5 Webb St -- Zone Change from Industrial I to Residential A. Applicant and Owner 5 Webb St LLC.

TOWN OF WINDSOR LOCKS
PLANNING AND ZONING COMMISSION
Town Hall – 50 Church Street
Windsor Locks, CT 06096

APPLICATION FORM

TYPE OF REQUEST

Please check all that apply:

- ____ Special Use Permit with Site Plan Review (public hearing required, please pick up signs)
- ____ Site Plan Review Only
- ____ Site Plan Modification Only
- ____ Liquor Permit
- ✓ Zone Change
- ____ Subdivision
- ____ Re-subdivision
- ____ Amendment to Zoning Regulations
- ____ Amendment to Subdivision Regulations
- ____ Other

Description of Request:

PROPERTY DESCRIPTION

Location: 5 Webb St Windsor Locks

Deed Reference: Volume: 539 Page: 471

Assessor's Block No. 043-089-005

Zone:

- ✓ Residential AA
- ✓ Residential A
- ____ Residential B
- ____ R-DRD
- ____ MFSD
- ____ Business 1
- ____ Business 2
- ____ B-DRD
- ✓ Industrial 1
- ____ Industrial 2
- ____ Industrial 3

APPLICANT INFORMATION

Name: 5 Webb St LLC

Home
Address:

Phone:
Fax:

Email:

Business
Address: 1 Hartford Sq Box 22E New Britain CT 06052

Phone: 860 221 5380
Fax:

Email: pcalafiore@copside.com

PROPERTY OWNER INFORMATION (IF DIFFERENT FROM THE APPLICANT)

Name: 5 Webb St LLC PAUL CALAFIORE

Home
Address:

Phone:
Fax:

Email:

Business
Address: 1 Hartford Sq Box 22E New Britain CT 06052

Phone:
Fax: 860-221-5380

Email: pcalafiore@copside.com

The undersigned warrants the truth of all statements contained herein according to the best of his or her knowledge and hereby grants permission for this Commission to inspect the property address listed in this application.

SIGNED: Paul Calafiore, PC DATE: 3/13/25
Applicant's Printed Name — Applicant's Signature

SIGNED: Paul Calafiore, PC DATE: 3/13/25

EXISTING CONDITIONS

PREPARED FOR

THOMAS S & PAUL BERNARD

WARREN LOCAL CONNECTICUT

Memo

To: Windsor Locks Planning and Zoning Commission

From: Justin LaFountain, AICP, Town Planning Consultant

Date: May 9, 2025

Re: 380 S Center Street-Residential Conversion

Background:

The Windsor Locks Planning and Zoning Commission has received a zone change application for 5 Webb Street from 5 Webb Street LLC. The application was legally noticed as a zone change from industrial to residential, instead of residential to business, and therefore cannot be heard on May 12. A new legal notice will need to be posted for the next Commission meeting.

Commission Action:

Staff recommends opening this public hearing at the next Planning and Zoning Commission meeting.

Memo

To: Windsor Locks Planning and Zoning Commission

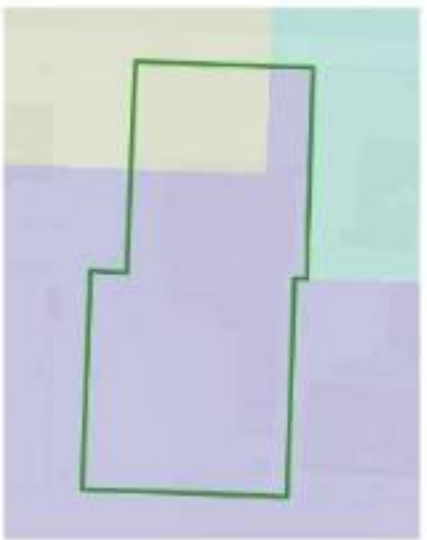
From: Justin LaFountain, AICP, Town Planning Consultant

Date: June 5, 2025

Re: 5 Webb Street Zone Change

Background:

The Windsor Locks Planning and Zoning Commission has received a zone change application for 5 Webb Street from 5 Webb Street LLC. The property is currently zoned primarily I-2 Industrial, with a small portion of the front of the property zoned R-A Residential. The applicant requests that the line be shifted slightly and that the front portion of the lot be zoned B-2 Business, to match the neighboring properties to the east. The current zoning map is included below left, with I-2 in purple, R-A in yellow, and B-2 in blue-green. The proposed dividing line is shown below right, with the front portion along Webb Street being B-2, and the rear portion remaining I-2.





Commission Action:

As the current zoning of the property is slightly confusing (as no residential use is or has been on the property), the proposed zoning change makes sense from a planning perspective. The front B-2 zoning will match the neighboring properties to the east, as will the I-2 in the rear half. The front half being zoned B-2 will allow for a mix of uses in the front portion of the building, which are not currently available to the property owner. The Commission may approve this application if they choose.

2 Elm St Special Use Permit with Site Plan Review to renovate the existing building to provide a mixed use development. Applicant and Owner: Hexagon Elm Street LLC.

TOWN OF WINDSOR LOCKS
PLANNING AND ZONING COMMISSION
Town Hall – 50 Church Street
Windsor Locks, CT 06096

APPLICATION FORM

TYPE OF REQUEST

Please check all that apply:

- [X] Special Use Permit with Site Plan Review (public hearing required, please pick up signs)
- [ ] Site Plan Review Only
- [ ] Site Plan Modification Only
- [ ] Liquor Permit
- [ ] Zone Change
- [ ] Subdivision
- [ ] Re-subdivision
- [ ] Amendment to Zoning Regulations
- [ ] Amendment to Subdivision Regulations
- [ ] Other

Description of Request:

Conversion of an office building to a residential building with small scale commercial on the bottom floor.

PROPERTY DESCRIPTION

Location: 2 Elm Street
Windsor Locks, CT 06096

Deed Reference: Volume: 0395 Page: 1011

Assessor's Block No. 036-082-028

Zone(s):

Residential AA	Business 1
Residential A	X Business 2
Residential B	B-DRD
R-DRD	Industrial 1
MFSD	Industrial 2
AIOZ	Industrial 3

APPLICANT INFORMATION

Name: Hexagon Elm Street LLC

Home	**Business**
Address:	Address: P.O. Box 330941, West Hartford, CT 06133
Phone:	Phone: 860-840-1538
Fax:	Fax: N/A
Email:	Email: ljlynch@gmail.com

PROPERTY OWNER INFORMATION (IF DIFFERENT FROM THE APPLICANT)

Name: same as applicant

Home	**Business**
Address:	Address:
Phone:	Phone:
Fax:	Fax:
Email:	Email:

The undersigned warrants the truth of all statements contained herein according to the best of his or her knowledge and hereby grants permission for this Commission to inspect the property address listed in this application.

SIGNED: Jeremy Li / DATE: 5/5/2025
Applicant's Printed Name — Applicant's Signature

SIGNED: _____ / DATE: _____
Property Owner's Printed Name — Property Owner's Signature (if different than applicant)

Project Narrative

To:	Windsor Locks Planning & Zoning Commission 50 Church Street Windsor Locks, CT 06096
From:	Luke Mauri, P.E., PTOE
Subject:	The Reinvention of Lily Pad 2 Elm Street, Windsor Locks, CT Project #: 2210-1301
Date:	06/09/25

Soli Engineering (Soli) has prepared this Project Narrative to describe the existing site conditions and proposed site improvements for the proposed mixed-use project located at 2 Elm Street in Windsor Locks, Connecticut.

EXISTING CONDITIONS

The site is a single ±6.3-acre parcel located within the Industrial 2 (I-2) zoning district and the Main Street Overlay Zone (MSOZ) and is currently developed with the vacant ±52,436 SF Arbitron R&D facility and 121 parking spaces. The property is bound by Elm Street (Route 140) to the north; Adds Brook and commercial uses to the east; Accs Brook and a cemetery to the south; by residential uses to the south; and residential uses to the west. The site is currently accessed via two unsignalized full-movement driveways on Elm Street and is serviced by public utilities. For more information regarding the location of the site refer to the Site Location Map (Figure 1), in the supporting documents of this Memo.

According to the FEMA Flood Insurance Rate Map (FIRM) Number 09003C0217F, dated 9/26/2008, the entire site is located outside the 1% annual chance (100-year) floodplain. The FIRM Index map is depicted in Figure 2 in the supporting documents.

PROPOSED CONDITIONS

The developer proposes to renovate the existing building to provide a mixed-use development consisting of 2,000 SF of commercial space, 4 studio units, 31 single-bedroom units and 4 two-bedroom units, along with indoor residential storage and a courtyard. Minor site/building improvements will include some façade renovations and the installation of an ADA ramp with rails at the front entrance to the building on the north façade and an ADA ramp and raised concrete walkway at the southeast entrance to the building. No additional sitework improvements are envisioned except for some minor landscape updates along the front façade of the building facing Elm Street and potentially the updating of utility services, if required to accommodate the change in use. The number of parking spaces and site access/egress will remain unchanged.

ZONING COMPLIANCE

Per Section 402 of the Windsor Locks Zoning Regulations, Multi-Family dwellings and commercial uses are permitted within the I-2 and MSOZ Districts per Special Use Permit. Per the Property Survey, prepared by Gardner & Peterson Associates, LLC and last revised 4/19/2024, the site is compliant with all dimensional regulations outlined for the I-2 zone per Section 403 of the Zoning Regulations. Section 419 of the zoning regulations outlines the uses permitted specifically within the Main Street Overlay Zone (MSOZ), which includes both multi-family residential uses and mixed-use buildings. Based on a review of the requirements within Section 419 of the regulations, the proposed uses are in conformance with the standards set forth for the MSOZ. Section 419 of the zoning regulations requires parking at a rate of 1 space per 500 SF of non-residential use and 1 parking space for each residential unit. The proposed redevelopment requires a total of 55 parking spaces per these standards and 121 parking spaces are proposed as part of the redevelopment; therefore, the redevelopment will comply with the parking requirements. A site plan showing dimensional and parking requirements is included in the supporting documents.

TRIP GENERATION COMPARISON

The anticipated number of trips that will be generated by proposed redevelopment was compared to estimated trip generation of the previous R&D development using data from the Institute of Transportation Engineers (ITE) Trip Generation Manual, 11th Edition. The trip generation was calculated for the weekday AM and PM peak hours utilizing ITE Land Use Code 760 – Research & Development Center for the existing facility, Land Use Code 220 – Low-Rise Multifamily Housing for the proposed residential use and Land Use Code 822 Strip Retail Plaza <40k for the small commercial space. Table 1 below provides a comparison of estimated trips for the existing facility and the proposed redevelopment. Backup ITE trip generation sheets are provided within the attached supporting materials.

TABLE 1
TRIP GENERATION SUMMARY

LAND USE	AM PEAK HOUR			PM PEAK HOUR		
	ENTER	EXIT	TOTAL	ENTER	EXIT	TOTAL
Existing R&D Center 52,416 SF (LUC 760)	44	10	54	8	43	51
Proposed Low Rise Multifamily 53 Units (LUC 220)	5	16	21	17	10	27
Proposed Commercial 2,360 SF (LUC 822)	3	3	6	8	8	16
Total Proposed	8	19	27	25	18	43
Net New Trips	-36	+9	-27	+17	-25	-8

As shown in Table 1 above, the proposed redevelopment is estimated to generate 27 less trips in the weekday morning peak-hour and 8 less trips in the weekday evening peak-hour compared to former Ahlstrom R&D facility. As such, no significant adverse impacts are expected to the surrounding roadway network as a result of the redevelopment.

SUPPORTING MATERIALS

ITE TRIP GENERATION INFORMATION

FIGURES

Figure 1 – Site Location Map
Figure 2 – FEMA Flood Map
Figure 3 – Abutters Map

PLANS

Sheet 1 of 1 – Property Survey, Land of Ahlstrom Nonwovens, LLC
Sheet 2.11 – Site Plan
The Residences at Lily Pad Architectural Plans

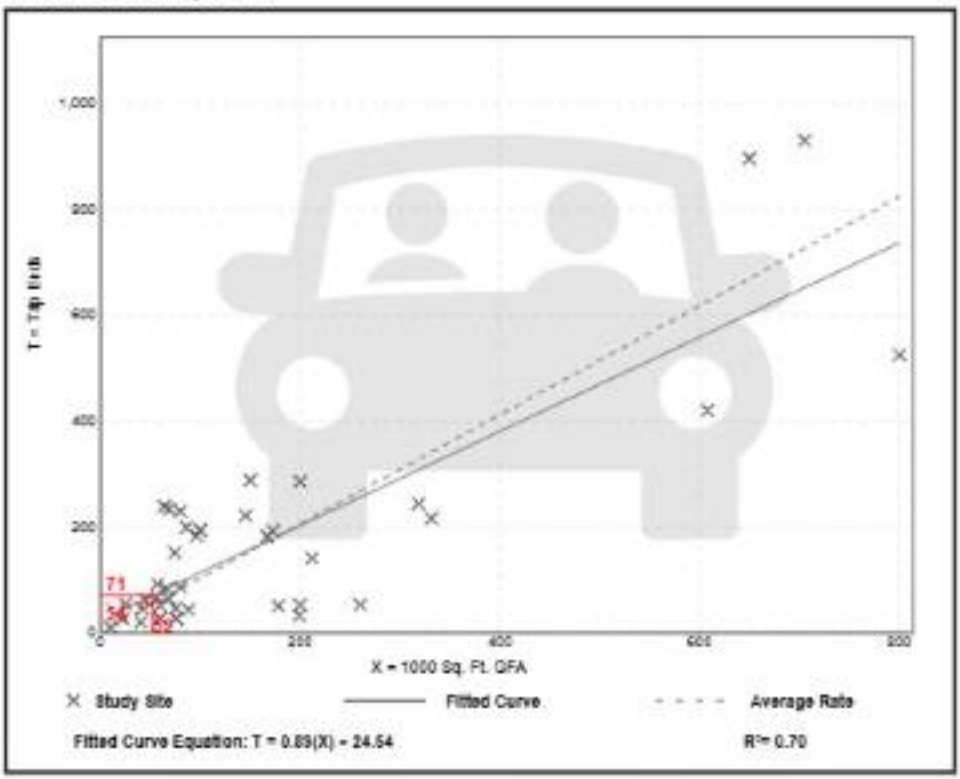
Research and Development Center
(760)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 39
Avg. 1000 Sq. Ft. GFA: 173
Directional Distribution: 82% entering, 18% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
1.03	0.17 - 3.73	0.65

Data Plot and Equation



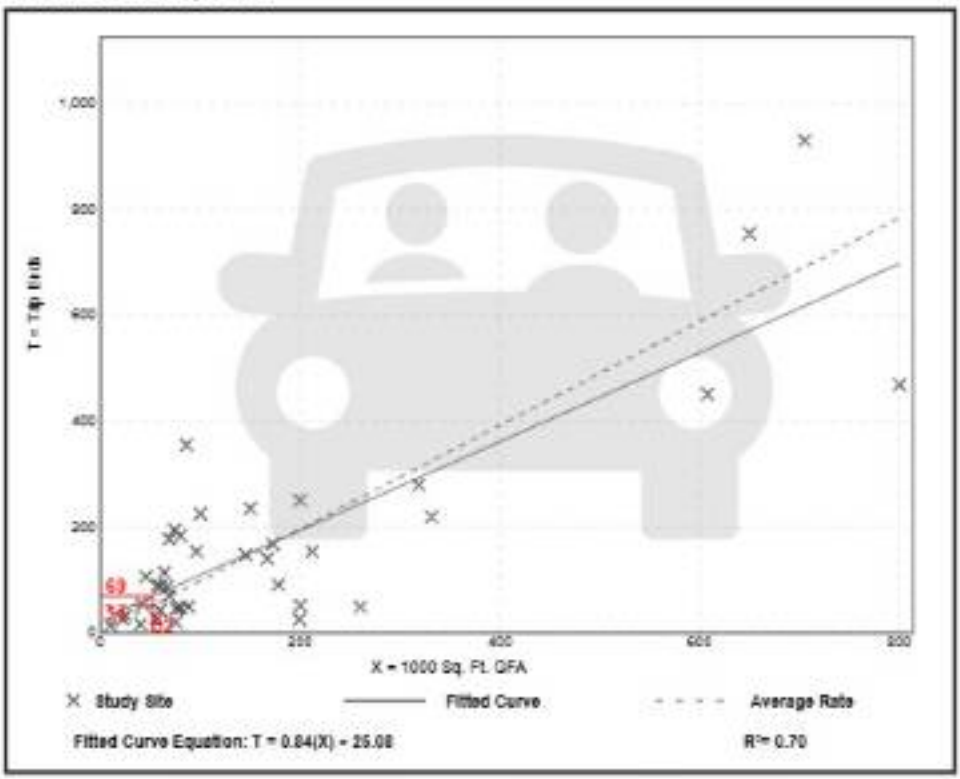
Research and Development Center
(760)

Vehicle Trip Ends vs: 1000 Sq. Ft. GFA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 39
Avg. 1000 Sq. Ft. GFA: 173
Directional Distribution: 16% entering, 84% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GFA

Average Rate	Range of Rates	Standard Deviation
0.98	0.13 - 4.13	0.84

Data Plot and Equation



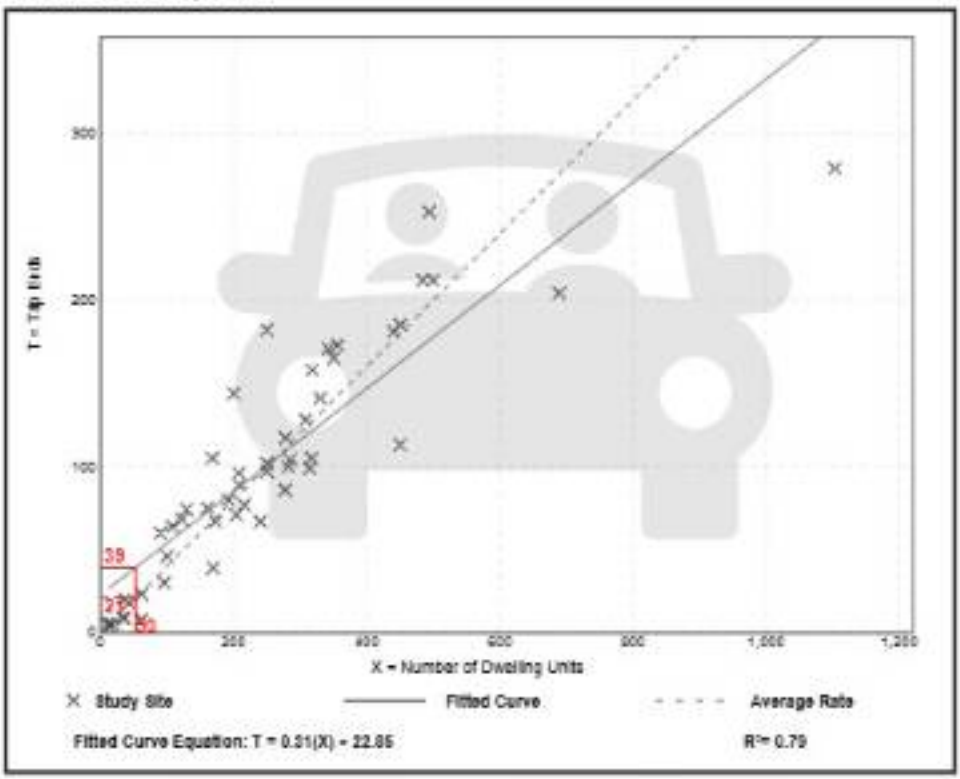
Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

Vehicle Trip Ends vs:	**Dwelling Units**
On a:	**Weekday,**
	Peak Hour of Adjacent Street Traffic,
	One Hour Between 7 and 9 a.m.
Setting/Location:	**General Urban/Suburban**
Number of Studies:	49
Avg. Num. of Dwelling Units:	249
Directional Distribution:	24% entering, 76% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.40	0.13 - 0.73	0.12

Data Plot and Equation



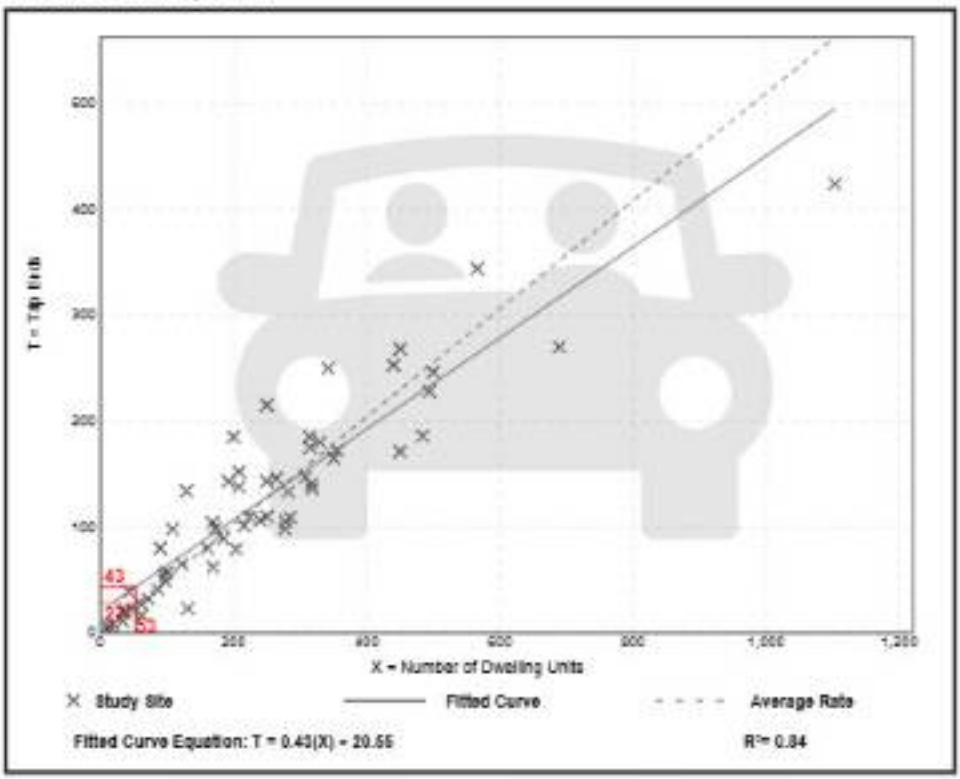
Multifamily Housing (Low-Rise)
Not Close to Rail Transit (220)

Vehicle Trip Ends vs: Dwelling Units
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 59
Avg. Num. of Dwelling Units: 241
Directional Distribution: 63% entering, 37% exiting

Vehicle Trip Generation per Dwelling Unit

Average Rate	Range of Rates	Standard Deviation
0.51	0.08 - 1.04	0.16

Data Plot and Equation



Strip Retail Plaza (<40k)
(822)

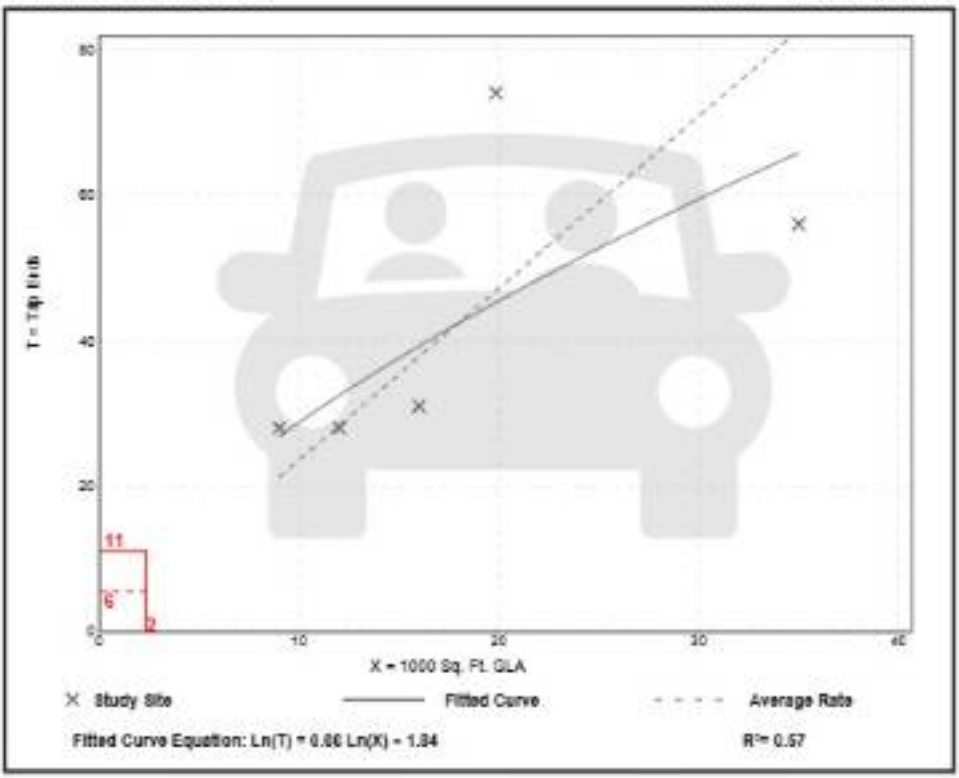
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 7 and 9 a.m.
Setting/Location: General Urban/Suburban
Number of Studies: 5
Avg. 1000 Sq. Ft. GLA: 18
Directional Distribution: 60% entering, 40% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
2.36	1.60 - 3.73	0.94

Data Plot and Equation

Caution – Small Sample Size



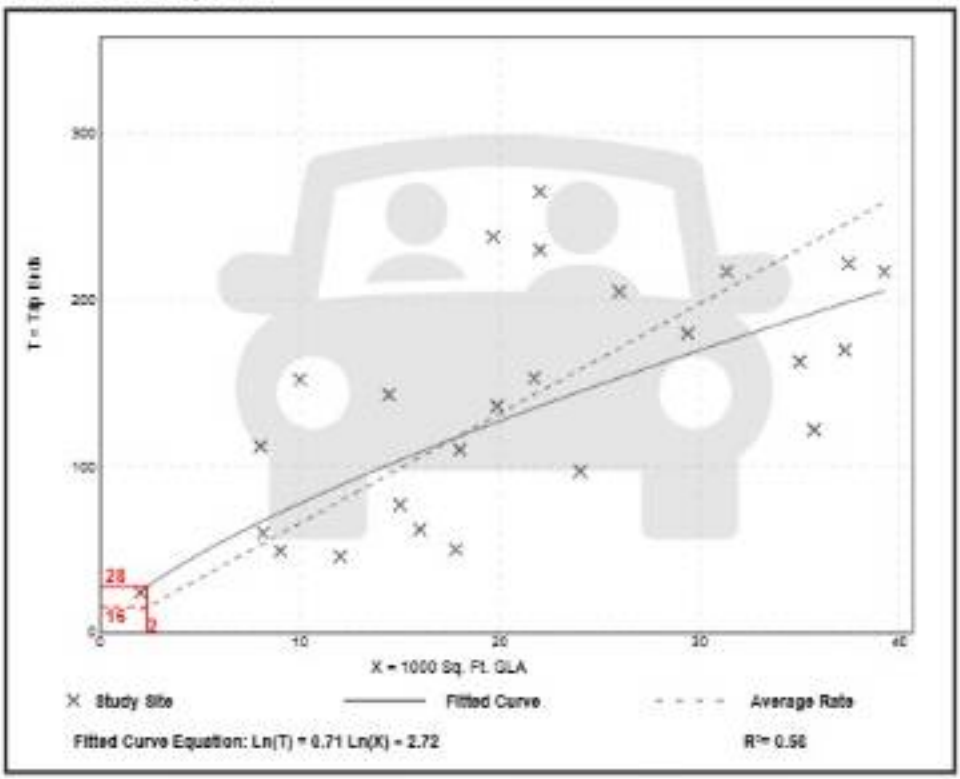
Strip Retail Plaza (<40k)
(822)

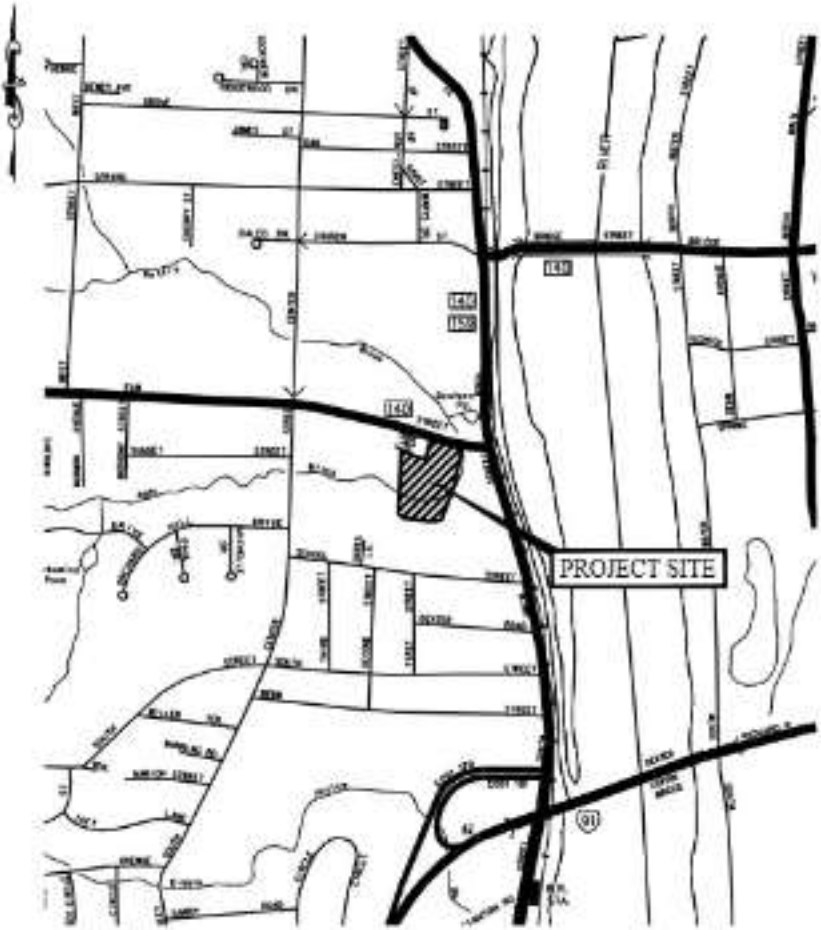
Vehicle Trip Ends vs: 1000 Sq. Ft. GLA
On a: Weekday,
Peak Hour of Adjacent Street Traffic,
One Hour Between 4 and 6 p.m.
Setting/Location: General Urban/Suburban
Number of Studies: 25
Avg. 1000 Sq. Ft. GLA: 21
Directional Distribution: 50% entering, 50% exiting

Vehicle Trip Generation per 1000 Sq. Ft. GLA

Average Rate	Range of Rates	Standard Deviation
6.59	2.81 - 15.20	2.94

Data Plot and Equation





NOTE: BASE MAP INFORMATION TAKEN FROM THE CTDOT TOWN ROAD MAPS NUMBER 48 & 165

1,000 0 500 1,000

SOLLI ENGINEERING

SITE LOCATION MAP

3 ELM STREET
WINDSOR LOCKS, CONNECTICUT

Project #	23104301
Plan Date:	05/08/25
Scale:	1" = 1,000



NOTE: BASE MAP INFORMATION TAKEN FROM FEMA
FLOOD INSURANCE RATE MAP, MAP NUMBERS
09003C0217F & 09003C0236F EFFECTIVE 09/26/2008

1,000 0 500 1,000

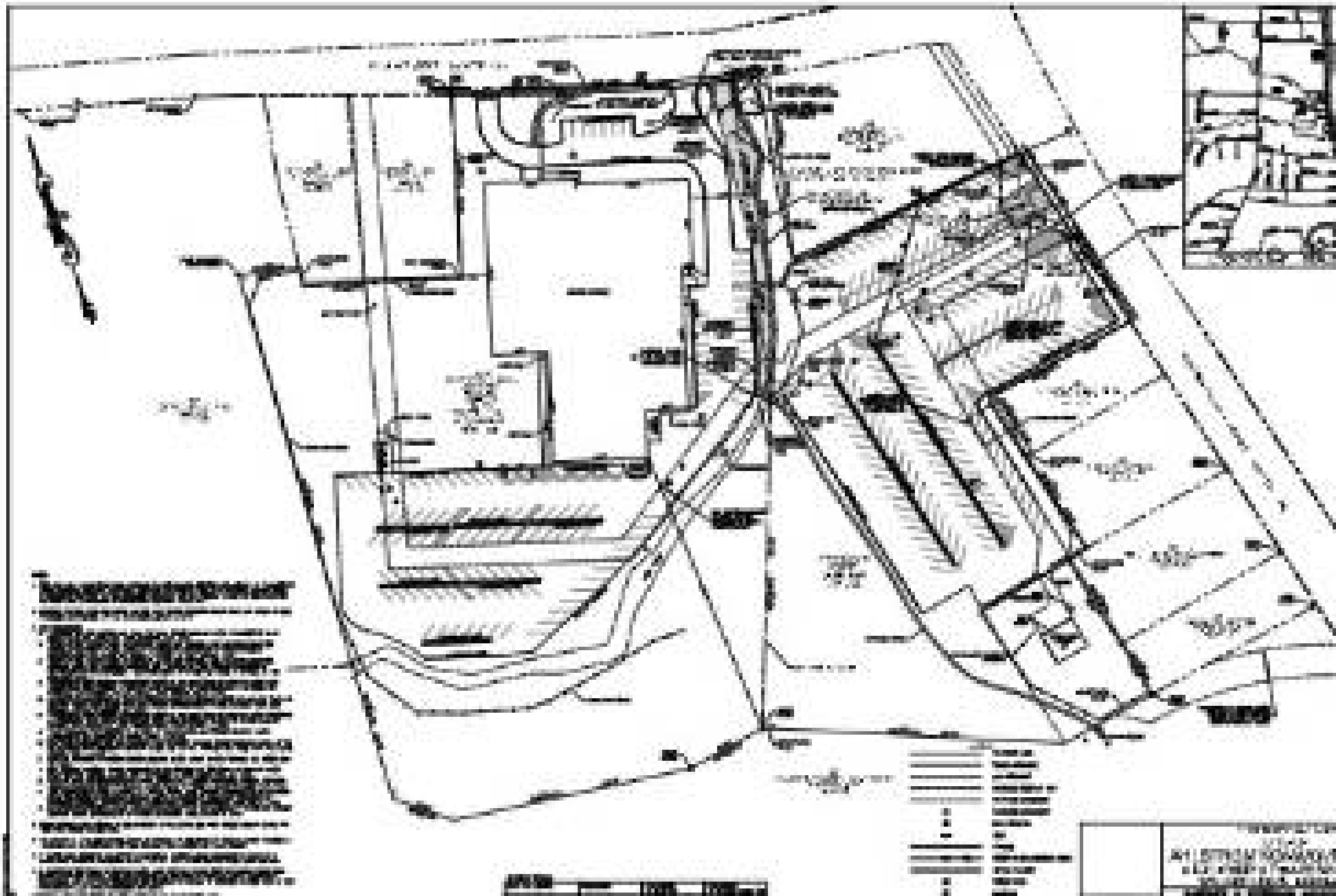
SOLLI ENGINEERING

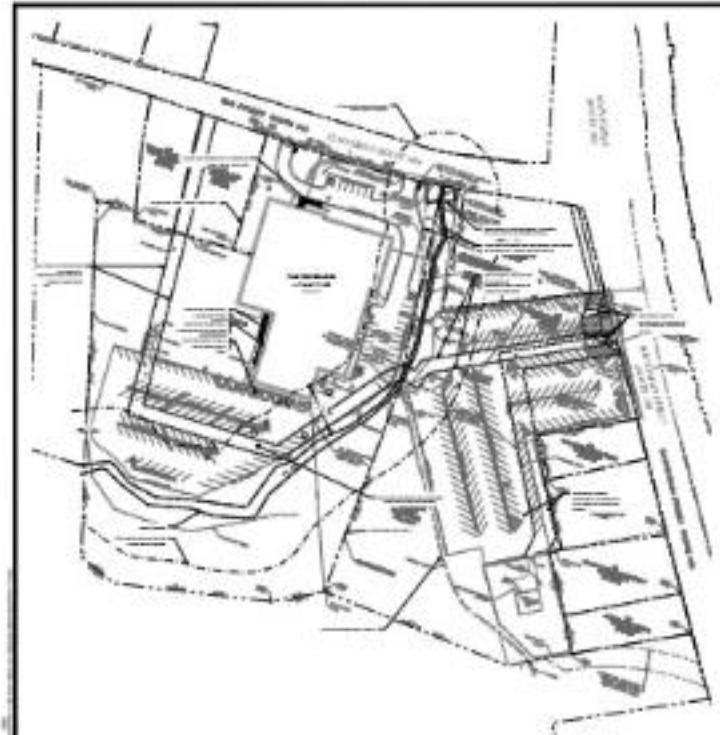
FEMA FLOOD MAP

3 ELM STREET
WINDSOR LOCKS, CONNECTICUT

Project #	23104501
Plan Date:	05/08/25
Scale:	1" = 1,000















THE RESIDENCES AT LILY PAD

2 Elm Street, Windsor Locks, CT
First Floor Plan | 2021.2025

Colliers





THE RESIDENCES AT LILY PAD

3 Elm Street, Windsor Locks, CT
Second Floor Plan | 5/1/2025



THE RESIDENCES AT LILY PAD

2 Elm Street, Windsor Locks, CT
Presentation Renders | 5.01.2023

Colliers


ASTOR


MUSEUM



May 8, 2025

Town of Windsor Locks - Planning & Zoning Commission
50 Church Street
Windsor Locks, CT 06096

RE: The Residences at Lily Pad
2 Elm Street
Windsor Locks, Connecticut 06096
Project Number: 25104301

Dear Commission Members:

On behalf of the owner/applicant, Hexagon Elm Street LLC, please find enclosed a Special Use Permit Application and supporting materials for the proposed Residences at Lily Pad at 2 Elm Street in Windsor Locks. The project includes the renovation of the existing Ahlstrom R&D facility for a multi-use development consisting of 2,360 square-feet of commercial space and 53 total residential units. Enclosed are a project narrative, figures, site and architectural plans for your review.

Should town staff or the Commission have any questions, comments or require any additional information, we would be happy to provide whatever is needed. We look forward to working with you during the processing of this application.

Sincerely,
Solli Engineering, LLC

Luke Mauro, P.E., PTOE
Senior Project Manager

K:\SE Files\Project Data\2025\25104301 - 2 Elm Street - Windsor Locks, CT\Archive\Outbound Archive\Submission\2025-05-08 Special Permit Application\2 Elm Street - Cover Letter 2025-05-08.docx

Gmail

Ashley Malec <wlpzcashley@gmail.com>

FW: [EXTERNAL]Re: 2 Elm St-intro and next step

Michael Sinsigalli <msinsigalli@windsorlocks.com> Tue, May 13, 2025 at 8:47 AM
To: Patricia Margolfo <pmargolfo@windsorlocks.com>, Zoning Committee <ZoningCommittee@windsorlocks.com>

I have reviewed the above noted application and proposed site plans for site accessibility for fire apparatus. This project consists of the change of use of an existing building, from business to mixed use residential and includes no building additions of changes to existing site access or parking. Two municipal fire hydrants are immediately accessible to the site for fire suppression and the existing site access appears adequate to support fire apparatus access. It should be noted that the number of dwelling units proposed on the second paragraph of the application attachment (Proposed Conditions) specifies a lower number of dwelling units (39 units) than does the First Floor, Floor Plan attached to the application (53 units). This discrepancy is a concern to the fire department as the lack of sufficient parking could lead to travel portions of the parking lot being used for informal overflow parking.

Please contact me with any questions.

Sincerely,

Michael L. Sinsigalli

Fire Marshal

Windsor Locks Fire Department

860-627-1467

[Quoted text hidden]
[Quoted text hidden]

Memo

To: Windsor Locks Planning and Zoning Commission

From: Justin LaFountain, AICP, Town Planning Consultant

Date: June 4, 2025

Re: 2 Elm Street-Residential Conversion

Background:

The Windsor Locks Planning and Zoning Commission has received a Special Permit application from Hexagon Elm Street LLC to allow for a change of use from office (formerly of Ahlstrom but currently vacant) to 53 residential units and approximately 2400 square feet of commercial space. The application requires a public hearing, which has been scheduled for June 9, 2025.

Application Analysis:

The subject site is zoned Business 2, while also located in the Main Street Overlay Zone. While the Business 2 Zone places a number of conditions on residential development within the zone, the Main Street Overlay Zone (Section 418) provides significant flexibility by allowing multi-family residential uses as follows:

a. Multi-family residential uses are permitted, except that such uses shall not occupy first floor of any building facing Main Street, and such application for multifamily uses shall adhere to the standards found in Section 412 D 1,5,6,7,8,11,12,13, and 14 and Section 412 E. However, in the case of multifamily uses proposed in vacant, deteriorated or underutilized buildings, the Commission shall alternatively use the density height and other standards found in Sections 407 C b, 407 D and 407 E of these Regulations.

b. Mixed use buildings.

The applicant meets the criteria found in Section 407 as referenced for vacant and underutilized buildings, however due to the commercial usage included in the building, it would fall into category b: Mixed Use Buildings, which are permitted.

While the cover letter notes that there are 4 studio units, 41 single-bedroom units, and 4 two-bedroom units, this is a typo, as the total number of studio units will in fact be 18 (arriving at a total of 53 units). There are 121 parking spaces on the site, which is more than adequate for the use which is proposed. Six ADA parking spaces are provided which is compliant with requirements, however one of these spaces needs to be striped as a van-accessible space.

There are thirteen apartment units on the first floor that are accessible only through the interior of the building (i.e., there is no exterior window or door access). If this application is approved, the applicant will be required to supply architectural drawings to the Building Department for review, to ensure that all life-safety and building code requirements are being met.

The commercial usage of the site is as-yet unspecified. The applicant should discuss this with the Commission, and note what the intended use of the space is.

The applicant has provided a traffic analysis using data from the Institute of Transportation Engineers (ITE). The calculations provided note that compared to the Athletom use, the trips generated from the site during peak AM and PM hours will decrease. This is logical, as employees from the building will not be arriving or leaving in shifts, but instead residents will be leaving and arriving to the building at various times throughout the day.

There are no exterior changes proposed to the site, except for minor façade improvements. It appears that there is parking lot lighting already on the site, however the applicant should speak to the adequacy of the lighting. Any additional lighting would be required to comply with the Zoning Regulations.

There is no dumpster location proposed on the site. The applicant should note where trash will be collected, and the dumpster should be screened by fencing, trees, shrubs, etc.

Commission Action:

The Planning and Zoning Commission may approve this Special Permit if it finds that it is in compliance with the following Special Permit criteria:

1. The location and size of the use, the nature and intensity of the operations connected with it, the size of the lot in relation to it, the location of the lot with respect to streets giving access to it, are such that it will be in harmony with the appropriate and orderly development of the district in which it is located.

2. The kind, location and height of all structures and the nature and extent of the landscaping on the lot are such that the use will not hinder or discourage the appropriate development and use of adjacent properties.

3. The parking and loading facilities are adequate and properly located for the proposed use and the entrance and exit driveways shall be laid out so as to achieve maximum safety. Recommendations of the Windsor Locks Police Commission shall be considered.

Staff would recommend adding the following conditions to any approval, if desired:

1. A dumpster shall be provided on a concrete pad and adequately screened with any of the following: fencing, trees, shrubs, landscaping, etc.
2. An ADA compliant van-accessible parking space must be striped on site.
3. All building code and fire safety requirements must be met.
4. Any additional site lighting must comply with the Zoning Regulations, and be reviewed by the Planning and Zoning Commission, if deemed necessary by staff.
5. Any proposed signage for the site must conform to the Zoning Regulations and follow the Town approval processes.
6. Any additional required federal, state, or local permits must be obtained in advance of construction.

Scannell Special Permit and Site Plan Review to construct two warehouse buildings and associated improvements on an approximately 76 acre property with frontage on Old County Road and a parcel ID of 056-127-001. Applicant: Scannell Properties #698, LLC. Property Owner: OJ Thrall Inc.

Special Use Permit/Site Plan Approval Application

Planning and Zoning Commission

For the Proposed:

Industrial Development

Located at:

Old County Road
Windsor Locks, Connecticut

Prepared for Submission to:

Town of Windsor Locks, Connecticut

May 6, 2025

Prepared for:

Scannell Properties
8801 River Crossing Blvd., Suite 300
Indianapolis, IN 46240

Prepared by:

BL Companies
100 Constitution Plaza, 10th Floor
Hartford, Connecticut 06103
Phone: (860) 249-2200
Fax: (860) 249-2400

BL Project Number: 2500161

Architecture
Engineering
Environmental
Land Surveying

BL Companies

May 6, 2025

Patsy Margolfo, Town of Windsor Locks
Building, Planning, & zoning Department
50 Church Street – Room 122 West Wing
Windsor Locks, CT 06096

RE: Special Use Permit with Site Plan Review Application
For the proposed Industrial Park
Old County Road/ Route 20, Windsor Locks, CT 06096

On behalf Scannell Properties #698, LLC, BL Companies respectfully applies for a special use and site plan application submission for the proposed Industrial Park located at Old County Road/Route 20, Windsor, CT. The application package includes the following:

- (4) Copies of the Special Use and Site Plan Approval Application booklet prepared by BL Companies, Inc. dated March 2025, including the following:
  - Site Plan Approval Application
  - Project Narrative
  - Location Maps
  - Site Lighting Fixtures
  - Sound Study

The following documents are submitted under separate cover:

- (4) copies of 24"x36 Site Plan prepared by BL Companies, Inc. and dated May 6, 2025.
- (9) copies of 11"x17" Site Plan prepared by BL Companies, Inc. and dated May 6, 2025
- (4) copies of the Stormwater Management Report prepared by BL Companies, Inc. and dated May 6, 2025.
- (4) copies of the abutters list and map.
- (4) copies of the Traffic Study Report
- Electronic copy of application package and drawing set emailed to Patsy Margolfo.

We are available at your convenience to review the plans and supporting documents.

Sincerely,

Timothy Houle, P.E.
Project Manager II

100 Constitution Plaza, 10th Floor, Hartford, CT 06103
Tel: 860.249.2200 | Fax: 860.249.2400

TOWN OF WINDSOR LOCKS
PLANNING AND ZONING COMMISSION
Town Hall – 50 Church Street
Windsor Locks, CT 06096

APPLICATION FORM

TYPE OF REQUEST

Please check all that apply:

- [X] Special Use Permit with Site Plan Review (public hearing required, please pick up signs)
- [ ] Site Plan Review Only
- [ ] Site Plan Modification Only
- [ ] Liquor Permit
- [ ] Zone Change
- [ ] Subdivision
- [ ] Re-subdivision
- [ ] Amendment to Zoning Regulations
- [ ] Amendment to Subdivision Regulations
- [ ] Other

Description of Request:

PROPERTY DESCRIPTION

Location: Old County Road/ Route 20

Deed Reference: Volume: 114 Page: 2

Assessor's Block No. 056-127-001

Zone(s):

- [ ] Residential AA
- [ ] Residential A
- [ ] Residential B
- [ ] R-DRD
- [X] MFSD
- [ ] AIOZ
- [ ] Business 1
- [ ] Business 2
- [ ] B-DRD
- [X] Industrial 1
- [ ] Industrial 2
- [ ] Industrial 3

APPLICANT INFORMATION

Name: Scannell Properties #698, LLC

Home
Address:
Phone:
Fax:
Email:

Business
Address: Scannell Properties #596, LLC
8901 River Crossing Boulevard, Suite 300
Indianapolis, IN 46240
Phone: (763) 331-8853
Fax:
Email: danialm@scannellproperties.com

PROPERTY OWNER INFORMATION (IF DIFFERENT FROM THE APPLICANT)

Name: CJ Thrall Inc.

Home
Address: 145 Thrall Road
Windsor,
Connecticut 06095
Phone:
Fax:
Email:

Business
Address:
Phone:
Fax:
Email:

The undersigned warrants the truth of all statements contained herein according to the best of his or her knowledge and hereby grants permission for this Commission to inspect the property address listed in this application.

SIGNED: Daniel Madrigal (Applicant's Printed Name) _____ (Applicant's Signature) DATE: 5/5/25

SIGNED: See attached Letter of Authorization from Property Owner (Property Owner's Printed Name) _____ (Property Owner's Signature (if different than applicant)) DATE: _____

April 29, 2025

Please be advised that we, O.J. Thrall, Inc, as owner, hereby authorize Scannell Properties #698, LLC and/or its authorized agents to file and present any land use and related permit applications associated with the development and use of our property located on Old County Road (Route 20) (Parcel ID 056-127-001) in Windsor Locks, Connecticut.

Sincerely,

O.J. THRALL, INC, a Connecticut Corporation

By: _____

Printed: Joseph B Thrall II

Title: President O.J. Thrall Inc

Date: 4/29/25

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Appendix B: Abutters List

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Appendix D: Sound Study

Introduction

Seasmall Properties #698, LLC is proposing to develop vacant land located along the eastern side of Old County Road immediately north of Route 20 in Windsor Locks, Connecticut. The company is a national developer and landowner with several facilities nearby including the Amazon facility located just west of the site in the Town of Windsor.

Work for this proposed development shall include construction of two warehouse buildings and a small gatehouse. The two warehouses total ±464,000sf and ±387,500sf each and the gatehouse is ±420sf. Site improvements include associated earthwork, paved parking and driveways, utility connections, a stormwater management system, site lighting, and landscaping.

This narrative is being provided in conjunction with the filing of a Site Plan Review and a Special Use Permit Application with the Planning & Zoning Commission. The proposed site plans and building elevations have been provided in conjunction with this narrative to illustrate details of the project. A project summary is provided below.

Summary of Site Plan & Development Schedule

Existing Conditions

The subject site, parcel ID number 056-127-001, is split between the Industrial 1 (I-1) and Multi-Family Special Development (MFSD) zoning districts. Total site area is approximately 76 acres in size with about 61 acres of area within the I-1 zone and the remaining approximately 15 acres in the MFSD zone. Located on the east side of Old County Road, the site is bounded to the north by private undeveloped land and Town owned conservation land known as the Waterworks property, to the east by residential developments on Woodbridge and Oak Ridge Drive and part of the Route 20 right-of-way, to the south by Route 20 and the Route 20 westbound offramp, and to the west by Old County Road and Honda. Existing features of the site include open farmland with woods along the very northern and eastern limits of the site.

Topography generally slopes from higher elevation to the east towards lower elevation to the northeast. The existing elevation at the eastern edge of the property is approximately 148', sloping to about elevation of 92' within the wetland at the northeastern corner of the site. Stormwater and soil details have been provided in the Stormwater Management Report which have been submitted under separate cover.

Proposed Project

Development will include the construction of two warehouses at ±494,000sf and ±387,500sf each and an approximately ±420sf gatehouse. The gatehouse is located along the main access drive into the site and is intended to provide guidance and security for vehicles entering the site. The larger warehouse is located in the rear or eastern half of the site and has loading docks along the north and south sides of the building with passenger car parking areas on the east and west sides of the building. The smaller warehouse is located in the central portion of the site and has loading docks along the south side of the building, passenger car parking areas along the north and west sides, and a site circulation drive along the east side. Both warehouse buildings will be concrete slab on grade and be less than 50'-0" tall.

Site improvements include new parking and circulation areas with associated site grading, stormwater management features, utility connections, site lighting with energy efficient LED fixtures, and landscaping. The site driveway, loop road, and loading areas were sized to accommodate WB-67 trucks. Parking lots were sized to accommodate standard passenger vehicles. Main driveways and internal access drives were sized to accommodate a variety of truck sizes. Site grading has been designed to maintain a 4% maximum slope through paved areas to provide safe access for both loaded and unloaded trucks in all weather conditions. Perimeter grading ties into vary from 1% minimum to a maximum of 33.33% (or 3H:1V) for slope stability.

Project Schedule

Seasmill would like to begin construction in 2026. Construction will be phased with an initial buildout consisting of the roadway, utility, and stormwater infrastructure for the entire site as well as the smaller warehouse building. Construction of the larger warehouse is expected to start near when the smaller building is completed. For more information regarding project phasing, please see the phasing plan included in the project plans. It is anticipated that construction will take 2 to 3 years, depending on the overlap of the two project phases. The expected initial occupancy of the smaller building will occur in late 2026 or early 2027.

Municipal Services & Infrastructure Usage

Electric, Cable & Data

It is anticipated that the site will be serviced by a single new three-phase, 480 volt underground electric service. The service is anticipated to be connected to a utility pole along the east side of Old County Road that needs to be relocated to accommodate the proposed driveway location. From the relocated pole, service will run underground to pad-mounted transformers located at the northwest corner of each building. The new underground telephone and data services will

generally run in the same trench as the electrical services. Coordination with utility providers is ongoing to refine utility routing onsite.

Gas

There are two existing gas mains in Old County Road. One new service for the site will connect to the main within the street. Coordination with the utility provider is ongoing for connection details and onsite routing.

Sewer

There is currently no sewer across the frontage of the project site. The closest sewer is approximately 800 feet north of the site on Old County Road. This project proposed a gravity sewer collection system onsite and a new force main within Old County Road to discharge into the existing municipal gravity sewer system 800 feet north of the site. Initial coordination for the preferred offsite sewer route has begun and will continue through the permitting process with the Town of Windsor Locks Water Pollution Control Authority.

Domestic Water & Fire Suppression

Old County Road currently has a water main located approximately under the eastern curbline. The site will be served by a single new tap and service throughout that will provide both domestic and fire water to both buildings and onsite hydrants. Individual services to each building will branch off the main line running through the site. New fire hydrants onsite will also be served off this same main line through the site. Coordination with the utility provider is ongoing.

The proposed site improvements include a new driveway to Old County Road as well as onsite drive aisles that are sized to accommodate a WB-67 truck. A loop road is provided through the site so emergency vehicles have access to any location on the site. Paved circulation drives wrap around all sides of each building. Interior drive aisles are designed to provide ample width for emergency vehicle access through the site.

Stormwater

Stormwater runoff from the newly paved areas will be collected in deep-sump and hooded catch basins and treated in hydrodynamic separators. Roof runoff will be collected in downspouts and conveyed via underground piping into the stormwater management system. The proposed design includes a total of six infiltration stormwater best management practices (BMPs); four surface basins and two subsurface infiltration systems. Overflow from these infiltration BMPs is generally discharged in one of two directions; towards the south and into the drainage system within Route 20, or to the north through pipe outlets equipped with riprap scour holes and level spreaders.

Surface stormwater discharges on the side of the development were carefully designed to minimize concern for erosion while also maintaining existing tributary flow into the wetlands on the Waterworks property. Details of the proposed stormwater management system are outlined in the Stormwater Management Report included in the Planning & Zoning Commission application package under separate cover.

Site Lighting

Site lighting is provided throughout the developed area of the site through a combination of pole mounted lights and building wall mounted lights. The applicant requests permission to allow lights to be installed at a 32-foot mounting height above finished grade. All fixtures are energy efficient LED. Average light levels through each design area are between one and two footcandles to provide for driver and pedestrian safety as well as security.

Landscaping

The site landscaping plan was thoughtfully designed to both complement the commercial nature of the development, enhance the upland area adjacent to the Waterworks property, and provide a buffer to the MFSD zoning district. A variety of shade tree species were provided within the passenger car parking lots of the development in accordance with the town Zoning Regulations and to help minimize urban heat island effects. Foundation plantings are proposed and consist of a variety of shrubs. The area immediately adjacent to the Waterworks property will be planted with a mix of native trees and shrubs and will be seeded with a conservation seed mix. A 35-foot buffer consisting of various evergreen species is proposed where the I-1 zone abuts the MFSD zone onsite. As an additional measure of buffering to the MFSD zone, the project includes the installation of a sound wall around the north and east sides of the development. For more information, please see the sound study included in Appendix D.

Traffic

The proposed development will have one new driveway to Old County Road. In proposed conditions, the driveway will consist of one entrance lane, one painted center median, and two exit lanes. Trucks will be prohibited from taking right turns out of the site. As part of the project, a new traffic signal is proposed at the driveway and would be synchronized with the existing signal just south of the site at the Route 20 westbound off-on ramp.

The proposed development includes a loop road, drive aisles for parking lots, and circulation areas for loading. All drive aisles for truck traffic are 30' wide with two 12' wide travel lanes and are sized to accommodate WB-67 truck access. Drive aisles in passenger car parking lots are 24' wide.

Truck loading areas consist of a 70' drive aisle for trucks to maneuver into and out of both loading docks and trailer parking stalls.

Parking is provided throughout the site for both passenger cars and trailers. The design is intended to be flexible to allow for each building to potentially be divided into multiple tenants with convenient parking and loading for each potential tenant. In total, the site contains (370) passenger car parking spaces that are a minimum of 9'x18' for an assumed (355) employees between the two buildings. Loading docks will be provided on both buildings, totaling (120) total docks. Additionally, there will be (193) paved parking stalls for trailers that are a minimum of 12'x55'. Emergency vehicles will have access around all sides of each proposed building and throughout the site.

A Traffic Study was prepared by BL Companies to analyze the impacts of the proposed development on the nearby road network. Results of the study show that the development will have a negligible impact on the existing road network. All nearby intersections will perform within acceptable levels of service. There are two noteworthy recommendations to help mitigate traffic concerns. The first is the installation of a traffic signal at the proposed driveway and the second is prohibiting trucks from taking a right turn out of the site. To accommodate the recommended installation of the traffic signal at the driveway, offsite improvements are recommended within the Old County Road right-of-way. A conceptual off site improvements plan has been included in the project plans. Upon the Town of Windsor Locks accepting this project onto the agenda for the Planning & Zoning Commission, this project will be submitted to the Connecticut Office of State Traffic Administration (OSTA) for review and determination if the traffic signal and off-site improvements will be required and accepted. The full Traffic Study for the site is included in the Planning & Zoning Commission application package under separate cover.

Environmental

The project site contains several wetlands with embedded watercourses that are all part of the larger Kimberly Brook wetland resource area north of the property. Wetland resource areas onsite were identified through a field delineation performed by All-Points Technology Corporation and have been located on the project plans through field survey. The proposed project limits all proposed disturbances outside the upland review areas around the identified wetland resources. As an extra measure of protection, a 40' buffer was provided along the boundary of the project site and the Waterworks property where no proposed improvements will be constructed. In this 40' buffer, woody invasives are proposed to be removed and native trees and shrubs are being planted to further enhance the upland areas adjacent to the Waterworks property. Details of the wetland delineation can be found in the Wetlands Evaluation Report prepared by All-Points which is enclosed in the submission to the Inland Wetlands Commission.

Per the FEMA Flood Insurance Rate Map Numbers 09003C0217F and 09003C0219F for the Town of East Windsor, Connecticut effective September 26, 2008, the parcel resides entirely within Zone X, an area determined to be outside the 0.2% annual chance floodplain.

The site does not contain any mapped rare species of habitat. Areas of historical significance are not mapped within the site.

Aesthetics

The proposed project will be constructed with traditional commercial architectural finishes that complement the look of the surrounding areas. Strategic landscaping has been provided to soften the appearance of the proposed structure and enhance the appearance of the property. Screening has been included in the design in the form of the boundary of the MFSD zone to provide a visual barrier compliant with the required buffer to a residential zone.

Summary

The project has been thoughtfully planned to meet project goals and minimize potential impacts to the surrounding area. The proposed project has been designed in accordance with the current Zoning Regulations.

The project will provide an aesthetically appealing and energy efficient repair facilities, create jobs and generate revenue for the Town.

In consideration of this information, we are asking that the Town of Windsor Locks Planning & Zoning Commission approve the proposed development on Old County Road for Scannell.

APPENDIX A

LOCATION MAPS

Figure 1: USGS Location Map
Figure 2: FEMA FIRMette



ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

USGS SITE LOCATION MAP
OLD COUNTY ROAD
WINDSOR LOCKS, CT

T.A.H.

FIG-1

National Flood Hazard Layer FIRMette

FEMA



Legend

SPECIAL FLOOD HAZARD AREAS

OTHER AREAS OF FLOOD HAZARD

OTHER AREAS

GENERAL STRUCTURES

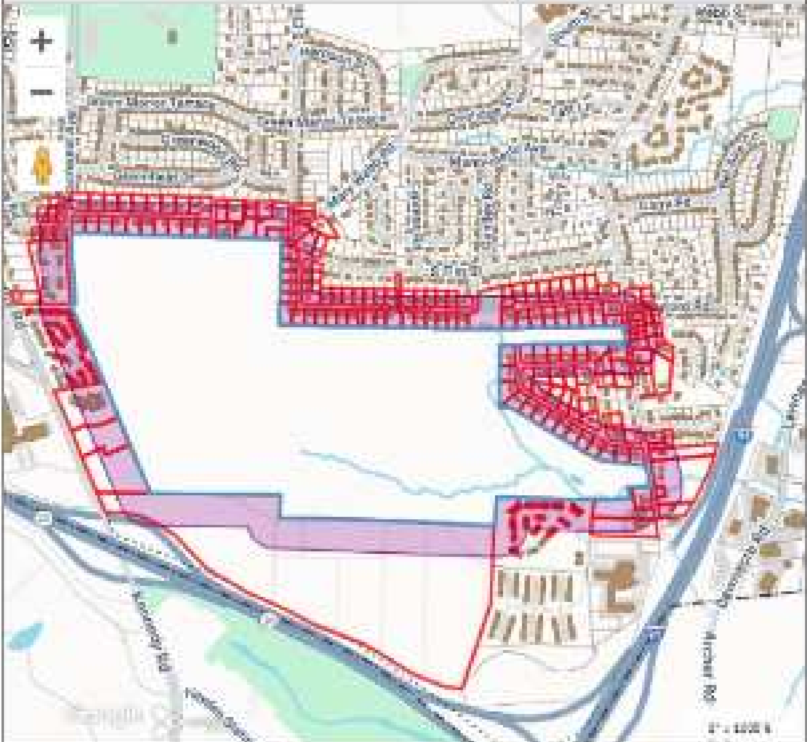
OTHER FEATURES

MAP PANELS

APPENDIX B

Abutters List

300' Radius Abutters Map



Property Information

MAP FOR REFERENCE ONLY
NOT A LEGAL DOCUMENT

Print map scale is approximate. Critical layout or measurement activities should not be done using this resource.

300' Abutters List

Lot Label	Address	Owner	Mailing Address	Owner City	Owner State	Zip
[illegible]	8 ALICIA TERRACE	[illegible]	8 ALICIA TERR	WINDSOR LOCKS	CT	6096
[illegible]	13 TIMBER DRIVE	[illegible]	13 TIMBER DR	WINDSOR LOCKS	CT	6096
[illegible]	33 MERRIGAN LANE	[illegible]	33 MERRIGAN LANE	WINDSOR LOCKS	CT	6096
[illegible]	33 COPPER DRIVE	[illegible]	33 COPPER DRIVE	WINDSOR LOCKS	CT	6096
[illegible]	17 RING HILL ROAD	[illegible]	17 RING HILL RD	WINDSOR LOCKS	CT	6096
[illegible]	94 RAYMOND ROAD	[illegible]	94 RAYMOND ROAD	WINDSOR LOCKS	CT	6096
[illegible]	4 TIMBER DRIVE	[illegible]	4 TIMBER DRIVE	WINDSOR LOCKS	CT	6096
[illegible]	[illegible] SOUTH CENTER STREET	[illegible]	[illegible]	[illegible]	CT	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	WINDSOR LOCKS	CT	6096
[illegible]	33 JUNIPER DRIVE	[illegible]	33 JUNIPER DR	WINDSOR LOCKS	CT	6096
[illegible]	[illegible] RAYMOND ROAD	[illegible]	[illegible] RAYMOND ROAD	WINDSOR LOCKS	CT	6096
[illegible]	3 TIMBER DRIVE	[illegible]	3 TIMBER DRIVE	WINDSOR LOCKS	CT	6096
[illegible]	47 ALICIA TERRACE	[illegible]	47 ALICIA TERRACE	WINDSOR LOCKS	CT	6096
[illegible]	17 WOODBRIDGE DRIVE	[illegible]	17 WOODBRIDGE DR	WINDSOR LOCKS	CT	6096
[illegible]	8 RING HILL ROAD	[illegible]	8 RING HILL ROAD	WINDSOR LOCKS	CT	6096
[illegible]	33 MERRIGAN LANE [illegible]	[illegible]	33 MERRIGAN LN UNIT [illegible]	WINDSOR LOCKS	CT	6096
[illegible]	5 WOODBRIDGE DRIVE	[illegible]	5 WOODBRIDGE DR	WINDSOR LOCKS	CT	6096
[illegible]	[illegible] RAYMOND ROAD	[illegible]	[illegible] RAYMOND RD	WINDSOR LOCKS	CT	6096
[illegible]	25 ALICIA TERRACE	[illegible]	25 ALICIA TERRACE	WINDSOR LOCKS	CT	6096
[illegible]	7 VILLAGE LANE	[illegible]	[illegible]	[illegible]	CT	[illegible]
[illegible]	43 JUNIPER DRIVE	[illegible]	43 JUNIPER DR	WINDSOR LOCKS	CT	6096
[illegible]	[illegible] SOUTH CENTER STREET	[illegible]	[illegible]	CLINTON	CT	[illegible]
[illegible]	26 WOODBRIDGE DRIVE	[illegible]	26 WOODBRIDGE DR	WINDSOR LOCKS	CT	6096
[illegible]	18 VILLAGE LANE	[illegible]	18 VILLAGE LN UNIT [illegible]	WINDSOR LOCKS	CT	6096
[illegible]	SOUTH ELM STREET	[illegible]	[illegible]	WINDSOR LOCKS	CT	6096
[illegible]	[illegible] SOUTH CENTER STREET	[illegible]	[illegible] SOUTH CENTER STREET	WINDSOR LOCKS	CT	6096
[illegible]	4 COPPER DRIVE	[illegible]	4 COPPER DR	WINDSOR LOCKS	CT	6096
[illegible]	8 VILLAGE LANE	[illegible]	8 VILLAGE LANE	WINDSOR LOCKS	CT	6096
[illegible]	[illegible] JUNIPER DRIVE	[illegible]	[illegible] JUNIPER DR	WINDSOR LOCKS	CT	6096
[illegible]	[illegible] RAYMOND ROAD	[illegible]	[illegible] RAYMOND RD	WINDSOR LOCKS	CT	6096
[illegible]	7 TIMBER DRIVE	[illegible]	7 TIMBER DRIVE	WINDSOR LOCKS	CT	6096
[illegible]	[illegible] JUNIPER DRIVE	[illegible]	[illegible]	[illegible]	CT	[illegible]
[illegible]	48 JUNIPER DRIVE	[illegible]	48 JUNIPER DR	WINDSOR LOCKS	CT	6096
[illegible]	1 WOODBRIDGE DRIVE	[illegible]	1 WOODBRIDGE DR	WINDSOR LOCKS	CT	6096
[illegible]	[illegible] ALICIA TERRACE	[illegible]	[illegible] ALICIA TER	WINDSOR LOCKS	CT	6096
[illegible]	74 JUNIPER DRIVE	[illegible]	74 JUNIPER DRIVE	WINDSOR LOCKS	CT	6096
[illegible]	11 TIMBER DRIVE	[illegible]	11 TIMBER DRIVE	WINDSOR LOCKS	CT	6096
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[illegible]	[illegible] ALICIA TERRACE	[illegible]	[illegible] ALICIA TERRACE	WINDSOR LOCKS	CT	6096
[illegible]	[illegible] JUNIPER DRIVE	[illegible]	[illegible] JUNIPER DRIVE	WINDSOR LOCKS	CT	6096
[illegible]	[illegible] WOODBRIDGE DRIVE	[illegible]	[illegible] WOODBRIDGE DRIVE	WINDSOR LOCKS	CT	6096
[illegible]	[illegible] SOUTH ELM STREET	[illegible]	[illegible] SOUTH ELM STREET	WINDSOR LOCKS	CT	6096
[illegible]	[illegible] SOUTH CENTER STREET	[illegible]	[illegible] SOUTH CENTER ST	WINDSOR LOCKS	CT	6096
[illegible]	7 WOODBRIDGE DRIVE	[illegible]	7 WOODBRIDGE DRIVE	WINDSOR LOCKS	CT	6096
[illegible]	[illegible] SOUTH ELM STREET	[illegible]	[illegible] SOUTH ELM STREET	WINDSOR LOCKS	CT	6096
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[illegible]	[illegible] OLD COUNTY ROAD	[illegible]	[illegible] OLD COUNTY ROAD	WINDSOR LOCKS	CT	6096
[illegible]	[illegible] SOUTH CENTER STREET	[illegible]	[illegible] SOUTH CENTER STREET	WINDSOR LOCKS	CT	6096
[illegible]	10 TIMBER DRIVE	[illegible]	10 TIMBER DR	WINDSOR LOCKS	CT	6096
[illegible]	12 TIMBER DRIVE	[illegible]	12 TIMBER DRIVE	WINDSOR LOCKS	CT	6096
[illegible]	14 VILLAGE LANE	[illegible]	14 VILLAGE LN	WINDSOR LOCKS	CT	6096

[illegible]	117 RAYMOND ROAD	[illegible]	117 RAYMOND ROAD	WINDSOR LOCKS CT	6096
[illegible]	11 VILLAGE LANE	[illegible]	11 VILLAGE LANE	WINDSOR LOCKS CT	6096
[illegible]	144 OLD RAYMOND ROAD	[illegible]	144 OLD RAYMOND ROAD	WINDSOR LOCKS CT	6096
[illegible]	19 JUNIPER DRIVE	[illegible]	19 JUNIPER DRIVE	WINDSOR LOCKS CT	6096
[illegible]	19 PRESTON ROAD	[illegible]	19 PRESTON ROAD	WINDSOR LOCKS CT	6096
[illegible]	9 VILLAGE LANE	[illegible]	9 VILLAGE LN	WINDSOR LOCKS CT	6096
[illegible]	33 WOODBRIDGE DRIVE	[illegible]	33 WOODBRIDGE DR	WINDSOR LOCKS CT	6096
[illegible]	15 MERRIMAN LANE	[illegible]	15 MERRIMAN LANE	WINDSOR LOCKS CT	6096
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[illegible]	11 SACKRIDA ROAD	[illegible]	11 SACKRIDA ROAD	WINDSOR LOCKS CT	6096
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[illegible]	23 COPPER DRIVE	[illegible]	23 COPPER DR	WINDSOR LOCKS CT	6096
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[illegible]	18 VILLAGE LANE	[illegible]	18 VILLAGE LANE	WINDSOR LOCKS CT	6096
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[illegible]	58 ALICIA TERRACE	[illegible]	58 [illegible]	[illegible]	[illegible]
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[illegible]	2 ALICIA ROAD	[illegible]	2 ALICIA RD	WINDSOR LOCKS CT	6096
[illegible]	6 WOODBRIDGE DRIVE	[illegible]	6 WOODBRIDGE DR	WINDSOR LOCKS CT	6096
[illegible]	372 SOUTH CENTER STREET	[illegible]	372 [illegible]	WINDSOR LOCKS CT	6096
[illegible]	13 PINE HILL ROAD	[illegible]	13 PINE HILL RD	WINDSOR LOCKS CT	6096
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[illegible]	1 VILLAGE LANE	[illegible]	1 VILLAGE LANE	WINDSOR LOCKS CT	6096
[illegible]	14 TIMBER DRIVE	[illegible]	14 TIMBER DRIVE	WINDSOR LOCKS CT	6096
[illegible]	386 SOUTH COUNTRY ST	[illegible]	386 SOUTH COUNTRY ST	WINDSOR LOCKS CT	6096
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[illegible]	33 JUNIPER DRIVE	[illegible]	33 JUNIPER DR	WINDSOR LOCKS CT	6096
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[illegible]	6 TIMBER DRIVE	[illegible]	6 TIMBER DRIVE	WINDSOR LOCKS CT	6096
[illegible]	365 OLD COUNTY ROAD	[illegible]	115 RIVERSIDE DRIVE APT 12D	NEW YORK NY	10024

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046-128-006	349 SOUTHWEST AVENUE	SEIBERT MARK A & GENOVESE STACI	1349 SOUTHWEST AVENUE	WINDSOR LOCKS	CT	6096
053-127-061	5 TINKER DRIVE	RANDOLPH JOEL W	5 TINKER DRIVE	WINDSOR LOCKS	CT	6096
043-093-002	54 GAYLORD ROAD	PRESTE CAROL Z	20 TENCH ST	ENFIELD	CT	6082
051-127-153-0003	9 VILLAGE LANE	GILLWORTH-DIENE BRIDGETT &	9 VILLAGE LA	WINDSOR LOCKS	CT	6096
051-127-156	300 SOUTHWEST AVENUE	PINE MEADOW V&L LLC	560 HALFWAY HOUSE RD	WINDSOR LOCKS	CT	6096
053-127-058	16 TINKER DRIVE	GIANTONIO ANDREW & JENNIFER D	16 TINKER DRIVE	WINDSOR LOCKS	CT	6096
046-127-132	28 COPPER DRIVE	DOODY MARK J & KATHLEEN C	28 COPPER DRIVE	WINDSOR LOCKS	CT	6096
046-127-154	39 COPPER DRIVE	LIVERSIDGE KATHERINE	39 COPPER DRIVE	WINDSOR LOCKS	CT	6096
051-127-010-0003	4 WOODRIDGE DRIVE	LEE JUNG HAE & KEON CHANG	4 WOODRIDGE DR	WINDSOR LOCKS	CT	6096
047-127-146	7 COPPER DRIVE	NATALE NICHOLAS J & KIMBERLY A	7 COPPER DRIVE	WINDSOR LOCKS	CT	6096
047-104-001	244 SOUTH ELM STREET	WALKER KIRK G	244 SOUTH ELM ST	WINDSOR LOCKS	CT	6096
051-091-005	280 SOUTH CENTER STREET	WINDSOR LOCKS TOWN OF	50 CHURCH ST	WINDSOR LOCKS	CT	6096
047-127-144	11 ALMA ROAD	HINDU SABHA OF CONNECTICUT INC &	11 ALMA ROAD	WINDSOR LOCKS	CT	6096
051-127-153-0035	550 OLD COUNTY ROAD	WGUV WINDSOR LOCKS LLC	8000 TOWERS CRESCENT DRIVE STE 1425	VIENNA	VA	22182
047-127-149	19 COPPER DRIVE	SYLVIA DOUGLAS W & JOANNE E	19 COPPER DRIVE	WINDSOR LOCKS	CT	6096
053-127-059	9 PINE HILL ROAD	ROBINSON DIANE S & DOUGLAS L	9 PINE HILL ROAD	WINDSOR LOCKS	CT	6096
051-127-010-0033	15 WOODRIDGE DRIVE	CASSELLO JOANNE & BROWN CHARLES A	15 WOODRIDGE DR	WINDSOR LOCKS	CT	6096
053-127-016	133 RAYMOND ROAD	LEVESQUE DANIEL R & JAKE	133 RAYMOND RD	WINDSOR LOCKS	CT	6096

APPENDIX C

SITE LIGHTING PRODUCT INFORMATION



D-Series Size 1
LED Area Luminaire

Introduction

The modern styling of the D-Series features a highly refined aesthetic that blends seamlessly with its environment. The D Series offers the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.

The photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. D Series outstanding photometry aids in reducing the number of poles required in area lighting applications with typical energy savings of 65% and expected service life of over 100,000 hours.

Specifications

EPA:

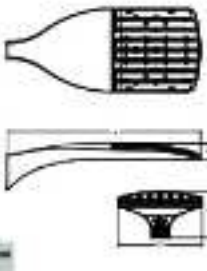
Length:

Width:

Height Kit:

Height Kit:

Weight:



design excel

Items marked by a shaded background qualify for the Design Select program and ship in 15 days or less. To learn more about Design Select, visit www.cooperlighting.com/designselect.
*Lens ordering time for details

Ordering Information

EXAMPLE: DSX1 LED P7 40K 70CRI T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

DSX1 LED

Series	Optic	Color temperature*	Color Rendering Index*	Distribution		Voltage	Mounting
DSX1 LED	Forward optics P1 P5 P2 P6 P3 P7 P4 P8 P9 Rotated optics P10 P12 P11 P13	Blue enriched (70 CRI only) 30K 3000K 40K 4000K 50K 5000K Blue enriched (70 CRI only, not available with all fixture configurations)* 27K 2700K 30K 3000K 40K 4000K 50K 5000K	Not for 27K Not for 27K Not for 27K Not for 27K Not for 27K Not for 27K Not for 27K Not for 27K	AFR Automotive front row T1S Type 1 Short T2M Type 2 Medium T3M Type 3 Medium T3LG Type 3 Long Gasket T4M Type 4 Medium T4VS Type 4 Very Short T5VS Type 5 Very Short T5W Type 5 Wide BLC Backlight control LCCO Left corner cutoff RCCO Right corner cutoff	SPA Square pole mounting RPA Round pole mounting SPUMBA Square pole mounting (universal mounting bracket) RPUMBA Round pole mounting (universal mounting bracket) WBA Wall bracket SPA2 Square pole mounting, 2 @ 180° RPA2 Round pole mounting, 2 @ 180° SPA3 Square pole mounting, 3 @ 90° RPA3 Round pole mounting, 3 @ 90° SPA4 Square pole mounting, 4 @ 90° RPA4 Round pole mounting, 4 @ 90° SPUMBA2 Square pole mounting, 2 @ 180° (universal mounting bracket) RPUMBA2 Round pole mounting, 2 @ 180° (universal mounting bracket) SPUMBA3 Square pole mounting, 3 @ 90° (universal mounting bracket) RPUMBA3 Round pole mounting, 3 @ 90° (universal mounting bracket) SPUMBA4 Square pole mounting, 4 @ 90° (universal mounting bracket) RPUMBA4 Round pole mounting, 4 @ 90° (universal mounting bracket) SPUMBA2 Square pole mounting, 2 @ 180° (universal mounting bracket) RPUMBA2 Round pole mounting, 2 @ 180° (universal mounting bracket) SPUMBA3 Square pole mounting, 3 @ 90° (universal mounting bracket) RPUMBA3 Round pole mounting, 3 @ 90° (universal mounting bracket) SPUMBA4 Square pole mounting, 4 @ 90° (universal mounting bracket) RPUMBA4 Round pole mounting, 4 @ 90° (universal mounting bracket) SPUMBA2 Square pole mounting, 2 @ 180° (universal mounting bracket) RPUMBA2 Round pole mounting, 2 @ 180° (universal mounting bracket) SPUMBA3 Square pole mounting, 3 @ 90° (universal mounting bracket) RPUMBA3 Round pole mounting, 3 @ 90° (universal mounting bracket) SPUMBA4 Square pole mounting, 4 @ 90° (universal mounting bracket) RPUMBA4 Round pole mounting, 4 @ 90° (universal mounting bracket) SPUMBA2 Square pole mounting, 2 @ 180° (universal mounting bracket) RPUMBA2 Round pole mounting, 2 @ 180° (universal mounting bracket) SPUMBA3 Square pole mounting, 3 @ 90° (universal mounting bracket) RPUMBA3 Round pole mounting, 3 @ 90° (universal mounting bracket) SPUMBA4 Square pole mounting, 4 @ 90° (universal mounting bracket) RPUMBA4 Round pole mounting, 4 @ 90° (universal mounting bracket)	120V 208V 240V 277V 347V 480V

Configurations		Miscellaneous	Hardware
Shipped installed MVOLT 7000V PE PER PER5 PER7	Lens, glass optical cover (standard, clear for P1 and P2) Field adjustable output Photocontrol, twist-lock receptacle, 208V Photocontrol, twist-lock receptacle, 240V Photocontrol, twist-lock receptacle, 480V Shorting cap **Shipped separately** BSW	**Shipped installed** XDDBXD Dark Bronze DBLXD Black DNAXD Natural Aluminum DWHXD White DDBTXD Textured Dark Bronze DBLBXD Textured Black DNATXD Textured Natural Aluminum DWHGXD Textured White	DDBXD Dark Bronze DBLXD Black DNAXD Natural Aluminum DWHXD White DDBTXD Textured Dark Bronze DBLBXD Textured Black DNATXD Textured Natural Aluminum DWHGXD Textured White

Ordering Information

Accessories

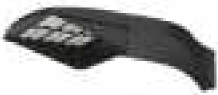
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Shield Accessories

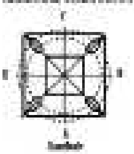


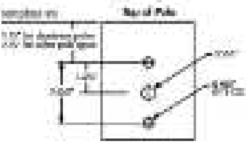
External Glare Shield (EGS)



House Side Shield (HS)

Drilling





Tenon Mounting Slipfitter

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DSX1 Area Luminaire - EPA

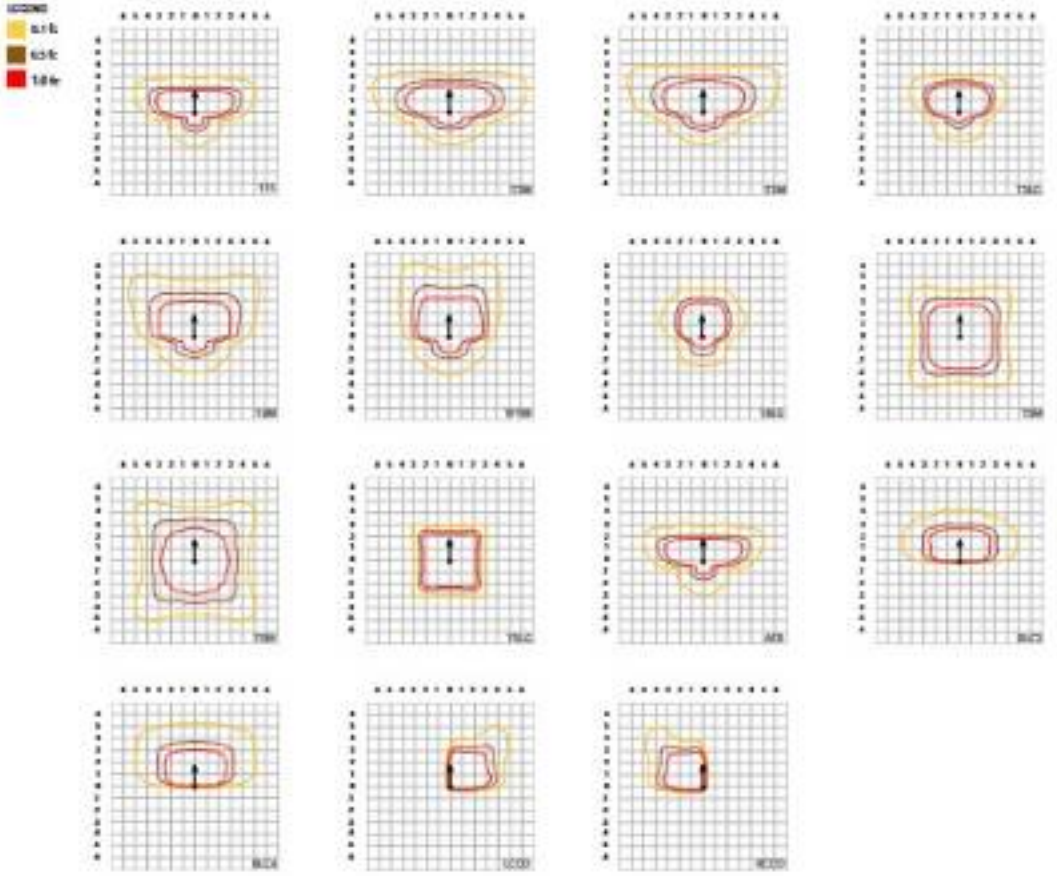
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Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's homepage.

Isofootcandle plots for the DSXT LED P9 40K RCR. Distances are in units of mounting height (25').



Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for various ambient temperatures (based on 25°C/77°F).

Ambient		Lumen Multiplier
0°C	32°F	1.04
5°C	41°F	1.03
10°C	50°F	1.02
15°C	59°F	1.01
20°C	68°F	1.00
25°C	77°F	0.99
30°C	86°F	0.98
35°C	95°F	0.96
40°C	104°F	0.95

Projected LED Lumen Maintenance

Data values are the projected performance projections for the platform tested in a 25°C ambient. Based on 10,000 hours of LED testing (IESNA LM-80-08) and projected per TM-21-11.

Actual performance may differ as a result of end-use operation and other environmental factors. See the Motion Sensor Default Settings table for specific values.

Operating Hours	Lumen Maintenance Factor
0	1.00
25,000	0.97
50,000	0.93
100,000	0.87

DALI Dimming Settings

DALI Value	% Voltage	% Current (typ.)
0	100%	100%
1	93%	93%
2	84%	84%
3	76%	77%
4	68%	69%
5	61%	62%
6	55%	56%
7	49%	50%
8	44%	45%
9	40%	41%
10	36%	37%
11	32%	33%
12	29%	30%
13	26%	27%
14	23%	24%
15	21%	22%
16	19%	20%
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97	1%	1%
98	1%	1%
99	1%	1%
100	1%	1%

*Note: Calculated values are based on original performance package data. Where manufacturing may cause for greater ±5% variation, see reference guide for industry leading package tolerance specifications. Actual typical watts and luminaire lumens may vary.

Electrical Load

	Performance Package	LED Count	Drive Current (mA)	Wattage	Input Voltage (V)					
					120V	208V	240V	277V	347V	480V
Standard (P1 / Zero Dimming)	P1	56	530	53	0.42	0.25	0.21	0.18	0.15	0.11
	P1	56	700	68	0.56	0.33	0.28	0.24	0.20	0.14
	P1	56	1050	104	0.85	0.49	0.43	0.37	0.30	0.21
	P2	84	1400	135	1.08	0.64	0.55	0.47	0.38	0.27
	P3	84	1800	162	1.31	0.76	0.66	0.56	0.46	0.32
	P4	84	2100	192	1.58	0.91	0.79	0.67	0.54	0.38
	P	84	2400	208	1.68	0.97	0.84	0.71	0.58	0.41
	P5	84	2800	236	1.91	1.10	0.96	0.81	0.66	0.46
	P6	84	3150	265	2.15	1.24	1.08	0.91	0.74	0.52
Bi-Level (Dim Output 10% on MS)	P10	84	530	53	0.42	0.25	0.21	0.18	0.15	0.11
	P11	84	700	68	0.56	0.33	0.28	0.24	0.20	0.14
	P12	84	1050	104	0.85	0.49	0.43	0.37	0.30	0.21
	P13	84	1400	135	1.08	0.64	0.55	0.47	0.38	0.27

LED Color Temperature / Color Rendering Multipliers

	3000K		4000K		5000K	
	Lumen Multiplier	4SDCM Ellipse	Lumen Multiplier	4SDCM Ellipse	Lumen Multiplier	4SDCM Ellipse
70CRI	0.91	Standard	0.96	Extended dual-bins	1.00	Extended dual-bins
80CRI	1.00	Standard	1.05	Extended dual-bins	1.10	Extended dual-bins
90CRI	1.00	Extended	1.05	Extended dual-bins	1.10	Extended dual-bins
95CRI	N/A	Extended	0.75	Extended dual-bins	1.10	Extended dual-bins
97CRI	0.75	Extended	N/A	Extended dual-bins	1.10	Extended dual-bins

*Lumen Factor (LF) figures are available as per optional request. Contact Technical Support for more information.

Motion Sensor Default Settings

Option	Reduced Dimmed Level	Ambient Light Override	Time Delay Operation	Dwell Time	Ramp-up Time	Ramp-down Time
MS	10%	100fc	Enabled at 100	5 Minutes	3 sec	5 sec
MS/DIM/TMR	10%	100fc	Enabled at 100	5 Minutes	3 sec	5 sec

Controls Options

Description	Description	Specifications	Recommended Applications	Notes
0-10V	0-10V adjust dimming of driver via dedicated leads for functional control by low voltage dimming leads.	Allows for full range dimming from high to low output.	0-10V device	Control to be used with other controls options to control the 0-10V leads.
0-10V (non-dim)	Drivers were shipped preset to the 10V maximum operation	No dimming to occur from system controls, always operate at 10V maximum	Non-dimming applications	Requires new separate switching from circuit. Luminaire operates at 10V as a constant current driver.
0-10V w/ TRIP	Same as 0-10V with TRIP input	Luminaire will control down from specified level when activated, or activate at current levels that prevent it from dimming output.	Same as 0-10V with TRIP input	Max 0-10V dimming level (minimum 10%) and current levels are factory set. Control to be used with other controls options to control the 0-10V leads.
DS	Allows sensor activation by a product IR Sensor suitable for Fire Alarm activation signal.	Luminaire dims when sensor goes to dim level	Activity tracked LEDs	Control to be used with other controls options to control the 0-10V leads.
MS/DIM/TMR	10% LED dimming level function for motion sensing photocell and sensitivity adjustment.	Motion and ambient light sensing/dimming response. Selected dimming will override sensor when manually connected to the digital output	10% for LEDs	Control to be used with other controls options to control the 0-10V leads.
0-10V w/ 0-10	Integrated 0-10V dimming driver allows a remote control module or sensor to signal the luminaire to dim to 10% or 10% light output	0-10V dimming signal to 0-10V dimming driver or integrated dimming driver. 10% or minimum 10% or 10% controlled by a secondary circuit	0-10V LED	0-10V dimming recommended for 10% dimming operation, may use to work with any input voltage down to 0.1V or 10%

Performance Data

Lumen Output

[illegible]

[illegible]

Performance Package	System Watts	CCT (Kelvin)	Drive Current (mA)	Distribution Type	40K (4000K, 70 CRI)					50K (5000K, 70 CRI)					57K (5700K, 70 CRI)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
[illegible]	[illegible]	[illegible]	[illegible]	T1S	1,216	1	0	1	114	8,304	1	0	2	129	8,442	1	0	2	362
				T2M	2,301	1	0	1	192	7,557	2	0	3	141	7,681	2	0	3	118
				T3M	1,351	1	0	1	142	7,204	1	0	3	149	7,192	1	0	3	112
				T4VL	4,189	1	0	1	129	6,200	1	0	3	133	6,304	1	0	3	106
				T4W	1,205	1	0	1	142	7,207	1	0	2	151	7,267	1	0	3	114
				T4VL	4,126	1	0	1	122	6,193	1	0	3	132	7,194	1	0	3	140
				T5W	1,146	1	0	1	140	7,018	1	0	3	152	7,187	1	0	3	115
[illegible]	[illegible]	[illegible]	[illegible]	T5W	2,689	0	0	2	140	7,040	1	0	2	144	8,003	1	0	2	139
				T5W	1,112	1	0	1	152	8,018	4	0	2	158	8,211	5	0	2	161
				T5VL	2,631	1	0	1	132	7,063	3	0	1	144	8,108	3	0	1	139
				B2U	1,305	0	0	2	109	5,124	0	0	2	109	5,621	0	0	2	111
				B2U	1,474	0	0	2	109	5,205	0	0	2	112	5,856	0	0	2	114
				B2U	1,340	0	0	2	106	5,411	0	0	2	109	5,602	0	0	2	112
				B3U	1,318	0	0	2	101	5,317	0	0	2	109	5,561	0	0	2	112
				B4U	1,176	1	0	2	114	8,304	1	0	2	129	8,442	1	0	2	362
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				T2M	2,268	2	0	2	187	9,661	2	0	3	142	9,829	2	0	3	145
				T3M	1,368	1	0	1	139	9,862	2	0	3	145	9,963	2	0	3	147
				T4VL	4,168	1	0	2	123	8,731	1	0	2	129	8,881	1	0	2	131
				T4W	1,182	2	0	1	140	9,909	2	0	3	146	10,033	2	0	3	148
				T4VL	4,092	1	0	2	120	8,552	1	0	2	126	9,332	1	0	2	136
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				T5W	1,102	1	0	1	144	10,195	4	0	2	159	10,359	5	0	2	153
				T5W	2,548	1	0	1	133	10,048	4	0	2	152	10,162	5	0	2	156
				T5VL	2,518	1	0	1	145	10,114	3	0	1	151	10,421	3	0	1	154
				B2U	1,311	0	0	2	103	7,303	0	0	2	105	7,390	0	0	2	107
				B3U	1,318	0	0	2	101	7,319	0	0	2	103	7,401	0	0	2	106
				B4U	1,073	1	0	2	103	7,305	1	0	2	106	7,305	1	0	2	108
				B4U	1,073	1	0	2	103	7,305	1	0	2	106	7,401	1	0	2	108
				T1S	1,199	1	0	2	107	10,438	1	0	2	154	10,621	1	0	2	152
[illegible]	[illegible]	[illegible]	[illegible]	T1S	14,000	2	0	3	108	19,447	2	0	3	150	19,913	2	0	3	142
				T2M	11,870	2	0	3	127	17,485	2	0	3	131	17,917	2	0	3	136
				T3M	11,356	2	0	4	120	15,762	2	0	4	133	16,033	2	0	4	132
				T4VL	11,178	2	0	3	115	13,294	2	0	3	120	12,168	2	0	3	121
				T4W	12,400	2	0	4	123	13,068	2	0	4	127	15,291	2	0	4	128
				T4VL	11,300	2	0	3	110	13,184	2	0	3	121	13,264	2	0	3	122
				T5W	11,406	2	0	4	122	14,865	2	0	4	128	14,729	2	0	4	140
[illegible]	[illegible]	[illegible]	[illegible]	T5W	11,700	4	0	3	116	18,171	4	0	3	161	18,662	4	0	3	146
				T5W	11,027	4	0	3	127	19,685	4	0	3	143	19,989	4	0	3	146
				T5VL	11,819	2	0	3	124	14,913	2	0	3	132	19,669	3	0	3	144
				B2U	9,600	0	0	3	94	10,811	0	0	3	98	10,926	0	0	3	100
				B3U	9,553	0	0	3	91	10,240	0	0	3	104	10,341	0	0	3	102
				B4U	9,600	1	0	3	94	10,811	1	0	3	98	10,926	1	0	3	100
				B4U	9,600	1	0	3	91	10,811	1	0	3	98	10,926	1	0	3	100
				T1S	11,000	2	0	3	108	19,447	2	0	3	150	19,913	2	0	3	142

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of configurations shown within the tolerances described within LM-79. Contact factory for performance data on any configurations not shown here.

Forward Optics

Performance Package	System Watts	CCT (Kelvin)	Drive Current (mA)	Distribution Type	40K (minimum)					50K (minimum)					57K (minimum)				
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
P4	52W	30	530	T1S	5,456	2	0	1	102	5,595	2	0	1	105	5,742	2	0	1	107
				T2M	5,357	2	0	1	101	5,494	2	0	1	103	5,639	2	0	1	106
				T3M	5,300	2	0	1	100	5,433	2	0	1	102	5,576	2	0	1	105
				T4M	5,197	2	0	1	98	5,327	2	0	1	100	5,468	2	0	1	103
				T5W	5,031	2	0	1	95	5,157	2	0	1	97	5,294	2	0	1	100
				T5M	5,031	2	0	1	95	5,157	2	0	1	97	5,294	2	0	1	100
				T5VW	5,031	2	0	1	95	5,157	2	0	1	97	5,294	2	0	1	100
				T6M	4,864	4	0	1	92	4,985	4	0	2	94	5,116	4	0	2	96
				T7M	4,579	5	0	1	87	4,693	5	0	1	89	4,816	5	0	1	91
				T8M	4,339	3	0	1	82	4,448	4	0	2	84	4,566	4	0	2	86
				BLC	11,990	0	0	1	98	12,290	0	0	1	101	12,616	0	0	1	103
				BLS	11,551	0	0	3	95	11,844	0	0	3	97	12,159	0	0	3	99
				BLW	11,199	1	0	3	91	11,484	1	0	3	94	11,788	1	0	3	97
				BLM	11,199	1	0	3	91	11,484	1	0	3	94	11,788	1	0	3	97
				AFR	5,456	2	0	1	102	5,595	2	0	1	105	5,742	2	0	1	107
P5	110W	30	1400	T1S	10,852	2	0	1	101	10,974	2	0	1	104	11,100	2	0	1	105
				T2M	10,651	2	0	1	99	10,771	2	0	1	102	10,894	2	0	1	103
				T3M	10,541	2	0	1	98	10,659	2	0	1	101	10,780	2	0	1	102
				T4M	10,339	2	0	1	96	10,455	2	0	1	99	10,573	2	0	1	100
				T5W	10,009	2	0	1	93	10,121	2	0	1	96	10,236	2	0	1	97
				T5M	10,009	2	0	1	93	10,121	2	0	1	96	10,236	2	0	1	97
				T5VW	10,009	2	0	1	93	10,121	2	0	1	96	10,236	2	0	1	97
				T6M	9,676	4	0	2	91	9,784	4	0	2	93	9,895	4	0	2	94
				T7M	9,111	5	0	1	86	9,212	5	0	1	87	9,316	5	0	1	88
				T8M	8,633	3	0	1	82	8,728	4	0	2	83	8,830	4	0	2	84
				BLC	11,990	0	0	1	98	12,290	0	0	1	101	12,616	0	0	1	103
				BLS	11,551	0	0	3	95	11,844	0	0	3	97	12,159	0	0	3	99
				BLW	11,199	1	0	3	91	11,484	1	0	3	94	11,788	1	0	3	97
				BLM	11,199	1	0	3	91	11,484	1	0	3	94	11,788	1	0	3	97
				AFR	10,852	2	0	1	101	10,974	2	0	1	104	11,100	2	0	1	105
P6	160W	30	1400	T1S	15,807	3	0	1	98	15,978	3	0	1	100	16,153	3	0	1	101
				T2M	15,507	3	0	1	97	15,675	3	0	1	98	15,847	3	0	1	99
				T3M	15,350	3	0	1	96	15,516	3	0	1	97	15,686	3	0	1	98
				T4M	15,057	3	0	1	94	15,220	3	0	2	95	15,387	3	0	2	96
				T5W	14,577	3	0	1	91	14,735	3	0	2	92	14,897	3	0	2	93
				T5M	14,577	3	0	1	91	14,735	3	0	2	92	14,897	3	0	2	93
				T5VW	14,577	3	0	1	91	14,735	3	0	2	92	14,897	3	0	2	93
				T6M	14,101	4	0	2	88	14,254	4	0	2	89	14,410	4	0	2	90
				T7M	13,271	5	0	1	83	13,415	5	0	1	84	13,562	5	0	1	85
				T8M	12,579	4	0	2	79	12,715	4	0	2	80	12,854	4	0	2	80
				BLC	17,466	0	0	1	95	17,656	0	0	1	97	17,850	0	0	1	98
				BLS	16,827	0	0	3	92	17,010	0	0	3	93	17,196	0	0	3	94
				BLW	16,315	1	0	3	89	16,493	1	0	3	90	16,674	1	0	3	91
				BLM	16,315	1	0	3	89	16,493	1	0	3	90	16,674	1	0	3	91
				AFR	15,807	3	0	1	96	15,978	3	0	1	98	16,153	3	0	1	99

Performance Data

Lumen Output

[illegible] Data is considered to be representative of configurations shown within the tolerances described within LM-79.
Contact factory for performance data on any configurations not shown here.

Forward Optics

Performance Package	System Watts	CCT (Kelvin)	Drive Current (mA)	Distribution Type	40K				50K				57K			
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
				T1S	27,745	2	0	1	120	25,988	2	0	1	139	24,562	2	0	1	131
				T2M	29,866	3	0	1	130	27,971	3	0	1	150	26,438	3	0	1	141
				T3M	29,311	3	0	1	126	27,450	3	0	1	147	25,942	3	0	1	139
				T4VS	29,006	3	0	2	125	27,164	3	0	2	146	25,674	3	0	2	138
				T4M	27,429	3	0	2	118	25,691	3	0	2	138	24,282	3	0	2	130
				T5VS	29,067	3	0	2	125	27,222	3	0	2	146	25,732	3	0	2	138
				T5W	27,573	3	0	2	119	25,822	3	0	2	139	24,414	3	0	2	131
FF	180W	5K	1400	T6S	27,842	4	0	3	120	26,081	4	0	3	140	24,648	4	0	3	132
				T6M	27,603	4	0	3	119	25,857	4	0	3	139	24,442	4	0	3	131
				T6VL	27,811	4	0	3	120	26,044	4	0	3	140	24,613	4	0	3	132
				R2C1	21,589	0	0	1	116	20,229	0	0	1	109	19,109	0	0	1	103
				R2C2	24,858	0	0	4	133	23,287	0	0	4	125	21,995	0	0	4	118
				R2C3	24,681	1	0	2	132	23,121	1	0	2	124	21,838	1	0	2	117
				R3C3	24,681	1	0	2	132	23,121	1	0	2	124	21,838	1	0	2	117
				R3C4	23,647	1	0	3	127	22,151	1	0	3	119	20,919	1	0	3	112
				T1S	30,745	3	0	1	133	28,802	3	0	1	155	27,211	3	0	1	146
				T2M	30,909	3	0	1	134	28,955	3	0	1	155	27,348	3	0	1	147
				T3M	30,201	3	0	2	131	28,292	3	0	2	152	26,720	3	0	2	144
				T4VS	31,296	3	0	1	137	29,318	3	0	1	161	27,687	3	0	1	152
				T4M	29,805	3	0	2	130	27,922	3	0	2	150	26,370	3	0	2	142
				R1C4	31,983	2	0	5	137	29,965	2	0	5	161	28,300	2	0	5	152
FH	210W	4K	1750	T5W	30,864	3	0	4	139	28,913	3	0	4	156	27,299	3	0	4	147
				T6W	28,549	3	0	3	133	26,743	3	0	3	144	25,253	3	0	3	136
				T5VL	29,165	4	0	2	135	27,324	4	0	2	156	25,795	4	0	2	149
				R3C2	27,562	0	0	4	131	25,820	0	0	4	123	24,376	0	0	4	116
				R3C3	28,191	0	0	5	134	26,409	0	0	5	126	24,924	0	0	5	119
				R3C4	30,498	1	0	4	145	28,572	1	0	4	136	26,967	1	0	4	128
				R4C4	29,488	1	0	4	140	27,627	1	0	4	131	26,071	1	0	4	124
				T1S	34,819	4	0	1	151	32,623	4	0	1	176	30,799	4	0	1	166
				T2M	35,007	4	0	1	152	32,799	4	0	1	176	30,971	4	0	1	167
				T3M	34,201	4	0	2	148	32,044	4	0	2	172	30,256	4	0	2	163
				T4VS	35,446	4	0	1	154	33,218	4	0	1	182	31,368	4	0	1	172
				T4M	33,756	4	0	2	147	31,631	4	0	2	170	29,868	4	0	2	161
				T5VS	34,426	4	0	2	150	32,258	4	0	2	173	30,457	4	0	2	164
				T5W	32,683	4	0	2	142	30,626	4	0	2	165	28,911	4	0	2	156
				R1C4	35,230	3	0	5	151	33,012	3	0	5	177	31,166	3	0	5	168
				R2C2	32,429	3	0	4	139	30,388	3	0	4	163	28,688	3	0	4	154
				R2C3	32,186	3	0	4	138	30,161	3	0	4	162	28,474	3	0	4	153
				T6W	32,374	3	0	3	139	30,337	3	0	3	163	28,635	3	0	3	154
				T6VL	33,319	4	0	3	143	31,229	4	0	3	167	29,483	4	0	3	158
				T7M	31,365	4	0	3	135	29,393	4	0	3	158	27,749	4	0	3	149
				T8M	34,871	4	0	4	150	32,680	4	0	4	175	30,851	4	0	4	165
				T5W	34,625	5	0	4	135	32,581	5	0	4	153	30,793	5	0	4	145
				T6VL	34,019	5	0	3	133	32,012	5	0	3	150	30,256	5	0	3	141
				R2C1	31,734	0	0	4	124	29,775	0	0	4	116	28,177	0	0	4	110
				R2C2	34,571	0	0	5	135	32,542	0	0	5	127	30,806	0	0	5	120
				R2C3	35,998	1	0	4	141	33,958	1	0	4	160	32,146	1	0	4	151
				R3C3	35,998	1	0	4	141	33,958	1	0	4	160	32,146	1	0	4	151
				R3C4	35,019	1	0	4	134	34,000	1	0	4	151	32,196	1	0	4	143

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of configurations shown within this tolerance (matched within 5 SDCM).
Contact factory for performance data on any configurations not shown here.

Ordering Options

Performance Package	System Watts	LED Count	Drive Current(mA)	Distribution Type	40K (4000K, 70 CRI)				50K (5000K, 70 CRI)				57K (5700K, 70 CRI)			
					Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
P10	109W	48	530	T1S	11,364	1	0	2	104	11,803	1	0	2	108	11,727	1	0	2	107
				T2M	10,918	1	0	2	100	11,340	1	0	2	104	11,265	1	0	2	103
				T2S	11,218	1	0	2	103	11,651	1	0	2	107	11,576	1	0	2	106
				T3M	11,218	1	0	2	103	11,651	1	0	2	107	11,576	1	0	2	106
				T3S	11,364	1	0	2	104	11,803	1	0	2	108	11,727	1	0	2	107
				T4M	11,364	1	0	2	104	11,803	1	0	2	108	11,727	1	0	2	107
				T4S	11,364	1	0	2	104	11,803	1	0	2	108	11,727	1	0	2	107
				T5M	11,364	1	0	2	104	11,803	1	0	2	108	11,727	1	0	2	107
				T5S	11,364	1	0	2	104	11,803	1	0	2	108	11,727	1	0	2	107
				TFT	11,364	1	0	2	104	11,803	1	0	2	108	11,727	1	0	2	107
P11	133W	48	700	T1S	14,727	1	0	2	111	15,297	1	0	2	115	15,202	1	0	2	114
				T2M	14,151	1	0	2	106	14,696	1	0	2	110	14,605	1	0	2	110
				T2S	14,539	1	0	2	109	15,100	1	0	2	113	15,006	1	0	2	113
				T3M	14,539	1	0	2	109	15,100	1	0	2	113	15,006	1	0	2	113
				T3S	14,727	1	0	2	111	15,297	1	0	2	115	15,202	1	0	2	114
				T4M	14,727	1	0	2	111	15,297	1	0	2	115	15,202	1	0	2	114
				T4S	14,727	1	0	2	111	15,297	1	0	2	115	15,202	1	0	2	114
				T5M	14,727	1	0	2	111	15,297	1	0	2	115	15,202	1	0	2	114
				T5S	14,727	1	0	2	111	15,297	1	0	2	115	15,202	1	0	2	114
				TFT	14,727	1	0	2	111	15,297	1	0	2	115	15,202	1	0	2	114
P13	154W	48	850	T1S	16,818	1	0	2	109	17,469	1	0	2	113	17,364	1	0	2	113
				T2M	16,156	1	0	2	105	16,784	1	0	2	109	16,683	1	0	2	108
				T2S	16,602	1	0	2	108	17,245	1	0	2	112	17,145	1	0	2	111
				T3M	16,602	1	0	2	108	17,245	1	0	2	112	17,145	1	0	2	111
				T3S	16,818	1	0	2	109	17,469	1	0	2	113	17,364	1	0	2	113
				T4M	16,818	1	0	2	109	17,469	1	0	2	113	17,364	1	0	2	113
				T4S	16,818	1	0	2	109	17,469	1	0	2	113	17,364	1	0	2	113
				T5M	16,818	1	0	2	109	17,469	1	0	2	113	17,364	1	0	2	113
				T5S	16,818	1	0	2	109	17,469	1	0	2	113	17,364	1	0	2	113
				TFT	16,818	1	0	2	109	17,469	1	0	2	113	17,364	1	0	2	113
P15	218W	64	1050	T1S	21,818	1	0	2	100	22,661	1	0	2	104	22,530	1	0	2	103
				T2M	20,957	1	0	2	96	21,763	1	0	2	100	21,642	1	0	2	99
				T2S	21,531	1	0	2	99	22,361	1	0	2	103	22,236	1	0	2	102
				T3M	21,531	1	0	2	99	22,361	1	0	2	103	22,236	1	0	2	102
				T3S	21,818	1	0	2	100	22,661	1	0	2	104	22,530	1	0	2	103
				T4M	21,818	1	0	2	100	22,661	1	0	2	104	22,530	1	0	2	103
				T4S	21,818	1	0	2	100	22,661	1	0	2	104	22,530	1	0	2	103
				T5M	21,818	1	0	2	100	22,661	1	0	2	104	22,530	1	0	2	103
				T5S	21,818	1	0	2	100	22,661	1	0	2	104	22,530	1	0	2	103
				TFT	21,818	1	0	2	100	22,661	1	0	2	104	22,530	1	0	2	103

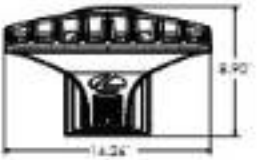
Dimensions





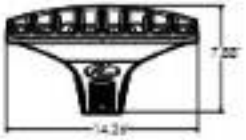
DSX1 with BPA, BPAS, SPAS, SPABN mount
Weight: 36 lbs





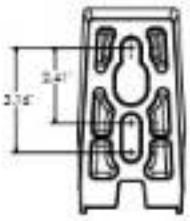
DSX1 with WBA mount
Weight: 38 lbs



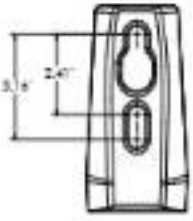


DSX1 with WA mount
Weight: 39 lbs

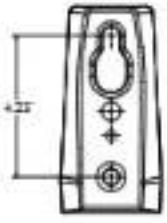
SPA (STANDARD ARM)



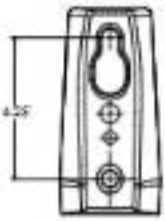
BPA



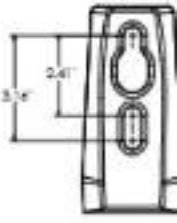
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SPABN



nLight Control - Sensor Coverage and Settings

nLight Sensor Coverage Pattern







FEATURES & SPECIFICATIONS

ENERGY USE

Fast-track design of the CLX series Size 1 with its thermally efficient high performance LED technology, is ideal for many commercial and municipal applications, such as parking lots, plazas, campuses, and streetscapes.

CONSTRUCTION

Single-piece die-cast aluminum housing has integral heat sink fins to optimize thermal management through conductive and convective cooling. Modular design allows for ease of maintenance and future light engine upgrades. The LED drivers are not mounted in direct contact with the casting to provide low operating temperatures and long life. Housing door compartment is completely sealed against moisture and contains terminal for connection to field. Wireless control per ANSI C136.41 (or 10) for NEMA and IEC 1.5A for mounting. With, NEMA, 1000 and NEMA. Low EPA 0.6 ft² for optimized pole wind loading.

FINISH

Exterior parts are protected by a zinc infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures a minimum 3 mils thickness for a finish that can withstand extreme exterior climate changes without cracking or peeling. Available in both textured and smooth architectural finishes.

Coastal Construction (CCE)

Optional corrosion resistant construction is engineered with added corrosion protection in materials and finish per minimum of base material under super durable paint. Provides additional corrosion protection for applications near coastal areas. Finish is salt spray tested to meet 5,000 hours per ASTM B117 with scribe rating of 10. Additional load times may apply.

OPTICS

Precision-molded proprietary silicone lenses are engineered for superior area lighting distribution, uniformity, and pole spacing. Light engines are available in selected 3000 K, 4000 K and 5000 K (70 CRI cartridge sizes. 80CRI configurations are also available. The D Series Size 1 has zero-uplight and qualifies as a "Night-time Friendly" product, measuring it is consistent with the IESNA and Dark Sky Association's criteria for eliminating wasteful uplight.

ELECTRICAL

Light engine configurations consist of high-efficacy LEDs mounted to metal-core circuit boards to maximize heat dissipation and promote long life (up to 100,000 hours at 25°C). Class 1 electronic drivers are designed to have a power factor >90%, THD <20%, and are expected life of 100,000 hours with <1% failure rate. Easily serviceable 10kV surge protection device meets a minimum Category C Low operation per ANSI/IEEE C62.41.2.

STANDARD CONTROLS

The DSX1 LED area luminaire has a universal platform of control options. DSX Size 1 comes standard with 0-10V dimming drivers. Dusk to dawn or dusk-can be ordered as options. NEMA twist-lock photocell receptacles, integral motion sensor with on-board photocell, features field-adjustable programming and are available for mounting heights up to 40 feet. Control Options 'T' features a hybrid dimmer that allows a second nominal circuit to switch all light engines to either 30% or 50% light output.

nLIGHT AIR CONTROLS

The DSX1 LED area luminaire is also available with nLight® AIR for the ultimate in wireless control. This powerful network platform provides out-of-the-box fixture sensing and photocontrol functionality and is suitable for mounting heights up to 40 feet. Once commissioned using a smartphone and the easy-to-use nLIGHT® app, all nLight AIR equipped luminaires can be operated, enabling motion sensor and photocell group response without the need for additional equipment. Scheduled dimming with motion sensor overrides can be achieved with no need with the nLight hardware. Additional information about nLight AIR can be found here.

INSTALLATION

Integral mounting arm allows for fast mounting using 1 of holes on round 8" drilling and accommodates pole drilling's from 2.41 to 2.13" on center. The standard "SPA" option for square poles and the "RPA" option for round poles use the #1 drilling. For #2 pole drillings, use SPA2 or RPA2. Additional mounting arms are available including a wall bracket (WBA) and mast arm (MA) option that allows luminaire attachment to a 2 3/8" horizontal round arm.

LISTINGS

UL listed to meet U.S. and Canadian standards. UL rated for wet locations. Light engines are IP66 rated. Luminaire is IP66 rated. Rated for -40°C minimum ambient.

DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.

International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature where only.

CONFORMANCE REQUIREMENT

BAA - Buy American Act: Product with the BAA option qualifies as a domestic end product under the Buy American Act as implemented by the FAR and DFARS. Product with the BAA option also qualifies as manufactured in the United States under DOT Buy America regulations.

BABA - Build America Buy America: Product with the BAA option also qualifies as produced in the United States under the definitions of the BABA Domestic Buy America Act.

Please refer to www.acuitybrands.com/buy-american for additional information.

WARRANTY

5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at www.acuitybrands.com/support/terms-and-conditions.

Note: Actual performance may differ as a result of end-user environment and application. All values are design or typical values, measured under laboratory conditions @ 25°C. Specifications subject to change without notice.

LITHONIA LIGHTING®

Catalog Number	
Notes	
Type	

FEATURES & SPECIFICATIONS

INTENDED USE — These specifications meet or exceed USA standards only. Square Straight Steel is engineered purpose light pole for up to 39' foot mounting heights. This pole provides a robust yet cost effective option for mounting area lights and floodlights.

CONSTRUCTION —

Pole Shaft: The pole shaft is of uniform dimension and wall thickness, and is made of a weldable-grade, hot rolled, commercial quality steel tubing with a minimum yield of 55 KSI (11 gauge, 0.120"), or 50 KSI (7 gauge, 0.179"). Shaft is one-piece with a full-length longitudinal high frequency electric resistance weld. Uniformly square cross-section with flat sides, small corner radii and excellent torsional qualities. Available shaft widths are 4", 5" and 6".

Pole Top: Options include 4" tenon top, drilled for side mount fixture, tenon with drilling (no holes exists handhole) and open top. Side drilled and open top poles include a removable top cap.

Handhole: A reinforced handhole with grounding provision is provided at 18" from the base on side A. Positioning the handhole lower may not be possible and requires engineering review; consult Info Support Outdoor for further information. Every handhole includes a cover and cover attachment hardware. The handhole has a nominal dimension of 2.5" x 5".

Base Cover: A durable ABS plastic two-piece full base cover, finished to match the pole, is provided with each pole assembly. Additional base cover options are available upon request.

