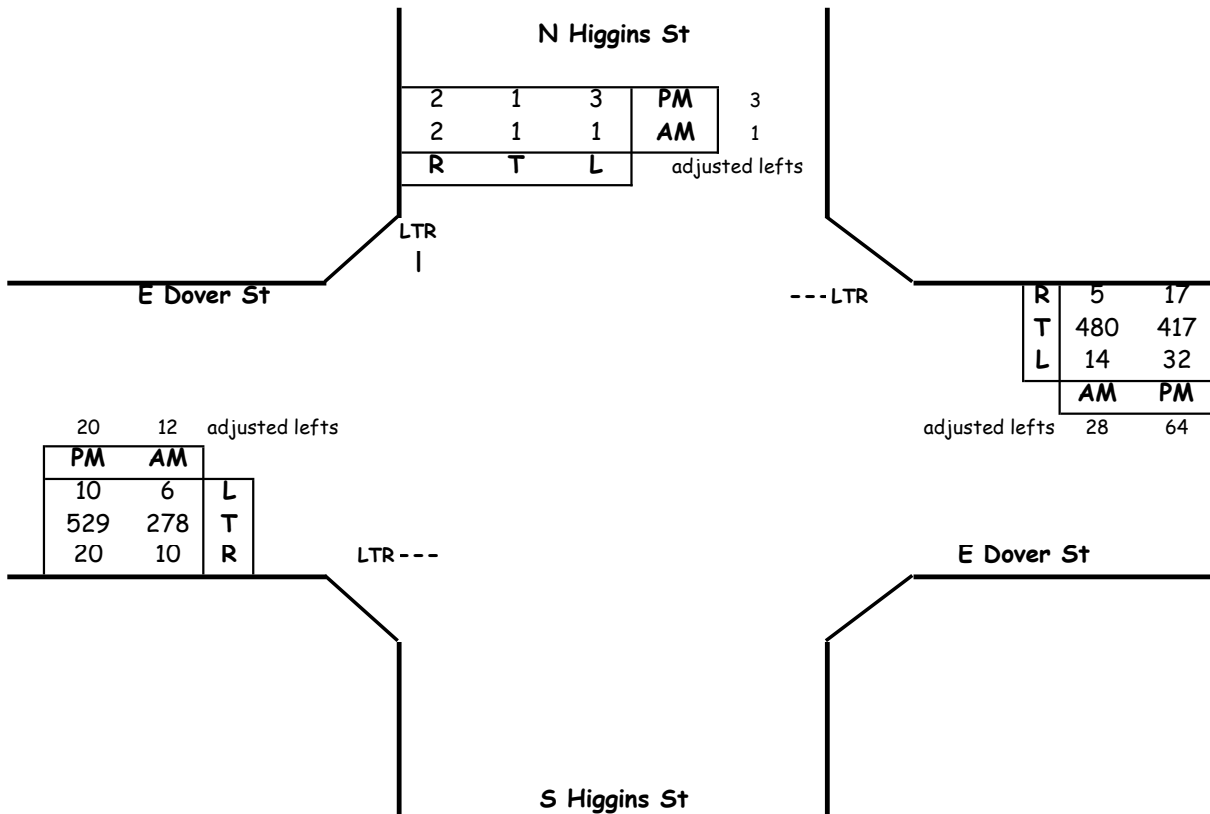
Level of Service (LOS) Worksheets

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Main Line: E Dover St
Minor Street: S Higgins St
Study Period: Existing Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour							
Dir	Thru Volumes			+ Opposing Lefts			AM
	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
NB	0	0.00	0	1	1	1	4
SB	4	1.00	4	0	0	0	
EB	300	1	300	14	1	14	519
WB	513	1	513	6	1	6	
CLV TOTAL=							523
Level of Service (LOS) =							A

Evening Peak Hour							
Dir	Thru Volumes			+ Opposing Lefts			PM
	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
NB	0	0.00	0	3	1	3	6
SB	6	1.00	6	0	0	0	
EB	569	1	569	32	1	32	601
WB	498	1	498	10	1	10	
CLV TOTAL=							607
Level of Service (LOS) =							A

Critical Lane Volume Analysis



LENHART TRAFFIC CONSULTING, INC.
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www.lenharttraffic.com

**E Dover St &
S Higgins St
(Existing Traffic)**

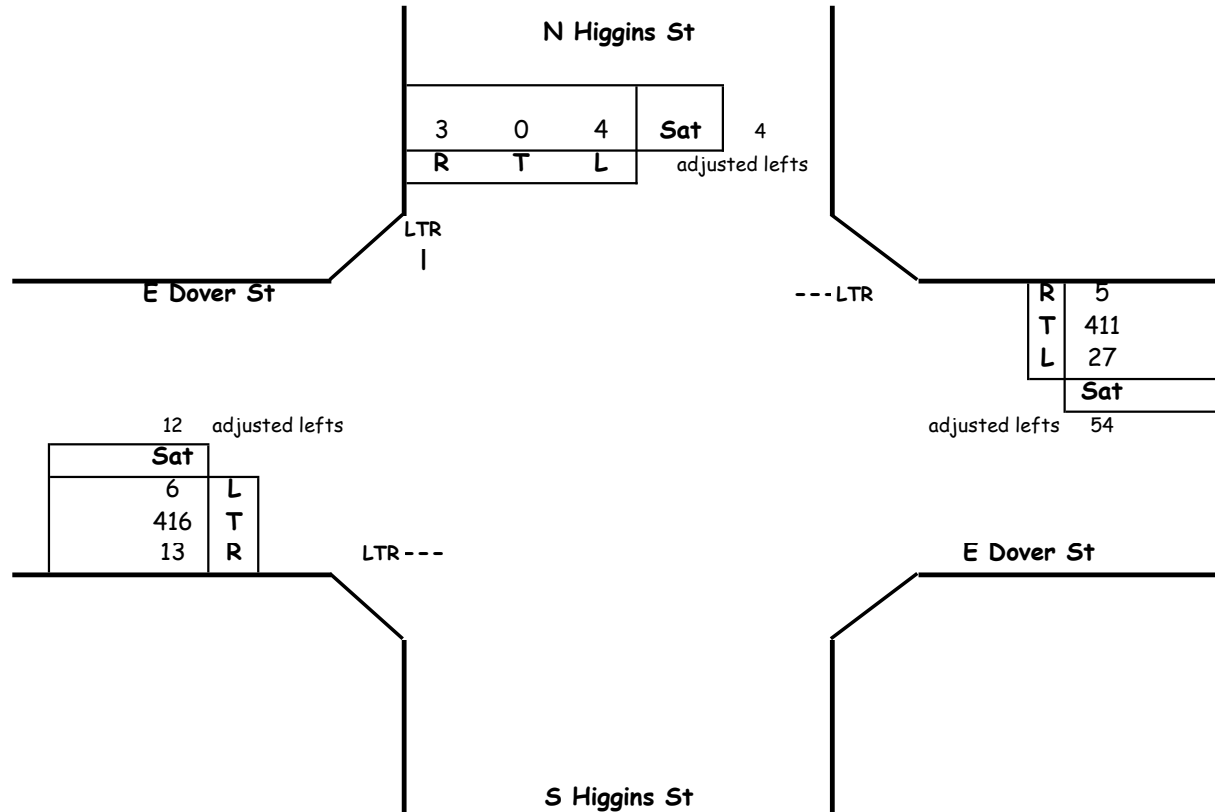
**Intersection
1**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Main Line: E Dover St
Minor Street: S Higgins St
Study Period: Existing Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Sat. Midday Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
NB	0	0.00	0	4	1	4
SB	7	1.00	7	0	0	0
EB	441	1	441	27	1	27
WB	470	1	470	6	1	6
CLV TOTAL=						483
Level of Service (LOS) =						A

Critical Lane Volume Analysis



LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
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**E Dover St &
S Higgins St
(Existing Traffic)**

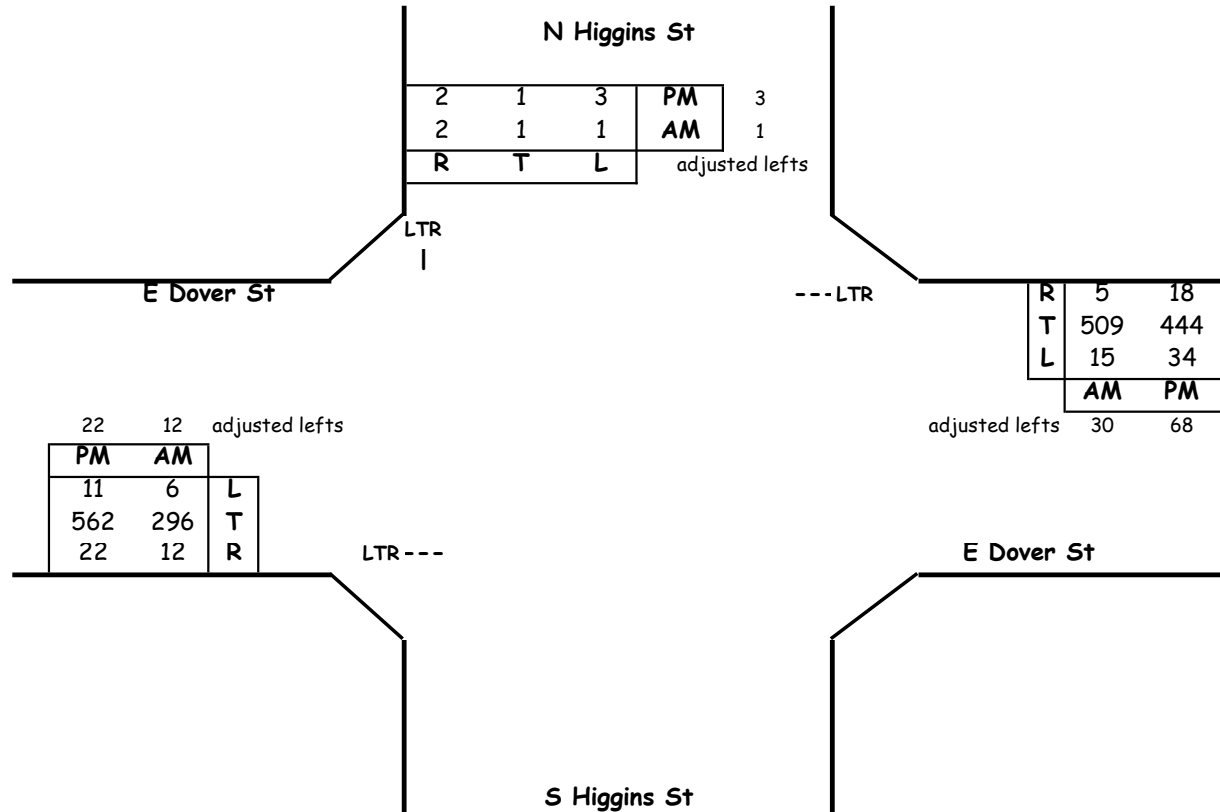
**Intersection
1-Sat**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Main Line: E Dover St
Minor Street: S Higgins St
Study Period: Background Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
NB	0	0.00	0	1	1	1
SB	4	1.00	4	0	0	0
EB	320	1	320	15	1	15
WB	544	1	544	6	1	6
CLV TOTAL=						554
Level of Service (LOS) =						A

Evening Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
NB	0	0.00	0	3	1	3
SB	6	1.00	6	0	0	0
EB	606	1	606	34	1	34
WB	530	1	530	11	1	11
CLV TOTAL=						646
Level of Service (LOS) =						A

Critical Lane Volume Analysis



LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
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**E Dover St &
S Higgins St**
(Background Traffic)

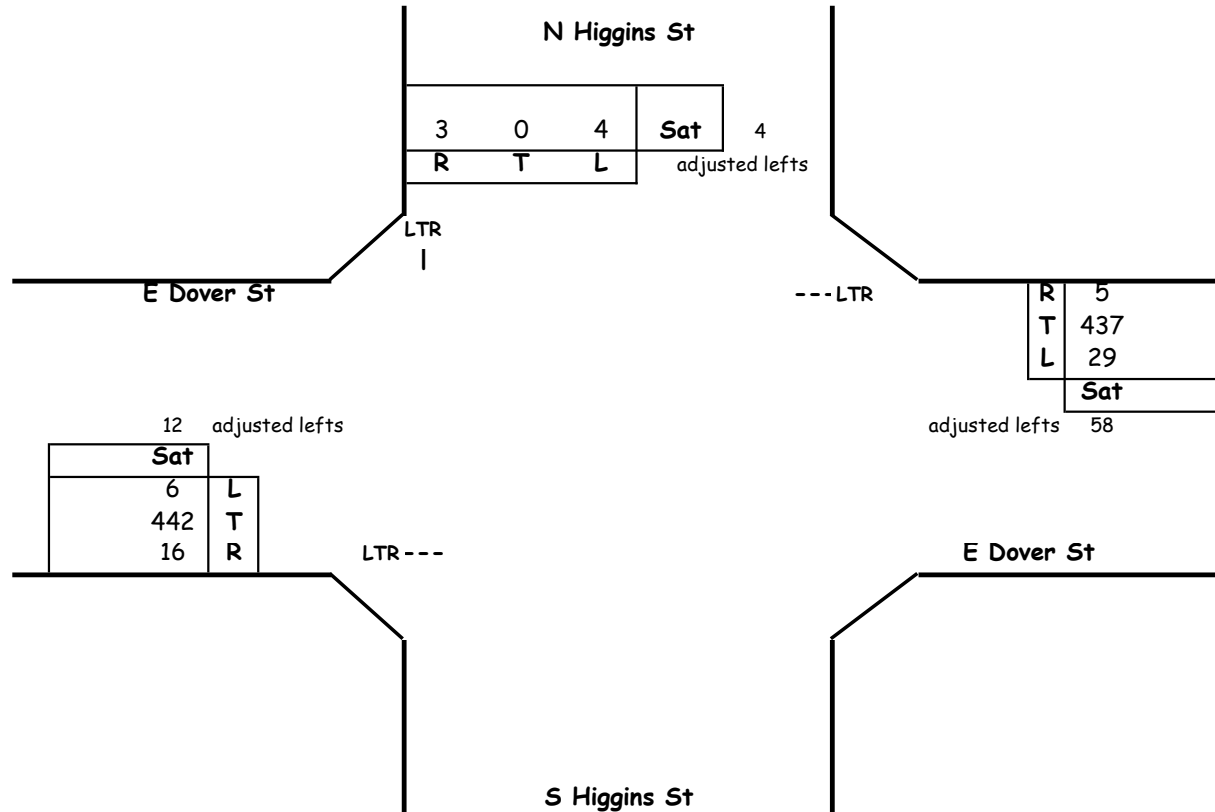
**Intersection
1**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Main Line: E Dover St
Minor Street: S Higgins St
Study Period: Background Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Sat. Midday Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
NB	0	0.00	0	4	1	4
SB	7	1.00	7	0	0	0
EB	470	1	470	29	1	29
WB	500	1	500	6	1	6
CLV TOTAL=						513
Level of Service (LOS) =						A

Critical Lane Volume Analysis



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**E Dover St &
 S Higgins St**
 (Background Traffic)

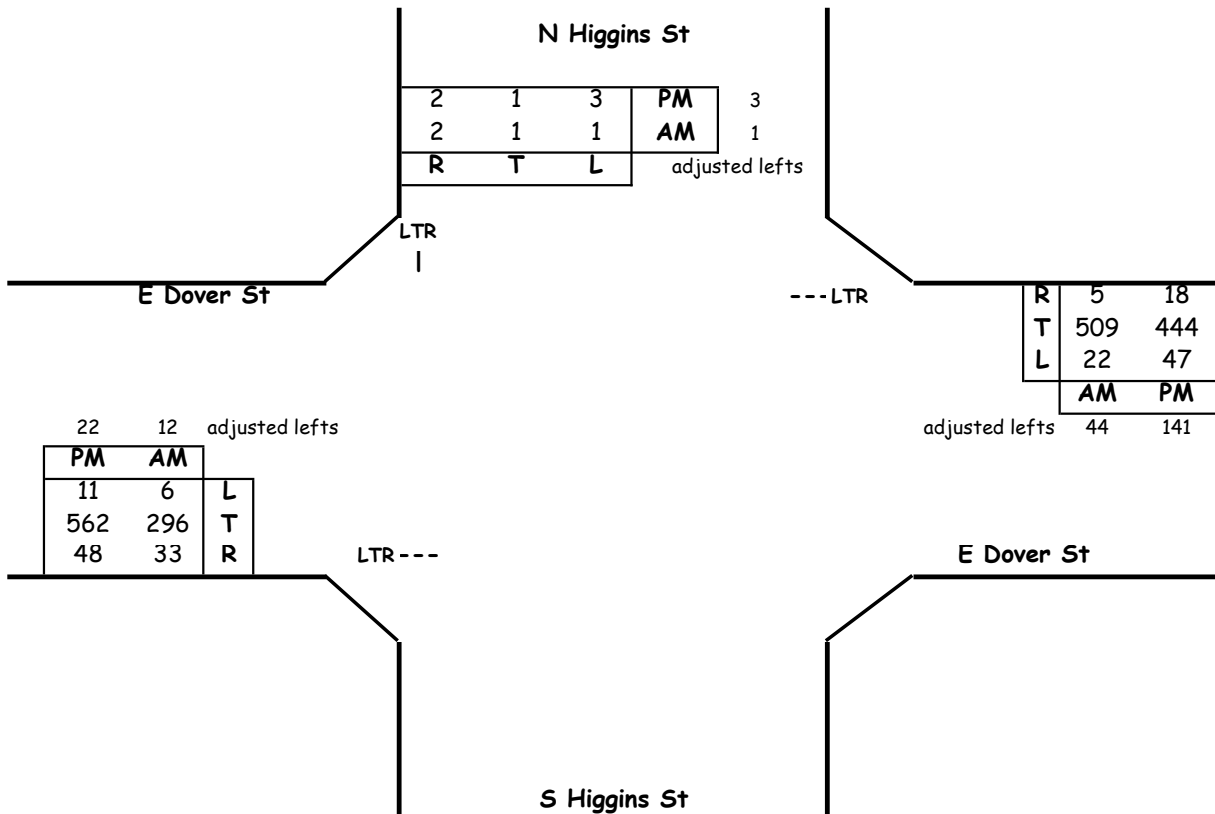
**Intersection
 1-Sat**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Main Line: E Dover St
Minor Street: S Higgins St
Study Period: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour							
Dir	Thru Volumes			+ Opposing Lefts			AM
	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
NB	0	0.00	0	1	1	1	4
SB	4	1.00	4	0	0	0	
EB	341	1	341	22	1	22	564
WB	558	1	558	6	1	6	
CLV TOTAL=							568
Level of Service (LOS) =							A

Evening Peak Hour							
Dir	Thru Volumes			+ Opposing Lefts			PM
	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
NB	0	0.00	0	3	1	3	6
SB	6	1.00	6	0	0	0	
EB	632	1	632	47	1	47	679
WB	603	1	603	11	1	11	
CLV TOTAL=							685
Level of Service (LOS) =							A

Critical Lane Volume Analysis



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**E Dover St &
S Higgins St
(Total Traffic)**

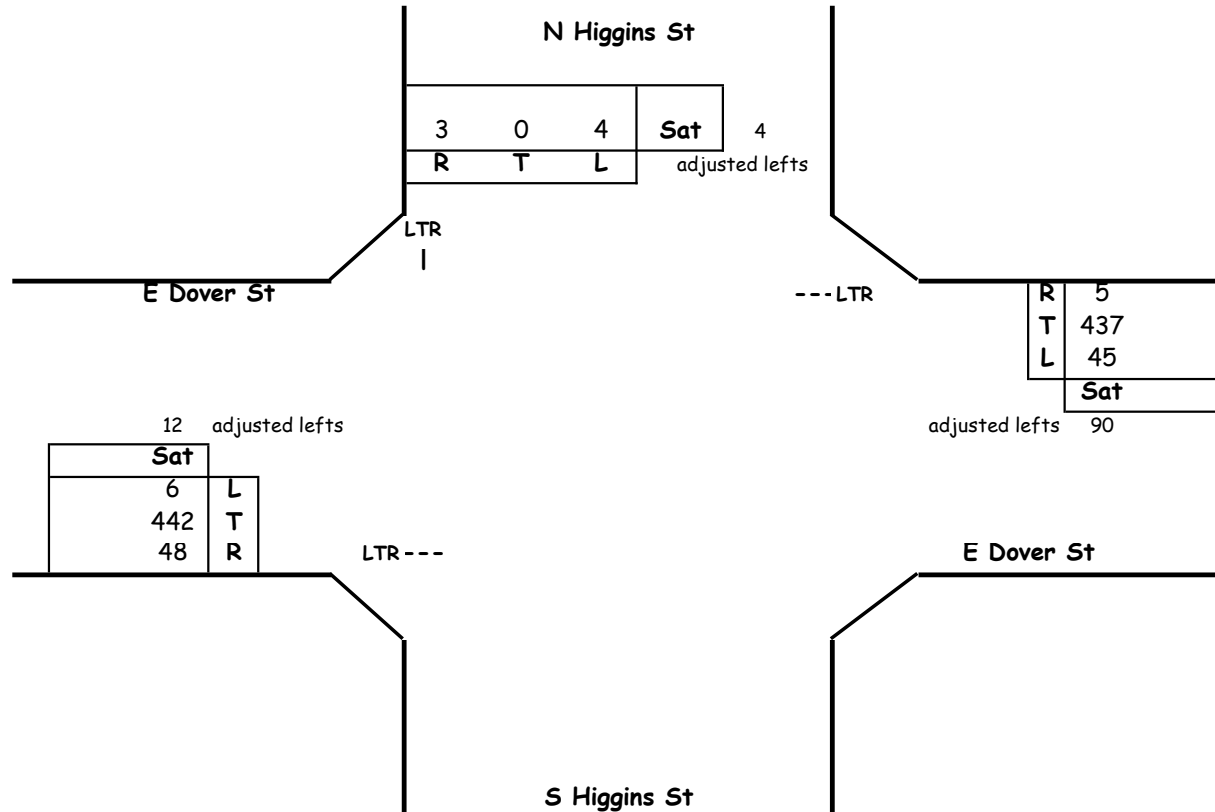
**Intersection
1**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Main Line: E Dover St
Minor Street: S Higgins St
Study Period: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Sat. Midday Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
NB	0	0.00	0	4	1	4
SB	7	1.00	7	0	0	0
EB	502	1	502	45	1	45
WB	532	1	532	6	1	6
CLV TOTAL=						554
Level of Service (LOS) =						A

Critical Lane Volume Analysis



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**E Dover St &
S Higgins St
(Total Traffic)**

**Intersection
1-Sat**

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: Dover Rd
Minor Street: Kemp Ln
Study Period: Existing Traffic

Analyst: Lenhart Traffic Consulting

DOVER RD

--- TL

	AM	PM
T	490	424
L	13	12

adjusted lefts 26 24

PM	AM	
483	275	T
34	5	R

TR ---

DOVER RD

|
 LR

Kemp Ln

	L	R
AM	20	22
PM	14	12

Critical Lane Volume Analysis

Morning Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
NB	42	1.00	42			
EB	280	1.00	280	13	1.00	13
WB	516	1.00	516			
CLV TOTAL=						558
Level of Service (LOS)=						A

Evening Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
NB	26	1.00	26			
EB	517	1.00	517	12	1.00	12
WB	448	1.00	448			
CLV TOTAL=						555
Level of Service (LOS)=						A

Critical Lane Volume Analysis



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Dover Rd &
 Kemp Ln
 (Existing Traffic)

Intersection
2

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: Dover Rd
Minor Street: Kemp Ln
Study Period: Existing Traffic

Analyst: Lenhart Traffic Consulting

DOVER RD

--- TL

	Sat	
T	440	
L	9	

adjusted lefts 18

	Sat	
	442	T
	8	R

TR ---

DOVER RD

|
LR

	L	R
Sat	5	9

Kemp Ln

Critical Lane Volume Analysis

Sat. Midday Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
NB	14	1.00	14			
EB	450	1.00	450	9	1.00	9
WB	458	1.00	458			
CLV TOTAL=						473
Level of Service (LOS) =						A

Critical Lane Volume Analysis



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Dover Rd &
 Kemp Ln
 (Existing Traffic)

Intersection
2-Sat

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: Dover Rd
Minor Street: Kemp Ln
Study Period: Background Traffic

Analyst: Lenhart Traffic Consulting

DOVER RD

--- TL

	AM	PM
T	520	451
L	14	13

adjusted lefts 28 26

PM	AM	
514	293	T
36	5	R

TR ---

DOVER RD

|
LR

Kemp Ln

	L	R
AM	21	23
PM	15	13

Critical Lane Volume Analysis

Morning Peak Hour							
Dir	Thru Volumes			+ Opposing Lefts			AM
	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
NB	44	1.00	44				44
EB	298	1.00	298	14	1.00	14	548
WB	548	1.00	548				
CLV TOTAL=							592
Level of Service (LOS)=							A

Evening Peak Hour							
Dir	Thru Volumes			+ Opposing Lefts			PM
	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
NB	28	1.00	28				28
EB	550	1.00	550	13	1.00	13	563
WB	477	1.00	477				
CLV TOTAL=							591
Level of Service (LOS)=							A

Critical Lane Volume Analysis



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Dover Rd &
 Kemp Ln
 (Background Traffic)

Intersection
2

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: Dover Rd
Minor Street: Kemp Ln
Study Period: Background Traffic

Analyst: Lenhart Traffic Consulting

DOVER RD

--- TL

	Sat	
T	468	
L	10	

adjusted lefts 20

	Sat	
	470	T
	8	R

TR ---

DOVER RD

|
 LR

Kemp Ln

	L	R
Sat	5	10

Critical Lane Volume Analysis

Sat. Midday Peak Hour					
Dir	Thru Volumes			+ Opposing Lefts	Sat CLV
	VOL	x LUF	= Total	VOL x LUF = Total	
NB	15	1.00	15		15
EB	478	1.00	478	10 1.00 10	488
WB	488	1.00	488		
CLV TOTAL=					503
Level of Service (LOS) =					A

Critical Lane Volume Analysis



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Dover Rd &
 Kemp Ln
 (Background Traffic)

Intersection
2-Sat

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: Dover Rd
Minor Street: Kemp Ln
Study Period: Total Traffic

Analyst: Lenhart Traffic Consulting

DOVER RD

--- TL

	AM	PM
T	527	464
L	48	56

adjusted lefts 96 112

PM	AM	
514	293	T
36	5	R

TR ---

DOVER RD

|
LR

Kemp Ln

	L	R
AM	21	49
PM	15	34

Critical Lane Volume Analysis

Morning Peak Hour							
Dir	Thru Volumes			+ Opposing Lefts			AM
	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
NB	70	1.00	70				70
EB	298	1.00	298	48	1.00	48	623
WB	623	1.00	623				
CLV TOTAL=							693
Level of Service (LOS) =							A

Evening Peak Hour							
Dir	Thru Volumes			+ Opposing Lefts			PM
	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
NB	49	1.00	49				49
EB	550	1.00	550	56	1.00	56	606
WB	576	1.00	576				
CLV TOTAL=							655
Level of Service (LOS)=							A

Critical Lane Volume Analysis



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Dover Rd &
 Kemp Ln
 (Total Traffic)

Intersection
2

Critical Lane Volume (CLV) Methodology for MSHA

Main Line: Dover Rd
Minor Street: Kemp Ln
Study Period: Total Traffic

Analyst: Lenhart Traffic Consulting

DOVER RD

--- TL

	Sat	
T	484	
L	55	

adjusted lefts 110

	Sat	
	470	T
	8	R

TR ---

Kemp Ln

|
LR

DOVER RD

	L	R
Sat	5	41

Critical Lane Volume Analysis

Sat. Midday Peak Hour							
Dir	Thru Volumes			+ Opposing Lefts			Sat
	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
NB	46	1.00	46				46
EB	478	1.00	478	55	1.00	55	594
WB	594	1.00	594				
CLV TOTAL=							640
Level of Service (LOS)=							A

Critical Lane Volume Analysis



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Dover Rd &
 Kemp Ln
 (Total Traffic)

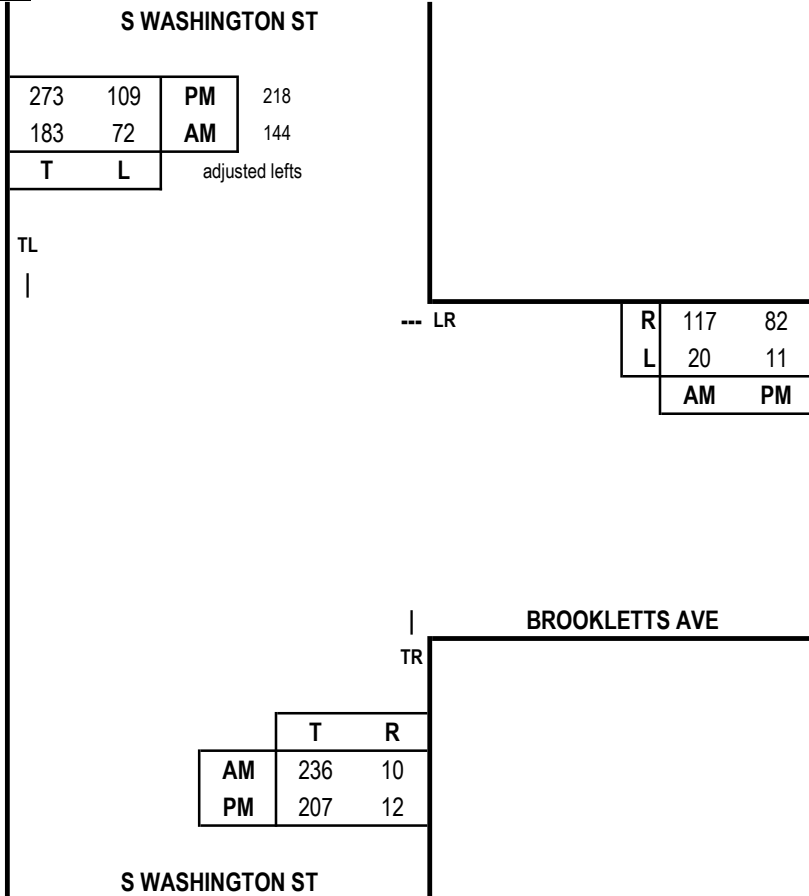
Intersection
2-Sat

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Intersection of: S Washington St
and: Brookletts Ave
Conditions: Existing Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Capacity Analysis

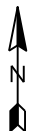
Morning Peak Hour							
Dir	Thru Volumes			+ Opposing Lefts			AM
	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
WB	137	1.00	137				137
NB	246	1.00	246	72	1.00	72	327
SB	327	1.00	327				
CLV TOTAL=							464
Level of Service (LOS) =							A

Evening Peak Hour							
Dir	Thru Volumes			+ Opposing Lefts			PM
	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
WB	93	1.00	93				93
NB	219	1.00	219	109	1.00	109	491
SB	491	1.00	491				
CLV TOTAL=							584
Level of Service (LOS) =							A

Critical Lane Volume Analysis



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S Washington St &
Brookletts Ave
(Existing Traffic)

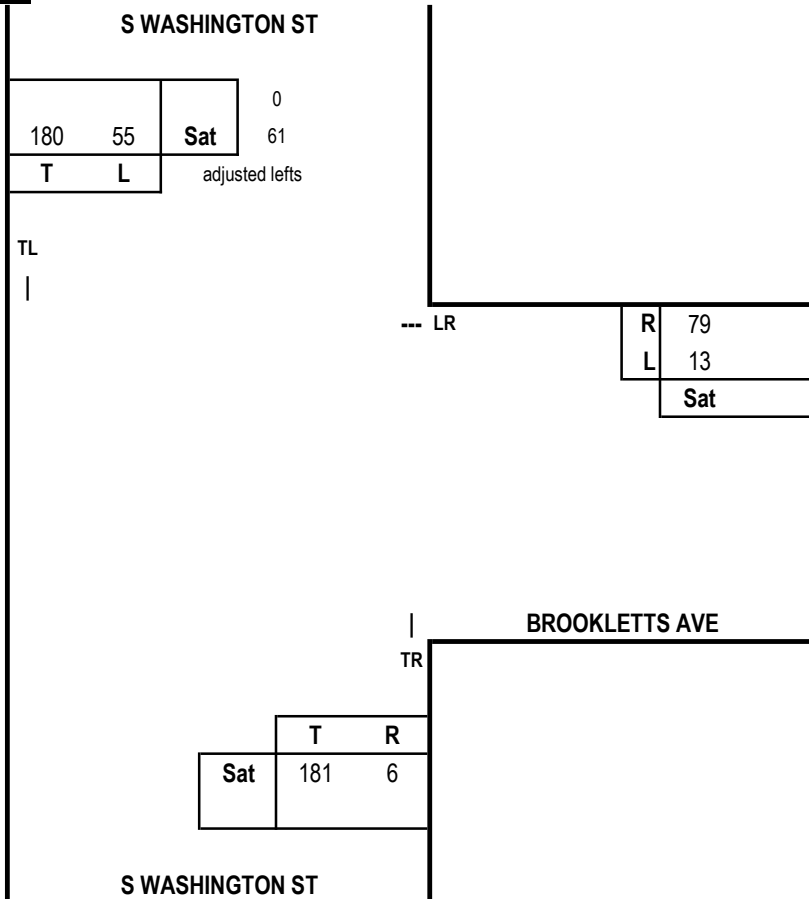
**Intersection
3**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Intersection of: S Washington St
and: Brookletts Ave
Conditions: Existing Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



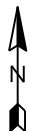
Capacity Analysis

Sat. Midday Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
WB	92	1.00	92			
NB	187	1.00	187	55	1.00	55
SB	241	1.00	241			
CLV TOTAL=						334
Level of Service (LOS)=						A

Critical Lane Volume Analysis



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S Washington St &
Brookletts Ave
(Existing Traffic)

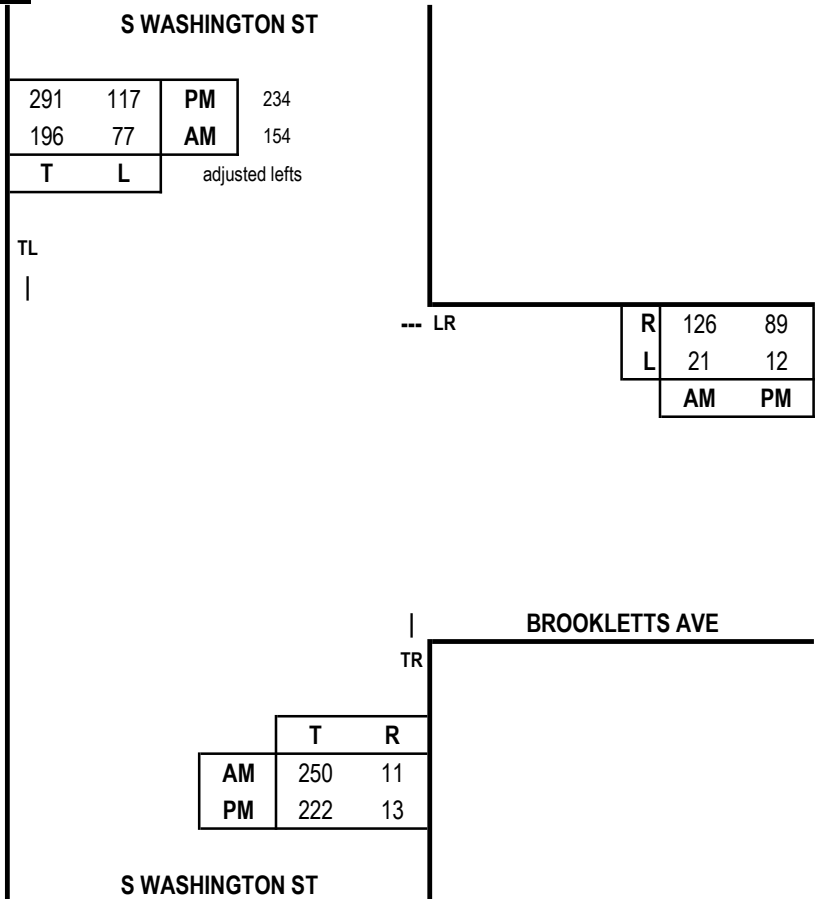
Intersection
3-Sat

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Intersection of: S Washington St
and: Brookletts Ave
Conditions: Background Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Capacity Analysis

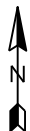
Morning Peak Hour							
Dir	Thru Volumes			+ Opposing Lefts			AM
	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
WB	147	1.00	147				147
NB	261	1.00	261	77	1.00	77	350
SB	350	1.00	350				
CLV TOTAL=							497
Level of Service (LOS) =							A

Evening Peak Hour							
Dir	Thru Volumes			+ Opposing Lefts			PM
	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
WB	101	1.00	101				101
NB	235	1.00	235	117	1.00	117	525
SB	525	1.00	525				
CLV TOTAL=							626
Level of Service (LOS) =							A

Critical Lane Volume Analysis



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**S Washington St &
Brookletts Ave
(Background Traffic)**

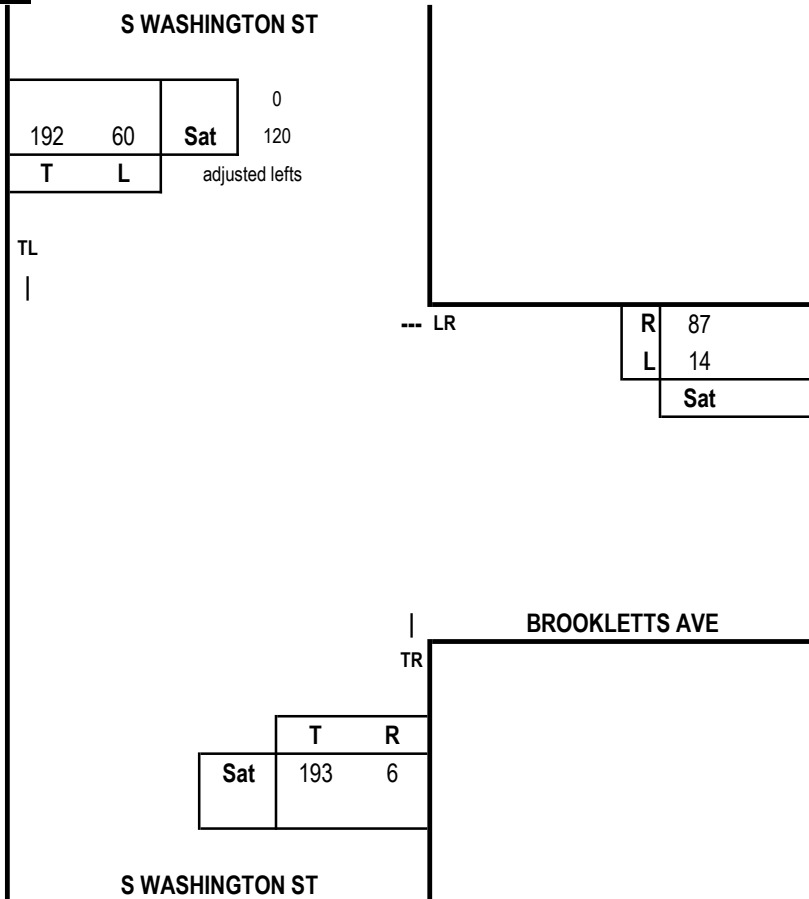
**Intersection
3**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Intersection of: S Washington St
and: Brookletts Ave
Conditions: Background Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



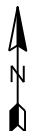
Capacity Analysis

Sat. Midday Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
WB	101	1.00	101			
NB	199	1.00	199	60	1.00	60
SB	312	1.00	312			
CLV TOTAL=						413
Level of Service (LOS)=						A

Critical Lane Volume Analysis



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S Washington St &
Brookletts Ave
(Background Traffic)

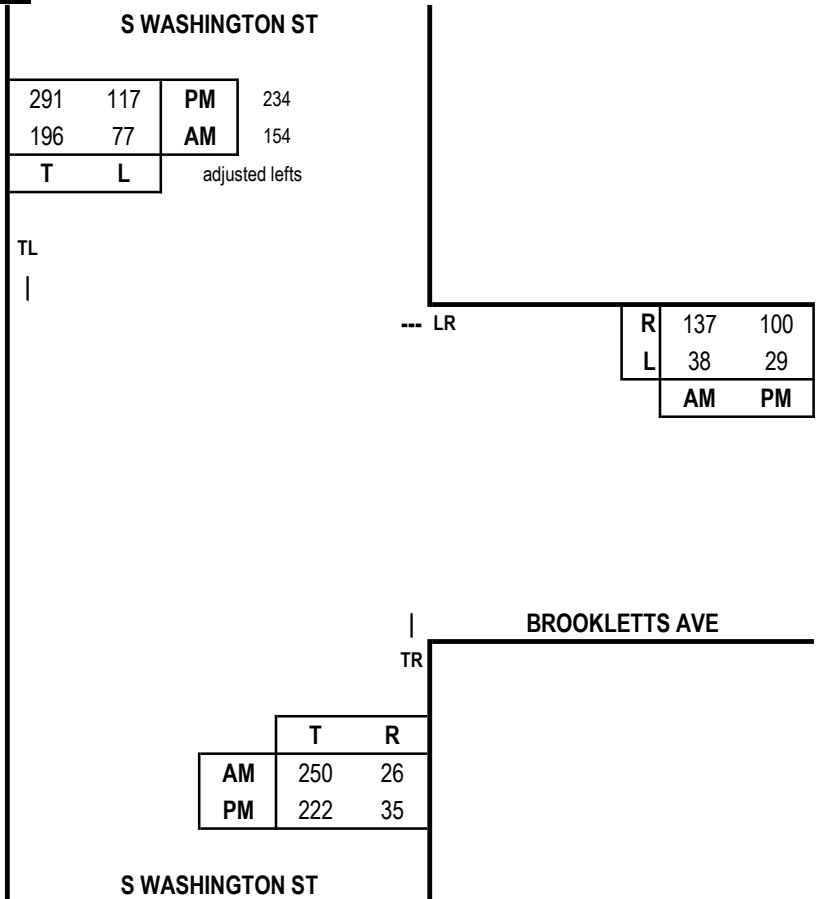
**Intersection
3-Sat**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Intersection of: S Washington St
and: Brookletts Ave
Conditions: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Capacity Analysis

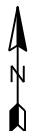
Morning Peak Hour							
Dir	Thru Volumes			+ Opposing Lefts			AM
	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
WB	175	1.00	175				175
NB	276	1.00	276	77	1.00	77	353
SB	350	1.00	350				
CLV TOTAL=							528
Level of Service (LOS) =							A

Evening Peak Hour							
Dir	Thru Volumes			+ Opposing Lefts			PM
	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
WB	129	1.00	129				129
NB	257	1.00	257	117	1.00	117	525
SB	525	1.00	525				
CLV TOTAL=							654
Level of Service (LOS) =							A

Critical Lane Volume Analysis



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**S Washington St &
Brookletts Ave
(Total Traffic)**

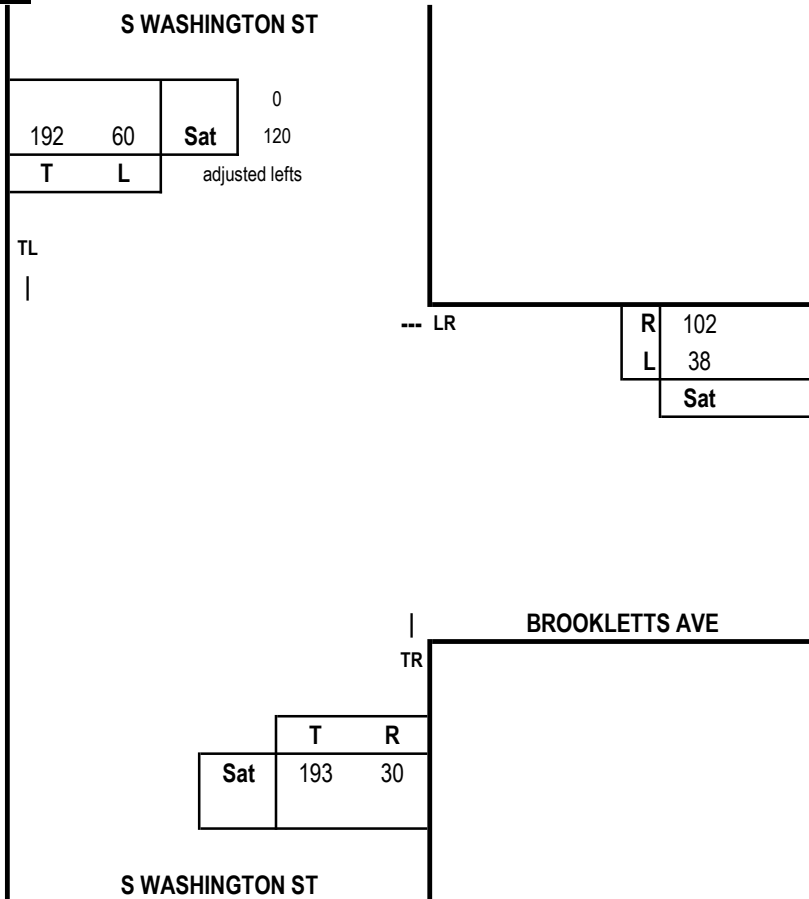
**Intersection
3**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Intersection of: S Washington St
and: Brookletts Ave
Conditions: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



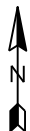
Capacity Analysis

Sat. Midday Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
WB	140	1.00	140			
NB	223	1.00	223	60	1.00	60
SB	312	1.00	312			
CLV TOTAL=						452
Level of Service (LOS)=						A

Critical Lane Volume Analysis



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S Washington St &
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(Total Traffic)

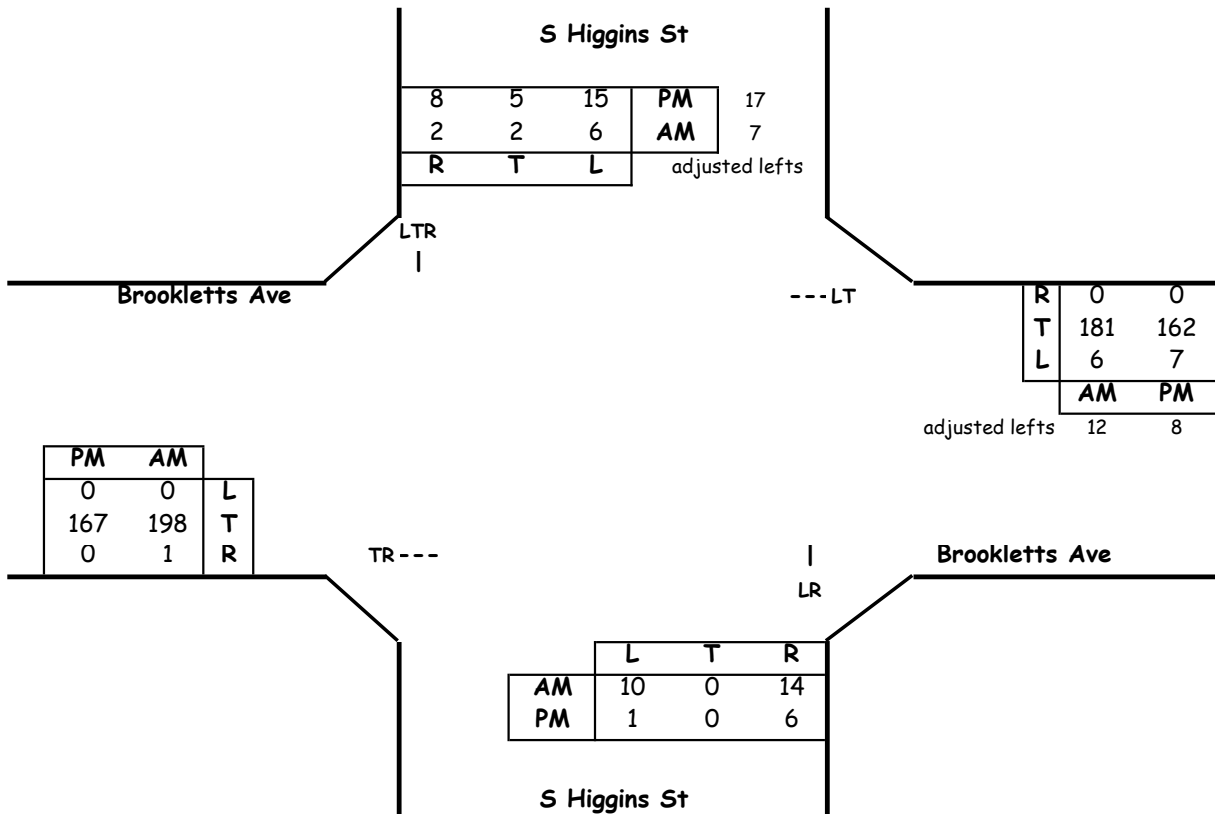
**Intersection
3-Sat**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Main Line: Brookletts Ave
Minor Street: S Higgins St
Study Period: Existing Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour							
Dir	Thru Volumes			+ Opposing Lefts			AM
	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
NB	0	0.00	0	6	1	6	11
SB	11	1.00	11	10	0	0	
EB	199	1	199	6	1	6	205
WB	193	1	193	0	0	0	
CLV TOTAL=							216
Level of Service (LOS) =							A

Evening Peak Hour							
Dir	Thru Volumes			+ Opposing Lefts			PM
	VOL	x LUF = Total		VOL	x LUF = Total		CLV
NB	0	0.00	0	15	1	15	30
SB	30	1.00	30	1	0	0	
EB	167	1	167	7	1	7	174
WB	170	1	170	0	0	0	
CLV TOTAL=							204
Level of Service (LOS) =							A

Critical Lane Volume Analysis



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**Brookletts Ave &
S Higgins St**
(Existing Traffic)

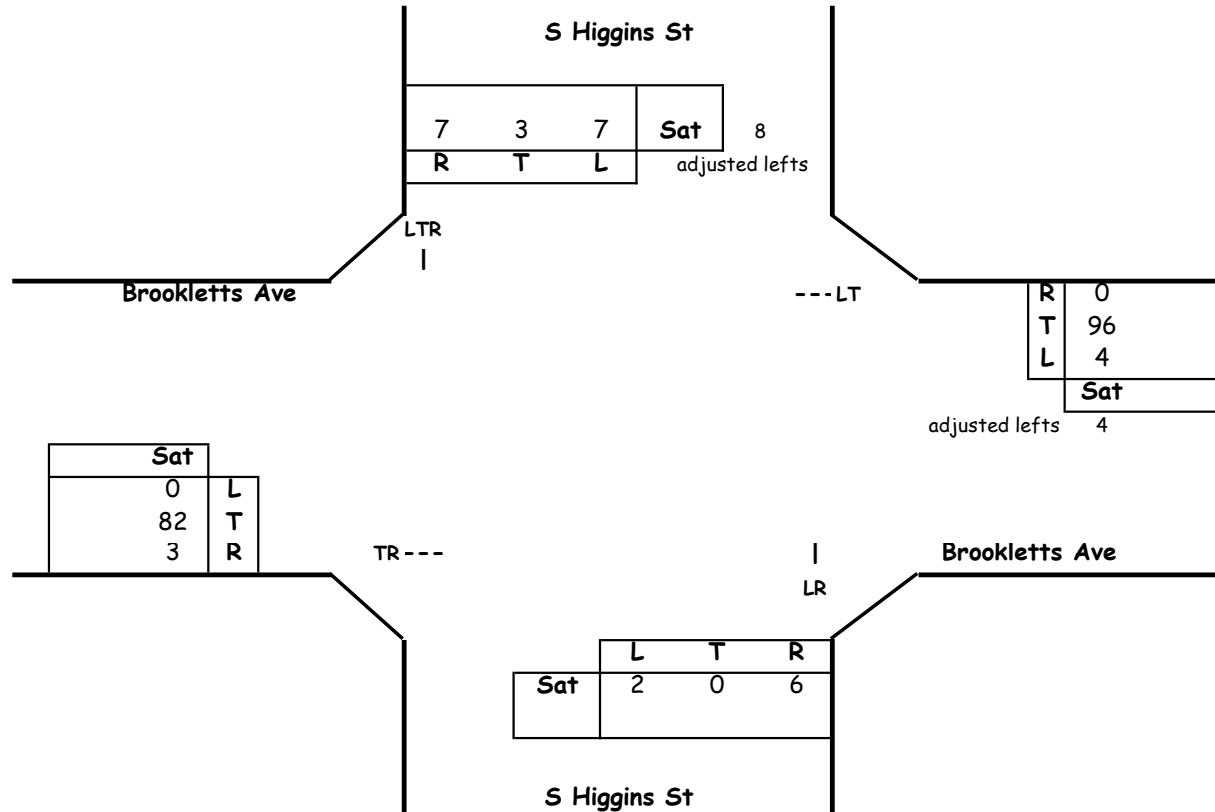
**Intersection
4**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Main Line: Brookletts Ave
Minor Street: S Higgins St
Study Period: Existing Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Sat. Midday Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
NB	0	0.00	0	7	1	7
SB	18	1.00	18	2	0	0
EB	85	1	85	4	1	4
WB	100	1	100	0	0	0
CLV TOTAL=						118
Level of Service (LOS) =						A

Critical Lane Volume Analysis

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**Brookletts Ave &
S Higgins St
(Existing Traffic)**

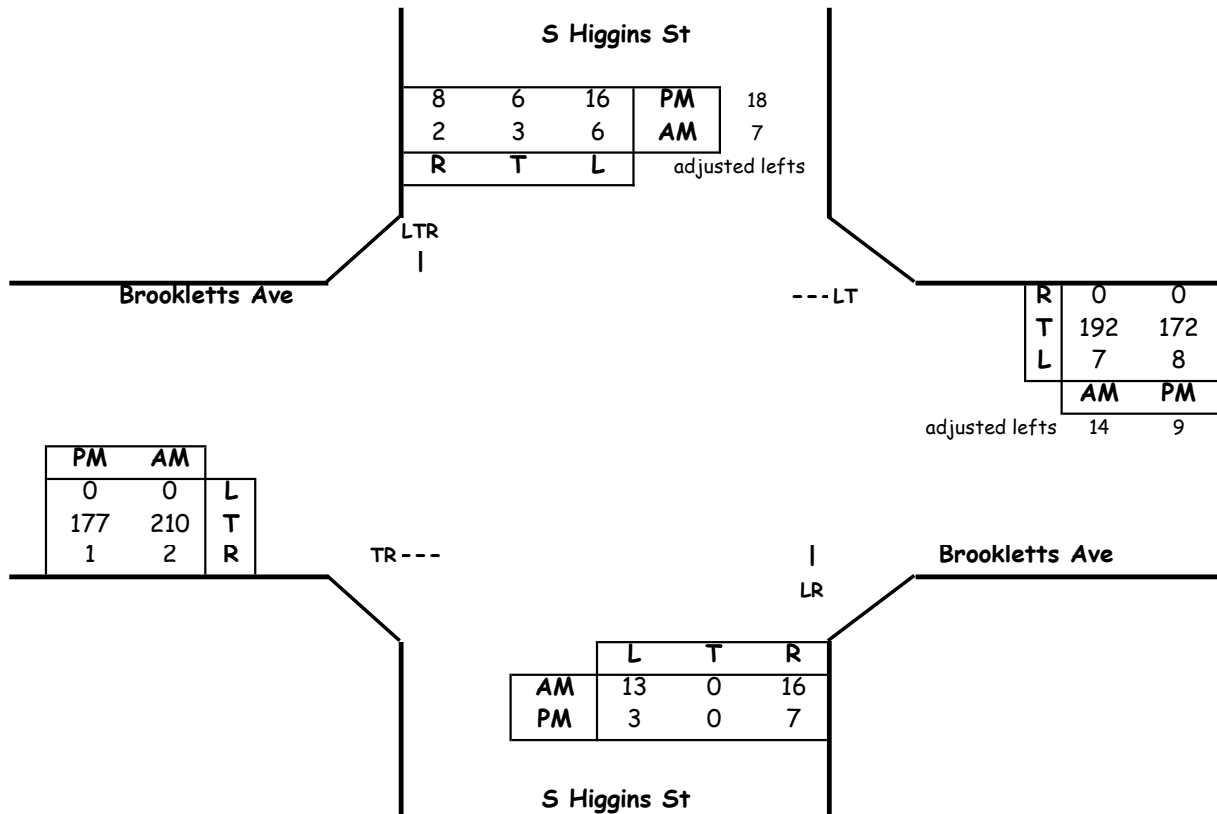
**Intersection
4-Sat**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Main Line: Brookletts Ave
Minor Street: S Higgins St
Study Period: Background Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
NB	0	0.00	0	6	1	6
SB	12	1.00	12	13	0	0
EB	212	1	212	7	1	7
WB	206	1	206	0	0	0
CLV TOTAL=						231
Level of Service (LOS) =						A

Evening Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
NB	0	0.00	0	16	1	16
SB	32	1.00	32	3	0	0
EB	178	1	178	8	1	8
WB	181	1	181	0	0	0
CLV TOTAL=						218
Level of Service (LOS) =						A

Critical Lane Volume Analysis



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**Brookletts Ave &
S Higgins St**
(Background Traffic)

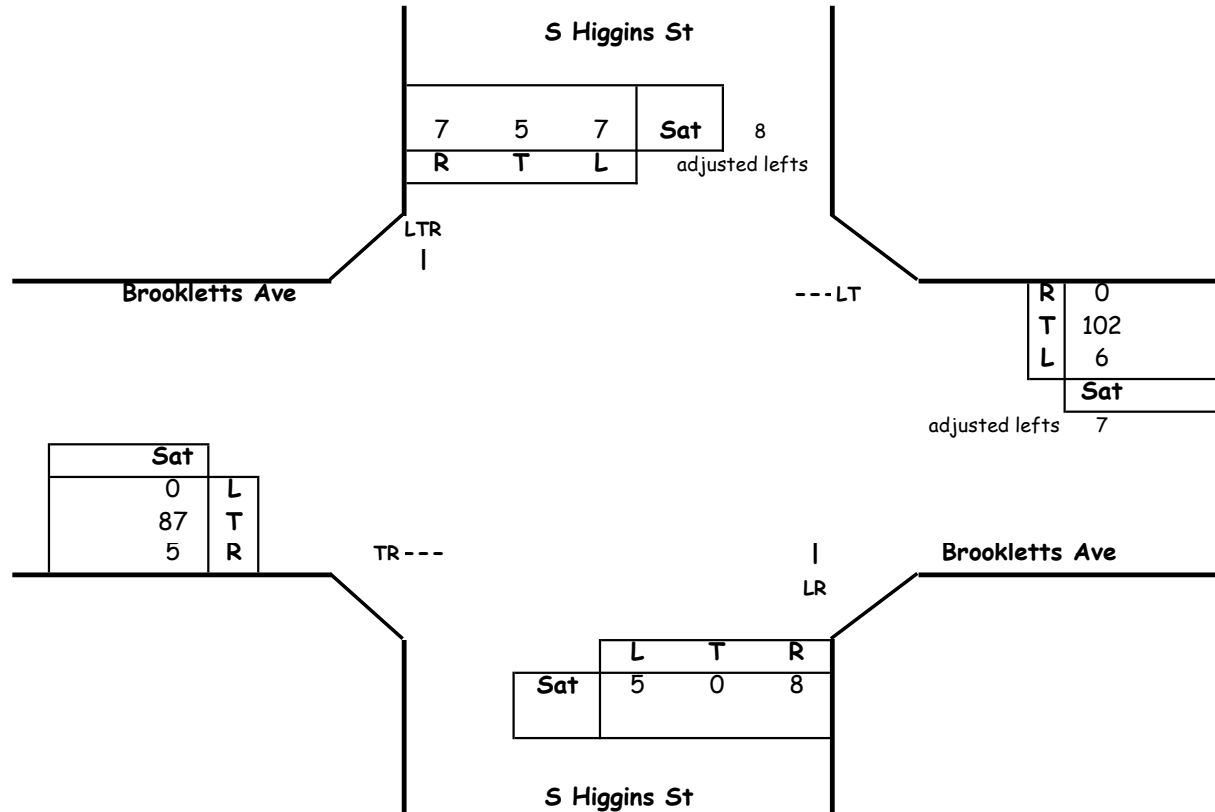
**Intersection
4**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Main Line: Brookletts Ave
Minor Street: S Higgins St
Study Period: Background Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Sat. Midday Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
NB	0	0.00	0	7	1	7
SB	20	1.00	20	5	0	0
EB	92	1	92	6	1	6
WB	109	1	109	0	0	0
CLV TOTAL=						129
Level of Service (LOS) =						A

Critical Lane Volume Analysis



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**Brookletts Ave &
 S Higgins St**
 (Background Traffic)

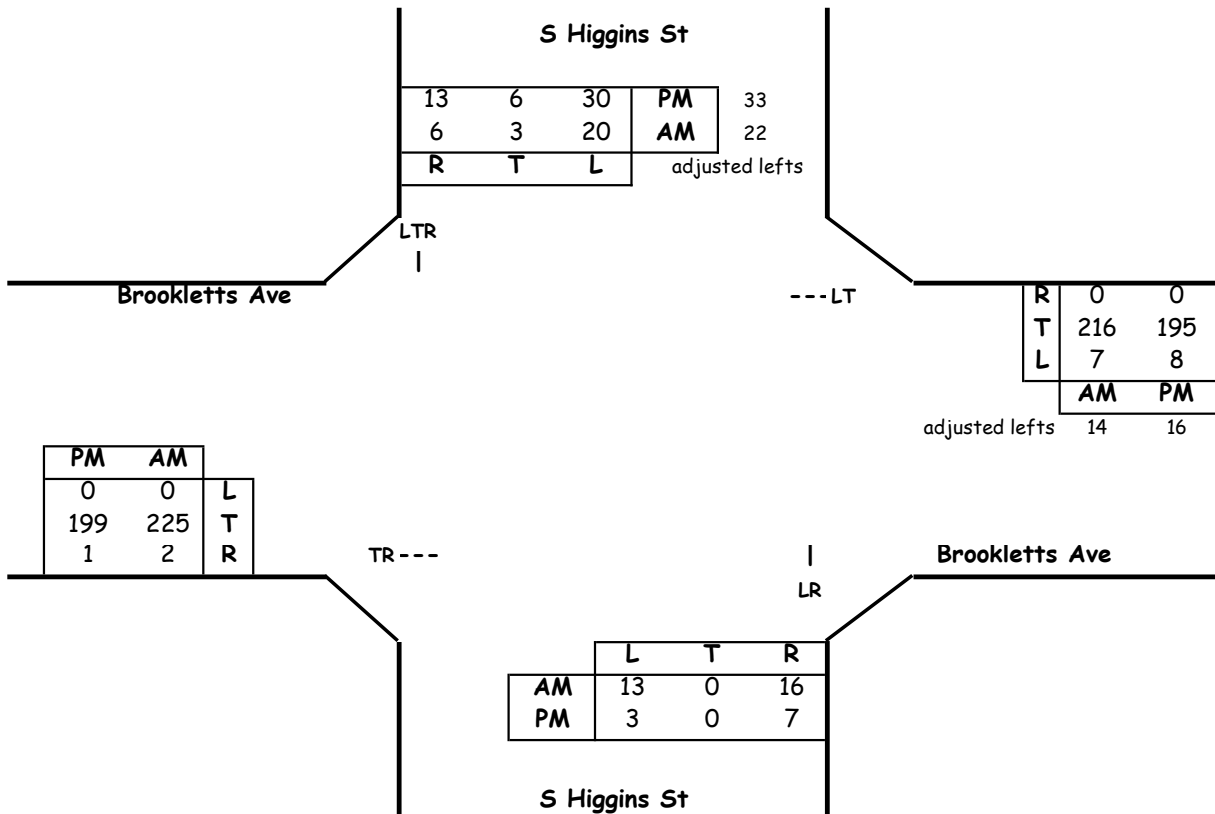
**Intersection
 4-Sat**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Main Line: Brookletts Ave
Minor Street: S Higgins St
Study Period: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Morning Peak Hour							
Dir	Thru Volumes			+ Opposing Lefts			AM
	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
NB	0	0.00	0	20	1	20	31
SB	31	1.00	31	13	0	0	
EB	227	1	227	7	1	7	234
WB	230	1	230	0	0	0	
CLV TOTAL=							265
Level of Service (LOS) =							A

Evening Peak Hour							
Dir	Thru Volumes			+ Opposing Lefts			PM
	VOL	x LUF = Total		VOL	x LUF = Total		CLV
NB	0	0.00	0	30	1	30	52
SB	52	1.00	52	3	0	0	
EB	200	1	200	8	1	8	211
WB	211	1	211	0	0	0	
CLV TOTAL=							263
Level of Service (LOS) =							A

Critical Lane Volume Analysis



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(Total Traffic)**

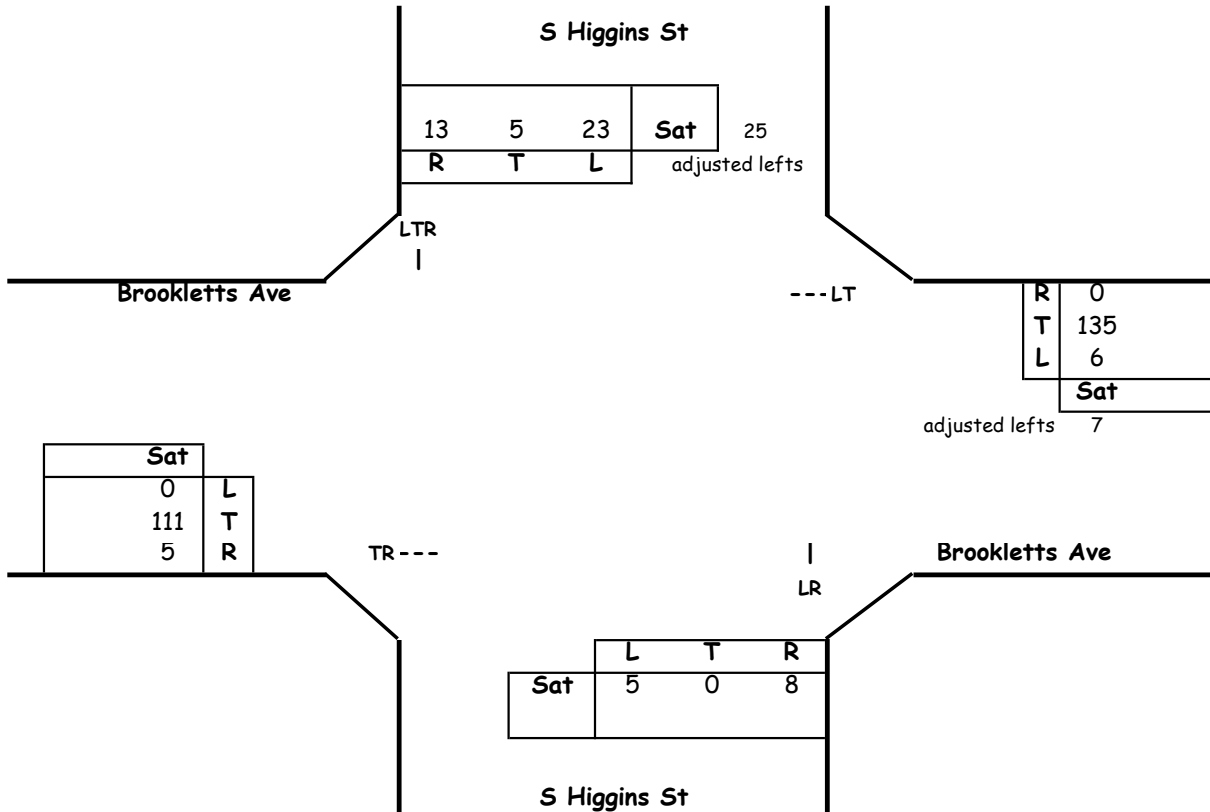
**Intersection
4**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Main Line: Brookletts Ave
Minor Street: S Higgins St
Study Period: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Critical Lane Volume Analysis

Sat. Midday Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
NB	0	0.00	0	23	1	23
SB	43	1.00	43	5	0	0
EB	116	1	116	6	1	6
WB	142	1	142	0	0	0
CLV TOTAL=						185
Level of Service (LOS) =						A

Critical Lane Volume Analysis



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(Total Traffic)**

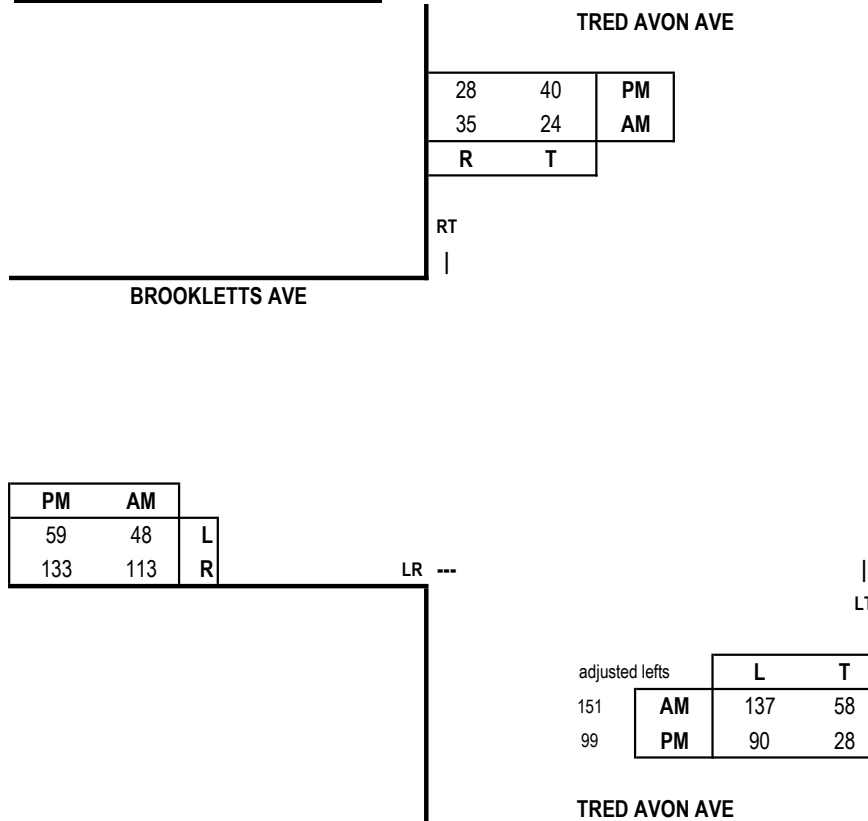
**Intersection
4-Sat**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Intersection of: Brookletts Ave
and: Tred Avon Ave
Conditions: Existing Traffic

Analyst: Lenhart Traffic

Lane Use + Traffic Volumes



Capacity Analysis

Morning Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
EB	161	1.00	161			
NB	209	1.00	209			
SB	59	1.00	59	137	1.00	137
CLV TOTAL=						370
Level of Service (LOS)=						A

Evening Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
EB	192	1.00	192			
NB	127	1.00	127			
SB	68	1.00	68	90	1.00	90
CLV TOTAL=						350
Level of Service (LOS)=						A

Critical Lane Volume Analysis



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**Brookletts Ave &
Tred Avon Ave
(Existing Traffic)**

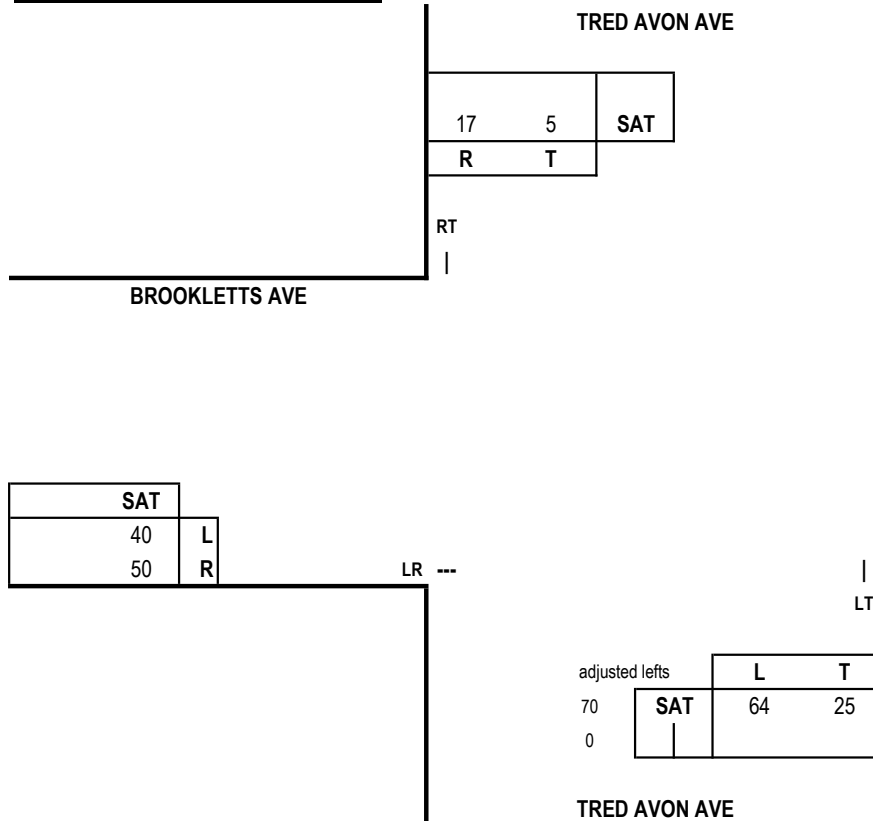
**Intersection
5**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Intersection of: Brookletts Ave
and: Tred Avon Ave
Conditions: Existing Traffic

Analyst: Lenhart Traffic

Lane Use + Traffic Volumes



Capacity Analysis

Sat. Midday Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
EB	90	1.00	90			
NB	95	1.00	95			
SB	22	1.00	22	64	1.00	64
CLV TOTAL=						185
Level of Service (LOS) =						A

Critical Lane Volume Analysis



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Brookletts Ave &
Tred Avon Ave
(Existing Traffic)

Intersection
5-Sat

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

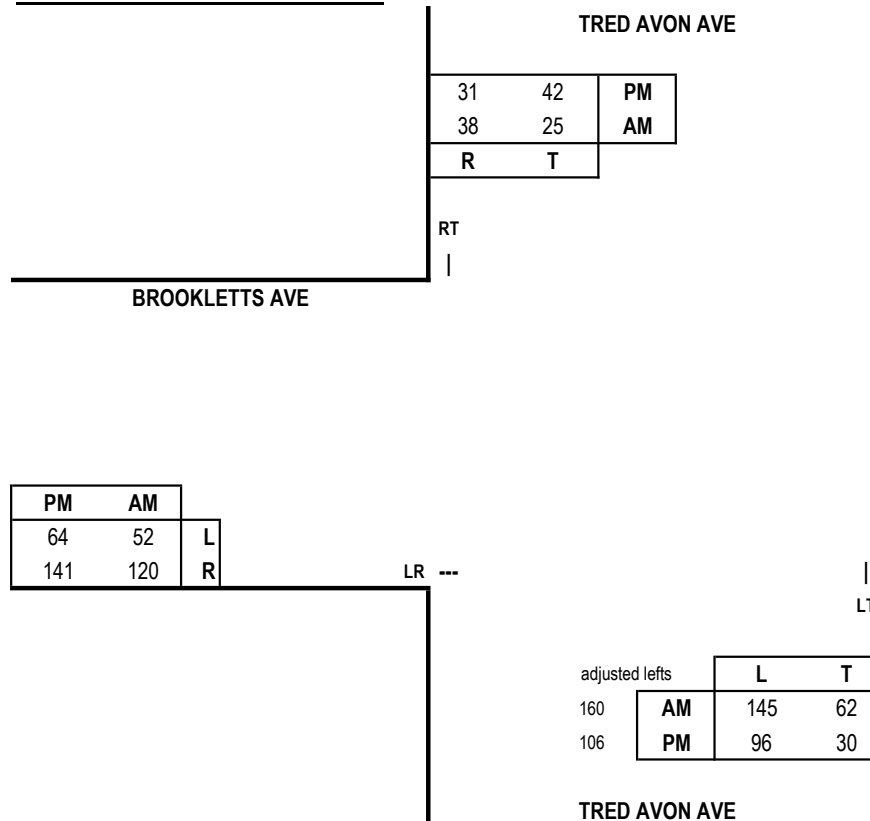
Intersection of: Brookletts Ave

and: Tred Avon Ave

Conditions: Background Traffic

Analyst: Lenhart Traffic

Lane Use + Traffic Volumes



Capacity Analysis

Morning Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
EB	172	1.00	172			
NB	222	1.00	222			
SB	63	1.00	63	145	1.00	145
CLV TOTAL=						394
Level of Service (LOS)=						A

Evening Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
EB	205	1.00	205			
NB	136	1.00	136			
SB	73	1.00	73	96	1.00	96
CLV TOTAL=						374
Level of Service (LOS)=						A

Critical Lane Volume Analysis



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**Brookletts Ave &
Tred Avon Ave
(Background Traffic)**

**Intersection
5**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

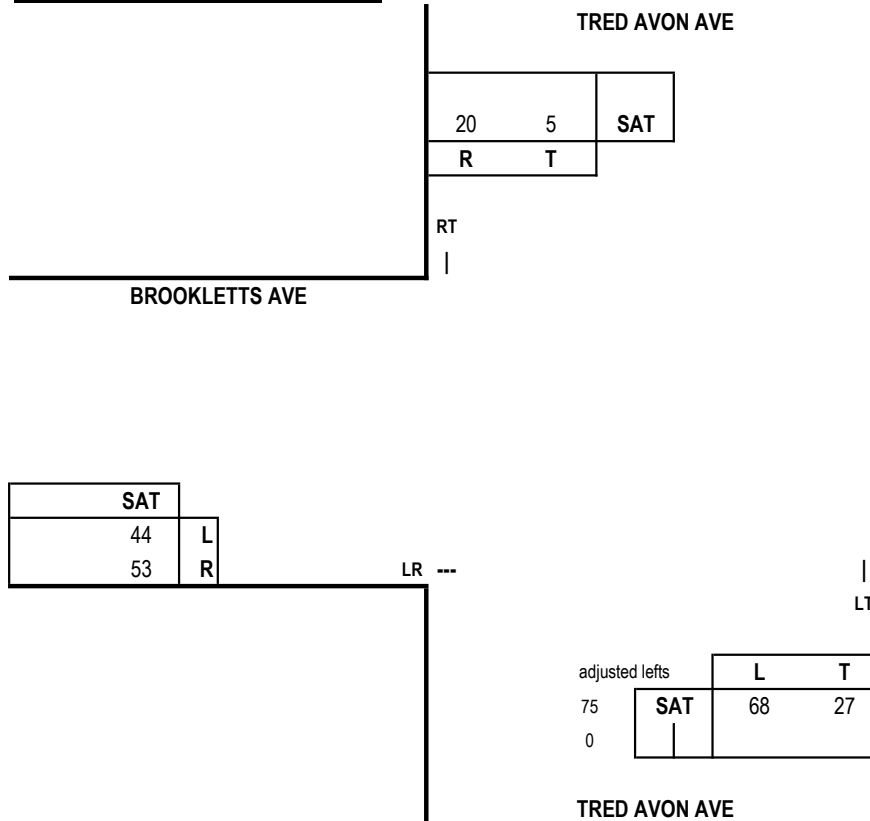
Intersection of: Brookletts Ave

and: Tred Avon Ave

Analyst: Lenhart Traffic

Conditions: Background Traffic

Lane Use + Traffic Volumes



Capacity Analysis

Sat. Midday Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
EB	97	1.00	97			
NB	102	1.00	102			
SB	25	1.00	25	68	1.00	68
CLV TOTAL=						199
Level of Service (LOS) =						A

Critical Lane Volume Analysis



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(Background Traffic)

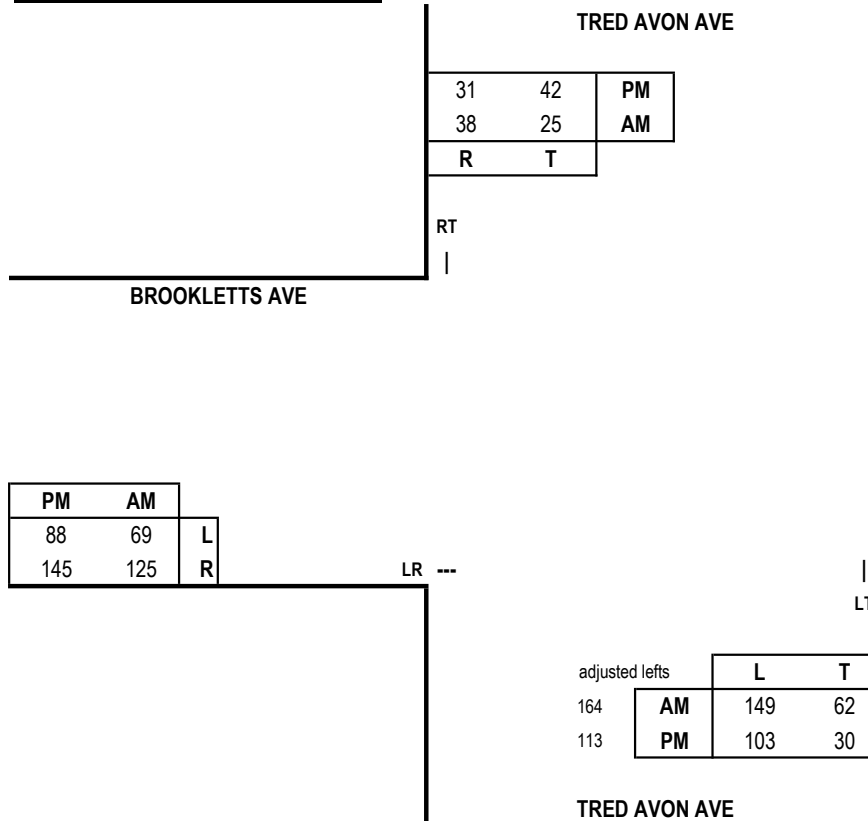
Intersection
5-Sat

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Intersection of: Brookletts Ave
and: Tred Avon Ave
Conditions: Total Traffic

Analyst: Lenhart Traffic

Lane Use + Traffic Volumes



Capacity Analysis

Morning Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
EB	194	1.00	194			
NB	226	1.00	226			
SB	63	1.00	63	149	1.00	149
CLV TOTAL=						420
Level of Service (LOS)=						A

Evening Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
EB	233	1.00	233			
NB	143	1.00	143			
SB	73	1.00	73	103	1.00	103
CLV TOTAL=						409
Level of Service (LOS)=						A

Critical Lane Volume Analysis



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Tred Avon Ave
(Total Traffic)

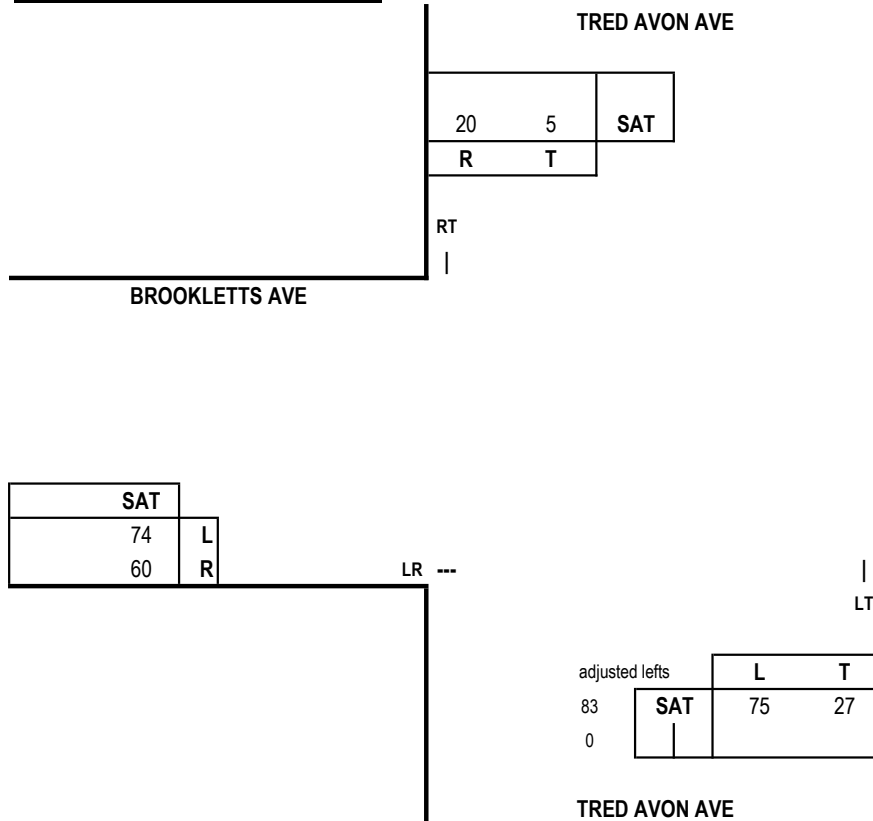
**Intersection
5**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Intersection of: Brookletts Ave
and: Tred Avon Ave
Conditions: Total Traffic

Analyst: Lenhart Traffic

Lane Use + Traffic Volumes



Capacity Analysis

Sat. Midday Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
EB	134	1.00	134			
NB	110	1.00	110			
SB	25	1.00	25	75	1.00	75
CLV TOTAL=						244
Level of Service (LOS) =						A

Critical Lane Volume Analysis



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Tred Avon Ave
(Total Traffic)

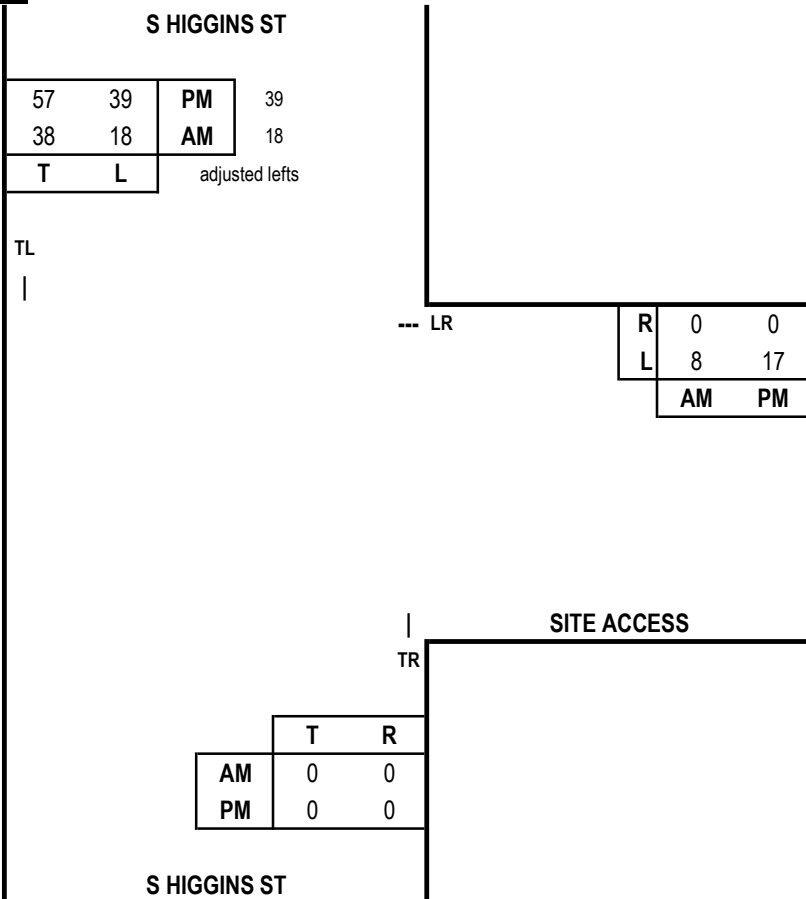
Intersection
5-Sat

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Intersection of: S Higgins St
and: Site Access
Conditions: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Capacity Analysis

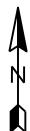
Morning Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
WB	8	1.00	8			
NB	0	1.00	0	18	1.00	18
SB	56	1.00	56			
CLV TOTAL=						64
Level of Service (LOS) =						A

Evening Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
WB	17	1.00	17			
NB	0	1.00	0	39	1.00	39
SB	96	1.00	96			
CLV TOTAL=						113
Level of Service (LOS) =						A

Critical Lane Volume Analysis



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**S Higgins St &
Site Access
(Total Traffic)**

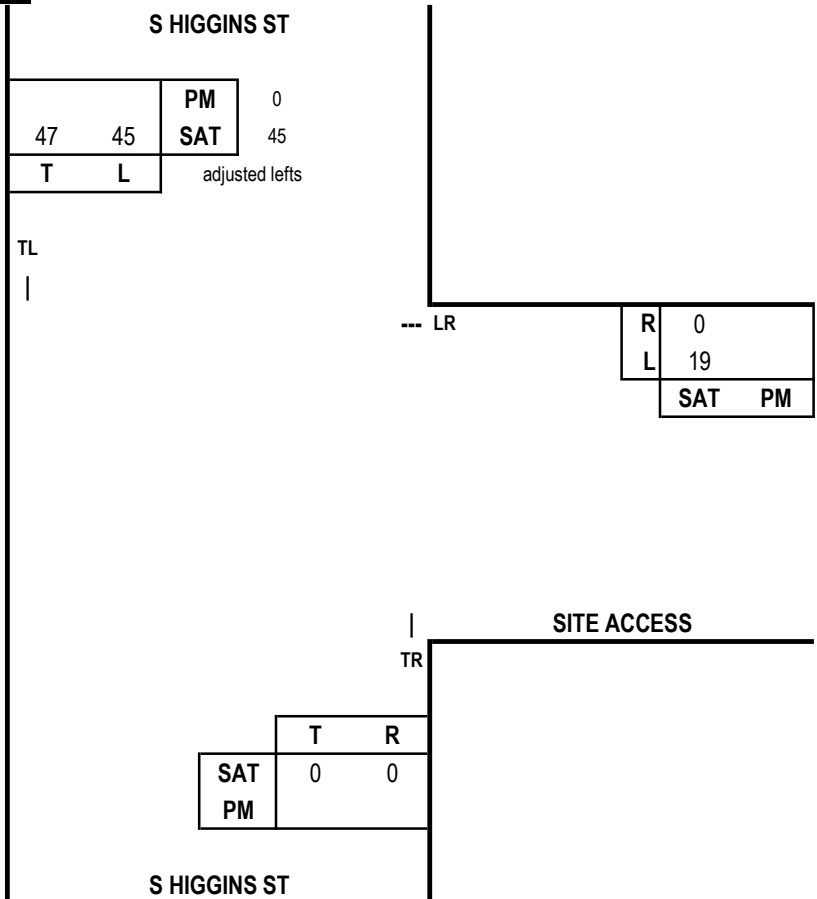
**Intersection
6**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Intersection of: S Higgins St
and: Site Access
Conditions: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



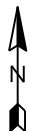
Capacity Analysis

Sat. Midday Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
WB	19	1.00	19			
NB	0	1.00	0	45	1.00	45
SB	92	1.00	92			
CLV TOTAL=						111
Level of Service (LOS) =						A

Critical Lane Volume Analysis



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S Higgins St &
Site Access
(Total Traffic)

**Intersection
6-SAT**

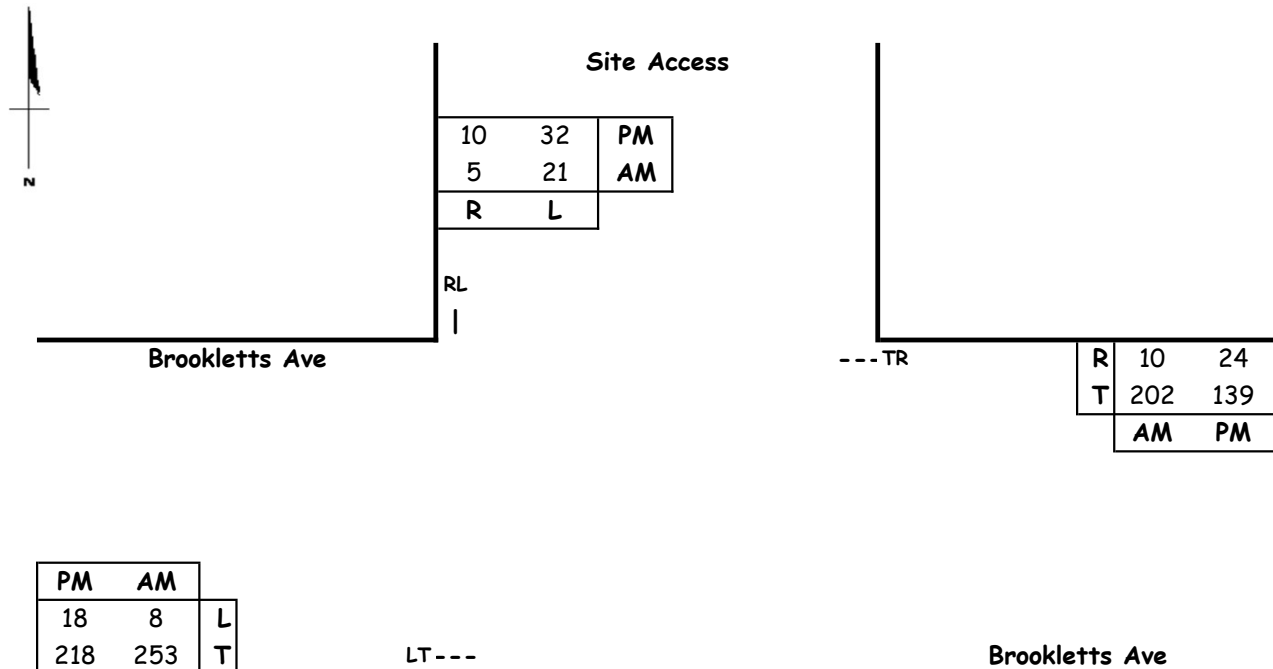
CRITICAL LANE VOLUME (CLV) METHODOLOGY

Choose your methodologies

Intersection of: Site Access
and: Brookletts Ave
Conditions: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Capacity Analysis

Morning Peak Hour					
Dir	Thru Volumes			+ Opposing Lefts	AM
	VOL	x LUF	= Total	VOL x LUF = Total	CLV
SB	26	1.00	26		26
EB	261	1.00	261		261
WB	212	1.00	212	8 1.00 8	
CLV TOTAL=					287
Level of Service (LOS)=					A

Evening Peak Hour					
Dir	Thru Volumes			+ Opposing Lefts	PM
	VOL	x LUF	= Total	VOL x LUF = Total	CLV
SB	42	1.00	42		42
EB	236	1.00	236		236
WB	163	1.00	163	18 1.00 18	
CLV TOTAL=					278
Level of Service (LOS)=					A

Critical Lane Volume Analysis



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Brookletts Ave &
Site Access
(Total Traffic)

**Intersection
7**

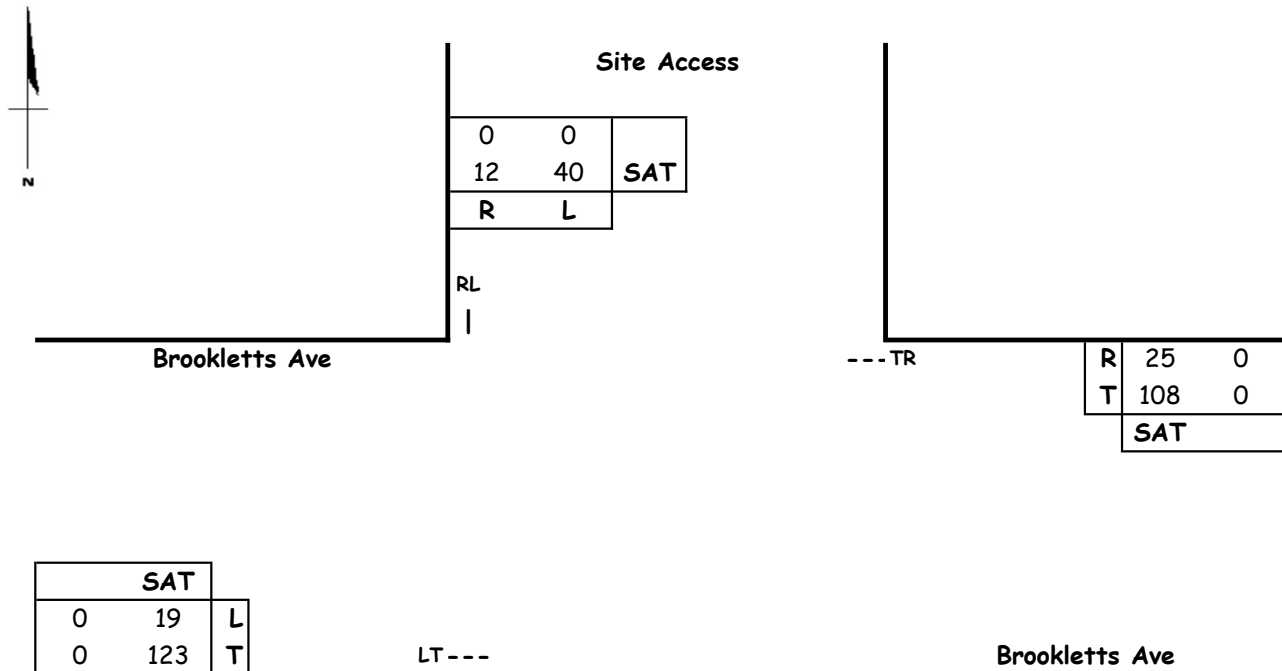
CRITICAL LANE VOLUME (CLV) METHODOLOGY

Choose your methodologies

Intersection of: Site Access
and: Brookletts Ave
Conditions: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Capacity Analysis

Sat. Midday Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
SB	52	1.00	52			
EB	142	1.00	142			
WB	133	1.00	133	19	1.00	19
CLV TOTAL=						204
Level of Service (LOS)=						A

Critical Lane Volume Analysis



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Site Access
(Total Traffic)

**Intersection
7-SAT**

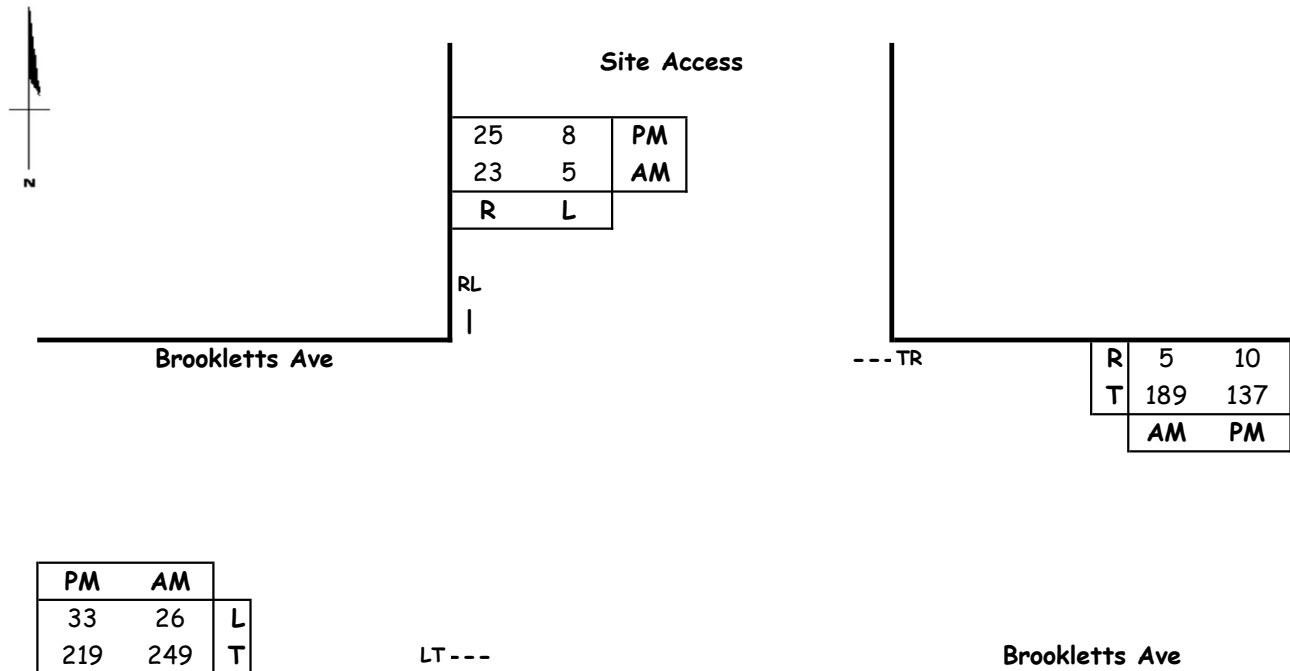
CRITICAL LANE VOLUME (CLV) METHODOLOGY

Choose your methodologies

Intersection of: Site Access
and: Brookletts Ave
Conditions: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Capacity Analysis

Morning Peak Hour							
Dir	Thru Volumes			+ Opposing Lefts			AM
	VOL	x LUF	= Total	VOL	x LUF	= Total	CLV
SB	28	1.00	28				28
EB	275	1.00	275				275
WB	194	1.00	194	26	1.00	26	
CLV TOTAL=							303
Level of Service (LOS) =							A

Evening Peak Hour							
Dir	Thru Volumes			+ Opposing Lefts			PM CLV
	VOL	x LUF	= Total	VOL	x LUF	= Total	
SB	33	1.00	33				33
EB	252	1.00	252				252
WB	147	1.00	147	33	1.00	33	252
CLV TOTAL=							285
Level of Service (LOS) =							A

Critical Lane Volume Analysis



Brookletts Ave &
Site Access
(Total Traffic)

Intersection
8

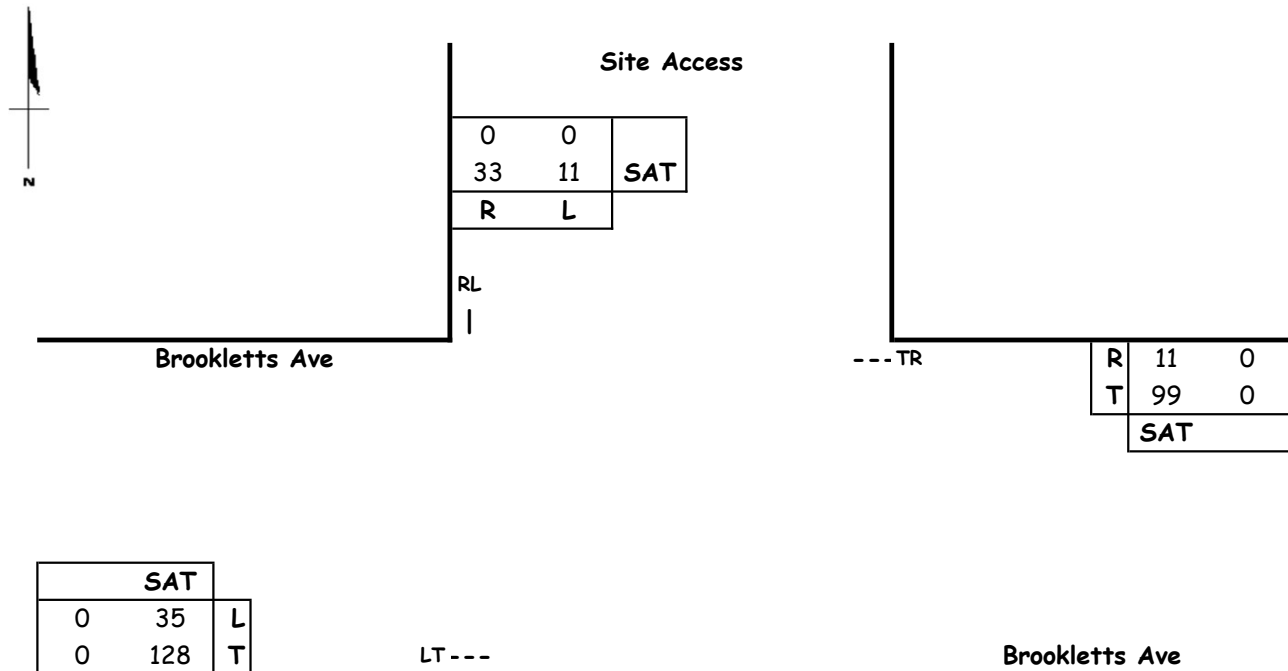
CRITICAL LANE VOLUME (CLV) METHODOLOGY

Choose your methodologies

Intersection of: Site Access
and: Brookletts Ave
Conditions: Total Traffic

Analyst: Lenhart Traffic Consulting

Lane Use + Traffic Volumes



Capacity Analysis

Sat. Midday Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
SB	44	1.00	44			
EB	163	1.00	163			
WB	110	1.00	110	35	1.00	35
CLV TOTAL=						207
Level of Service (LOS) =						A

Critical Lane Volume Analysis



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Brookletts Ave &
Site Access
(Total Traffic)

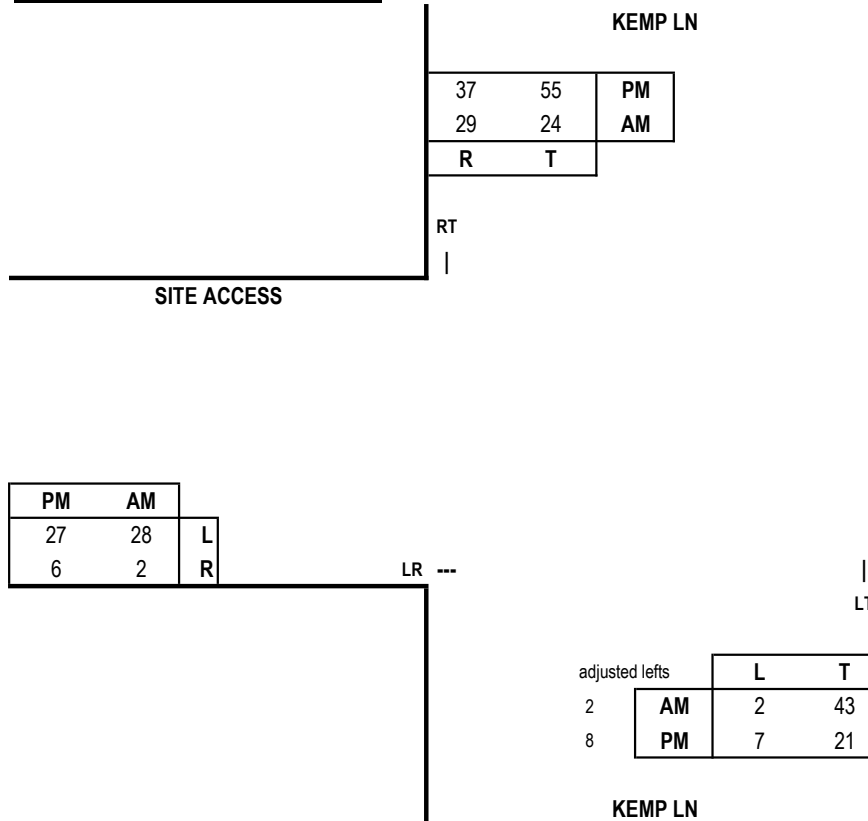
**Intersection
8-SAT**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

Intersection of: Site Access
and: Kemp Ln
Conditions: Total Traffic

Analyst: Lenhart Traffic

Lane Use + Traffic Volumes



Capacity Analysis

Morning Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
EB	30	1.00	30			
NB	45	1.00	45			
SB	53	1.00	53	2	1.00	2
CLV TOTAL=						85
Level of Service (LOS)=						A

Evening Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
EB	33	1.00	33			
NB	29	1.00	29			
SB	92	1.00	92	7	1.00	7
CLV TOTAL=						132
Level of Service (LOS)=						A

Critical Lane Volume Analysis



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Kemp Ln &
Site Access
(Total Traffic)

**Intersection
9**

CRITICAL LANE VOLUME (CLV) METHODOLOGY for MSHA

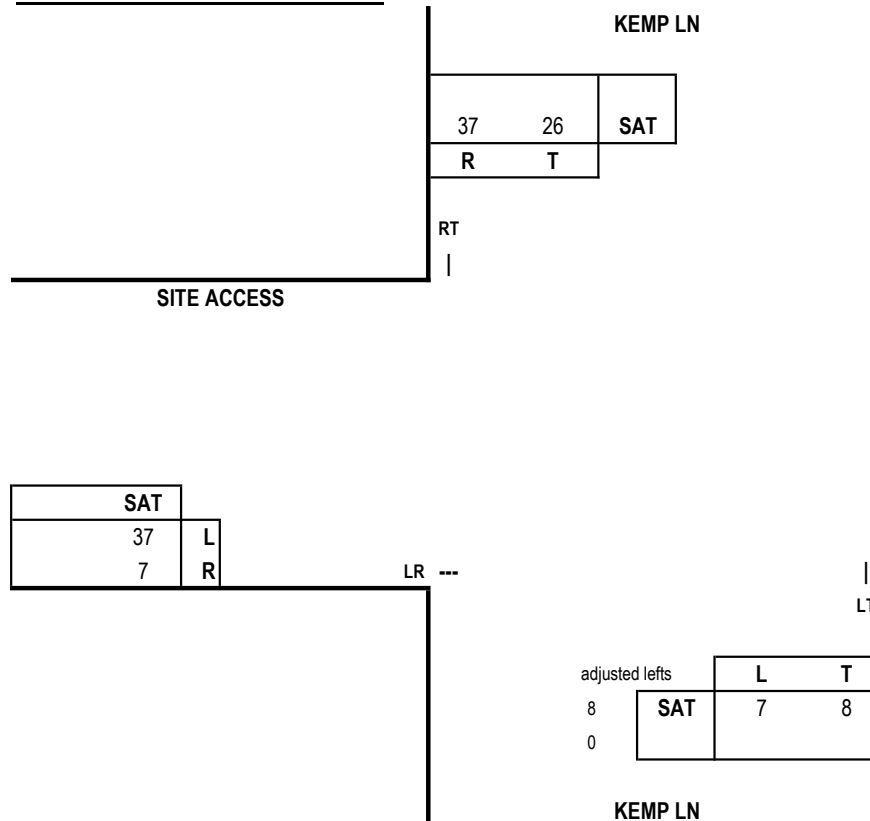
Intersection of: Site Access

and: Kemp Ln

Conditions: Total Traffic

Analyst: Lenhart Traffic

Lane Use + Traffic Volumes



Capacity Analysis

Sat. Midday Peak Hour						
Dir	Thru Volumes			+ Opposing Lefts		
	VOL	x LUF	= Total	VOL	x LUF	= Total
EB	44	1.00	44			
NB	16	1.00	16			
SB	63	1.00	63	7	1.00	7
CLV TOTAL=						114
Level of Service (LOS) =						A

Critical Lane Volume Analysis



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Kemp Ln &
Site Access
(Total Traffic)

Intersection
9-SAT

HCM Unsignalized Intersection Capacity Analysis

The Arc - Easton Crossing

1: S Higgins St/N Higgins St & E Dover St

AM Existing

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	278	10	14	480	5	0	0	0	1	1	2
Future Volume (Veh/h)	6	278	10	14	480	5	0	0	0	1	1	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	302	11	15	522	5	0	0	0	1	1	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	527			313			878	878	308	876	882	524
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	527			313			878	878	308	876	882	524
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	100	100	100	100	100
cM capacity (veh/h)	1040			1247			263	281	732	265	280	553
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total	320	542	4									
Volume Left	7	15	1									
Volume Right	11	5	2									
cSH	1040	1247	365									
Volume to Capacity	0.01	0.01	0.01									
Queue Length 95th (ft)	1	1	1									
Control Delay (s)	0.3	0.4	15.0									
Lane LOS	A	A	B									
Approach Delay (s)	0.3	0.4	15.0									
Approach LOS			B									
Intersection Summary												
Average Delay			0.4									
Intersection Capacity Utilization			42.7%	ICU Level of Service		A						
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

2: Kemp Ln & E Dover St/Dover Rd

The Arc - Easton Crossing
AM Existing

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	↱
Traffic Volume (veh/h)	275	5	13	490	20	22
Future Volume (Veh/h)	275	5	13	490	20	22
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	299	5	14	533	22	24
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			304		862	302
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			304		862	302
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		93	97
cM capacity (veh/h)			1257		322	738
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	304	547	46			
Volume Left	0	14	22			
Volume Right	5	0	24			
cSH	1700	1257	456			
Volume to Capacity	0.18	0.01	0.10			
Queue Length 95th (ft)	0	1	8			
Control Delay (s)	0.0	0.3	13.8			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.3	13.8			
Approach LOS			B			
Intersection Summary						
Average Delay			0.9			
Intersection Capacity Utilization			46.3%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: S Washington St & Brookletts Ave

The Arc - Easton Crossing
AM Existing

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	20	117	236	10	72	183
Future Volume (Veh/h)	20	117	236	10	72	183
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	22	127	257	11	78	199
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	618	262			268	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	618	262			268	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	95	84			94	
cM capacity (veh/h)	426	776			1296	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	149	268	277			
Volume Left	22	0	78			
Volume Right	127	11	0			
cSH	692	1700	1296			
Volume to Capacity	0.22	0.16	0.06			
Queue Length 95th (ft)	20	0	5			
Control Delay (s)	11.6	0.0	2.6			
Lane LOS	B		A			
Approach Delay (s)	11.6	0.0	2.6			
Approach LOS	B					
Intersection Summary						
Average Delay		3.5				
Intersection Capacity Utilization		45.0%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 4: S Higgins St & Brookletts Ave

The Arc - Easton Crossing
AM Existing

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	198	1	6	181	0	10	0	14	6	2	2
Future Volume (Veh/h)	0	198	1	6	181	0	10	0	14	6	2	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	215	1	7	197	0	11	0	15	7	2	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				None							
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	197			216			430	426	216	442	427	197
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	197			216			430	426	216	442	427	197
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			98	100	98	99	100	100
cM capacity (veh/h)	1376			1354			531	517	824	515	517	844
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	216	204	26	11								
Volume Left	0	7	11	7								
Volume Right	1	0	15	2								
cSH	1700	1354	668	554								
Volume to Capacity	0.13	0.01	0.04	0.02								
Queue Length 95th (ft)	0	0	3	2								
Control Delay (s)	0.0	0.3	10.6	11.6								
Lane LOS		A	B	B								
Approach Delay (s)	0.0	0.3	10.6	11.6								
Approach LOS			B	B								
Intersection Summary												
Average Delay												
Intersection Capacity Utilization												
Analysis Period (min)												
Average Delay												
Intersection Capacity Utilization												
Analysis Period (min)												

HCM Unsignalized Intersection Capacity Analysis

5: Tred Avon Ave & Brookletts Ave

The Arc - Easton Crossing
AM Existing

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	48	113	137	58	24	35
Future Volume (Veh/h)	48	113	137	58	24	35
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	52	123	149	63	26	38
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	406	45	64			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	406	45	64			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	88	90			
cM capacity (veh/h)	543	1025	1538			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	175	212	64			
Volume Left	52	149	0			
Volume Right	123	0	38			
cSH	811	1538	1700			
Volume to Capacity	0.22	0.10	0.04			
Queue Length 95th (ft)	20	8	0			
Control Delay (s)	10.7	5.6	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.7	5.6	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		6.7				
Intersection Capacity Utilization		33.6%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

1: S Higgins St/N Higgins St & E Dover St

The Arc - Easton Crossing
AM Background

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	296	12	15	509	5	0	0	0	1	1	2
Future Volume (Veh/h)	6	296	12	15	509	5	0	0	0	1	1	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	322	13	16	553	5	0	0	0	1	1	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	558			335			932	932	328	930	936	556
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	558			335			932	932	328	930	936	556
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			99			100	100	100	100	100	100
cM capacity (veh/h)	1013			1224			241	261	713	244	260	531
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total	342	574	4									
Volume Left	7	16	1									
Volume Right	13	5	2									
cSH	1013	1224	341									
Volume to Capacity	0.01	0.01	0.01									
Queue Length 95th (ft)	1	1	1									
Control Delay (s)	0.2	0.4	15.7									
Lane LOS	A	A	C									
Approach Delay (s)	0.2	0.4	15.7									
Approach LOS			C									
Intersection Summary												
Average Delay			0.4									
Intersection Capacity Utilization			44.9%	ICU Level of Service					A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

2: Kemp Ln & E Dover St/Dover Rd

The Arc - Easton Crossing
AM Background

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	↱
Traffic Volume (veh/h)	293	5	14	520	21	23
Future Volume (Veh/h)	293	5	14	520	21	23
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	318	5	15	565	23	25
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			323		916	320
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			323		916	320
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		92	97
cM capacity (veh/h)			1237		299	720
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	323	580	48			
Volume Left	0	15	23			
Volume Right	5	0	25			
cSH	1700	1237	430			
Volume to Capacity	0.19	0.01	0.11			
Queue Length 95th (ft)	0	1	9			
Control Delay (s)	0.0	0.3	14.4			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.3	14.4			
Approach LOS			B			
Intersection Summary						
Average Delay		0.9				
Intersection Capacity Utilization		48.6%	ICU Level of Service	A		
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

3: S Washington St & Brookletts Ave

The Arc - Easton Crossing
AM Background

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	21	126	250	11	77	196
Future Volume (Veh/h)	21	126	250	11	77	196
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	23	137	272	12	84	213
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	659	278			284	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	659	278			284	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	94	82			93	
cM capacity (veh/h)	400	761			1278	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	160	284	297			
Volume Left	23	0	84			
Volume Right	137	12	0			
cSH	674	1700	1278			
Volume to Capacity	0.24	0.17	0.07			
Queue Length 95th (ft)	23	0	5			
Control Delay (s)	12.0	0.0	2.7			
Lane LOS	B		A			
Approach Delay (s)	12.0	0.0	2.7			
Approach LOS	B					
Intersection Summary						
Average Delay		3.7				
Intersection Capacity Utilization		47.3%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 4: S Higgins St & Brookletts Ave

The Arc - Easton Crossing
AM Background

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	210	2	7	192	0	13	0	16	6	3	2
Future Volume (Veh/h)	0	210	2	7	192	0	13	0	16	6	3	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	228	2	8	209	0	14	0	17	7	3	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	209			230			458	454	229	471	455	209
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	209			230			458	454	229	471	455	209
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			97	100	98	99	99	100
cM capacity (veh/h)	1362			1338			508	499	810	490	498	831
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	230	217	31	12								
Volume Left	0	8	14	7								
Volume Right	2	0	17	2								
cSH	1700	1338	638	528								
Volume to Capacity	0.14	0.01	0.05	0.02								
Queue Length 95th (ft)	0	0	4	2								
Control Delay (s)	0.0	0.3	10.9	12.0								
Lane LOS		A	B	B								
Approach Delay (s)	0.0	0.3	10.9	12.0								
Approach LOS			B	B								
Intersection Summary												
Average Delay			1.1									
Intersection Capacity Utilization			25.8%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

5: Tred Avon Ave & Brookletts Ave

The Arc - Easton Crossing
AM Background

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	52	120	145	62	25	38
Future Volume (Veh/h)	52	120	145	62	25	38
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	57	130	158	67	27	41
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	430	48	68			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	430	48	68			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	87	90			
cM capacity (veh/h)	522	1022	1533			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	187	225	68			
Volume Left	57	158	0			
Volume Right	130	0	41			
cSH	791	1533	1700			
Volume to Capacity	0.24	0.10	0.04			
Queue Length 95th (ft)	23	9	0			
Control Delay (s)	11.0	5.6	0.0			
Lane LOS	B	A				
Approach Delay (s)	11.0	5.6	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		6.9				
Intersection Capacity Utilization		34.9%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

The Arc - Easton Crossing

1: S Higgins St & E Dover St

AM Total

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	296	33	22	509	5	0	0	0	1	1	2
Future Volume (Veh/h)	6	296	33	22	509	5	0	0	0	1	1	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	322	36	24	553	5	0	0	0	1	1	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	558			358			960	960	340	958	976	556
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	558			358			960	960	340	958	976	556
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			98			100	100	100	100	100	100
cM capacity (veh/h)	1013			1201			230	250	702	232	245	531
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total	365	582	4									
Volume Left	7	24	1									
Volume Right	36	5	2									
cSH	1013	1201	329									
Volume to Capacity	0.01	0.02	0.01									
Queue Length 95th (ft)	1	2	1									
Control Delay (s)	0.2	0.6	16.1									
Lane LOS	A	A	C									
Approach Delay (s)	0.2	0.6	16.1									
Approach LOS			C									
Intersection Summary												
Average Delay			0.5									
Intersection Capacity Utilization			48.9%	ICU Level of Service					A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis 2: Kemp Ln & Dover Rd

The Arc - Easton Crossing
AM Total

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	↱
Traffic Volume (veh/h)	293	5	48	527	21	49
Future Volume (Veh/h)	293	5	48	527	21	49
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	318	5	52	573	23	53
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			323		998	320
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			323		998	320
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			96		91	93
cM capacity (veh/h)			1237		259	720
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	323	625	76			
Volume Left	0	52	23			
Volume Right	5	0	53			
cSH	1700	1237	468			
Volume to Capacity	0.19	0.04	0.16			
Queue Length 95th (ft)	0	3	14			
Control Delay (s)	0.0	1.1	14.2			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.1	14.2			
Approach LOS			B			
Intersection Summary						
Average Delay		1.7				
Intersection Capacity Utilization		60.3%	ICU Level of Service		B	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

3: S Washington St & Brookletts Ave

The Arc - Easton Crossing
AM Total

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	38	137	250	26	77	196
Future Volume (Veh/h)	38	137	250	26	77	196
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	41	149	272	28	84	213
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	667	286			300	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	667	286			300	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	80			93	
cM capacity (veh/h)	396	753			1261	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	190	300	297			
Volume Left	41	0	84			
Volume Right	149	28	0			
cSH	630	1700	1261			
Volume to Capacity	0.30	0.18	0.07			
Queue Length 95th (ft)	32	0	5			
Control Delay (s)	13.2	0.0	2.7			
Lane LOS	B		A			
Approach Delay (s)	13.2	0.0	2.7			
Approach LOS	B					
Intersection Summary						
Average Delay			4.2			
Intersection Capacity Utilization			49.9%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 4: S Higgins St & Brookletts Ave

The Arc - Easton Crossing
AM Total

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	225	2	7	216	0	13	0	16	20	3	6
Future Volume (Veh/h)	0	225	2	7	216	0	13	0	16	20	3	6
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	245	2	8	235	0	14	0	17	22	3	7
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				None							
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	235			247			506	497	246	514	498	235
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	235			247			506	497	246	514	498	235
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			97	100	98	95	99	99
cM capacity (veh/h)	1332			1319			469	472	793	459	471	804
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	247	243	31	32								
Volume Left	0	8	14	22								
Volume Right	2	0	17	7								
cSH	1700	1319	604	508								
Volume to Capacity	0.15	0.01	0.05	0.06								
Queue Length 95th (ft)	0	0	4	5								
Control Delay (s)	0.0	0.3	11.3	12.6								
Lane LOS		A	B	B								
Approach Delay (s)	0.0	0.3	11.3	12.6								
Approach LOS			B	B								
Intersection Summary												
Average Delay												
Intersection Capacity Utilization												
Analysis Period (min)												

HCM Unsignalized Intersection Capacity Analysis

5: Tred Avon Ave & Brookletts Ave

The Arc - Easton Crossing
AM Total

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	69	125	149	62	25	38
Future Volume (Veh/h)	69	125	149	62	25	38
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	75	136	162	67	27	41
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	438	48	68			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	438	48	68			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	85	87	89			
cM capacity (veh/h)	515	1022	1533			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	211	229	68			
Volume Left	75	162	0			
Volume Right	136	0	41			
cSH	757	1533	1700			
Volume to Capacity	0.28	0.11	0.04			
Queue Length 95th (ft)	29	9	0			
Control Delay (s)	11.6	5.6	0.0			
Lane LOS	B	A				
Approach Delay (s)	11.6	5.6	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		7.4				
Intersection Capacity Utilization		36.4%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 6: S Higgins St & Site Access

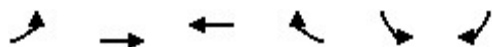
The Arc - Easton Crossing
AM Total

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	8	0	0	0	18	38
Future Volume (Veh/h)	8	0	0	0	18	38
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	0	0	0	20	41
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	81	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	81	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	99	100			99	
cM capacity (veh/h)	910	1085			1623	
Direction, Lane #	WB 1	SB 1				
Volume Total	9	61				
Volume Left	9	20				
Volume Right	0	0				
cSH	910	1623				
Volume to Capacity	0.01	0.01				
Queue Length 95th (ft)	1	1				
Control Delay (s)	9.0	2.4				
Lane LOS	A	A				
Approach Delay (s)	9.0	2.4				
Approach LOS	A					
Intersection Summary						
Average Delay			3.3			
Intersection Capacity Utilization			13.3%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

7: Brookletts Ave & Site Access

The Arc - Easton Crossing
AM Total



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↩	↩		↩	
Traffic Volume (veh/h)	8	253	202	10	21	5
Future Volume (Veh/h)	8	253	202	10	21	5
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	9	275	220	11	23	5
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	231				518	226
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	231				518	226
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				96	99
cM capacity (veh/h)	1337				514	814
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	284	231	28			
Volume Left	9	0	23			
Volume Right	0	11	5			
cSH	1337	1700	550			
Volume to Capacity	0.01	0.14	0.05			
Queue Length 95th (ft)	1	0	4			
Control Delay (s)	0.3	0.0	11.9			
Lane LOS	A		B			
Approach Delay (s)	0.3	0.0	11.9			
Approach LOS			B			
Intersection Summary						
Average Delay			0.8			
Intersection Capacity Utilization			29.8%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 8: Brookletts Ave & Site Access

The Arc - Easton Crossing
AM Total

						
Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	26	249	189	5	5	23
Future Volume (Veh/h)	26	249	189	5	5	23
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	28	271	205	5	5	25
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	210				534	208
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	210				534	208
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	98				99	97
cM capacity (veh/h)	1361				496	833
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	299	210	30			
Volume Left	28	0	5			
Volume Right	0	5	25			
cSH	1361	1700	748			
Volume to Capacity	0.02	0.12	0.04			
Queue Length 95th (ft)	2	0	3			
Control Delay (s)	0.9	0.0	10.0			
Lane LOS	A		B			
Approach Delay (s)	0.9	0.0	10.0			
Approach LOS			B			
Intersection Summary						
Average Delay			1.1			
Intersection Capacity Utilization			38.1%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 9: Kemp Ln & Site Access

The Arc - Easton Crossing
AM Total

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	28	2	2	43	24	29
Future Volume (Veh/h)	28	2	2	43	24	29
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	30	2	2	47	26	32
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	93	42	58			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	93	42	58			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	100	100			
cM capacity (veh/h)	906	1029	1546			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	32	49	58			
Volume Left	30	2	0			
Volume Right	2	0	32			
cSH	913	1546	1700			
Volume to Capacity	0.04	0.00	0.03			
Queue Length 95th (ft)	3	0	0			
Control Delay (s)	9.1	0.3	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.1	0.3	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		2.2				
Intersection Capacity Utilization		13.9%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

The Arc - Easton Crossing

1: S Higgins St/N Higgins St & E Dover St

PM Existing

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	529	20	32	417	17	0	0	0	3	1	2
Future Volume (Veh/h)	10	529	20	32	417	17	0	0	0	3	1	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	11	575	22	35	453	18	0	0	0	3	1	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	471			597			1142	1149	586	1140	1151	462
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	471			597			1142	1149	586	1140	1151	462
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			100	100	100	98	99	100
cM capacity (veh/h)	1091			980			170	189	510	172	189	600
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total	608	506	6									
Volume Left	11	35	3									
Volume Right	22	18	2									
cSH	1091	980	230									
Volume to Capacity	0.01	0.04	0.03									
Queue Length 95th (ft)	1	3	2									
Control Delay (s)	0.3	1.0	21.1									
Lane LOS	A	A	C									
Approach Delay (s)	0.3	1.0	21.1									
Approach LOS			C									
Intersection Summary												
Average Delay			0.7									
Intersection Capacity Utilization			50.6%	ICU Level of Service						A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

2: Kemp Ln & E Dover St/Dover Rd

The Arc - Easton Crossing
PM Existing

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	483	34	12	424	14	12
Future Volume (Veh/h)	483	34	12	424	14	12
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	525	37	13	461	15	13
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			562	1030		544
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			562	1030		544
tC, single (s)			4.1	6.4		6.2
tC, 2 stage (s)						
tF (s)			2.2	3.5		3.3
p0 queue free %			99	94		98
cM capacity (veh/h)			1009	255		539
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	562	474	28			
Volume Left	0	13	15			
Volume Right	37	0	13			
cSH	1700	1009	338			
Volume to Capacity	0.33	0.01	0.08			
Queue Length 95th (ft)	0	1	7			
Control Delay (s)	0.0	0.4	16.6			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.4	16.6			
Approach LOS			C			
Intersection Summary						
Average Delay			0.6			
Intersection Capacity Utilization			42.0%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: S Washington St & Brookletts Ave

The Arc - Easton Crossing
PM Existing

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	11	82	207	12	109	273
Future Volume (Veh/h)	11	82	207	12	109	273
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	89	225	13	118	297
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	764	232			238	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	764	232			238	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	89			91	
cM capacity (veh/h)	339	808			1329	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	101	238	415			
Volume Left	12	0	118			
Volume Right	89	13	0			
cSH	694	1700	1329			
Volume to Capacity	0.15	0.14	0.09			
Queue Length 95th (ft)	13	0	7			
Control Delay (s)	11.1	0.0	2.9			
Lane LOS	B		A			
Approach Delay (s)	11.1	0.0	2.9			
Approach LOS	B					
Intersection Summary						
Average Delay		3.1				
Intersection Capacity Utilization		47.7%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 4: S Higgins St & Brookletts Ave

The Arc - Easton Crossing
PM Existing

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	167	0	7	162	0	1	0	6	15	5	8
Future Volume (Veh/h)	0	167	0	7	162	0	1	0	6	15	5	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	182	0	8	176	0	1	0	7	16	5	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	176			182			386	374	182	381	374	176
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	176			182			386	374	182	381	374	176
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			100	100	99	97	99	99
cM capacity (veh/h)	1400			1393			561	553	861	570	553	867
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	182	184	8	30								
Volume Left	0	8	1	16								
Volume Right	0	0	7	9								
cSH	1700	1393	807	632								
Volume to Capacity	0.11	0.01	0.01	0.05								
Queue Length 95th (ft)	0	0	1	4								
Control Delay (s)	0.0	0.4	9.5	11.0								
Lane LOS		A	A	B								
Approach Delay (s)	0.0	0.4	9.5	11.0								
Approach LOS			A	B								
Intersection Summary												
Average Delay			1.2									
Intersection Capacity Utilization			25.3%		ICU Level of Service			A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis 5: Tred Avon Ave & Brookletts Ave

The Arc - Easton Crossing
PM Existing

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	59	133	90	28	40	28
Future Volume (Veh/h)	59	133	90	28	40	28
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	64	145	98	30	43	30
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	284	58	73			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	284	58	73			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	90	86	94			
cM capacity (veh/h)	661	1008	1527			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	209	128	73			
Volume Left	64	98	0			
Volume Right	145	0	30			
cSH	868	1527	1700			
Volume to Capacity	0.24	0.06	0.04			
Queue Length 95th (ft)	24	5	0			
Control Delay (s)	10.5	5.9	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.5	5.9	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		7.2				
Intersection Capacity Utilization		31.2%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

The Arc - Easton Crossing

1: S Higgins St/N Higgins St & E Dover St

PM Background

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	562	22	34	444	18	0	0	0	3	1	2
Future Volume (Veh/h)	11	562	22	34	444	18	0	0	0	3	1	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	611	24	37	483	20	0	0	0	3	1	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	503			635			1216	1224	623	1214	1226	493
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	503			635			1216	1224	623	1214	1226	493
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			96			100	100	100	98	99	100
cM capacity (veh/h)	1061			948			151	170	486	152	170	576
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total	647	540	6									
Volume Left	12	37	3									
Volume Right	24	20	2									
cSH	1061	948	206									
Volume to Capacity	0.01	0.04	0.03									
Queue Length 95th (ft)	1	3	2									
Control Delay (s)	0.3	1.1	23.0									
Lane LOS	A	A	C									
Approach Delay (s)	0.3	1.1	23.0									
Approach LOS			C									
Intersection Summary												
Average Delay			0.8									
Intersection Capacity Utilization			53.0%	ICU Level of Service						A		
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

2: Kemp Ln & E Dover St/Dover Rd

The Arc - Easton Crossing
PM Background

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	514	36	13	451	15	13
Future Volume (Veh/h)	514	36	13	451	15	13
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	559	39	14	490	16	14
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			598			1096
vC1, stage 1 conf vol						578
vC2, stage 2 conf vol						
vCu, unblocked vol			598			1096
tC, single (s)			4.1			6.4
tC, 2 stage (s)						6.2
tF (s)			2.2			3.5
p0 queue free %			99			93
cM capacity (veh/h)			979			233
						515
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	598	504	30			
Volume Left	0	14	16			
Volume Right	39	0	14			
cSH	1700	979	313			
Volume to Capacity	0.35	0.01	0.10			
Queue Length 95th (ft)	0	1	8			
Control Delay (s)	0.0	0.4	17.7			
Lane LOS		A	C			
Approach Delay (s)	0.0	0.4	17.7			
Approach LOS			C			
Intersection Summary						
Average Delay			0.7			
Intersection Capacity Utilization			44.2%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

3: S Washington St & Brookletts Ave

The Arc - Easton Crossing
PM Background

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	12	89	222	13	117	291
Future Volume (Veh/h)	12	89	222	13	117	291
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	13	97	241	14	127	316
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	818	248			255	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	818	248			255	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	96	88			90	
cM capacity (veh/h)	312	791			1310	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	110	255	443			
Volume Left	13	0	127			
Volume Right	97	14	0			
cSH	669	1700	1310			
Volume to Capacity	0.16	0.15	0.10			
Queue Length 95th (ft)	15	0	8			
Control Delay (s)	11.4	0.0	3.0			
Lane LOS	B		A			
Approach Delay (s)	11.4	0.0	3.0			
Approach LOS	B					
Intersection Summary						
Average Delay			3.2			
Intersection Capacity Utilization			50.4%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 4: S Higgins St & Brookletts Ave

The Arc - Easton Crossing
PM Background

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	177	1	8	172	0	3	0	7	16	6	8
Future Volume (Veh/h)	0	177	1	8	172	0	3	0	7	16	6	8
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	192	1	9	187	0	3	0	8	17	7	9
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	187			193			410	398	192	406	398	187
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	187			193			410	398	192	406	398	187
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			99	100	99	97	99	99
cM capacity (veh/h)	1387			1380			538	537	849	548	536	855
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	193	196	11	33								
Volume Left	0	9	3	17								
Volume Right	1	0	8	9								
cSH	1700	1380	733	604								
Volume to Capacity	0.11	0.01	0.01	0.05								
Queue Length 95th (ft)	0	0	1	4								
Control Delay (s)	0.0	0.4	10.0	11.3								
Lane LOS		A	A	B								
Approach Delay (s)	0.0	0.4	10.0	11.3								
Approach LOS			A	B								
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			25.6%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

5: Tred Avon Ave & Brookletts Ave

The Arc - Easton Crossing
PM Background

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	64	141	96	30	42	31
Future Volume (Veh/h)	64	141	96	30	42	31
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	70	153	104	33	46	34
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	304	63	80			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	304	63	80			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	85	93			
cM capacity (veh/h)	641	1002	1518			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	223	137	80			
Volume Left	70	104	0			
Volume Right	153	0	34			
cSH	851	1518	1700			
Volume to Capacity	0.26	0.07	0.05			
Queue Length 95th (ft)	26	6	0			
Control Delay (s)	10.7	5.9	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.7	5.9	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		7.3				
Intersection Capacity Utilization		32.4%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

1: S Higgins St & E Dover St

The Arc - Easton Crossing
PM Total

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	562	48	47	444	18	0	0	0	3	1	2
Future Volume (Veh/h)	11	562	48	47	444	18	0	0	0	3	1	2
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	12	611	52	51	483	20	0	0	0	3	1	2
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	503			663			1258	1266	637	1256	1282	493
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	503			663			1258	1266	637	1256	1282	493
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			94			100	100	100	98	99	100
cM capacity (veh/h)	1061			926			139	158	477	141	154	576
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total	675	554	6									
Volume Left	12	51	3									
Volume Right	52	20	2									
cSH	1061	926	192									
Volume to Capacity	0.01	0.06	0.03									
Queue Length 95th (ft)	1	4	2									
Control Delay (s)	0.3	1.5	24.4									
Lane LOS	A	A	C									
Approach Delay (s)	0.3	1.5	24.4									
Approach LOS	C											
Intersection Summary												
Average Delay	1.0											
Intersection Capacity Utilization	60.9%			ICU Level of Service					B			
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

2: Kemp Ln & Dover Rd

The Arc - Easton Crossing
PM Total

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↱	↘↗	
Traffic Volume (veh/h)	514	36	56	464	15	34
Future Volume (Veh/h)	514	36	56	464	15	34
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	559	39	61	504	16	37
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			598		1204	578
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			598		1204	578
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		92	93
cM capacity (veh/h)			979		191	515
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	598	565	53			
Volume Left	0	61	16			
Volume Right	39	0	37			
cSH	1700	979	340			
Volume to Capacity	0.35	0.06	0.16			
Queue Length 95th (ft)	0	5	14			
Control Delay (s)	0.0	1.7	17.5			
Lane LOS		A	C			
Approach Delay (s)	0.0	1.7	17.5			
Approach LOS			C			
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			70.1%	ICU Level of Service	C	
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 3: S Washington St & Brookletts Ave

The Arc - Easton Crossing
PM Total

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	29	100	222	34	117	291
Future Volume (Veh/h)	29	100	222	34	117	291
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	32	109	241	37	127	316
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	830	260			278	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	830	260			278	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	90	86			90	
cM capacity (veh/h)	307	779			1285	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	141	278	443			
Volume Left	32	0	127			
Volume Right	109	37	0			
cSH	577	1700	1285			
Volume to Capacity	0.24	0.16	0.10			
Queue Length 95th (ft)	24	0	8			
Control Delay (s)	13.2	0.0	3.0			
Lane LOS	B		A			
Approach Delay (s)	13.2	0.0	3.0			
Approach LOS	B					
Intersection Summary						
Average Delay			3.7			
Intersection Capacity Utilization			53.3%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 4: S Higgins St & Brookletts Ave

The Arc - Easton Crossing
PM Total

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	199	1	8	195	0	3	0	7	30	6	13
Future Volume (Veh/h)	0	199	1	8	195	0	3	0	7	30	6	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	216	1	9	212	0	3	0	8	33	7	14
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				None							
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	212			217			464	446	216	454	447	212
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	212			217			464	446	216	454	447	212
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			99			99	100	99	94	99	98
cM capacity (veh/h)	1358			1353			492	503	823	508	503	828
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	217	221	11	54								
Volume Left	0	9	3	33								
Volume Right	1	0	8	14								
cSH	1700	1353	696	564								
Volume to Capacity	0.13	0.01	0.02	0.10								
Queue Length 95th (ft)	0	1	1	8								
Control Delay (s)	0.0	0.4	10.3	12.1								
Lane LOS		A	B	B								
Approach Delay (s)	0.0	0.4	10.3	12.1								
Approach LOS			B	B								
Intersection Summary												
Average Delay												
1.7												
Intersection Capacity Utilization												
28.7%												
ICU Level of Service												
A												
Analysis Period (min)												
15												

HCM Unsignalized Intersection Capacity Analysis

5: Tred Avon Ave & Brookletts Ave

The Arc - Easton Crossing
PM Total

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	88	145	103	30	42	31
Future Volume (Veh/h)	88	145	103	30	42	31
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	96	158	112	33	46	34
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	320	63	80			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	320	63	80			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	85	84	93			
cM capacity (veh/h)	624	1002	1518			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	254	145	80			
Volume Left	96	112	0			
Volume Right	158	0	34			
cSH	815	1518	1700			
Volume to Capacity	0.31	0.07	0.05			
Queue Length 95th (ft)	33	6	0			
Control Delay (s)	11.4	6.0	0.0			
Lane LOS	B	A				
Approach Delay (s)	11.4	6.0	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		7.9				
Intersection Capacity Utilization		34.4%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 6: S Higgins St & Site Access

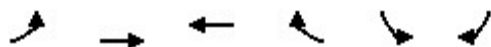
The Arc - Easton Crossing
PM Total

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	17	0	0	0	39	57
Future Volume (Veh/h)	17	0	0	0	39	57
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	0	0	0	42	62
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	146	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	146	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	98	100			97	
cM capacity (veh/h)	824	1085			1623	
Direction, Lane #	WB 1	SB 1				
Volume Total	18	104				
Volume Left	18	42				
Volume Right	0	0				
cSH	824	1623				
Volume to Capacity	0.02	0.03				
Queue Length 95th (ft)	2	2				
Control Delay (s)	9.5	3.1				
Lane LOS	A	A				
Approach Delay (s)	9.5	3.1				
Approach LOS	A					
Intersection Summary						
Average Delay			4.0			
Intersection Capacity Utilization			15.2%		ICU Level of Service	A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

7: Brookletts Ave & Site Access

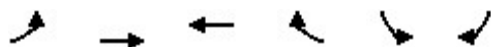
The Arc - Easton Crossing
PM Total



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	18	218	139	24	32	10
Future Volume (Veh/h)	18	218	139	24	32	10
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	20	237	151	26	35	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	177				441	164
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	177				441	164
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				94	99
cM capacity (veh/h)	1399				565	881
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	257	177	46			
Volume Left	20	0	35			
Volume Right	0	26	11			
cSH	1399	1700	618			
Volume to Capacity	0.01	0.10	0.07			
Queue Length 95th (ft)	1	0	6			
Control Delay (s)	0.7	0.0	11.3			
Lane LOS	A		B			
Approach Delay (s)	0.7	0.0	11.3			
Approach LOS			B			
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			34.6%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 8: Brookletts Ave & Site Access

The Arc - Easton Crossing
PM Total



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↰		↰	
Traffic Volume (veh/h)	33	219	137	10	8	25
Future Volume (Veh/h)	33	219	137	10	8	25
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	36	238	149	11	9	27
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	160				464	154
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	160				464	154
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				98	97
cM capacity (veh/h)	1419				542	891
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	274	160	36			
Volume Left	36	0	9			
Volume Right	0	11	27			
cSH	1419	1700	768			
Volume to Capacity	0.03	0.09	0.05			
Queue Length 95th (ft)	2	0	4			
Control Delay (s)	1.2	0.0	9.9			
Lane LOS	A		A			
Approach Delay (s)	1.2	0.0	9.9			
Approach LOS			A			
Intersection Summary						
Average Delay			1.5			
Intersection Capacity Utilization			34.5%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 9: Kemp Ln & Site Access

The Arc - Easton Crossing
PM Total

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	27	6	7	21	55	37
Future Volume (Veh/h)	27	6	7	21	55	37
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	29	7	8	23	60	40
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	119	80	100			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	119	80	100			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	99	99			
cM capacity (veh/h)	872	980	1493			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	36	31	100			
Volume Left	29	8	0			
Volume Right	7	0	40			
cSH	891	1493	1700			
Volume to Capacity	0.04	0.01	0.06			
Queue Length 95th (ft)	3	0	0			
Control Delay (s)	9.2	1.9	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.2	1.9	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		2.3				
Intersection Capacity Utilization		17.2%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

The Arc - Easton Crossing

1: S Higgins St/N Higgins St & E Dover St

Sat Existing

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	416	13	27	411	5	0	0	0	4	0	3
Future Volume (Veh/h)	6	416	13	27	411	5	0	0	0	4	0	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	452	14	29	447	5	0	0	0	4	0	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	452			466			984	983	459	980	988	450
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	452			466			984	983	459	980	988	450
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			100	100	100	98	100	100
cM capacity (veh/h)	1109			1095			221	241	602	223	239	610
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total	473	481	7									
Volume Left	7	29	4									
Volume Right	14	5	3									
cSH	1109	1095	306									
Volume to Capacity	0.01	0.03	0.02									
Queue Length 95th (ft)	0	2	2									
Control Delay (s)	0.2	0.8	17.0									
Lane LOS	A	A	C									
Approach Delay (s)	0.2	0.8	17.0									
Approach LOS			C									
Intersection Summary												
Average Delay			0.6									
Intersection Capacity Utilization			47.9%	ICU Level of Service		A						
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

2: Kemp Ln & E Dover St/Dover Rd

The Arc - Easton Crossing
Sat Existing

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↰			↱	↰	↱
Traffic Volume (veh/h)	442	8	9	440	5	9
Future Volume (Veh/h)	442	8	9	440	5	9
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	480	9	10	478	5	10
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			489		982	484
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			489		982	484
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	98
cM capacity (veh/h)			1074		273	582
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	489	488	15			
Volume Left	0	10	5			
Volume Right	9	0	10			
cSH	1700	1074	423			
Volume to Capacity	0.29	0.01	0.04			
Queue Length 95th (ft)	0	1	3			
Control Delay (s)	0.0	0.3	13.8			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.3	13.8			
Approach LOS			B			
Intersection Summary						
Average Delay		0.3				
Intersection Capacity Utilization		40.4%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 3: S Washington St & Brookletts Ave

The Arc - Easton Crossing
Sat Existing

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	13	79	181	6	55	180
Future Volume (Veh/h)	13	79	181	6	55	180
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	14	86	197	7	60	196
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	516	200			204	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	516	200			204	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	90			96	
cM capacity (veh/h)	496	840			1368	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	100	204	256			
Volume Left	14	0	60			
Volume Right	86	7	0			
cSH	766	1700	1368			
Volume to Capacity	0.13	0.12	0.04			
Queue Length 95th (ft)	11	0	3			
Control Delay (s)	10.4	0.0	2.1			
Lane LOS	B		A			
Approach Delay (s)	10.4	0.0	2.1			
Approach LOS	B					
Intersection Summary						
Average Delay			2.8			
Intersection Capacity Utilization			38.0%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 4: S Higgins St & Brookletts Ave

The Arc - Easton Crossing
Sat Existing

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	82	3	4	96	0	2	0	6	7	3	7
Future Volume (Veh/h)	0	82	3	4	96	0	2	0	6	7	3	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	89	3	4	104	0	2	0	7	8	3	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	104			92			212	202	90	210	204	104
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	104			92			212	202	90	210	204	104
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	99	99	100	99
cM capacity (veh/h)	1488			1503			735	692	967	741	691	951
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	92	108	9	19								
Volume Left	0	4	2	8								
Volume Right	3	0	7	8								
cSH	1700	1503	904	807								
Volume to Capacity	0.05	0.00	0.01	0.02								
Queue Length 95th (ft)	0	0	1	2								
Control Delay (s)	0.0	0.3	9.0	9.6								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	0.3	9.0	9.6								
Approach LOS			A	A								
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			18.3%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

5: Tred Avon Ave & Brookletts Ave

The Arc - Easton Crossing
Sat Existing

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	40	50	64	25	5	17
Future Volume (Veh/h)	40	50	64	25	5	17
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	54	70	27	5	18
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	181	14	23			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	181	14	23			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	95	96			
cM capacity (veh/h)	773	1066	1592			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	97	97	23			
Volume Left	43	70	0			
Volume Right	54	0	18			
cSH	913	1592	1700			
Volume to Capacity	0.11	0.04	0.01			
Queue Length 95th (ft)	9	3	0			
Control Delay (s)	9.4	5.4	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.4	5.4	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		6.6				
Intersection Capacity Utilization		23.5%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

The Arc - Easton Crossing

1: S Higgins St/N Higgins St & E Dover St

Sat Background

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	442	16	29	437	5	0	0	0	4	0	3
Future Volume (Veh/h)	6	442	16	29	437	5	0	0	0	4	0	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	480	17	32	475	5	0	0	0	4	0	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	480			497			1047	1046	488	1044	1052	478
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	480			497			1047	1046	488	1044	1052	478
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			97			100	100	100	98	100	99
cM capacity (veh/h)	1082			1067			199	220	579	201	218	588
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total	504	512	7									
Volume Left	7	32	4									
Volume Right	17	5	3									
cSH	1082	1067	280									
Volume to Capacity	0.01	0.03	0.02									
Queue Length 95th (ft)	0	2	2									
Control Delay (s)	0.2	0.9	18.2									
Lane LOS	A	A	C									
Approach Delay (s)	0.2	0.9	18.2									
Approach LOS			C									
Intersection Summary												
Average Delay			0.7									
Intersection Capacity Utilization			50.8%	ICU Level of Service		A						
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

2: Kemp Ln & E Dover St/Dover Rd

The Arc - Easton Crossing
Sat Background

	→	↘	↙	←	↖	↗
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↱			↱	↘	
Traffic Volume (veh/h)	470	8	10	468	5	10
Future Volume (Veh/h)	470	8	10	468	5	10
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	511	9	11	509	5	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			520		1046	516
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			520		1046	516
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			99		98	98
cM capacity (veh/h)			1046		250	559
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	520	520	16			
Volume Left	0	11	5			
Volume Right	9	0	11			
cSH	1700	1046	404			
Volume to Capacity	0.31	0.01	0.04			
Queue Length 95th (ft)	0	1	3			
Control Delay (s)	0.0	0.3	14.3			
Lane LOS		A	B			
Approach Delay (s)	0.0	0.3	14.3			
Approach LOS			B			
Intersection Summary						
Average Delay		0.4				
Intersection Capacity Utilization		42.7%	ICU Level of Service	A		
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

3: S Washington St & Brookletts Ave

The Arc - Easton Crossing
Sat Background

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	14	87	193	6	60	192
Future Volume (Veh/h)	14	87	193	6	60	192
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	15	95	210	7	65	209
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	552	214			217	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	552	214			217	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	89			95	
cM capacity (veh/h)	471	827			1353	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	110	217	274			
Volume Left	15	0	65			
Volume Right	95	7	0			
cSH	749	1700	1353			
Volume to Capacity	0.15	0.13	0.05			
Queue Length 95th (ft)	13	0	4			
Control Delay (s)	10.6	0.0	2.2			
Lane LOS	B		A			
Approach Delay (s)	10.6	0.0	2.2			
Approach LOS	B					
Intersection Summary						
Average Delay		2.9				
Intersection Capacity Utilization		40.1%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 4: S Higgins St & Brookletts Ave

The Arc - Easton Crossing
Sat Background

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	87	5	6	102	0	5	0	8	7	5	7
Future Volume (Veh/h)	0	87	5	6	102	0	5	0	8	7	5	7
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	95	5	7	111	0	5	0	9	8	5	8
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None				None							
Median storage veh												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	111			100			233	222	98	232	225	111
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	111			100			233	222	98	232	225	111
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	99	99	99	99
cM capacity (veh/h)	1479			1493			709	673	959	714	671	942
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	100	118	14	21								
Volume Left	0	7	5	8								
Volume Right	5	0	9	8								
cSH	1700	1493	852	774								
Volume to Capacity	0.06	0.00	0.02	0.03								
Queue Length 95th (ft)	0	0	1	2								
Control Delay (s)	0.0	0.5	9.3	9.8								
Lane LOS		A	A	A								
Approach Delay (s)	0.0	0.5	9.3	9.8								
Approach LOS			A	A								
Intersection Summary												
Average Delay			1.5									
Intersection Capacity Utilization			20.3%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

5: Tred Avon Ave & Brookletts Ave

The Arc - Easton Crossing
Sat Background

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	44	53	68	27	5	20
Future Volume (Veh/h)	44	53	68	27	5	20
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	48	58	74	29	5	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	193	16	27			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	193	16	27			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	95	95			
cM capacity (veh/h)	759	1063	1587			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	106	103	27			
Volume Left	48	74	0			
Volume Right	58	0	22			
cSH	900	1587	1700			
Volume to Capacity	0.12	0.05	0.02			
Queue Length 95th (ft)	10	4	0			
Control Delay (s)	9.5	5.4	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.5	5.4	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay		6.6				
Intersection Capacity Utilization		24.2%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

The Arc - Easton Crossing

1: S Higgins St & E Dover St

Sat Total

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	6	442	48	45	437	5	0	0	0	4	0	3
Future Volume (Veh/h)	6	442	48	45	437	5	0	0	0	4	0	3
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	7	480	52	49	475	5	0	0	0	4	0	3
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	480			532			1098	1098	506	1096	1122	478
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	480			532			1098	1098	506	1096	1122	478
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	99			95			100	100	100	98	100	99
cM capacity (veh/h)	1082			1036			181	201	566	183	195	588
Direction, Lane #	EB 1	WB 1	SB 1									
Volume Total	539	529	7									
Volume Left	7	49	4									
Volume Right	52	5	3									
cSH	1082	1036	260									
Volume to Capacity	0.01	0.05	0.03									
Queue Length 95th (ft)	0	4	2									
Control Delay (s)	0.2	1.3	19.2									
Lane LOS	A	A	C									
Approach Delay (s)	0.2	1.3	19.2									
Approach LOS			C									
Intersection Summary												
Average Delay			0.9									
Intersection Capacity Utilization			61.5%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

2: Kemp Ln & Dover Rd

The Arc - Easton Crossing
Sat Total

						
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	470	8	55	484	5	41
Future Volume (Veh/h)	470	8	55	484	5	41
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	511	9	60	526	5	45
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			None		
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			520		1162	516
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			520		1162	516
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			94		98	92
cM capacity (veh/h)			1046		203	559
Direction, Lane #	EB 1	WB 1	NB 1			
Volume Total	520	586	50			
Volume Left	0	60	5			
Volume Right	9	0	45			
cSH	1700	1046	476			
Volume to Capacity	0.31	0.06	0.11			
Queue Length 95th (ft)	0	5	9			
Control Delay (s)	0.0	1.5	13.4			
Lane LOS		A	B			
Approach Delay (s)	0.0	1.5	13.4			
Approach LOS			B			
Intersection Summary						
Average Delay		1.4				
Intersection Capacity Utilization		67.1%	ICU Level of Service	C		
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

3: S Washington St & Brookletts Ave

The Arc - Easton Crossing
Sat Total

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	38	102	193	30	60	192
Future Volume (Veh/h)	38	102	193	30	60	192
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	41	111	210	33	65	209
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	566	226			243	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	566	226			243	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	91	86			95	
cM capacity (veh/h)	462	813			1323	
Direction, Lane #	WB 1	NB 1	SB 1			
Volume Total	152	243	274			
Volume Left	41	0	65			
Volume Right	111	33	0			
cSH	675	1700	1323			
Volume to Capacity	0.23	0.14	0.05			
Queue Length 95th (ft)	22	0	4			
Control Delay (s)	11.9	0.0	2.2			
Lane LOS	B		A			
Approach Delay (s)	11.9	0.0	2.2			
Approach LOS	B					
Intersection Summary						
Average Delay		3.6				
Intersection Capacity Utilization		43.8%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis

4: S Higgins St & Brookletts Ave

The Arc - Easton Crossing

Sat Total

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	111	5	6	135	0	5	0	8	23	5	13
Future Volume (Veh/h)	0	111	5	6	135	0	5	0	8	23	5	13
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	0	121	5	7	147	0	5	0	9	25	5	14
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	147			126			301	284	124	294	287	147
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	147			126			301	284	124	294	287	147
tC, single (s)	4.1			4.1			7.1	6.5	6.2	7.1	6.5	6.2
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			99	100	99	96	99	98
cM capacity (veh/h)	1435			1460			635	622	927	650	620	900
Direction, Lane #	EB 1	WB 1	NB 1	SB 1								
Volume Total	126	154	14	44								
Volume Left	0	7	5	25								
Volume Right	5	0	9	14								
cSH	1700	1460	796	709								
Volume to Capacity	0.07	0.00	0.02	0.06								
Queue Length 95th (ft)	0	0	1	5								
Control Delay (s)	0.0	0.4	9.6	10.4								
Lane LOS		A	A	B								
Approach Delay (s)	0.0	0.4	9.6	10.4								
Approach LOS			A	B								
Intersection Summary												
Average Delay			1.9									
Intersection Capacity Utilization			22.2%	ICU Level of Service					A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

5: Tred Avon Ave & Brookletts Ave

The Arc - Easton Crossing
Sat Total

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	74	60	75	27	5	20
Future Volume (Veh/h)	74	60	75	27	5	20
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	80	65	82	29	5	22
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	209	16	27			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	209	16	27			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	94	95			
cM capacity (veh/h)	739	1063	1587			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	145	111	27			
Volume Left	80	82	0			
Volume Right	65	0	22			
cSH	856	1587	1700			
Volume to Capacity	0.17	0.05	0.02			
Queue Length 95th (ft)	15	4	0			
Control Delay (s)	10.1	5.6	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.1	5.6	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		7.3				
Intersection Capacity Utilization		26.7%		ICU Level of Service		A
Analysis Period (min)		15				

HCM Unsignalized Intersection Capacity Analysis 6: S Higgins St & Site Access

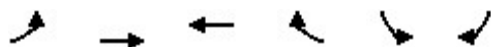
The Arc - Easton Crossing
Sat Total

						
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	19	0	0	0	45	47
Future Volume (Veh/h)	19	0	0	0	45	47
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	21	0	0	0	49	51
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	149	0			0	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	149	0			0	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	97	100			97	
cM capacity (veh/h)	818	1085			1623	
Direction, Lane #	WB 1	SB 1				
Volume Total	21	100				
Volume Left	21	49				
Volume Right	0	0				
cSH	818	1623				
Volume to Capacity	0.03	0.03				
Queue Length 95th (ft)	2	2				
Control Delay (s)	9.5	3.7				
Lane LOS	A	A				
Approach Delay (s)	9.5	3.7				
Approach LOS	A					
Intersection Summary						
Average Delay			4.7			
Intersection Capacity Utilization			15.0%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis

7: Brookletts Ave & Site Access

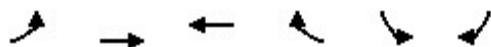
The Arc - Easton Crossing
Sat Total



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↰	↰		↰	
Traffic Volume (veh/h)	19	123	108	25	40	12
Future Volume (Veh/h)	19	123	108	25	40	12
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	21	134	117	27	43	13
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	144				306	130
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	144				306	130
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	99				94	99
cM capacity (veh/h)	1438				676	919
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	155	144	56			
Volume Left	21	0	43			
Volume Right	0	27	13			
cSH	1438	1700	720			
Volume to Capacity	0.01	0.08	0.08			
Queue Length 95th (ft)	1	0	6			
Control Delay (s)	1.1	0.0	10.4			
Lane LOS	A		B			
Approach Delay (s)	1.1	0.0	10.4			
Approach LOS			B			
Intersection Summary						
Average Delay			2.1			
Intersection Capacity Utilization			28.1%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 8: Brookletts Ave & Site Access

The Arc - Easton Crossing
Sat Total



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations		↩	↩		↩	↩
Traffic Volume (veh/h)	35	128	99	11	11	33
Future Volume (Veh/h)	35	128	99	11	11	33
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	38	139	108	12	12	36
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	120				329	114
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	120				329	114
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				98	96
cM capacity (veh/h)	1468				648	939
Direction, Lane #	EB 1	WB 1	SB 1			
Volume Total	177	120	48			
Volume Left	38	0	12			
Volume Right	0	12	36			
cSH	1468	1700	844			
Volume to Capacity	0.03	0.07	0.06			
Queue Length 95th (ft)	2	0	5			
Control Delay (s)	1.8	0.0	9.5			
Lane LOS	A		A			
Approach Delay (s)	1.8	0.0	9.5			
Approach LOS			A			
Intersection Summary						
Average Delay			2.2			
Intersection Capacity Utilization			25.3%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Unsignalized Intersection Capacity Analysis 9: Kemp Ln & Site Access

The Arc - Easton Crossing
Sat Total

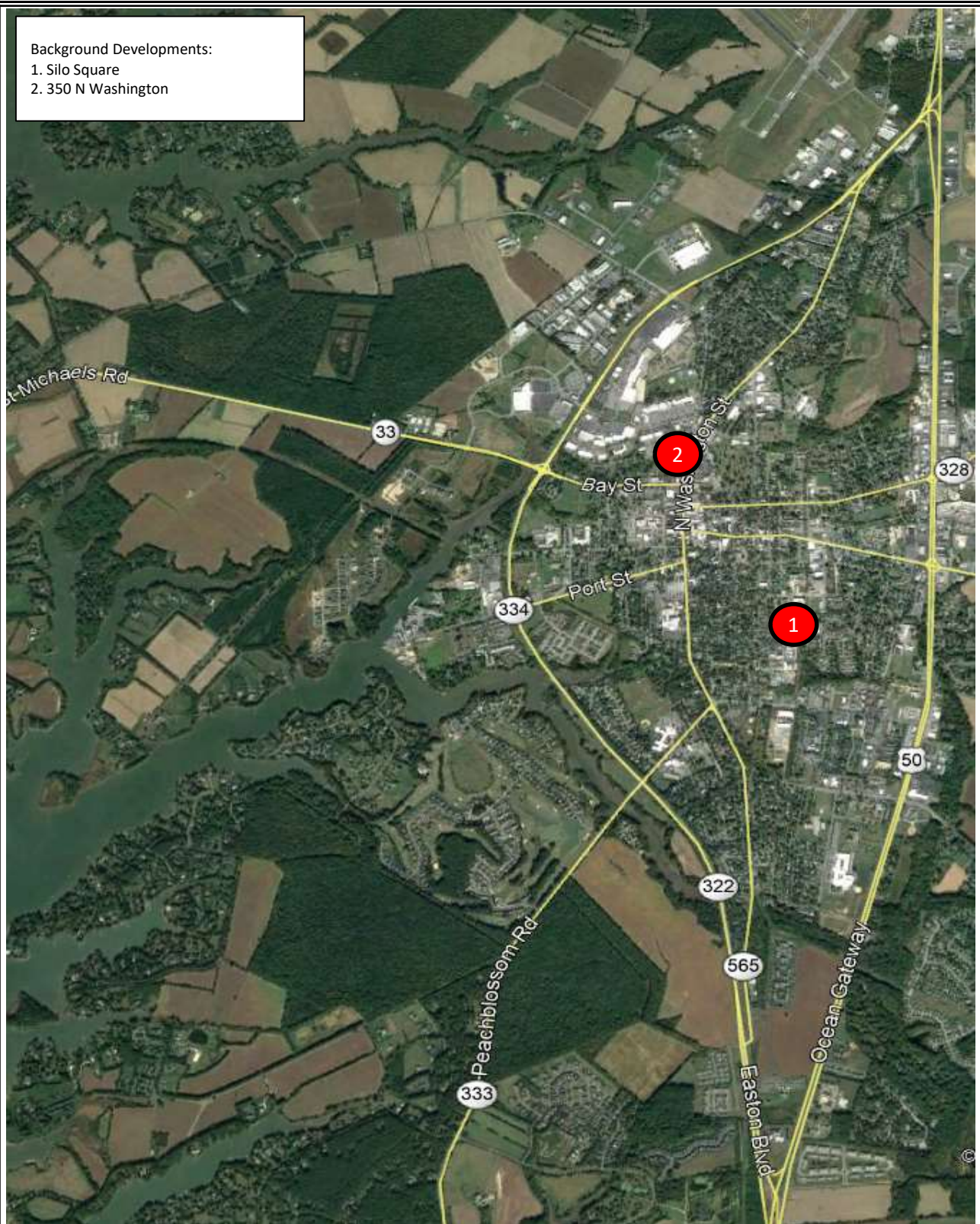
						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	37	7	7	8	26	37
Future Volume (Veh/h)	37	7	7	8	26	37
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	40	8	8	9	28	40
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	73	48	68			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	73	48	68			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	99	99			
cM capacity (veh/h)	926	1021	1533			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	48	17	68			
Volume Left	40	8	0			
Volume Right	8	0	40			
cSH	941	1533	1700			
Volume to Capacity	0.05	0.01	0.04			
Queue Length 95th (ft)	4	0	0			
Control Delay (s)	9.0	3.5	0.0			
Lane LOS	A	A				
Approach Delay (s)	9.0	3.5	0.0			
Approach LOS	A					
Intersection Summary						
Average Delay			3.7			
Intersection Capacity Utilization		16.7%		ICU Level of Service		A
Analysis Period (min)		15				

Appendix C

Background Developments

Background Developments:

1. Silo Square
2. 350 N Washington



Traffic Impact Analysis



LENHART TRAFFIC CONSULTING, INC.
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Location of
Background Devs.

**Exhibit
C1**

Trip Generation for Background Developments

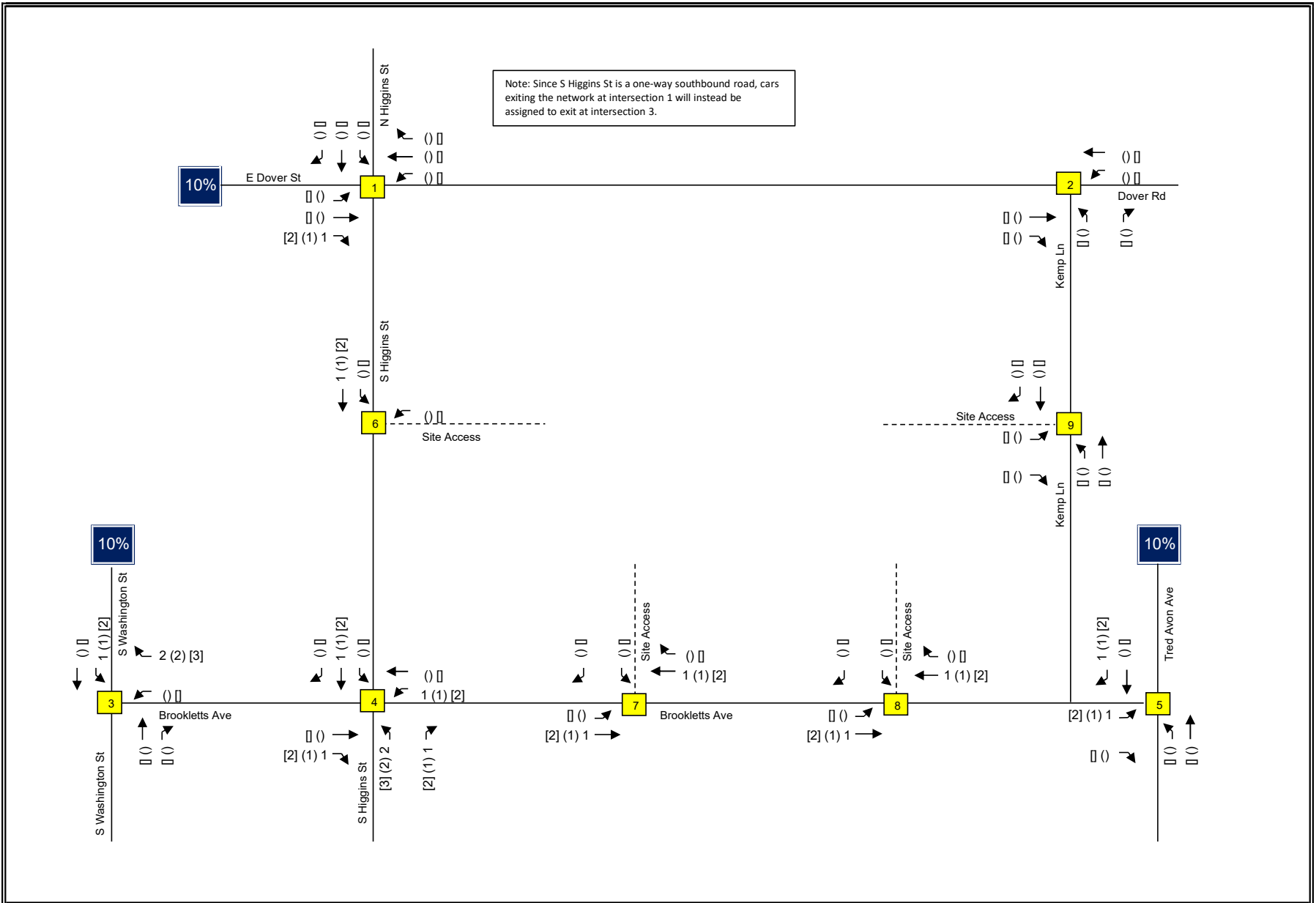
			AM Peak			PM Peak			Sat Mid-day Peak		
			In	Out	Total	In	Out	Total	In	Out	Total
1. Silo Square	Single-Family Attached Housing (ITE-215, Units)	28 units	3	6	9	7	6	13	12	12	24
2. 350 N Washington	Multifamily Housing, Low-Rise (ITE-220, Units)	16 units	1	5	6	5	3	8	3	4	7
Total Primary Trips for All Background Developments:			4	11	15	12	9	21	15	16	31

Traffic Impact Analysis

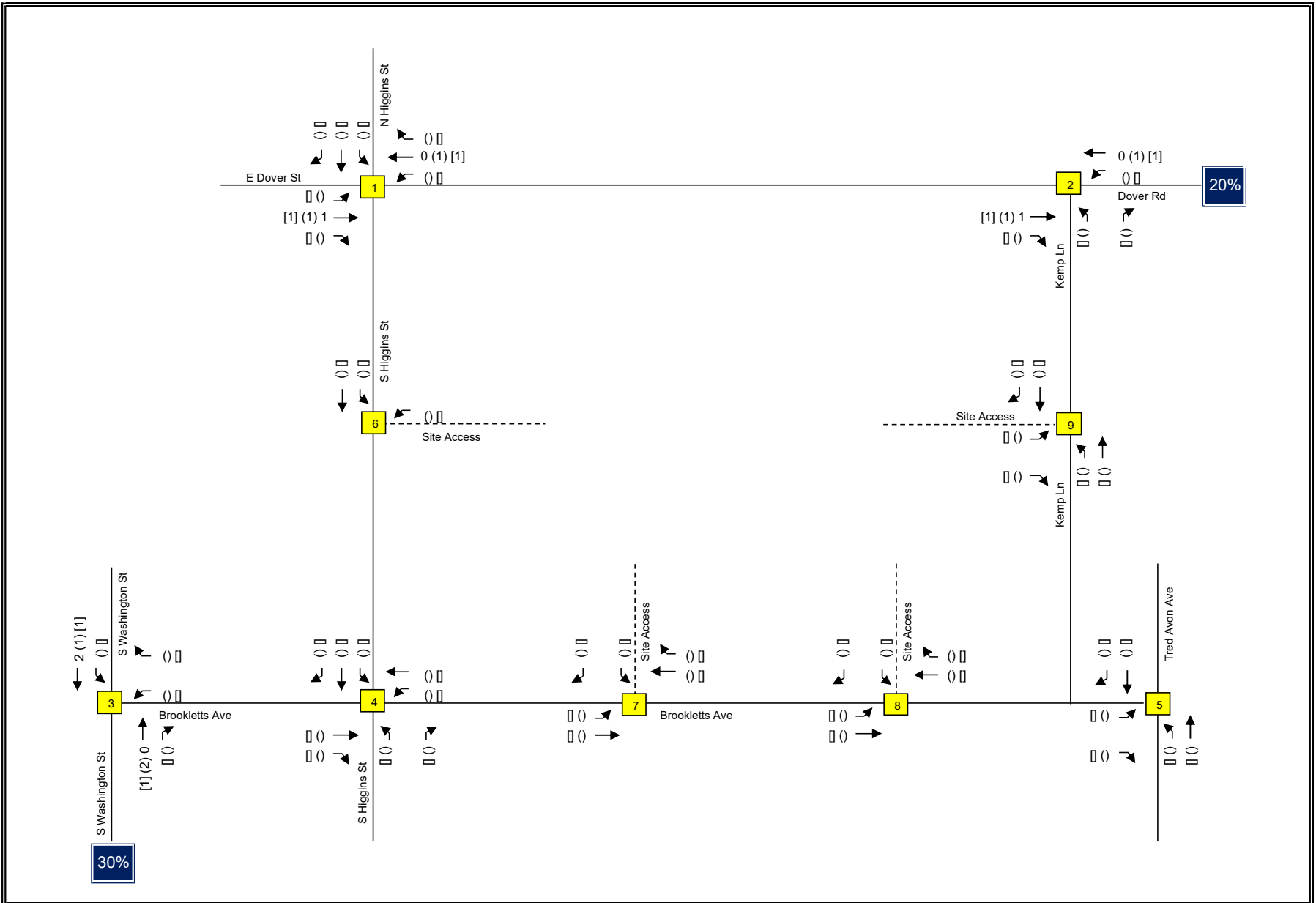
 **LENHART TRAFFIC CONSULTING, INC.**
645 BALTIMORE ANNAPOLIS BLVD, SUITE 214
SEVERNA PARK, MD 21146
www.lenharttraffic.com

Trip Generation for
Background Developments

**Exhibit
C2**



Traffic Impact Analysis LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com	Trip Assignment for Silo Square Key: xx = AM Peak Vol's (xx) = PM Peak Vol's [xx] = Sat. Mid-day Peak Vol's	Exhibit C3
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Traffic Impact Analysis	Trip Assignment for 350 N Washington		Exhibit C4
 LENHART TRAFFIC CONSULTING, INC. 645 BALTIMORE ANNAPOLIS BLVD, SUITE 214 SEVERNA PARK, MD 21146 www.lenharttraffic.com	Key: xx = AM Peak Vol's (xx) = PM Peak Vol's [xx] = Sat. Mid-day Peak Vol's		



STORMWATER MANAGEMENT ANALYSIS
FOR
EASTON CROSSING
PREPARED FOR
CHESAPEAKE NEIGHBORS, LLC

PREPARED BY
RAUCH, INC
106 N. HARRISON STREET
EASTON, MD 21601

26th of November 2024



PROFESSIONAL CERTIFICATION

I HEREBY CERTIFY THAT THESE PLANS WERE PREPARED OR APPROVED BY ME, AND THAT I AM A DULY LICENCED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MARYLAND.