Anchor Base/Bolts: Anchor base is fabricated from steel that meets ASTM A36 standards and can be altered to match existing foundations; consult factory for modifications. Anchor bolts are manufactured to ASTM F1554 Standards grade 55, 55 KSI minimum yield strength and tensile strength of 75 95 KSI. Top threaded portion (nominal 1.1") is hot-dipped galvanized per ASTM A 153.

HARDWARE — All structural fasteners are high-strength galvanized carbon steel. All non-structural fasteners are galvanized or zinc-plated carbon steel or stainless steel.

FINISH — Extra durable painted finish is coated with TGIC (Triglycidyl Iso-cyanurate) Polyester powder that meets 5A and 5B classifications of ASTM D3359. Powder coat finishes include Dark Bronze, White, Black, and Natural Aluminum colors. Architectural Colors and Special Finishes are available by quote and include, but are not limited to Paint over Hot-dipped Galvanized, RAL Colors, Custom Colors and Extended Warranty Finishes.

GOVERNMENT PROCUREMENT —

BAA – Buy America Act: Product qualifies as a domestic end product under the Buy American Act as implemented in the FAR and DFARS. Product also qualifies as manufactured in the United States under FHA Buy America regulations.

BABA – Build America Buy America: Product qualifies as produced in the United States under the definitions of the Build America, Buy America Act.

Please refer to www.acuitybrands.com/buy_america.pdf for additional information.

INSTALLATION — Do not erect poles without having fixtures installed. Factory supplied templates must be used when setting anchor bolts. Lithonia Lighting will not accept claim for incorrect anchorage placement due to failure to use Lithonia Lighting factory templates. If poles are stored outside, all protective wrapping must be removed immediately upon delivery to prevent finish damage. Lithonia Lighting is not responsible for the foundation design.

WARRANTY — 5-year limited warranty. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: www.acuitybrands.com/support/warranty/terms-and-conditions

NOTE: Actual performance may differ as a result of end-user environment and application.
Specifications subject to change without notice.



Anchor Base Pr

SS

SQUARE STRAIGHT ST

BAA BA

SSS Square Straight Steel Poles

Load times will vary depending on options selected. Consult with your sales representative.

Example: SSS.20 SC DM.CBAS.070

SSS					
Series	**Nominal fixture mounting height**	**Nominal shaft base size/wall thickness[1]**	**Mounting[2]**	**Options**	**Finish**
SSS	10'-30' (See SSS Accessories, add-A-Leveler pole height. See 20-ft example, SSP1 Series.) See technical information table for complete ordering information.)	8C 4" (10 g (0.135")) 9C 4" (11 g (0.179")) 12C 5" (10 g (0.135")) 14C 5" (13 g (0.179")) 16C 6" (13 g (0.179")) See technical information table for complete ordering information.)	**Tenon mounting** FT Open-top (includes slip-cap) 1.25 2 3/8" O.D. (2" NPS) 2.375 2 3/8" O.D. (2 1/2" NPS) 2.50 2 1/2" O.D. (2" NPS) 2.75 4" O.D. (2 1/2" NPS) **DM.CBAS.CBMAST Drill mounting** DM1.CBAS 1 at 180° DM2.CBAS 2 at 180° DM3.CBAS 3 at 90° DM4.CBAS 4 at 90° **DDC drill mounting** DM1.DDC 1 at 180° DM2.DDC 2 at 180° DM3.DDC 3 at 90° DM4.DDC 4 at 90° **CLS Drill mounting** DM1.CLS 1 at 180° DM2.CLS 2 at 180° DM3.CLS 3 at 90° DM4.CLS 4 at 90° **Base drill mounting** To be added as suffix + drill information: **EX: SHACB** for SHAC base, drilling 1 at 90°	**Universal tenon drilled** HD Vibration dampers[3] 2Way 2-Mode Vibration dampers drilled[3] HA ay Base-mounted arm bracket (1 feature)[4,5] HB ay 1-arm wall-mount bracket (specify arm)[5] HBA/HA ay 1-arm mast-arm bracket and accessory cover[5] LPR1/2 ay 1/2" coupling[6] LPR3/4 ay 3/4" coupling[6] LPR1 ay 1" coupling[6] NPT1/2 ay 1/2" threaded nipple[6] NPT3/4 ay 3/4" threaded nipple[6] NPT1 ay 1" threaded nipple[6] LTB ay Lamp handhole[7,8] SAND/BP Sand anchor bolt template (standard in galvanized) SH HH Steel handhole cover (standard in plastic, finish is unpainted)[8] EBK/EBK.DPC 2 Piece steel base cover (standard in galvanized)[9] EC Exterior coating[10] EHH Extra anchor bolts (Not Easily when anchor bolts are not needed) EH Lamper service access handhole cover. Lockwasher. NRC NEC 410.30 compliant up-shroud handhole (Must EH Labelled) EE EE Ground and Isolated Bonded to NEC compliant ground NAA Nipple shroud to match Ha Compliance[11] NNN ay special ordered Match pole/ fixture order as prepared[12]	**Tenon shoulder paint colors** DDBXSP Black Bronze DNAXSP Black DRAXSP Natural Aluminum DWHXSP White DSAXSP Sandstone DGCXSP Charcoal Gray DSLXSP Ivory Sparrow DNBXSP Bronze Pearl DSAXSP Sand Silver DSBXSP Textured Black Bronze DNAXSP Textured Black DRAXSP Textured Natural Aluminum DWHXSP Textured White **Other finishes** GALV Galvanized Finish **Architectural colors and special finishes[13]** DNAXSP / GALV Painted over galvanizing XP10 3 year warranty extension XP15 5 year warranty extension DNA.RAL# Non-standard RAL colors. Lightning texture finishes: see Steel Finishes Custom color Numerical name assigned through Customer Care "Custom Color Process"

Accessories: Order as separate catalog number.
HH.BC.DC Plaque for 1 1/2 drill mtgs.
HH.BC.TR Plaque for 3 Mount/4 drill mtgs.
VIBR.mod.1 Field installed vibration dampers (retrofit style)

NOTES:

1. Wall thickness will be specified with a "T" (STD Gauge) or a "D" (U.S. Gauge) in nominal column: "T" - 0.105" | "D" - 0.179".
2. If upper tenon is desired, include top cap. When ordering more than one mounting, list the lowest mounting first, then the next mounting, and so on. Specify by ordering options, from bottom to top. For combinations not available, request a special consideration.
   Example: DM2.CBAS.120
3. Refer to the luminaire spec sheet for the correct drilling template pattern and accessories compatibility.
4. One 8" mast arm is standard. All accessories are mounted 3 generatrices (HA, HB, HBA, LPR) are to centerline of mast. Add the tenon size and length.
   Example: For a length of a 10-ft. 4 generatrix mounted tenon, order HA.4.120.
5. Specify location and external wire when ordering options.
   Add "Z" (Specify the height above finished grade) to the end of the catalog number, separated with a dash (-).
   Example: HA – 1 mast ARM Slot – 20.3
   Add "W" (Specify external wire from handhole) to ALL drilling options. Refer to the Handhole Orientation diagram below.
   Example: DM2.CBAS.070.W (1 1/2" penetration) – LPR.HA.W
6. Horizontal tenons, 90° ± 1.188" O.D. tenon standard, with radius curve providing 72" rise and 2 3/8" O.D. If ordering two horizontal arms of the same height, specify with HA qty.
   Example: HA.4.060.
7. HB does not come with LH handhole or handhole cover. Fixture must be supplied for wire leads to reach fixture.
8. Increase replace that comes with LH. Cast in. Not sized. LH.1 tenon size. Other may require more gaps.
9. Combination of tenon top and drill mount requires custom handhole. Not included. Quote.
10. Plastic finish hole cover and base cover standard with all poles. Green color equivalent. Additional paint is an extra cost option (contact).
11. Not with LA.EC.
12. Use when with wall fills, plates, or supports.
13. Non-catalog original order number. Also for replacement parts or part order issues, contact finish support or paint sales team. If a mast is on same poles matching, approximate specify three orders in order, as a single project list. A customer can use two to create, please prepare with multiple orders. Available: DNBXSP, or, or not.
14. Also the optional drawings with Standard shroud register DIA. Shaft orders available are drawings "Architectural Colors Standard Lead times may be extended up to 7 weeks due to paint requirements.

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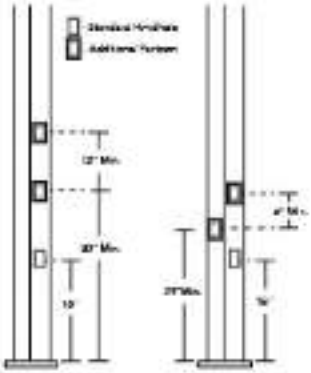
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Shaft base size	Bolt circle A	Bolt projection B	Base square C	Base plate thickness	Template description*	Anchor bolt description	Bolt size (in.) Dia. L or C	Anchor bolt/ Template Combo
4"C	8" - 0"	3.25" - 3.75"	8" - 8.25"	0.75"	ABSTEMPLATE-PFA0004	ABSB-0	3/4 x 30 x 3	ABSSS-4C
4"SL	8" - 0"	3.38" - 3.75"	8" - 8.25"	0.625"	ABSTEMPLATE-PFA0004	ABSB-0	3/4 x 30 x 3	ABSSS-4SL
5"	10" - 12"	3.5" - 4"	10"	1"	ABSTEMPLATE-PFA0010	ABSB-0	1 x 36 x 4	ABSSS-5
6"	10" - 12"	4" - 4.50"	12.5"	1"	ABSTEMPLATE-PFA0011	ABSB-0	1 x 36 x 4	N/A

*Paper template standard. Add "CE" to end of description for the steel template.

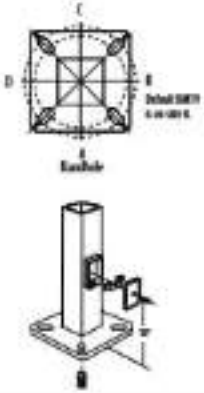
BASE & BOLT DETAIL



SQUARE STEEL HANDHOLE AND FESTOON - PLACEMENT RULES



HANDHOLE DETAIL



IMPORTANT INSTALLATION NOTES:

- Do not erect poles without base plates installed.
- Factory supplied templates must be used when setting anchor bolts. Lithonia Lighting will not accept claims for incorrect anchorage placement due to failure to use Lithonia Lighting factory templates.
- If poles are stored outside, all protective wrapping must be removed immediately upon delivery to prevent finish damage.
- Lithonia Lighting is not responsible for the foundation design.
- Bolt circles have +/- 1/2" tolerance.

CAUTION: These specifications are intended for general purpose only. Lithonia Lighting reserves the right to change material or design, without prior notice, in a continuing effort to upgrade its products.

APPENDIX D

SOUND STUDY

OSTERGAARD ACOUSTICAL ASSOCIATES

EVALUATION OF SITE SOUND EMISSIONS

BDL LOGISTICS PARK II
Windsor Locks, CT

Prepared for: **Scannell Properties**

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Date: **4 May 2025**

OAA File: **4841A**

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INTRODUCTION

Ostergaard Acoustical Associates (OAA) was asked to assist with evaluation of potential sound emissions from BDL Logistics Park II, a proposed high-end warehouse development in the Town of Windsor Locks, Connecticut. Farmland will be redeveloped to accommodate two high-end warehouse facilities. Much of the area comprises non-noise-sensitive uses including various commercial and industrial uses to the south and west. Woodlands are immediately north of the site with residences beyond; residential receptors also abut the east side of the site.

The proposed facility has the potential to operate at any hour, with personnel vehicle activity primarily concentrated during the day and intermittent truck arrivals and departures occurring throughout the day and night. As such, nearby residential receptors are of most acoustical concern given their potential noise sensitivity. This report addresses the on-site noise radiated to off-site residential receptors. The purpose of this sound study is to analyze future site sound emissions for comparison with applicable code limits and to evaluate the potential for noise complaints.

There is some history here to discuss. OAA is aware that the site was subject to a previous application featuring two warehouse buildings, with a different size and layout than discussed in this report. A sound study associated with that application was prepared by Epsilon Associates Inc. It is important to note that OAA's sound study and report utilizes OAA's approaches, methodologies, and data and is independent of previous efforts. One item of interest from the former study is ambient sound survey work carried out by Epsilon, which is exclusive of any analyses, still relevant to the site, and pertinent to OAA's analyses. A review of ambient sound level survey findings indicates that existing average daily minimum background sound levels in the area are 48-to-49 dB(A). These results provide input on how quiet the area currently gets; data are also helpful to compare to State and local noise codes in subsequent analyses.

Sound emissions from the facility were evaluated against applicable Town of Windsor Locks, Hartford County, and the State of Connecticut noise codes. The site will contribute steady sound from rooftop HVAC equipment. Additionally, the site will contribute intermittent sound from on-site truck and car[1] activity.

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[1] Note that throughout this report, the term "car" collectively refers to personal passenger vehicles including automobiles, vans, pick-ups, or SUVs. The term "truck" refers to heavy trucks such as over-the-road or line-haul trucks.

Work by OAA was overseen by Benjamin C. Mueller, P.E., with assistance from OAA Staff. The representative at Scannell Properties coordinating the project is Daniel Madrigal. This report is an updated version of our 23 September 2024 report and was revised to reflect minor plan changes.

SITE AND VICINITY

Figure 1 is based on aerial imagery obtained from Google Earth Pro software, and shows the site and vicinity; the site is outlined in red. The site is located northeast of the intersection of Route 20 and Kennedy Road. The site currently comprises farmland in the B-1, Business Zone 1, district. The project is proposing rezoning to the I-1, Industrial, district.

Based on a review of available online documents, the land uses and zoning in the various directions is as follows:

- North of the site is the Waterworks Brook Conservation Area and hiking trails in the R-AA, Residence AA, district which is owned by the Town of Windsor Locks. Beyond that are single-family residences approximately 1,800 feet away from the site, in the R-A, Residence A, district.

- Multi-family residential properties are located east of the site in a mixture of the MFSD, Multiple Family Special Development, district, and the B-2, Business Zone 2, district. Beyond those residences is Interstate-91.

- Immediately south of the site is Route 20. Beyond that is Olds and Whipple Pond Open space and various commercial and industrial uses in the Town of Windsor.

- West of the site is Old Country Road. Across Old Country Road to the west are multiple industrial uses in the I-3, Industrial Zone 3, district. Along the east side of Old Country Road, northwest of the site, is a senior care facility and multi-family residences in the MFSD district.



Figure 1 — Aerial image showing the proposed warehouse development site and vicinity in Windsor Locks, CT. The approximate site boundary is outlined in red.

Plans call for the development of the site to accommodate two high-end warehouse buildings. A warehouse approximately 387,500 ft² is proposed in the western portion of the site. A second warehouse, approximately 494,000 ft², is proposed in the eastern portion of the site. The western building has truck docks along the southwest façade and personnel parking along the northeast façade. The eastern building has trucks docks along the northeast and southwest facades of the building, while parking areas for employees are primarily located along the short sides of the buildings. All site access will be provided via a single driveway that connects to Old Country Road. A ring road allows all vehicles to circulate around the site to their respective destination. In coordination with the design team, screening in the form of a solid fence and noise control barrier, ranging from 6-to-15 feet in height, is proposed along the north and east side of the site.

Specific traffic counts depend on the end user tenant. While the extent of onsite traffic and the hours of operation are unknown, the sound study follows the same conservative estimations as the traffic study does and scrutinizes a traffic dispersal promulgated by the Institute of Transportation Engineers Trip Generation Manual, representative for a project of this size. Based on ITE calculations, the site could see almost 265 trucks a day, or about 11 per hour. Typical warehouse facilities operate 24/7 with much of the activity during the daytime hours; nighttime operations are generally used to prepare for the next day. ITE hourly dispersal data supports this as truck activity is not evenly spread out across all hours. During the midday, truck counts can approach 30 trucks in a given hour. During the night however, counts are lower and range from 0-to-12 in an hour.

REGULATIONS/GOALS

When developing a site of this type, it is appropriate to consider how sound from the project will likely be received, especially by noise-sensitive receptors. Sound produced by a typical warehouse facility is characterized by car and truck parking lot activity, such as idling and vehicle movement, as well as steady HVAC equipment. The noise from these sources was evaluated and compared to applicable noise code limits as well as acoustical goals based on professional experience. As a general practice, when motor vehicles are on-site, they are considered part of a site's sound emissions; when vehicles are on public roads, they are not.

State and local noise codes were reviewed.

The State of Connecticut code discusses noise in CGS Sections 22a-67 to 22a-76 as well as in State Regulations Sections 22a-69-1 to 22a-69-7.4. The code regulates maximum sound emissions by source and receiving land uses when measured at the receiving property line. Class C land uses are nominally non-sensitive uses, such as these facilities. Class B land uses are potentially noise-sensitive such as offices; Class A land uses include residences and other noise-sensitive receptors. For sound propagating from Class C land uses to Class A land uses, maximum sound emissions are limited to 61 dB(A) during the daytime, that is 0700-to-2200 hours, and 51 dB(A) during the nighttime, 2200-to-0700 hours. The maximum sound emissions limit for Class C land uses to Class B uses is 66 dB(A) at all times. The limit from Class C to other Class C land uses is 70 dB(A) at all times. Similarly, for sound propagating from Class B land uses to Class A land uses, maximum sound emissions are limited to 55 dB(A) during the daytime, that is 0700-to-2200 hours, and 45 dB(A) during the nighttime, 2200-to-0700 hours. The limit at all other land use categories is 62 dB(A). In addition, no impulsive sounds over 80 dB(A) peak may be produced at night at Class A receptors. These code limits only apply for stationary sources such as HVAC equipment. The State provides adjustments to the above limits for short-term excursions based on the duration of the sound. If a source occurs for 15 minutes or less of any hour, the limits above may be increased by 3 dB. If the sound occurs for 7½ minutes or less, the limit is increased by 6 dB; if it occurs for 1 minutes or less, the limit is increased by 8 dB. These limits specifically exclude mobile noise sources, such as trucks. Per code language, such an exclusion ceases to apply once the truck is in position of a loading dock, turned off, and started the process of unloading. Noise from motor vehicles is regulated separately.

Connecticut State code, Sections 14-80a-1 through 14-80a-10a, specifically limits noise from motor vehicles depending on speed and type of ground surface. For vehicles over 10,000 pounds, a vehicle traveling on a hard site is limited to 88 dB(A) at 50 feet if traveling under 35 mph and 92 dB(A) at 50 feet for speeds of 35 mph or more. For soft sites, the limits are 2 dB lower. For typical passenger vehicles, the limits for hard sites are 74 dB(A) for speeds less than 35 mph and 81 dB(A) for speeds greater than 35 mph; again, soft site limits are 2 dB lower in level. Tangentially related to the above is Section 22a-174-18 limits motor vehicle idling to no more than 3 minutes.

The Town of Windsor Locks regulates sound similar to the State and uses the same limits, except that receptors are based on zoning as opposed to land use. Under Town code, any legal non-conforming use shall be deemed in the zone which corresponds to its actual use. Vacant parcels are assumed to have no use and therefore are not receptors of noise; should any vacant parcels become developed, they would then become protectable receptors subject to all noise regulations. There is also a difference in the definition of daytime and nighttime. The Town uses slightly different periods than the State, defining the daytime hours between 0700 and 2200 hours Monday through Saturday and between 0900 and 2200 hours on Sunday, the nighttime hours are the complementary hours. The Town also limits impulsive noise at residential receptors to 80 dBA peak. Certain sounds are excluded from noise code limits including warning devices such as back up alarms. Motor vehicle noise is regulated in a separate section and is required to meet the State motor vehicle noise limits.

Based on OAA's experience, the State and local limits are in line with many noise ordinances found throughout the country. There are some discrepancies that should be discussed, however. The Windsor Locks code does not provide adjustments for short term processes as the State does. This potentially makes the local ordinance more stringent, however it should be noted that such adjustments are not detrimental to the public health as the more permissive limits allow only base exceptions must be considered short duration sounds of higher level. A discussion regarding motor vehicle noise is also helpful. Both local and State codes require motor vehicles to meet State Code Sections 14-80a-1 through 14-80a-10a. These limits are relative to the vehicle and not the receptor, hence they are not useful for identifying potential noise impacts. The State code goes a step further to note that motor vehicle noise is exempt from limits until the time when a truck is at a loading dock, turned off, and has begun the process of unloading. Hence, separate project noise goals are required for on-site truck activity to meet the intent of noise code limits to minimize the potential for any acoustical impact.

In summary, to comply with local and State noise code limits all HVAC and loading/unloading sound should not exceed 51 dBA/ 1-foot inside the boundary of any residence. OAA has assumed the park receptors would be considered as residential, with the qualification that the park is only used during the daytime hours. Therefore at the Wilderness Brook Park, these receptors should not exceed 61 dBA. To minimize the exception of on-site motor vehicle sound, OAA recommends following the State noise code as guidance for this intermittent activity. As such, heavy truck sound emissions should strive to not exceed 51 dBA at all residential dwellings. At the park an appropriate goal for the park is 61 dBA. Note that these project goals are not applied at the boundary of the site, but rather at the façade of residential dwellings or

this is where receptors are during the nighttime hours. Park noise goals are applied at the location of the nearest established trail. This approach takes into account that receptors are currently exposed to local and distant transportation sources. Meeting code and project goals will minimize the potential for noise complaints and any disruptions during the nighttime sleeping hours.

EXPECTED SOUND EMISSIONS

Acoustical modeling software, specifically Cadna/A, was used to create and analyze site sound emissions for the site. The model takes into account relevant parameters between the noise source and receptor positions of interest to predict how sound will propagate. In addition to distance attenuation, the model accounts for the effects of terrain, various types of ground cover, shielding by structures, and reflections from buildings. In the model, buildings are white, and the site property line is outlined in red. Waterworks Brook walking trails are shown with white lines. The recommended fence and noise control barrier are shown in light blue and pink. The specific mitigation plan comprises a 515 foot long, 10-foot-tall segment (pink) in the southeast, a 1,350 foot long 15-foot-tall segment (light blue) in the northeast corner, a 160 foot long 10-foot-tall segment (pink) in the north, and finally a 1,875 foot long 6-foot-tall fence along the northwest part of the site. Details on fence and barrier material are provided in a subsequent section. Offsite elevation information was obtained from CT ECO (in partnership with the University of Connecticut and the Connecticut Department of Energy and Environmental Protection) and was incorporated into the model. Although the model includes a great deal of elevation data, for clarity in the models in this report, only major elevation changes (5-foot and 10-foot incremental on and offsite are made visible as teal lines.

The acoustical model shows the results graphically as A-weighted sound level contours, in 1 dB increments, and tabulates the summed A-weighted sound levels at seven discrete locations typifying nearby receptors, designated as Receptors A through C. All sound level contours are at ear height, 5 feet above grade. Receptors A through F are at the façade of nearest residences and are 30 feet above grade, to typify a second story receptor. Receptor G represents a receptor, 5 feet above grade, on the closest Waterworks Brook walking trail to the site.

Model results show only sound contributed by the proposed warehouse facilities. Ambient sound sources, such as traffic, are not included in the modeled sound emissions.

Rooftop HVAC Sound

Rooftop HVAC equipment produces noise that is steady in nature and hence will not vary over time. While a mechanical design has not been completed, noise sources were selected based on experience and placed on the rooftop of the buildings. A conservative estimation results in 46 HVAC units that are 25-tons or larger. The eastern building will have 26 units, while the western building will have 20 units; these units were each modelled to be 93 dB(A) re 1 picowatt based on typical manufacturer's sound data. This conservatively estimates that warehouses will be heated and cooled; most warehouses are only heated and hence use fewer and smaller HVAC units.

The noise from the rooftop units was included in the HVAC sound model. Noise sources were placed 4 feet above the rooftop, and sound was projected off site. Figure 2 shows the results graphically and tabulates the summed A-weighted sound levels at the nearby receptor locations of concern. The results show that with all rooftop units operating, HVAC sound levels at off-site receptors are in the 33-to-42 dB(A) range.

This conservative analysis shows that there is little concern about HVAC sound. HVAC sound is sufficiently controlled via distance and roof shielding effects so that this noise is below the 51 dB(A) nighttime State and local code limit at residences. The gray 50 dB(A) contour does not travel off site. Note that for these model results to be realized, acoustical performance of HVAC equipment must be acoustically aligned with what was modelled.



Figure 2 — Model of proposed warehouse development site sound emissions from rooftop HVAC equipment. Colored contours are A-weighted sound emission 4 feet above grade. Receptors 1 through 8 are 25 feet above grade.

Truck Activity

OAA has had the opportunity to visit various logistics and warehouse facilities over the years to survey and document the sounds of truck activity. The warehouse facilities will have over-the-road and line-haul trucks active on site. There is also the potential to have terminal tractors (yard tractors) on site. Line-haul trucks deliver trailers from off-site whereas terminal tractors do not leave the site and move trailers between the docks and parking areas. Terminal tractors are responsible for the majority of back-up movements on-site. From an acoustical aspect, terminal tractors and line-haul trucks are acoustically equivalent.

Truck noise in a typical dock area can routinely produce maximum sound levels of 79 dB(A) at 50 feet. This sound level was determined by looking at a wide variety of truck activity, such as truck movement, air brakes, back-up alarms, and coupling/decoupling, and distilling it to a single conservative maximum level and spectrum for use in acoustical studies such as this. A driving truck exhibits slightly lower maximum sound levels of 74 dB(A) at 50 feet. Loading and unloading activity can produce maximum sound levels of 70 dB(A) at 50 feet. Idling trucks produce maximum levels of 62 dB(A) at 50 feet. The height of a truck source for all truck activity is modelled at a conservative height of 8 feet above grade. OAA has found that using these maximum sound levels at this height ensures a conservative approach to evaluating truck sound. When specific individual activities are modelled at their actual height and sound level, results are typically lower in level than predicted below. For example, many of the high sound level activities, such as back-up alarms and air brakes, occur at a height of 4 feet above grade, not 8 feet. This is a critical detail when evaluating the effectiveness of a sound barrier or berm and when considering offsite topography. It is also important to recognize that all truck noise is dynamic in nature. Maximum sound levels only occur for a short duration and are not representative of the constant sound level produced by on-site trucks.

Trucks were modelled at various on-site locations. To be conservative, multiple trucks were modelled at the same time. Of particular interest are the worst-case truck locations; these occur when truck activity occurs closest to off-site receptors. Driving trucks are modelled as pink "+" symbols, truck yard activity (coupling/decoupling, back-up alarms, etc.) is modelled as white "+" symbols, and idling trucks are modelled as green "+" symbols. Figures 3 and 4 show the resulting site sound emissions contributed off-site by on-site truck operations when added to the HVAC sound model. Several conclusions can be drawn from these models:

Figure 3 shows twelve trucks driving around the site simultaneously as well as twelve idling trucks at loading docks. Maximum emissions of 50-to-51 dB(A) occur at Receptors A and B, which are the closest multi-family residences to the east. At other residences to the east, emissions are around 47 dB(A). Farther away at residences to the north, emissions are 42-to-43 dB(A). Trail patrons at Receptor C show levels up to 39 dB(A). This model represents one of the busiest hours expected with a total of 74 trucks active on site. In isolation, no one truck event is shown to exceed 66 dB(A) at any off-site receptor.

Figure 4 shows six truck yard activity events occurring simultaneously at the edges of the truck dock areas closest to nearby residences. Model results typify intermittent truck court events such as back-up alarms, coupling/decoupling, or air brake releases. Such events are short in duration, most less than one second long, and would never naturally occur at exactly the same time as modelled. Despite this conservatism, site sound emissions to the east are in the 49-to-51 dB(A) range, while emissions are as high as 44 dB(A) to the north. Of note is that many of these sources would qualify as impulsive in nature and would fall under the more permissive local and State code limits for such sources, if applicable.

Results show that with the effects of terrain and distance as well as the presence of the 10-to-13-foot-tall noise control barriers and 8-foot-tall fence, on-site activity sound is well controlled and will meet the nighttime project noise goal of 51 dB(A) at all residences. On-site truck operations also meet project noise goal of 51 dB(A) at all Waterworks Brook hiking trails. There is also full compliance with code limits at all commercial and industrial uses. It is worth noting that all truck activity shown is dynamic in nature, and therefore model results in Figures 3 and 4 do not represent continuous noise produced by these sources, rather a moment in time during an occurrence. When truck activity has ceased, site sound emissions will closer resemble those shown in the HVAC model.

Note that specific acoustical models of loading and unloading sound were not prepared. Such activity is lower in level than what is shown in Figures 3 and 4, and as a result will also not be an issue. All loading and unloading sound will fully comply with 51 dB(A) code limit at the site boundary.

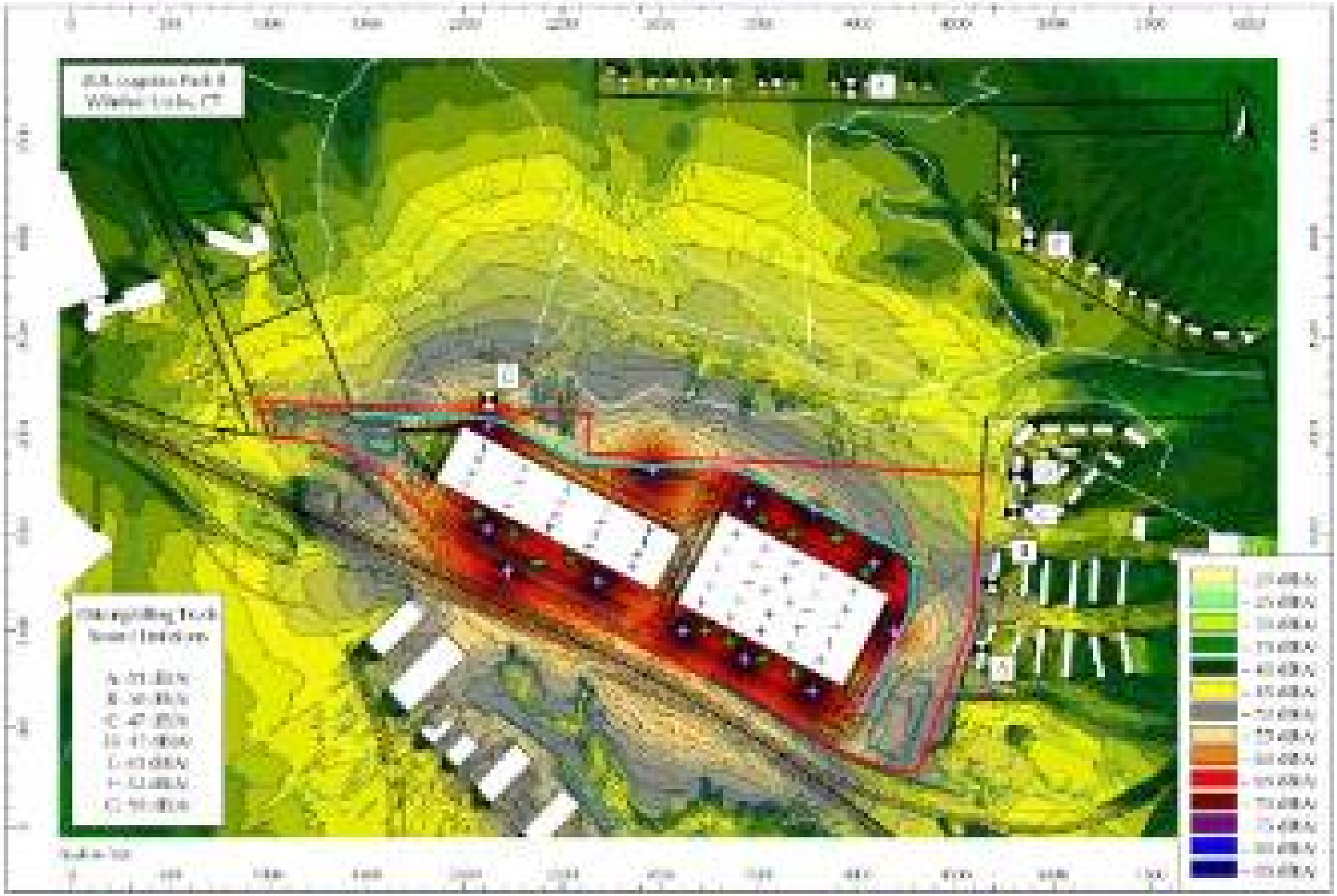


Figure 2— Model of proposed warehouse development site sound emissions from driving and idling trucks. Colored contours are A-weighted sound emission 5 feet above grade. Receptors 1 through 8 are 25 feet above grade.



Figure 4 — Model of proposed warehouse development site sound emissions from trucks. Colored contours are A-weighted

While off-site truck routes are not regulated by code, they were reviewed to evaluate their potential acoustical impact. All truck activity is expected to travel to and from Interstate-91 via Route 20 and Old Country Road. This route keeps all trucks in proximity to other commercial and industrial uses and does not directly pass any residential receptors. As such, offsite trucks will blend in with existing traffic activity and are not expected to have any negative acoustical impact on the area.

RECOMMENDATIONS

1. To ensure the project goal is met to the north, construct a noise control barrier as shown in the figures. The 10 and 15-foot-tall sound barrier segments shown in light blue and pink in the figures above, should be carried to their respective heights above the paved roadway/truck court and extend to the approximate lengths discussed above. Note that to be effective, the noise control barrier needs to meet the following requirements:

   - ☐ The barriers need to be solid, without openings, and be of sufficient surface weight to force sound to travel over or around rather than leak through. The recommended minimum surface weight is 7 lbs/ft^2.

   - ☐ Gaps between the bottom of the barrier and the ground should be minimized to the extent feasible. Any gaps in excess of 6 inches need to be coordinated for acoustical design concerns.

   - ☐ Appropriate materials of construction for the barrier include ¾-inch-thick sheet steel piling, precast or poured-in-place concrete, pressure treated wood, or acoustical metal/PVC panels. It is not necessary for the walls to have any sound-absorptive surfaces.

   - ☐ Non-acoustical elements of the barrier design need to be overseen by qualified professionals, such as a structural engineer, for aspects such as wind load.

2. The almost 1,900-foot-long solid fence in the northwest portion of the site (shown in light blue), should be carried to a height of 6 feet above grade and should be constructed using a solid commercial-grade vinyl fence material. Such material should have a surface weight of about 1 lbs/ft^2 or greater to work as an effective sound barrier.

3. Proceed with HVAC equipment plans keeping in mind acoustical performance to ensure noise goals are met.

CONCLUSION

An industrial development comprising two high-end warehouses is proposed in Windsor Locks, Connecticut. Residences are nearby to the east and distant to the north. Also to the north is a conservation area with hiking trails. In all other directions there are non-noise-sensitive commercial/industrial uses, as well as major roadways. State and local noise codes were relied upon for criteria for rooftop HVAC equipment and other continuous noise sources such as loading and unloading. Sound emissions from mobile sources are regulated separately; regulations for motor vehicles are relative to the source and not useful for evaluating off-site impacts. Noise codes were also used as guidance to develop a project goal for onsite vehicles to minimize the acoustical impact of site sound on nearby residences.

Analyses show that HVAC sound emissions meet code limits at all receptors. Intermittent truck sound emissions also meet the code limits at all nearby residential receptors with the inclusion of a robust sound barrier/fence of varied heights along much of the north and east parts of the site; all maximum sound levels produced by trucks will comply with the steady nighttime noise code limit of 51 dB(A) at residential receptors. Maximum sound emissions along the hiking trails will not exceed 59 dB(A) which are below the steady daytime noise code limit of 61 dB(A). Site sound emissions also comply with applicable noise code limits at all commercial and industrial receptors. Off-site truck routes are not forecasted to have any negative acoustical impact on the area as the routes are short and direct to Route 20 and Interstate 91. No residential areas are impacted by these truck routes.

The proposed site plan and proposed on-site sound barrier and fence represent good acoustical planning and will put the site in a position to minimize the potential for noise complaints. As a result, no negative acoustical impact is anticipated.



LAND DEVELOPMENT PLANS FOR WINDSOR LOCKS - INDUSTRIAL PARK
ISSUED FOR PERMIT

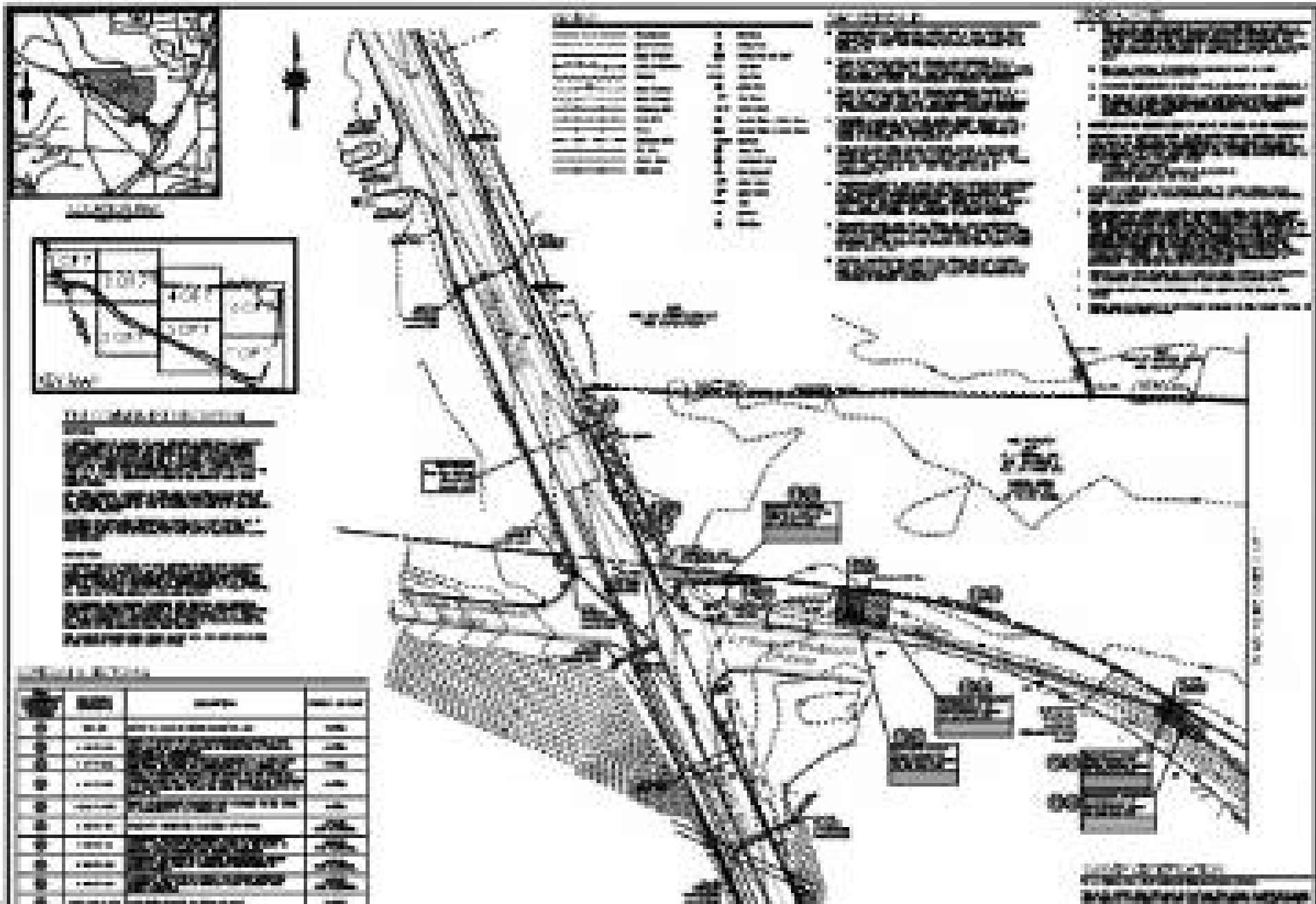
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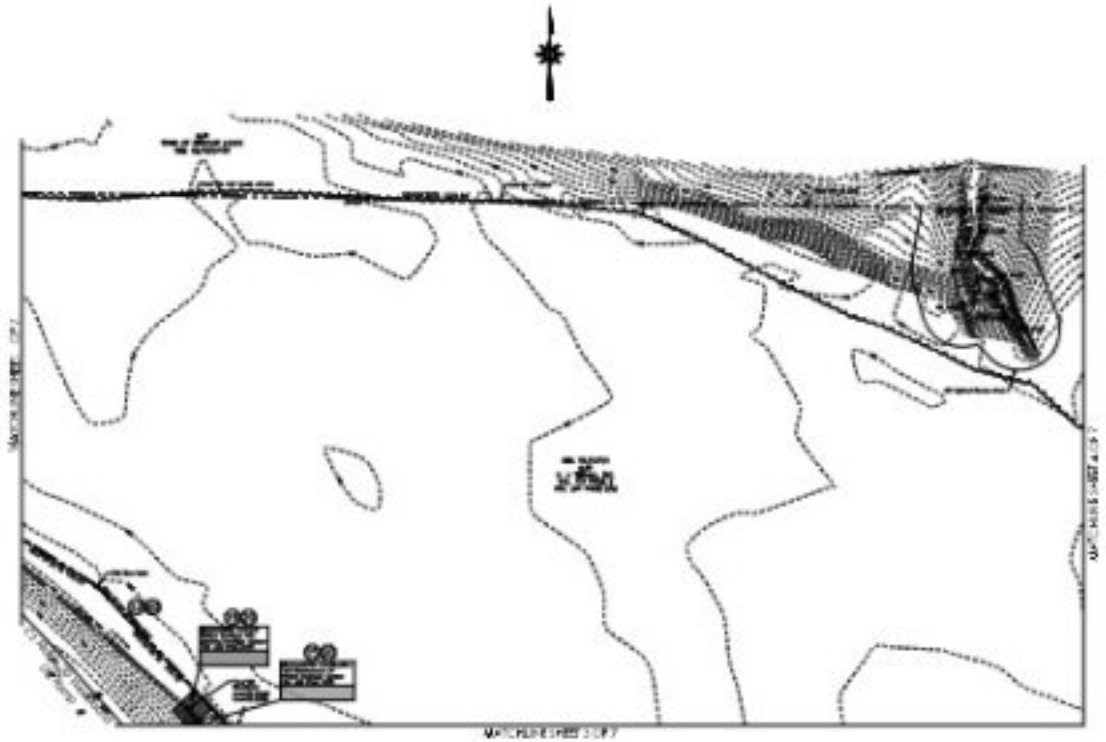


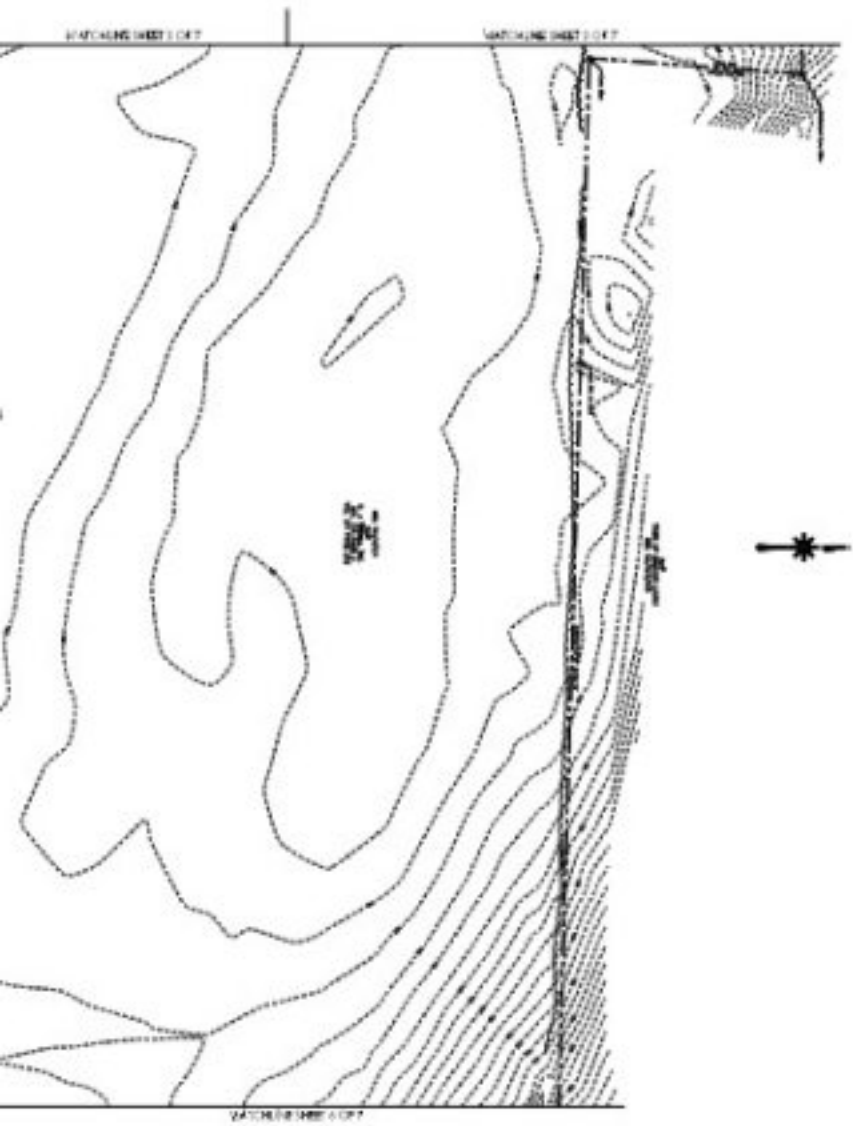
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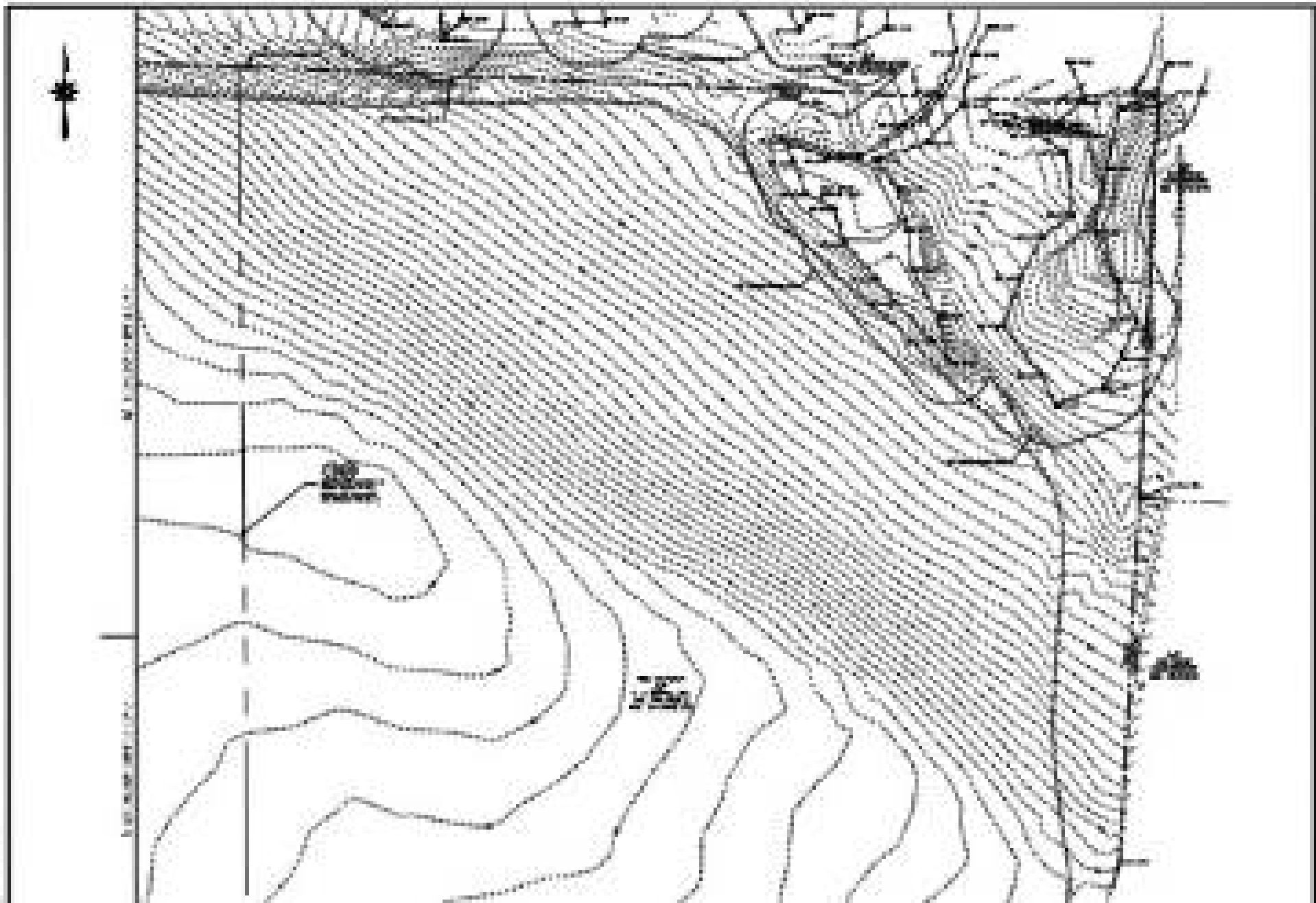
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SCANNELL PROPERTIES #698, LLC
8801 RIVER CROSSING BLVD., SUITE 300
INDIANAPOLIS, IN 46240

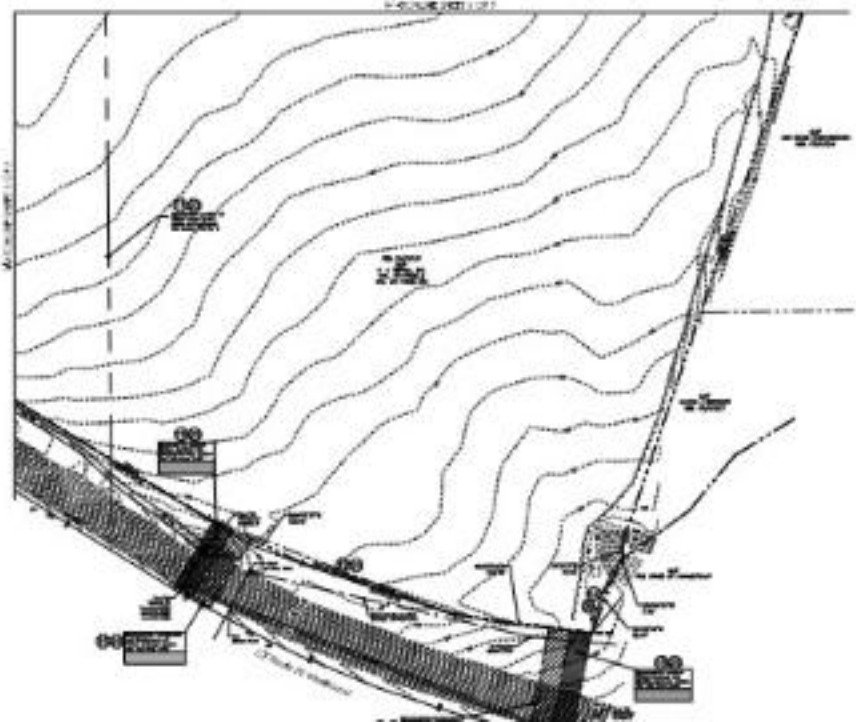
PREPARED BY:

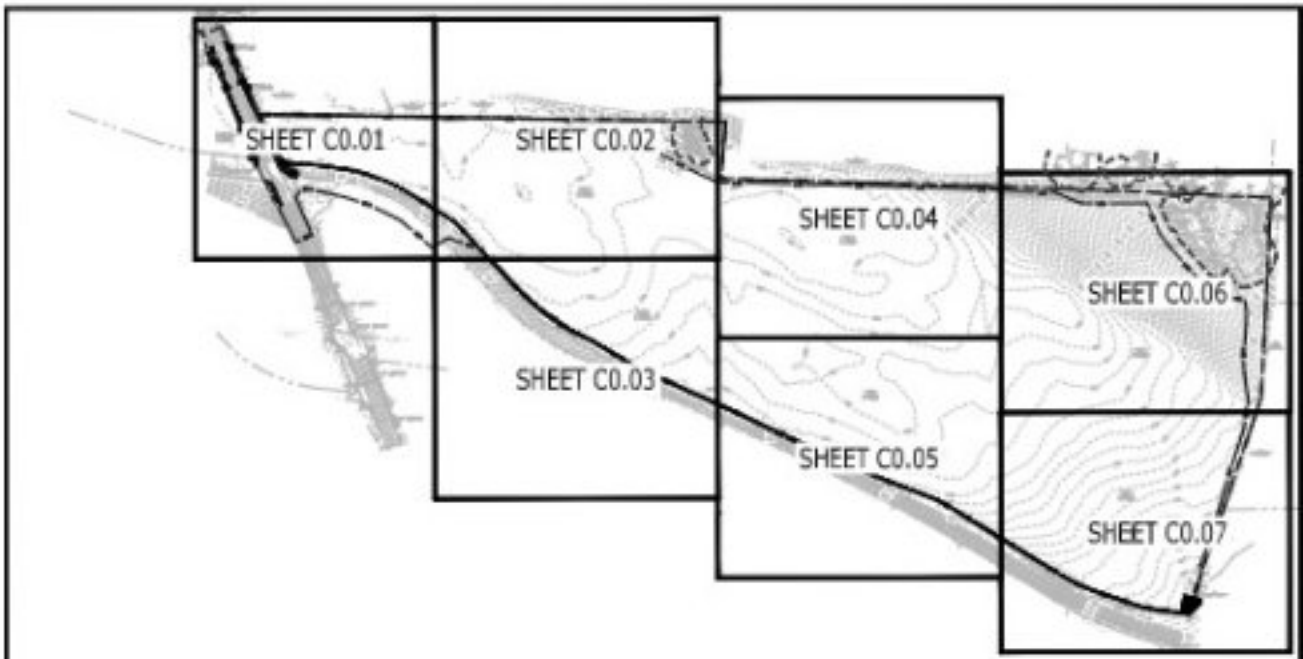




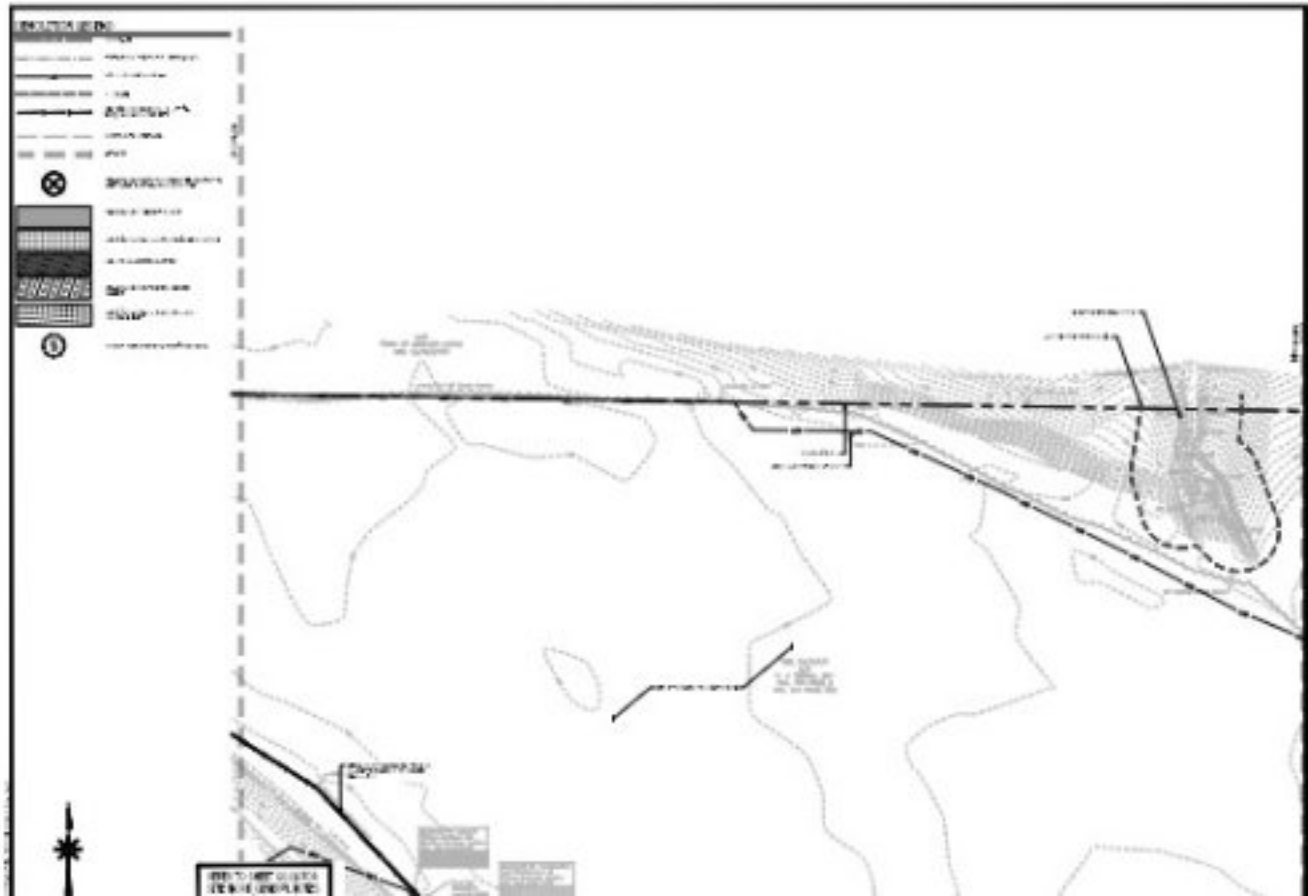


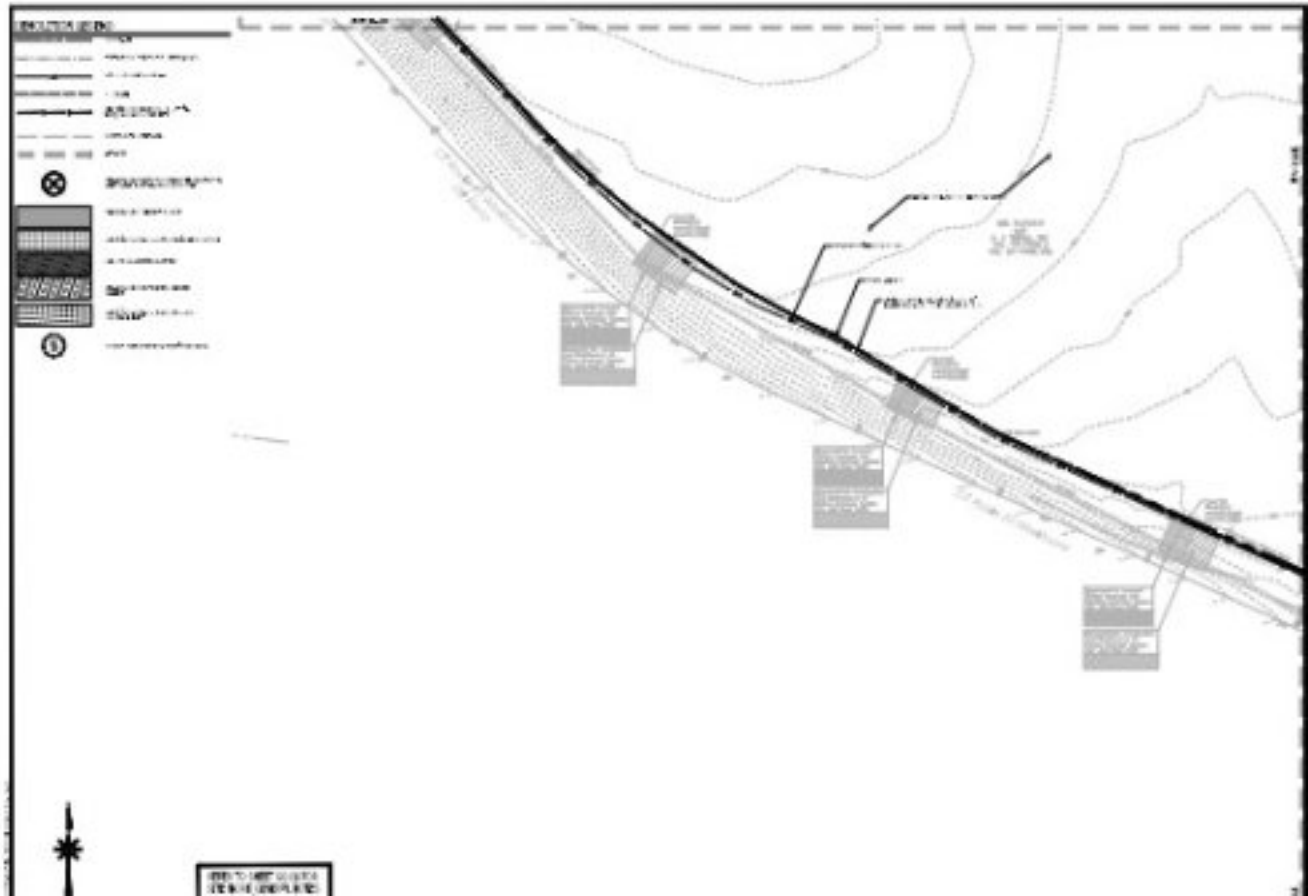


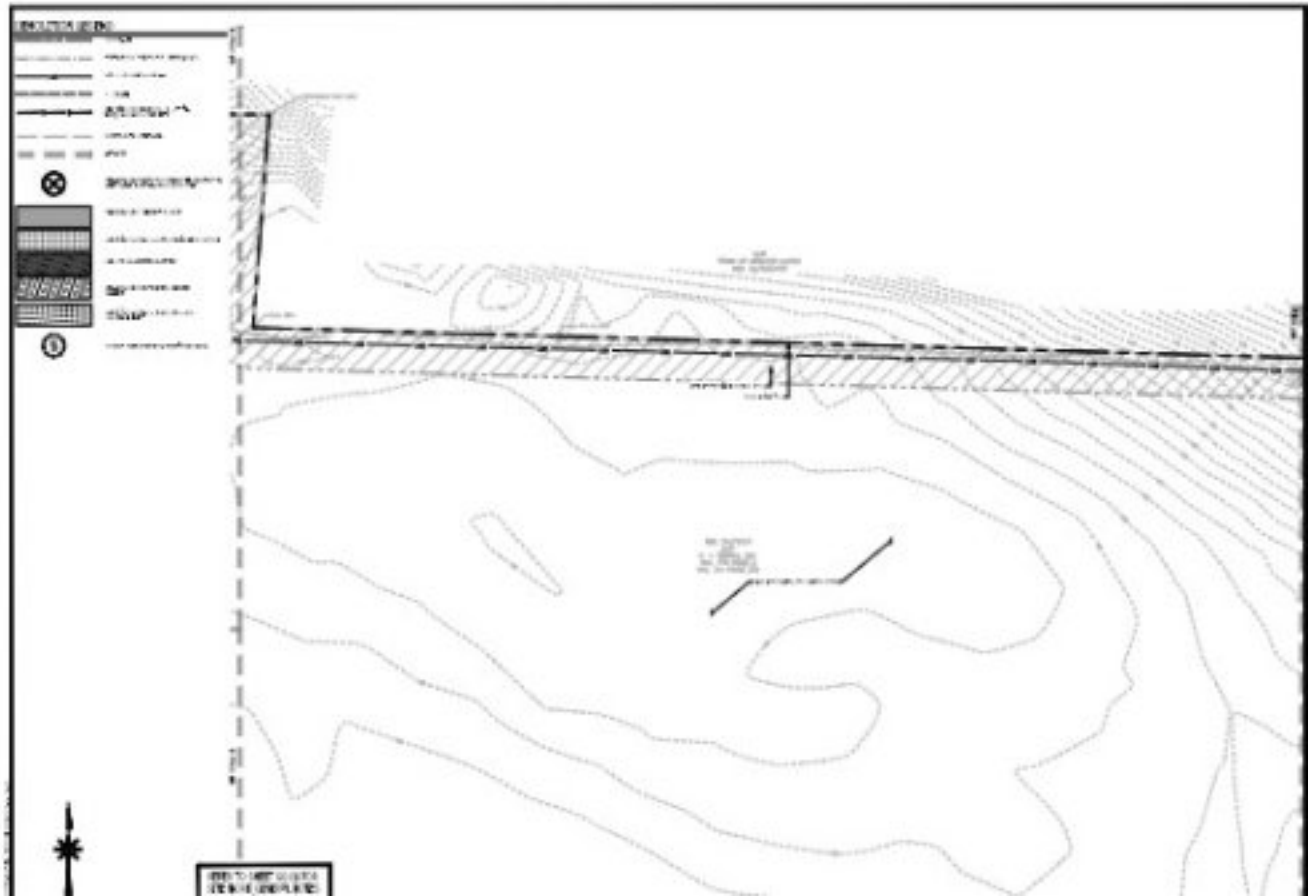


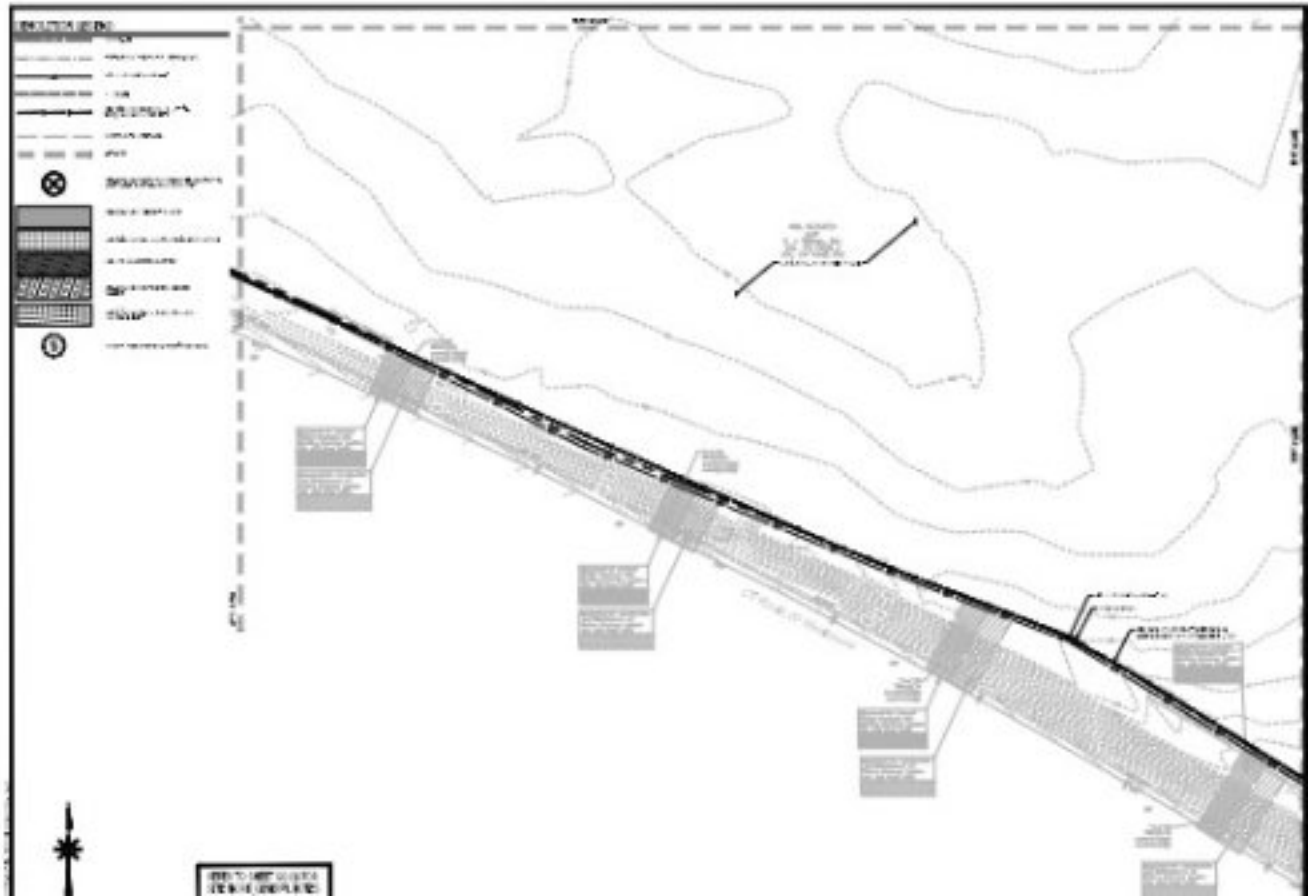

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SHEET C0.02
SHEET C0.03
SHEET C0.04
SHEET C0.05
SHEET C0.06
SHEET C0.07

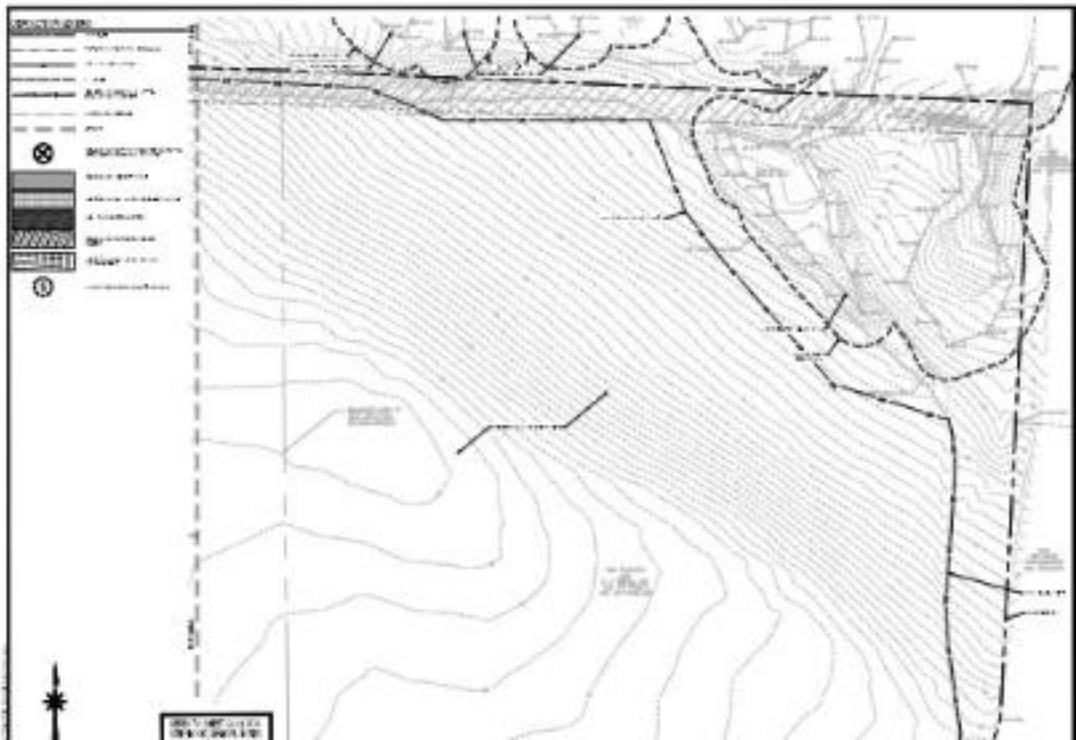


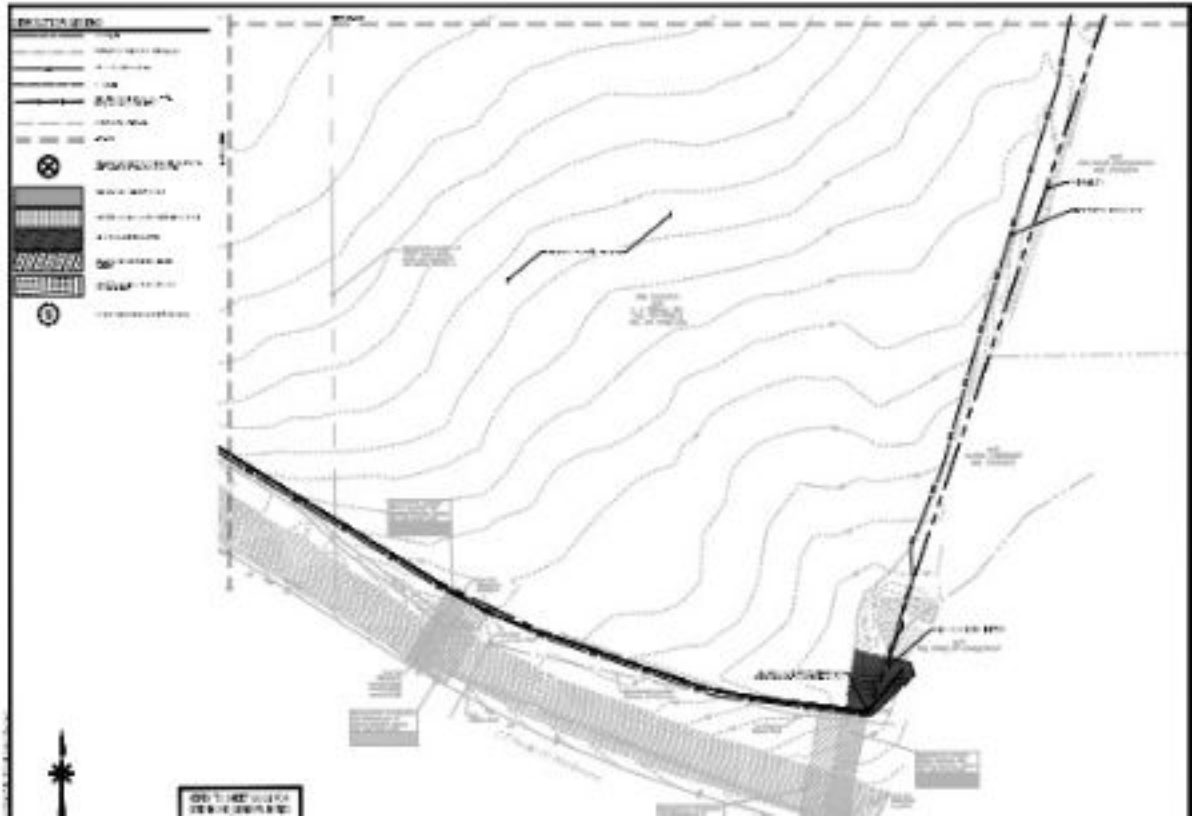


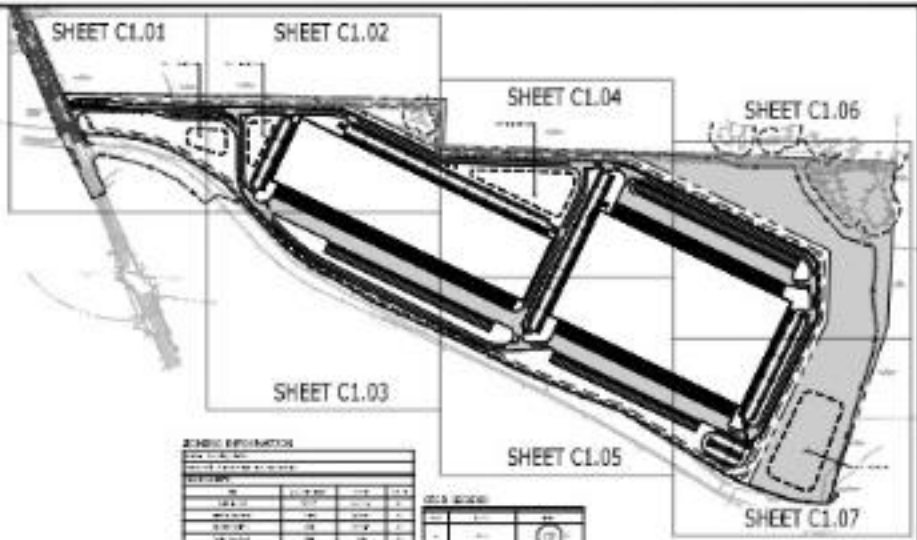


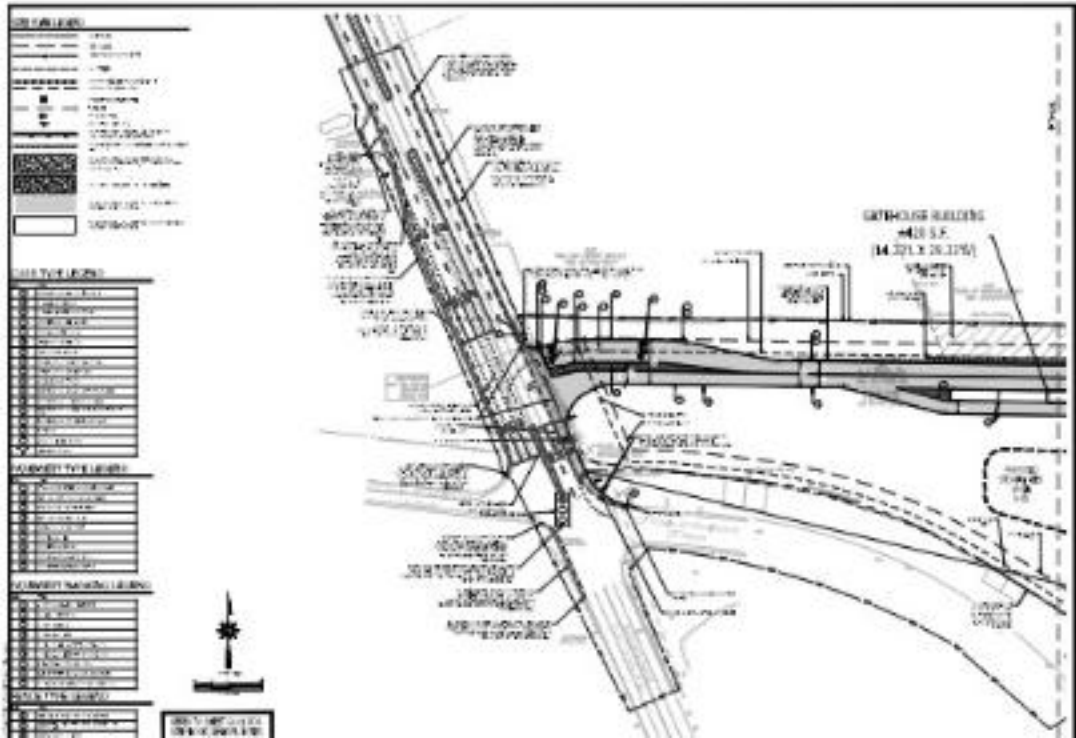


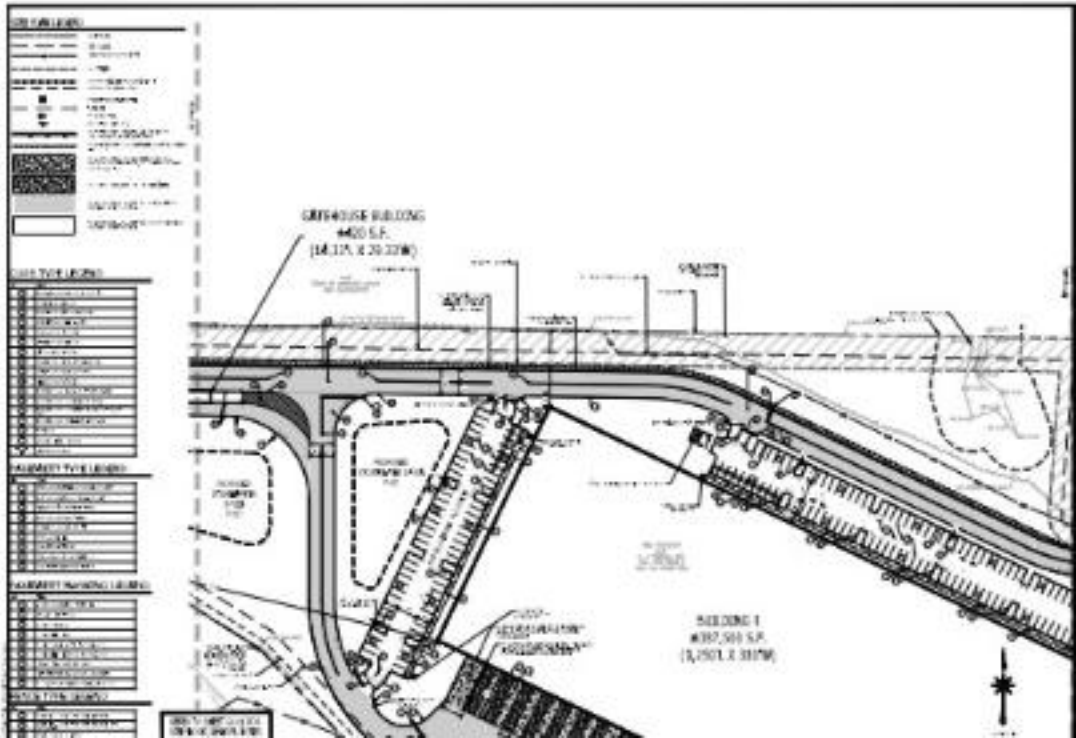


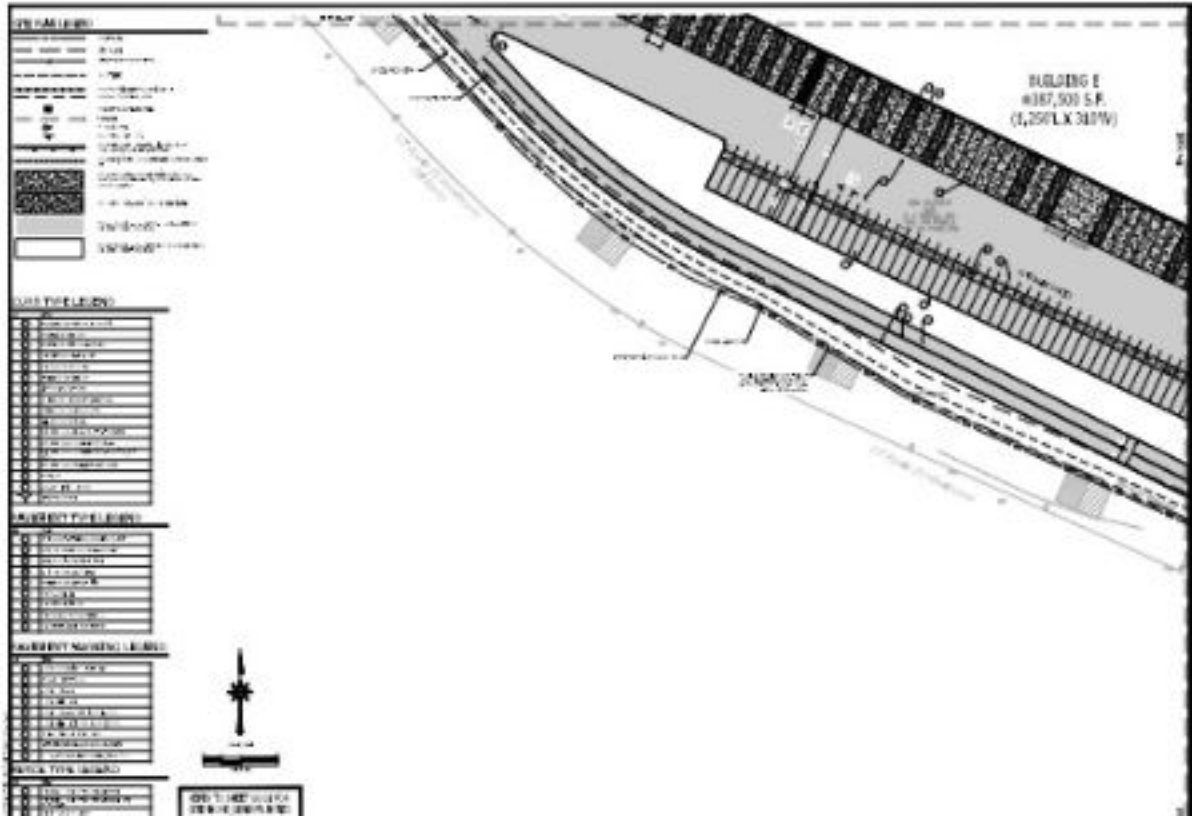


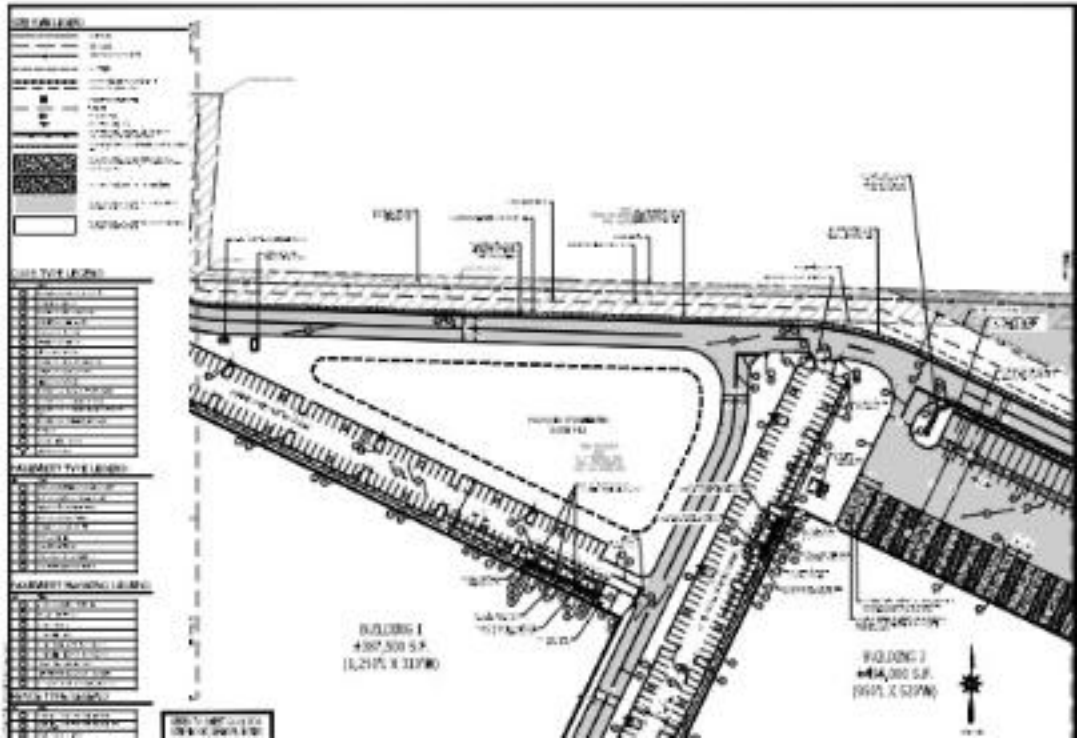


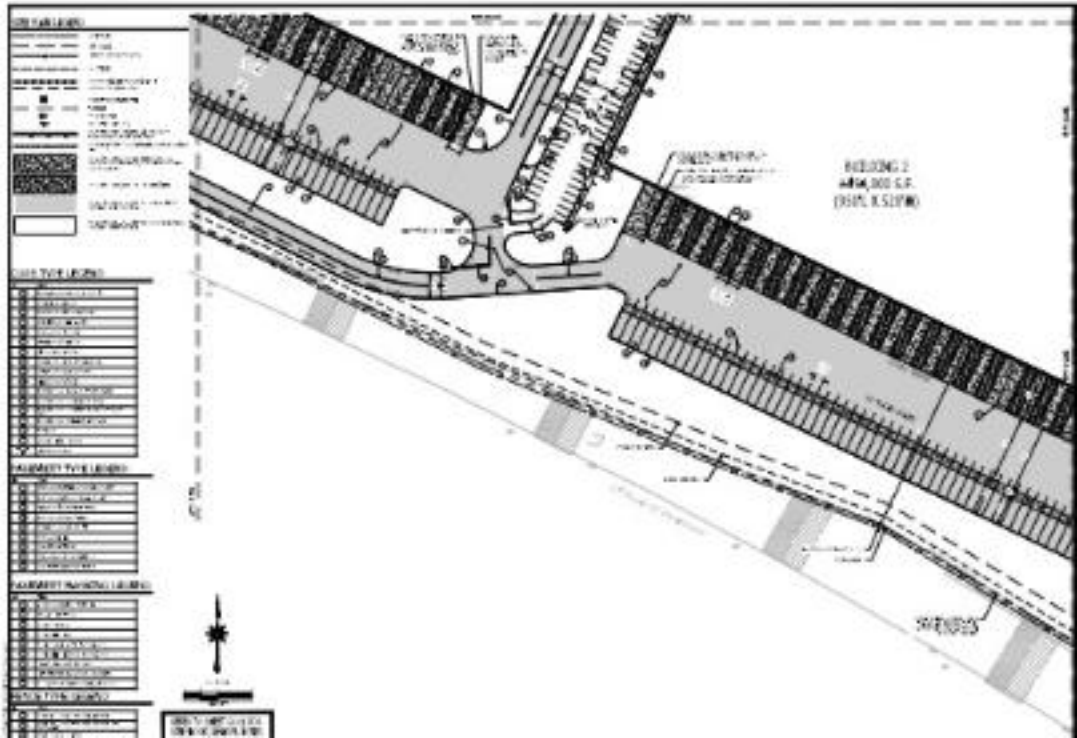

SHEET C1.01
SHEET C1.02
SHEET C1.04
SHEET C1.06
SHEET C1.03
SHEET C1.05
SHEET C1.07

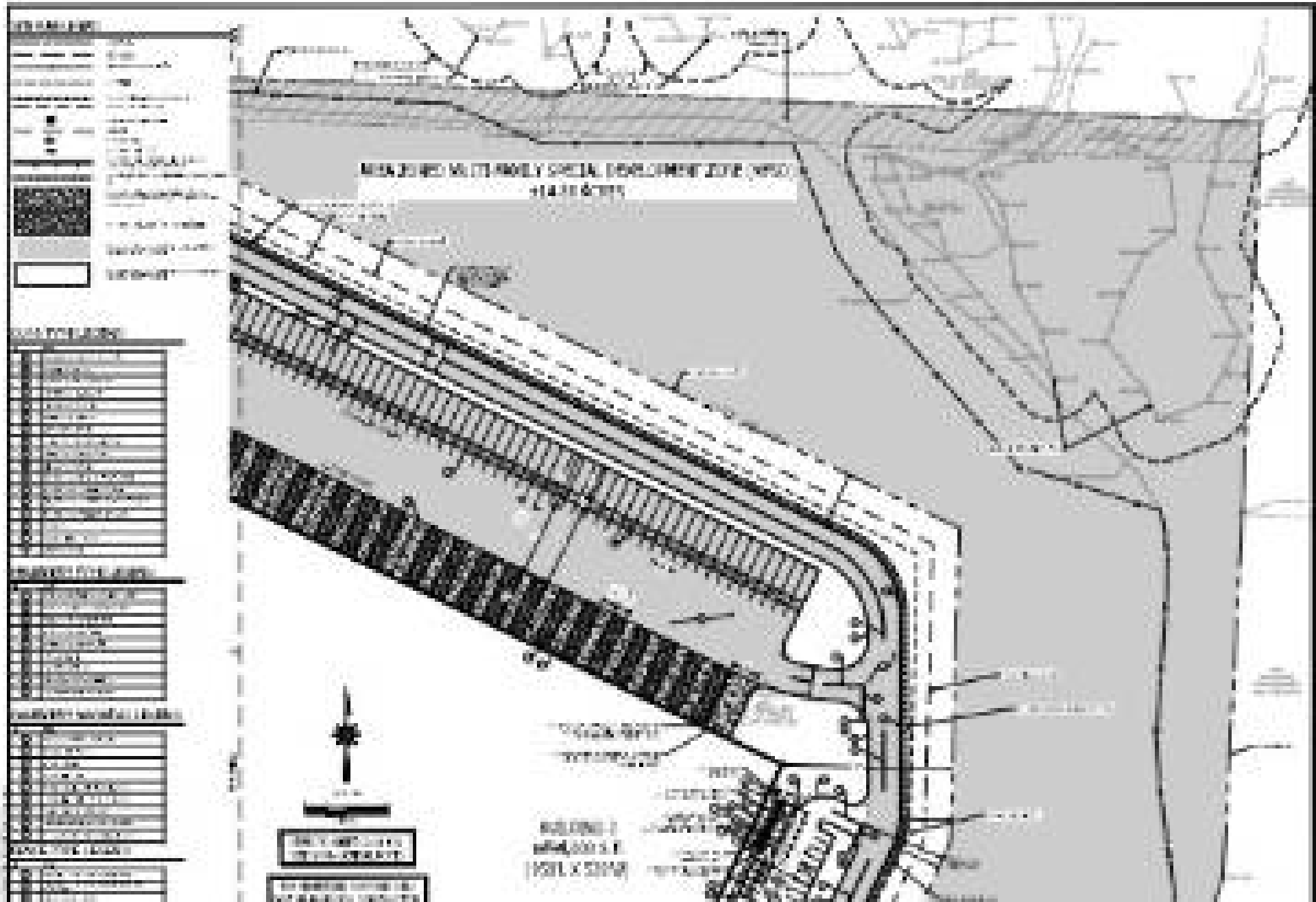


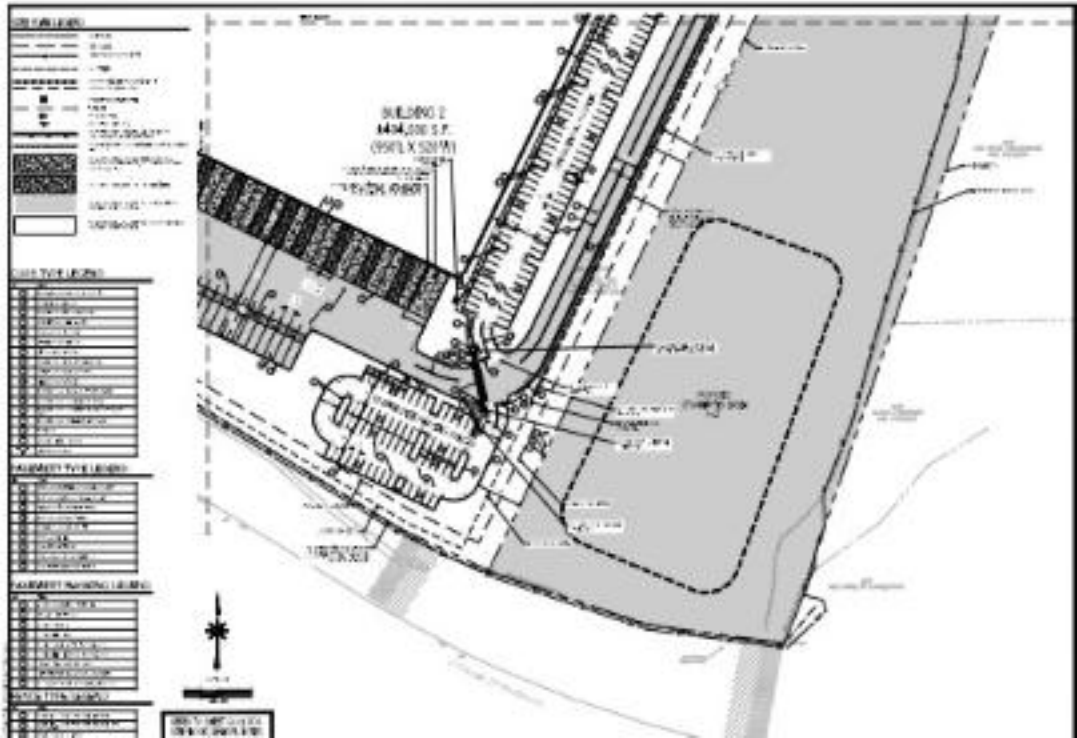



BUILDING E
±387,500 S.F.
(1,250'LX 310'W)

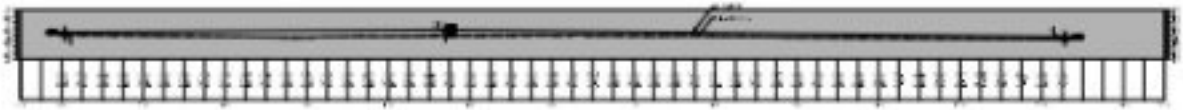


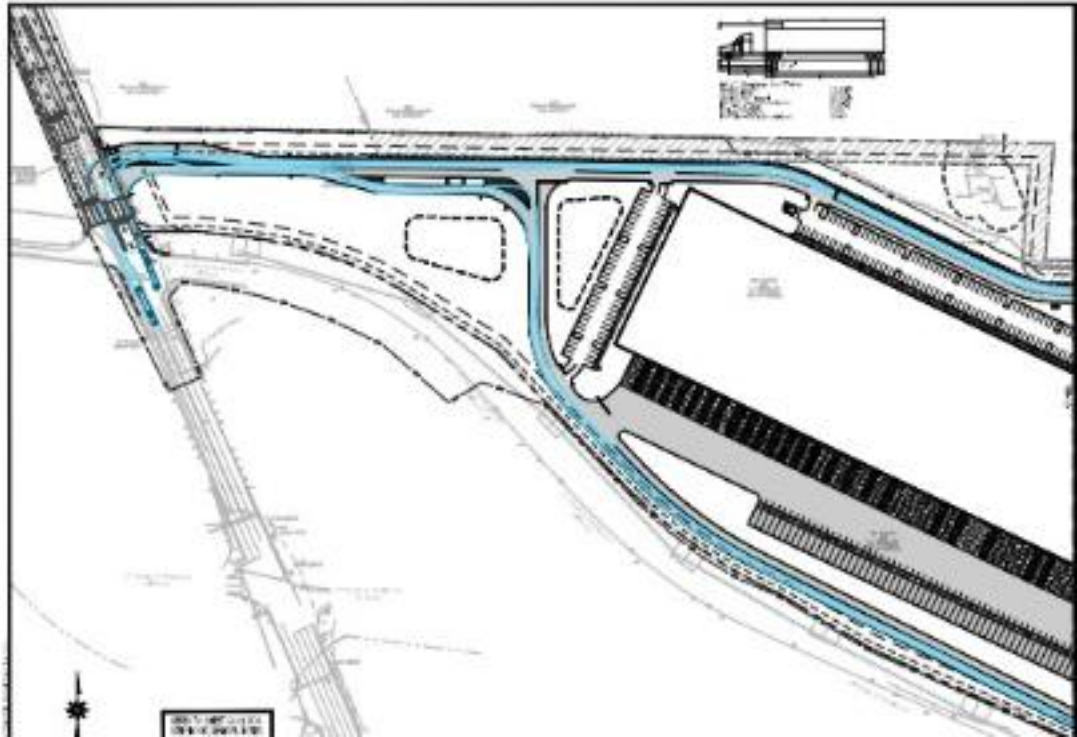


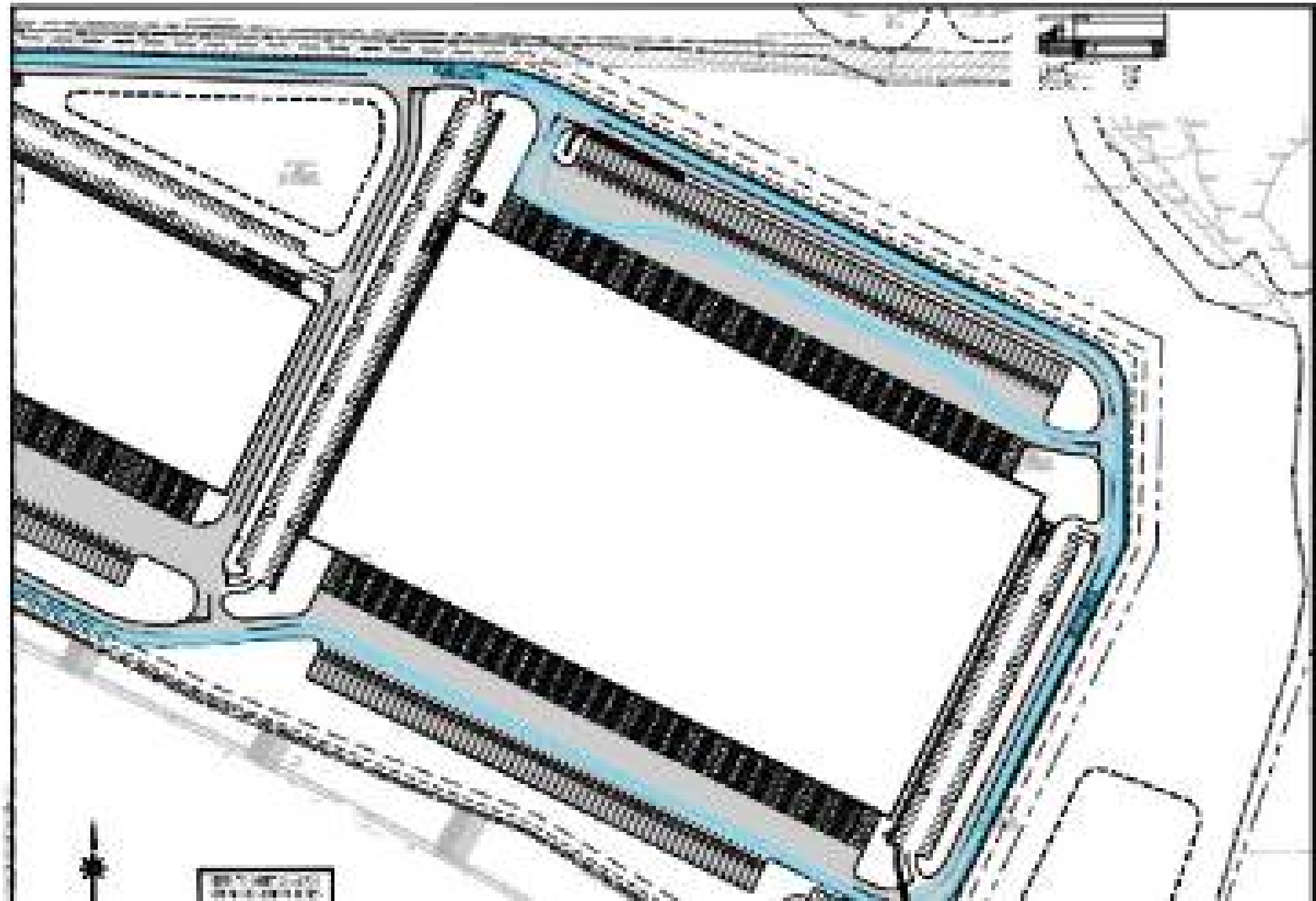


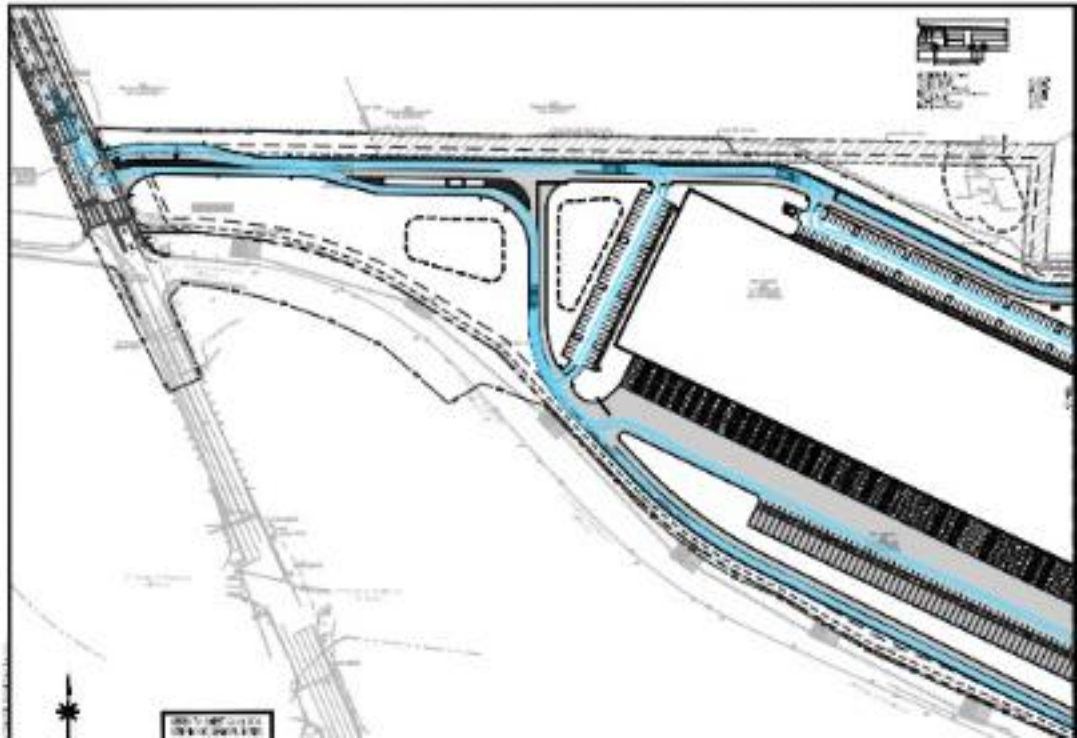


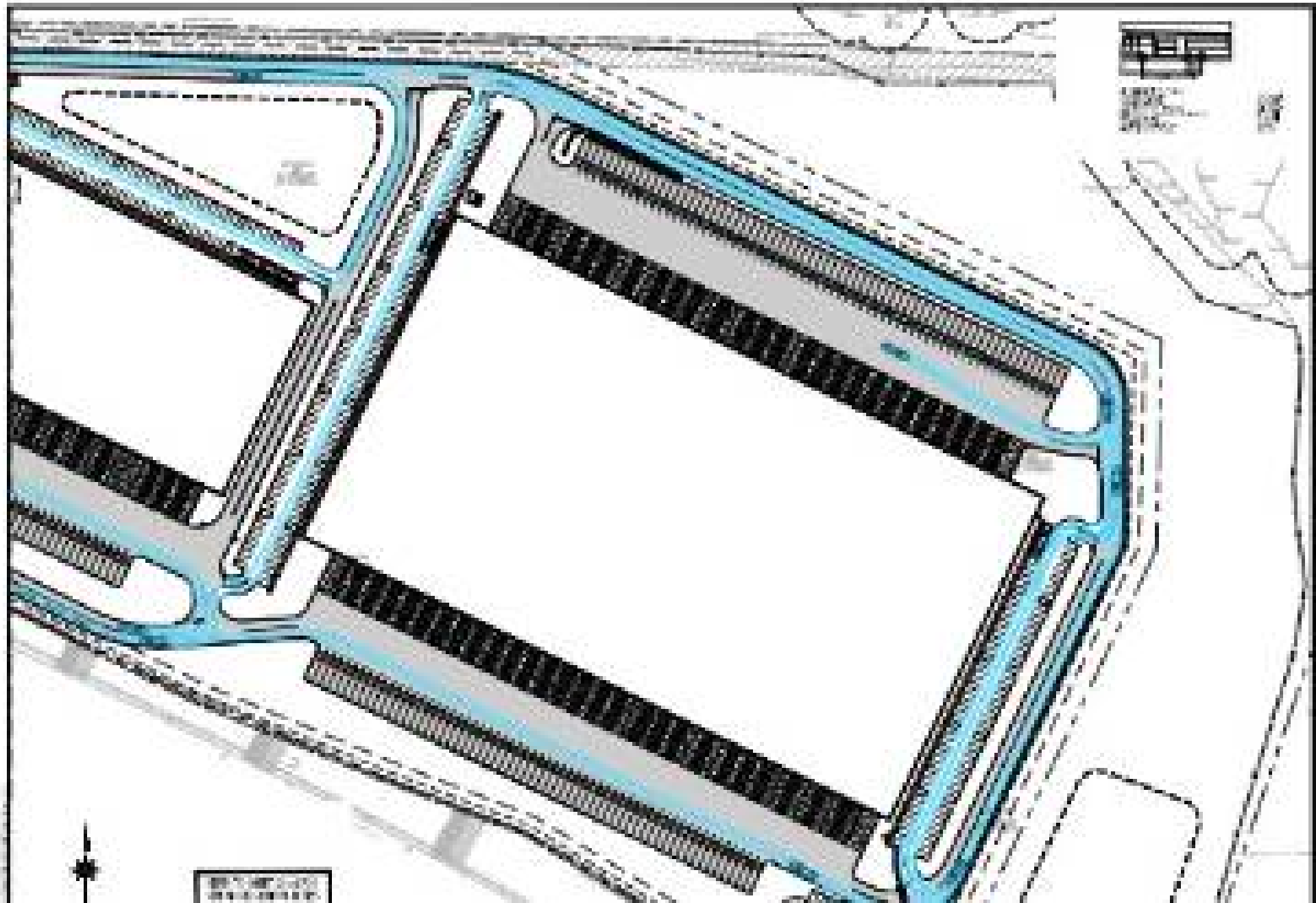




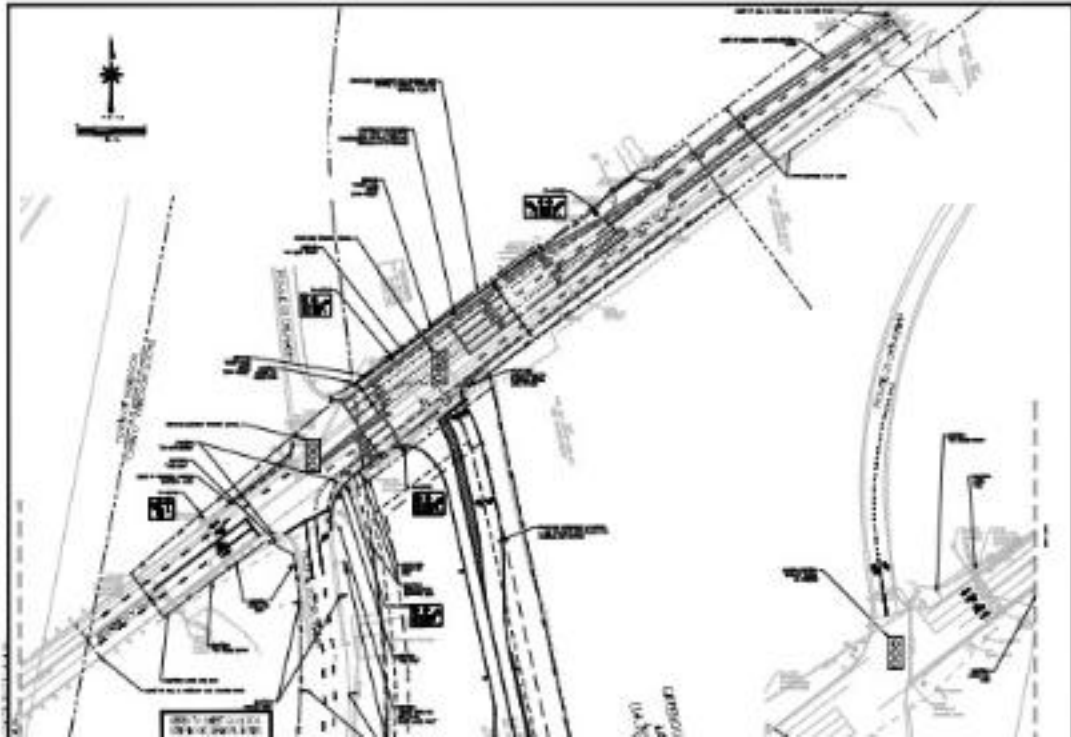


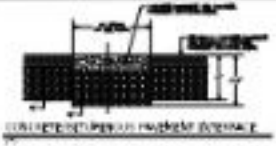


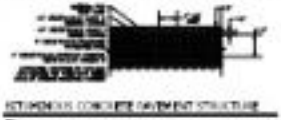










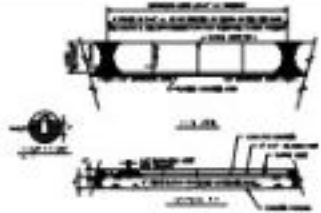


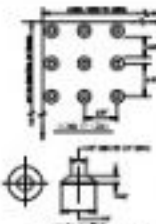


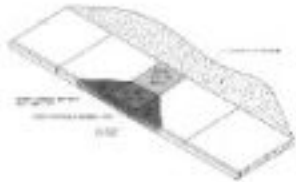


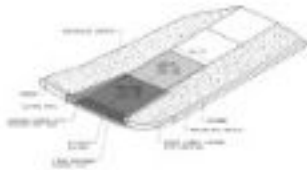


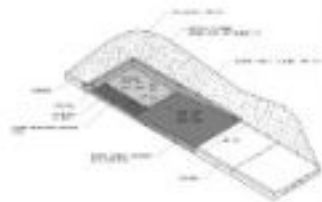


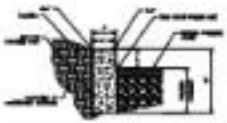












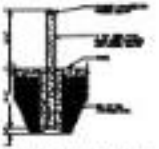




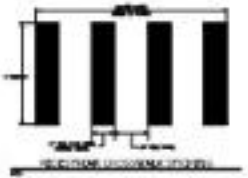




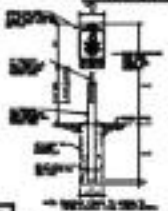


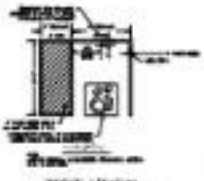




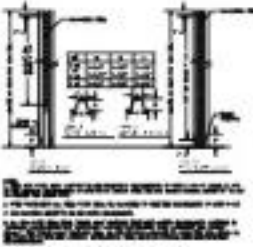


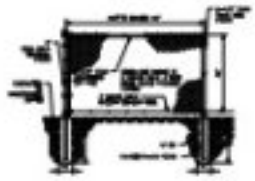


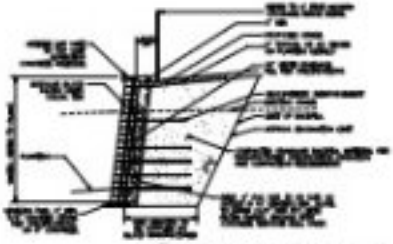


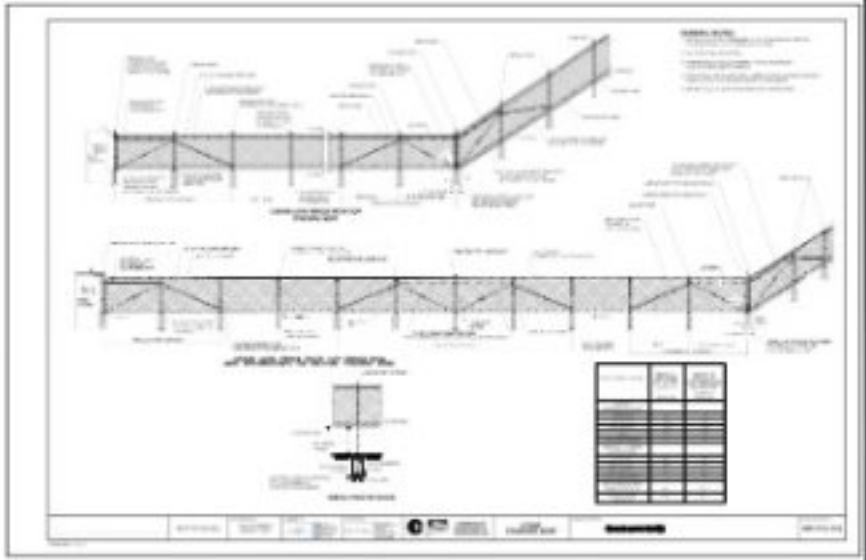


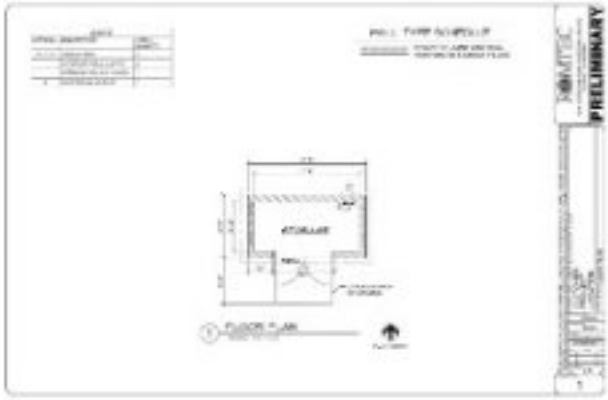


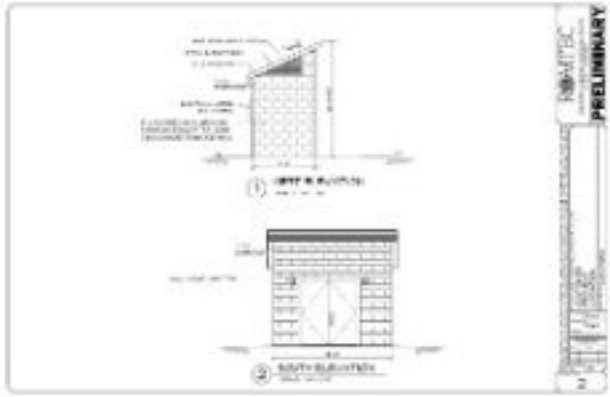




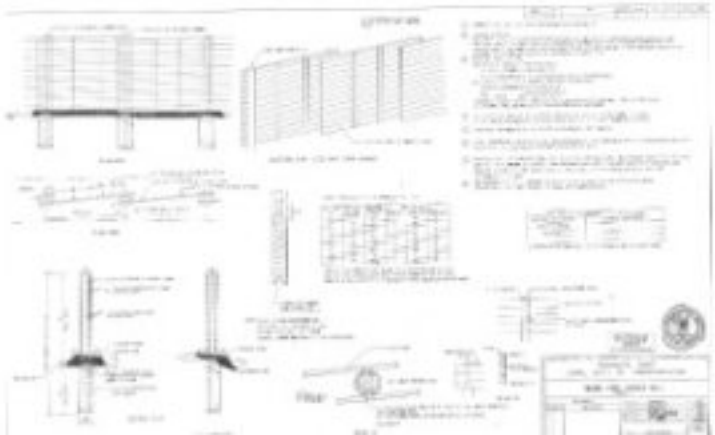


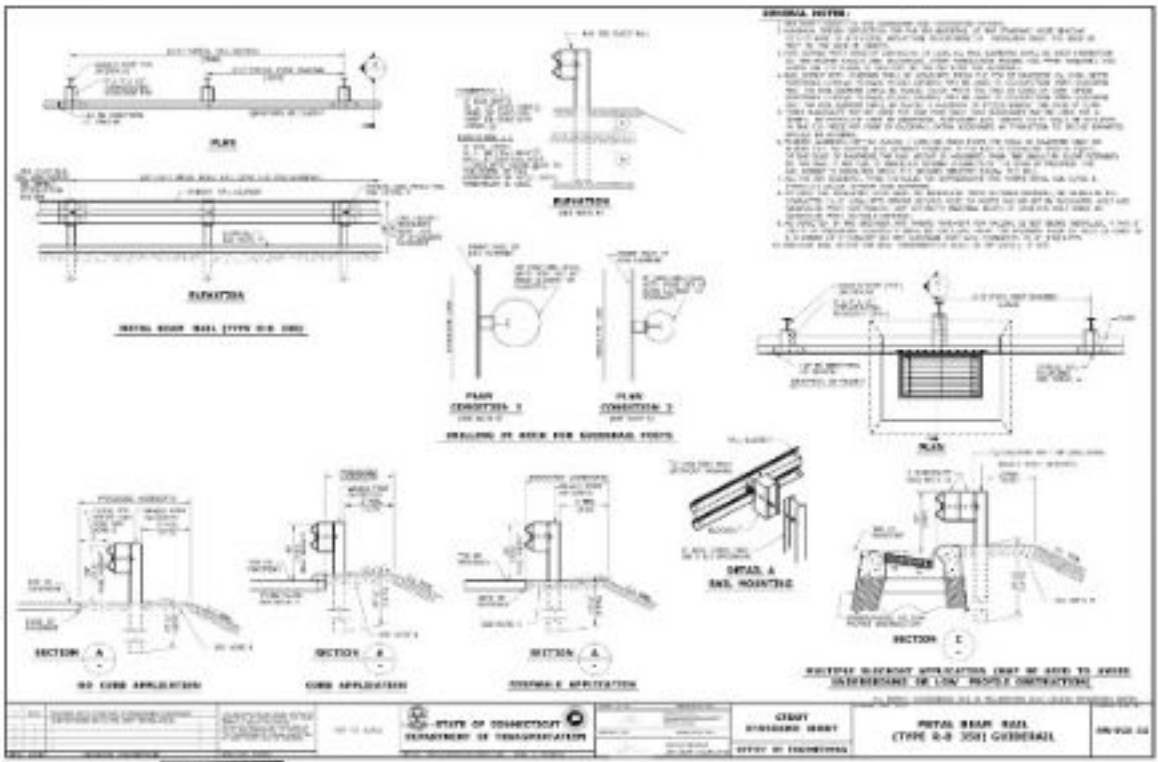


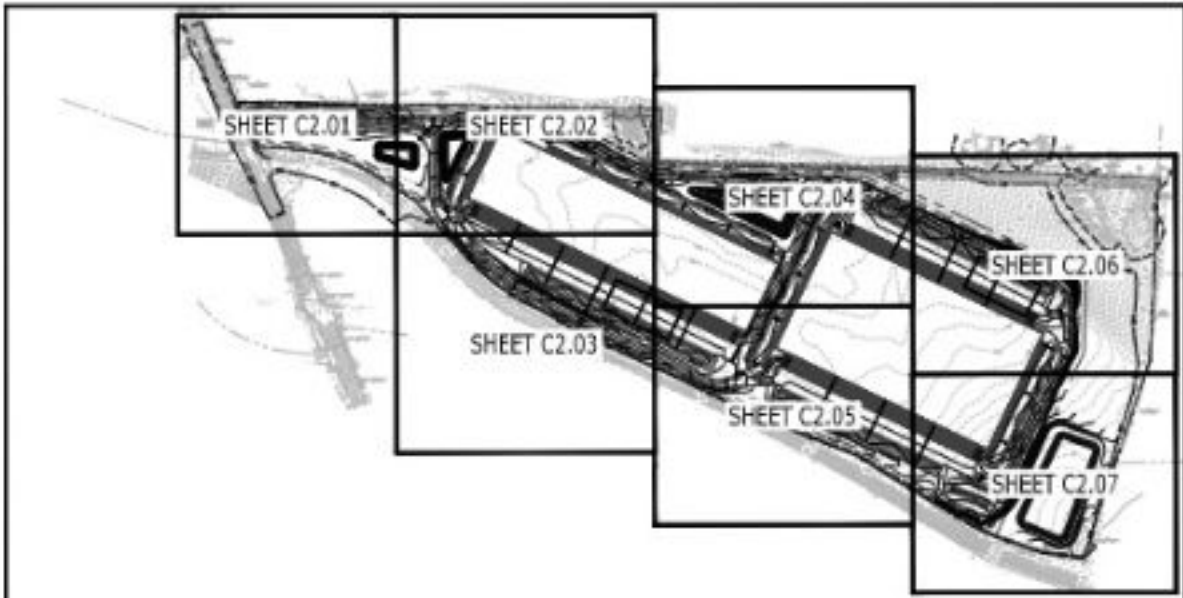


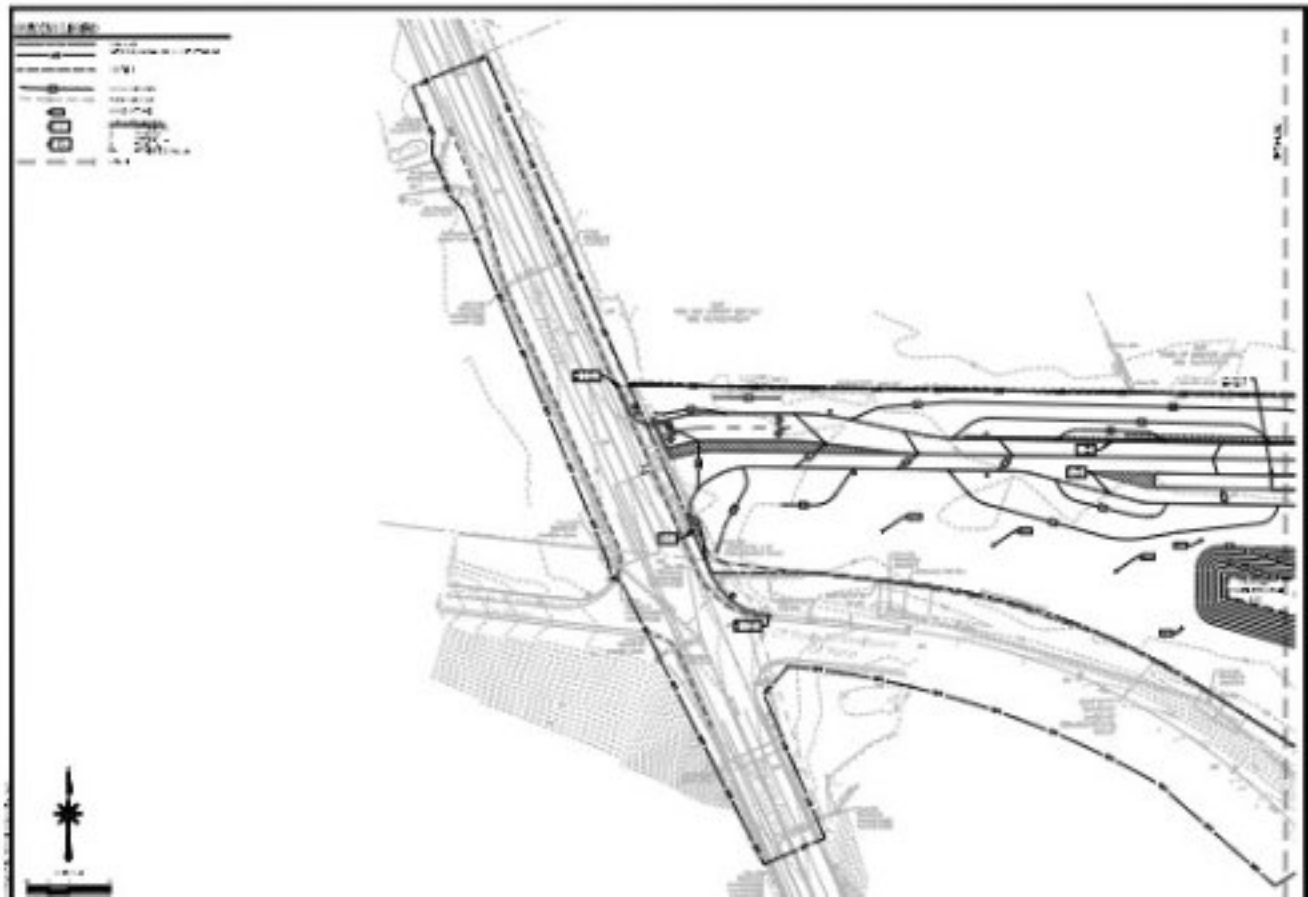


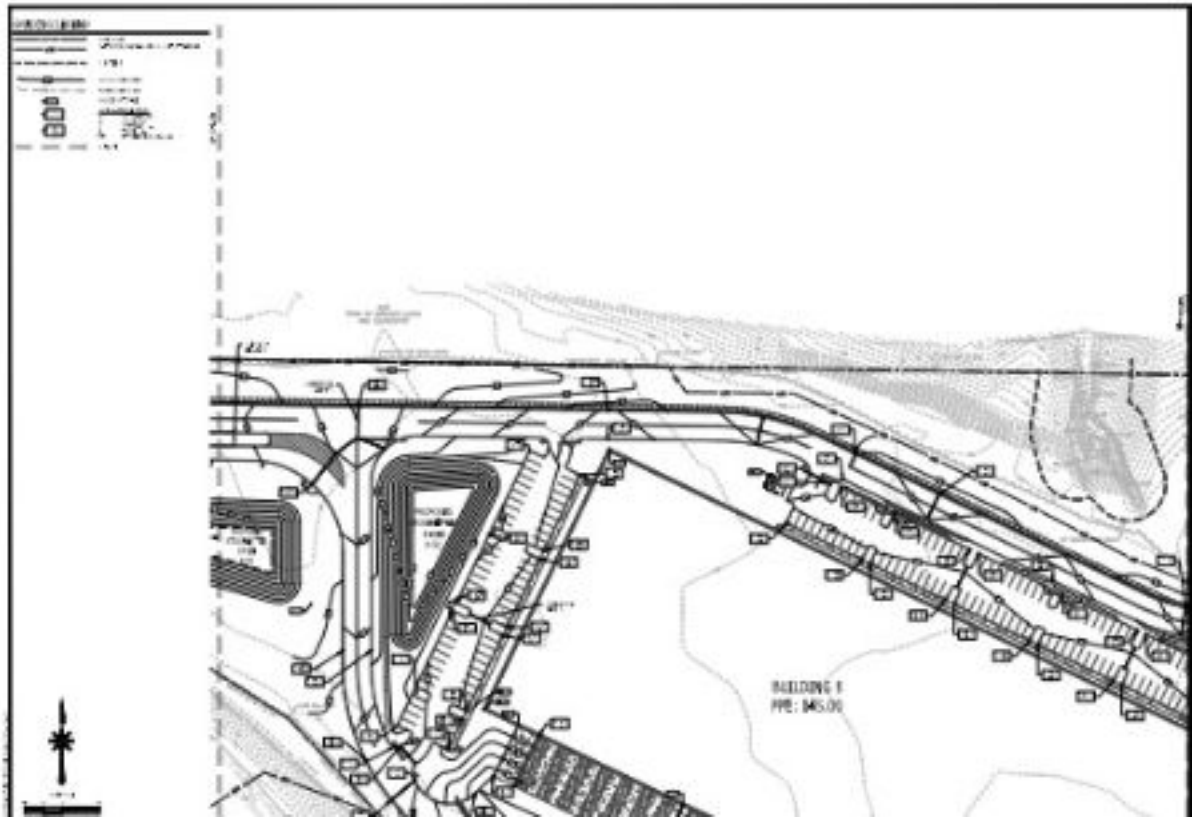
GATEWAY WATER PUMP STATION CONTROL BUILDING