ROBERT D. RAUCH, LICENCE NO. 11024
EXPIRATION DATE 7/24/2026

11/26/2024
DATE

Stormwater Management Narrative



STORMWATER MANAGEMENT ANALYSIS – NARRATIVE

EXISTING CONDITIONS

The project site under analysis is located in the town of Easton, Maryland, in Talbot County. It is bordered by Brookletts Avenue, South Street, South Higgins Street, and Kemp Lane, and is bisected by the Easton Rails-to-Trails.

The site's existing conditions vary between its two sections. The western portion includes ten silos, truck scales, and two buildings, while the eastern portion contains twenty-seven silos and two buildings. The soil composition is predominantly poorly drained HSG C, with the western section situated on better-draining HSG B soil.

Water drainage patterns differ between the two portions. The western section drains via a combination of sheet flow and shallow concentrated flow, eventually reaching South Higgins Street. There, the water enters the street gutter as channeled flow and continues to Study Point 1, a curb inlet on South Higgins Street. The eastern section drains southward along the Easton Rails-to-Trails, flowing toward Brookletts Avenue and ultimately reaching Study Point 2, another curb inlet.

PROPOSED CONDITIONS

Easton Crossing involves the construction of 10 mixed used buildings, a center meadow with a gazebo, 220 parking spaces (including ADA-compliant spaces), driving aisles, four Bioretention areas, and stormwater management facilities.

The proposed impervious will be treated for quality management by four Bioretention areas and a submerged gravel wetland with a forebay. The ponding in the bioretention areas, forebay and submerged gravel wetland will also be used as quantity management.

Proposed conditions during the 2-, 10-, and 100-year storm events have been analyzed and show postconstruction peak flows are less than preconstruction peak flows at the Study Point.

The maps included with this report detail all drainage areas with times of concentration.

WATER QUALITY – ESDv/WQv

The summary of the calculations is shown below:

SITE REQUIRED ESDv (SEE ATTACHMENTS FOR SPECIFIC CALCULATIONS):

ESDv REQUIRED: 10,050 CF

DRAINAGE AREA	TYPE OF ESD PRACTICE	NAME OF ESD PRACTICE (STRUCTURE NAME)	ON-SITE OR OFF-SITE STRUCTURE	RUNOFF CURVE NURVE (RCN) WEIGHTED	MARYLAND GRID COORDINATE NAD 83 NORTHING	MARYLAND GRID COORDINATE NAD 83 EASTING	ESD PRACTICE TOTAL DRAINAGE AREA (ACRES)	ESD PRACTICE IMPERVIOUS DRAINAGE AREA (ACRES)	SURFACE AREA OF ESD PRACTICE (ACRES)	TARGET PE (IN.)	ACTUAL PE (IN.)	TARGET ESDv (FT. ³)	ACTUAL ESDv (FT. ³)
1	MBR-1	BIORETENTION 1	ON-SITE	95	404001.0280'	1577860.4733'	0.458	0.421	0.006	1.23	0.49	1796	716
2	MBR-2	BIORETENTION 2	ON-SITE	91	403787.4477'	1577724.3978'	0.442	0.363	0.003	1.23	0.31	1556	391
3	MBR-3	BIORETENTION 3	ON-SITE	87	403580.5404'	1577730.4142'	0.427	0.297	0.006	1.23	0.66	1296	700
4	MBR-4	BIORETENTION 4	ON-SITE	93	403583.8545'	1577794.9402'	0.445	0.380	0.005	1.23	0.31	2455	618
5	SGW-1	SUBMERGED GRAVEL WETLAND	ON-SITE	87	403682.2326'	1577610.0030'	4.904	3.547	0.112	1.23	0.37	5402	9330
TOTAL/AVERAGE							6.676	5.008	0.131	6.15	2.14	10050	11755

STORMWATER QUALITY NOTES:

The above quality stormwater management practices meet the Environmental Site Design Volume required for the site.

WATER QUANTITY

Volume control is provided within the submerged gravel wetland, bioretention areas, and by managing/maintaining existing times of concentrations within existing and reshaped drainage areas.

The eastern portion of the site drains entirely into a forebay via a series of yard and curb inlets. From there, the flow moves to the submerged gravel wetland. The western portion of the site includes four micro-bioretention areas, which also discharge into the submerged gravel wetland. Finally, the flow is directed into the town's storm pipe system, ultimately reaching the study point on South Higgins Street.

Below is a summary of the proposed peak runoffs flows from the 2, 10, and 100-year storms compared to existing peak runoff flows from the same events.

STUDY POINT	STORM EVENT	2-YEAR (cfs)	10-YEAR (cfs)	100-YEAR (cfs)
STUDY POINT 1	EXISTING	11.19	19.35	35.59
	PROPOSED	9.95	18.7	33.72
CHANGE	CHANGE	-1.24	-0.65	-1.87
STUDY POINT 2	EXISTING	3.21	5.1	8.89
	PROPOSED	0.49	0.85	1.57
CHANGE	CHANGE	-2.72	-4.25	-7.32

NATURAL AREA PRESERVATION

The stormwater management facilities for this project have been designed to preserve natural areas such as existing treelines as best as possible.

CONCLUSION

This report shows that all requirements of the MDE stormwater design manual have been met for this site and natural areas have been preserved in meeting these guidelines.

ESD Calculations

VERSION		4.2															
Maryland ESD Calculations and 10% Phosphorus Removal										Last Update:		1/6/2019		Rauch Inc.			
Project Name:		Easton Crossing															
Date:		26-Nov-24															
		data input cells															
		calculation cells															
Step 1: Complete ESD Implementation Checklist																	
Check all of the Following ESD Practices That Were Implemented at Site																	
Environmental Mapping Was Conducted at Site Prior to Layout																	
Natural Areas Were Conserved (e.g., forests, wetlands, steep slopes, floodplains)																	
Stream, Wetland and Shoreline Buffers Were Reserved																	
Disturbance of Permeable Soils Was Minimized																	
Natural Flow Paths Were Maintained Across the Site																	
Building Layout Was Fingerprinted to Reduce Clearing and Grading at Site																	
Site Grading Promoted Sheetflow From Impervious Areas to Pervious Ones																	
Site Design Was Evaluated to Reduce Creation of Needless Impervious Cover																	
Site Design Was Evaluated to Maximize Disconnection of Impervious Cover																	
Site Design Was Evaluated to Identify Potential Hotspot Generating Area for Stormwater Treatment																	
Erosion and Sediment Control Practices and Post Construction Stormwater Management Practices Were Integrated into a Comprehensive Plan																	
Tree Planting Was Used at the Site to Convert Turf Areas into Forest																	
Step 2: Calculate Site Imperviousness and Water Quality Volume, WQv (for redevelopment)																	
New development/redevelopment category is based on the the TOTAL SITE AREA whereas the ESD and WQ volume are based on the LOD AREA. The term "SITE" is defined as A single tract, lot, parcel of land or combination of tracts, lots parcels of land that are in one ownership or are contiguous and in diverse ownership where development is to be performed as part of a unit, subdivision or project. See page 5.117 in the design handbook. This means that a project may be classed as redevelopment even if the LOD is less than 40% impervious																	
Total SITE Area, A (acres or sq-ft)		314968															
Existing SITE Impervious Area (acres or sq-ft)		216569															
SITE percent impervious		69%															
Development Category (for ESD)		Redevelopment															
LOD Area, A (acres)		7.23															
Existing LOD Impervious Surface Area (acres)		4.97															
Proposed LOD Impervious Surface Area (acres)		5.14															
Rainfall Depth, P (in)		1.0															
Existing LOD Imperviousness, I_{imp}		69%															
Proposed LOD Imperviousness, $I_{imp,pro}$		71%															
Water Quality Calculation for Redevelopment Only																	
Required Treatment Area (acres)		2.486															
Runoff Coefficient, R_v		0.95															
Water Quality Volume, WQv (cf)		8,573															
Step 3: Calculate Phosphorous Removal Requirement, RR for Critical Area Sites																	
Development Category (for 10%)		Redevelopment															
New Development																	
Average Annual Predevelopment Load, L_{pre} (lbs P / yr)		3.62															
Redevelopment:																	
Predevelopment Runoff Coefficient, $R_{v,pre}$		0.67															
Phosphorous Mean Concentration, C (mg/L)		0.3															
Average Annual Predevelopment Load, L_{pre} (lbs P / yr)		11.84															
Post-Development Runoff Coefficient, $R_{v,post}$		0.69															
Average Annual Post-Development Load, L_{post} (lbs P / yr)		12.21															
Removal Requirement, RR (lbs P / yr)		1.55															
Step 4: Calculate Environmental Site Design (ESD) Rainfall Target, P_E																	
% Soil Type A		0%															
% Soil Type B		94%															
% Soil Type C		6%															
% Soil Type D		0%															
Target Pre-Developed Condition, RCN_{predev}		55.87861															
Post-Developed Condition, RCN		87.65															
Soil Type A ESD Rainfall Target, P_E (in)		0.00															
Soil Type B ESD Rainfall Target, P_E (in)		2.60															
Soil Type C ESD Rainfall Target, P_E (in)		2.20															
Soil Type D ESD Rainfall Target, P_E (in)		0.00															
Maximum P_E (in)		2.7															
Site ESD Rainfall Target, P_E (in)		2.58															
ESD Runoff Depth, Q_E (in)		2.45															
ESD Runoff Volume, ESD_v (cf)		1,477															
Site Rainfall Target, P_E (in)		1.23															
Total Treatment Volume (cf)		10,050															

Step 6: Select Micro-Scale Practices to Treat the ESD Rainfall Target											
<i>Micro-Scale Practices</i>	P _e Credit Description	Contributing Drainage Area (sf)	Direct ESDv Received by Practice (cf)	WQv or ESDv from Up- Gradient Practices (cf)	WQv or ESDv credit (cf)	Runoff Volume Remaining (cf)					
Submerged Gravel Wetlands	ESDv credit is based on design storage volume	230,241	33,828	53763	9,330	78,261					
Micro-Bioretenention 1	ESDv credit is based on design storage volume	87,202	15,592	15592	2,425	13,166					

Step 7: Check for ESDv to MEP compliance and Revise Site If Necessary									
	Drainage Area Treated (sf)	317,443		WQv or ESDv Treated (cf) using ESD practices	11,756				
				P _r achieved (inches)	1.44				
				Entire ESDv Treated Through ESD Practices?	YES				
				ESDv Remaining? (cf)	0				
				If ESDV is not fully treated, is ESD to MEP achieved?	NO				
				Redevelopment WQv Requirements Met Through ESD Practices?	YES				
				WQv Remaining? (cf)	0				
<i>New Development Water Quality Volume Requirements</i>									
	Required Treatment Area (acres)	0.17							
	Runoff Coefficient, Rv	0.95							
	Water Quality Volume, WQv (cf)	0		New Development WQv Requirements Met Through ESD Practices?	N/A				
				WQv Remaining? (cf)	0				

Entire ESDv Treated Through Environmental Site Design?

YES

Total
Treatment
Volume:
Volume
Treated:

10,050
11,756

VOID RATI

0.4

M-2

M-2	Direct drainage				Indirect drainage																
	Contributing Drainage Area (sf)	% Impervious Cover ----- RV	To fully treat sub area ----- PE required ----- WQV required	Max available WQV or ESDv from CDA (cf)	Area of upstream catchment (sf)	WQV or ESDv from Up- Gradient Practices (cf)	Total catchment area ----- Total ESDv to practice	Practice Specific Parameter(s)				WQV or ESDv provided (cf)	Runoff Volume Remainin g (cf)	Down-Gradient Practice and Row	SOIL TYPE	Baseline Phosphor ous Removal Efficiency	Adjusted Removal Rate	P Load to Practice (lbs/yr)	Load Reduction (lbs/yr)	Remainin g Load (lbs/yr)	
Micro-Scale Practices								Bed Surface Area (sf)	Top of Ponding Surface Area (sf)	Ponding Depth (ft)	Media Depth (ft)			Submerged Gravel Wetlands							
Forebay	230,241	67%	1.23				317,443	3,662	4,869	1.5		6,398	40,596	2	C/D	60%	41.24%	11.74	4.84	6.90	
		0.653	15411	33,828	87202	13166	46995														
Submerged Gravel Wetlands			1.00				317,443	Bed Surface Area (sf)	Top of Ponding Surface Area (sf)	Ponding Depth (ft)	Media Depth (ft)										
		0.05	0	0	317443	40596	40596	804	1,392	1.5	4	2,932	37,664		C/D	60%	29.35%	10.14	2.98	7.16	
Total	230,241			33,828		53,763						9,330	78,261			59%	35.73%	21.88	7.82	14.06	

Entire ESDv Treated Through Environn YES

Total Treatment
Volume: 10,050
Volume Treated: 11,756

VOID RATI

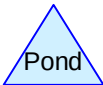
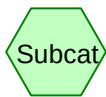
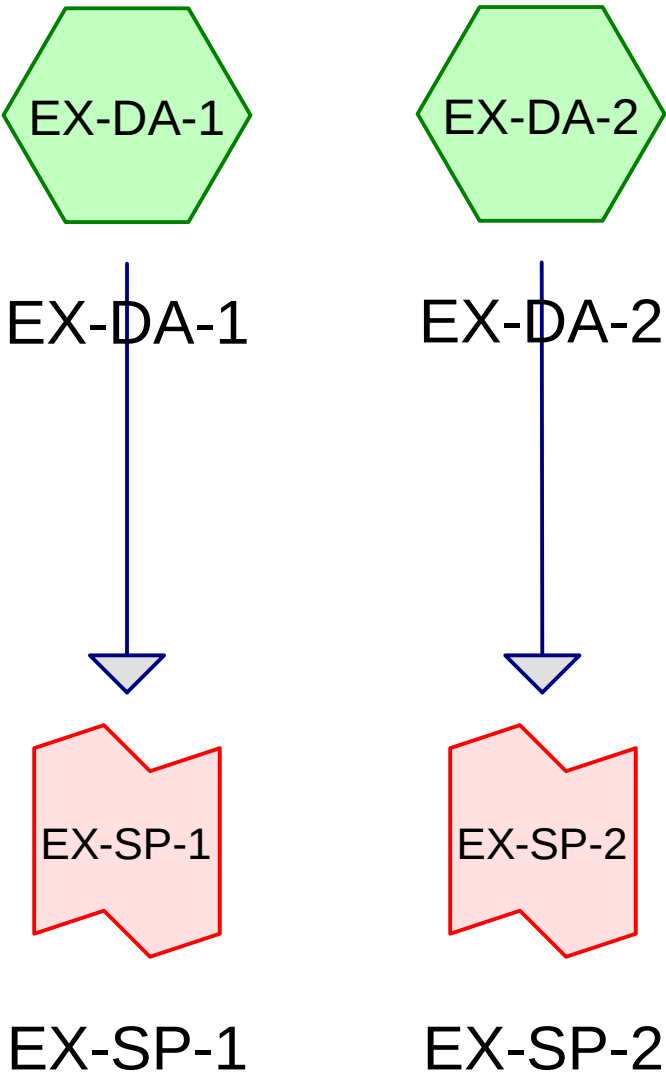
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M-6

	Direct drainage				Indirect drainage			Practice Specific Parameter(s)				Bed area % of direct catchment area	WQV or ESDv provided (cf)	Runoff Volume Remaining (cf)	Down-Gradient Practice and Row	SOIL TYPE	Baseline Phosphorous Removal Efficiency	Adjusted Removal Rate	P Load to Practice (lbs/yr)	Load Reduction (lbs/yr)	Remaining Load (lbs/yr)
	Contributing Drainage Area (sf)	% Impervious Cover ----- RV	To fully treat sub area ----- PE required ----- WQV required	Max available WQV or ESDv from CDA (cf)	Area of upstream catchment (sf)	WQV or ESDv from Up-Gradient Practices (cf)	Total catchment area ----- Total ESDv to practice														
Micro-Scale Practices								Bed Surface Area (sf)	Top of Ponding Surface Area (sf)	Ponding Depth (ft)	Media Depth (ft)										
Micro-Bioretenention 1	19,960	92% 0.878	1.23 1796	3,943	0	0	19,960 3943	265	709	1	2.17	1.3%	716	3,227	Submerged Gravel Wetlands 1	A/B	75%	58.30%	0.98	0.57	0.41
Micro-Bioretenention 2	19,263	82% 0.788	1.23 1556	3,415	0	0	19,263 3415	122	352	1	3.15	0.6%	391	3,024	Submerged Gravel Wetlands 1	A/B	75%	47.49%	0.85	0.41	0.45
Micro-Bioretenention 3	18,594	70% 0.68	1.23 1296	2,845	0	0	18,594 2845	249	669	1	2.43	1.3%	700	2,144	Submerged Gravel Wetlands 1	A/B	75%	65.43%	0.71	0.46	0.25
Micro-Bioretenention 4	29,385	85% 0.815	1.23 2455	5,388	0	0	29,385 5388	212	578	1	2.62	0.7%	618	4,771	Submerged Gravel Wetlands 1	A/B	75%	47.51%	1.35	0.64	0.71
Total	87,202			15,592		0							2,425	13,166			73%	53.51%	3.89	2.08	1.81

Analysis of Existing Conditions

EXISTING



Routing Diagram for Arc - Easton Crossing - Existing vs Proposed
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Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 2-Year Rainfall=3.33"

Prepared by Rauch Inc

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Page 2

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EX-DA-1: EX-DA-1

Runoff Area=213,631 sf 56.44% Impervious Runoff Depth=2.29"
Flow Length=1,205' Tc=13.0 min CN=90 Runoff=11.19 cfs 0.936 af

Subcatchment EX-DA-2: EX-DA-2

Runoff Area=101,338 sf 94.73% Impervious Runoff Depth=2.99"
Flow Length=589' Tc=54.4 min CN=97 Runoff=3.21 cfs 0.579 af

Link EX-SP-1: EX-SP-1

Inflow=11.19 cfs 0.936 af
Primary=11.19 cfs 0.936 af

Link EX-SP-2: EX-SP-2

Inflow=3.21 cfs 0.579 af
Primary=3.21 cfs 0.579 af

Total Runoff Area = 7.231 ac Runoff Volume = 1.514 af Average Runoff Depth = 2.51"
31.24% Pervious = 2.259 ac 68.76% Impervious = 4.972 ac

Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 2-Year Rainfall=3.33"

Prepared by Rauch Inc

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Page 3

Summary for Subcatchment EX-DA-1: EX-DA-1

Runoff = 11.19 cfs @ 12.21 hrs, Volume= 0.936 af, Depth= 2.29"
 Routed to Link EX-SP-1 : EX-SP-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 2-Year Rainfall=3.33"

Area (sf)	CN	Description
90,997	79	<50% Grass cover, Poor, HSG B
104,185	98	Paved parking, HSG B
2,064	86	<50% Grass cover, Poor, HSG C
16,385	98	Paved parking, HSG C
213,631	90	Weighted Average
93,061		43.56% Pervious Area
120,570		56.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	82	0.0346	0.87		Sheet Flow, GRAVELED SHEET FLOW n= 0.025 P2= 3.33"
3.8	18	0.0066	0.08		Sheet Flow, GRASSED SHEET FLOW Grass: Short n= 0.150 P2= 3.33"
4.1	419	0.0111	1.70		Shallow Concentrated Flow, GRASSED SHALLOW CONCENTRATED Unpaved Kv= 16.1 fps
0.6	80	0.0137	2.38		Shallow Concentrated Flow, GRAVELED SCF Paved Kv= 20.3 fps
0.1	6	0.0014	0.76		Shallow Concentrated Flow, CONCRETED SCF Paved Kv= 20.3 fps
2.2	233	0.0092	1.73	0.17	Channel Flow, CONCRETED CHANNEL FLOW Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
0.0	13	0.0150	6.57	5.16	Pipe Channel, PIPED FLOW 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011 Concrete pipe, straight & clean
0.6	354	0.0051	9.40	82.01	Pipe Channel, PIPED FLOW 40.0" Round Area= 8.7 sf Perim= 10.5' r= 0.83' n= 0.010 PVC, smooth interior
13.0	1,205	Total			

Arc - Easton Crossing - Existing vs Proposed

Prepared by Rauch Inc

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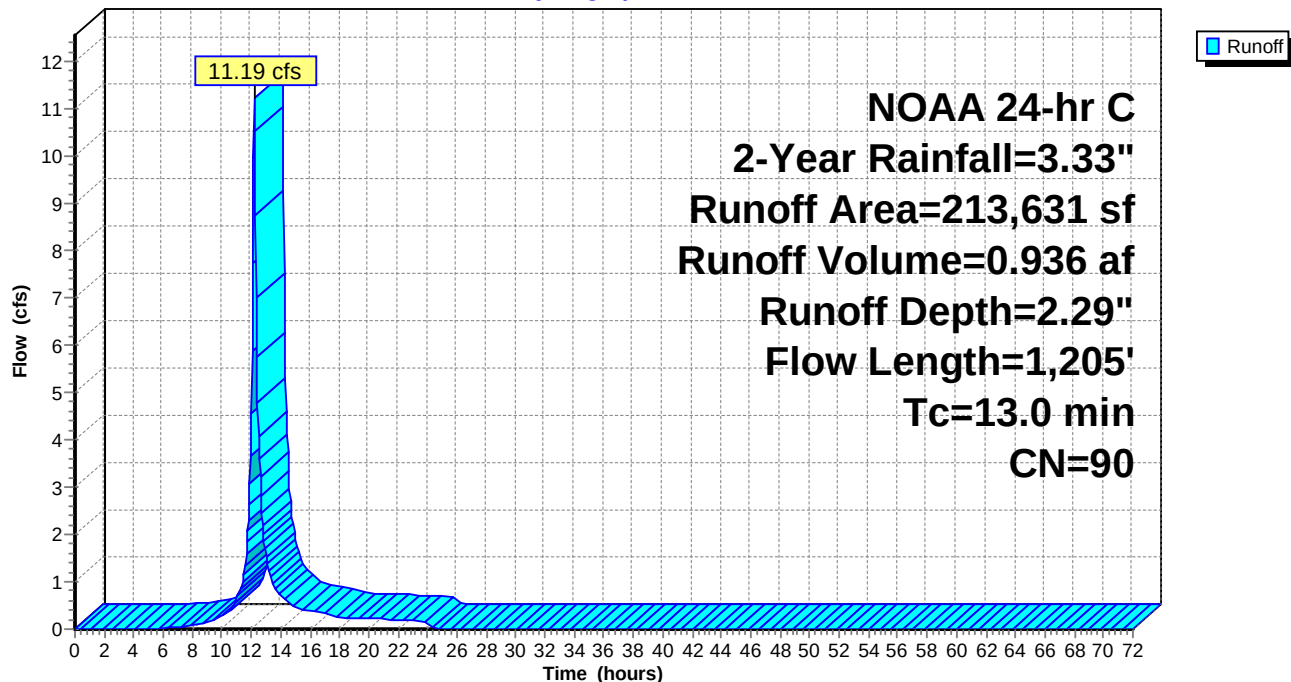
NOAA 24-hr C 2-Year Rainfall=3.33"

Printed 12/2/2024

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Subcatchment EX-DA-1: EX-DA-1

Hydrograph



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 2-Year Rainfall=3.33"

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Summary for Subcatchment EX-DA-2: EX-DA-2

Runoff = 3.21 cfs @ 12.71 hrs, Volume= 0.579 af, Depth= 2.99"
Routed to Link EX-SP-2 : EX-SP-2

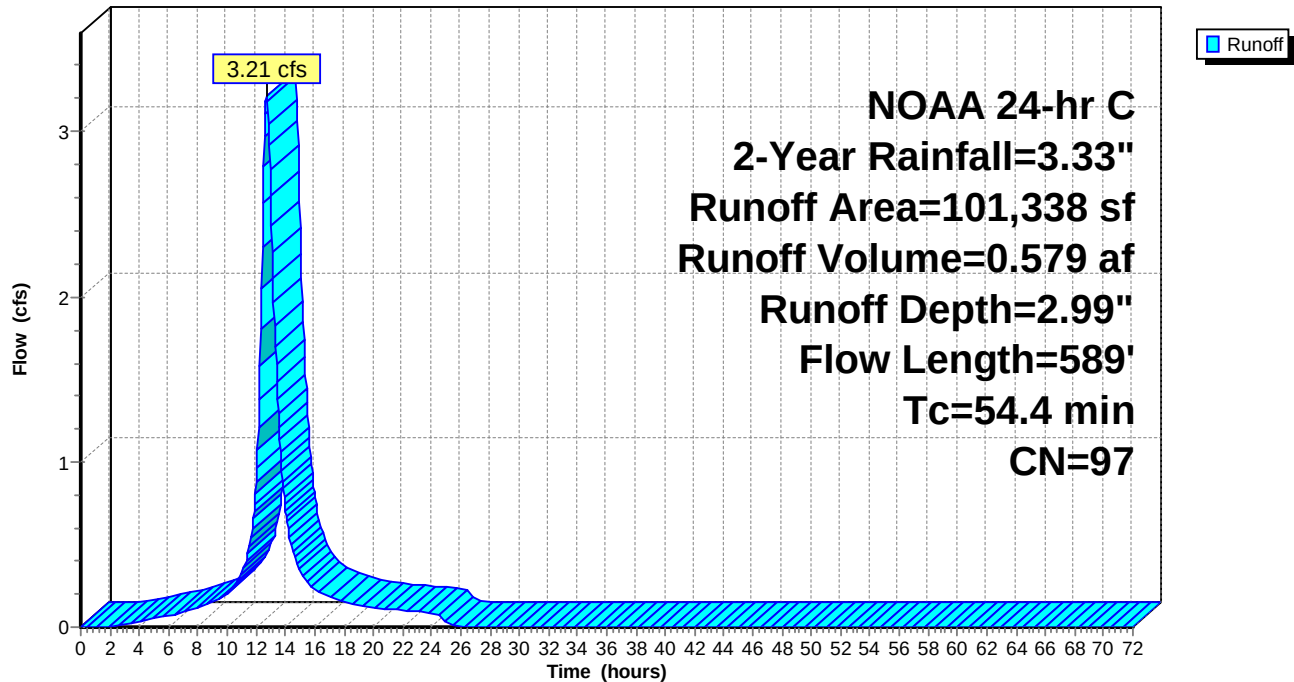
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.33"

Area (sf)	CN	Description
5,339	79	<50% Grass cover, Poor, HSG B
95,999	98	Paved parking, HSG C
101,338	97	Weighted Average
5,339		5.27% Pervious Area
95,999		94.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	45	0.0221	1.24		Sheet Flow, CONCRETED SHEET FLOW Smooth surfaces n= 0.011 P2= 3.33"
5.0	55	0.0303	0.18		Sheet Flow, GRASSED SHEET FLOW Grass: Short n= 0.150 P2= 3.33"
48.3	435	0.0001	0.15		Shallow Concentrated Flow, GRASSED SHALLOW CONCENTRATED Grassed Waterway Kv= 15.0 fps
0.1	8	0.0075	1.76		Shallow Concentrated Flow, CONCRETED SHALLOW CONCENTRATED Paved Kv= 20.3 fps
0.4	46	0.0144	2.16	0.22	Channel Flow, CONCRETED CHanneled Flow Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
54.4	589	Total			

Subcatchment EX-DA-2: EX-DA-2

Hydrograph



Arc - Easton Crossing - Existing vs Proposed

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NOAA 24-hr C 2-Year Rainfall=3.33"

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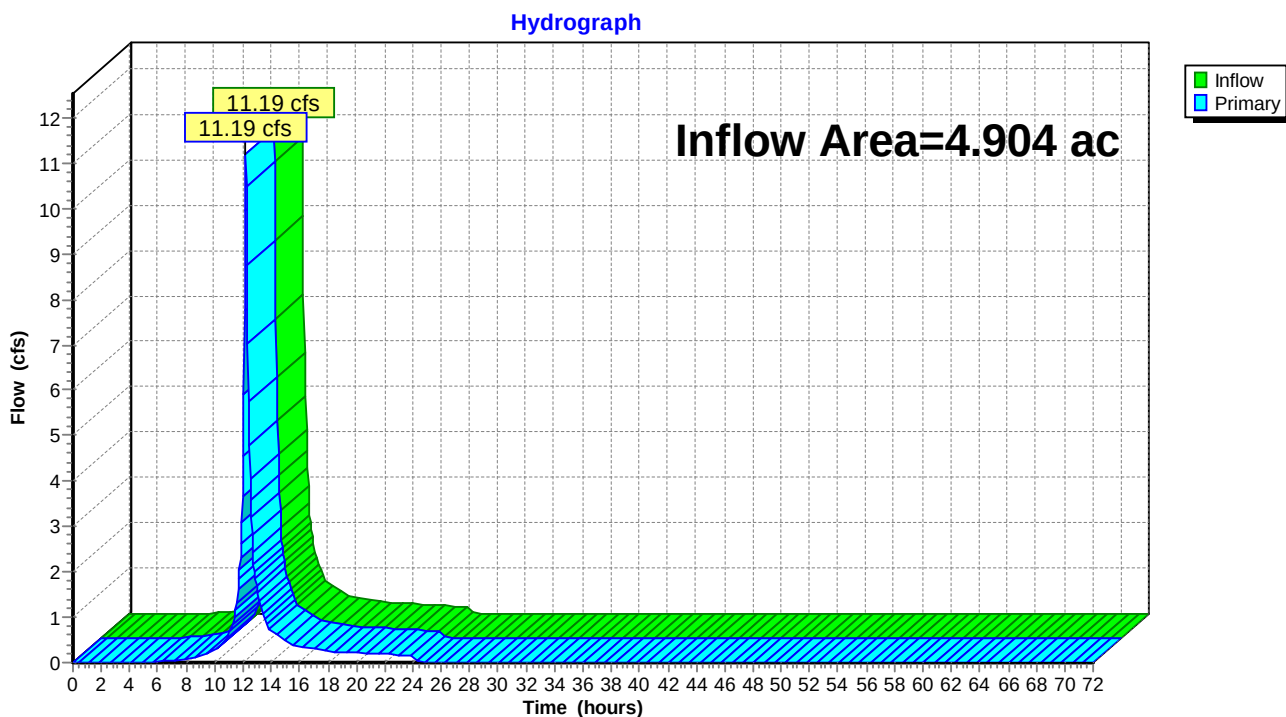
Page 7

Summary for Link EX-SP-1: EX-SP-1

Inflow Area = 4.904 ac, 56.44% Impervious, Inflow Depth = 2.29" for 2-Year event
Inflow = 11.19 cfs @ 12.21 hrs, Volume= 0.936 af
Primary = 11.19 cfs @ 12.21 hrs, Volume= 0.936 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link EX-SP-1: EX-SP-1

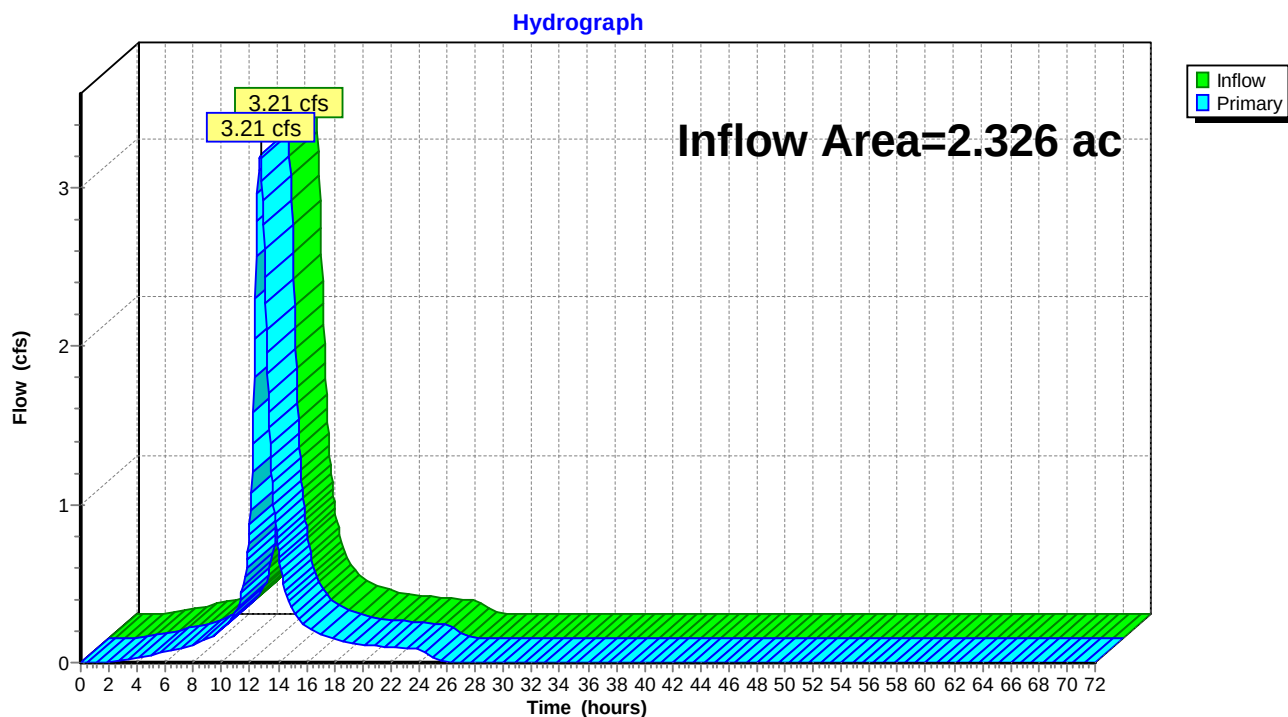


Summary for Link EX-SP-2: EX-SP-2

Inflow Area = 2.326 ac, 94.73% Impervious, Inflow Depth = 2.99" for 2-Year event
 Inflow = 3.21 cfs @ 12.71 hrs, Volume= 0.579 af
 Primary = 3.21 cfs @ 12.71 hrs, Volume= 0.579 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link EX-SP-2: EX-SP-2



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 10-Year Rainfall=5.20"

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EX-DA-1: EX-DA-1

Runoff Area=213,631 sf 56.44% Impervious Runoff Depth=4.07"
Flow Length=1,205' Tc=13.0 min CN=90 Runoff=19.35 cfs 1.663 af

Subcatchment EX-DA-2: EX-DA-2

Runoff Area=101,338 sf 94.73% Impervious Runoff Depth=4.85"
Flow Length=589' Tc=54.4 min CN=97 Runoff=5.10 cfs 0.940 af

Link EX-SP-1: EX-SP-1

Inflow=19.35 cfs 1.663 af
Primary=19.35 cfs 1.663 af

Link EX-SP-2: EX-SP-2

Inflow=5.10 cfs 0.940 af
Primary=5.10 cfs 0.940 af

Total Runoff Area = 7.231 ac Runoff Volume = 2.603 af Average Runoff Depth = 4.32"
31.24% Pervious = 2.259 ac 68.76% Impervious = 4.972 ac

Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 10-Year Rainfall=5.20"

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Summary for Subcatchment EX-DA-1: EX-DA-1

Runoff = 19.35 cfs @ 12.21 hrs, Volume= 1.663 af, Depth= 4.07"
 Routed to Link EX-SP-1 : EX-SP-1

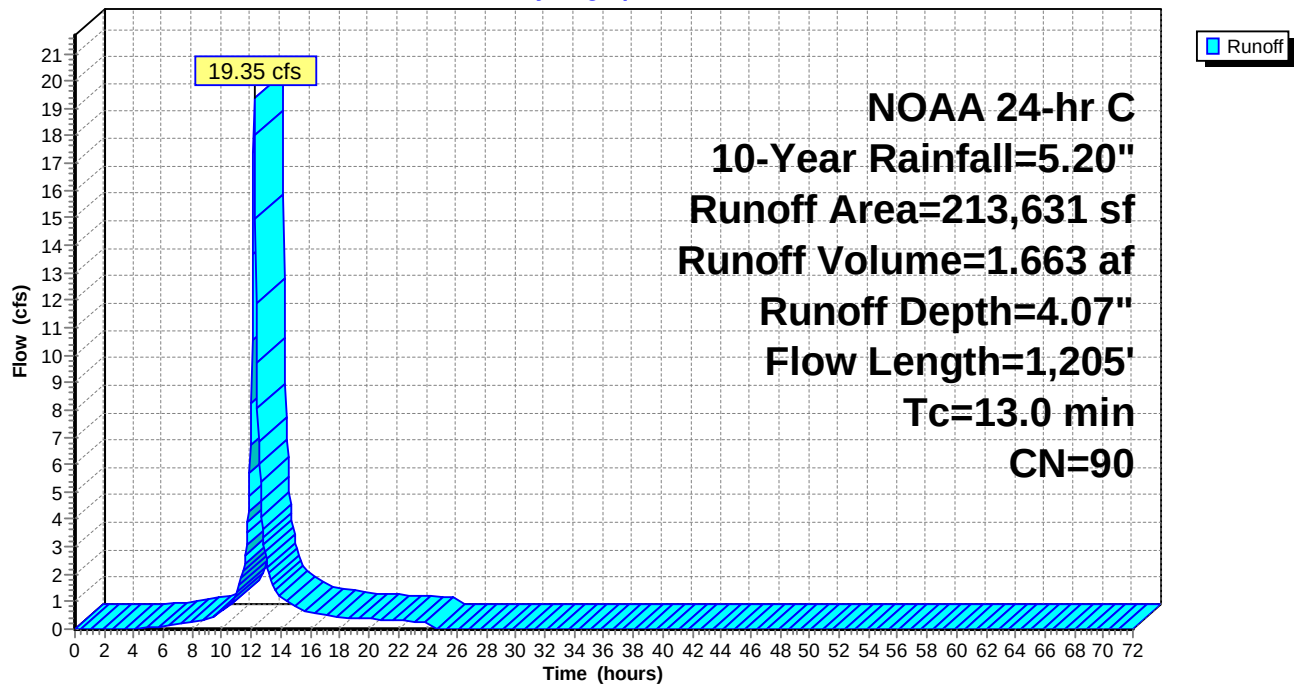
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 10-Year Rainfall=5.20"

Area (sf)	CN	Description
90,997	79	<50% Grass cover, Poor, HSG B
104,185	98	Paved parking, HSG B
2,064	86	<50% Grass cover, Poor, HSG C
16,385	98	Paved parking, HSG C
213,631	90	Weighted Average
93,061		43.56% Pervious Area
120,570		56.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	82	0.0346	0.87		Sheet Flow, GRAVELED SHEET FLOW n= 0.025 P2= 3.33"
3.8	18	0.0066	0.08		Sheet Flow, GRASSED SHEET FLOW Grass: Short n= 0.150 P2= 3.33"
4.1	419	0.0111	1.70		Shallow Concentrated Flow, GRASSED SHALLOW CONCENTRATED Unpaved Kv= 16.1 fps
0.6	80	0.0137	2.38		Shallow Concentrated Flow, GRAVELED SCF Paved Kv= 20.3 fps
0.1	6	0.0014	0.76		Shallow Concentrated Flow, CONCRETED SCF Paved Kv= 20.3 fps
2.2	233	0.0092	1.73	0.17	Channel Flow, CONCRETED CHANNEL FLOW Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
0.0	13	0.0150	6.57	5.16	Pipe Channel, PIPED FLOW 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011 Concrete pipe, straight & clean
0.6	354	0.0051	9.40	82.01	Pipe Channel, PIPED FLOW 40.0" Round Area= 8.7 sf Perim= 10.5' r= 0.83' n= 0.010 PVC, smooth interior
13.0	1,205	Total			

Subcatchment EX-DA-1: EX-DA-1

Hydrograph



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 10-Year Rainfall=5.20"

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Summary for Subcatchment EX-DA-2: EX-DA-2

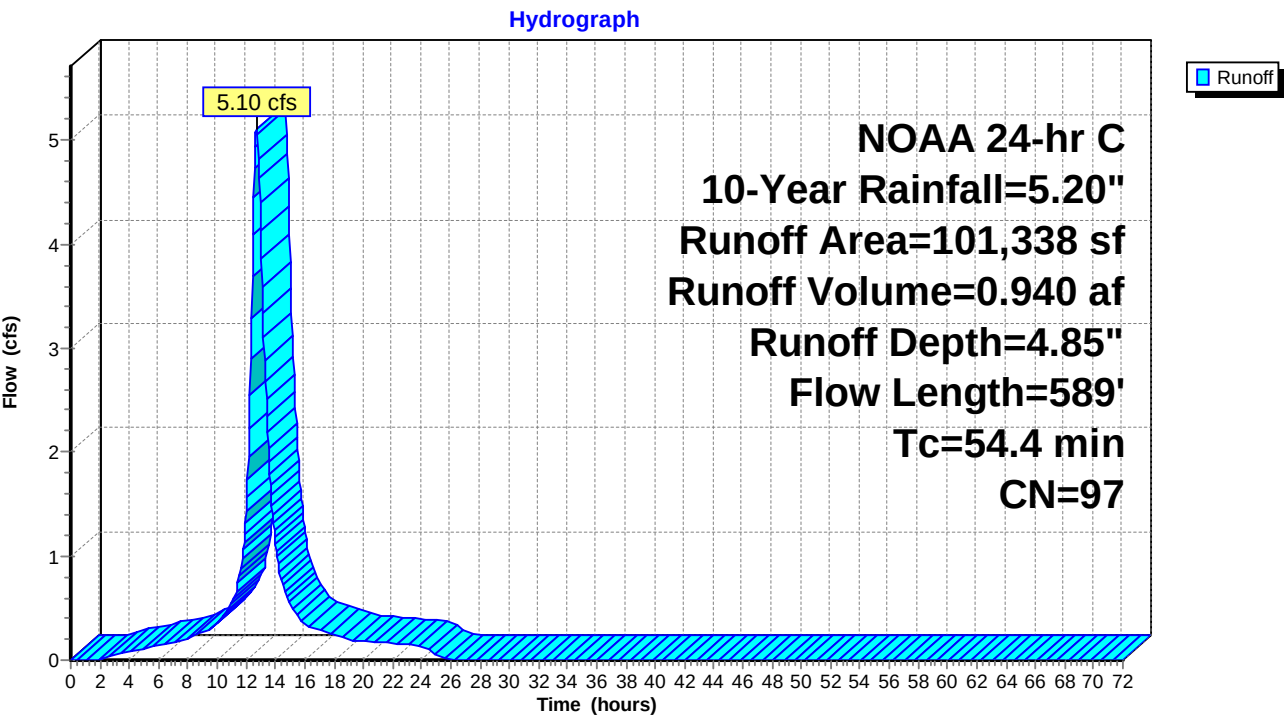
Runoff = 5.10 cfs @ 12.71 hrs, Volume= 0.940 af, Depth= 4.85"
 Routed to Link EX-SP-2 : EX-SP-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 10-Year Rainfall=5.20"

Area (sf)	CN	Description
5,339	79	<50% Grass cover, Poor, HSG B
95,999	98	Paved parking, HSG C
101,338	97	Weighted Average
5,339		5.27% Pervious Area
95,999		94.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	45	0.0221	1.24		Sheet Flow, CONCRETED SHEET FLOW Smooth surfaces n= 0.011 P2= 3.33"
5.0	55	0.0303	0.18		Sheet Flow, GRASSED SHEET FLOW Grass: Short n= 0.150 P2= 3.33"
48.3	435	0.0001	0.15		Shallow Concentrated Flow, GRASSED SHALLOW CONCENTRATED Grassed Waterway Kv= 15.0 fps
0.1	8	0.0075	1.76		Shallow Concentrated Flow, CONCRETED SHALLOW CONCENTRATED Paved Kv= 20.3 fps
0.4	46	0.0144	2.16	0.22	Channel Flow, CONCRETED CHanneled Flow Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
54.4	589	Total			

Subcatchment EX-DA-2: EX-DA-2



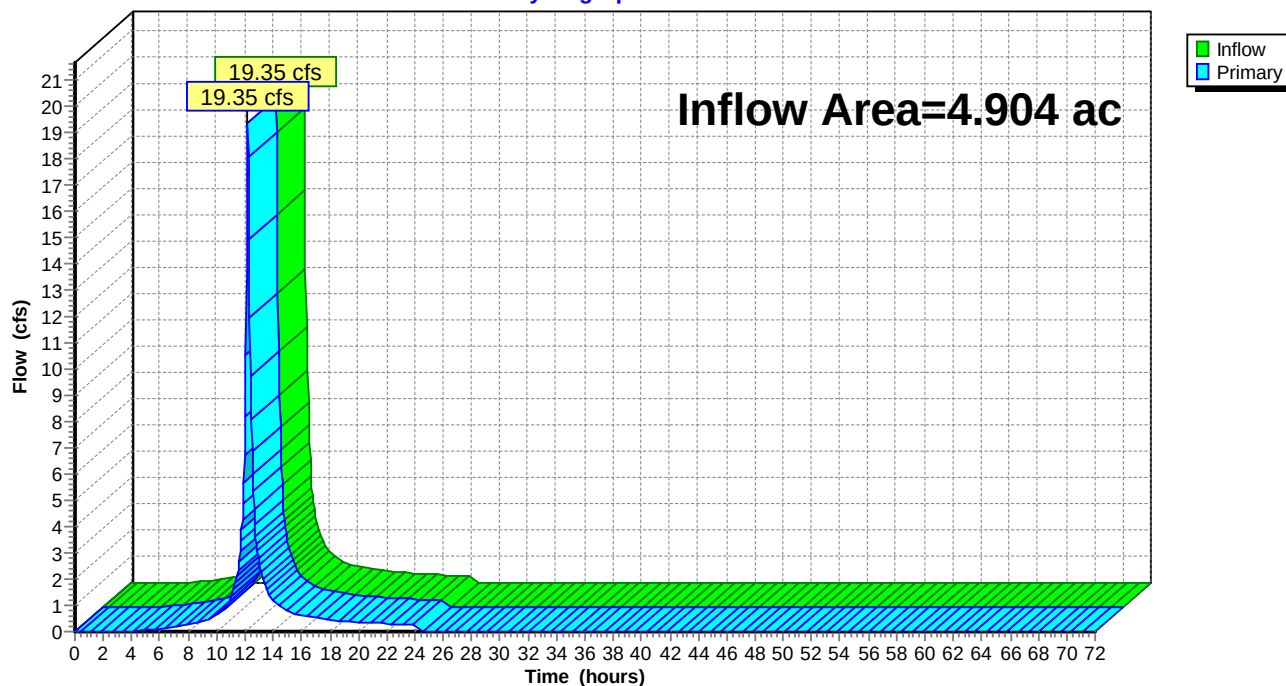
Summary for Link EX-SP-1: EX-SP-1

Inflow Area = 4.904 ac, 56.44% Impervious, Inflow Depth = 4.07" for 10-Year event
Inflow = 19.35 cfs @ 12.21 hrs, Volume= 1.663 af
Primary = 19.35 cfs @ 12.21 hrs, Volume= 1.663 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link EX-SP-1: EX-SP-1

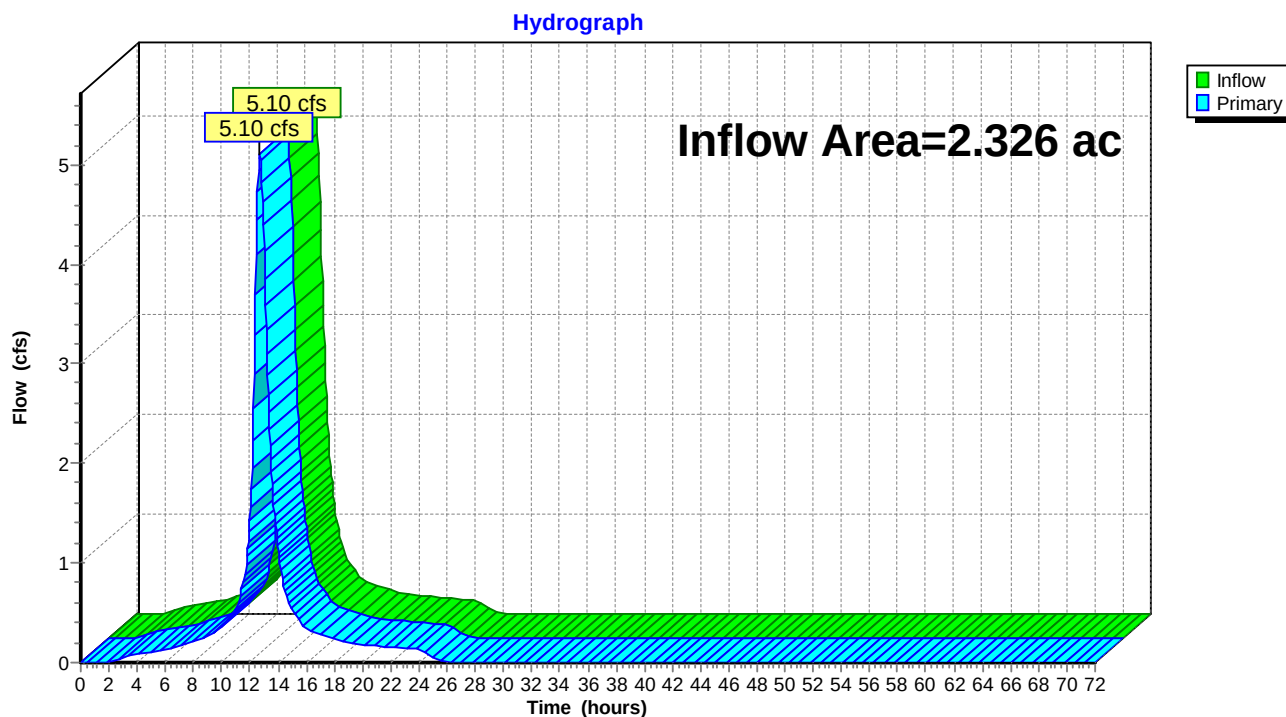
Hydrograph



Summary for Link EX-SP-2: EX-SP-2

Inflow Area = 2.326 ac, 94.73% Impervious, Inflow Depth = 4.85" for 10-Year event
Inflow = 5.10 cfs @ 12.71 hrs, Volume= 0.940 af
Primary = 5.10 cfs @ 12.71 hrs, Volume= 0.940 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link EX-SP-2: EX-SP-2

Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 100-Year Rainfall=8.98"

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment EX-DA-1: EX-DA-1

Runoff Area=213,631 sf 56.44% Impervious Runoff Depth=7.77"
Flow Length=1,205' Tc=13.0 min CN=90 Runoff=35.59 cfs 3.176 af

Subcatchment EX-DA-2: EX-DA-2

Runoff Area=101,338 sf 94.73% Impervious Runoff Depth=8.62"
Flow Length=589' Tc=54.4 min CN=97 Runoff=8.89 cfs 1.671 af

Link EX-SP-1: EX-SP-1

Inflow=35.59 cfs 3.176 af
Primary=35.59 cfs 3.176 af

Link EX-SP-2: EX-SP-2

Inflow=8.89 cfs 1.671 af
Primary=8.89 cfs 1.671 af

Total Runoff Area = 7.231 ac Runoff Volume = 4.847 af Average Runoff Depth = 8.04"
31.24% Pervious = 2.259 ac 68.76% Impervious = 4.972 ac

Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 100-Year Rainfall=8.98"

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Summary for Subcatchment EX-DA-1: EX-DA-1

Runoff = 35.59 cfs @ 12.20 hrs, Volume= 3.176 af, Depth= 7.77"
 Routed to Link EX-SP-1 : EX-SP-1

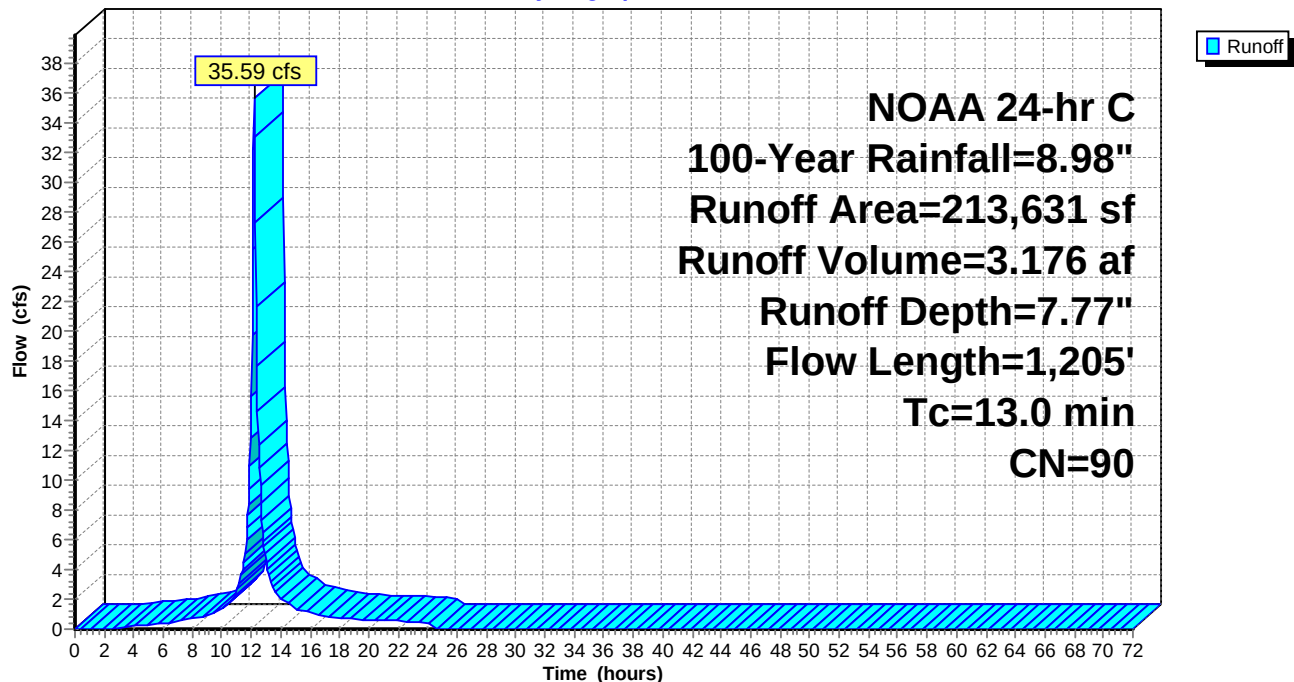
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 100-Year Rainfall=8.98"

Area (sf)	CN	Description
90,997	79	<50% Grass cover, Poor, HSG B
104,185	98	Paved parking, HSG B
2,064	86	<50% Grass cover, Poor, HSG C
16,385	98	Paved parking, HSG C
213,631	90	Weighted Average
93,061		43.56% Pervious Area
120,570		56.44% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.6	82	0.0346	0.87		Sheet Flow, GRAVELED SHEET FLOW n= 0.025 P2= 3.33"
3.8	18	0.0066	0.08		Sheet Flow, GRASSED SHEET FLOW Grass: Short n= 0.150 P2= 3.33"
4.1	419	0.0111	1.70		Shallow Concentrated Flow, GRASSED SHALLOW CONCENTRATED Unpaved Kv= 16.1 fps
0.6	80	0.0137	2.38		Shallow Concentrated Flow, GRAVELED SCF Paved Kv= 20.3 fps
0.1	6	0.0014	0.76		Shallow Concentrated Flow, CONCRETED SCF Paved Kv= 20.3 fps
2.2	233	0.0092	1.73	0.17	Channel Flow, CONCRETED CHANNEL FLOW Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
0.0	13	0.0150	6.57	5.16	Pipe Channel, PIPED FLOW 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.011 Concrete pipe, straight & clean
0.6	354	0.0051	9.40	82.01	Pipe Channel, PIPED FLOW 40.0" Round Area= 8.7 sf Perim= 10.5' r= 0.83' n= 0.010 PVC, smooth interior
13.0	1,205	Total			

Subcatchment EX-DA-1: EX-DA-1

Hydrograph



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 100-Year Rainfall=8.98"

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Summary for Subcatchment EX-DA-2: EX-DA-2

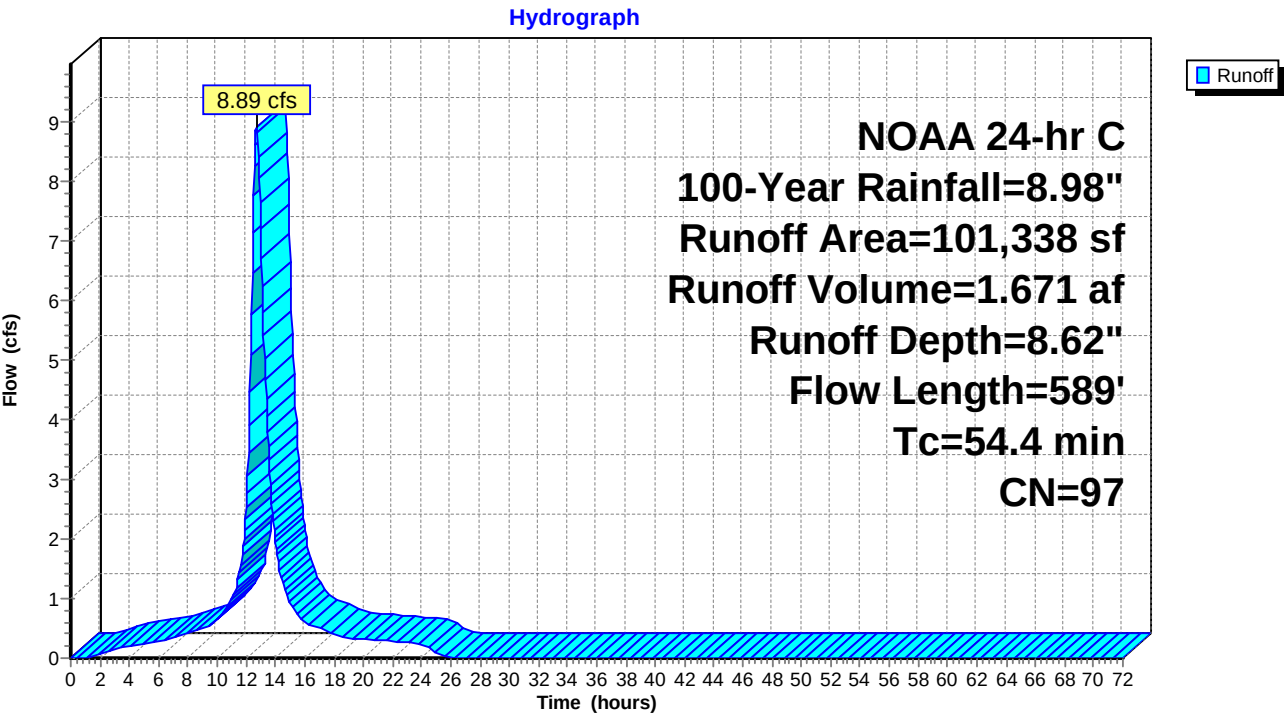
Runoff = 8.89 cfs @ 12.71 hrs, Volume= 1.671 af, Depth= 8.62"
 Routed to Link EX-SP-2 : EX-SP-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 100-Year Rainfall=8.98"

Area (sf)	CN	Description
5,339	79	<50% Grass cover, Poor, HSG B
95,999	98	Paved parking, HSG C
101,338	97	Weighted Average
5,339		5.27% Pervious Area
95,999		94.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.6	45	0.0221	1.24		Sheet Flow, CONCRETED SHEET FLOW Smooth surfaces n= 0.011 P2= 3.33"
5.0	55	0.0303	0.18		Sheet Flow, GRASSED SHEET FLOW Grass: Short n= 0.150 P2= 3.33"
48.3	435	0.0001	0.15		Shallow Concentrated Flow, GRASSED SHALLOW CONCENTRATED Grassed Waterway Kv= 15.0 fps
0.1	8	0.0075	1.76		Shallow Concentrated Flow, CONCRETED SHALLOW CONCENTRATED Paved Kv= 20.3 fps
0.4	46	0.0144	2.16	0.22	Channel Flow, CONCRETED CHanneled Flow Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
54.4	589	Total			

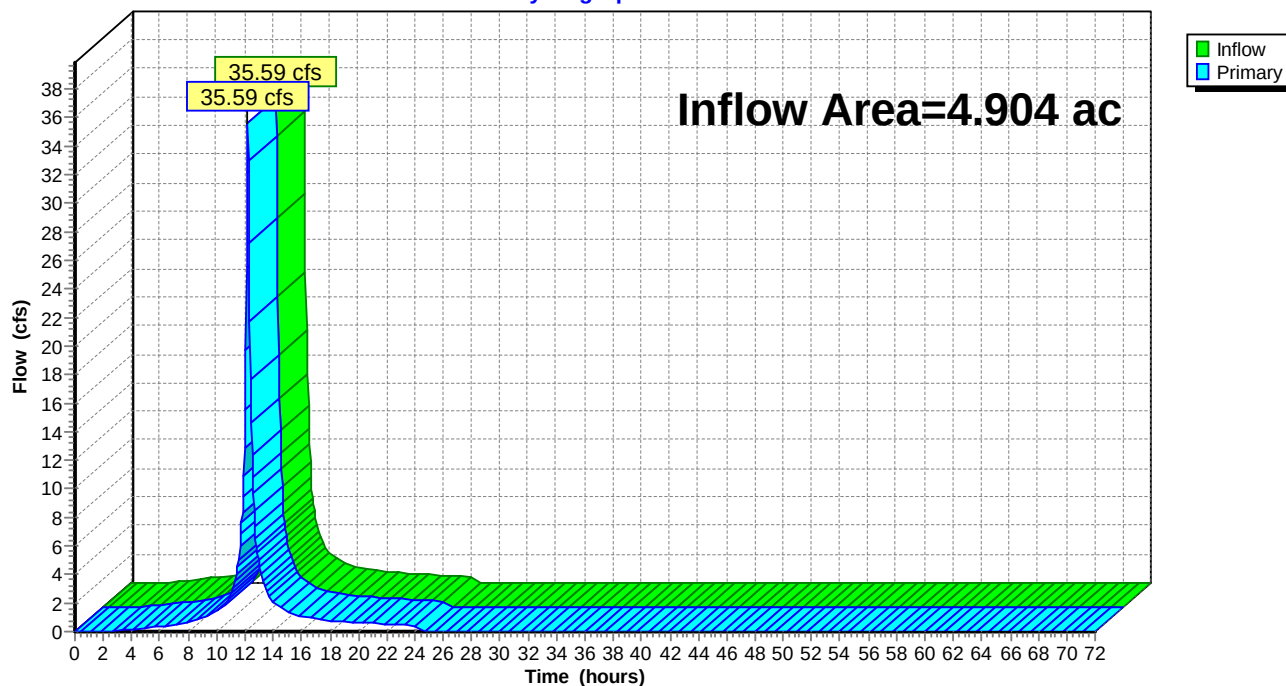
Subcatchment EX-DA-2: EX-DA-2



Summary for Link EX-SP-1: EX-SP-1

Inflow Area = 4.904 ac, 56.44% Impervious, Inflow Depth = 7.77" for 100-Year event
Inflow = 35.59 cfs @ 12.20 hrs, Volume= 3.176 af
Primary = 35.59 cfs @ 12.20 hrs, Volume= 3.176 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link EX-SP-1: EX-SP-1**Hydrograph**

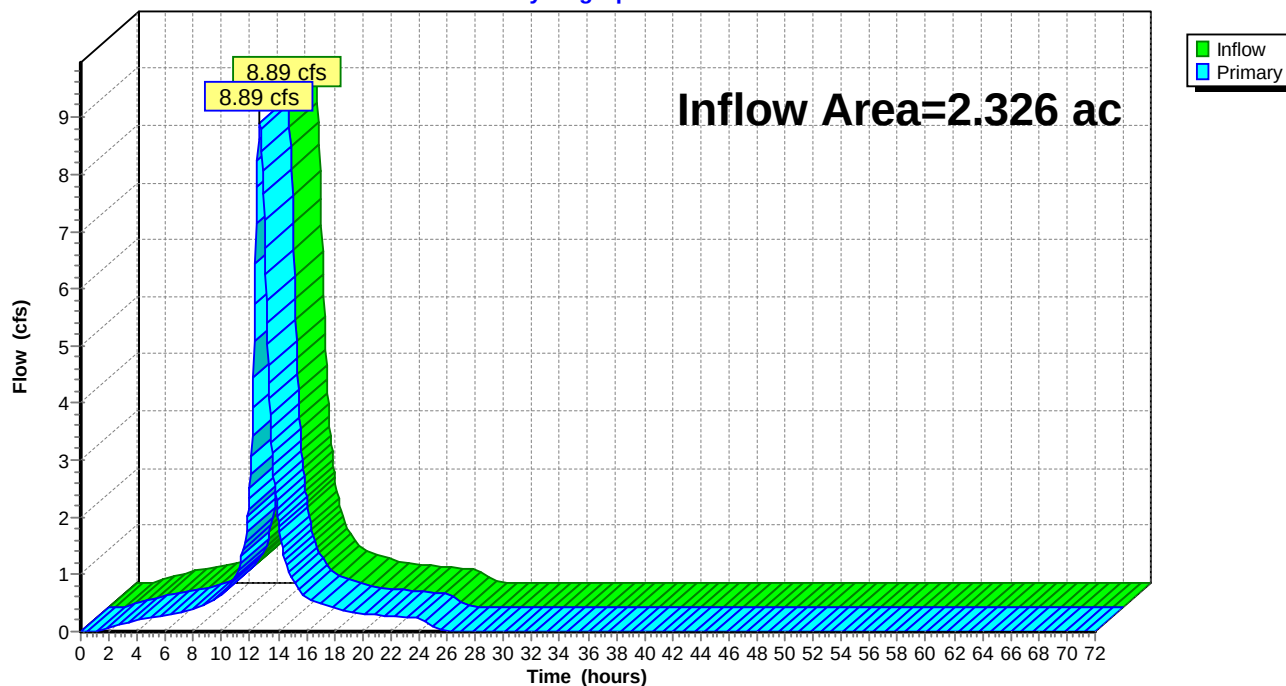
Summary for Link EX-SP-2: EX-SP-2

Inflow Area = 2.326 ac, 94.73% Impervious, Inflow Depth = 8.62" for 100-Year event
Inflow = 8.89 cfs @ 12.71 hrs, Volume= 1.671 af
Primary = 8.89 cfs @ 12.71 hrs, Volume= 1.671 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

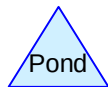
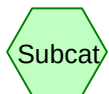
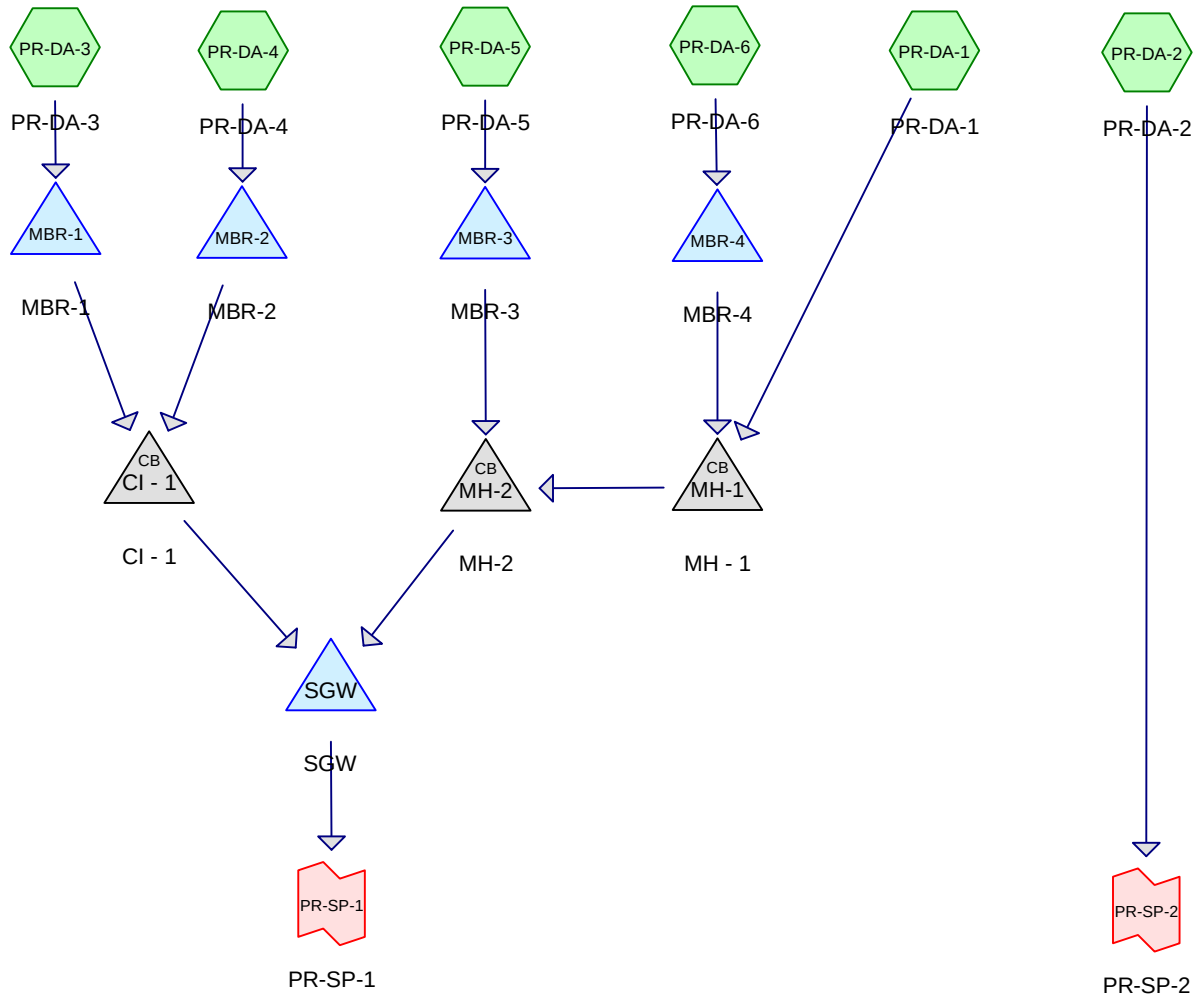
Link EX-SP-2: EX-SP-2

Hydrograph



Analysis of Proposed Conditions

PROPOSED



Routing Diagram for Arc - Easton Crossing - Existing vs Proposed
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Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 2-Year Rainfall=3.33"

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PR-DA-1: PR-DA-1	Runoff Area=230,241 sf 67.12% Impervious Runoff Depth=1.95" Flow Length=347' Tc=26.1 min CN=86 Runoff=7.64 cfs 0.858 af
Subcatchment PR-DA-2: PR-DA-2	Runoff Area=7,525 sf 75.24% Impervious Runoff Depth=2.20" Flow Length=258' Tc=5.1 min CN=89 Runoff=0.49 cfs 0.032 af
Subcatchment PR-DA-3: PR-DA-3	Runoff Area=19,951 sf 91.92% Impervious Runoff Depth=2.77" Flow Length=150' Tc=1.9 min CN=95 Runoff=1.72 cfs 0.106 af
Subcatchment PR-DA-4: PR-DA-4	Runoff Area=19,263 sf 82.03% Impervious Runoff Depth=2.38" Flow Length=112' Tc=12.2 min CN=91 Runoff=1.06 cfs 0.088 af
Subcatchment PR-DA-5: PR-DA-5	Runoff Area=18,594 sf 69.57% Impervious Runoff Depth=2.03" Flow Length=154' Tc=11.2 min CN=87 Runoff=0.92 cfs 0.072 af
Subcatchment PR-DA-6: PR-DA-6	Runoff Area=19,385 sf 85.36% Impervious Runoff Depth=2.57" Flow Length=110' Tc=12.1 min CN=93 Runoff=1.15 cfs 0.095 af
Pond CI - 1: CI - 1	Peak Elev=30.75' Inflow=2.00 cfs 0.193 af 30.0" Round Culvert n=0.013 L=60.0' S=0.0030 ' /' Outflow=1.99 cfs 0.193 af
Pond MBR-1: MBR-1	Peak Elev=33.91' Storage=414 cf Inflow=1.72 cfs 0.106 af Outflow=1.07 cfs 0.106 af
Pond MBR-2: MBR-2	Peak Elev=35.07' Storage=306 cf Inflow=1.06 cfs 0.088 af Outflow=1.09 cfs 0.088 af
Pond MBR-3: MBR-3	Peak Elev=34.41' Storage=593 cf Inflow=0.92 cfs 0.072 af Outflow=0.90 cfs 0.061 af
Pond MBR-4: MBR-4	Peak Elev=33.62' Storage=286 cf Inflow=1.15 cfs 0.095 af Outflow=0.94 cfs 0.095 af
Pond MH-1: MH - 1	Peak Elev=31.65' Inflow=8.43 cfs 0.953 af 30.0" Round Culvert n=0.010 L=58.4' S=0.0259 ' /' Outflow=8.43 cfs 0.953 af
Pond MH-2: MH-2	Peak Elev=30.94' Inflow=8.98 cfs 1.014 af 36.0" Round Culvert n=0.010 L=87.0' S=0.0049 ' /' Outflow=8.98 cfs 1.014 af
Pond SGW: SGW	Peak Elev=30.75' Storage=9,590 cf Inflow=10.34 cfs 1.208 af Outflow=9.95 cfs 1.208 af
Link PR-SP-1: PR-SP-1	Inflow=9.95 cfs 1.208 af Primary=9.95 cfs 1.208 af
Link PR-SP-2: PR-SP-2	Inflow=0.49 cfs 0.032 af Primary=0.49 cfs 0.032 af

Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 2-Year Rainfall=3.33"

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Total Runoff Area = 7.230 ac Runoff Volume = 1.251 af Average Runoff Depth = 2.08"
28.94% Pervious = 2.092 ac 71.06% Impervious = 5.138 ac

Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 2-Year Rainfall=3.33"

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Summary for Subcatchment PR-DA-1: PR-DA-1

Runoff = 7.64 cfs @ 12.37 hrs, Volume= 0.858 af, Depth= 1.95"
 Routed to Pond MH-1 : MH - 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 2-Year Rainfall=3.33"

Area (sf)	CN	Description
65,361	61	>75% Grass cover, Good, HSG B
146,431	98	Unconnected pavement, HSG B
10,353	74	>75% Grass cover, Good, HSG C
8,096	98	Unconnected pavement, HSG C
230,241	86	Weighted Average
75,714		32.88% Pervious Area
154,527		67.12% Impervious Area
154,527		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	35	0.0163	0.13		Sheet Flow, Grassed Sheet Flow Grass: Short n= 0.150 P2= 3.33"
3.5	8	0.0042	0.04		Sheet Flow, Concreted Sheet Flow Grass: Dense n= 0.240 P2= 3.33"
17.3	57	0.0015	0.06		Sheet Flow, Grassed Sheet Flow Grass: Short n= 0.150 P2= 3.33"
0.4	14	0.0015	0.58		Shallow Concentrated Flow, Grassed SCF Grassed Waterway Kv= 15.0 fps
0.3	114	0.0050	5.46	9.66	Pipe Channel, 18" Piped Flow 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.010 PVC, smooth interior
0.1	119	0.0206	15.59	76.53	Pipe Channel, 30" Piped Flow 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.010 PVC, smooth interior
26.1	347	Total			

Arc - Easton Crossing - Existing vs Proposed

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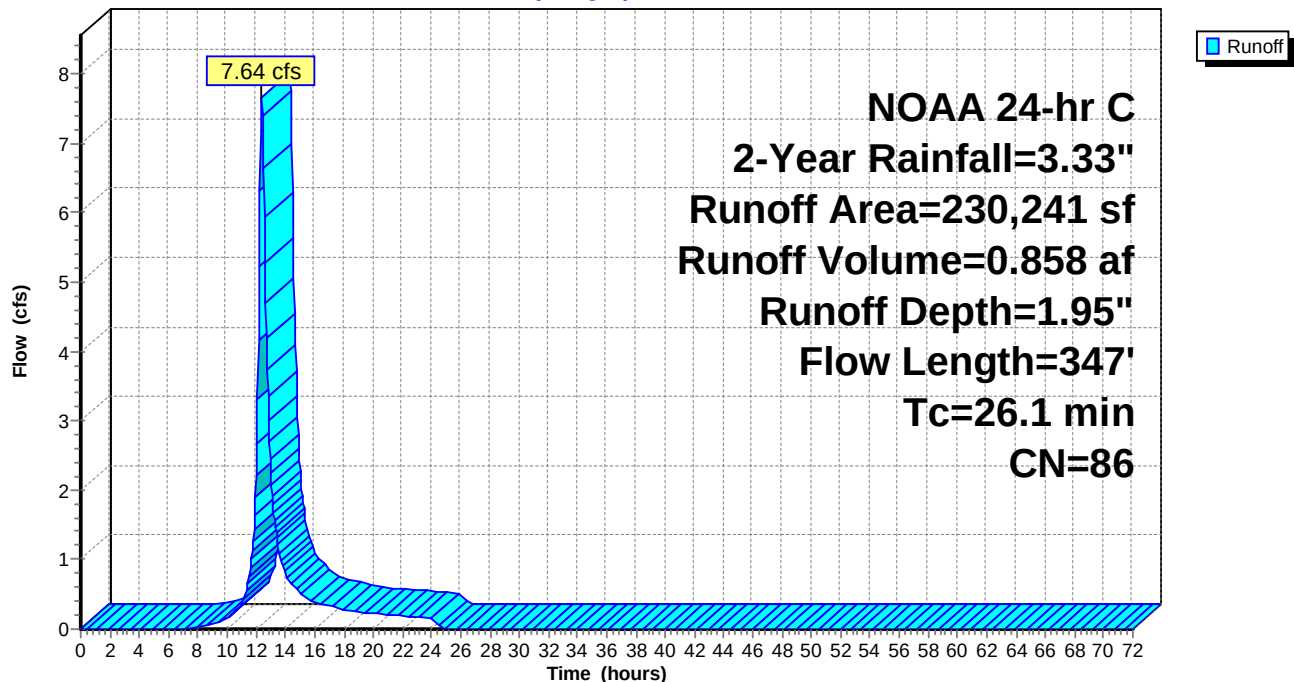
NOAA 24-hr C 2-Year Rainfall=3.33"

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Subcatchment PR-DA-1: PR-DA-1

Hydrograph



Arc - Easton Crossing - Existing vs Proposed

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NOAA 24-hr C 2-Year Rainfall=3.33"

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Summary for Subcatchment PR-DA-2: PR-DA-2

Runoff = 0.49 cfs @ 12.12 hrs, Volume= 0.032 af, Depth= 2.20"
Routed to Link PR-SP-2 : PR-SP-2

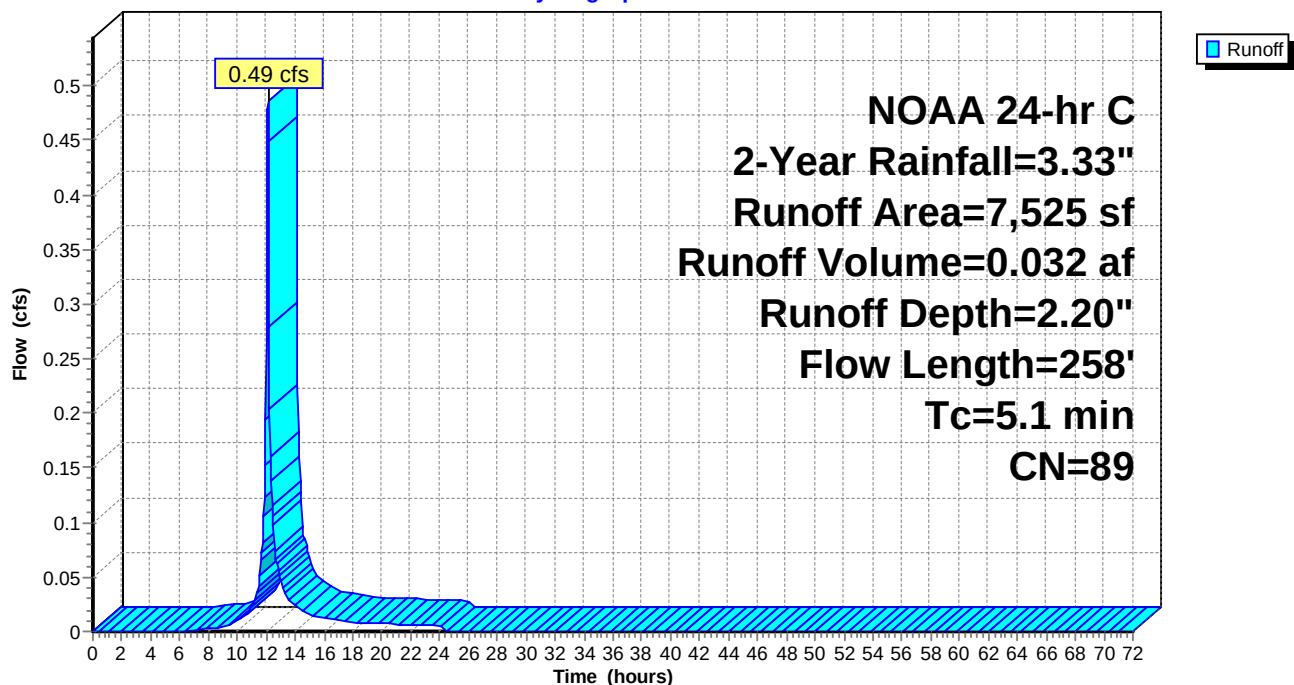
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.33"

Area (sf)	CN	Description
1,863	61	>75% Grass cover, Good, HSG B
5,662	98	Unconnected pavement, HSG B
7,525	89	Weighted Average
1,863		24.76% Pervious Area
5,662		75.24% Impervious Area
5,662		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	13	0.0375	1.20		Sheet Flow, Concreted Sheet Flow
					Smooth surfaces n= 0.011 P2= 3.33"
4.9	245	0.0021	0.82	0.08	Channel Flow, Concreted Channelled Flow
					Area= 0.1 sf Perim= 1.6' r= 0.06'
					n= 0.013 Concrete, trowel finish
5.1	258	Total			

Subcatchment PR-DA-2: PR-DA-2

Hydrograph



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 2-Year Rainfall=3.33"

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Summary for Subcatchment PR-DA-3: PR-DA-3

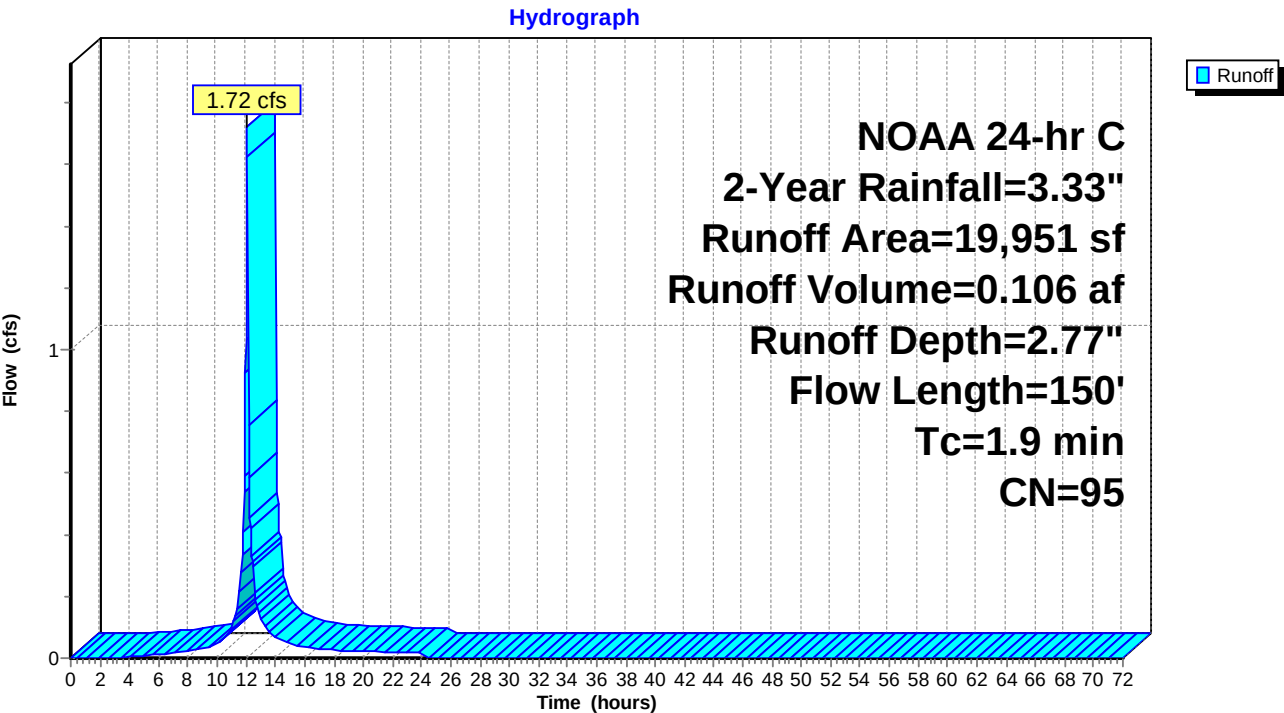
Runoff = 1.72 cfs @ 12.08 hrs, Volume= 0.106 af, Depth= 2.77"
 Routed to Pond MBR-1 : MBR-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 2-Year Rainfall=3.33"

Area (sf)	CN	Description
1,612	61	>75% Grass cover, Good, HSG B
18,339	98	Unconnected pavement, HSG B
19,951	95	Weighted Average
1,612		8.08% Pervious Area
18,339		91.92% Impervious Area
18,339		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	80	0.0079	0.93		Sheet Flow, Paved Sheet Flow Smooth surfaces n= 0.011 P2= 3.33"
0.1	17	0.0200	2.55	0.25	Channel Flow, Concrete Channeled Flow Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
0.3	36	0.0101	2.04		Shallow Concentrated Flow, Paved SCF Paved Kv= 20.3 fps
0.1	17	0.0336	3.30	0.33	Channel Flow, Concrete Channeled Flow Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
1.9	150	Total			

Subcatchment PR-DA-3: PR-DA-3



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 2-Year Rainfall=3.33"

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Summary for Subcatchment PR-DA-4: PR-DA-4

Runoff = 1.06 cfs @ 12.20 hrs, Volume= 0.088 af, Depth= 2.38"
 Routed to Pond MBR-2 : MBR-2

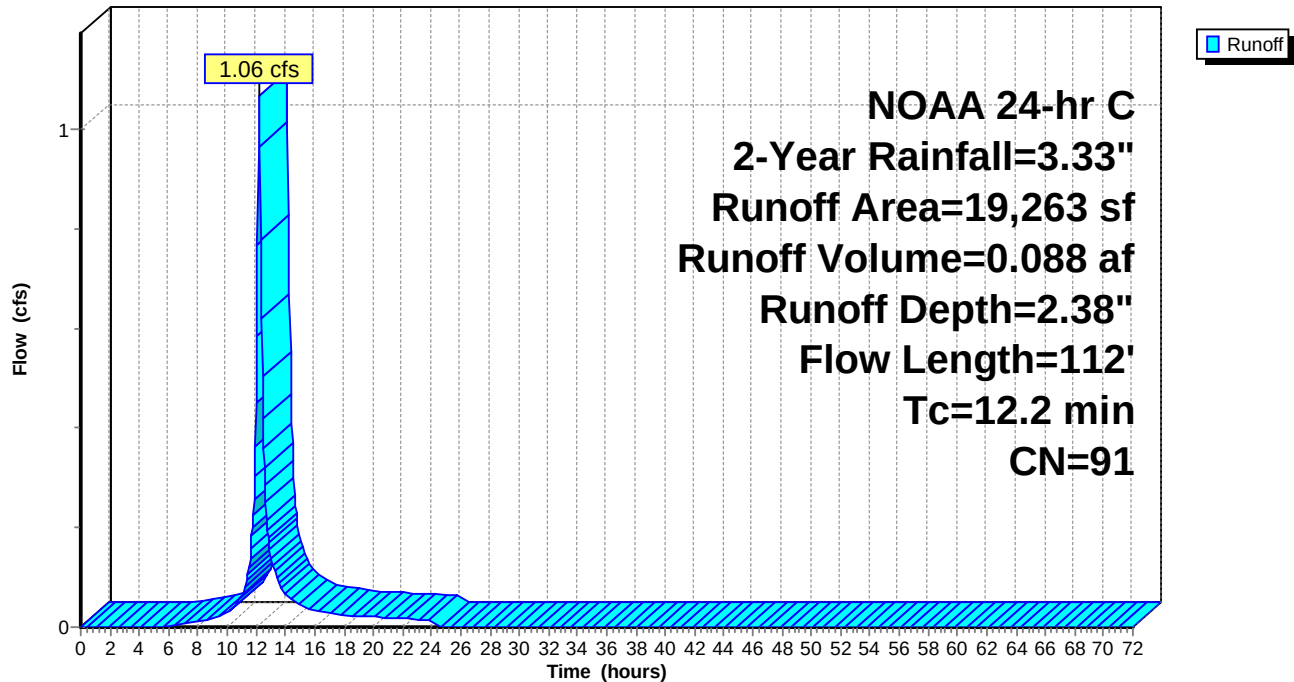
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 2-Year Rainfall=3.33"

Area (sf)	CN	Description
3,462	61	>75% Grass cover, Good, HSG B
15,801	98	Unconnected pavement, HSG B
19,263	91	Weighted Average
3,462		17.97% Pervious Area
15,801		82.03% Impervious Area
15,801		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	31	0.0013	0.05		Sheet Flow, Grassed Sheet Flow Grass: Short n= 0.150 P2= 3.33"
0.1	5	0.0289	0.89		Sheet Flow, Concreted Sheet Flow Smooth surfaces n= 0.011 P2= 3.33"
0.7	49	0.0154	1.10		Sheet Flow, Paved Sheet Flow Smooth surfaces n= 0.011 P2= 3.33"
0.2	27	0.0200	2.55	0.25	Channel Flow, Concreted Channeled Flow Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
12.2	112	Total			

Subcatchment PR-DA-4: PR-DA-4

Hydrograph



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 2-Year Rainfall=3.33"

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Summary for Subcatchment PR-DA-5: PR-DA-5

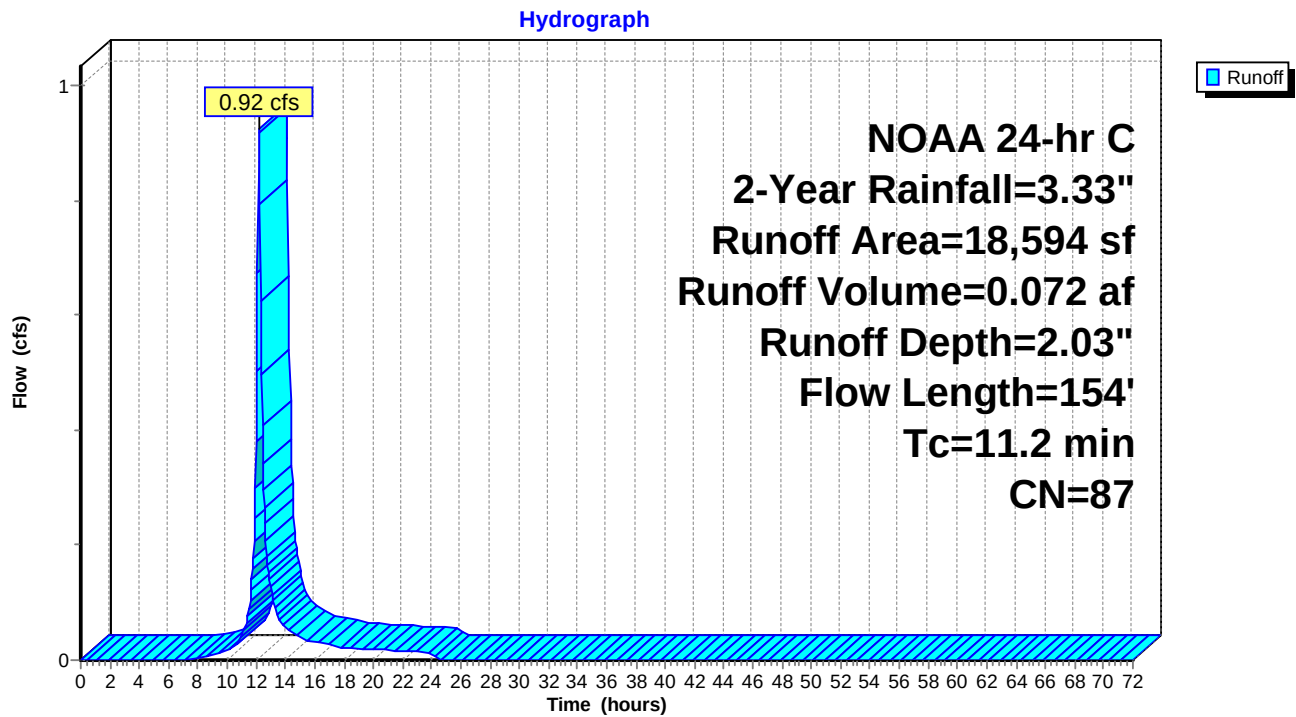
Runoff = 0.92 cfs @ 12.19 hrs, Volume= 0.072 af, Depth= 2.03"
 Routed to Pond MBR-3 : MBR-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 2-Year Rainfall=3.33"

Area (sf)	CN	Description
5,659	61	>75% Grass cover, Good, HSG B
12,935	98	Unconnected pavement, HSG B
18,594	87	Weighted Average
5,659		30.43% Pervious Area
12,935		69.57% Impervious Area
12,935		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	60	0.0063	0.10		Sheet Flow, Grassed Sheet Flow Grass: Short n= 0.150 P2= 3.33"
0.8	33	0.0062	0.70		Sheet Flow, Concreted Sheet Flow Smooth surfaces n= 0.011 P2= 3.33"
0.1	19	0.0200	2.55	0.25	Channel Flow, Concreted Channeled Flow Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
0.2	42	0.0279	3.39		Shallow Concentrated Flow, Paved SCF Paved Kv= 20.3 fps
11.2	154	Total			

Subcatchment PR-DA-5: PR-DA-5



Arc - Easton Crossing - Existing vs Proposed

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NOAA 24-hr C 2-Year Rainfall=3.33"

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Summary for Subcatchment PR-DA-6: PR-DA-6

Runoff = 1.15 cfs @ 12.20 hrs, Volume= 0.095 af, Depth= 2.57"
Routed to Pond MBR-4 : MBR-4

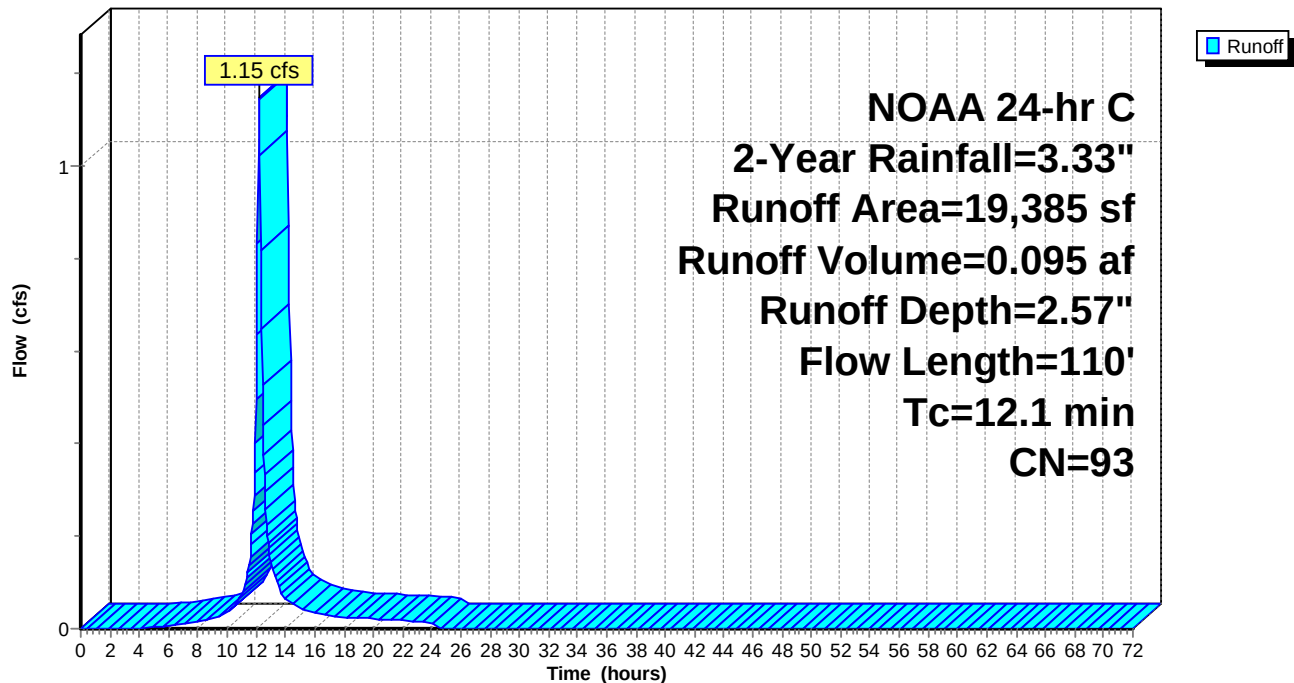
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 2-Year Rainfall=3.33"

Area (sf)	CN	Description
2,837	61	>75% Grass cover, Good, HSG B
16,548	98	Unconnected pavement, HSG B
19,385	93	Weighted Average
2,837		14.64% Pervious Area
16,548		85.36% Impervious Area
16,548		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	8	0.0073	0.07		Sheet Flow, Grassed Sheet Flow Grass: Short n= 0.150 P2= 3.33"
10.0	75	0.0262	0.13		Sheet Flow, Paved Sheet Flow Grass: Dense n= 0.240 P2= 3.33"
0.2	27	0.0200	2.55	0.25	Channel Flow, Concrete Channelled Flow Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
12.1	110	Total			

Subcatchment PR-DA-6: PR-DA-6

Hydrograph



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Summary for Pond CI - 1: CI - 1

Inflow Area = 0.900 ac, 87.06% Impervious, Inflow Depth = 2.58" for 2-Year event
 Inflow = 2.00 cfs @ 12.25 hrs, Volume= 0.193 af
 Outflow = 1.99 cfs @ 12.25 hrs, Volume= 0.193 af, Atten= 1%, Lag= 0.0 min
 Primary = 1.99 cfs @ 12.25 hrs, Volume= 0.193 af
 Routed to Pond SGW : SGW

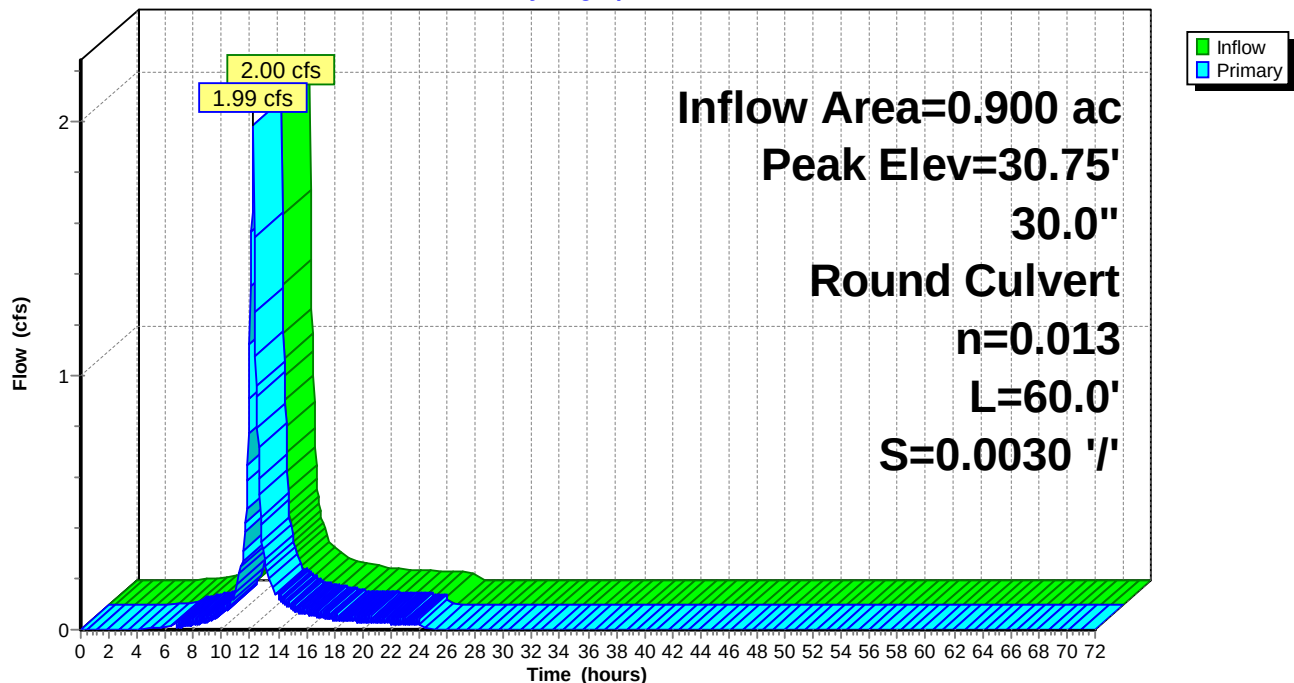
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 30.75' @ 12.40 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	28.34'	30.0" Round Culvert L= 60.0' Box, 0° wingwalls, square crown edge, Ke= 0.700 Inlet / Outlet Invert= 28.34' / 28.16' S= 0.0030 '/' Cc= 0.900 n= 0.013 Concrete, trowel finish, Flow Area= 4.91 sf

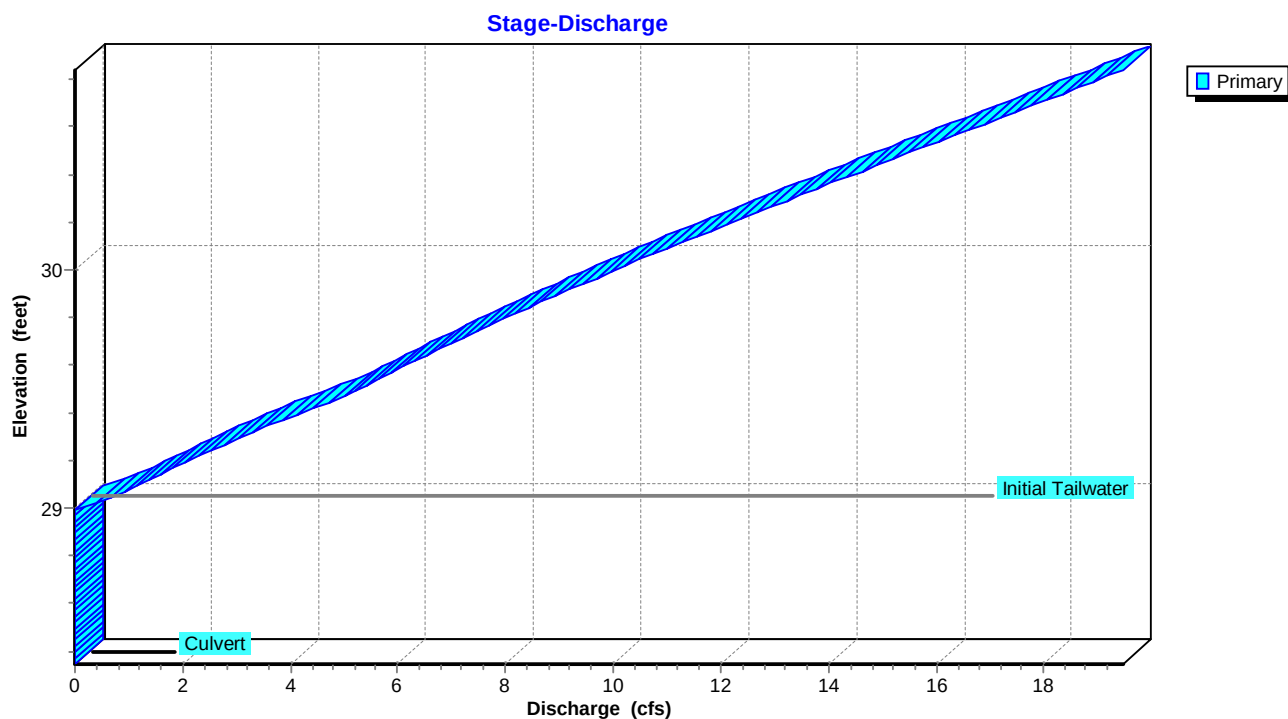
Primary OutFlow Max=1.98 cfs @ 12.25 hrs HW=30.51' TW=30.50' (Dynamic Tailwater)
 ↑ **1=Culvert** (Outlet Controls 1.98 cfs @ 0.59 fps)

Pond CI - 1: CI - 1

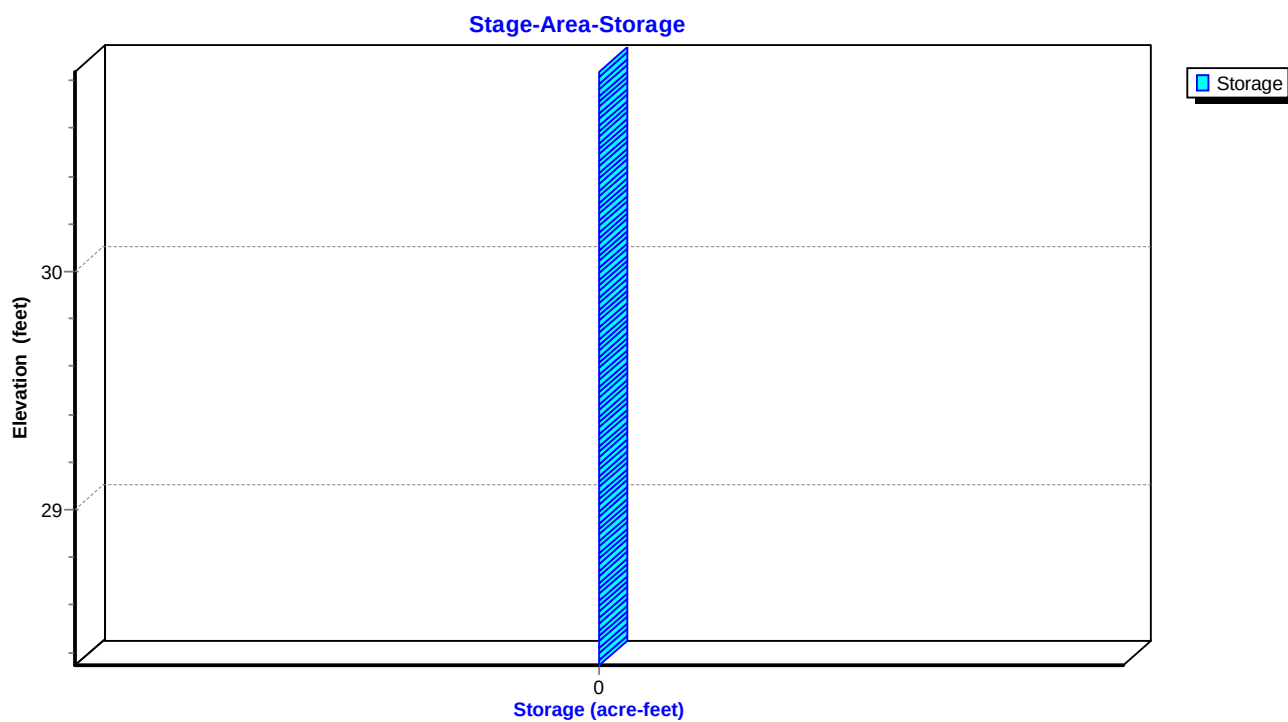
Hydrograph



Pond CI - 1: CI - 1



Pond CI - 1: CI - 1



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 2-Year Rainfall=3.33"

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Summary for Pond MBR-1: MBR-1

Inflow Area = 0.458 ac, 91.92% Impervious, Inflow Depth = 2.77" for 2-Year event
 Inflow = 1.72 cfs @ 12.08 hrs, Volume= 0.106 af
 Outflow = 1.07 cfs @ 12.14 hrs, Volume= 0.106 af, Atten= 38%, Lag= 3.6 min
 Primary = 1.07 cfs @ 12.14 hrs, Volume= 0.106 af
 Routed to Pond CI - 1 : CI - 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 33.91' @ 12.14 hrs Surf.Area= 330 sf Storage= 414 cf

Plug-Flow detention time= 8.8 min calculated for 0.106 af (100% of inflow)
 Center-of-Mass det. time= 7.9 min (785.9 - 778.0)

Volume	Invert	Avail.Storage	Storage Description			
#1	30.76'	2,356 cf	Custom Stage Data (Irregular) Listed below			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
30.76	265	168.6	0.0	0	0	265
30.77	265	168.6	40.0	1	1	267
33.76	265	168.6	40.0	317	318	771
33.77	265	168.6	100.0	3	321	772
35.77	1,209	176.3	100.0	1,360	1,681	1,177
36.00	2,270	206.1	100.0	394	2,074	2,085
36.10	3,399	287.6	100.0	282	2,356	5,287

Device	Routing	Invert	Outlet Devices	
#1	Device 2	34.02'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads	
#2	Device 3	30.77'	6.0" Round 6" Piped Flow L= 83.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 30.77' / 30.35' S= 0.0050 ' / ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf	
#3	Device 4	30.10'	18.0" Round 18" Piped Flow L= 61.5' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 30.10' / 29.79' S= 0.0050 ' / ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf	
#4	Device 5	29.28'	24.0" Round 24" Piped Flow L= 82.1' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 29.28' / 28.87' S= 0.0050 ' / ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf	
#5	Device 6	28.87'	24.0" Round 24" Piped Flow L= 81.2' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 28.87' / 28.34' S= 0.0065 ' / ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf	
#6	Primary	28.34'	30.0" Round 30" Piped Flow L= 60.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 28.34' / 28.16' S= 0.0030 ' / ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 4.91 sf	
#7	Device 2	30.77'	6.0" Round Underdrain	

Arc - Easton Crossing - Existing vs Proposed

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L= 63.0' CPP, square edge headwall, $K_e = 0.500$

Inlet / Outlet Invert= 30.77' / 30.77' S= 0.0000 '/' Cc= 0.900

n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=1.06 cfs @ 12.14 hrs HW=33.89' TW=30.07' (Dynamic Tailwater)

6=30" Piped Flow (Passes 1.06 cfs of 40.80 cfs potential flow)

5=24" Piped Flow (Passes 1.06 cfs of 29.59 cfs potential flow)

4=24" Piped Flow (Passes 1.06 cfs of 28.76 cfs potential flow)

3=18" Piped Flow (Passes 1.06 cfs of 14.85 cfs potential flow)

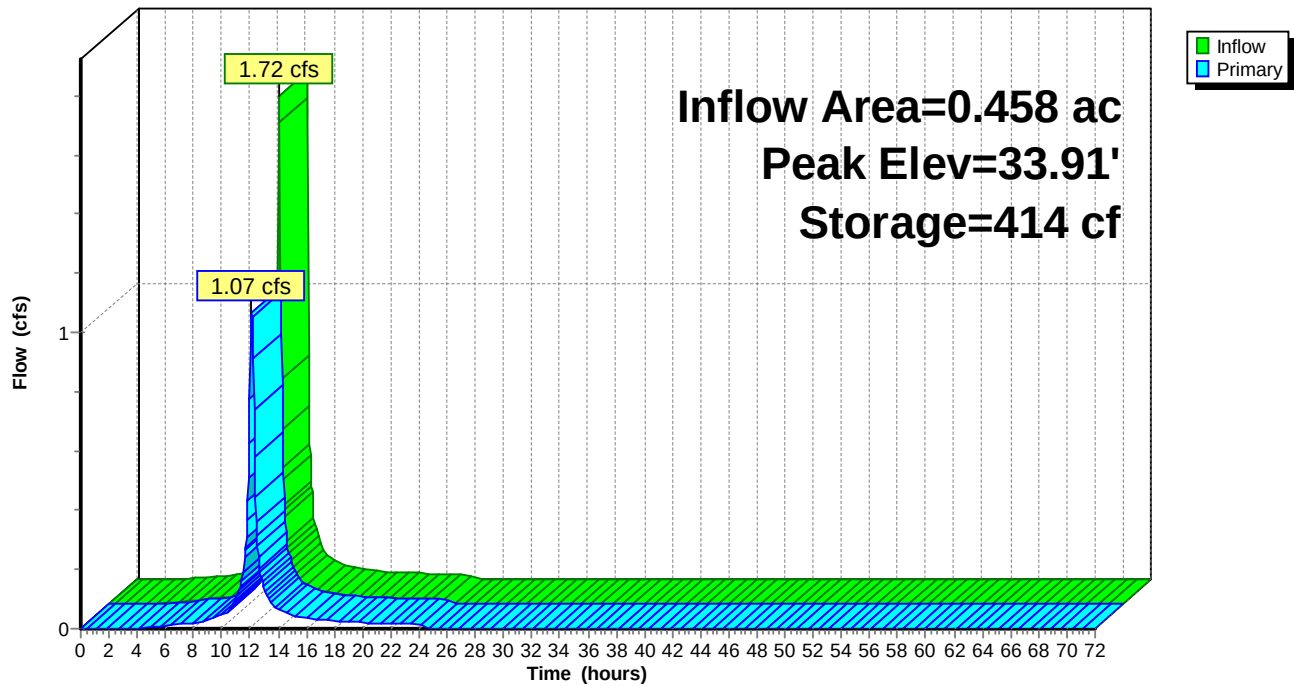
2=6" Piped Flow (Passes 1.06 cfs of 1.18 cfs potential flow)

1=Orifice/Grate (Controls 0.00 cfs)

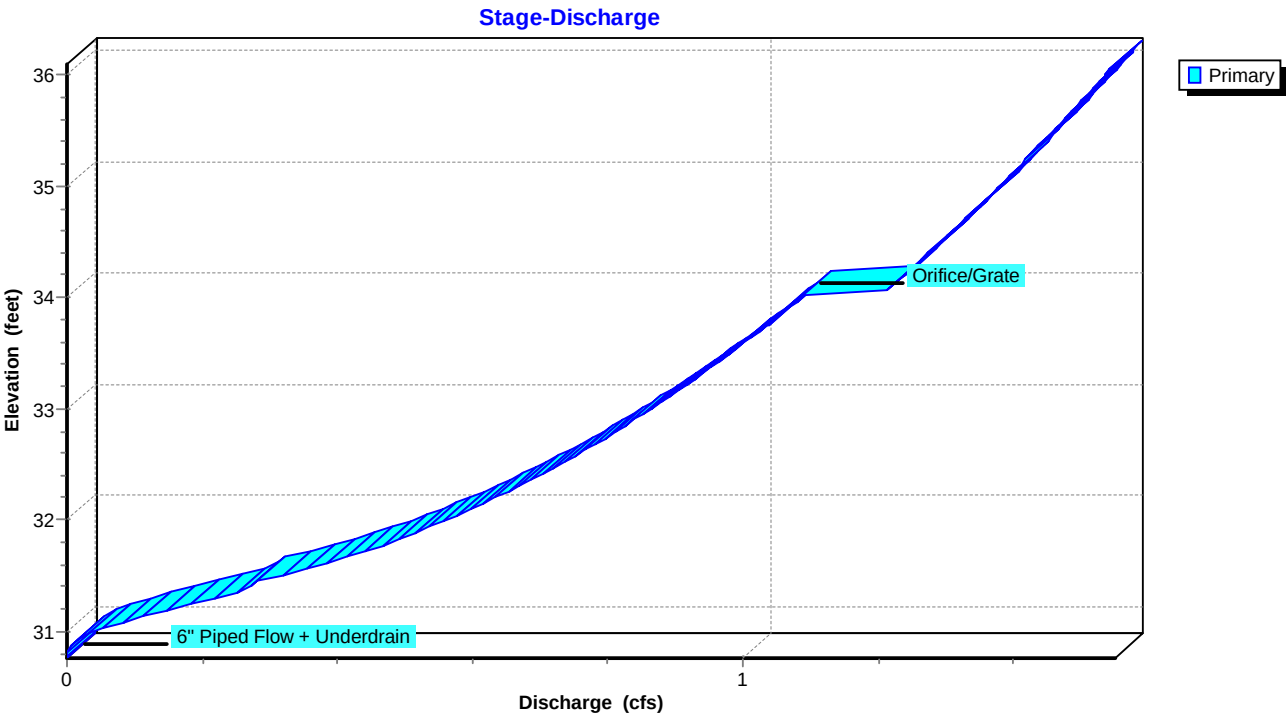
7=Underdrain (Barrel Controls 1.06 cfs @ 5.42 fps)

Pond MBR-1: MBR-1

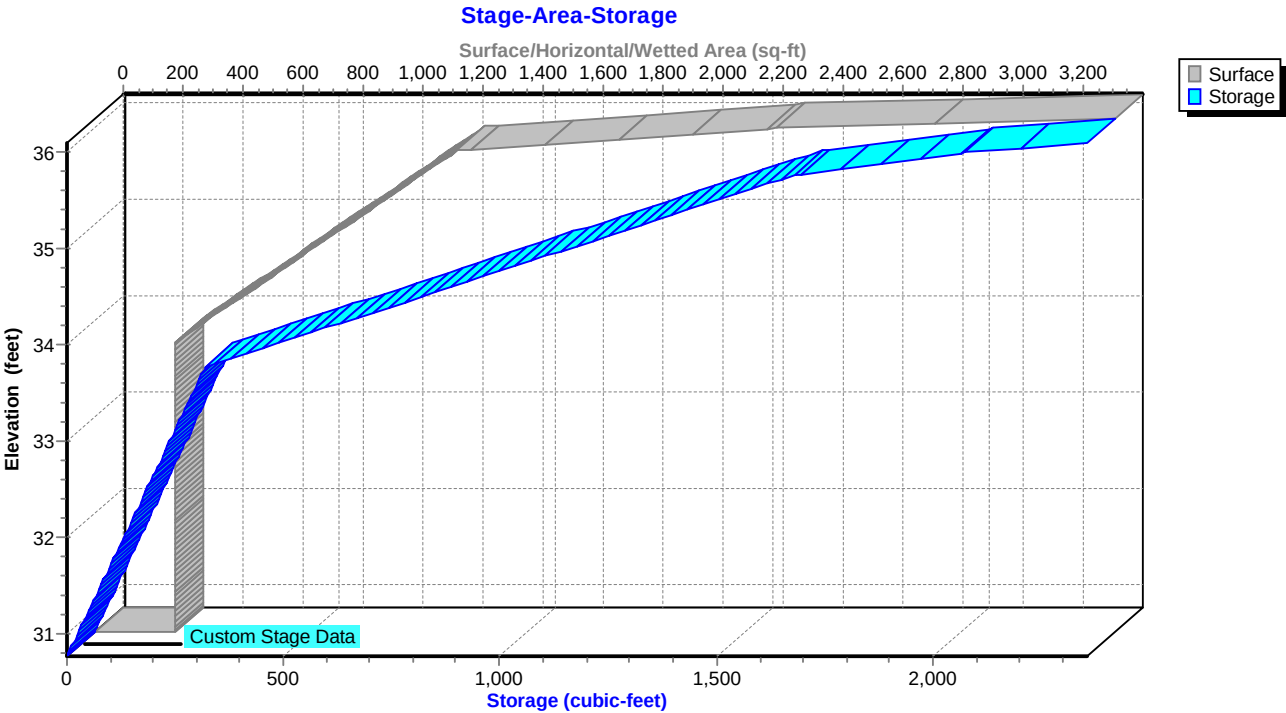
Hydrograph



Pond MBR-1: MBR-1



Pond MBR-1: MBR-1



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 2-Year Rainfall=3.33"

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Summary for Pond MBR-2: MBR-2

Inflow Area = 0.442 ac, 82.03% Impervious, Inflow Depth = 2.38" for 2-Year event
 Inflow = 1.06 cfs @ 12.20 hrs, Volume= 0.088 af
 Outflow = 1.09 cfs @ 12.26 hrs, Volume= 0.088 af, Atten= 0%, Lag= 3.4 min
 Primary = 1.09 cfs @ 12.26 hrs, Volume= 0.088 af
 Routed to Pond CI - 1 : CI - 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 35.07' @ 12.26 hrs Surf.Area= 248 sf Storage= 306 cf

Plug-Flow detention time= 6.2 min calculated for 0.088 af (100% of inflow)
 Center-of-Mass det. time= 5.1 min (814.7 - 809.5)

Volume	Invert	Avail.Storage	Storage Description			
#1	30.47'	1,326 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
30.47	122	67.3	0.0	0	0	122
30.48	122	67.3	40.0	0	0	123
34.45	122	67.3	40.0	194	194	390
34.46	122	67.3	100.0	1	195	391
35.46	352	86.2	100.0	227	423	634
36.46	983	123.9	100.0	641	1,064	1,273
36.66	1,157	138.0	100.0	214	1,277	1,568
36.70	1,262	145.2	100.0	48	1,326	1,730

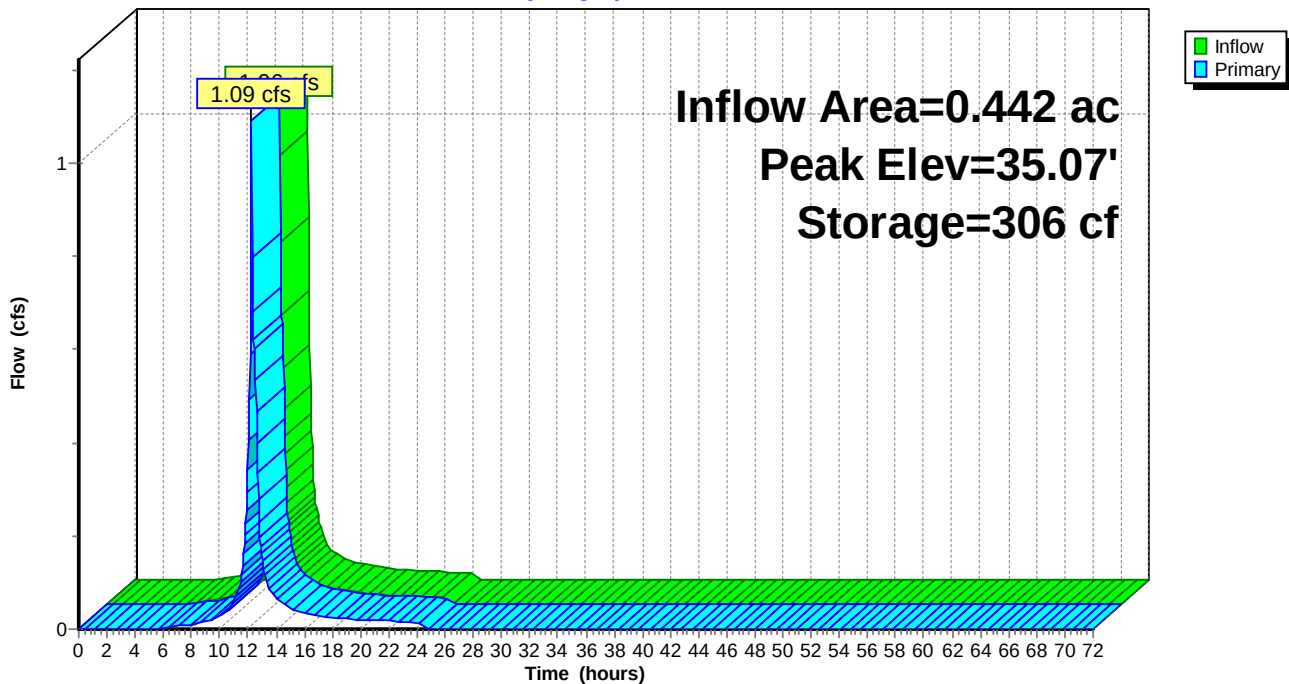
Device	Routing	Invert	Outlet Devices
#1	Device 2	34.96'	12.0" x 12.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	30.48'	15.0" Round Culvert L= 58.4' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 30.48' / 28.34' S= 0.0366 ' S= 0.0366 ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf
#3	Device 2	30.47'	4.0" Round Underdrain L= 27.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 30.47' / 30.47' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf

Primary OutFlow Max=1.05 cfs @ 12.26 hrs HW=35.06' TW=30.55' (Dynamic Tailwater)

↑ **2=Culvert** (Passes 1.05 cfs of 11.75 cfs potential flow)
 ↑ **1=Orifice/Grate** (Weir Controls 0.42 cfs @ 1.04 fps)
 ↑ **3=Underdrain** (Barrel Controls 0.63 cfs @ 7.25 fps)

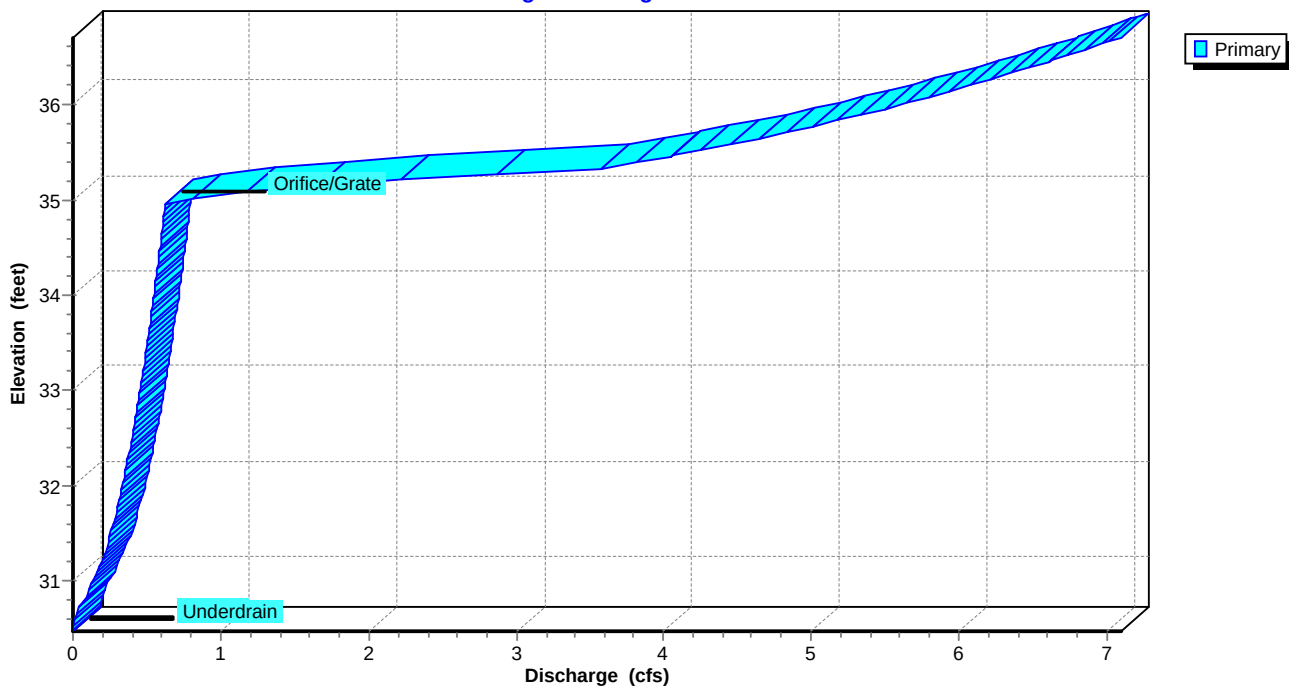
Pond MBR-2: MBR-2

Hydrograph

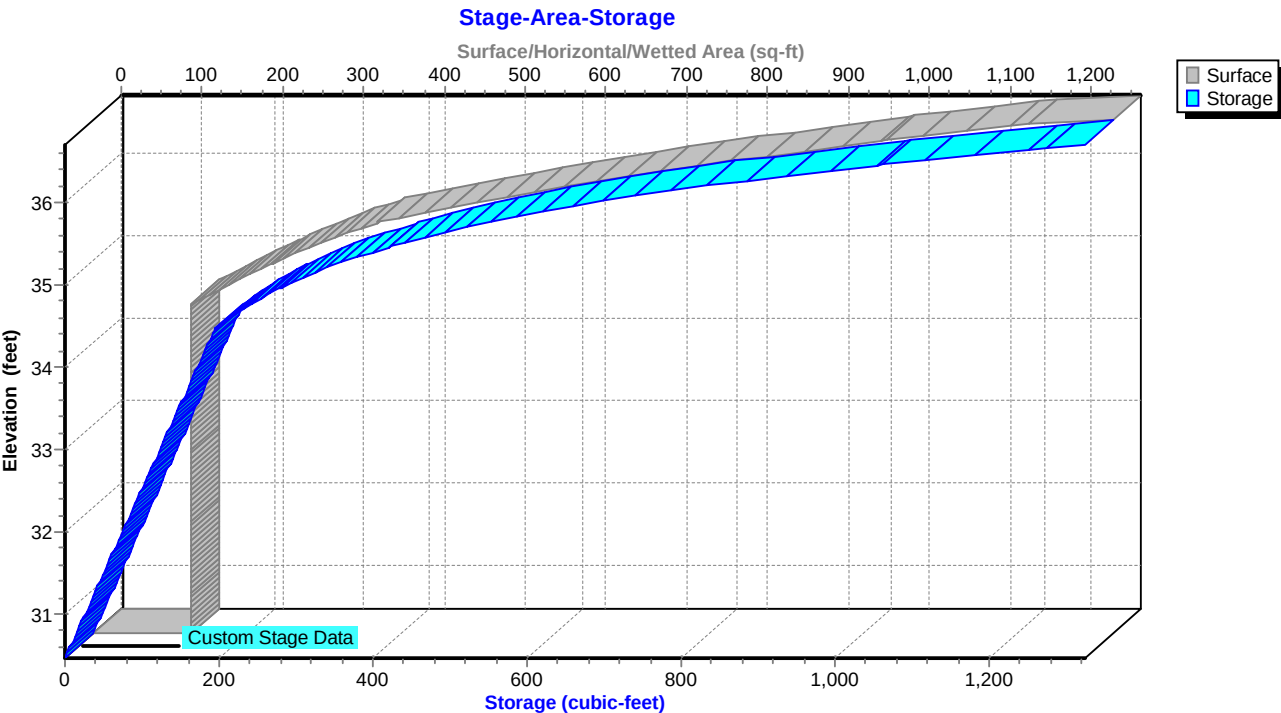


Pond MBR-2: MBR-2

Stage-Discharge



Pond MBR-2: MBR-2



Arc - Easton Crossing - Existing vs Proposed

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Summary for Pond MBR-3: MBR-3

Inflow Area = 0.427 ac, 69.57% Impervious, Inflow Depth = 2.03" for 2-Year event
 Inflow = 0.92 cfs @ 12.19 hrs, Volume= 0.072 af
 Outflow = 0.90 cfs @ 12.21 hrs, Volume= 0.061 af, Atten= 2%, Lag= 1.3 min
 Primary = 0.90 cfs @ 12.21 hrs, Volume= 0.061 af
 Routed to Pond MH-2 : MH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 34.41' @ 12.21 hrs Surf.Area= 523 sf Storage= 593 cf

Plug-Flow detention time= 104.0 min calculated for 0.061 af (84% of inflow)
 Center-of-Mass det. time= 33.9 min (859.1 - 825.1)

Volume	Invert	Avail.Storage	Storage Description			
#1	30.44'	1,981 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
30.44	249	130.6	0.0	0	0	249
30.45	249	130.6	40.0	1	1	250
33.70	249	130.6	40.0	324	325	675
33.71	249	130.6	100.0	2	327	676
34.71	669	149.5	100.0	442	769	1,120
35.71	1,145	168.3	100.0	896	1,666	1,621
35.90	2,235	222.1	100.0	315	1,981	3,293

Device	Routing	Invert	Outlet Devices
#1	Device 3	34.21'	9.0" x 9.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	29.13'	15.0" Round Culvert L= 38.2' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 29.13' / 28.93' S= 0.0052 ' / ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf
#3	Device 2	29.13'	6.0" Round Underdrain L= 59.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 29.13' / 29.13' S= 0.0000 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.89 cfs @ 12.21 hrs HW=34.41' TW=30.57' (Dynamic Tailwater)

↑ **2=Culvert** (Passes 0.89 cfs of 11.59 cfs potential flow)
 ↑ **3=Underdrain** (Passes 0.89 cfs of 1.24 cfs potential flow)
 ↑ **1=Orifice/Grate** (Weir Controls 0.89 cfs @ 1.47 fps)

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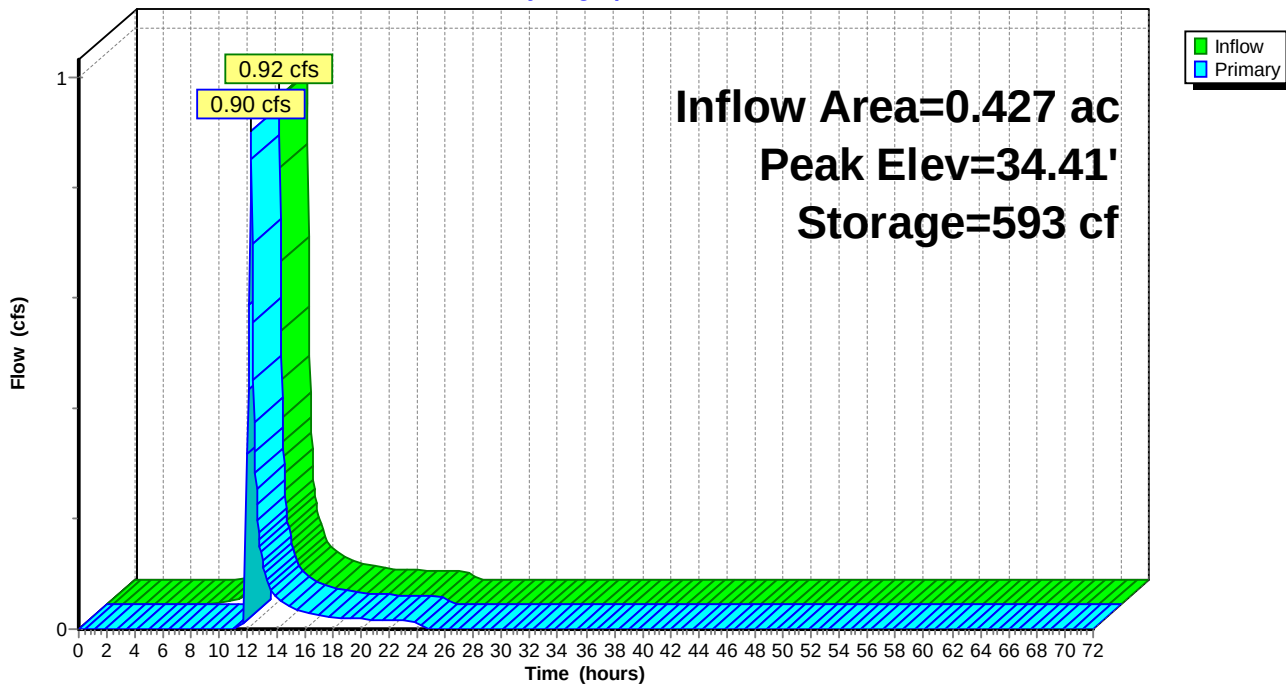
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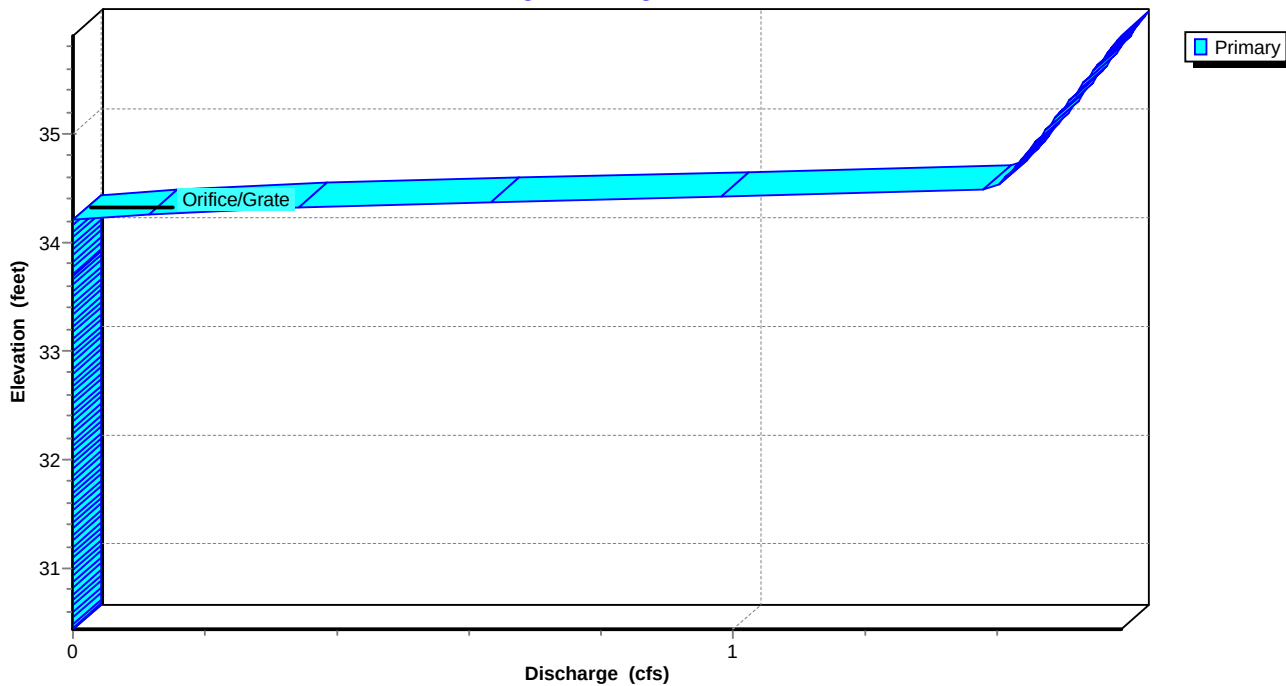
Pond MBR-3: MBR-3

Hydrograph



Pond MBR-3: MBR-3

Stage-Discharge



Arc - Easton Crossing - Existing vs Proposed

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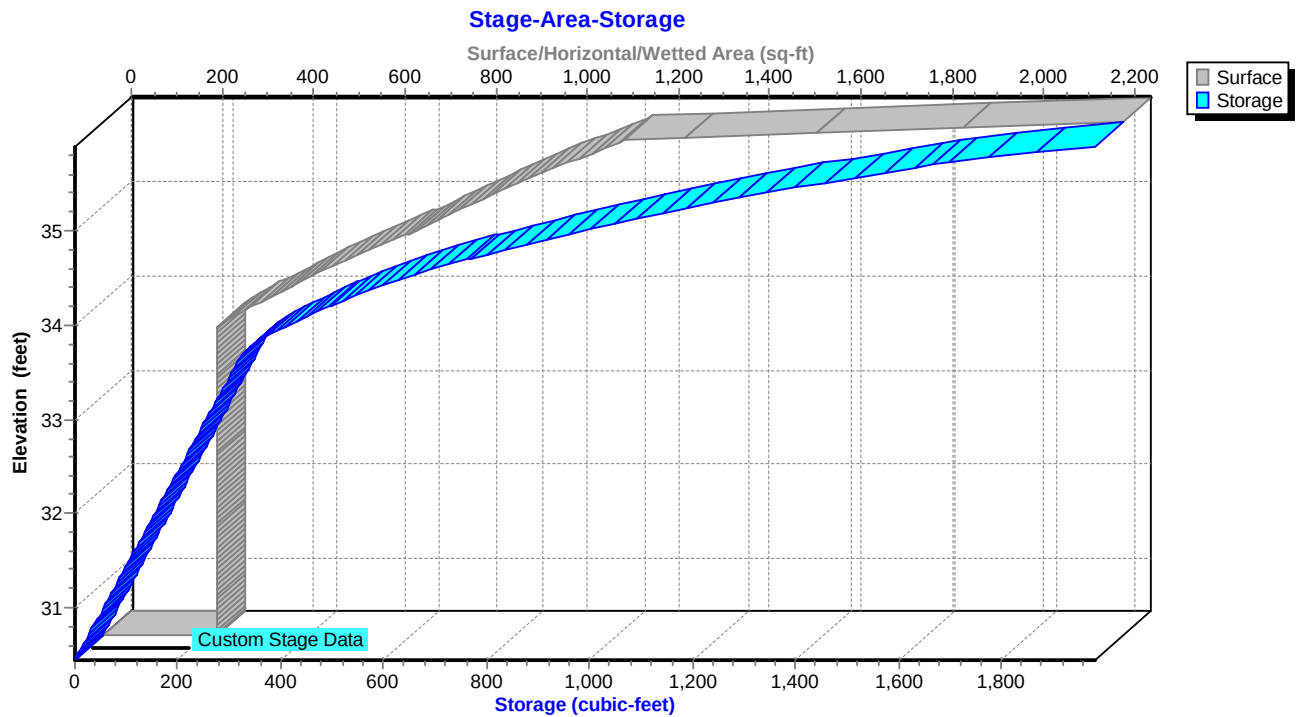
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Pond MBR-3: MBR-3



Arc - Easton Crossing - Existing vs Proposed

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Summary for Pond MBR-4: MBR-4

Inflow Area = 0.445 ac, 85.36% Impervious, Inflow Depth = 2.57" for 2-Year event
 Inflow = 1.15 cfs @ 12.20 hrs, Volume= 0.095 af
 Outflow = 0.94 cfs @ 12.26 hrs, Volume= 0.095 af, Atten= 18%, Lag= 3.9 min
 Primary = 0.94 cfs @ 12.26 hrs, Volume= 0.095 af
 Routed to Pond MH-1 : MH - 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 33.62' @ 12.27 hrs Surf.Area= 212 sf Storage= 286 cf

Plug-Flow detention time= 10.1 min calculated for 0.095 af (100% of inflow)
 Center-of-Mass det. time= 8.2 min (807.7 - 799.4)

Volume	Invert	Avail.Storage	Storage Description			
#1	30.25'	1,725 cf	Custom Stage Data (Irregular) Listed below			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
30.25	212	112.4	0.0	0	0	212
30.26	212	112.4	40.0	1	1	213
33.70	212	112.4	40.0	292	293	600
33.71	212	112.4	100.0	2	295	601
34.71	578	131.3	100.0	380	675	987
35.71	1,000	150.1	100.0	779	1,454	1,431
35.90	1,899	200.3	100.0	271	1,725	2,831

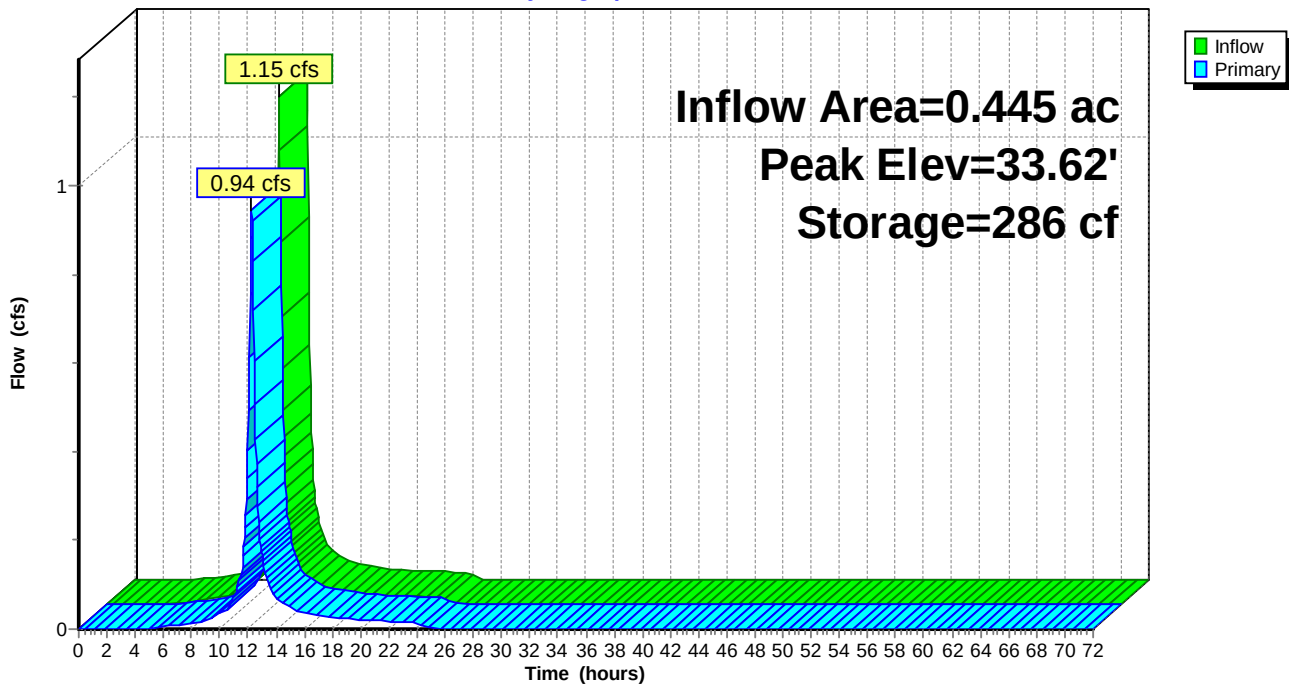
Device	Routing	Invert	Outlet Devices
#1	Device 2	34.71'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	30.26'	15.0" Round Culvert L= 46.8' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 30.26' / 29.89' S= 0.0079 ' / ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf
#3	Device 2	30.26'	6.0" Round Underdrain L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 30.26' / 30.26' S= 0.0000 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=0.94 cfs @ 12.26 hrs HW=33.58' TW=31.51' (Dynamic Tailwater)

↑ **2=Culvert** (Passes 0.94 cfs of 8.51 cfs potential flow)
 ↑ **1=Orifice/Grate** (Controls 0.00 cfs)
 ↑ **3=Underdrain** (Outlet Controls 0.94 cfs @ 4.77 fps)

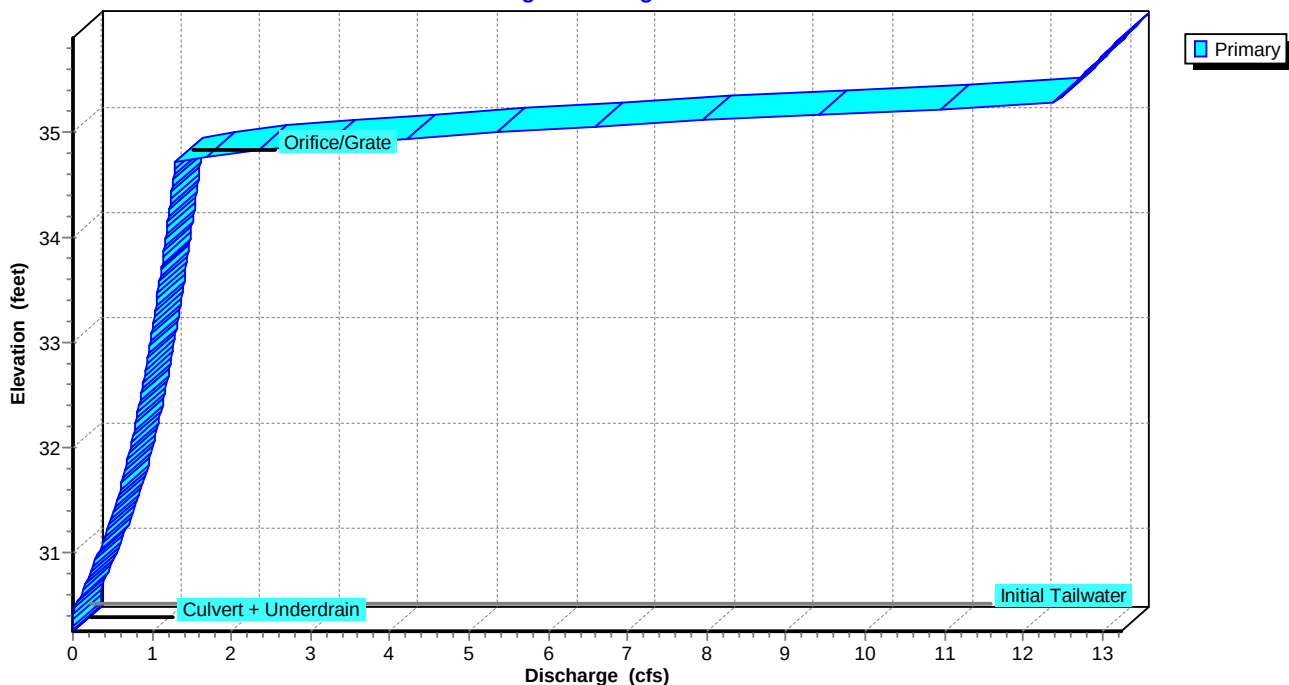
Pond MBR-4: MBR-4

Hydrograph

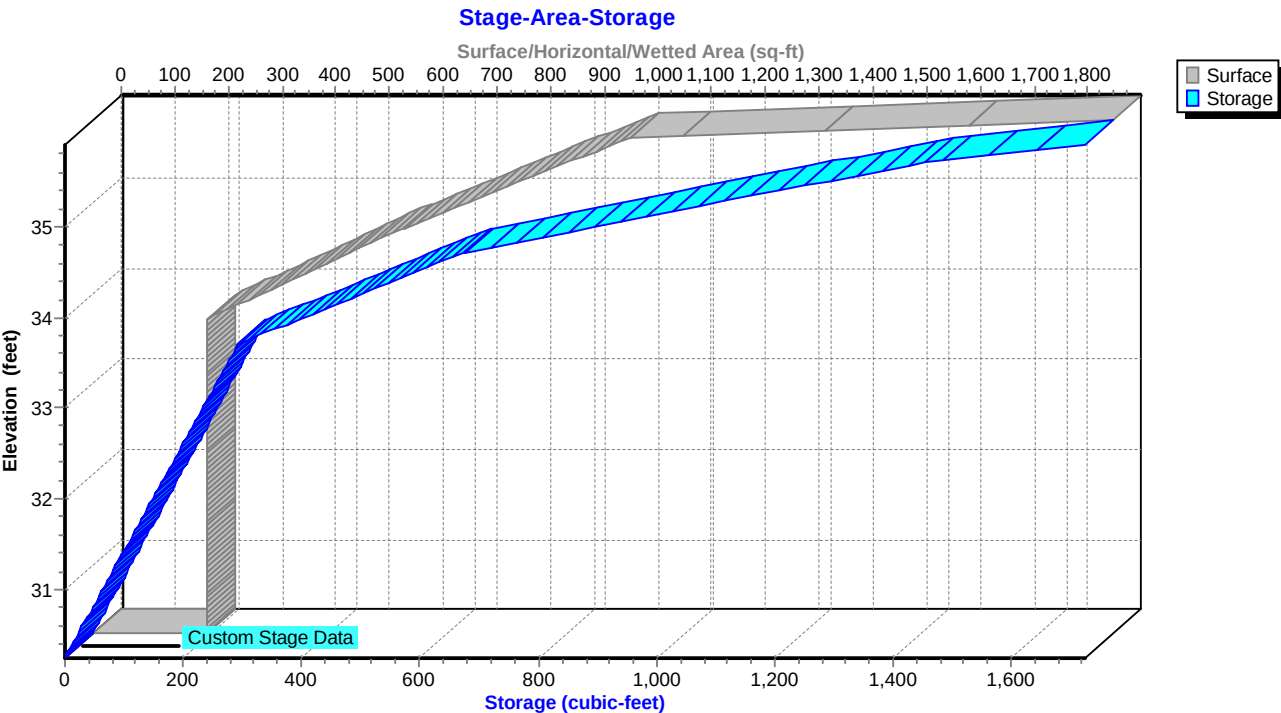


Pond MBR-4: MBR-4

Stage-Discharge



Pond MBR-4: MBR-4



Arc - Easton Crossing - Existing vs Proposed

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Summary for Pond MH-1: MH - 1

Inflow Area = 5.731 ac, 68.53% Impervious, Inflow Depth = 2.00" for 2-Year event
Inflow = 8.43 cfs @ 12.36 hrs, Volume= 0.953 af
Outflow = 8.43 cfs @ 12.36 hrs, Volume= 0.953 af, Atten= 0%, Lag= 0.0 min
Primary = 8.43 cfs @ 12.36 hrs, Volume= 0.953 af
Routed to Pond MH-2 : MH-2

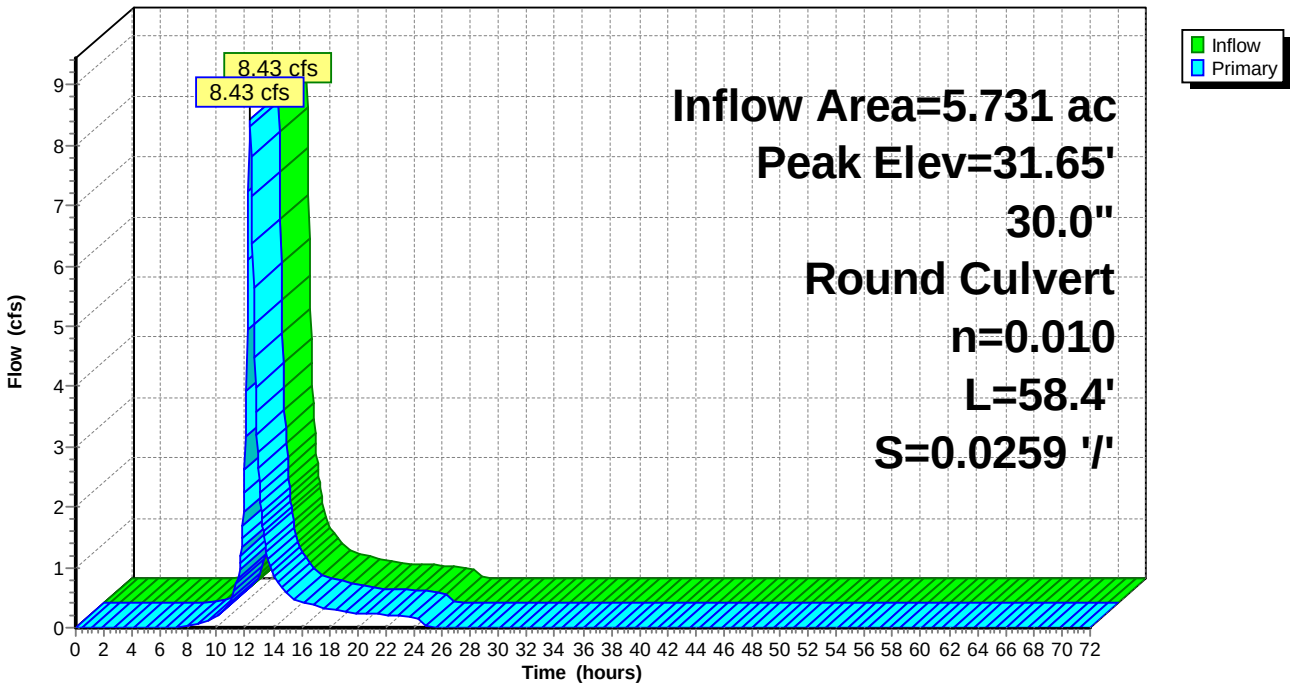
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 31.65' @ 12.38 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	30.40'	30.0" Round Culvert L= 58.4' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 30.40' / 28.89' S= 0.0259 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 4.91 sf

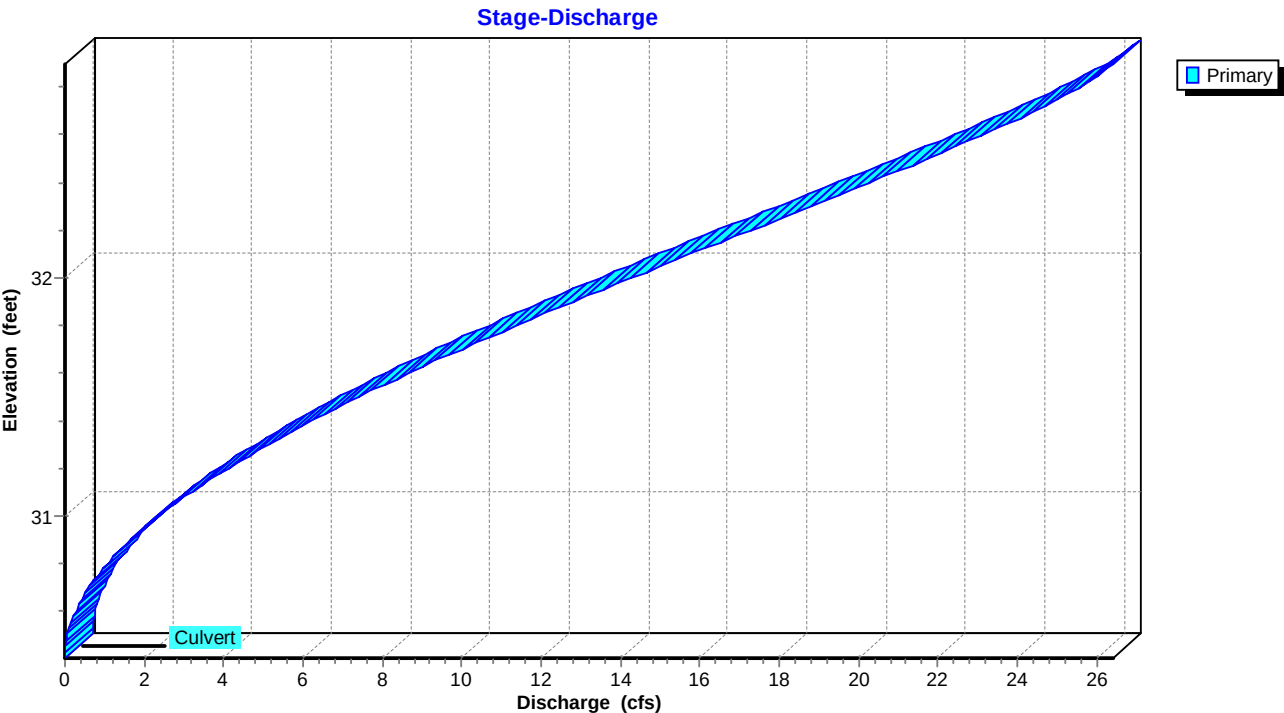
Primary OutFlow Max=8.20 cfs @ 12.36 hrs HW=31.65' TW=30.93' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 8.20 cfs @ 4.89 fps)

Pond MH-1: MH - 1

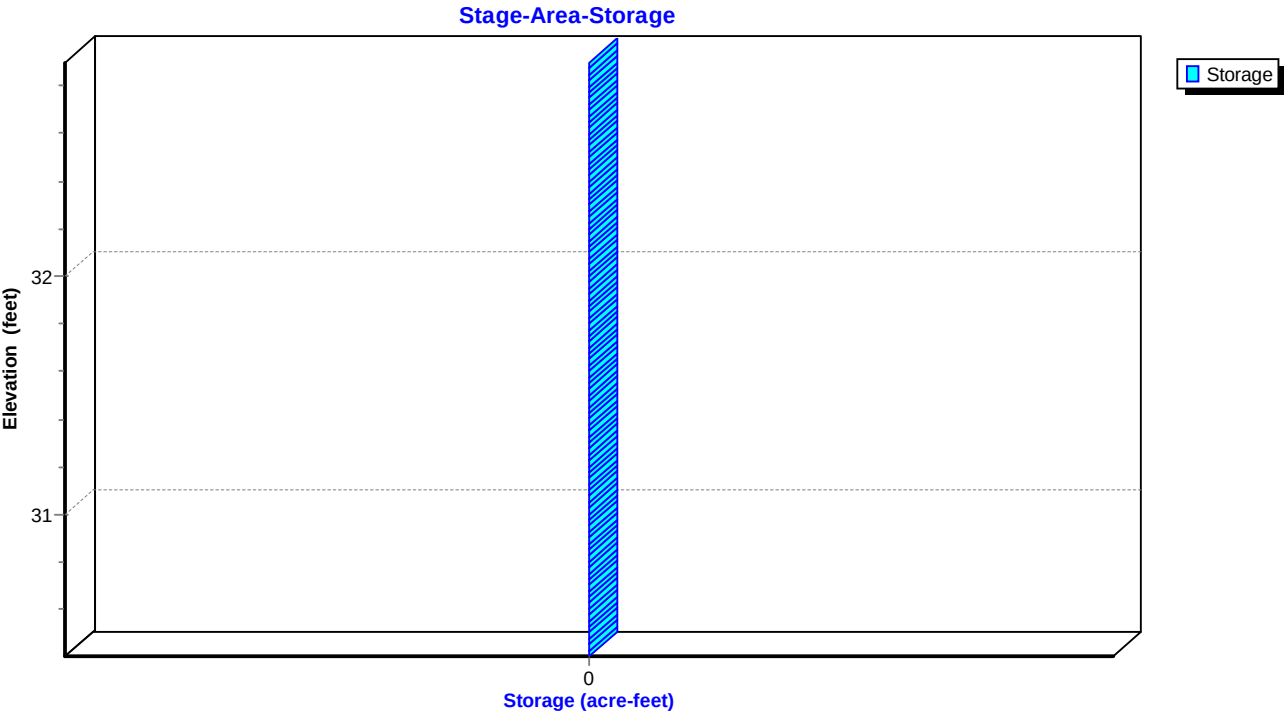
Hydrograph



Pond MH-1: MH - 1



Pond MH-1: MH - 1



Arc - Easton Crossing - Existing vs Proposed

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Summary for Pond MH-2: MH-2

Inflow Area = 6.157 ac, 68.60% Impervious, Inflow Depth = 1.98" for 2-Year event
Inflow = 8.98 cfs @ 12.35 hrs, Volume= 1.014 af
Outflow = 8.98 cfs @ 12.35 hrs, Volume= 1.014 af, Atten= 0%, Lag= 0.0 min
Primary = 8.98 cfs @ 12.35 hrs, Volume= 1.014 af
Routed to Pond SGW : SGW

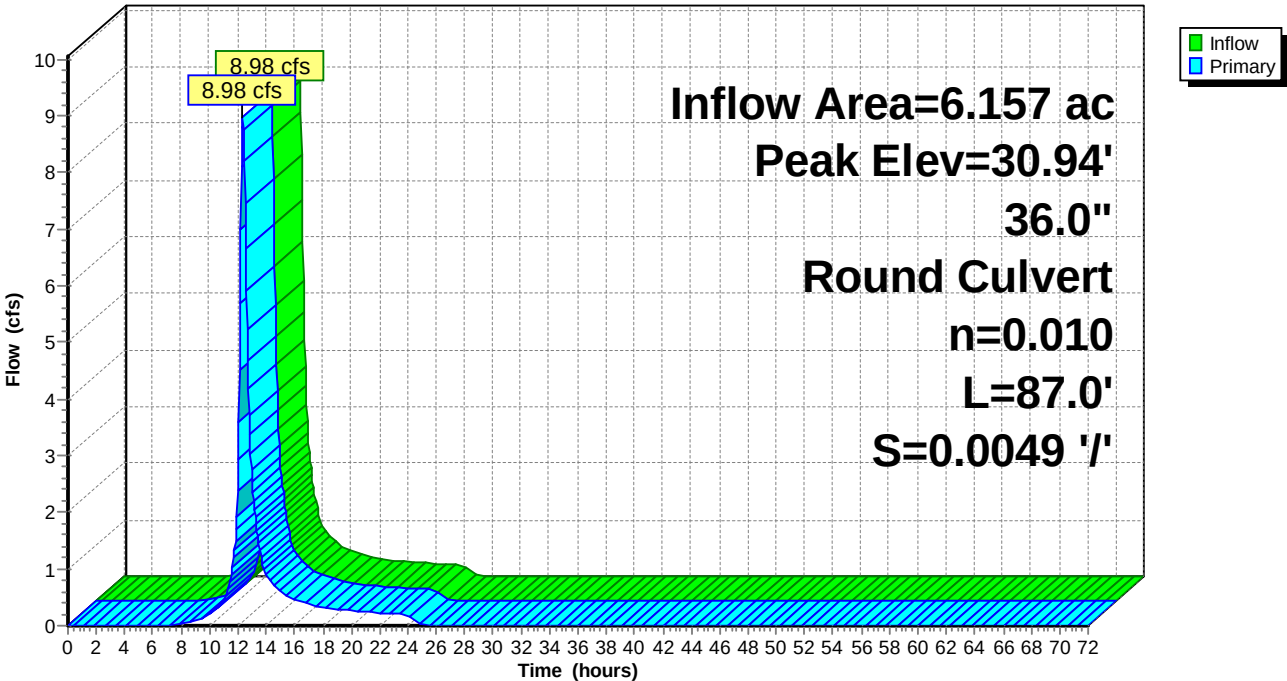
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 30.94' @ 12.37 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	28.89'	36.0" Round Culvert L= 87.0' Box, 0° wingwalls, square crown edge, Ke= 0.700 Inlet / Outlet Invert= 28.89' / 28.46' S= 0.0049 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 7.07 sf

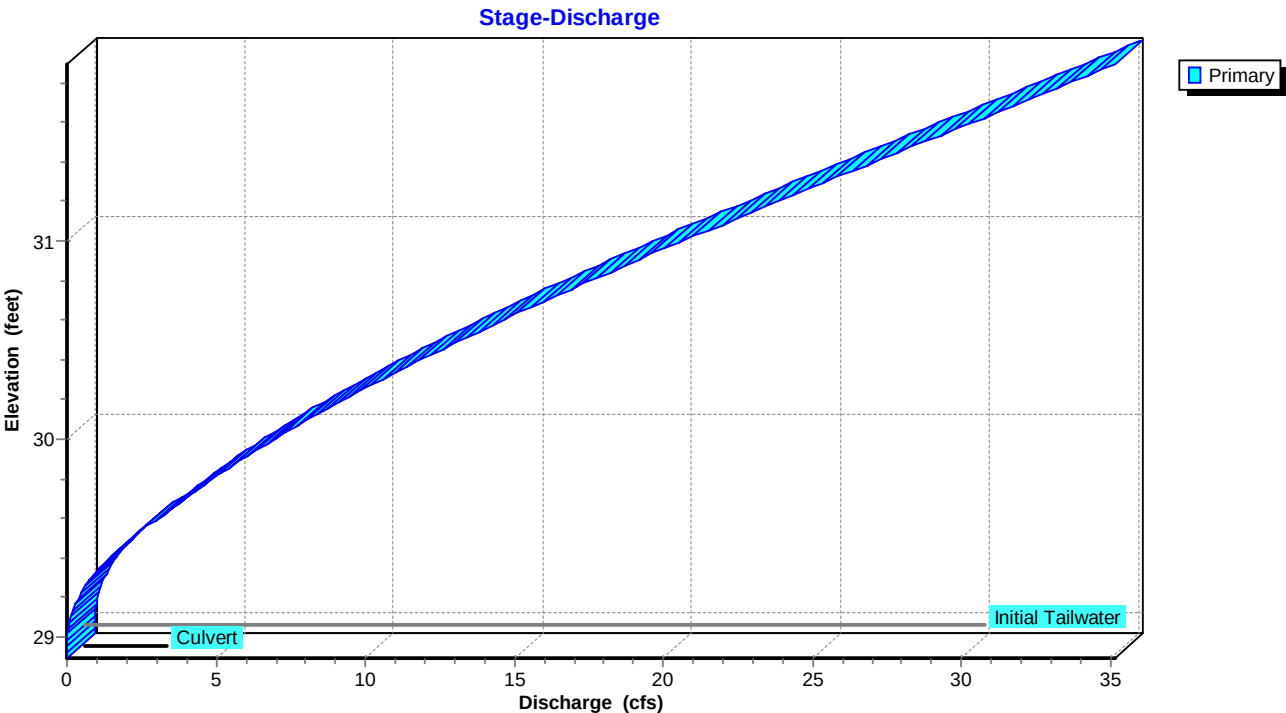
Primary OutFlow Max=8.97 cfs @ 12.35 hrs HW=30.93' TW=30.74' (Dynamic Tailwater)
1=Culvert (Outlet Controls 8.97 cfs @ 2.47 fps)

Pond MH-2: MH-2

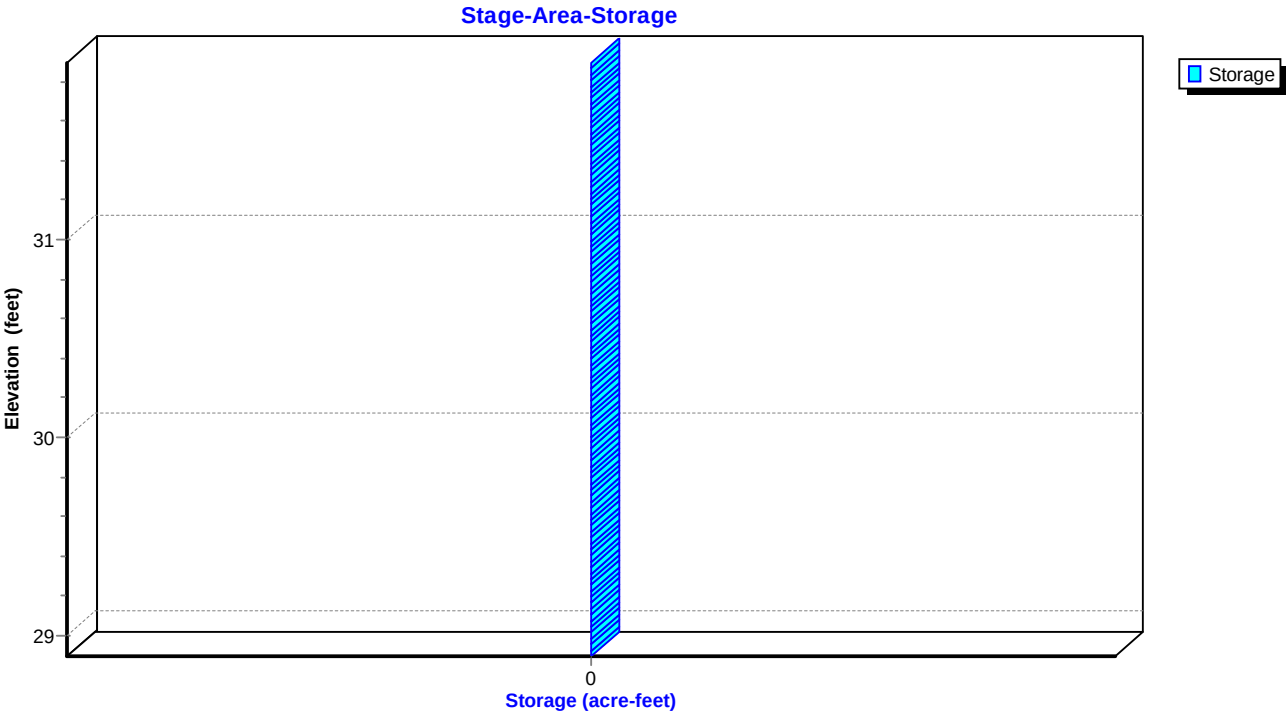
Hydrograph



Pond MH-2: MH-2



Pond MH-2: MH-2



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 2-Year Rainfall=3.33"

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Summary for Pond SGW: SGW

Inflow Area = 7.058 ac, 70.96% Impervious, Inflow Depth = 2.05" for 2-Year event
 Inflow = 10.34 cfs @ 12.31 hrs, Volume= 1.208 af
 Outflow = 9.95 cfs @ 12.40 hrs, Volume= 1.208 af, Atten= 4%, Lag= 5.3 min
 Primary = 9.95 cfs @ 12.40 hrs, Volume= 1.208 af
 Routed to Link PR-SP-1 : PR-SP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2

Starting Elev= 28.67' Storage= 0 cf

Peak Elev= 30.75' @ 12.40 hrs Surf.Area= 6,336 sf Storage= 9,590 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 36.1 min (869.9 - 833.7)