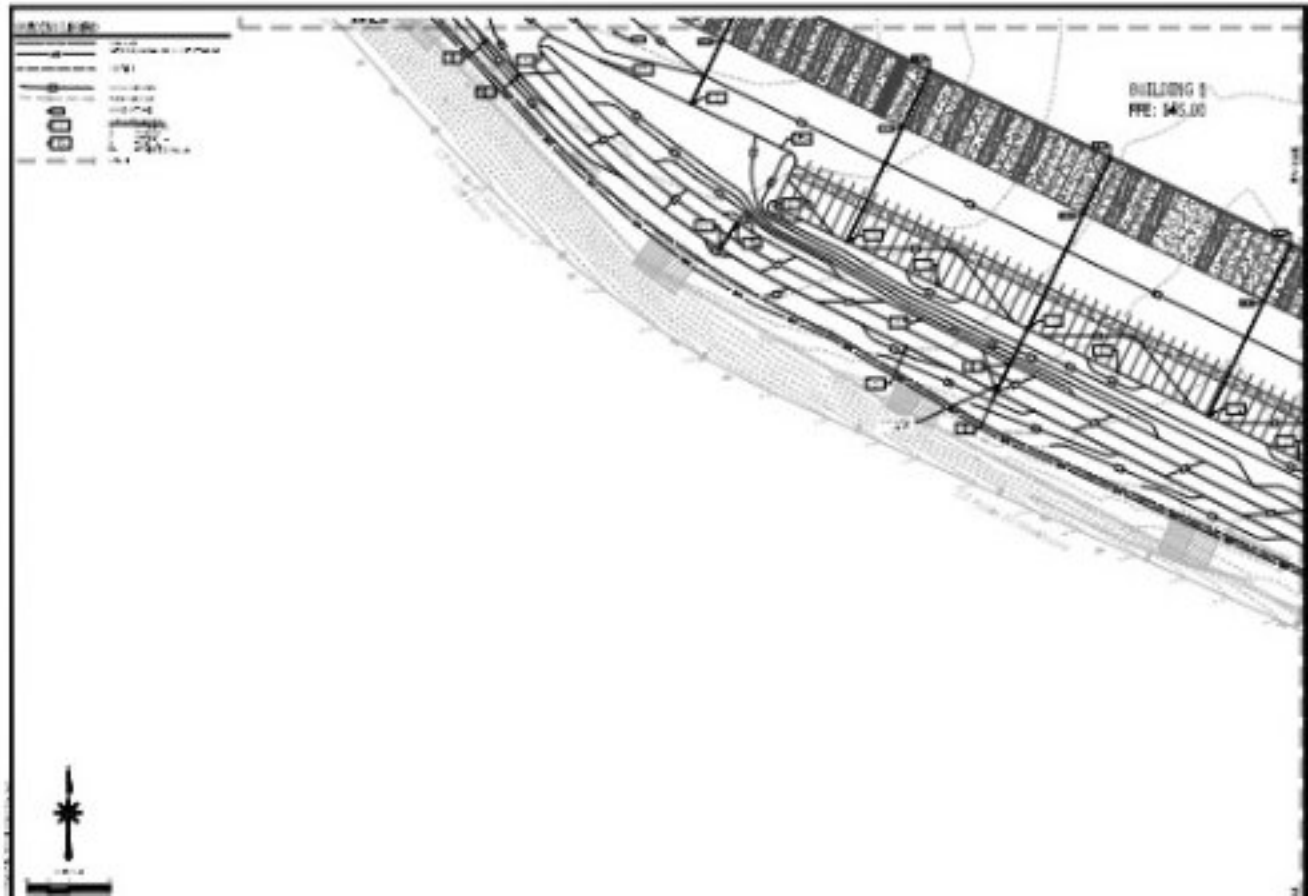


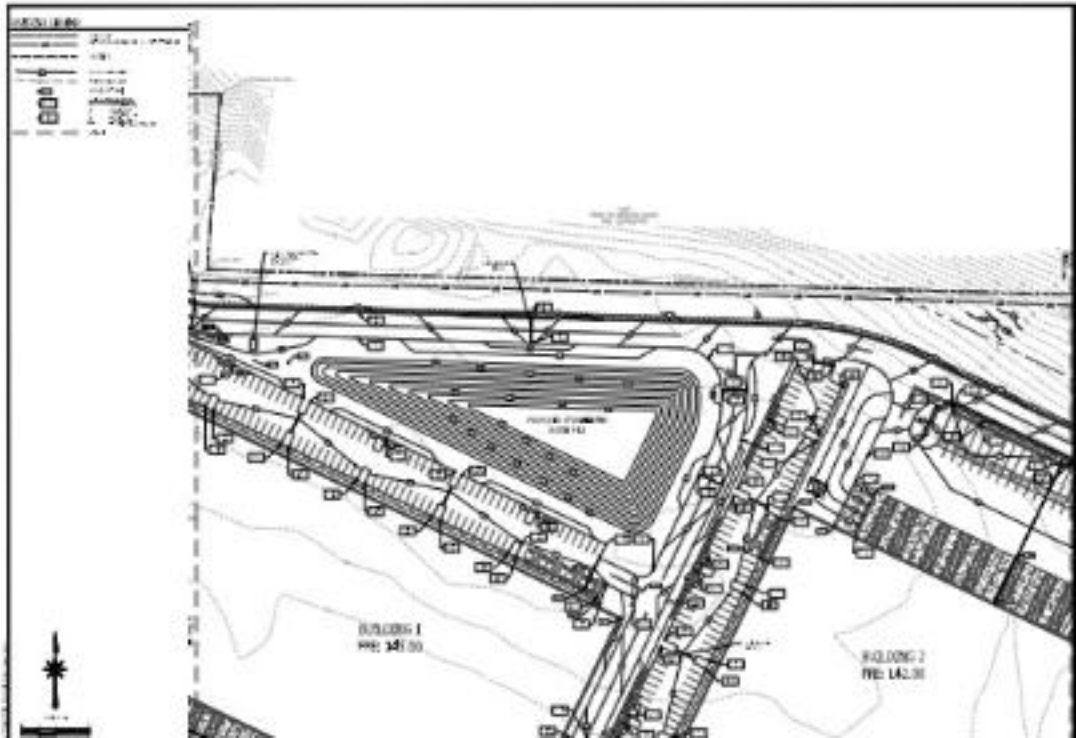

GENERAL NOTES:
PLAN
ELEVATION
METAL BEAM RAIL (TYPE W-B 350)
PLAN
CONDITION 1
PLAN
CONDITION 2
DRILLING OF HOLES FOR GUARDRAIL POSTS
PLAN
DETAIL A
RAIL MOUNTING
SECTION A
NO CURB APPLICATION
SECTION B
CURB APPLICATION
SECTION A
SIDEWALK APPLICATION
SECTION C
MINIMUM CLEARANCE APPLICATION (MAY BE USED TO AVOID
UNDERGROUND OR LOW PROFILE OBSTRUCTION)
STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
METAL BEAM RAIL
(TYPE W-B 350) GUARDRAIL

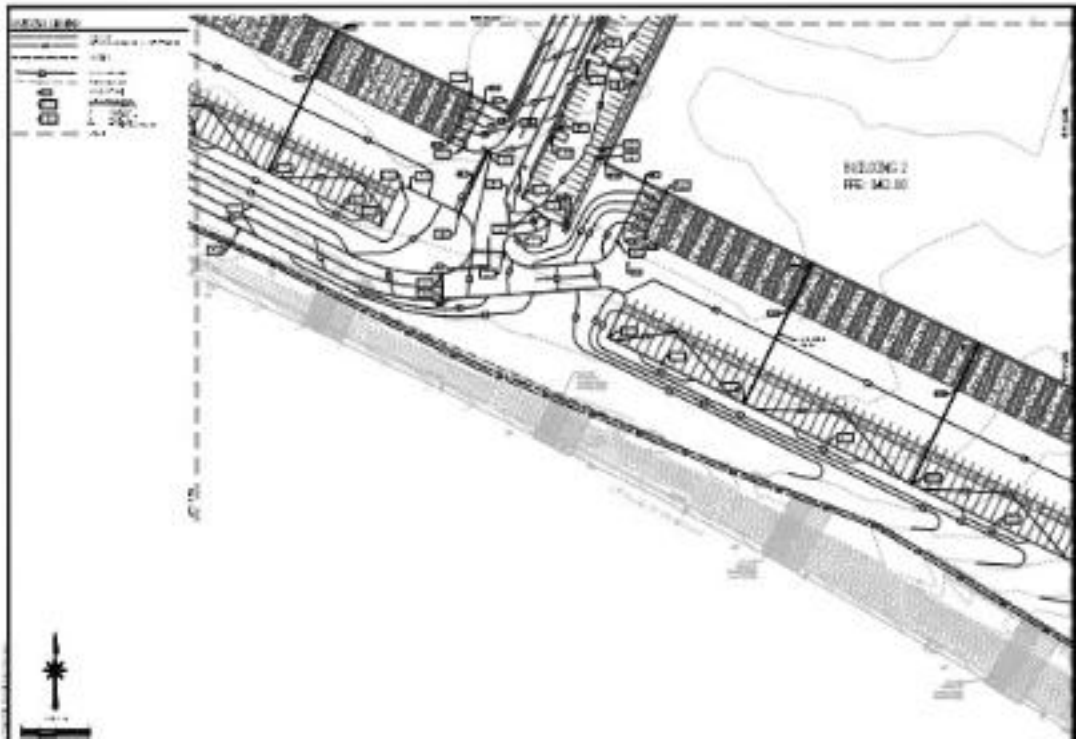

SHEET C2.01
SHEET C2.02
SHEET C2.03
SHEET C2.04
SHEET C2.05
SHEET C2.06
SHEET C2.07

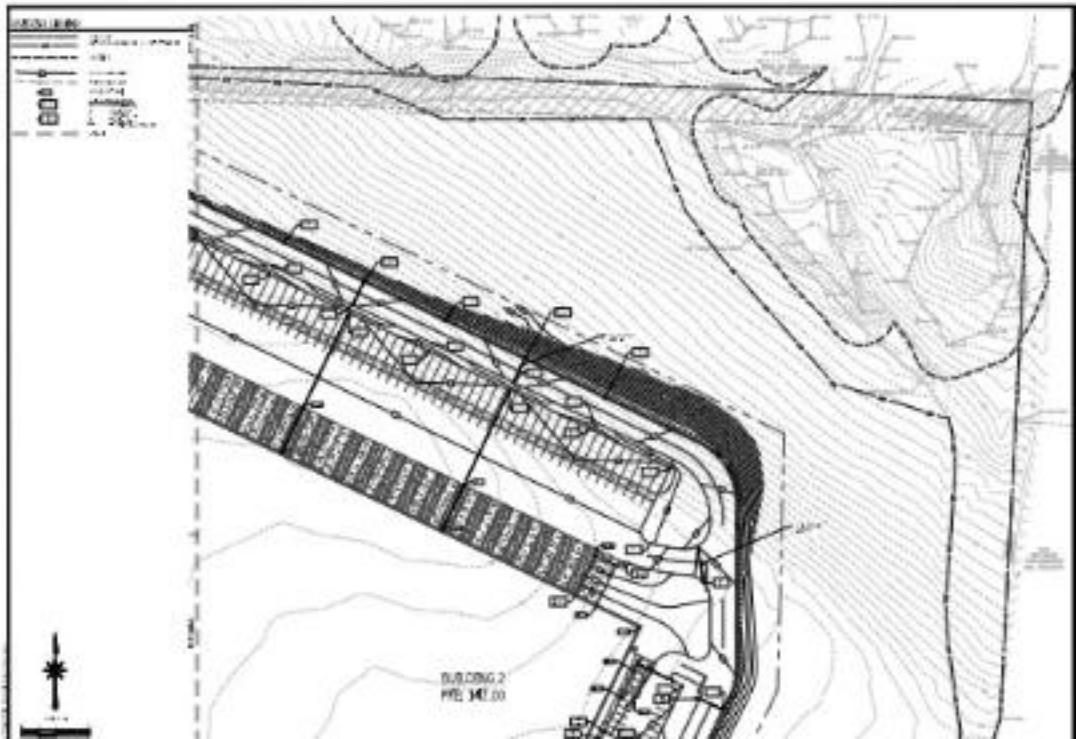


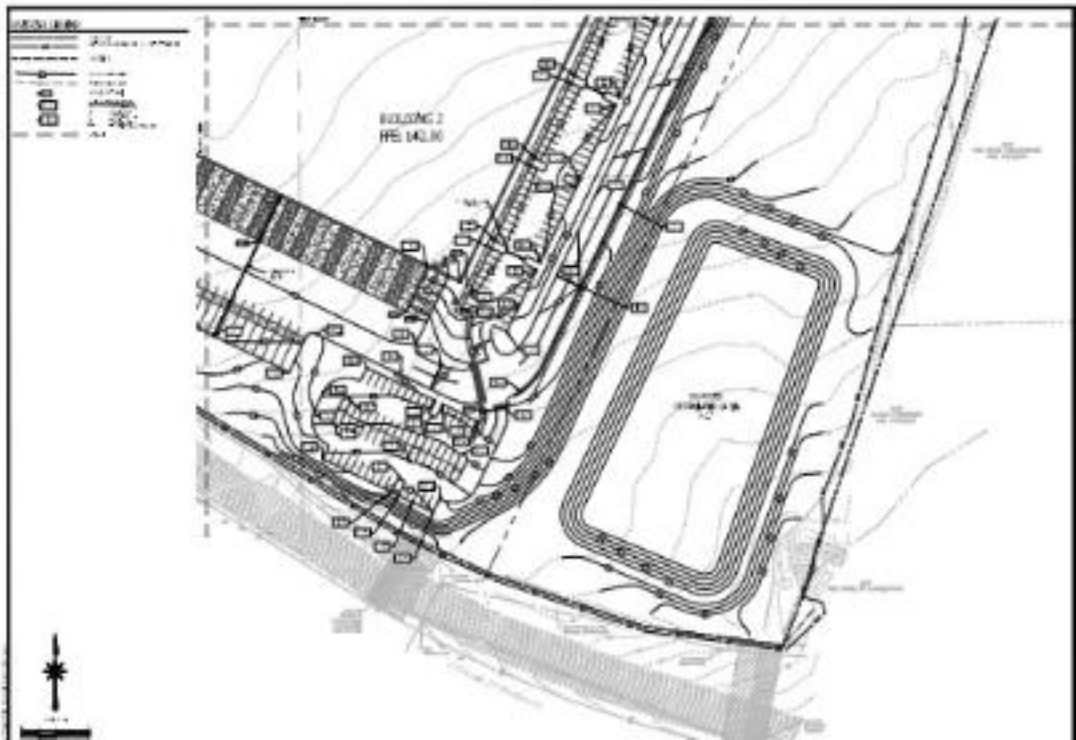

BUILDING 1
FFE: 845.00

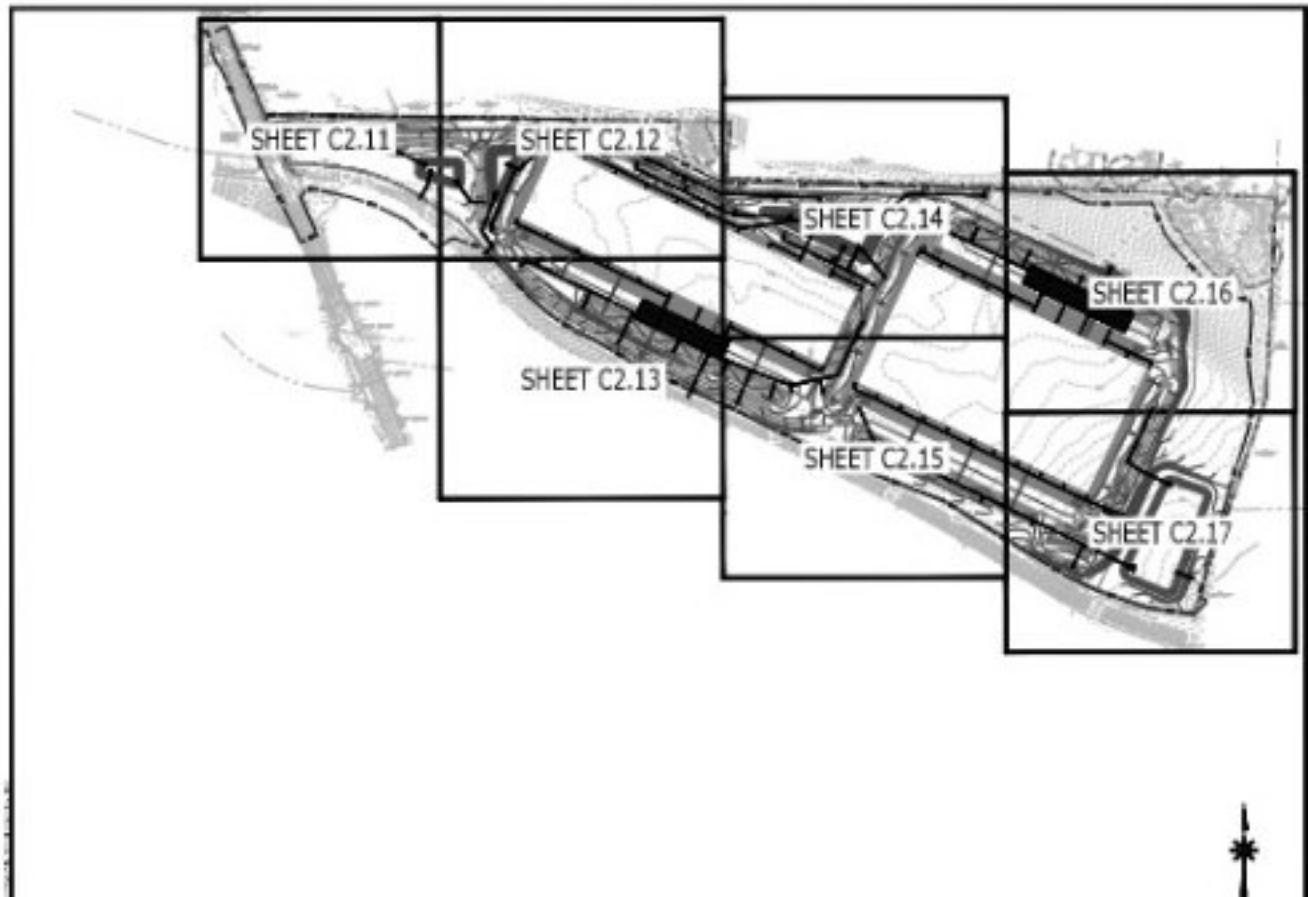

BUILDING 1
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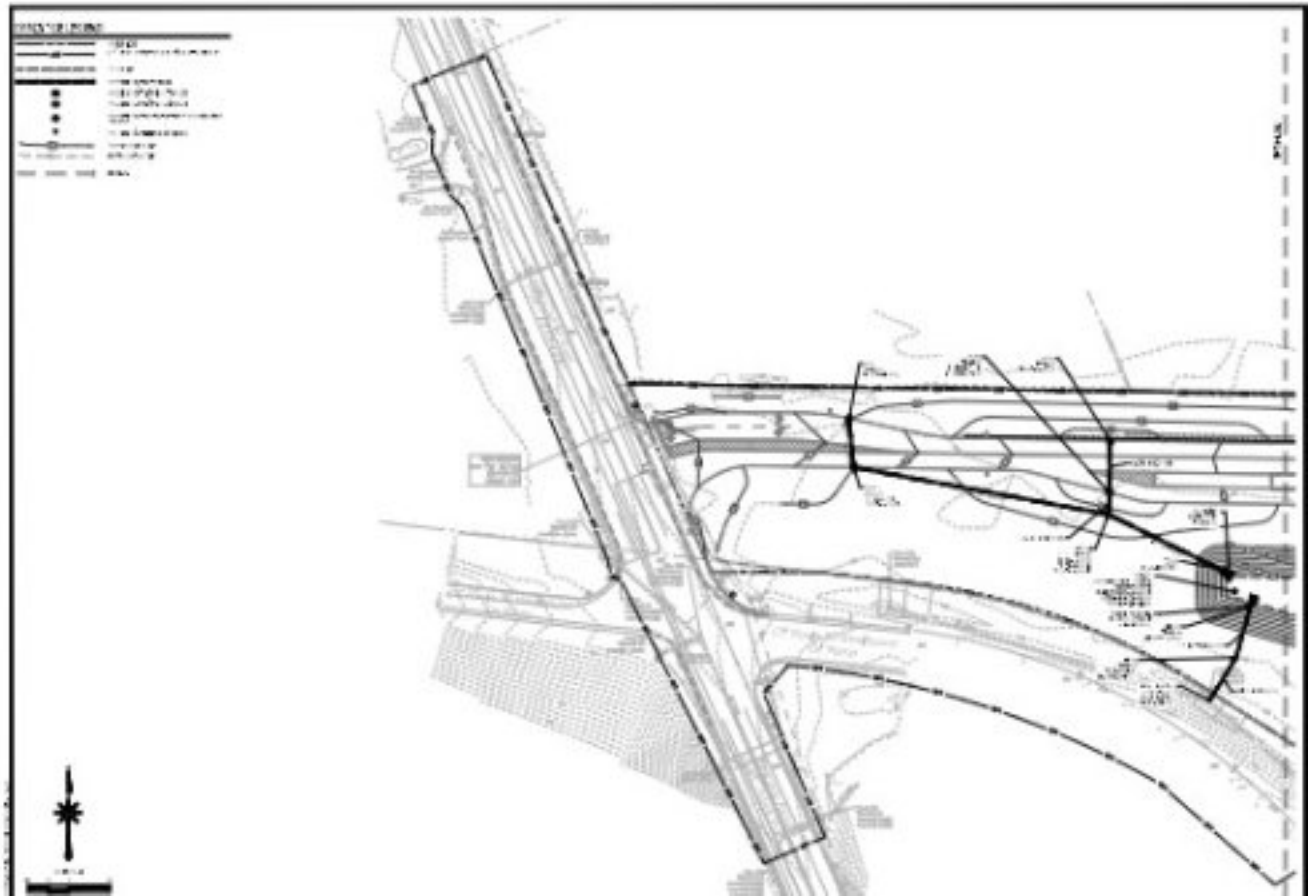


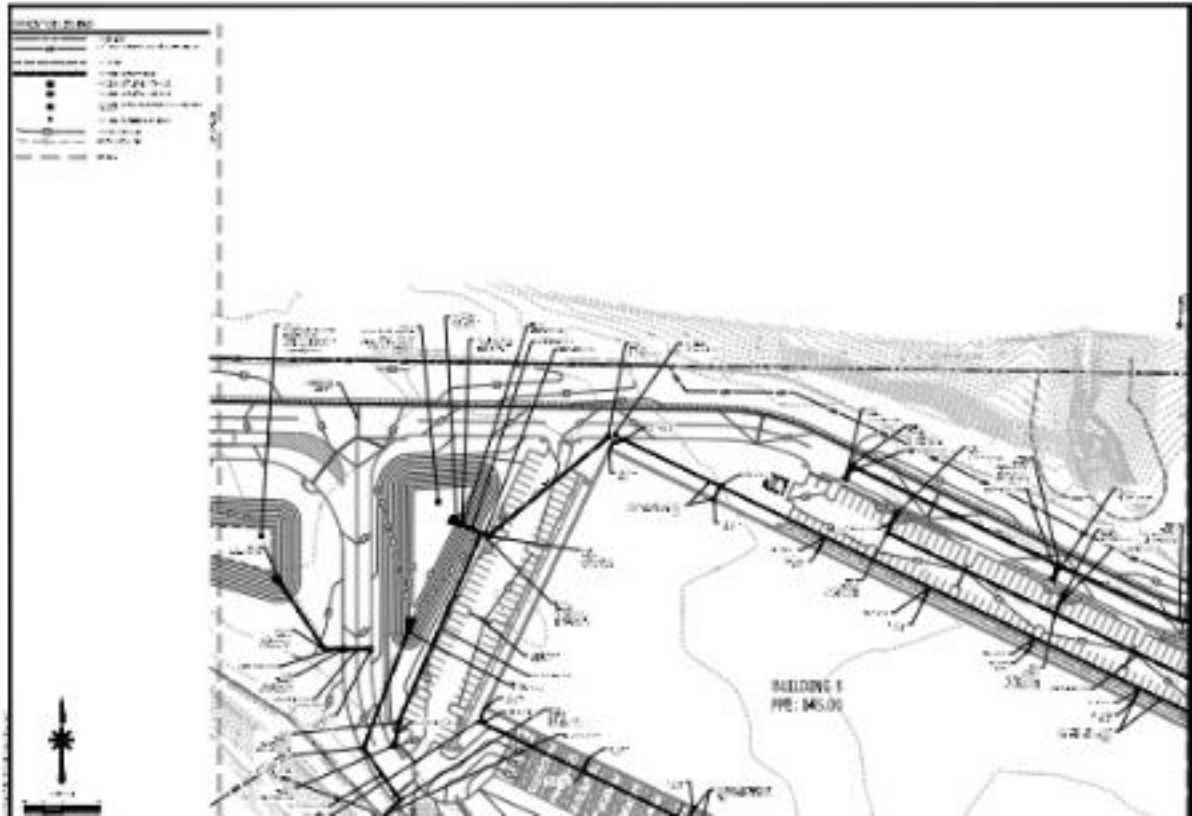


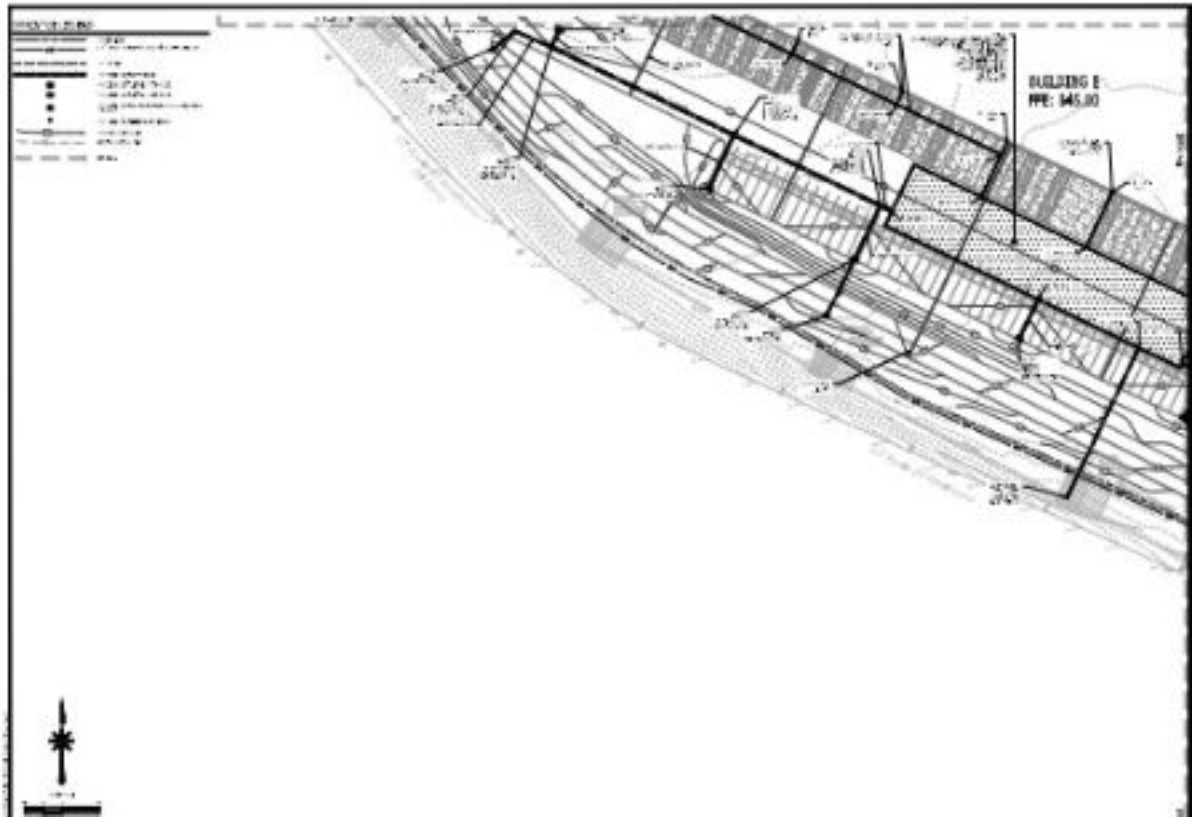

BUILDING 2
FFE 341.00

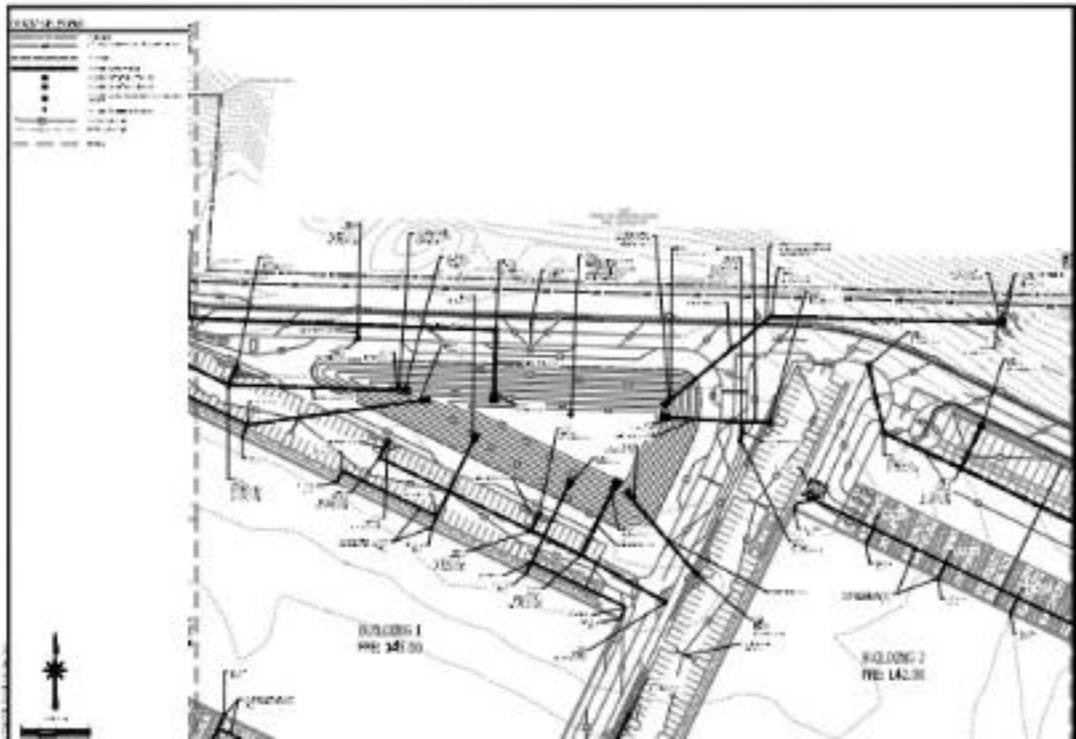


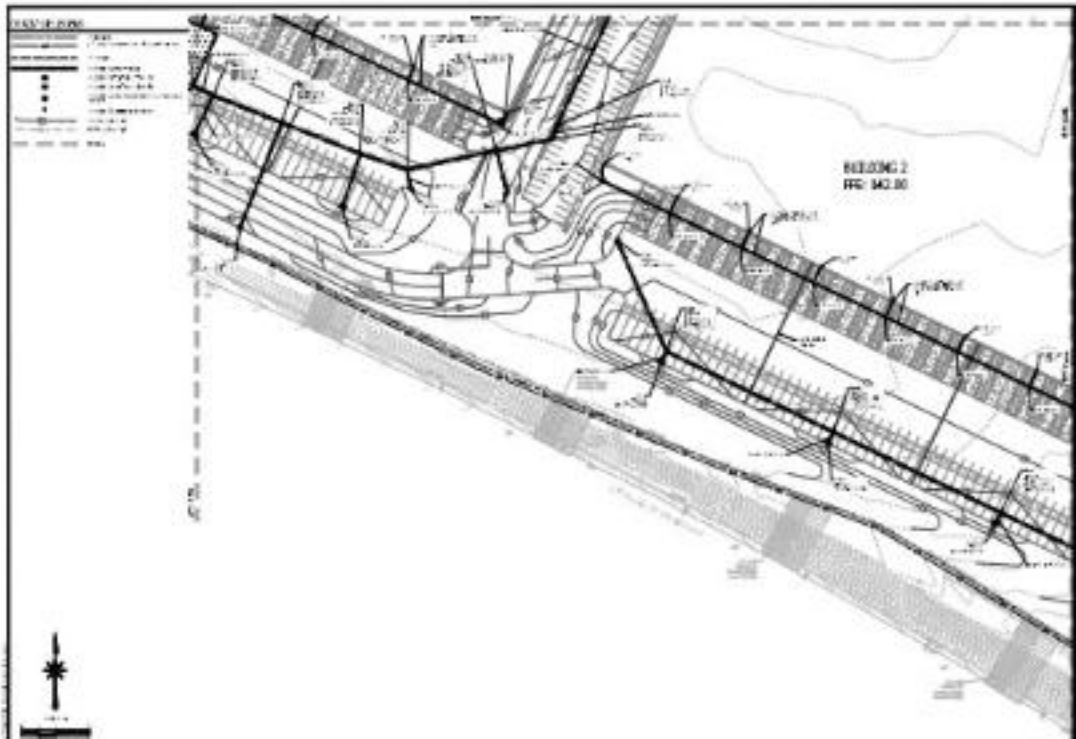

SHEET C2.11
SHEET C2.12
SHEET C2.13
SHEET C2.14
SHEET C2.15
SHEET C2.16
SHEET C2.17

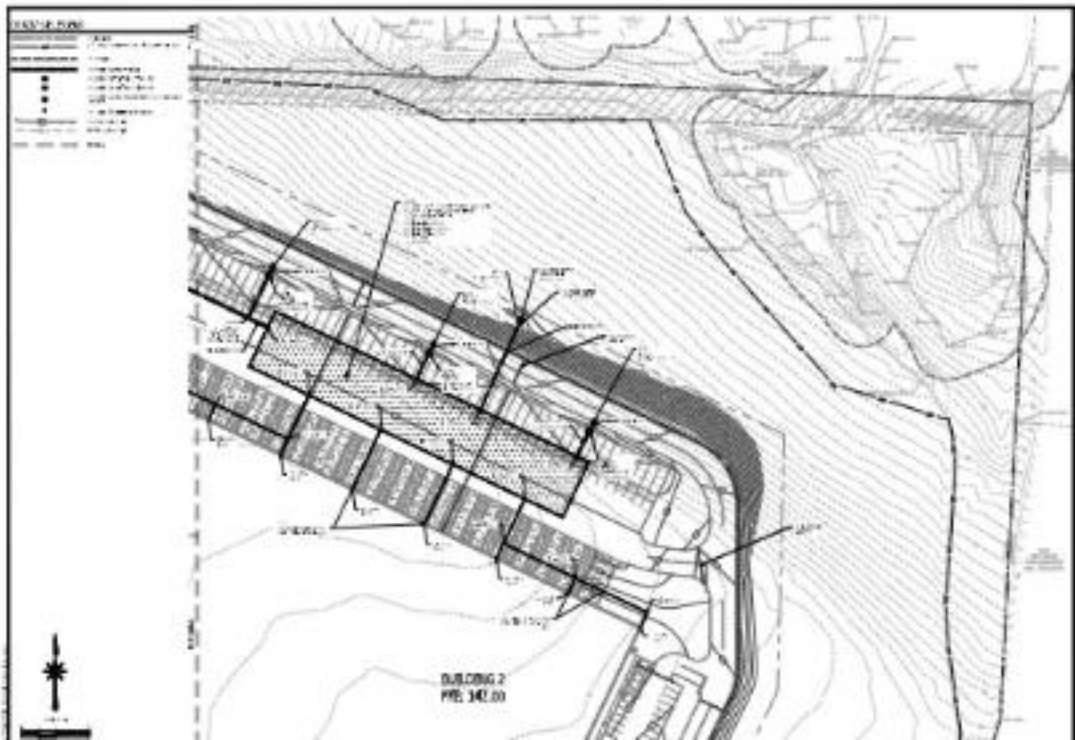


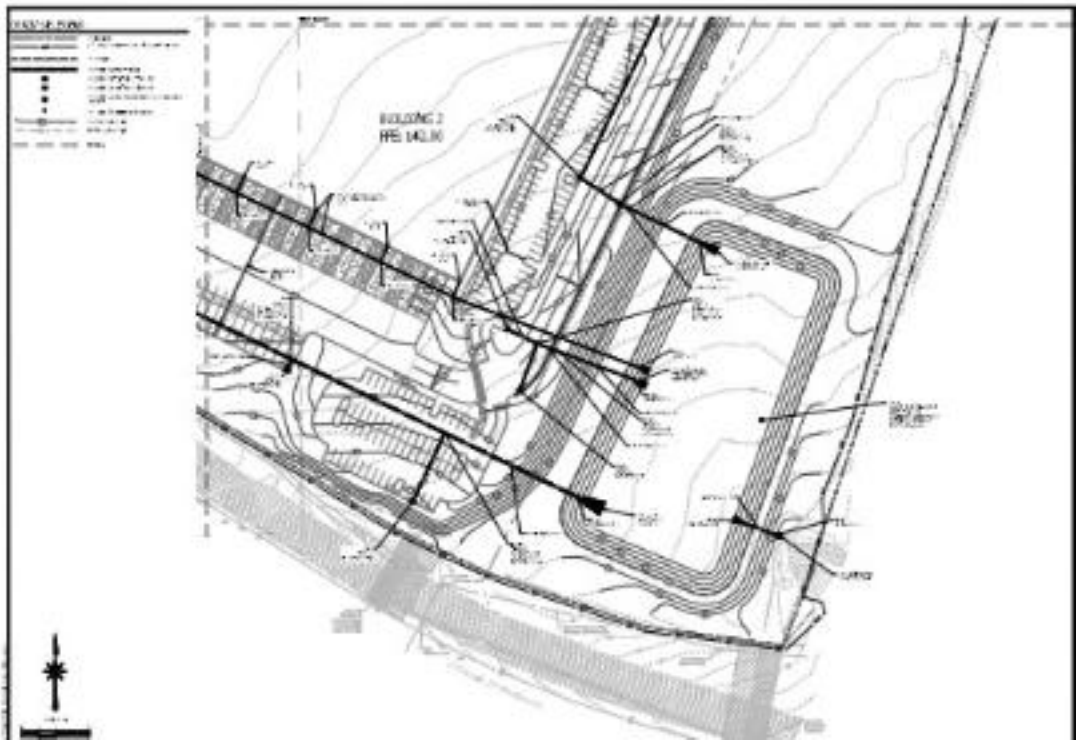

BUILDING 1
FFE: 845.00

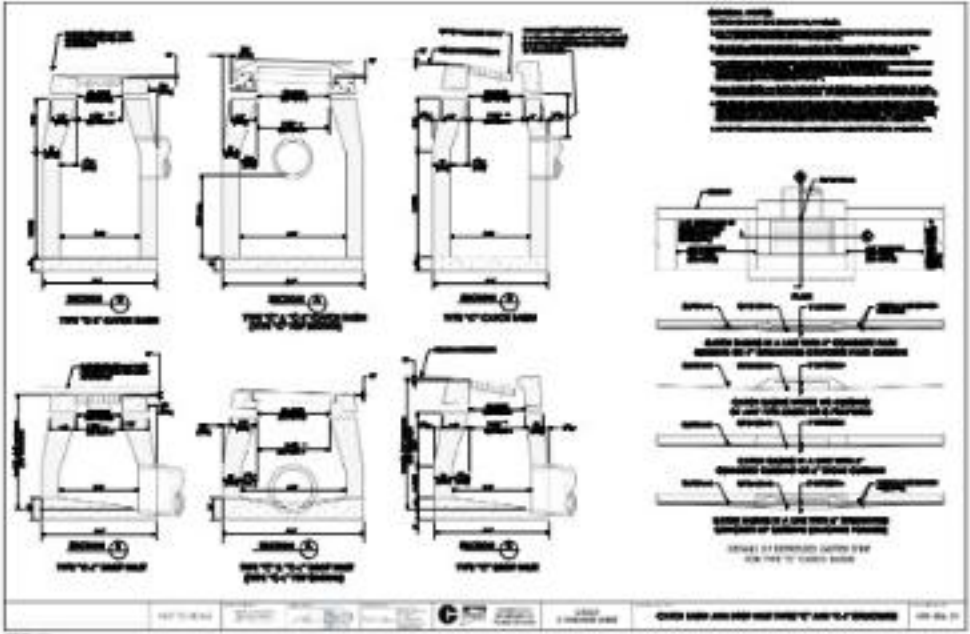

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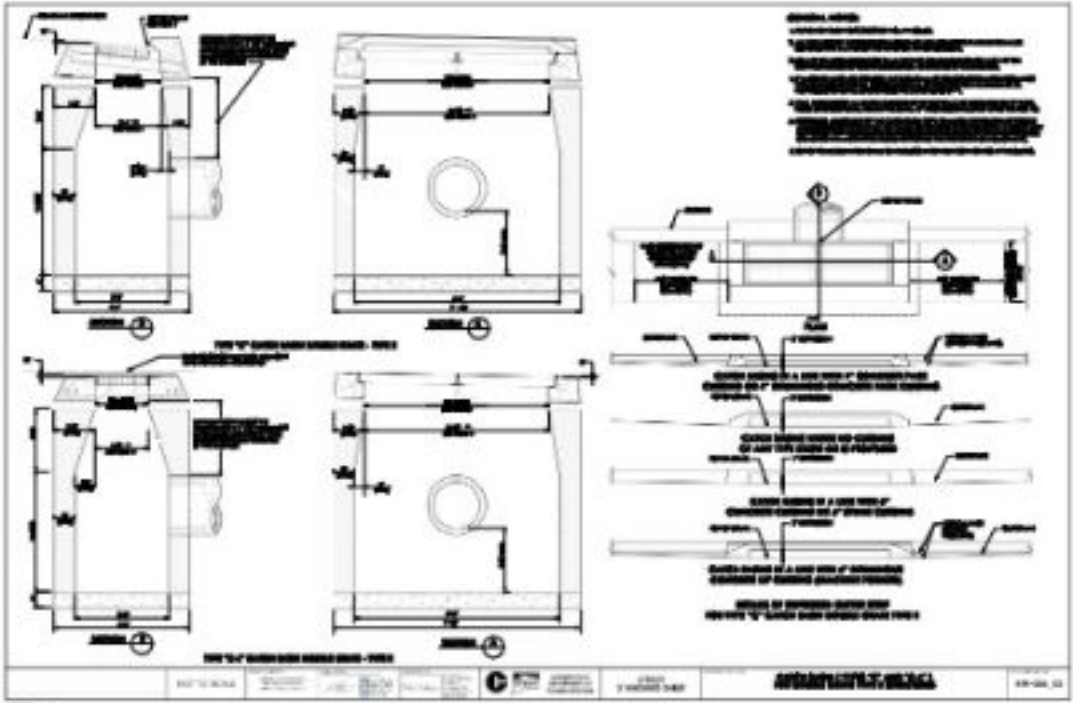


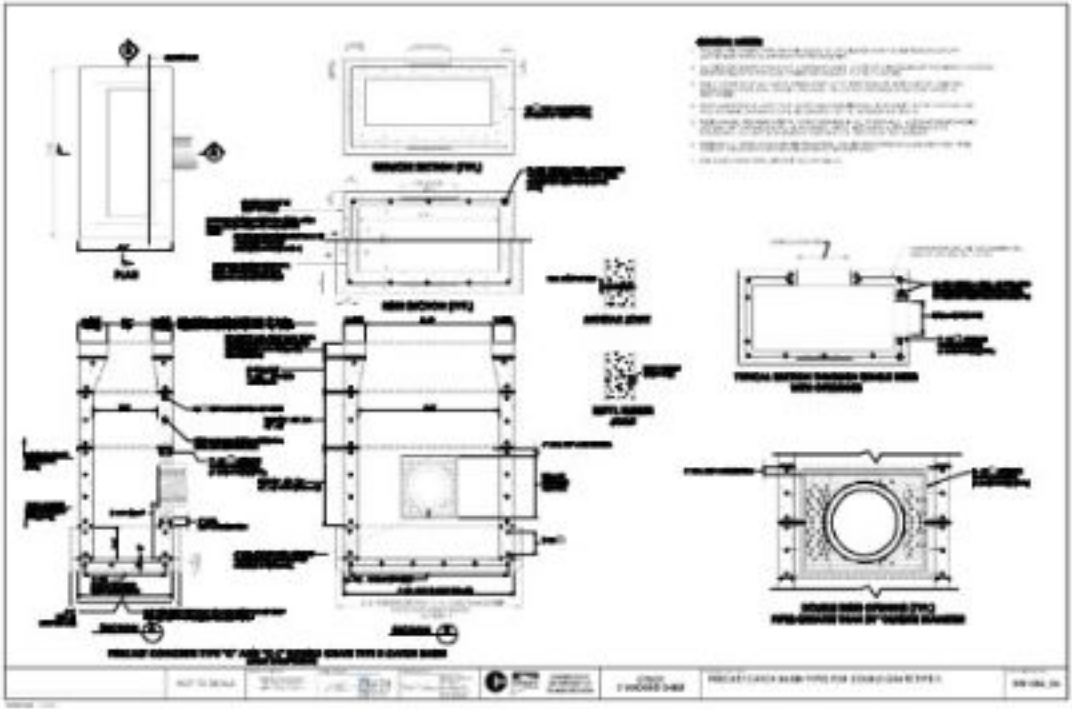


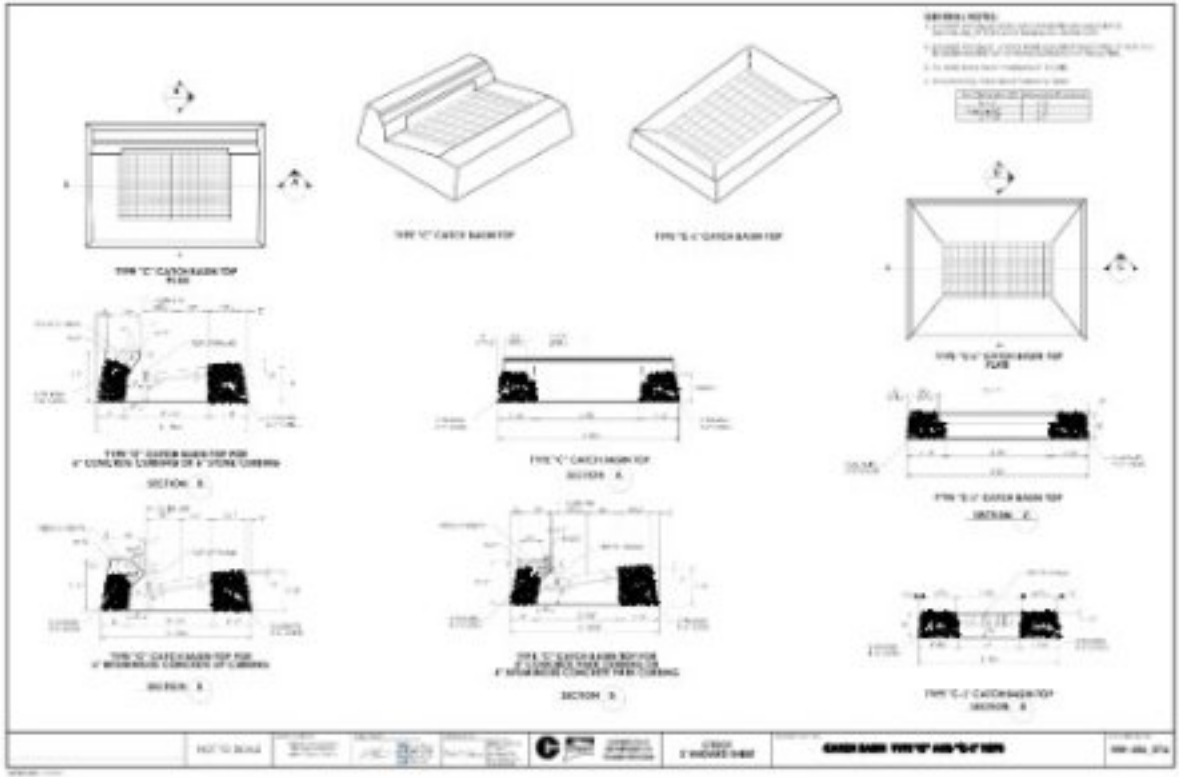

BUILDING 2
FFE 340.00

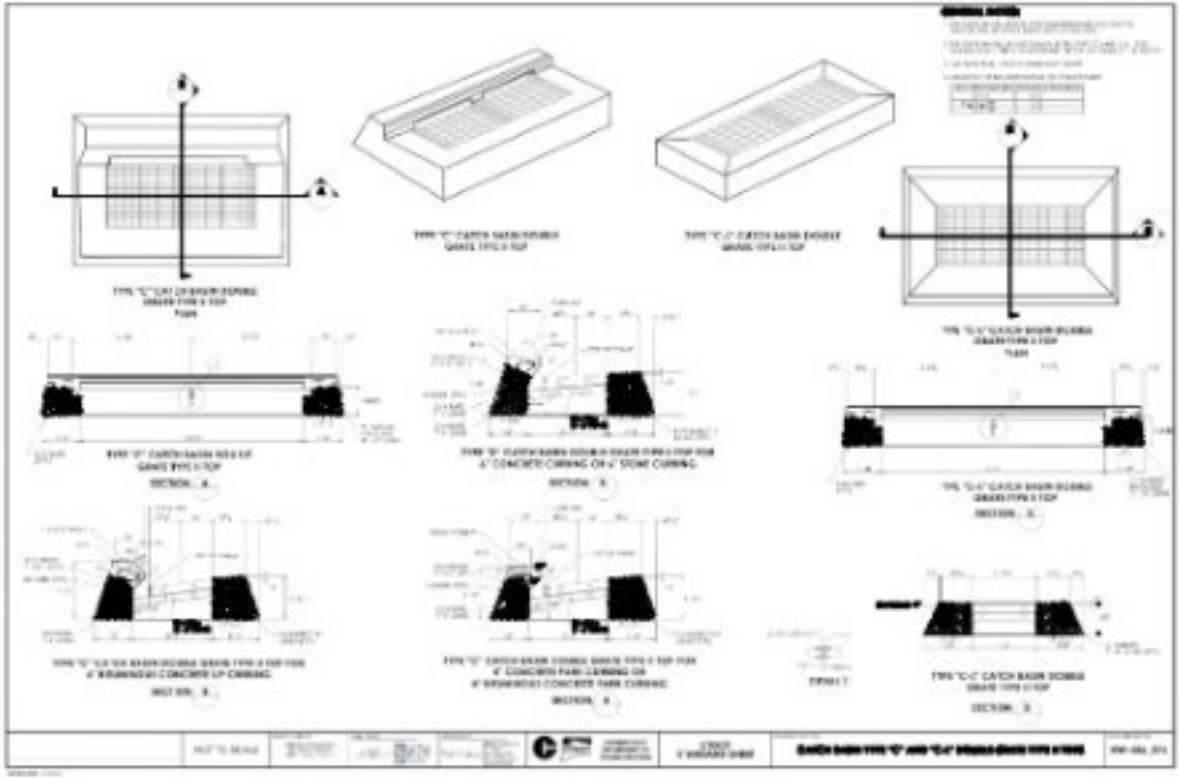


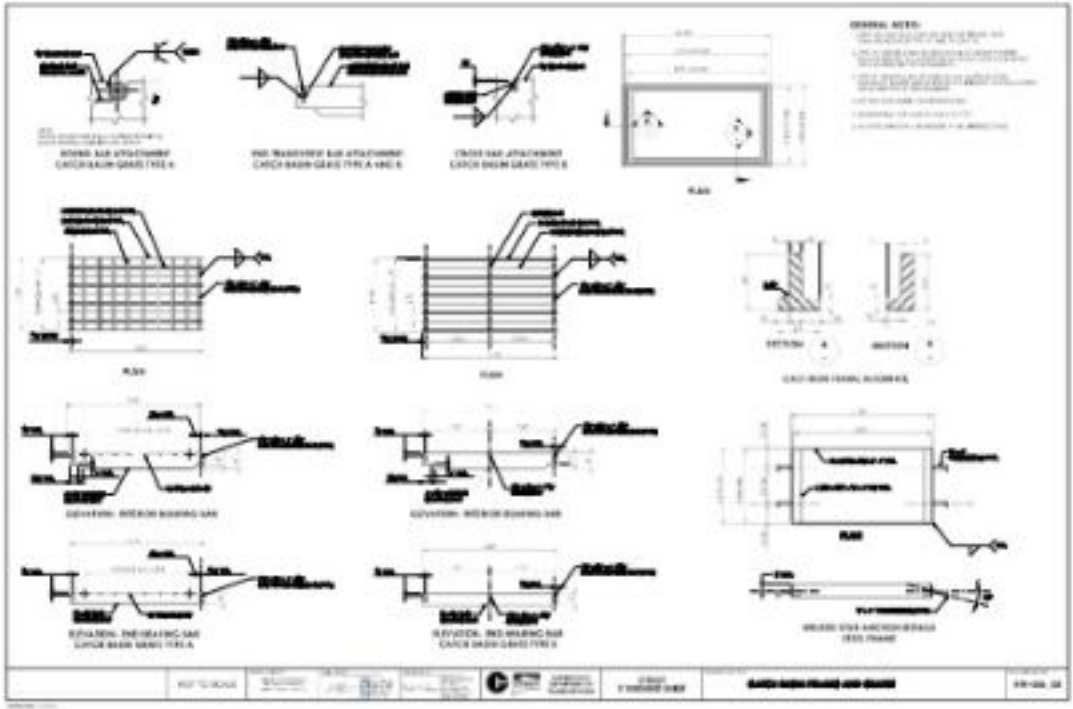








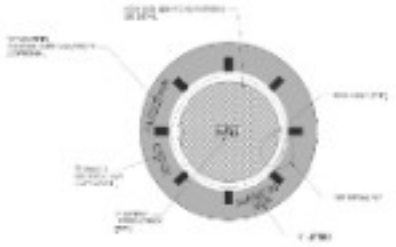




GENERAL NOTES:



MANHOLE FRAME AND COVER



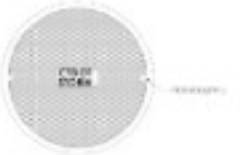
PLAN



DETAIL "A"



DIAMOND PATTERN
PLAN



MANHOLE COVER
PLAN

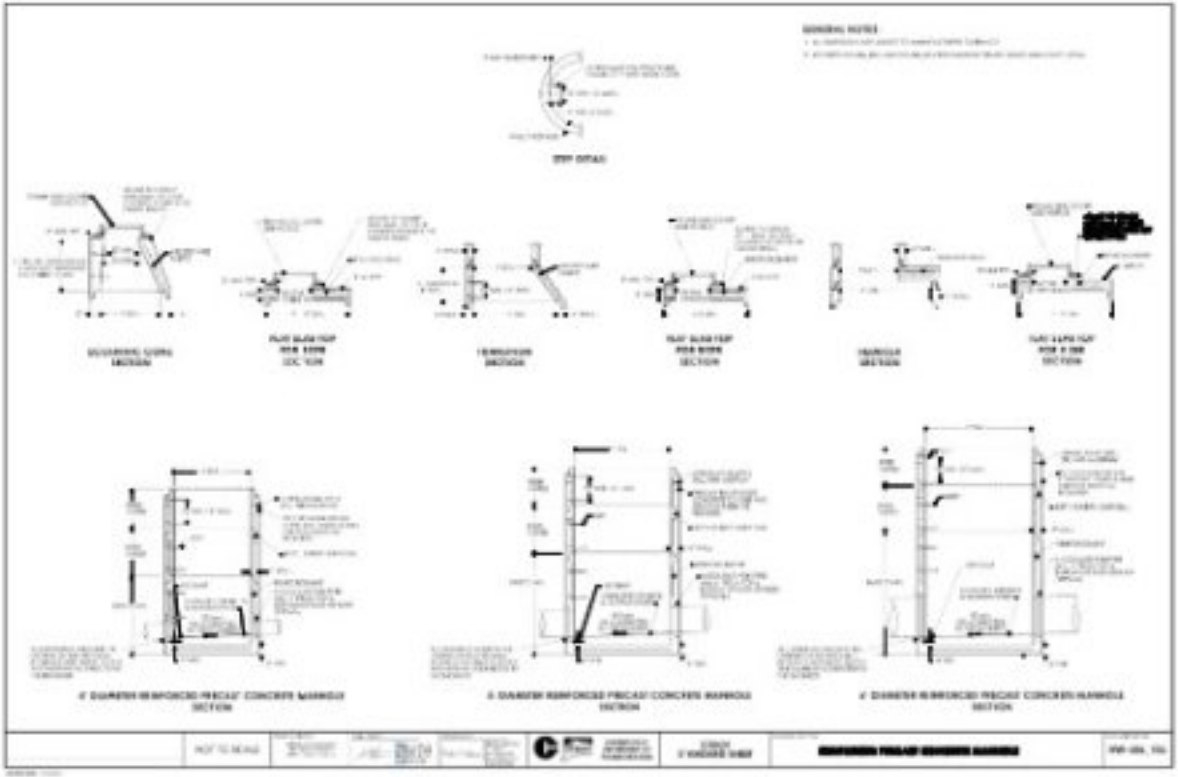


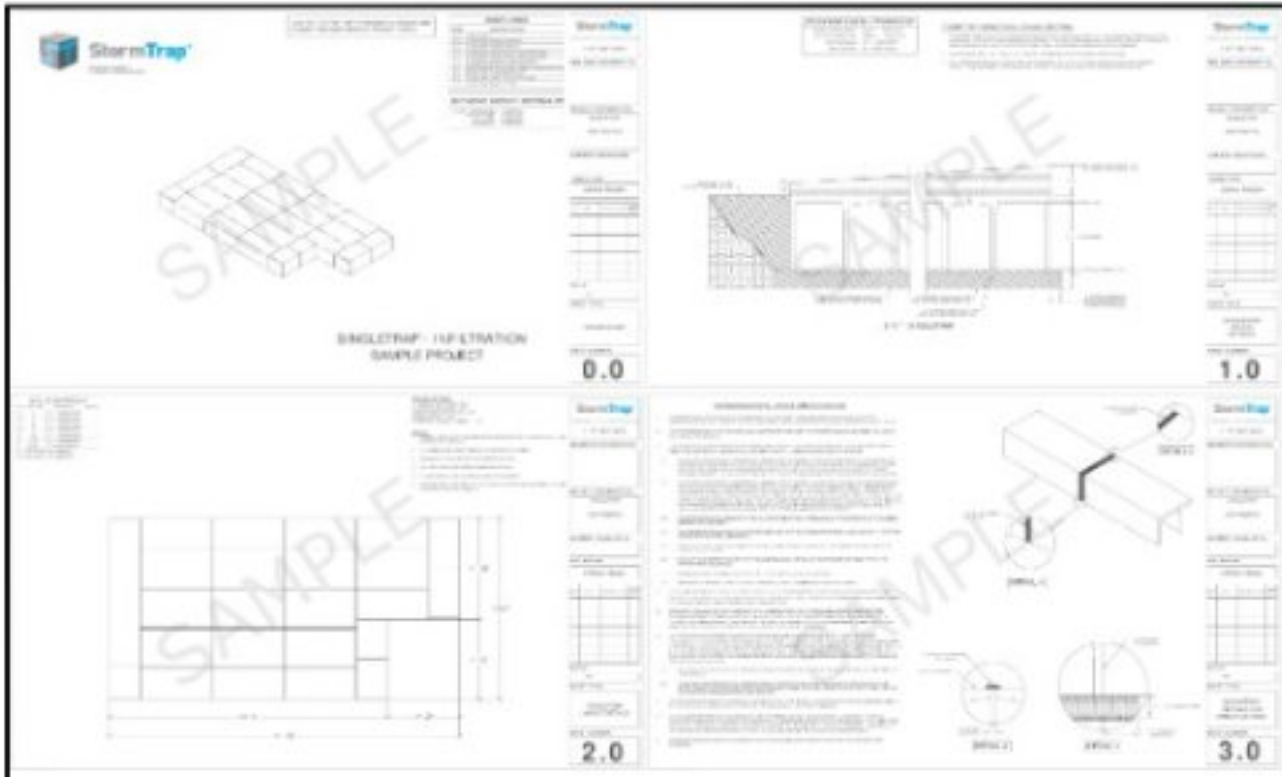
MANHOLE FRAME AND COVER

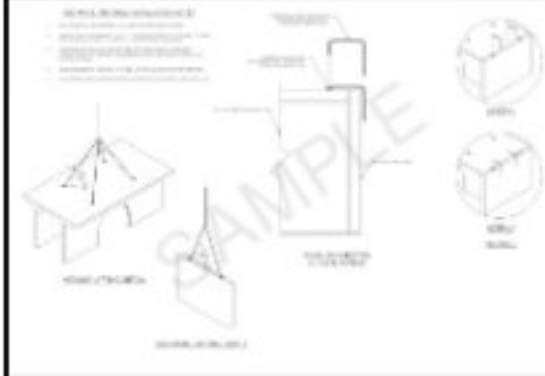


MANHOLE COVER WITH
DIAMOND PATTERN

	NOT TO SCALE					STANDARD DRAWING	MANHOLE FRAME AND COVER



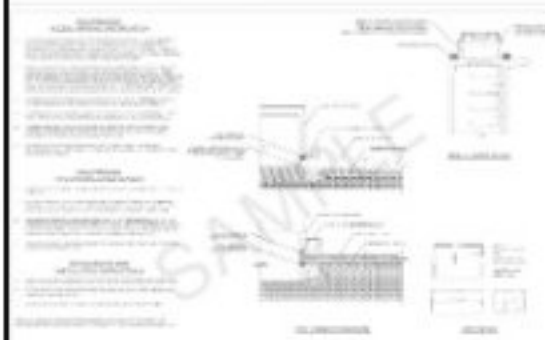

StormTrap
SAMPLE
SINGLETRAP - I-NFILTRATION
SAMPLE PROJECT
0.0
1.0
2.0
3.0



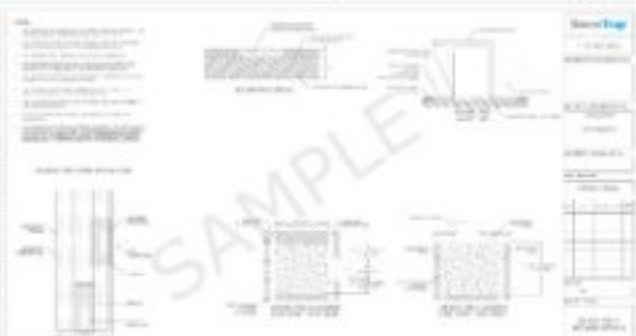
3.1



4.0

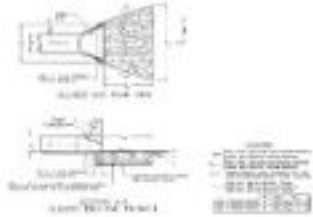


5.0



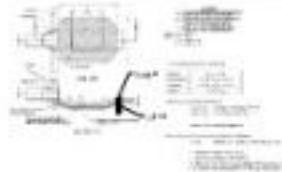
6.0





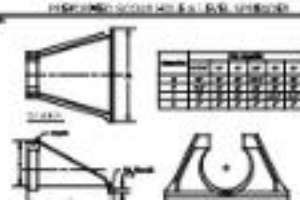
SAMPLE

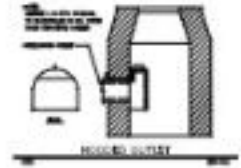


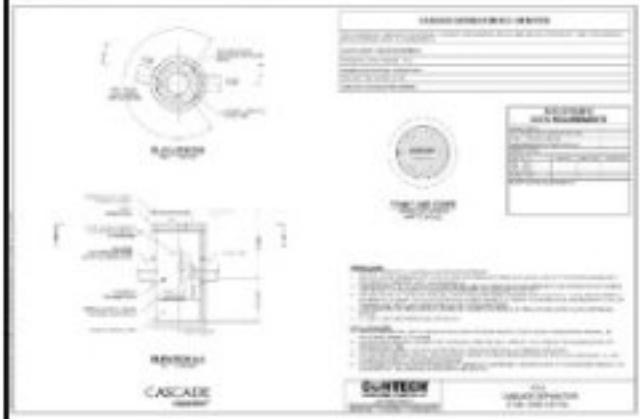


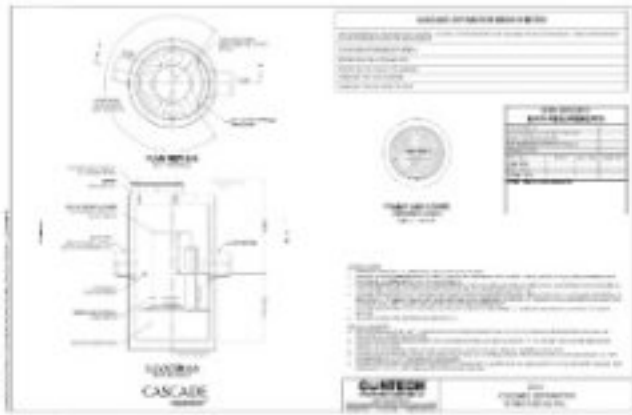


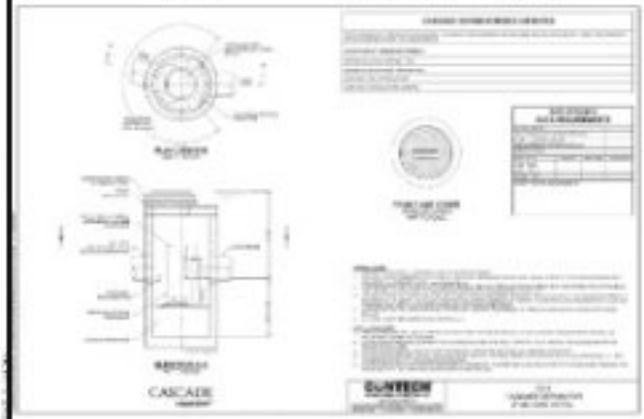




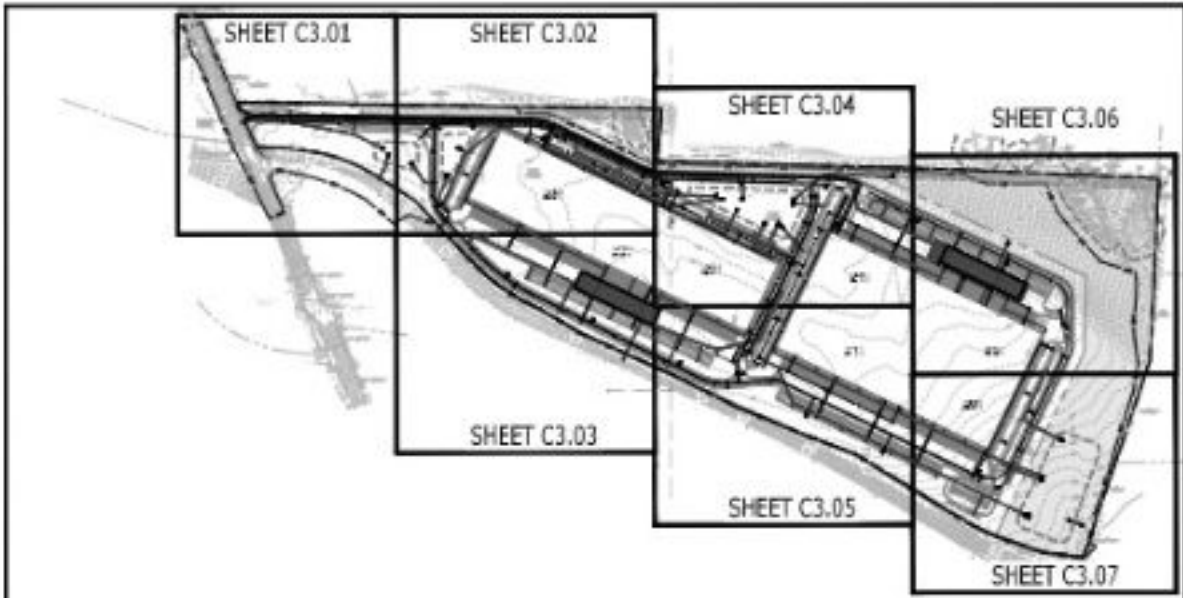


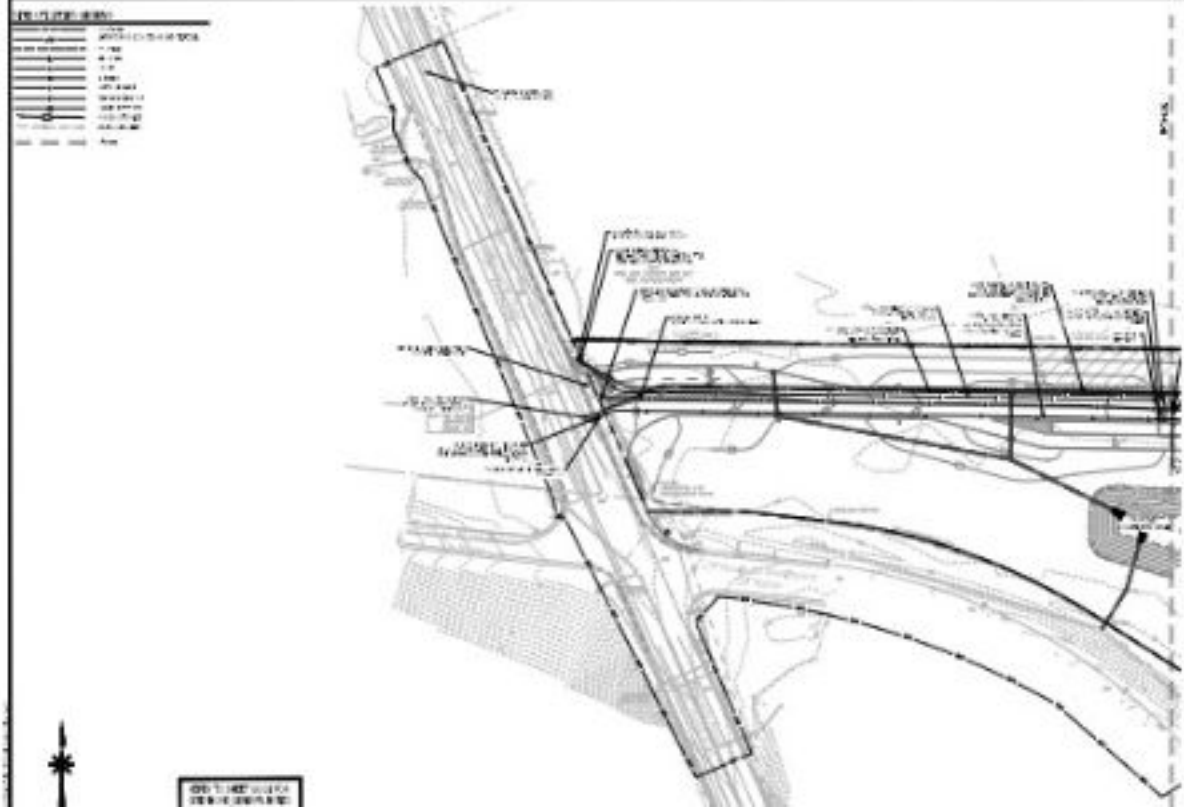


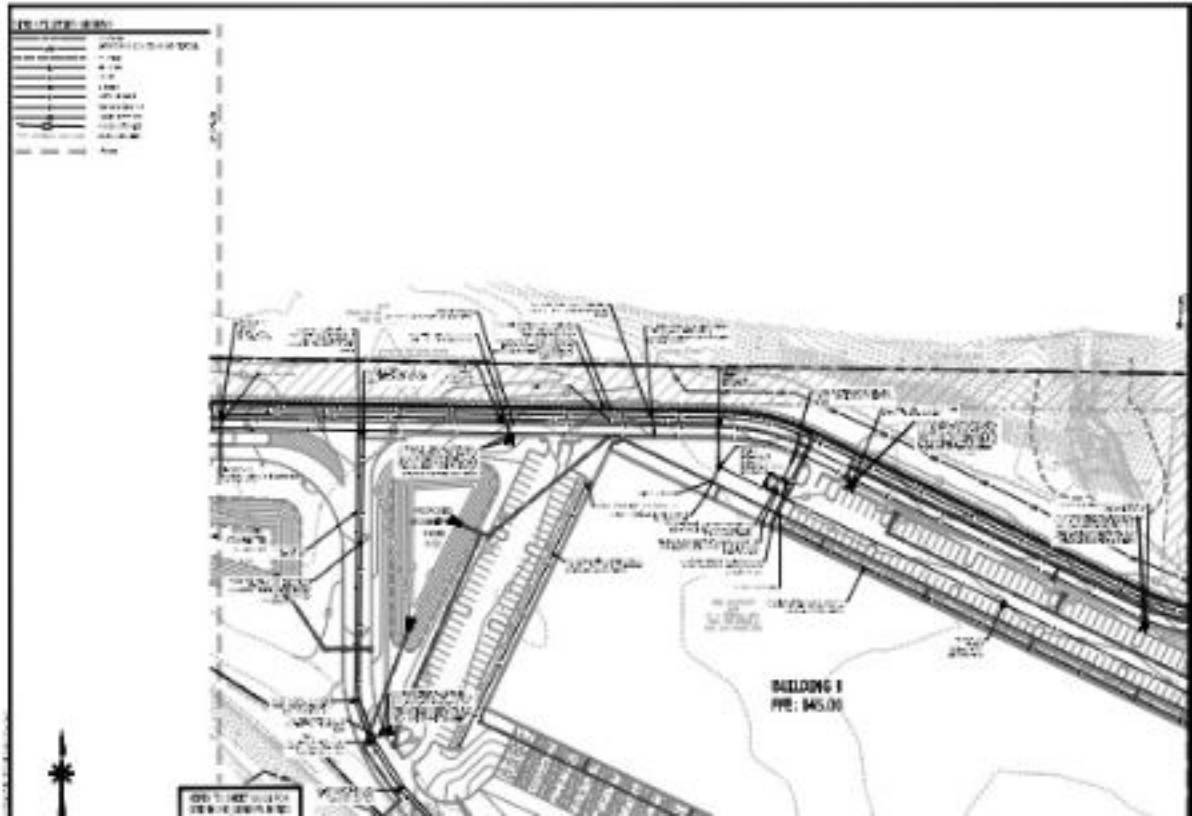


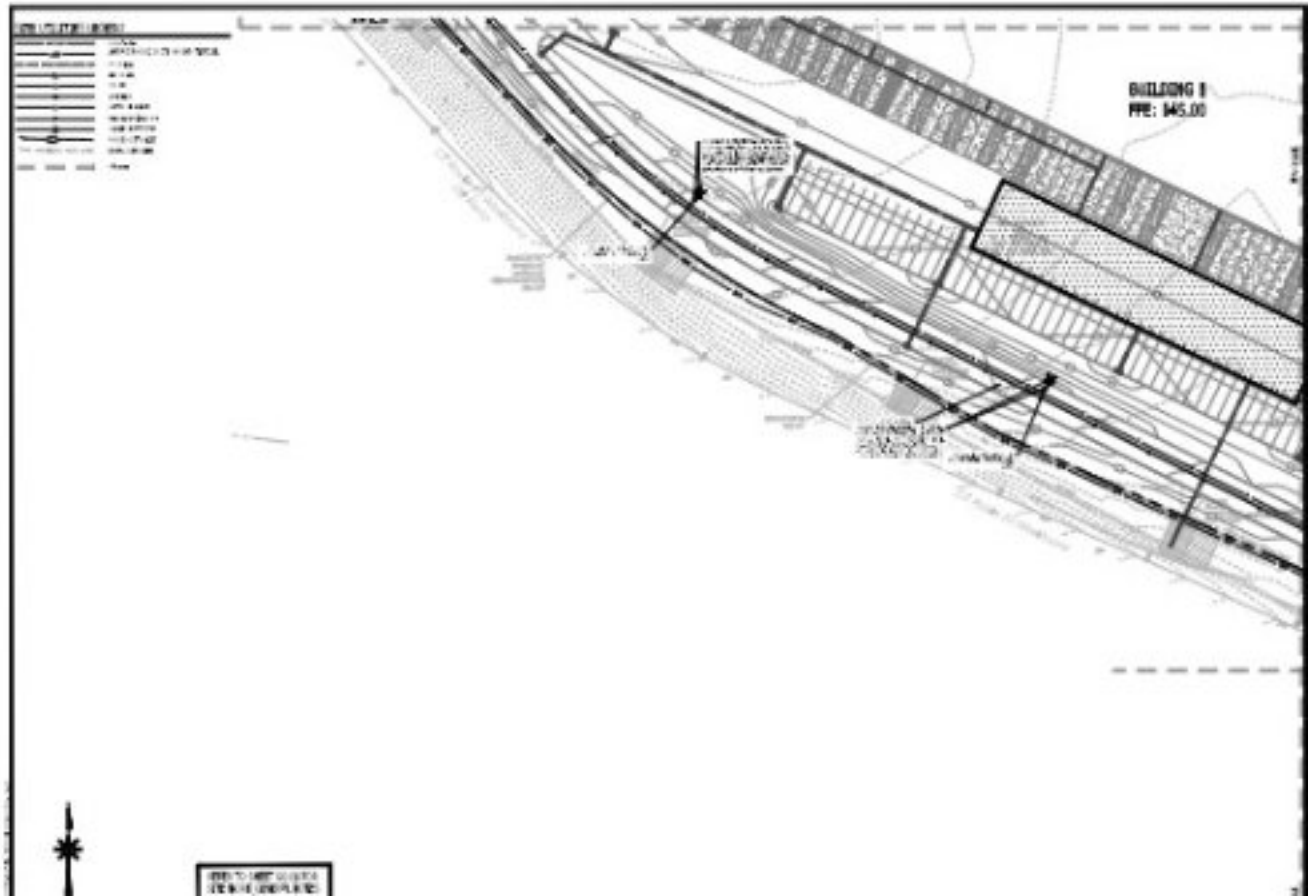


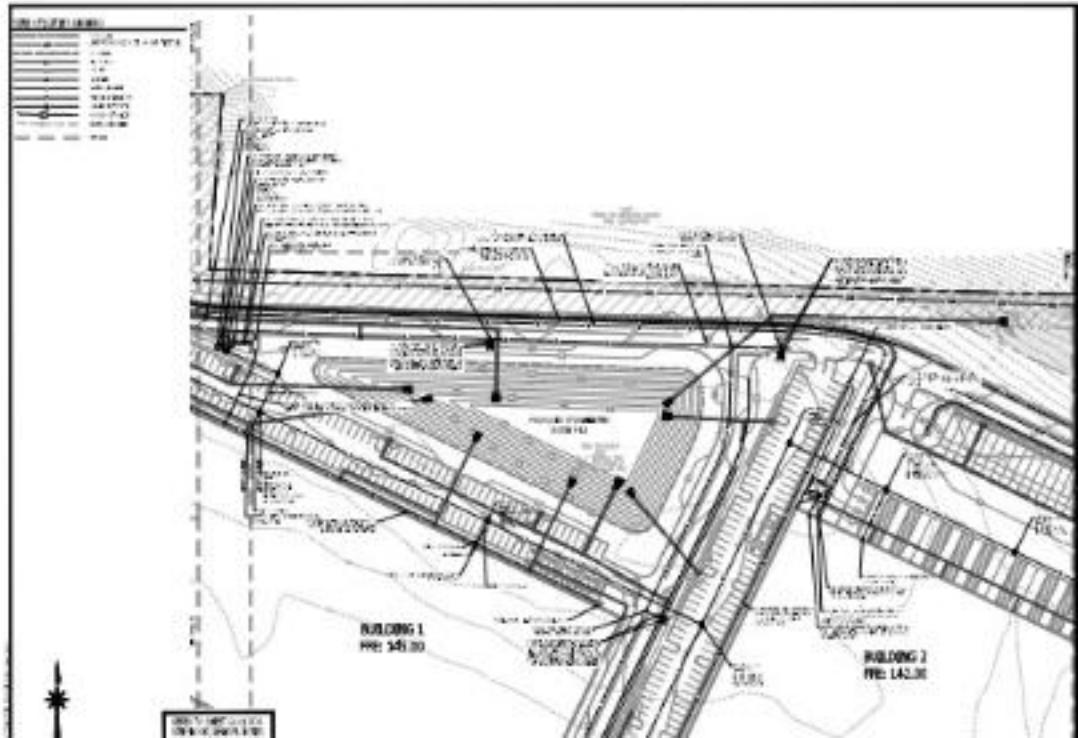


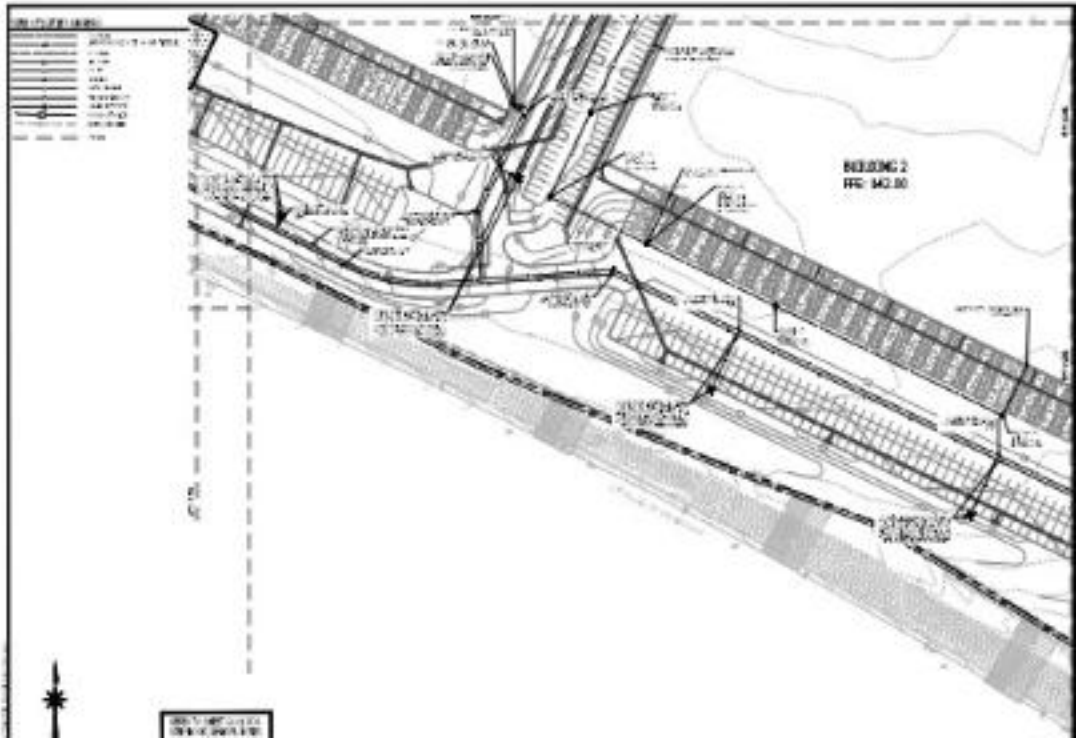

SHEET C3.01
SHEET C3.02
SHEET C3.04
SHEET C3.06
SHEET C3.03
SHEET C3.05
SHEET C3.07

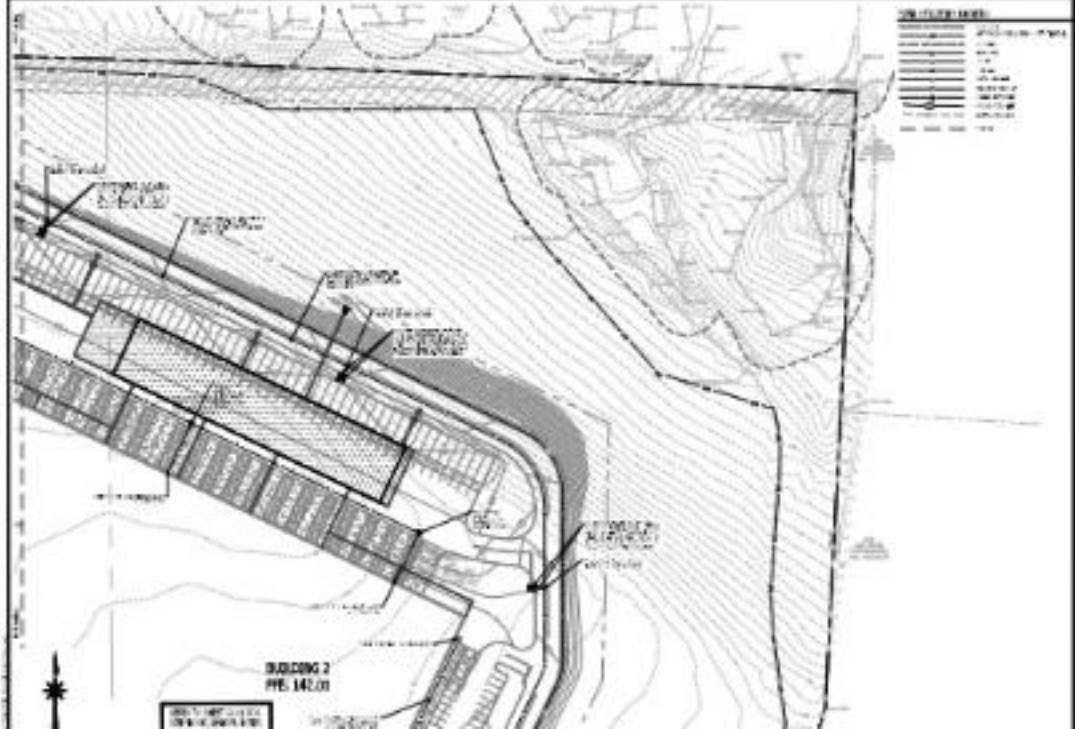


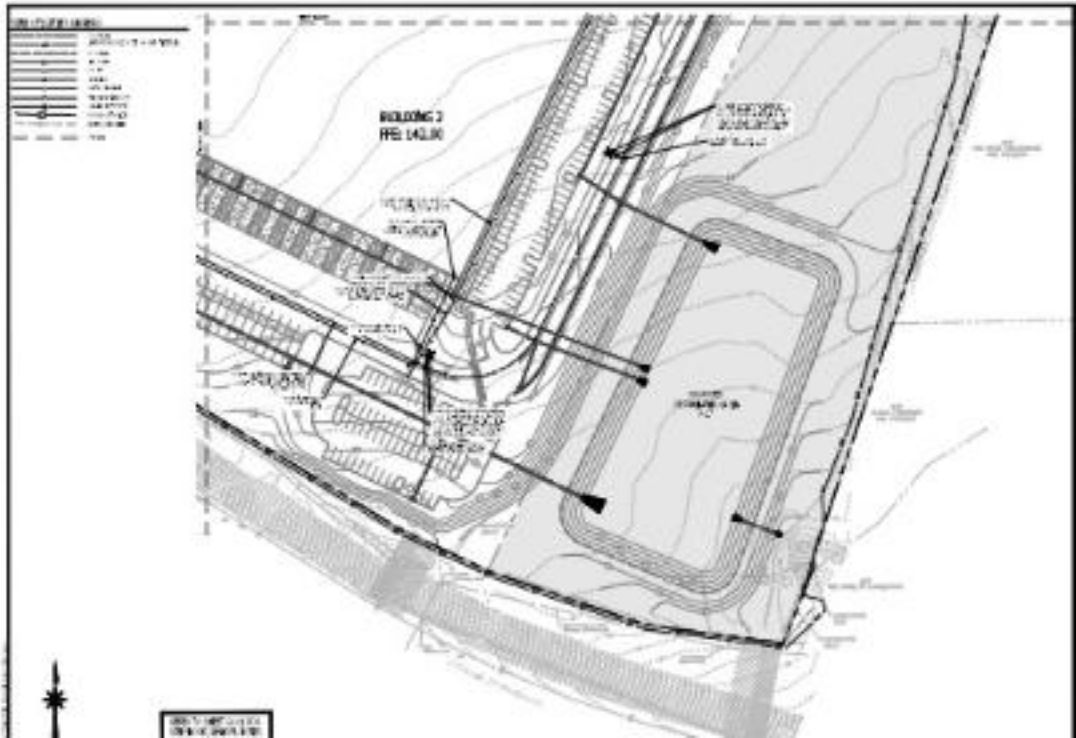

BUILDING 1
FFE: 845.00

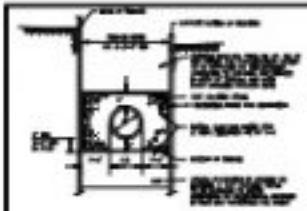

BUILDING 1
FFE: 845.00

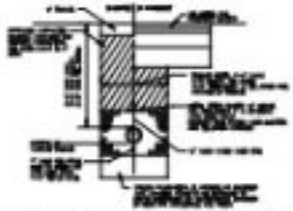

BUILDING 1
BUILDING 2

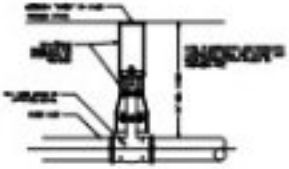



BUILDING 2
FFE 142.00



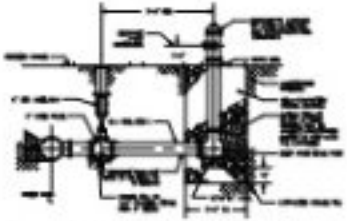




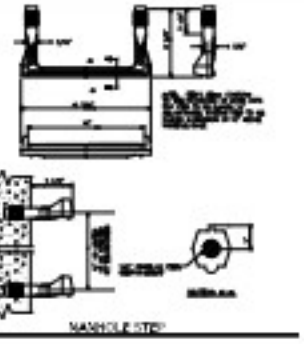




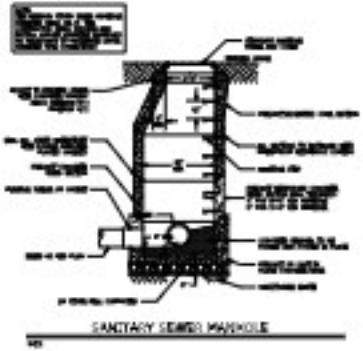




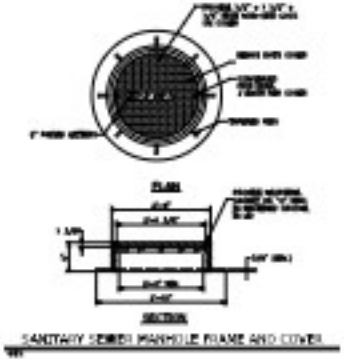




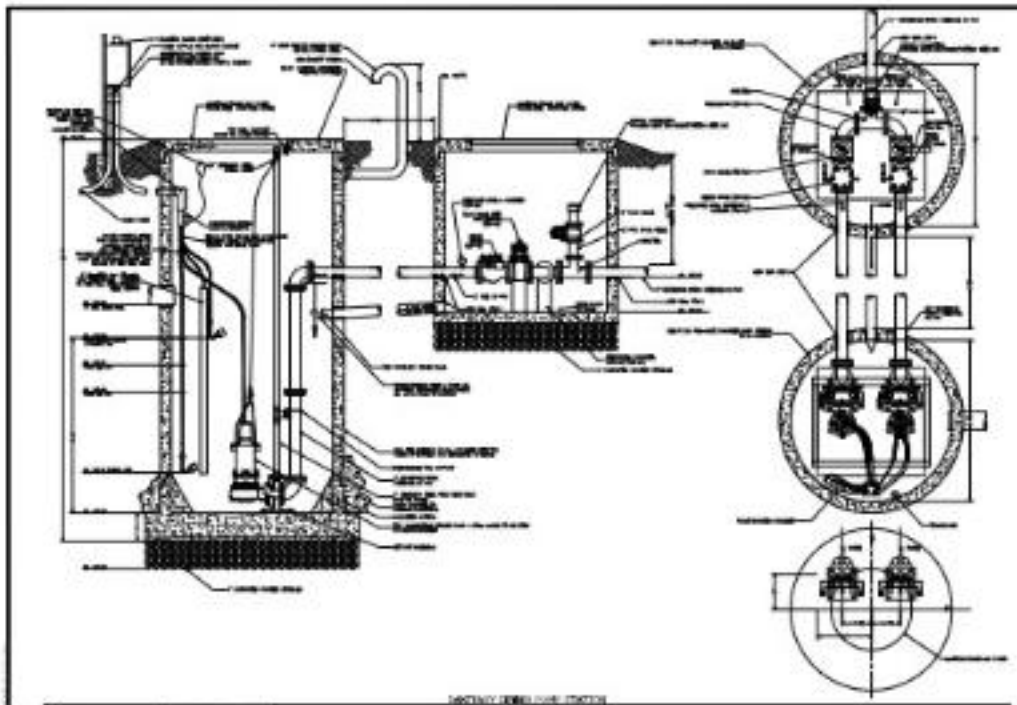
MANHOLE STEP

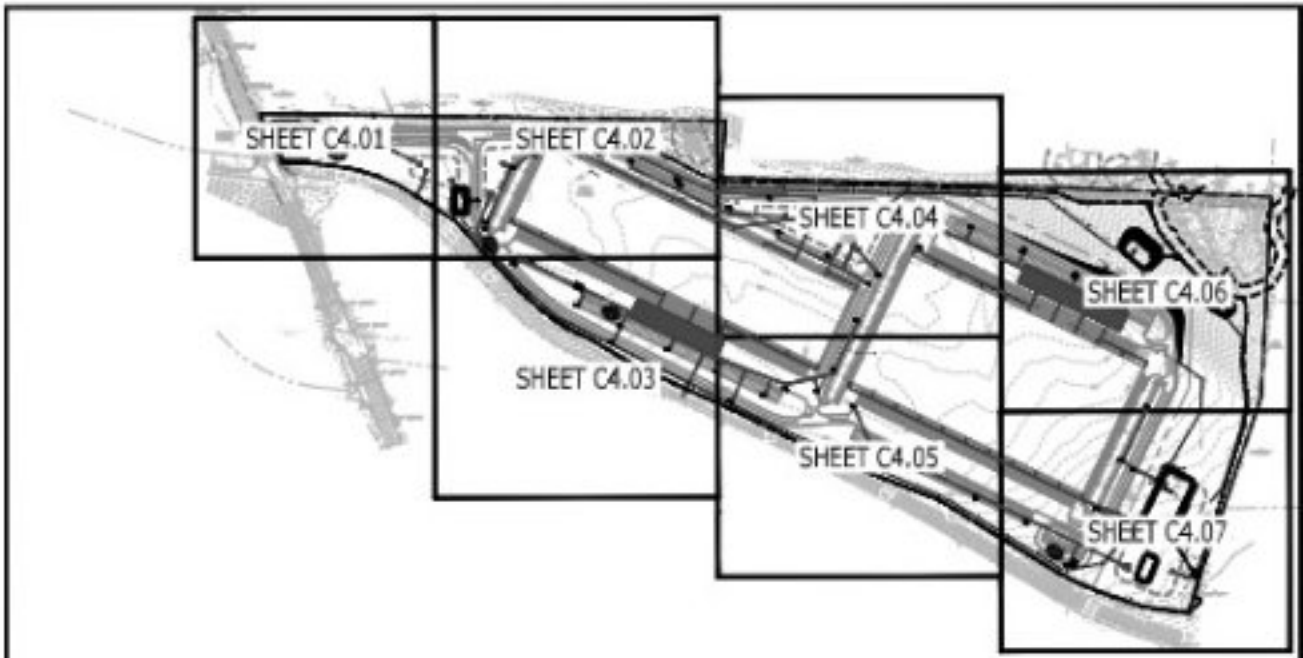


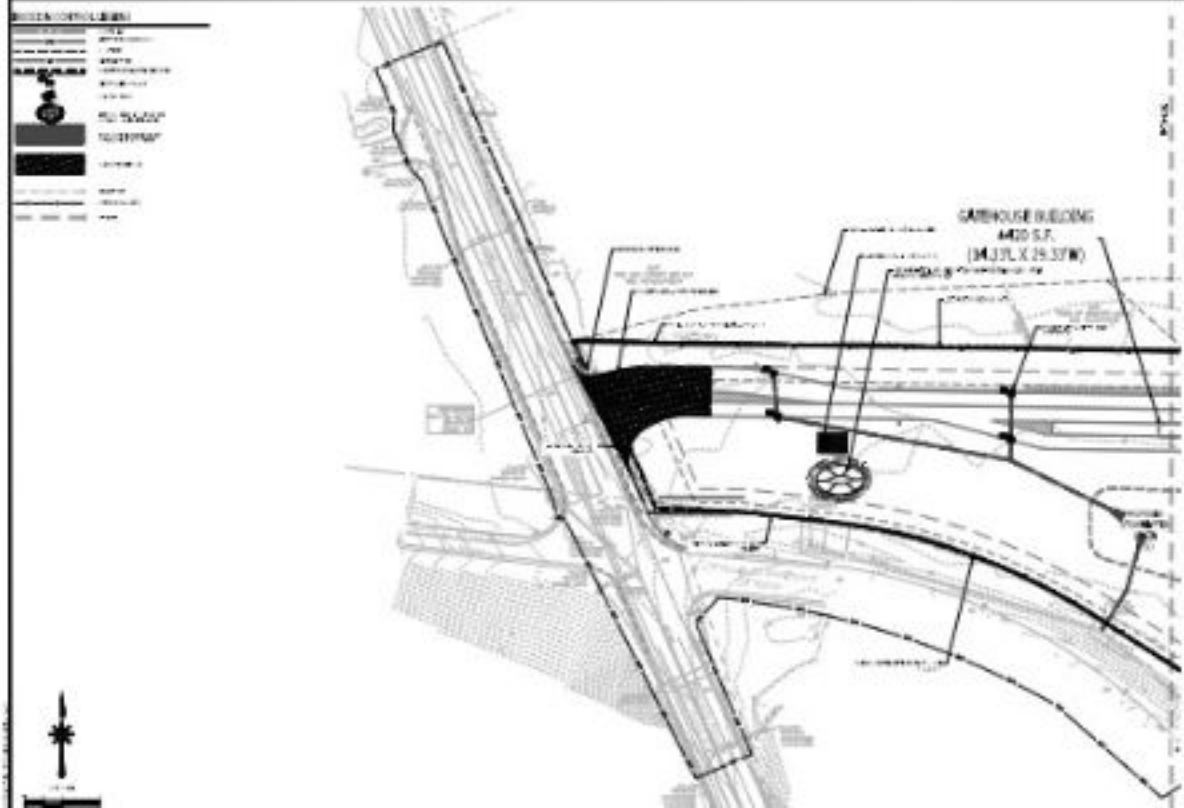
SANITARY SEWER MANHOLE

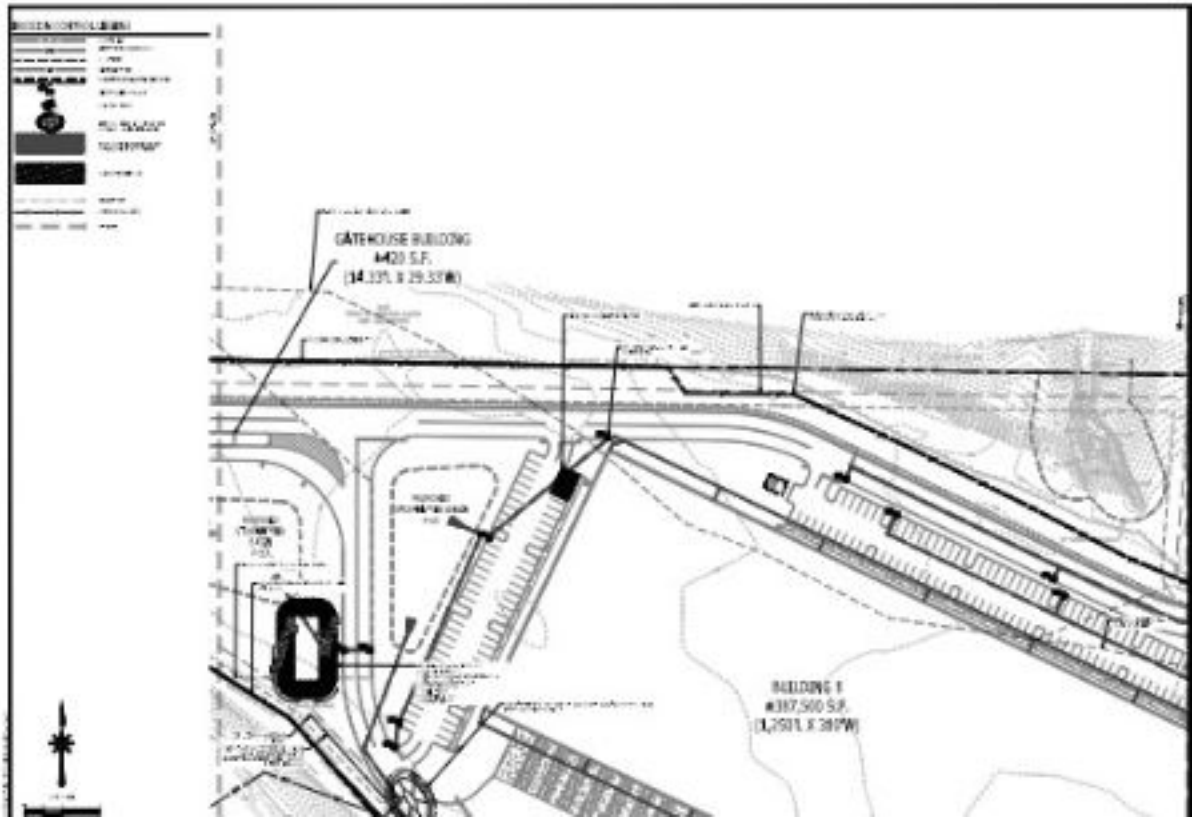


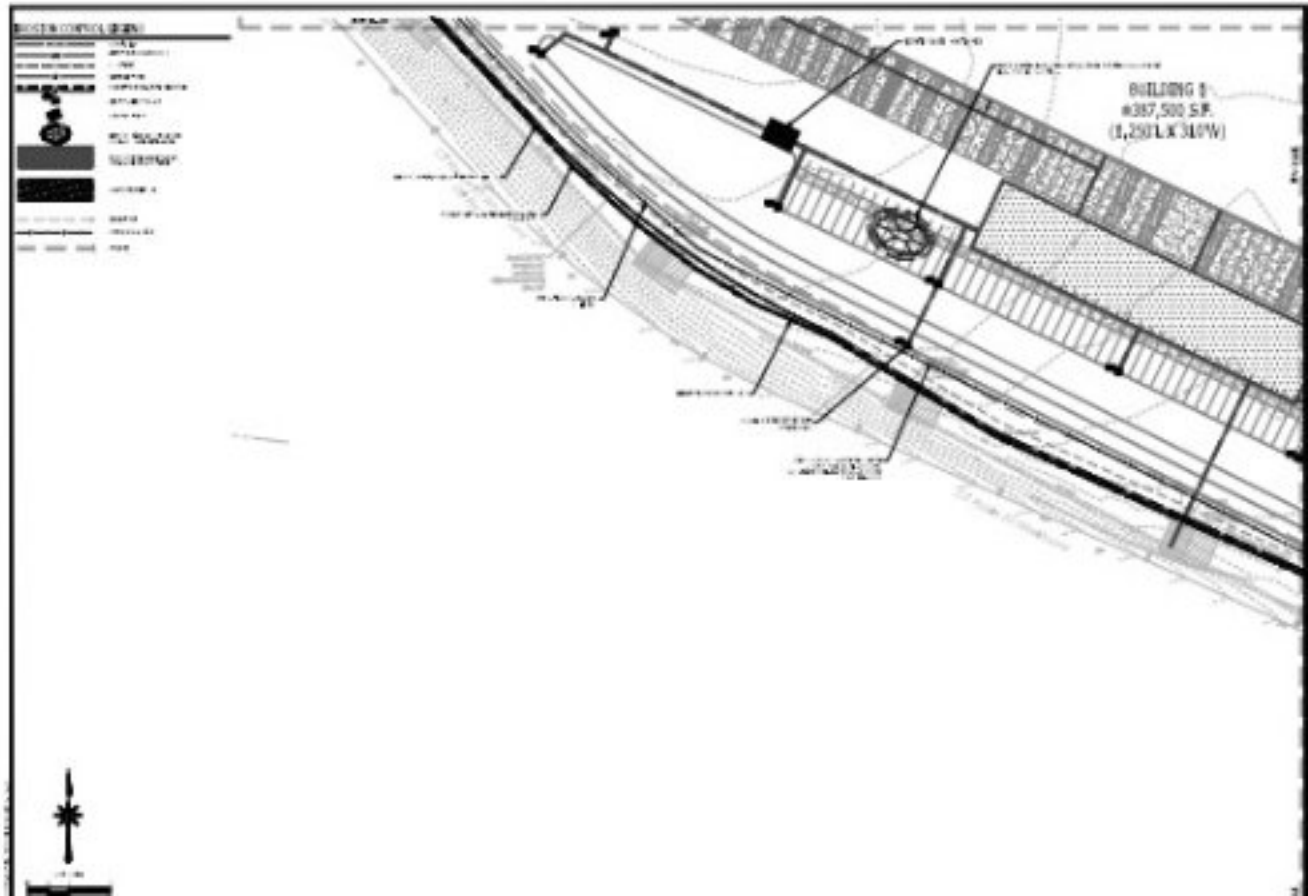
SANITARY SEWER MANHOLE FRAME AND COVER

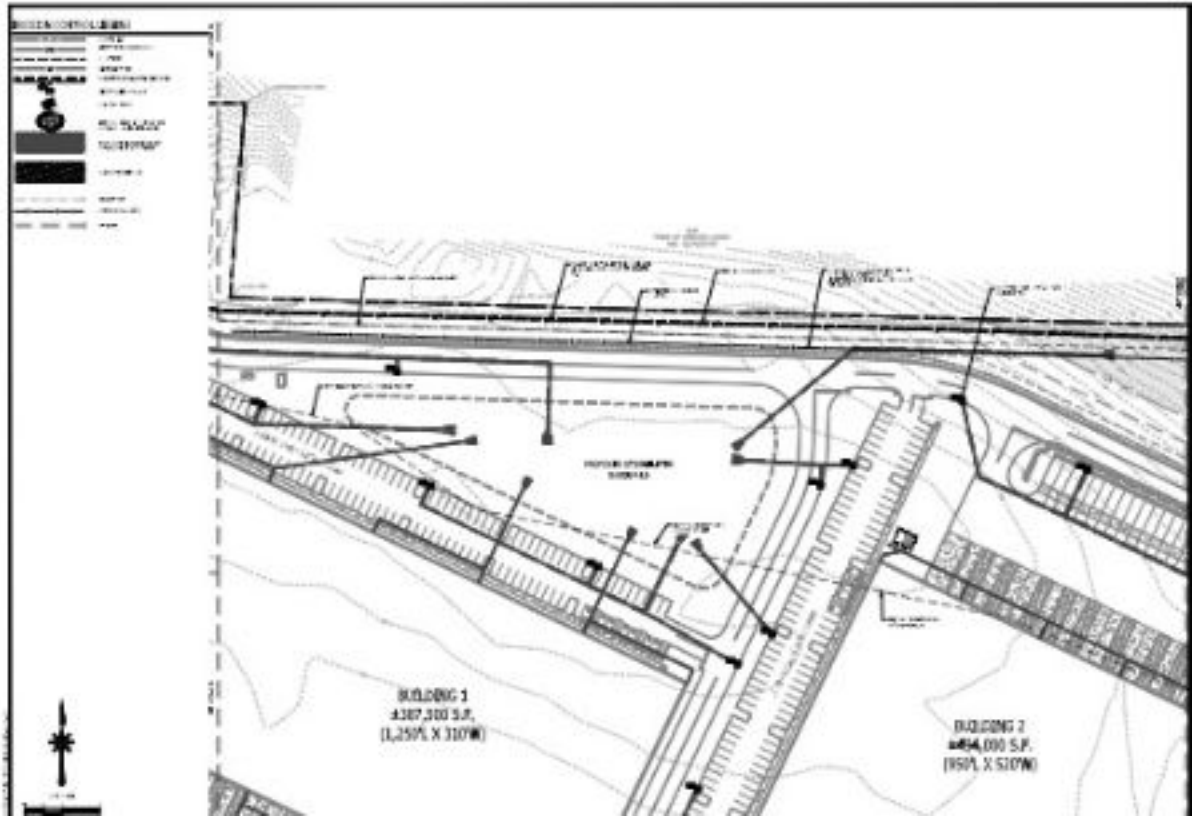


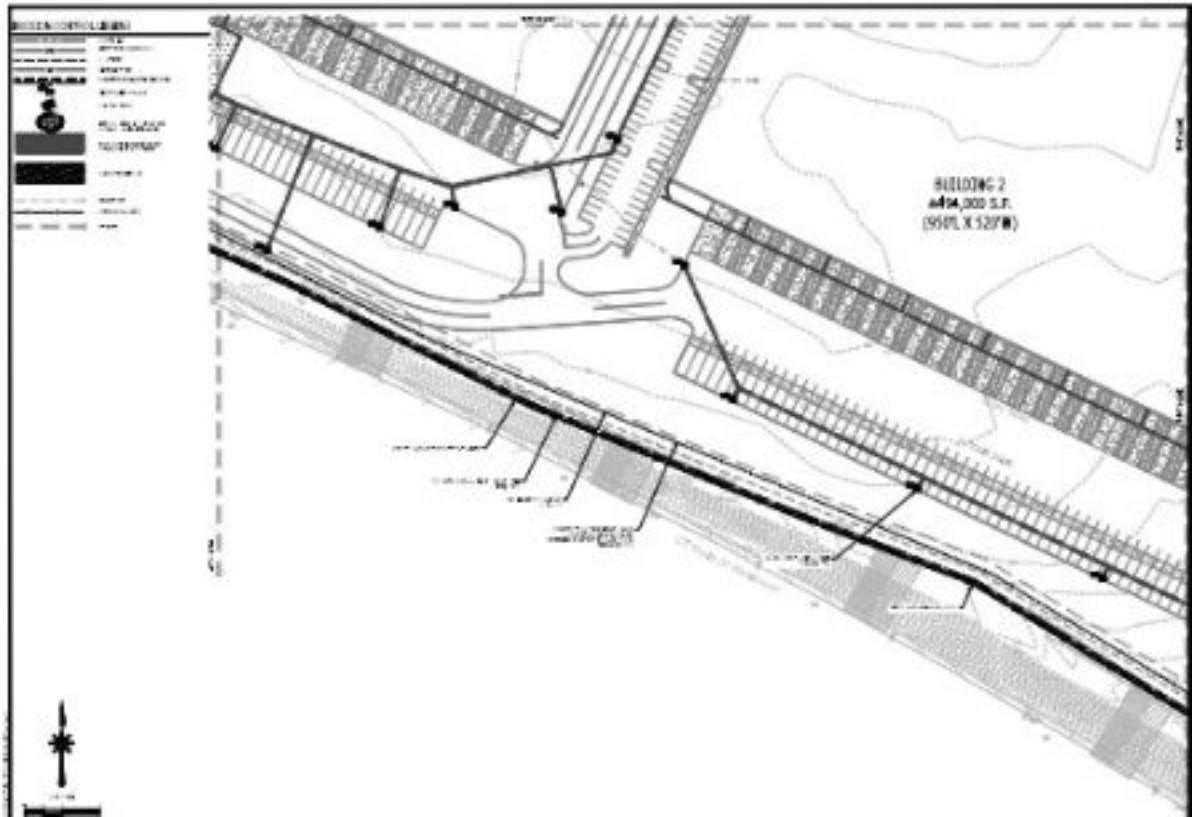

SHEET C4.01
SHEET C4.02
SHEET C4.03
SHEET C4.04
SHEET C4.05
SHEET C4.06
SHEET C4.07

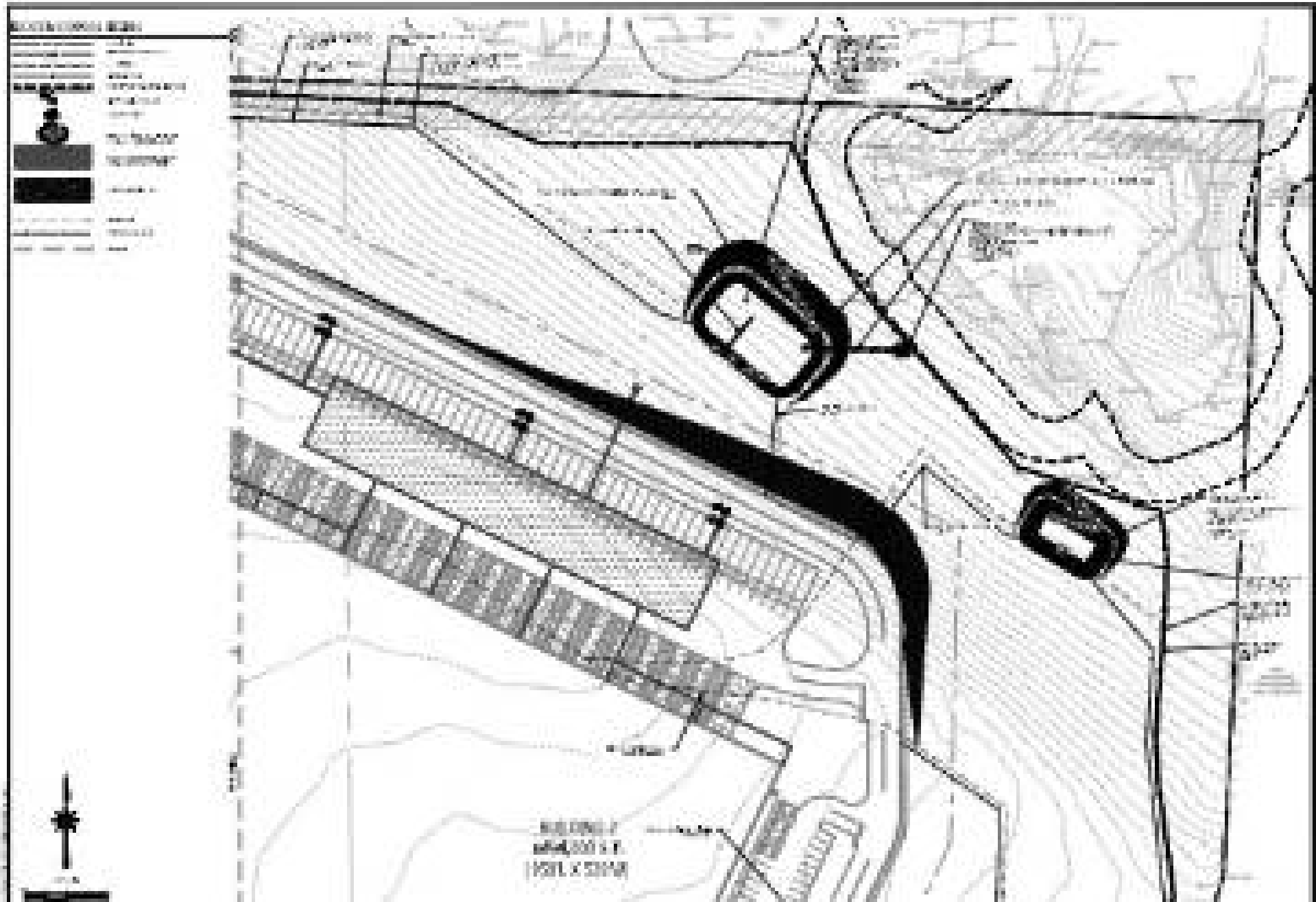

GATEHOUSE BUILDING
4420 S.F.

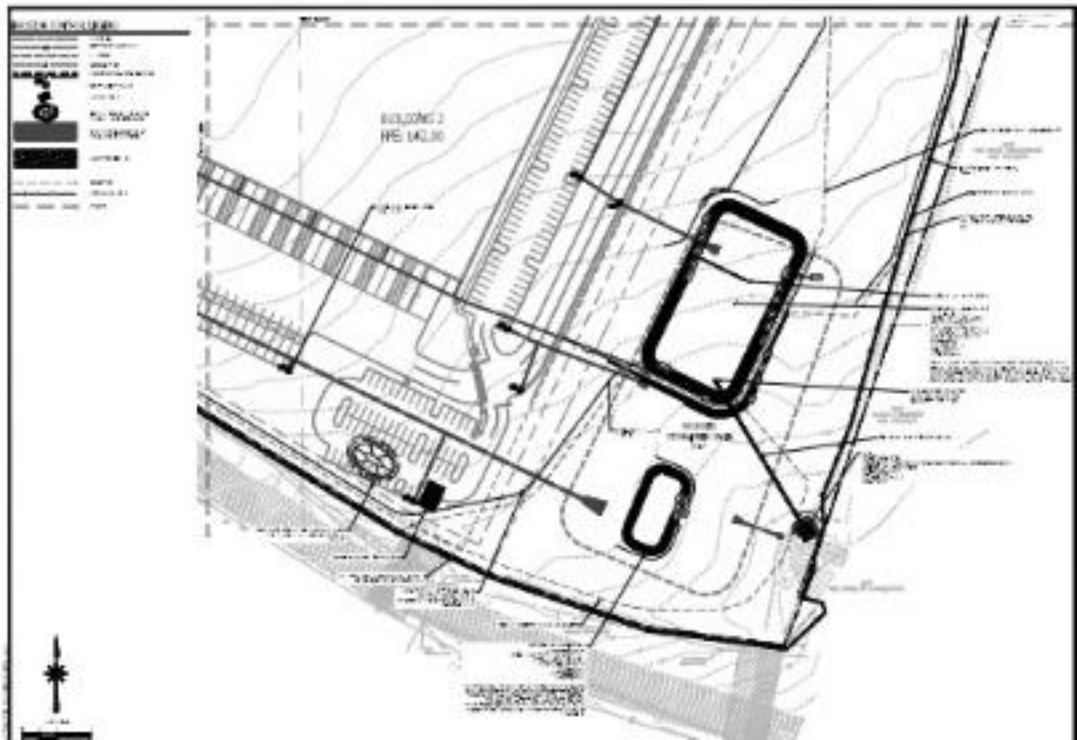

GATEHOUSE BUILDING
BUILDING 1


BUILDING 1
±387,500 S.F.
(1,250'L X 310'W)


BUILDING 1
±387,000 S.F.
(1,250'L X 310'W)
BUILDING 2
±454,000 S.F.
(950'L X 510'W)





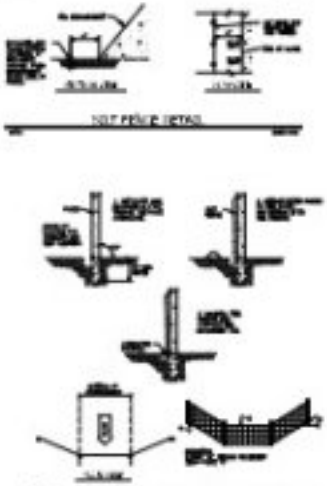


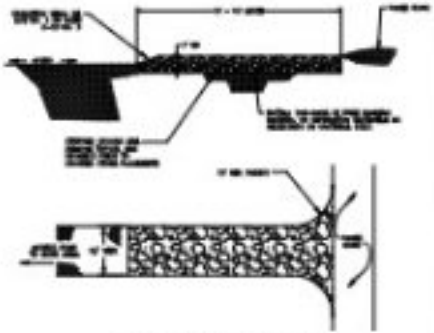




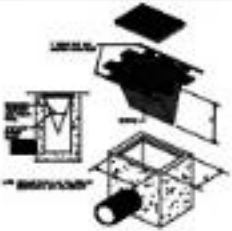








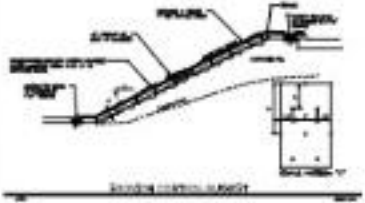










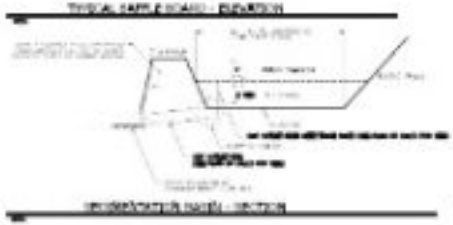








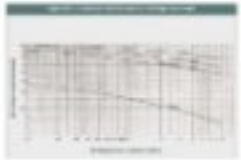






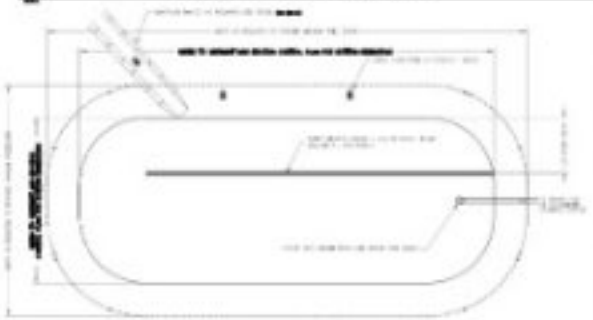


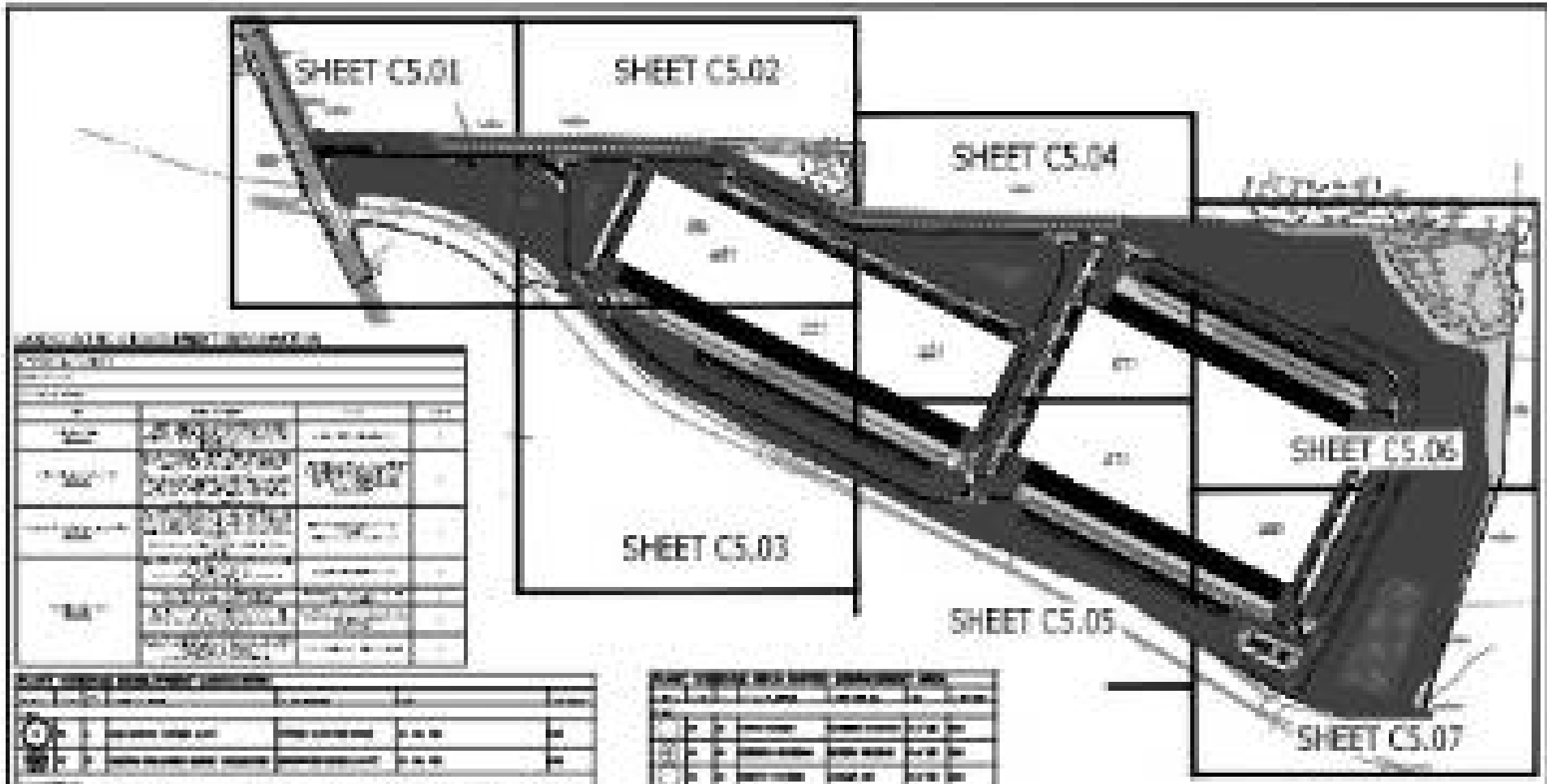


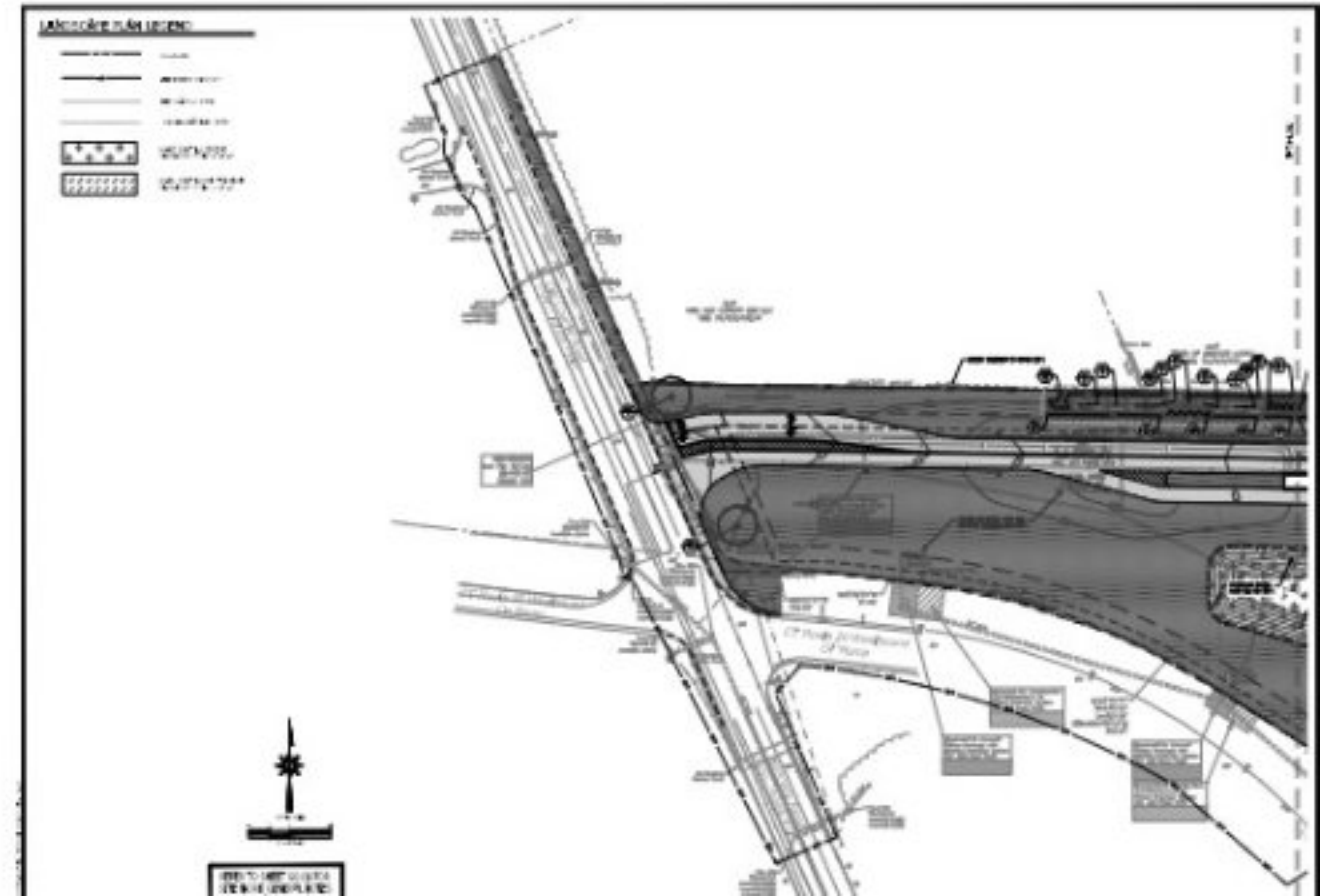


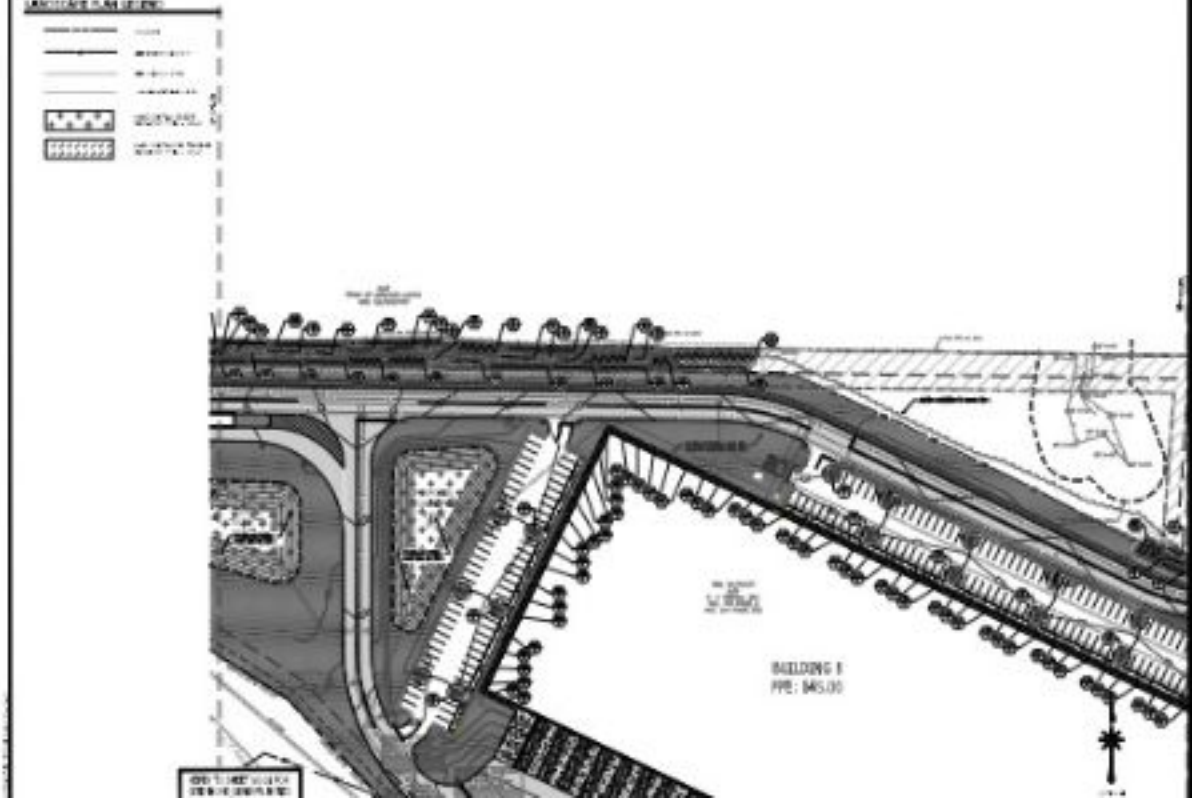


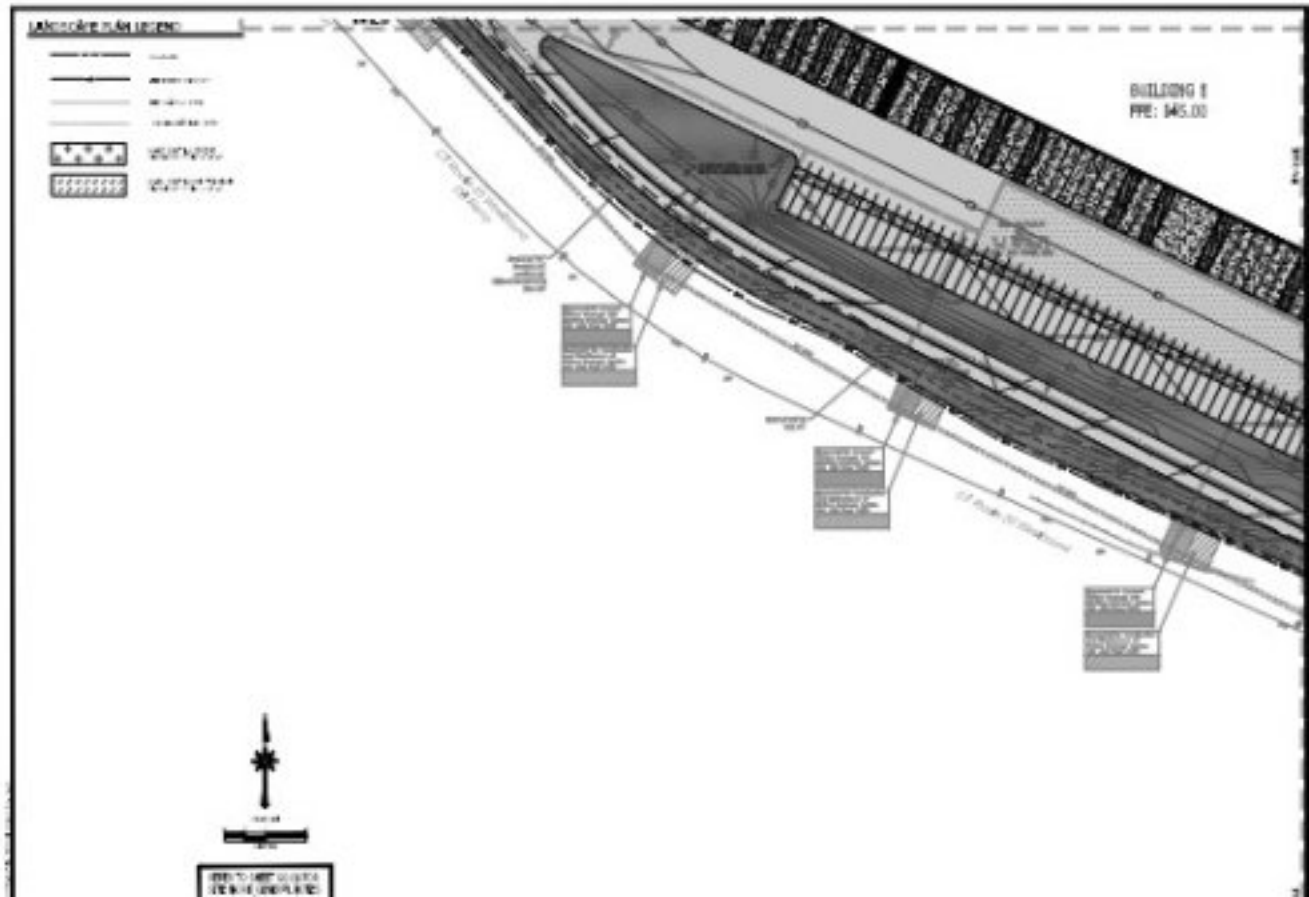


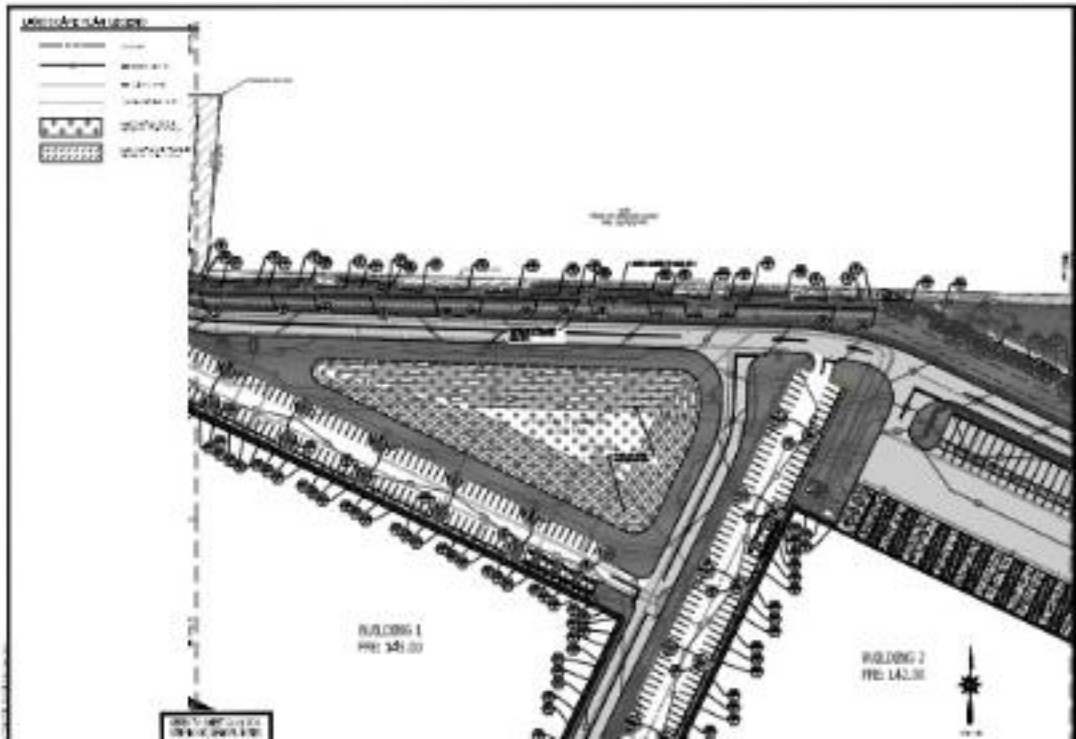


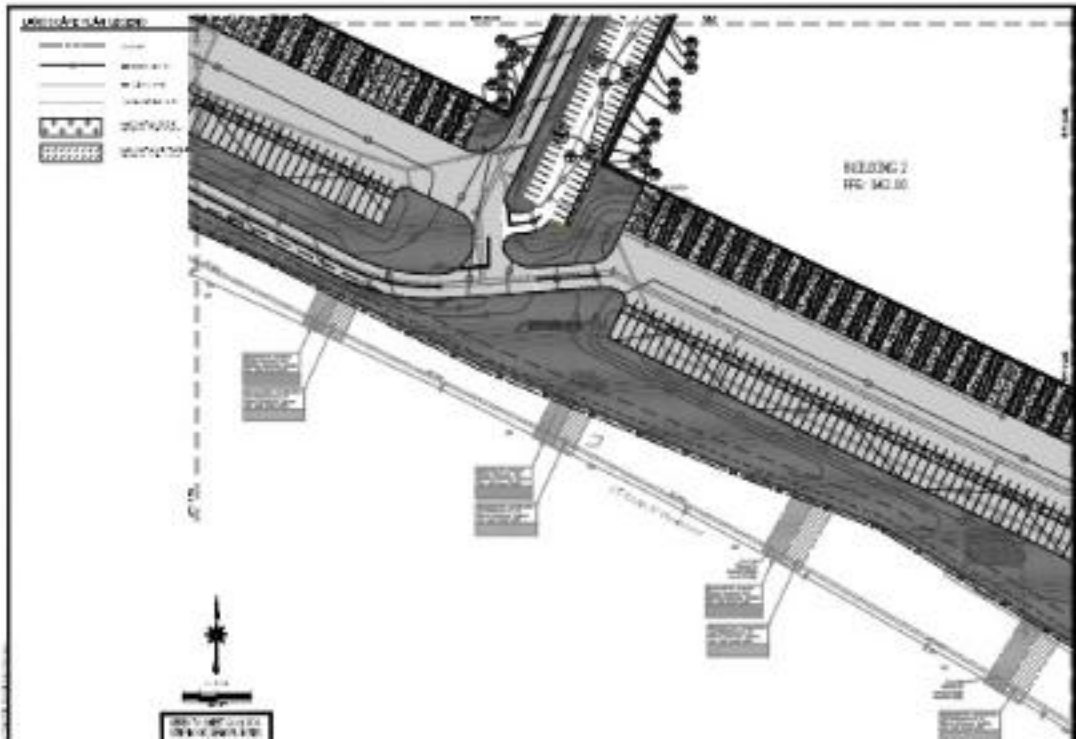

SHEET C5.01
SHEET C5.02
SHEET C5.04
SHEET C5.06
SHEET C5.03
SHEET C5.05
SHEET C5.07

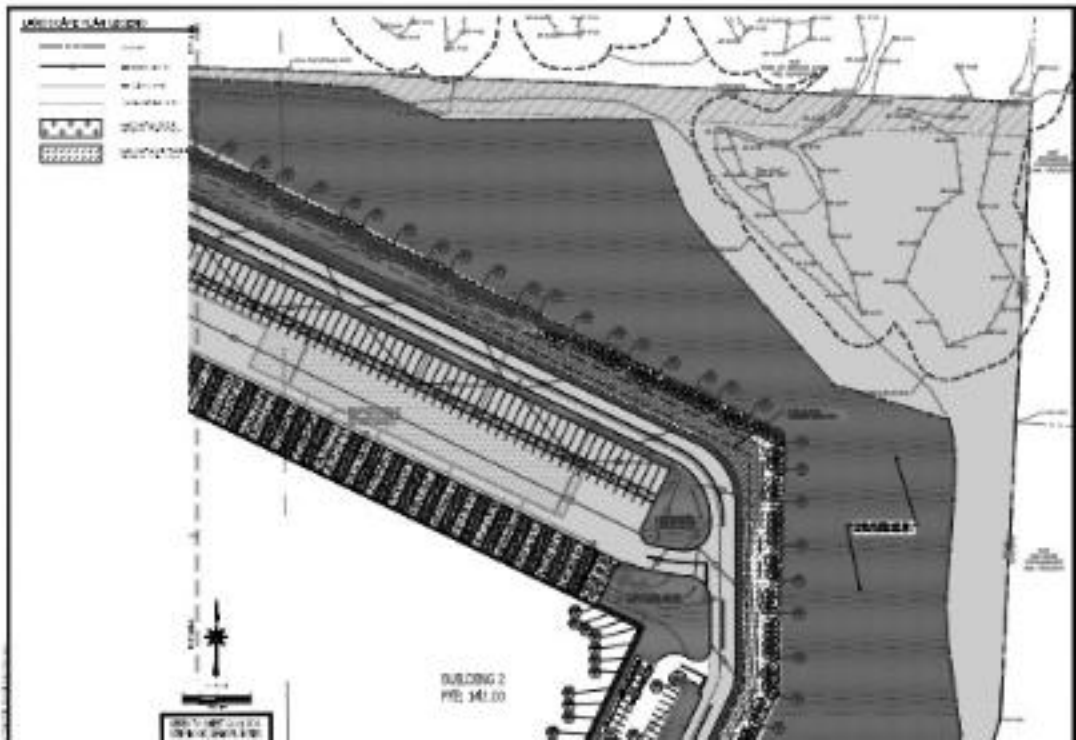


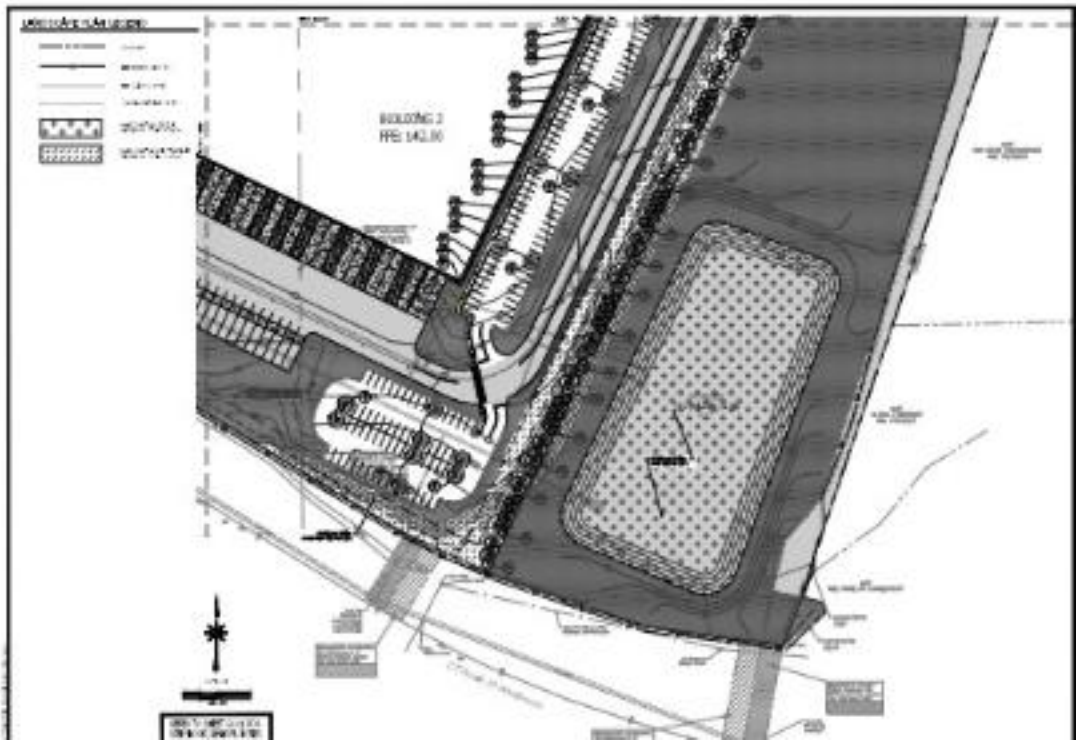

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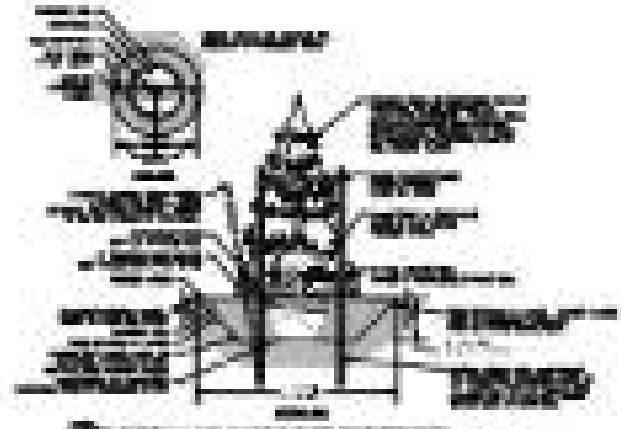

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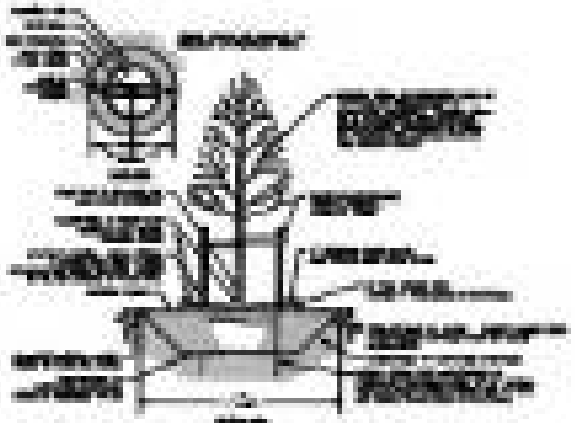

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BUILDING 2

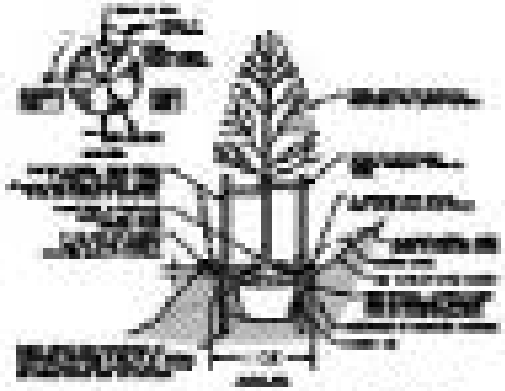


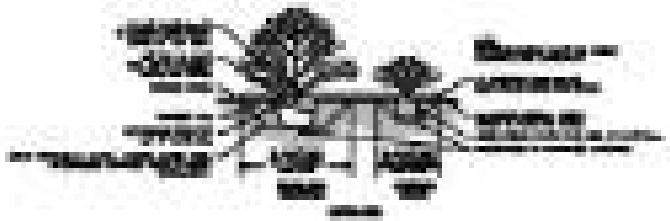

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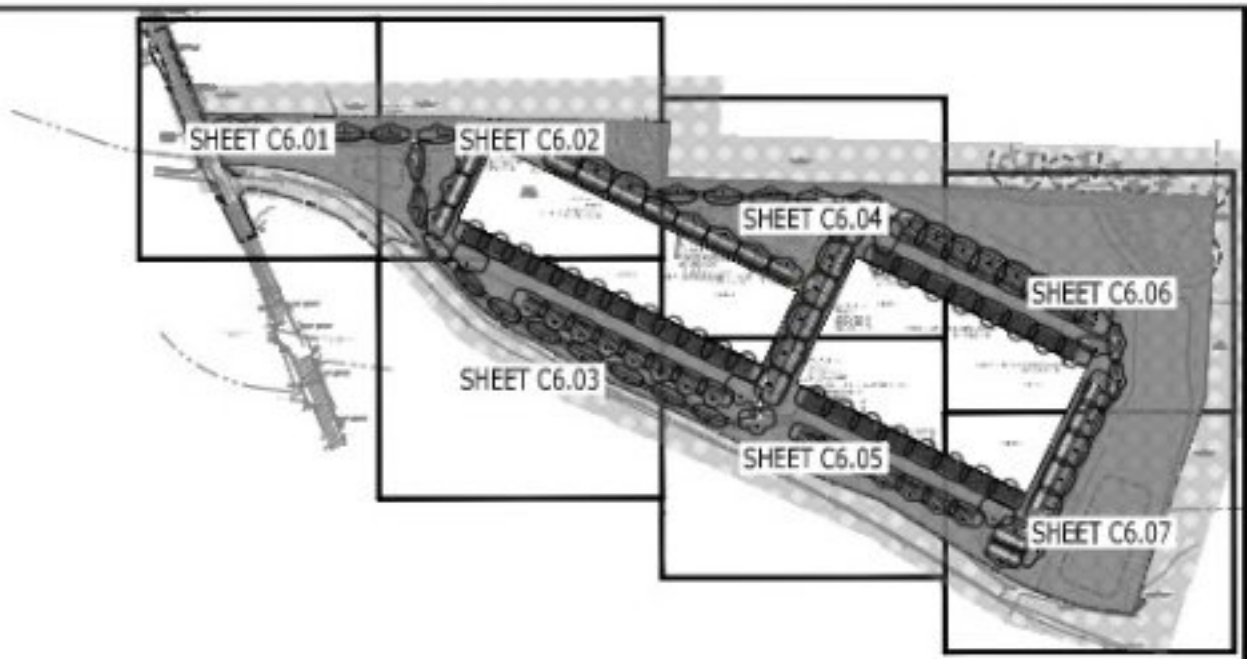


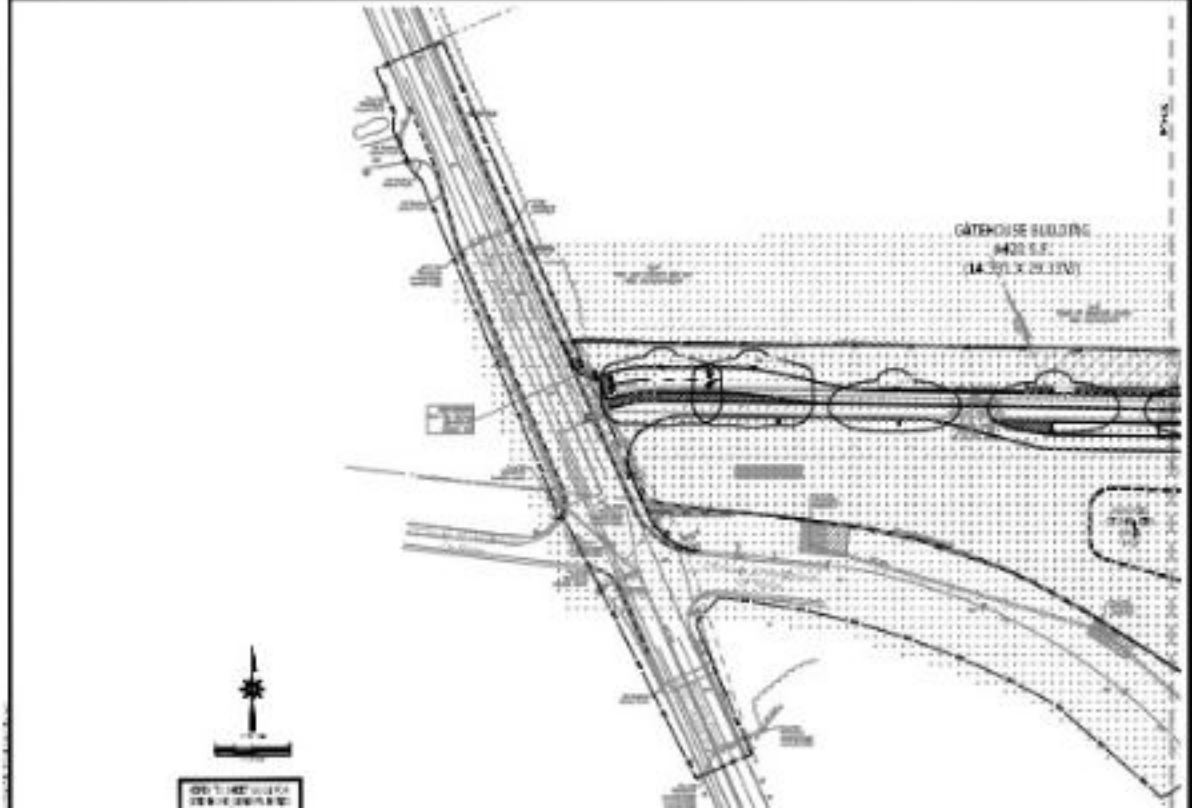


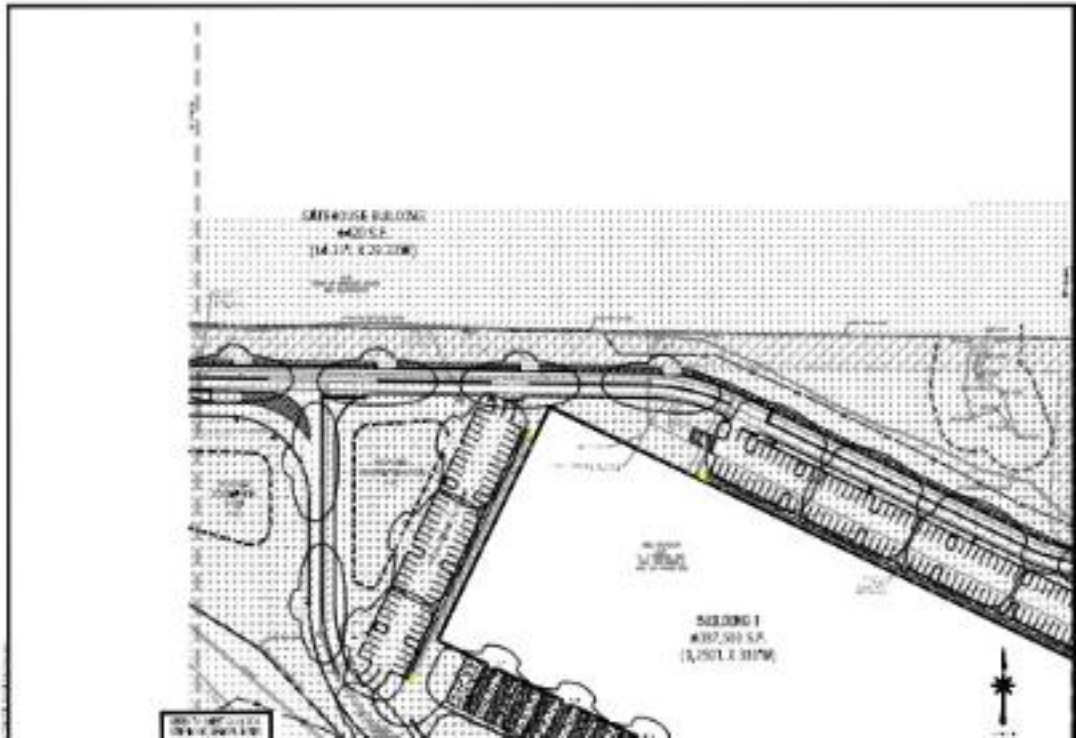


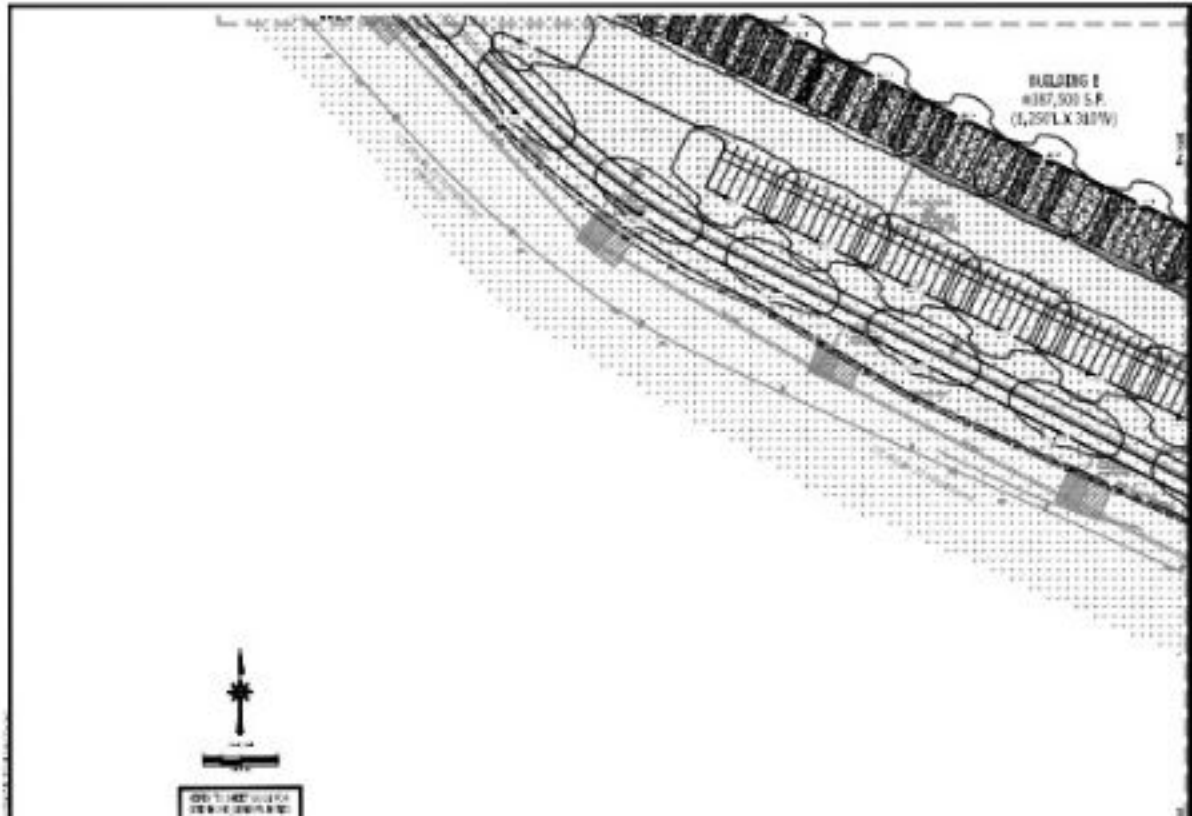


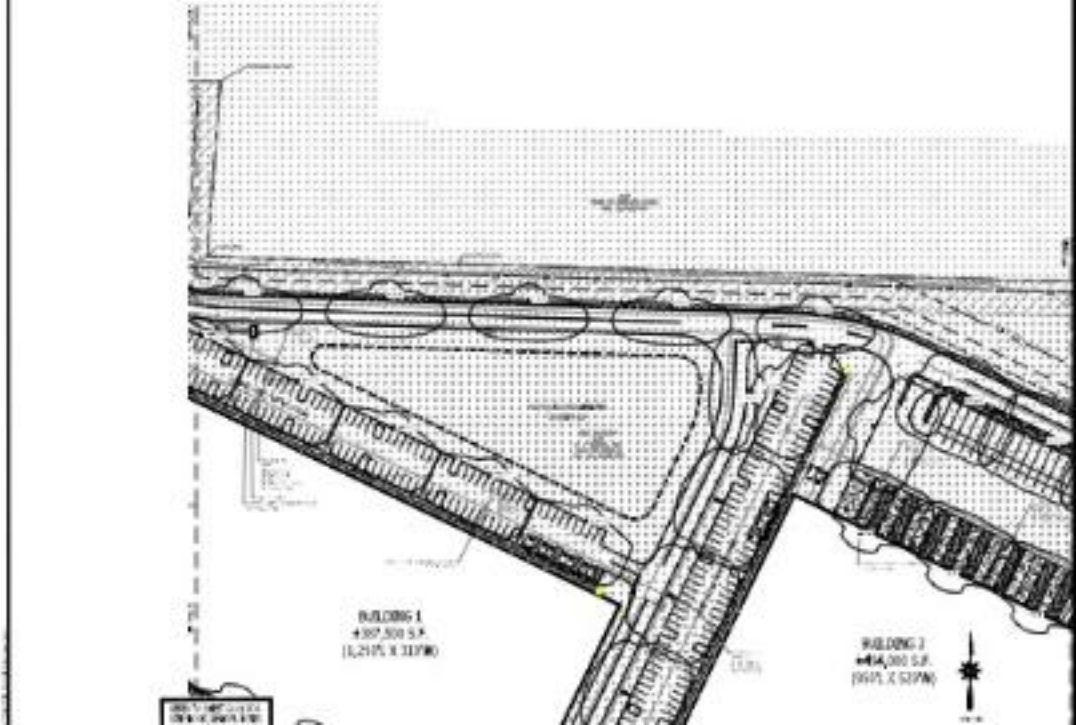


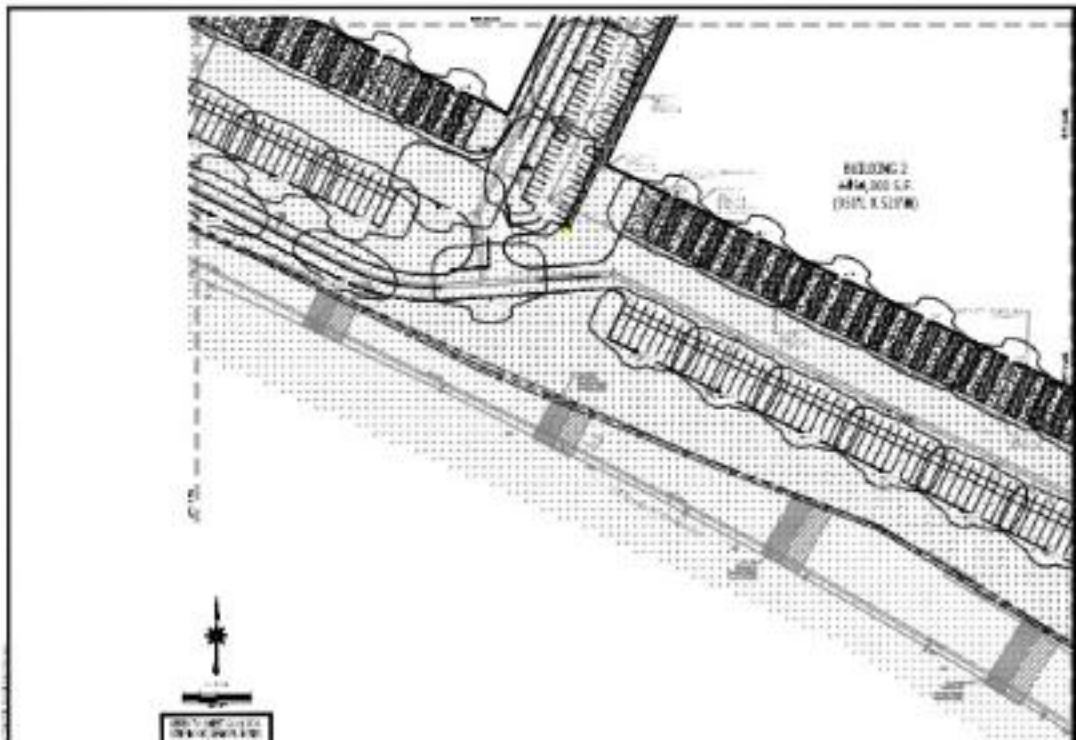

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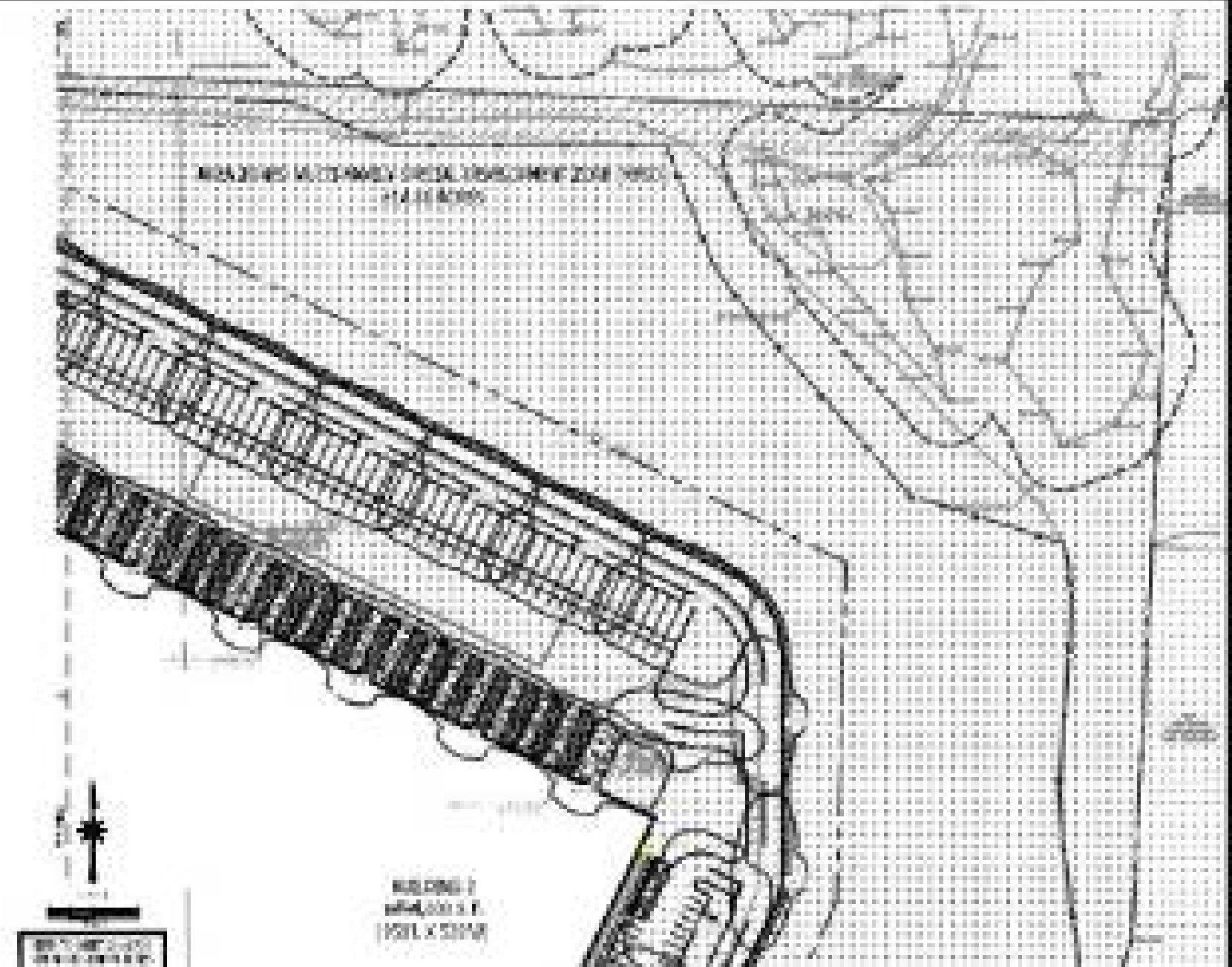

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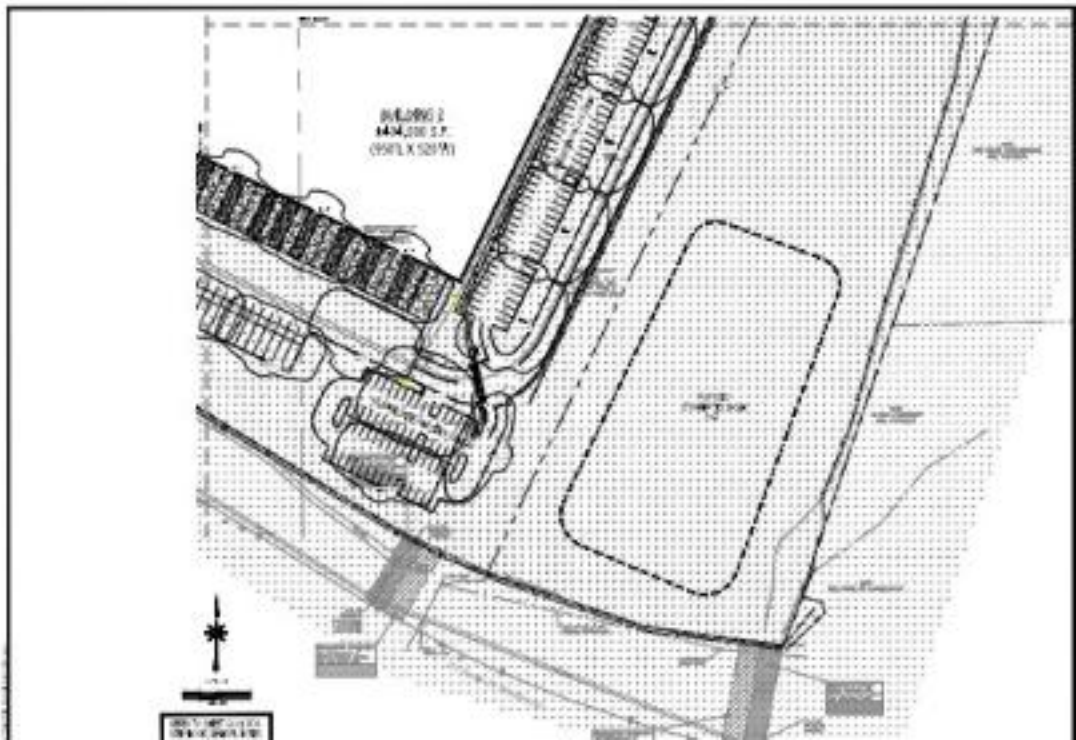



BUILDING E
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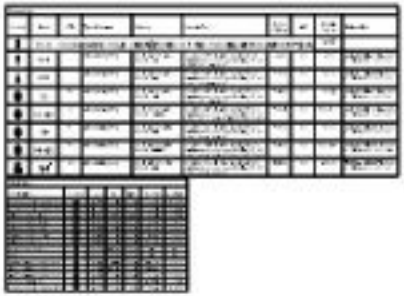

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BUILDING 2

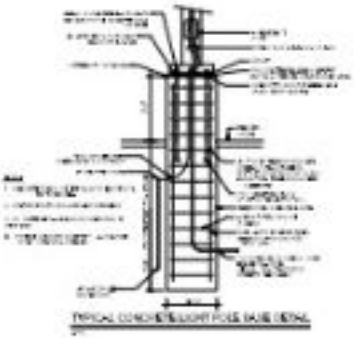




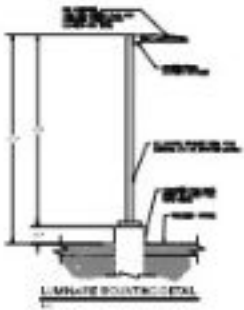


LIGHTING NOTES

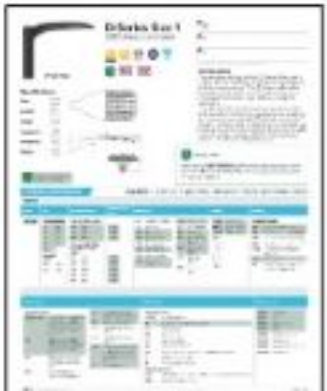




TYPICAL CONCRETE LIGHT POLE BASE DETAIL



LUMINAIRE MOUNTING DETAIL



STORMWATER MANAGEMENT REPORT

For the proposed:

WINDSOR LOCKS INDUSTRIAL PARK

Old County Road

Windsor Locks, Connecticut

Prepared for:

SCANNELL PROPERTIES #698, LLC

Issued: May 6, 2025

Last revised: N/A

PREPARED BY

BL Companies

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Architecture
Engineering
Environmental
Land Surveying

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EXECUTIVE SUMMARY

Scannell Properties #498, LLC is seeking to develop the existing parcel located at the intersection of Old County Road and CT Route 20 within the Town of Windsor Locks. The proposed development will include two warehouse buildings with associated parking facilities, truck docks, trailer spaces, stormwater management, utilities, landscaping, and off-site road improvements. The existing parcel (Parcel ID# 056-107-001) has a total area of approximately 75.2 acres. The total limit of disturbance necessary to complete the project is approximately 75.2 acres.

The proposed stormwater management system has been designed to mitigate any potential impacts that the Project could have on the existing watershed. The stormwater management system has also been designed to control peak runoff rates, provide water quality, promote groundwater recharge and sediment removal. The proposed stormwater management system has been designed to be in general conformance with the following requirements:

- Town of Windsor Locks Zoning Regulations
- Town of Windsor Locks Inland Wetlands and Watercourses Regulations
- 2004 Connecticut Stormwater Quality Manual
- 2002 Connecticut Guidelines for Soil Erosion and Sediment Control
- State of Connecticut Department of Transportation Drainage Manual

The pre- and post-development hydrologic conditions were modeled using HydroCAD version 10.20 to demonstrate that post-development stormwater runoff rates will have a 00% reduction from the pre-development rates in the 2-year storm and a match or reduction from the pre-development rates in the 10-, 25-, and 100- year storm events. Drainage Area maps with soil types and detailed analysis of the model results are included in this report.

The stormwater management systems on site are designed to maintain the existing stormwater runoff patterns once construction is complete. This, in conjunction with attempting to work with the natural topography of the parcel, is the reason for the numerous stormwater management features proposed around the site. Instead of conveying the stormwater long distances across the site by pipe, which would result in deep stormwater facilities and excavation on site, the stormwater management systems were designed to be similar to the existing conditions while treating and infiltrating the stormwater as close as possible to where it is generated.

Numerous Water Quality Best Management Practices (BMPs) have been incorporated into the project design that include various elements such as deep-sump hooded catch basins, hydrodynamic separators, and infiltration stormwater management beds.

1.0 SITE INFORMATION

Project Description:

The overall subject parcel is located at the intersection of Old County Road and CT Route 20. The existing topography of the site is typically flat, with the site elevations varying from 148 feet along Old County Road to 140 feet along Route 20 to 100 feet at the farm pond in the northeastern corner of the site. The northern half of the site drains towards Waterworks Brook with the northeastern portion of the site sloping down to a farm field which then overflows to Waterworks Brook. The southern half of the site discharges to DOT Stormwater Management pond to the east of the site, with a large portion of the site captured by the closed drainage system of Route 20 which eventually discharges to the DOT stormwater management basin.

The project parcel is currently undeveloped, consisting of farmland, dirt roads, lawn, and wooded areas. There are no formal stormwater management systems currently located on site; however a portion of the site's stormwater runoff is directed toward an existing riprap channel and stormwater management basin located east of the site. No modifications to the existing riprap channel or stormwater management basin are proposed, and they will continue to function as they do currently with impacts from the proposed construction.

The proposed site development will include the construction of two warehouses (one 387,500 SF and the other 494,000 SF), associated parking facilities, truck docks, trailer spaces, stormwater management, utilities, and landscaping. The proposed improvements will require the removal of the existing farmland and landscaping.

SITE LOCATION



SITE SOILS

The soils in the area of the Property are classified by United States Department of Agriculture Natural Resources Conservation Service and consist primarily of type "A" and "B" rated soils. Please refer to Appendix A: NRCS Soil Survey Map with Hydrologic Soil Group Data, for soils and their classifications in the project area.

Soils located within the project area from the soil report are as follows:

Map Unit Symbol	Map Unit Name	Hydrologic Soil Group Rating
36A	Windsor Loamy Sand, 0-3% slopes	A
36B	Windsor Loamy Sand, 3-8% slopes	A
36C	Windsor Loamy Sand, 8-15% slopes	A
38E	Hinckley Loamy Sand, 15-45% slopes	A
108	Saco Silt Loam, 0-2% slopes	B
306	Udorthents – Urban Land Complex	B

EXISTING GEOTECHNICAL FINDINGS

A pre-development site characterization and assessment of soil and geology of the site was conducted by GEI Consultants on April 02, 2020.

The full Geotechnical and Infiltration Analysis is available upon request, the information contained in the report has been summarized below.

INFILTRATION TESTING

The subsurface exploration for stormwater management was performed by the Geotechnical engineer as part of the overall site subsurface investigation. There were a series of 12 test pits that were performed to determine the seasonal high groundwater elevation as well as to obtain the field tested infiltration rate for the modeling analysis. Per the recommendations of the Connecticut Stormwater Quality Manual, the maximum infiltration rate of 8.27 inches per hour (in/hr) was used.

GROUNDWATER OBSERVATION

To determine the seasonal high groundwater levels on site, the geotechnical engineer performed a series of test pits and test borings throughout the site. Per the geotechnical engineer, no groundwater intrusion nor evidence of soil redoximorphic features (i.e. mottling) was encountered in the recent test pits and borings, conducted to a maximum depth of 20 feet. Groundwater was noted at a depth of about 30 feet below grade in the deep test borings conducted by others.

1.1 NATURAL RESOURCES

ENDANGERED AND TREATENED SPECIES

The Connecticut Department of Energy and Environmental Protection's (CTDEEP) Natural Diversity Data Base (NDDB), compiles maps that are representative of the locations of endangered, threatened and special concern species and significant natural communities in Connecticut. A review of the criteria for concern indicates there are potential endangered species within 1/2 mile north of the project site however there are no critical habitats on site. The Northern Long-eared bat and the Shaloved bat are considered endangered, and the Monarch butterfly is shown as a proposed threatened species. This review was performed on April 29, 2020 with maps released in December 2004.

HISTORIC PRESERVATION REVIEW

Per Chapter 184c, section 10-387 of the Connecticut General Statute states that DEEP shall review, in consultation with the State Historic Preservation Office it's policies and practices for consistency with regards to historic and archeological sites. As such, the historic preservation review procedures have been performed for the site based on the DEEP General Stormwater Discharge Permit for Construction activities, and the site is not within an area of significance.

1.2 RECEIVING SURFACE WATERS

The project site lies within the Waterworks Brook drainage basin, which is within the Connecticut River Major Basin. The project site is not located within a public water supply watershed.

The project is not located within an aquifer protection area.

1.3 FEMA FLOODPLAIN

The site is not located in a FEMA floodplain. Per the FEMA Flood Insurance Rate Map Number 09003C0219F for Hartford County, Connecticut, map effective date: September 26, 2008, the site resides inside Zone X (areas determined to be outside the 0.2% annual chance floodplain).

Flood Insurance Rate Maps are included in Appendix A for reference.

2.0 STORMWATER MANGEMENT STANDARDS AND PERFORMACE CRITERIA

2.1 DESIGN CRITERIA

The proposed stormwater management system is designed to be in general conformance with the current Town of Windsor Locks Zoning Regulations, the 2023 State of Connecticut Guidelines for Soil Erosion and Sediment Control, the 2023 State of Connecticut Stormwater Quality Manual, and State of Connecticut Department of Transportation Drainage Manual. The 2023 Stormwater Quality Manual 5 Stormwater Standards are outlined below.

STANDARD 1: RUNOFF VOLUME AND POLLUTANT REDUCTION

- Retain the Required Retention Volume on site.
- Preference for non-structural Low Impact Development (LID) measures were used to the maximum extent achievable.

STANDARD 2: STORMWATER RUNOFF QUANTITY CONTROL

- The 2 Year post development peak flow has been reduced to be less than 50% of the pre-development flow.
- The 10-year post-development flow has been reduced to less than the 10-year pre-development flow.
- The 25-year post-development flow has been reduced to less than the 25-year pre-development flow.
- The 100-year post development flow has been reduced to less than the 100-year pre-development flow.

STANDARD 3: CONSTRUCTION EROSION AND SEDIMENT CONTROL PLAN

We have developed a Soil Erosion and Sediment Control (SESC) Plan in general conformance with the local and state regulatory requirements, the Connecticut Guidelines for Soil Erosion Sediment Control Guidelines (as amended), and the requirements of the CT DEEP Construction Stormwater General Permit. This can be found on Design plans and in Section 7 of this report.

STANDARD 4: POST-CONSTRUCTION OPERATION AND MAINTENANCE

We have developed a long-term Operation and Maintenance (O&M) Plan, which identifies required inspection and maintenance activities for structural stormwater BMPs. This can be found in Appendix G of this report.

STANDARD 5: STORMWATER MANAGEMENT PLAN

We have prepared Stormwater Management Plan to outlining the stormwater management measures for the proposed development are in general conformance with the stormwater management standards, performance criteria, and design guidelines contained in the Connecticut Stormwater Quality Manual, as well as other local, state, and federal stormwater requirements.

3.0 HYDROLOGIC DESIGN METHODOLOGY

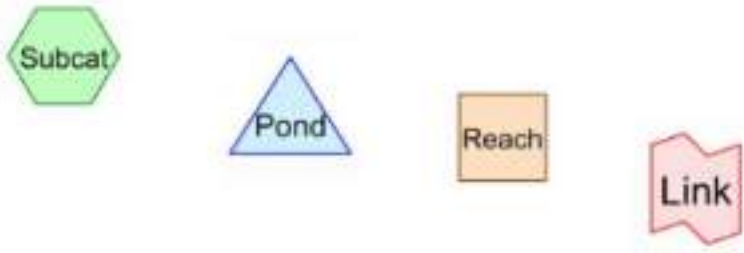
The hydrologic analysis to determine peak stormwater discharge rates was performed using the HydroCAD stormwater modeling system computer program, version 10.20 developed by HydroCAD Software Solutions, LLC. Hydrographs for each watershed were developed using the SCS Synthetic Unit Hydrograph Method. Rainfall depths and distribution per the NOAA Atlas 14 for Windsor Locks, Connecticut were used for the calculation of peak flow rates and are listed below.

TABLE 1: RAINFALL DEPTHS

Return Period (Year)	24-hour Rainfall Depth
2	3.22
10	5.16
25	6.36
100	8.22

The HydroCAD printouts use a series of symbols for the various modeling entities. Hydrologic Subcatchment areas are represented by a hexagon, stormwater basins are represented by blue triangles, reaches are represented by squares, and links are represented by irregular octagons. A Reach is used to perform an independent hydrograph routing through an open channel based on normal Manning's flow, and a link is used to hydrologically add multiple entities together to determine the peak discharge to an analysis point.

The hydrologic modeling results determined the change in peak rates of runoff for a 2-, 10-, 25-, and 100-year storm events. The hydrologic modeling results in Appendices C and D are the overall analysis summaries from each storm event. The complete hydrographs for each storm and subcatchment can be found in the Hydrologic Report.



4.0 HYDROLOGIC ANALYSIS

The site layout and approach to stormwater management was completed in an integrated manner by attempting to limit the impacts of vegetation loss and soil changes, by incorporating Best Management Practices (BMPs), which include both structural and non-structural practices, and by considering the overall impact to the receiving waters.

4.1 PRE-DEVELOPMENT CONDITIONS

Existing runoff from the project site generally drains from the north side of the property to the south to one (1) Design Point (DP), generally described as follows:

- Design Point 1: Waterworks Brook
- Design Point 2: Wetland Area directly north of the site
- Design Point 3: Wetland Area northeast of the site
- Design Point 4: Existing State-owned Stormwater Management Basin
- Design Point 5: Existing State-owned Drainage System

4.1.1 ANALYSIS POINTS

Design Point 1 is Waterworks Brook north of the site. Under existing conditions, this design point will collect stormwater runoff from a total area of approximately 50.8 acres. All stormwater runoff will discharge to the design point via sheet flow through farmland, bare soil, grass, and wooded areas.

Design Point 2 is the wetland area directly north of the site. Under existing conditions, this design point will collect stormwater runoff from a total area of approximately 2.1 acres. All stormwater runoff will discharge to the design point via sheet flow through farmland, bare soil, grass, and wooded areas.

Design Point 3 is the wetland area northeast of the site. Under existing conditions, this design point will collect stormwater runoff from a total area of approximately 4.0 acres. All stormwater runoff will discharge to the design point via sheet flow through farmland, bare soil, grass, and wooded areas.

Design Point 4 is the existing state-owned stormwater basin southeast of the site. Under existing conditions, this design point will collect stormwater runoff from a total area of approximately 27.1 acres. All stormwater runoff will discharge to the design point via sheet flow through farmland, bare soil, grass, and wooded areas.

Design Point 5 is the existing state-owned drainage system south of the site. Under existing conditions, this design point will collect stormwater runoff from two contributing drainage areas (EDA-5A and EDA-5B). The total area discharging to this design point is about 45.2 acres. This area consists of woods, bare soil, pavement surfaces, and grass. All stormwater runoff within these areas will sheet flow to the existing via sheet flow.

Appendix B contains the Existing Conditions Drainage Area Maps.

4.2 POST DEVELOPMENT CONDITIONS

The drainage analysis for the proposed construction encompasses the same tributary drainage areas as described in the existing conditions section. The impervious coverage percentage for the entire tributary area in the proposed condition is approximately 36%. The proposed drainage areas with runoff curve numbers, time of concentration paths and soil types can be found in the hydrologic modeling results in Appendix D. The proposed drainage has been designed to reduce peak stormwater discharge rates and volumes leaving the site.

Just as the existing conditions hydrology, discussed above, the project area hydrology is also broken down into five overall design points with eleven contributing Drainage Areas.

Overall, there is a net reduction in peak discharge from each of the Design Points for the 2-year,10-year, 25-year, and 100-year storm events as seen in Table 6 below.

4.2.1 ANALYSIS POINTS

Design Point 1 is Waterworks Brook north of the site. Under proposed conditions, this design point will collect stormwater runoff from three contributing drainage areas (PDA-1A, PDA-1B, and PDA-1C). The total area discharging to this design point is about 65 acres. This area consists of woods, impervious surfaces (pavement and building), landscaped islands, and grass surfaces. All stormwater runoff within PDA-1A will sheet flow to the brook via the grass and existing wooded area. All stormwater runoff within the other two contributing drainage areas will be collected and treated through proposed stormwater infiltration basins and a conveyance system. The stormwater infiltration basins will slowly discharge small volumes of water through a piped connection, riprap scour holes, and level spreaders.

Design Point 2 is the wetland area directly north of the site. Under proposed conditions, this design point will collect stormwater runoff from a total area of approximately 1.3 acres. All stormwater runoff will discharge to the design point via sheet flow through grass and wooded areas.

Design Point 3 is the wetland area northeast of the site. Under proposed conditions, this design point will collect stormwater runoff from a total area of approximately 3.4 acres. All stormwater runoff will discharge to the design point via sheet flow through grass and wooded areas.

Design Point 4 is the existing state-owned stormwater basin southeast of the site. Under proposed conditions, this design point will collect stormwater runoff from two contributing drainage areas (PDA-4A and PDA-4B). The total area discharging to this design point is about 28.7 acres. This area consists of woods, impervious surfaces (pavement and building), landscaped islands, and grass surfaces. All stormwater runoff within PDA-4A will be collected and treated through a proposed stormwater infiltration basin and a conveyance system. The stormwater infiltration basins will slowly discharge small volumes of water through a piped connection and riprap scour holes. All stormwater runoff within PDA-4B will sheet flow to the basin via the grass and existing wooded area.

Design Point 5 is the existing state-owned drainage system. Under proposed conditions, this design point will collect stormwater runoff from four contributing drainage areas (PDA-5A, PDA-

5B, PDA-5C, and PDA-5D). The total area discharging to this design point is about 32.5 acres. This area consists of woods, impervious surfaces (pavement and building), landscaped islands, and grass surfaces. All stormwater runoff within PDA-5B will sheet flow to the existing drainage system via grass areas. All stormwater runoff within the other three contributing drainage areas will be collected and treated through proposed stormwater infiltration basins and a conveyance system. The stormwater infiltration basins will slowly discharge small volumes of water through a piped connection into the existing drainage system.

4.3 POST-DEVELOPMENT HYDROLOGIC CONCLUSIONS

TABLE 2: PEAK FLOW COMPARISON CHART

Design Point	2-Year Flow (CFS)	10-Year Flow (CFS)	25-Year Flow (CFS)	100-Year Flow (CFS)
Design Point 1 – Waterworks Brook				
DP 1 – Existing Condition	0.21	4.01	11.16	27.86
DP 1 – Proposed Condition	0.08	2.58	11.08	26.66
Difference	-61.90%	-35.66%	-0.72%	-4.31%
Design Point 2 – Northern Wetland Area				
DP 2 – Existing Condition	0.11	1.30	2.50	4.68
DP 2 – Proposed Condition	0.00	0.09	0.31	0.96
Difference	-100.00%	-93.07%	-87.60%	-79.49%
Design Point 3 – Northeastern Wetland Area				
DP 3 – Existing Condition	0.04	0.93	2.27	4.93
DP 3 – Proposed Condition	0.01	0.37	1.24	3.38
Difference	-75.00%	-60.22%	-45.37%	-31.44%
Design Point 4 – Existing State-Owned Stormwater Management Basin				
DP 4 – Existing Condition	0.60	6.59	13.26	26.91
DP 4 – Proposed Condition	0.01	0.44	1.89	7.01
Difference	-98.00%	-93.32%	-85.74%	-72.94%
Design Point 5 – Existing State-Owned Drainage System				
DP 5 – Existing Condition	6.06	18.36	29.59	48.80
DP 5 – Proposed Condition	0.81	5.33	12.77	23.16
Difference	-86.63%	-70.97%	-56.84%	-52.54%

4.4 WATER QUALITY VOLUME AND TREATMENT ANALYSIS

The six stormwater infiltration basins have been designed to retain the 1.3" water quality volume assuming an 8.27 in/hr infiltration rate, per the requirements from the Town of Windsor Locks.

The proposed water quality volume is calculated at the available storage depth below the outlet pipes inside each of the infiltration basins. The water quality volume equation from the CT Stormwater Quality Manual was used to calculate the required volume needed for the basin to retain. With a total drainage area of about 57.8 acres and an impervious cover of 81%, the required volume that the basins need to retain is 212,370 cubic feet. The proposed stormwater basin will meet the water quality volume requirement and retain approximately 237,520 cubic feet. Calculations can be found in Appendix F.

Stormwater quality treatment is being addressed through the utilization of stormwater management basins, hydrodynamic separators, and deep sump hooded outlet catch basins. These features will provide the minimum required 90% total suspended solids (TSS) removal as required in the CT Stormwater Quality Manual. The proposed treatment train as designed is expected to remove at least 90% of TSS. Calculations can be found in Appendix F.

Outlet protection measures are provided at each drainage outlet point (see Appendix F for Outlet Protection Calculations). Riprap outlet protection will be installed for energy dissipation of scour velocities and additional water quality treatment.

In addition, the stormwater runoff from the various building roofs is routed through the proposed stormwater management system. This roof stormwater is recognized by the regulatory agencies as clean, so it does not flow through any pre-treatment devices prior to infiltration.

5.0 HYDRAULIC ANALYSIS

5.1 PRELIMINARY HYDRAULICS

The hydraulic study of the on-site drainage system has been designed to comply with the requirements set forth in the Town of Windsor Locks Zoning Regulations and the State of Connecticut Department of Transportation Drainage Manual.

The proposed drainage systems have been sized to convey the 25-year storm event to their respective discharge points without ponding or surcharging above the catch basin / manhole grates. The site drainage system improvements have been designed to comply with the requirements set forth in the State of Connecticut Department of Transportation Drainage Manual, dated 2000, as amended. Drainage areas contributing to each catch basin have been determined and are found in Appendix B.

The minimum pipe size maintained onsite is 12 inches.

The runoff coefficients for each inlet drainage area have been calculated as the weighted average of impervious and pervious surfaces contributing to the runoff. Impervious surfaces including bituminous concrete pavement, concrete pavement, and building roof area were computed using a rational runoff coefficient of 0.90. Pervious surfaces including lawn and landscaped area were computing using a rational runoff coefficient of 0.30.

Tailwater elevations for the stormwater management areas and flared end sections are based on the water surface of the stormwater management basins in the 25-year design storm.

StormCAD version 8i by Haestad Methods, utilizing the Rational Method, was used to model the proposed drainage system. Calculation data can be found in Appendix E.

6.0 SITE DESIGN SUMMARY

The proposed stormwater management system is designed to be in general conformance with the Town of Windsor Locks Zoning Regulations, the 2023 State of Connecticut Guidelines for Soil Erosion and Sediment Control, the 2023 State of Connecticut Stormwater Quality Manual, and State of Connecticut Department of Transportation Drainage Manual.

The system is designed to meet the goals and objectives outlined in the 2023 State of Connecticut Stormwater quality manual. This is done by reducing the peak flows for all storms and design points and providing water quality improvements.

Standard 1 has been met by retaining the 1.3" water quality volume in the six proposed stormwater infiltration basins. The stormwater management system has been designed to achieve the average annual pollutant load reductions from directly connected impervious area for sediment (Total Suspended Solids-90%) with the proposed hydrodynamic separator units throughout the site. Total Phosphorus (60%) and total Nitrogen (30%) removal will be achieved with the proposed underground stormwater infiltration basin.

The stormwater management system will also provide stormwater treatment though the use of hooded outlets and deep sump catch basins.

Standard 2 is met by reducing the peak flow rate for all storm events and design points, sizing the conveyance system to convey to the 25-year, 24hr storm, and sizing the underground infiltration basin to safely pass the 100-year post-development peak runoff. Additionally, the 2-year storm event has been reduced by at least the required 50% across all design points.

Standard 3 is met as shown in the design plans and Section 7 of this report.

Standard 4 is met by the Operations and Maintenance Manual included in this report.

Standard 5 is met by providing this report. Overall, the Stormwater Quality Manual Standards have been met to the maximum extent achievable.

7.0 SITE CONSTRUCTION AND EROSION CONTROLS

There are two phases of erosion control measures for the proposed development. The first phase proposes the installation of silt sock protection at existing stormwater inlets, rock construction entrances and silt fence around the proposed area of disturbance prior to the commencement of any earth disturbance activities. At the start of Phase 1, two temporary sediment traps, two temporary sediment basins, diversion swales and stone check dams will be installed to capture runoff from the site.

During Phase 2 of the erosion control sequence, the perimeter measures and rock construction entrances will remain in place. All constructed stormwater inlets will have inlet protection installed. All areas that have achieved final grade will need to be immediately covered with 6" of topsoil, seeded and mulched. Slopes that are 3:1 or greater will need to be covered with erosion control matting prior receiving seed and mulch. All erosion control matting will be wildlife friendly, with all-natural material and no photodegradable content

Any topsoil that is stripped will need to be stockpiled onsite to be used later. Stockpiles will need to receive temporary seeding and have a double row of silt fence around its base to prevent the loss of materials.

Dewater of any trenches and/or basin will need to be completed in a manner that will avoid creating any areas of accelerated erosion.

During construction of this project, all erosion control measures will need to be inspected weekly and following any major rain event. Any repairs to the erosion control BMPs will need to be completed within 24 hours of any major rain event.

See Civil plans for full Construction Sequence.

8.0 CONCLUSIONS & RECOMMENDATION

The post-development peak discharge rates for the developed site have been reduced for the 2-, 10-, 50-, and 100-year storm events. In addition, this system is also in general conformance with the stormwater quality requirements of the Town of Windsor Locks and the State of Connecticut for this project.

The stormwater management systems in the adjacent roadways (Old County Road and CT Route 20) will not be negatively impacted as a result of this development. The proposed development will decrease flows discharged to the closed state-owned drainage system to the north of CT Route 20.

This report, as noted above, has been prepared to complement the submitted project plans as well as to represent the technical basis for the designs presented herein. In consideration of the overall project, we conclude that the stormwater management systems have been designed to be in general conformance with the design parameters set forth by the Town and State.

APPENDIX A

FIGURES



ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

USGS SITE LOCATION MAP
OLD COUNTY ROAD
WINDSOR LOCKS, CT

Designed	P.G.K.
Drawn	P.G.K.
Reviewed	T.A.K.
Scale	1" = 1000'
Project No.	2020.0163
Date	08/06/2020

FIG-1

National Flood Hazard Layer FIRMette

FEMA



Legend

SPECIAL FLOOD HAZARD AREAS

OTHER AREAS OF FLOOD HAZARD

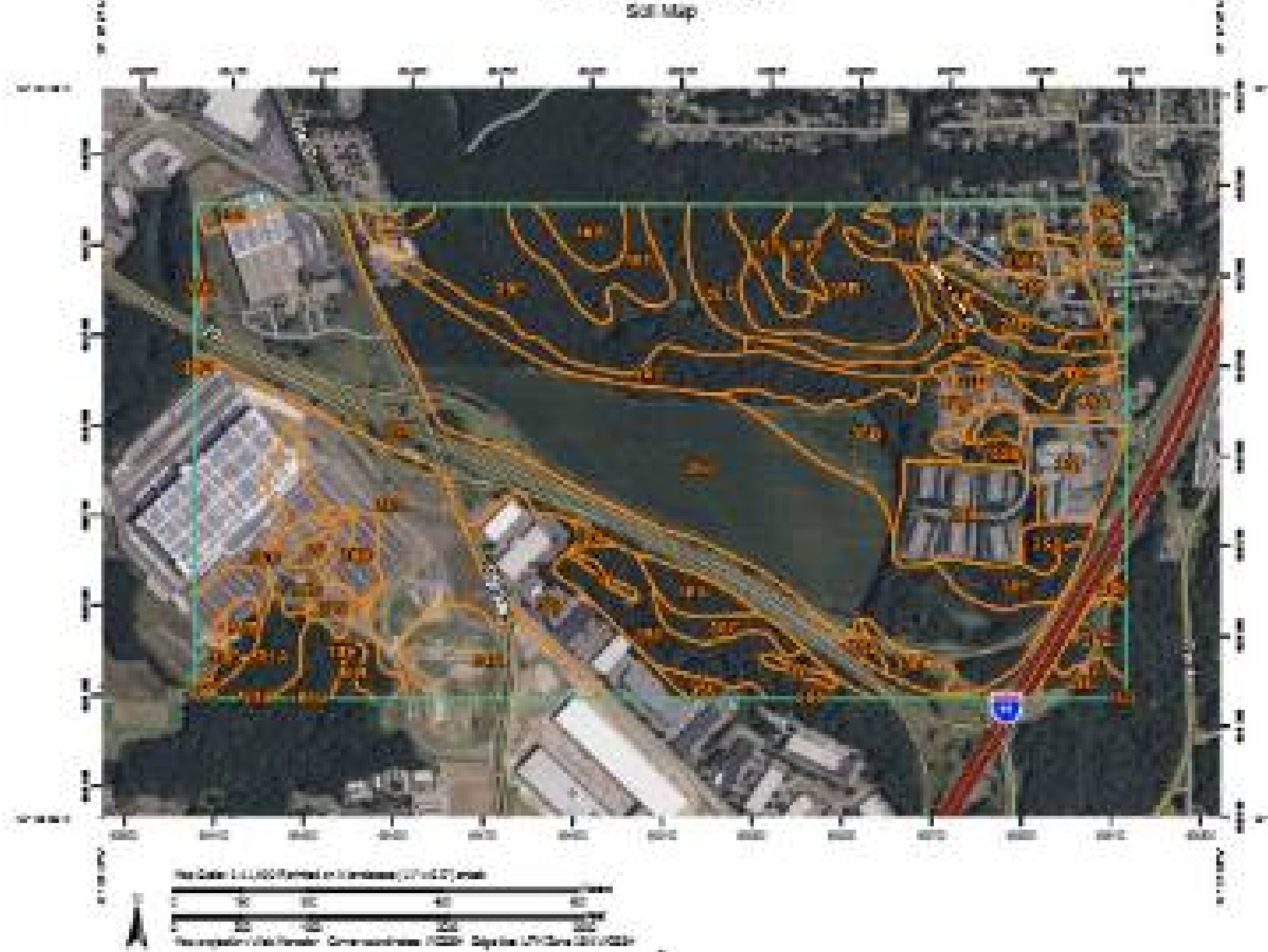
OTHER AREAS

GENERAL STRUCTURES

OTHER FEATURES

MAP PANELS

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.

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: State of Connecticut, Western Part
Survey Area Data: Version 2, Aug 30, 2024

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 14, 2022—Oct 6, 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
9	Scituo, Shaker, and Maybid soils, 0 to 3 percent slopes	4.9	0.9%
15	Scarboro muck, 0 to 3 percent slopes	3.6	0.6%
28B	Elmridge fine sandy loam, 3 to 8 percent slopes	3.0	0.5%
34A	Merrimac fine sandy loam, 0 to 3 percent slopes	15.8	2.8%
36A	Windsor loamy sand, 0 to 3 percent slopes	171.5	30.4%
36B	Windsor loamy sand, 3 to 8 percent slopes	46.5	8.2%
36C	Windsor loamy sand, 8 to 15 percent slopes	64.2	11.4%
36E	Hinckley loamy sand, 15 to 45 percent slopes	75.4	13.4%
87C	Wethersfield loam, 8 to 15 percent slopes	1.6	0.3%
87D	Wethersfield loam, 15 to 25 percent slopes	1.8	0.3%
103	Rippowam fine sandy loam	0.0	0.0%
105	Saco silt loam, frequently ponded, 0 to 2 percent slopes, frequently flooded	9.5	1.7%
236B	Windsor-Urban land complex, 0 to 8 percent slopes	14.5	2.6%
305	Udorthents-Pits complex, gravelly	2.1	0.4%
306	Udorthents-Urban land complex	105.2	18.6%
307	Urban land	30.9	5.5%
308	Udorthents, smoothed	3.6	0.6%
701A	Ninigret fine sandy loam, 0 to 3 percent slopes	5.8	1.0%
702B	Tisbury silt loam, 3 to 8 percent slopes	1.2	0.2%
704C	Enfield silt loam, 8 to 15 percent slopes	0.2	0.0%
W	Water	2.7	0.5%
Totals for Area of Interest		**564.2**	**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.





PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Average recurrence interval (years)

Duration	1	2	5	10	25	50	100	200	500	1000
5-min										
10-min										
15-min										
30-min										
60-min										
2-hr										
3-hr										
6-hr										
12-hr										
24-hr										
2-day										
3-day										
4-day										
7-day										
10-day										
20-day										
30-day										
45-day										
60-day										

[1] Values derived from PF estimates at 5-min and upper bounds of the 90% confidence interval. Please visit Precipitation Frequency Processing (PFP) documentation for more information. Estimates at 5-min are based on NOAA Atlas 14 Volume 10 Version 3 and average recurrence intervals greater than 200-years are based on Extreme Storm Factor (ESF) as described in NOAA Atlas 14 Volume 10 Version 3. Values are not shown for greater than 1000-years because ESF is not applicable for durations greater than 60-minutes.

Please refer to NOAA Atlas 14 Volume 10 Version 3.