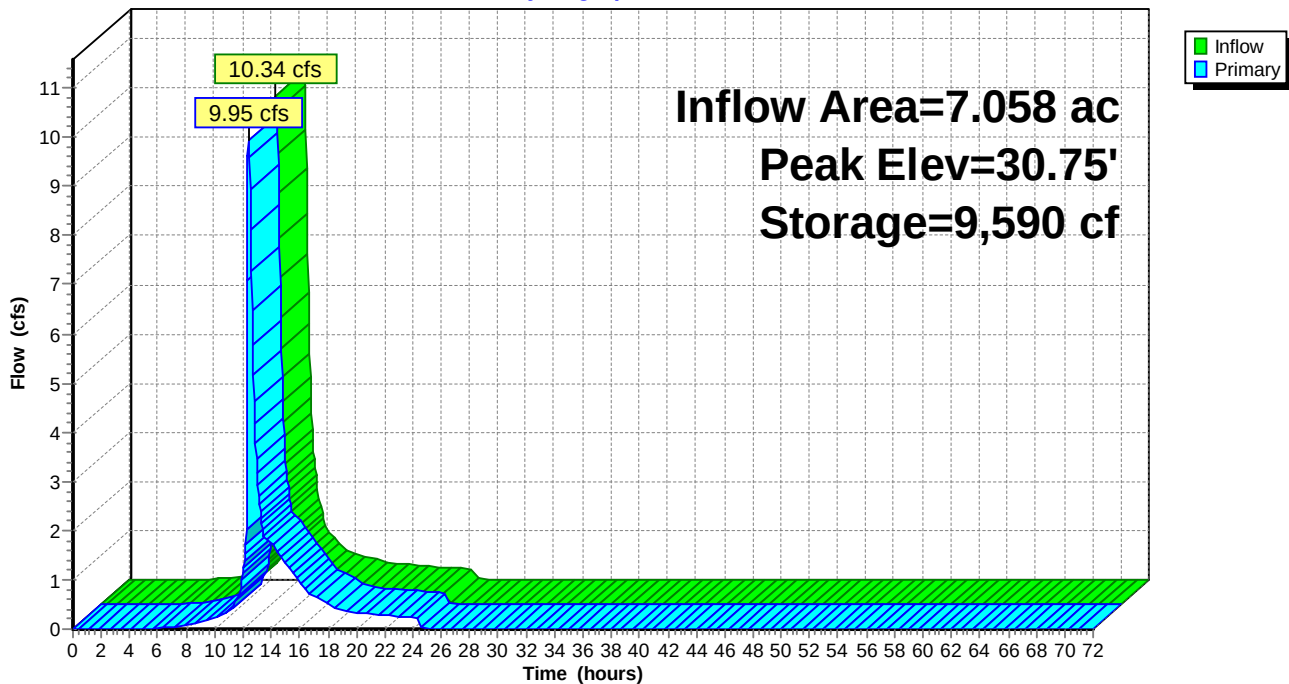
Volume	Invert	Avail.Storage	Storage Description		
#1	29.00'	18,455 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
29.00	4,692	305.3	0	0	4,692
29.50	5,135	313.7	2,456	2,456	5,134
30.00	5,608	322.3	2,685	5,141	5,597
30.50	6,095	330.8	2,925	8,066	6,068
31.00	6,592	339.4	3,171	11,237	6,556
31.50	7,157	350.0	3,436	14,673	7,163
32.00	7,979	388.0	3,782	18,455	9,402

Device	Routing	Invert	Outlet Devices	
#1	Device 2	30.50'	60.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads	
#2	Primary	28.67'	36.0" Round Culvert L= 42.9' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 28.67' / 24.02' S= 0.1084 ' / ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 7.07 sf	
#3	Device 2	28.67'	6.0" Round Collection Pipe X 2.00 L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.67' / 28.67' S= 0.0000 ' / ' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf	

Primary OutFlow Max=9.95 cfs @ 12.40 hrs HW=30.75' TW=0.00' (Dynamic Tailwater)↑ **2=Culvert** (Passes 9.95 cfs of 25.58 cfs potential flow)↑ **1=Orifice/Grate** (Weir Controls 7.93 cfs @ 1.62 fps)↑ **3=Collection Pipe** (Barrel Controls 2.01 cfs @ 5.13 fps)

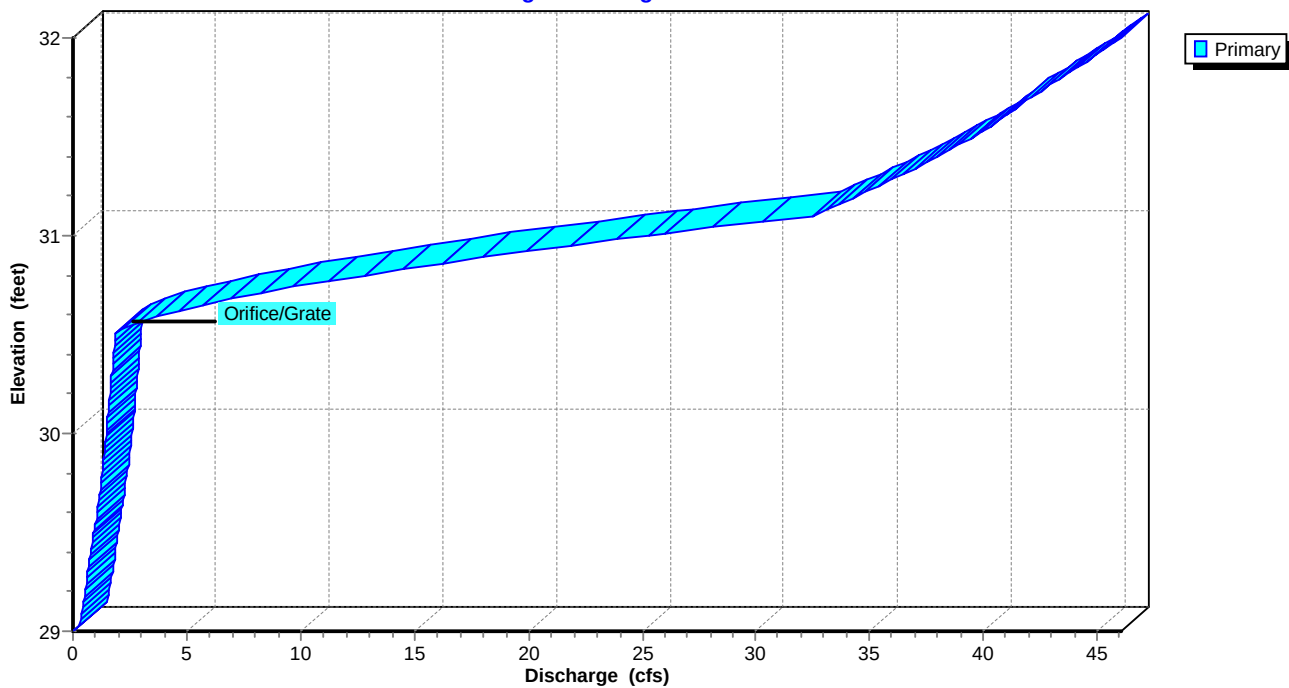
Pond SGW: SGW

Hydrograph

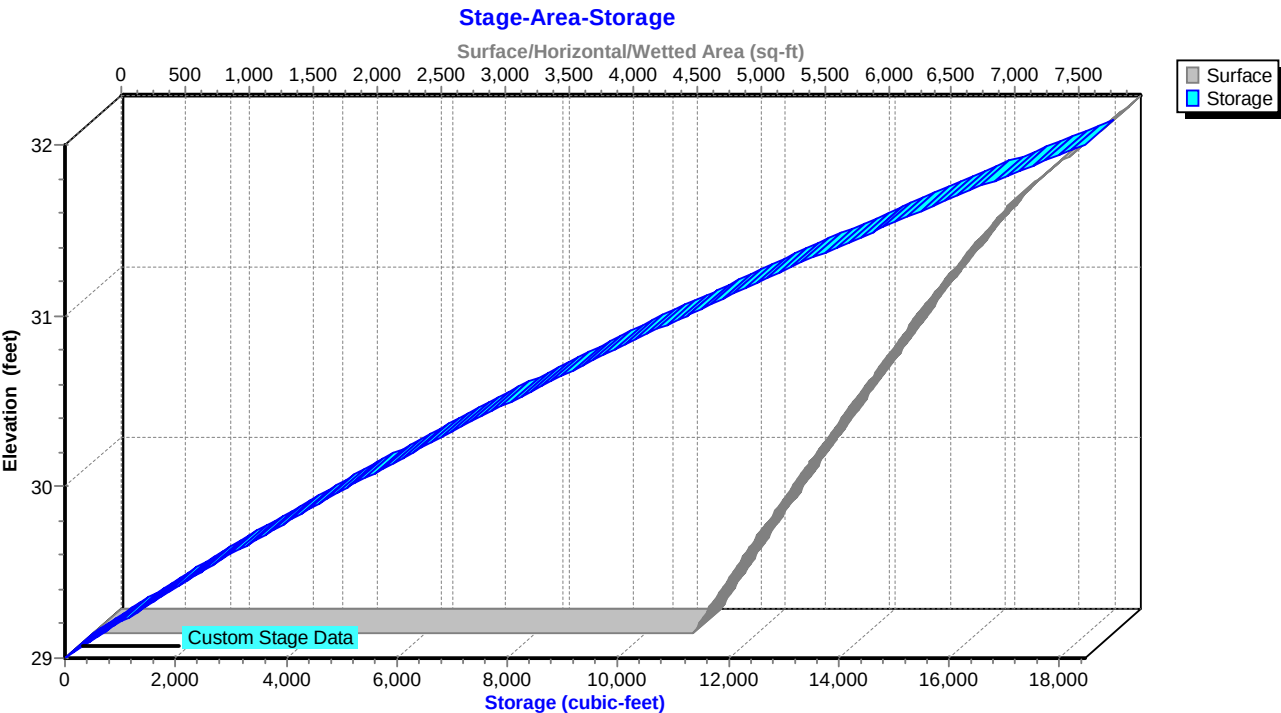


Pond SGW: SGW

Stage-Discharge



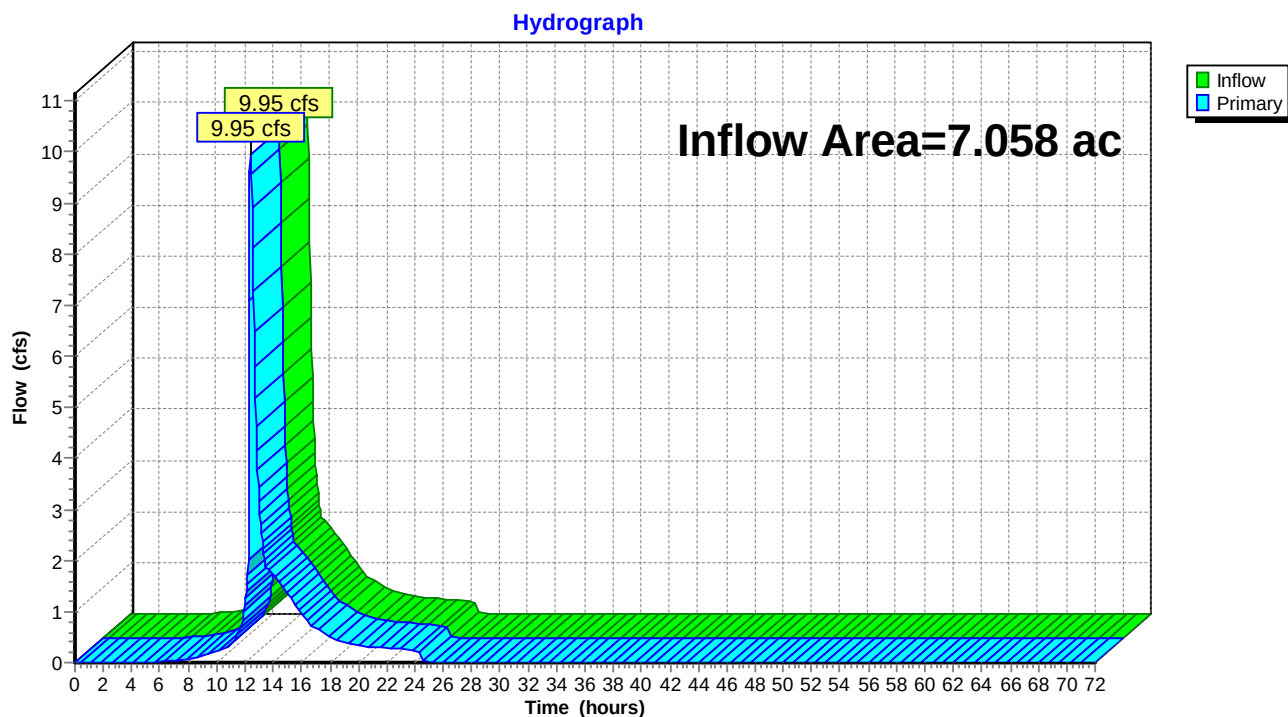
Pond SGW: SGW



Summary for Link PR-SP-1: PR-SP-1

Inflow Area = 7.058 ac, 70.96% Impervious, Inflow Depth = 2.05" for 2-Year event
Inflow = 9.95 cfs @ 12.40 hrs, Volume= 1.208 af
Primary = 9.95 cfs @ 12.40 hrs, Volume= 1.208 af, Atten= 0%, Lag= 0.0 min

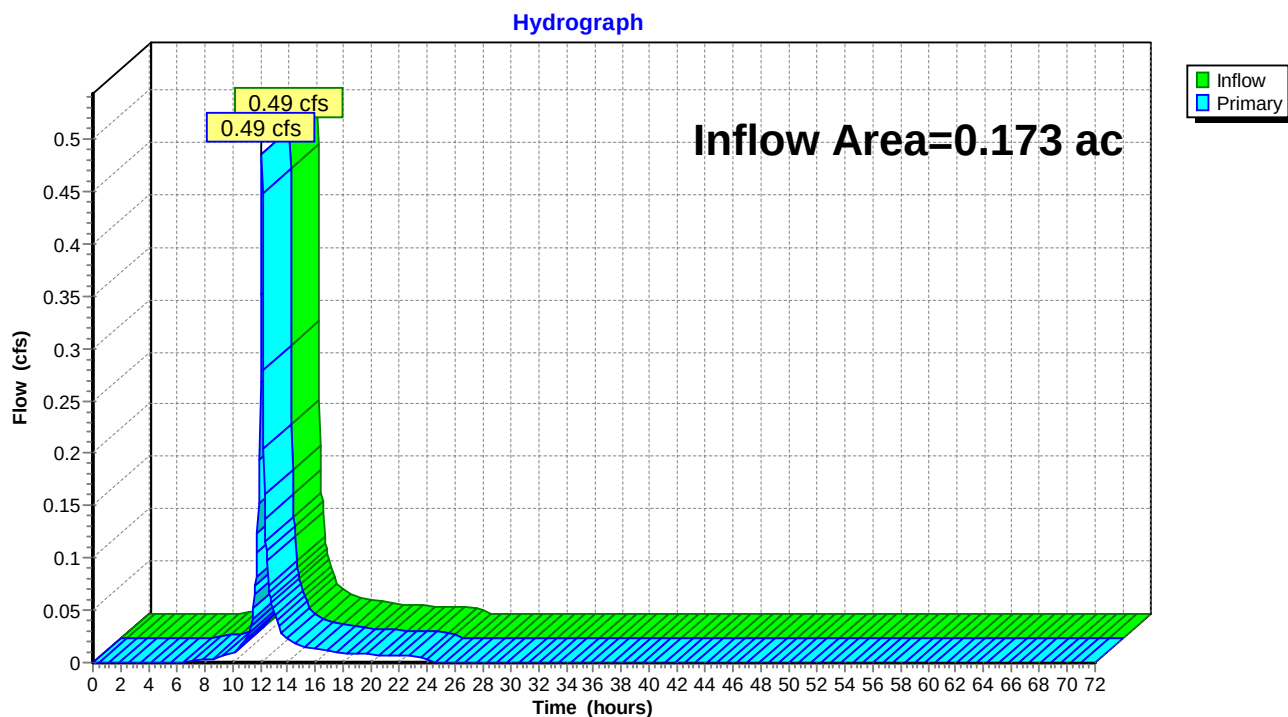
Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link PR-SP-1: PR-SP-1

Summary for Link PR-SP-2: PR-SP-2

Inflow Area = 0.173 ac, 75.24% Impervious, Inflow Depth = 2.20" for 2-Year event
Inflow = 0.49 cfs @ 12.12 hrs, Volume= 0.032 af
Primary = 0.49 cfs @ 12.12 hrs, Volume= 0.032 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link PR-SP-2: PR-SP-2

Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 10-Year Rainfall=5.20"

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PR-DA-1: PR-DA-1	Runoff Area=230,241 sf 67.12% Impervious Runoff Depth=3.65" Flow Length=347' Tc=26.1 min CN=86 Runoff=14.14 cfs 1.609 af
Subcatchment PR-DA-2: PR-DA-2	Runoff Area=7,525 sf 75.24% Impervious Runoff Depth=3.96" Flow Length=258' Tc=5.1 min CN=89 Runoff=0.85 cfs 0.057 af
Subcatchment PR-DA-3: PR-DA-3	Runoff Area=19,951 sf 91.92% Impervious Runoff Depth=4.62" Flow Length=150' Tc=1.9 min CN=95 Runoff=2.77 cfs 0.176 af
Subcatchment PR-DA-4: PR-DA-4	Runoff Area=19,263 sf 82.03% Impervious Runoff Depth=4.18" Flow Length=112' Tc=12.2 min CN=91 Runoff=1.81 cfs 0.154 af
Subcatchment PR-DA-5: PR-DA-5	Runoff Area=18,594 sf 69.57% Impervious Runoff Depth=3.76" Flow Length=154' Tc=11.2 min CN=87 Runoff=1.67 cfs 0.134 af
Subcatchment PR-DA-6: PR-DA-6	Runoff Area=19,385 sf 85.36% Impervious Runoff Depth=4.39" Flow Length=110' Tc=12.1 min CN=93 Runoff=1.90 cfs 0.163 af
Pond CI - 1: CI - 1	Peak Elev=30.91' Inflow=3.06 cfs 0.330 af 30.0" Round Culvert n=0.013 L=60.0' S=0.0030 ' /' Outflow=3.06 cfs 0.330 af
Pond MBR-1: MBR-1	Peak Elev=34.64' Storage=910 cf Inflow=2.77 cfs 0.176 af Outflow=1.32 cfs 0.176 af
Pond MBR-2: MBR-2	Peak Elev=35.15' Storage=328 cf Inflow=1.81 cfs 0.154 af Outflow=1.75 cfs 0.154 af
Pond MBR-3: MBR-3	Peak Elev=34.77' Storage=807 cf Inflow=1.67 cfs 0.134 af Outflow=1.20 cfs 0.122 af
Pond MBR-4: MBR-4	Peak Elev=34.77' Storage=723 cf Inflow=1.90 cfs 0.163 af Outflow=1.46 cfs 0.163 af
Pond MH-1: MH - 1	Peak Elev=32.20' Inflow=15.29 cfs 1.772 af 30.0" Round Culvert n=0.010 L=58.4' S=0.0259 ' /' Outflow=15.29 cfs 1.772 af
Pond MH-2: MH-2	Peak Elev=31.32' Inflow=16.46 cfs 1.894 af 36.0" Round Culvert n=0.010 L=87.0' S=0.0049 ' /' Outflow=16.46 cfs 1.894 af
Pond SGW: SGW	Peak Elev=30.90' Storage=10,587 cf Inflow=18.82 cfs 2.225 af Outflow=18.70 cfs 2.225 af
Link PR-SP-1: PR-SP-1	Inflow=18.70 cfs 2.225 af Primary=18.70 cfs 2.225 af
Link PR-SP-2: PR-SP-2	Inflow=0.85 cfs 0.057 af Primary=0.85 cfs 0.057 af

Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 10-Year Rainfall=5.20"

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Total Runoff Area = 7.230 ac Runoff Volume = 2.293 af Average Runoff Depth = 3.81"
28.94% Pervious = 2.092 ac 71.06% Impervious = 5.138 ac

Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 10-Year Rainfall=5.20"

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Summary for Subcatchment PR-DA-1: PR-DA-1

Runoff = 14.14 cfs @ 12.37 hrs, Volume= 1.609 af, Depth= 3.65"
 Routed to Pond MH-1 : MH - 1

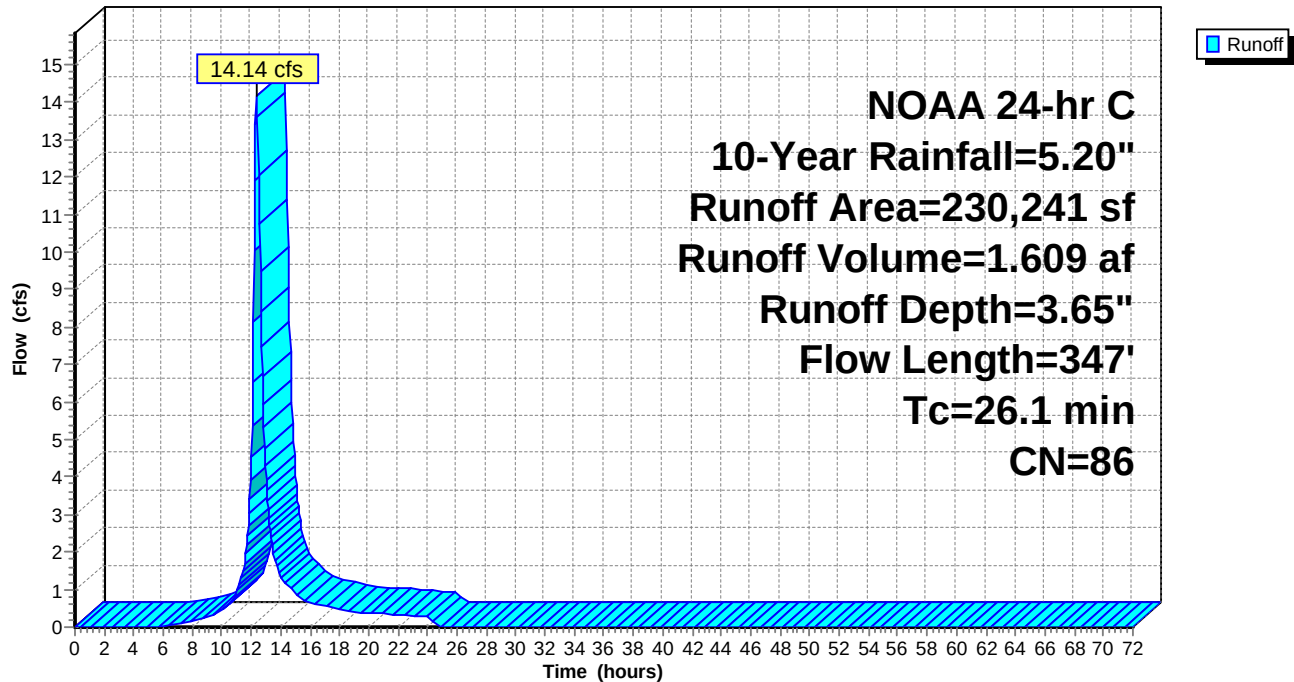
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 10-Year Rainfall=5.20"

Area (sf)	CN	Description
65,361	61	>75% Grass cover, Good, HSG B
146,431	98	Unconnected pavement, HSG B
10,353	74	>75% Grass cover, Good, HSG C
8,096	98	Unconnected pavement, HSG C
230,241	86	Weighted Average
75,714		32.88% Pervious Area
154,527		67.12% Impervious Area
154,527		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	35	0.0163	0.13		Sheet Flow, Grassed Sheet Flow Grass: Short n= 0.150 P2= 3.33"
3.5	8	0.0042	0.04		Sheet Flow, Concreted Sheet Flow Grass: Dense n= 0.240 P2= 3.33"
17.3	57	0.0015	0.06		Sheet Flow, Grassed Sheet Flow Grass: Short n= 0.150 P2= 3.33"
0.4	14	0.0015	0.58		Shallow Concentrated Flow, Grassed SCF Grassed Waterway Kv= 15.0 fps
0.3	114	0.0050	5.46	9.66	Pipe Channel, 18" Piped Flow 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.010 PVC, smooth interior
0.1	119	0.0206	15.59	76.53	Pipe Channel, 30" Piped Flow 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.010 PVC, smooth interior
26.1	347	Total			

Subcatchment PR-DA-1: PR-DA-1

Hydrograph



Arc - Easton Crossing - Existing vs Proposed

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NOAA 24-hr C 10-Year Rainfall=5.20"

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Summary for Subcatchment PR-DA-2: PR-DA-2

Runoff = 0.85 cfs @ 12.11 hrs, Volume= 0.057 af, Depth= 3.96"
Routed to Link PR-SP-2 : PR-SP-2

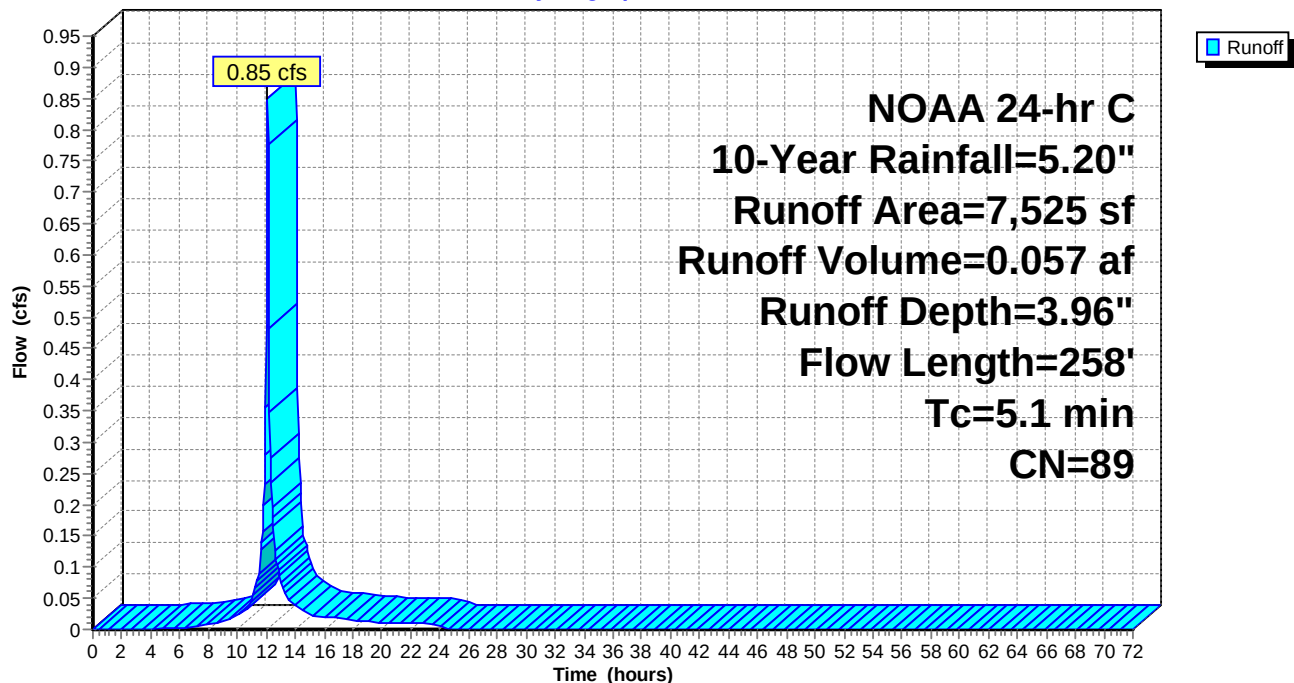
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.20"

Area (sf)	CN	Description
1,863	61	>75% Grass cover, Good, HSG B
5,662	98	Unconnected pavement, HSG B
7,525	89	Weighted Average
1,863		24.76% Pervious Area
5,662		75.24% Impervious Area
5,662		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	13	0.0375	1.20		Sheet Flow, Concreted Sheet Flow
					Smooth surfaces n= 0.011 P2= 3.33"
4.9	245	0.0021	0.82	0.08	Channel Flow, Concreted Channelled Flow
					Area= 0.1 sf Perim= 1.6' r= 0.06'
					n= 0.013 Concrete, trowel finish
5.1	258	Total			

Subcatchment PR-DA-2: PR-DA-2

Hydrograph



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 10-Year Rainfall=5.20"

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Summary for Subcatchment PR-DA-3: PR-DA-3

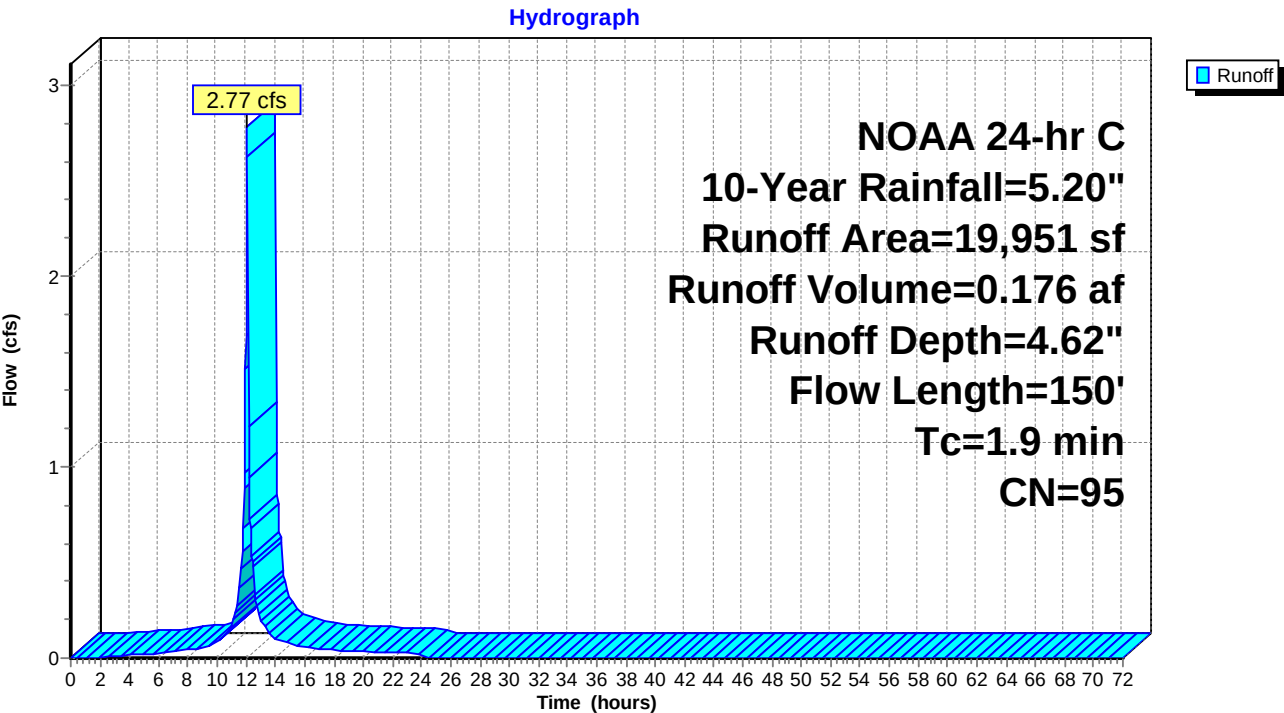
Runoff = 2.77 cfs @ 12.08 hrs, Volume= 0.176 af, Depth= 4.62"
 Routed to Pond MBR-1 : MBR-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 10-Year Rainfall=5.20"

Area (sf)	CN	Description
1,612	61	>75% Grass cover, Good, HSG B
18,339	98	Unconnected pavement, HSG B
19,951	95	Weighted Average
1,612		8.08% Pervious Area
18,339		91.92% Impervious Area
18,339		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	80	0.0079	0.93		Sheet Flow, Paved Sheet Flow Smooth surfaces n= 0.011 P2= 3.33"
0.1	17	0.0200	2.55	0.25	Channel Flow, Concrete Channeled Flow Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
0.3	36	0.0101	2.04		Shallow Concentrated Flow, Paved SCF Paved Kv= 20.3 fps
0.1	17	0.0336	3.30	0.33	Channel Flow, Concrete Channeled Flow Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
1.9	150	Total			

Subcatchment PR-DA-3: PR-DA-3



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 10-Year Rainfall=5.20"

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Summary for Subcatchment PR-DA-4: PR-DA-4

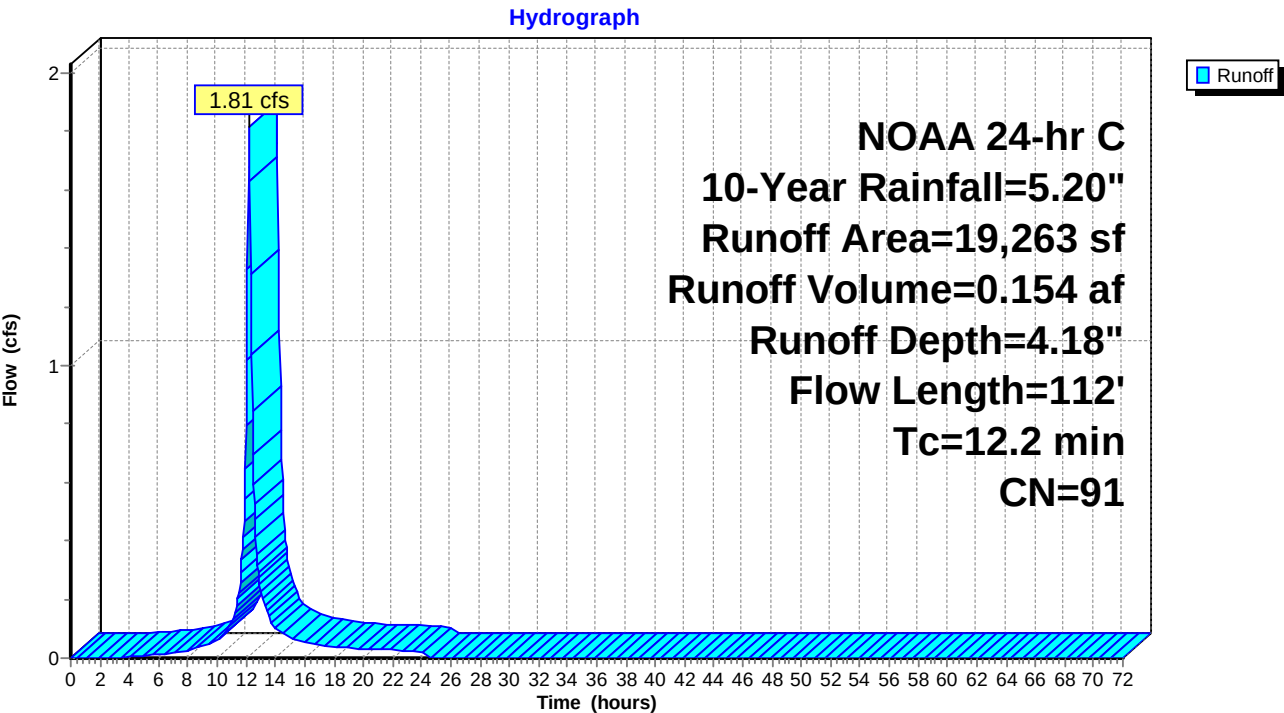
Runoff = 1.81 cfs @ 12.20 hrs, Volume= 0.154 af, Depth= 4.18"
 Routed to Pond MBR-2 : MBR-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 10-Year Rainfall=5.20"

Area (sf)	CN	Description
3,462	61	>75% Grass cover, Good, HSG B
15,801	98	Unconnected pavement, HSG B
19,263	91	Weighted Average
3,462		17.97% Pervious Area
15,801		82.03% Impervious Area
15,801		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	31	0.0013	0.05		Sheet Flow, Grassed Sheet Flow Grass: Short n= 0.150 P2= 3.33"
0.1	5	0.0289	0.89		Sheet Flow, Concreted Sheet Flow Smooth surfaces n= 0.011 P2= 3.33"
0.7	49	0.0154	1.10		Sheet Flow, Paved Sheet Flow Smooth surfaces n= 0.011 P2= 3.33"
0.2	27	0.0200	2.55	0.25	Channel Flow, Concreted Channeled Flow Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
12.2	112	Total			

Subcatchment PR-DA-4: PR-DA-4



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 10-Year Rainfall=5.20"

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Summary for Subcatchment PR-DA-5: PR-DA-5

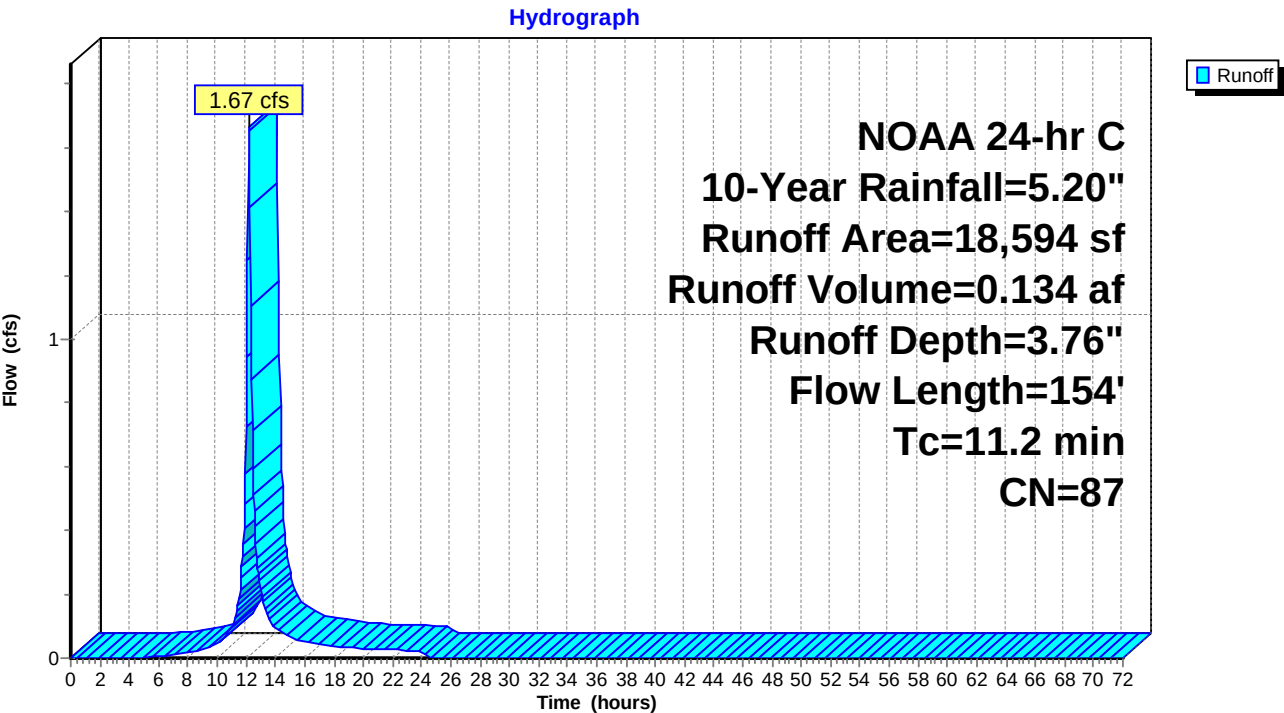
Runoff = 1.67 cfs @ 12.19 hrs, Volume= 0.134 af, Depth= 3.76"
 Routed to Pond MBR-3 : MBR-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 10-Year Rainfall=5.20"

Area (sf)	CN	Description
5,659	61	>75% Grass cover, Good, HSG B
12,935	98	Unconnected pavement, HSG B
18,594	87	Weighted Average
5,659		30.43% Pervious Area
12,935		69.57% Impervious Area
12,935		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	60	0.0063	0.10		Sheet Flow, Grassed Sheet Flow Grass: Short n= 0.150 P2= 3.33"
0.8	33	0.0062	0.70		Sheet Flow, Concreted Sheet Flow Smooth surfaces n= 0.011 P2= 3.33"
0.1	19	0.0200	2.55	0.25	Channel Flow, Concreted Channeled Flow Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
0.2	42	0.0279	3.39		Shallow Concentrated Flow, Paved SCF Paved Kv= 20.3 fps
11.2	154	Total			

Subcatchment PR-DA-5: PR-DA-5



Arc - Easton Crossing - Existing vs Proposed

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NOAA 24-hr C 10-Year Rainfall=5.20"

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Summary for Subcatchment PR-DA-6: PR-DA-6

Runoff = 1.90 cfs @ 12.19 hrs, Volume= 0.163 af, Depth= 4.39"
Routed to Pond MBR-4 : MBR-4

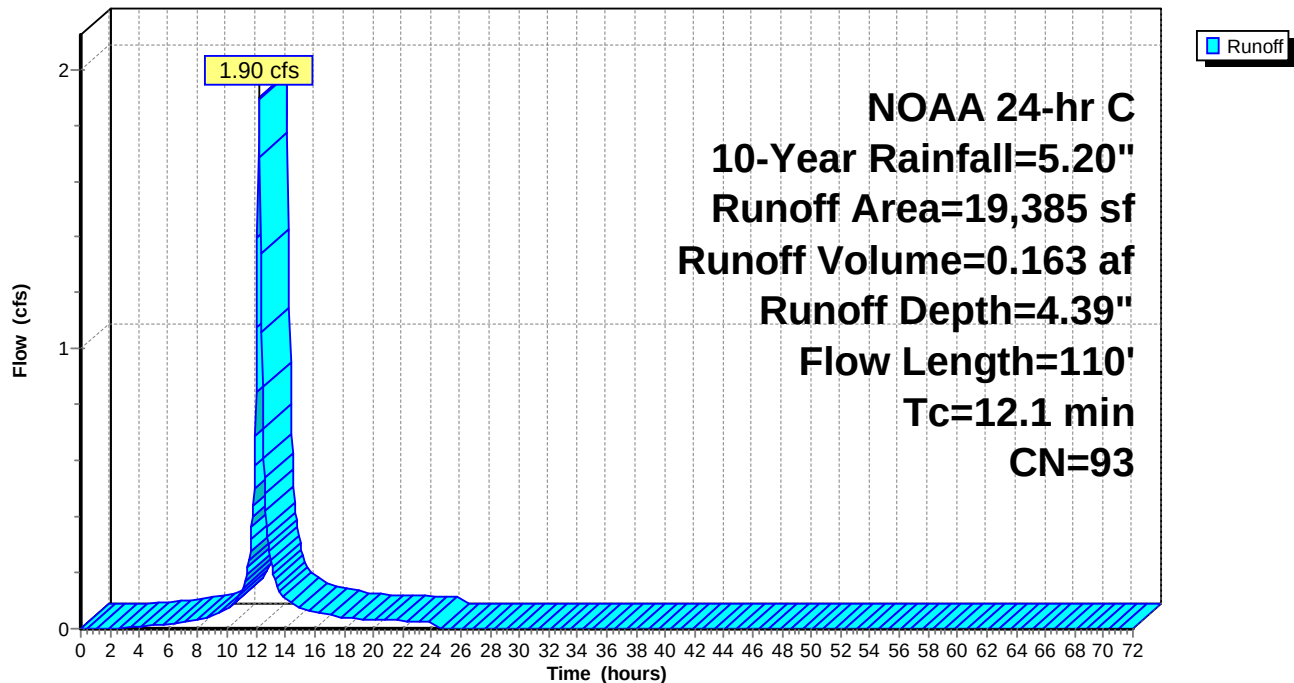
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 10-Year Rainfall=5.20"

Area (sf)	CN	Description
2,837	61	>75% Grass cover, Good, HSG B
16,548	98	Unconnected pavement, HSG B
19,385	93	Weighted Average
2,837		14.64% Pervious Area
16,548		85.36% Impervious Area
16,548		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	8	0.0073	0.07		Sheet Flow, Grassed Sheet Flow Grass: Short n= 0.150 P2= 3.33"
10.0	75	0.0262	0.13		Sheet Flow, Paved Sheet Flow Grass: Dense n= 0.240 P2= 3.33"
0.2	27	0.0200	2.55	0.25	Channel Flow, Concreted Channeled Flow Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
12.1	110	Total			

Subcatchment PR-DA-6: PR-DA-6

Hydrograph



Arc - Easton Crossing - Existing vs Proposed

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NOAA 24-hr C 10-Year Rainfall=5.20"

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Summary for Pond CI - 1: CI - 1

Inflow Area = 0.900 ac, 87.06% Impervious, Inflow Depth = 4.40" for 10-Year event
Inflow = 3.06 cfs @ 12.18 hrs, Volume= 0.330 af
Outflow = 3.06 cfs @ 12.18 hrs, Volume= 0.330 af, Atten= 0%, Lag= 0.0 min
Primary = 3.06 cfs @ 12.18 hrs, Volume= 0.330 af
Routed to Pond SGW : SGW

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2

Peak Elev= 30.91' @ 12.36 hrs

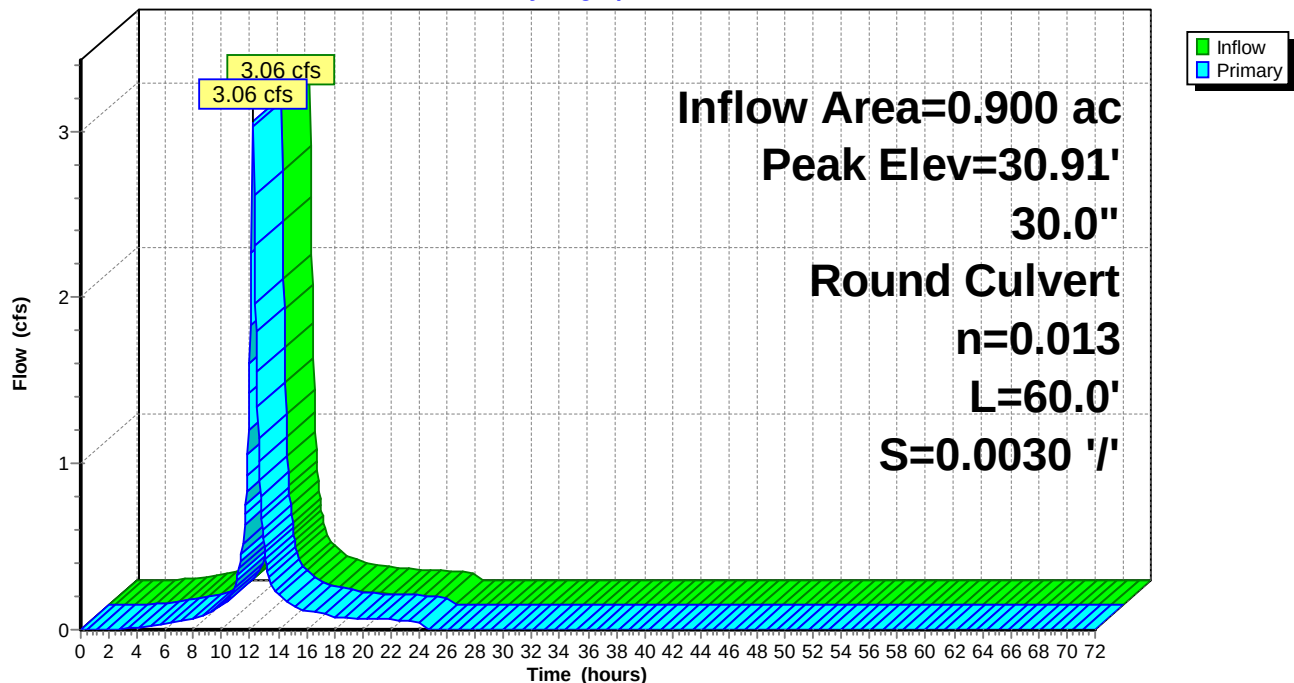
Device	Routing	Invert	Outlet Devices
#1	Primary	28.34'	30.0" Round Culvert L= 60.0' Box, 0° wingwalls, square crown edge, Ke= 0.700 Inlet / Outlet Invert= 28.34' / 28.16' S= 0.0030 '/' Cc= 0.900 n= 0.013 Concrete, trowel finish, Flow Area= 4.91 sf

Primary OutFlow Max=3.07 cfs @ 12.18 hrs HW=30.82' TW=30.80' (Dynamic Tailwater)

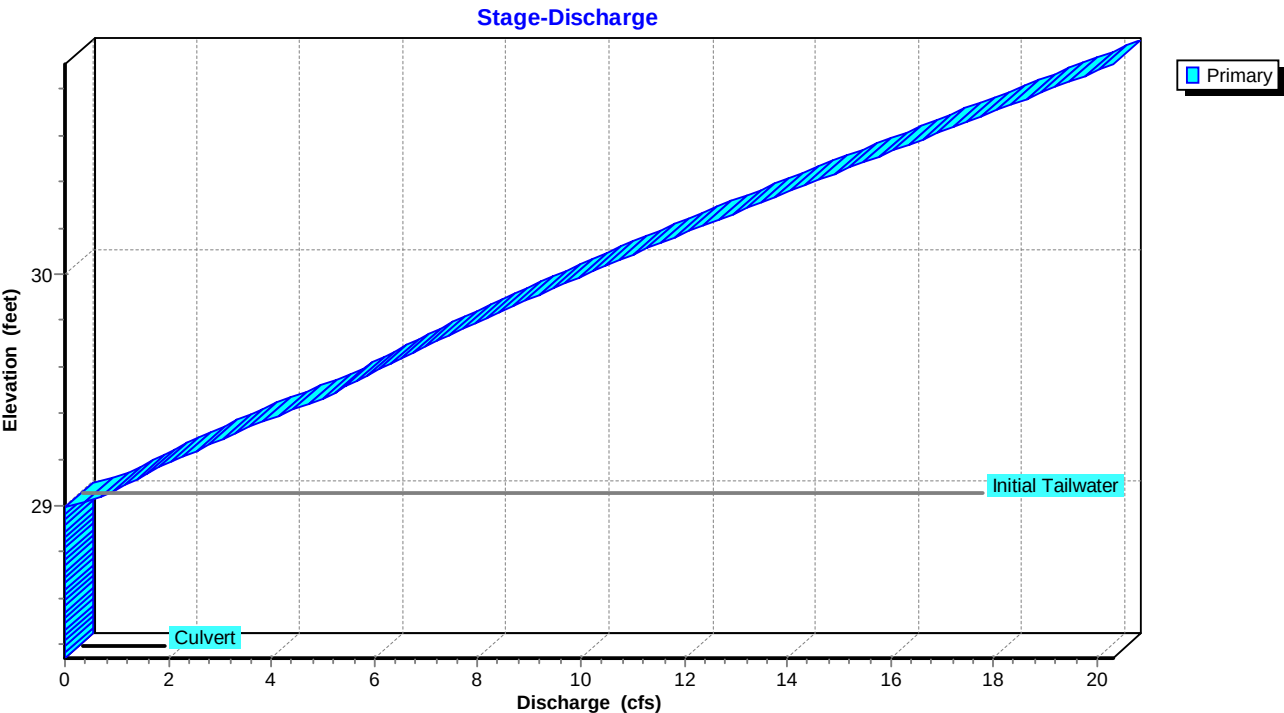
↑**1=Culvert** (Inlet Controls 3.07 cfs @ 0.63 fps)

Pond CI - 1: CI - 1

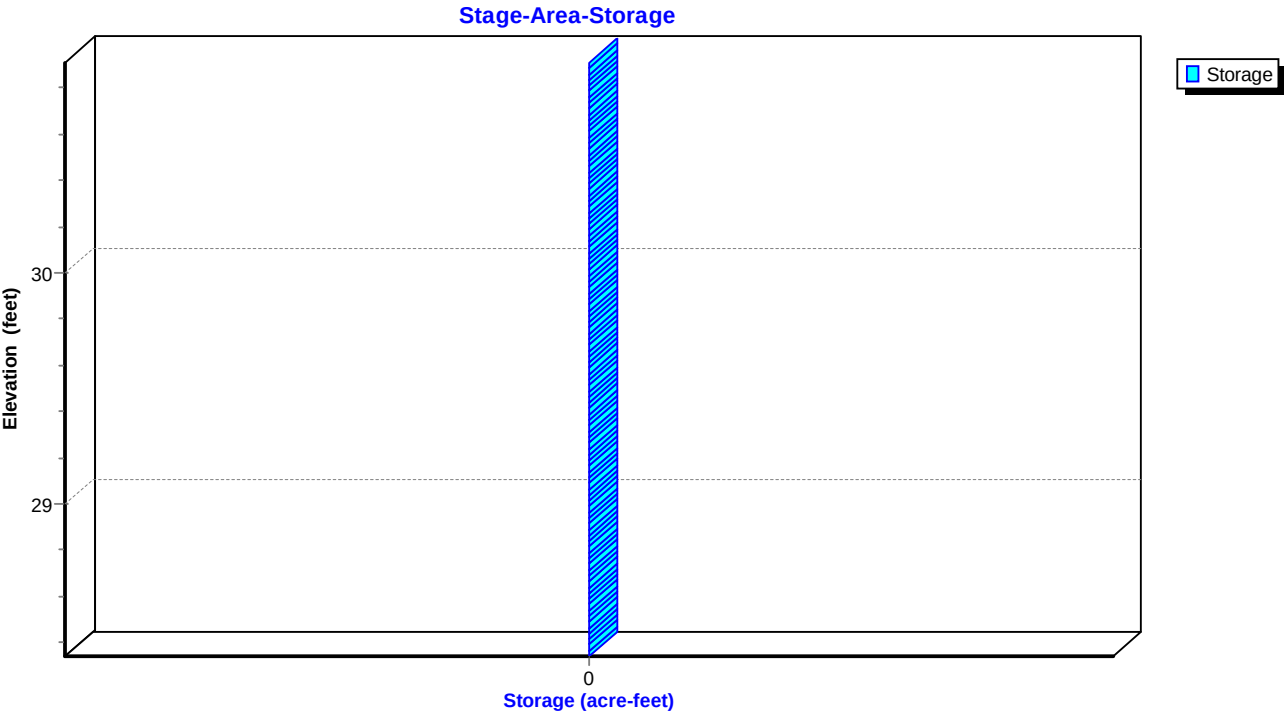
Hydrograph



Pond CI - 1: CI - 1



Pond CI - 1: CI - 1



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 10-Year Rainfall=5.20"

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Summary for Pond MBR-1: MBR-1

Inflow Area = 0.458 ac, 91.92% Impervious, Inflow Depth = 4.62" for 10-Year event
 Inflow = 2.77 cfs @ 12.08 hrs, Volume= 0.176 af
 Outflow = 1.32 cfs @ 12.16 hrs, Volume= 0.176 af, Atten= 53%, Lag= 5.1 min
 Primary = 1.32 cfs @ 12.16 hrs, Volume= 0.176 af
 Routed to Pond CI - 1 : CI - 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 34.64' @ 12.16 hrs Surf.Area= 674 sf Storage= 910 cf

Plug-Flow detention time= 8.6 min calculated for 0.176 af (100% of inflow)
 Center-of-Mass det. time= 7.7 min (772.7 - 765.0)

Volume	Invert	Avail.Storage	Storage Description			
#1	30.76'	2,356 cf	Custom Stage Data (Irregular) Listed below			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
30.76	265	168.6	0.0	0	0	265
30.77	265	168.6	40.0	1	1	267
33.76	265	168.6	40.0	317	318	771
33.77	265	168.6	100.0	3	321	772
35.77	1,209	176.3	100.0	1,360	1,681	1,177
36.00	2,270	206.1	100.0	394	2,074	2,085
36.10	3,399	287.6	100.0	282	2,356	5,287

Device	Routing	Invert	Outlet Devices
#1	Device 2	34.02'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Device 3	30.77'	6.0" Round 6" Piped Flow L= 83.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 30.77' / 30.35' S= 0.0050 '/ Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#3	Device 4	30.10'	18.0" Round 18" Piped Flow L= 61.5' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 30.10' / 29.79' S= 0.0050 '/ Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#4	Device 5	29.28'	24.0" Round 24" Piped Flow L= 82.1' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 29.28' / 28.87' S= 0.0050 '/ Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#5	Device 6	28.87'	24.0" Round 24" Piped Flow L= 81.2' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 28.87' / 28.34' S= 0.0065 '/ Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#6	Primary	28.34'	30.0" Round 30" Piped Flow L= 60.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 28.34' / 28.16' S= 0.0030 '/ Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 4.91 sf
#7	Device 2	30.77'	6.0" Round Underdrain

Arc - Easton Crossing - Existing vs Proposed

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NOAA 24-hr C 10-Year Rainfall=5.20"

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L= 63.0' CPP, square edge headwall, $K_e = 0.500$

Inlet / Outlet Invert= 30.77' / 30.77' S= 0.0000 '/' Cc= 0.900

n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=1.31 cfs @ 12.16 hrs HW=34.62' TW=30.81' (Dynamic Tailwater)

6=30" Piped Flow (Passes 1.31 cfs of 40.70 cfs potential flow)

5=24" Piped Flow (Passes 1.31 cfs of 29.52 cfs potential flow)

4=24" Piped Flow (Passes 1.31 cfs of 29.52 cfs potential flow)

3=18" Piped Flow (Passes 1.31 cfs of 16.52 cfs potential flow)

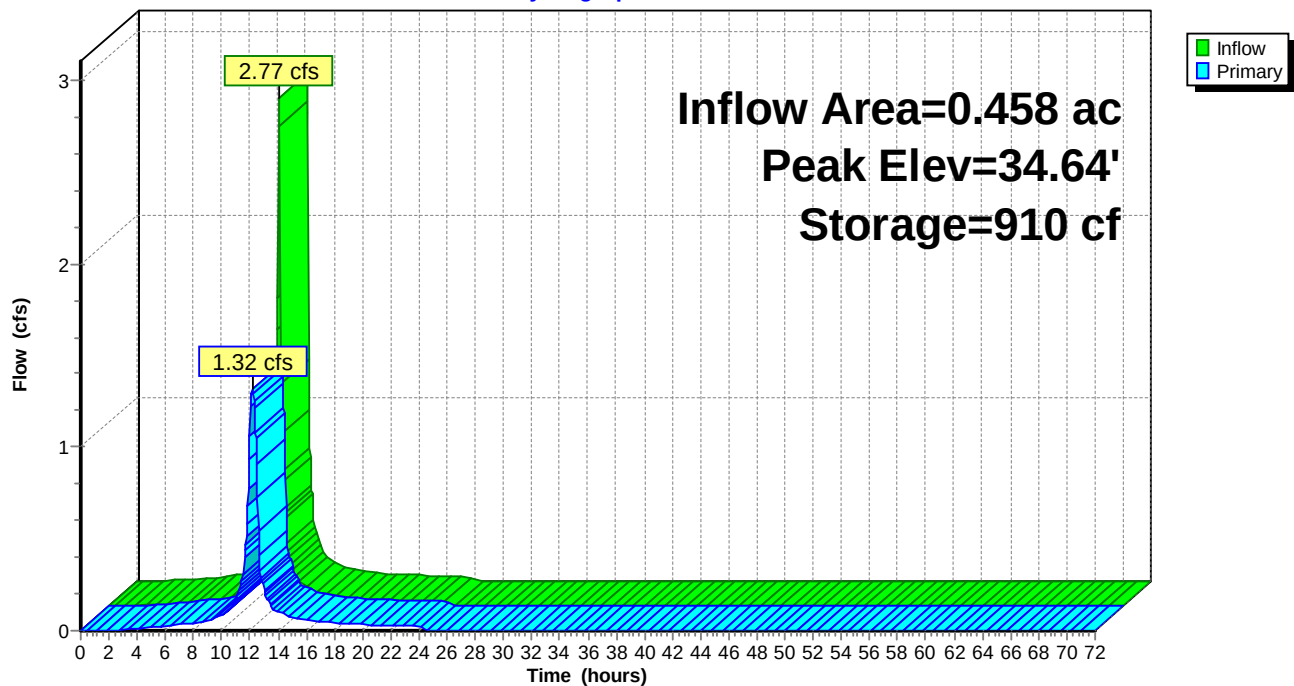
2=6" Piped Flow (Barrel Controls 1.31 cfs @ 6.69 fps)

1=Orifice/Grate (Passes < 12.08 cfs potential flow)

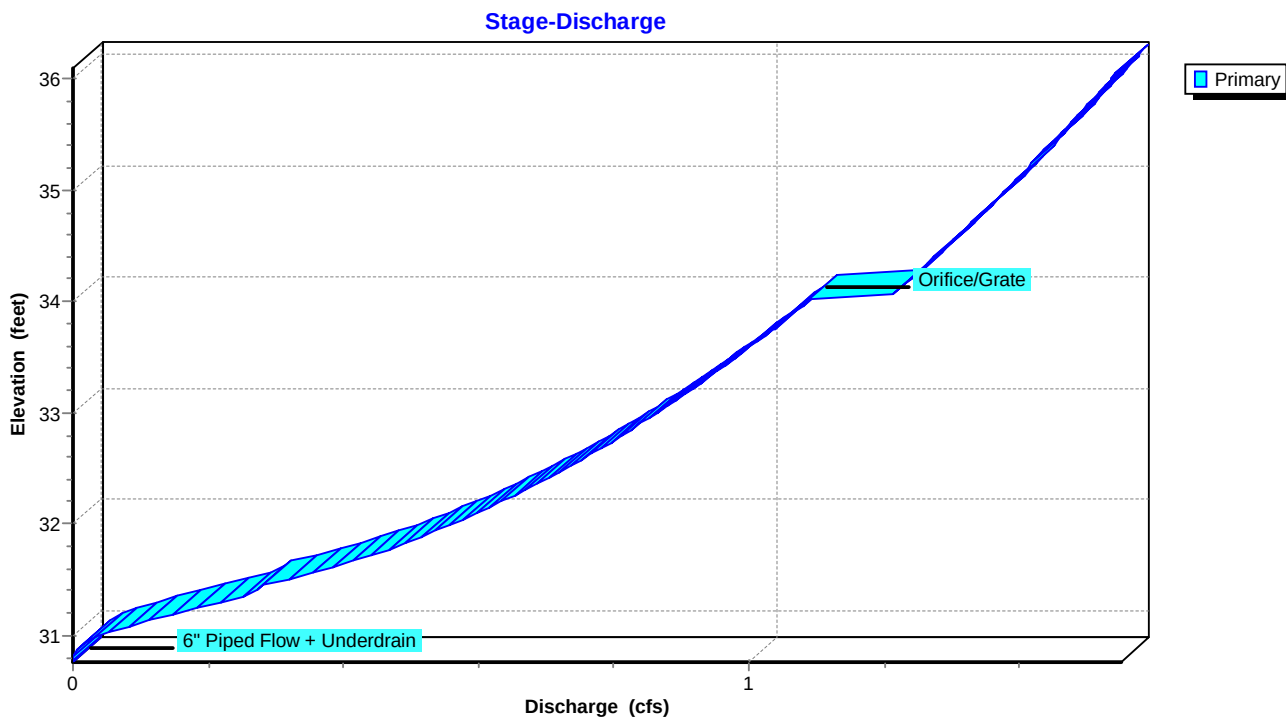
7=Underdrain (Passes < 1.20 cfs potential flow)

Pond MBR-1: MBR-1

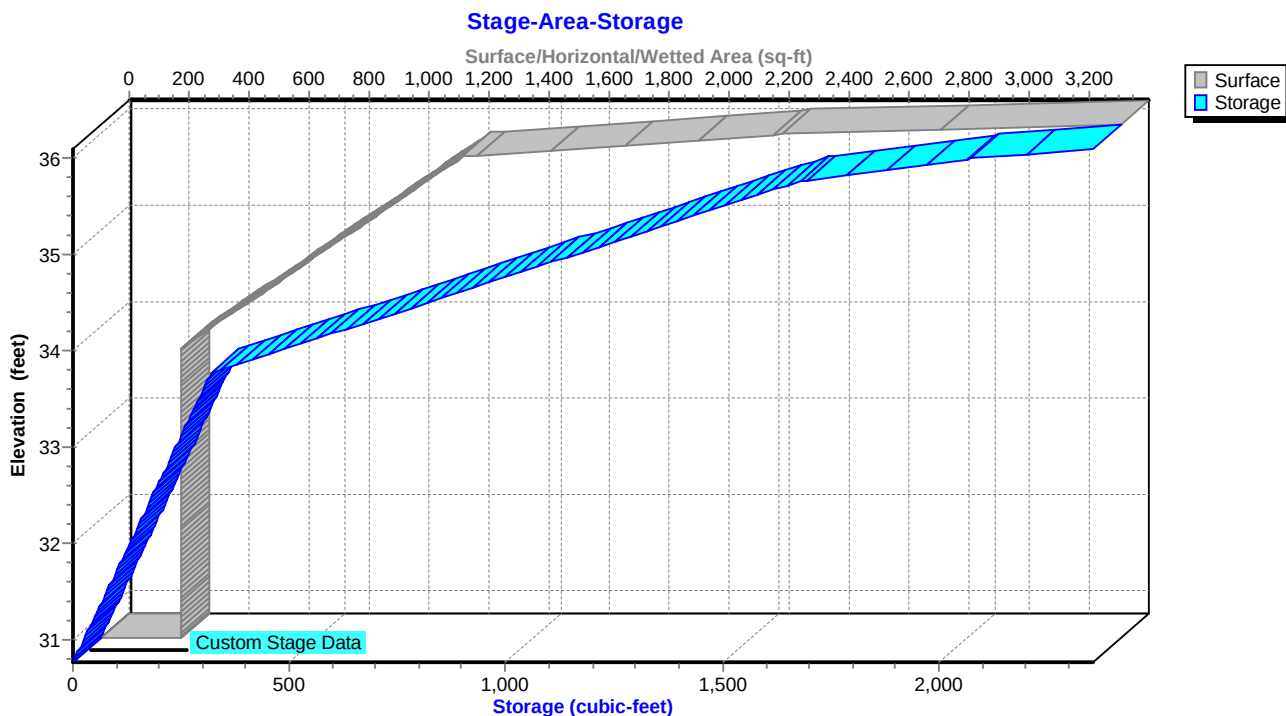
Hydrograph



Pond MBR-1: MBR-1



Pond MBR-1: MBR-1



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 10-Year Rainfall=5.20"

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Summary for Pond MBR-2: MBR-2

Inflow Area = 0.442 ac, 82.03% Impervious, Inflow Depth = 4.18" for 10-Year event
 Inflow = 1.81 cfs @ 12.20 hrs, Volume= 0.154 af
 Outflow = 1.75 cfs @ 12.19 hrs, Volume= 0.154 af, Atten= 3%, Lag= 0.0 min
 Primary = 1.75 cfs @ 12.19 hrs, Volume= 0.154 af
 Routed to Pond CI - 1 : CI - 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 35.15' @ 12.19 hrs Surf.Area= 269 sf Storage= 328 cf

Plug-Flow detention time= 4.4 min calculated for 0.154 af (100% of inflow)
 Center-of-Mass det. time= 4.4 min (798.0 - 793.6)

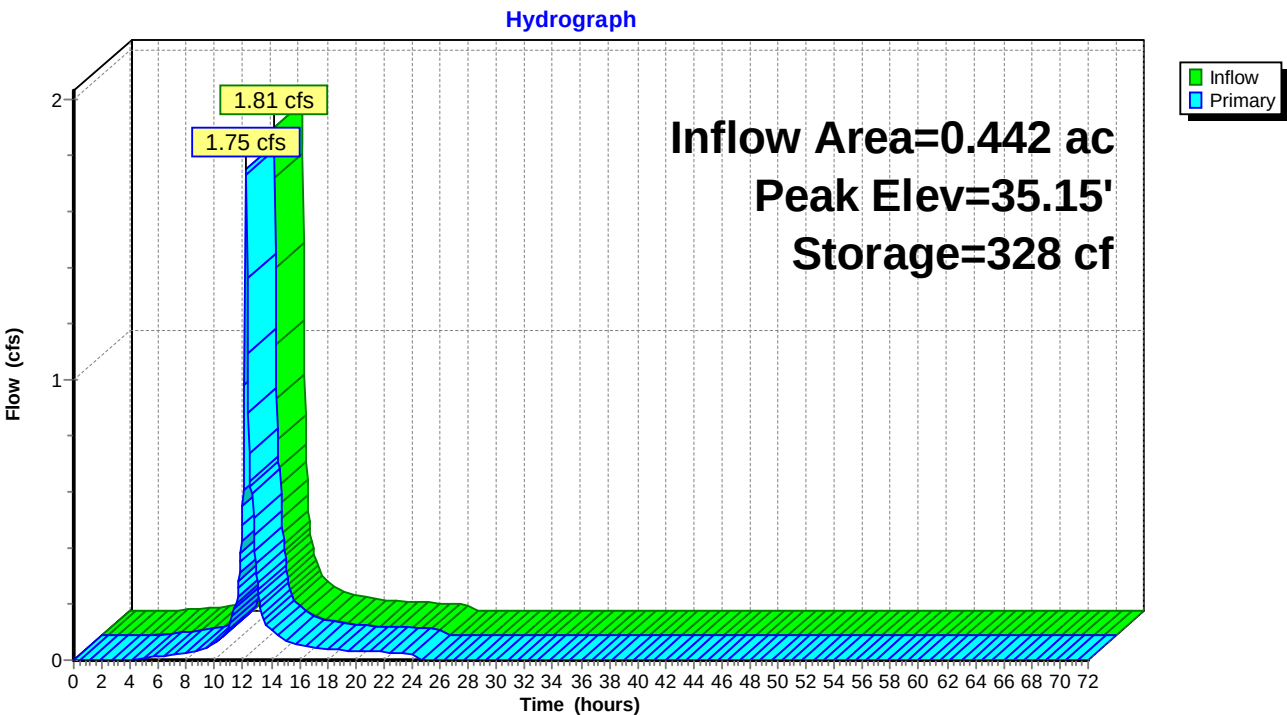
Volume	Invert	Avail.Storage	Storage Description			
#1	30.47'	1,326 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
30.47	122	67.3	0.0	0	0	122
30.48	122	67.3	40.0	0	0	123
34.45	122	67.3	40.0	194	194	390
34.46	122	67.3	100.0	1	195	391
35.46	352	86.2	100.0	227	423	634
36.46	983	123.9	100.0	641	1,064	1,273
36.66	1,157	138.0	100.0	214	1,277	1,568
36.70	1,262	145.2	100.0	48	1,326	1,730

Device	Routing	Invert	Outlet Devices
#1	Device 2	34.96'	12.0" x 12.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	30.48'	15.0" Round Culvert L= 58.4' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 30.48' / 28.34' S= 0.0366 ' S= 0.0366 ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf
#3	Device 2	30.47'	4.0" Round Underdrain L= 27.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 30.47' / 30.47' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf

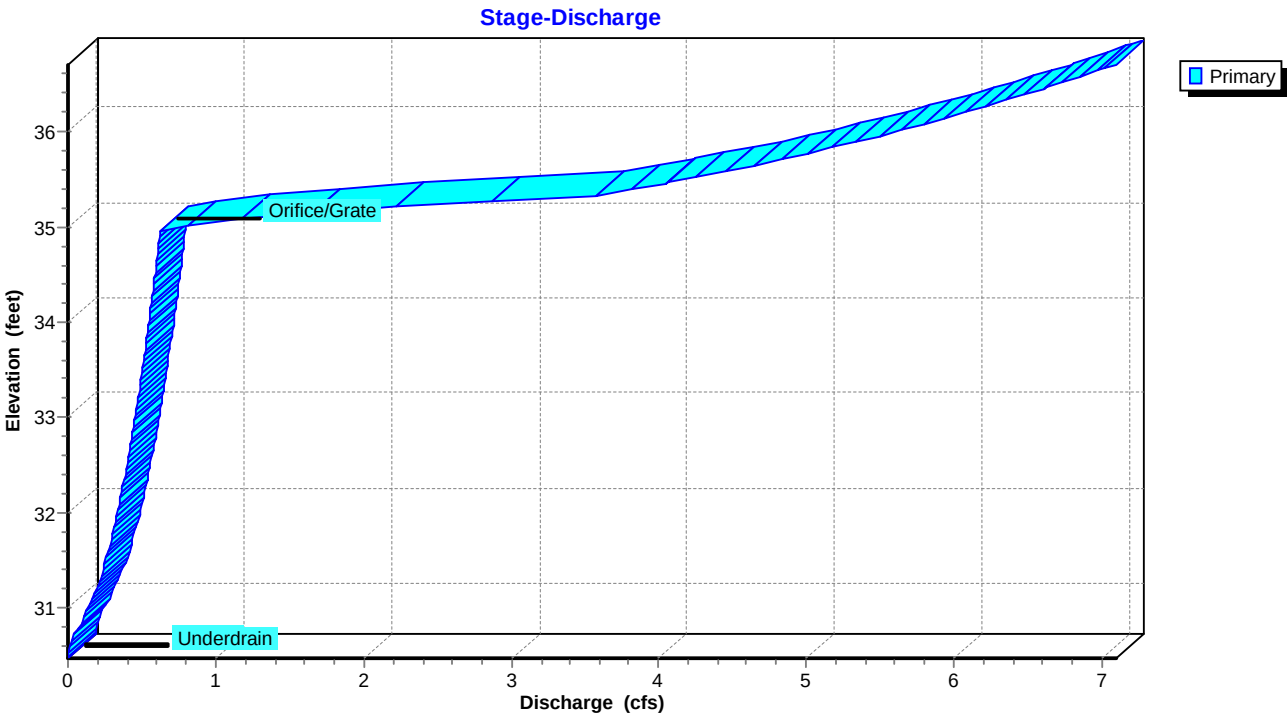
Primary OutFlow Max=1.74 cfs @ 12.19 hrs HW=35.15' TW=30.83' (Dynamic Tailwater)

↑ **2=Culvert** (Passes 1.74 cfs of 11.89 cfs potential flow)
 ↑ **1=Orifice/Grate** (Weir Controls 1.11 cfs @ 1.44 fps)
 ↑ **3=Underdrain** (Outlet Controls 0.64 cfs @ 7.30 fps)

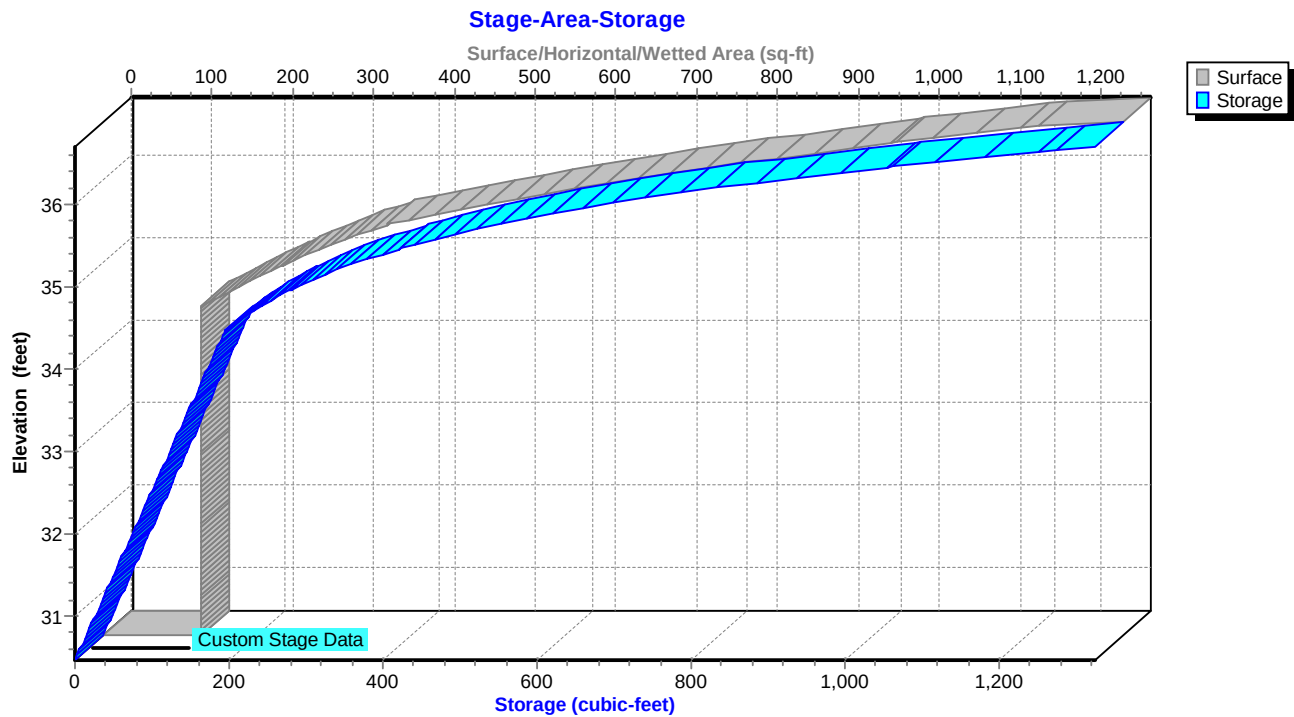
Pond MBR-2: MBR-2



Pond MBR-2: MBR-2



Pond MBR-2: MBR-2



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 10-Year Rainfall=5.20"

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Summary for Pond MBR-3: MBR-3

Inflow Area = 0.427 ac, 69.57% Impervious, Inflow Depth = 3.76" for 10-Year event
 Inflow = 1.67 cfs @ 12.19 hrs, Volume= 0.134 af
 Outflow = 1.20 cfs @ 12.20 hrs, Volume= 0.122 af, Atten= 28%, Lag= 1.1 min
 Primary = 1.20 cfs @ 12.20 hrs, Volume= 0.122 af
 Routed to Pond MH-2 : MH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 34.77' @ 12.29 hrs Surf.Area= 692 sf Storage= 807 cf

Plug-Flow detention time= 70.5 min calculated for 0.122 af (91% of inflow)
 Center-of-Mass det. time= 25.7 min (833.1 - 807.3)

Volume	Invert	Avail.Storage	Storage Description			
#1	30.44'	1,981 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
30.44	249	130.6	0.0	0	0	249
30.45	249	130.6	40.0	1	1	250
33.70	249	130.6	40.0	324	325	675
33.71	249	130.6	100.0	2	327	676
34.71	669	149.5	100.0	442	769	1,120
35.71	1,145	168.3	100.0	896	1,666	1,621
35.90	2,235	222.1	100.0	315	1,981	3,293

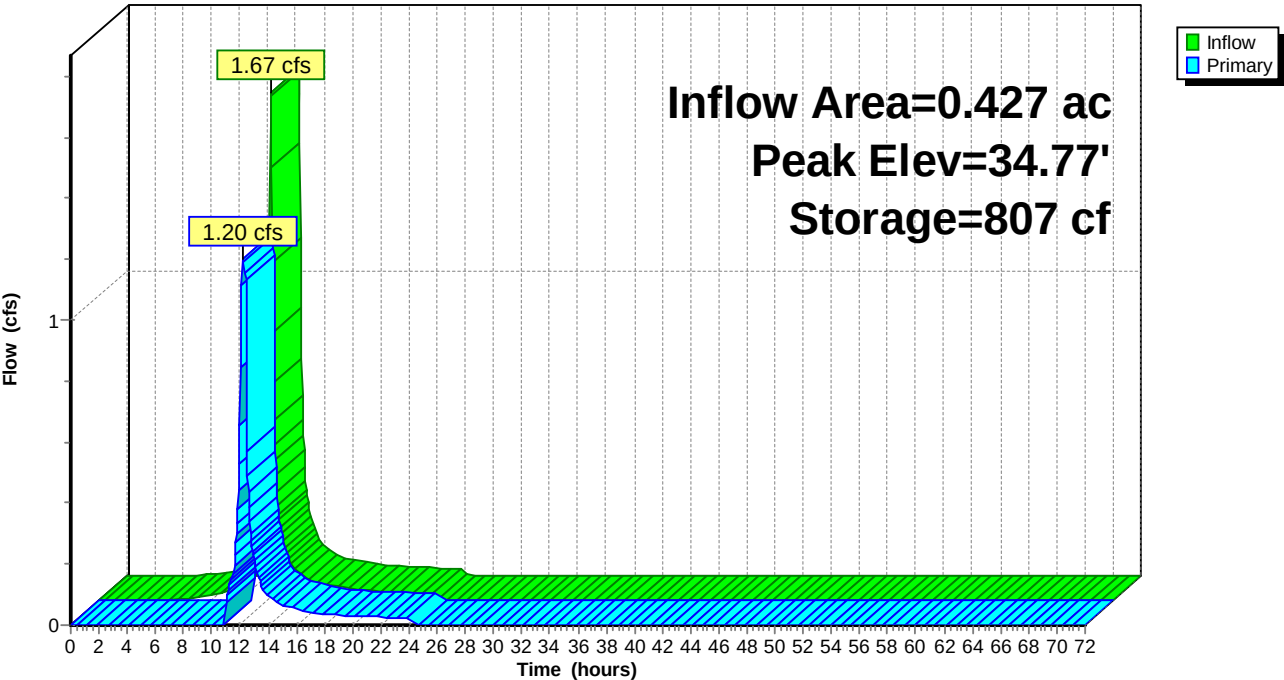
Device	Routing	Invert	Outlet Devices
#1	Device 3	34.21'	9.0" x 9.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	29.13'	15.0" Round Culvert L= 38.2' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 29.13' / 28.93' S= 0.0052 ' S= 0.0052 ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf
#3	Device 2	29.13'	6.0" Round Underdrain L= 59.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 29.13' / 29.13' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=1.19 cfs @ 12.20 hrs HW=34.66' TW=31.12' (Dynamic Tailwater)

↑ **2=Culvert** (Passes 1.19 cfs of 11.12 cfs potential flow)
 ↑ **3=Underdrain** (Outlet Controls 1.19 cfs @ 6.08 fps)
 ↑ **1=Orifice/Grate** (Passes 1.19 cfs of 1.82 cfs potential flow)

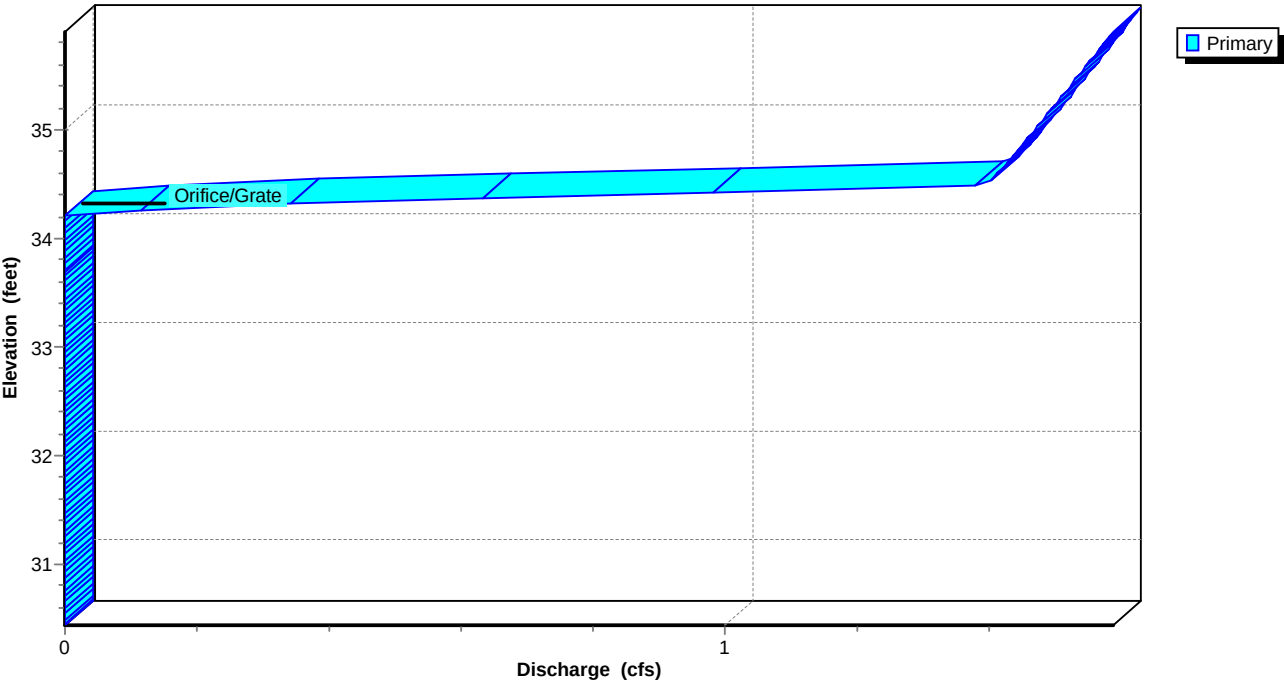
Pond MBR-3: MBR-3

Hydrograph

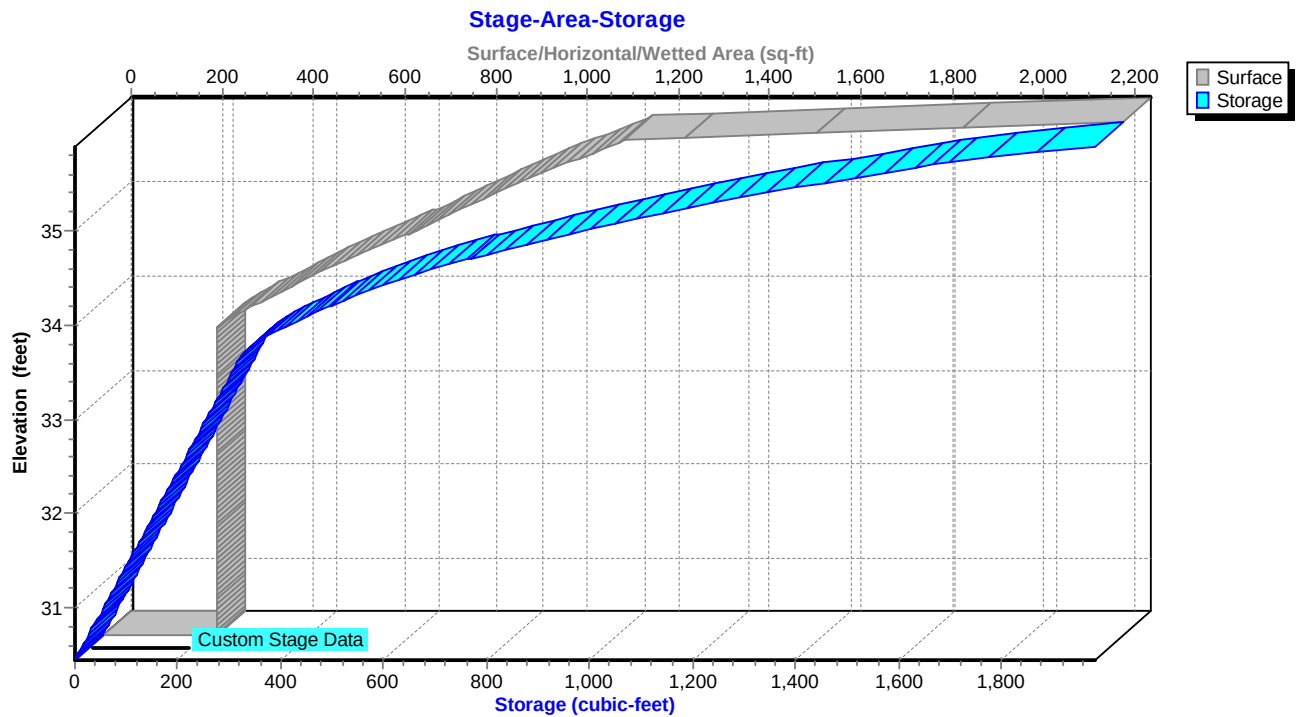


Pond MBR-3: MBR-3

Stage-Discharge



Pond MBR-3: MBR-3



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 10-Year Rainfall=5.20"

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Summary for Pond MBR-4: MBR-4

Inflow Area = 0.445 ac, 85.36% Impervious, Inflow Depth = 4.39" for 10-Year event
 Inflow = 1.90 cfs @ 12.19 hrs, Volume= 0.163 af
 Outflow = 1.46 cfs @ 12.30 hrs, Volume= 0.163 af, Atten= 23%, Lag= 6.6 min
 Primary = 1.46 cfs @ 12.30 hrs, Volume= 0.163 af
 Routed to Pond MH-1 : MH - 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 34.77' @ 12.31 hrs Surf.Area= 604 sf Storage= 723 cf

Plug-Flow detention time= 9.4 min calculated for 0.163 af (100% of inflow)
 Center-of-Mass det. time= 8.2 min (793.0 - 784.8)

Volume	Invert	Avail.Storage	Storage Description			
#1	30.25'	1,725 cf	Custom Stage Data (Irregular) Listed below			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
30.25	212	112.4	0.0	0	0	212
30.26	212	112.4	40.0	1	1	213
33.70	212	112.4	40.0	292	293	600
33.71	212	112.4	100.0	2	295	601
34.71	578	131.3	100.0	380	675	987
35.71	1,000	150.1	100.0	779	1,454	1,431
35.90	1,899	200.3	100.0	271	1,725	2,831

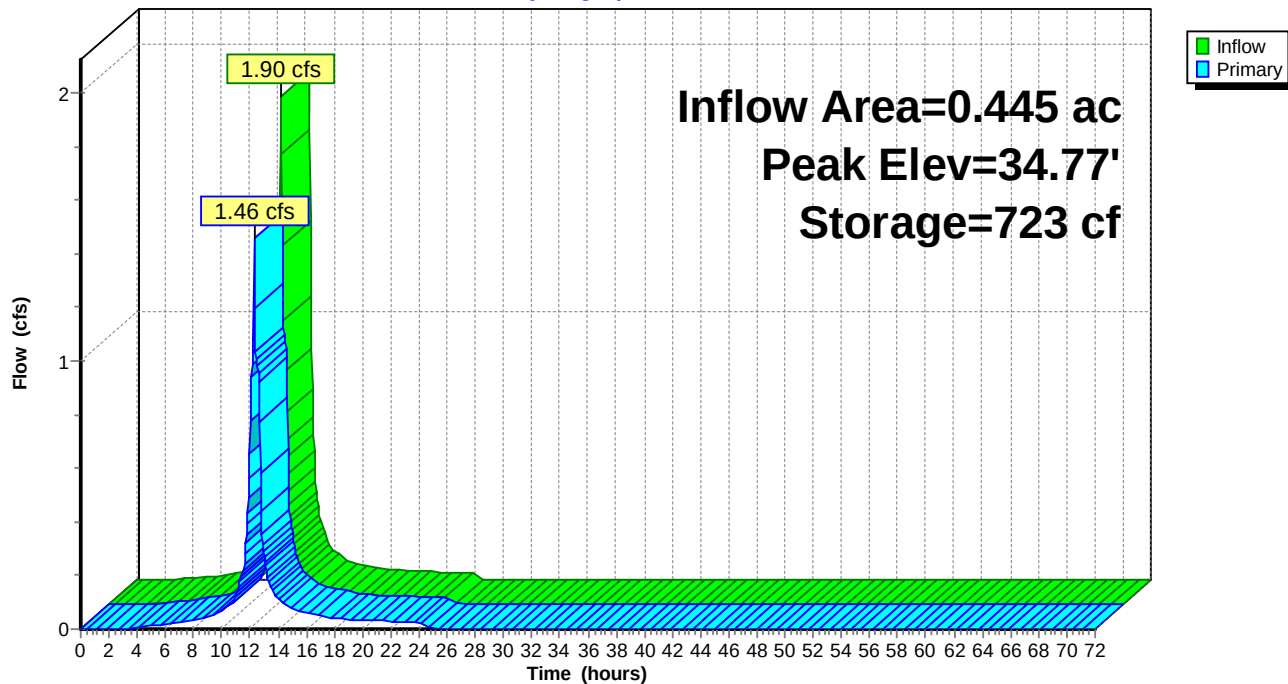
Device	Routing	Invert	Outlet Devices	
#1	Device 2	34.71'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads	
#2	Primary	30.26'	15.0" Round Culvert L= 46.8' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 30.26' / 29.89' S= 0.0079 ' / ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf	
#3	Device 2	30.26'	6.0" Round Underdrain L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 30.26' / 30.26' S= 0.0000 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf	

Primary OutFlow Max=1.42 cfs @ 12.30 hrs HW=34.77' TW=32.17' (Dynamic Tailwater)

↑ **2=Culvert** (Passes 1.42 cfs of 9.53 cfs potential flow)
 ↑ **1=Orifice/Grate** (Weir Controls 0.37 cfs @ 0.79 fps)
 ↑ **3=Underdrain** (Outlet Controls 1.05 cfs @ 5.35 fps)

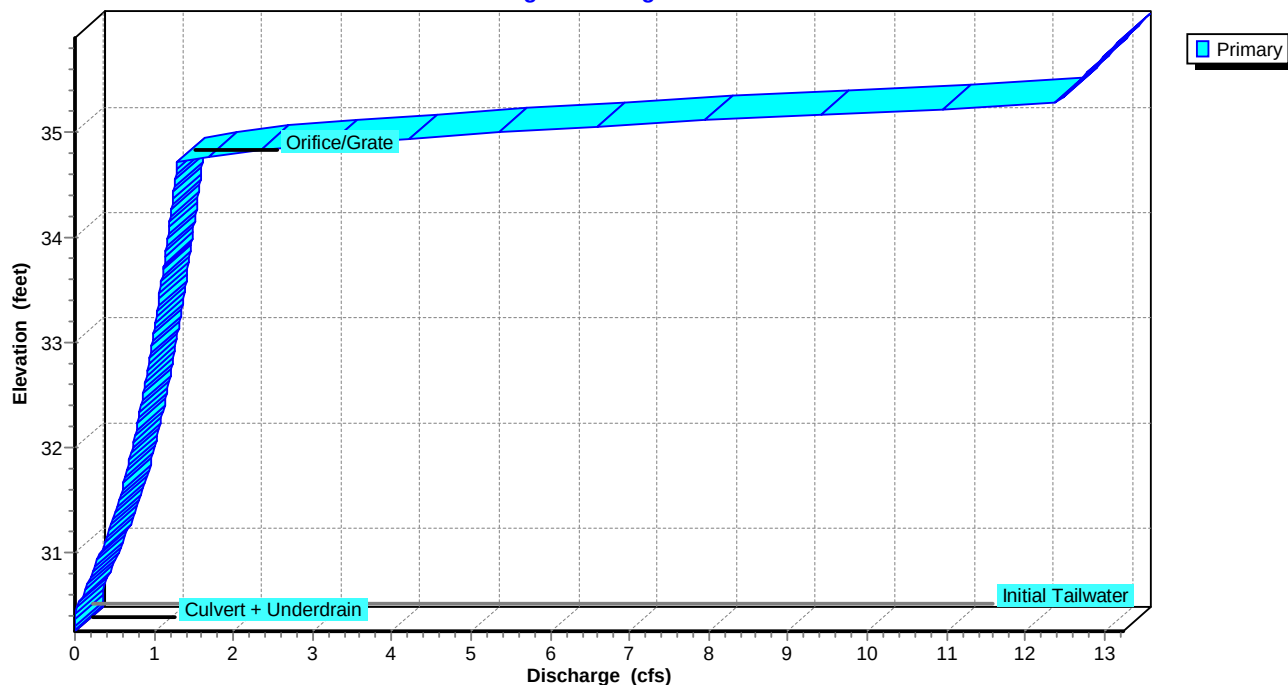
Pond MBR-4: MBR-4

Hydrograph

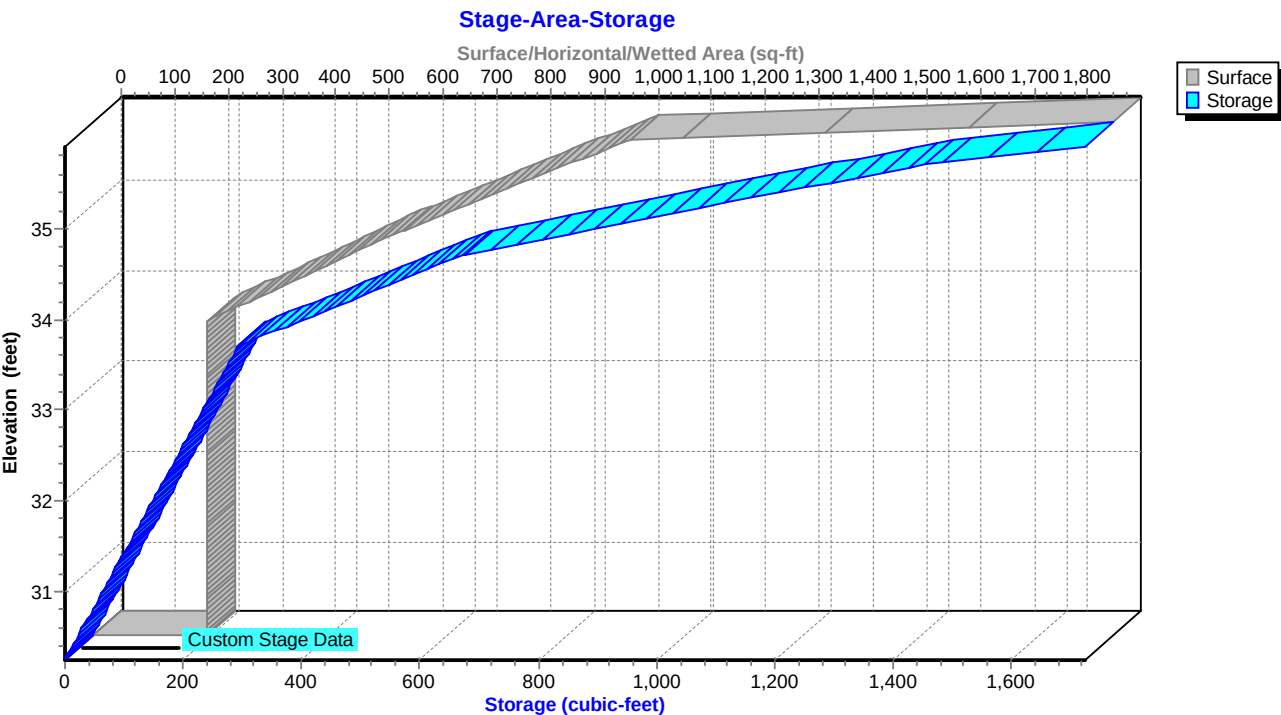


Pond MBR-4: MBR-4

Stage-Discharge



Pond MBR-4: MBR-4



Summary for Pond MH-1: MH - 1

Inflow Area = 5.731 ac, 68.53% Impervious, Inflow Depth = 3.71" for 10-Year event
Inflow = 15.29 cfs @ 12.36 hrs, Volume= 1.772 af
Outflow = 15.29 cfs @ 12.36 hrs, Volume= 1.772 af, Atten= 0%, Lag= 0.0 min
Primary = 15.29 cfs @ 12.36 hrs, Volume= 1.772 af
Routed to Pond MH-2 : MH-2

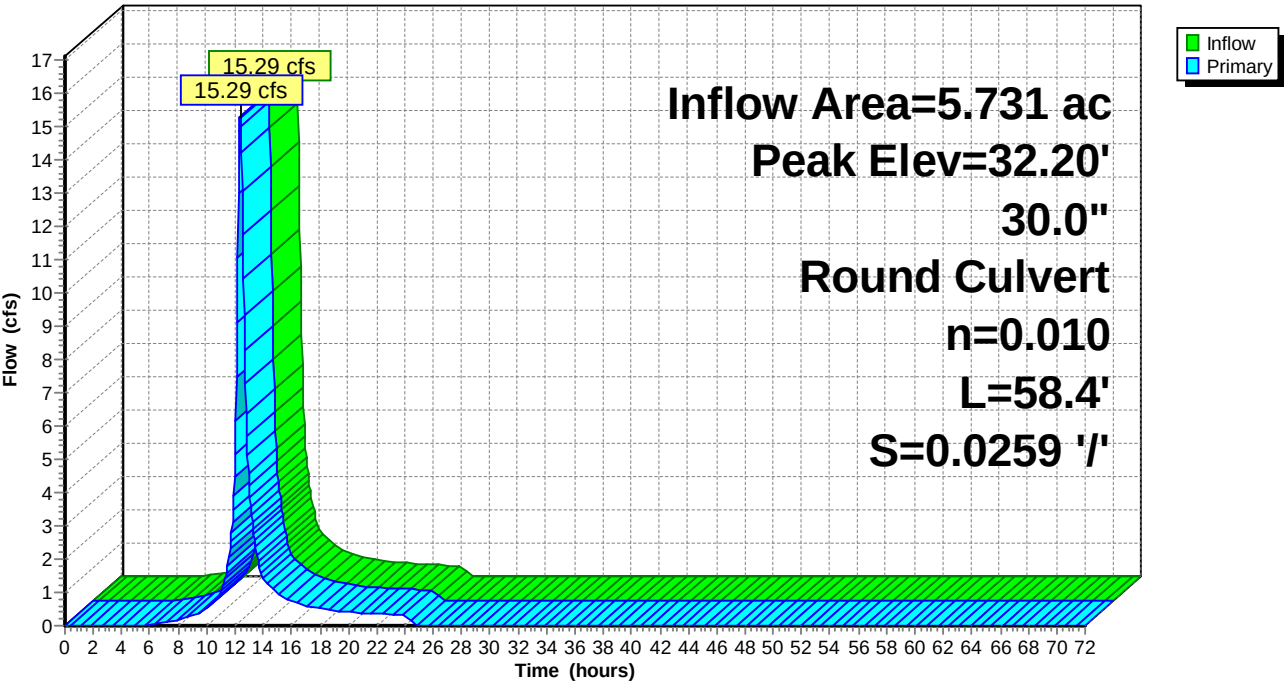
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 32.20' @ 12.36 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	30.40'	30.0" Round Culvert L= 58.4' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 30.40' / 28.89' S= 0.0259 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 4.91 sf

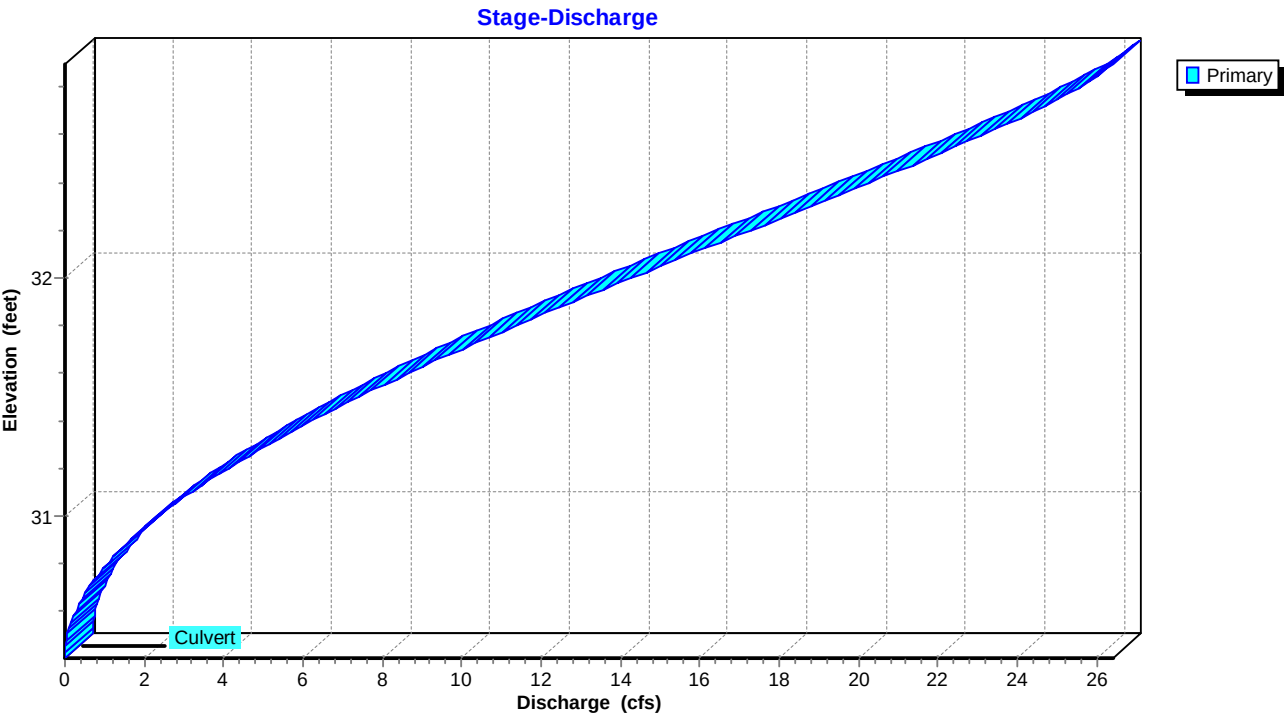
Primary OutFlow Max=15.18 cfs @ 12.36 hrs HW=32.20' TW=31.32' (Dynamic Tailwater)
↑**1=Culvert** (Outlet Controls 15.18 cfs @ 5.61 fps)

Pond MH-1: MH - 1

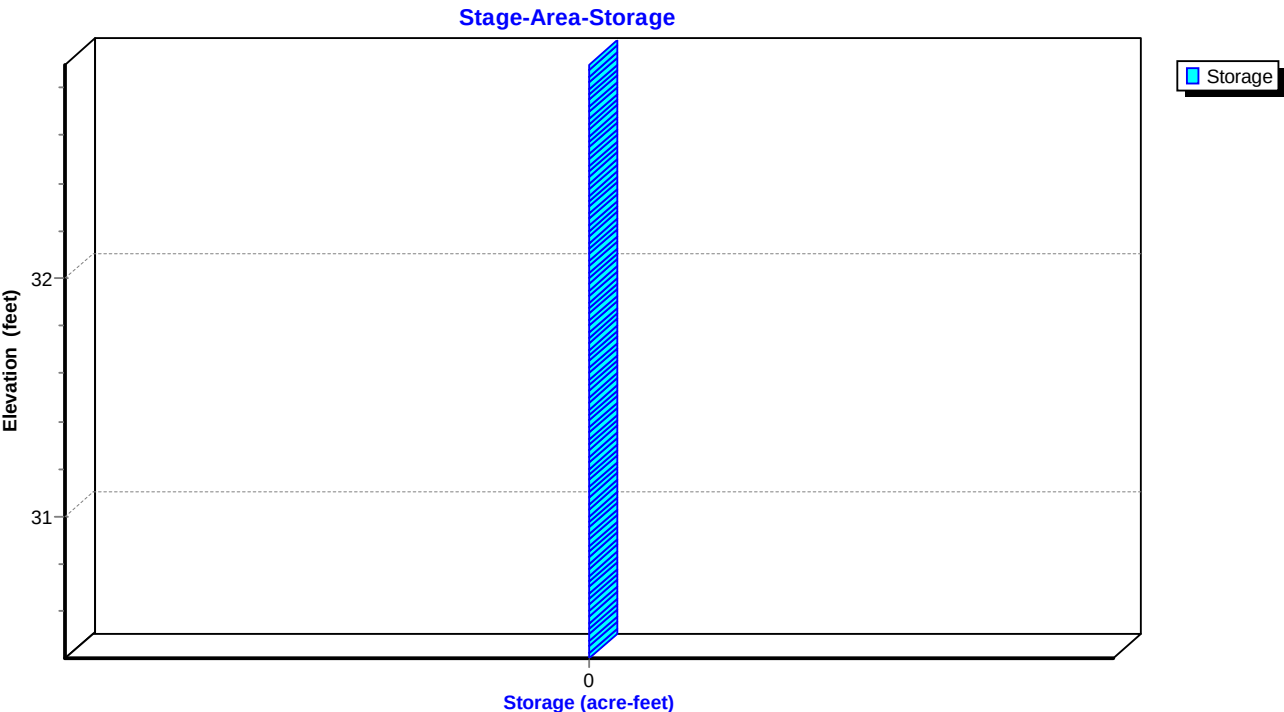
Hydrograph



Pond MH-1: MH - 1



Pond MH-1: MH - 1



Arc - Easton Crossing - Existing vs Proposed

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Summary for Pond MH-2: MH-2

Inflow Area = 6.157 ac, 68.60% Impervious, Inflow Depth = 3.69" for 10-Year event
Inflow = 16.46 cfs @ 12.35 hrs, Volume= 1.894 af
Outflow = 16.46 cfs @ 12.35 hrs, Volume= 1.894 af, Atten= 0%, Lag= 0.0 min
Primary = 16.46 cfs @ 12.35 hrs, Volume= 1.894 af
Routed to Pond SGW : SGW

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2

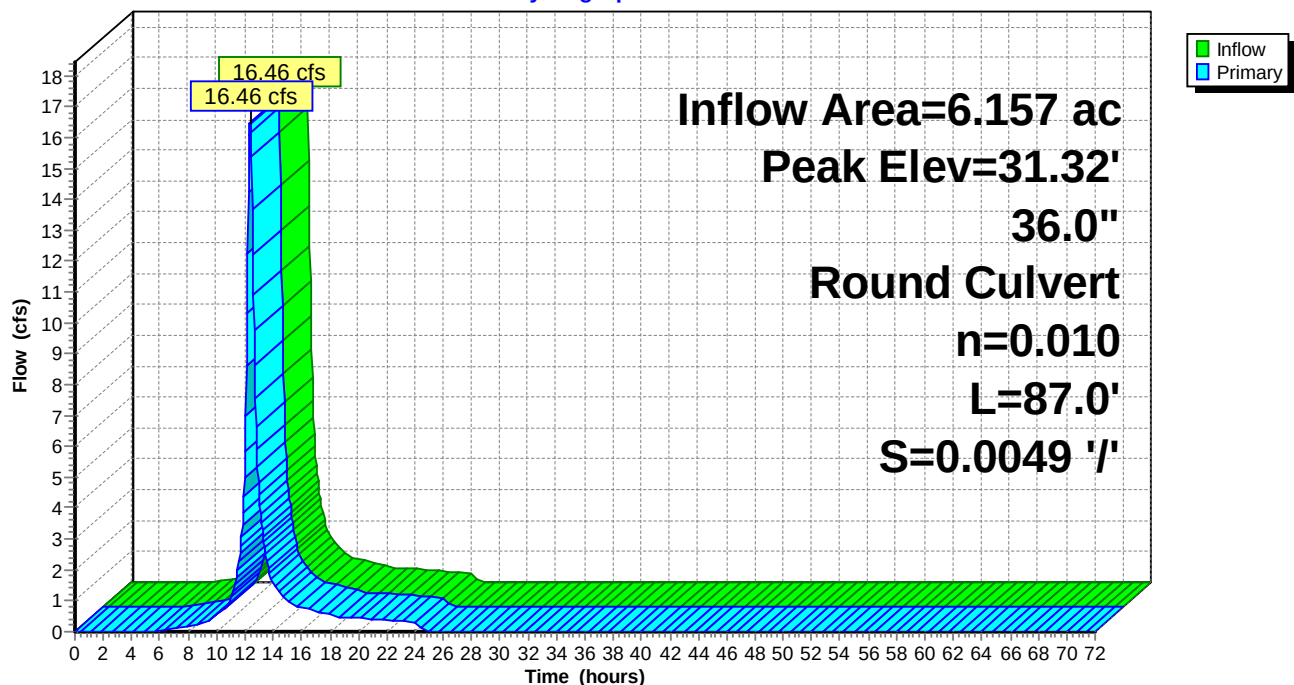
Peak Elev= 31.32' @ 12.36 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	28.89'	36.0" Round Culvert L= 87.0' Box, 0° wingwalls, square crown edge, Ke= 0.700 Inlet / Outlet Invert= 28.89' / 28.46' S= 0.0049 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 7.07 sf

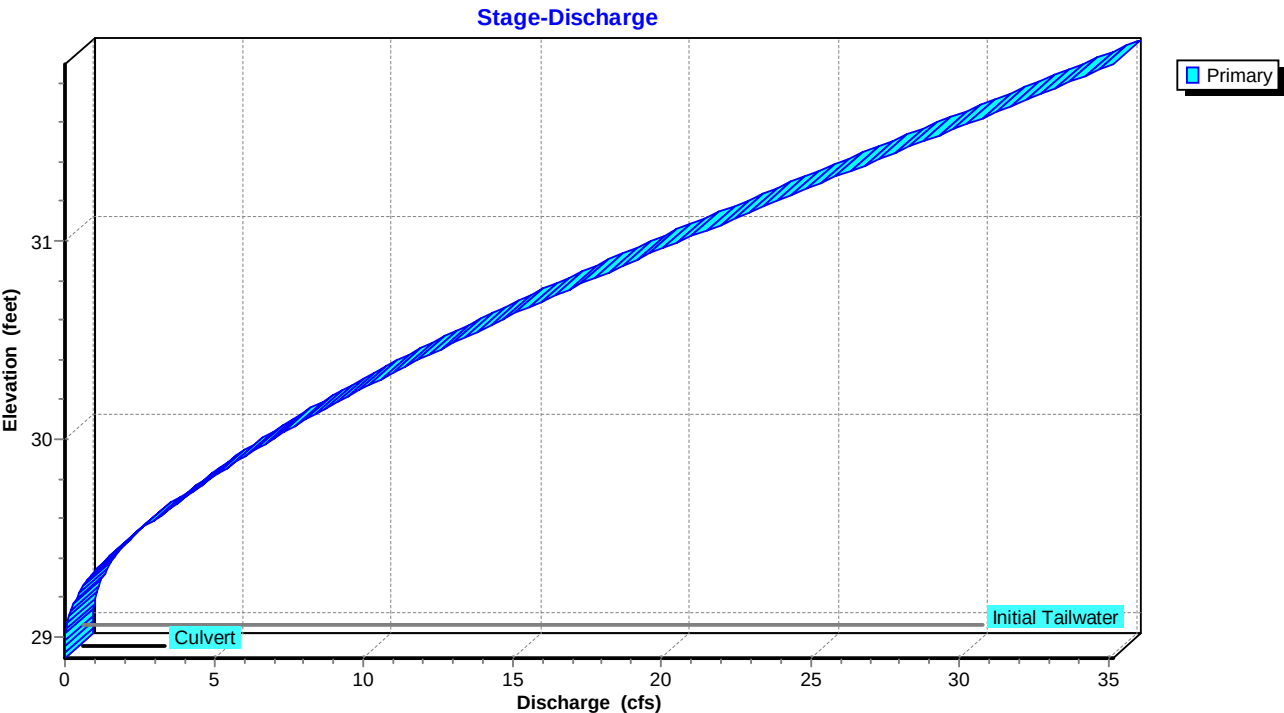
Primary OutFlow Max=16.43 cfs @ 12.35 hrs HW=31.32' TW=30.90' (Dynamic Tailwater)
↑ **1=Culvert** (Outlet Controls 16.43 cfs @ 3.66 fps)

Pond MH-2: MH-2

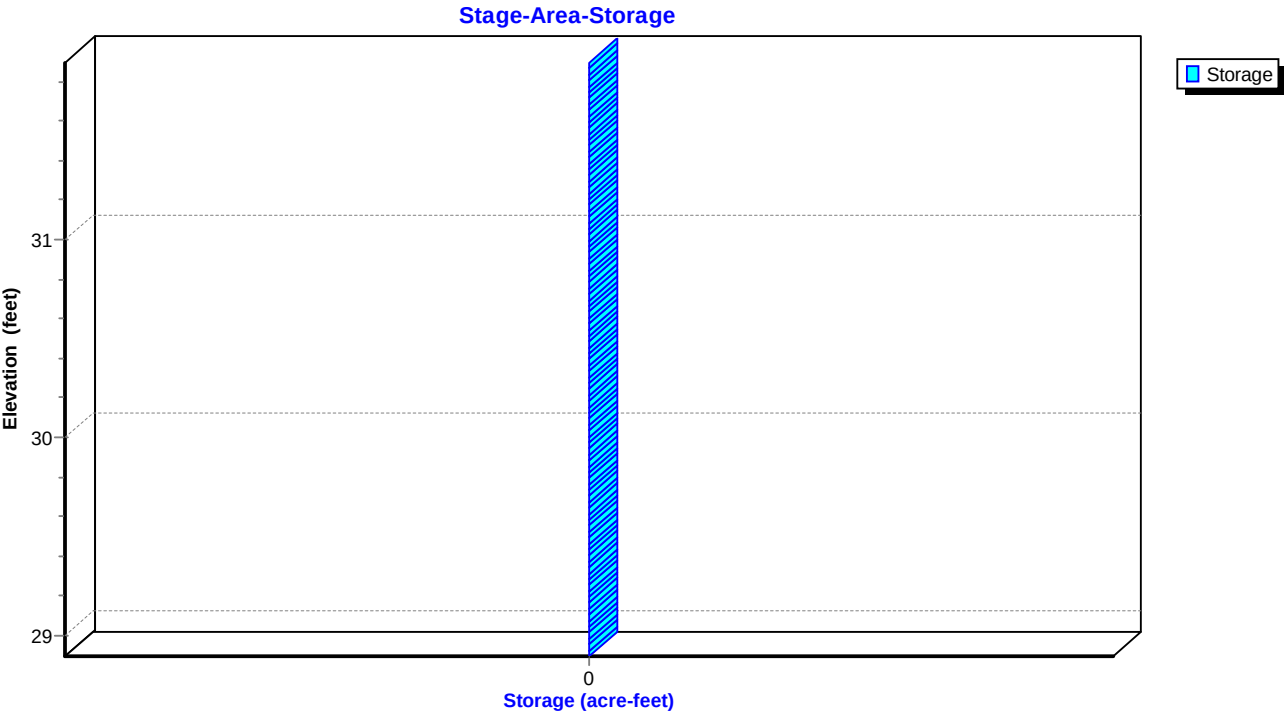
Hydrograph



Pond MH-2: MH-2



Pond MH-2: MH-2



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 10-Year Rainfall=5.20"

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Summary for Pond SGW: SGW

Inflow Area = 7.058 ac, 70.96% Impervious, Inflow Depth = 3.78" for 10-Year event
 Inflow = 18.82 cfs @ 12.33 hrs, Volume= 2.225 af
 Outflow = 18.70 cfs @ 12.37 hrs, Volume= 2.225 af, Atten= 1%, Lag= 2.0 min
 Primary = 18.70 cfs @ 12.37 hrs, Volume= 2.225 af
 Routed to Link PR-SP-1 : PR-SP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2

Starting Elev= 28.67' Storage= 0 cf

Peak Elev= 30.90' @ 12.37 hrs Surf.Area= 6,492 sf Storage= 10,587 cf

Plug-Flow detention time= (not calculated: outflow precedes inflow)

Center-of-Mass det. time= 31.4 min (848.1 - 816.7)

Volume	Invert	Avail.Storage	Storage Description		
#1	29.00'	18,455 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
29.00	4,692	305.3	0	0	4,692
29.50	5,135	313.7	2,456	2,456	5,134
30.00	5,608	322.3	2,685	5,141	5,597
30.50	6,095	330.8	2,925	8,066	6,068
31.00	6,592	339.4	3,171	11,237	6,556
31.50	7,157	350.0	3,436	14,673	7,163
32.00	7,979	388.0	3,782	18,455	9,402

Device	Routing	Invert	Outlet Devices
#1	Device 2	30.50'	60.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	28.67'	36.0" Round Culvert L= 42.9' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 28.67' / 24.02' S= 0.1084 ' S= 0.1084 ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 7.07 sf
#3	Device 2	28.67'	6.0" Round Collection Pipe X 2.00 L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.67' / 28.67' S= 0.0000 ' S= 0.0000 ' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=18.58 cfs @ 12.37 hrs HW=30.90' TW=0.00' (Dynamic Tailwater)

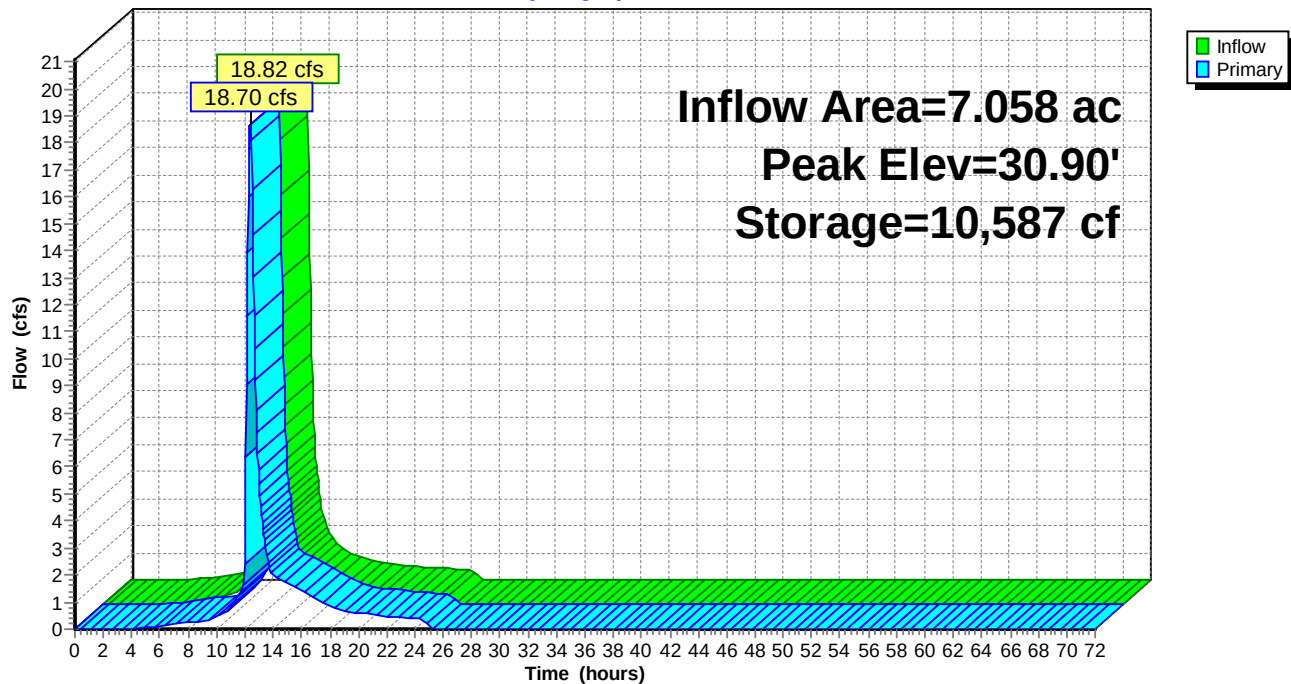
↑ **2=Culvert** (Passes 18.58 cfs of 28.62 cfs potential flow)

↑ **1=Orifice/Grate** (Weir Controls 16.47 cfs @ 2.06 fps)

↑ **3=Collection Pipe** (Barrel Controls 2.11 cfs @ 5.37 fps)

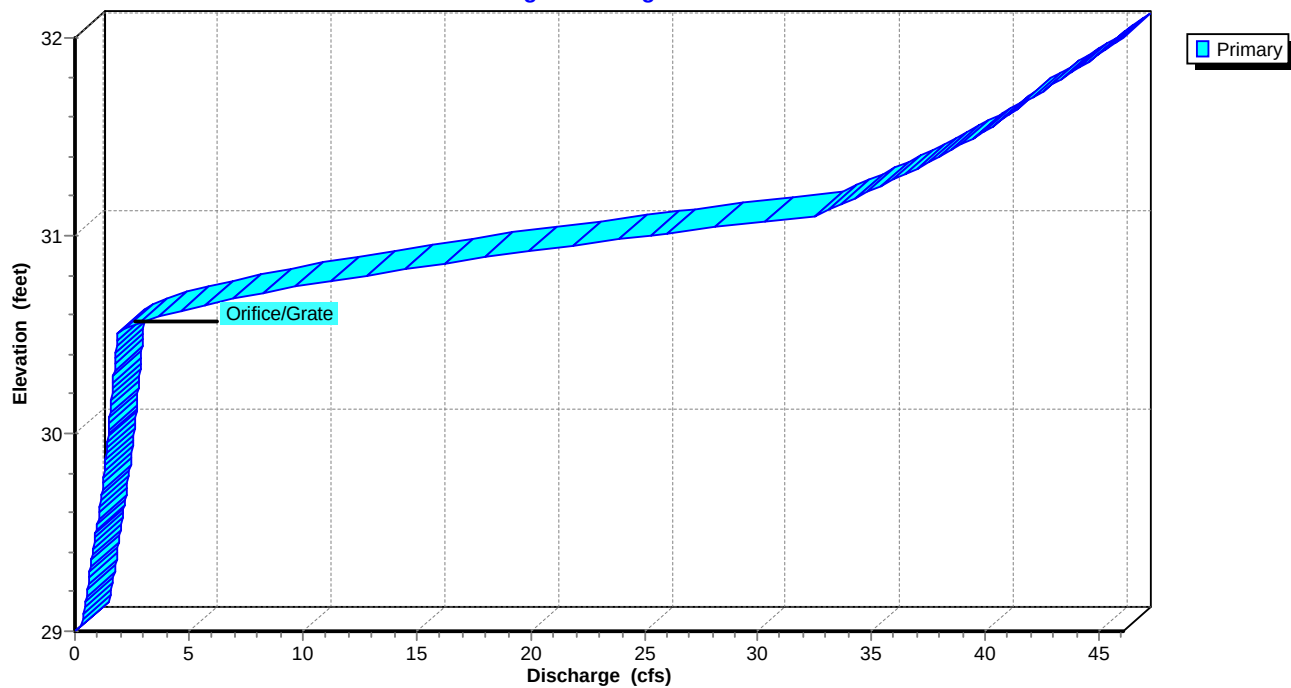
Pond SGW: SGW

Hydrograph

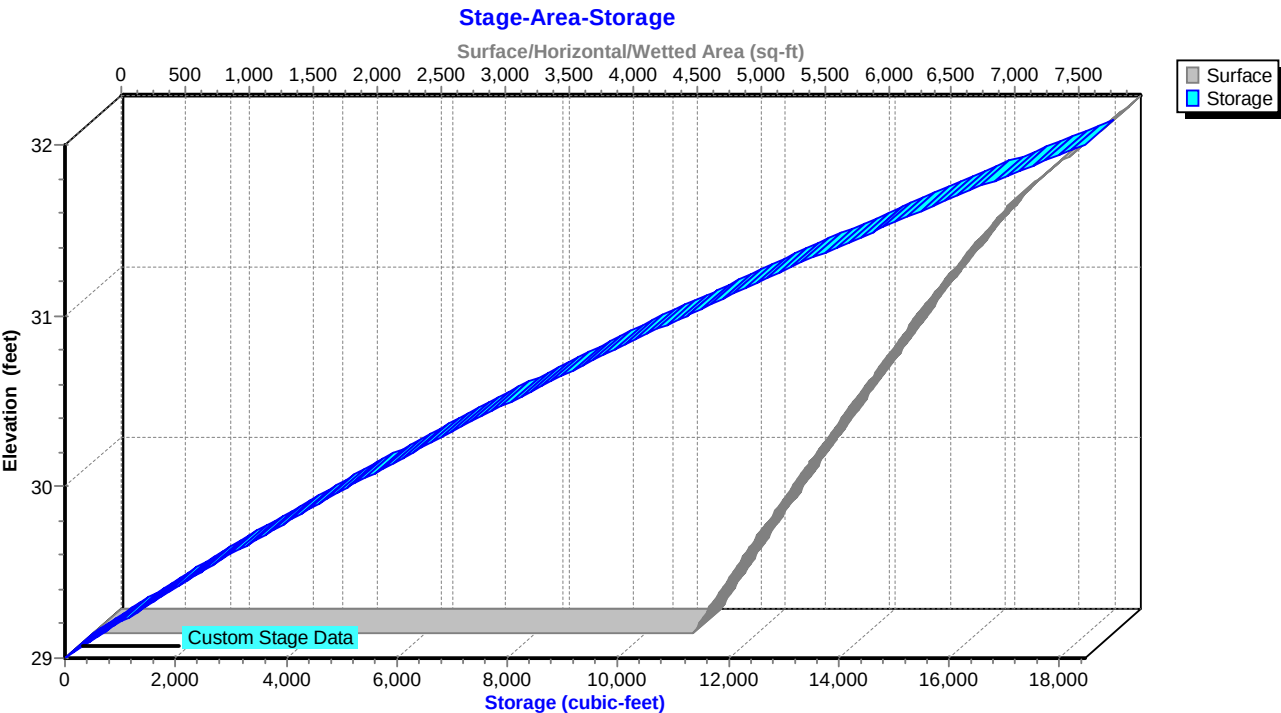


Pond SGW: SGW

Stage-Discharge



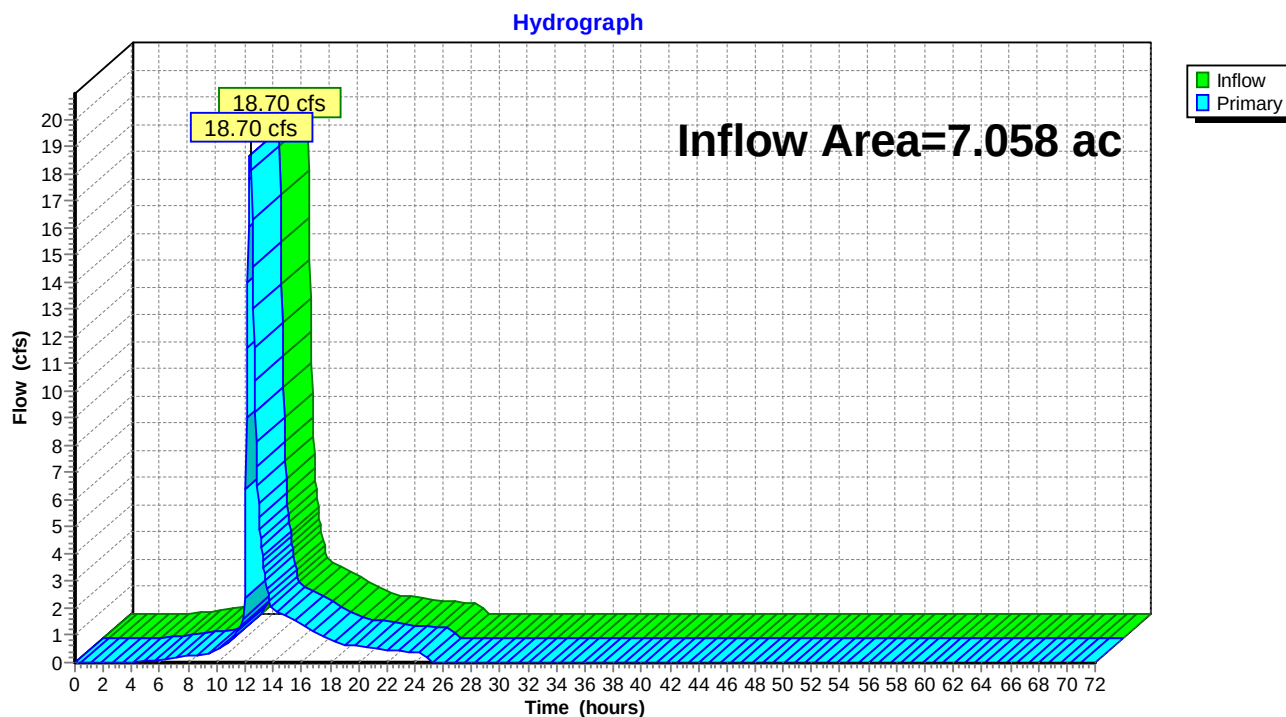
Pond SGW: SGW



Summary for Link PR-SP-1: PR-SP-1

Inflow Area = 7.058 ac, 70.96% Impervious, Inflow Depth = 3.78" for 10-Year event
Inflow = 18.70 cfs @ 12.37 hrs, Volume= 2.225 af
Primary = 18.70 cfs @ 12.37 hrs, Volume= 2.225 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link PR-SP-1: PR-SP-1

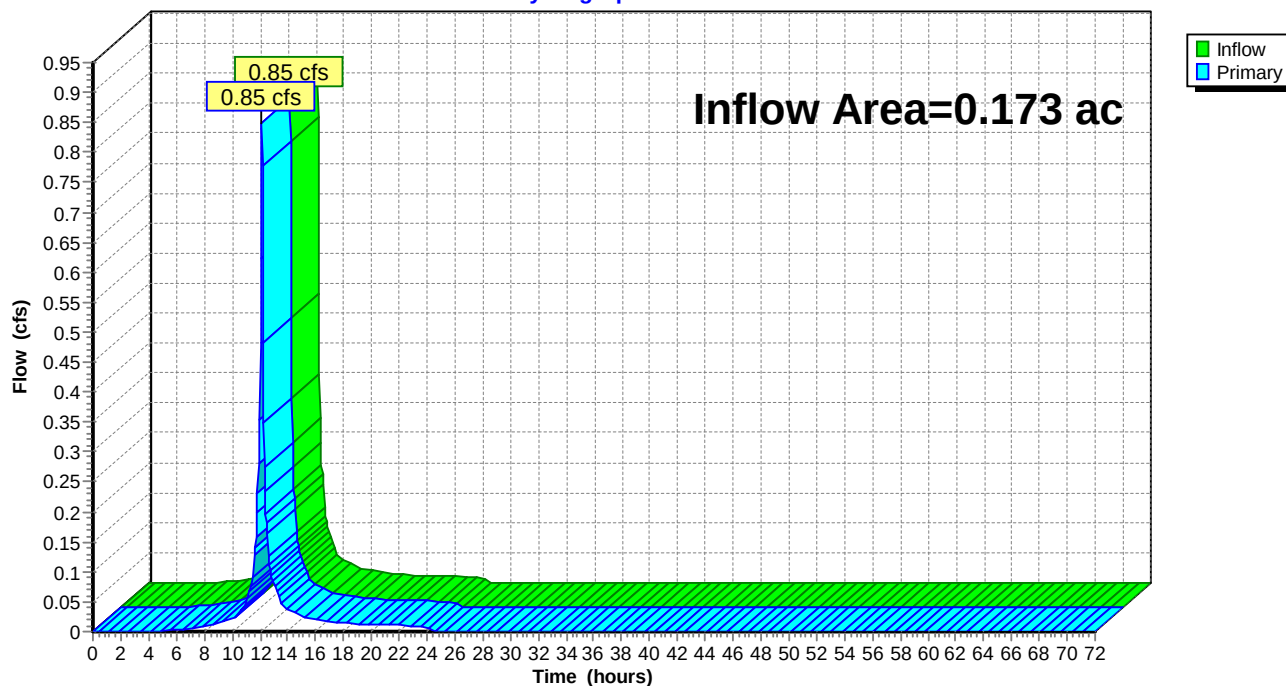
Summary for Link PR-SP-2: PR-SP-2

Inflow Area = 0.173 ac, 75.24% Impervious, Inflow Depth = 3.96" for 10-Year event
Inflow = 0.85 cfs @ 12.11 hrs, Volume= 0.057 af
Primary = 0.85 cfs @ 12.11 hrs, Volume= 0.057 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link PR-SP-2: PR-SP-2

Hydrograph



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 100-Year Rainfall=8.98"

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Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points x 2
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PR-DA-1: PR-DA-1	Runoff Area=230,241 sf 67.12% Impervious Runoff Depth=7.28" Flow Length=347' Tc=26.1 min CN=86 Runoff=27.32 cfs 3.208 af
Subcatchment PR-DA-2: PR-DA-2	Runoff Area=7,525 sf 75.24% Impervious Runoff Depth=7.65" Flow Length=258' Tc=5.1 min CN=89 Runoff=1.57 cfs 0.110 af
Subcatchment PR-DA-3: PR-DA-3	Runoff Area=19,951 sf 91.92% Impervious Runoff Depth=8.38" Flow Length=150' Tc=1.9 min CN=95 Runoff=4.87 cfs 0.320 af
Subcatchment PR-DA-4: PR-DA-4	Runoff Area=19,263 sf 82.03% Impervious Runoff Depth=7.89" Flow Length=112' Tc=12.2 min CN=91 Runoff=3.30 cfs 0.291 af
Subcatchment PR-DA-5: PR-DA-5	Runoff Area=18,594 sf 69.57% Impervious Runoff Depth=7.41" Flow Length=154' Tc=11.2 min CN=87 Runoff=3.17 cfs 0.263 af
Subcatchment PR-DA-6: PR-DA-6	Runoff Area=19,385 sf 85.36% Impervious Runoff Depth=8.14" Flow Length=110' Tc=12.1 min CN=93 Runoff=3.39 cfs 0.302 af
Pond CI - 1: CI - 1	Peak Elev=31.18' Inflow=4.82 cfs 0.611 af 30.0" Round Culvert n=0.013 L=60.0' S=0.0030 '/' Outflow=4.82 cfs 0.611 af
Pond MBR-1: MBR-1	Peak Elev=36.08' Storage=2,305 cf Inflow=4.87 cfs 0.320 af Outflow=1.53 cfs 0.320 af
Pond MBR-2: MBR-2	Peak Elev=35.31' Storage=372 cf Inflow=3.30 cfs 0.291 af Outflow=3.29 cfs 0.291 af
Pond MBR-3: MBR-3	Peak Elev=46.12' Storage=1,981 cf Inflow=3.17 cfs 0.263 af Outflow=2.37 cfs 0.252 af
Pond MBR-4: MBR-4	Peak Elev=34.91' Storage=830 cf Inflow=3.39 cfs 0.302 af Outflow=3.30 cfs 0.301 af
Pond MH-1: MH - 1	Peak Elev=33.76' Inflow=29.28 cfs 3.510 af 30.0" Round Culvert n=0.010 L=58.4' S=0.0259 '/' Outflow=29.28 cfs 3.510 af
Pond MH-2: MH-2	Peak Elev=32.26' Inflow=31.64 cfs 3.762 af 36.0" Round Culvert n=0.010 L=87.0' S=0.0049 '/' Outflow=31.64 cfs 3.762 af
Pond SGW: SGW	Peak Elev=31.16' Storage=12,313 cf Inflow=35.12 cfs 4.373 af Outflow=33.72 cfs 4.373 af
Link PR-SP-1: PR-SP-1	Inflow=33.72 cfs 4.373 af Primary=33.72 cfs 4.373 af
Link PR-SP-2: PR-SP-2	Inflow=1.57 cfs 0.110 af Primary=1.57 cfs 0.110 af

Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 100-Year Rainfall=8.98"

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Total Runoff Area = 7.230 ac Runoff Volume = 4.494 af Average Runoff Depth = 7.46"
28.94% Pervious = 2.092 ac 71.06% Impervious = 5.138 ac

Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 100-Year Rainfall=8.98"

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Summary for Subcatchment PR-DA-1: PR-DA-1

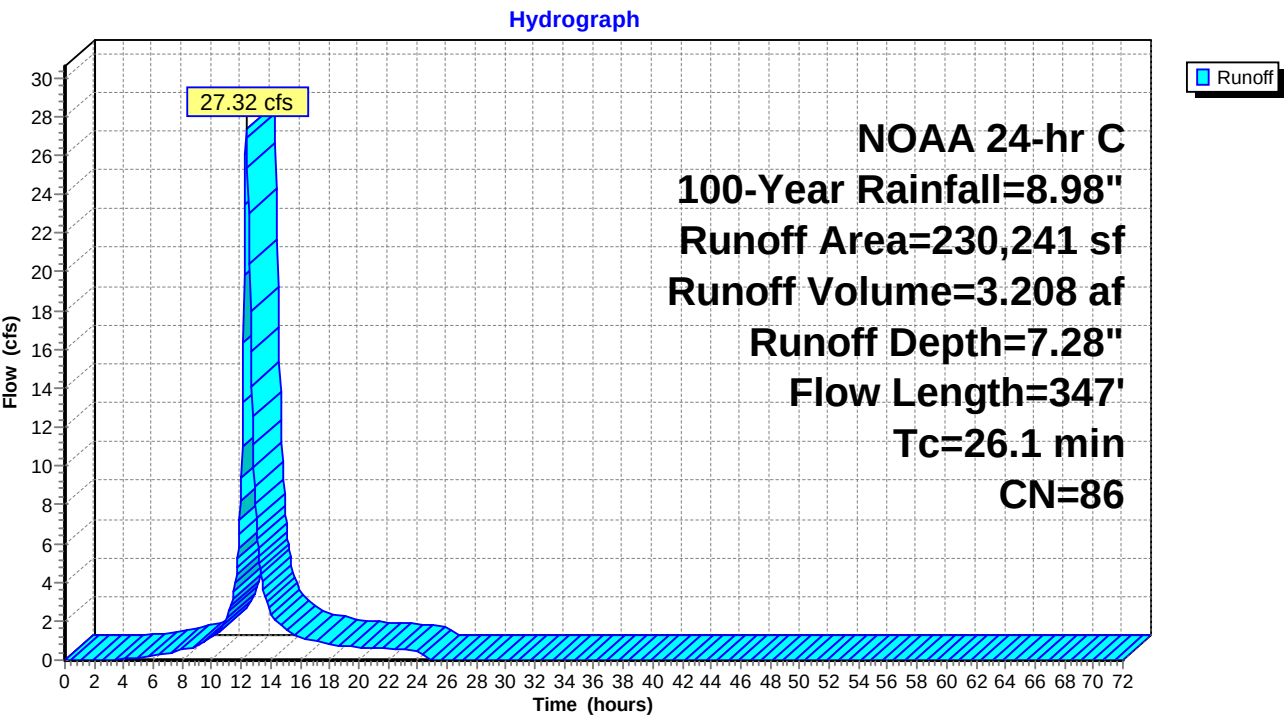
Runoff = 27.32 cfs @ 12.36 hrs, Volume= 3.208 af, Depth= 7.28"
 Routed to Pond MH-1 : MH - 1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 100-Year Rainfall=8.98"

Area (sf)	CN	Description
65,361	61	>75% Grass cover, Good, HSG B
146,431	98	Unconnected pavement, HSG B
10,353	74	>75% Grass cover, Good, HSG C
8,096	98	Unconnected pavement, HSG C
230,241	86	Weighted Average
75,714		32.88% Pervious Area
154,527		67.12% Impervious Area
154,527		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
4.5	35	0.0163	0.13		Sheet Flow, Grassed Sheet Flow Grass: Short n= 0.150 P2= 3.33"
3.5	8	0.0042	0.04		Sheet Flow, Concreted Sheet Flow Grass: Dense n= 0.240 P2= 3.33"
17.3	57	0.0015	0.06		Sheet Flow, Grassed Sheet Flow Grass: Short n= 0.150 P2= 3.33"
0.4	14	0.0015	0.58		Shallow Concentrated Flow, Grassed SCF Grassed Waterway Kv= 15.0 fps
0.3	114	0.0050	5.46	9.66	Pipe Channel, 18" Piped Flow 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.010 PVC, smooth interior
0.1	119	0.0206	15.59	76.53	Pipe Channel, 30" Piped Flow 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.010 PVC, smooth interior
26.1	347	Total			

Subcatchment PR-DA-1: PR-DA-1



Arc - Easton Crossing - Existing vs Proposed

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Summary for Subcatchment PR-DA-2: PR-DA-2

Runoff = 1.57 cfs @ 12.11 hrs, Volume= 0.110 af, Depth= 7.65"
Routed to Link PR-SP-2 : PR-SP-2

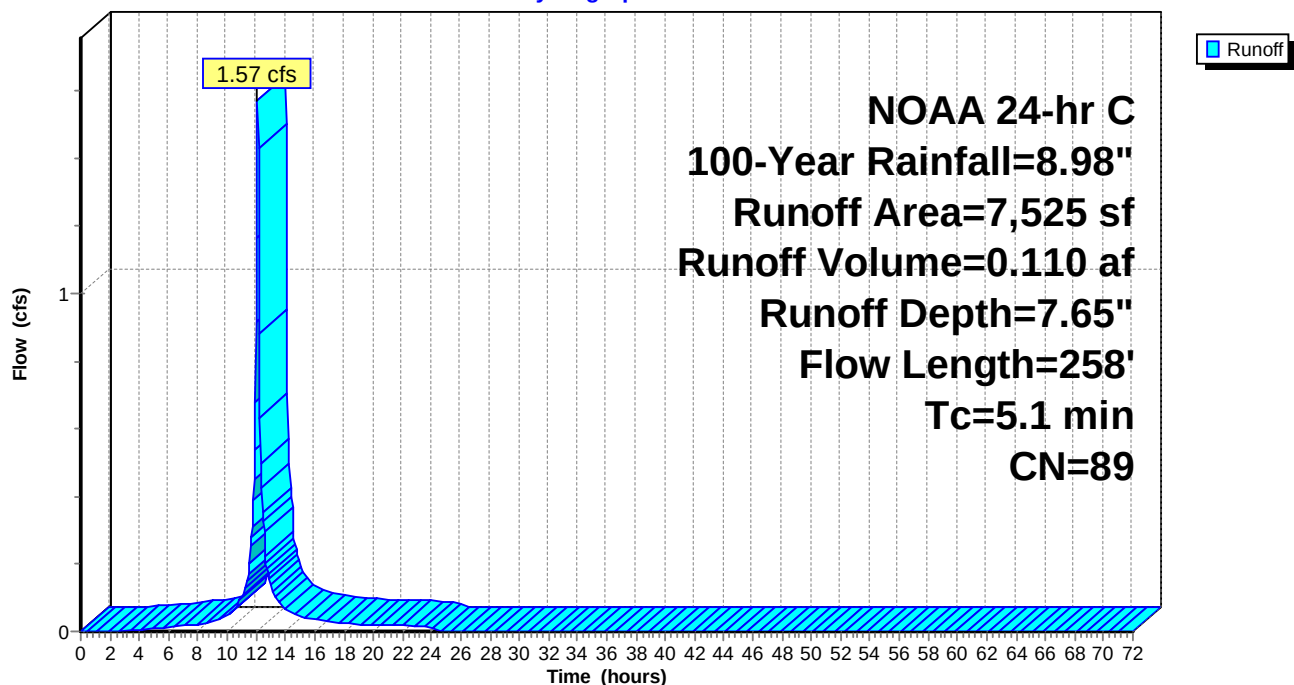
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.98"

Area (sf)	CN	Description
1,863	61	>75% Grass cover, Good, HSG B
5,662	98	Unconnected pavement, HSG B
7,525	89	Weighted Average
1,863		24.76% Pervious Area
5,662		75.24% Impervious Area
5,662		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
0.2	13	0.0375	1.20		Sheet Flow, Concreted Sheet Flow Smooth surfaces n= 0.011 P2= 3.33"
4.9	245	0.0021	0.82	0.08	Channel Flow, Concreted Channelled Flow Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
5.1	258	Total			

Subcatchment PR-DA-2: PR-DA-2

Hydrograph



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 100-Year Rainfall=8.98"

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Summary for Subcatchment PR-DA-3: PR-DA-3

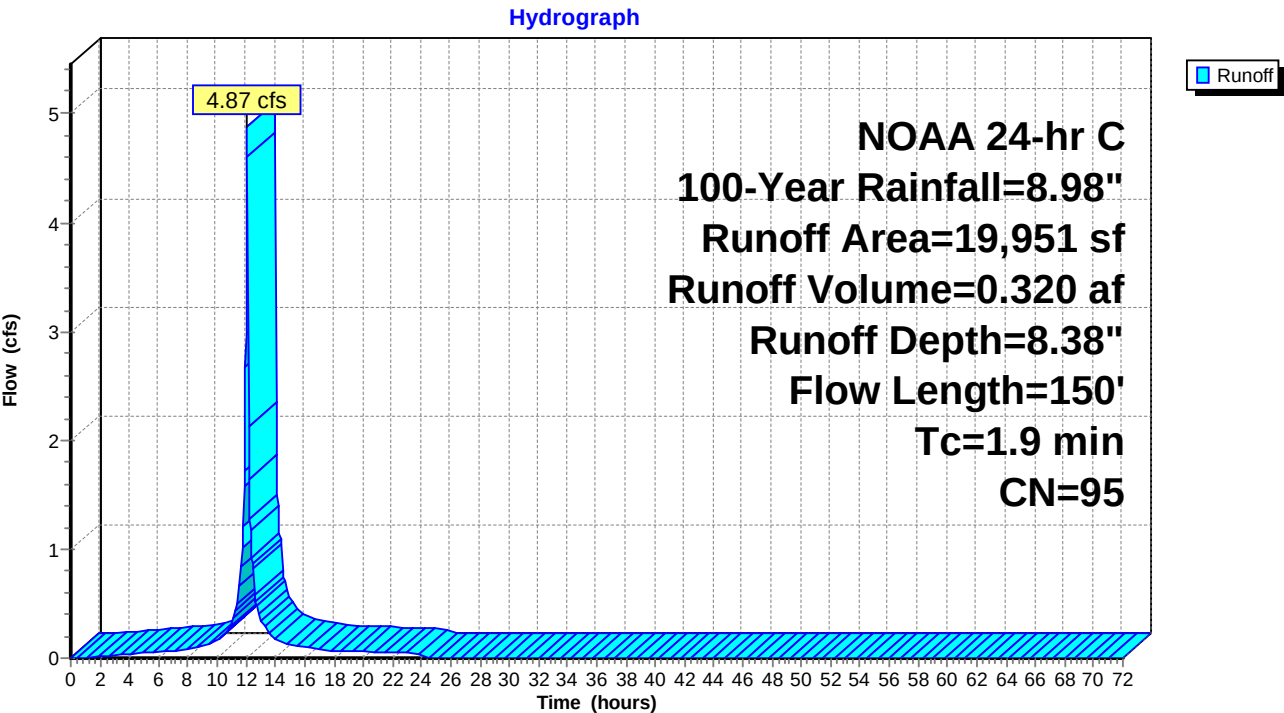
Runoff = 4.87 cfs @ 12.08 hrs, Volume= 0.320 af, Depth= 8.38"
 Routed to Pond MBR-1 : MBR-1

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 100-Year Rainfall=8.98"

Area (sf)	CN	Description
1,612	61	>75% Grass cover, Good, HSG B
18,339	98	Unconnected pavement, HSG B
19,951	95	Weighted Average
1,612		8.08% Pervious Area
18,339		91.92% Impervious Area
18,339		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	80	0.0079	0.93		Sheet Flow, Paved Sheet Flow Smooth surfaces n= 0.011 P2= 3.33"
0.1	17	0.0200	2.55	0.25	Channel Flow, Concreted Channeled Flow Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
0.3	36	0.0101	2.04		Shallow Concentrated Flow, Paved SCF Paved Kv= 20.3 fps
0.1	17	0.0336	3.30	0.33	Channel Flow, Concreted Channeled Flow Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
1.9	150	Total			

Subcatchment PR-DA-3: PR-DA-3



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 100-Year Rainfall=8.98"

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Summary for Subcatchment PR-DA-4: PR-DA-4

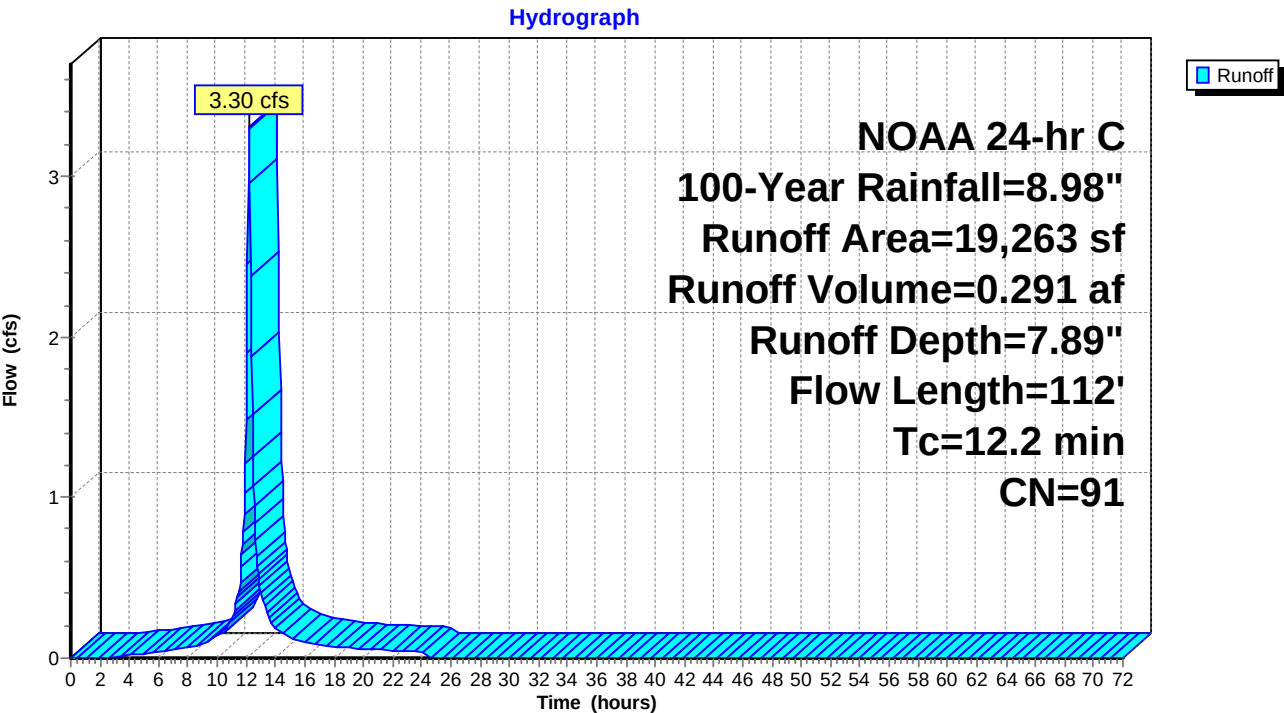
Runoff = 3.30 cfs @ 12.20 hrs, Volume= 0.291 af, Depth= 7.89"
 Routed to Pond MBR-2 : MBR-2

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 100-Year Rainfall=8.98"

Area (sf)	CN	Description
3,462	61	>75% Grass cover, Good, HSG B
15,801	98	Unconnected pavement, HSG B
19,263	91	Weighted Average
3,462		17.97% Pervious Area
15,801		82.03% Impervious Area
15,801		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.2	31	0.0013	0.05		Sheet Flow, Grassed Sheet Flow Grass: Short n= 0.150 P2= 3.33"
0.1	5	0.0289	0.89		Sheet Flow, Concreted Sheet Flow Smooth surfaces n= 0.011 P2= 3.33"
0.7	49	0.0154	1.10		Sheet Flow, Paved Sheet Flow Smooth surfaces n= 0.011 P2= 3.33"
0.2	27	0.0200	2.55	0.25	Channel Flow, Concreted Channeled Flow Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
12.2	112	Total			

Subcatchment PR-DA-4: PR-DA-4



Arc - Easton Crossing - Existing vs Proposed

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Summary for Subcatchment PR-DA-5: PR-DA-5

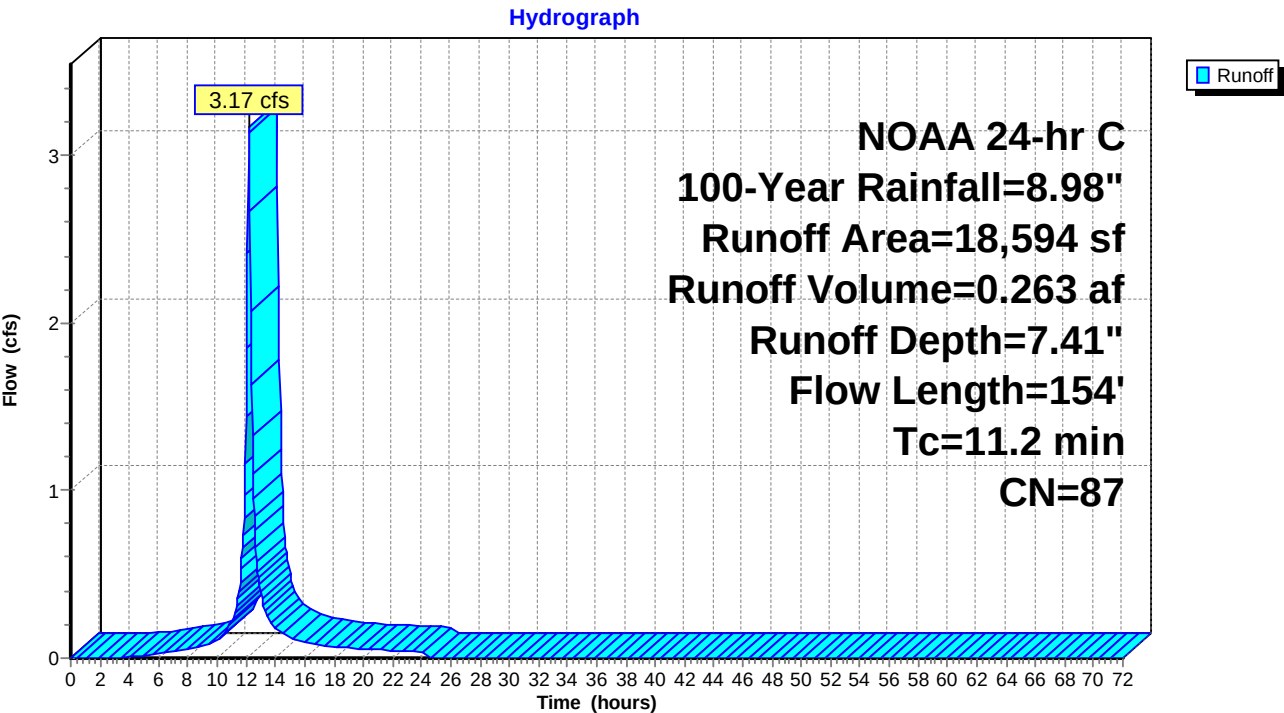
Runoff = 3.17 cfs @ 12.19 hrs, Volume= 0.263 af, Depth= 7.41"
 Routed to Pond MBR-3 : MBR-3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
 NOAA 24-hr C 100-Year Rainfall=8.98"

Area (sf)	CN	Description
5,659	61	>75% Grass cover, Good, HSG B
12,935	98	Unconnected pavement, HSG B
18,594	87	Weighted Average
5,659		30.43% Pervious Area
12,935		69.57% Impervious Area
12,935		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.1	60	0.0063	0.10		Sheet Flow, Grassed Sheet Flow Grass: Short n= 0.150 P2= 3.33"
0.8	33	0.0062	0.70		Sheet Flow, Concreted Sheet Flow Smooth surfaces n= 0.011 P2= 3.33"
0.1	19	0.0200	2.55	0.25	Channel Flow, Concreted Channeled Flow Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
0.2	42	0.0279	3.39		Shallow Concentrated Flow, Paved SCF Paved Kv= 20.3 fps
11.2	154	Total			

Subcatchment PR-DA-5: PR-DA-5



Arc - Easton Crossing - Existing vs Proposed

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Summary for Subcatchment PR-DA-6: PR-DA-6

Runoff = 3.39 cfs @ 12.19 hrs, Volume= 0.302 af, Depth= 8.14"
Routed to Pond MBR-4 : MBR-4

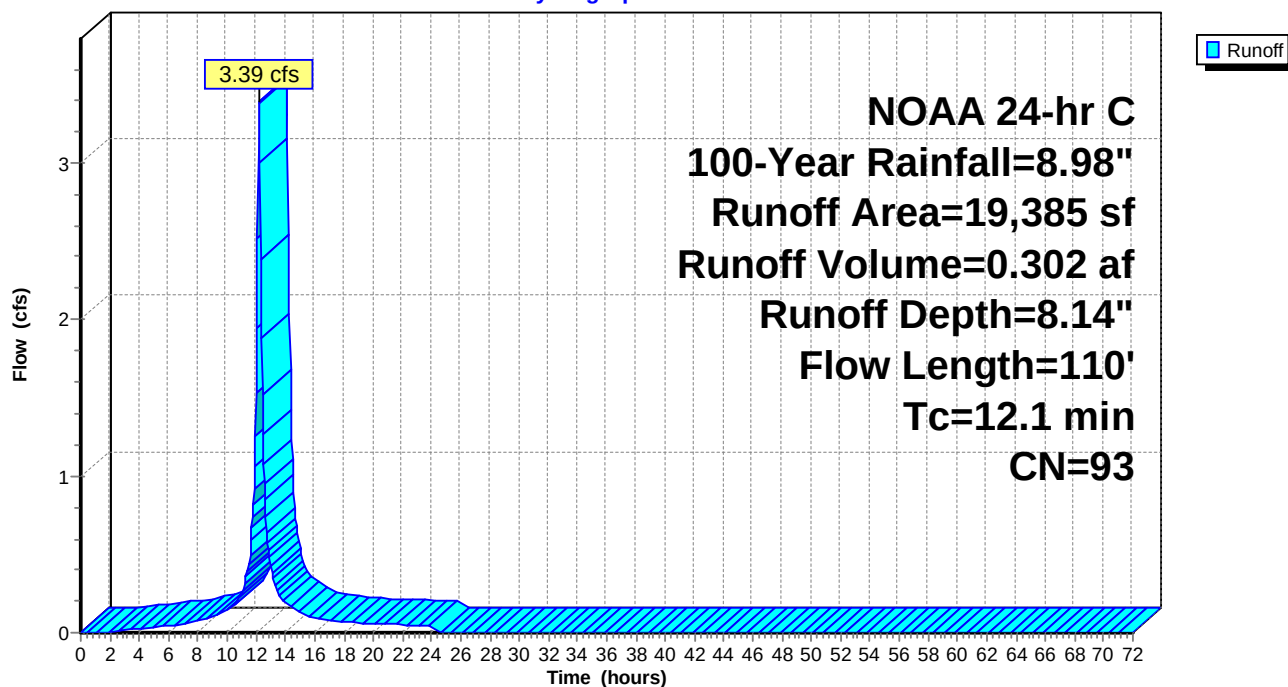
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
NOAA 24-hr C 100-Year Rainfall=8.98"

Area (sf)	CN	Description
2,837	61	>75% Grass cover, Good, HSG B
16,548	98	Unconnected pavement, HSG B
19,385	93	Weighted Average
2,837		14.64% Pervious Area
16,548		85.36% Impervious Area
16,548		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.9	8	0.0073	0.07		Sheet Flow, Grassed Sheet Flow Grass: Short n= 0.150 P2= 3.33"
10.0	75	0.0262	0.13		Sheet Flow, Paved Sheet Flow Grass: Dense n= 0.240 P2= 3.33"
0.2	27	0.0200	2.55	0.25	Channel Flow, Concreted Channeled Flow Area= 0.1 sf Perim= 1.6' r= 0.06' n= 0.013 Concrete, trowel finish
12.1	110	Total			

Subcatchment PR-DA-6: PR-DA-6

Hydrograph



Arc - Easton Crossing - Existing vs Proposed

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Summary for Pond CI - 1: CI - 1

Inflow Area = 0.900 ac, 87.06% Impervious, Inflow Depth = 8.14" for 100-Year event
Inflow = 4.82 cfs @ 12.20 hrs, Volume= 0.611 af
Outflow = 4.82 cfs @ 12.20 hrs, Volume= 0.611 af, Atten= 0%, Lag= 0.0 min
Primary = 4.82 cfs @ 12.20 hrs, Volume= 0.611 af
Routed to Pond SGW : SGW

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2

Peak Elev= 31.18' @ 12.38 hrs

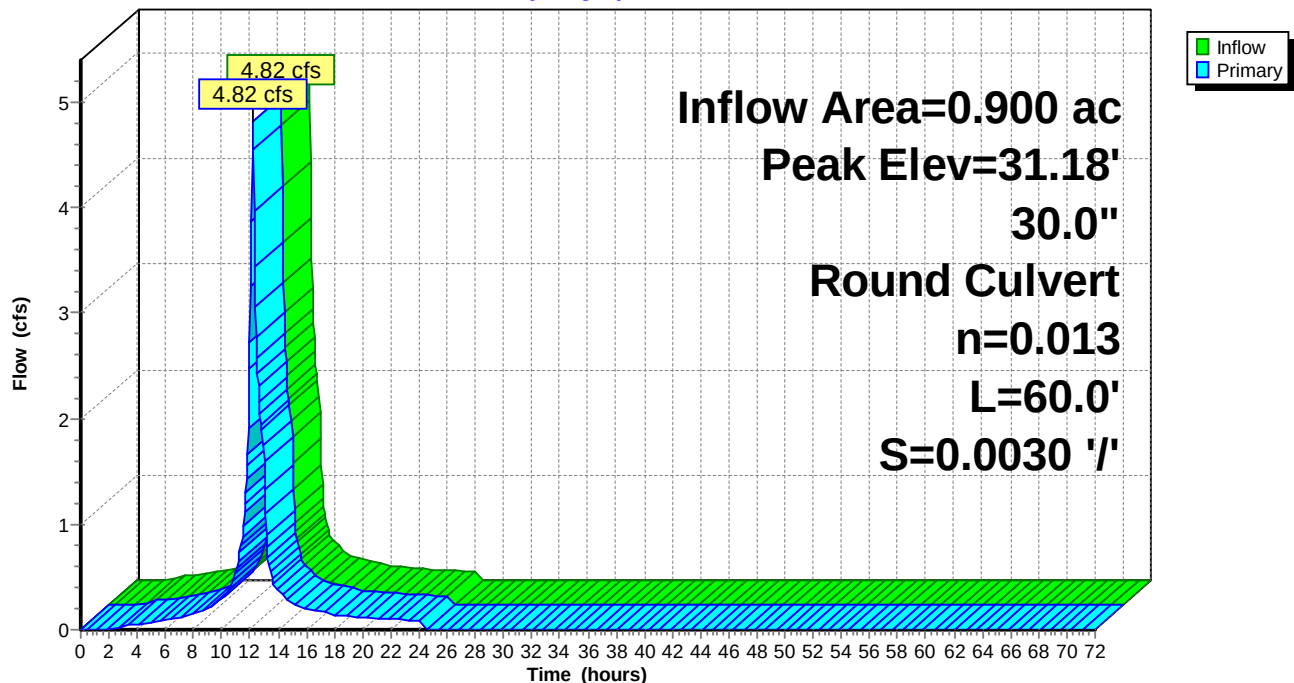
Device	Routing	Invert	Outlet Devices
#1	Primary	28.34'	30.0" Round Culvert L= 60.0' Box, 0° wingwalls, square crown edge, Ke= 0.700 Inlet / Outlet Invert= 28.34' / 28.16' S= 0.0030 '/' Cc= 0.900 n= 0.013 Concrete, trowel finish, Flow Area= 4.91 sf

Primary OutFlow Max=4.82 cfs @ 12.20 hrs HW=31.08' TW=31.03' (Dynamic Tailwater)

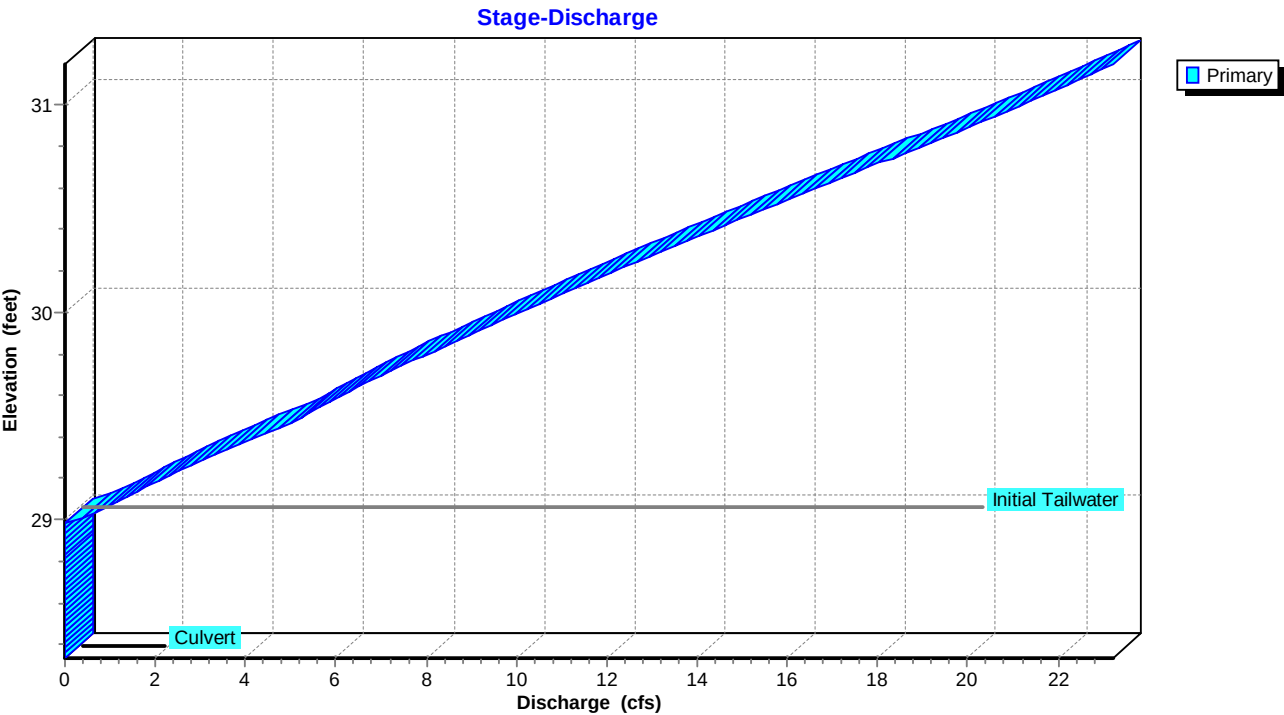
↑**1=Culvert** (Inlet Controls 4.82 cfs @ 0.98 fps)

Pond CI - 1: CI - 1

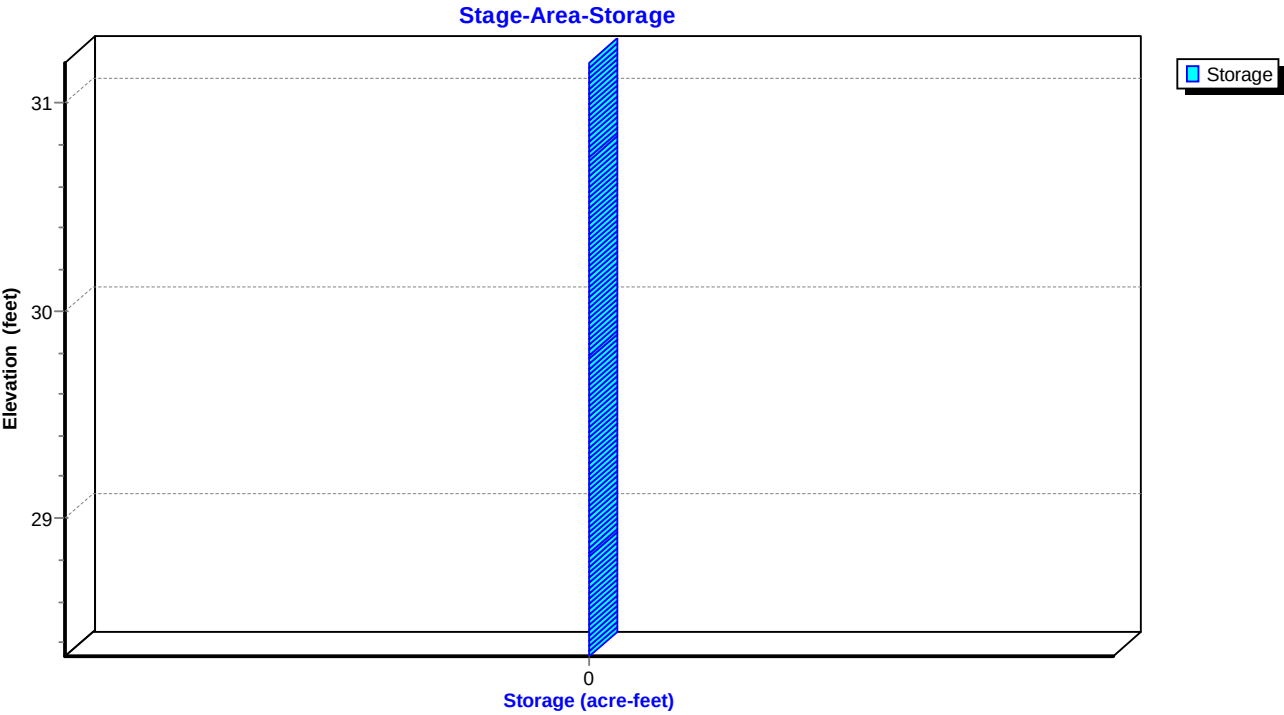
Hydrograph



Pond CI - 1: CI - 1



Pond CI - 1: CI - 1



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 100-Year Rainfall=8.98"

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Summary for Pond MBR-1: MBR-1

Inflow Area = 0.458 ac, 91.92% Impervious, Inflow Depth = 8.38" for 100-Year event
 Inflow = 4.87 cfs @ 12.08 hrs, Volume= 0.320 af
 Outflow = 1.53 cfs @ 12.16 hrs, Volume= 0.320 af, Atten= 69%, Lag= 4.9 min
 Primary = 1.53 cfs @ 12.16 hrs, Volume= 0.320 af
 Routed to Pond CI - 1 : CI - 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 36.08' @ 12.22 hrs Surf.Area= 3,193 sf Storage= 2,305 cf