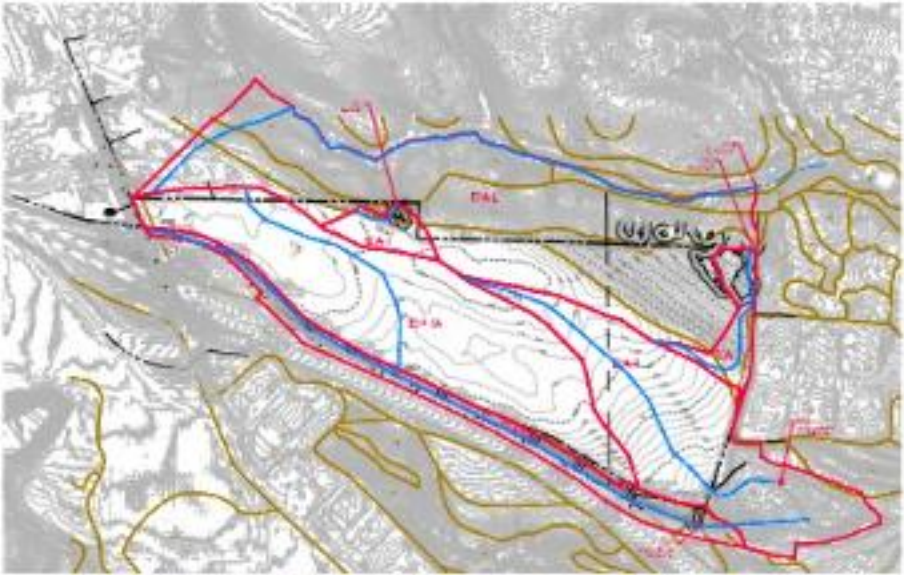
PF tabular

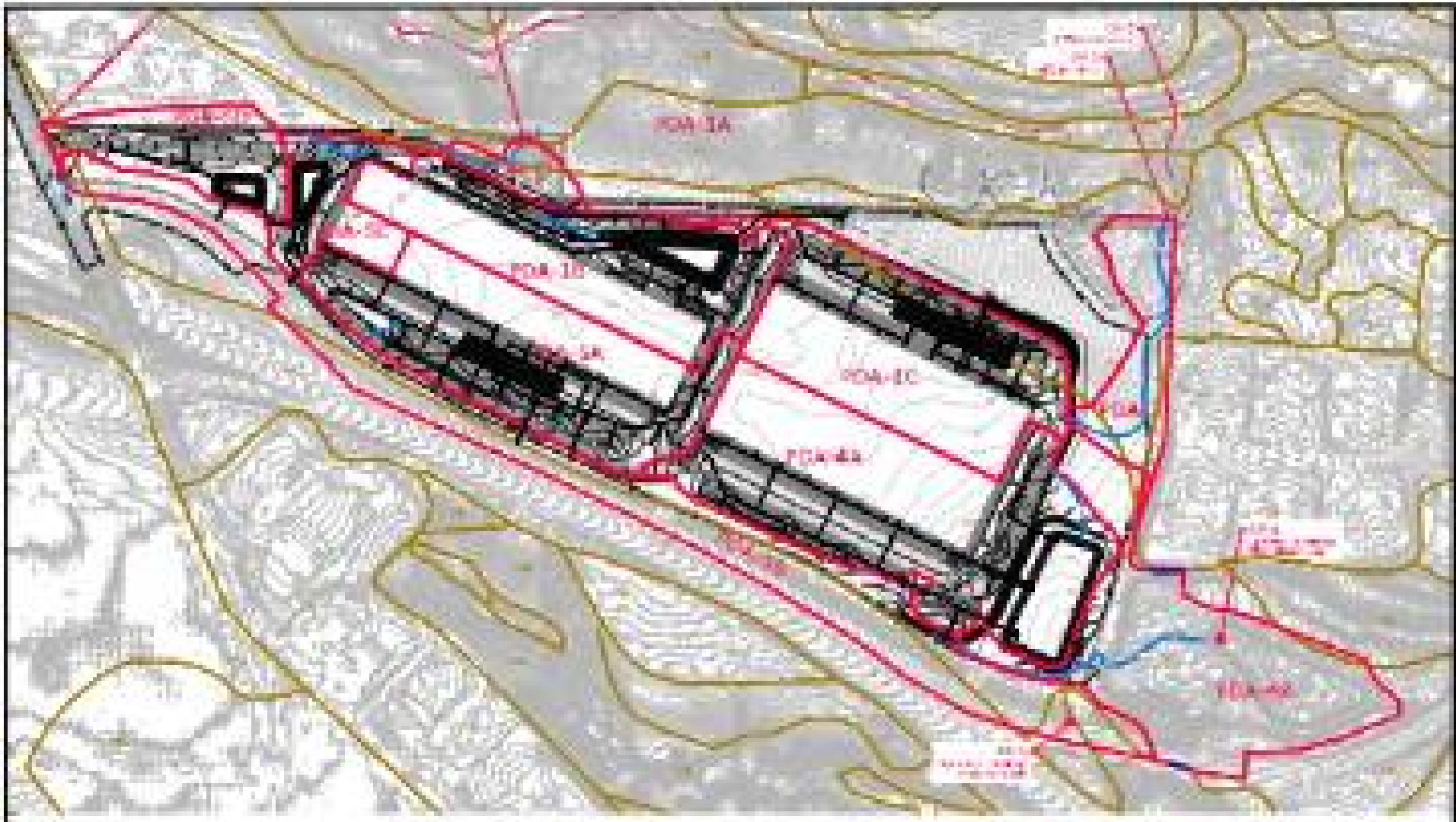
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour)[1]										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min										
10-min										
15-min										
30-min										
60-min										
2-hr										
3-hr										
6-hr										
12-hr										
24-hr										
2-day										
3-day										
4-day										
7-day										
10-day										
20-day										
30-day										
45-day										
60-day										

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

APPENDIX B

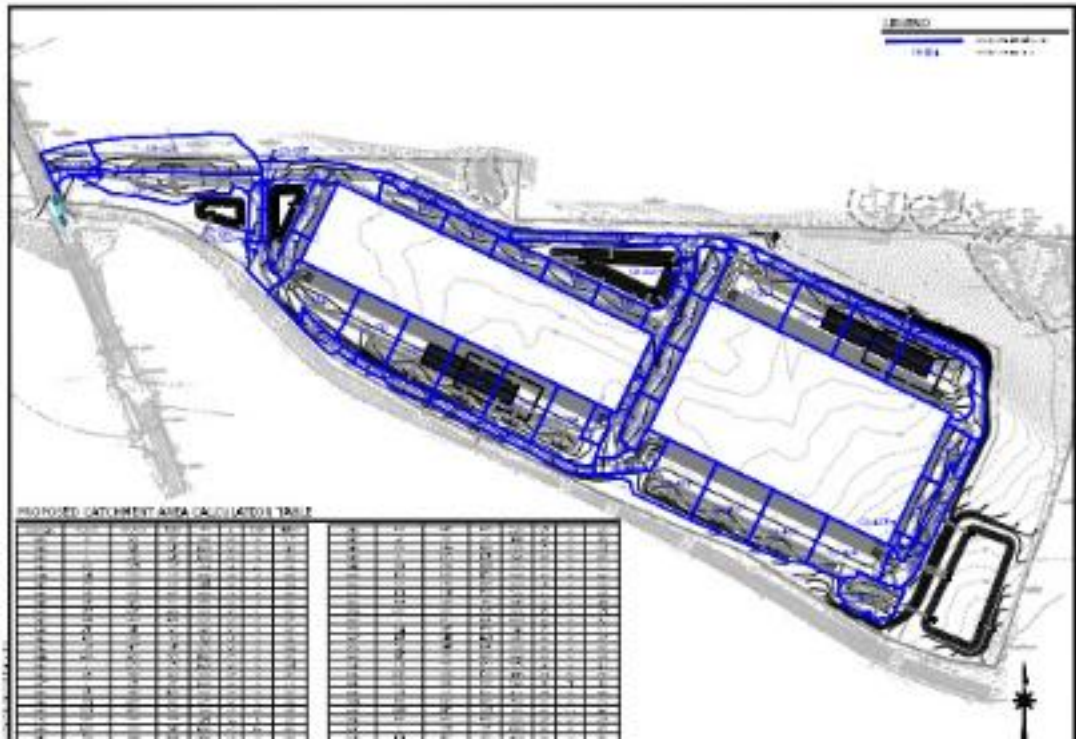
DRAINAGE AREA MAPS





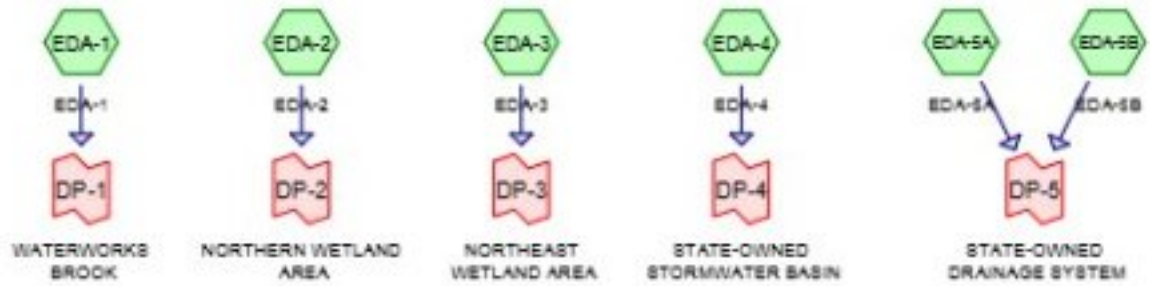
PROPOSED HYDROLOGY LEGEND

PROPOSED HYDROLOGY SUMMARY TABLE



APPENDIX C

PRE-DEVELOPMENT HYDROLOGIC ANALYSIS



Subcat Reach Pond Link

Routing Diagram for C-DAT-2500161-EXISTING-HYDRO-2025-04-1
Prepared by BL Companies, Printed 5/3/2025
HydroCAD® 10.20-6a s/n 01334 © 2024 HydroCAD Software Solutions LLC

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EDA-1: EDA-1 Runoff Area=2,212,445 sf 0.00% Impervious Runoff Depth=0.03"
Tc=61.1 min CN=44 Runoff=0.21 cfs 0.144 af

Subcatchment EDA-2: EDA-2 Runoff Area=124,728 sf 0.00% Impervious Runoff Depth=0.20"
Tc=25.5 min CN=63 Runoff=0.11 cfs 0.048 af

Subcatchment EDA-3: EDA-3 Runoff Area=172,854 sf 0.00% Impervious Runoff Depth=0.08"
Tc=24.6 min CN=48 Runoff=0.04 cfs 0.031 af

Subcatchment EDA-4: EDA-4 Runoff Area=1,181,634 sf 1.05% Impervious Runoff Depth=0.15"
Tc=54.2 min CN=51 Runoff=0.50 cfs 0.349 af

Subcatchment EDA-5A: EDA-5A Runoff Area=1,684,736 sf 0.00% Impervious Runoff Depth=0.38"
Tc=73.9 min CN=69 Runoff=3.05 cfs 1.164 af

Subcatchment EDA-5B: EDA-5B Runoff Area=417,036 sf 34.14% Impervious Runoff Depth=0.80"
Tc=21.5 min CN=71 Runoff=5.87 cfs 0.710 af

Link DP-1: WATERWORKS BROOK Inflow=0.21 cfs 0.144 af
Primary=0.21 cfs 0.144 af

Link DP-2: NORTHERN WETLAND AREA Inflow=0.11 cfs 0.048 af
Primary=0.11 cfs 0.048 af

Link DP-3: NORTHEAST WETLAND AREA Inflow=0.04 cfs 0.031 af
Primary=0.04 cfs 0.031 af

Link DP-4: STATE-OWNED STORMWATER BASIN Inflow=0.50 cfs 0.349 af
Primary=0.50 cfs 0.349 af

Link DP-5: STATE-OWNED DRAINAGE SYSTEM Inflow=6.06 cfs 1.874 af
Primary=6.06 cfs 1.874 af

Total Runoff Area = 130.933 ac Runoff Volume = 2.447 af Average Runoff Depth = 0.22"
97.29% Pervious = 127.380 ac 2.71% Impervious = 3.552 ac

Summary for Subcatchment EDA-1: EDA-1

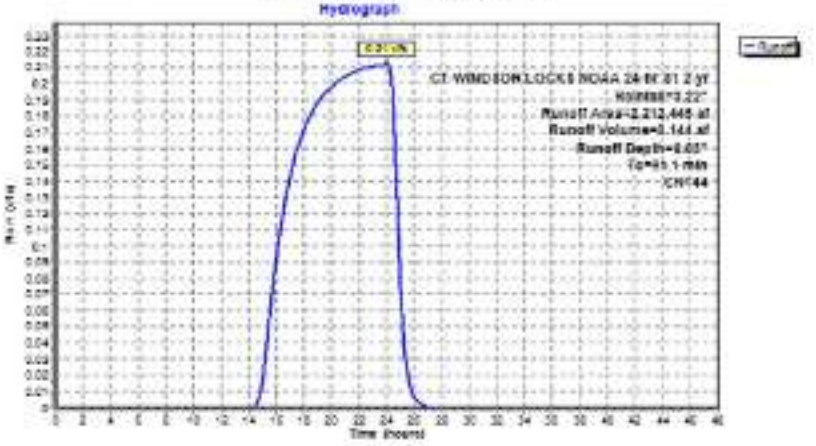
Runoff = 0.21 cfs @ 23.97 hrs, Volume= 0.144 af, Depth= 0.03"
Routed to Link DP-1 : WATERWORKS BROOK

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 2-yr Rainfall=3.22"

Area (sf)	CN	Description
20,634	72	Dirt roads, HSG A
72,515	49	50-75% Grass cover, Fair, HSG A
1,428,139	36	Woods, Fair, HSG A
79,036	60	Woods, Fair, HSG B
612,121	59	Farmsteads, HSG A
2,212,445	44	Weighted Average
2,212,445		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
61.1					Direct Entry, TC

Subcatchment EDA-1: EDA-1



Summary for Subcatchment EDA-2: EDA-2

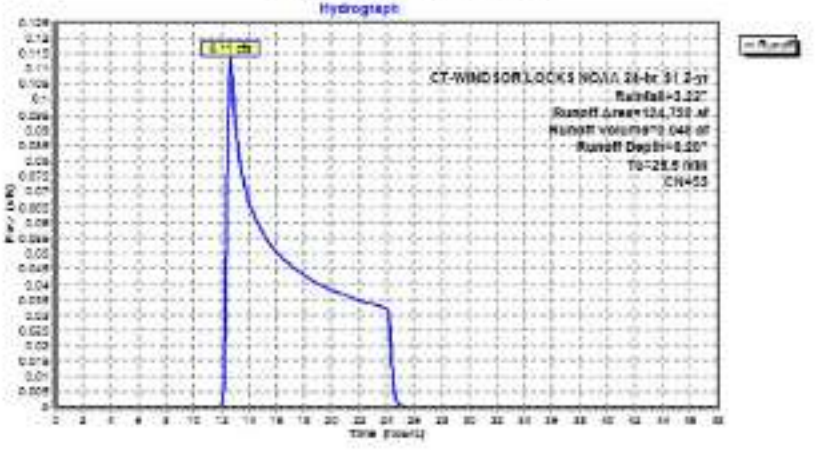
Runoff = 0.11 cfs @ 12.72 hrs, Volume= 0.048 af, Depth= 0.20"
Routed to Link DP-2 : NORTHERN WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 2-yr Rainfall=3.22"

Area (sf)	CN	Description
4,427	72	Dirt roads, HSG A
16,624	49	50-75% Grass cover, Fair, HSG A
27,594	36	Woods, Fair, HSG A
73,883	59	Farmsteads, HSG A
124,728	53	Weighted Average
124,728		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.5					Direct Entry, TC

Subcatchment EDA-2: EDA-2



Summary for Subcatchment EDA-3: EDA-3

Runoff = 0.04 cfs @ 14.89 hrs, Volume= 0.031 af, Depth= 0.09"
Routed to Link DP-3 : NORTHEAST WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 2-yr Rainfall=3.22"

Area (sf)	CN	Description
3,959	72	Dirt roads, HSG A
3,451	49	50-75% Grass cover, Fair, HSG A
82,062	36	Woods, Fair, HSG A
17,571	60	Woods, Fair, HSG B
65,811	59	Farmsteads, HSG A
172,854	48	Weighted Average
172,854		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5					Direct Entry, TC

Subcatchment EDA-3: EDA-3



Summary for Subcatchment EDA-4: EDA-4

Runoff = 0.50 cfs @ 13.67 hrs, Volume= 0.349 af, Depth= 0.15"
Routed to Link DP-4 : STATE-OWNED STORMWATER BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 2-yr Rainfall=3.22"

Area (sf)	CN	Description
11,153	72	Dirt roads, HSG A
5,708	49	50-75% Grass cover, Fair, HSG A
416,000	36	Woods, Fair, HSG A
2,259	60	Woods, Fair, HSG B
734,084	59	Farmsteads, HSG A
12,370	98	Paved parking, HSG A
1,181,634	51	Weighted Average
1,169,264		98.95% Pervious Area
12,370		1.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
54.2					Direct Entry, TC

Subcatchment EDA-4: EDA-4



Summary for Subcatchment EDA-5A: EDA-5A

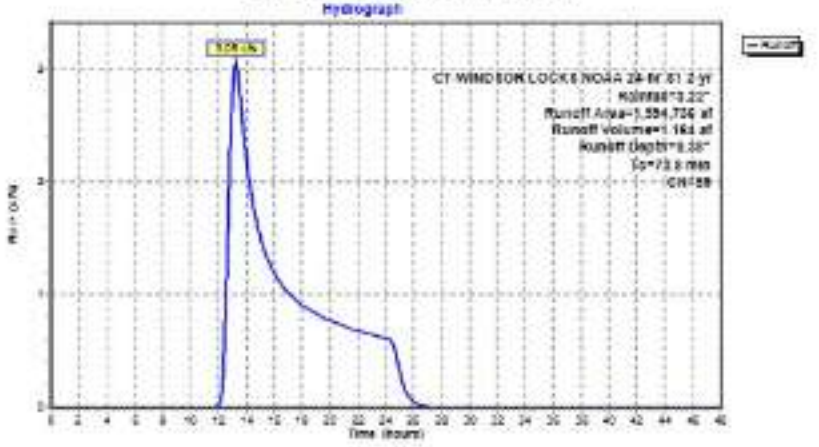
Runoff = 3.05 cfs @ 13.22 hrs, Volume= 1.164 af, Depth= 0.38"
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 2-yr Rainfall=3.22"

Area (sf)	CN	Description
48,606	72	Dirt roads, HSG A
4,170	82	Dirt roads, HSG B
43,866	49	50-75% Grass cover, Fair, HSG A
16,735	69	50-75% Grass cover, Fair, HSG B
49,223	36	Woods, Fair, HSG A
845	60	Woods, Fair, HSG B
1,429,638	59	Farmsteads, HSG A
1,445	74	Farmsteads, HSG B
1,594,736	59	Weighted Average
1,594,736		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
73.9					Direct Entry, TC

Subcatchment EDA-5A: EDA-5A



Summary for Subcatchment EDA-5B: EDA-5B

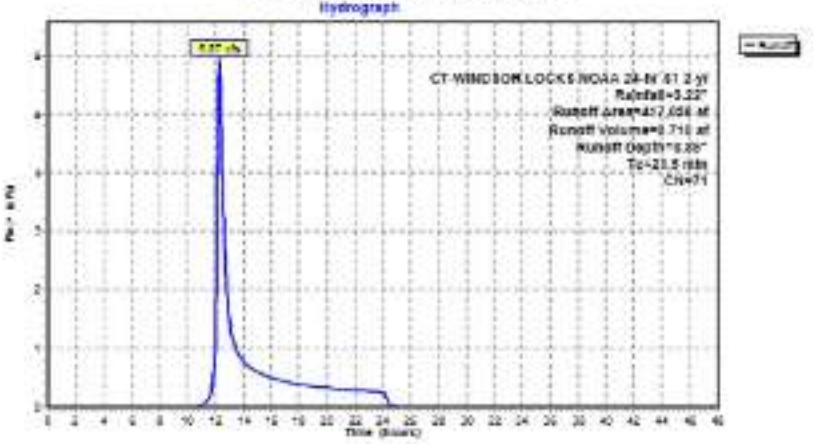
Runoff = 5.87 cfs @ 12.26 hrs, Volume= 0.710 af, Depth= 0.80"
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 2-yr Rainfall=3.22"

Area (sf)	CN	Description
32,668	98	Unconnected roofs, HSG A
109,705	98	Unconnected pavement, HSG B
157,565	49	50-75% Grass cover, Fair, HSG A
107,735	69	50-75% Grass cover, Fair, HSG B
9,363	36	Woods, Fair, HSG A
417,036	71	Weighted Average
274,693		65.86% Pervious Area
142,373		34.14% Impervious Area
142,373		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.5					Direct Entry, TC

Subcatchment EDA-5B: EDA-5B

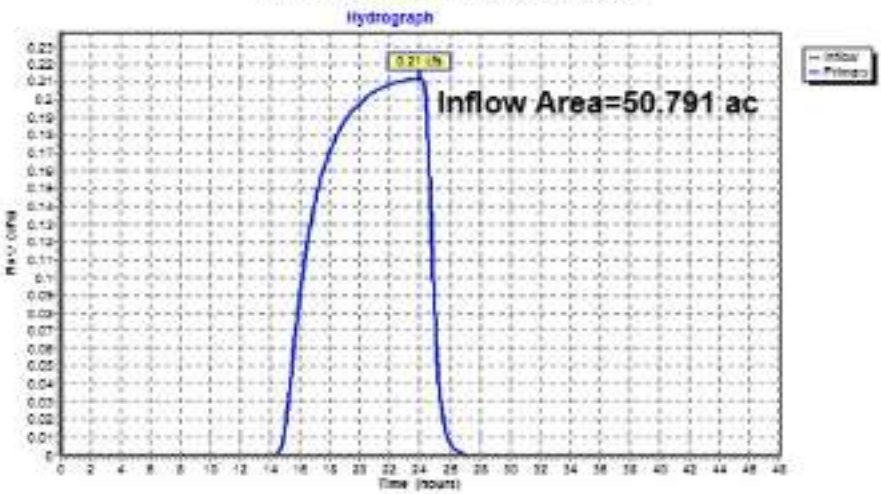


Summary for Link DP-1: WATERWORKS BROOK

Inflow Area = 50.791 ac, 0.00% Impervious, Inflow Depth = 0.03" for 2-yr event
Inflow = 0.21 cfs @ 23.97 hrs, Volume= 0.144 af
Primary = 0.21 cfs @ 23.97 hrs, Volume= 0.144 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-1: WATERWORKS BROOK

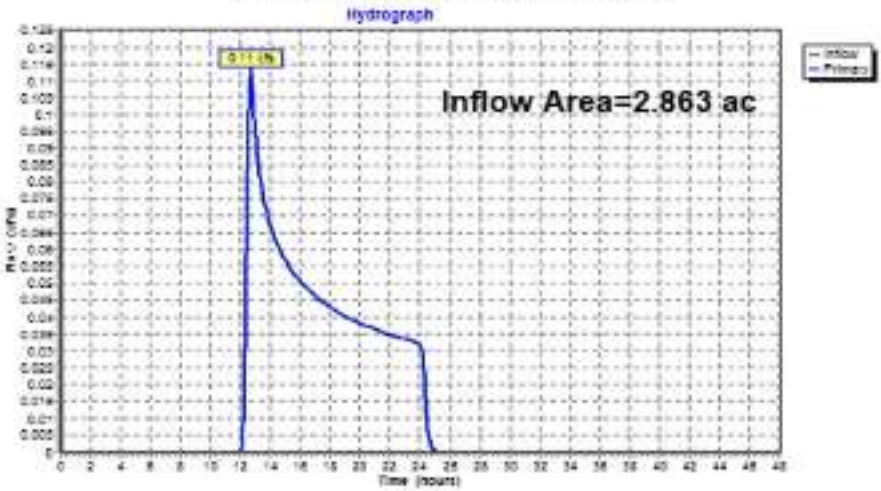


Summary for Link DP-2: NORTHERN WETLAND AREA

Inflow Area = 2.863 ac, 0.00% Impervious, Inflow Depth = 0.20" for 2-yr event
Inflow = 0.11 cfs @ 12.72 hrs, Volume= 0.048 af
Primary = 0.11 cfs @ 12.72 hrs, Volume= 0.048 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-2: NORTHERN WETLAND AREA

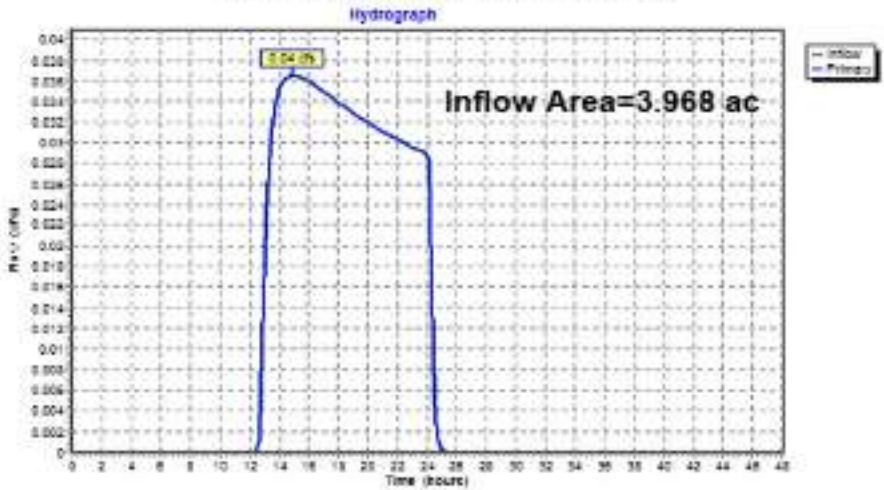


Summary for Link DP-3: NORTHEAST WETLAND AREA

Inflow Area = 3.968 ac, 0.00% Impervious, Inflow Depth = 0.09" for 2-yr event
Inflow = 0.04 cfs @ 14.89 hrs, Volume= 0.031 af
Primary = 0.04 cfs @ 14.89 hrs, Volume= 0.031 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-3: NORTHEAST WETLAND AREA

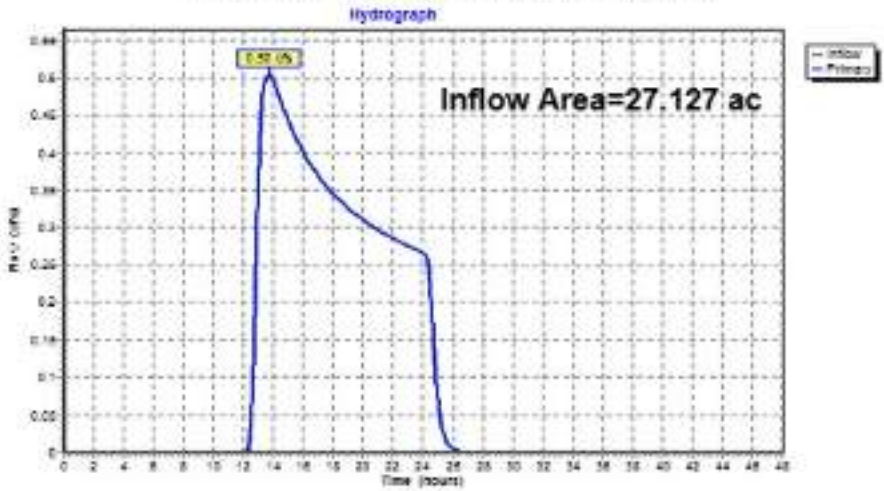


Summary for Link DP-4: STATE-OWNED STORMWATER BASIN

Inflow Area = 27.127 ac, 1.05% Impervious, Inflow Depth = 0.15" for 2-yr event
Inflow = 0.50 cfs @ 13.67 hrs, Volume= 0.349 af
Primary = 0.50 cfs @ 13.67 hrs, Volume= 0.349 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-4: STATE-OWNED STORMWATER BASIN

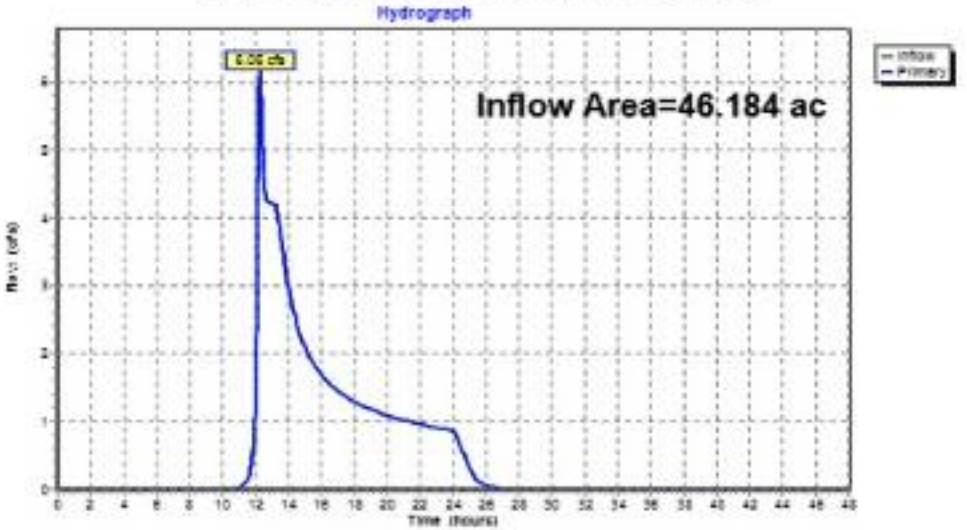


Summary for Link DP-5: STATE-OWNED DRAINAGE SYSTEM

Inflow Area = 46.184 ac, 7.08% Impervious, Inflow Depth = 0.49" for 2-yr event
Inflow = 6.06 cfs @ 12.28 hrs, Volume= 1.874 af
Primary = 6.06 cfs @ 12.28 hrs, Volume= 1.874 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-5: STATE-OWNED DRAINAGE SYSTEM



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EDA-1: EDA-1 Runoff Area=2,212,445 sf 0.00% Impervious Runoff Depth=0.45"
Tc=61.1 min CN=44 Runoff=4.01 cfs 1.886 af

Subcatchment EDA-2: EDA-2 Runoff Area=124,728 sf 0.00% Impervious Runoff Depth=0.94"
Tc=25.5 min CN=63 Runoff=1.30 cfs 0.223 af

Subcatchment EDA-3: EDA-3 Runoff Area=172,854 sf 0.00% Impervious Runoff Depth=0.65"
Tc=24.5 min CN=48 Runoff=0.93 cfs 0.214 af

Subcatchment EDA-4: EDA-4 Runoff Area=1,181,634 sf 1.05% Impervious Runoff Depth=0.62"
Tc=54.2 min CN=51 Runoff=6.59 cfs 1.845 af

Subcatchment EDA-5A: EDA-5A Runoff Area=1,684,736 sf 0.00% Impervious Runoff Depth=1.33"
Tc=73.9 min CN=59 Runoff=14.99 cfs 4.046 af

Subcatchment EDA-5B: EDA-5B Runoff Area=417,036 sf 34.14% Impervious Runoff Depth=2.24"
Tc=21.5 min CN=71 Runoff=15.43 cfs 1.786 af

Link DP-1: WATERWORKS BROOK Inflow=4.01 cfs 1.886 af
Primary=4.01 cfs 1.886 af

Link DP-2: NORTHERN WETLAND AREA Inflow=1.30 cfs 0.223 af
Primary=1.30 cfs 0.223 af

Link DP-3: NORTHEAST WETLAND AREA Inflow=0.93 cfs 0.214 af
Primary=0.93 cfs 0.214 af

Link DP-4: STATE-OWNED STORMWATER BASIN Inflow=6.59 cfs 1.845 af
Primary=6.59 cfs 1.845 af

Link DP-5: STATE-OWNED DRAINAGE SYSTEM Inflow=18.36 cfs 5.831 af
Primary=18.36 cfs 5.831 af

Total Runoff Area = 130.933 ac Runoff Volume = 10.000 af Average Runoff Depth = 0.92"
97.29% Pervious = 127.380 ac 2.71% Impervious = 3.552 ac

Summary for Subcatchment EDA-1: EDA-1

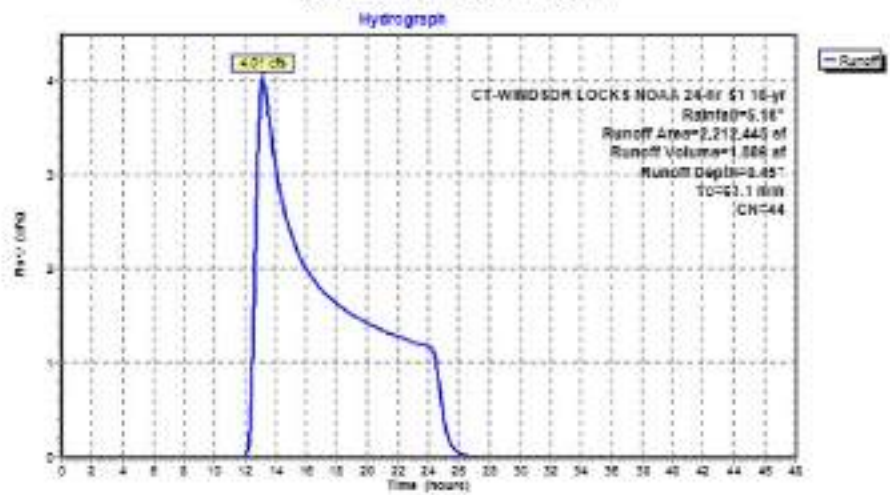
Runoff = 4.01 cfs @ 13.17 hrs, Volume= 1.886 af, Depth= 0.45"
Routed to Link DP-1 : WATERWORKS BROOK

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 10-yr Rainfall=5.16"

Area (sf)	CN	Description
20,634	72	Dirt roads, HSG A
72,515	49	50-75% Grass cover, Fair, HSG A
1,428,139	36	Woods, Fair, HSG A
79,036	60	Woods, Fair, HSG B
612,121	59	Farmsteads, HSG A
2,212,445	44	Weighted Average
2,212,445		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
61.1					Direct Entry, TC

Subcatchment EDA-1: EDA-1



Summary for Subcatchment EDA-2: EDA-2

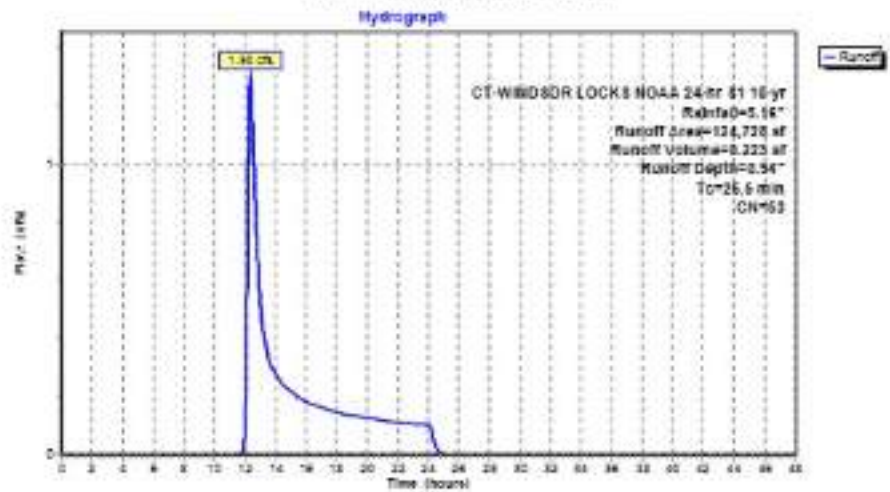
Runoff = 1.30 cfs @ 12.36 hrs, Volume= 0.223 af, Depth= 0.94"
Routed to Link DP-2 : NORTHERN WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 10-yr Rainfall=5.16"

Area (sf)	CN	Description
4,427	72	Dirt roads, HSG A
18,824	49	50-75% Grass cover, Fair, HSG A
27,594	36	Woods, Fair, HSG A
73,883	59	Farmsteads, HSG A
124,728	53	Weighted Average
124,728		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.5					Direct Entry, TC

Subcatchment EDA-2: EDA-2



Summary for Subcatchment EDA-3: EDA-3

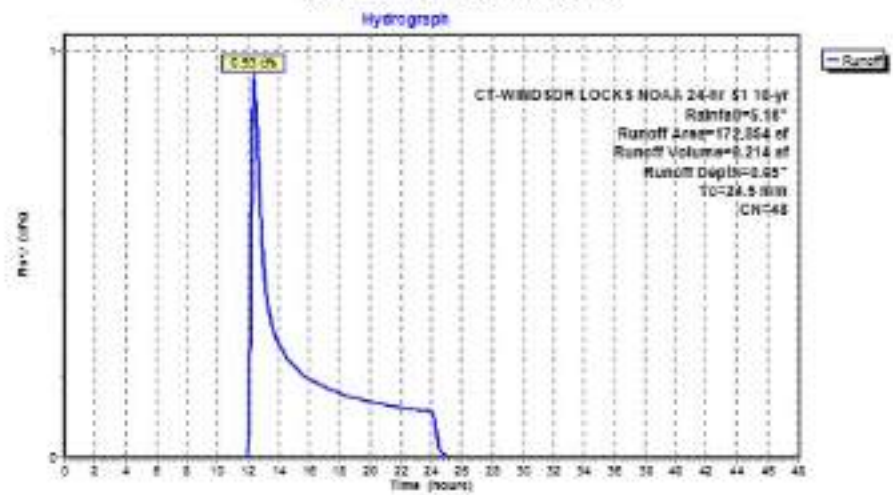
Runoff = 0.93 cfs @ 12.39 hrs, Volume= 0.214 af, Depth= 0.65"
Routed to Link DP-3 : NORTHEAST WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 10-yr Rainfall=5.16"

Area (sf)	CN	Description
3,959	72	Dirt roads, HSG A
3,451	49	50-75% Grass cover, Fair, HSG A
82,062	36	Woods, Fair, HSG A
17,571	60	Woods, Fair, HSG B
65,811	59	Farmsteads, HSG A
172,854	48	Weighted Average
172,854		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5					Direct Entry, TC

Subcatchment EDA-3: EDA-3



Summary for Subcatchment EDA-4: EDA-4

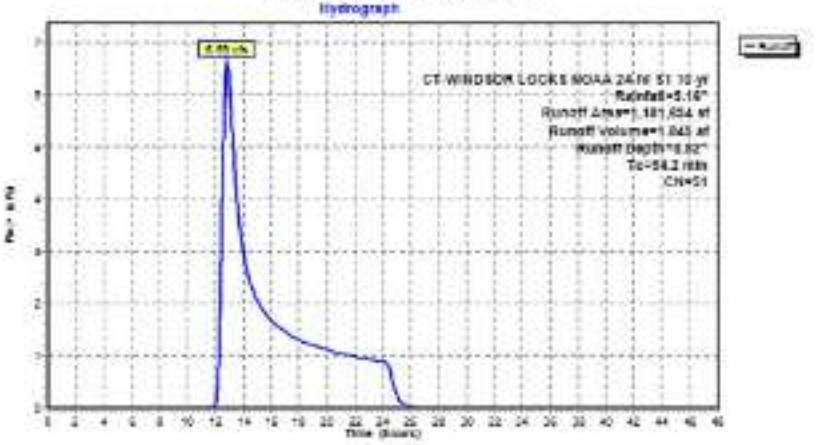
Runoff = 6.50 cfs @ 12.83 hrs, Volume= 1.845 af, Depth= 0.82"
Routed to Link DP-4 : STATE-OWNED STORMWATER BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 10-yr Rainfall=5.16"

Area (sf)	CN	Description
11,153	72	Dirt roads, HSG A
5,768	49	50-75% Grass cover, Fair, HSG A
416,000	36	Woods, Fair, HSG A
2,259	60	Woods, Fair, HSG B
734,084	59	Farmsteads, HSG A
12,370	98	Paved parking, HSG A
1,181,634	51	Weighted Average
1,169,264		98.95% Pervious Area
12,370		1.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
54.2					Direct Entry, TC

Subcatchment EDA-4: EDA-4



Summary for Subcatchment EDA-5A: EDA-5A

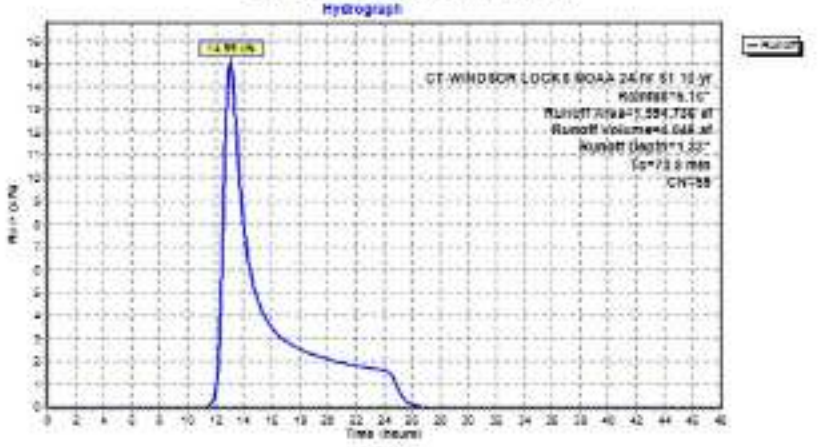
Runoff = 14.99 cfs @ 13.05 hrs, Volume= 4.046 af, Depth= 1.33"
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 10-yr Rainfall=5.16"

Area (sf)	CN	Description
48,606	72	Dirt roads, HSG A
4,170	82	Dirt roads, HSG B
43,866	49	50-75% Grass cover, Fair, HSG A
16,735	69	50-75% Grass cover, Fair, HSG B
49,223	36	Woods, Fair, HSG A
845	60	Woods, Fair, HSG B
1,429,638	59	Farmsteads, HSG A
1,445	74	Farmsteads, HSG B
1,594,736	59	Weighted Average
1,594,736		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
73.9					Direct Entry, TC

Subcatchment EDA-5A: EDA-5A



Summary for Subcatchment EDA-5B: EDA-5B

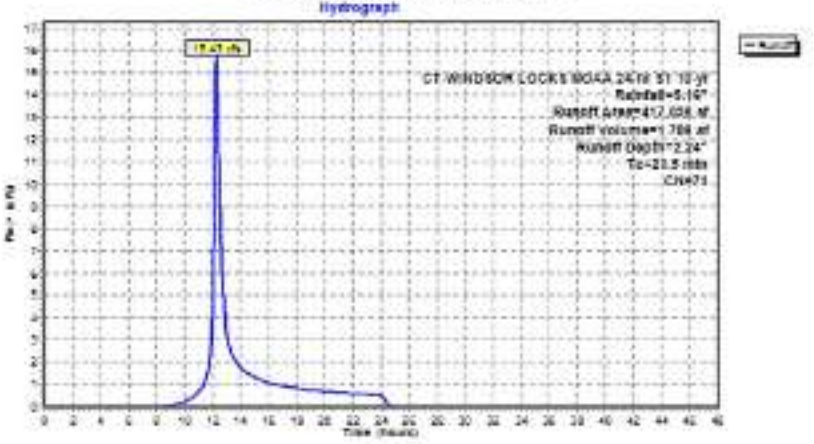
Runoff = 15.43 cfs @ 12.25 hrs, Volume= 1.786 af, Depth= 2.24"
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 10-yr Rainfall=5.16"

Area (sf)	CN	Description
32,668	98	Unconnected roofs, HSG A
109,705	98	Unconnected pavement, HSG B
157,565	49	50-75% Grass cover, Fair, HSG A
107,735	69	50-75% Grass cover, Fair, HSG B
9,363	36	Woods, Fair, HSG A
417,036	71	Weighted Average
274,693		65.86% Pervious Area
142,373		34.14% Impervious Area
142,373		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.5					Direct Entry, TC

Subcatchment EDA-5B: EDA-5B

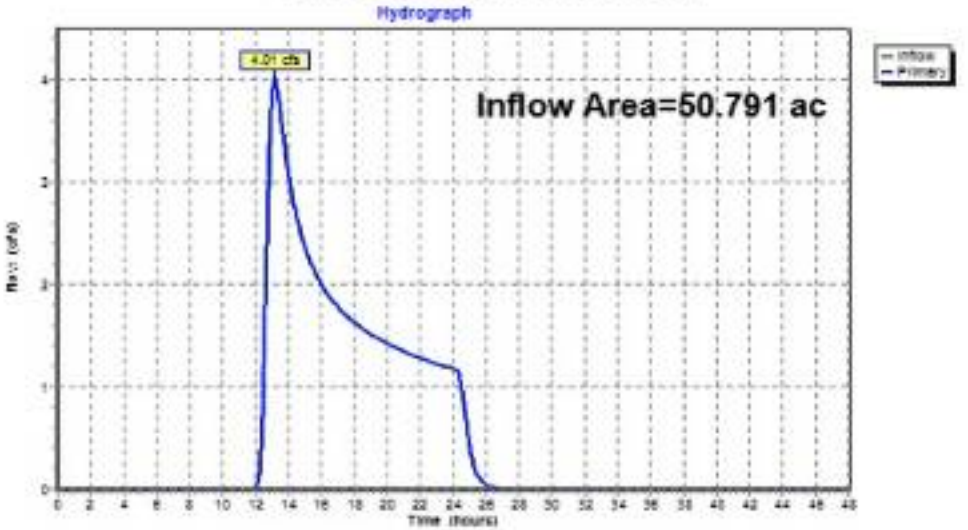


Summary for Link DP-1: WATERWORKS BROOK

Inflow Area = 50.791 ac, 0.00% Impervious, Inflow Depth = 0.45" for 10-yr event
Inflow = 4.01 cfs @ 13.17 hrs, Volume= 1.886 af
Primary = 4.01 cfs @ 13.17 hrs, Volume= 1.886 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-1: WATERWORKS BROOK

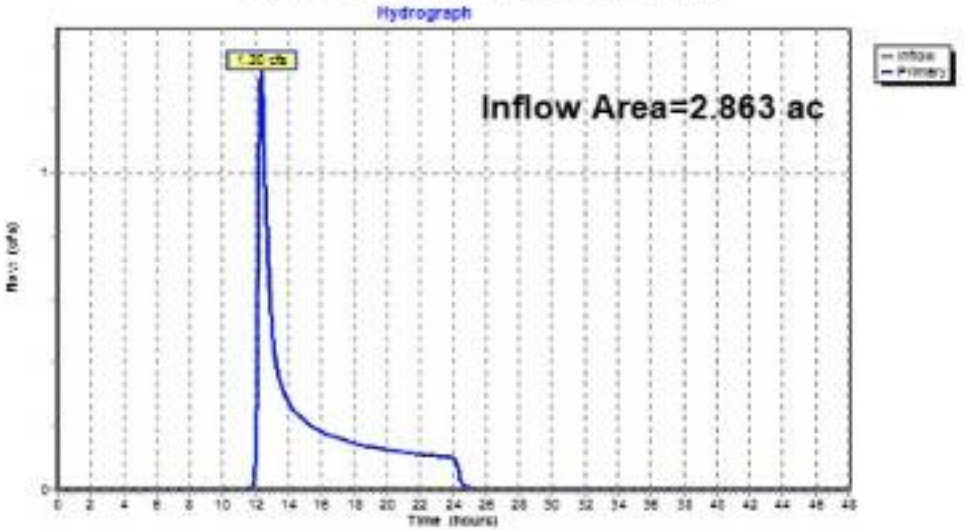


Summary for Link DP-2: NORTHERN WETLAND AREA

Inflow Area = 2.863 ac, 0.00% Impervious, Inflow Depth = 0.94" for 10-yr event
Inflow = 1.30 cfs @ 12.36 hrs, Volume= 0.223 af
Primary = 1.30 cfs @ 12.36 hrs, Volume= 0.223 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-2: NORTHERN WETLAND AREA

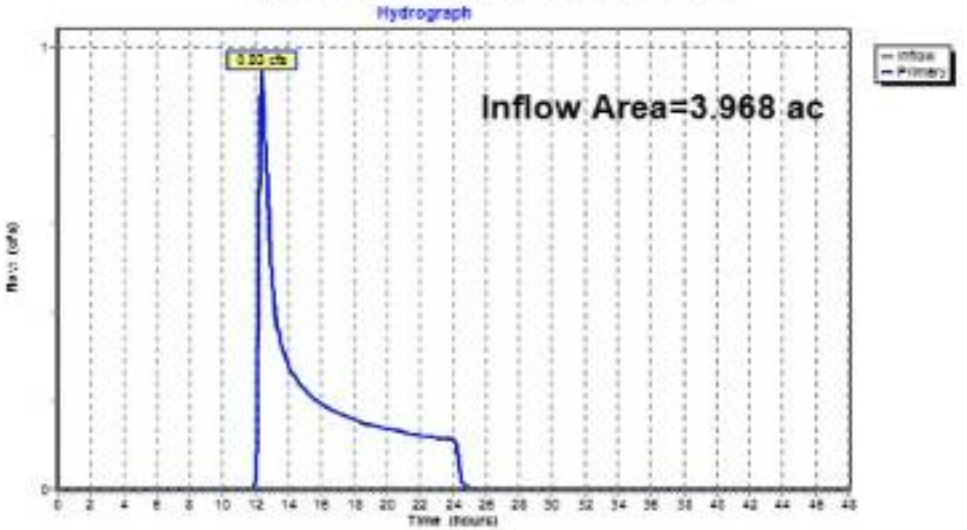


Summary for Link DP-3: NORTHEAST WETLAND AREA

Inflow Area = 3.968 ac, 0.00% Impervious, Inflow Depth = 0.65" for 10-yr event
Inflow = 0.93 cfs @ 12.39 hrs, Volume= 0.214 af
Primary = 0.93 cfs @ 12.39 hrs, Volume= 0.214 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-3: NORTHEAST WETLAND AREA

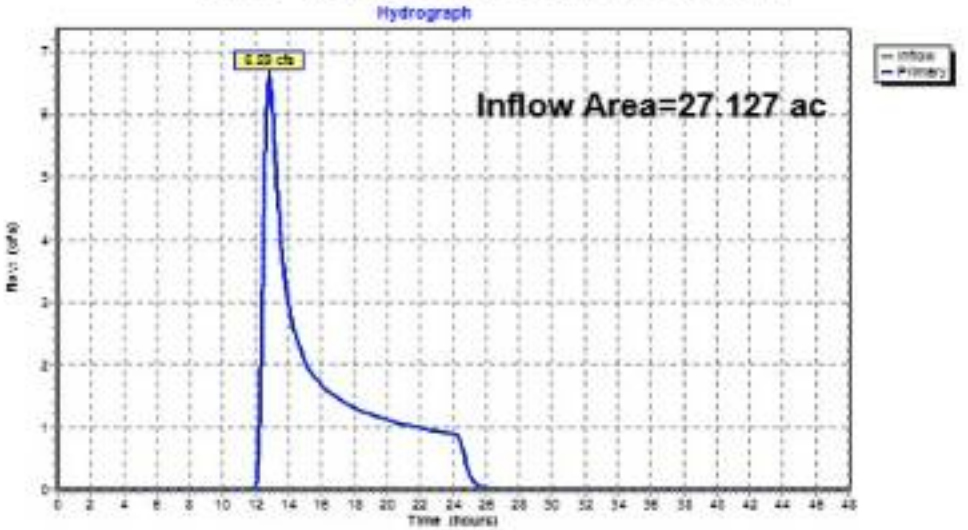


Summary for Link DP-4: STATE-OWNED STORMWATER BASIN

Inflow Area = 27.127 ac, 1.05% Impervious, Inflow Depth = 0.82" for 10-yr event
Inflow = 6.59 cfs @ 12.83 hrs, Volume= 1.845 af
Primary = 6.59 cfs @ 12.83 hrs, Volume= 1.845 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-4: STATE-OWNED STORMWATER BASIN

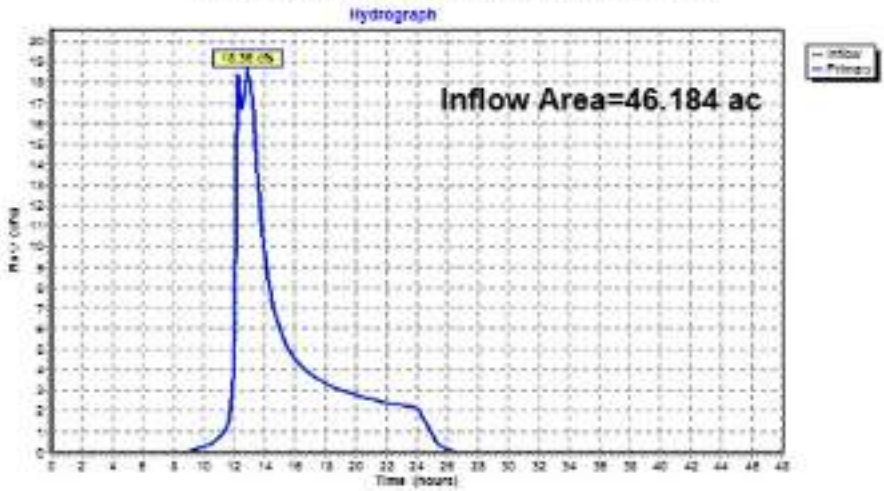


Summary for Link DP-5: STATE-OWNED DRAINAGE SYSTEM

Inflow Area = 46.184 ac, 7.08% Impervious, Inflow Depth = 1.52" for 10-yr event
Inflow = 18.36 cfs @ 12.89 hrs, Volume= 5.831 af
Primary = 18.36 cfs @ 12.89 hrs, Volume= 5.831 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-5: STATE-OWNED DRAINAGE SYSTEM



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EDA-1: EDA-1 Runoff Area=2,212,445 sf 0.00% Impervious Runoff Depth=0.88"
Tc=61.1 min CN=44 Runoff=11.16 cfs 3.723 af

Subcatchment EDA-2: EDA-2 Runoff Area=124,728 sf 0.00% Impervious Runoff Depth=1.58"
Tc=25.5 min CN=63 Runoff=2.50 cfs 0.373 af

Subcatchment EDA-3: EDA-3 Runoff Area=172,854 sf 0.00% Impervious Runoff Depth=1.17"
Tc=24.6 min CN=48 Runoff=2.27 cfs 0.387 af

Subcatchment EDA-4: EDA-4 Runoff Area=1,181,634 sf 1.05% Impervious Runoff Depth=1.40"
Tc=54.2 min CN=51 Runoff=13.25 cfs 3.170 af

Subcatchment EDA-5A: EDA-5A Runoff Area=1,684,736 sf 0.00% Impervious Runoff Depth=2.07"
Tc=73.9 min CN=59 Runoff=24.59 cfs 6.323 af

Subcatchment EDA-5B: EDA-5B Runoff Area=417,036 sf 34.14% Impervious Runoff Depth=3.10"
Tc=21.5 min CN=71 Runoff=21.91 cfs 2.546 af

Link DP-1: WATERWORKS BROOK Inflow=11.16 cfs 3.723 af
Primary=11.16 cfs 3.723 af

Link DP-2: NORTHERN WETLAND AREA Inflow=2.50 cfs 0.373 af
Primary=2.50 cfs 0.373 af

Link DP-3: NORTHEAST WETLAND AREA Inflow=2.27 cfs 0.387 af
Primary=2.27 cfs 0.387 af

Link DP-4: STATE-OWNED STORMWATER BASIN Inflow=13.25 cfs 3.170 af
Primary=13.25 cfs 3.170 af

Link DP-5: STATE-OWNED DRAINAGE SYSTEM Inflow=29.59 cfs 8.869 af
Primary=29.59 cfs 8.869 af

Total Runoff Area = 130.933 ac Runoff Volume = 16.523 af Average Runoff Depth = 1.51"
97.29% Pervious = 127.380 ac 2.71% Impervious = 3.552 ac

Summary for Subcatchment EDA-1: EDA-1

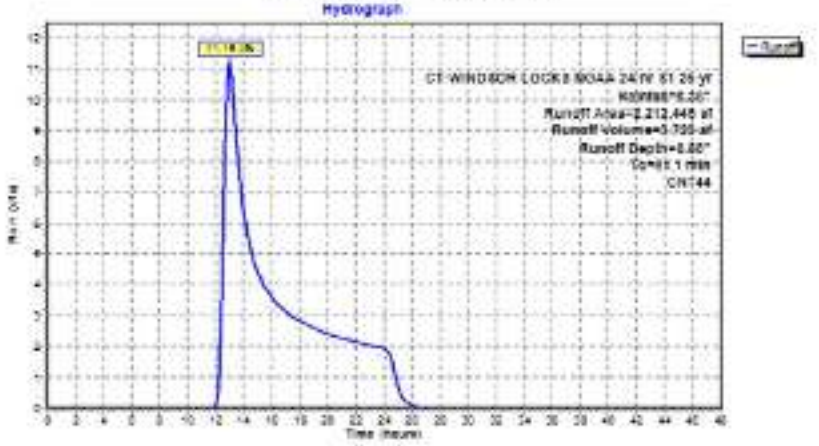
Runoff = 11.16 cfs @ 12.97 hrs, Volume= 3.723 af, Depth= 0.88"
Routed to Link DP-1 : WATERWORKS BROOK

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 25-yr Rainfall=6.36"

Area (sf)	CN	Description
20,634	72	Dirt roads, HSG A
72,515	49	50-75% Grass cover, Fair, HSG A
1,428,139	36	Woods, Fair, HSG A
79,036	60	Woods, Fair, HSG B
612,121	59	Farmsteads, HSG A
2,212,445	44	Weighted Average
2,212,445		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
61.1					Direct Entry, TC

Subcatchment EDA-1: EDA-1



Summary for Subcatchment EDA-2: EDA-2

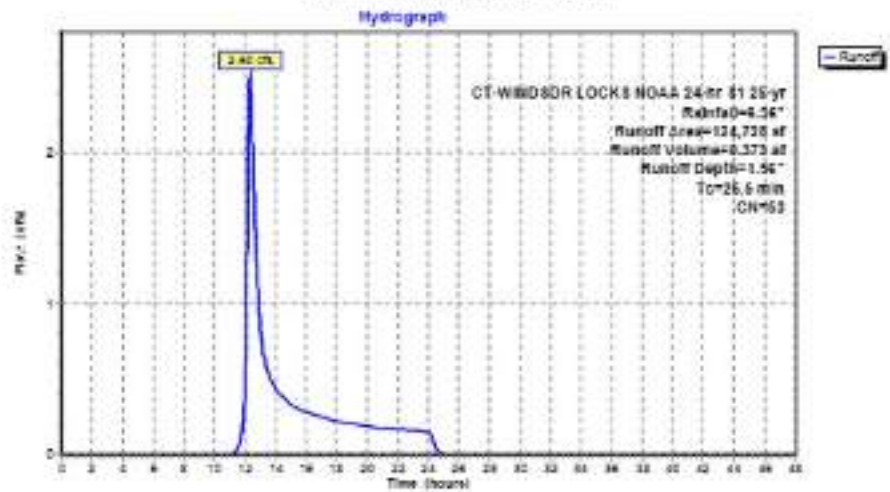
Runoff = 2.50 cfs @ 12.33 hrs, Volume= 0.373 af, Depth= 1.56"
Routed to Link DP-2 : NORTHERN WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 25-yr Rainfall=6.36"

Area (sf)	CN	Description
4,427	72	Dirt roads, HSG A
18,824	49	50-75% Grass cover, Fair, HSG A
27,594	36	Woods, Fair, HSG A
73,883	59	Farmsteads, HSG A
124,728	53	Weighted Average
124,728		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.5					Direct Entry, TC

Subcatchment EDA-2: EDA-2



Summary for Subcatchment EDA-3: EDA-3

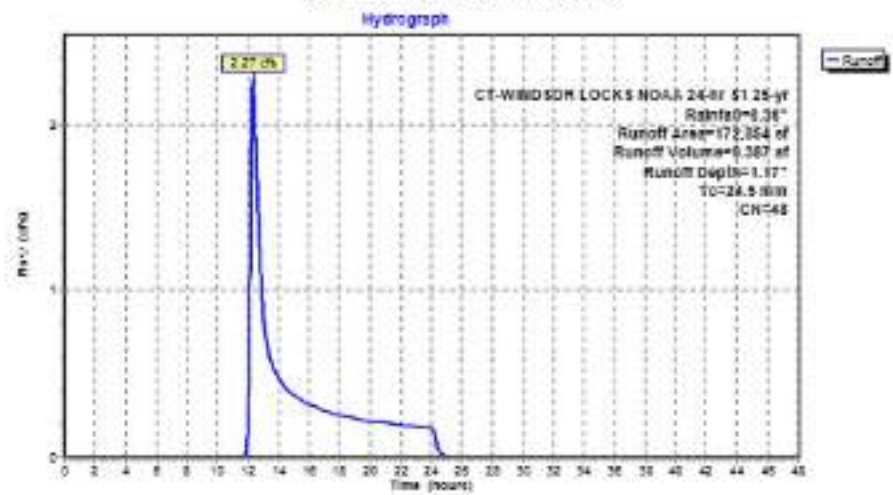
Runoff = 2.27 cfs @ 12.33 hrs, Volume= 0.387 af, Depth= 1.17"
Routed to Link DP-3 : NORTHEAST WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 25-yr Rainfall=6.36"

Area (sf)	CN	Description
3,959	72	Dirt roads, HSG A
3,451	49	50-75% Grass cover, Fair, HSG A
82,062	36	Woods, Fair, HSG A
17,571	60	Woods, Fair, HSG B
65,811	59	Farmsteads, HSG A
172,854	48	Weighted Average
172,854		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5					Direct Entry, TC

Subcatchment EDA-3: EDA-3



Summary for Subcatchment EDA-4: EDA-4

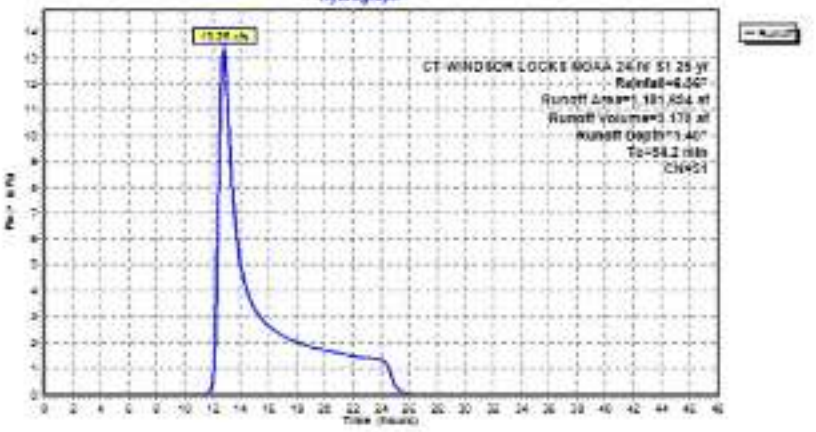
Runoff = 13.25 cfs @ 12.77 hrs, Volume= 3.170 af, Depth= 1.40"
Routed to Link DP-4 : STATE-OWNED STORMWATER BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 25-yr Rainfall=6.36"

Area (sf)	CN	Description
11,153	72	Dirt roads, HSG A
5,768	49	50-75% Grass cover, Fair, HSG A
416,000	36	Woods, Fair, HSG A
2,259	60	Woods, Fair, HSG B
734,084	59	Farmsteads, HSG A
12,370	98	Paved parking, HSG A
1,181,634	51	Weighted Average
1,169,264		98.95% Pervious Area
12,370		1.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
54.2					Direct Entry, TC

Subcatchment EDA-4: EDA-4



Summary for Subcatchment EDA-5A: EDA-5A

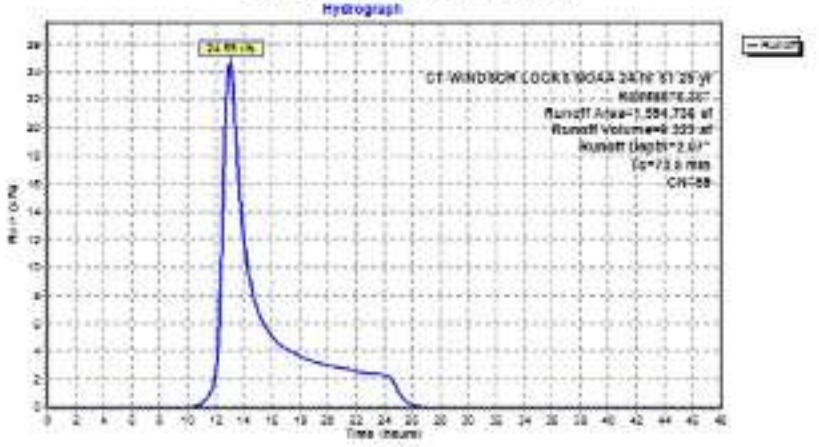
Runoff = 24.50 cfs @ 13.05 hrs, Volume= 6,323 af, Depth= 2.07"
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 25-yr Rainfall=6.36"

Area (sf)	CN	Description
48,606	72	Dirt roads, HSG A
4,170	82	Dirt roads, HSG B
43,866	49	50-75% Grass cover, Fair, HSG A
16,735	69	50-75% Grass cover, Fair, HSG B
49,223	36	Woods, Fair, HSG A
845	60	Woods, Fair, HSG B
1,429,638	59	Farmsteads, HSG A
1,445	74	Farmsteads, HSG B
1,594,736	59	Weighted Average
1,594,736		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
73.9					Direct Entry, TC

Subcatchment EDA-5A: EDA-5A



Summary for Subcatchment EDA-5B: EDA-5B

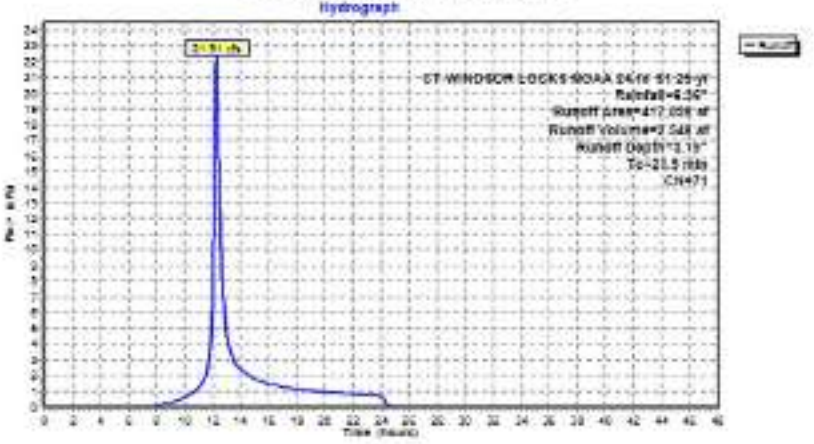
Runoff = 21.91 cfs @ 12.25 hrs, Volume= 2.546 af, Depth= 3.19"
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 25-yr Rainfall=6.36"

Area (sf)	CN	Description
32,668	98	Unconnected roofs, HSG A
109,705	98	Unconnected pavement, HSG B
157,565	49	50-75% Grass cover, Fair, HSG A
107,735	69	50-75% Grass cover, Fair, HSG B
9,363	36	Woods, Fair, HSG A
417,036	71	Weighted Average
274,693		65.86% Pervious Area
142,373		34.14% Impervious Area
142,373		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.5					Direct Entry, TC

Subcatchment EDA-5B: EDA-5B

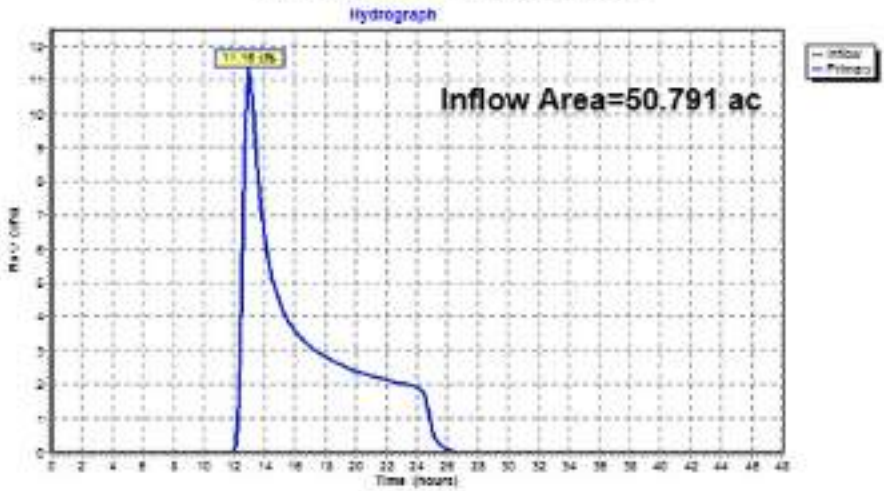


Summary for Link DP-1: WATERWORKS BROOK

Inflow Area = 50.791 ac, 0.00% Impervious, Inflow Depth = 0.88" for 25-yr event
Inflow = 11.16 cfs @ 12.97 hrs, Volume= 3.723 af
Primary = 11.16 cfs @ 12.97 hrs, Volume= 3.723 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-1: WATERWORKS BROOK

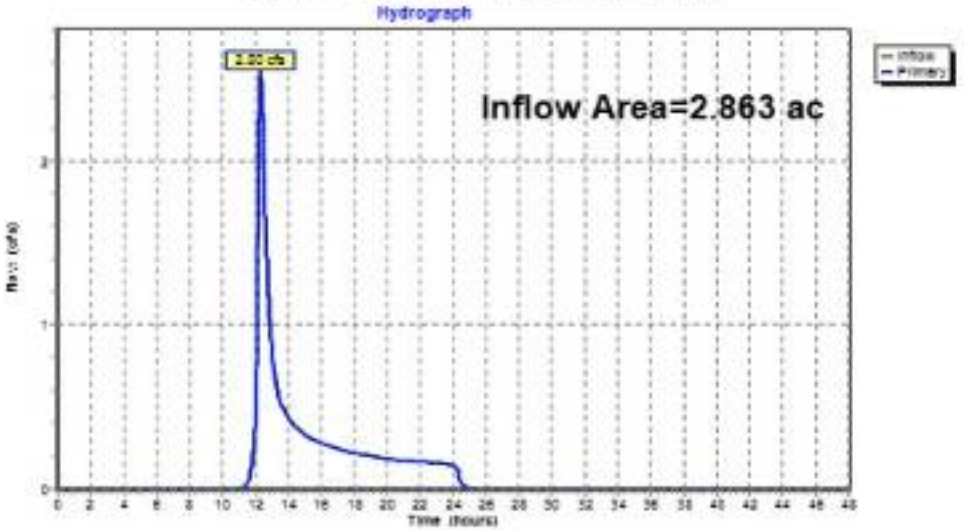


Summary for Link DP-2: NORTHERN WETLAND AREA

Inflow Area = 2.863 ac, 0.00% Impervious, Inflow Depth = 1.56" for 25-yr event
Inflow = 2.50 cfs @ 12.33 hrs, Volume= 0.373 af
Primary = 2.50 cfs @ 12.33 hrs, Volume= 0.373 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-2: NORTHERN WETLAND AREA

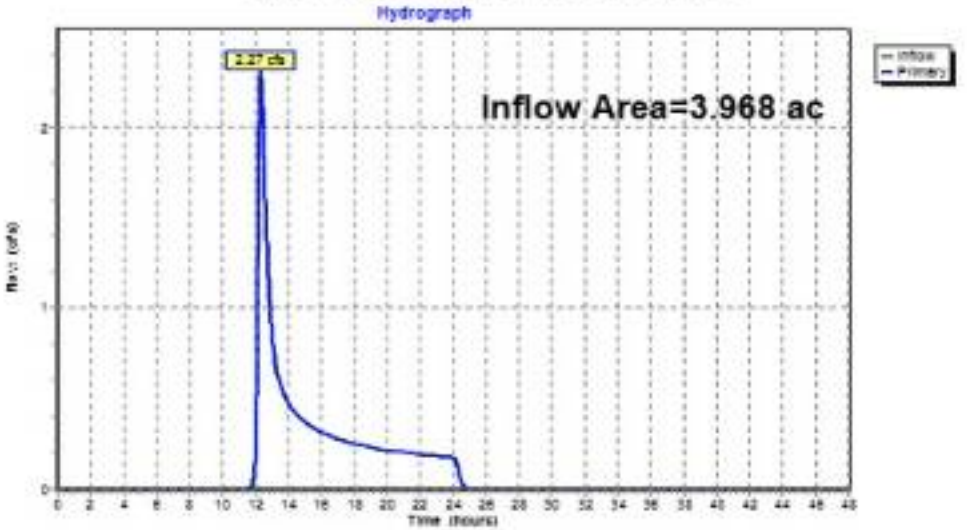


Summary for Link DP-3: NORTHEAST WETLAND AREA

Inflow Area = 3.968 ac, 0.00% Impervious, Inflow Depth = 1.17" for 25-yr event
Inflow = 2.27 cfs @ 12.33 hrs, Volume= 0.387 af
Primary = 2.27 cfs @ 12.33 hrs, Volume= 0.387 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-3: NORTHEAST WETLAND AREA

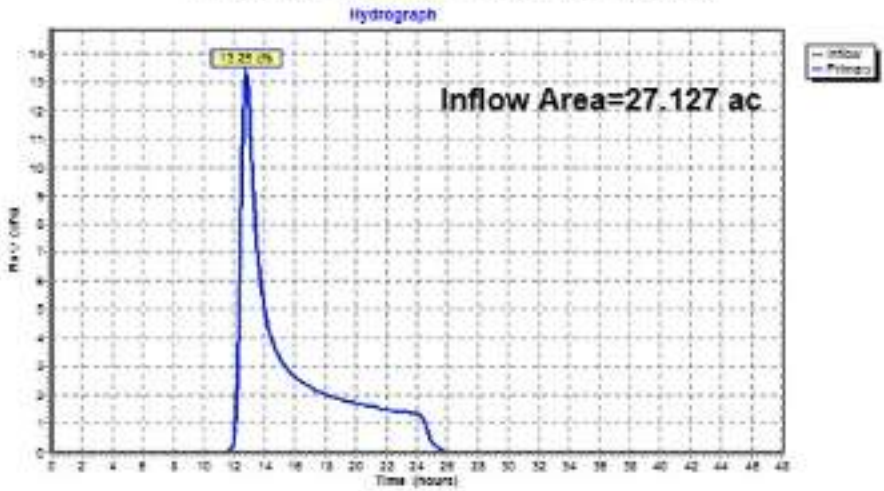


Summary for Link DP-4: STATE-OWNED STORMWATER BASIN

Inflow Area = 27.127 ac, 1.05% Impervious, Inflow Depth = 1.40" for 25-yr event
Inflow = 13.25 cfs @ 12.77 hrs, Volume= 3.170 af
Primary = 13.25 cfs @ 12.77 hrs, Volume= 3.170 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-4: STATE-OWNED STORMWATER BASIN

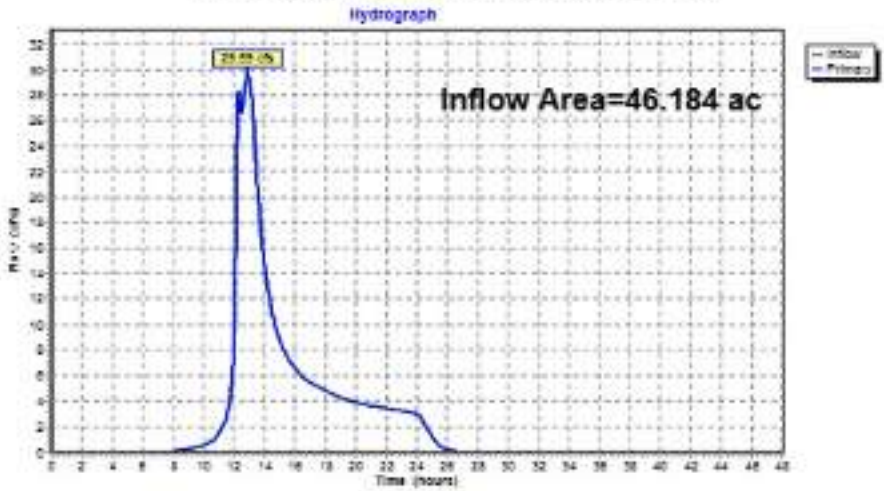


Summary for Link DP-5: STATE-OWNED DRAINAGE SYSTEM

Inflow Area = 46.184 ac, 7.08% Impervious, Inflow Depth = 2.30" for 25-yr event
Inflow = 29.59 cfs @ 12.89 hrs, Volume= 8.869 af
Primary = 29.59 cfs @ 12.89 hrs, Volume= 8.869 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-5: STATE-OWNED DRAINAGE SYSTEM



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment EDA-1: EDA-1 Runoff Area=2,212,445 sf 0.00% Impervious Runoff Depth=1.75"
Tc=61.1 min CN=44 Runoff=27.86 cfs 7.406 af

Subcatchment EDA-2: EDA-2 Runoff Area=124,728 sf 0.00% Impervious Runoff Depth=2.71"
Tc=25.5 min CN=63 Runoff=4.68 cfs 0.647 af

Subcatchment EDA-3: EDA-3 Runoff Area=172,854 sf 0.00% Impervious Runoff Depth=2.17"
Tc=24.6 min CN=48 Runoff=4.93 cfs 0.718 af

Subcatchment EDA-4: EDA-4 Runoff Area=1,181,634 sf 1.05% Impervious Runoff Depth=2.49"
Tc=54.2 min CN=51 Runoff=25.91 cfs 5.638 af

Subcatchment EDA-5A: EDA-5A Runoff Area=1,664,736 sf 0.00% Impervious Runoff Depth=3.39"
Tc=73.9 min CN=59 Runoff=41.38 cfs 10.329 af

Subcatchment EDA-5B: EDA-5B Runoff Area=417,036 sf 34.14% Impervious Runoff Depth=4.77"
Tc=21.5 min CN=71 Runoff=32.33 cfs 3.806 af

Link DP-1: WATERWORKS BROOK Inflow=27.86 cfs 7.406 af
Primary=27.86 cfs 7.406 af

Link DP-2: NORTHERN WETLAND AREA Inflow=4.68 cfs 0.647 af
Primary=4.68 cfs 0.647 af

Link DP-3: NORTHEAST WETLAND AREA Inflow=4.93 cfs 0.718 af
Primary=4.93 cfs 0.718 af

Link DP-4: STATE-OWNED STORMWATER BASIN Inflow=25.91 cfs 5.638 af
Primary=25.91 cfs 5.638 af

Link DP-5: STATE-OWNED DRAINAGE SYSTEM Inflow=48.80 cfs 14.135 af
Primary=48.80 cfs 14.135 af

Total Runoff Area = 130.933 ac Runoff Volume = 28.544 af Average Runoff Depth = 2.62"
97.29% Pervious = 127.380 ac 2.71% Impervious = 3.552 ac

Summary for Subcatchment EDA-1: EDA-1

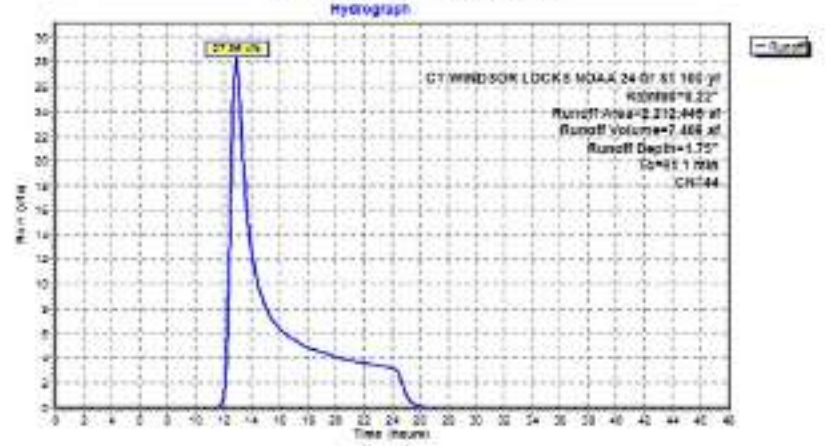
Runoff = 27.86 cfs @ 12.90 hrs, Volume= 7.406 af, Depth= 1.75"
Routed to Link DP-1 : WATERWORKS BROOK

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 100-yr Rainfall=8.22"

Area (sf)	CN	Description
20,634	72	Dirt roads, HSG A
72,515	49	50-75% Grass cover, Fair, HSG A
1,428,139	36	Woods, Fair, HSG A
79,036	60	Woods, Fair, HSG B
612,121	59	Farmsteads, HSG A
2,212,445	44	Weighted Average
2,212,445		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
61.1					Direct Entry, TC

Subcatchment EDA-1: EDA-1



Summary for Subcatchment EDA-2: EDA-2

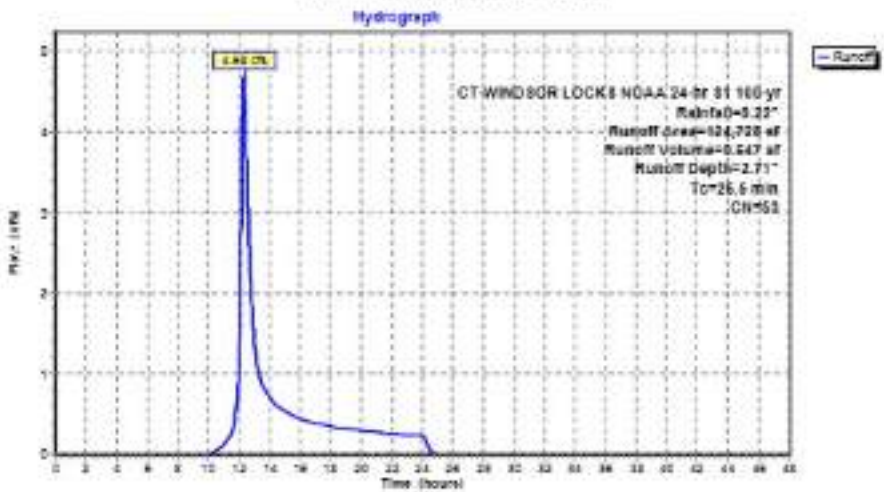
Runoff = 4.68 cfs @ 12.32 hrs, Volume= 0.647 af, Depth= 2.71"
Routed to Link DP-2 : NORTHERN WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 100-yr Rainfall=8.22"

Area (sf)	CN	Description
4,427	72	Dirt roads, HSG A
18,824	49	50-75% Grass cover, Fair, HSG A
27,594	36	Woods, Fair, HSG A
73,883	59	Farmsteads, HSG A
124,728	53	Weighted Average
124,728		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.5					Direct Entry, TC

Subcatchment EDA-2: EDA-2



Summary for Subcatchment EDA-3: EDA-3

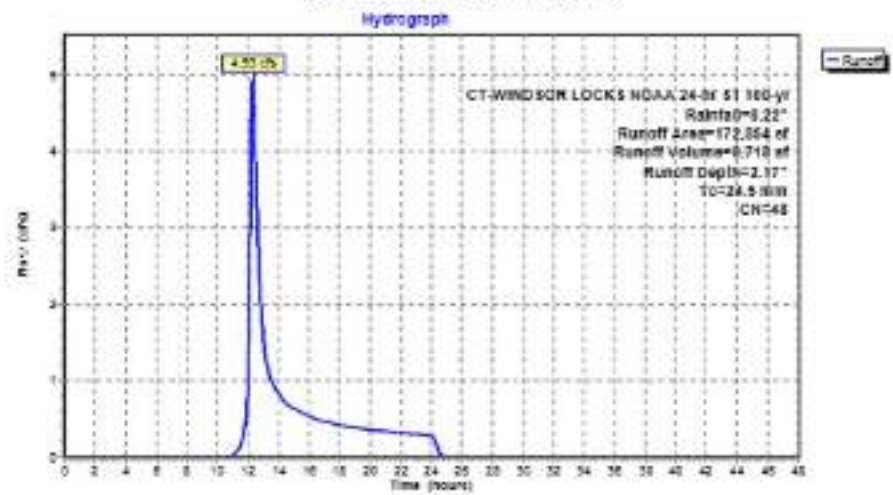
Runoff = 4.93 cfs @ 12.31 hrs, Volume= 0.718 af, Depth= 2.17"
Routed to Link DP-3 : NORTHEAST WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 100-yr Rainfall=8.22"

Area (sf)	CN	Description
3,959	72	Dirt roads, HSG A
3,451	49	50-75% Grass cover, Fair, HSG A
82,062	36	Woods, Fair, HSG A
17,571	60	Woods, Fair, HSG B
65,811	59	Farmsteads, HSG A
172,854	48	Weighted Average
172,854		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
24.5					Direct Entry, TC

Subcatchment EDA-3: EDA-3



Summary for Subcatchment EDA-4: EDA-4

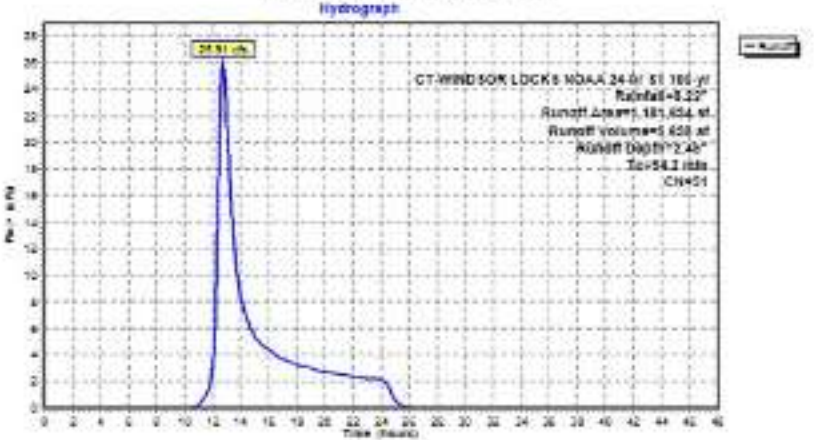
Runoff = 25.91 cfs @ 12.71 hrs, Volume= 5.638 af, Depth= 2.49"
Routed to Link DP-4 : STATE-OWNED STORMWATER BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 100-yr Rainfall=8.22"

Area (sf)	CN	Description
11,153	72	Dirt roads, HSG A
5,708	49	50-75% Grass cover, Fair, HSG A
416,000	36	Woods, Fair, HSG A
2,259	60	Woods, Fair, HSG B
734,084	59	Farmsteads, HSG A
12,370	98	Paved parking, HSG A
1,181,634	51	Weighted Average
1,169,264		98.95% Pervious Area
12,370		1.05% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
54.2					Direct Entry, TC

Subcatchment EDA-4: EDA-4



Summary for Subcatchment EDA-5A: EDA-5A

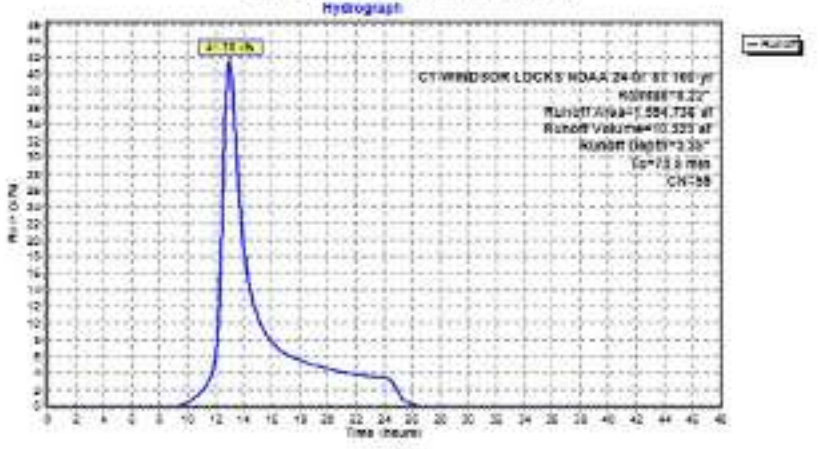
Runoff = 41.38 cfs @ 12.97 hrs, Volume= 10.329 af, Depth= 3.39"
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 100-yr Rainfall=8.22"

Area (sf)	CN	Description
48,606	72	Dirt roads, HSG A
4,170	82	Dirt roads, HSG B
43,866	49	50-75% Grass cover, Fair, HSG A
16,735	69	50-75% Grass cover, Fair, HSG B
49,223	36	Woods, Fair, HSG A
845	60	Woods, Fair, HSG B
1,429,638	59	Farmsteads, HSG A
1,445	74	Farmsteads, HSG B
1,594,736	59	Weighted Average
1,594,736		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
73.9					Direct Entry, TC

Subcatchment EDA-5A: EDA-5A



Summary for Subcatchment EDA-5B: EDA-5B

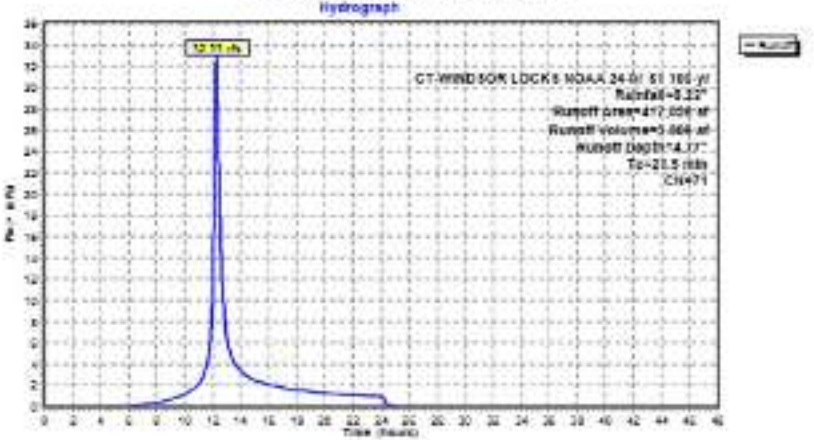
Runoff = 32.33 cfs @ 12.25 hrs, Volume= 3.806 af, Depth= 4.77"
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 100-yr Rainfall=8.22"

Area (sf)	CN	Description
32,668	98	Unconnected roofs, HSG A
109,705	98	Unconnected pavement, HSG B
157,565	49	50-75% Grass cover, Fair, HSG A
107,735	69	50-75% Grass cover, Fair, HSG B
9,363	36	Woods, Fair, HSG A
417,036	71	Weighted Average
274,693		65.86% Pervious Area
142,373		34.14% Impervious Area
142,373		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.5					Direct Entry, TC

Subcatchment EDA-5B: EDA-5B

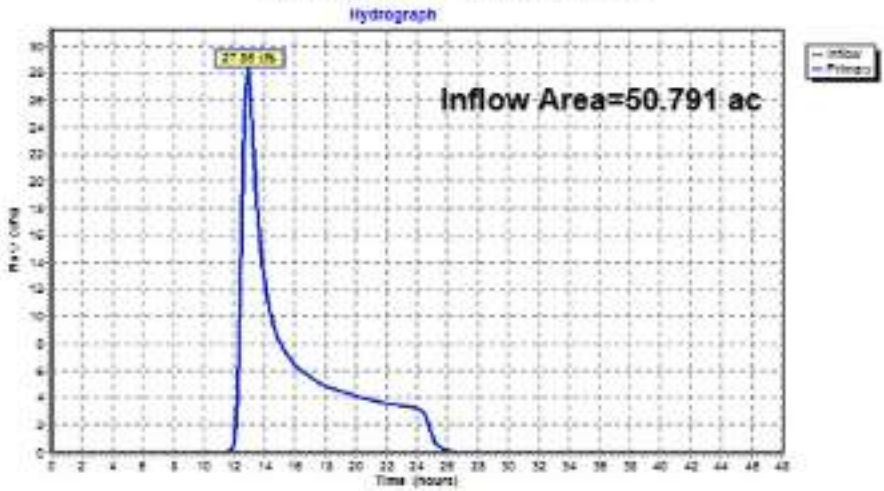


Summary for Link DP-1: WATERWORKS BROOK

Inflow Area = 50.791 ac, 0.00% Impervious, Inflow Depth = 1.75" for 100-yr event
Inflow = 27.86 cfs @ 12.90 hrs, Volume= 7.406 af
Primary = 27.86 cfs @ 12.90 hrs, Volume= 7.406 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-1: WATERWORKS BROOK

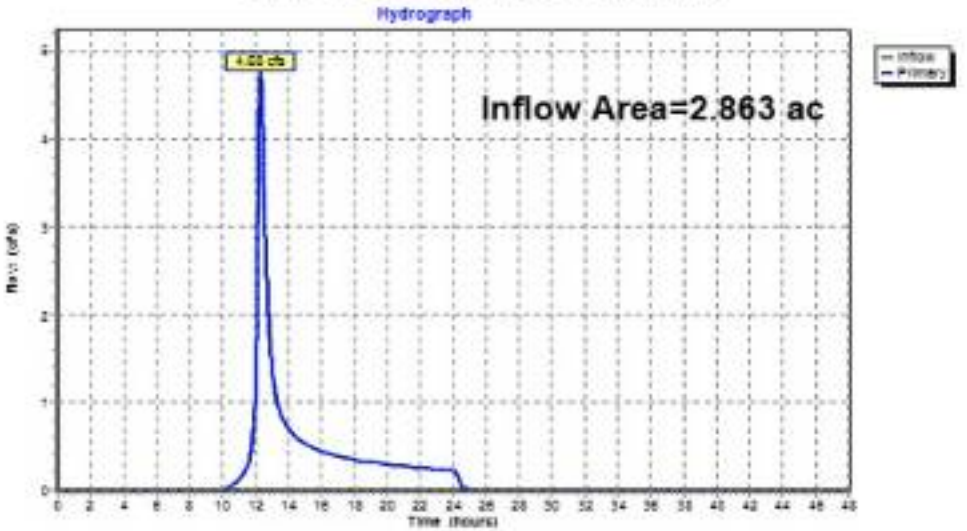


Summary for Link DP-2: NORTHERN WETLAND AREA

Inflow Area = 2.863 ac, 0.00% Impervious, Inflow Depth = 2.71" for 100-yr event
Inflow = 4.68 cfs @ 12.32 hrs, Volume= 0.647 af
Primary = 4.68 cfs @ 12.32 hrs, Volume= 0.647 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-2: NORTHERN WETLAND AREA

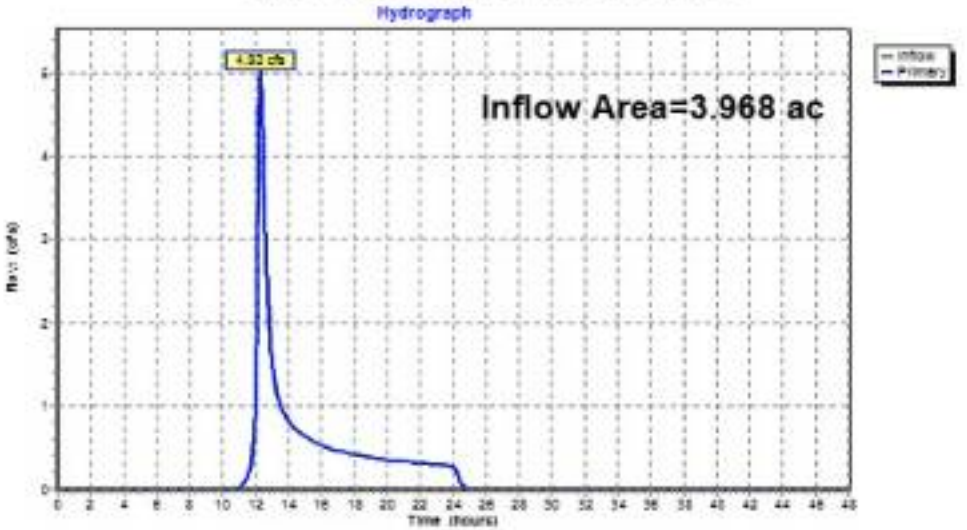


Summary for Link DP-3: NORTHEAST WETLAND AREA

Inflow Area = 3.968 ac, 0.00% Impervious, Inflow Depth = 2.17" for 100-yr event
Inflow = 4.93 cfs @ 12.31 hrs, Volume= 0.718 af
Primary = 4.93 cfs @ 12.31 hrs, Volume= 0.718 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-3: NORTHEAST WETLAND AREA

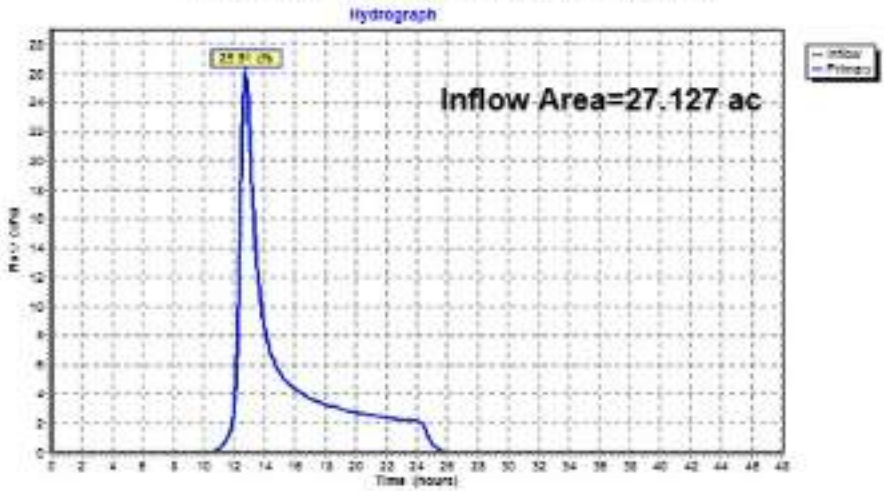


Summary for Link DP-4: STATE-OWNED STORMWATER BASIN

Inflow Area = 27.127 ac, 1.05% Impervious, Inflow Depth = 2.49" for 100-yr event
Inflow = 25.91 cfs @ 12.71 hrs, Volume= 5.638 af
Primary = 25.91 cfs @ 12.71 hrs, Volume= 5.638 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-4: STATE-OWNED STORMWATER BASIN

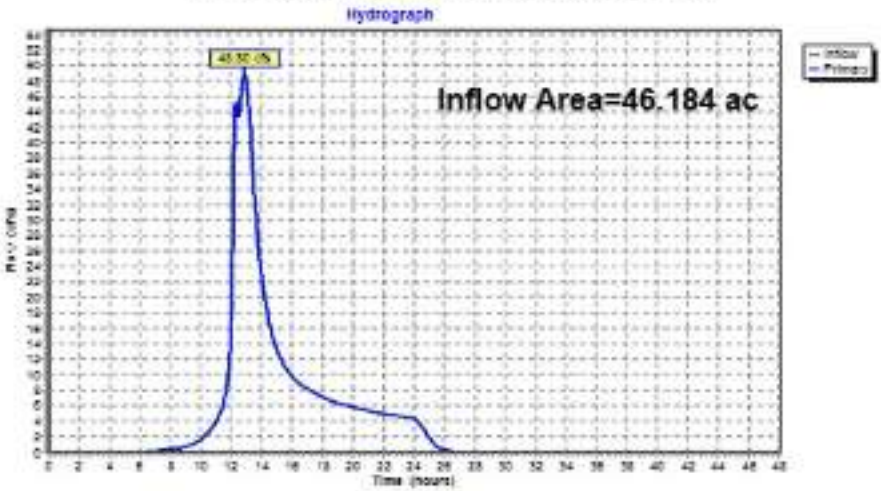


Summary for Link DP-5: STATE-OWNED DRAINAGE SYSTEM

Inflow Area = 46.184 ac, 7.06% Impervious, Inflow Depth = 3.67" for 100-yr event
Inflow = 48.80 cfs @ 12.89 hrs, Volume= 14.135 af
Primary = 48.80 cfs @ 12.89 hrs, Volume= 14.135 af, Atten= 0%, Lag= 0.0 min

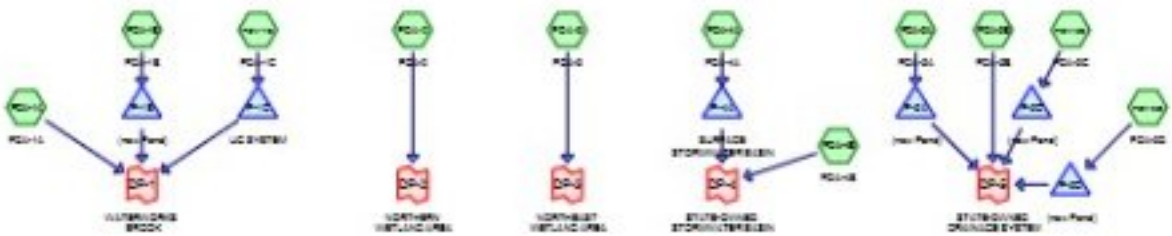
Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-5: STATE-OWNED DRAINAGE SYSTEM



APPENDIX D

POST-DEVELOPMENT HYDROLOGIC ANALYSIS



Subcat Reach Pond Link

Routing Diagram for C-DAT-2500161-PROPOSED-HYDRO-2025-04-10
Prepared by BL Companies, Printed 5/3/2025
HydroCAD® 10.20-6a s/n 01334 © 2024 HydroCAD Software Solutions LLC

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentPDA-1A: PDA-1A Runoff Area=1,878,800 sf 0.00% Impervious Runoff Depth=0.01"
Tc=61.1 min CN=40 Runoff=0.00 cfs 0.028 af

SubcatchmentPDA-1B: PDA-1B Runoff Area=458,136 sf 86.47% Impervious Runoff Depth=2.28"
Flow Length=192' Tc=14.1 min CN=91 Runoff=23.14 cfs 1.996 af

SubcatchmentPDA-1C: PDA-1C Runoff Area=600,666 sf 80.42% Impervious Runoff Depth=2.59"
Flow Length=80' Slope=0.0200 '/' Tc=9.0 min CN=94 Runoff=24.60 cfs 2.457 af

SubcatchmentPDA-2: PDA-2 Runoff Area=56,562 sf 0.00% Impervious Runoff Depth=0.01"
Tc=25.5 min CN=40 Runoff=0.00 cfs 0.002 af

SubcatchmentPDA-3: PDA-3 Runoff Area=146,741 sf 0.00% Impervious Runoff Depth=0.02"
Flow Length=486' Tc=20.7 min CN=44 Runoff=0.01 cfs 0.010 af

SubcatchmentPDA-4A: PDA-4A Runoff Area=119,711 sf 80.39% Impervious Runoff Depth=2.01"
Flow Length=272' Tc=11.5 min CN=88 Runoff=35.78 cfs 2.774 af

SubcatchmentPDA-4B: PDA-4B Runoff Area=529,899 sf 2.06% Impervious Runoff Depth=0.02"
Flow Length=901' Tc=28.7 min CN=40 Runoff=0.01 cfs 0.008 af

SubcatchmentPDA-5A: PDA-5A Runoff Area=518,631 sf 95.22% Impervious Runoff Depth=2.20"
Flow Length=102' Slope=0.0422 '/' Tc=6.4 min CN=91 Runoff=33.46 cfs 2.251 af

SubcatchmentPDA-5D: PDA-5D Runoff Area=579,560 sf 0.21% Impervious Runoff Depth=0.32"
Tc=73.9 min CN=57 Runoff=0.91 cfs 0.351 af

SubcatchmentPDA-5C: PDA-5C Runoff Area=139,934 sf 67.96% Impervious Runoff Depth=1.55"
Flow Length=509' Tc=12.4 min CN=82 Runoff=5.13 cfs 0.419 af

SubcatchmentPDA-5D: PDA-5D Runoff Area=161,404 sf 26.32% Impervious Runoff Depth=0.57"
Flow Length=189' Tc=22.7 min CN=64 Runoff=1.29 cfs 0.197 af

Pond P-1B: (new Pond) Peak Elev=135.13' Storage=28,503 cf Inflow=23.14 cfs 1.996 af
Discarded=3.21 cfs 1.996 af Primary=0.00 cfs 0.000 af Outflow=3.21 cfs 1.996 af

Pond P-1C: UG SYSTEM Peak Elev=129.93' Storage=25,184 cf Inflow=24.60 cfs 2.457 af
Discarded=5.75 cfs 2.457 af Primary=0.00 cfs 0.000 af Outflow=5.75 cfs 2.457 af

Pond P-4A: SURFACE STORMWATER Peak Elev=125.23' Storage=19,880 cf Inflow=35.78 cfs 2.774 af
Discarded=11.84 cfs 2.774 af Primary=0.00 cfs 0.000 af Outflow=11.84 cfs 2.774 af

Pond P-5A: (new Pond) Peak Elev=132.09' Storage=25,091 cf Inflow=33.46 cfs 2.251 af
Discarded=1.00 cfs 2.251 af Primary=0.00 cfs 0.000 af Outflow=1.00 cfs 2.251 af

Pond P-5C: (new Pond) Peak Elev=130.00' Storage=1,905 cf Inflow=5.13 cfs 0.419 af
Discarded=1.07 cfs 0.419 af Primary=0.00 cfs 0.000 af Outflow=1.07 cfs 0.419 af

Pond P-5D: (new Pond) Peak Elev=138.69' Storage=739 cf Inflow=1.26 cfs 0.197 af
Discarded=0.76 cfs 0.197 af Primary=0.00 cfs 0.000 af Outflow=0.76 cfs 0.197 af

Link DP-1: WATERWORKS BROOK Inflow=0.08 cfs 0.028 af
Primary=0.08 cfs 0.028 af

Link DP-2: NORTHERN WETLAND AREA Inflow=0.00 cfs 0.002 af
Primary=0.00 cfs 0.002 af

Link DP-3: NORTHEAST WETLAND AREA Inflow=0.01 cfs 0.010 af
Primary=0.01 cfs 0.010 af

Link DP-4: STATE-OWNED STORMWATER BASIN Inflow=0.01 cfs 0.003 af
Primary=0.01 cfs 0.003 af

Link DP-5: STATE-OWNED DRAINAGE SYSTEM Inflow=0.81 cfs 0.351 af
Primary=0.81 cfs 0.351 af

Total Runoff Area = 130.933 ac Runoff Volume = 10.484 af Average Runoff Depth = 0.96"
64.06% Pervious = 83.875 ac 35.94% Impervious = 47.058 ac

Summary for Subcatchment PDA-1A: PDA-1A

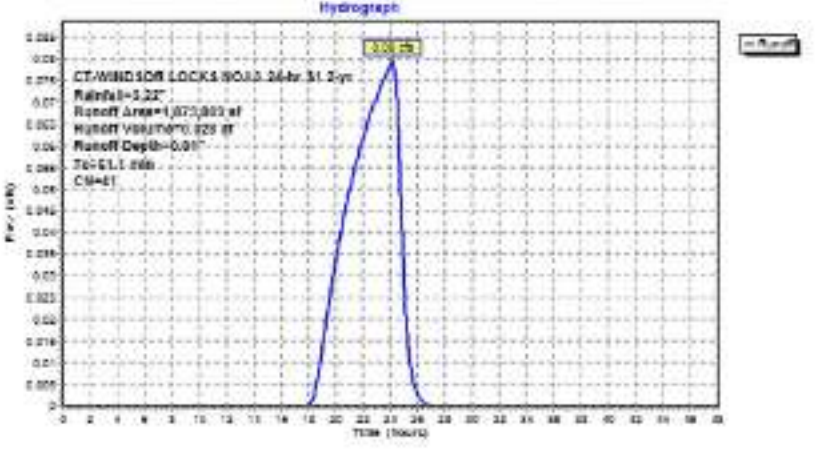
Runoff = 0.08 cfs @ 24.17 hrs, Volume= 0.028 af, Depth= 0.01"
Routed to Link DP-1 : WATERWORKS BROOK

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 2-yr Rainfall=3.22"

Area (sf)	CN	Description
115,427	49	50-75% Grass cover, Fair, HSG A
1,436,860	36	Woods, Fair, HSG A
79,096	60	Woods, Fair, HSG B
242,486	59	Farmsteads, HSG A
1,873,869	41	Weighted Average
1,873,869	41	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
61.1					Direct Entry, TC

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

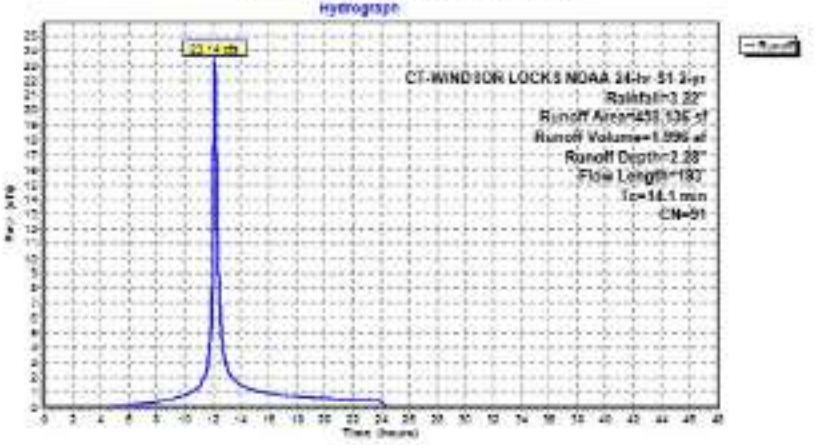
Runoff = 23.14 cfs @ 12.14 hrs, Volume= 1.996 af, Depth= 2.28"
Routed to Pond P-1B : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 2-yr Rainfall=3.22"

Area (sf)	CN	Description
62,001	49	50-75% Grass cover, Fair, HSG A
396,135	98	Paved parking, HSG A
458,136	91	Weighted Average
62,001	49	13.53% Pervious Area
396,135	98	86.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0150	0.15		Sheet Flow, GRASS Grass: Short n= 0.150 P2= 3.22"
3.1	93	0.0050	0.49		Shallow Concentrated Flow, GRASS Short Grass Pasture Kv= 7.0 fps
14.1	193	Total			

Subcatchment PDA-1B: PDA-1B



Summary for Subcatchment PDA-1C: PDA-1C

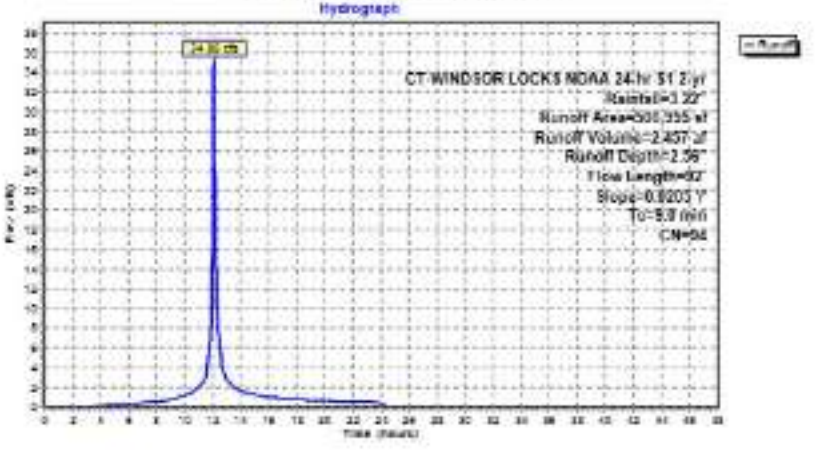
Runoff = 34.88 cfs @ 12.07 hrs, Volume= 2.457 af, Depth= 2.58"
Routed to Pond P-1C : UG SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 2-yr Rainfall=3.22"

Area (sf)	CN	Description
37,989	49	50-75% Grass cover, Fair, HSG A
462,966	98	Paved parking, HSG A
500,955	94	Weighted Average
37,989	49	7.58% Pervious Area
462,966	98	92.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	92	0.0205	0.17		Sheet Flow, GRASS Grass: Short n= 0.150 P2= 3.22"

Subcatchment PDA-1C: PDA-1C



Summary for Subcatchment PDA-2: PDA-2

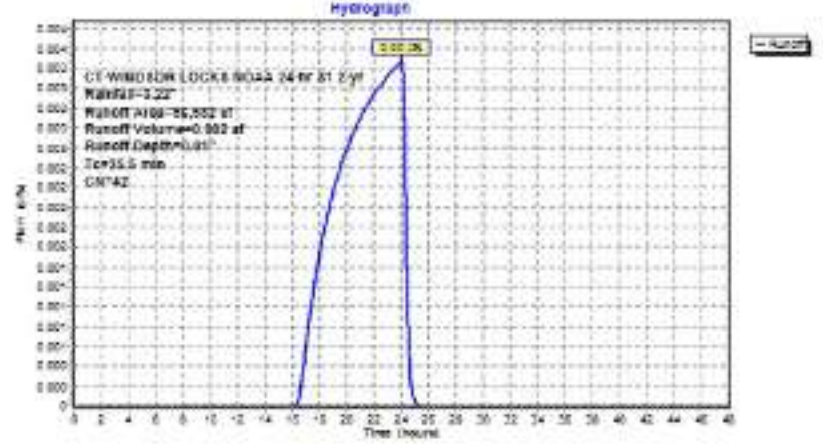
Runoff = 0.00 cfs @ 24.00 hrs, Volume= 0.002 af, Depth= 0.01"
Routed to Link DP-2 : NORTHERN WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 2-yr Rainfall=3.22"

Area (sf)	CN	Description
27,598	49	50-75% Grass cover, Fair, HSG A
28,984	36	Woods, Fair, HSG A
56,582	42	Weighted Average
56,582	42	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.5					Direct Entry, TC

Subcatchment PDA-2: PDA-2



Summary for Subcatchment PDA-3: PDA-3

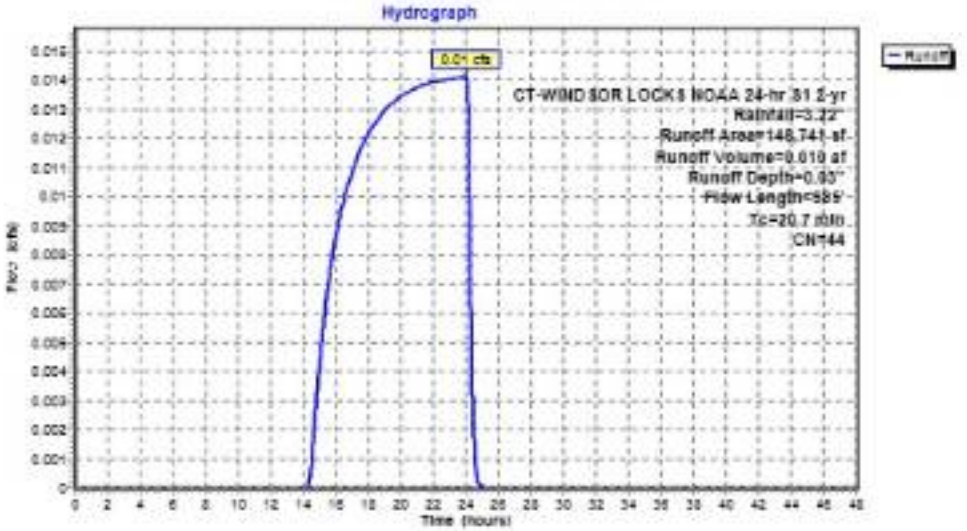
Runoff = 0.01 cfs @ 23.99 hrs, Volume= 0.010 af, Depth= 0.03"
Routed to Link DP-3 : NORTHEAST WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 2-yr Rainfall=3.22"

Area (sf)	CN	Description
57,064	49	50-75% Grass cover, Fair, HSG A
72,106	36	Woods, Fair, HSG A
17,571	60	Woods, Fair, HSG B
146,741	44	Weighted Average
146,741	44	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0267	0.19		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
2.0	118	0.0197	0.98		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
3.3	341	0.0599	1.71		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
0.7	61	0.0854	1.46		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
2.5	203	0.0707	1.33		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
3.5	162	0.0235	0.77		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
20.7	985	Total			

Subcatchment PDA-3: PDA-3



Summary for Subcatchment PDA-4A: PDA-4A

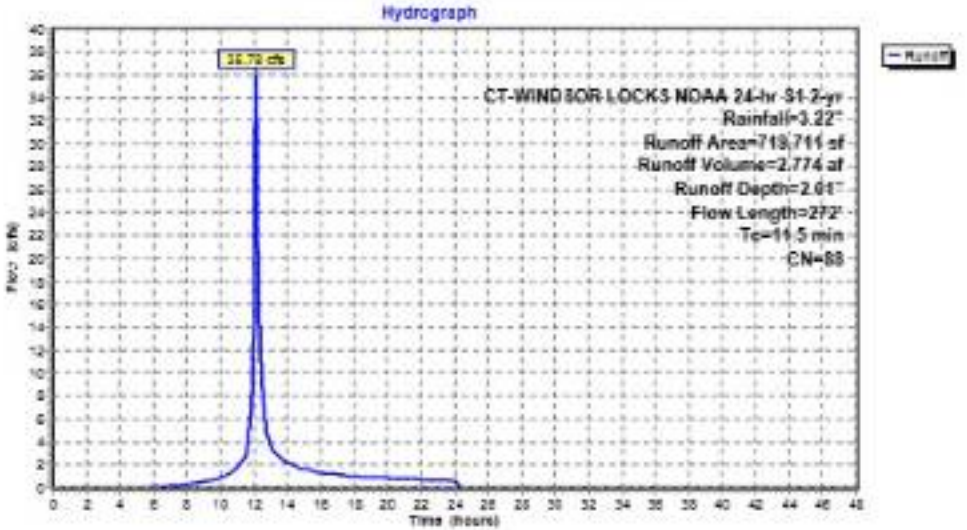
Runoff = 35.78 cfs @ 12.11 hrs, Volume= 2.774 af, Depth= 2.01"
Routed to Pond P-4A : SURFACE STORMWATER BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 2-yr Rainfall=3.22"

Area (sf)	CN	Description
141,156	49	50-75% Grass cover, Fair, HSG A
578,555	98	Paved parking, HSG A
719,711	88	Weighted Average
141,156	49	19.61% Pervious Area
578,555	98	80.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	18	0.1555	0.28		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
7.9	82	0.0226	0.17		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
2.1	136	0.0232	1.07		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
0.1	12	0.1667	2.86		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
0.3	24	0.0416	1.43		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
11.5	272	Total			

Subcatchment PDA-4A: PDA-4A



Summary for Subcatchment PDA-4B: PDA-4B

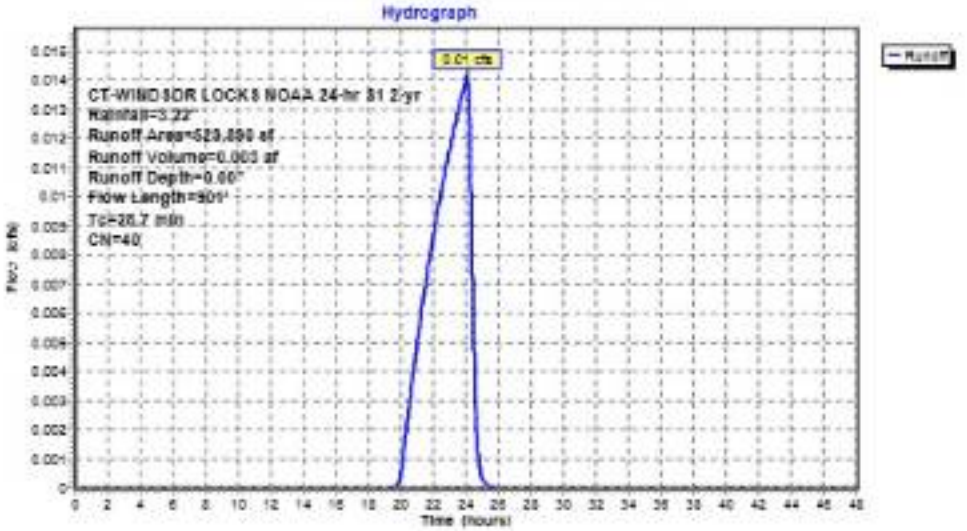
Runoff = 0.01 cfs @ 24.08 hrs, Volume= 0.003 af, Depth= 0.00"
Routed to Link DP-4 : STATE-OWNED STORMWATER BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 2-yr Rainfall=3.22"

Area (sf)	CN	Description
104,160	49	50-75% Grass cover, Fair, HSG A
412,529	36	Woods, Fair, HSG A
2,260	60	Woods, Fair, HSG B
10,941	98	Paved parking, HSG A
529,890	40	Weighted Average
518,949	39	97.94% Pervious Area
10,941	98	2.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0116	0.14		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
6.7	307	0.0119	0.76		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
0.8	41	0.0327	0.90		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
0.3	41	0.1951	2.21		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
8.8	412	0.0243	0.78		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
28.7	901	Total			

Subcatchment PDA-4B: PDA-4B



Summary for Subcatchment PDA-5A: PDA-5A

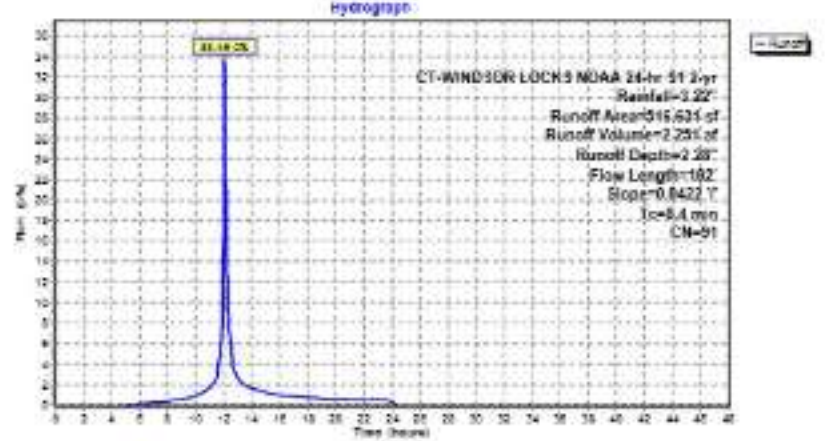
Runoff = 33.46 cfs @ 12.07 hrs, Volume= 2.251 af, Depth= 2.28"
Routed to Pond P-5A : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 2-yr Rainfall=3.22"

Area (sf)	CN	Description
75,817	49	50-75% Grass cover, Fair, HSG A
440,814	98	Paved parking, HSG A
516,631	91	Weighted Average
75,817	49	14.68% Pervious Area
440,814	98	85.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	102	0.0422	0.23		Sheet Flow, GRASS Grass: Short n= 0.150 P2= 3.22"
1.0					Direct Entry, SHALLOW
8.4	102	Total			

Subcatchment PDA-5A: PDA-5A



Summary for Subcatchment PDA-5B: PDA-5B

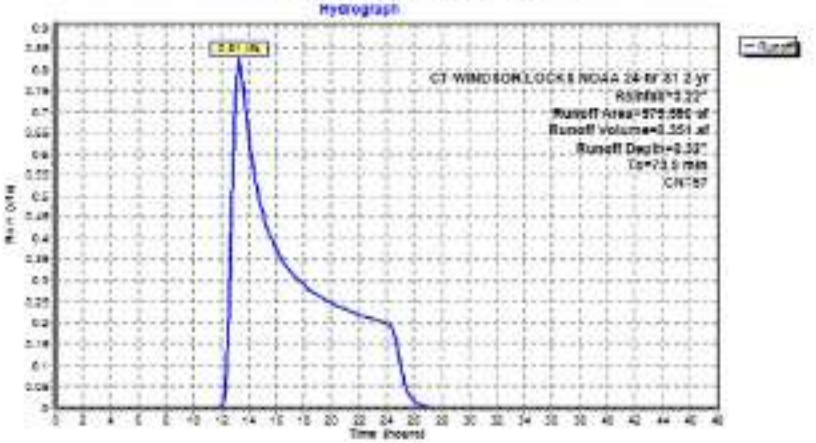
Runoff = 0.81 cfs @ 13.31 hrs, Volume= 0.351 af, Depth= 0.32"
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 2-yr Rainfall=3.22"

Area (sf)	CN	Description
336,170	49	50-75% Grass cover, Fair, HSG A
232,035	69	50-75% Grass cover, Fair, HSG B
9,363	36	Woods, Fair, HSG A
1,222	98	Paved parking, HSG A
579,590	57	Weighted Average
578,368	57	99.79% Pervious Area
1,222	98	0.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
73.9					Direct Entry, TC

Subcatchment PDA-5B: PDA-5B



Summary for Subcatchment PDA-5C: PDA-5C

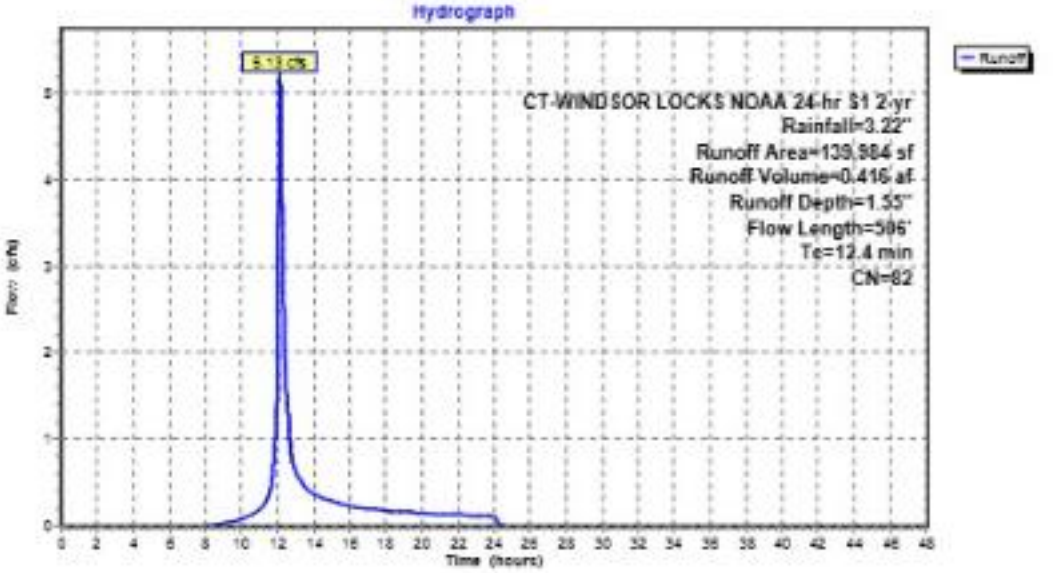
Runoff = 5.13 cfs @ 12.12 hrs, Volume= 0.416 af, Depth= 1.55"
Routed to Pond P-5C : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 2-yr Rainfall=3.22"

Area (sf)	CN	Description
95,137	98	Paved parking, HSG A
44,847	49	50-75% Grass cover, Fair, HSG A
139,984	82	Weighted Average
44,847	49	32.04% Pervious Area
95,137	98	67.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	82	0.0122	0.13		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
0.9	131	0.0153	2.51		**Shallow Concentrated Flow, PAVEMENT** Paved Kv= 20.3 fps
0.7	166	0.0051	4.07	5.00	**Pipe Channel, 15" PIPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
0.5	111	0.0050	4.03	4.95	**Pipe Channel, 15" PIPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
0.1	16	0.0056	4.82	8.52	**Pipe Channel, 18" PIPE** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
12.4	506	Total			

Subcatchment PDA-5C: PDA-5C



Summary for Subcatchment PDA-5D: PDA-5D

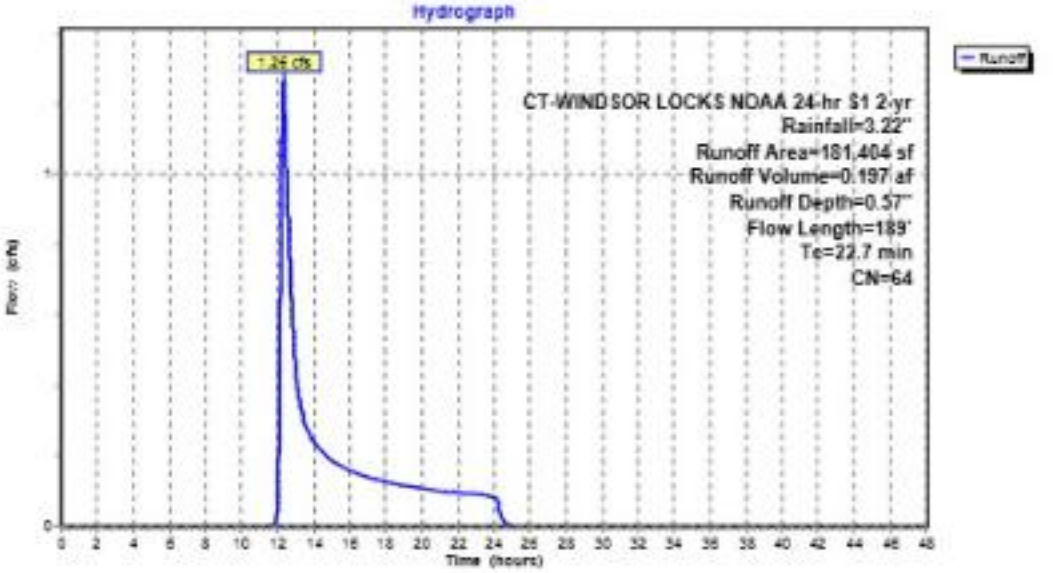
Runoff = 1.26 cfs @ 12.31 hrs, Volume= 0.197 af, Depth= 0.57"
Routed to Pond P-5D : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 2-yr Rainfall=3.22"