Plug-Flow detention time= 10.5 min calculated for 0.320 af (100% of inflow)
 Center-of-Mass det. time= 10.6 min (762.5 - 751.9)

Volume	Invert	Avail.Storage	Storage Description			
#1	30.76'	2,356 cf	Custom Stage Data (Irregular) Listed below			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
30.76	265	168.6	0.0	0	0	265
30.77	265	168.6	40.0	1	1	267
33.76	265	168.6	40.0	317	318	771
33.77	265	168.6	100.0	3	321	772
35.77	1,209	176.3	100.0	1,360	1,681	1,177
36.00	2,270	206.1	100.0	394	2,074	2,085
36.10	3,399	287.6	100.0	282	2,356	5,287

Device	Routing	Invert	Outlet Devices
#1	Device 2	34.02'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Device 3	30.77'	6.0" Round 6" Piped Flow L= 83.8' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 30.77' / 30.35' S= 0.0050 ' / ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.20 sf
#3	Device 4	30.10'	18.0" Round 18" Piped Flow L= 61.5' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 30.10' / 29.79' S= 0.0050 ' / ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.77 sf
#4	Device 5	29.28'	24.0" Round 24" Piped Flow L= 82.1' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 29.28' / 28.87' S= 0.0050 ' / ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#5	Device 6	28.87'	24.0" Round 24" Piped Flow L= 81.2' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 28.87' / 28.34' S= 0.0065 ' / ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 3.14 sf
#6	Primary	28.34'	30.0" Round 30" Piped Flow L= 60.0' CPP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 28.34' / 28.16' S= 0.0030 ' / ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 4.91 sf
#7	Device 2	30.77'	6.0" Round Underdrain

Arc - Easton Crossing - Existing vs Proposed

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L= 63.0' CPP, square edge headwall, $K_e = 0.500$

Inlet / Outlet Invert= 30.77' / 30.77' S= 0.0000 '/' Cc= 0.900

n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=1.52 cfs @ 12.16 hrs HW=36.06' TW=31.01' (Dynamic Tailwater)

6=30" Piped Flow (Passes 1.52 cfs of 46.85 cfs potential flow)

5=24" Piped Flow (Passes 1.52 cfs of 33.98 cfs potential flow)

4=24" Piped Flow (Passes 1.52 cfs of 33.98 cfs potential flow)

3=18" Piped Flow (Passes 1.52 cfs of 19.12 cfs potential flow)

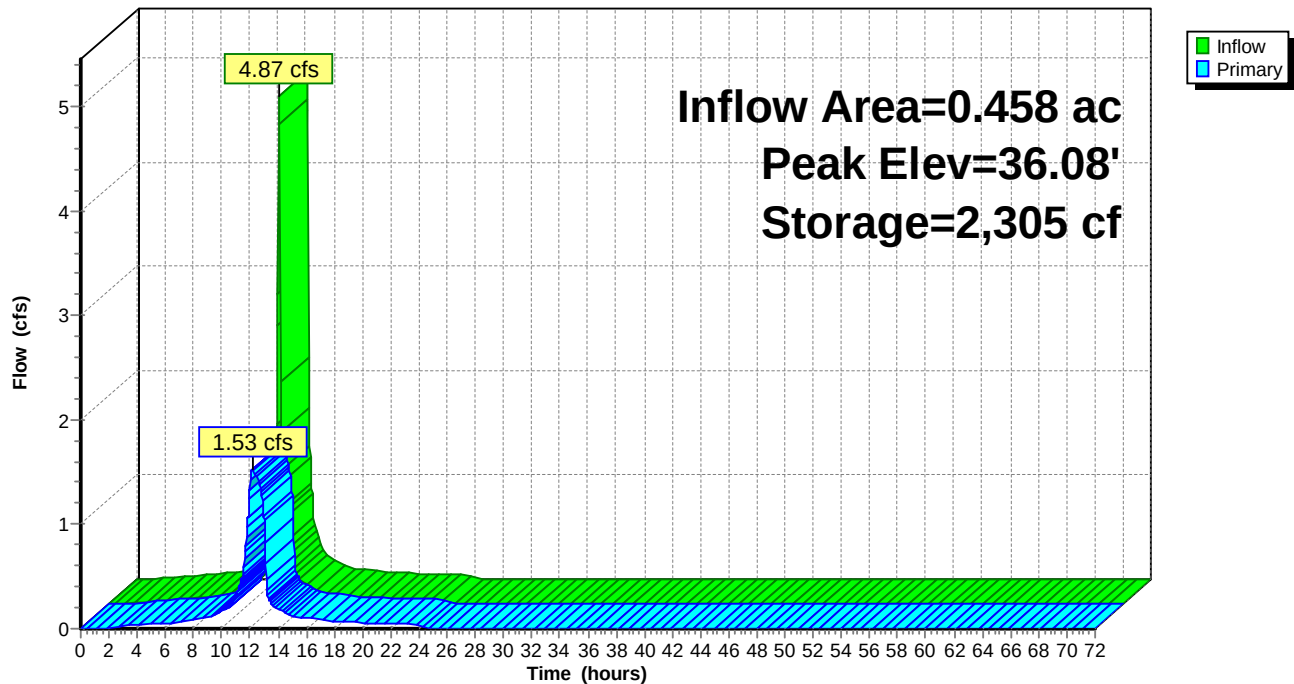
2=6" Piped Flow (Outlet Controls 1.52 cfs @ 7.74 fps)

1=Orifice/Grate (Passes < 27.51 cfs potential flow)

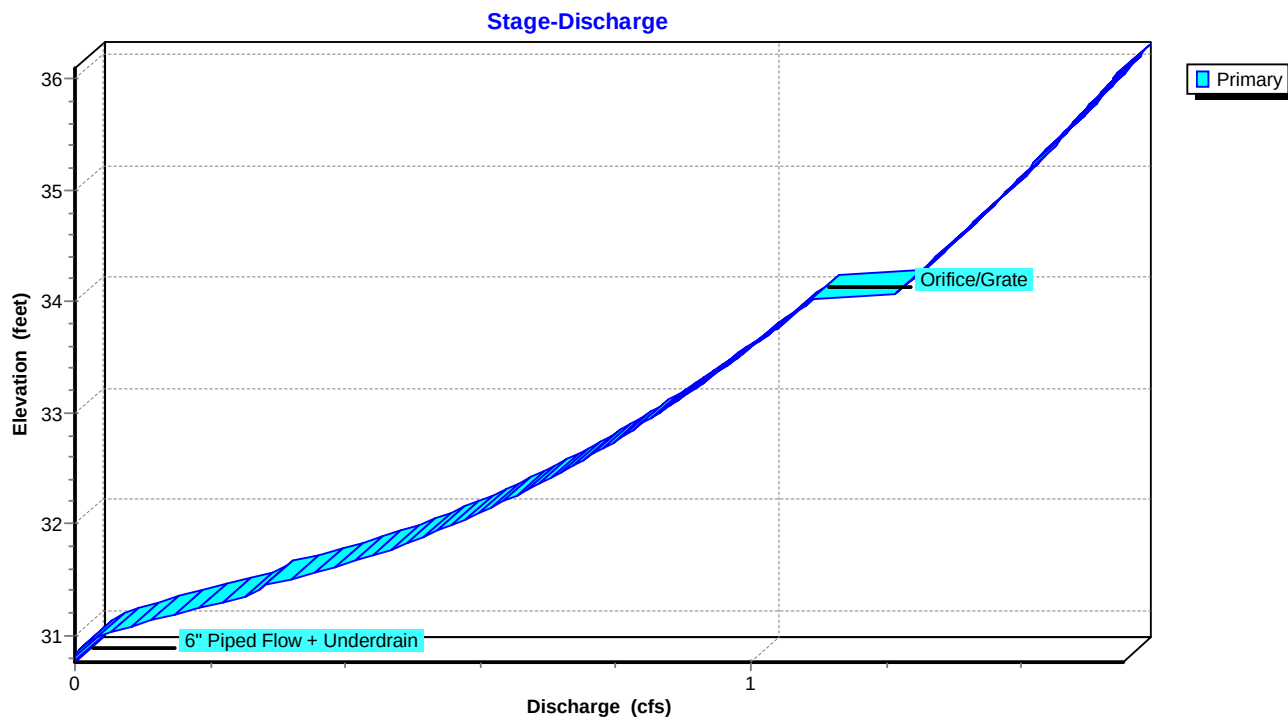
7=Underdrain (Passes < 1.44 cfs potential flow)

Pond MBR-1: MBR-1

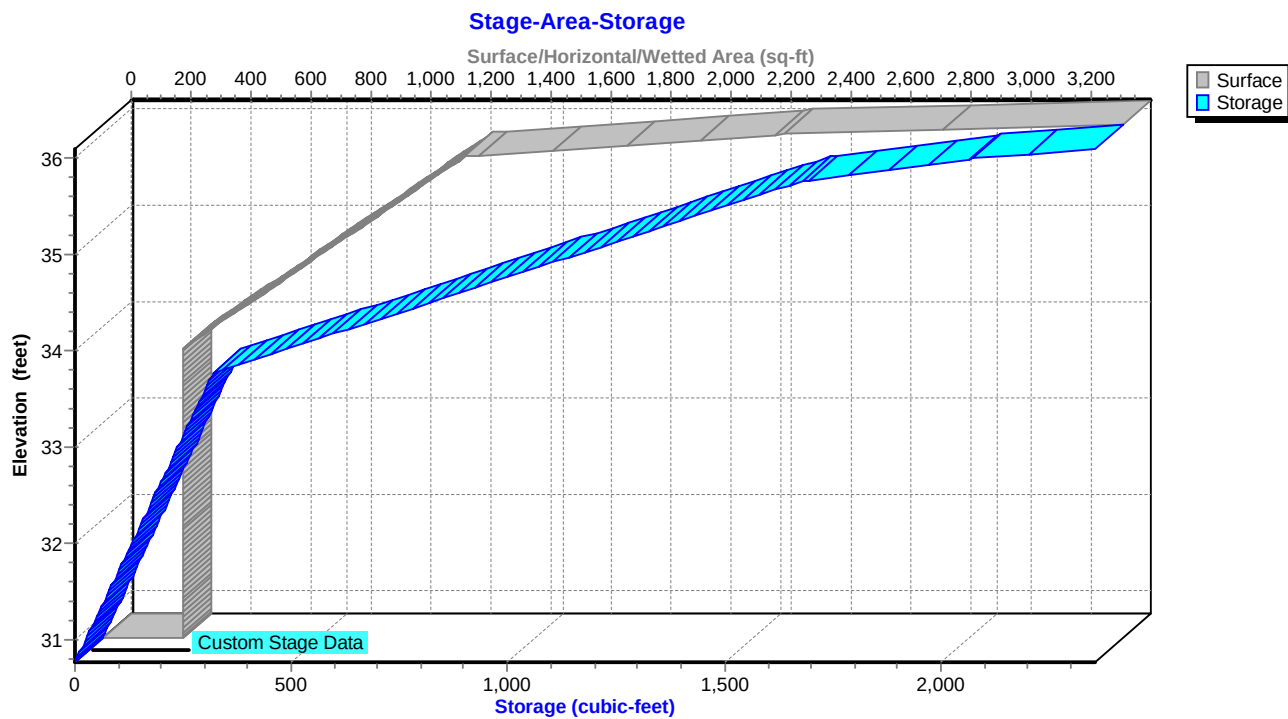
Hydrograph



Pond MBR-1: MBR-1



Pond MBR-1: MBR-1



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 100-Year Rainfall=8.98"

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Summary for Pond MBR-2: MBR-2

Inflow Area = 0.442 ac, 82.03% Impervious, Inflow Depth = 7.89" for 100-Year event
 Inflow = 3.30 cfs @ 12.20 hrs, Volume= 0.291 af
 Outflow = 3.29 cfs @ 12.20 hrs, Volume= 0.291 af, Atten= 0%, Lag= 0.4 min
 Primary = 3.29 cfs @ 12.20 hrs, Volume= 0.291 af
 Routed to Pond CI - 1 : CI - 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 35.31' @ 12.20 hrs Surf.Area= 309 sf Storage= 372 cf

Plug-Flow detention time= 3.7 min calculated for 0.291 af (100% of inflow)
 Center-of-Mass det. time= 3.7 min (780.6 - 776.9)

Volume	Invert	Avail.Storage	Storage Description			
#1	30.47'	1,326 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
30.47	122	67.3	0.0	0	0	122
30.48	122	67.3	40.0	0	0	123
34.45	122	67.3	40.0	194	194	390
34.46	122	67.3	100.0	1	195	391
35.46	352	86.2	100.0	227	423	634
36.46	983	123.9	100.0	641	1,064	1,273
36.66	1,157	138.0	100.0	214	1,277	1,568
36.70	1,262	145.2	100.0	48	1,326	1,730

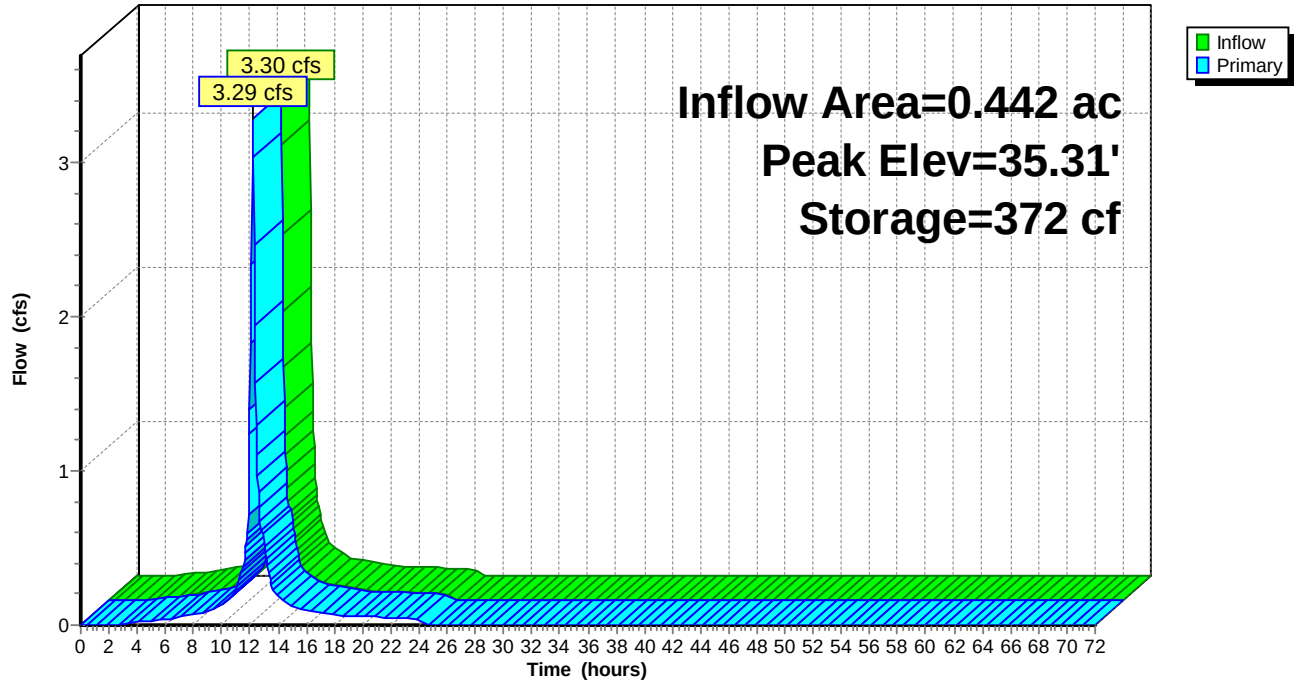
Device	Routing	Invert	Outlet Devices
#1	Device 2	34.96'	12.0" x 12.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	30.48'	15.0" Round Culvert L= 58.4' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 30.48' / 28.34' S= 0.0366 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf
#3	Device 2	30.47'	4.0" Round Underdrain L= 27.4' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 30.47' / 30.47' S= 0.0000 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.09 sf

Primary OutFlow Max=3.27 cfs @ 12.20 hrs HW=35.30' TW=31.08' (Dynamic Tailwater)

↑ **2=Culvert** (Passes 3.27 cfs of 12.11 cfs potential flow)
 ↑ **1=Orifice/Grate** (Weir Controls 2.64 cfs @ 1.92 fps)
 ↑ **3=Underdrain** (Outlet Controls 0.63 cfs @ 7.22 fps)

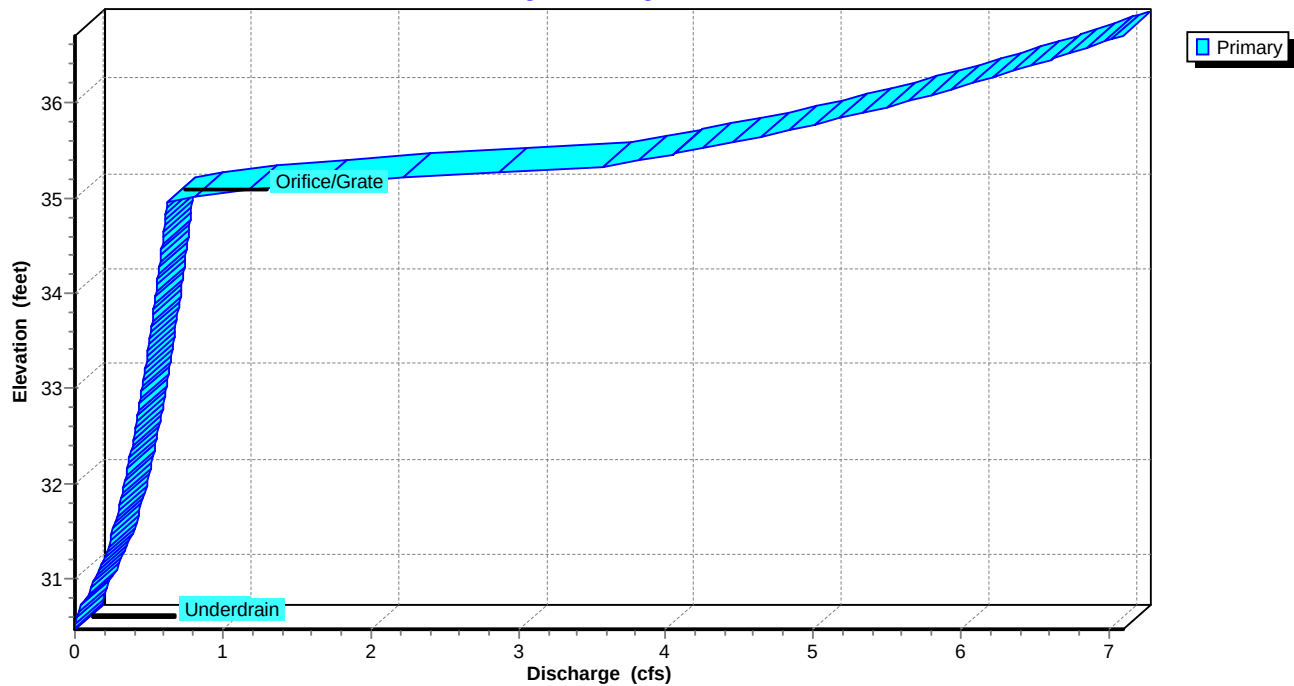
Pond MBR-2: MBR-2

Hydrograph

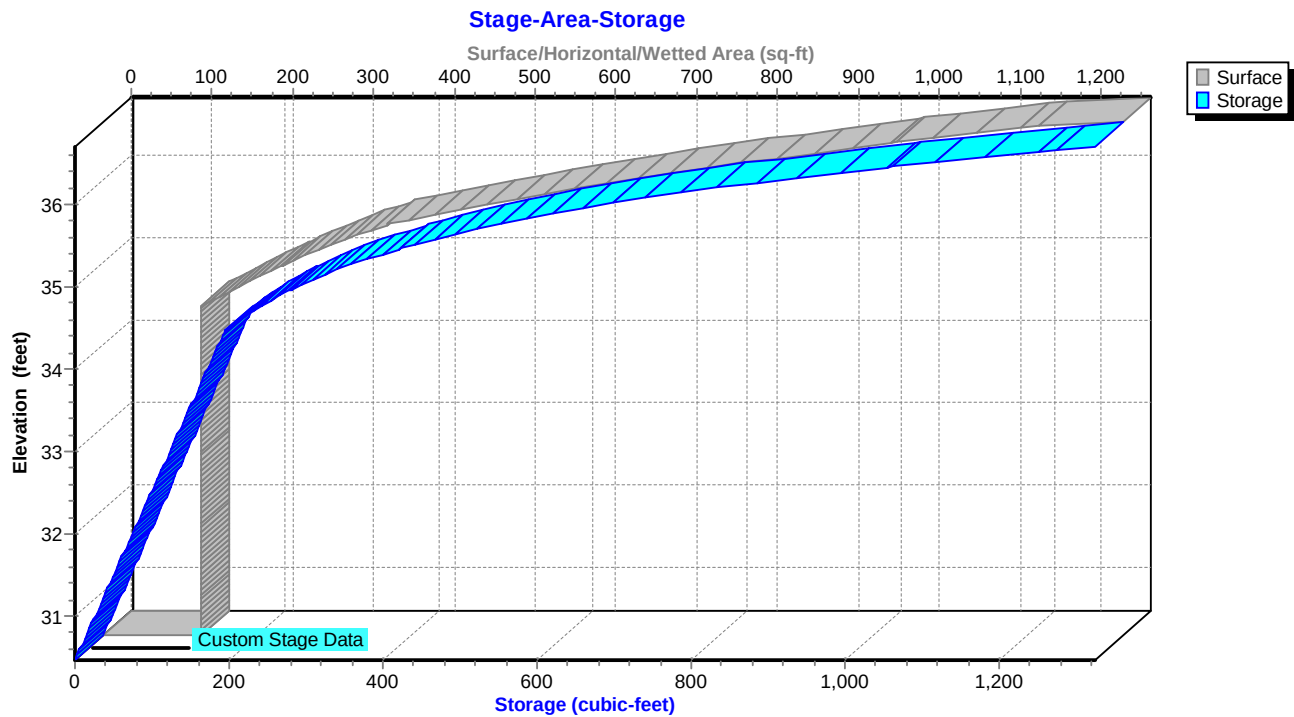


Pond MBR-2: MBR-2

Stage-Discharge



Pond MBR-2: MBR-2



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 100-Year Rainfall=8.98"

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Summary for Pond MBR-3: MBR-3

Inflow Area = 0.427 ac, 69.57% Impervious, Inflow Depth = 7.41" for 100-Year event
 Inflow = 3.17 cfs @ 12.19 hrs, Volume= 0.263 af
 Outflow = 2.37 cfs @ 12.35 hrs, Volume= 0.252 af, Atten= 25%, Lag= 9.8 min
 Primary = 2.37 cfs @ 12.35 hrs, Volume= 0.252 af
 Routed to Pond MH-2 : MH-2

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 46.12' @ 12.35 hrs Surf.Area= 2,235 sf Storage= 1,981 cf

Plug-Flow detention time= 49.4 min calculated for 0.252 af (96% of inflow)
 Center-of-Mass det. time= 23.8 min (812.1 - 788.3)

Volume	Invert	Avail.Storage	Storage Description			
#1	30.44'	1,981 cf	Custom Stage Data (Irregular) Listed below (Recalc)			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
30.44	249	130.6	0.0	0	0	249
30.45	249	130.6	40.0	1	1	250
33.70	249	130.6	40.0	324	325	675
33.71	249	130.6	100.0	2	327	676
34.71	669	149.5	100.0	442	769	1,120
35.71	1,145	168.3	100.0	896	1,666	1,621
35.90	2,235	222.1	100.0	315	1,981	3,293

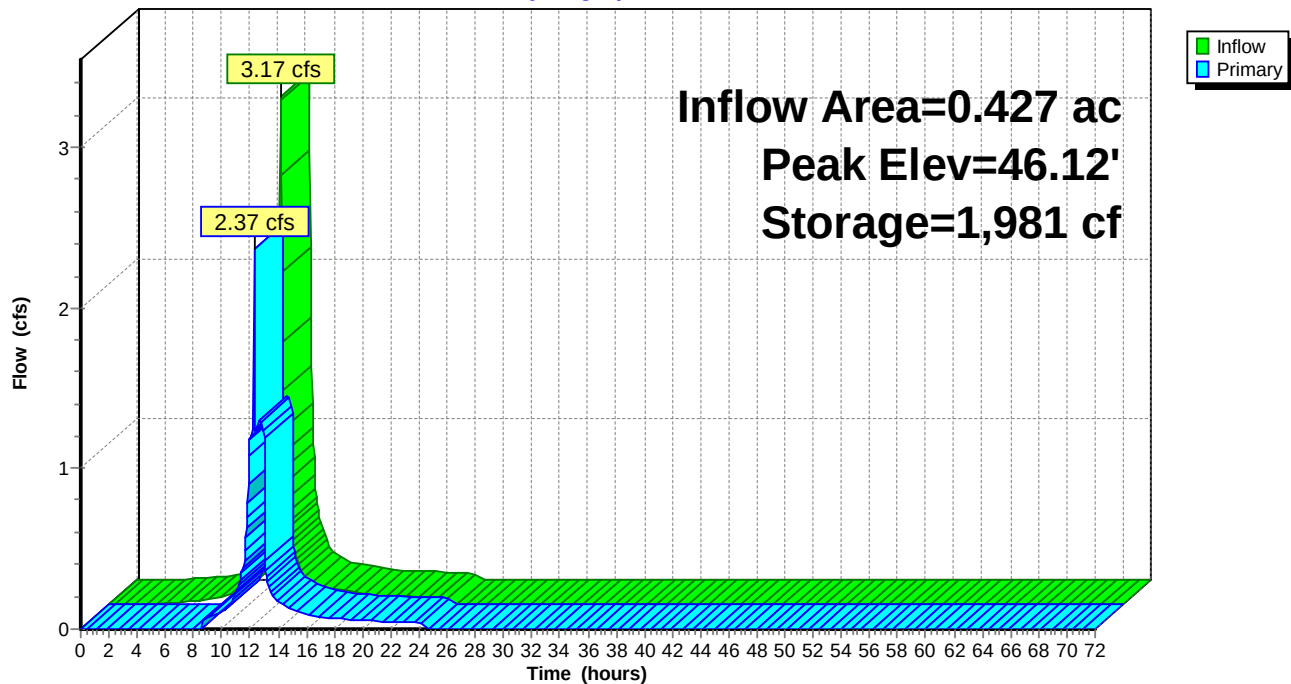
Device	Routing	Invert	Outlet Devices
#1	Device 3	34.21'	9.0" x 9.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	29.13'	15.0" Round Culvert L= 38.2' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 29.13' / 28.93' S= 0.0052 ' / ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf
#3	Device 2	29.13'	6.0" Round Underdrain L= 59.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 29.13' / 29.13' S= 0.0000 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=2.34 cfs @ 12.35 hrs HW=45.86' TW=32.26' (Dynamic Tailwater)

↑ **2=Culvert** (Passes 2.34 cfs of 21.79 cfs potential flow)
 ↑ **3=Underdrain** (Outlet Controls 2.34 cfs @ 11.92 fps)
 ↑ **1=Orifice/Grate** (Passes 2.34 cfs of 9.24 cfs potential flow)

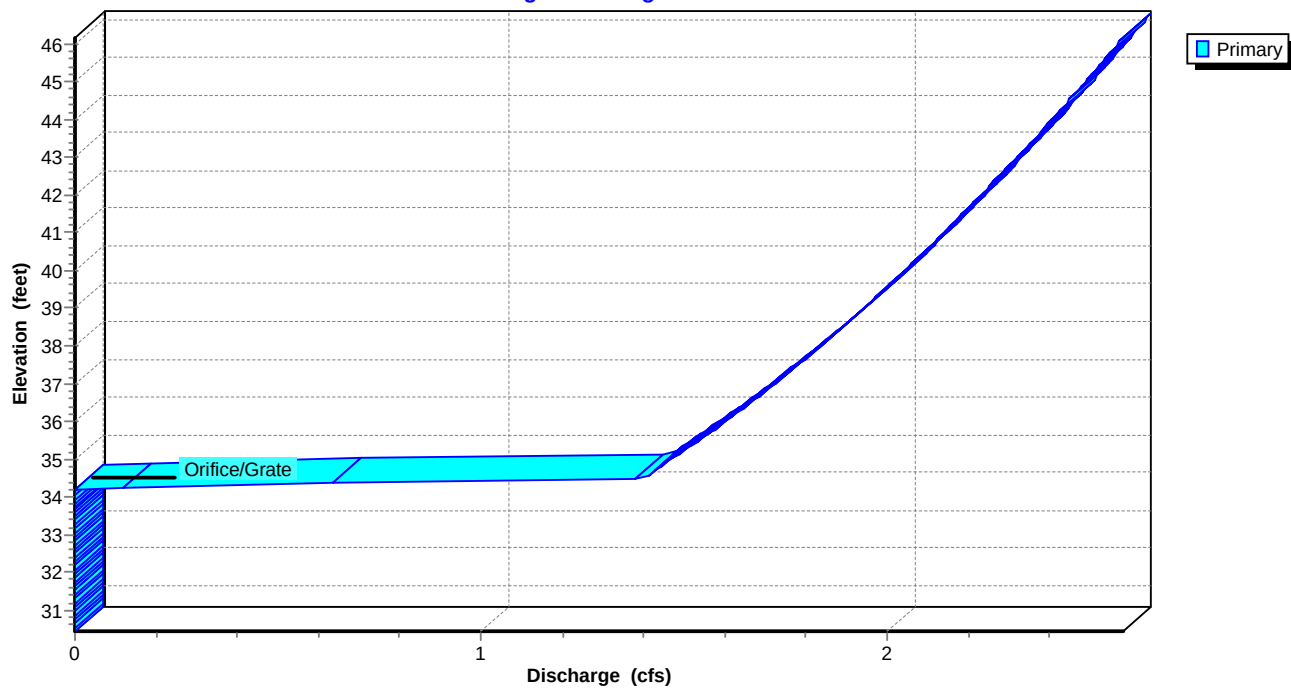
Pond MBR-3: MBR-3

Hydrograph



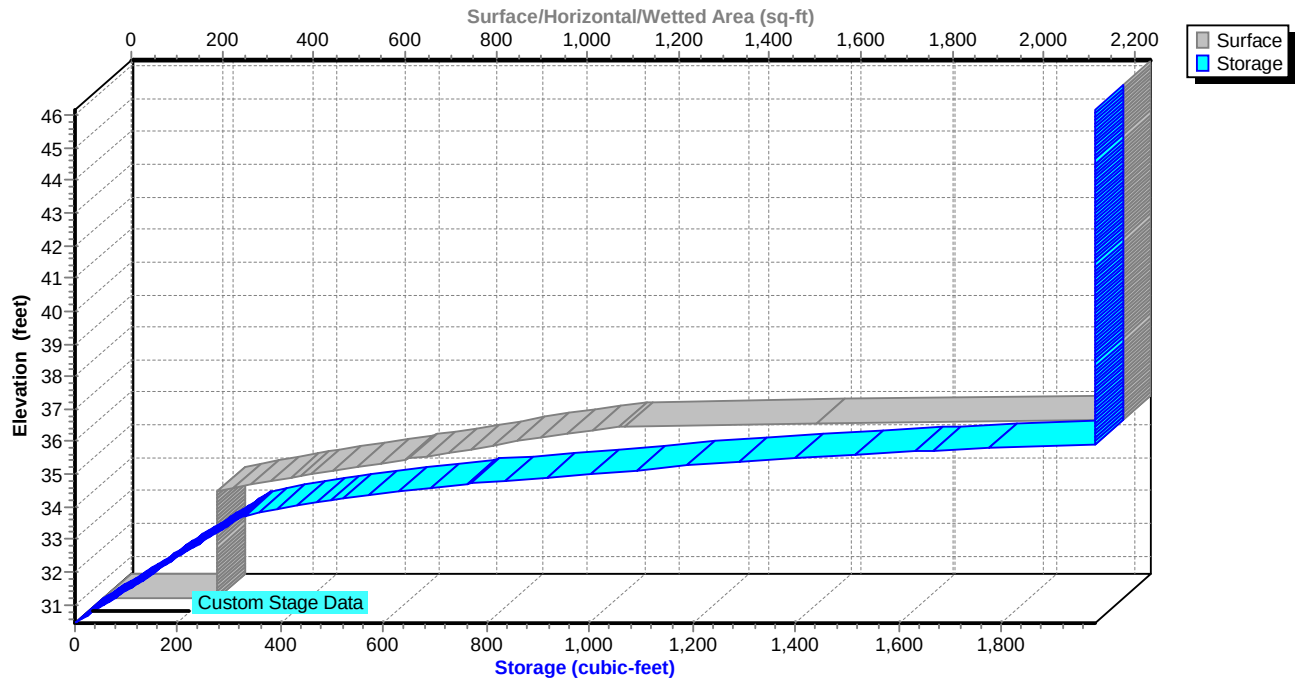
Pond MBR-3: MBR-3

Stage-Discharge



Pond MBR-3: MBR-3

Stage-Area-Storage



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 100-Year Rainfall=8.98"

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Summary for Pond MBR-4: MBR-4

Inflow Area = 0.445 ac, 85.36% Impervious, Inflow Depth = 8.14" for 100-Year event
 Inflow = 3.39 cfs @ 12.19 hrs, Volume= 0.302 af
 Outflow = 3.30 cfs @ 12.20 hrs, Volume= 0.301 af, Atten= 3%, Lag= 0.4 min
 Primary = 3.30 cfs @ 12.20 hrs, Volume= 0.301 af
 Routed to Pond MH-1 : MH - 1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
 Peak Elev= 34.91' @ 12.21 hrs Surf.Area= 662 sf Storage= 830 cf

Plug-Flow detention time= 7.6 min calculated for 0.301 af (100% of inflow)
 Center-of-Mass det. time= 7.0 min (776.5 - 769.6)

Volume	Invert	Avail.Storage	Storage Description			
#1	30.25'	1,725 cf	Custom Stage Data (Irregular) Listed below			
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Voids (%)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
30.25	212	112.4	0.0	0	0	212
30.26	212	112.4	40.0	1	1	213
33.70	212	112.4	40.0	292	293	600
33.71	212	112.4	100.0	2	295	601
34.71	578	131.3	100.0	380	675	987
35.71	1,000	150.1	100.0	779	1,454	1,431
35.90	1,899	200.3	100.0	271	1,725	2,831

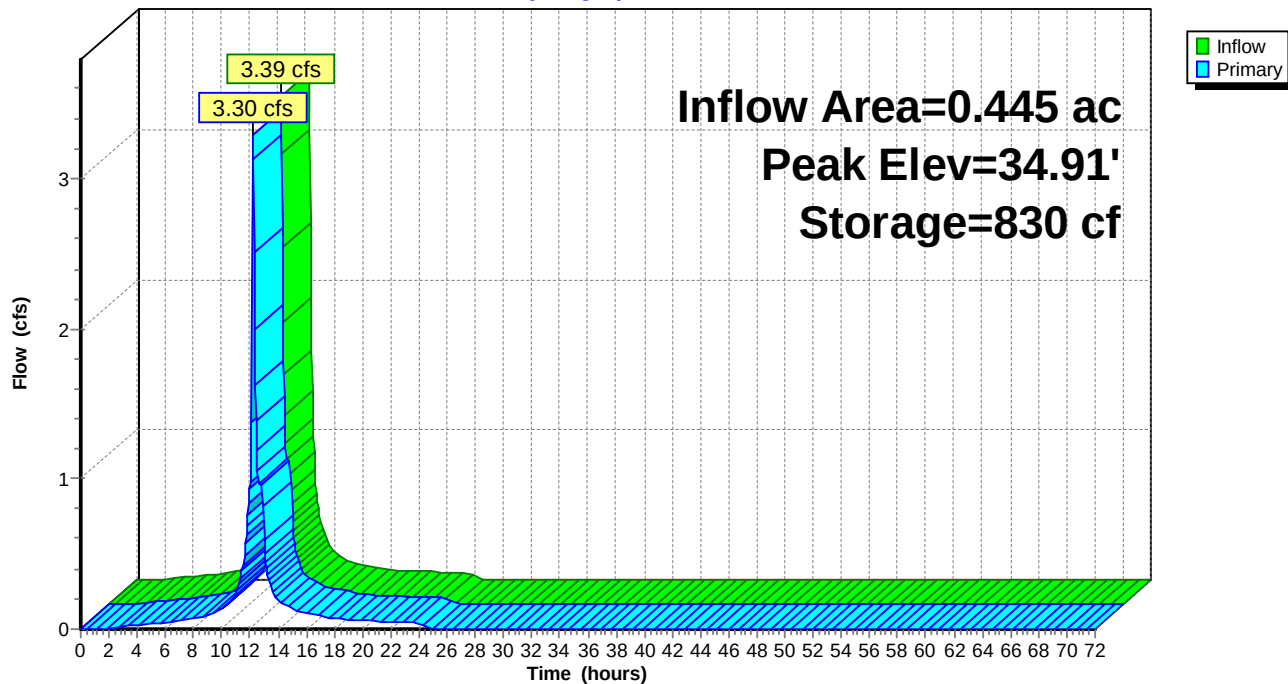
Device	Routing	Invert	Outlet Devices
#1	Device 2	34.71'	24.0" x 24.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	30.26'	15.0" Round Culvert L= 46.8' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 30.26' / 29.89' S= 0.0079 ' / ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf
#3	Device 2	30.26'	6.0" Round Underdrain L= 50.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 30.26' / 30.26' S= 0.0000 ' / ' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=3.28 cfs @ 12.20 hrs HW=34.91' TW=32.74' (Dynamic Tailwater)

↑ **2=Culvert** (Passes 3.28 cfs of 8.70 cfs potential flow)
 ↑ **1=Orifice/Grate** (Weir Controls 2.32 cfs @ 1.46 fps)
 ↑ **3=Underdrain** (Outlet Controls 0.96 cfs @ 4.88 fps)

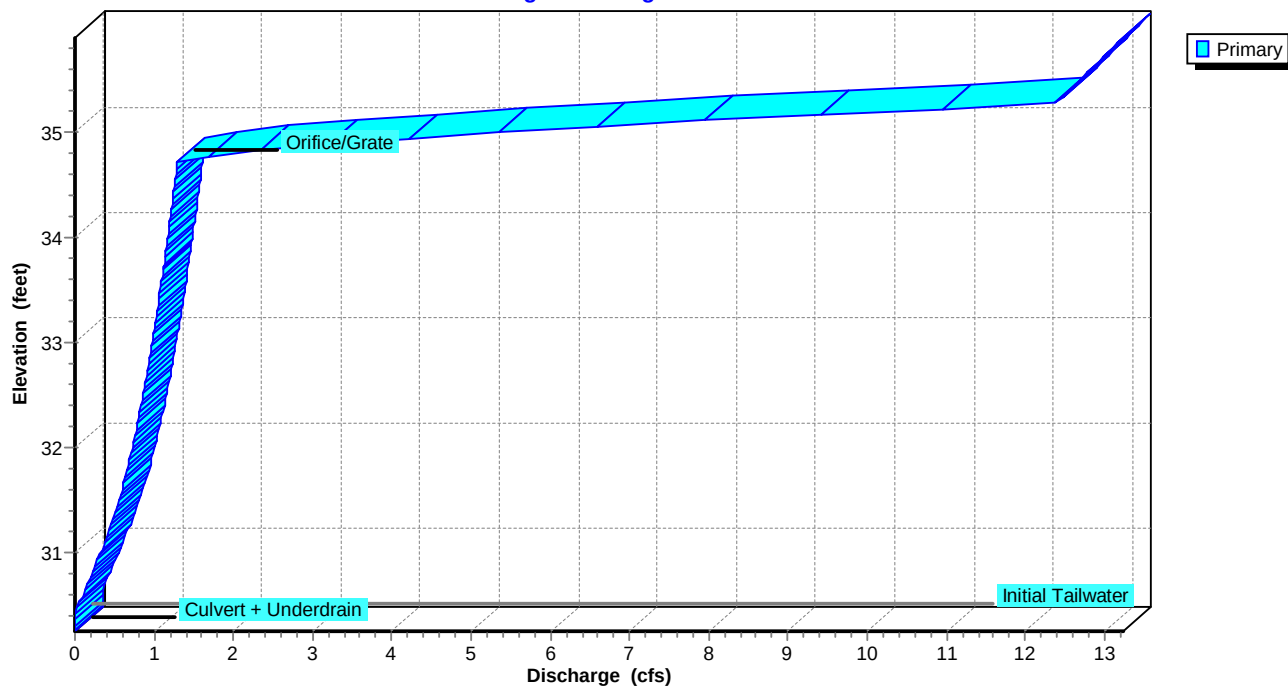
Pond MBR-4: MBR-4

Hydrograph



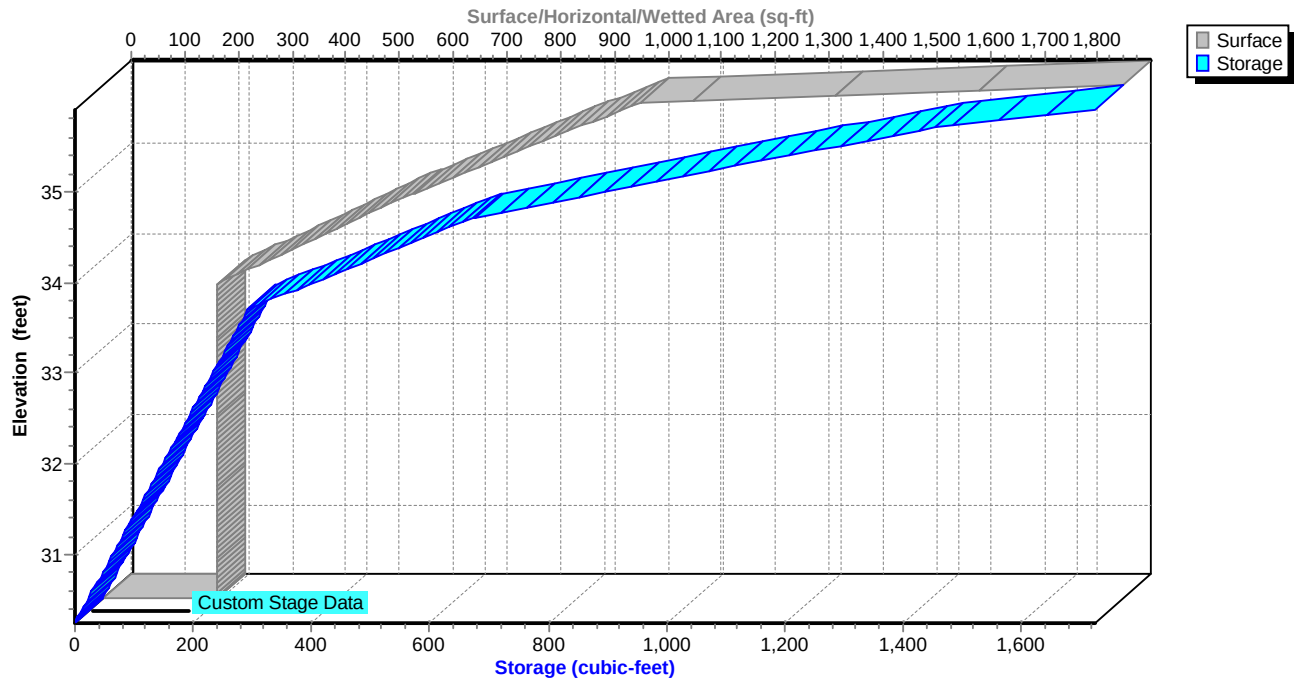
Pond MBR-4: MBR-4

Stage-Discharge



Pond MBR-4: MBR-4

Stage-Area-Storage



Summary for Pond MH-1: MH - 1

Inflow Area = 5.731 ac, 68.53% Impervious, Inflow Depth = 7.35" for 100-Year event
Inflow = 29.28 cfs @ 12.35 hrs, Volume= 3.510 af
Outflow = 29.28 cfs @ 12.35 hrs, Volume= 3.510 af, Atten= 0%, Lag= 0.0 min
Primary = 29.28 cfs @ 12.35 hrs, Volume= 3.510 af
Routed to Pond MH-2 : MH-2

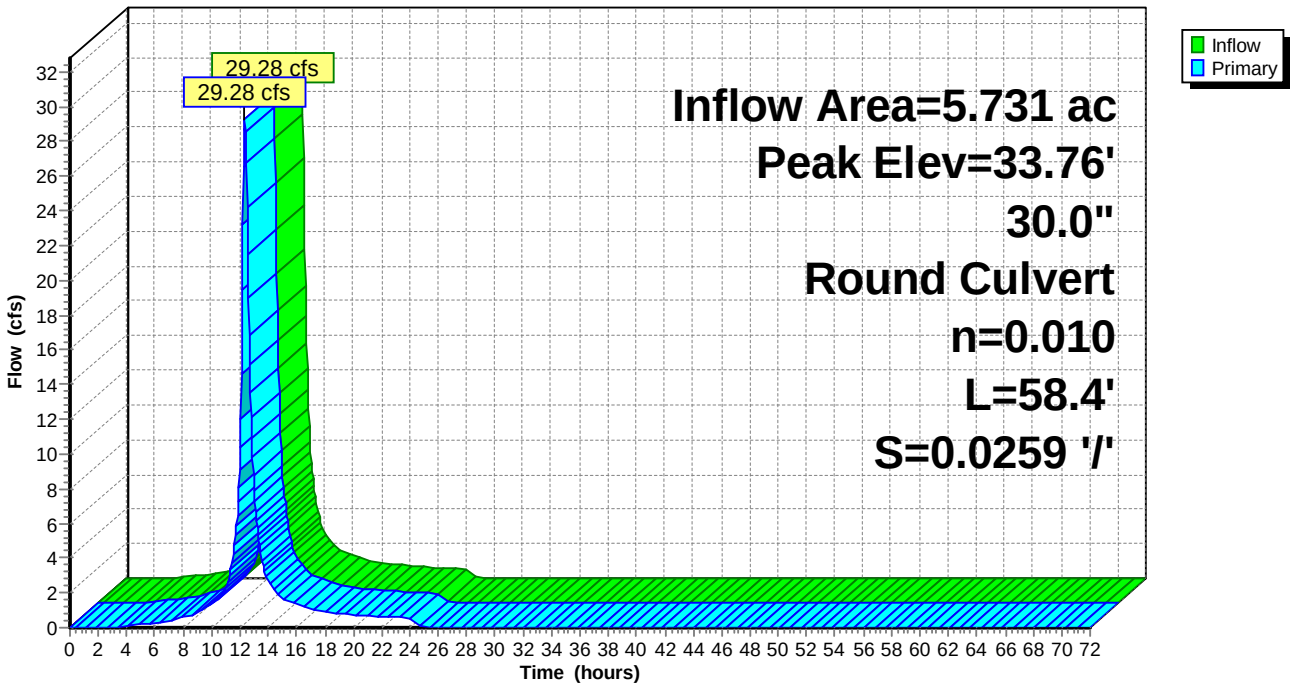
Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2
Peak Elev= 33.76' @ 12.35 hrs

Device	Routing	Invert	Outlet Devices
#1	Primary	30.40'	30.0" Round Culvert L= 58.4' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 30.40' / 28.89' S= 0.0259 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 4.91 sf

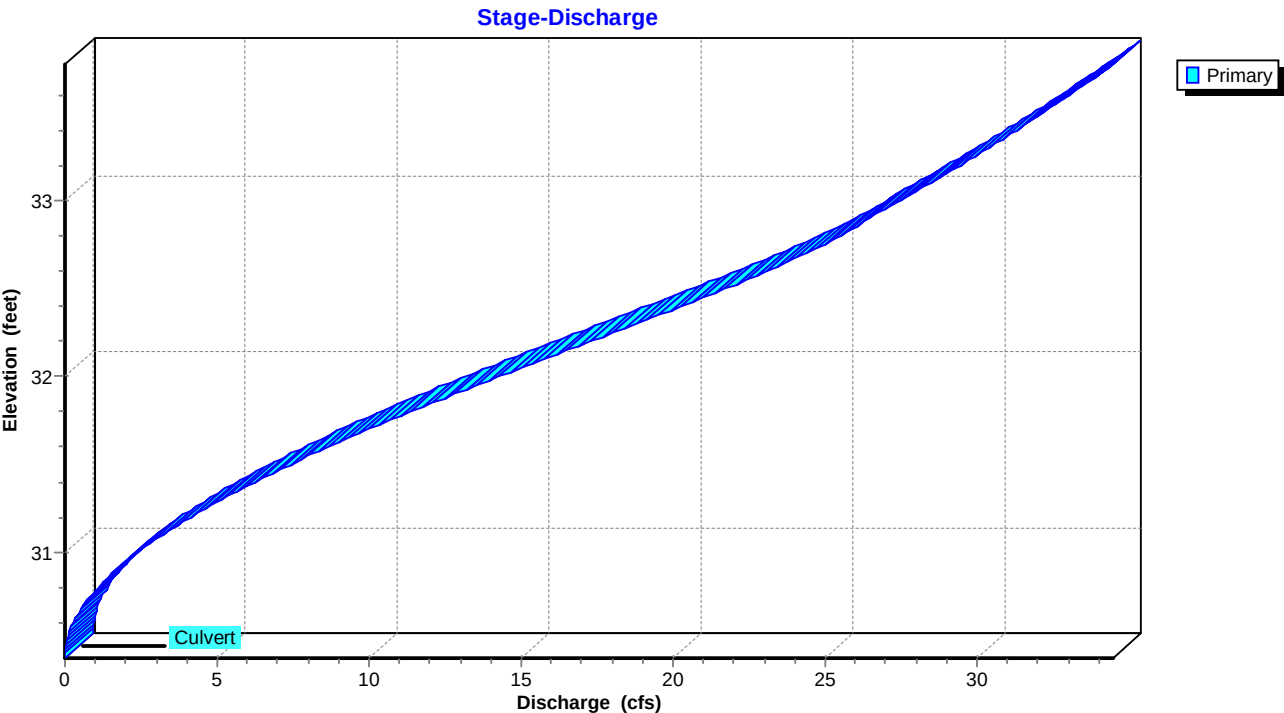
Primary OutFlow Max=28.91 cfs @ 12.35 hrs HW=33.75' TW=32.25' (Dynamic Tailwater)
↑**1=Culvert** (Inlet Controls 28.91 cfs @ 5.89 fps)

Pond MH-1: MH - 1

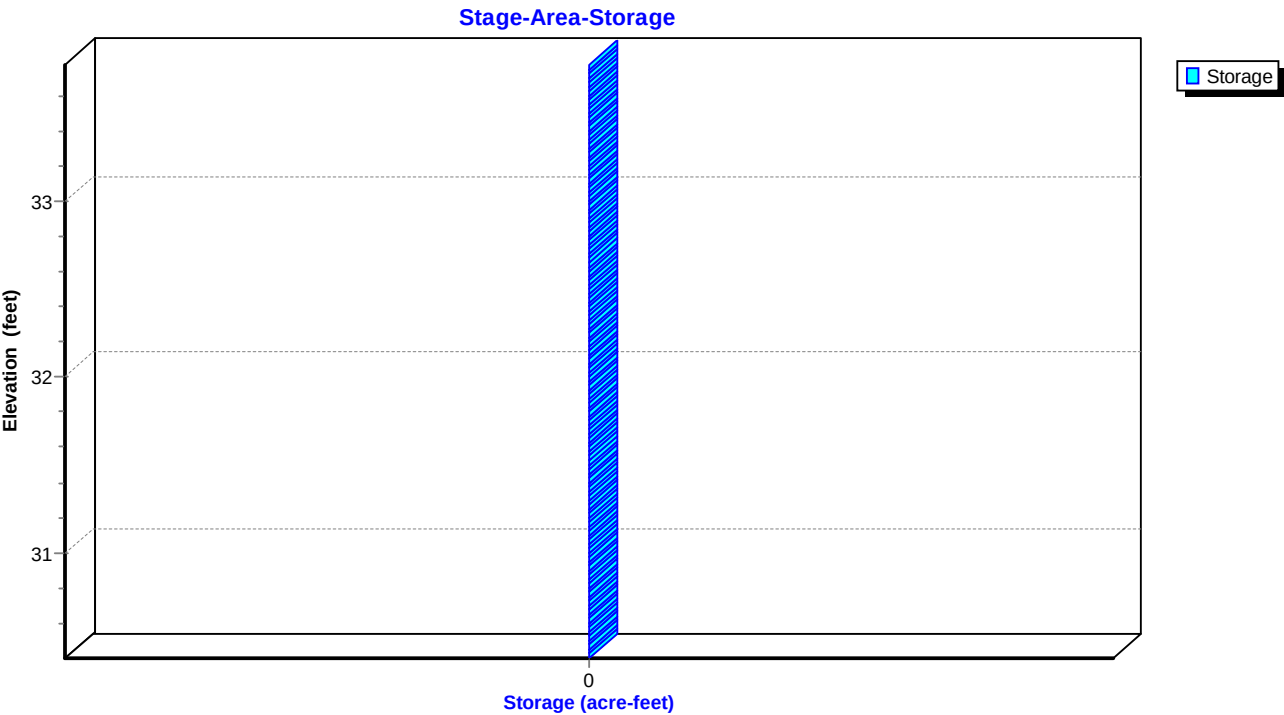
Hydrograph



Pond MH-1: MH - 1



Pond MH-1: MH - 1



Arc - Easton Crossing - Existing vs Proposed

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Summary for Pond MH-2: MH-2

Inflow Area = 6.157 ac, 68.60% Impervious, Inflow Depth = 7.33" for 100-Year event
Inflow = 31.64 cfs @ 12.35 hrs, Volume= 3.762 af
Outflow = 31.64 cfs @ 12.35 hrs, Volume= 3.762 af, Atten= 0%, Lag= 0.0 min
Primary = 31.64 cfs @ 12.35 hrs, Volume= 3.762 af
Routed to Pond SGW : SGW

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2

Peak Elev= 32.26' @ 12.35 hrs

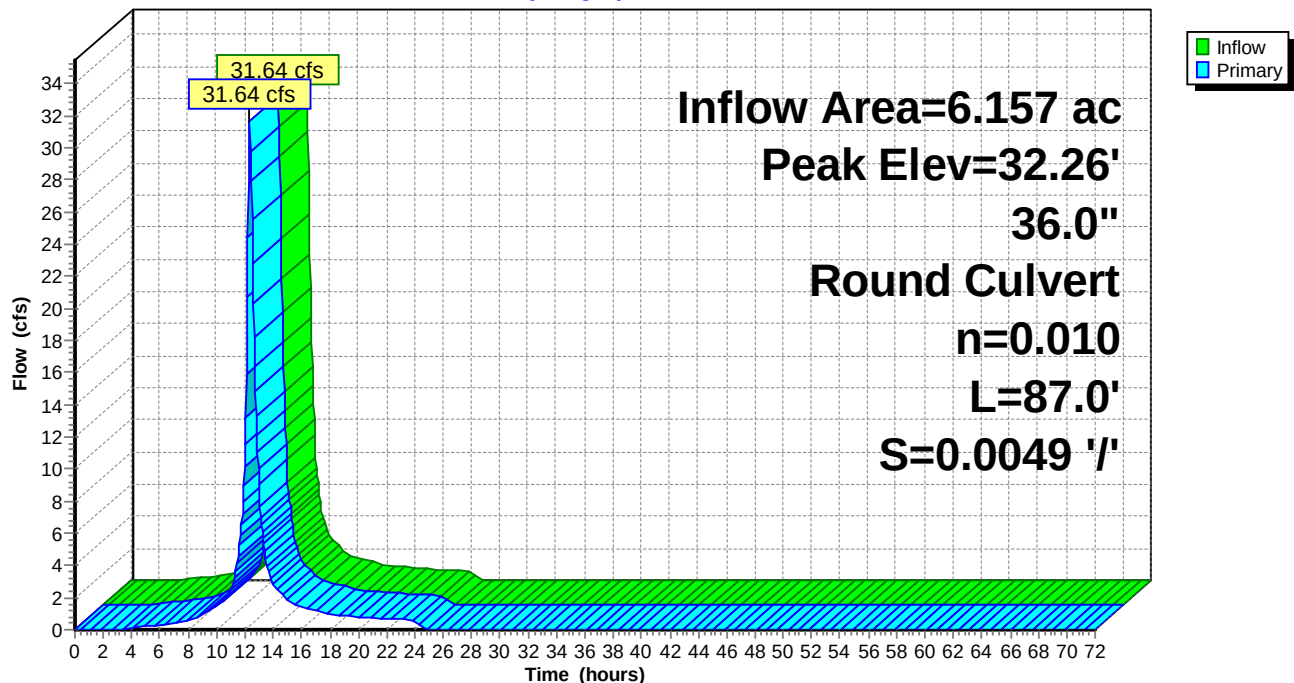
Device	Routing	Invert	Outlet Devices
#1	Primary	28.89'	36.0" Round Culvert L= 87.0' Box, 0° wingwalls, square crown edge, Ke= 0.700 Inlet / Outlet Invert= 28.89' / 28.46' S= 0.0049 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 7.07 sf

Primary OutFlow Max=31.59 cfs @ 12.35 hrs HW=32.25' TW=31.15' (Dynamic Tailwater)

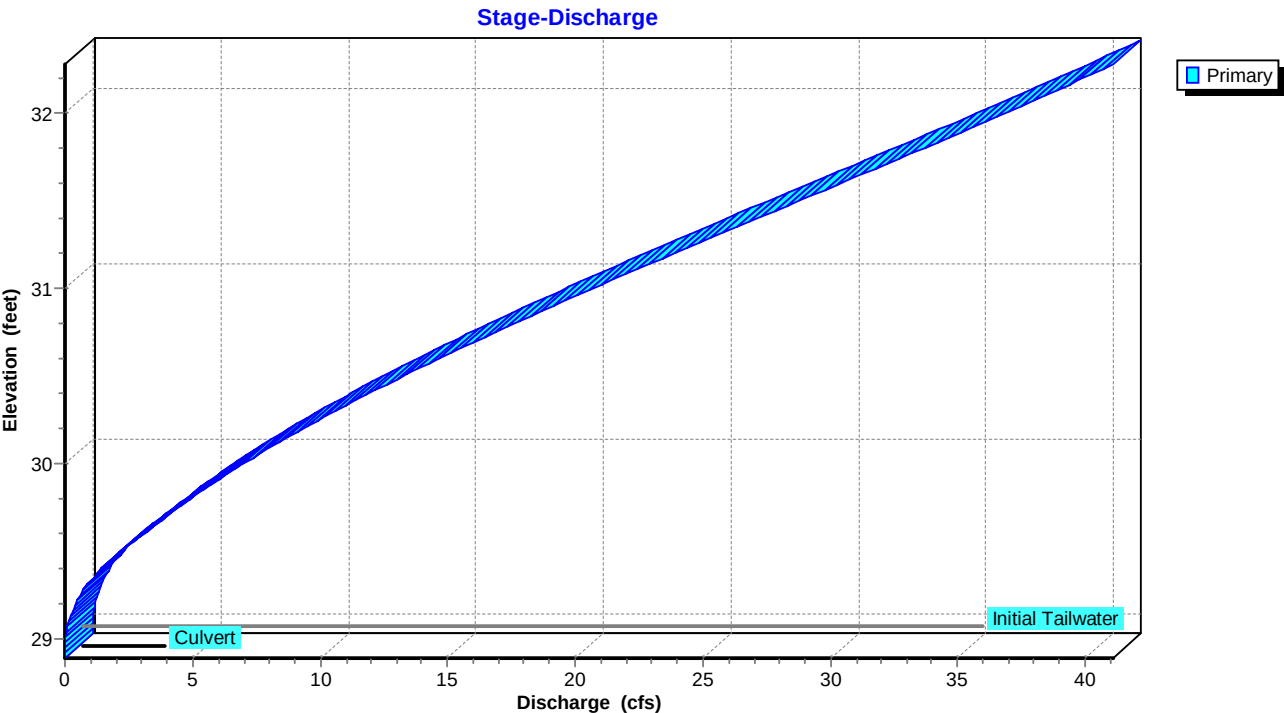
↑ **1=Culvert** (Inlet Controls 31.59 cfs @ 4.47 fps)

Pond MH-2: MH-2

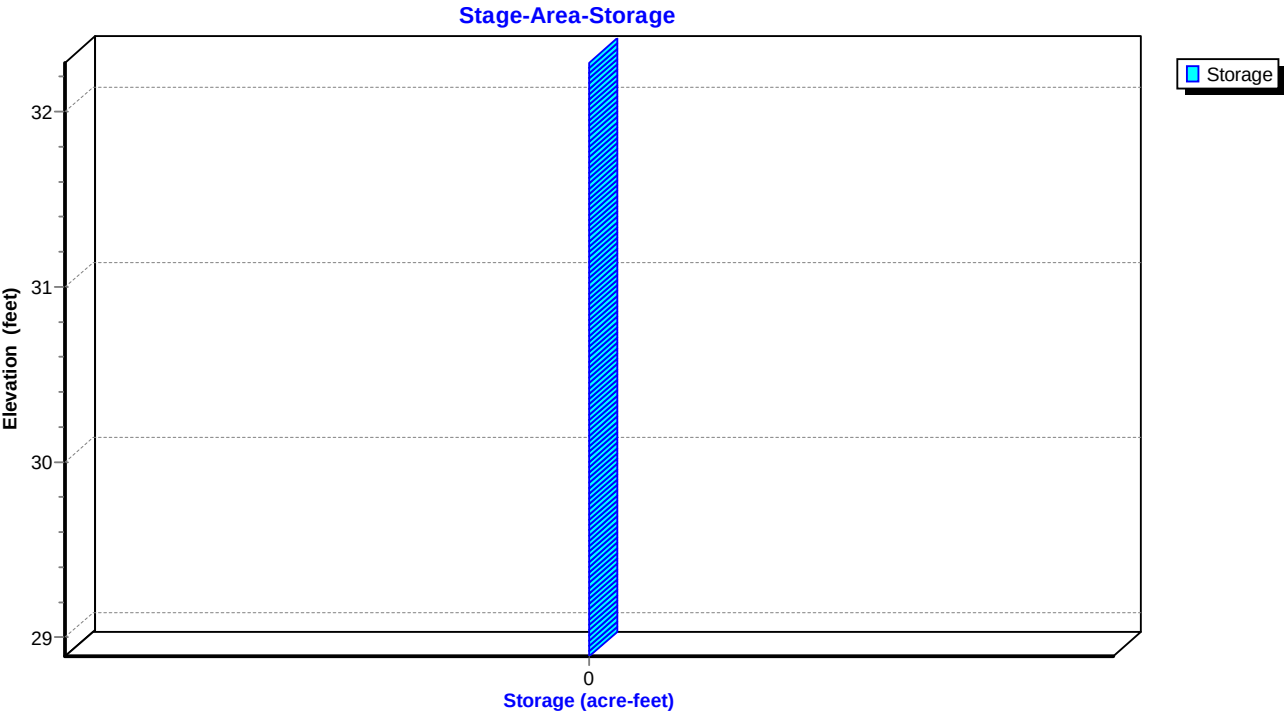
Hydrograph



Pond MH-2: MH-2



Pond MH-2: MH-2



Arc - Easton Crossing - Existing vs Proposed

NOAA 24-hr C 100-Year Rainfall=8.98"

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Summary for Pond SGW: SGW

Inflow Area = 7.058 ac, 70.96% Impervious, Inflow Depth = 7.43" for 100-Year event
 Inflow = 35.12 cfs @ 12.34 hrs, Volume= 4.373 af
 Outflow = 33.72 cfs @ 12.38 hrs, Volume= 4.373 af, Atten= 4%, Lag= 2.6 min
 Primary = 33.72 cfs @ 12.38 hrs, Volume= 4.373 af
 Routed to Link PR-SP-1 : PR-SP-1

Routing by Dyn-Stor-Ind method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs / 2

Starting Elev= 28.67' Storage= 0 cf

Peak Elev= 31.16' @ 12.38 hrs Surf.Area= 6,772 sf Storage= 12,313 cf

Plug-Flow detention time= 27.6 min calculated for 4.370 af (100% of inflow)

Center-of-Mass det. time= 27.6 min (826.3 - 798.6)

Volume	Invert	Avail.Storage	Storage Description		
#1	29.00'	18,455 cf	Custom Stage Data (Irregular) Listed below (Recalc)		
Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
29.00	4,692	305.3	0	0	4,692
29.50	5,135	313.7	2,456	2,456	5,134
30.00	5,608	322.3	2,685	5,141	5,597
30.50	6,095	330.8	2,925	8,066	6,068
31.00	6,592	339.4	3,171	11,237	6,556
31.50	7,157	350.0	3,436	14,673	7,163
32.00	7,979	388.0	3,782	18,455	9,402

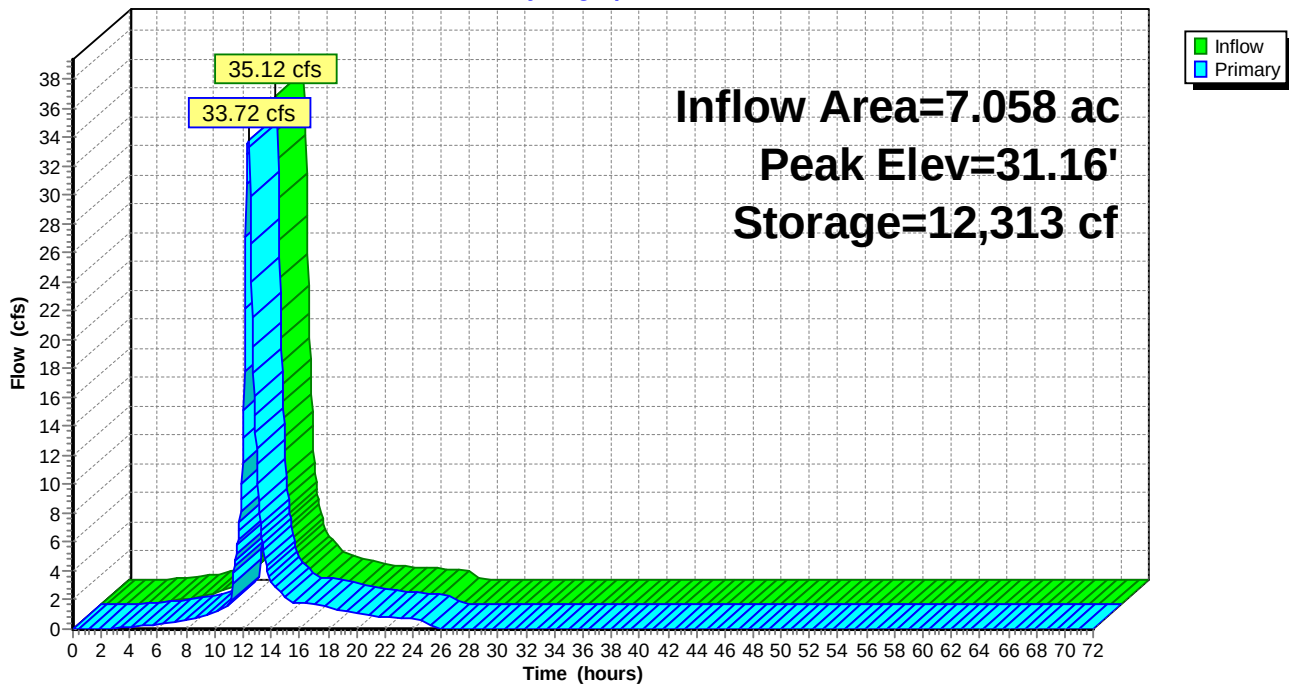
Device	Routing	Invert	Outlet Devices
#1	Device 2	30.50'	60.0" x 60.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads
#2	Primary	28.67'	36.0" Round Culvert L= 42.9' Box, headwall w/3 square edges, Ke= 0.500 Inlet / Outlet Invert= 28.67' / 24.02' S= 0.1084 ' / ' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 7.07 sf
#3	Device 2	28.67'	6.0" Round Collection Pipe X 2.00 L= 35.0' CPP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 28.67' / 28.67' S= 0.0000 ' / ' Cc= 0.900 n= 0.012 Corrugated PP, smooth interior, Flow Area= 0.20 sf

Primary OutFlow Max=33.62 cfs @ 12.38 hrs HW=31.16' TW=0.00' (Dynamic Tailwater)

↑ **2=Culvert** (Inlet Controls 33.62 cfs @ 5.37 fps)
 ↑ **1=Orifice/Grate** (Passes < 34.73 cfs potential flow)
 ↑ **3=Collection Pipe** (Passes < 2.26 cfs potential flow)

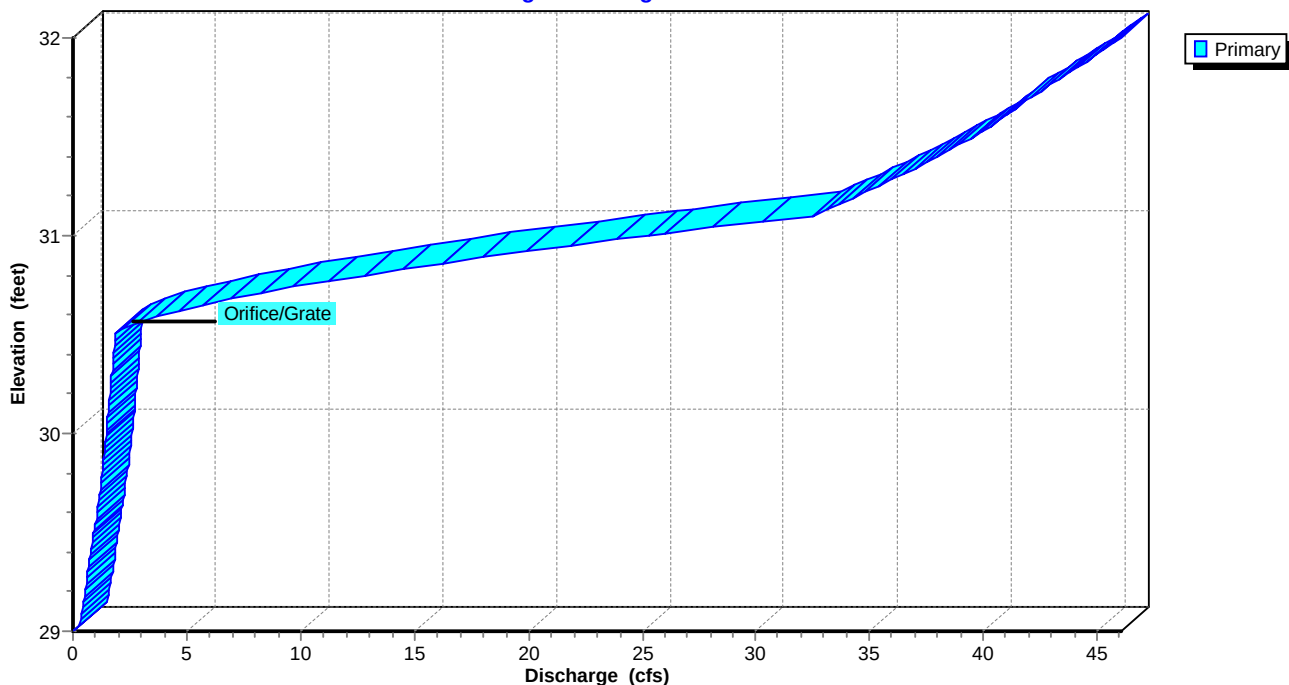
Pond SGW: SGW

Hydrograph

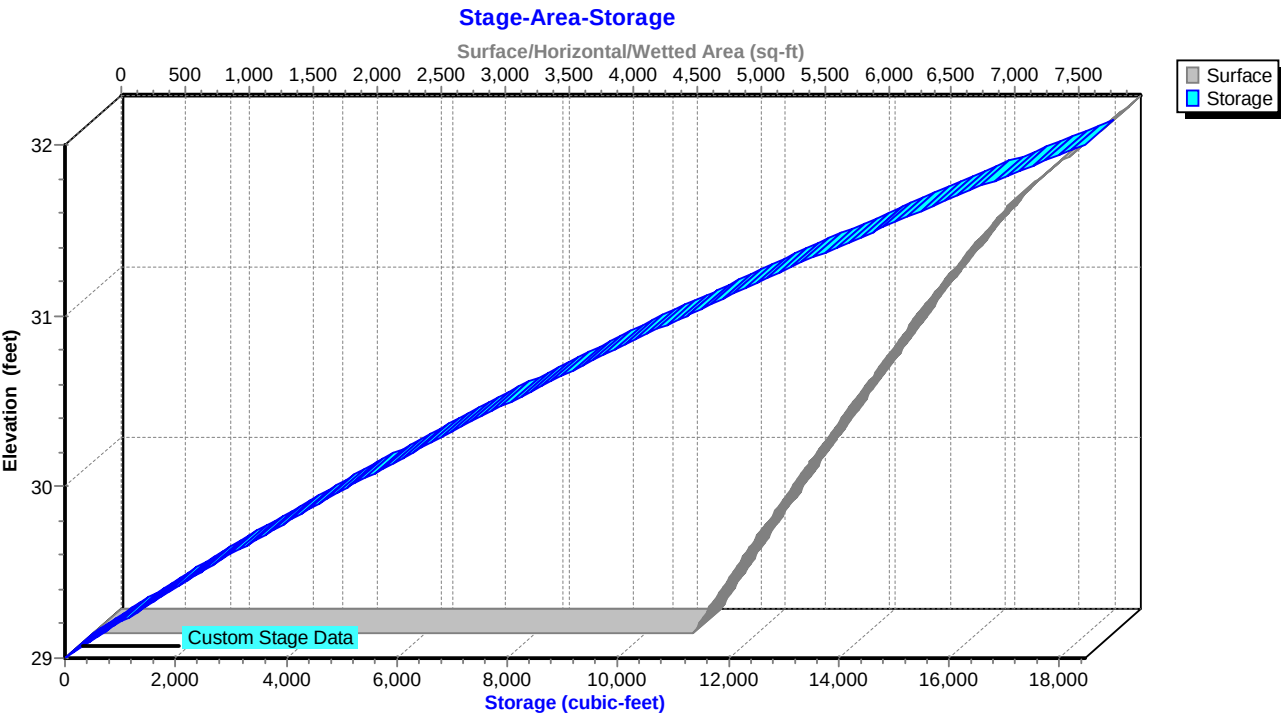


Pond SGW: SGW

Stage-Discharge



Pond SGW: SGW



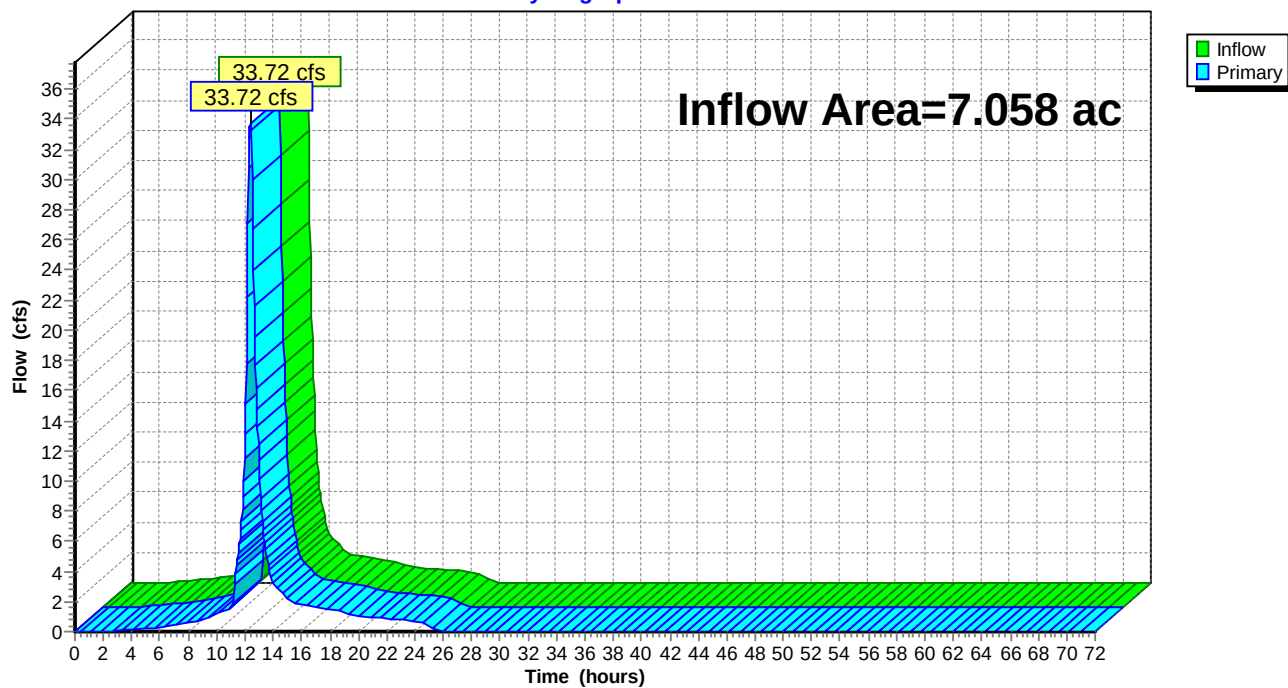
Summary for Link PR-SP-1: PR-SP-1

Inflow Area = 7.058 ac, 70.96% Impervious, Inflow Depth = 7.43" for 100-Year event
Inflow = 33.72 cfs @ 12.38 hrs, Volume= 4.373 af
Primary = 33.72 cfs @ 12.38 hrs, Volume= 4.373 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link PR-SP-1: PR-SP-1

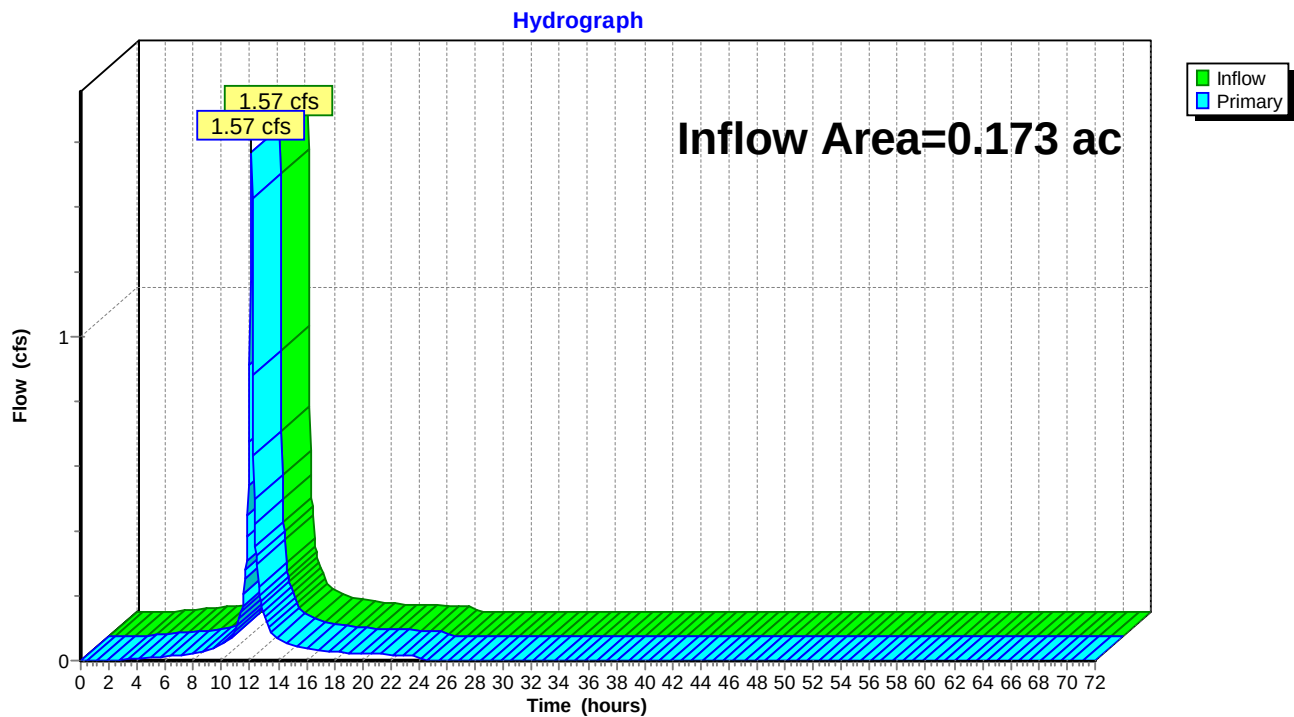
Hydrograph



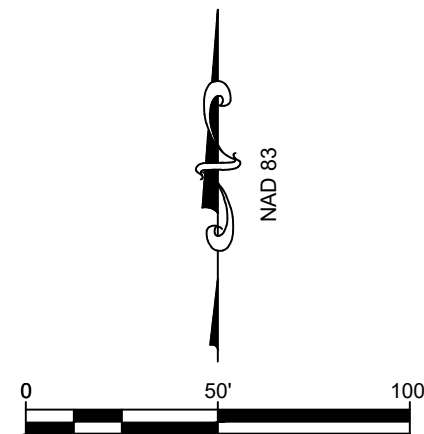
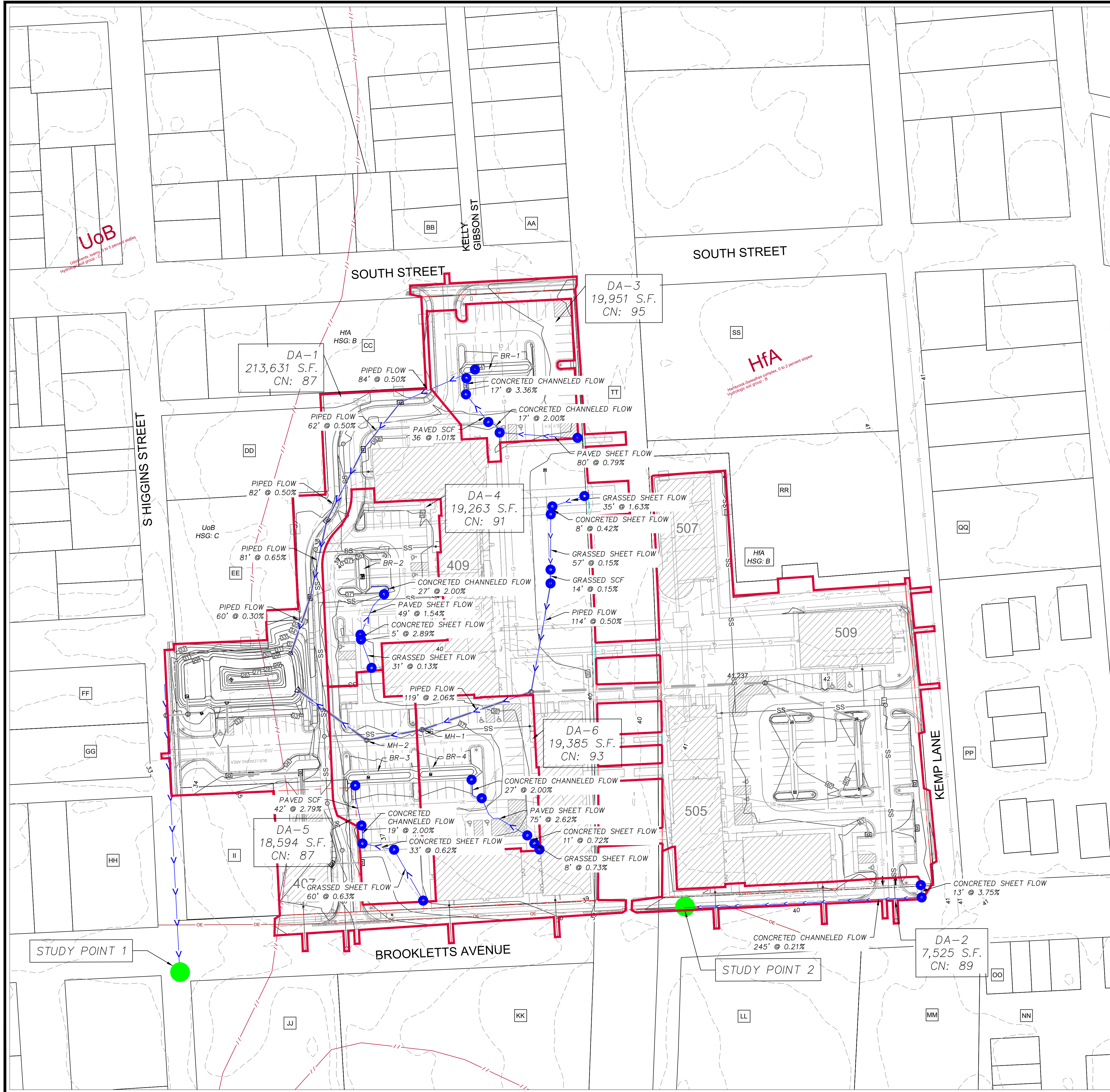
Summary for Link PR-SP-2: PR-SP-2

Inflow Area = 0.173 ac, 75.24% Impervious, Inflow Depth = 7.65" for 100-Year event
Inflow = 1.57 cfs @ 12.11 hrs, Volume= 0.110 af
Primary = 1.57 cfs @ 12.11 hrs, Volume= 0.110 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link PR-SP-2: PR-SP-2

Stormwater Drainage Area Maps



LEGEND

FLOWPATH

DRAINAGE AREA

SOILS BOUNDARY

STUDY POINT

PROPERTY DATA

AA	MIDSHOREHOMES, LLC. M/G/P: 0104/000EA/1618 - B/P: 03144/00403	KK	SHAW KENNETH L. SHAW BARBARA H M/G/P: 0105/000EA/2205 - B/P: 02656/00470
BB	LEWIS BEVERLY M/G/P: 0104/0000/1622 - B/P: 00890/00787	LL	DONALD D FOSTER INC M/G/P: 0105/000EA/2206 - B/P: 00499/00522
CC	G M RENTALS L L C M/G/P: 0104/000EA/1827 - B/P: 00786/00443	MM	411 NEEDWOOD LLC M/G/P: 0105/000EA/1824 - B/P: 03091/00291
DD	MARVEL PROPERTIES L L C M/G/P: 0104/000EA/1830 - B/P: 00782/00168	NN	TREEHAVEN HOMEOWNERS ASSOCIATION INC M/G/P: 0105/0000/2212A - B/P: 01306/00755
EE	MARVEL PROPERTIES L L C M/G/P: 0104/000EA/1831 - B/P: 00782/00168	OO	MAZARIEGOS JOSE V. MAZARIEGOS MARIA G M/G/P: 0105/0000/2212A - B/P: 01259/00865
FF	MARVEL PROPERTIES LLC M/G/P: 0104/000EA/1837 - B/P: 00786/00042	PP	BROOKLETT COMMONS HOMEOWNERS ASSOCIATION INC M/G/P: 0104/0000/1812 - B/P: 00829/00629
GG	FOR ALL SEASONS INC M/G/P: 0104/000EA/1874 - B/P: 01511/00250	QQ	SPARACINO MICHAEL J M/G/P: 0104/000EA/1814 - B/P: 00780/00334
HH	MLYNARSKI ANDREW M/G/P: 0104/000EA/1835 - B/P: 02761/00429	RR	125 KEMP LLC M/G/P: 0104/000EA/1822 - B/P: 02734/00473
II	401 BROOKLETT'S LLC M/G/P: 0104/000EA/1834 - B/P: 02325/00109	SS	PRITCHETT HELEN M M/G/P: 0104/000EA/1821 - B/P: 02609/00464
JJ	TALBOT COUNTY MARYLAND M/G/P: 0105/000EA/2204 - B/P: 00613/00105	TT	TOWN OF EASTON M/G/P: 0105/000EA/2211 - B/P: 01595/00214

DRAINAGE AREA	TYPE OF ESD PRACTICE	NAME OF ESD PRACTICE (STRUCTURE/NAME)	ON-SITE OR OFF-SITE STRUCTURE	RUNOFF CURVE NUMBER (CN)	MARYLAND GRID COORDINATE NAD 83 NORTHING	MARYLAND GRID COORDINATE NAD 83 EASTING	ESD PRACTICE COORDINATE	ESD PRACTICE AREA (ACRES)	SURFACE AREA OF ESD (ACRES)	TARGET PE (IN)	ACTUAL PE (IN)	TARGET ESDV (FT ³)	ACTUAL ESDV (FT ³)
1	MER-1	BICRETENTION 1	ON-SITE	96	404001.0280	1577860.4733	0.438	0.421	0.008	1.23	0.40	1766	716
2	MER-2	BICRETENTION 2	ON-SITE	91	403787.4477	1577724.3078	0.442	0.363	0.003	1.23	0.31	1596	391
3	MER-3	BICRETENTION 3	ON-SITE	87	403880.5404	1577730.4142	0.427	0.267	0.006	1.23	0.66	1266	700
4	MER-4	BICRETENTION 4	ON-SITE	93	403883.6465	1577704.6402	0.446	0.380	0.005	1.23	0.31	2466	619
5	SDV-1	SUBMERGED GRAVEL VEGETATION	ON-SITE	87	403882.2208	1577810.0007	4.904	3.547	0.112	1.23	0.37	5402	8300
TOTAL AVERAGE							6.676	5.008	0.131	6.15	2.14	10050	11755

SITE SOIL DATA

Map Unit Symbol	Name	Hydrologic Soil Group	K-Factor	Hydric?
HfA	Hambrook-Sassafras complex, 0 to 2 percent slopes	B	0.32	No
UoB	Udorthents, loamy, 0 to 5 percent slopes	C	0.37	No

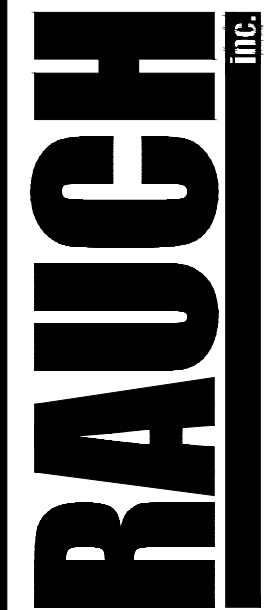
STUDYPOINT	STORM EVENT	2-YEAR(cfs)	10-YEAR(cfs)	100-YEAR(cfs)
STUDYPOINT 1	EXISTING	11.19	19.35	35.59
	PROPOSED	9.95	18.7	33.72
CHANGE	CHANGE	-1.24	-0.65	-1.87
STUDYPOINT 2	EXISTING	3.21	5.1	8.89
	PROPOSED	0.49	0.85	1.57
CHANGE	CHANGE	-2.72	-4.25	-7.32

DEVELOPED - QUANTITY ANALYSIS MAP

OF THE LANDS OF

EASTON CROSSING

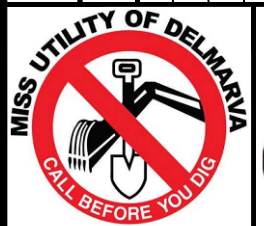
TAX MAP 0104, GRID 000EA000, PARCEL 1823, 1826
EASTON, TALBOT COUNTY, MARYLAND
PREPARED FOR: EASTON CROSSING, LLC



Main Office: 106 N Harrison St - Easton, MD 21601
Web: www.rauch-inc.com | Email: design@rauch.com
Phone: 410 770 8081 | Fax: 410 770 3987

REVISIONS

REV. #	DATE	DESCRIPTION
1		



DATE: 11/27/2024
SCALE: 1" = 50'
DRAWN BY: BAOC
DESIGNED BY: BAOC
APPROVED BY:

SHEET NO.: SWM-102

FOR REVIEW

Soils Report



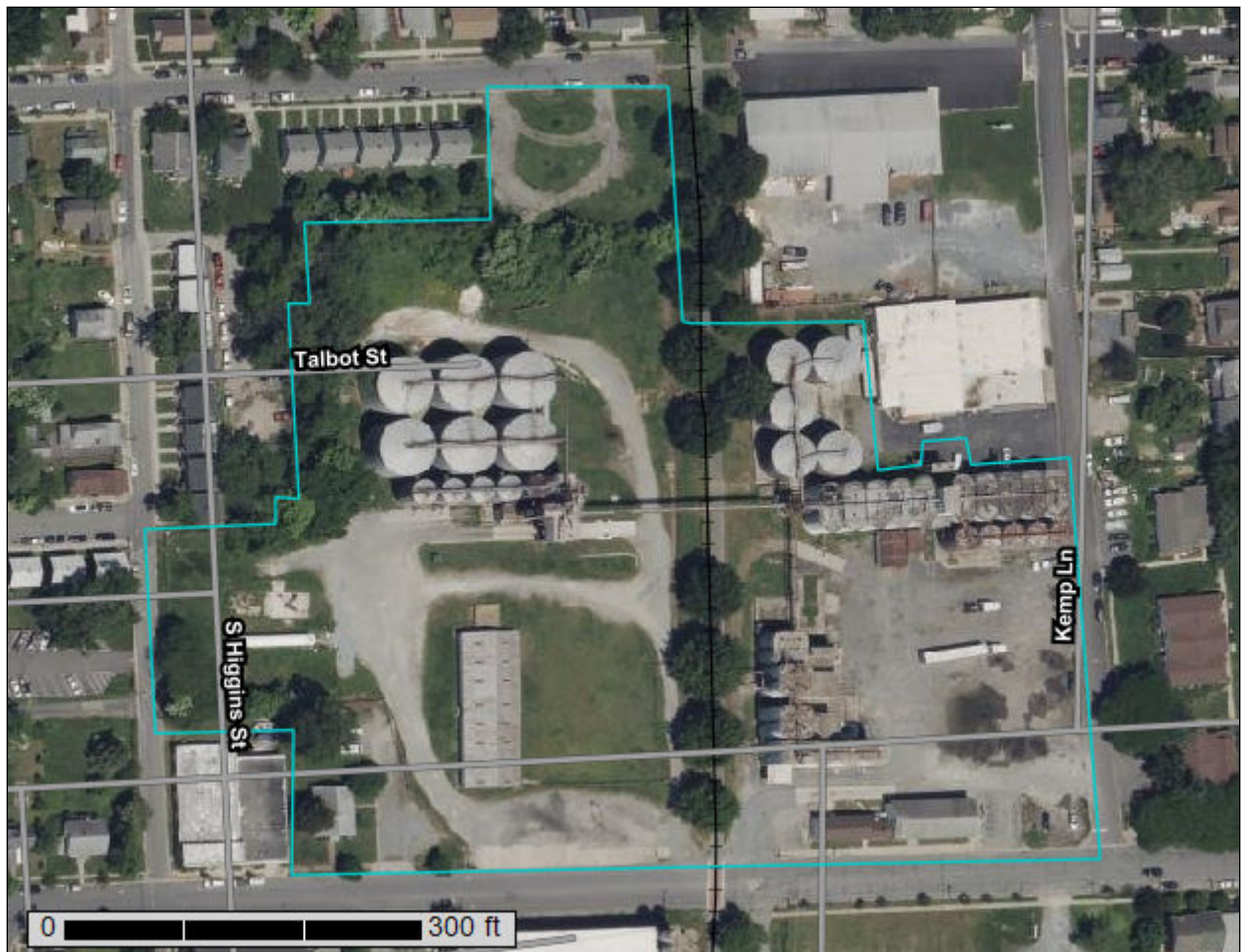
United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Talbot County, Maryland**



Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

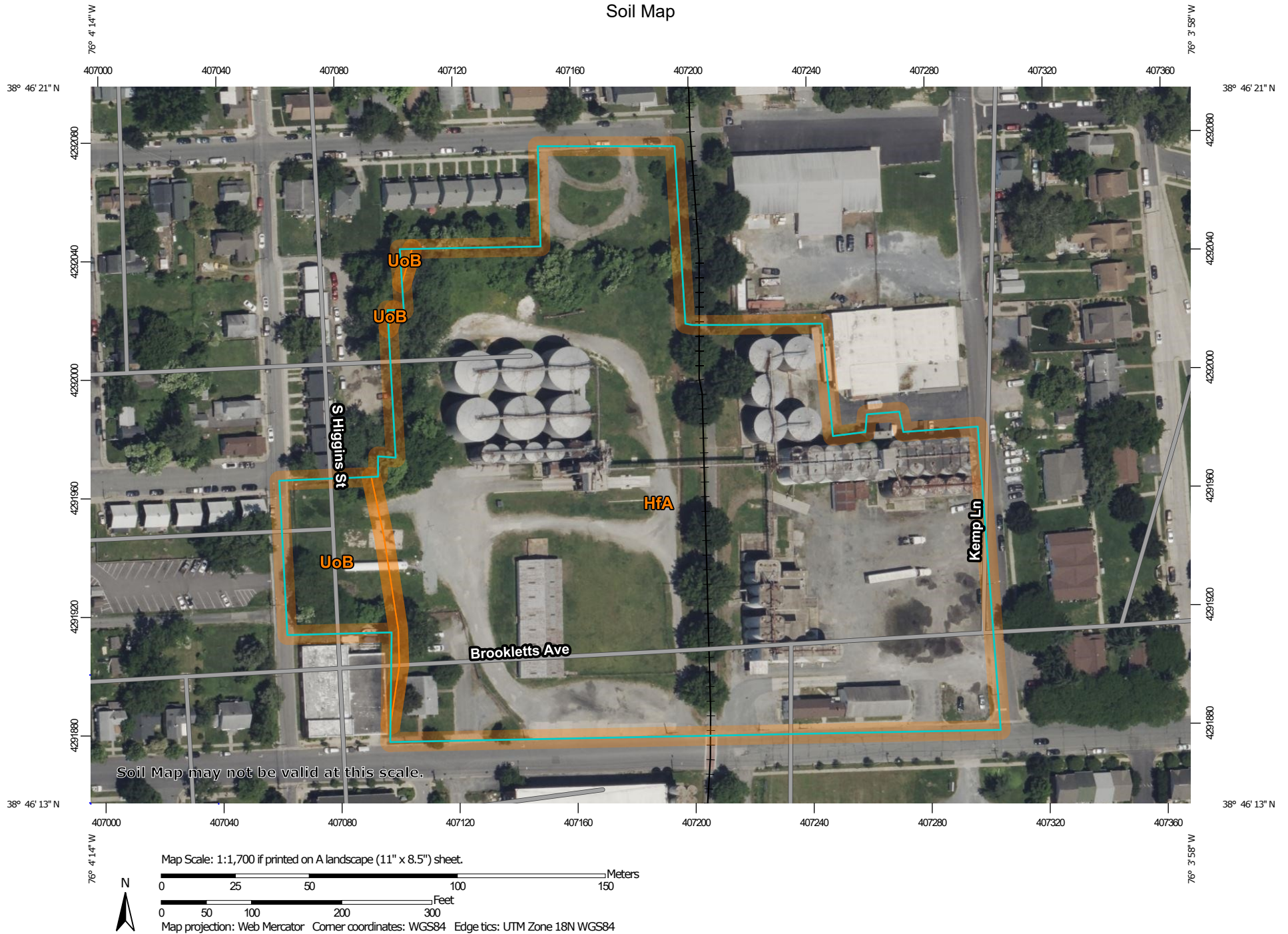
Custom Soil Resource Report

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)

Soils

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot

 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry

 Miscellaneous Water

 Perennial Water

 Rock Outcrop

 Saline Spot

 Sandy Spot

 Severely Eroded Spot

 Sinkhole

 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot

 Very Stony Spot

 Wet Spot

 Other

 Special Line Features

Water Features

 Streams and Canals

Transportation

 Rails

 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Talbot County, Maryland
Survey Area Data: Version 21, Sep 6, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 30, 2022—Jul 4, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
HfA	Hambrook-Sassafras complex, 0 to 2 percent slopes	7.5	94.1%
UoB	Udorthents, loamy, 0 to 5 percent slopes	0.5	5.9%
Totals for Area of Interest		8.0	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Talbot County, Maryland

HfA—Hambrook-Sassafras complex, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 1vh08
Elevation: 0 to 330 feet
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 58 degrees F
Frost-free period: 180 to 220 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Hambrook and similar soils: 41 percent
Sassafras and similar soils: 39 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hambrook

Setting

Landform: Depressions, flats, fluviomarine terraces
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear

Typical profile

Ap - 0 to 10 inches: sandy loam
BE - 10 to 14 inches: loam
Bt - 14 to 28 inches: sandy clay loam
BC - 28 to 65 inches: loamy sand
2Cg - 65 to 80 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Low
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.20 to 1.98 in/hr)
Depth to water table: About 42 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 7.9 inches)

Interpretive groups

Land capability classification (irrigated): 1
Land capability classification (nonirrigated): 1
Hydrologic Soil Group: B
Ecological site: F149AY170MD - Well Drained Fine-Loamy Upland
Hydric soil rating: No

Description of Sassafras

Setting

Landform: Low hills, flats, fluviomarine terraces, knolls
Landform position (three-dimensional): Riser, dip

Custom Soil Resource Report

Down-slope shape: Convex, linear

Across-slope shape: Convex, linear

Typical profile

Ap - 0 to 9 inches: sandy loam

E - 9 to 15 inches: sandy loam

Bt - 15 to 30 inches: loam

BC - 30 to 37 inches: sandy loam

C - 37 to 80 inches: loamy sand

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high
(0.57 to 1.98 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water supply, 0 to 60 inches: Moderate (about 7.8 inches)

Interpretive groups

Land capability classification (irrigated): 1

Land capability classification (nonirrigated): 1

Hydrologic Soil Group: B

Ecological site: F149AY170MD - Well Drained Fine-Loamy Upland

Hydric soil rating: No

Minor Components

Woodstown

Percent of map unit: 10 percent

Landform: Flats, depressions

Landform position (three-dimensional): Dip

Ecological site: F149AY130NJ - Moist Loamy Upland

Hydric soil rating: No

Mattapex

Percent of map unit: 5 percent

Landform: Depressions, flats

Landform position (three-dimensional): Dip

Ecological site: F153CY020MD - Moist Loess Upland

Hydric soil rating: No

Ingleside

Percent of map unit: 5 percent

Landform: Flats

Landform position (three-dimensional): Talf

Ecological site: F153DY160NJ - Well Drained Coarse-Loamy Upland

Hydric soil rating: No

UoB—Udorthents, loamy, 0 to 5 percent slopes

Map Unit Setting

National map unit symbol: 1vh0v
Elevation: 0 to 300 feet
Mean annual precipitation: 42 to 48 inches
Mean annual air temperature: 52 to 58 degrees F
Frost-free period: 180 to 220 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents, loamy, and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents, Loamy

Setting

Landform: Flats
Landform position (three-dimensional): Talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Fluvio-marine deposits

Typical profile

AC - 0 to 2 inches: loam
C - 2 to 72 inches: gravelly loam

Properties and qualities

Slope: 0 to 5 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: High
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to very high (0.01 to 19.98 in/hr)
Depth to water table: About 40 to 72 inches
Frequency of flooding: None
Frequency of ponding: None
Available water supply, 0 to 60 inches: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2e
Hydrologic Soil Group: C
Hydric soil rating: No

Minor Components

Urban land

Percent of map unit: 10 percent

Landform: Flats

Down-slope shape: Linear

Across-slope shape: Linear

Hydric soil rating: No

References

- American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.
- American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.
- Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.
- Federal Register. July 13, 1994. Changes in hydric soils of the United States.
- Federal Register. September 18, 2002. Hydric soils of the United States.
- Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.
- National Research Council. 1995. Wetlands: Characteristics and boundaries.
- Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262
- Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577
- Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580
- Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.
- United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.
- United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374
- United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

**Town of Easton**

Engineering, Planning and Zoning

14 South Harrison Street, Easton, MD 21601

Easton Staff Development Review**Property Information**

Address	801 Port Street Easton, MD 21601				
Tax Map	34	Grid		Parcel	171
Deed Reference:	Liber	933	Folio	698	
Plat Reference:	Liber		Folio		
Base Zoning District	MXW	Historic District	Y ☐ N ☒		
		Planning Redevelopment	Y ☐ N ☒		

Purpose of Application / Description of Work:

Proposed public boat ramp with associated site improvements including parking, sidewalk/pedestrian path, SWM, and bathroom facilities on existing Town of Easton public park - Easton Point Park.

Owner

Name	Town of Easton - Rick Van Emburgh	
Mailing Address	14 S Harrison St Easton MD 21601	
Telephone No.	410-820-8822	Email rvanemburgh@eastonmd.gov

Applicant / Agent

Name	Rick Van Emburgh / Sierra Clem	
Mailing Address	14 S Harrison St Easton MD 21601	
Telephone No.	410-820-8822	Email rvanemburgh@eastonmd.gov / sclem@eastonmd.gov

Surveyor / Engineer

Name	Tim Glass - Lane Engineering	License No.	23152	Expiration Date	7/5/2025
Mailing Address	117 Bay Street Easton MD 21601				
Telephone No.	410-822-8003	Email	tglass@leinc.com		

Any modifications during review shall warrant an updated application.

I do hereby solemnly declare and affirm that the information provided by this application and the documents attached hereto accurately represent the conditions of the request and that submission of an incomplete application will be returned for correction prior to processing.

Signature of Applicant or Agent	Sierra Clem
Date	1/2/2025
Printed Name of Applicant or Agent	Sierra Clem

For Office Use Only

Easton Staff Development Review Meeting Required Y ☒ N ☐

Easton Staff Development Review Meeting Date **01/22/2025**

Completeness Check Date **01/02/2025**

Revisions/Resubmissions Required Y ☐ N ☐

Resubmission Date

Documents Received Y ☐ N ☐

Staff Determination

Scheduled for January 22, 2025 Easton Staff Development Review discussion.

Planning Commission Required Y ☐ N ☐ TBD

BOZA Required Y ☐ N ☐ TBD

Historic District Commission Required Y ☐ N ☒

Resubmission for ESDR Required Y ☐ N ☐ TBD

Staff Signature *Samantha N. Smith*

Date **01/03/2024**

Revised 02-2019

PLANS ARE NOT
APPROVED FOR
CONSTRUCTION

WARNING!!

THE LOCATIONS OF EXISTING UTILITIES AS SHOWN ON THIS PLAN ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL VERIFY THE LOCATION AND DEPTH OF EXISTING UTILITIES PRIOR TO BEGINNING CONSTRUCTION. THE CONTRACTOR SHALL ALLOW FOR THE DEPTH OF EXISTING UTILITIES AND PERMITTING PURPOSES ONLY. THE CONTRACTOR SHALL VERIFY ALL QUANTITIES TO HIS OWN SATISFACTION PRIOR TO BEGINNING CONSTRUCTION.

THE CONTRACTOR SHALL TEST PIT AND LOCATE EXISTING UNDERGROUND UTILITIES PRIOR TO THE BEGINNING OF ANY WORK. IF THE CONTRACTOR DISCOVERS ANY DEPT. OF PUBLIC WORKS OF ANY POSSIBLE CONFLICT AND REQUEST THE RELOCATION OF THE EXISTING UNDERGROUND UTILITIES BEFORE BEGINNING ANY WORK ON THE PROJECT, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RELOCATION EXPENSE.



Civil Engineers • Land Planning • Land Surveyors



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IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 34, PARCELS 158, 170, 171 & 215

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SHEET No. 2 OF 4	
SCALE: AS NOTED	JOB No. 210560
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ABBREVIATIONS	
ADA	AMERICANS WITH DISABILITIES ACT
AGIP	AT GRADE INLET PROTECTION
BC	BACK OF CURB
BM	BENCHMARK
BRL	BUILDING RESTRICTION LINE
CES	CONCRETE END SECTION
C	CENTERLINE
CHRD	CHORD
CIP	CURB INLET PROTECTION
COMP	CORRUGATED METAL PIPE
CY	CUBIC YARD
DI	DUCTILE IRON
DIMJ	DUCTILE IRON MECHANICAL JOINT
E	EAST
EL/ELEV	ELEVATION
EOP	EDGE OF PAVEMENT
EX	EXISTING
FFE	FINISHED FLOOR ELEVATION
FH	FIRE HYDRANT
FES	FLARED END SECTION
FL	FLOWLINE
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE
HP	HIGH POINT
I	INLET
INV	INVERT
KV	KILOVOLTS
L	ARC LENGTH
LF	LINEAR FEET
LOD	LIMITS OF DISTURBED AREA
LP	LOW POINT
LT	LEFT
MAX	MAXIMUM
MH	MANHOLE
MHW	MEAN HIGH WATER
MIN	MINIMUM
MLW	MEAN LOW WATER
MSHA	MARYLAND STATE HIGHWAY ADMINISTRATION
MUTCD	MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES
N	NORTH
NO	NUMBER
PC	POINT OF CURVATURE
PE	POLYTHYLENE
PT	POINT OF TANGENCY
PROP	PROPOSED
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
Q	DISCHARGE
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
ROW	RIGHT-OF-WAY
RT	RIGHT
S	SOUTH
SCE	STABILIZED CONSTRUCTION ENTRANCE
SDCO	STORMDRAIN CLEANOUT
SDMH	STORMDRAIN MANHOLE
SSMH	SANITARY SEWER MANHOLE
SF	SILT FENCE
Sf	FRICTION SLOPE
SHA	STATE HIGHWAY ADMINISTRATION
SIP	STANDARD INLET PROTECTION
SL	STREET LIGHT
SSF	SUPER SILT FENCE
STA	STATION
STD	STANDARD
SWM	STORMWATER MANAGEMENT
TAN	TANGENT
TB	THRUST BLOCK
TBR	TO BE REMOVED
TC	TOP OF CURB
TCP	TERRACOTTA PIPE
TYP	TYPICAL
UE	UNDERGROUND ELECTRIC
UL	UNDERGROUND LIGHT CABLE
UT	UNDERGROUND TELEPHONE
V	VELOCITY
VCP	VITRIFIED CLAY PIPE
W	WEST
W/	WITH



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OVERALL CONTEXT
SITE PLAN

EASTON POINT PARK BOAT RAMP

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 34, PARCELS 158, 170, 171 & 215

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3 OF 4

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FILE No.	5962

NOTE: THE LAYOUT AS SHOWN HEREON IS
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SCALE: AS NOTED	JOB No. 210560
	FILE No. 5962

CONCEPT STORMWATER MANAGEMENT REPORT

For

**Easton Point Park Boat Ramp
801 Port Street Easton, MD and
672 W Glenwood Avenue Easton, MD**

Developer

Town of Easton
C/O Rick Van Emburgh P.E.
14 S Harrison Street
Easton, Maryland 21601

Design Professional

Lane Engineering, LLC.
117 Bay Street
Easton, Maryland 21601
410-822-8003

Date Prepared

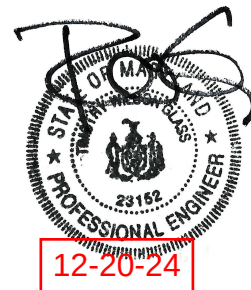
December 5, 2024

Prepared by

Matt Rajacich, E.I.T.
Civil Engineer

Reviewed by

Timothy W. Glass, P.E.
Civil Engineer



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APPENDIX LIST

APPENDIX A – ESD Calculations
APPENDIX B – 10% Phosphorous Reduction Calculations
APPENDIX C – Drainage Area Maps
APPENDIX D – HydroCAD Report

EASTON POINT PARK BOAT RAMP CONCEPT STORMWATER MANAGEMENT REPORT

1. INTRODUCTION

The following narrative addresses stormwater management quality and quantity requirements for the site as described in the current Town of Easton Stormwater Management Ordinance. The 2000 Maryland Stormwater Design Manual Volumes I and II (Manual), as amended in 2009, is referenced in meeting these requirements.

2. GENERAL SITE AND PROJECT INFORMATION

801 Port Street is currently improved with existing buildings and parking areas on-site. The Owner has previously removed the buildings and retaining wall on-site in preparation of the proposed boat ramp project. For the purposes on stormwater management, the footprints of these building are incorporated in the existing impervious area on-site. The site was previously owned by Southern States Cooperative Inc. and was utilized as an industrial site for fuel storage/transport and material storage. It is fully developed with a parking lot, office buildings, and fuel tanks. There are no existing stormwater facilities on-site.

The proposed development at 801 Port Street will consist of removing all of the existing improvements on-site and constructing a public boat ramp with a new parking lot and bathroom.

672 W Glenwood Avenue is currently being used as a public park. It previously was used an industrial site and then was owned and operated by the Town of Easton Department of Public Works. The site previously was developed with multiple buildings, parking, and at one time, contained a large fuel storage tank. There are no existing stormwater facilities on-site. The Town has been removing impervious area over the last few years as the site is converted from an industrial site to a public park.

The proposed development for 672 W Glenwood Avenue is to remove a portion of the existing parking area and construct an access road to the proposed boat ramp as well as an 8' wide walking path that will be incorporated into the Easton Rails-To-Trails.

3. STORMWATER MANAGEMENT

3.1 EXISTING SOILS CONDITIONS

Both sites were once industrial sites for fuel and material storage. The existing soils that are mapped for 801 Port Street are predominately have UoB soils which are categorized as HSG "C" soils. The area of interest for 672 W Glenwood Avenue is mapped as Up or Urban Land which is considered to be a HSG "D" soil. A geotechnical analysis is currently being performed and will be incorporated into this report at the preliminary stage.

3.2 EXISTING DRAINAGE CONDITIONS

The sites both drain to the Tred Avon River either by direct sheetflow, or through existing swales that border the property. Since the sites discharge directly to tidal waters, they are exempt from quantity management.

3.3 ENVIRONMENTAL SITE DESIGN (ESD) PRACTICES - QUALITY

The Limits of Disturbance associated with the proposed is 176,527 SF and there is an existing impervious area on-site of 74,418 SF (42% of the site is impervious). Due to the existing impervious area on-site, the project qualifies for redevelopment. Sites that qualify for redevelopment are required to either treat or remove 50% of the existing impervious on-site to a Pe of 1", and any increase in impervious area shall be treated to the full Pe requirement.

Local zoning requirements state that all pavement used for parking areas located within the Mixed-Use Waterfront District (MXW) shall be pervious. By utilizing Permeable Pavers, the proposed development will reduce the impervious area by 17,679 SF leaving 19,530 SF of impervious area to be treated. This area results in an ESD target of **1,546 cf**.

Permeable Pavers not only reduce the impervious area on-site, but also provide treatment, the proposed paver areas on-site will provide **986 cf** of treatment. The remainder of the required ESD volume will be captured by a proposed bio-swale. There is an existing swale along this southern property line that drains a portion of the 672 W Glenwood Avenue parcel. This swale will be converted to a bio-swale to provide ESD treatment for the proposed development. The proposed bioswale will provide **2,912 cf** of treatment (refer to Appendix A for detailed ESD calculations). A portion of 672 W Glenwood Avenue outside of the proposed LOD drains to the existing swale/proposed bioswale along the southern property line. A HydroCAD analysis was conducted to ensure that the proposed bio-swale can safely convey the 100-year storm (see Appendix C for drainage area maps and Appendix D for HydroCAD report). The total ESD volume provided by the two proposed features is **3,898 cf**. this is **2,352 cf** more ESD volume than required for redevelopment on this project, this additional ESD volume can be applied to future projects if needed.

3.3.1 10% PHOSPHOROUS REDUCTION CALCULATIONS

Regulations require a 10% phosphorous reduction for projects within the Critical Area that are zoned as Intensely Developed Areas (IDA). By reducing the overall impervious area on-site at 801 Port Street, we have implicitly met this reduction requirement. The proposed permeable pavers offer additional phosphorous removal. For 872 W Glenwood Avenue, the proposed bio-swale provides the necessary phosphorous reduction needed to meet the state regulations. Refer to Appendix B for phosphorous removal calculations.

3.4 QUANTITY MANAGEMENT

The site discharges directly to tidal waters and is therefore exempt from quantity management. Post redevelopment, the site will continue to drain to the Tred Avon River as it did pre-redevelopment.

4. CONCLUSION

The project design meets the intent of the Town of Easton's Stormwater Management Ordinance for both water quality treatment and water quantity control.

As demonstrated, the project design has incorporated planning and development strategies and has evaluated ESD practices for application and compatibility with the existing site conditions, project design objectives and required ESD design parameters. ESD has been met to the MEP for this commercial site.

It is respectfully requested that the stormwater analysis and report and project design be approved as presented.

APPENDIX A

- ESD CALCULATIONS

ESD Target for Site Development (Total Site)

Earthen Disturbance (LOD) = 4.05 acres = 176,527 sf (excluding offsite utility work & sidewalk improvements)

Existing Coverage within LOD = 74,418 sf (42%)

Project qualifies for redevelopment: $R_v = 0.95$; $P_E = 1.0$

Treat and/or remove half of existing impervious coverage: $\frac{1}{2} \times 74,418 = 37,209$ sf

Project will remove 17,679 sf of unused asphalt & concrete pavement

$37,209 - 17,679 = 19,530$ sf to be treated

$$ESD_v = \frac{(P_e)(R_v)(A)}{12} = \frac{(1.0)(0.95)(19,530)}{12} = \mathbf{1,546 \text{ cf}}$$

Permeable Pavers (A-2)

$ESD_{\text{Provided}} = \text{Total Paver Area} \times ESD_v \text{ Per SF for HSG C with 6" base} = 22,939 \times 0.043 = \mathbf{986 \text{ cf}}$

Refer to Environmental Site Design (ESD) Process and Computations July 2010 for details on ESDv credits

Micro-Bioretenction (M-8)

$ESD_{\text{Ponding}} = 1.5'$ of ponding equvalates to **1,442 cf** or treatment (Refer to HydroCad Report for staging volumes)

$ESD_{\text{Media}} = \text{Porosity of Media} \times \text{Media depth} \times \text{Floor Area} = 0.4 \times 1,837 \times 2.0 = \mathbf{1,470 \text{ cf}}$

$ESD_{\text{Provided}} = ESD_{\text{Ponding}} + ESD_{\text{Media}} = 1,442 + 1,470 = \mathbf{2,912 \text{ cf}}$

$ESD_v (\text{provided PR -1}) > ESD_v (\text{target redevelopment})$

ESD SUMMARY CHART

DRAINAGE AREA	TYPE OF ESD PRACTICE	NAME OF ESD PRACTICE (STRUCTURE NAME)	ON-SITE OR OFF-SITE STRUCTURE	RUNOFF CURVE NUMBER (RCN) WEIGHTED	MARYLAND GRID COORDINATE NAD 83 METERS NORTHING	MARYLAND GRID COORDINATE NAD 83 METERS EASTING	ESD PRACTICE TOTAL DRAINAGE AREA (ACRES)	ESD PRACTICE IMPERVIOUS DRAINAGE AREA (ACRES)	SURFACE AREA OF ESD PRACTICE (ACRES)	TARGET PE (IN.)	ACTUAL PE (IN.)	TARGET ESDv (FT. ³)	ACTUAL ESDv (ft. ³)
1	A-2	PERMEABLE PAVERS	ON-SITE	93	403325.33	1571264.31	0.527	0.527	0.527	1	1	-	986
2	M-8	BIO-SWALE	ON-SITE	86	403480.07	1571546.14	3.469	1.698	0.042	1	1	-	2,912
TOTAL/ AVERAGE				90			3.996	2.225	.569	1	1	*1,546	3,898

* Site Target based on re-development



APPROVAL

Rid Van Engle
TOWN ENGINEER

1/2020
DATE

**TOWN OF EASTON
STANDARD DETAILS**

ESD SUMMARY CHART

ISSUED: JANUARY 2020

STANDARD NO: TOE-SWM-7.01

APPENDIX B

- 10% PHOSPHOROUS REDUCTION CALCULATIONS

Calculation Summary	0.5 acre site
	.25 acres to .38 acres
Critical Area 10% Calculations	50% to 75%
Removal Requirement, RR (lbs P / yr)	-0.47
after non-structural and micro-scale BMPs (Steps 5 and 6)	
Total Load Reduction (lbs P / year)	2.82
Total Load Reduction Remaining (lbs P / yr)	0.00
after structural practices (Step 9)	
Total Load Reduction (lbs P / year)	100861.30
Total Load Reduction Remaining (lbs P / yr)	0.00
MDE's ESD to the MEP Calculations	
ESD Runoff Volume, ESDv (cf)	0.00
Total Treatment Volume (cf)	1546.13
WQv or ESDv Treated (cf)	3898.38
PE achieved (inches)	N/A
Entire ESDv Treated Through Environmental Site Design?	YES
ESDv Remaining? (cf)	0.00
If ESDV is not fully treated, is ESD to MEP achieved?	YES
Redevelopment WQv Requirements Met Through Environmental Site Design?	YES
WQv Remaining? (cf)	0.00
New Development WQv Requirements Met Through Environmental Site Design?	N/A
WQv Remaining? (cf)	0.00

Micro-Scale Practices	P _E Credit Description	Contributing Drainage Area (sf)	% Impervious Cover	Direct ESDv Received by Practice (cf)	WQv or ESDv from Up-Gradient Practices (cf)	Practice Specific Parameter(s)			WQv or ESDv credit (cf)	Runoff Volume Remaining (cf)	Down-Gradient Practice		Baseline Phosphorous Removal Efficiency	Average Adjusted Removal Efficiency Rate	P Load to Practice (lbs/yr)	Load Reduction (lbs/yr)	Remaining Load (lbs/yr)
Pemeable Pavement (C Soils)	ESDv credit is based on subbase thickness	22,939	100%	4,903	N/A	Subbase Thickness (in)			986	3,917	Stormwater Ponds (Level 1)		40%	100%	1.22	1.22	0.00
						6											
Pemeable Pavement (C Soils)	ESDv credit is based on subbase thickness		100%	0	N/A	Subbase Thickness (in)			0	0			40%		0.00	0.00	0.00
Pemeable Pavement (C Soils)	ESDv credit is based on subbase thickness		100%	0	N/A	Subbase Thickness (in)			0	0			40%		0.00	0.00	0.00
Pemeable Pavement (C Soils)	ESDv credit is based on subbase thickness		100%	0	N/A	Subbase Thickness (in)			0	0			40%		0.00	0.00	0.00
Pemeable Pavement (C Soils)	ESDv credit is based on subbase thickness		100%	0	N/A	Subbase Thickness (in)			0	0			40%		0.00	0.00	0.00
Total			22,939		4,903	0			986	3,917			40%	100%	1.22	1.22	0.00

Micro-Scale Practices	P _E Credit Description	Contributing Drainage Area (sf)	% Impervious Cover	Direct ESDv Received by Practice (cf)	WQv or ESDv from Up- Gradient Practices (cf)	Practice Specific Parameter (s)			WQv or ESDv credit (cf)	Runoff Volume Remaining (cf)	Down- Gradient Practice		Baseline Phosphorous Removal Efficiency	Average Adjusted Removal Efficiency Rate	P Load to Practice (lbs/yr)	Load Reduction (lbs/yr)	Remaining Load (lbs/yr)
Bio-swales (C/D Soils)	ESDv credit is based on design storage volume	151,098	49%	16,693	0	Surface Area (sf) 1,837	Ponding Depth (ft) 1.5	Media Depth (ft) 2	2,912	13,781			50%	38%	4.17	1.59	2.58
Bio-swales (C/D Soils)	ESDv credit is based on design storage volume			0	0	Surface Area (sf)	Ponding Depth (ft)	Media Depth (ft)	0	0			50%		0.00	0.00	0.00
Bio-swales (C/D Soils)	ESDv credit is based on design storage volume			0	0	Surface Area (sf)	Ponding Depth (ft)	Media Depth (ft)	0	0			50%		0.00	0.00	0.00
Bio-swales (C/D Soils)	ESDv credit is based on design storage volume			0	0	Surface Area (sf)	Ponding Depth (ft)	Media Depth (ft)	0	0			50%		0.00	0.00	0.00
Bio-swales (C/D Soils)	ESDv credit is based on design storage volume			0	0	Surface Area (sf)	Ponding Depth (ft)	Media Depth (ft)	0	0			50%		0.00	0.00	0.00
Bio-swales (C/D Soils)	ESDv credit is based on design storage volume			0	0	Surface Area (sf)	Ponding Depth (ft)	Media Depth (ft)	0	0			50%		0.00	0.00	0.00
Total		151,098		16,693	0				2,912	13,781			50%	38%	4.17	1.59	2.58

APPENDIX C

- DRAINAGE AREA MAPS

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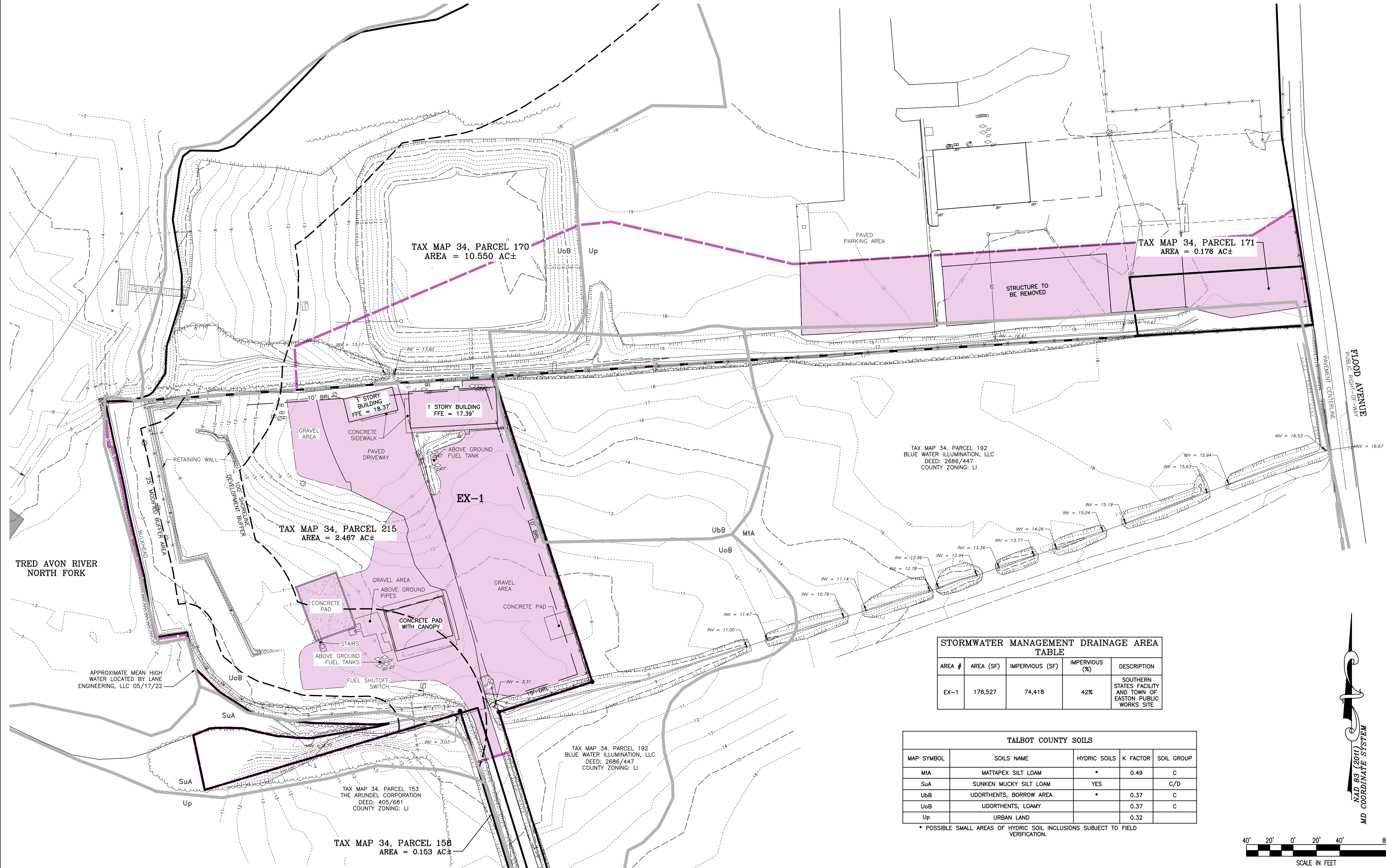
EASTON POINT PARK
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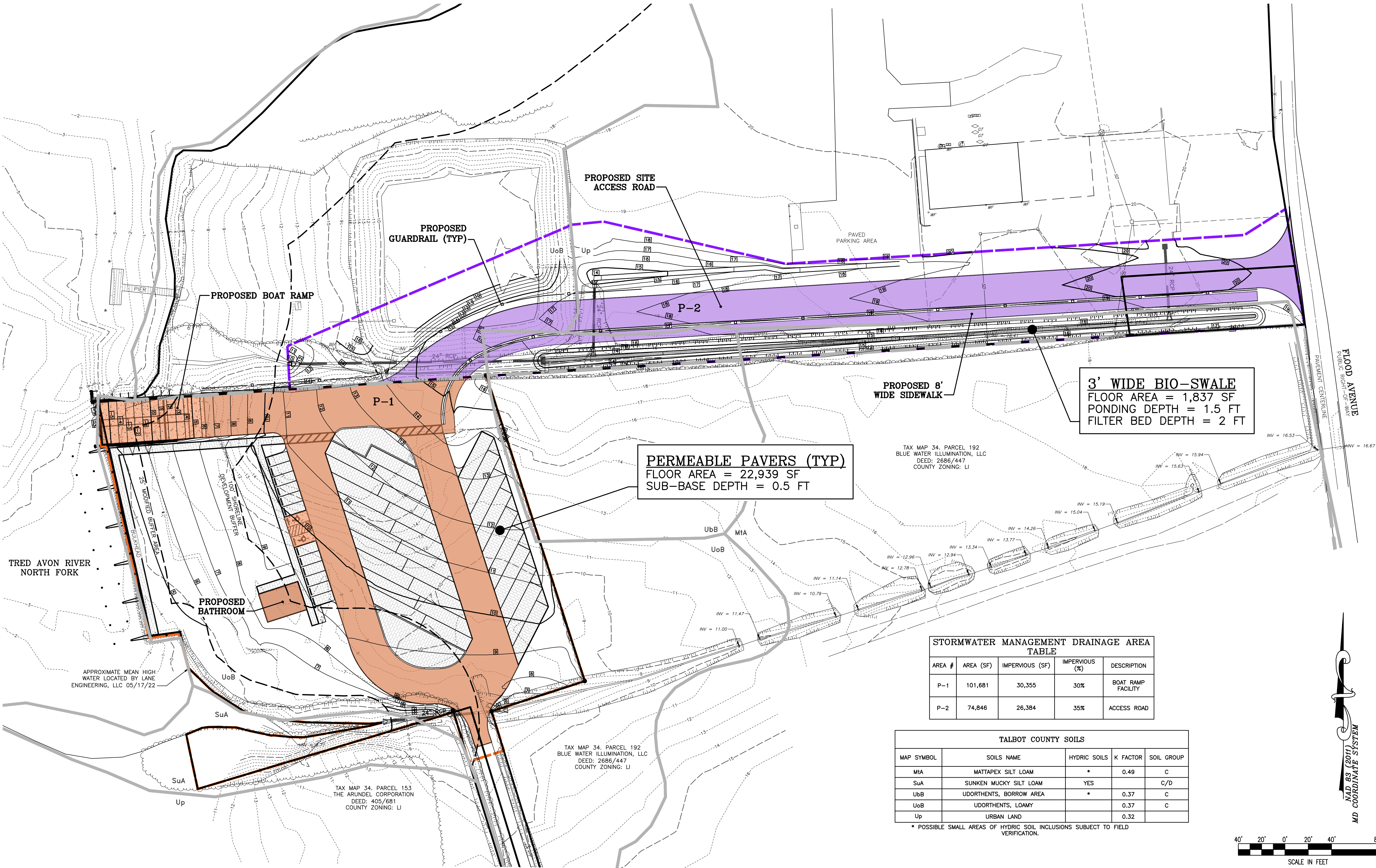
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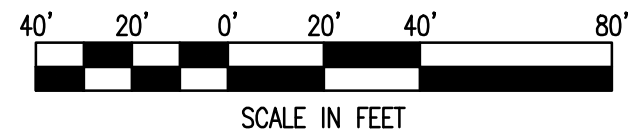
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STORMWATER MANAGEMENT DRAINAGE AREA TABLE				
AREA #	AREA (SF)	IMPERVIOUS (SF)	IMPERVIOUS (%)	DESCRIPTION
P-1	101,681	30,355	30%	BOAT RAMP FACILITY
P-2	74,846	26,384	35%	ACCESS ROAD

TALBOT COUNTY SOILS				
MAP SYMBOL	SOILS NAME	HYDRIC SOILS	K FACTOR	SOIL GROUP
MIA	MATTAPEX SILT LOAM	*	0.49	C
SuA	SUNKEN MUCKY SILT LOAM	YES		C/D
UoB	UDORTHERTS, BORROW AREA	*	0.37	C
UoB	UDORTHERTS, LOAMY		0.37	C
Up	URBAN LAND		0.32	

* POSSIBLE SMALL AREAS OF HYDRIC SOIL INCLUSIONS SUBJECT TO FIELD VERIFICATION.



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REVISIONS TO APPROVED PLANS			
No.	DATE	DESCRIPTION	BY

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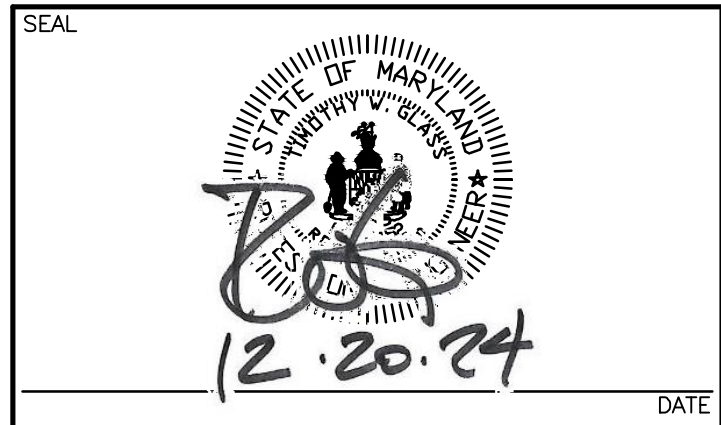
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WATER QUALITY
EXHIBIT**

**EASTON POINT PARK
BOAT RAMP**

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 34, PARCELS 158, 170, 171 & 215

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PROFESSIONAL CERTIFICATION: I hereby certify that these documents were prepared or approved by me, and that I am a duly licensed professional engineer under the laws of the State of Maryland, License No. 23152 , Expiration Date: 7/5/2025.



POST-DEVELOPMENT QUANTITY EXHIBIT

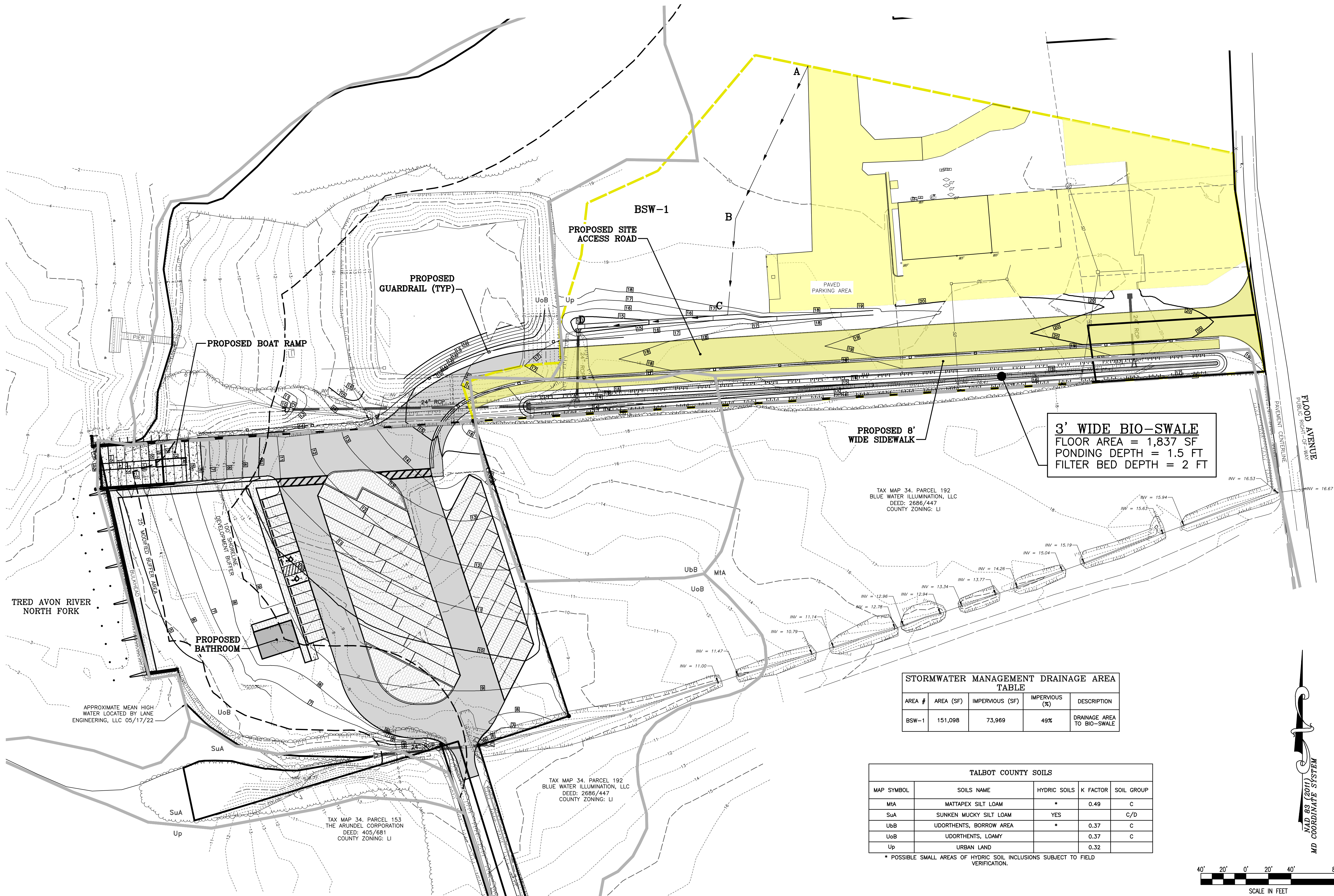
EASTON POINT PARK
BOAT RAMP

IN THE TOWN OF EASTON
TALBOT COUNTY, MARYLAND
TAX MAP 34, PARCELS 158, 170, 171 & 215

ISSUED/REVISED FOR:	DATE:	BY:
ESDR SUBMITTAL	12/19/24	JSC

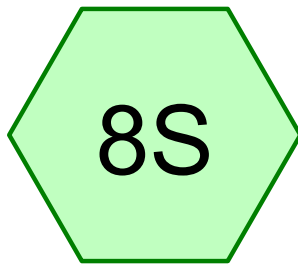
SHEET No. 3 OF 3

SCALE: AS NOTED

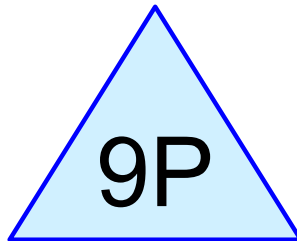


APPENDIX D

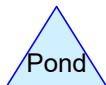
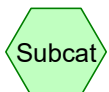
- HYDROCAD REPORT



DA 1



3' wide bioswale



Routing Diagram for 210560-Concept-HydroCAD
Prepared by Lane Engineering, LLC, Printed 12/19/2024
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210560-Concept-HydroCAD

Prepared by Lane Engineering, LLC

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210560 HydroCAD
Type II 24-hr 2-yr Rainfall=3.40"

Printed 12/19/2024

Page 2

Summary for Subcatchment 8S: DA 1

Runoff = 4.44 cfs @ 12.20 hrs, Volume= 0.575 af, Depth> 1.99"

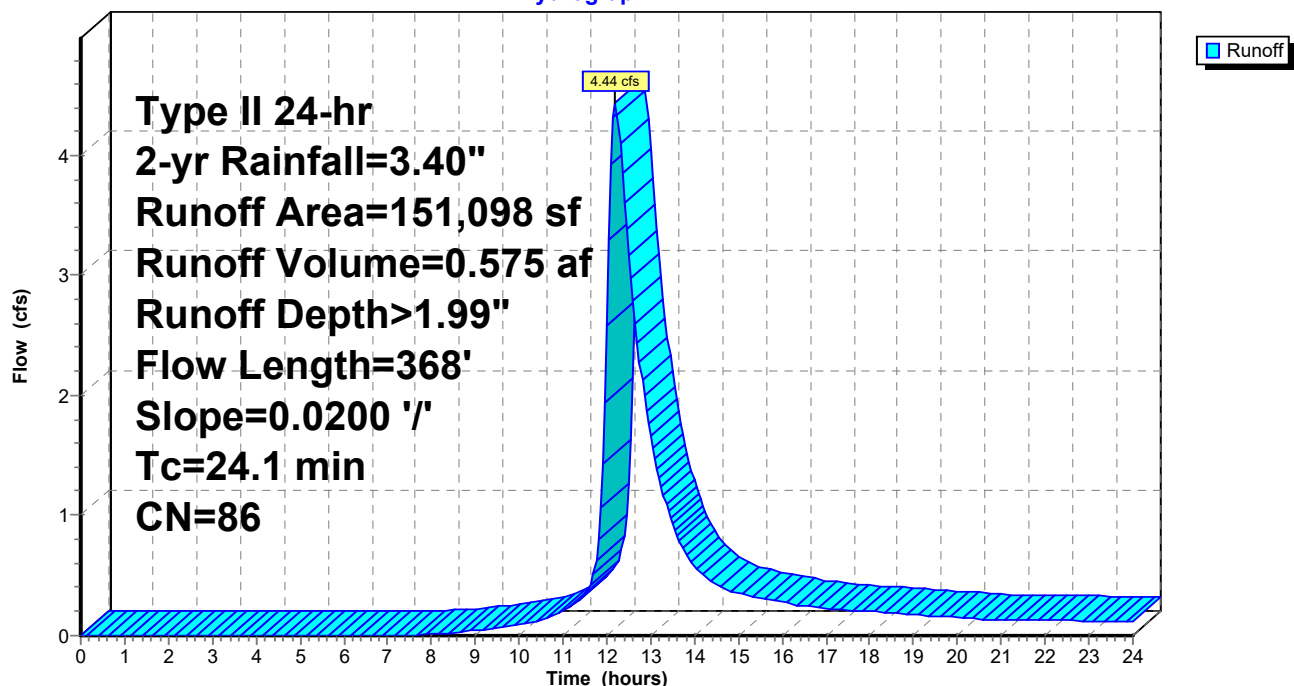
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 2-yr Rainfall=3.40"

Area (sf)	CN	Description
73,969	98	Paved parking, HSG C
77,129	74	>75% Grass cover, Good, HSG C
151,098	86	Weighted Average
77,129		51.05% Pervious Area
73,969		48.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	150	0.0200	0.13		Sheet Flow, a-b Grass: Dense n= 0.240 P2= 3.40"
0.6	85	0.0200	2.28		Shallow Concentrated Flow, b-c Unpaved Kv= 16.1 fps
4.4	133	0.0200	0.50	3.00	Channel Flow, c-d Area= 6.0 sf Perim= 500.0' r= 0.01' n= 0.022 Earth, clean & straight
24.1	368	Total			

Subcatchment 8S: DA 1

Hydrograph



210560-Concept-HydroCAD

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210560 HydroCAD

Type II 24-hr 2-yr Rainfall=3.40"

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Page 3

Summary for Pond 9P: 3' wide bioswale

Inflow Area = 3.469 ac, 48.95% Impervious, Inflow Depth > 1.99" for 2-yr event
 Inflow = 4.44 cfs @ 12.20 hrs, Volume= 0.575 af
 Outflow = 4.39 cfs @ 12.24 hrs, Volume= 0.541 af, Atten= 1%, Lag= 2.2 min
 Primary = 4.39 cfs @ 12.24 hrs, Volume= 0.541 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 15.25' @ 12.24 hrs Surf.Area= 3,097 sf Storage= 2,130 cf

Plug-Flow detention time= 46.8 min calculated for 0.541 af (94% of inflow)

Center-of-Mass det. time= 15.4 min (857.6 - 842.1)

Volume	Invert	Avail.Storage	Storage Description
#1	13.50'	5,360 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
13.50	4	5.0	0	0	4
13.60	73	46.0	3	3	170
13.70	155	88.0	11	14	618
13.80	250	130.0	20	34	1,347
13.90	358	171.0	30	65	2,329
14.00	479	213.0	42	106	3,613
14.10	613	255.0	54	161	5,177
14.20	761	296.0	69	229	6,975
14.30	921	338.0	84	313	9,094
14.40	1,095	380.0	101	414	11,494
14.50	1,281	421.0	119	533	14,108
14.60	1,481	463.0	138	671	17,063
14.70	1,693	505.0	159	829	20,299
14.80	1,919	546.0	180	1,010	23,728
14.90	2,158	588.0	204	1,213	27,519
15.00	2,409	630.0	228	1,442	31,590
15.10	2,674	671.0	254	1,696	35,835
15.20	2,952	713.0	281	1,977	40,461
15.30	3,243	755.0	310	2,287	45,368
15.40	3,547	796.0	339	2,626	50,429
15.50	3,864	838.0	370	2,996	55,891
15.60	4,194	880.0	403	3,399	61,634
15.70	4,538	921.0	436	3,836	67,511
15.80	4,894	963.0	471	4,307	73,808
15.90	5,263	1,005.0	508	4,815	80,386
16.00	5,646	1,046.0	545	5,360	87,079

Device	Routing	Invert	Outlet Devices
#1	Primary	11.50'	24.0" Round Culvert L= 215.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 11.50' / 10.00' S= 0.0070 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

210560-Concept-HydroCAD

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210560 HydroCAD
Type II 24-hr 2-yr Rainfall=3.40"

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Page 4

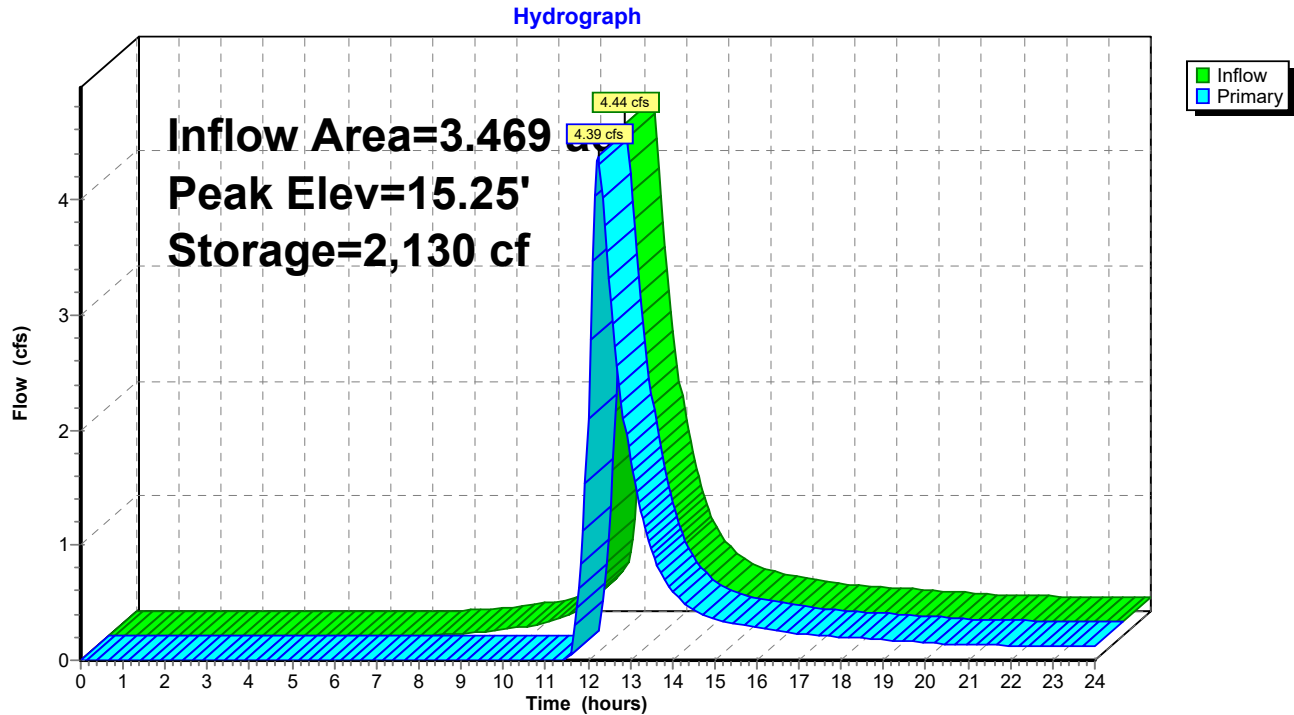
#2 Device 1 15.00' 10.7' long Sharp-Crested Rectangular Weir 0 End Contraction(s)

Primary OutFlow Max=4.37 cfs @ 12.24 hrs HW=15.25' (Free Discharge)

1=Culvert (Passes 4.37 cfs of 22.13 cfs potential flow)

2=Sharp-Crested Rectangular Weir (Weir Controls 4.37 cfs @ 1.63 fps)

Pond 9P: 3' wide bioswale



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210560 HydroCAD
Type II 24-hr 2-yr Rainfall=3.40"

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Stage-Area-Storage for Pond 9P: 3' wide bioswale

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
13.50	4	0
13.55	28	1
13.60	73	3
13.65	110	8
13.70	155	14
13.75	200	23
13.80	250	34
13.85	302	48
13.90	358	65
13.95	416	84
14.00	479	106
14.05	544	132
14.10	613	161
14.15	685	193
14.20	761	229
14.25	839	269
14.30	921	313
14.35	1,006	361
14.40	1,095	414
14.45	1,186	471
14.50	1,281	533
14.55	1,379	599
14.60	1,481	671
14.65	1,585	747
14.70	1,693	829
14.75	1,804	917
14.80	1,919	1,010
14.85	2,037	1,109
14.90	2,158	1,213
14.95	2,282	1,324
15.00	2,409	1,442
15.05	2,540	1,565
15.10	2,674	1,696
15.15	2,811	1,833
15.20	2,952	1,977
15.25	3,096	2,128
15.30	3,243	2,287
15.35	3,393	2,452
15.40	3,547	2,626
15.45	3,704	2,807
15.50	3,864	2,996
15.55	4,027	3,194
15.60	4,194	3,399
15.65	4,364	3,613
15.70	4,538	3,836
15.75	4,714	4,067
15.80	4,894	4,307
15.85	5,077	4,556
15.90	5,263	4,815
15.95	5,453	5,083
16.00	5,646	5,360

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Type II 24-hr 10-yr Rainfall=5.30"

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Summary for Subcatchment 8S: DA 1

Runoff = 8.27 cfs @ 12.19 hrs, Volume= 1.074 af, Depth> 3.71"

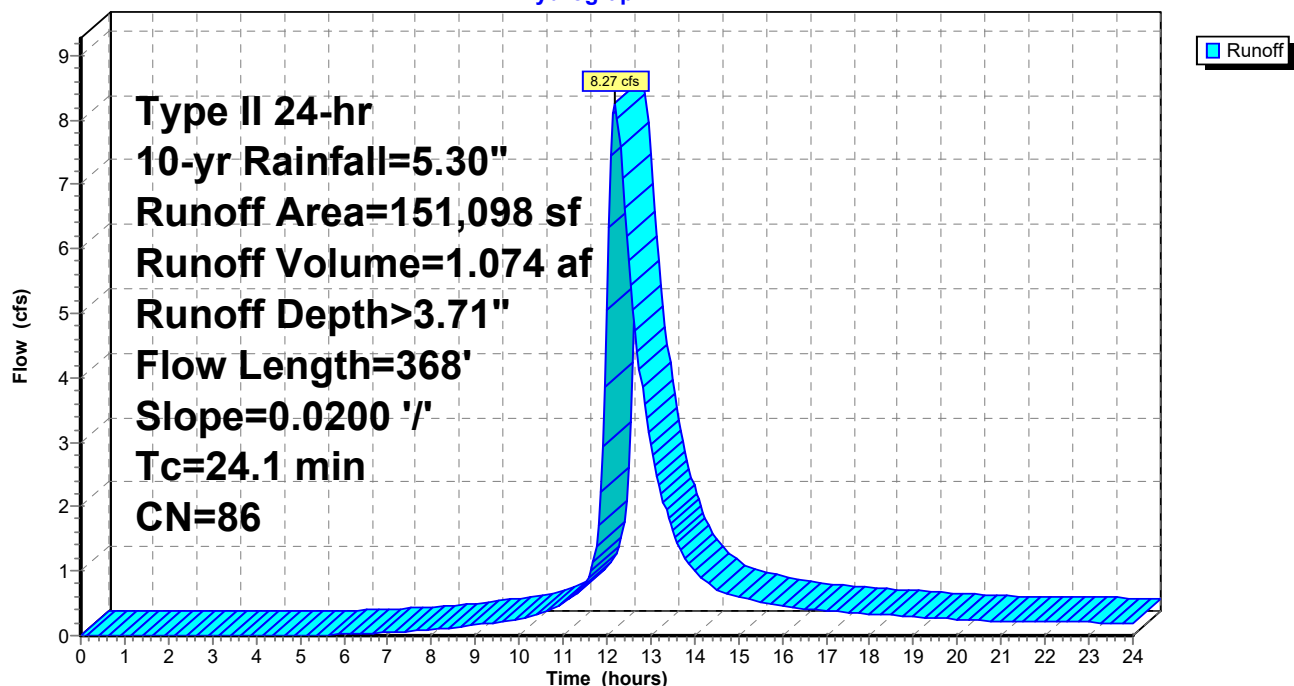
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 10-yr Rainfall=5.30"

Area (sf)	CN	Description
73,969	98	Paved parking, HSG C
77,129	74	>75% Grass cover, Good, HSG C
151,098	86	Weighted Average
77,129		51.05% Pervious Area
73,969		48.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	150	0.0200	0.13		Sheet Flow, a-b Grass: Dense n= 0.240 P2= 3.40"
0.6	85	0.0200	2.28		Shallow Concentrated Flow, b-c Unpaved Kv= 16.1 fps
4.4	133	0.0200	0.50	3.00	Channel Flow, c-d Area= 6.0 sf Perim= 500.0' r= 0.01' n= 0.022 Earth, clean & straight
24.1	368	Total			

Subcatchment 8S: DA 1

Hydrograph



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Type II 24-hr 10-yr Rainfall=5.30"

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Summary for Pond 9P: 3' wide bioswale

Inflow Area = 3.469 ac, 48.95% Impervious, Inflow Depth > 3.71" for 10-yr event
 Inflow = 8.27 cfs @ 12.19 hrs, Volume= 1.074 af
 Outflow = 8.18 cfs @ 12.23 hrs, Volume= 1.039 af, Atten= 1%, Lag= 1.9 min
 Primary = 8.18 cfs @ 12.23 hrs, Volume= 1.039 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 15.38' @ 12.23 hrs Surf.Area= 3,484 sf Storage= 2,554 cf

Plug-Flow detention time= 30.7 min calculated for 1.037 af (97% of inflow)

Center-of-Mass det. time= 12.5 min (837.4 - 824.9)

Volume	Invert	Avail.Storage	Storage Description
#1	13.50'	5,360 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
13.50	4	5.0	0	0	4
13.60	73	46.0	3	3	170
13.70	155	88.0	11	14	618
13.80	250	130.0	20	34	1,347
13.90	358	171.0	30	65	2,329
14.00	479	213.0	42	106	3,613
14.10	613	255.0	54	161	5,177
14.20	761	296.0	69	229	6,975
14.30	921	338.0	84	313	9,094
14.40	1,095	380.0	101	414	11,494
14.50	1,281	421.0	119	533	14,108
14.60	1,481	463.0	138	671	17,063
14.70	1,693	505.0	159	829	20,299
14.80	1,919	546.0	180	1,010	23,728
14.90	2,158	588.0	204	1,213	27,519
15.00	2,409	630.0	228	1,442	31,590
15.10	2,674	671.0	254	1,696	35,835
15.20	2,952	713.0	281	1,977	40,461
15.30	3,243	755.0	310	2,287	45,368
15.40	3,547	796.0	339	2,626	50,429
15.50	3,864	838.0	370	2,996	55,891
15.60	4,194	880.0	403	3,399	61,634
15.70	4,538	921.0	436	3,836	67,511
15.80	4,894	963.0	471	4,307	73,808
15.90	5,263	1,005.0	508	4,815	80,386
16.00	5,646	1,046.0	545	5,360	87,079

Device	Routing	Invert	Outlet Devices
#1	Primary	11.50'	24.0" Round Culvert L= 215.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 11.50' / 10.00' S= 0.0070 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

210560-Concept-HydroCAD

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Type II 24-hr 10-yr Rainfall=5.30"

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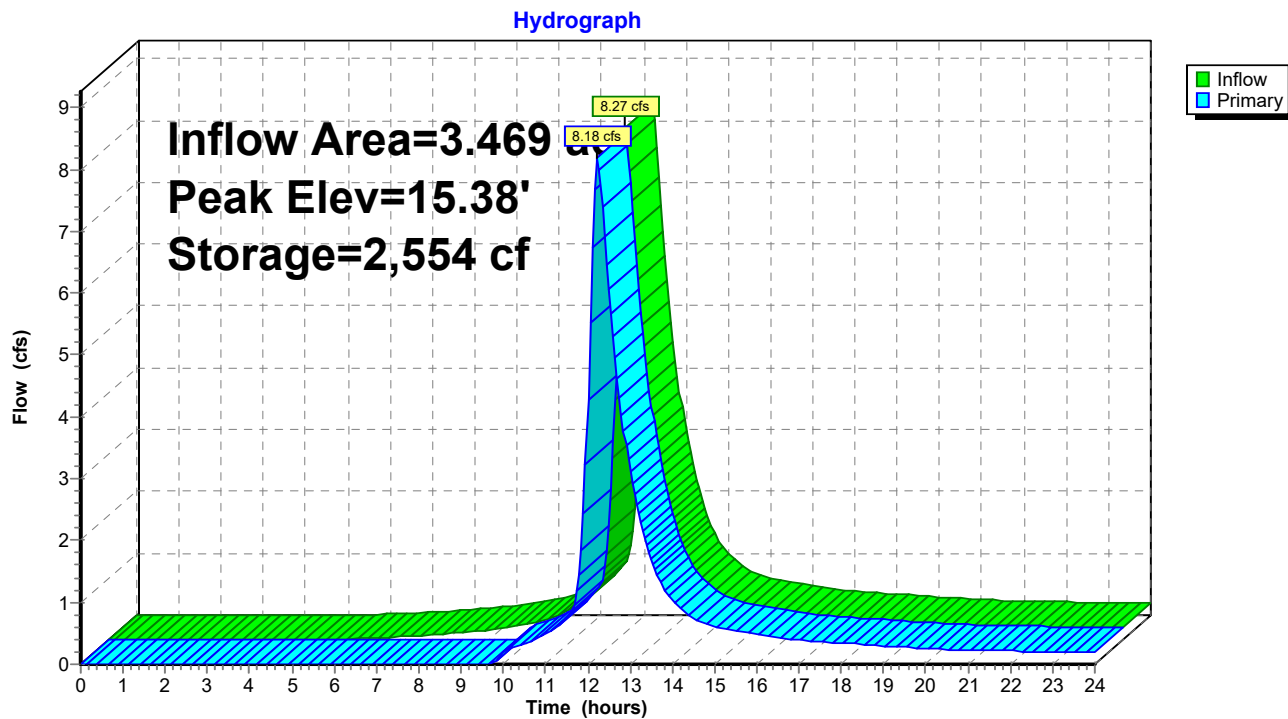
#2 Device 1 15.00' 10.7' long Sharp-Crested Rectangular Weir 0 End Contraction(s)

Primary OutFlow Max=8.14 cfs @ 12.23 hrs HW=15.38' (Free Discharge)

1=Culvert (Passes 8.14 cfs of 22.64 cfs potential flow)

2=Sharp-Crested Rectangular Weir (Weir Controls 8.14 cfs @ 2.01 fps)

Pond 9P: 3' wide bioswale



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Type II 24-hr 10-yr Rainfall=5.30"

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Stage-Area-Storage for Pond 9P: 3' wide bioswale

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
13.50	4	0
13.55	28	1
13.60	73	3
13.65	110	8
13.70	155	14
13.75	200	23
13.80	250	34
13.85	302	48
13.90	358	65
13.95	416	84
14.00	479	106
14.05	544	132
14.10	613	161
14.15	685	193
14.20	761	229
14.25	839	269
14.30	921	313
14.35	1,006	361
14.40	1,095	414
14.45	1,186	471
14.50	1,281	533
14.55	1,379	599
14.60	1,481	671
14.65	1,585	747
14.70	1,693	829
14.75	1,804	917
14.80	1,919	1,010
14.85	2,037	1,109
14.90	2,158	1,213
14.95	2,282	1,324
15.00	2,409	1,442
15.05	2,540	1,565
15.10	2,674	1,696
15.15	2,811	1,833
15.20	2,952	1,977
15.25	3,096	2,128
15.30	3,243	2,287
15.35	3,393	2,452
15.40	3,547	2,626
15.45	3,704	2,807
15.50	3,864	2,996
15.55	4,027	3,194
15.60	4,194	3,399
15.65	4,364	3,613
15.70	4,538	3,836
15.75	4,714	4,067
15.80	4,894	4,307
15.85	5,077	4,556
15.90	5,263	4,815
15.95	5,453	5,083
16.00	5,646	5,360

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210560 HydroCAD

Type II 24-hr 100-yr Rainfall=7.60"

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Summary for Subcatchment 8S: DA 1

Runoff = 12.96 cfs @ 12.19 hrs, Volume= 1.704 af, Depth> 5.90"

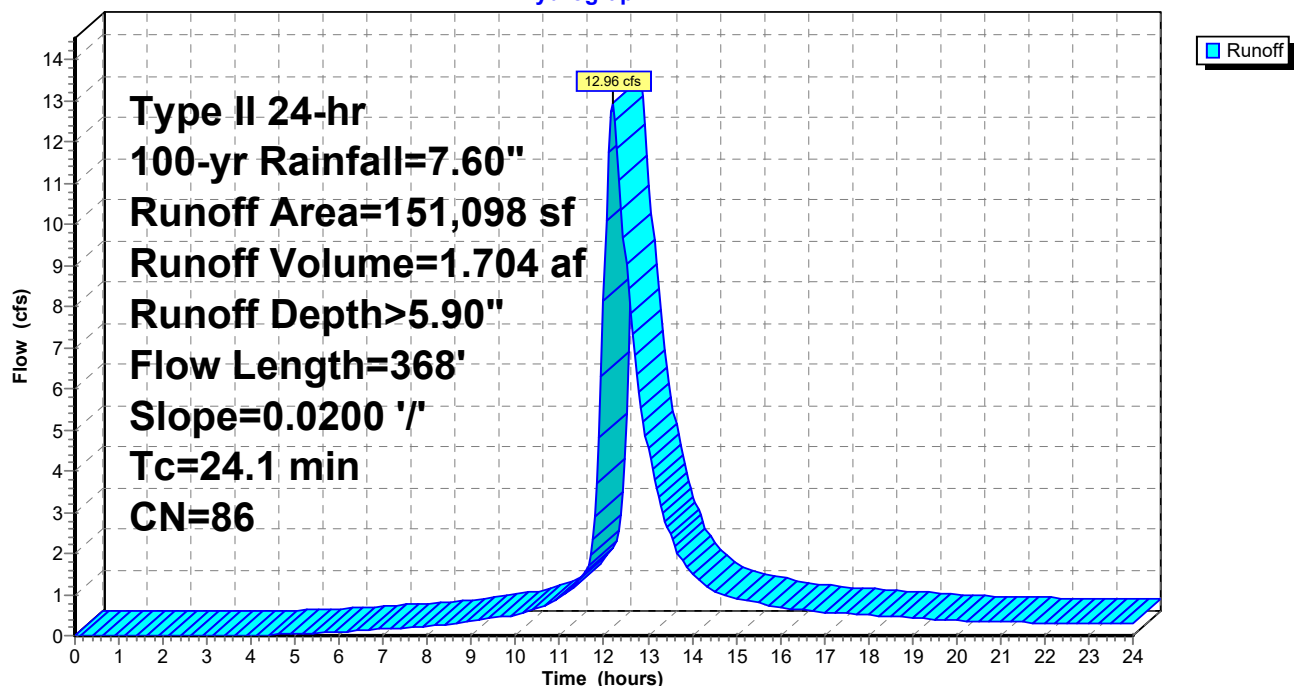
Runoff by SCS TR-20 method, UH=Delmarva, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs
Type II 24-hr 100-yr Rainfall=7.60"

Area (sf)	CN	Description
73,969	98	Paved parking, HSG C
77,129	74	>75% Grass cover, Good, HSG C
151,098	86	Weighted Average
77,129		51.05% Pervious Area
73,969		48.95% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
19.1	150	0.0200	0.13		Sheet Flow, a-b
					Grass: Dense n= 0.240 P2= 3.40"
0.6	85	0.0200	2.28		Shallow Concentrated Flow, b-c
					Unpaved Kv= 16.1 fps
4.4	133	0.0200	0.50	3.00	Channel Flow, c-d
					Area= 6.0 sf Perim= 500.0' r= 0.01'
					n= 0.022 Earth, clean & straight
24.1	368	Total			

Subcatchment 8S: DA 1

Hydrograph



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Type II 24-hr 100-yr Rainfall=7.60"

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Summary for Pond 9P: 3' wide bioswale

Inflow Area = 3.469 ac, 48.95% Impervious, Inflow Depth > 5.90" for 100-yr event
 Inflow = 12.96 cfs @ 12.19 hrs, Volume= 1.704 af
 Outflow = 12.86 cfs @ 12.22 hrs, Volume= 1.669 af, Atten= 1%, Lag= 1.8 min
 Primary = 12.86 cfs @ 12.22 hrs, Volume= 1.669 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.05 hrs

Peak Elev= 15.51' @ 12.22 hrs Surf.Area= 3,906 sf Storage= 3,047 cf

Plug-Flow detention time= 22.5 min calculated for 1.665 af (98% of inflow)

Center-of-Mass det. time= 10.4 min (822.7 - 812.3)

Volume	Invert	Avail.Storage	Storage Description
#1	13.50'	5,360 cf	Custom Stage Data (Irregular) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Perim. (feet)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)	Wet.Area (sq-ft)
13.50	4	5.0	0	0	4
13.60	73	46.0	3	3	170
13.70	155	88.0	11	14	618
13.80	250	130.0	20	34	1,347
13.90	358	171.0	30	65	2,329
14.00	479	213.0	42	106	3,613
14.10	613	255.0	54	161	5,177
14.20	761	296.0	69	229	6,975
14.30	921	338.0	84	313	9,094
14.40	1,095	380.0	101	414	11,494
14.50	1,281	421.0	119	533	14,108
14.60	1,481	463.0	138	671	17,063
14.70	1,693	505.0	159	829	20,299
14.80	1,919	546.0	180	1,010	23,728
14.90	2,158	588.0	204	1,213	27,519
15.00	2,409	630.0	228	1,442	31,590
15.10	2,674	671.0	254	1,696	35,835
15.20	2,952	713.0	281	1,977	40,461
15.30	3,243	755.0	310	2,287	45,368
15.40	3,547	796.0	339	2,626	50,429
15.50	3,864	838.0	370	2,996	55,891
15.60	4,194	880.0	403	3,399	61,634
15.70	4,538	921.0	436	3,836	67,511
15.80	4,894	963.0	471	4,307	73,808
15.90	5,263	1,005.0	508	4,815	80,386
16.00	5,646	1,046.0	545	5,360	87,079

Device	Routing	Invert	Outlet Devices
#1	Primary	11.50'	24.0" Round Culvert L= 215.0' CMP, mitered to conform to fill, Ke= 0.700 Inlet / Outlet Invert= 11.50' / 10.00' S= 0.0070 '/' Cc= 0.900 n= 0.012, Flow Area= 3.14 sf

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Type II 24-hr 100-yr Rainfall=7.60"

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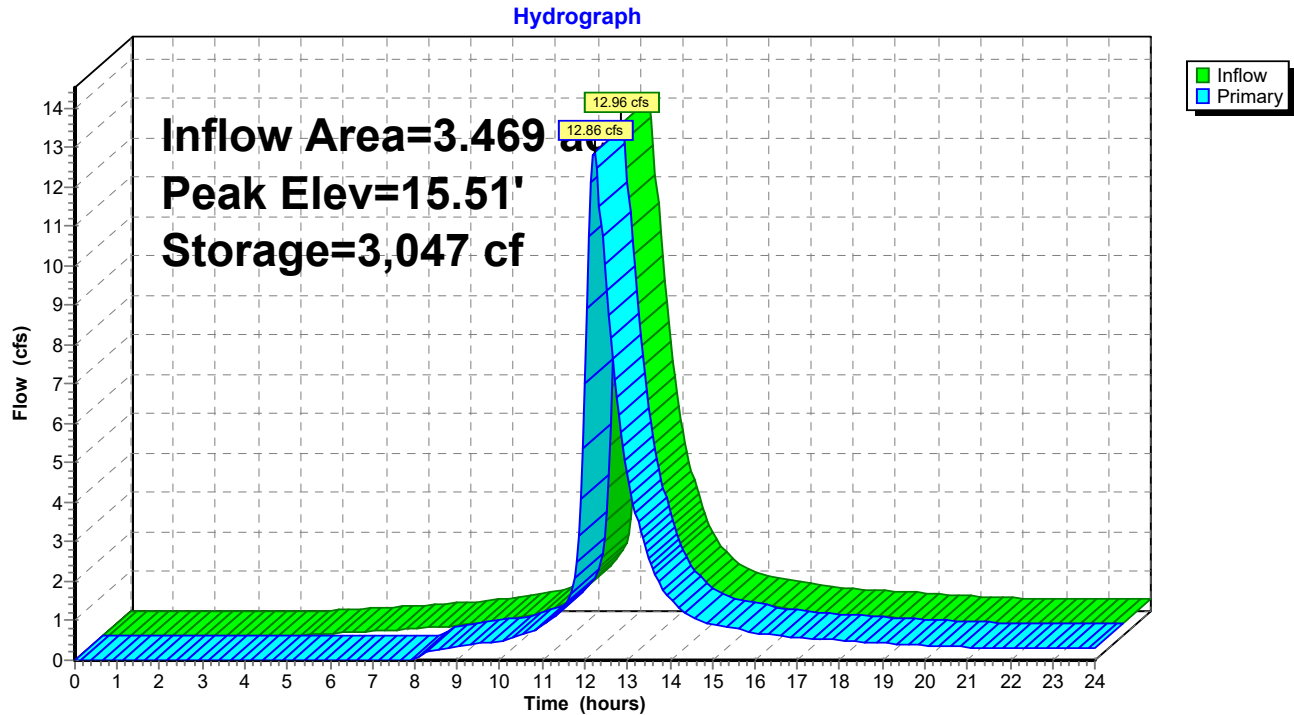
#2 Device 1 15.00' 10.7' long Sharp-Crested Rectangular Weir 0 End Contraction(s)

Primary OutFlow Max=12.77 cfs @ 12.22 hrs HW=15.51' (Free Discharge)

1=Culvert (Passes 12.77 cfs of 23.16 cfs potential flow)

2=Sharp-Crested Rectangular Weir (Weir Controls 12.77 cfs @ 2.34 fps)

Pond 9P: 3' wide bioswale



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Type II 24-hr 100-yr Rainfall=7.60"

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Stage-Area-Storage for Pond 9P: 3' wide bioswale

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
13.50	4	0
13.55	28	1
13.60	73	3
13.65	110	8
13.70	155	14
13.75	200	23
13.80	250	34
13.85	302	48
13.90	358	65
13.95	416	84
14.00	479	106
14.05	544	132
14.10	613	161
14.15	685	193
14.20	761	229
14.25	839	269
14.30	921	313
14.35	1,006	361
14.40	1,095	414
14.45	1,186	471
14.50	1,281	533
14.55	1,379	599
14.60	1,481	671
14.65	1,585	747
14.70	1,693	829
14.75	1,804	917
14.80	1,919	1,010
14.85	2,037	1,109
14.90	2,158	1,213
14.95	2,282	1,324
15.00	2,409	1,442
15.05	2,540	1,565
15.10	2,674	1,696
15.15	2,811	1,833
15.20	2,952	1,977
15.25	3,096	2,128
15.30	3,243	2,287
15.35	3,393	2,452
15.40	3,547	2,626
15.45	3,704	2,807
15.50	3,864	2,996
15.55	4,027	3,194
15.60	4,194	3,399
15.65	4,364	3,613
15.70	4,538	3,836
15.75	4,714	4,067
15.80	4,894	4,307
15.85	5,077	4,556
15.90	5,263	4,815
15.95	5,453	5,083
16.00	5,646	5,360