Area (sf)	CN	Description
75,856	49	50-75% Grass cover, Fair, HSG A
1,810	69	50-75% Grass cover, Fair, HSG B
39,371	36	Woods, Fair, HSG A
299	60	Woods, Fair, HSG B
64,068	98	Paved parking, HSG A
181,404	64	Weighted Average
117,336	45	64.68% Pervious Area
64,068	98	35.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.9	66	0.0158	0.07		**Sheet Flow, WOODS** Woods: Light underbrush n= 0.400 P2= 3.22"
5.7	45	0.0153	0.13		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
0.1	78	0.0250	10.18	17.99	**Pipe Channel, PIPE** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
22.7	189	Total			

Subcatchment PDA-5D: PDA-5D



Summary for Pond P-1B: (new Pond)

Inflow Area = 10.517 ac, 86.47% Impervious, Inflow Depth = 2.28" for 2-yr event
Inflow = 23.14 cfs @ 12.14 hrs, Volume= 1.996 af
Outflow = 3.21 cfs @ 12.83 hrs, Volume= 1.996 af, Atten= 86%, Lag= 41.5 min
Discarded = 3.21 cfs @ 12.83 hrs, Volume= 1.996 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link DP-1 : WATERWORKS BROOK

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 135.13' @ 12.83 hrs Surf Area= 16,773 sf Storage= 28,523 cf

Plug-Flow detention time= 71.4 min calculated for 1.995 af (100% of inflow)
Center-of-Mass det. time= 71.4 min (890.0 - 821.6)

Volume	Invert	Avail.Storage	Storage Description
#1	133.00'	293,903 cf	Custom Stage Data (Prismatic)Listed below (Recalc)

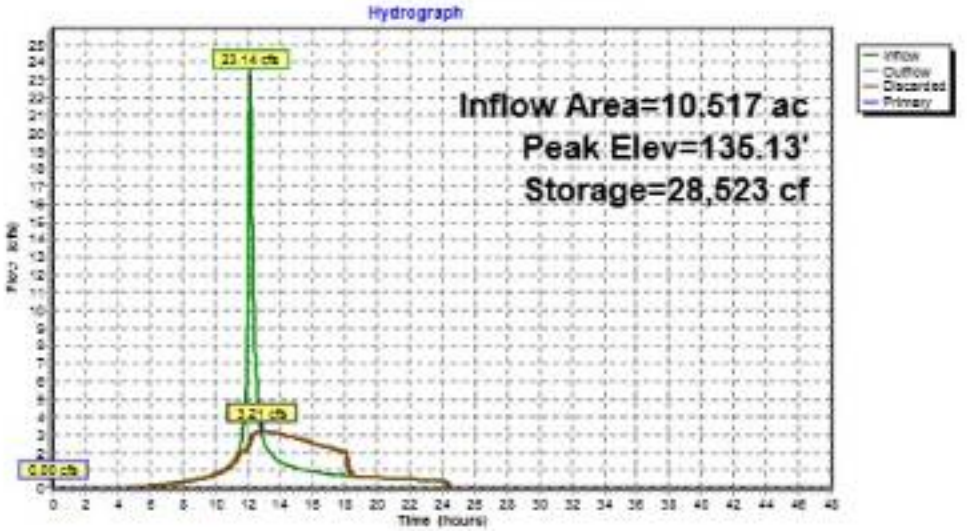
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.00	10,167	0	0
134.00	13,066	11,627	11,627
135.00	16,294	14,680	26,307
136.00	19,869	18,082	44,388
137.00	23,787	21,828	66,216
138.00	28,048	25,918	92,134
139.00	32,651	30,350	122,483
140.00	37,533	35,092	157,575
141.00	42,714	40,124	197,699
142.00	48,072	45,393	243,092
143.00	53,550	50,811	293,903

Device	Routing	Invert	Outlet Devices
#1	Discarded	133.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	136.00'	15.0" Round Culvert L= 400.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 134.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Discarded OutFlow Max=3.21 cfs @ 12.83 hrs HW=135.13' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 3.21 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=133.00' (Free Discharge)
└**2=Culvert** (Controls 0.00 cfs)

Pond P-1B: (new Pond)



Summary for Pond P-1C: UG SYSTEM

Inflow Area = 11.500 ac, 92.42% Impervious, Inflow Depth = 2.56" for 2-yr event
Inflow = 34.86 cfs @ 12.07 hrs, Volume= 2.457 af
Outflow = 5.75 cfs @ 11.82 hrs, Volume= 2.457 af, Atten= 84%, Lag= 0.0 min
Discarded = 5.75 cfs @ 11.82 hrs, Volume= 2.457 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link DP-1 : WATERWORKS BROOK

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 128.93' @ 12.56 hrs Surf Area= 30,055 sf Storage= 25,164 cf

Plug-Flow detention time= 24.7 min calculated for 2.457 af (100% of inflow)
Center-of-Mass det. time= 24.7 min (822.7 - 797.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	128.00'	0 cf	**72.67'W x 413.60'L x 5.50'H Field A** 165,304 cf Overall - 165,304 cf Embedded = 0 cf x 40.0% Voids
#2A	128.00'	134,711 cf	**StormTrap SingleTrap 5-0 x 182 Inside #1** Inside= 101.7'W x 90.0'H => 38.33 sf x 15.40'L = 590.2 cf Outside= 101.7'W x 86.0'H => 46.84 sf x 15.40'L = 718.0 cf 182 Chambers in 7 Rows 59.35' x 400.29' Core + 6.66' Border = 72.67' x 413.60' System
		134,711 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	129.80'	**12.0" Round Culvert** L= 110.0' Ke= 0.500 Inlet / Outlet Invert= 129.80' / 129.00' S= 0.0073 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Discarded	128.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=5.75 cfs @ 11.82 hrs HW=128.06' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 5.75 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=128.00' (Free Discharge)
└**1=Culvert** (Controls 0.00 cfs)

Pond P-1C: UG SYSTEM - Chamber Wizard Field A

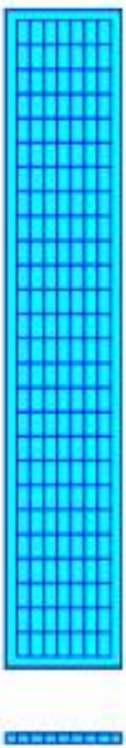
Chamber Model = StormTrap SingleTrap 5-0 (StormTrap SingleTrap® Type II+IV)
Inside= 101.7"W x 60.0"H => 38.33 sf x 15.40'L = 590.2 cf
Outside= 101.7"W x 66.0"H => 46.64 sf x 15.40'L = 718.0 cf

26 Chambers/Row x 15.40' Long = 400.29' Row Length +79.9" Border x 2 = 413.60' Base Length
7 Rows x 101.7" Wide + 79.9" Side Border x 2 = 72.67' Base Width
66.0" Chamber Height = 5.50' Field Height

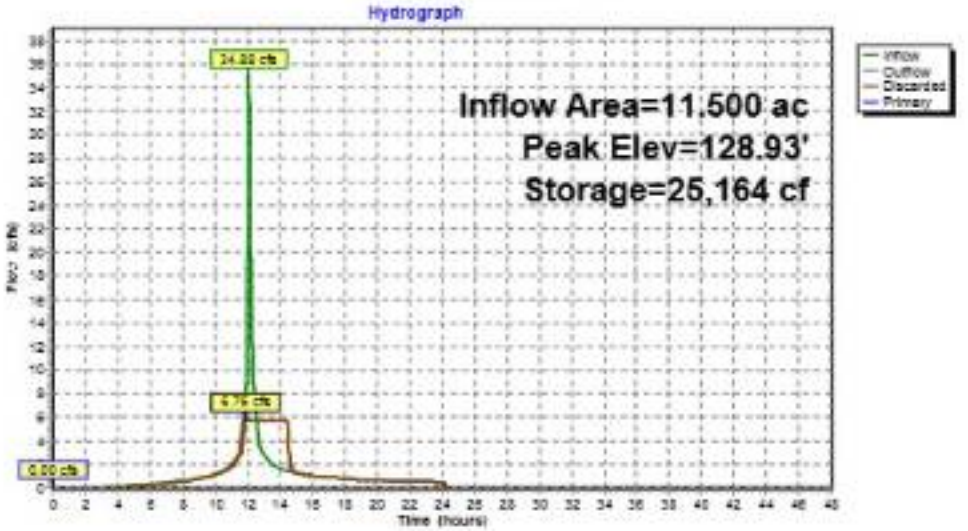
182 Chambers x 590.2 cf + 27,298.0 cf Border = 134,711.2 cf Chamber Storage
182 Chambers x 718.0 cf + 34,629.4 cf Border = 165,303.8 cf Displacement

Chamber Storage = 134,711.2 cf = 3.093 af
Overall Storage Efficiency = 81.5%
Overall System Size = 413.60' x 72.67' x 5.50'

182 Chambers (plus border)
6,122.4 cy Field



Pond P-1C: UG SYSTEM



Summary for Pond P-4A: SURFACE STORMWATER BASIN

Inflow Area = 16.522 ac, 80.39% Impervious, Inflow Depth = 2.01" for 2-yr event
Inflow = 35.76 cfs @ 12.11 hrs, Volume= 2.774 af
Outflow = 11.64 cfs @ 12.39 hrs, Volume= 2.774 af, Atten= 67%, Lag= 17.2 min
Discarded = 11.64 cfs @ 12.39 hrs, Volume= 2.774 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link DP-4 : STATE-OWNED STORMWATER BASIN

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 125.33' @ 12.39 hrs Surf Area= 80,789 sf Storage= 19,866 cf

Plug-Flow detention time= 9.9 min calculated for 2.774 af (100% of inflow)
Center-of-Mass det. time= 9.8 min (844.7 - 834.7)

Volume	Invert	Avail.Storage	Storage Description
#1	125.00'	287,186 cf	Custom Stage Data (Prismatic)Listed below (Recalc)

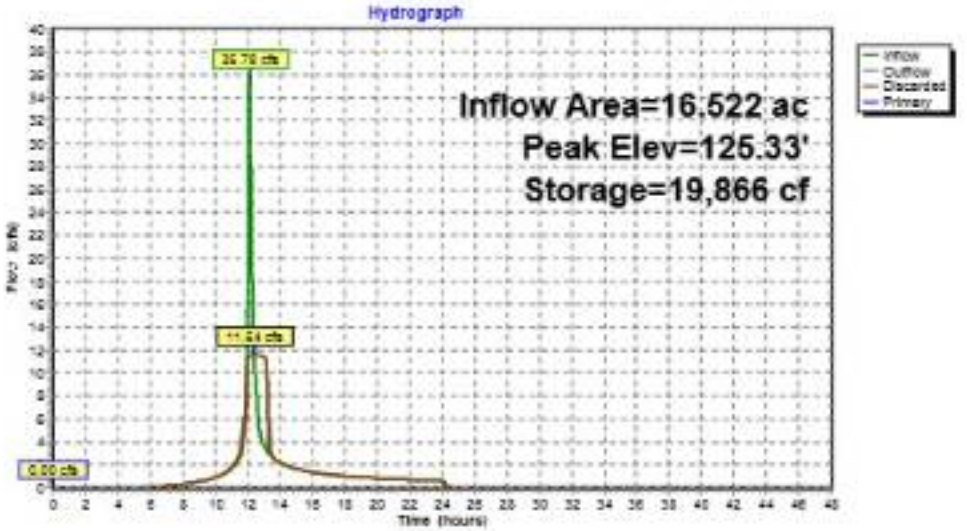
Elevation (feet)	Surf Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.00	58,672	0	0
126.00	65,036	61,854	61,854
127.00	71,627	68,332	130,186
128.00	78,444	75,036	205,221
129.00	85,488	81,965	287,186

Device	Routing	Invert	Outlet Devices
#1	Primary	126.30'	12.0" Round Culvert L= 42.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 126.30' / 126.00' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Discarded	125.00'	8.270 in/hr Exfiltration over Surface area

Discarded OutFlow Max=11.64 cfs @ 12.39 hrs HW=125.33' (Free Discharge)
└2=Exfiltration (Exfiltration Controls 11.64 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.00' (Free Discharge)
└1=Culvert (Controls 0.00 cfs)

Pond P-4A: SURFACE STORMWATER BASIN



Summary for Pond P-5A: (new Pond)

Inflow Area = 11.860 ac, 85.32% Impervious, Inflow Depth = 2.28" for 2-yr event
Inflow = 33.46 cfs @ 12.07 hrs, Volume= 2.251 af
Outflow = 4.90 cfs @ 11.79 hrs, Volume= 2.251 af, Atten= 85%, Lag= 0.0 min
Discarded = 4.90 cfs @ 11.79 hrs, Volume= 2.251 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 132.09' @ 12.60 hrs Surf Area= 25,580 sf Storage= 25,091 cf

Plug-Flow detention time= 30.6 min calculated for 2.251 af (100% of inflow)
Center-of-Mass det. time= 30.6 min (846.9 - 816.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	131.00'	0 cf	**72.67'W x 352.02'L x 5.50'H Field A** 140,691 cf Overall - 140,691 cf Embedded = 0 cf x 40.0% Voids
#2A	131.00'	114,632 cf	**StormTrap SingleTrap 5-0 x 154 Inside #1** Inside= 101.7'W x 90.0'H => 38.33 sf x 15.40'L = 590.2 cf Outside= 101.7'W x 86.0'H => 46.84 sf x 15.40'L = 718.0 cf 154 Chambers in 7 Rows 59.35' x 336.71' Core + 6.66' Border = 72.67' x 352.02' System
		114,632 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	131.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	133.00'	**12.0" Round Culvert** L= 179.0' Ke= 0.500 Inlet / Outlet Invert= 133.00' / 132.00' S= 0.0056 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=4.90 cfs @ 11.79 hrs HW=131.06' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 4.90 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=131.00' (Free Discharge)
└**2=Culvert** (Controls 0.00 cfs)

Pond P-5A: (new Pond) - Chamber Wizard Field A

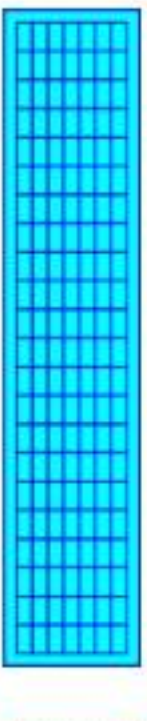
Chamber Model = StormTrap SingleTrap 5-0 (StormTrap SingleTrap® Type II+IV)
Inside= 101.7"W x 60.0"H => 38.33 sf x 15.40'L = 590.2 cf
Outside= 101.7"W x 66.0"H => 46.64 sf x 15.40'L = 718.0 cf

22 Chambers/Row x 15.40' Long = 338.71' Row Length +79.9" Border x 2 = 352.02' Base Length
7 Rows x 101.7" Wide + 79.9" Side Border x 2 = 72.67' Base Width
66.0" Chamber Height = 5.50' Field Height

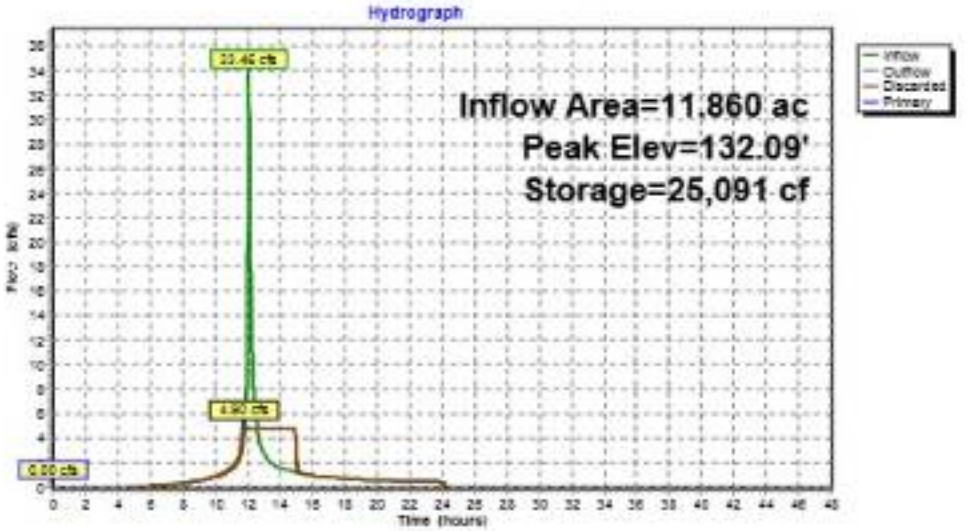
154 Chambers x 590.2 cf + 23,743.6 cf Border = 114,631.6 cf Chamber Storage
154 Chambers x 718.0 cf + 30,120.4 cf Border = 140,691.0 cf Displacement

Chamber Storage = 114,631.6 cf = 2.632 af
Overall Storage Efficiency = 81.5%
Overall System Size = 352.02' x 72.67' x 5.50'

154 Chambers (plus border)
5,210.8 cy Field



Pond P-5A: (new Pond)



Summary for Pond P-5C: (new Pond)

Inflow Area = 3.214 ac, 67.96% Impervious, Inflow Depth = 1.55" for 2-yr event
Inflow = 5.13 cfs @ 12.12 hrs, Volume= 0.416 af
Outflow = 1.07 cfs @ 12.65 hrs, Volume= 0.416 af, Atten= 79%, Lag= 31.5 min
Discarded = 1.07 cfs @ 12.65 hrs, Volume= 0.416 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 136.90' @ 12.65 hrs Surf Area= 5,582 sf Storage= 4,505 cf

Plug-Flow detention time= 28.6 min calculated for 0.416 af (100% of inflow)
Center-of-Mass det. time= 28.6 min (890.2 - 861.6)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	53,207 cf	Custom Stage Data (Prismatic)Listed below (Recalc)

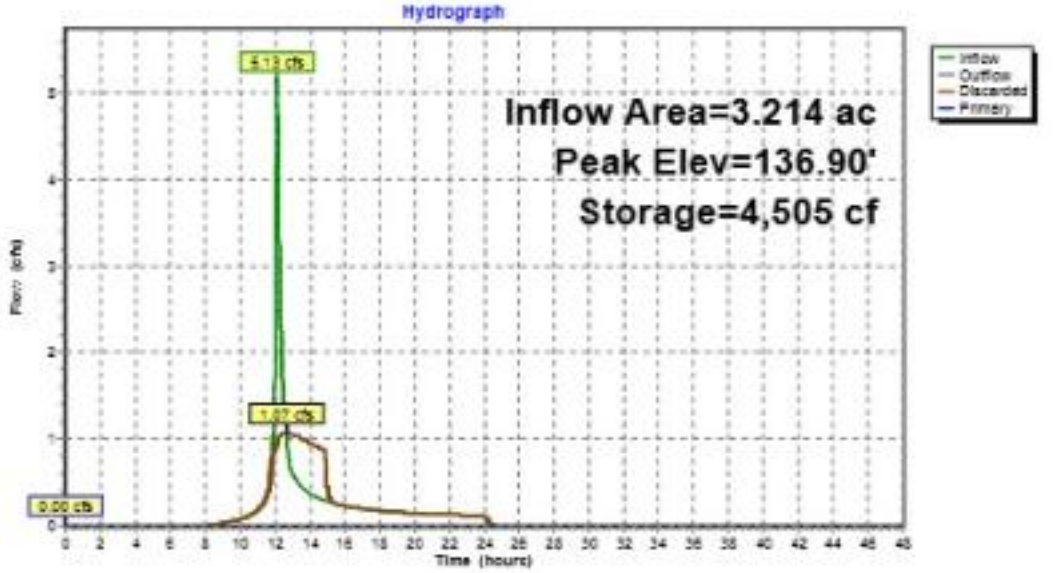
Elevation (feet)	Surf Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
136.00	4,393	0	0
137.00	5,709	5,051	5,051
138.00	7,177	6,443	11,494
139.00	8,719	7,948	19,442
140.00	10,338	9,529	28,971
141.00	12,034	11,186	40,157
142.00	14,066	13,050	53,207

Device	Routing	Invert	Outlet Devices
#1	Discarded	136.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	137.80'	**12.0" Round Culvert** L= 246.0' Ke= 0.500 Inlet / Outlet Invert= 137.80' / 136.50' S= 0.0053 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=1.07 cfs @ 12.65 hrs HW=136.90' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 1.07 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=136.00' (Free Discharge)
↑**2=Culvert** (Controls 0.00 cfs)

Pond P-5C: (new Pond)



Summary for Pond P-5D: (new Pond)

Inflow Area = 4.164 ac, 35.32% Impervious, Inflow Depth = 0.57" for 2-yr event
Inflow = 1.26 cfs @ 12.31 hrs, Volume= 0.197 af
Outflow = 0.76 cfs @ 12.67 hrs, Volume= 0.197 af, Atten= 40%, Lag= 21.3 min
Discarded = 0.76 cfs @ 12.67 hrs, Volume= 0.197 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 138.69' @ 12.67 hrs Surf Area= 3,974 sf Storage= 739 cf

Plug-Flow detention time= 8.3 min calculated for 0.197 af (100% of inflow)
Center-of-Mass det. time= 8.3 min (954.9 - 946.5)

Volume	Invert	Avail.Storage	Storage Description
#1	138.50'	69,891 cf	Custom Stage Data (Prismatic)Listed below (Recalc)

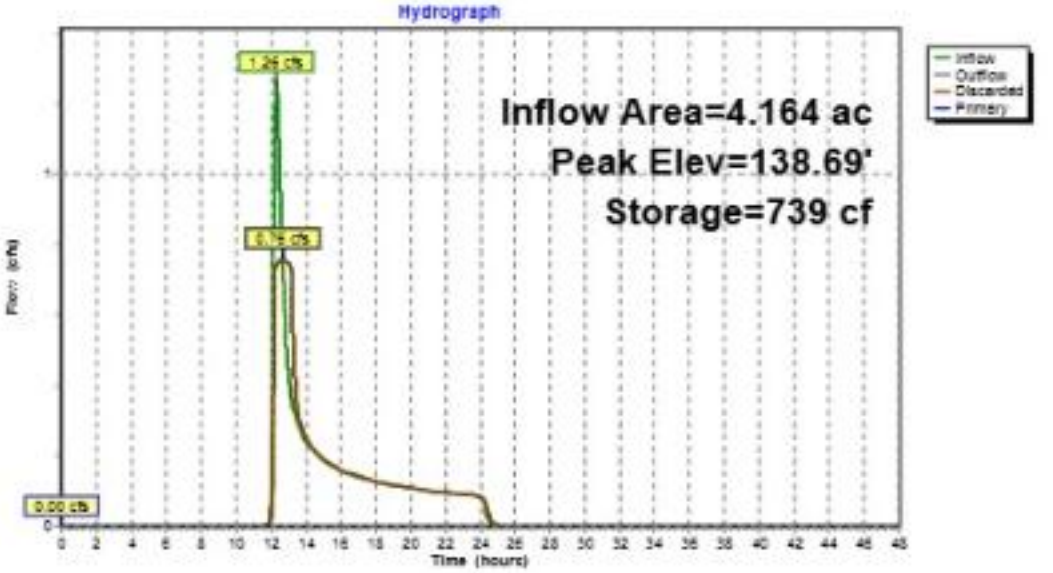
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.50	3,739	0	0
139.00	4,351	2,023	2,023
140.00	5,672	5,012	7,034
141.00	7,121	6,397	13,431
142.00	8,669	7,895	21,326
143.00	10,317	9,493	30,819
144.00	12,066	11,192	42,010
145.00	13,915	12,991	55,001
146.00	15,865	14,890	69,891

Device	Routing	Invert	Outlet Devices
#1	Discarded	138.50'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	139.75'	**12.0" Round Culvert** L= 102.0' Ke= 0.500 Inlet / Outlet Invert= 139.75' / 139.20' S= 0.0054 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=0.76 cfs @ 12.67 hrs HW=138.69' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 0.76 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=138.50' (Free Discharge)
└**2=Culvert** (Controls 0.00 cfs)

Pond P-5D: (new Pond)

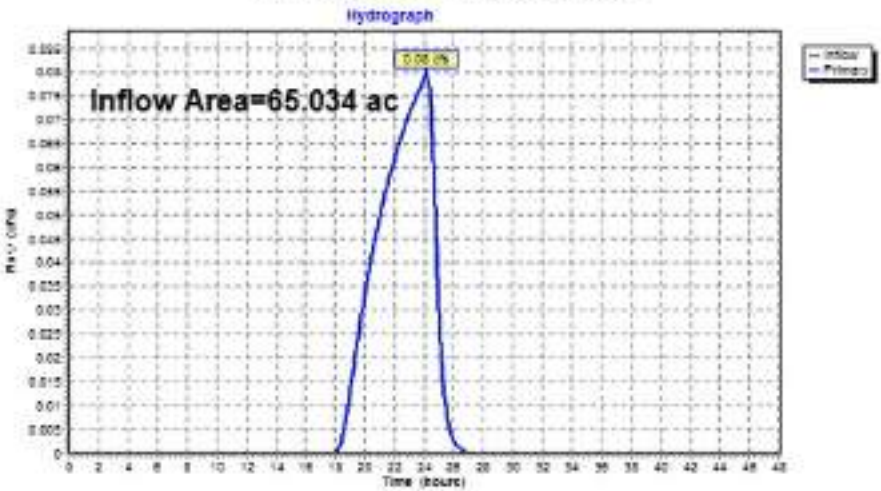


Summary for Link DP-1: WATERWORKS BROOK

Inflow Area = 65.034 ac, 30.33% Impervious, Inflow Depth = 0.01" for 2-yr event
Inflow = 0.08 cfs @ 24.17 hrs, Volume= 0.028 af
Primary = 0.08 cfs @ 24.17 hrs, Volume= 0.028 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-1: WATERWORKS BROOK

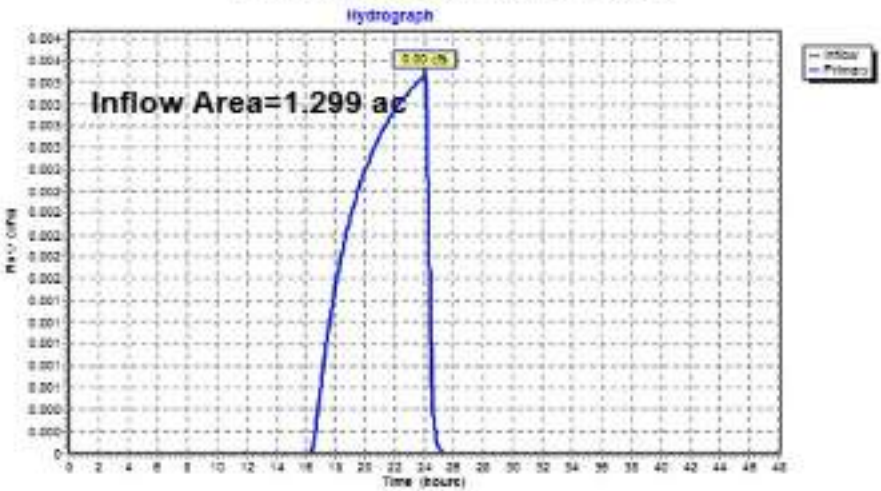


Summary for Link DP-2: NORTHERN WETLAND AREA

Inflow Area = 1.299 ac, 0.00% Impervious, Inflow Depth = 0.01" for 2-yr event
Inflow = 0.00 cfs @ 24.00 hrs, Volume= 0.002 af
Primary = 0.00 cfs @ 24.00 hrs, Volume= 0.002 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-2: NORTHERN WETLAND AREA

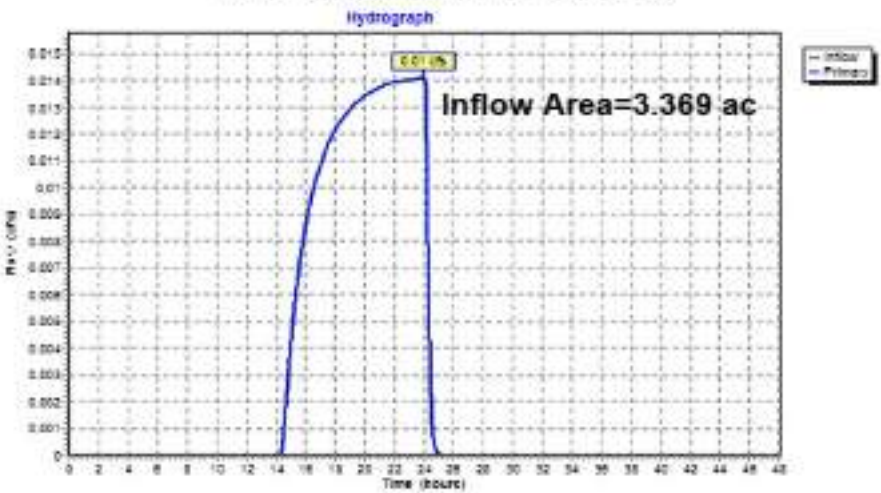


Summary for Link DP-3: NORTHEAST WETLAND AREA

Inflow Area = 3.369 ac, 0.00% Impervious, Inflow Depth = 0.03" for 2-yr event
Inflow = 0.01 cfs @ 23.99 hrs, Volume= 0.010 af
Primary = 0.01 cfs @ 23.99 hrs, Volume= 0.010 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-3: NORTHEAST WETLAND AREA

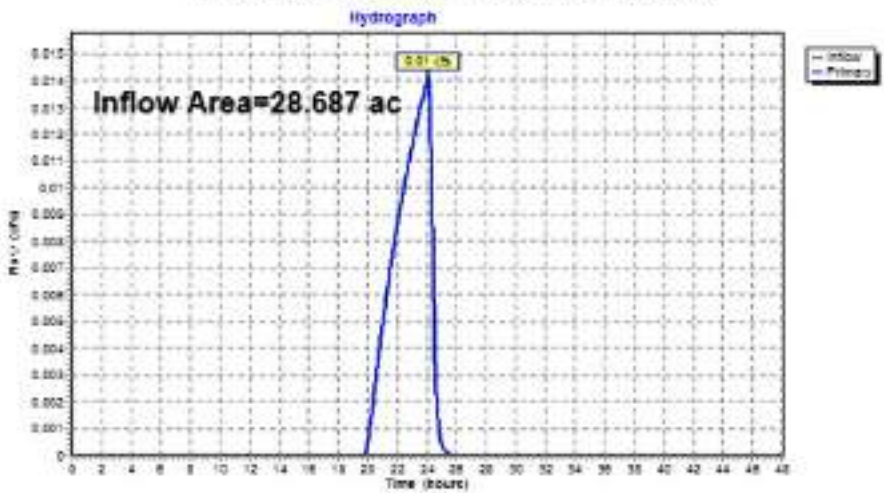


Summary for Link DP-4: STATE-OWNED STORMWATER BASIN

Inflow Area = 28.687 ac, 47.17% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.01 cfs @ 24.08 hrs, Volume= 0.003 af
Primary = 0.01 cfs @ 24.08 hrs, Volume= 0.003 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-4: STATE-OWNED STORMWATER BASIN

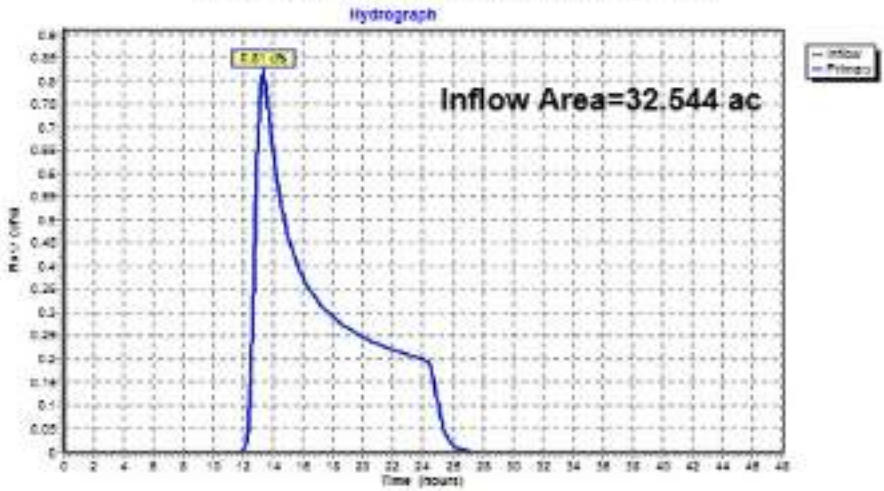


Summary for Link DP-5: STATE-OWNED DRAINAGE SYSTEM

Inflow Area = 32.544 ac, 42.41% Impervious, Inflow Depth = 0.13" for 2-yr event
Inflow = 0.81 cfs @ 13.31 hrs, Volume= 0.351 af
Primary = 0.81 cfs @ 13.31 hrs, Volume= 0.351 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-5: STATE-OWNED DRAINAGE SYSTEM



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentPDA-1A: PDA-1A Runoff Area=1,878,800 sf 0.00% Impervious Runoff Depth=0.31"
Tc=61.1 min CN=40 Runoff=1.79 cfs 1.120 af

SubcatchmentPDA-1B: PDA-1B Runoff Area=458,136 sf 86.47% Impervious Runoff Depth=4.14"
Flow Length=192' Tc=14.1 min CN=91 Runoff=39.63 cfs 3.626 af

SubcatchmentPDA-1C: PDA-1C Runoff Area=600,866 sf 80.42% Impervious Runoff Depth=4.47"
Flow Length=80' Slope=0.0200 '/' Tc=9.0 min CN=94 Runoff=55.39 cfs 4.280 af

SubcatchmentPDA-2: PDA-2 Runoff Area=56,562 sf 0.00% Impervious Runoff Depth=0.39"
Tc=25.5 min CN=42 Runoff=0.09 cfs 0.038 af

SubcatchmentPDA-3: PDA-3 Runoff Area=146,741 sf 0.00% Impervious Runoff Depth=0.49"
Flow Length=486' Tc=20.7 min CN=44 Runoff=0.37 cfs 0.138 af

SubcatchmentPDA-4A: PDA-4A Runoff Area=119,711 sf 80.39% Impervious Runoff Depth=3.82"
Flow Length=272' Tc=11.5 min CN=88 Runoff=12.85 cfs 0.261 af

SubcatchmentPDA-4B: PDA-4B Runoff Area=529,899 sf 2.06% Impervious Runoff Depth=0.27"
Flow Length=901' Tc=28.7 min CN=40 Runoff=0.44 cfs 0.278 af

SubcatchmentPDA-5A: PDA-5A Runoff Area=518,631 sf 95.22% Impervious Runoff Depth=4.14"
Flow Length=102' Slope=0.0422 '/' Tc=6.4 min CN=91 Runoff=55.62 cfs 4.099 af

SubcatchmentPDA-5D: PDA-5D Runoff Area=579,560 sf 0.21% Impervious Runoff Depth=1.19"
Tc=73.9 min CN=57 Runoff=4.70 cfs 1.320 af

SubcatchmentPDA-5C: PDA-5C Runoff Area=139,934 sf 97.96% Impervious Runoff Depth=3.22"
Flow Length=508' Tc=12.4 min CN=82 Runoff=10.10 cfs 0.863 af

SubcatchmentPDA-5D: PDA-5D Runoff Area=161,404 sf 26.32% Impervious Runoff Depth=1.69"
Flow Length=189' Tc=22.7 min CN=64 Runoff=4.69 cfs 0.585 af

Pond P-1B: (new Pond) Peak Elev=126.53 Storage=55,647 cf Inflow=39.63 cfs 3.626 af
Discarded=4.20 cfs 3.521 af Primary=1.07 cfs 0.105 af Outflow=5.26 cfs 3.626 af

Pond P-1C: UG SYSTEM Peak Elev=129.65 Storage=62,404 cf Inflow=55.39 cfs 4.280 af
Discarded=5.75 cfs 4.276 af Primary=0.08 cfs 0.004 af Outflow=5.84 cfs 4.280 af

Pond P-4A: SURFACE STORMWATER Peak Elev=125.84 Storage=31,983 cf Inflow=62.85 cfs 5.261 af
Discarded=12.26 cfs 5.261 af Primary=0.00 cfs 0.000 af Outflow=12.26 cfs 5.261 af

Pond P-5A: (new Pond) Peak Elev=133.27 Storage=54,394 cf Inflow=55.62 cfs 4.099 af
Discarded=4.90 cfs 4.050 af Primary=0.47 cfs 0.049 af Outflow=5.37 cfs 4.099 af

Pond P-5C: (new Pond) Peak Elev=138.09 Storage=11,024 cf Inflow=10.10 cfs 0.863 af
Discarded=1.38 cfs 0.856 af Primary=0.14 cfs 0.008 af Outflow=1.52 cfs 0.863 af

Pond P-5D: (new Pond) Peak Elev=139.92' Storage=6,591 cf Inflow=4.66 cfs 0.585 af
Discarded=1.07 cfs 0.579 af Primary=0.10 cfs 0.006 af Outflow=1.16 cfs 0.585 af

Link DP-1: WATERWORKS BROOK Inflow=2.58 cfs 1.229 af
Primary=2.58 cfs 1.229 af

Link DP-2: NORTHERN WETLAND AREA Inflow=0.09 cfs 0.038 af
Primary=0.09 cfs 0.038 af

Link DP-3: NORTHEAST WETLAND AREA Inflow=0.37 cfs 0.125 af
Primary=0.37 cfs 0.125 af

Link DP-4: STATE-OWNED STORMWATER BASIN Inflow=0.44 cfs 0.276 af
Primary=0.44 cfs 0.276 af

Link DP-5: STATE-OWNED DRAINAGE SYSTEM Inflow=5.33 cfs 1.373 af
Primary=5.33 cfs 1.373 af

Total Runoff Area = 130.933 ac Runoff Volume = 21.584 af Average Runoff Depth = 1.98"
64.06% Pervious = 83.875 ac 35.94% Impervious = 47.058 ac

Summary for Subcatchment PDA-1A: PDA-1A

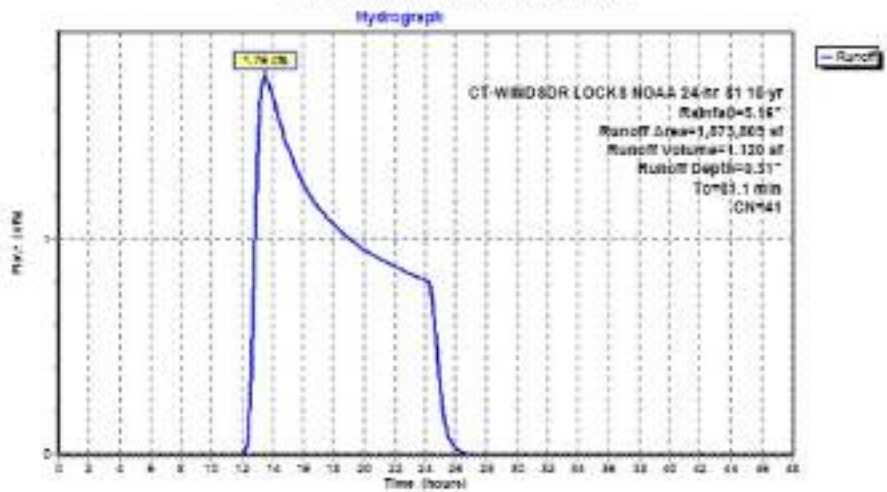
Runoff = 1.76 cfs @ 13.51 hrs, Volume= 1.120 af, Depth= 0.31"
Routed to Link DP-1 : WATERWORKS BROOK

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 10-yr Rainfall=5.16"

Area (sf)	CN	Description
115,427	49	50-75% Grass cover, Fair, HSG A
1,436,860	36	Woods, Fair, HSG A
79,036	60	Woods, Fair, HSG B
242,486	59	Farmsteads, HSG A
1,873,809	41	Weighted Average
1,873,809	41	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
61.1					Direct Entry, TC

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

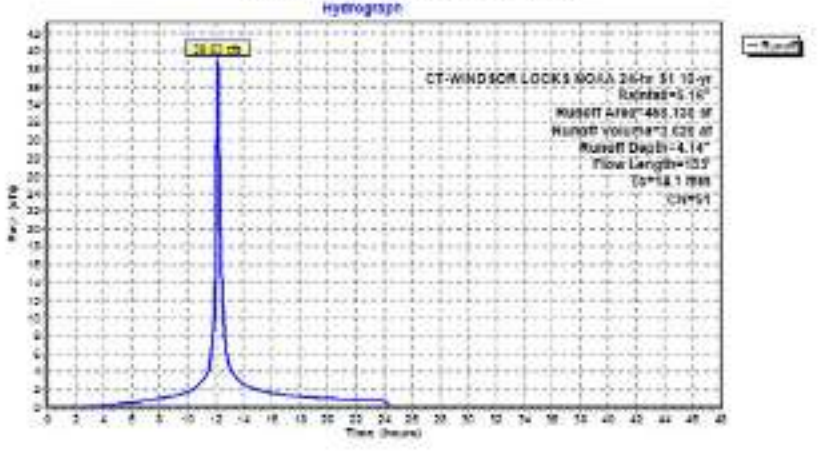
Runoff = 38.63 cfs @ 12.14 hrs, Volume= 3.626 af, Depth= 4.14"
Routed to Pond P-1B : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 10-yr Rainfall=5.16"

Area (sf)	CN	Description
62,001	49	50-75% Grass cover, Fair, HSG A
396,135	98	Paved parking, HSG A
458,136	91	Weighted Average
62,001	49	13.53% Pervious Area
396,135	98	86.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0150	0.15		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
3.1	93	0.0050	0.49		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
14.1	193	Total			

Subcatchment PDA-1B: PDA-1B



Summary for Subcatchment PDA-1C: PDA-1C

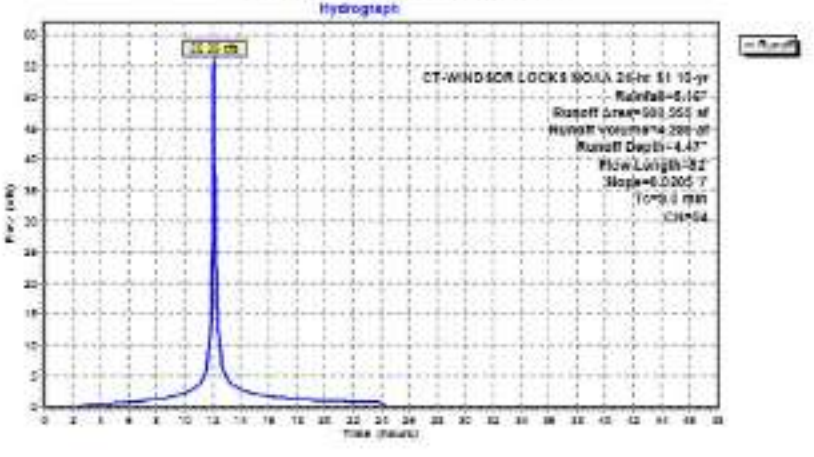
Runoff = 55.39 cfs @ 12.07 hrs, Volume= 4.280 af, Depth= 4.47"
Routed to Pond P-1C : UG SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 10-yr Rainfall=5.16"

Area (sf)	CN	Description
37,989	49	50-75% Grass cover, Fair, HSG A
462,966	98	Paved parking, HSG A
500,955	94	Weighted Average
37,989	49	7.58% Pervious Area
462,966	98	92.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	92	0.0205	0.17		Sheet Flow, GRASS Grass: Short n= 0.150 P2= 3.22"

Subcatchment PDA-1C: PDA-1C



Summary for Subcatchment PDA-2: PDA-2

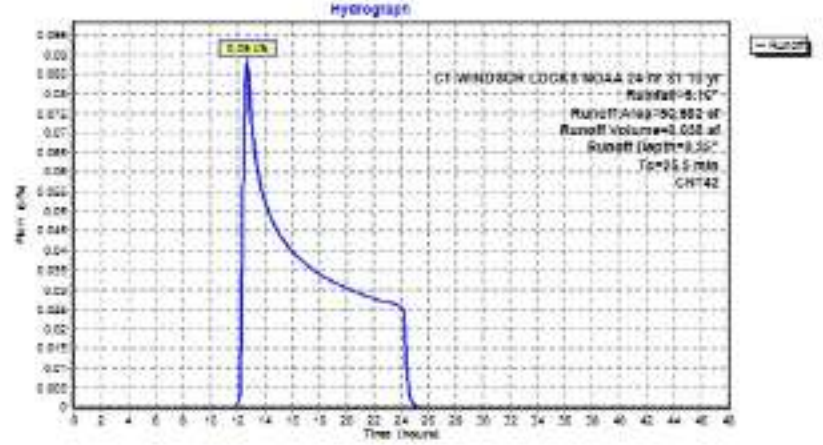
Runoff = 0.09 cfs @ 12.69 hrs, Volume= 0.038 af, Depth= 0.35"
Routed to Link DP-2 : NORTHERN WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 10-yr Rainfall=5.16"

Area (sf)	CN	Description
27,598	49	50-75% Grass cover, Fair, HSG A
28,984	36	Woods, Fair, HSG A
56,582	42	Weighted Average
56,582	42	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.5					Direct Entry, TC

Subcatchment PDA-2: PDA-2



Summary for Subcatchment PDA-3: PDA-3

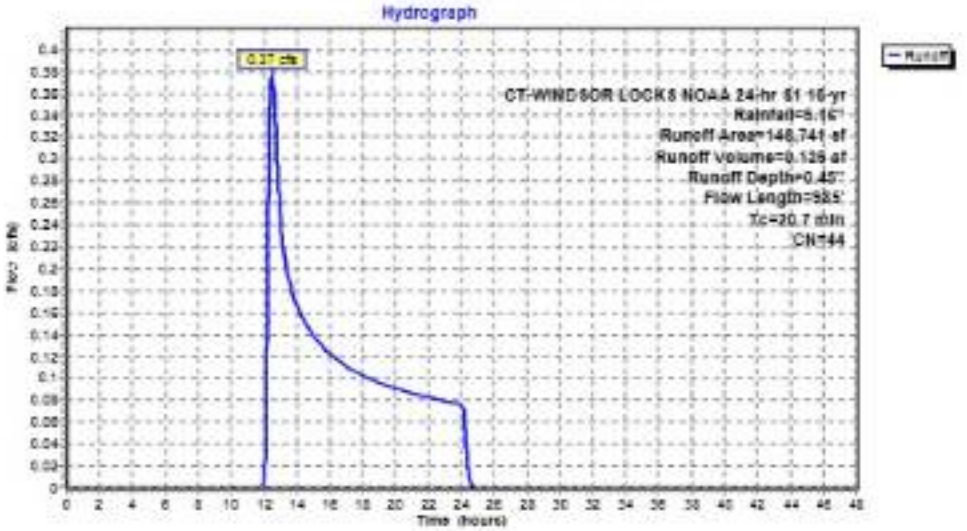
Runoff = 0.37 cfs @ 12.49 hrs, Volume= 0.125 af, Depth= 0.45"
Routed to Link DP-3 : NORTHEAST WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 10-yr Rainfall=5.16"

Area (sf)	CN	Description
57,064	49	50-75% Grass cover, Fair, HSG A
72,106	36	Woods, Fair, HSG A
17,571	60	Woods, Fair, HSG B
146,741	44	Weighted Average
146,741	44	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0267	0.19		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
2.0	118	0.0197	0.98		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
3.3	341	0.0599	1.71		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
0.7	61	0.0854	1.46		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
2.5	203	0.0707	1.33		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
3.5	162	0.0235	0.77		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
20.7	985	Total			

Subcatchment PDA-3: PDA-3



Summary for Subcatchment PDA-4A: PDA-4A

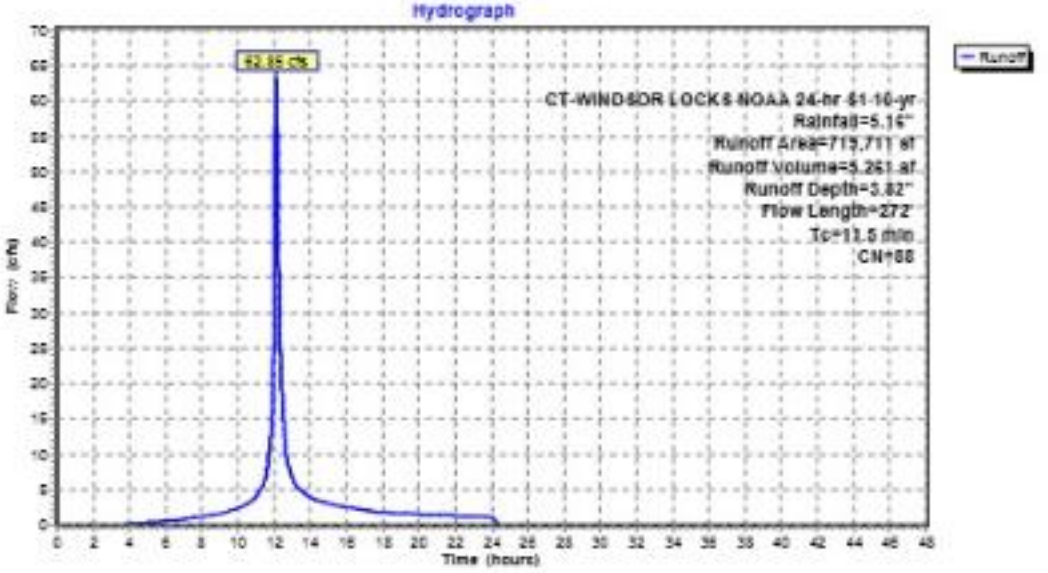
Runoff = 62.85 cfs @ 12.10 hrs, Volume= 5.261 af, Depth= 3.82"
Routed to Pond P-4A : SURFACE STORMWATER BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 10-yr Rainfall=5.16"

Area (sf)	CN	Description
141,156	49	50-75% Grass cover, Fair, HSG A
578,555	98	Paved parking, HSG A
719,711	88	Weighted Average
141,156	49	19.61% Pervious Area
578,555	98	80.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	18	0.1555	0.28		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
7.9	82	0.0226	0.17		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
2.1	136	0.0232	1.07		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
0.1	12	0.1667	2.86		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
0.3	24	0.0416	1.43		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
11.5	272	Total			

Subcatchment PDA-4A: PDA-4A



Summary for Subcatchment PDA-4B: PDA-4B

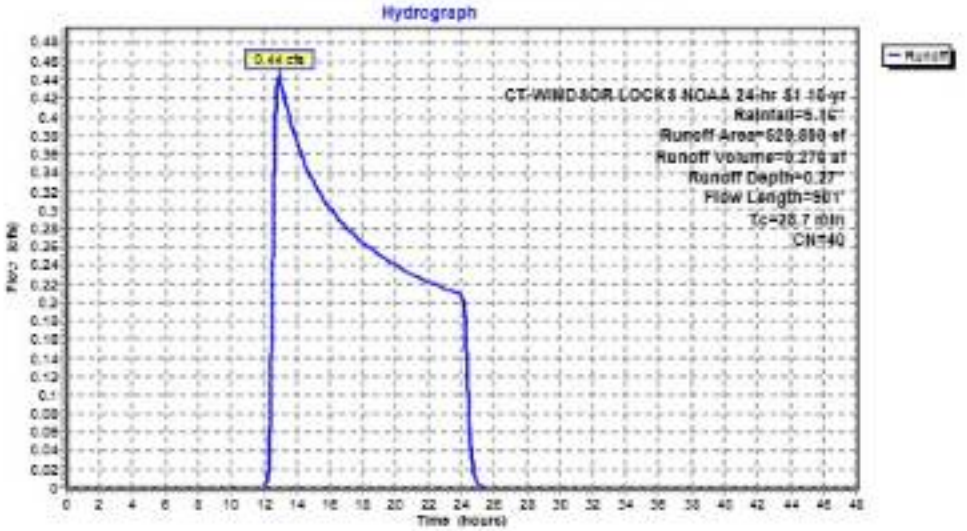
Runoff = 0.44 cfs @ 12.91 hrs, Volume= 0.276 af, Depth= 0.27"
Routed to Link DP-4 : STATE-OWNED STORMWATER BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 10-yr Rainfall=5.16"

Area (sf)	CN	Description
104,160	49	50-75% Grass cover, Fair, HSG A
412,529	36	Woods, Fair, HSG A
2,260	60	Woods, Fair, HSG B
10,941	98	Paved parking, HSG A
529,890	40	Weighted Average
518,949	39	97.94% Pervious Area
10,941	98	2.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0116	0.14		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
6.7	307	0.0119	0.76		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
0.8	41	0.0327	0.90		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
0.3	41	0.1951	2.21		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
8.8	412	0.0243	0.78		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
28.7	901	Total			

Subcatchment PDA-4B: PDA-4B



Summary for Subcatchment PDA-5A: PDA-5A

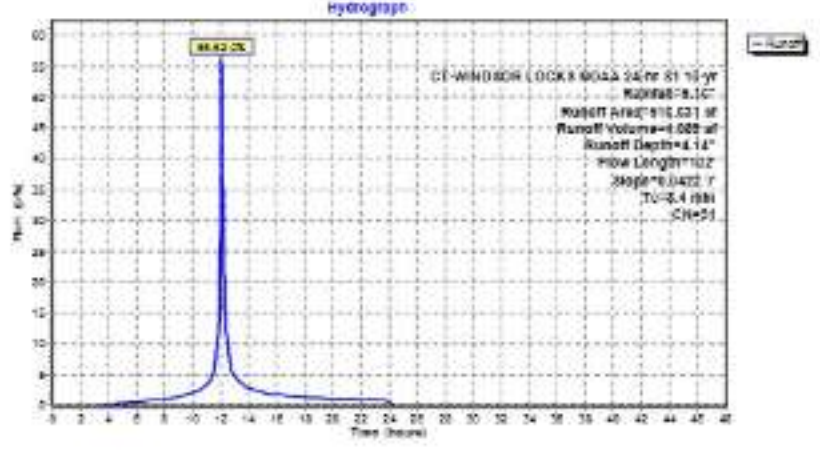
Runoff = 55.62 cfs @ 12.06 hrs, Volume= 4.089 af, Depth= 4.14"
Routed to Pond P-5A : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 10-yr Rainfall=5.16"

Area (sf)	CN	Description
75,817	49	50-75% Grass cover, Fair, HSG A
440,814	98	Paved parking, HSG A
516,631	91	Weighted Average
75,817	49	14.68% Pervious Area
440,814	98	85.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	102	0.0422	0.23		Sheet Flow, GRASS Grass: Short n= 0.150 P2= 3.22"
1.0					Direct Entry, SHALLOW
8.4	102	Total			

Subcatchment PDA-5A: PDA-5A



Summary for Subcatchment PDA-5B: PDA-5B

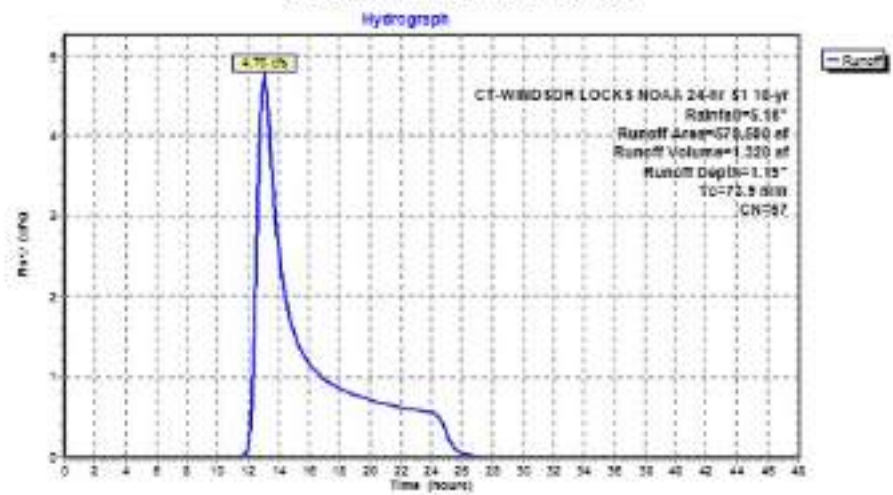
Runoff = 4.70 cfs @ 13.06 hrs, Volume= 1.320 af, Depth= 1.19"
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 10-yr Rainfall=5.16"

Area (sf)	CN	Description
336,170	49	50-75% Grass cover, Fair, HSG A
232,835	69	50-75% Grass cover, Fair, HSG B
9,363	36	Woods, Fair, HSG A
1,222	98	Paved parking, HSG A
579,590	57	Weighted Average
578,368	57	99.79% Pervious Area
1,222	98	0.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
73.9					Direct Entry, TC

Subcatchment PDA-5B: PDA-5B



Summary for Subcatchment PDA-5C: PDA-5C

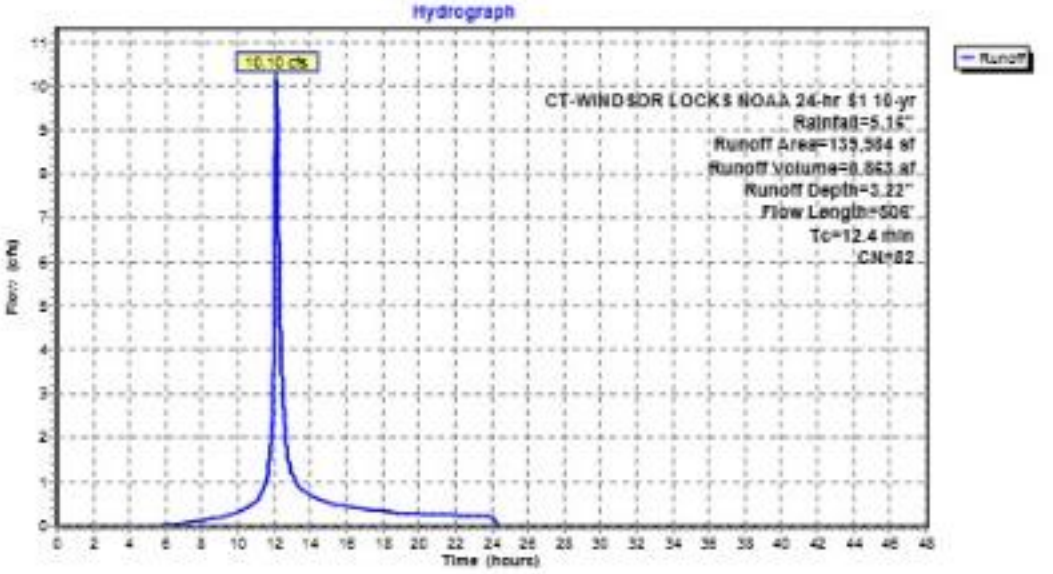
Runoff = 10.10 cfs @ 12.12 hrs, Volume= 0.863 af, Depth= 3.22"
Routed to Pond P-5C : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 10-yr Rainfall=5.16"

Area (sf)	CN	Description
95,137	98	Paved parking, HSG A
44,847	49	50-75% Grass cover, Fair, HSG A
139,984	82	Weighted Average
44,847	49	32.04% Pervious Area
95,137	98	67.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	82	0.0122	0.13		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
0.9	131	0.0153	2.51		**Shallow Concentrated Flow, PAVEMENT** Paved Kv= 20.3 fps
0.7	166	0.0051	4.07	5.00	**Pipe Channel, 15" PIPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
0.5	111	0.0050	4.03	4.95	**Pipe Channel, 15" PIPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
0.1	16	0.0056	4.82	8.52	**Pipe Channel, 18" PIPE** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
12.4	506	Total			

Subcatchment PDA-5C: PDA-5C



Summary for Subcatchment PDA-5D: PDA-5D

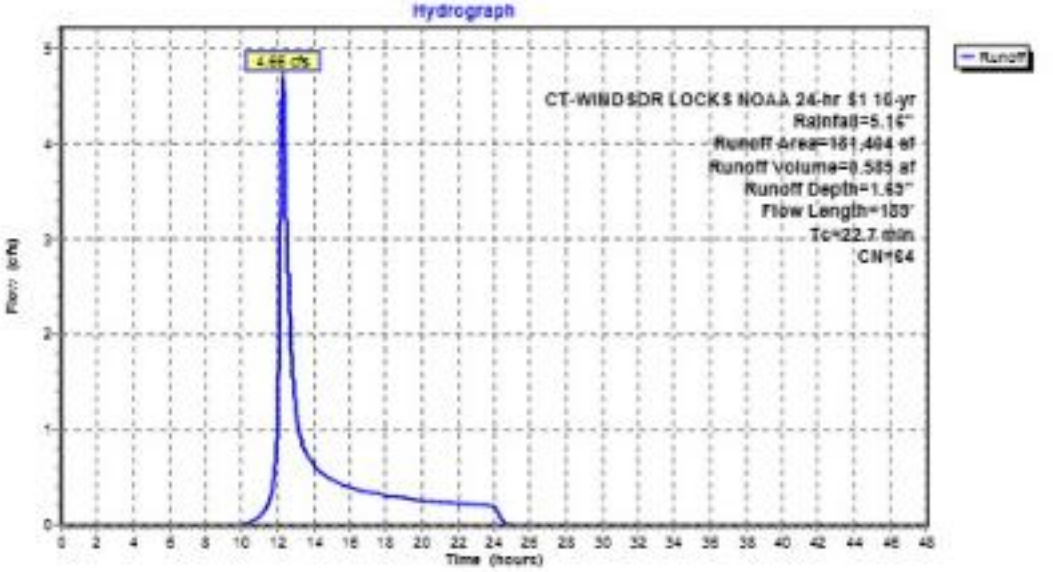
Runoff = 4.66 cfs @ 12.28 hrs, Volume= 0.585 af, Depth= 1.69"
Routed to Pond P-5D : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 10-yr Rainfall=5.16"

Area (sf)	CN	Description
75,856	49	50-75% Grass cover, Fair, HSG A
1,810	69	50-75% Grass cover, Fair, HSG B
39,371	36	Woods, Fair, HSG A
299	60	Woods, Fair, HSG B
64,068	98	Paved parking, HSG A
181,404	64	Weighted Average
117,336	45	64.68% Pervious Area
64,068	98	35.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.9	66	0.0158	0.07		**Sheet Flow, WOODS** Woods: Light underbrush n= 0.400 P2= 3.22"
5.7	45	0.0153	0.13		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
0.1	78	0.0250	10.18	17.99	**Pipe Channel, PIPE** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
22.7	189	Total			

Subcatchment PDA-5D: PDA-5D



Summary for Pond P-1B: (new Pond)

Inflow Area = 10.517 ac, 86.47% Impervious, Inflow Depth = 4.14" for 10-yr event
Inflow = 38.63 cfs @ 12.14 hrs, Volume= 3.626 af
Outflow = 5.28 cfs @ 12.85 hrs, Volume= 3.626 af, Atten= 86%, Lag= 42.8 min
Discarded = 4.20 cfs @ 12.85 hrs, Volume= 3.521 af
Primary = 1.07 cfs @ 12.85 hrs, Volume= 0.105 af
Routed to Link DP-1 : WATERWORKS BROOK

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 136.53' @ 12.85 hrs Surf Area= 21,959 sf Storage= 55,547 cf

Plug-Flow detention time= 114.0 min calculated for 3.626 af (100% of inflow)
Center-of-Mass det. time= 114.0 min (916.9 - 802.9)

Volume	Invert	Avail.Storage	Storage Description
#1	133.00'	293,903 cf	Custom Stage Data (Prismatic)Listed below (Recalc)

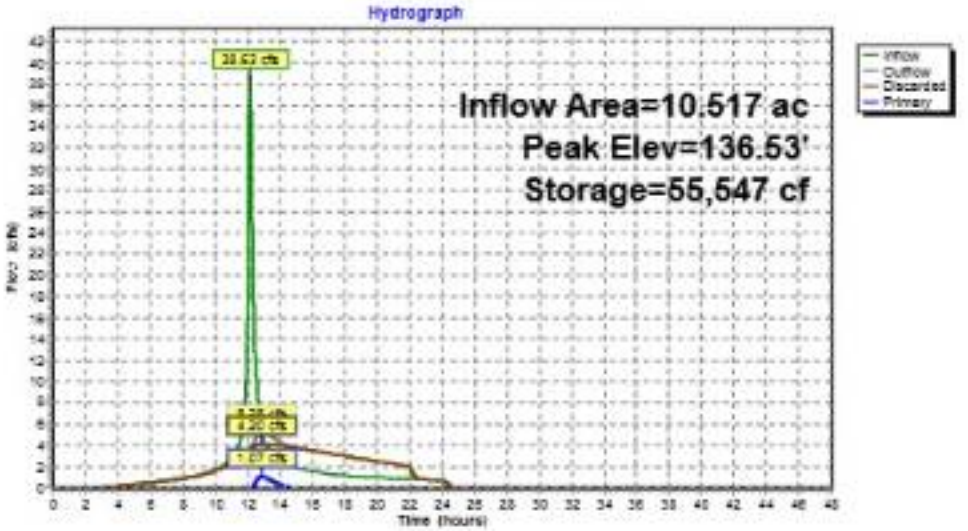
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.00	10,167	0	0
134.00	13,066	11,627	11,627
135.00	16,294	14,680	26,307
136.00	19,869	18,082	44,388
137.00	23,787	21,828	66,216
138.00	28,048	25,918	92,134
139.00	32,651	30,350	122,483
140.00	37,533	35,092	157,575
141.00	42,714	40,124	197,699
142.00	48,072	45,393	243,092
143.00	53,550	50,811	293,903

Device	Routing	Invert	Outlet Devices
#1	Discarded	133.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	136.00'	15.0" Round Culvert L= 400.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 134.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Discarded OutFlow Max=4.20 cfs @ 12.85 hrs HW=136.53' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 4.20 cfs)

Primary OutFlow Max=1.07 cfs @ 12.85 hrs HW=136.53' (Free Discharge)
└**2=Culvert** (Barrel Controls 1.07 cfs @ 3.16 fps)

Pond P-1B: (new Pond)



Summary for Pond P-1C: UG SYSTEM

Inflow Area = 11.500 ac, 92.42% Impervious, Inflow Depth = 4.47" for 10-yr event
Inflow = 59.39 cfs @ 12.07 hrs, Volume= 4.280 af
Outflow = 5.84 cfs @ 12.76 hrs, Volume= 4.280 af, Atten= 89%, Lag= 41.5 min
Discarded = 5.75 cfs @ 11.59 hrs, Volume= 4.276 af
Primary = 0.08 cfs @ 12.76 hrs, Volume= 0.004 af
Routed to Link DP-1 : WATERWORKS BROOK

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 129.95' @ 12.76 hrs Surf Area= 30,055 sf Storage= 52,424 cf

Plug-Flow detention time= 56.0 min calculated for 4.279 af (100% of inflow)
Center-of-Mass det. time= 56.0 min (837.5 - 781.5)

Volume	Invert	Avail.Storage	Storage Description
#1A	128.00'	0 cf	**72.67'W x 413.60'L x 5.50'H Field A** 165,304 cf Overall - 165,304 cf Embedded = 0 cf x 40.0% Voids
#2A	128.00'	134,711 cf	**StormTrap SingleTrap 5.0 x 182 Inside #1** Inside= 101.7'W x 90.0'H => 38.33 sf x 15.40'L = 590.2 cf Outside= 101.7'W x 86.0'H => 46.84 sf x 15.40'L = 718.0 cf 182 Chambers in 7 Rows 59.35' x 400.29' Core + 6.66' Border = 72.67' x 413.60' System
		134,711 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	129.80'	**12.0" Round Culvert** L= 110.0' Ke= 0.500 **Inlet / Outlet Invert=** 129.80' / 129.00' S= 0.0073 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Discarded	128.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=5.75 cfs @ 11.59 hrs HW=128.06' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 5.75 cfs)

Primary OutFlow Max=0.08 cfs @ 12.76 hrs HW=129.95' (Free Discharge)
└**1=Culvert** (Barrel Controls 0.08 cfs @ 1.74 fps)

Pond P-1C: UG SYSTEM - Chamber Wizard Field A

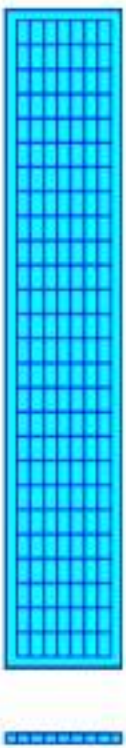
Chamber Model = StormTrap SingleTrap 5-0 (StormTrap SingleTrap® Type II+IV)
Inside= 101.7"W x 60.0"H => 38.33 sf x 15.40'L = 590.2 cf
Outside= 101.7"W x 66.0"H => 46.64 sf x 15.40'L = 718.0 cf

26 Chambers/Row x 15.40' Long = 400.29' Row Length +79.9" Border x 2 = 413.60' Base Length
7 Rows x 101.7" Wide + 79.9" Side Border x 2 = 72.67' Base Width
66.0" Chamber Height = 5.50' Field Height

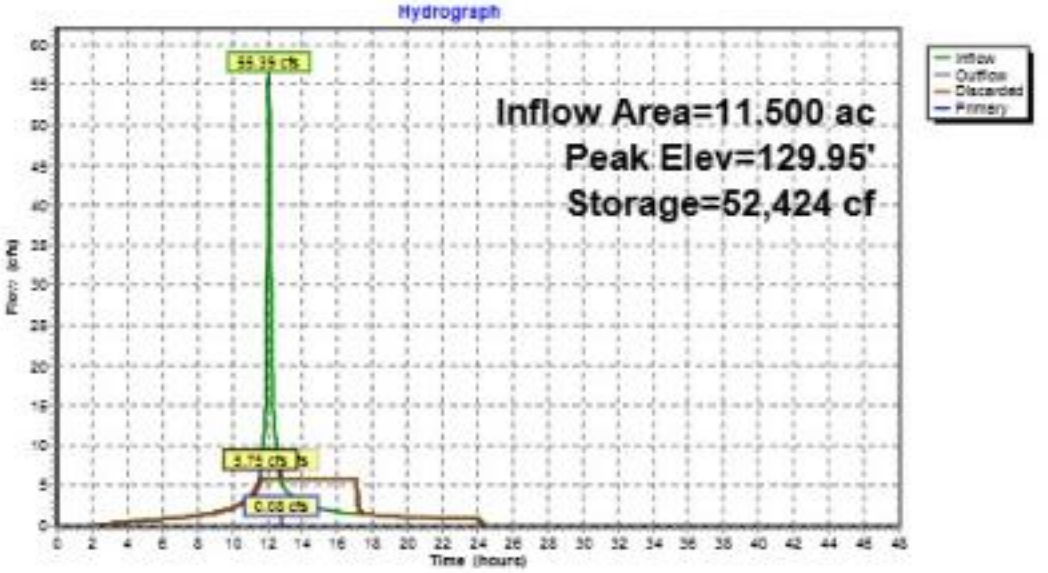
182 Chambers x 590.2 cf + 27,298.0 cf Border = 134,711.2 cf Chamber Storage
182 Chambers x 718.0 cf + 34,629.4 cf Border = 165,303.8 cf Displacement

Chamber Storage = 134,711.2 cf = 3.093 af
Overall Storage Efficiency = 81.5%
Overall System Size = 413.60' x 72.67' x 5.50'

182 Chambers (plus border)
6,122.4 cy Field



Pond P-1C: UG SYSTEM



Summary for Pond P-4A: SURFACE STORMWATER BASIN

Inflow Area = 16.522 ac, 80.39% Impervious, Inflow Depth = 3.82" for 10-yr event
Inflow = 62.85 cfs @ 12.10 hrs, Volume= 5.261 af
Outflow = 12.26 cfs @ 12.60 hrs, Volume= 5.261 af, Atten= 80%, Lag= 30.0 min
Discarded = 12.26 cfs @ 12.60 hrs, Volume= 5.261 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link DP-4 : STATE-OWNED STORMWATER BASIN

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 125.64' @ 12.60 hrs Surf Area= 84,023 sf Storage= 51,583 cf

Plug-Flow detention time= 24.0 min calculated for 5.260 af (100% of inflow)
Center-of-Mass det. time= 24.0 min (838.4 - 814.4)

Volume	Invert	Avail.Storage	Storage Description
#1	125.00'	287,186 cf	Custom Stage Data (Prismatic)Listed below (Recalc)

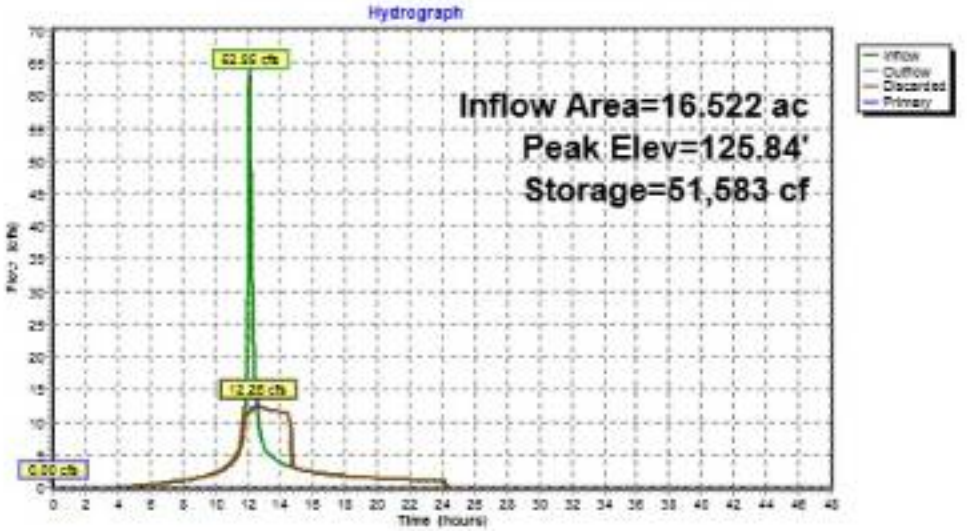
Elevation (feet)	Surf Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.00	58,672	0	0
126.00	65,036	61,854	61,854
127.00	71,627	68,332	130,186
128.00	78,444	75,036	205,221
129.00	85,488	81,965	287,186

Device	Routing	Invert	Outlet Devices
#1	Primary	126.30'	12.0" Round Culvert L= 42.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 126.30' / 126.00' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Discarded	125.00'	8.270 in/hr Exfiltration over Surface area

Discarded OutFlow Max=12.26 cfs @ 12.60 hrs HW=125.64' (Free Discharge)
└2=Exfiltration (Exfiltration Controls 12.26 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.00' (Free Discharge)
└1=Culvert (Controls 0.00 cfs)

Pond P-4A: SURFACE STORMWATER BASIN



Summary for Pond P-5A: (new Pond)

Inflow Area = 11.860 ac, 85.32% Impervious, Inflow Depth = 4.14" for 10-yr event
Inflow = 55.62 cfs @ 12.06 hrs, Volume= 4.089 af
Outflow = 5.37 cfs @ 12.82 hrs, Volume= 4.089 af, Atten= 90%, Lag= 45.5 min
Discarded = 4.90 cfs @ 11.51 hrs, Volume= 4.050 af
Primary = 0.47 cfs @ 12.82 hrs, Volume= 0.040 af
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 133.37' @ 12.82 hrs Surf Area= 25,580 sf Storage= 54,364 cf

Plug-Flow detention time= 73.1 min calculated for 4.088 af (100% of inflow)
Center-of-Mass det. time= 73.1 min (870.7 - 797.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	131.00'	0 cf	**72.67'W x 352.02'L x 5.50'H Field A** 140,691 cf Overall - 140,691 cf Embedded = 0 cf x 40.0% Voids
#2A	131.00'	114,632 cf	**StormTrap SingleTrap 5-0 x 154 Inside #1** Inside= 101.7'W x 90.0'H => 38.33 sf x 15.40'L = 590.2 cf Outside= 101.7'W x 86.0'H => 46.84 sf x 15.40'L = 718.0 cf 154 Chambers in 7 Rows 59.35' x 336.71' Core + 6.66' Border = 72.67' x 352.02' System
		114,632 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	131.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	133.00'	**12.0" Round Culvert** L= 179.0' Ke= 0.500 Inlet / Outlet Invert= 133.00' / 132.00' S= 0.0056 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=4.90 cfs @ 11.51 hrs HW=131.06' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 4.90 cfs)

Primary OutFlow Max=0.47 cfs @ 12.82 hrs HW=133.37' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.47 cfs @ 2.64 fps)

Pond P-5A: (new Pond) - Chamber Wizard Field A

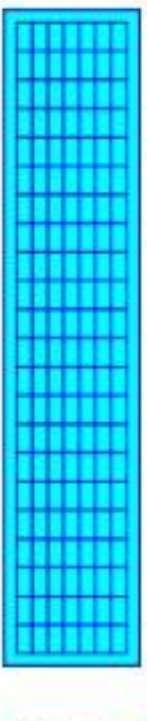
Chamber Model = StormTrap SingleTrap 5-0 (StormTrap SingleTrap® Type II+IV)
Inside= 101.7"W x 60.0"H => 38.33 sf x 15.40'L = 590.2 cf
Outside= 101.7"W x 66.0"H => 46.64 sf x 15.40'L = 718.0 cf

22 Chambers/Row x 15.40' Long = 338.71' Row Length +79.9" Border x 2 = 352.02' Base Length
7 Rows x 101.7" Wide + 79.9" Side Border x 2 = 72.67' Base Width
66.0" Chamber Height = 5.50' Field Height

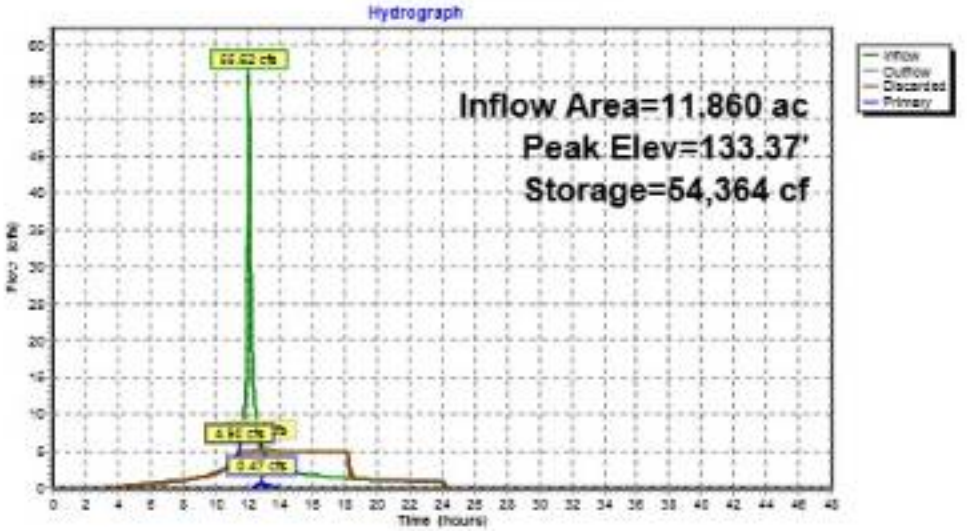
154 Chambers x 590.2 cf + 23,743.6 cf Border = 114,631.6 cf Chamber Storage
154 Chambers x 718.0 cf + 30,120.4 cf Border = 140,691.0 cf Displacement

Chamber Storage = 114,631.6 cf = 2.632 af
Overall Storage Efficiency = 81.5%
Overall System Size = 352.02' x 72.67' x 5.50'

154 Chambers (plus border)
5,210.8 cy Field



Pond P-5A: (new Pond)



Summary for Pond P-5C: (new Pond)

Inflow Area = 3.214 ac, 67.96% Impervious, Inflow Depth = 3.22" for 10-yr event
Inflow = 10.10 cfs @ 12.12 hrs, Volume= 0.863 af
Outflow = 1.52 cfs @ 12.77 hrs, Volume= 0.863 af, Atten= 85%, Lag= 39.1 min
Discarded = 1.38 cfs @ 12.77 hrs, Volume= 0.855 af
Primary = 0.14 cfs @ 12.77 hrs, Volume= 0.008 af
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 138.00' @ 12.77 hrs Surf Area= 7,183 sf Storage= 11,524 cf

Plug-Flow detention time= 65.5 min calculated for 0.863 af (100% of inflow)
Center-of-Mass det. time= 65.4 min (904.2 - 838.8)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	53,207 cf	Custom Stage Data (Prismatic)Listed below (Recalc)

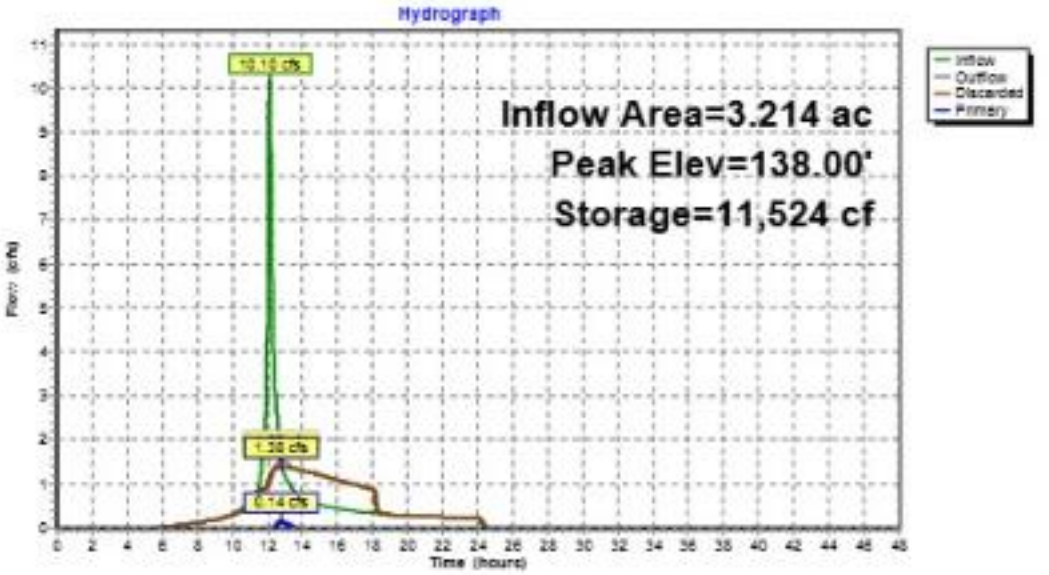
Elevation (feet)	Surf Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
136.00	4,393	0	0
137.00	5,709	5,051	5,051
138.00	7,177	6,443	11,494
139.00	8,719	7,948	19,442
140.00	10,338	9,529	28,971
141.00	12,034	11,186	40,157
142.00	14,066	13,050	53,207

Device	Routing	Invert	Outlet Devices
#1	Discarded	136.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	137.80'	**12.0" Round Culvert** L= 246.0' Ke= 0.500 Inlet / Outlet Invert= 137.80' / 136.50' S= 0.0053 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=1.38 cfs @ 12.77 hrs HW=138.00' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 1.38 cfs)

Primary OutFlow Max=0.14 cfs @ 12.77 hrs HW=138.00' (Free Discharge)
↑**2=Culvert** (Barrel Controls 0.14 cfs @ 1.85 fps)

Pond P-5C: (new Pond)



Summary for Pond P-5D: (new Pond)

Inflow Area = 4.164 ac, 35.32% Impervious, Inflow Depth = 1.69" for 10-yr event
Inflow = 4.66 cfs @ 12.28 hrs, Volume= 0.585 af
Outflow = 1.16 cfs @ 13.01 hrs, Volume= 0.585 af, Atten= 75%, Lag= 44.1 min
Discarded = 1.07 cfs @ 13.01 hrs, Volume= 0.579 af
Primary = 0.10 cfs @ 13.01 hrs, Volume= 0.006 af
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 139.92' @ 13.01 hrs Surf Area= 5,568 sf Storage= 8,591 cf

Plug-Flow detention time= 49.1 min calculated for 0.585 af (100% of inflow)
Center-of-Mass det. time= 49.1 min (956.8 - 907.5)

Volume	Invert	Avail.Storage	Storage Description
#1	138.50'	69,891 cf	Custom Stage Data (Prismatic)Listed below (Recalc)

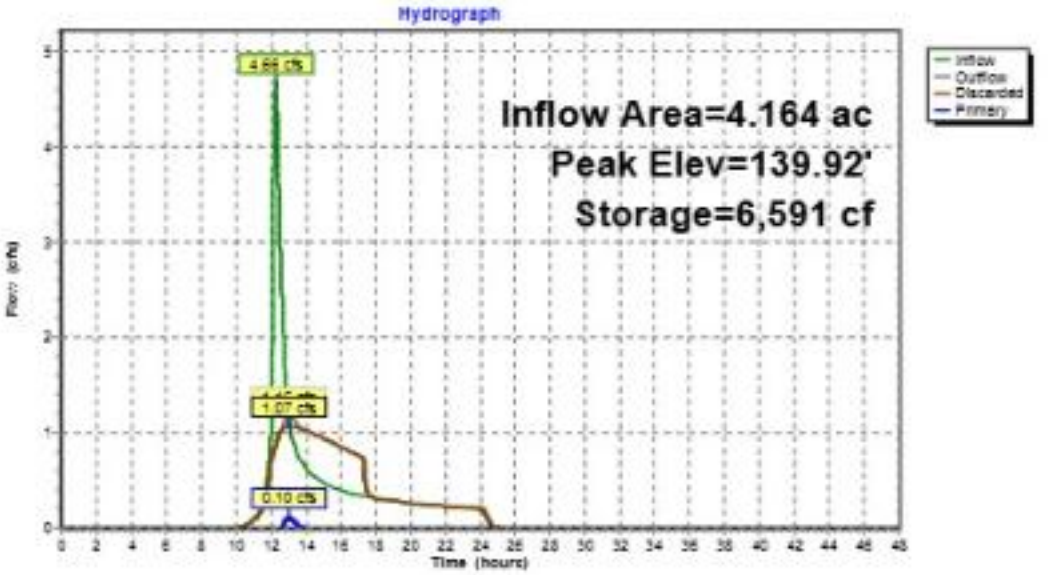
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.50	3,739	0	0
139.00	4,351	2,023	2,023
140.00	5,672	5,012	7,034
141.00	7,121	6,397	13,431
142.00	8,669	7,895	21,326
143.00	10,317	9,493	30,819
144.00	12,066	11,192	42,010
145.00	13,915	12,991	55,001
146.00	15,865	14,890	69,891

Device	Routing	Invert	Outlet Devices
#1	Discarded	138.50'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	139.75'	**12.0" Round Culvert** L= 102.0' Ke= 0.500 Inlet / Outlet Invert= 139.75' / 139.20' S= 0.0054 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=1.07 cfs @ 13.01 hrs HW=139.92' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 1.07 cfs)

Primary OutFlow Max=0.10 cfs @ 13.01 hrs HW=139.92' (Free Discharge)
└**2=Culvert** (Barrel Controls 0.10 cfs @ 1.66 fps)

Pond P-5D: (new Pond)

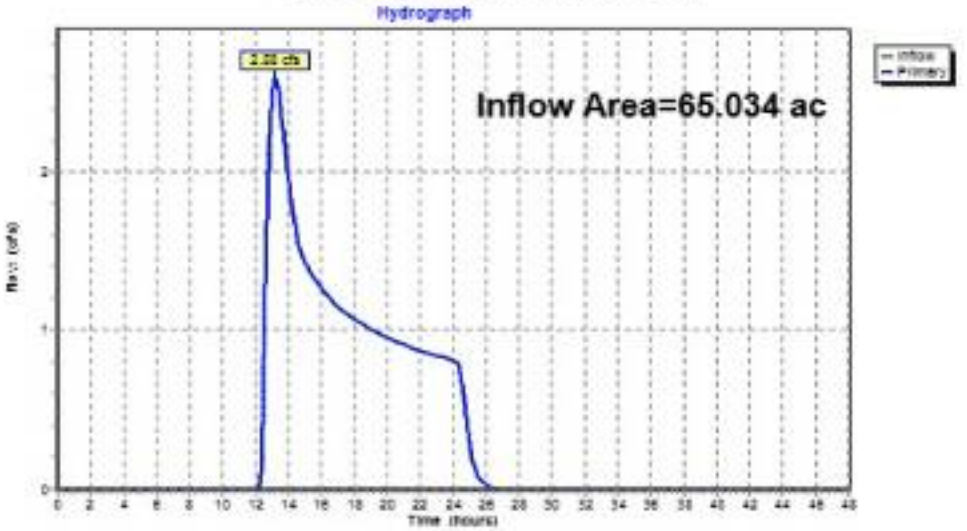


Summary for Link DP-1: WATERWORKS BROOK

Inflow Area = 65.034 ac, 30.33% Impervious, Inflow Depth = 0.23" for 10-yr event
Inflow = 2.58 cfs @ 13.23 hrs, Volume= 1.229 af
Primary = 2.58 cfs @ 13.23 hrs, Volume= 1.229 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-1: WATERWORKS BROOK

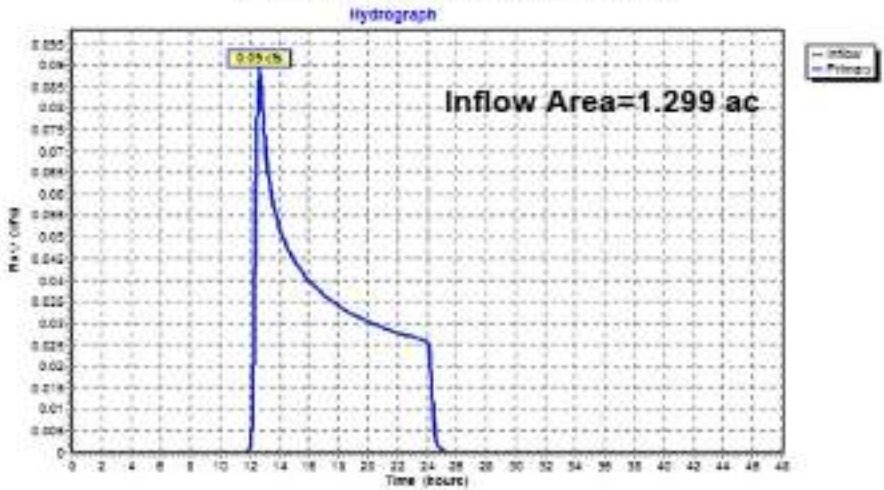


Summary for Link DP-2: NORTHERN WETLAND AREA

Inflow Area = 1.299 ac, 0.00% Impervious, Inflow Depth = 0.35" for 10-yr event
Inflow = 0.09 cfs @ 12.69 hrs, Volume= 0.038 af
Primary = 0.09 cfs @ 12.69 hrs, Volume= 0.038 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-2: NORTHERN WETLAND AREA

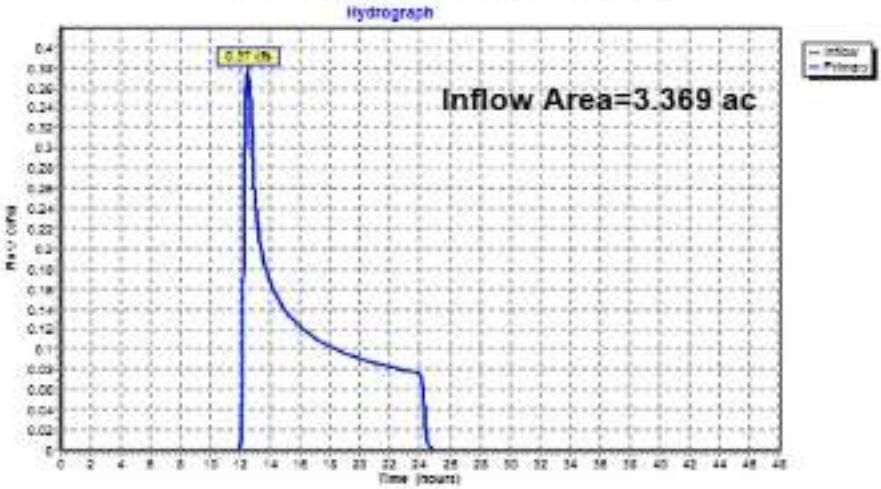


Summary for Link DP-3: NORTHEAST WETLAND AREA

Inflow Area = 3.369 ac, 0.00% Impervious, Inflow Depth = 0.45" for 10-yr event
Inflow = 0.37 cfs @ 12.49 hrs, Volume= 0.125 af
Primary = 0.37 cfs @ 12.49 hrs, Volume= 0.125 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-3: NORTHEAST WETLAND AREA

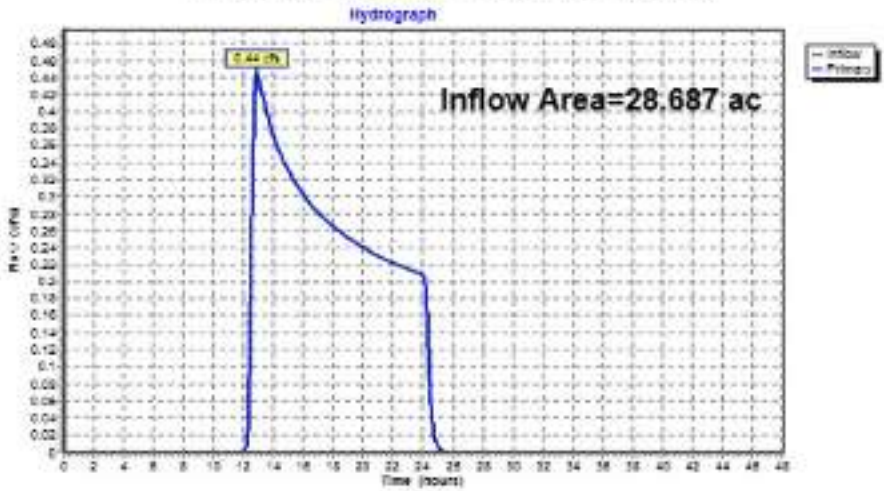


Summary for Link DP-4: STATE-OWNED STORMWATER BASIN

Inflow Area = 28.687 ac, 47.17% Impervious, Inflow Depth = 0.12" for 10-yr event
Inflow = 0.44 cfs @ 12.91 hrs, Volume= 0.276 af
Primary = 0.44 cfs @ 12.91 hrs, Volume= 0.276 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-4: STATE-OWNED STORMWATER BASIN

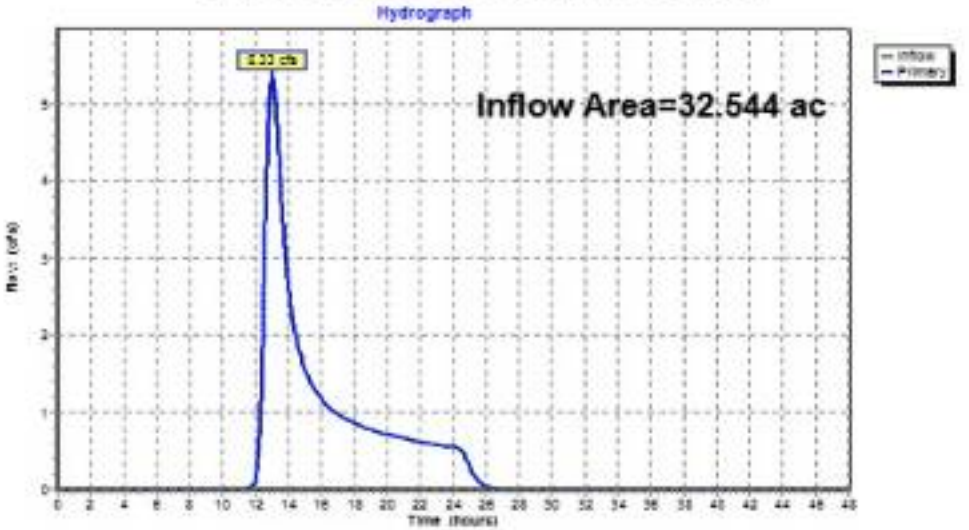


Summary for Link DP-5: STATE-OWNED DRAINAGE SYSTEM

Inflow Area = 32.544 ac, 42.41% Impervious, Inflow Depth = 0.51" for 10-yr event
Inflow = 5.33 cfs @ 13.05 hrs, Volume= 1.373 af
Primary = 5.33 cfs @ 13.05 hrs, Volume= 1.373 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-5: STATE-OWNED DRAINAGE SYSTEM



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentPDA-1A: PDA-1A Runoff Area=1,878,800 sf 0.00% Impervious Runoff Depth=0.09"
Tc=61.1 min CN=40 Runoff=0.04 cfs 0.332 af

SubcatchmentPDA-1B: PDA-1B Runoff Area=458,136 sf 86.47% Impervious Runoff Depth=5.31"
Flow Length=192' Tc=14.1 min CN=91 Runoff=47.99 cfs 4.654 af

SubcatchmentPDA-1C: PDA-1C Runoff Area=600,666 sf 80.42% Impervious Runoff Depth=5.05"
Flow Length=80' Slope=0.0200 '/' Tc=9.0 min CN=94 Runoff=67.06 cfs 5.410 af

SubcatchmentPDA-2: PDA-2 Runoff Area=56,562 sf 0.00% Impervious Runoff Depth=0.74"
Tc=25.5 min CN=42 Runoff=0.31 cfs 0.081 af

SubcatchmentPDA-3: PDA-3 Runoff Area=146,741 sf 0.00% Impervious Runoff Depth=0.65"
Flow Length=486' Tc=20.7 min CN=44 Runoff=1.24 cfs 0.247 af

SubcatchmentPDA-4A: PDA-4A Runoff Area=119,711 sf 80.39% Impervious Runoff Depth=4.97"
Flow Length=272' Tc=11.5 min CN=88 Runoff=19.50 cfs 0.847 af

SubcatchmentPDA-4B: PDA-4B Runoff Area=329,890 sf 2.06% Impervious Runoff Depth=0.91"
Flow Length=901' Tc=28.7 min CN=46 Runoff=1.89 cfs 0.623 af

SubcatchmentPDA-5A: PDA-5A Runoff Area=518,631 sf 95.22% Impervious Runoff Depth=5.31"
Flow Length=102' Slope=0.0422 '/' Tc=5.4 min CN=91 Runoff=69.04 cfs 5.248 af

SubcatchmentPDA-5D: PDA-5D Runoff Area=579,560 sf 0.21% Impervious Runoff Depth=1.90"
Tc=73.9 min CN=67 Runoff=8.02 cfs 2.105 af

SubcatchmentPDA-6C: PDA-6C Runoff Area=139,934 sf 67.96% Impervious Runoff Depth=4.32"
Flow Length=506' Tc=12.4 min CN=82 Runoff=13.21 cfs 1.157 af

SubcatchmentPDA-6D: PDA-6D Runoff Area=161,404 sf 26.32% Impervious Runoff Depth=2.52"
Flow Length=189' Tc=22.7 min CN=64 Runoff=7.12 cfs 0.779 af

Pond P-1B: (new Pond) Peak Elev=137.14' Storage=58,556 cf Inflow=47.99 cfs 4.654 af
Discarded=4.67 cfs 4.171 af Primary=3.85 cfs 0.483 af Outflow=8.52 cfs 4.654 af

Pond P-1C: UG SYSTEM Peak Elev=130.53' Storage=58,266 cf Inflow=67.06 cfs 5.410 af
Discarded=5.75 cfs 5.228 af Primary=1.72 cfs 0.182 af Outflow=7.47 cfs 5.410 af

Pond P-4A: SURFACE STORMWATER Peak Elev=129.19' Storage=74,356 cf Inflow=79.30 cfs 9.847 af
Discarded=12.59 cfs 9.047 af Primary=0.00 cfs 0.000 af Outflow=12.59 cfs 9.047 af

Pond P-5A: (new Pond) Peak Elev=134.09' Storage=70,220 cf Inflow=69.04 cfs 5.248 af
Discarded=4.90 cfs 4.876 af Primary=2.06 cfs 0.372 af Outflow=7.00 cfs 5.248 af

Pond P-5C: (new Pond) Peak Elev=138.45' Storage=14,888 cf Inflow=13.21 cfs 1.157 af
Discarded=1.51 cfs 1.053 af Primary=1.36 cfs 0.104 af Outflow=2.80 cfs 1.157 af

Pond P-5D: (new Pond) Peak Elev=140.43' Storage=9,579 cf Inflow=7.12 cfs 0.876 af
Discarded=1.20 cfs 0.763 af Primary=1.33 cfs 0.113 af Outflow=2.53 cfs 0.876 af

Link DP-1: WATERWORKS BROOK Inflow=11.08 cfs 3.107 af
Primary=11.08 cfs 3.107 af

Link DP-2: NORTHERN WETLAND AREA Inflow=0.31 cfs 0.081 af
Primary=0.31 cfs 0.081 af

Link DP-3: NORTHEAST WETLAND AREA Inflow=1.24 cfs 0.247 af
Primary=1.24 cfs 0.247 af

Link DP-4: STATE-OWNED STORMWATER BASIN Inflow=1.89 cfs 0.623 af
Primary=1.89 cfs 0.623 af

Link DP-5: STATE-OWNED DRAINAGE SYSTEM Inflow=12.77 cfs 2.694 af
Primary=12.77 cfs 2.694 af

Total Runoff Area = 130.933 ac Runoff Volume = 29.688 af Average Runoff Depth = 2.72"
64.06% Pervious = 83.875 ac 35.94% Impervious = 47.058 ac

Summary for Subcatchment PDA-1A: PDA-1A

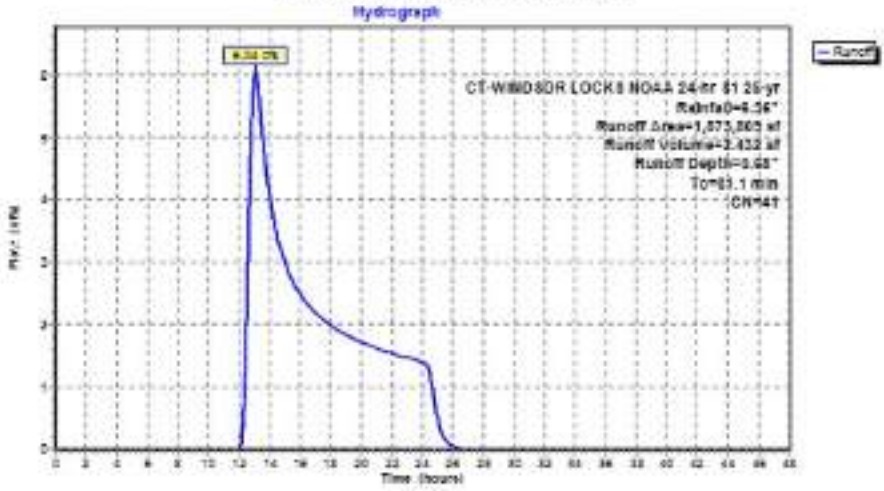
Runoff = 6.04 cfs @ 13.10 hrs, Volume= 2.432 af, Depth= 0.68"
Routed to Link DP-1 : WATERWORKS BROOK

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 25-yr Rainfall=6.36"

Area (sf)	CN	Description
115,427	49	50-75% Grass cover, Fair, HSG A
1,436,860	36	Woods, Fair, HSG A
79,036	60	Woods, Fair, HSG B
242,486	59	Farmsteads, HSG A
1,873,809	41	Weighted Average
1,873,809	41	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
61.1					Direct Entry, TC

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

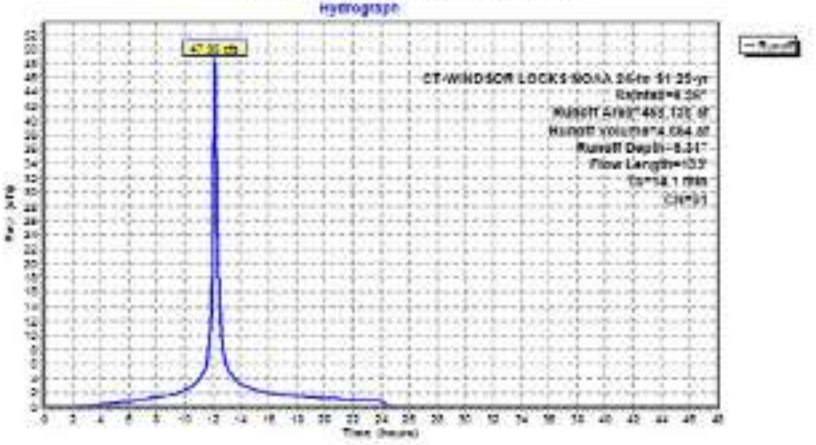
Runoff = 47.99 cfs @ 12.14 hrs, Volume= 4.654 af, Depth= 5.31"
Routed to Pond P-1B : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 25-yr Rainfall=6.36"

Area (sf)	CN	Description
62,001	49	50-75% Grass cover, Fair, HSG A
396,135	98	Paved parking, HSG A
458,136	91	Weighted Average
62,001	49	13.53% Pervious Area
396,135	98	86.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0150	0.15		Sheet Flow, GRASS Grass: Short n= 0.150 P2= 3.22"
3.1	93	0.0050	0.49		Shallow Concentrated Flow, GRASS Short Grass Pasture Kv= 7.0 fps
14.1	193	Total			

Subcatchment PDA-1B: PDA-1B



Summary for Subcatchment PDA-1C: PDA-1C

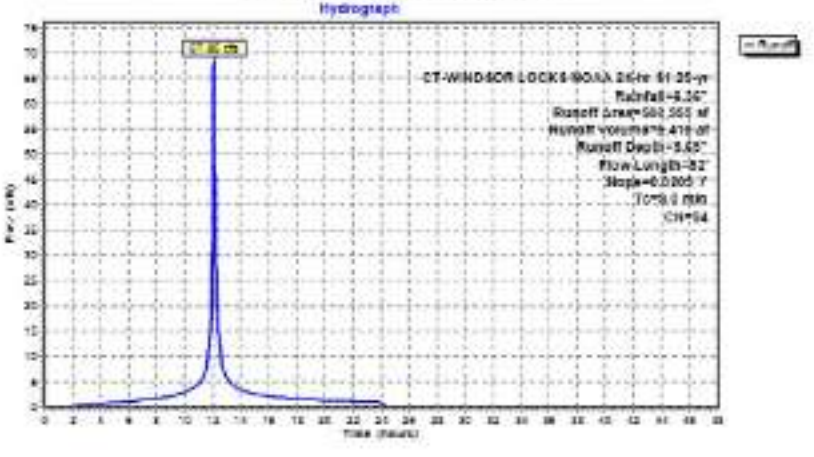
Runoff = 67.86 cfs @ 12.07 hrs, Volume= 5.418 af, Depth= 5.65"
Routed to Pond P-1C : UG SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 25-yr Rainfall=6.36"

Area (sf)	CN	Description
37,989	49	50-75% Grass cover, Fair, HSG A
462,966	98	Paved parking, HSG A
500,955	94	Weighted Average
37,989	49	7.58% Pervious Area
462,966	98	92.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	92	0.0205	0.17		Sheet Flow, GRASS Grass: Short n= 0.150 P2= 3.22"

Subcatchment PDA-1C: PDA-1C



Summary for Subcatchment PDA-2: PDA-2

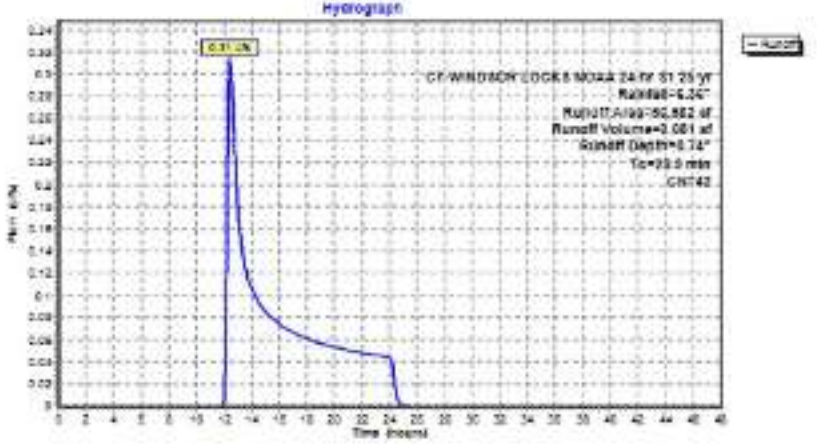
Runoff = 0.31 cfs @ 12.44 hrs, Volume= 0.081 af, Depth= 0.74"
Routed to Link DP-2 : NORTHERN WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 25-yr Rainfall=6.36"

Area (sf)	CN	Description
27,598	49	50-75% Grass cover, Fair, HSG A
28,984	36	Woods, Fair, HSG A
56,582	42	Weighted Average
56,582	42	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.5					Direct Entry, TC

Subcatchment PDA-2: PDA-2



Summary for Subcatchment PDA-3: PDA-3

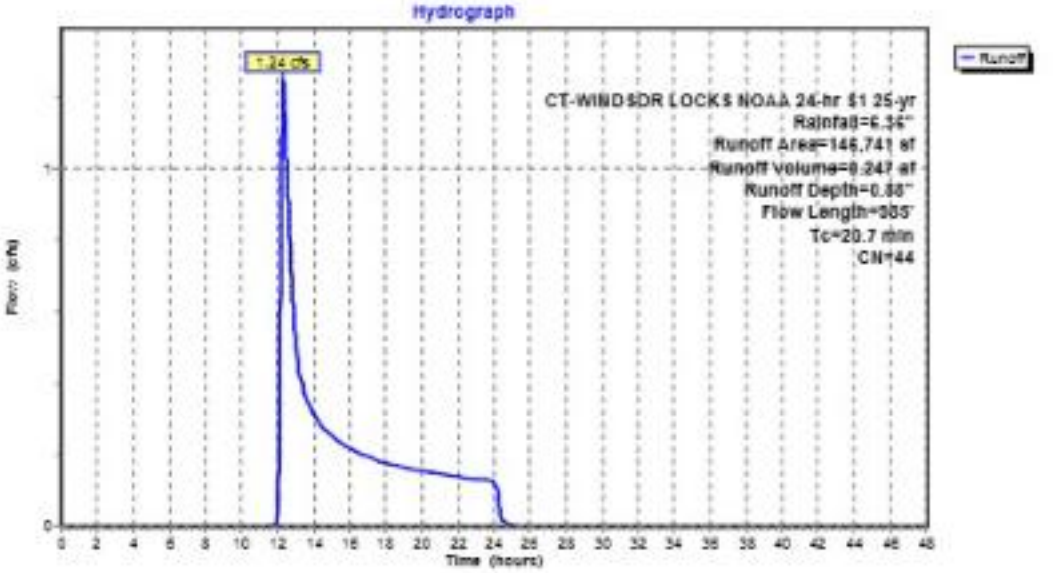
Runoff = 1.24 cfs @ 12.31 hrs, Volume= 0.247 af, Depth= 0.88"
Routed to Link DP-3 : NORTHEAST WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 25-yr Rainfall=6.36"

Area (sf)	CN	Description
57,064	49	50-75% Grass cover, Fair, HSG A
72,106	36	Woods, Fair, HSG A
17,571	60	Woods, Fair, HSG B
146,741	44	Weighted Average
146,741	44	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0267	0.19		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
2.0	118	0.0197	0.98		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
3.3	341	0.0599	1.71		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
0.7	61	0.0854	1.46		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
2.5	203	0.0707	1.33		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
3.5	162	0.0235	0.77		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
20.7	985	Total			

Subcatchment PDA-3: PDA-3



Summary for Subcatchment PDA-4A: PDA-4A

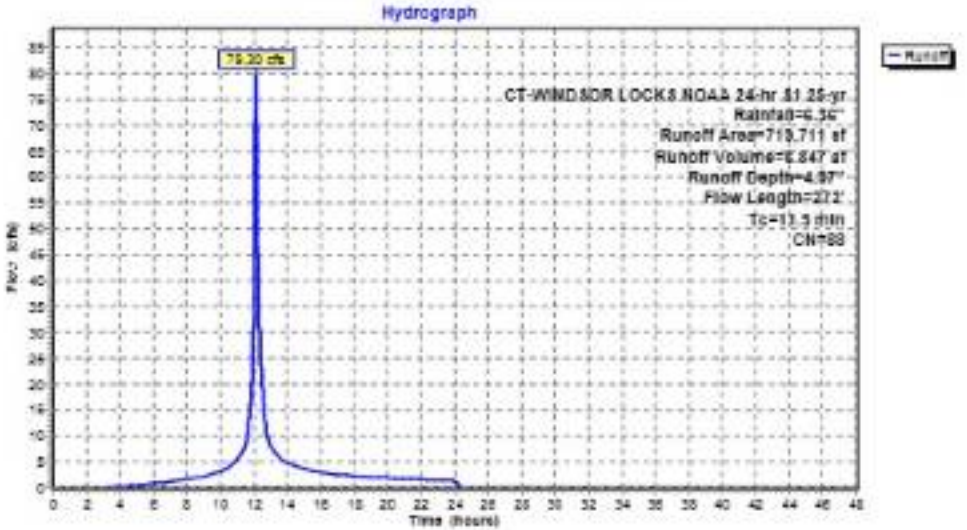
Runoff = 79.30 cfs @ 12.10 hrs, Volume= 6.847 af, Depth= 4.97"
Routed to Pond P-4A : SURFACE STORMWATER BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 25-yr Rainfall=6.36"

Area (sf)	CN	Description
141,156	49	50-75% Grass cover, Fair, HSG A
578,555	98	Paved parking, HSG A
719,711	88	Weighted Average
141,156	49	19.61% Pervious Area
578,555	98	80.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	18	0.1555	0.28		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
7.9	82	0.0226	0.17		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
2.1	136	0.0232	1.07		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
0.1	12	0.1667	2.86		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
0.3	24	0.0416	1.43		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
11.5	272	Total			

Subcatchment PDA-4A: PDA-4A



Summary for Subcatchment PDA-4B: PDA-4B

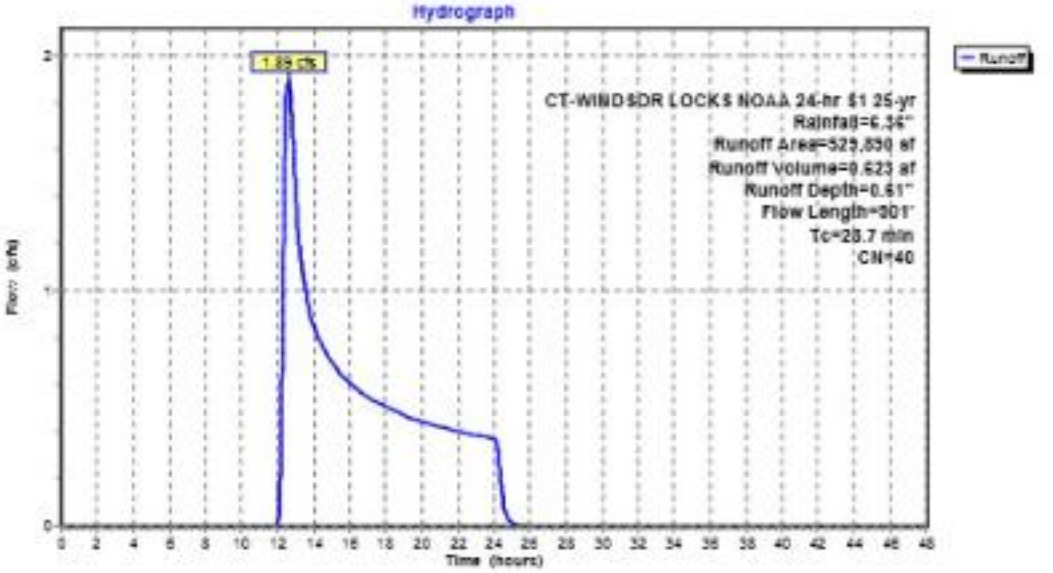
Runoff = 1.89 cfs @ 12.59 hrs, Volume= 0.623 af, Depth= 0.61"
Routed to Link DP-4 : STATE-OWNED STORMWATER BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 25-yr Rainfall=6.36"

Area (sf)	CN	Description
104,160	49	50-75% Grass cover, Fair, HSG A
412,529	36	Woods, Fair, HSG A
2,260	60	Woods, Fair, HSG B
10,941	98	Paved parking, HSG A
529,890	40	Weighted Average
518,949	39	97.94% Pervious Area
10,941	98	2.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0116	0.14		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
6.7	307	0.0119	0.76		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
0.8	41	0.0327	0.90		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
0.3	41	0.1951	2.21		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
8.8	412	0.0243	0.78		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
28.7	901	Total			

Subcatchment PDA-4B: PDA-4B



Summary for Subcatchment PDA-5A: PDA-5A

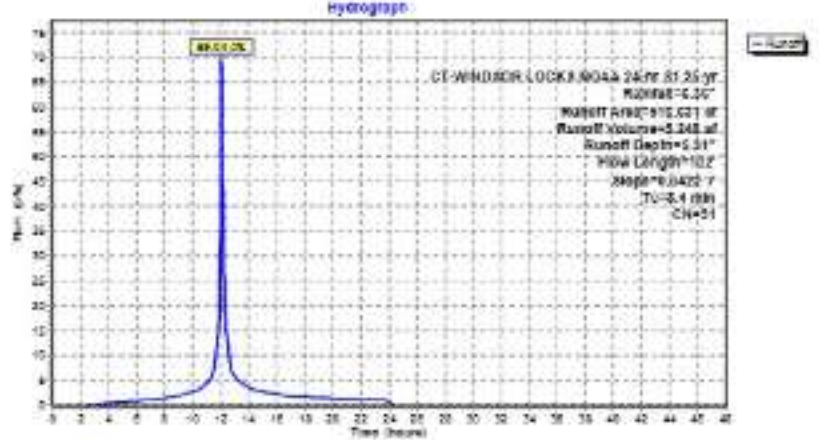
Runoff = 60.04 cfs @ 12.06 hrs, Volume= 5.248 af, Depth= 5.31"
Routed to Pond P-5A : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 25-yr Rainfall=6.36"

Area (sf)	CN	Description
75,817	49	50-75% Grass cover, Fair, HSG A
440,814	98	Paved parking, HSG A
516,631	91	Weighted Average
75,817	49	14.68% Pervious Area
440,814	98	85.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	102	0.0422	0.23		Sheet Flow, GRASS Grass: Short n= 0.150 P2= 3.22"
1.0					Direct Entry, SHALLOW
8.4	102	Total			

Subcatchment PDA-5A: PDA-5A



Summary for Subcatchment PDA-5B: PDA-5B

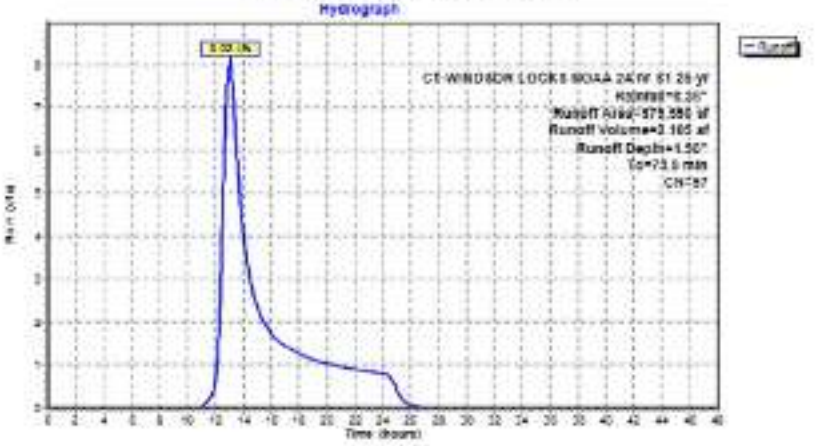
Runoff = 8.02 cfs @ 13.05 hrs, Volume= 2.105 af, Depth= 1.90"
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 25-yr Rainfall=6.36"

Area (sf)	CN	Description
336,170	49	50-75% Grass cover, Fair, HSG A
232,035	69	50-75% Grass cover, Fair, HSG B
9,363	36	Woods, Fair, HSG A
1,222	98	Paved parking, HSG A
579,590	57	Weighted Average
578,368	57	99.79% Pervious Area
1,222	98	0.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
73.9					Direct Entry, TC

Subcatchment PDA-5B: PDA-5B



Summary for Subcatchment PDA-5C: PDA-5C

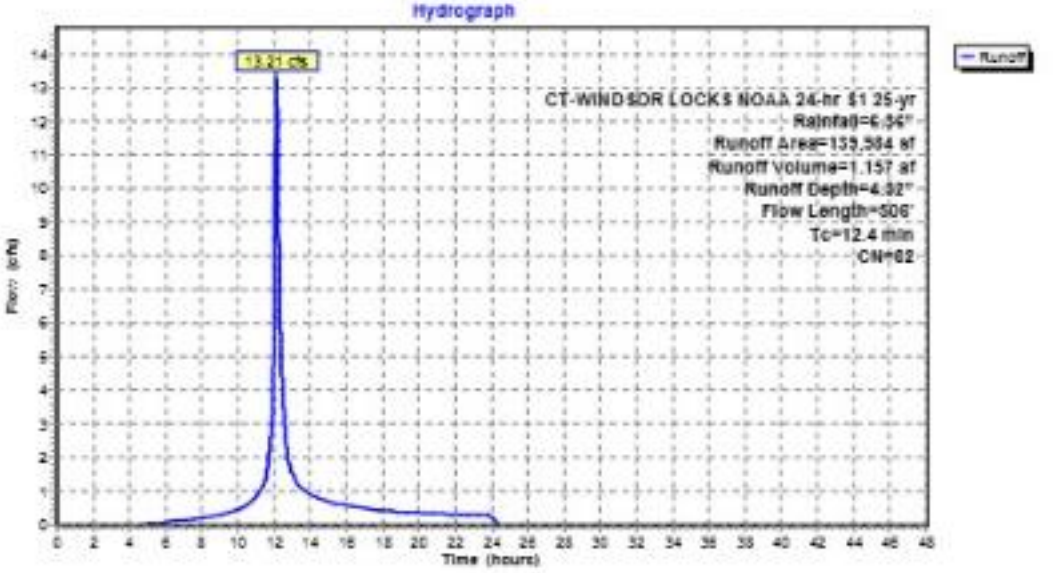
Runoff = 13.21 cfs @ 12.12 hrs, Volume= 1.157 af, Depth= 4.32"
Routed to Pond P-5C : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 25-yr Rainfall=6.36"

Area (sf)	CN	Description
95,137	98	Paved parking, HSG A
44,847	49	50-75% Grass cover, Fair, HSG A
139,984	82	Weighted Average
44,847	49	32.04% Pervious Area
95,137	98	67.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	82	0.0122	0.13		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
0.9	131	0.0153	2.51		**Shallow Concentrated Flow, PAVEMENT** Paved Kv= 20.3 fps
0.7	166	0.0051	4.07	5.00	**Pipe Channel, 15" PIPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
0.5	111	0.0050	4.03	4.95	**Pipe Channel, 15" PIPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
0.1	16	0.0056	4.82	8.52	**Pipe Channel, 18" PIPE** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
12.4	506	Total			

Subcatchment PDA-5C: PDA-5C



Summary for Subcatchment PDA-5D: PDA-5D

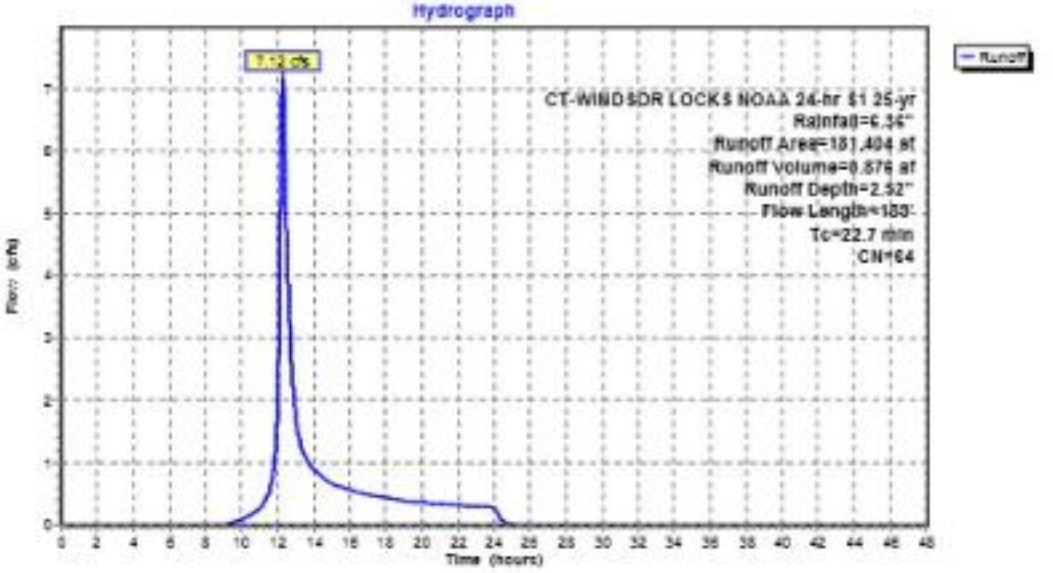
Runoff = 7.12 cfs @ 12.28 hrs, Volume= 0.876 af, Depth= 2.52"
Routed to Pond P-5D : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 25-yr Rainfall=6.36"

Area (sf)	CN	Description
75,856	49	50-75% Grass cover, Fair, HSG A
1,810	69	50-75% Grass cover, Fair, HSG B
39,371	36	Woods, Fair, HSG A
299	60	Woods, Fair, HSG B
64,068	98	Paved parking, HSG A
181,404	64	Weighted Average
117,336	45	64.68% Pervious Area
64,068	98	35.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.9	66	0.0158	0.07		**Sheet Flow, WOODS** Woods: Light underbrush n= 0.400 P2= 3.22"
5.7	45	0.0153	0.13		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
0.1	78	0.0250	10.18	17.99	**Pipe Channel, PIPE** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
22.7	189	Total			

Subcatchment PDA-5D: PDA-5D



Summary for Pond P-1B: (new Pond)

Inflow Area = 10.517 ac, 86.47% Impervious, Inflow Depth = 5.31" for 25-yr event
Inflow = 47.99 cfs @ 12.14 hrs, Volume= 4.654 af
Outflow = 8.52 cfs @ 12.72 hrs, Volume= 4.654 af, Atten= 82%, Lag= 34.7 min
Discarded = 4.67 cfs @ 12.72 hrs, Volume= 4.171 af
Primary = 3.85 cfs @ 12.72 hrs, Volume= 0.483 af
Routed to Link DP-1 : WATERWORKS BROOK

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 137.14' @ 12.72 hrs Surf Area= 24,378 sf Storage= 69,556 cf

Plug-Flow detention time= 116.5 min calculated for 4.653 af (100% of inflow)
Center-of-Mass det. time= 116.4 min (911.5 - 795.0)

Volume	Invert	Avail.Storage	Storage Description
#1	133.00'	293,903 cf	Custom Stage Data (Prismatic)Listed below (Recalc)

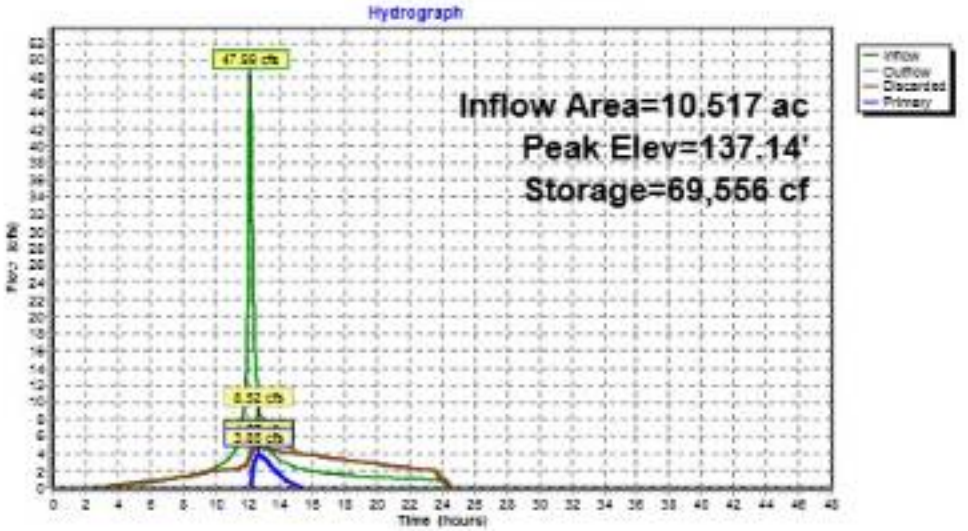
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.00	10,167	0	0
134.00	13,066	11,627	11,627
135.00	16,294	14,680	26,307
136.00	19,869	18,082	44,388
137.00	23,787	21,828	66,216
138.00	28,048	25,918	92,134
139.00	32,651	30,350	122,483
140.00	37,533	35,092	157,575
141.00	42,714	40,124	197,699
142.00	48,072	45,393	243,092
143.00	53,550	50,811	293,903

Device	Routing	Invert	Outlet Devices
#1	Discarded	133.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	136.00'	15.0" Round Culvert L= 400.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 134.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Discarded OutFlow Max=4.67 cfs @ 12.72 hrs HW=137.14' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 4.67 cfs)

Primary OutFlow Max=3.85 cfs @ 12.72 hrs HW=137.14' (Free Discharge)
└**2=Culvert** (Barrel Controls 3.85 cfs @ 4.31 fps)

Pond P-1B: (new Pond)



Summary for Pond P-1C: UG SYSTEM

Inflow Area = 11.500 ac, 92.42% Impervious, Inflow Depth = 5.65" for 25-yr event
Inflow = 67.86 cfs @ 12.07 hrs, Volume= 5.416 af
Outflow = 7.47 cfs @ 12.74 hrs, Volume= 5.416 af, Atten= 89%, Lag= 40.1 min
Discarded = 5.75 cfs @ 11.37 hrs, Volume= 5.226 af
Primary = 1.72 cfs @ 12.74 hrs, Volume= 0.192 af
Routed to Link DP-1 : WATERWORKS BROOK

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 130.53' @ 12.74 hrs Surf Area= 30,055 sf Storage= 68,266 cf

Plug-Flow detention time= 69.6 min calculated for 5.417 af (100% of inflow)
Center-of-Mass det. time= 68.6 min (844.5 - 774.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	128.00'	0 cf	**72.67'W x 413.60'L x 5.50'H Field A** 165,304 cf Overall - 165,304 cf Embedded = 0 cf x 40.0% Voids
#2A	128.00'	134,711 cf	**StormTrap SingleTrap 5-0 x 182 Inside #1** Inside= 101.7'W x 90.0'H => 38.33 sf x 15.40'L = 590.2 cf Outside= 101.7'W x 86.0'H => 46.84 sf x 15.40'L = 718.0 cf 182 Chambers in 7 Rows 59.35' x 400.29' Core + 6.66' Border = 72.67' x 413.60' System
		134,711 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	129.80'	**12.0" Round Culvert** L= 110.0' Ke= 0.500 Inlet / Outlet Invert= 129.80' / 129.00' S= 0.0073 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Discarded	128.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=5.75 cfs @ 11.37 hrs HW=128.06' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 5.75 cfs)

Primary OutFlow Max=1.72 cfs @ 12.74 hrs HW=130.53' (Free Discharge)
└**1=Culvert** (Barrel Controls 1.72 cfs @ 3.87 fps)

Pond P-1C: UG SYSTEM - Chamber Wizard Field A

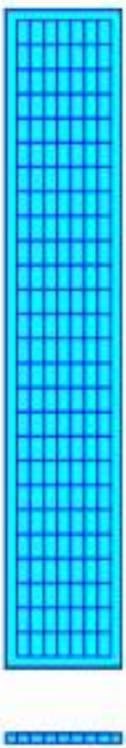
Chamber Model = StormTrap SingleTrap 5-0 (StormTrap SingleTrap® Type II+IV)
Inside= 101.7"W x 60.0"H => 38.33 sf x 15.40'L = 590.2 cf
Outside= 101.7"W x 66.0"H => 46.64 sf x 15.40'L = 718.0 cf

26 Chambers/Row x 15.40' Long = 400.29' Row Length +79.9" Border x 2 = 413.60' Base Length
7 Rows x 101.7" Wide + 79.9" Side Border x 2 = 72.67' Base Width
66.0" Chamber Height = 5.50' Field Height

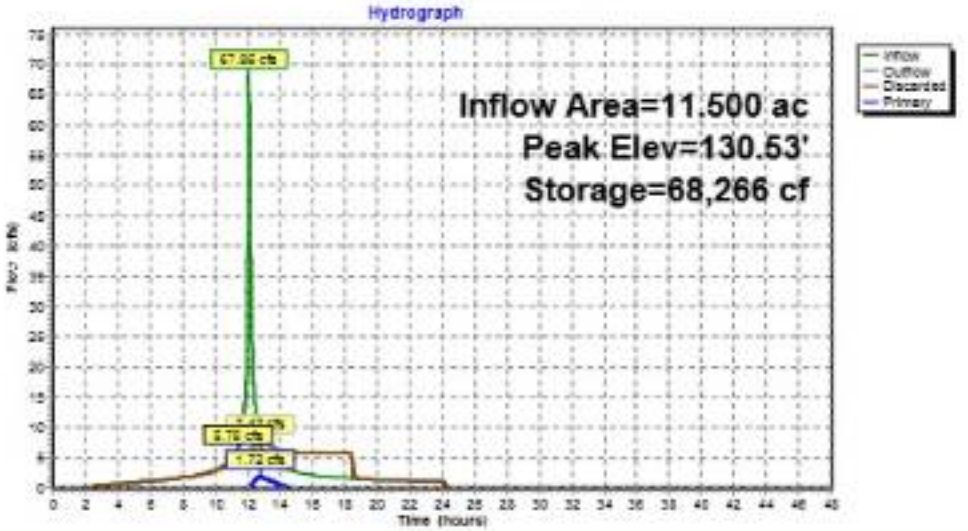
182 Chambers x 590.2 cf + 27,298.0 cf Border = 134,711.2 cf Chamber Storage
182 Chambers x 718.0 cf + 34,629.4 cf Border = 165,303.8 cf Displacement

Chamber Storage = 134,711.2 cf = 3.093 af
Overall Storage Efficiency = 81.5%
Overall System Size = 413.60' x 72.67' x 5.50'

182 Chambers (plus border)
6,122.4 cy Field



Pond P-1C: UG SYSTEM



Summary for Pond P-4A: SURFACE STORMWATER BASIN

Inflow Area = 16.522 ac, 80.39% Impervious, Inflow Depth = 4.97" for 25-yr event
Inflow = 79.30 cfs @ 12.10 hrs, Volume= 6.847 af
Outflow = 12.69 cfs @ 12.68 hrs, Volume= 6.847 af, Atten= 84%, Lag= 34.4 min
Discarded = 12.69 cfs @ 12.68 hrs, Volume= 6.847 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link DP-4 : STATE-OWNED STORMWATER BASIN

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 126.19' @ 12.68 hrs Surf Area= 66,291 sf Storage= 74,358 cf

Plug-Flow detention time= 35.0 min calculated for 6.846 af (100% of inflow)
Center-of-Mass det. time= 35.0 min (840.8 - 805.7)

Volume	Invert	Avail.Storage	Storage Description
#1	125.00'	287,186 cf	Custom Stage Data (Prismatic)Listed below (Recalc)

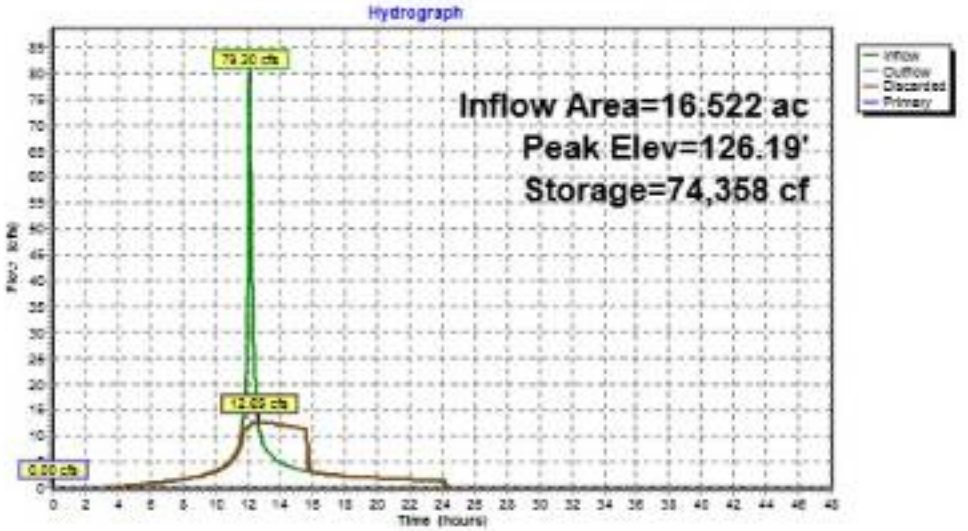
Elevation (feet)	Surf Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.00	58,672	0	0
126.00	65,036	61,854	61,854
127.00	71,627	68,332	130,186
128.00	78,444	75,036	205,221
129.00	85,486	81,965	287,186

Device	Routing	Invert	Outlet Devices
#1	Primary	126.30'	12.0" Round Culvert L= 42.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 126.30' / 126.00' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Discarded	125.00'	8.270 in/hr Exfiltration over Surface area

Discarded OutFlow Max=12.69 cfs @ 12.68 hrs HW=126.19' (Free Discharge)
└2=Exfiltration (Exfiltration Controls 12.69 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=125.00' (Free Discharge)
└1=Culvert (Controls 0.00 cfs)

Pond P-4A: SURFACE STORMWATER BASIN



Summary for Pond P-5A: (new Pond)

Inflow Area = 11.860 ac, 85.32% Impervious, Inflow Depth = 5.31" for 25-yr event
Inflow = 69.04 cfs @ 12.06 hrs, Volume= 5.248 af
Outflow = 7.56 cfs @ 12.73 hrs, Volume= 5.248 af, Atten= 89%, Lag= 39.7 min
Discarded = 4.90 cfs @ 11.22 hrs, Volume= 4.876 af
Primary = 2.66 cfs @ 12.73 hrs, Volume= 0.372 af
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 134.06' @ 12.73 hrs Surf Area= 25,580 sf Storage= 70,225 cf

Plug-Flow detention time= 84.0 min calculated for 5.247 af (100% of inflow)
Center-of-Mass det. time= 84.0 min (873.7 - 789.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	131.00'	0 cf	**72.67'W x 352.02'L x 5.50'H Field A** 140,691 cf Overall - 140,691 cf Embedded = 0 cf x 40.0% Voids
#2A	131.00'	114,632 cf	**StormTrap SingleTrap 5-0 x 154 Inside #1** Inside= 101.7'W x 90.0'H => 38.33 sf x 15.40'L = 590.2 cf Outside= 101.7'W x 86.0'H => 46.84 sf x 15.40'L = 718.0 cf 154 Chambers in 7 Rows 59.35' x 336.71' Core + 6.66' Border = 72.67' x 352.02' System
		114,632 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	131.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	133.00'	**12.0" Round Culvert** L= 179.0' Ke= 0.500 Inlet / Outlet Invert= 133.00' / 132.00' S= 0.0056 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=4.90 cfs @ 11.22 hrs HW=131.06' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 4.90 cfs)

Primary OutFlow Max=2.66 cfs @ 12.73 hrs HW=134.06' (Free Discharge)
└**2=Culvert** (Barrel Controls 2.66 cfs @ 3.36 fps)

Pond P-5A: (new Pond) - Chamber Wizard Field A

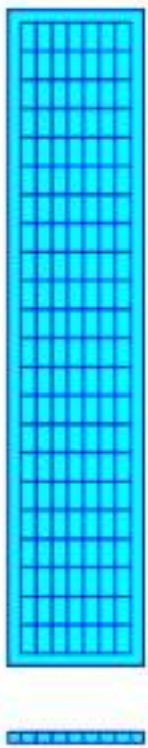
Chamber Model = StormTrap SingleTrap 5-0 (StormTrap SingleTrap® Type II+IV)
Inside= 101.7"W x 60.0"H => 38.33 sf x 15.40'L = 590.2 cf
Outside= 101.7"W x 66.0"H => 46.64 sf x 15.40'L = 718.0 cf

22 Chambers/Row x 15.40' Long = 338.71' Row Length +79.9" Border x 2 = 352.02' Base Length
7 Rows x 101.7" Wide + 79.9" Side Border x 2 = 72.67' Base Width
66.0" Chamber Height = 5.50' Field Height

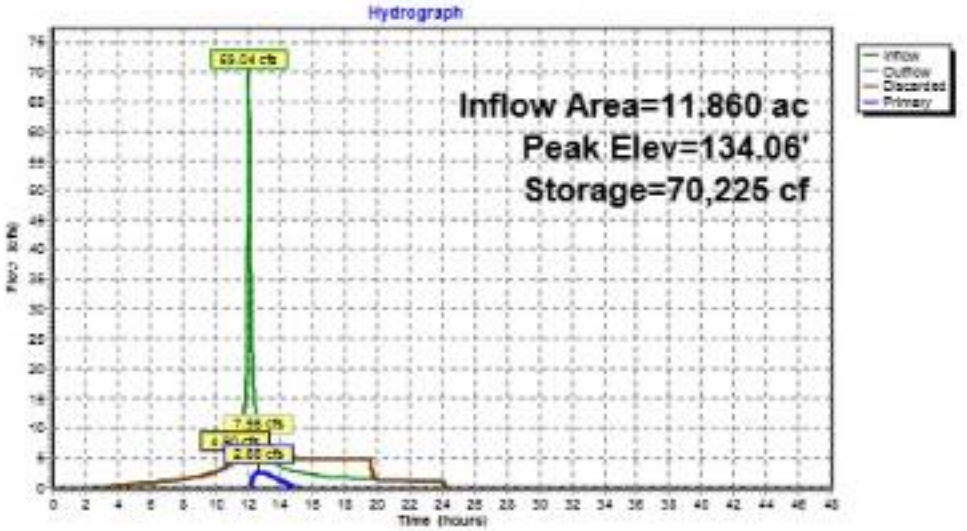
154 Chambers x 590.2 cf + 23,743.6 cf Border = 114,631.6 cf Chamber Storage
154 Chambers x 718.0 cf + 30,120.4 cf Border = 140,691.0 cf Displacement

Chamber Storage = 114,631.6 cf = 2.632 af
Overall Storage Efficiency = 81.5%
Overall System Size = 352.02' x 72.67' x 5.50'

154 Chambers (plus border)
5,210.8 cy Field



Pond P-5A: (new Pond)



Summary for Pond P-5C: (new Pond)

Inflow Area = 3.214 ac, 67.96% Impervious, Inflow Depth = 4.32" for 25-yr event
Inflow = 13.21 cfs @ 12.12 hrs, Volume= 1.157 af
Outflow = 2.80 cfs @ 12.61 hrs, Volume= 1.157 af, Atten= 79%, Lag= 29.8 min
Discarded = 1.51 cfs @ 12.61 hrs, Volume= 1.053 af
Primary = 1.29 cfs @ 12.61 hrs, Volume= 0.104 af
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 138.45' @ 12.61 hrs Surf Area= 7,871 sf Storage= 14,883 cf

Plug-Flow detention time= 68.1 min calculated for 1.157 af (100% of inflow)
Center-of-Mass det. time= 68.1 min (897.9 - 829.9)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	53,207 cf	Custom Stage Data (Prismatic)Listed below (Recalc)

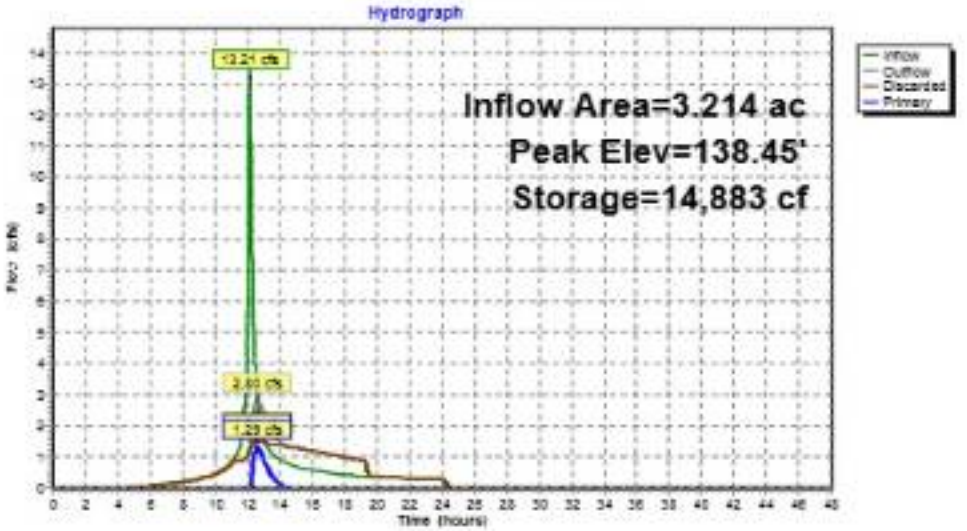
Elevation (feet)	Surf Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
136.00	4,393	0	0
137.00	5,709	5,051	5,051
138.00	7,177	6,443	11,494
139.00	8,719	7,948	19,442
140.00	10,338	9,529	28,971
141.00	12,034	11,186	40,157
142.00	14,066	13,050	53,207

Device	Routing	Invert	Outlet Devices
#1	Discarded	136.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	137.80'	**12.0" Round Culvert** L= 246.0' Ke= 0.500 Inlet / Outlet Invert= 137.80' / 136.50' S= 0.0053 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=1.51 cfs @ 12.61 hrs HW=138.45' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 1.51 cfs)

Primary OutFlow Max=1.29 cfs @ 12.61 hrs HW=138.45' (Free Discharge)
↑**2=Culvert** (Barrel Controls 1.29 cfs @ 3.36 fps)

Pond P-5C: (new Pond)



Summary for Pond P-5D: (new Pond)

Inflow Area = 4.164 ac, 35.32% Impervious, Inflow Depth = 2.52" for 25-yr event
Inflow = 7.12 cfs @ 12.28 hrs, Volume= 0.876 af
Outflow = 2.53 cfs @ 12.76 hrs, Volume= 0.876 af, Atten= 64%, Lag= 30.1 min
Discarded = 1.20 cfs @ 12.76 hrs, Volume= 0.763 af
Primary = 1.33 cfs @ 12.76 hrs, Volume= 0.113 af
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 140.43' @ 12.76 hrs Surf Area= 6,289 sf Storage= 9,579 cf

Plug-Flow detention time= 53.5 min calculated for 0.876 af (100% of inflow)
Center-of-Mass det. time= 53.5 min (947.3 - 893.8)

Volume	Invert	Avail.Storage	Storage Description
#1	138.50'	69,891 cf	Custom Stage Data (Prismatic)Listed below (Recalc)

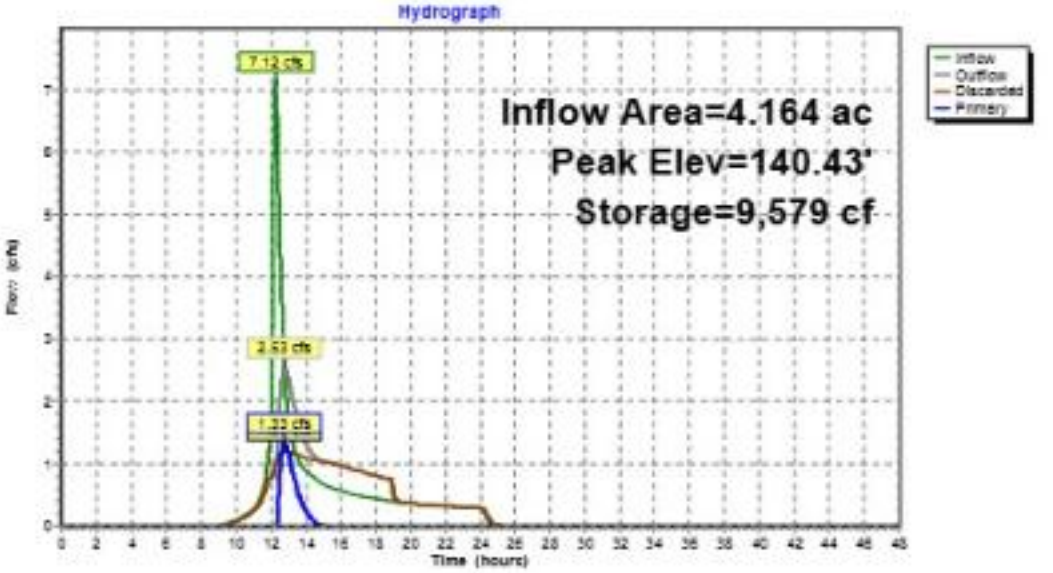
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.50	3,739	0	0
139.00	4,351	2,023	2,023
140.00	5,672	5,012	7,034
141.00	7,121	6,397	13,431
142.00	8,669	7,895	21,326
143.00	10,317	9,493	30,819
144.00	12,066	11,192	42,010
145.00	13,915	12,991	55,001
146.00	15,865	14,890	69,891

Device	Routing	Invert	Outlet Devices
#1	Discarded	138.50'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	139.75'	**12.0" Round Culvert** L= 102.0' Ke= 0.500 Inlet / Outlet Invert= 139.75' / 139.20' S= 0.0054 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=1.20 cfs @ 12.76 hrs HW=140.43' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 1.20 cfs)

Primary OutFlow Max=1.33 cfs @ 12.76 hrs HW=140.43' (Free Discharge)
└**2=Culvert** (Barrel Controls 1.33 cfs @ 3.32 fps)

Pond P-5D: (new Pond)

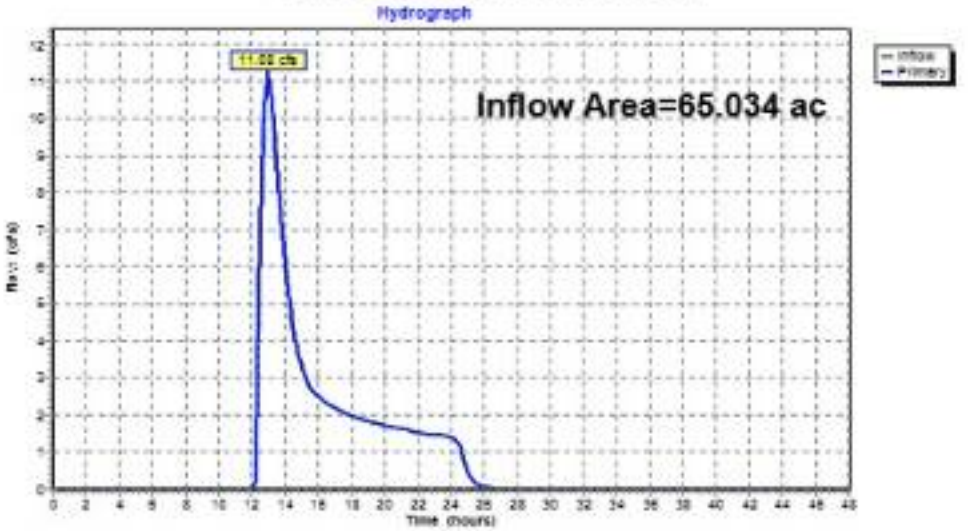


Summary for Link DP-1: WATERWORKS BROOK

Inflow Area = 65.034 ac, 30.33% Impervious, Inflow Depth = 0.57" for 25-yr event
Inflow = 11.08 cfs @ 12.97 hrs, Volume= 3.107 af
Primary = 11.08 cfs @ 12.97 hrs, Volume= 3.107 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-1: WATERWORKS BROOK

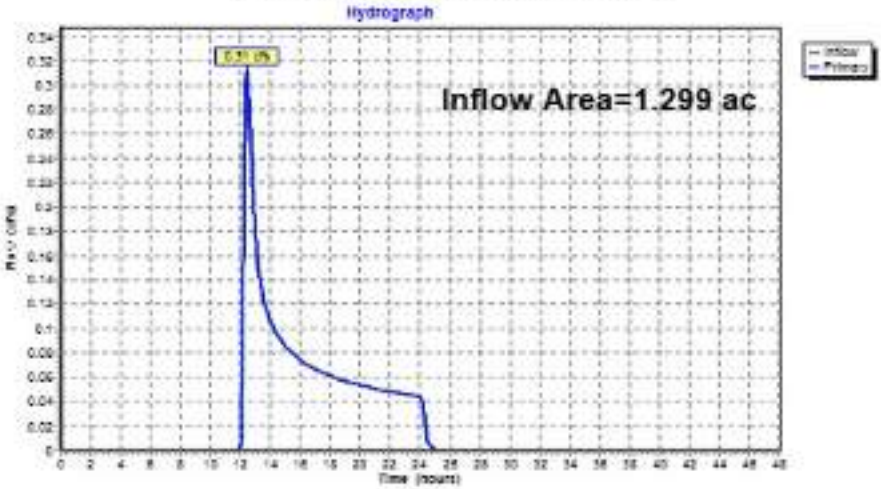


Summary for Link DP-2: NORTHERN WETLAND AREA

Inflow Area = 1.299 ac, 0.00% Impervious, Inflow Depth = 0.74" for 25-yr event
Inflow = 0.31 cfs @ 12.44 hrs, Volume= 0.081 af
Primary = 0.31 cfs @ 12.44 hrs, Volume= 0.081 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-2: NORTHERN WETLAND AREA

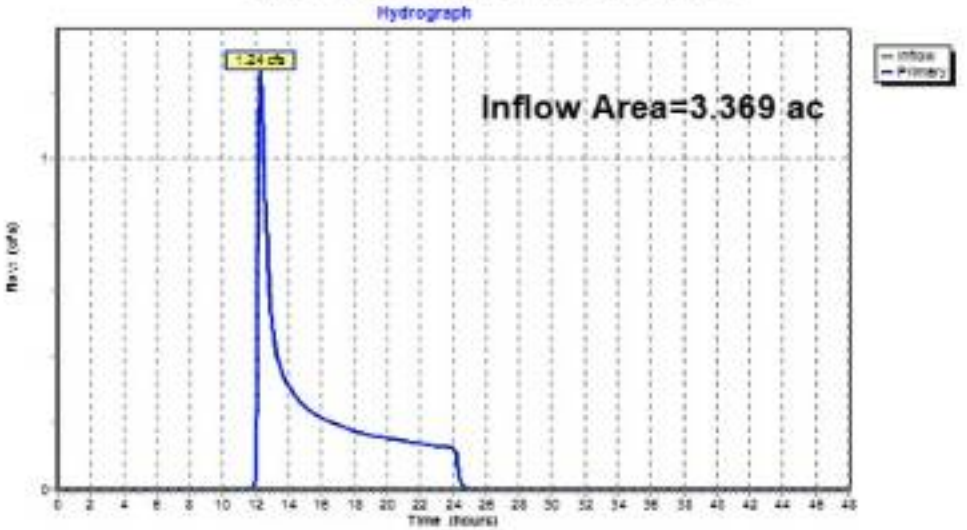


Summary for Link DP-3: NORTHEAST WETLAND AREA

Inflow Area = 3.369 ac, 0.00% Impervious, Inflow Depth = 0.88" for 25-yr event
Inflow = 1.24 cfs @ 12.31 hrs, Volume= 0.247 af
Primary = 1.24 cfs @ 12.31 hrs, Volume= 0.247 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-3: NORTHEAST WETLAND AREA

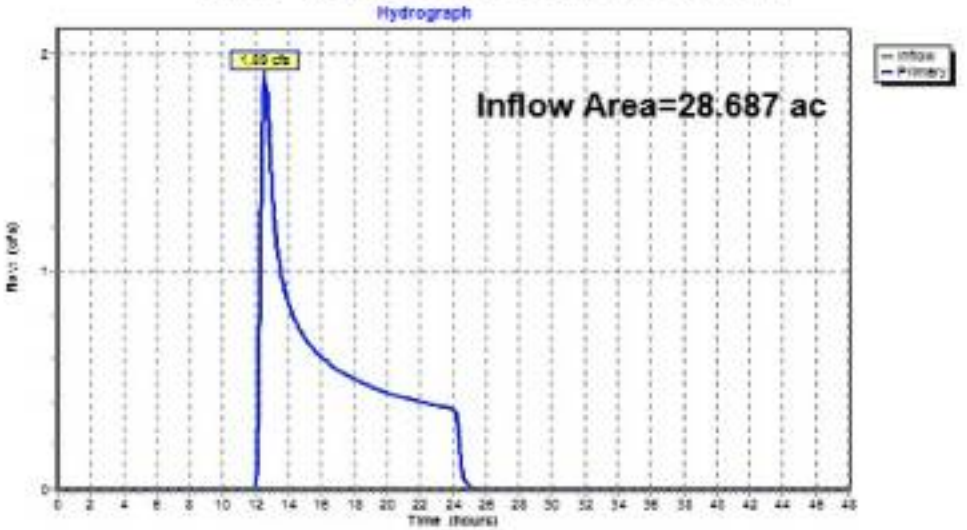


Summary for Link DP-4: STATE-OWNED STORMWATER BASIN

Inflow Area = 28.687 ac, 47.17% Impervious, Inflow Depth = 0.26" for 25-yr event
Inflow = 1.89 cfs @ 12.59 hrs, Volume= 0.623 af
Primary = 1.89 cfs @ 12.59 hrs, Volume= 0.623 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-4: STATE-OWNED STORMWATER BASIN

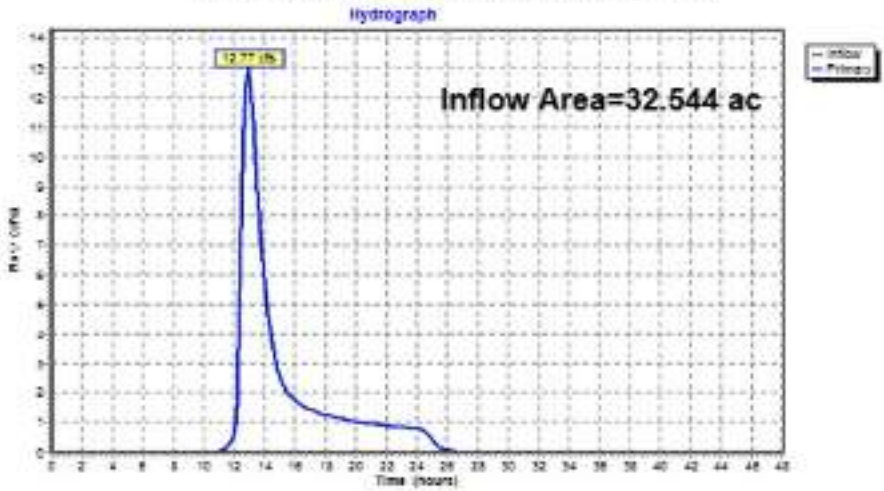


Summary for Link DP-5: STATE-OWNED DRAINAGE SYSTEM

Inflow Area = 32.544 ac, 42.41% Impervious, Inflow Depth = 0.99" for 25-yr event
Inflow = 12.77 cfs @ 12.89 hrs, Volume= 2.694 af
Primary = 12.77 cfs @ 12.89 hrs, Volume= 2.694 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-5: STATE-OWNED DRAINAGE SYSTEM



Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentPDA-1A: PDA-1A Runoff Area=1,878,809 sf 0.00% Impervious Runoff Depth=1.40"
Tc=61.1 min CN=41 Runoff=17.70 cfs 5.194 af

SubcatchmentPDA-1B: PDA-1B Runoff Area=458,136 sf 86.47% Impervious Runoff Depth=7.14"
Flow Length=192' Tc=14.1 min CN=91 Runoff=82.26 cfs 6.259 af

SubcatchmentPDA-1C: PDA-1C Runoff Area=600,866 sf 80.42% Impervious Runoff Depth=7.00"
Flow Length=80' Slope=0.0200 '/' Tc=9.0 min CN=94 Runoff=66.92 cfs 7.166 af

SubcatchmentPDA-2: PDA-2 Runoff Area=56,562 sf 0.00% Impervious Runoff Depth=1.95"
Tc=25.5 min CN=42 Runoff=0.98 cfs 0.067 af

SubcatchmentPDA-3: PDA-3 Runoff Area=146,741 sf 0.00% Impervious Runoff Depth=1.12"
Flow Length=486' Tc=20.7 min CN=44 Runoff=3.38 cfs 0.491 af

SubcatchmentPDA-4A: PDA-4A Runoff Area=719,711 sf 80.39% Impervious Runoff Depth=6.78"
Flow Length=272' Tc=11.6 min CN=88 Runoff=104.35 cfs 9.340 af

SubcatchmentPDA-4B: PDA-4B Runoff Area=529,890 sf 2.06% Impervious Runoff Depth=1.95"
Flow Length=901' Tc=28.7 min CN=42 Runoff=9.66 cfs 1.976 af

SubcatchmentPDA-5A: PDA-5A Runoff Area=518,631 sf 95.22% Impervious Runoff Depth=7.14"
Flow Length=102' Slope=0.0422 '/' Tc=6.4 min CN=91 Runoff=69.49 cfs 7.059 af

SubcatchmentPDA-5D: PDA-5D Runoff Area=579,590 sf 0.21% Impervious Runoff Depth=0.18"
Tc=13.9 min CN=37 Runoff=13.69 cfs 0.203 af

SubcatchmentPDA-5C: PDA-5C Runoff Area=139,934 sf 67.96% Impervious Runoff Depth=6.07"
Flow Length=506' Tc=12.4 min CN=82 Runoff=18.09 cfs 1.625 af

SubcatchmentPDA-5D: PDA-5D Runoff Area=181,434 sf 26.32% Impervious Runoff Depth=3.06"
Flow Length=189' Tc=22.7 min CN=64 Runoff=11.22 cfs 1.373 af

Pond P-1B: (new Pond) Peak Elev=139.10 Storage=85,093 cf Inflow=82.26 cfs 6.259 af
Discarded=5.46 cfs 5.091 af Primary=5.41 cfs 1.168 af Outflow=10.87 cfs 6.259 af

Pond P-1C: UG SYSTEM Peak Elev=131.47 Storage=93,821 cf Inflow=66.92 cfs 7.166 af
Discarded=5.75 cfs 6.404 af Primary=3.62 cfs 0.762 af Outflow=9.38 cfs 7.166 af

Pond P-4A: SURFACE STORMWATER Peak Elev=129.73 Storage=111,217 cf Inflow=104.35 cfs 9.340 af
Discarded=12.37 cfs 9.284 af Primary=0.63 cfs 0.056 af Outflow=14.01 cfs 9.340 af

Pond P-5A: (new Pond) Peak Elev=139.23 Storage=99,190 cf Inflow=69.49 cfs 7.059 af
Discarded=4.66 cfs 6.201 af Primary=3.83 cfs 1.058 af Outflow=8.78 cfs 7.059 af

Pond P-5C: (new Pond) Peak Elev=139.07 Storage=20,029 cf Inflow=18.09 cfs 1.625 af
Discarded=1.88 cfs 1.310 af Primary=2.07 cfs 0.315 af Outflow=4.06 cfs 1.625 af

Pond P-5D: (new Pond) Peak Elev=141.14' Storage=14,460 cf Inflow=11.22 cfs 1.373 af
Discarded=1.41 cfs 1.010 af Primary=2.98 cfs 0.363 af Outflow=4.38 cfs 1.373 af

Link DP-1: WATERWORKS BROOK Inflow=26.66 cfs 7.114 af
Primary=26.66 cfs 7.114 af

Link DP-2: NORTHERN WETLAND AREA Inflow=0.96 cfs 0.167 af
Primary=0.96 cfs 0.167 af

Link DP-3: NORTHEAST WETLAND AREA Inflow=3.38 cfs 0.491 af
Primary=3.38 cfs 0.491 af

Link DP-4: STATE-OWNED STORMWATER BASIN Inflow=7.01 cfs 1.422 af
Primary=7.01 cfs 1.422 af

Link DP-5: STATE-OWNED DRAINAGE SYSTEM Inflow=23.16 cfs 5.239 af
Primary=23.16 cfs 5.239 af

Total Runoff Area = 130.933 ac Runoff Volume = 43.557 af Average Runoff Depth = 3.99"
64.06% Pervious = 83.875 ac 35.94% Impervious = 47.058 ac

Summary for Subcatchment PDA-1A: PDA-1A

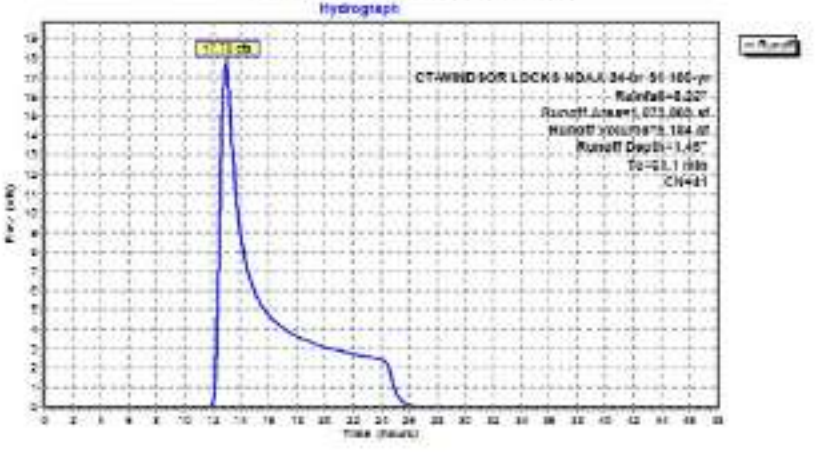
Runoff = 17.70 cfs @ 12.96 hrs, Volume= 5.184 af, Depth= 1.45"
Routed to Link DP-1 : WATERWORKS BROOK

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 100-yr Rainfall=8.22"

Area (sf)	CN	Description
115,427	49	50-75% Grass cover, Fair, HSG A
1,436,860	36	Woods, Fair, HSG A
79,036	60	Woods, Fair, HSG B
242,486	59	Farmsteads, HSG A
1,873,809	41	Weighted Average
1,873,809	41	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
61.1					Direct Entry, TC

Subcatchment PDA-1A: PDA-1A



Summary for Subcatchment PDA-1B: PDA-1B

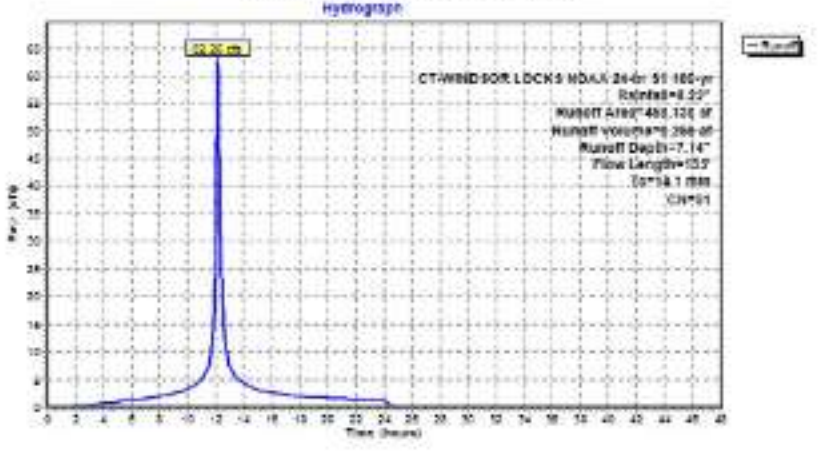
Runoff = 62.26 cfs @ 12.14 hrs, Volume= 6.259 af, Depth= 7.14"
Routed to Pond P-1B : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 100-yr Rainfall=8.22"

Area (sf)	CN	Description
62,001	49	50-75% Grass cover, Fair, HSG A
396,135	98	Paved parking, HSG A
458,136	91	Weighted Average
62,001	49	13.53% Pervious Area
396,135	98	86.47% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	100	0.0150	0.15		Sheet Flow, GRASS Grass: Short n= 0.150 P2= 3.22"
3.1	93	0.0050	0.49		Shallow Concentrated Flow, GRASS Short Grass Pasture Kv= 7.0 fps
14.1	193	Total			

Subcatchment PDA-1B: PDA-1B



Summary for Subcatchment PDA-1C: PDA-1C

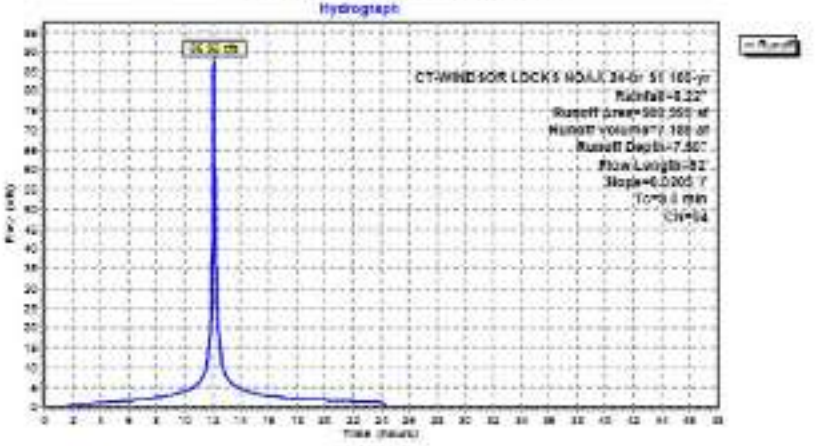
Runoff = 86.90 cfs @ 12.07 hrs, Volume= 7.188 af, Depth= 7.50"
Routed to Pond P-1C : UG SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 100-yr Rainfall=8.22"

Area (sf)	CN	Description
37,989	49	50-75% Grass cover, Fair, HSG A
462,966	98	Paved parking, HSG A
500,955	94	Weighted Average
37,989	49	7.58% Pervious Area
462,966	98	92.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.0	92	0.0205	0.17		Sheet Flow, GRASS Grass: Short n= 0.150 P2= 3.22"

Subcatchment PDA-1C: PDA-1C



Summary for Subcatchment PDA-2: PDA-2

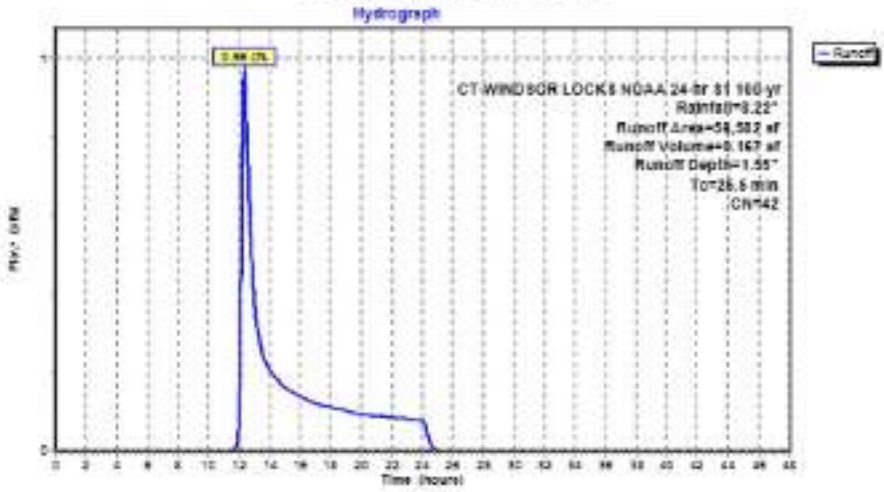
Runoff = 0.96 cfs @ 12.35 hrs, Volume= 0.167 af, Depth= 1.55"
Routed to Link DP-2 : NORTHERN WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 100-yr Rainfall=8.22"

Area (sf)	CN	Description
27,598	49	50-75% Grass cover, Fair, HSG A
28,984	36	Woods, Fair, HSG A
56,582	42	Weighted Average
56,582	42	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.5					Direct Entry, TC

Subcatchment PDA-2: PDA-2



Summary for Subcatchment PDA-3: PDA-3

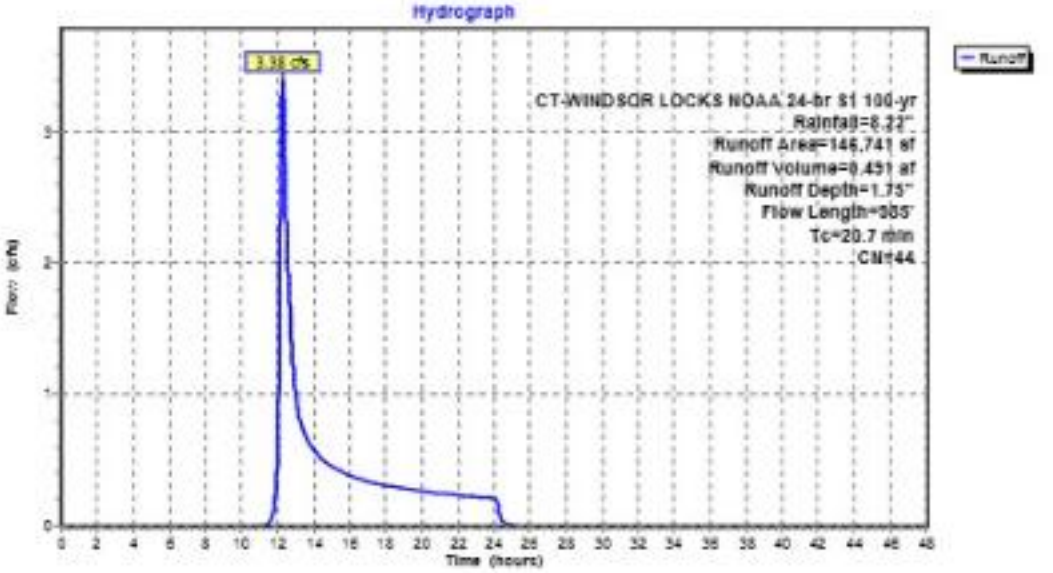
Runoff = 3.38 cfs @ 12.26 hrs, Volume= 0.491 af, Depth= 1.75"
Routed to Link DP-3 : NORTHEAST WETLAND AREA

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 100-yr Rainfall=8.22"

Area (sf)	CN	Description
57,064	49	50-75% Grass cover, Fair, HSG A
72,106	36	Woods, Fair, HSG A
17,571	60	Woods, Fair, HSG B
146,741	44	Weighted Average
146,741	44	100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0267	0.19		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
2.0	118	0.0197	0.98		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
3.3	341	0.0599	1.71		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
0.7	61	0.0854	1.46		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
2.5	203	0.0707	1.33		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
3.5	162	0.0235	0.77		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
20.7	985	Total			

Subcatchment PDA-3: PDA-3



Summary for Subcatchment PDA-4A: PDA-4A

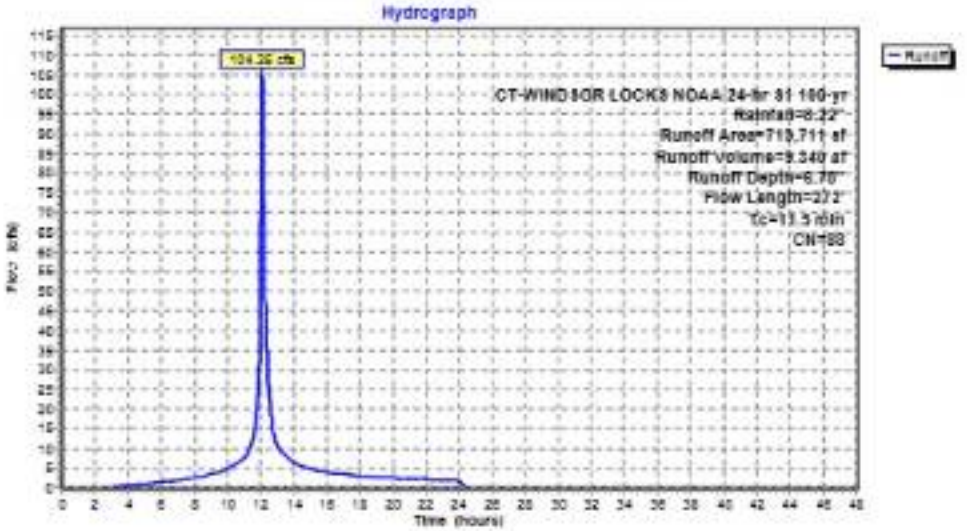
Runoff = 104.35 cfs @ 12.10 hrs, Volume= 9.340 af, Depth= 6.78"
Routed to Pond P-4A : SURFACE STORMWATER BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 100-yr Rainfall=8.22"

Area (sf)	CN	Description
141,156	49	50-75% Grass cover, Fair, HSG A
578,555	98	Paved parking, HSG A
719,711	88	Weighted Average
141,156	49	19.61% Pervious Area
578,555	98	80.39% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.1	18	0.1555	0.28		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
7.9	82	0.0226	0.17		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
2.1	136	0.0232	1.07		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
0.1	12	0.1667	2.86		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
0.3	24	0.0416	1.43		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
11.5	272	Total			

Subcatchment PDA-4A: PDA-4A



Summary for Subcatchment PDA-4B: PDA-4B

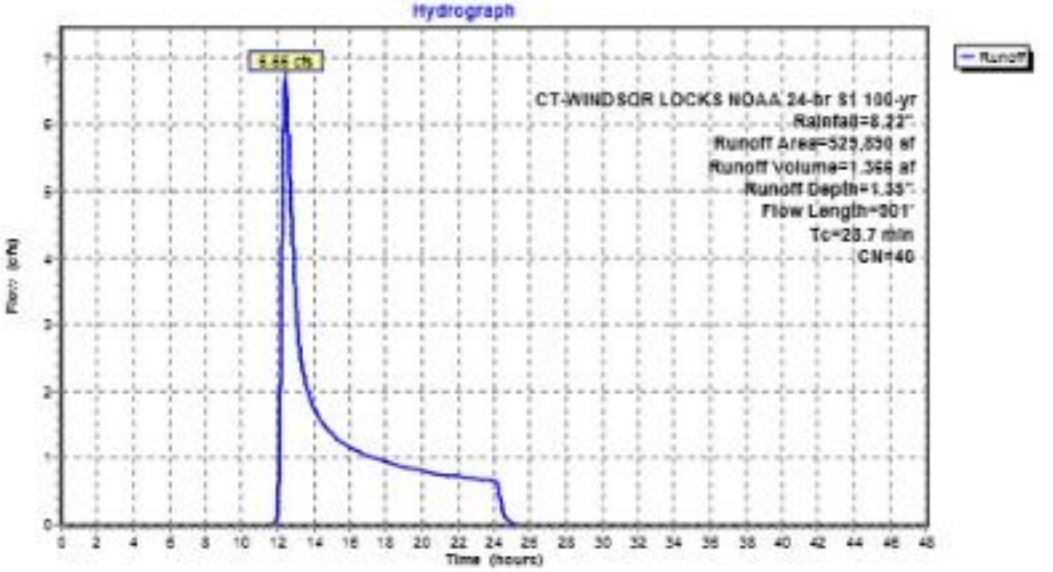
Runoff = 6.66 cfs @ 12.41 hrs, Volume= 1.366 af, Depth= 1.35"
Routed to Link DP-4 : STATE-OWNED STORMWATER BASIN

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 100-yr Rainfall=8.22"

Area (sf)	CN	Description
104,160	49	50-75% Grass cover, Fair, HSG A
412,529	36	Woods, Fair, HSG A
2,260	60	Woods, Fair, HSG B
10,941	98	Paved parking, HSG A
529,890	40	Weighted Average
518,949	39	97.94% Pervious Area
10,941	98	2.06% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.1	100	0.0116	0.14		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
6.7	307	0.0119	0.76		**Shallow Concentrated Flow, GRASS** Short Grass Pasture Kv= 7.0 fps
0.8	41	0.0327	0.90		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
0.3	41	0.1951	2.21		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
8.8	412	0.0243	0.78		**Shallow Concentrated Flow, WOODS** Woodland Kv= 5.0 fps
28.7	901	Total			

Subcatchment PDA-4B: PDA-4B



Summary for Subcatchment PDA-5A: PDA-5A

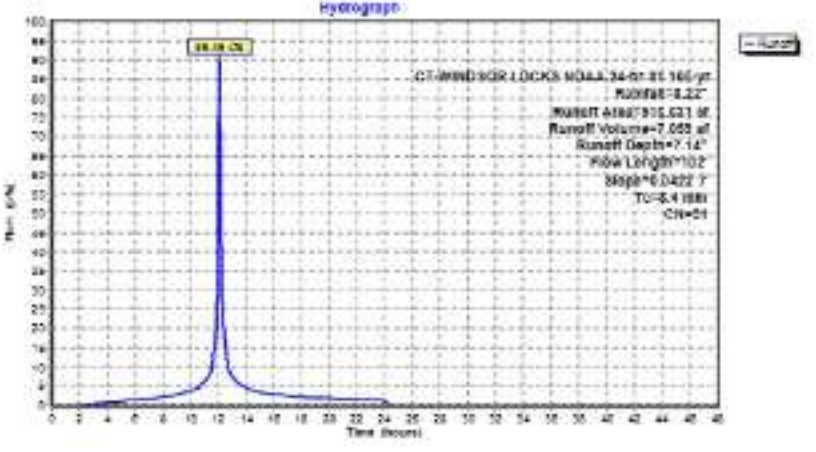
Runoff = 89.40 cfs @ 12.06 hrs, Volume= 7.059 af, Depth= 7.14"
Routed to Pond P-5A : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 100-yr Rainfall=8.22"

Area (sf)	CN	Description
75,817	49	50-75% Grass cover, Fair, HSG A
440,814	98	Paved parking, HSG A
516,631	91	Weighted Average
75,817	49	14.68% Pervious Area
440,814	98	85.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.4	102	0.0422	0.23		Sheet Flow, GRASS Grass: Short n= 0.150 P2= 3.22"
1.0					Direct Entry, SHALLOW
8.4	102	Total			

Subcatchment PDA-5A: PDA-5A



Summary for Subcatchment PDA-5B: PDA-5B

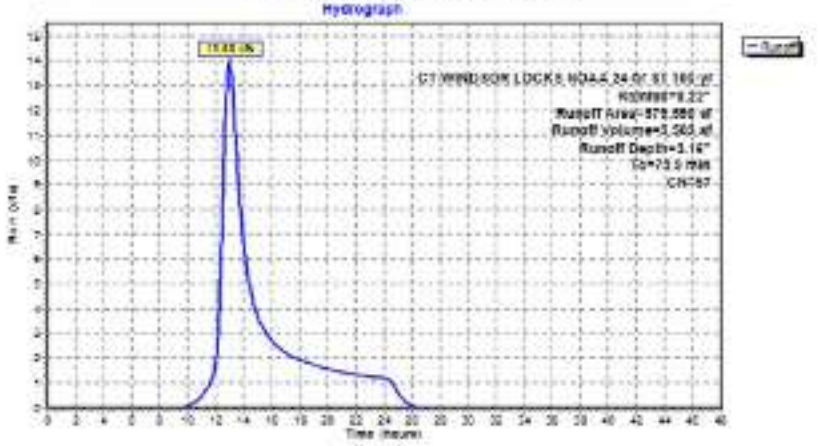
Runoff = 13.88 cfs @ 12.97 hrs, Volume= 3,503 af, Depth= 3.16"
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 100-yr Rainfall=8.22"

Area (sf)	CN	Description
336,170	49	50-75% Grass cover, Fair, HSG A
232,035	69	50-75% Grass cover, Fair, HSG B
9,363	36	Woods, Fair, HSG A
1,222	98	Paved parking, HSG A
579,590	57	Weighted Average
578,368	57	99.79% Pervious Area
1,222	98	0.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
73.9					Direct Entry, TC

Subcatchment PDA-5B: PDA-5B



Summary for Subcatchment PDA-5C: PDA-5C

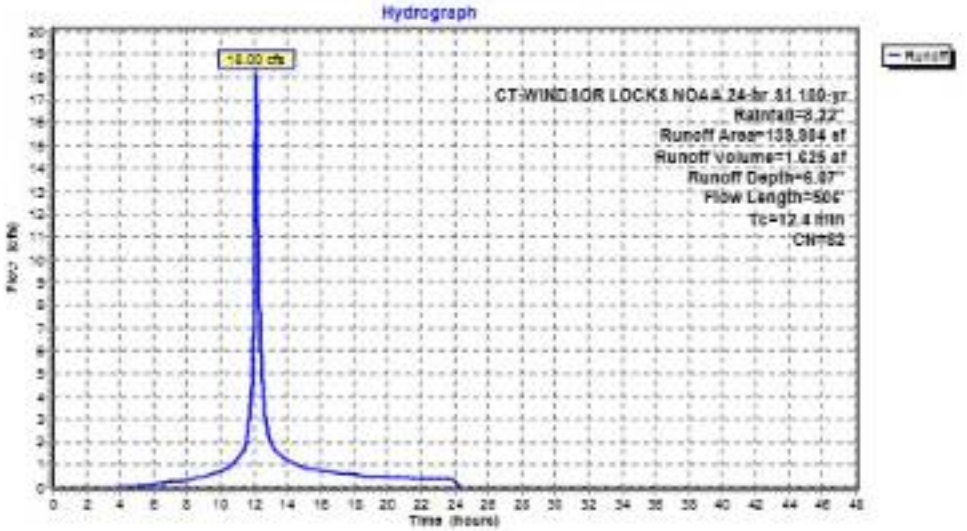
Runoff = 18.00 cfs @ 12.12 hrs, Volume= 1.625 af, Depth= 6.07"
Routed to Pond P-5C : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 100-yr Rainfall=8.22"

Area (sf)	CN	Description
95,137	98	Paved parking, HSG A
44,847	49	50-75% Grass cover, Fair, HSG A
139,984	82	Weighted Average
44,847	49	32.04% Pervious Area
95,137	98	67.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	82	0.0122	0.13		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
0.9	131	0.0153	2.51		**Shallow Concentrated Flow, PAVEMENT** Paved Kv= 20.3 fps
0.7	166	0.0051	4.07	5.00	**Pipe Channel, 15" PIPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
0.5	111	0.0050	4.03	4.95	**Pipe Channel, 15" PIPE** 15.0" Round Area= 1.2 sf Perim= 3.9' r= 0.31' n= 0.012
0.1	16	0.0056	4.82	8.52	**Pipe Channel, 18" PIPE** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
12.4	506	Total			

Subcatchment PDA-5C: PDA-5C



Summary for Subcatchment PDA-5D: PDA-5D

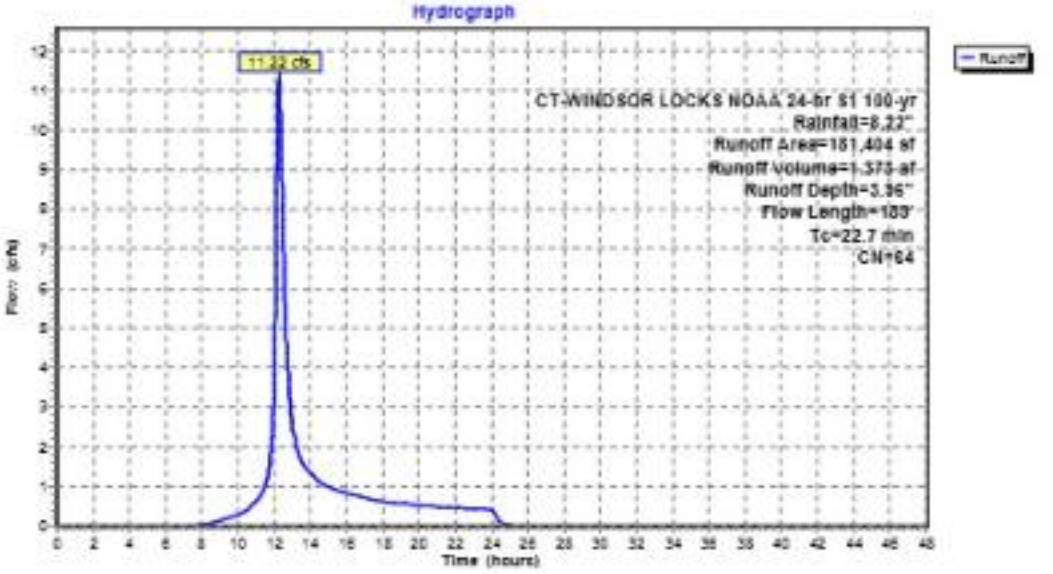
Runoff = 11.22 cfs @ 12.26 hrs, Volume= 1.373 af, Depth= 3.96"
Routed to Pond P-5D : (new Pond)

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
CT-WINDSOR LOCKS NOAA 24-hr S1 100-yr Rainfall=8.22"

Area (sf)	CN	Description
75,856	49	50-75% Grass cover, Fair, HSG A
1,810	69	50-75% Grass cover, Fair, HSG B
39,371	36	Woods, Fair, HSG A
299	60	Woods, Fair, HSG B
64,068	98	Paved parking, HSG A
181,404	64	Weighted Average
117,336	45	64.68% Pervious Area
64,068	98	35.32% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
16.9	66	0.0158	0.07		**Sheet Flow, WOODS** Woods: Light underbrush n= 0.400 P2= 3.22"
5.7	45	0.0153	0.13		**Sheet Flow, GRASS** Grass: Short n= 0.150 P2= 3.22"
0.1	78	0.0250	10.18	17.99	**Pipe Channel, PIPE** 18.0" Round Area= 1.8 sf Perim= 4.7' r= 0.38' n= 0.012
22.7	189	Total			

Subcatchment PDA-5D: PDA-5D



Summary for Pond P-1B: (new Pond)

Inflow Area = 10.517 ac, 86.47% Impervious, Inflow Depth = 7.14" for 100-yr event
Inflow = 62.26 cfs @ 12.14 hrs, Volume= 6.259 af
Outflow = 10.87 cfs @ 12.72 hrs, Volume= 6.259 af, Atten= 83%, Lag= 35.2 min
Discarded = 5.46 cfs @ 12.72 hrs, Volume= 5.091 af
Primary = 5.41 cfs @ 12.72 hrs, Volume= 1.168 af
Routed to Link DP-1 : WATERWORKS BROOK

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 136.10' @ 12.72 hrs Surf Area= 28,530 sf Storage= 95,093 cf

Plug-Flow detention time= 121.9 min calculated for 6.258 af (100% of inflow)
Center-of-Mass det. time= 121.9 min (907.9 - 786.0)

Volume	Invert	Avail.Storage	Storage Description
#1	133.00'	293,903 cf	Custom Stage Data (Prismatic)Listed below (Recalc)

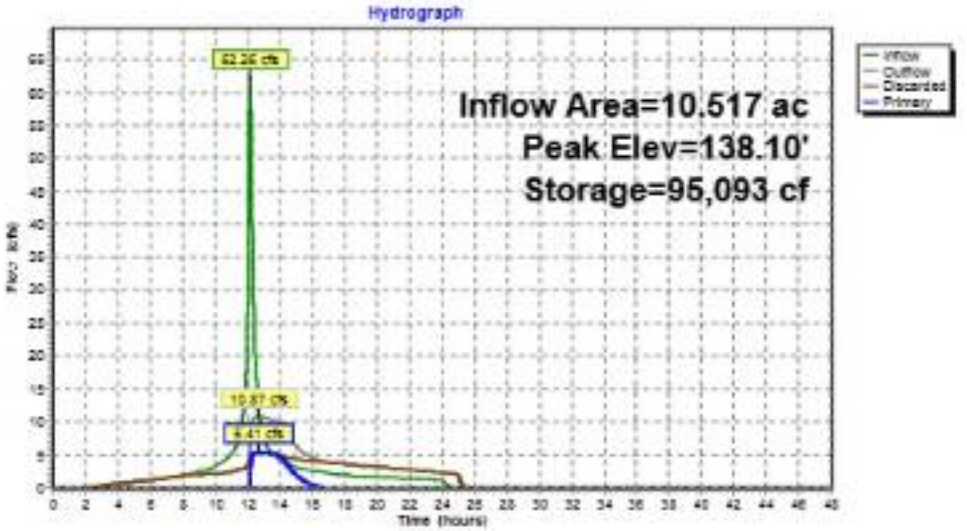
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
133.00	10,167	0	0
134.00	13,066	11,627	11,627
135.00	16,294	14,680	26,307
136.00	19,869	18,082	44,388
137.00	23,787	21,828	66,216
138.00	28,048	25,918	92,134
139.00	32,651	30,350	122,483
140.00	37,533	35,092	157,575
141.00	42,714	40,124	197,699
142.00	48,072	45,393	243,092
143.00	53,550	50,811	293,903

Device	Routing	Invert	Outlet Devices
#1	Discarded	133.00'	8.270 in/hr Exfiltration over Surface area
#2	Primary	136.00'	15.0" Round Culvert L= 400.0' Ke= 0.500 Inlet / Outlet Invert= 136.00' / 134.00' S= 0.0050 '/' Cc= 0.900 n= 0.012, Flow Area= 1.23 sf

Discarded OutFlow Max=5.46 cfs @ 12.72 hrs HW=136.10' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 5.46 cfs)

Primary OutFlow Max=5.41 cfs @ 12.72 hrs HW=136.10' (Free Discharge)
└**2=Culvert** (Barrel Controls 5.41 cfs @ 4.41 fps)

Pond P-1B: (new Pond)



Summary for Pond P-1C: UG SYSTEM

Inflow Area = 11.500 ac, 92.42% Impervious, Inflow Depth = 7.50" for 100-yr event
Inflow = 86.92 cfs @ 12.07 hrs, Volume= 7.188 af
Outflow = 9.30 cfs @ 12.76 hrs, Volume= 7.188 af, Atten= 89%, Lag= 41.6 min
Discarded = 5.75 cfs @ 10.96 hrs, Volume= 6.426 af
Primary = 3.63 cfs @ 12.76 hrs, Volume= 0.762 af
Routed to Link DP-1 : WATERWORKS BROOK

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 131.47' @ 12.76 hrs Surf Area= 30,055 sf Storage= 93,521 cf

Plug-Flow detention time= 83.0 min calculated for 7.187 af (100% of inflow)
Center-of-Mass det. time= 83.0 min (850.4 - 767.4)

Volume	Invert	Avail.Storage	Storage Description
#1A	128.00'	0 cf	**72.67'W x 413.60'L x 5.50'H Field A** 165,304 cf Overall - 165,304 cf Embedded = 0 cf x 40.0% Voids
#2A	128.00'	134,711 cf	**StormTrap SingleTrap 5-0 x 182 Inside #1** Inside= 101.7'W x 90.0'H => 38.33 sf x 15.40'L = 590.2 cf Outside= 101.7'W x 86.0'H => 46.84 sf x 15.40'L = 718.0 cf 182 Chambers in 7 Rows 59.35' x 400.29' Core + 6.66' Border = 72.67' x 413.60' System
		134,711 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	129.80'	**12.0" Round Culvert** L= 110.0' Ke= 0.500 **Inlet / Outlet Invert=** 129.80' / 129.00' S= 0.0073 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Discarded	128.00'	**8.270 in/hr Exfiltration over Surface area**

Discarded OutFlow Max=5.75 cfs @ 10.96 hrs HW=128.06' (Free Discharge)
└**2=Exfiltration** (Exfiltration Controls 5.75 cfs)

Primary OutFlow Max=3.63 cfs @ 12.76 hrs HW=131.47' (Free Discharge)
└**1=Culvert** (Barrel Controls 3.63 cfs @ 4.62 fps)

Pond P-1C: UG SYSTEM - Chamber Wizard Field A

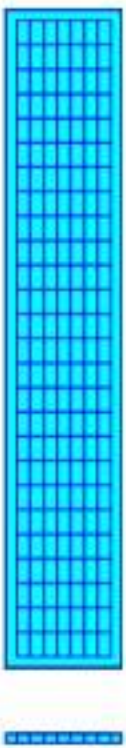
Chamber Model = StormTrap SingleTrap 5-0 (StormTrap SingleTrap® Type II+IV)
Inside= 101.7"W x 60.0"H => 38.33 sf x 15.40'L = 590.2 cf
Outside= 101.7"W x 66.0"H => 46.64 sf x 15.40'L = 718.0 cf

26 Chambers/Row x 15.40' Long = 400.29' Row Length +79.9" Border x 2 = 413.60' Base Length
7 Rows x 101.7" Wide + 79.9" Side Border x 2 = 72.67' Base Width
66.0" Chamber Height = 5.50' Field Height

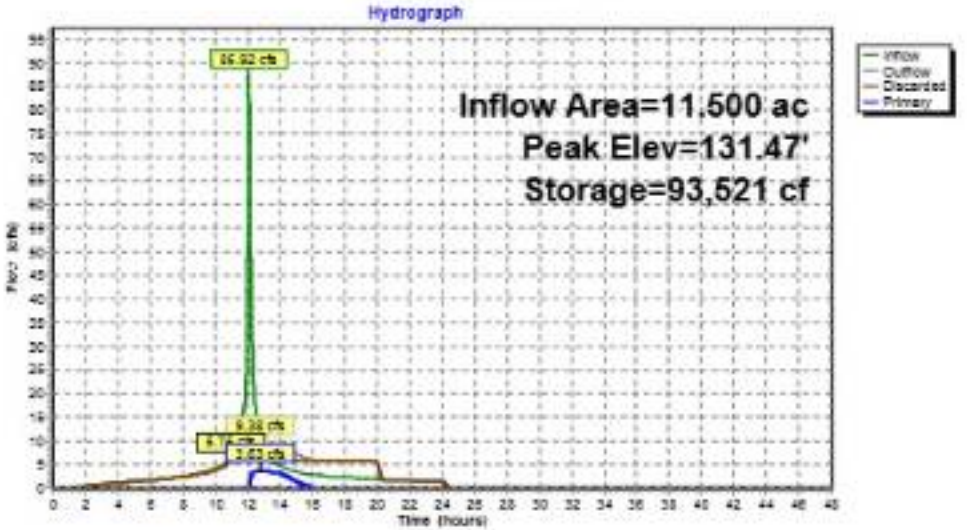
182 Chambers x 590.2 cf + 27,298.0 cf Border = 134,711.2 cf Chamber Storage
182 Chambers x 718.0 cf + 34,629.4 cf Border = 165,303.8 cf Displacement

Chamber Storage = 134,711.2 cf = 3.093 af
Overall Storage Efficiency = 81.5%
Overall System Size = 413.60' x 72.67' x 5.50'

182 Chambers (plus border)
6,122.4 cy Field



Pond P-1C: UG SYSTEM



Summary for Pond P-4A: SURFACE STORMWATER BASIN

Inflow Area = 16.522 ac, 80.39% Impervious, Inflow Depth = 6.78" for 100-yr event
Inflow = 104.35 cfs @ 12.10 hrs, Volume= 9.340 af
Outflow = 14.01 cfs @ 12.76 hrs, Volume= 9.340 af, Atten= 87%, Lag= 39.7 min
Discarded = 13.37 cfs @ 12.76 hrs, Volume= 9.284 af
Primary = 0.63 cfs @ 12.76 hrs, Volume= 0.056 af
Routed to Link DP-4 : STATE-OWNED STORMWATER BASIN

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 126.73' @ 12.76 hrs Surf Area= 69,885 sf Storage= 111,271 cf

Plug-Flow detention time= 52.8 min calculated for 9.340 af (100% of inflow)
Center-of-Mass det. time= 52.8 min (848.4 - 795.6)

Volume	Invert	Avail.Storage	Storage Description
#1	125.00'	287,186 cf	Custom Stage Data (Prismatic)Listed below (Recalc)

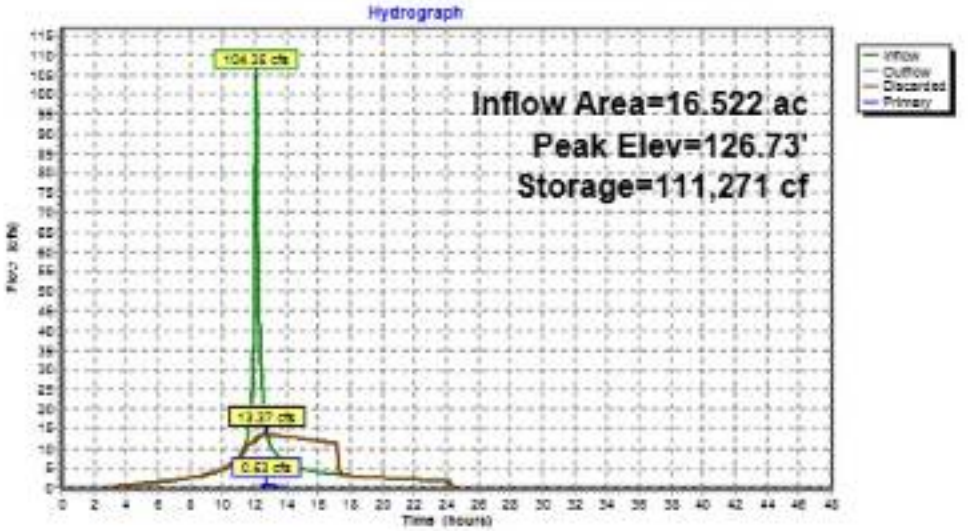
Elevation (feet)	Surf Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
125.00	58,672	0	0
126.00	65,036	61,854	61,854
127.00	71,627	68,332	130,186
128.00	78,444	75,036	205,221
129.00	85,488	81,965	287,186

Device	Routing	Invert	Outlet Devices
#1	Primary	126.30'	12.0" Round Culvert L= 42.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 126.30' / 126.00' S= 0.0071 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Discarded	125.00'	8.270 in/hr Exfiltration over Surface area

Discarded OutFlow Max=13.37 cfs @ 12.76 hrs HW=126.73' (Free Discharge)
└2=Exfiltration (Exfiltration Controls 13.37 cfs)

Primary OutFlow Max=0.63 cfs @ 12.76 hrs HW=126.73' (Free Discharge)
└1=Culvert (Barrel Controls 0.63 cfs @ 2.56 fps)

Pond P-4A: SURFACE STORMWATER BASIN



Summary for Pond P-5A: (new Pond)

Inflow Area = 11.860 ac, 85.32% Impervious, Inflow Depth = 7.14" for 100-yr event
Inflow = 89.49 cfs @ 12.06 hrs, Volume= 7.059 af
Outflow = 8.73 cfs @ 12.83 hrs, Volume= 7.059 af, Atten= 90%, Lag= 46.1 min
Discarded = 4.90 cfs @ 10.69 hrs, Volume= 6.001 af
Primary = 3.83 cfs @ 12.83 hrs, Volume= 1.058 af
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 135.33' @ 12.83 hrs Surf Area= 25,580 sf Storage= 99,196 cf

Plug-Flow detention time= 102.5 min calculated for 7.057 af (100% of inflow)
Center-of-Mass det. time= 102.4 min (883.1 - 780.7)

Volume	Invert	Avail.Storage	Storage Description
#1A	131.00'	0 cf	**72.67'W x 352.02'L x 5.50'H Field A** 140,691 cf Overall - 140,691 cf Embedded = 0 cf x 40.0% Voids
#2A	131.00'	114,632 cf	**StormTrap SingleTrap 5-0 x 154 Inside #1** Inside= 101.7'W x 90.0'H => 38.33 sf x 15.40'L = 590.2 cf Outside= 101.7'W x 86.0'H => 46.84 sf x 15.40'L = 718.0 cf 154 Chambers in 7 Rows 59.35' x 336.71' Core + 6.66' Border = 72.67' x 352.02' System
		114,632 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	131.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	133.00'	**12.0" Round Culvert** L= 179.0' Ke= 0.500 Inlet / Outlet Invert= 133.00' / 132.00' S= 0.0056 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=4.90 cfs @ 10.69 hrs HW=131.06' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 4.90 cfs)

Primary OutFlow Max=3.83 cfs @ 12.83 hrs HW=135.33' (Free Discharge)
└**2=Culvert** (Barrel Controls 3.83 cfs @ 4.88 fps)

Pond P-5A: (new Pond) - Chamber Wizard Field A

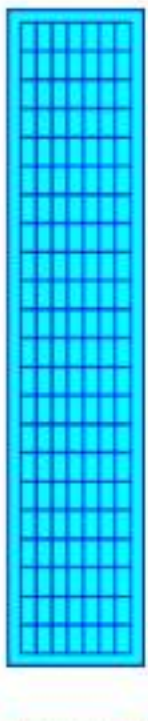
Chamber Model = StormTrap SingleTrap 5-0 (StormTrap SingleTrap® Type II+IV)
Inside= 101.7"W x 60.0"H => 38.33 sf x 15.40'L = 590.2 cf
Outside= 101.7"W x 66.0"H => 46.64 sf x 15.40'L = 718.0 cf

22 Chambers/Row x 15.40' Long = 338.71' Row Length +79.9" Border x 2 = 352.02' Base Length
7 Rows x 101.7" Wide + 79.9" Side Border x 2 = 72.67' Base Width
66.0" Chamber Height = 5.50' Field Height

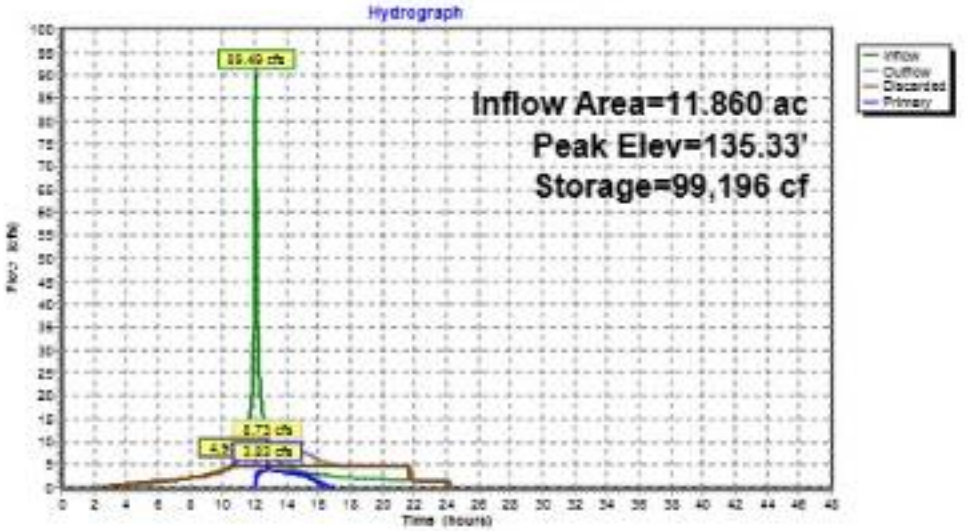
154 Chambers x 590.2 cf + 23,743.6 cf Border = 114,631.6 cf Chamber Storage
154 Chambers x 718.0 cf + 30,120.4 cf Border = 140,691.0 cf Displacement

Chamber Storage = 114,631.6 cf = 2.632 af
Overall Storage Efficiency = 81.5%
Overall System Size = 352.02' x 72.67' x 5.50'

154 Chambers (plus border)
5,210.8 cy Field



Pond P-5A: (new Pond)



Summary for Pond P-5C: (new Pond)

Inflow Area = 3.214 ac, 67.96% Impervious, Inflow Depth = 6.07" for 100-yr event
Inflow = 18.00 cfs @ 12.12 hrs, Volume= 1.625 af
Outflow = 4.66 cfs @ 12.57 hrs, Volume= 1.625 af, Atten= 74%, Lag= 27.1 min
Discarded = 1.69 cfs @ 12.57 hrs, Volume= 1.310 af
Primary = 2.97 cfs @ 12.57 hrs, Volume= 0.315 af
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 139.07' @ 12.51 hrs Surf Area= 8,827 sf Storage= 20,029 cf

Plug-Flow detention time= 67.5 min calculated for 1.625 af (100% of inflow)
Center-of-Mass det. time= 67.5 min (884.6 - 817.1)

Volume	Invert	Avail.Storage	Storage Description
#1	136.00'	53,207 cf	Custom Stage Data (Prismatic)Listed below (Recalc)

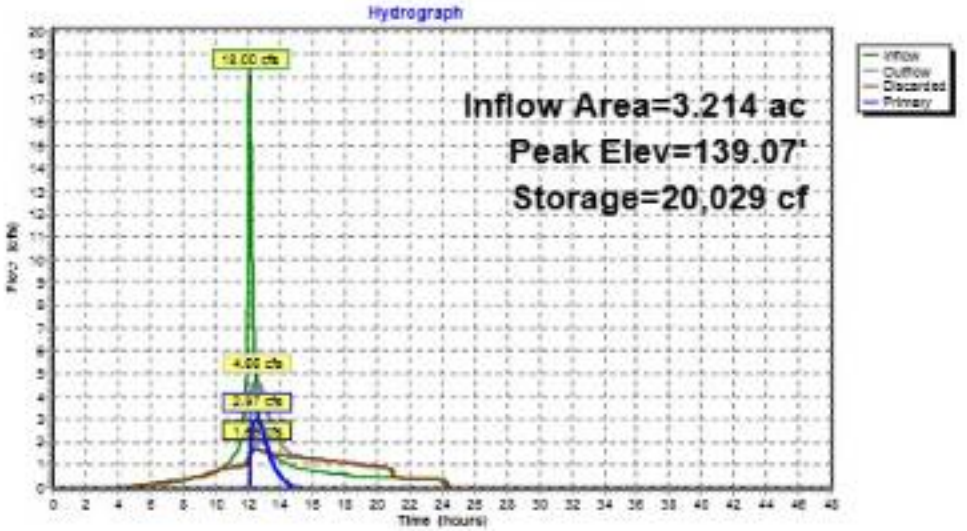
Elevation (feet)	Surf Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
136.00	4,393	0	0
137.00	5,709	5,051	5,051
138.00	7,177	6,443	11,494
139.00	8,719	7,948	19,442
140.00	10,338	9,529	28,971
141.00	12,034	11,186	40,157
142.00	14,066	13,050	53,207

Device	Routing	Invert	Outlet Devices
#1	Discarded	136.00'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	137.80'	**12.0" Round Culvert** L= 246.0' Ke= 0.500 Inlet / Outlet Invert= 137.80' / 136.50' S= 0.0053 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=1.69 cfs @ 12.57 hrs HW=139.06' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 1.69 cfs)

Primary OutFlow Max=2.97 cfs @ 12.57 hrs HW=139.06' (Free Discharge)
↑**2=Culvert** (Barrel Controls 2.97 cfs @ 3.87 fps)

Pond P-5C: (new Pond)



Summary for Pond P-5D: (new Pond)

Inflow Area = 4.164 ac, 35.32% Impervious, Inflow Depth = 3.96" for 100-yr event
Inflow = 11.22 cfs @ 12.26 hrs, Volume= 1.373 af
Outflow = 4.30 cfs @ 12.71 hrs, Volume= 1.373 af, Atten= 61%, Lag= 26.9 min
Discarded = 1.41 cfs @ 12.71 hrs, Volume= 1.010 af
Primary = 2.98 cfs @ 12.71 hrs, Volume= 0.363 af
Routed to Link DP-5 : STATE-OWNED DRAINAGE SYSTEM

Routing by Stor-Ind method, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
Peak Elev= 141.14' @ 12.71 hrs Surf Area= 7,341 sf Storage= 14,460 cf

Plug-Flow detention time= 54.6 min calculated for 1.373 af (100% of inflow)
Center-of-Mass det. time= 54.6 min (932.8 - 878.2)

Volume	Invert	Avail.Storage	Storage Description
#1	138.50'	69,891 cf	Custom Stage Data (Prismatic)Listed below (Recalc)

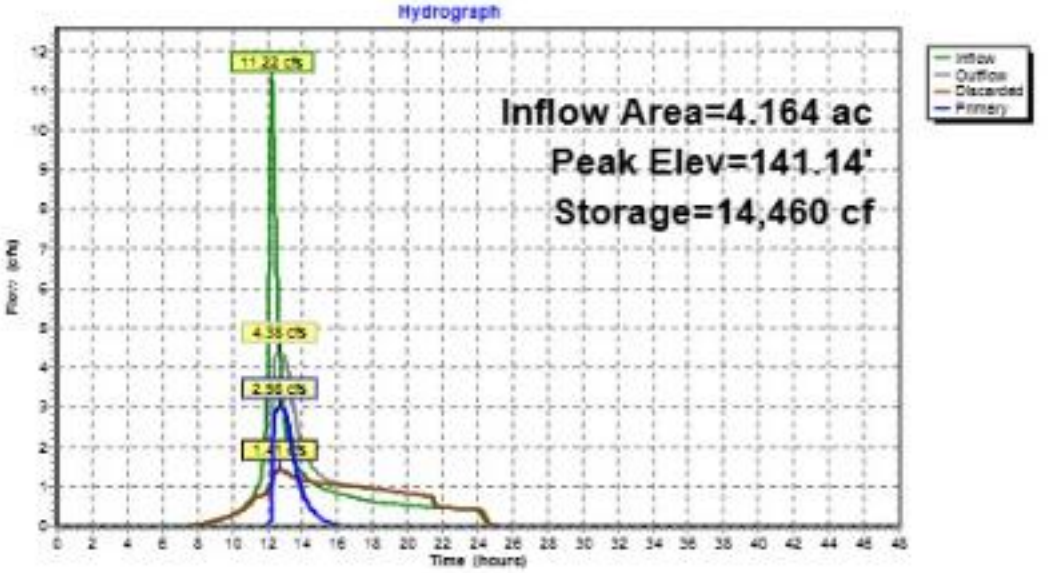
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
138.50	3,739	0	0
139.00	4,351	2,023	2,023
140.00	5,672	5,012	7,034
141.00	7,121	6,397	13,431
142.00	8,669	7,895	21,326
143.00	10,317	9,493	30,819
144.00	12,066	11,192	42,010
145.00	13,915	12,991	55,001
146.00	15,865	14,890	69,891

Device	Routing	Invert	Outlet Devices
#1	Discarded	138.50'	**8.270 in/hr Exfiltration over Surface area**
#2	Primary	139.75'	**12.0" Round Culvert** L= 102.0' Ke= 0.500 Inlet / Outlet Invert= 139.75' / 139.20' S= 0.0054 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf

Discarded OutFlow Max=1.41 cfs @ 12.71 hrs HW=141.14' (Free Discharge)
└**1=Exfiltration** (Exfiltration Controls 1.41 cfs)

Primary OutFlow Max=2.98 cfs @ 12.71 hrs HW=141.14' (Free Discharge)
└**2=Culvert** (Barrel Controls 2.98 cfs @ 3.79 fps)

Pond P-5D: (new Pond)

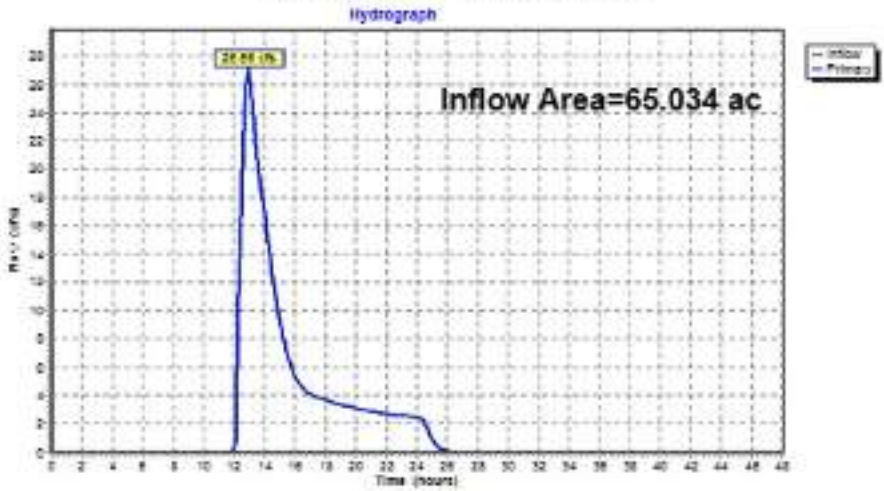


Summary for Link DP-1: WATERWORKS BROOK

Inflow Area = 65.034 ac, 30.33% Impervious, Inflow Depth = 1.31" for 100-yr event
Inflow = 26.66 cfs @ 12.96 hrs, Volume= 7.114 af
Primary = 26.66 cfs @ 12.96 hrs, Volume= 7.114 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-1: WATERWORKS BROOK

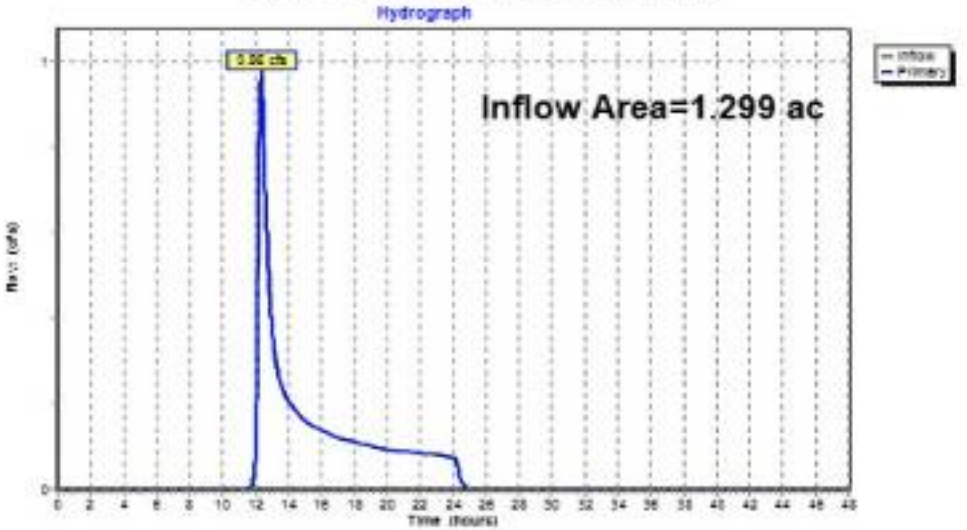


Summary for Link DP-2: NORTHERN WETLAND AREA

Inflow Area = 1.299 ac, 0.00% Impervious, Inflow Depth = 1.55" for 100-yr event
Inflow = 0.96 cfs @ 12.35 hrs, Volume= 0.167 af
Primary = 0.96 cfs @ 12.35 hrs, Volume= 0.167 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-2: NORTHERN WETLAND AREA

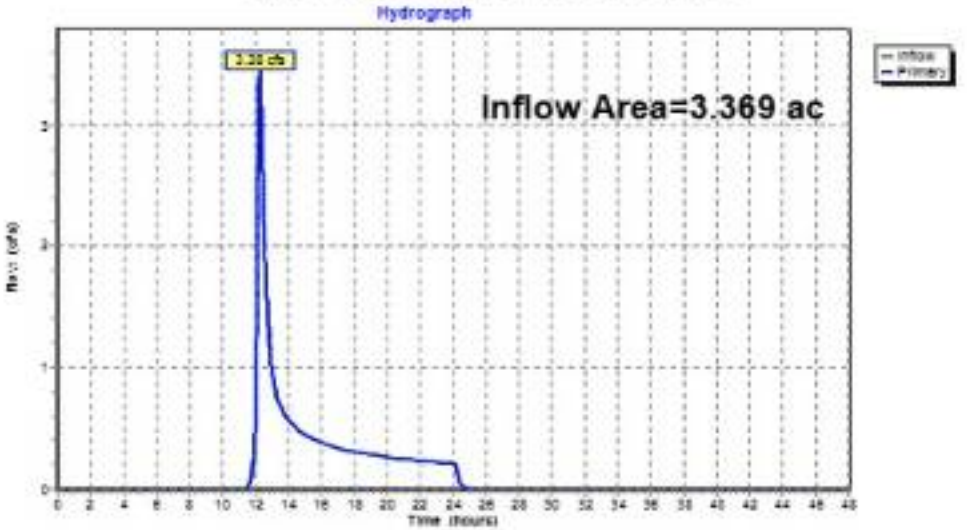


Summary for Link DP-3: NORTHEAST WETLAND AREA

Inflow Area = 3.369 ac, 0.00% Impervious, Inflow Depth = 1.75" for 100-yr event
Inflow = 3.38 cfs @ 12.26 hrs, Volume= 0.491 af
Primary = 3.38 cfs @ 12.26 hrs, Volume= 0.491 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-3: NORTHEAST WETLAND AREA

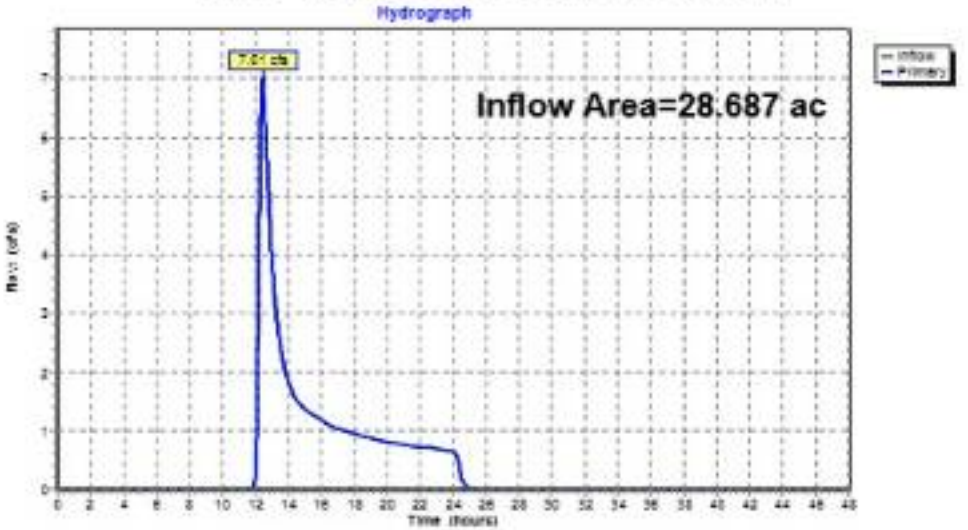


Summary for Link DP-4: STATE-OWNED STORMWATER BASIN

Inflow Area = 28.687 ac, 47.17% Impervious, Inflow Depth = 0.59" for 100-yr event
Inflow = 7.01 cfs @ 12.44 hrs, Volume= 1.422 af
Primary = 7.01 cfs @ 12.44 hrs, Volume= 1.422 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-4: STATE-OWNED STORMWATER BASIN

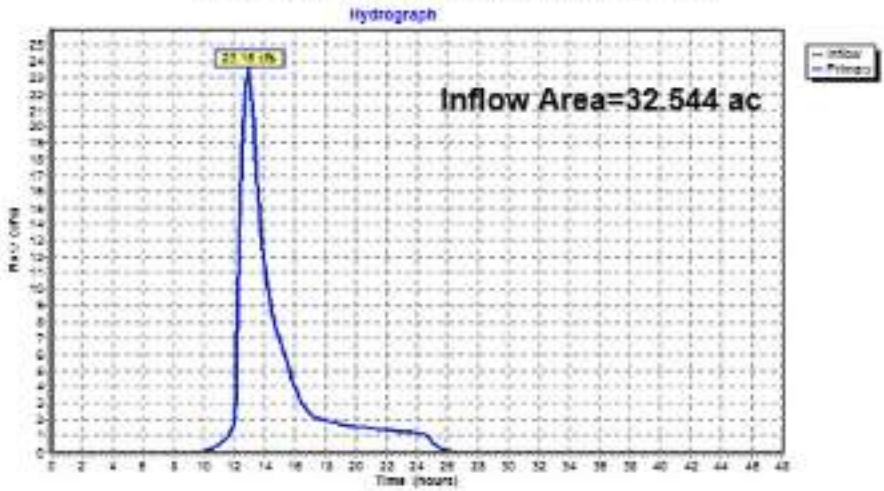


Summary for Link DP-5: STATE-OWNED DRAINAGE SYSTEM

Inflow Area = 32.544 ac, 42.41% Impervious, Inflow Depth = 1.93" for 100-yr event
Inflow = 23.16 cfs @ 12.90 hrs, Volume= 5.239 af
Primary = 23.16 cfs @ 12.90 hrs, Volume= 5.239 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Link DP-5: STATE-OWNED DRAINAGE SYSTEM



APPENDIX E

CONVEYANCE MODELING RESULTS

Conduit FlexTable: DOT Hydraulic Grade Line Computations

Label	Start Node	Stop Node	Diameter (in)	Length (ft)	Number of Upstream Pipes (n/a)	Total System Flow (cfs)	Design Flow (Hydraulic Flow) (cfs)	Velocity (ft/s)	Slope (Calculated) (ft/ft)	Invert (Start) (ft)	Invert (End) (ft)	HGL (Start) (ft)	EGL (Start) (ft)	HGL (End) (ft)	EGL (End) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (End) (ft)
P-000	[illegible]	[illegible]	18.0	10.0	0.00	0.00	0.00	0.00	0.000	145.00	145.00	145.00	145.00	145.00	145.00	144.00	144.00
P-001	[illegible]	[illegible]	18.0	545.0	1.24	1.24	0.74	1.41	0.009	140.54	135.63	140.83	140.89	140.83	140.83	144.29	144.29
P-002	[illegible]	[illegible]	12.0	18.0	1.70	1.70	2.79	3.71	0.028	135.79	135.67	140.80	140.88	140.80	140.80	143.80	143.80
P-003	[illegible]	[illegible]	18.0	340.0	0.70	0.70	4.90	4.33	0.000	135.81	135.80	139.09	139.37	139.09	139.10	144.00	140.00
P-004	[illegible]	[illegible]	18.0	320.0	0.50	0.00	4.90	4.29	0.000	135.80	137.80	139.11	139.47	139.09	139.09	140.00	140.44
P-005	[illegible]	[illegible]	18.0	18.0	0.10	0.00	5.00	4.28	0.000	135.80	135.80	139.09	139.79	139.09	139.09	143.00	143.44
P-006	[illegible]	[illegible]	18.0	71.0	4.00	4.00	0.00	4.88	0.000	137.80	138.00	139.09	137.88	139.00	137.78	143.44	143.88
P-007	[illegible]	[illegible]	18.0	97.0	4.30	4.30	0.17	4.73	0.000	138.00	138.00	137.80	137.80	137.18	137.34	143.00	140.00
P-008	[illegible]	[illegible]	18.0	10.1	1.99	1.99	0.00	1.81	0.000	139.79	139.60	140.04	140.01	140.00	140.00	141.79	141.00
P-009	[illegible]	[illegible]	18.0	800.0	1.00	1.00	0.00	3.81	0.000	139.80	139.80	140.41	139.87	140.10	139.80	143.00	140.00
P-010	[illegible]	[illegible]	18.0	10.0	0.70	0.70	0.00	4.28	0.000	139.00	139.00	139.00	139.00	139.00	139.70	143.70	143.00
P-011	[illegible]	[illegible]	18.0	800.0	0.00	0.00	0.00	4.40	0.000	139.80	137.00	139.00	139.00	139.00	139.00	143.00	143.40
P-012	[illegible]	[illegible]	18.0	10.1	0.00	0.00	0.00	4.28	0.000	139.00	139.00	139.00	139.00	139.00	139.00	143.70	143.40
P-013	[illegible]	[illegible]	18.0	800.0	0.00	0.00	0.10	4.00	0.000	137.80	139.00	139.00	137.00	139.00	137.40	143.40	143.00
P-014	[illegible]	[illegible]	18.0	10.1	0.10	0.10	0.00	4.10	0.000	139.00	139.00	139.00	139.01	139.00	139.00	143.70	143.00
P-015	[illegible]	[illegible]	18.0	800.0	0.70	0.70	0.00	4.00	0.000	139.00	137.00	139.00	139.00	139.00	139.00	143.00	143.00

Conduit FlexTable: DOT Hydraulic Grade Line Computations

Label	Start Node	Stop Node	Diameter (in)	Length (ft)	Number of Additional Flows (cfs)	Total Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Slope (Calculated) (ft/ft)	Invert (Start) (ft)	Invert (Stop) (ft)	HGL (Start) (ft)	EGL (Start) (ft)	HGL (Stop) (ft)	EGL (Stop) (ft)	Elevation ground (Start) (ft)	Elevation ground (Stop) (ft)
P-010	[illegible]	[illegible]	18.0	80.1	0.10	3.80	8.03	4.27	0.000	128.00	128.80	139.01	139.79	139.65	139.83	143.79	143.89
P-011	[illegible]	[illegible]	24.0	55.7	5.10	5.10	17.57	4.80	0.000	127.23	128.00	138.49	138.79	138.99	139.34	143.59	143.63
P-012	[illegible]	[illegible]	18.0	116.0	2.50	2.80	6.05	4.11	0.000	126.00	127.02	138.03	138.80	138.88	139.83	141.79	143.82
P-013	[illegible]	[illegible]	24.0	72.7	7.40	7.40	17.02	3.29	0.000	126.80	126.00	138.35	137.00	137.07	137.45	143.83	140.00
P-100	[illegible]	[illegible]	15.0	113.0	0.00	0.80	3.13	4.05	0.000	126.70	126.10	137.00	137.04	137.35	137.34	140.00	140.00
P-101	[illegible]	[illegible]	18.0	55.1	0.30	0.30	6.13	1.04	0.000	126.80	126.45	137.80	137.80	137.84	137.84	139.80	142.80
P-102	[illegible]	[illegible]	18.0	80.0	0.70	0.70	6.77	3.60	0.000	126.40	126.00	136.00	136.72	136.79	136.98	140.40	140.00
P-103	[illegible]	[illegible]	15.0	83.0	0.00	0.00	3.13	4.03	0.000	126.03	126.00	137.00	137.04	137.00	137.34	140.00	140.00
P-104	[illegible]	[illegible]	18.0	102.0	0.00	0.00	6.00	0.00	0.000	126.00	126.00	137.00	136.70	136.00	136.00	140.00	140.00
P-105	[illegible]	[illegible]	15.0	240.0	0.00	0.00	4.04	4.40	0.000	125.03	125.00	135.00	135.11	135.00	134.77	140.00	137.00
P-106A	[illegible]	[illegible]	18.0	80.7	0.77	0.77	6.00	0.47	0.000	124.80	124.00	135.00	135.04	135.17	135.00	140.00	138.00
P-106B	[illegible]	[illegible]	30.0	88.7	0.70	0.70	22.00	0.00	0.000	121.70	121.10	132.00	132.01	132.00	132.00	138.00	138.07
P-107	[illegible]	[illegible]	24.0	80.2	7.70	7.70	17.02	3.47	0.000	121.47	121.10	132.70	132.00	132.00	132.00	138.00	138.07
P-108	[illegible]	[illegible]	36.0	112.0	0.00	0.00	17.00	3.17	0.000	121.10	120.10	132.00	132.10	132.04	132.06	138.07	138.00
P-109	[illegible]	[illegible]	15.0	13.0	0.41	0.41	8.20	1.04	0.014	121.00	120.00	132.00	132.00	132.04	132.04	138.00	138.00
P-110	[illegible]	[illegible]	18.0	88.1	0.00	0.00	6.00	3.81	0.000	120.00	120.47	132.70	132.00	132.00	132.70	138.00	138.00

Conduit FlexTable: DOT Hydraulic Grade Line Computations

Label	Start Node	Stop Node	Diameter (in)	Length (ft)	Invert at Upstream End (ft)	Total System Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Slope (Calculated) (ft/ft)	Invert (Start) (ft)	Invert (End) (ft)	HGL (Start) (ft)	EGL (Start) (ft)	HGL (End) (ft)	EGL (End) (ft)	Elevation at Ground (Start) (ft)	Elevation at Ground (End) (ft)
P-101	103-104	D-100	24.0	77.0	17.00	17.00	17.00	5.09	0.000	126.00	125.00	128.38	128.88	127.75	131.49	128.00	128.00
P-102	DR-117	DR-116	18.0	13.0	1.04	1.04	12.40	3.76	0.014	131.00	130.80	134.39	134.89	134.80	136.80	136.00	135.00
P-103	DR-116	D-101	18.0	48.0	8.58	8.58	8.17	3.85	0.000	130.80	130.67	134.08	134.37	134.16	137.81	135.00	135.00
P-104	DR-115	DR-116	18.0	13.0	0.00	0.00	12.40	3.33	0.014	131.00	130.88	133.97	133.98	133.88	136.80	136.00	136.00
P-105	DR-130	D-101	18.0	48.0	8.63	8.63	8.17	4.88	0.000	130.84	130.67	133.40	133.52	133.16	137.81	134.10	134.00
P-106	P-10 DIVITUB E	RED-009	12.0	180.7	8.00	1.72	3.94	5.84	0.004	129.00	128.00	132.79	133.03	132.08	138.07	138.00	131.00
P-107	DR-109	107-401	18.0	148.6	2.15	2.15	8.00	1.28	0.000	132.22	132.02	134.28	134.32	134.18	134.18	137.29	135.60
P-108	DR-101	108-401	18.0	18.0	8.13	8.13	8.01	3.80	0.000	131.88	131.82	134.37	134.39	134.14	134.11	138.28	138.00
P-109	109-401	109-402	24.0	222.3	8.88	8.88	17.31	2.18	0.000	131.80	130.40	134.18	132.08	134.08	138.88	138.40	138.40
P-110	DR-111	107-402	18.0	15.4	8.18	8.18	8.31	4.83	0.000	131.09	130.97	134.14	134.08	133.81	135.79	139.09	139.40
P-111	107-402	107-403	36.0	220.6	11.40	11.4 0	17.31	3.84	0.000	130.40	129.80	133.79	133.31	133.88	135.10	138.40	138.40
P-112	DR-102	109-403	18.0	13.0	8.00	8.01	8.31	4.33	0.000	131.00	130.87	133.40	133.02	133.11	133.04	133.00	133.40
P-113	109-403	109-404	24.0	226.0	13.59	13.5 0	17.33	4.96	0.000	129.30	128.20	133.08	132.15	132.83	134.79	135.40	135.50
P-114	DR-104	107-404	18.0	15.0	8.88	8.88	8.31	5.04	0.000	131.19	131.07	132.48	132.18	132.07	131.58	139.19	139.60
P-115	109-404	HDR-405	24.0	128.0	18.00	18.0 0	17.33	5.88	0.000	128.00	127.36	131.79	132.08	131.08	133.01	135.00	135.00
P-116	DR-103	HDR-406	18.0	80.3	8.47	8.47	8.48	4.80	0.000	130.23	129.83	131.48	130.98	131.18	133.02	133.00	133.00
P-117	105-406	105-406	24.0	174.5	11.09	11.0 0	17.34	5.71	0.000	127.20	126.20	130.11	129.90	129.40	137.99	135.20	131.00

Conduit FlexTable: DOT Hydraulic Grade Line Computations

Label	Start Node	Stop Node	Diameter (in)	Length (ft)	Number of Upstream Pipes (FB)	Total System Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Slope (Calculated) (ft/ft)	Invert (Start) (ft)	Invert (End) (ft)	HGL (Start) (ft)	EGL (Start) (ft)	HGL (End) (ft)	EGL (End) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (End) (ft)
P-411	DB-408	114-403	18.0	89.0	0.07	0.07	8.10	4.09	0.000	128.00	128.70	134.11	134.68	134.68	135.08	137.00	137.00
P-412	DB-407	113-408	15.0	55.0	0.09	0.09	6.62	5.21	0.000	134.00	135.32	134.77	134.85	134.76	134.91	135.00	137.00
P-413	117-402	1107-401	18.0	26.6	0.13	0.22	10.09	7.08	0.000	133.70	133.18	135.75	135.10	135.66	135.05	137.00	138.00
P-414	1129-401	1128-401	18.0	80.0	0.30	0.31	10.74	10.0 1	0.000	130.00	130.80	133.04	133.63	133.72	133.88	135.00	139.00
P-415	DB-408	DB-409	18.0	210.0	0.07	0.07	4.97	4.09	0.000	128.00	130.00	130.97	131.05	131.17	131.78	135.00	139.00
P-416	DB-409	DB-410	18.0	85.0	0.09	0.09	5.04	4.78	0.000	130.00	130.78	131.88	132.10	132.00	134.01	139.00	137.00
P-417	DB-410	1109-402	18.0	13.0	0.18	0.18	10.03	9.00	0.000	130.78	130.80	134.78	135.41	133.02	133.87	137.00	137.00
P-418	1123-403	1122-402	15.0	90.0	0.40	0.40	17.00	12.0 0	0.000	133.00	135.30	133.94	135.05	133.14	137.13	137.00	139.00
P-419	P164 OUTLET	1105-403	12.0	61.0	0.00	0.00	8.17	0.00	0.000	128.70	128.00	128.70	128.00	128.70	128.00	139.00	139.00
P-500	DB-000	DB-001	18.0	800.0	0.00	0.00	4.00	0.00	0.000	128.70	128.70	128.00	128.00	128.07	128.00	128.70	128.00
P-501	DB-001	104-501	12.0	13.0	4.09	4.09	3.62	4.07	0.000	128.70	129.03	129.48	129.48	129.32	129.12	129.00	140.00
P-502	103-501	103-502	15.0	57.1	4.07	4.07	4.00	4.09	0.000	129.81	130.37	130.14	137.00	137.00	137.04	140.00	141.00
P-503	DB-002	104-502	18.0	80.0	0.00	0.00	8.00	0.00	0.000	128.00	128.00	137.00	137.00	137.00	137.00	140.00	141.00
P-504	104-503	104-503	24.0	126.0	7.09	7.09	17.00	0.00	0.000	128.07	129.70	137.00	137.00	137.00	137.48	141.00	139.00
P-505	DB-003	104-503	15.0	15.1	1.09	1.09	5.07	1.09	0.000	129.00	130.00	137.00	137.04	137.00	137.01	139.00	139.00
P-506	104-504	104-504	36.0	88.7	8.27	8.27	17.83	2.83	0.000	134.73	135.00	137.00	137.00	137.00	137.00	139.00	139.00
P-507	DB-004	104-504	18.0	87.2	4.01	4.01	8.00	3.00	0.000	128.00	129.00	137.70	137.48	137.00	137.04	138.00	139.00

Conduit FlexTable: DOT Hydraulic Grade Line Computations

Label	Start Node	Stop Node	Diameter (in)	Length (ft)	Scaled Assumed Flow (cfs)	Total System Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Slope (Calculated) (ft/ft)	Invert (Start) (ft)	Invert (Stop) (ft)	HGL (Start) (ft)	EGL (Start) (ft)	HGL (Stop) (ft)	EGL (Stop) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)
P-808	804	808	24.0	335.7	14.00	21.23	17.67	3.81	0.000	134.48	133.80	137.67	137.68	137.67	138.68	139.80	139.68
P-809	809	808	15.0	154.5	5.76	5.76	4.98	3.61	0.009	134.79	134.07	137.42	137.68	137.38	138.68	139.79	139.68
P-810	810	809	30.0	87.7	13.84	13.84	17.58	4.08	0.009	133.83	133.02	136.88	136.92	136.87	136.38	139.83	139.30
P-811	811	809	18.0	30.1	7.39	7.39	8.13	4.18	0.000	133.80	133.02	136.00	136.08	136.00	136.11	139.13	139.09
P-812	812	811	24.0	87.1	18.00	18.00	17.61	5.24	0.000	133.49	133.02	133.04	133.08	133.15	134.90	139.49	139.09
P-813	813	811	18.0	48.0	7.39	7.39	8.13	5.26	0.000	133.80	133.02	133.44	133.18	133.01	134.78	139.13	139.09
P-814	814	813	15.0	93.1	1.62	1.62	7.91	4.83	0.010	139.87	139.07	139.08	139.09	139.08	139.09	141.79	140.80
P-815	815	814	18.0	62.6	1.62	1.62	7.03	1.91	0.010	139.87	139.16	139.00	137.08	137.07	137.08	140.80	140.00
P-816	816	815	18.0	31.3	5.16	5.16	8.07	3.49	0.000	135.83	135.19	135.10	135.04	137.00	137.00	139.20	140.00
P-817	817	816	24.0	317.7	7.00	7.00	17.34	3.33	0.000	135.24	135.05	137.00	137.00	137.15	137.29	140.20	139.50
P-818	818	816	18.0	64.0	5.40	5.40	8.13	3.06	0.009	135.10	134.77	137.00	137.15	137.15	137.68	138.59	139.80
P-819	819	818	24.0	170.2	12.20	12.20	17.58	3.83	0.000	134.77	133.80	137.00	137.00	137.00	138.84	139.80	139.68
P-820	820	820	12.0	87.4	1.88	1.88	8.68	8.85	0.048	138.68	138.18	139.07	137.72	138.80	137.80	142.00	138.18
P-821	821	820	18.0	64.0	8.16	8.16	8.04	3.16	0.000	138.18	134.78	137.00	137.15	137.15	138.74	138.18	139.80
P-822	822	821	24.0	13.5	15.00	15.00	21.05	7.38	0.000	133.80	133.80	135.85	135.17	135.48	135.50	139.50	139.50
P-823	823	823	12.0	178.0	0.00	0.00	0.00	0.00	0.000	133.00	133.00	133.00	133.00	133.78	133.70	139.00	138.61
P-824	824	824	12.0	30.7	1.47	1.47	3.03	1.30	0.000	139.33	139.33	140.00	140.78	140.15	140.77	142.00	140.80

Conduit FlexTable: DOT Hydraulic Grade Line Computations

Label	Start Node	Stop Node	Diameter (in)	Length (ft)	System Rational Flow (cfs)	Total System Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Slope (Calculated) (ft/ft)	Invert (Start) (ft)	Invert (Stop) (ft)	EGL (In) (ft)	EGL (Out) (ft)	HGL (In) (ft)	HGL (Out) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)
P-524	CB-514	HDS-502	15.0	227.8	3.46	3.46	4.95	2.82	0.005	139.20	138.09	140.73	140.19	140.61	140.07	142.20	143.15
P-525	CB-515	CB-516	15.0	188.3	2.57	2.57	5.33	4.89	0.005	139.50	138.14	140.64	140.42	140.55	140.33	143.50	142.65
P-526	CB-516	HDS-502	15.0	14.6	4.32	4.32	4.98	3.52	0.005	138.14	138.10	140.28	140.22	140.08	140.02	142.65	143.15
P-527	HDS-502	FES-500	15.0	16.1	8.83	8.83	8.88	5.40	0.005	138.09	137.95	139.74	139.56	139.35	139.99	143.15	143.00

Conduit FlexTable: DOT Hydraulic Grade Line Computations

Label	Start Node	Stop Node	Diameter (in)	Length (ft)	Swale Natural Flow (cfs)	Total Swale Flow (cfs)	Capacity (Full Flow) (cfs)	Velocity (ft/s)	Slope (Calculated) (ft/ft)	Invert (Start) (ft)	Invert (Stop) (ft)	EGL (In) (ft)	EGL (Out) (ft)	HGL (In) (ft)	HGL (Out) (ft)	Elevation Ground (Start) (ft)	Elevation Ground (Stop) (ft)
P-528	CB-517	CB-518	15.0	30.0	0.57	0.57	4.95	2.82	0.005	141.70	141.55	142.44	142.44	142.45	142.45	144.70	144.70
P-529	CB-518	HDS-503	15.0	33.1	1.69	1.69	4.97	3.77	0.005	141.55	141.45	142.39	142.38	142.30	142.29	144.70	145.85
P-530	HDS-503	FES-501	15.0	82.7	1.88	1.88	5.16	3.87	0.005	141.45	141.20	142.20	141.75	142.00	141.82	145.85	146.00
P-531	CB-521	CB-522	15.0	47.6	0.57	0.57	5.06	3.09	0.005	142.50	142.25	143.06	143.03	143.01	143.01	146.50	146.50
P-532	CB-522	HDS-504	15.0	253.5	1.39	1.39	4.93	3.46	0.005	142.25	140.95	142.89	142.49	142.72	142.47	146.50	145.15
P-533	CB-519	CB-520	15.0	50.7	2.68	2.68	5.01	2.18	0.005	141.00	140.74	142.90	142.82	142.82	142.75	144.00	144.00
P-534	CB-520	HDS-504	15.0	21.8	5.17	5.17	5.01	4.21	0.005	140.74	140.63	142.71	142.59	142.45	142.32	144.00	145.15
P-535	HDS-504	FES-502	18.0	121.0	8.37	8.37	8.21	5.13	0.005	140.63	140.00	142.03	141.40	141.82	140.88	145.15	146.00
P-536	FES-OUTLET	new-511	12.0	54.1	0.00	1.33	2.96	3.87	0.005	139.75	139.45	140.45	140.21	140.24	140.14	146.00	146.00
P-537	new-511	EX-C5	12.0	47.0	0.00	1.33	2.75	3.48	0.005	139.45	139.20	140.15	139.85	139.94	139.89	146.00	144.15

Conduit FlexTable: DOT Storm Drain Computations

Start node	Stop node	Length (ft)	System CA (acres)	System Flow Time (min)	System Intensity (in/h)	Flow (cfs)	Capacity (Full Flow) (cfs)	Diameter (in)	Velocity (ft/s)	Invert (Start) (ft)	Invert (Stop) (ft)	Slope (calculated) (ft/ft)
MH-102	MH-103	200.0	0.317	5.842	5.000	1.60	4.91	15.0	4.09	158.10	157.20	0.005
MH-107	HDS-102	85.7	0.595	5.000	5.575	3.13	17.27	24.0	4.80	157.53	156.90	0.005
MH-103	MH-101	245.0	0.137	5.000	5.009	1.34	2.74	12.0	3.41	140.15	138.91	0.005
MH-108	MH-107	200.0	0.298	5.071	5.003	2.70	4.95	15.0	4.11	155.23	157.25	0.005
MH-101	MH-102	141.5	0.317	6.272	5.368	2.79	6.26	15.0	4.18	138.91	138.20	0.005
MH-108	MH-109	200.0	0.318	10.779	6.188	1.98	6.28	15.0	5.81	150.83	158.83	0.005
HDS-105	FES-105	87.0	0.588	5.247	7.328	4.32	8.27	15.0	6.75	156.38	156.00	0.005
HDS-103	FES-103	72.7	0.606	5.000	5.000	7.48	17.22	24.0	6.39	158.00	158.80	0.005
HDS-202	FES-202	10.1	1.109	11.720	5.829	6.62	8.88	15.0	5.40	158.09	157.98	0.005
MH-105	HDS-105	71.9	0.585	7.553	7.634	4.53	8.05	15.0	4.55	157.10	156.55	0.005
HDS-101	FES-101	200.0	0.818	11.884	5.843	3.58	8.05	15.0	4.45	158.83	157.83	0.005
MH-106	MH-107	42.6	0.178	5.087	5.994	1.81	7.03	15.0	1.31	158.87	158.14	0.010
MH-107	MH-108	217.7	0.845	7.119	7.921	7.55	17.34	24.0	5.33	156.14	155.05	0.005
HDS-104	FES-104	83.6	0.536	5.000	5.000	3.80	8.14	15.0	4.31	158.83	158.20	0.005
MH-109	FES-109	268.0	0.000	0.000	11.972	3.80	8.04	15.0	6.48	158.33	153.98	0.005
MH-202	MH-203	108.8	0.000	5.771	5.000	7.29	17.28	24.0	5.20	158.67	154.73	0.005
MH-208	HDS-201	178.0	1.848	5.000	7.429	13.36	17.28	24.0	6.82	154.77	153.80	0.005
MH-203	MH-204	88.7	1.006	7.203	7.592	5.67	17.32	24.0	6.80	154.72	154.45	0.005
MH-501	MH-502	57.1	0.598	5.495	5.251	4.97	4.95	15.0	4.05	155.61	155.27	0.005
HDS-501	O-502	15.5	0.655	5.774	7.047	18.88	31.06	24.0	7.88	155.90	155.80	0.007
MH-504	MH-505	150.7	1.740	9.904	6.451	11.35	17.27	24.0	5.61	154.43	153.95	0.005
MH-506	HDS-503	87.7	2.158	10.390	6.208	13.60	17.28	24.0	6.36	153.93	153.49	0.005
HDS-502	O-503	27.1	0.967	10.758	6.208	18.88	17.81	24.0	6.36	153.48	153.38	0.005
HDS-401	FES-401	26.2	0.000	5.000	5.000	3.01	16.79	18.0	10.61	153.00	129.80	0.067
MH-408	HDS-401	29.8	0.000	5.000	5.000	3.02	13.08	18.0	7.36	153.70	153.18	0.011
HDS-402	FES-402	80.0	0.000	5.000	5.000	3.40	17.02	18.0	13.88	153.00	153.00	0.000
MH-401	MH-402	220.5	1.134	11.158	5.573	5.55	17.31	24.0	5.19	151.90	150.40	0.005
MH-108	HDS-104	210.0	1.000	7.200	7.206	9.93	17.33	24.0	5.17	151.19	150.15	0.005
HDS-104	O-105	77.5	2.554	5.595	7.247	17.20	17.33	24.0	5.29	150.13	150.00	0.005
HDS-403	FES-403	174.8	4.178	16.131	5.007	21.08	17.68	24.0	6.71	127.28	126.86	0.008

Conduit FlexTable: DOT Storm Drain Computations

Start Node	Stop Node	Length (ft)	System CA (acres)	System Flow Time (min)	System Intensity (in/h)	Flow (cfs)	Capacity (Full Flow) (cfs)	Diameter (in)	Velocity (ft/s)	Invert (Start) (ft)	Invert (Stop) (ft)	Slope (Calculated) (ft/ft)
MH-402	MH-404	200.0	2.801	13.874	5.051	13.39	17.33	24.0	4.26	129.30	128.09	0.003
MH-402	MH-403	220.5	2.911	13.994	5.010	11.40	17.31	24.0	3.64	130.40	129.30	0.003
MH-404	HDS-400	199.9	3.886	14.371	5.138	19.09	17.33	24.0	6.08	128.09	127.23	0.003
CB-130	MH-130	16.9	0.157	4.983	5.051	1.25	2.66	12.0	3.52	140.25	140.15	0.005
CB-131	MH-131	16.8	0.100	4.983	5.051	1.73	2.76	12.0	3.71	139.78	139.67	0.006
CB-132	MH-132	16.8	0.288	4.983	5.051	3.38	6.68	18.0	4.38	139.00	138.80	0.008
CB-133	MH-134	23.3	0.518	10.880	6.313	1.90	6.06	18.0	3.87	139.78	139.63	0.006
CB-134	MH-132	23.3	0.288	4.983	5.051	3.72	6.09	18.0	4.18	139.00	138.88	0.008
CB-135	HDS-131	23.1	0.294	4.983	5.051	3.88	6.09	18.0	4.18	139.00	138.88	0.008
CB-136	MH-136	23.2	0.295	4.983	5.051	3.72	5.05	15.0	4.19	139.00	138.88	0.008
CB-137	MH-137	23.1	0.292	4.983	5.051	3.86	5.05	15.0	4.17	139.00	138.88	0.008
CB-138	HDS-132	115.9	0.316	5.133	5.449	3.69	4.95	15.0	4.11	138.00	137.42	0.005
CB-139	HDS-133	33.1	0.273	5.733	5.152	3.34	5.19	18.0	3.29	138.80	138.63	0.005
CB-140	HDS-133	22.2	0.263	4.983	5.051	3.79	5.77	15.0	5.25	138.40	138.25	0.007
CB-141	FES-135	116.0	0.010	4.983	5.051	3.82	6.10	18.0	4.34	139.70	139.10	0.005
CB-142	MH-142	80.7	0.004	4.983	5.051	3.77	6.68	18.0	6.67	139.80	139.00	0.008
CB-124	MH-128	89.3	0.836	5.900	5.037	7.74	17.30	24.0	2.47	121.47	121.19	0.003
CB-118	CB-118	10.8	0.264	4.983	5.051	3.41	6.08	18.0	1.86	121.00	120.89	0.014
CB-118	HDS-134	89.3	1.284	5.072	5.002	9.90	6.03	18.0	5.61	120.89	120.57	0.003
CB-117	CB-118	10.8	0.156	4.983	5.051	1.34	13.45	18.0	3.79	121.00	120.85	0.014
CB-118	O-101	48.8	0.948	5.236	5.015	8.85	8.17	18.0	5.20	120.85	120.67	0.009
CB-119	CB-120	10.8	0.451	4.983	5.051	5.95	13.45	18.0	3.33	121.00	120.85	0.014
CB-120	O-102	48.8	1.405	10.880	6.213	8.82	8.17	18.0	4.99	120.88	120.87	0.009
CB-600	MH-601	166.8	0.288	7.833	7.887	3.33	6.03	18.0	1.38	102.32	101.80	0.003
CB-601	MH-601	16.4	0.838	11.100	6.098	8.13	8.01	18.0	5.00	101.88	101.80	0.005
CB-602	MH-602	18.4	0.838	4.983	5.051	8.18	8.01	18.0	4.63	121.08	120.87	0.008
CB-603	MH-603	18.2	0.879	4.983	5.051	8.01	8.01	18.0	4.53	121.08	120.87	0.008
CB-604	MH-604	15.0	0.755	5.583	7.150	5.55	8.51	15.0	5.05	121.15	121.07	0.005
CB-605	HDS-600	90.5	0.490	4.983	5.051	4.47	8.45	18.0	4.83	150.35	129.85	0.006
CB-606	MH-605	55.2	0.250	4.983	5.051	2.37	5.13	15.0	4.09	153.00	152.70	0.005
CB-607	MH-606	58.0	0.106	4.983	5.051	0.99	5.03	18.0	5.17	154.00	153.33	0.010

Conduit FlexTable: DOT Storm Drain Computations

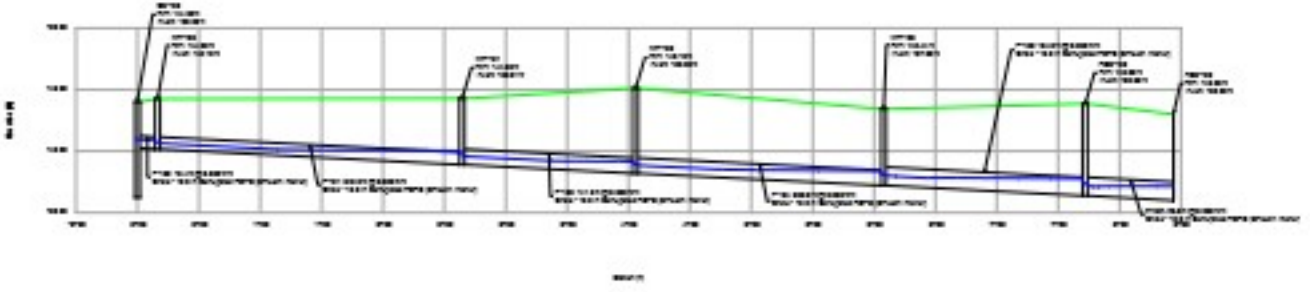
Start Node	Stop Node	Length (ft)	Subcm CA (acres)	Subcm Flow Time (min)	Subcm Intensity (in/h)	Flow (cfs)	Capacity (Full Flow) (cfs)	Diameter (in)	Velocity (ft/s)	Invert (Start) (ft)	Invert (Stop) (ft)	Slope (Calculated) (ft/ft)
CB'408	CB'409	318.0	0.337	4.980	8.051	2.07	4.37	15.0	4.39	155.00	150.80	0.013
CB'409	CB'410	35.0	0.573	5.032	8.000	3.83	9.84	15.0	4.75	153.90	150.75	0.031
CB'410	MH'401	13.0	0.958	5.037	8.495	8.45	13.20	15.0	8.30	152.75	150.30	0.021
CB'500	CB'501	200.0	0.518	4.953	8.051	3.82	4.95	15.0	3.50	156.70	155.70	0.005
CB'501	MH'501	18.6	0.938	5.428	8.398	4.00	5.21	15.0	4.07	155.70	155.61	0.005
CB'502	MH'502	83.8	0.206	4.980	8.051	3.88	8.01	18.0	3.18	156.00	155.83	0.002
CB'503	MH'503	33.1	0.174	4.980	8.051	1.80	8.07	18.0	1.39	156.30	156.18	0.003
CB'504	MH'504	87.2	0.877	5.800	8.611	4.81	8.09	18.0	3.88	156.18	156.80	0.003
CB'505	MH'505	134.0	0.412	4.980	8.051	3.75	4.90	18.0	3.27	154.78	154.27	0.003
CB'506	MH'506	55.1	0.811	4.980	8.051	7.29	8.11	18.0	4.16	153.90	153.83	0.003
CB'507	CB'501	48.0	0.807	4.980	8.051	7.25	8.22	18.0	5.25	153.90	153.83	0.003
CB'508	MH'501	84.9	1.307	5.110	8.981	9.12	5.84	18.0	5.16	155.15	154.75	0.005
CB'509	CB'508	87.4	0.204	4.980	8.051	1.88	8.28	12.0	8.50	155.28	155.16	0.048
CB'510	MH'506	30.1	0.178	4.980	8.051	1.82	7.01	18.0	4.65	156.87	156.57	0.010
CB'511	MH'507	21.2	0.767	7.003	7.573	6.16	8.27	18.0	3.49	156.28	156.14	0.006
CB'512	MH'508	84.0	0.700	7.880	7.828	5.48	8.12	18.0	3.08	156.10	156.77	0.008
CB'514	MH'502	227.0	0.307	5.329	8.057	2.48	4.90	18.0	2.82	156.00	155.09	0.004
CB'515	MH'502	14.0	0.722	11.887	6.040	4.33	4.90	18.0	2.82	155.14	155.10	0.003
CB'513	CB'515	155.3	0.418	11.100	6.095	2.57	8.03	15.0	4.89	159.30	158.14	0.008
P-1C OUTLET	MH'105	125.7	0.000	0.000	9.040	1.72	5.84	12.0	5.54	152.00	159.00	0.014
P-1B OUTLET	MH'109	139.0	0.000	0.000	9.040	2.03	4.90	15.0	4.46	155.00	155.22	0.002
P-4A OUTLET	MH'402	41.0	0.000	0.000	9.040	0.00	8.17	12.0	0.00	155.72	155.00	0.018
P-3A OUTLET	CI'503	170.9	0.000	0.000	9.040	0.00	8.89	12.0	4.17	153.00	152.00	0.006
CB'513	CB'514	33.7	0.161	4.980	8.051	1.47	8.03	15.0	1.20	159.33	159.20	0.003
MH'110	MH'108	85.7	0.304	5.255	8.009	2.72	23.94	27.0	3.99	151.70	151.19	0.005

Conduit FlexTable: DOT Storm Drain Computations

Start Node	Stop Node	Length (ft)	System CA (acres)	System Flow Time (min)	System Intensity (in/h)	Flow (cfs)	Capacity (Full Flow) (cfs)	Diameter (in)	Velocity (ft/s)	Invert (Start) (ft)	Invert (Stop) (ft)	Slope (Calculated) (ft/ft)
HDS-503	FES-501	82.7	0.209	5.246	5.911	1.88	5.16	15.0	3.87	141.46	141.00	0.005
HDS-504	FES-502	121.0	1.530	23.153	4.156	5.37	5.21	15.0	5.13	140.83	140.00	0.005
CB-521	CB-522	47.8	0.179	16.930	4.816	0.67	5.06	15.0	3.09	142.50	142.25	0.005
CB-522	HDS-504	283.8	0.288	17.178	4.789	1.09	4.98	15.0	3.48	142.25	140.88	0.005
CB-519	CB-520	50.7	0.631	22.880	4.206	2.68	5.01	15.0	2.18	141.00	140.74	0.005
CB-520	HDS-504	21.8	1.232	23.068	4.165	5.17	5.01	15.0	4.21	140.74	140.63	0.005
CB-517	CB-518	30.0	0.074	4.980	9.051	0.67	4.98	15.0	2.82	141.70	141.55	0.005
CB-518	HDS-503	30.2	0.209	5.157	8.957	1.89	4.97	15.0	3.77	141.55	141.48	0.005
P-50 OUTLET	MH-511	94.2	0.000	0.000	9.040	1.33	2.98	12.0	3.87	139.78	139.48	0.006
MH-511	EX-CB	47.0	0.000	0.232	11.888	1.33	2.76	12.0	3.48	139.48	139.20	0.005

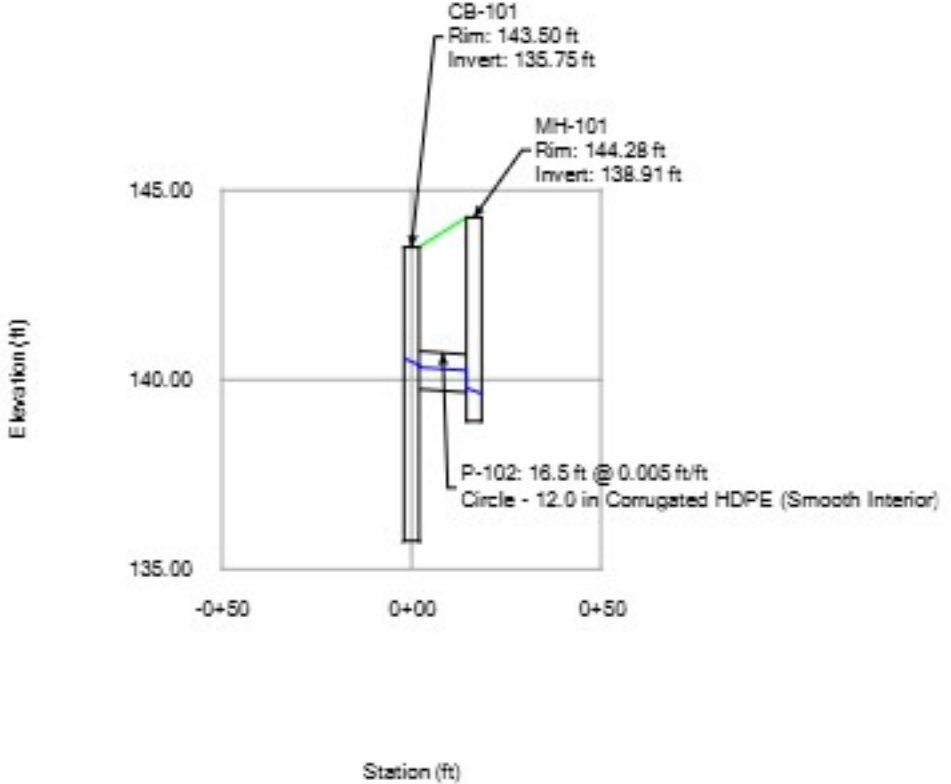
Profile Report

Engineering Profile - CB-100 TO FES-100 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



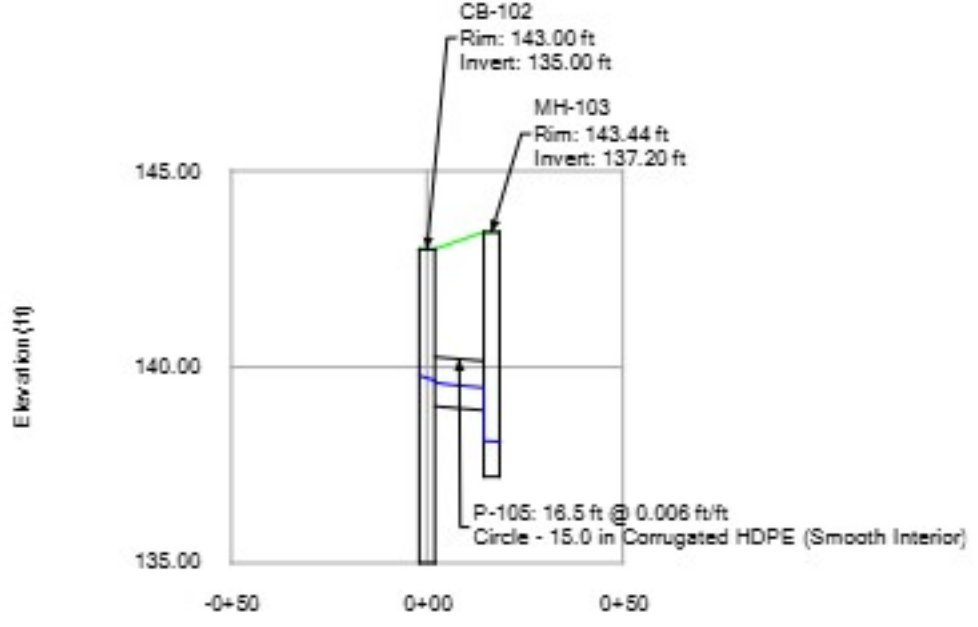
Profile Report

Engineering Profile - CB-101 TO MH-101 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



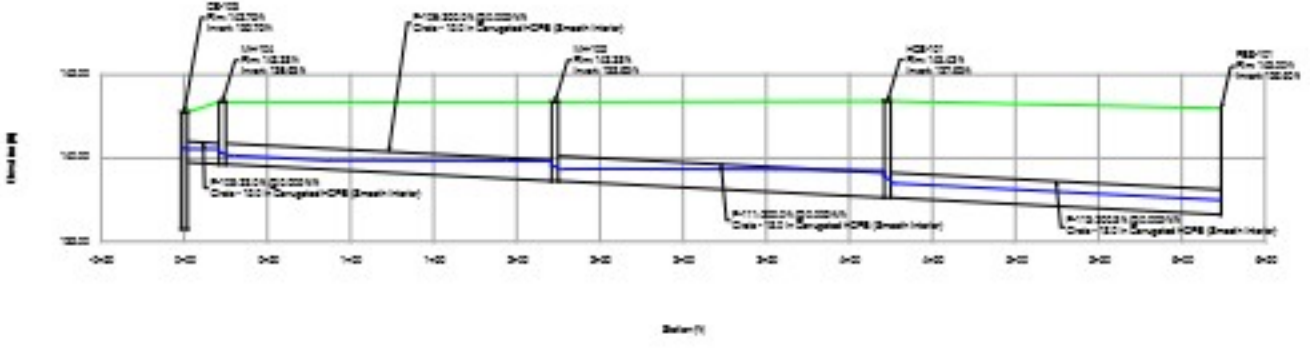
Profile Report

Engineering Profile - CB-102 TO MH-103 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



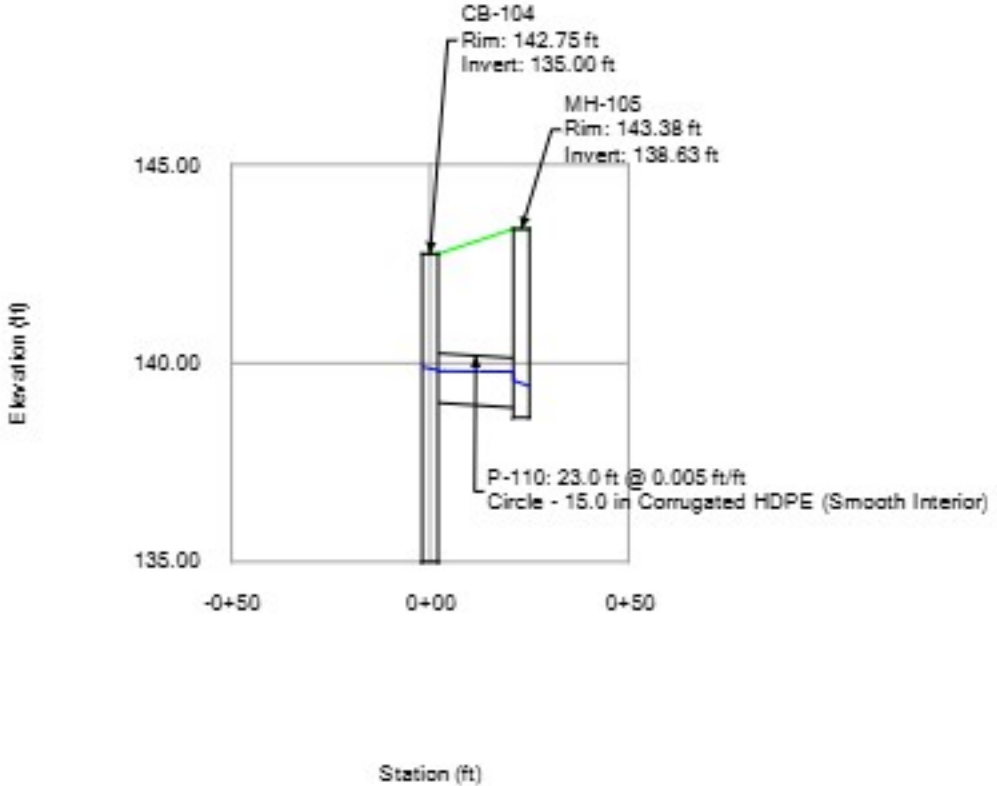
Profile Report

Engineering Profile - CB-103 TO FES-101 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



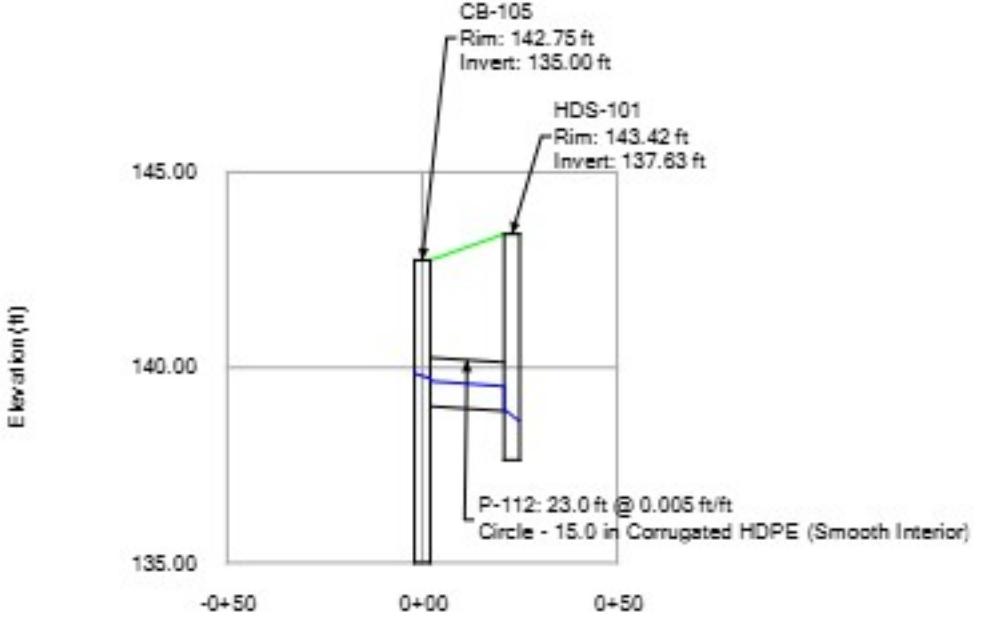
Profile Report

Engineering Profile - CB-104 TO MH-105 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



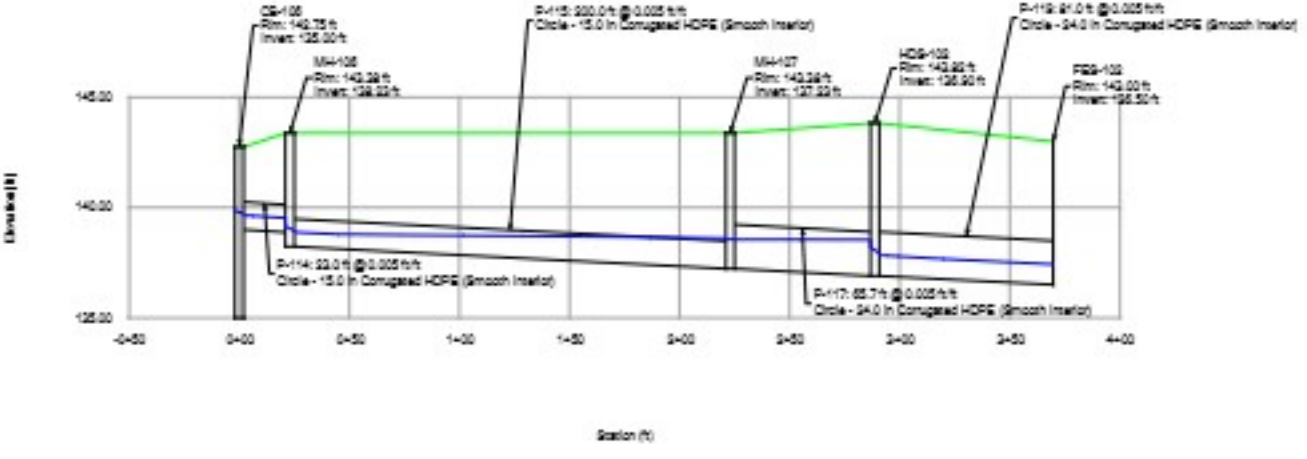
Profile Report

Engineering Profile - CB-105 TO HDS-101 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



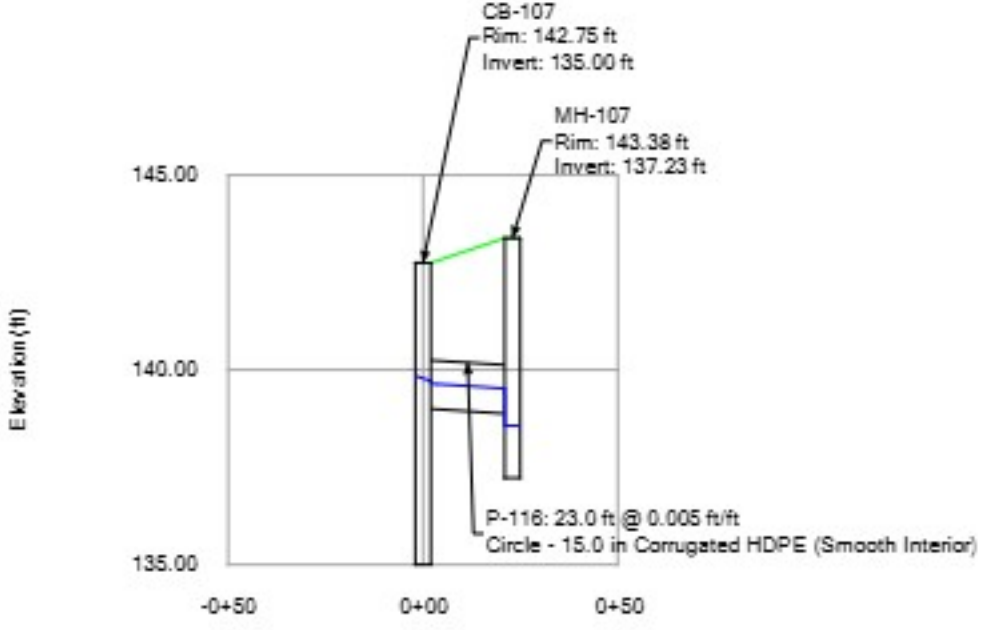
Profile Report

Engineering Profile - CB-106 TO FES-102 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



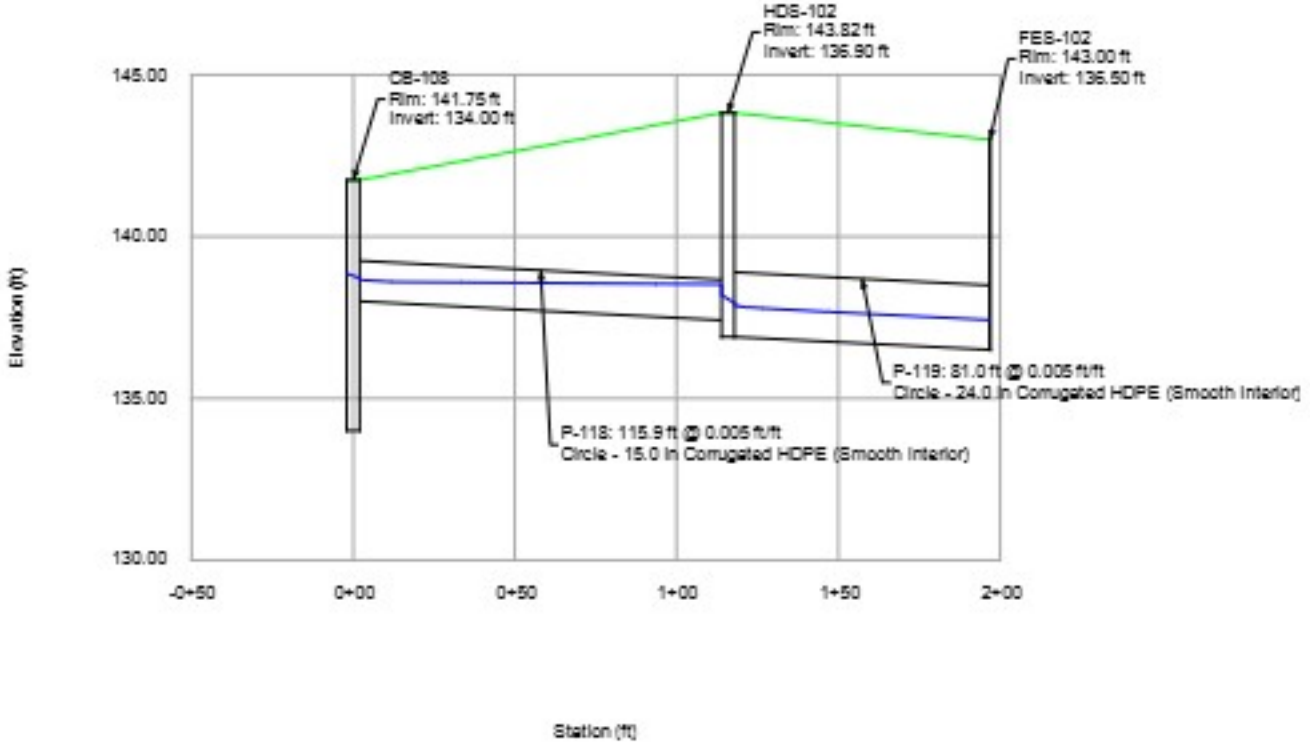
Profile Report

Engineering Profile - CB-107 TO MH-107 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



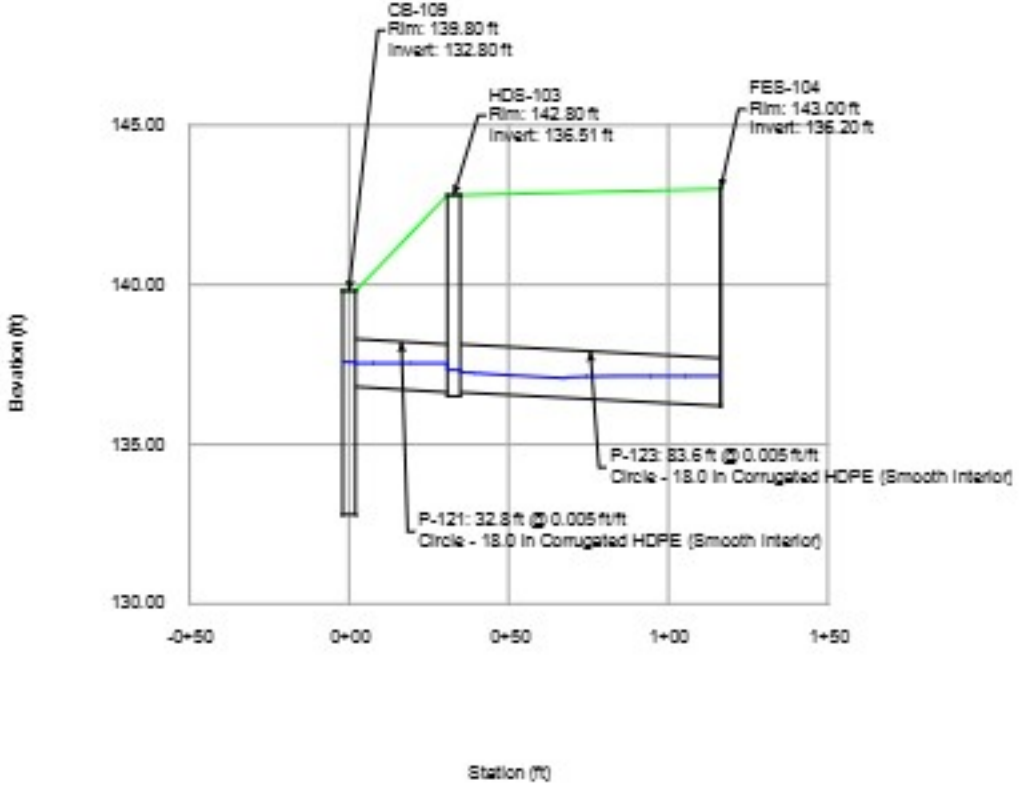
Profile Report

Engineering Profile - CB-108 TO FES-102 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



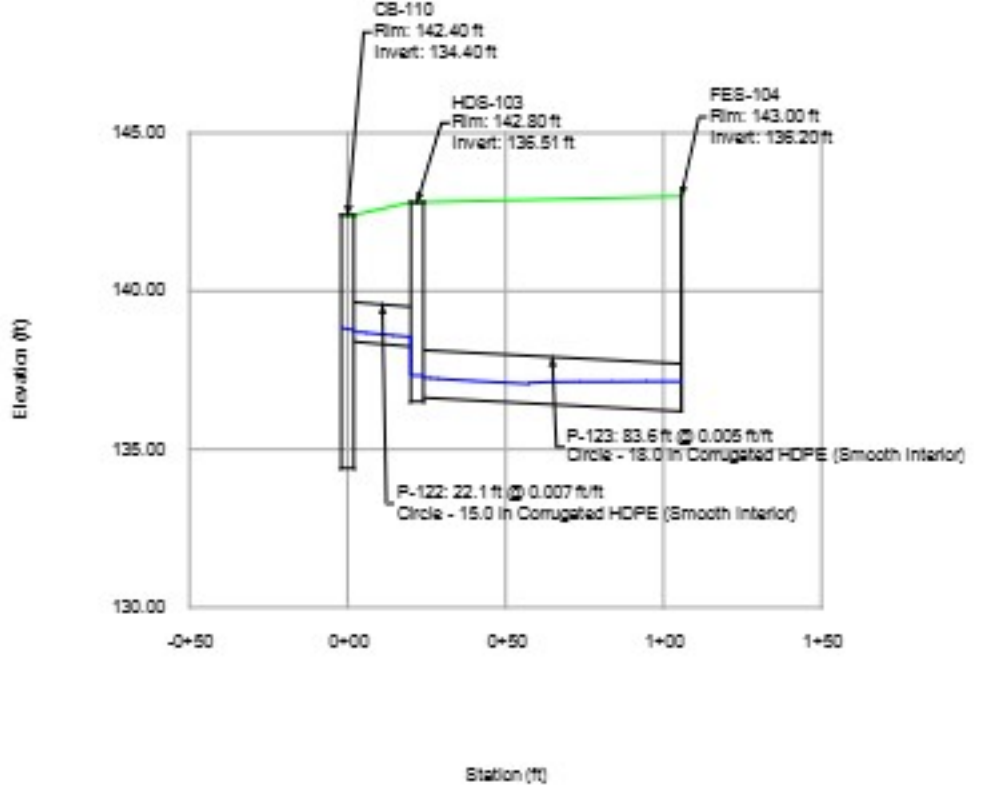
Profile Report

Engineering Profile - CB-109 TO FES-104 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



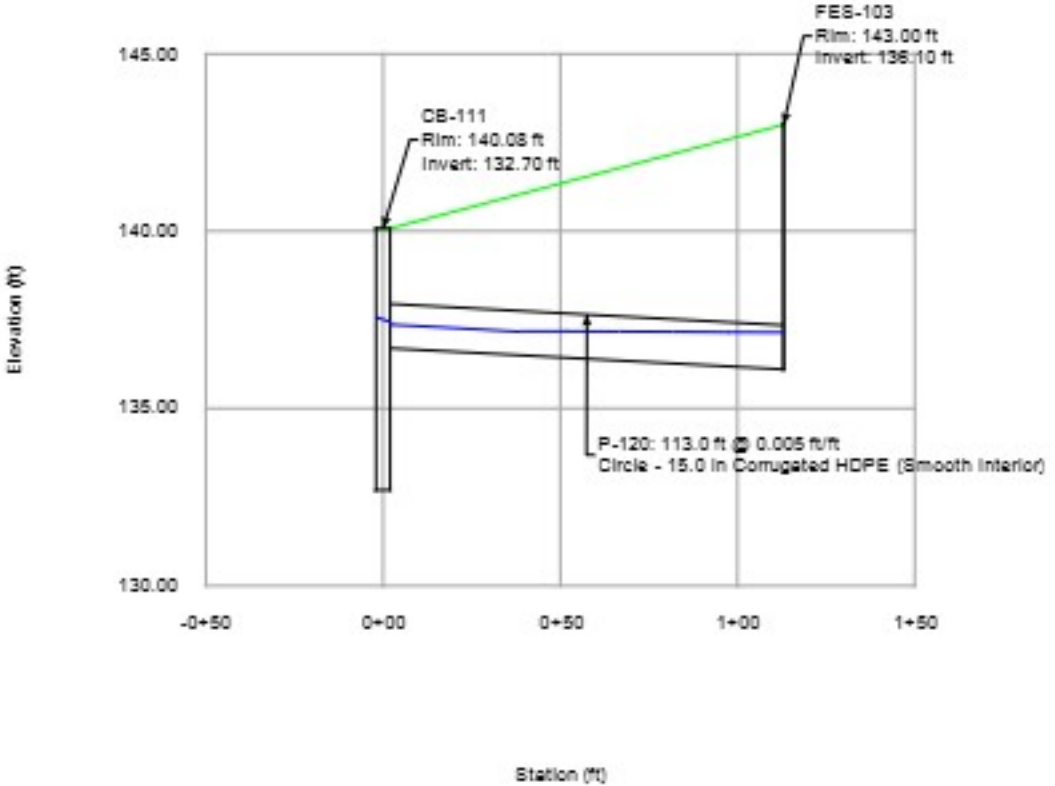
Profile Report

Engineering Profile - CB-110 TO FES-104 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



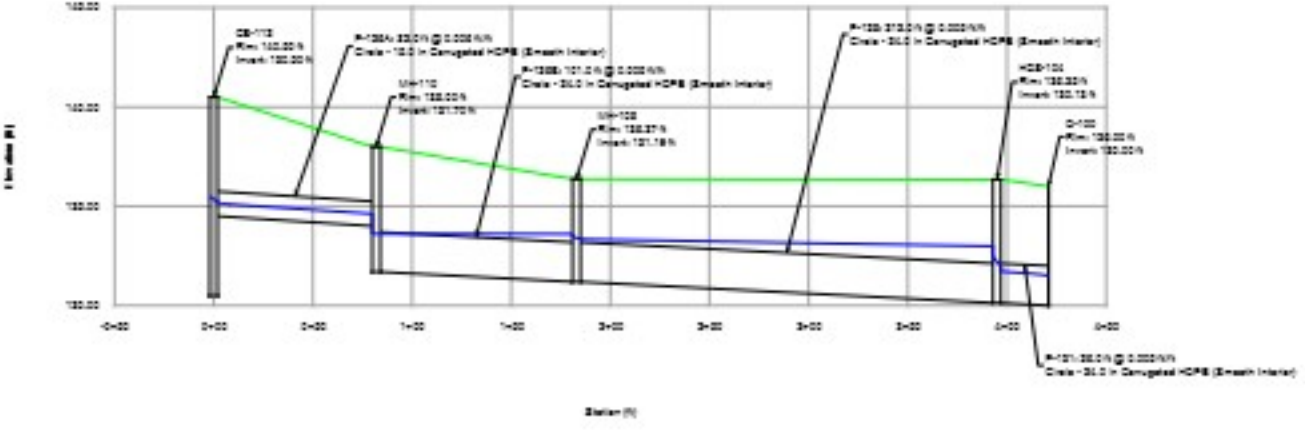
Profile Report

Engineering Profile - CB-111 TO FES-103 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



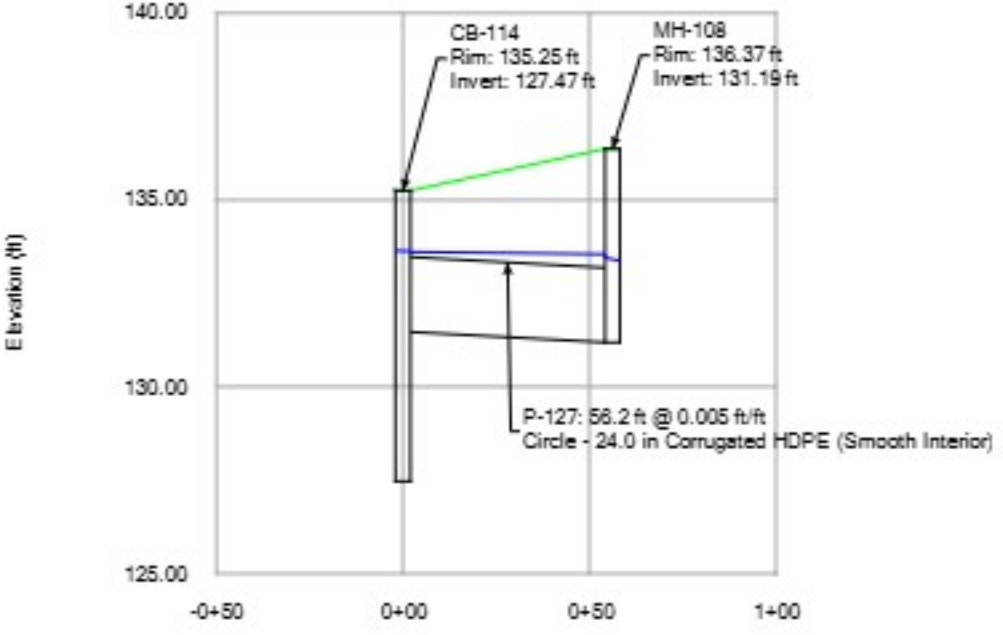
Profile Report

Engineering Profile - CB-112 TO O-100 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



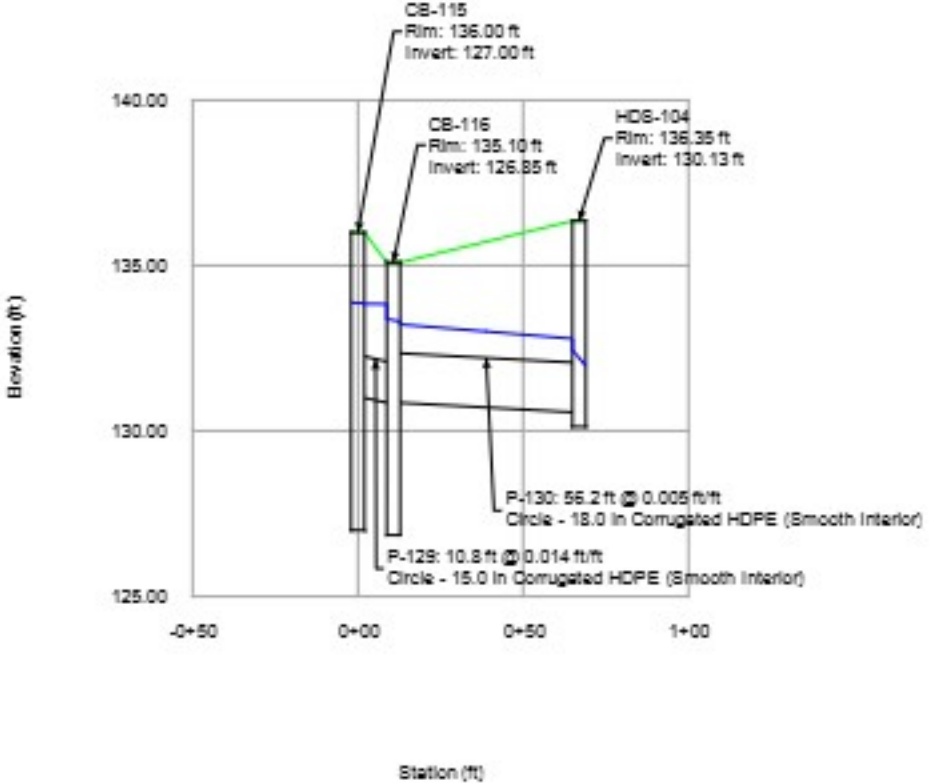
Profile Report

Engineering Profile - CB-114 TO MH-108 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



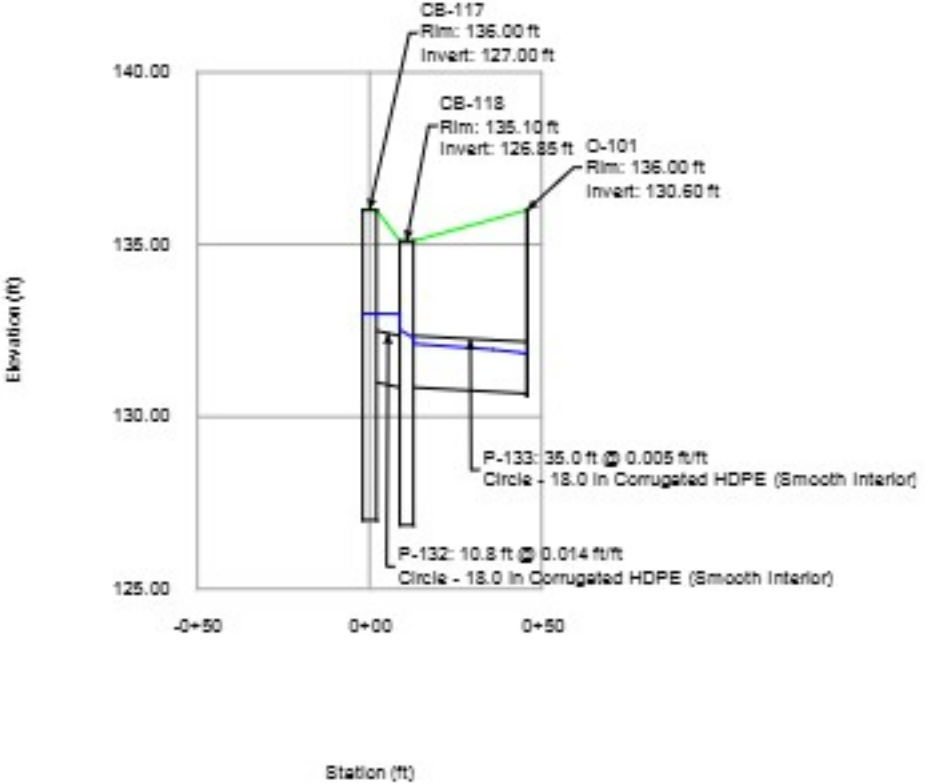
Profile Report

Engineering Profile - CB-115 TO HDS-104 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



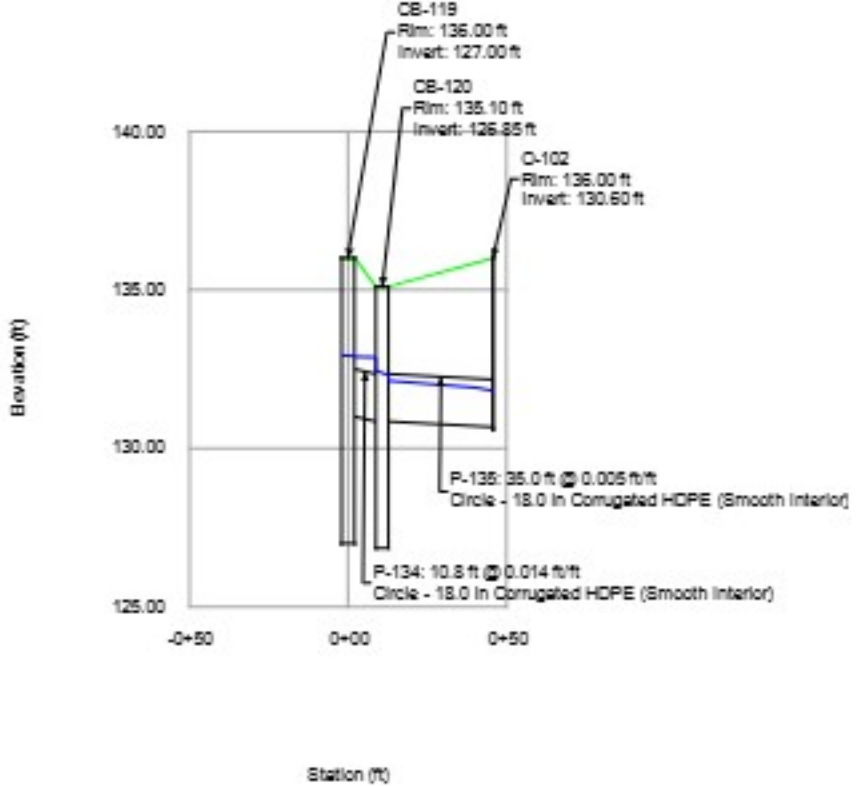
Profile Report

Engineering Profile - CB-117 TO O-101 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



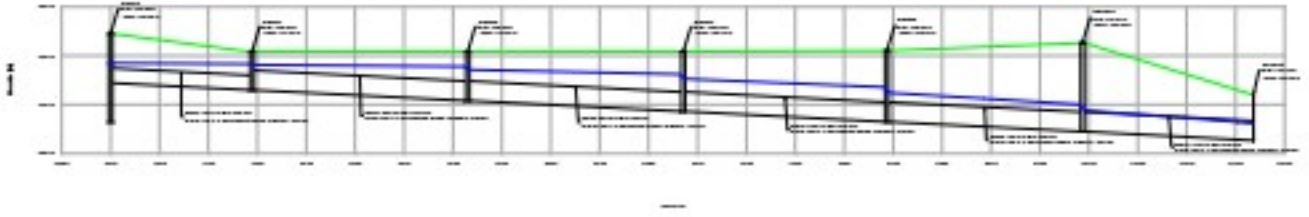
Profile Report

Engineering Profile - CB-119 TO O-102 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



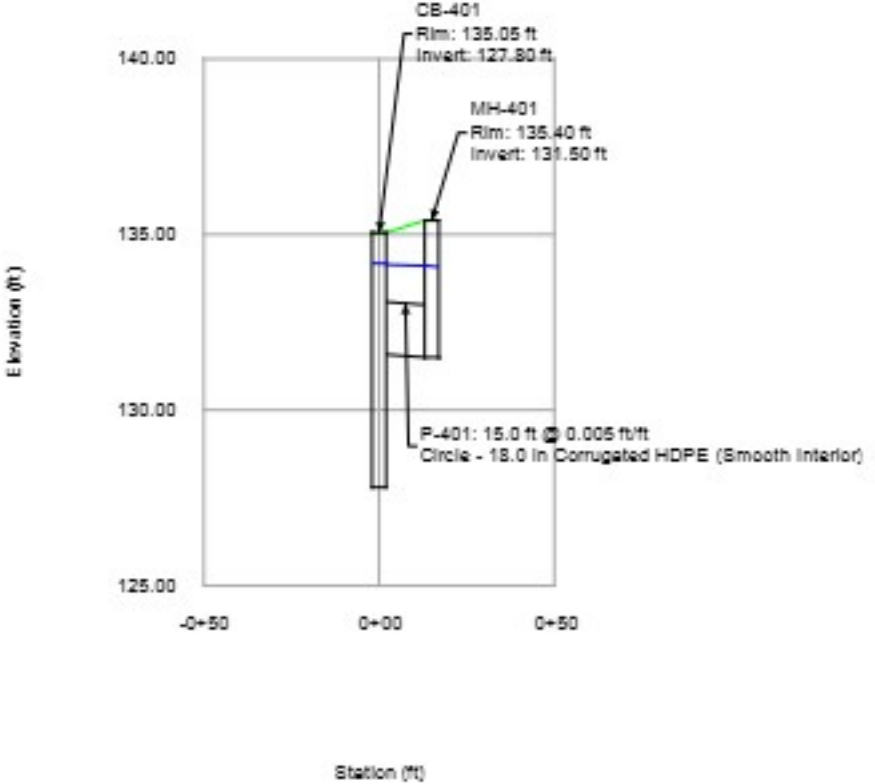
Profile Report

Engineering Profile - CB-400 TO FES-400 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



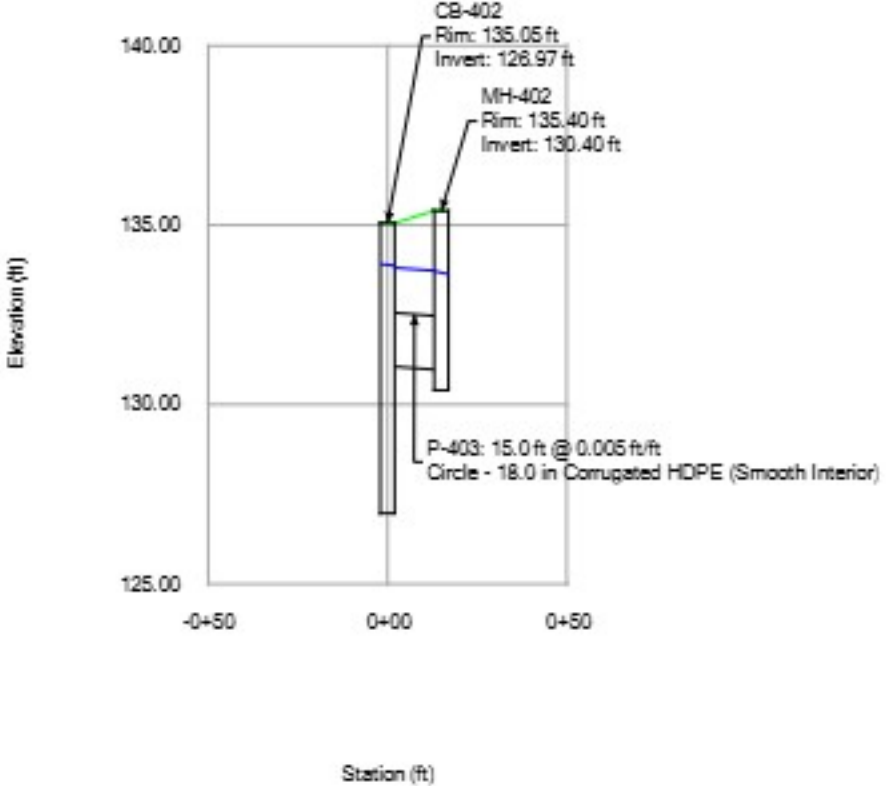
Profile Report

Engineering Profile - CB-401 TO MH-401 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



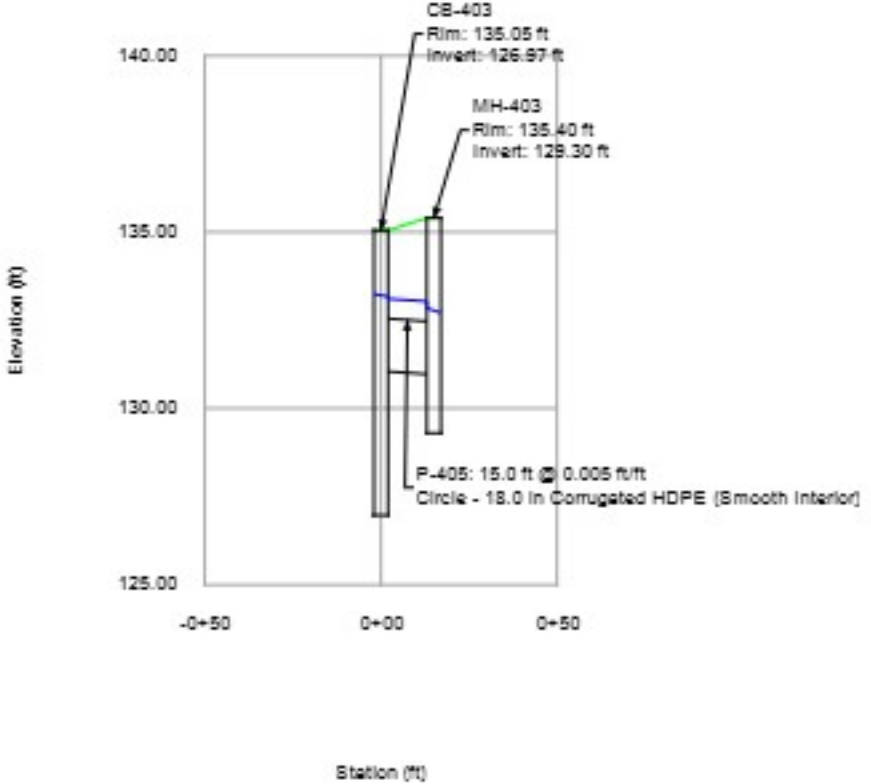
Profile Report

Engineering Profile - CB-402 TO MH-402 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



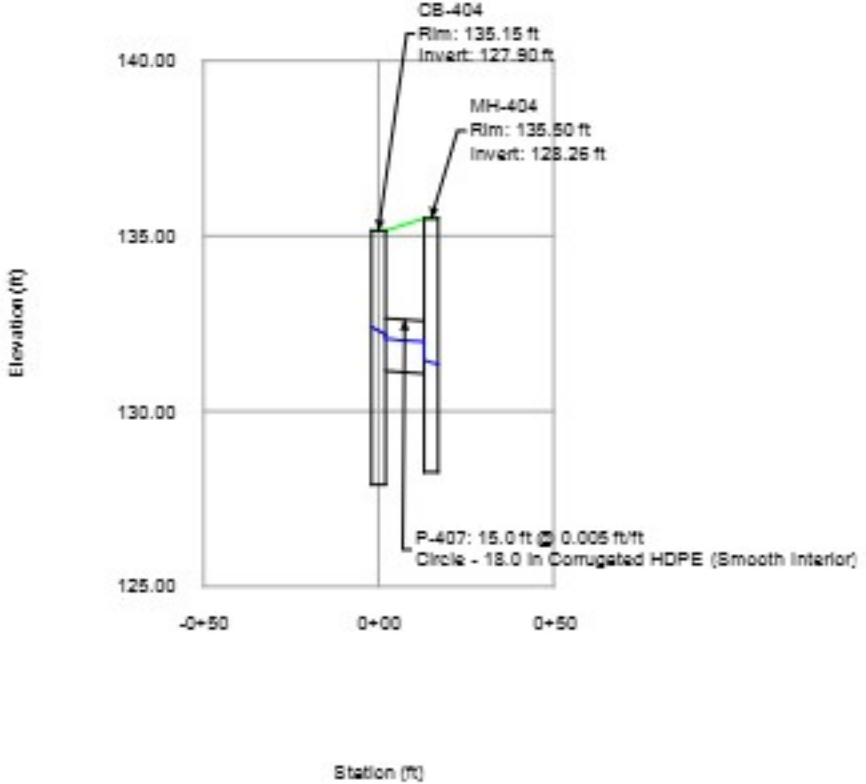
Profile Report

Engineering Profile - CB-403 TO MH-403 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



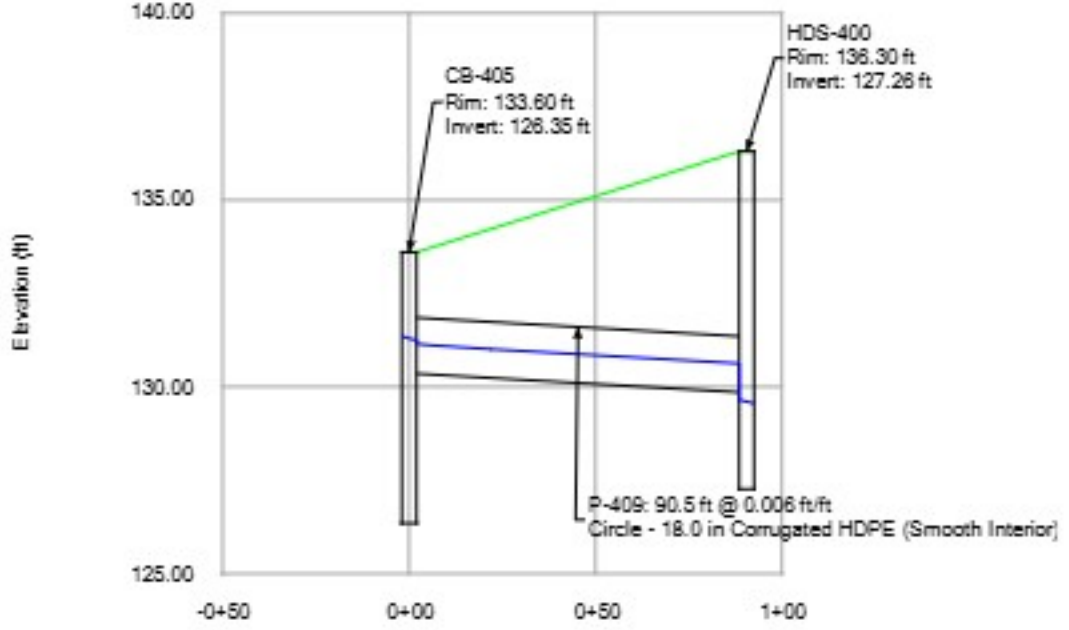
Profile Report

Engineering Profile - CB-404 TO MH-404 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



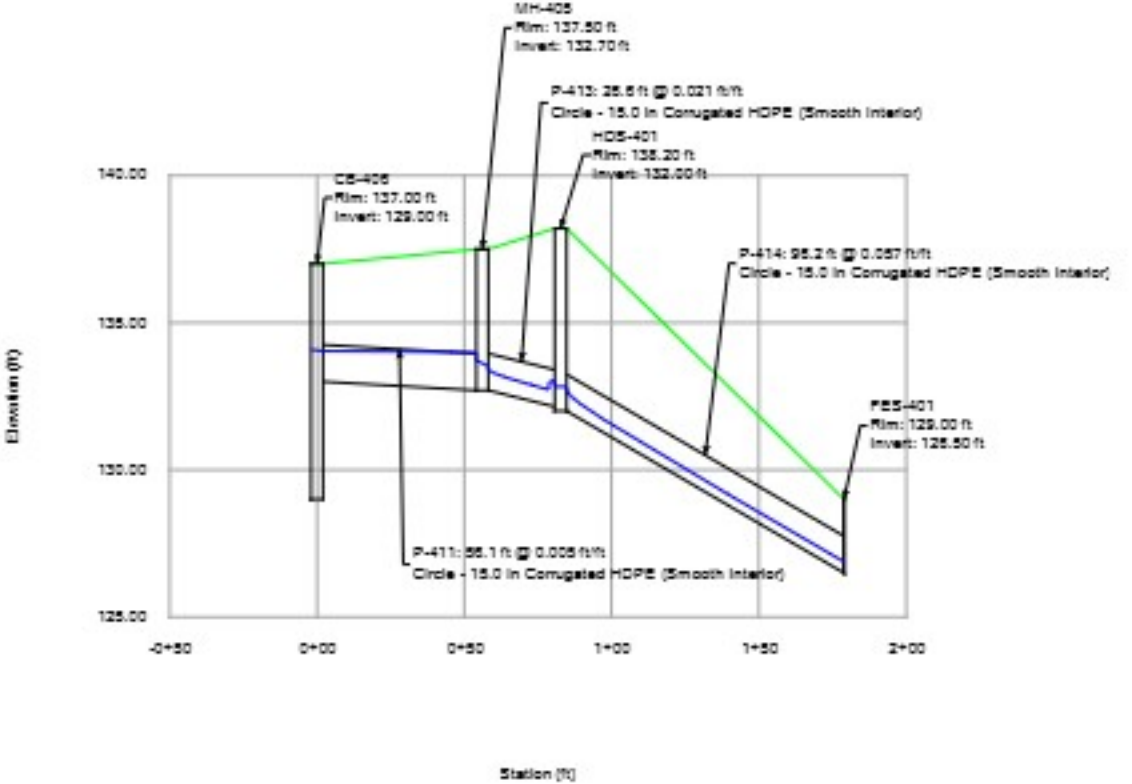
Profile Report

Engineering Profile - CB-405 TO HDS-400 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



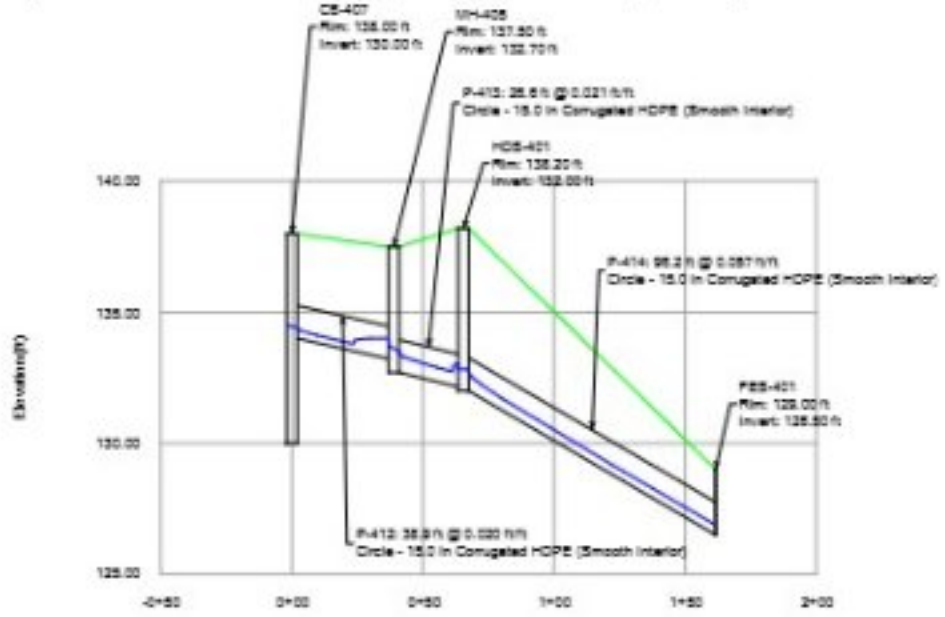
Profile Report

Engineering Profile - CB-406 TO FES-401 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



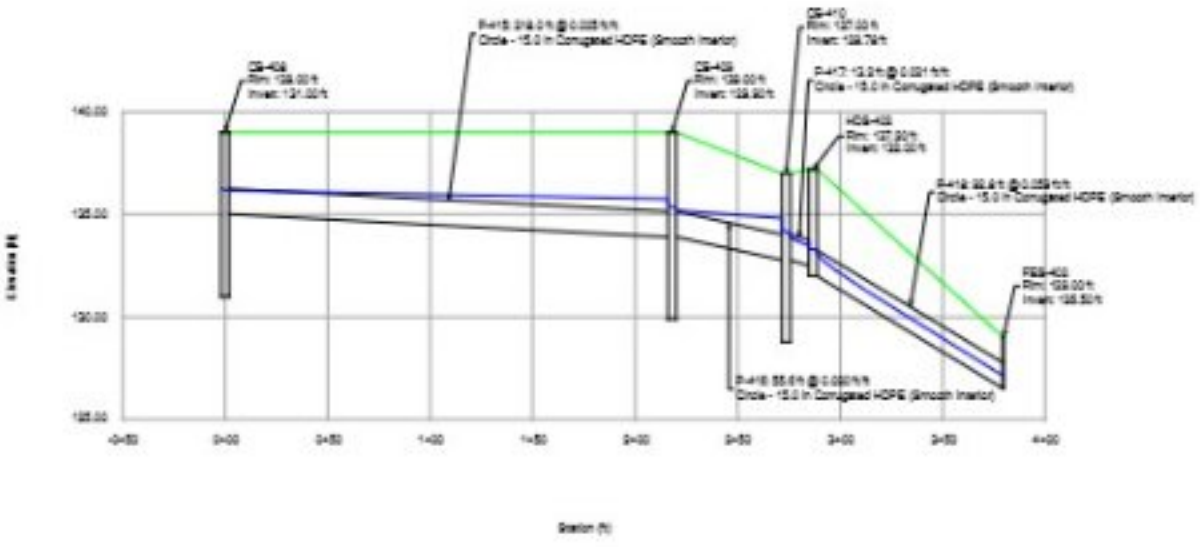
Profile Report

Engineering Profile - CB-407 TO FES-401 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



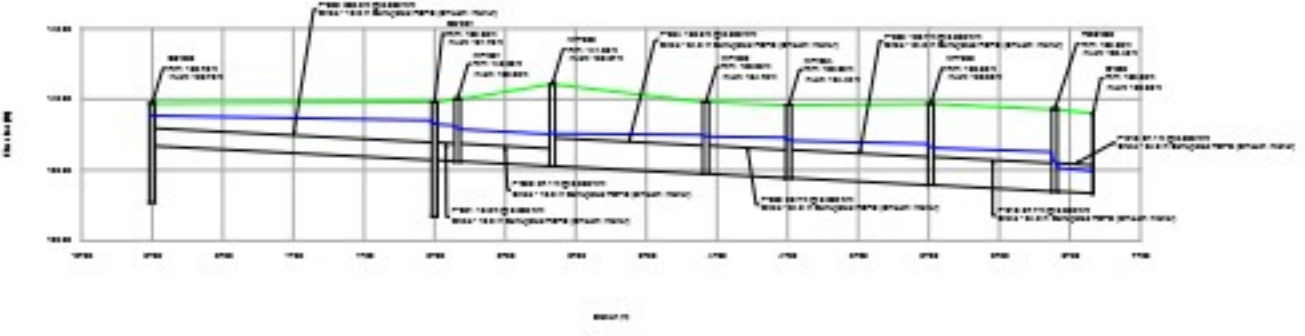
Profile Report

Engineering Profile - CB-408 TO FES-402 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



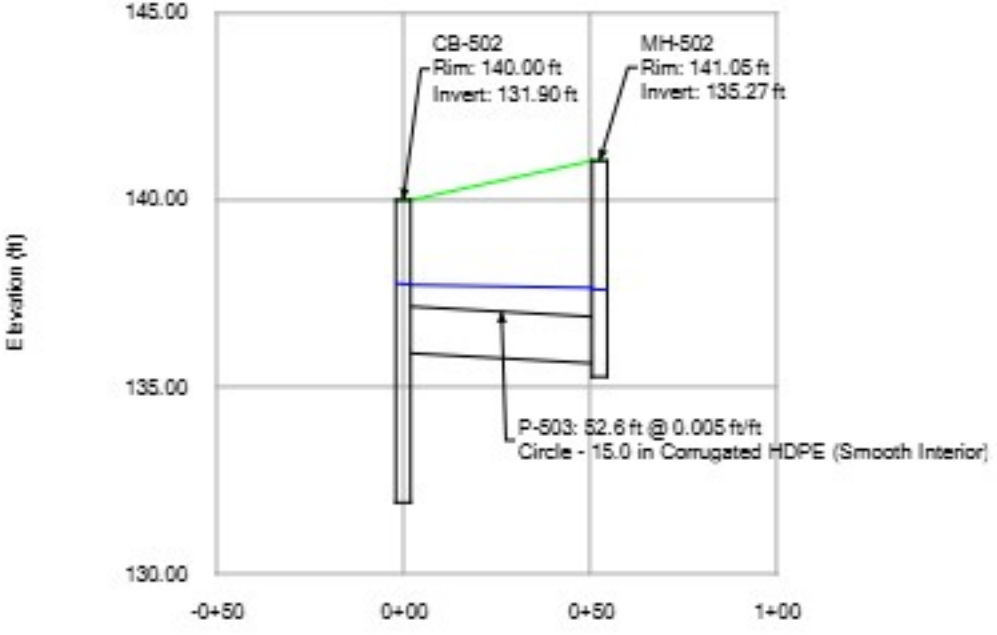
Profile Report

Engineering Profile - CB-500 TO O-500 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



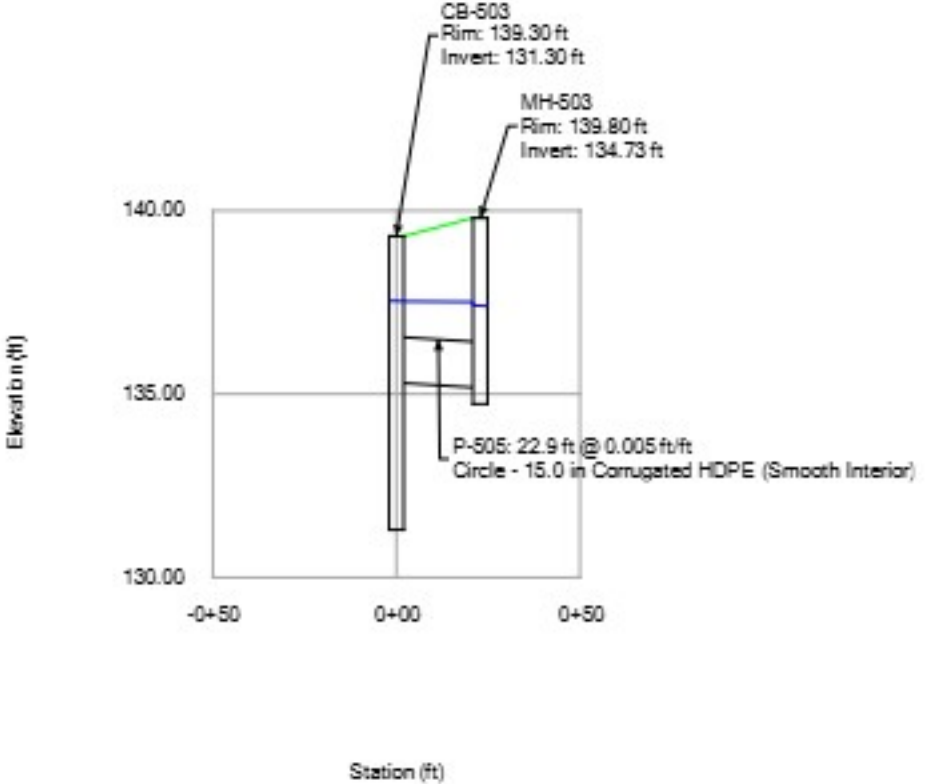
Profile Report

Engineering Profile - CB-502 TO MH-502 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



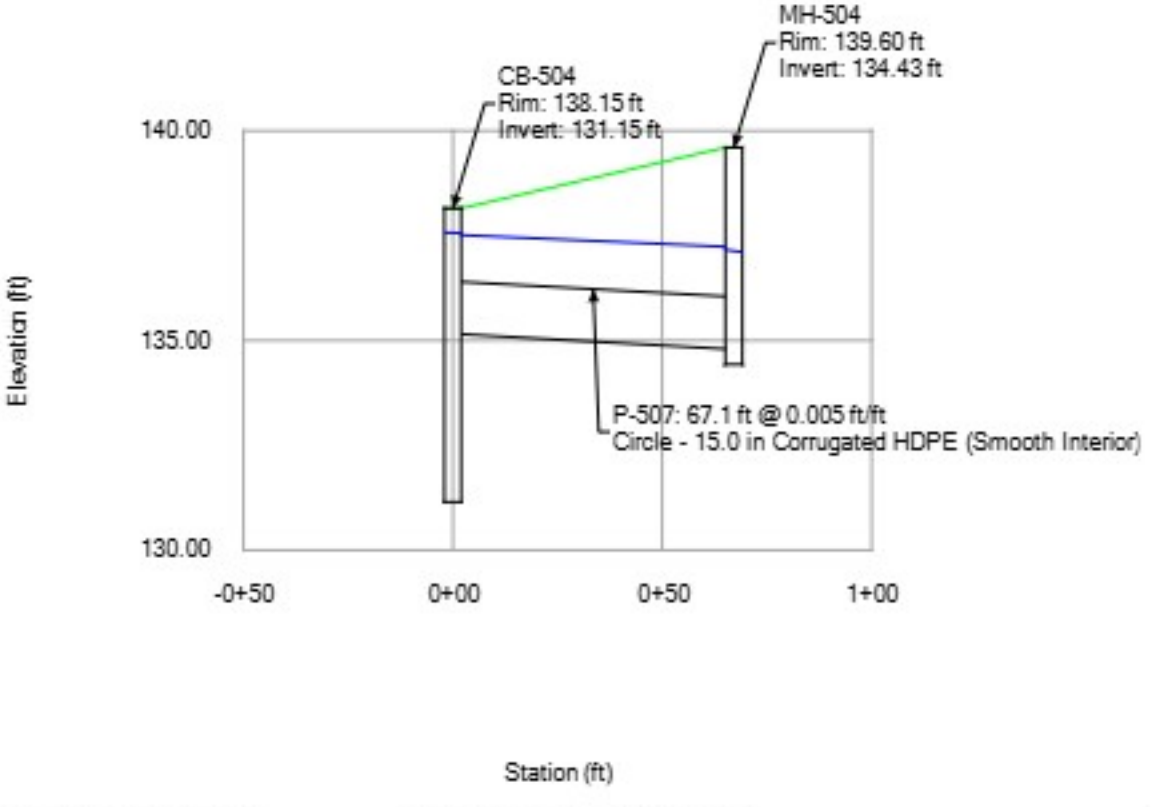
Profile Report

Engineering Profile - CB-503 TO MH-503 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



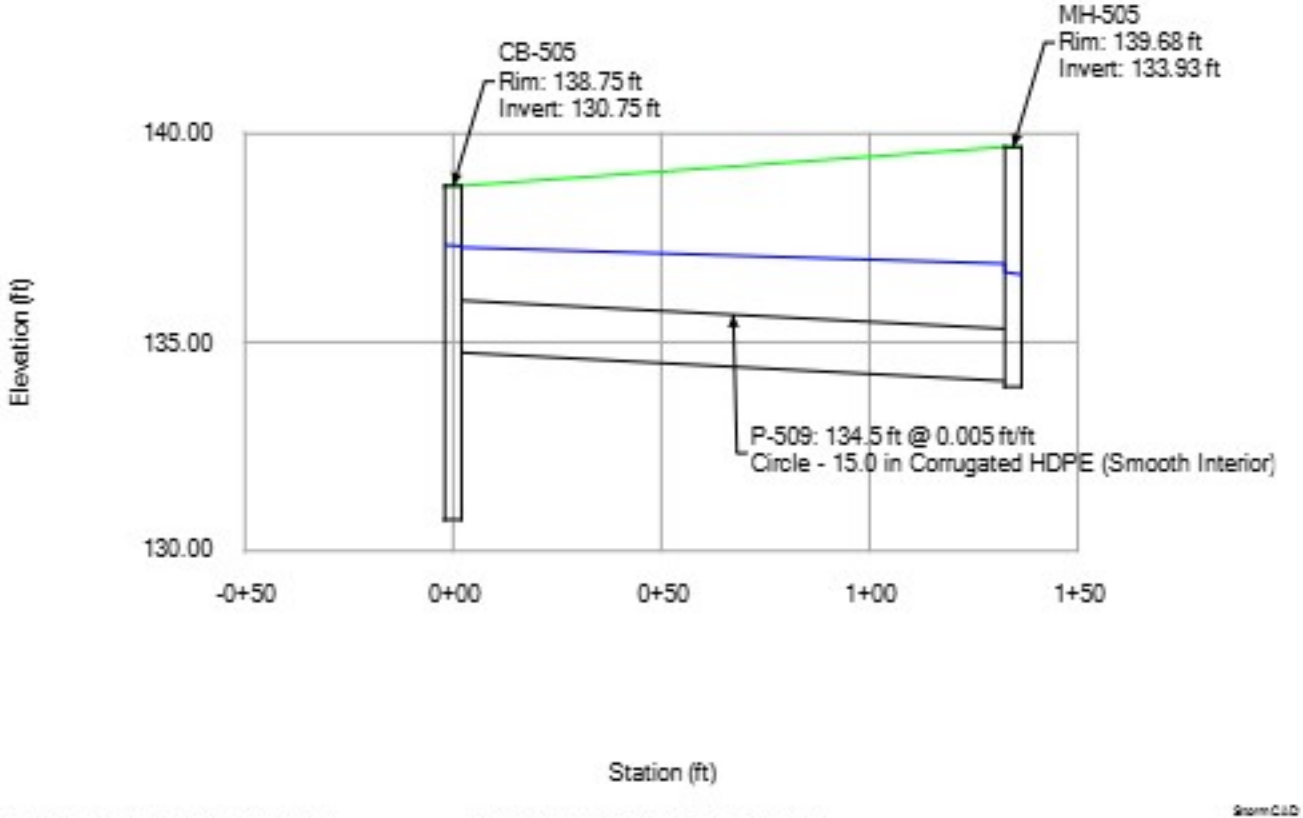
Profile Report

Engineering Profile - CB-504 TO MH-504 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



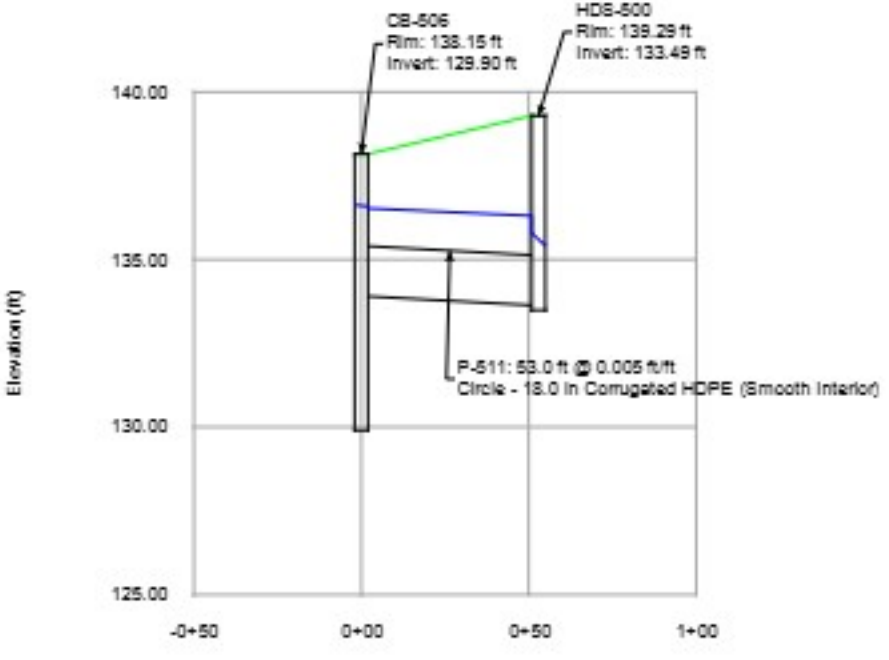
Profile Report

Engineering Profile - CB-505 TO MH-505 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



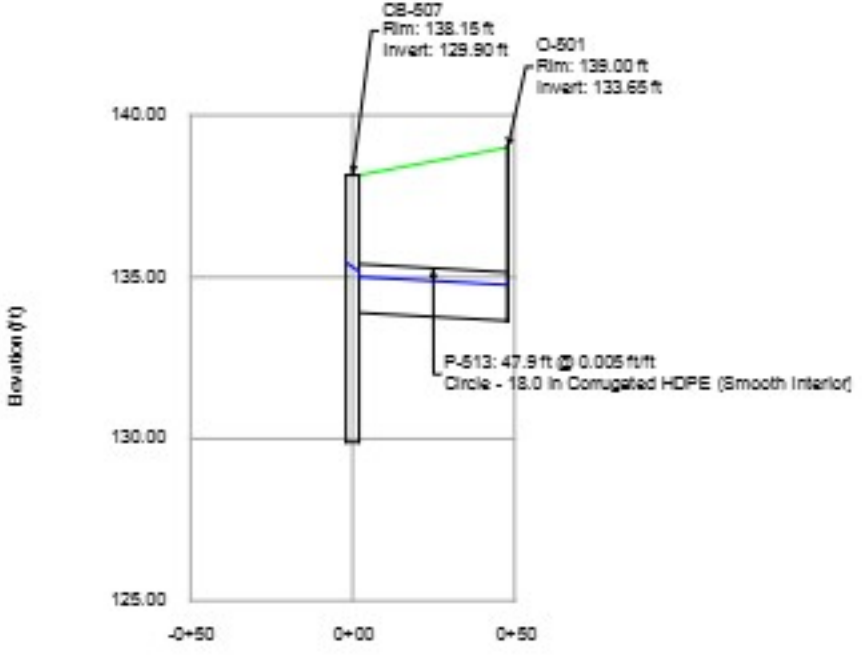
Profile Report

Engineering Profile - CB-506 TO HDS-500 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



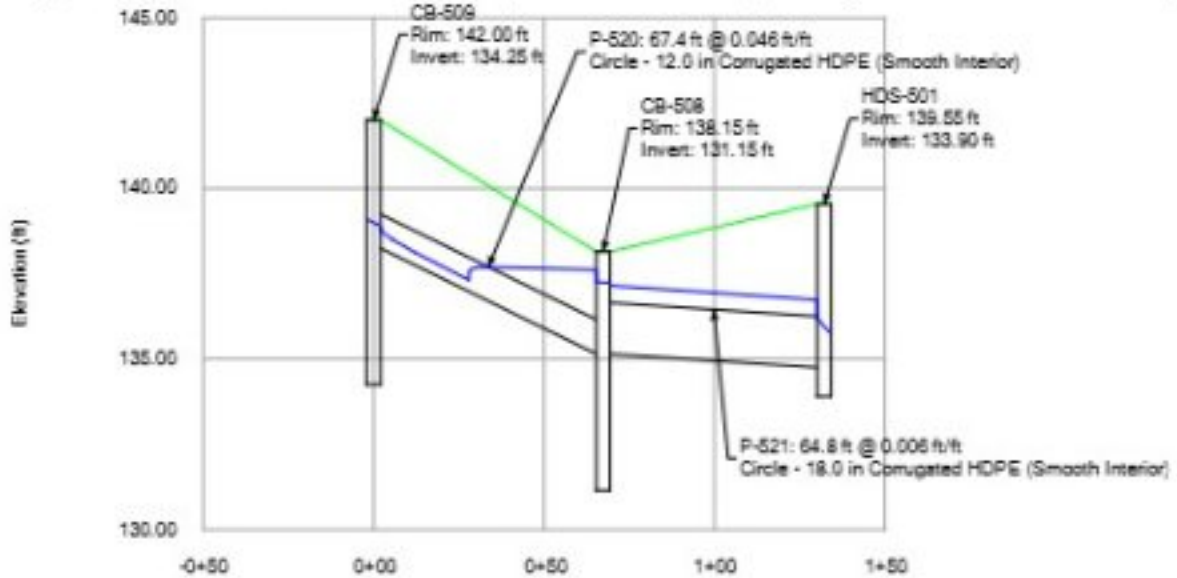
Profile Report

Engineering Profile - CB-507 TO O-501 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



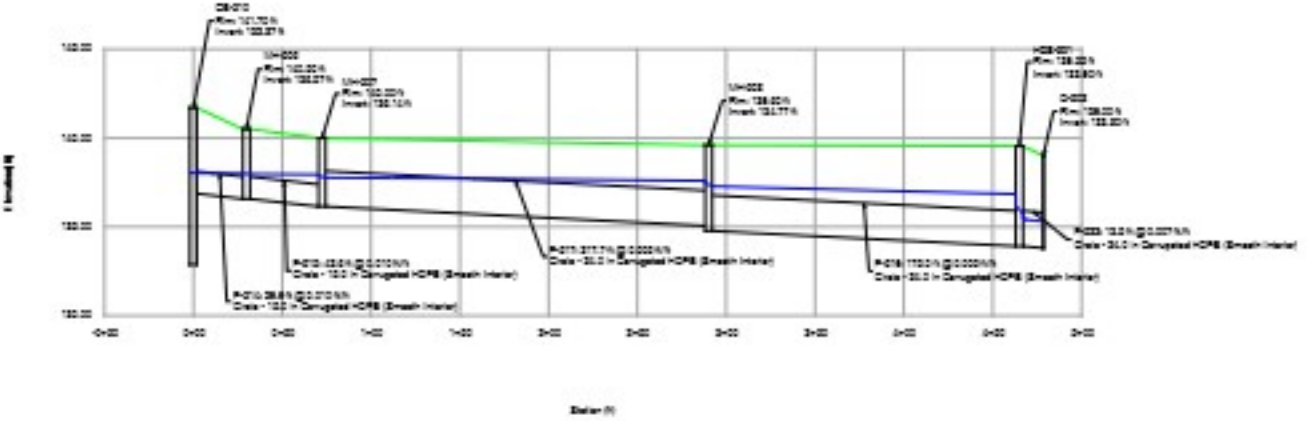
Profile Report

Engineering Profile - CB-509 TO HDS-501 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



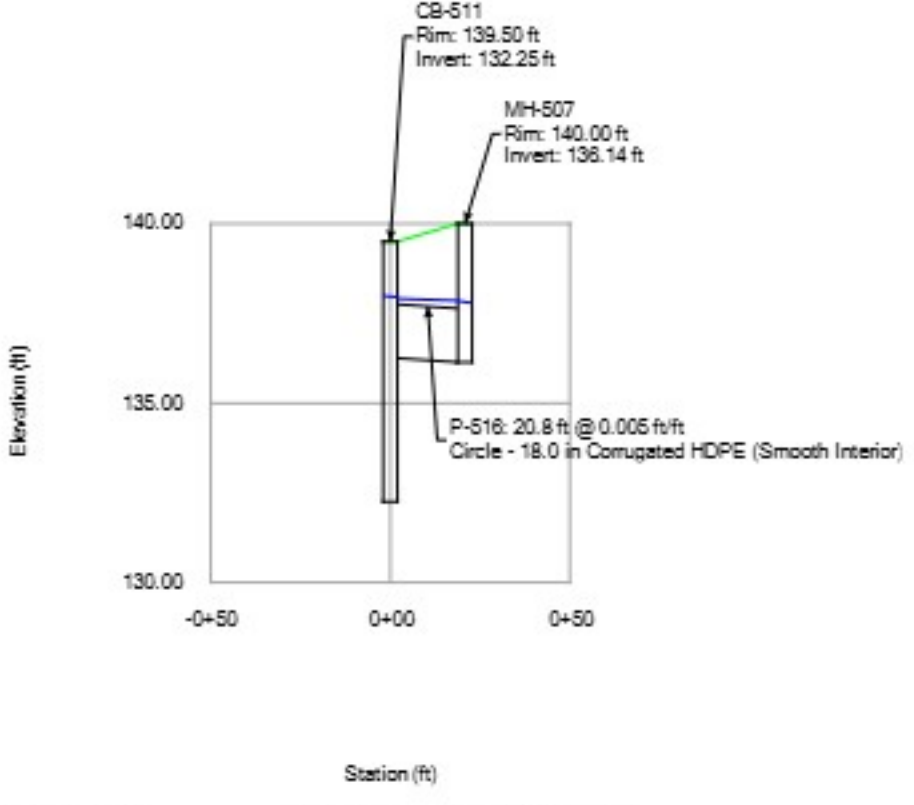
Profile Report

Engineering Profile - CB-510 TO O-502 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



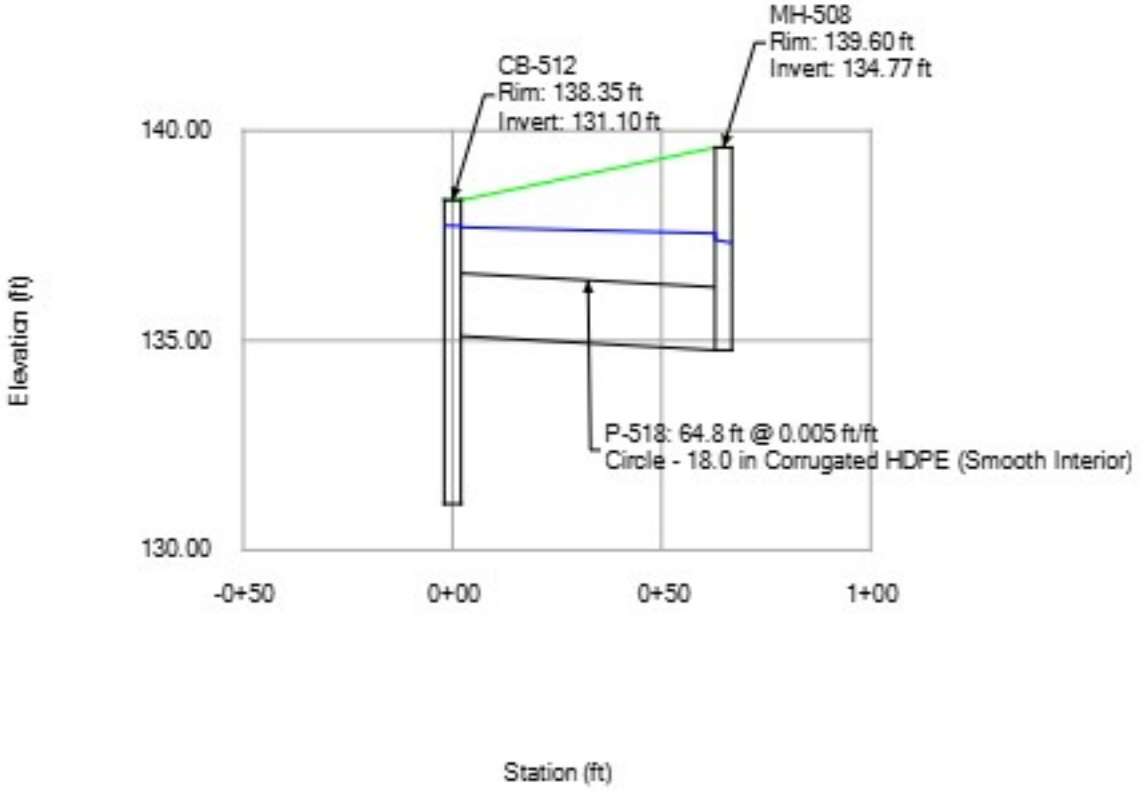
Profile Report

Engineering Profile - CB-511 TO MH-507 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



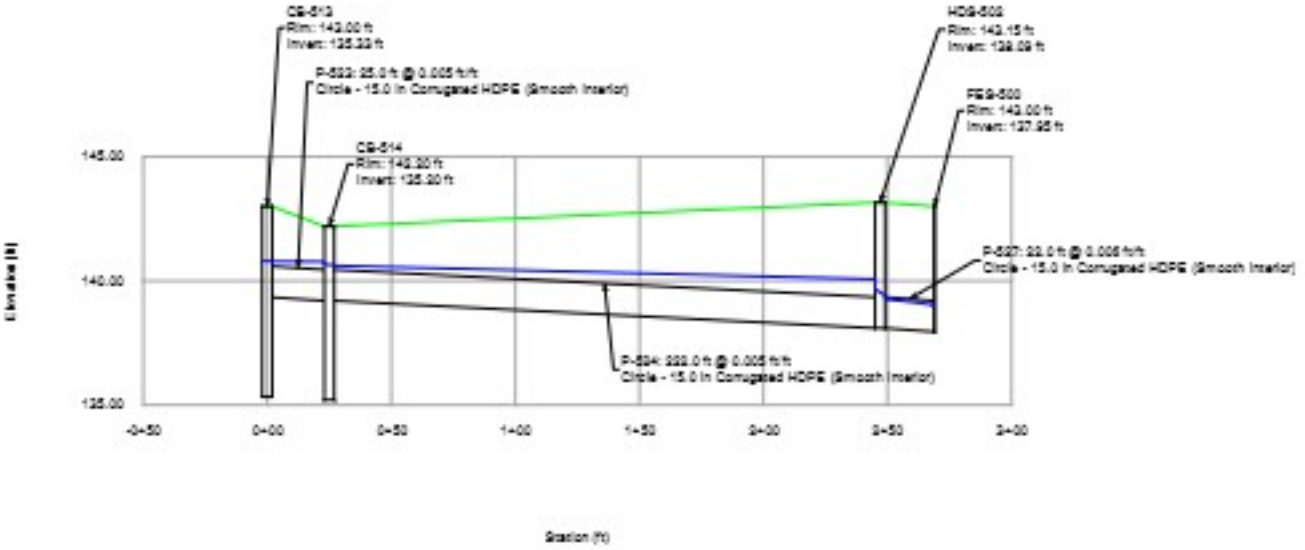
Profile Report

Engineering Profile - CB-512 TO MH-508 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



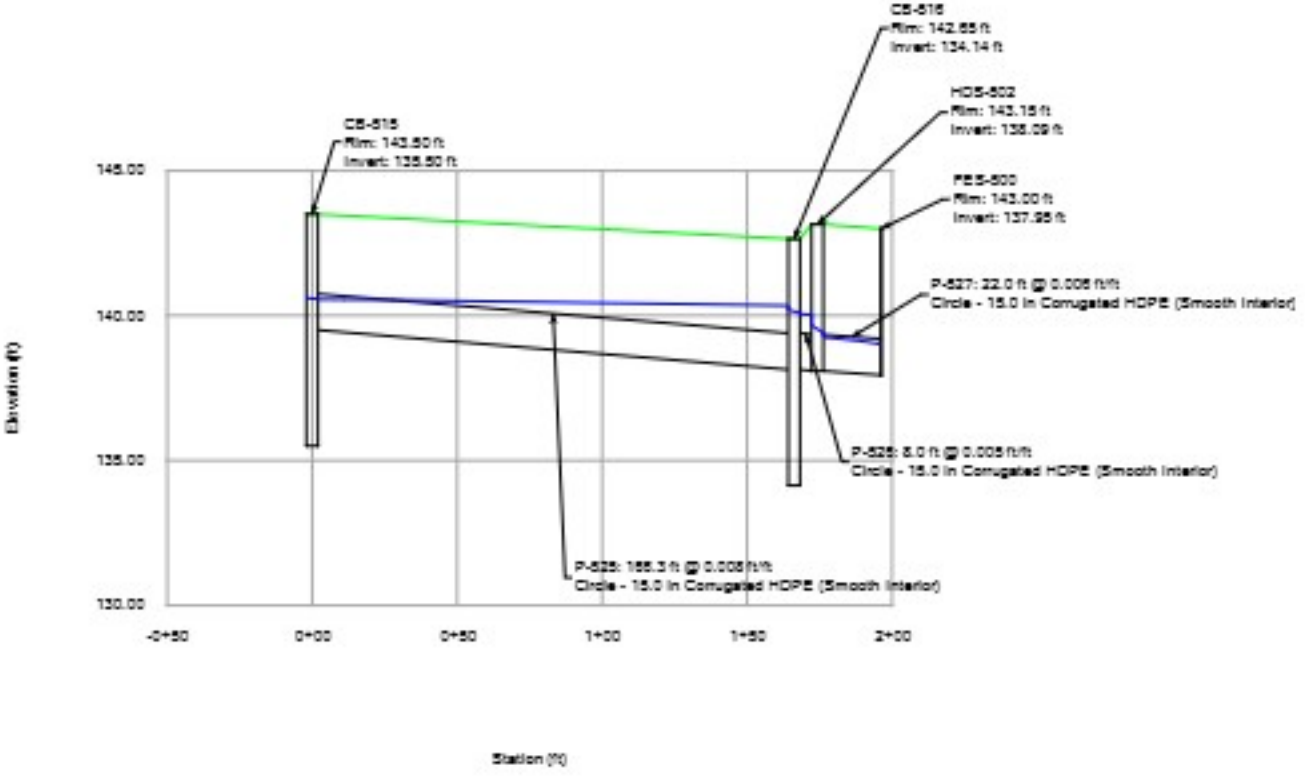
Profile Report

Engineering Profile - CB-513 TO FES-500 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



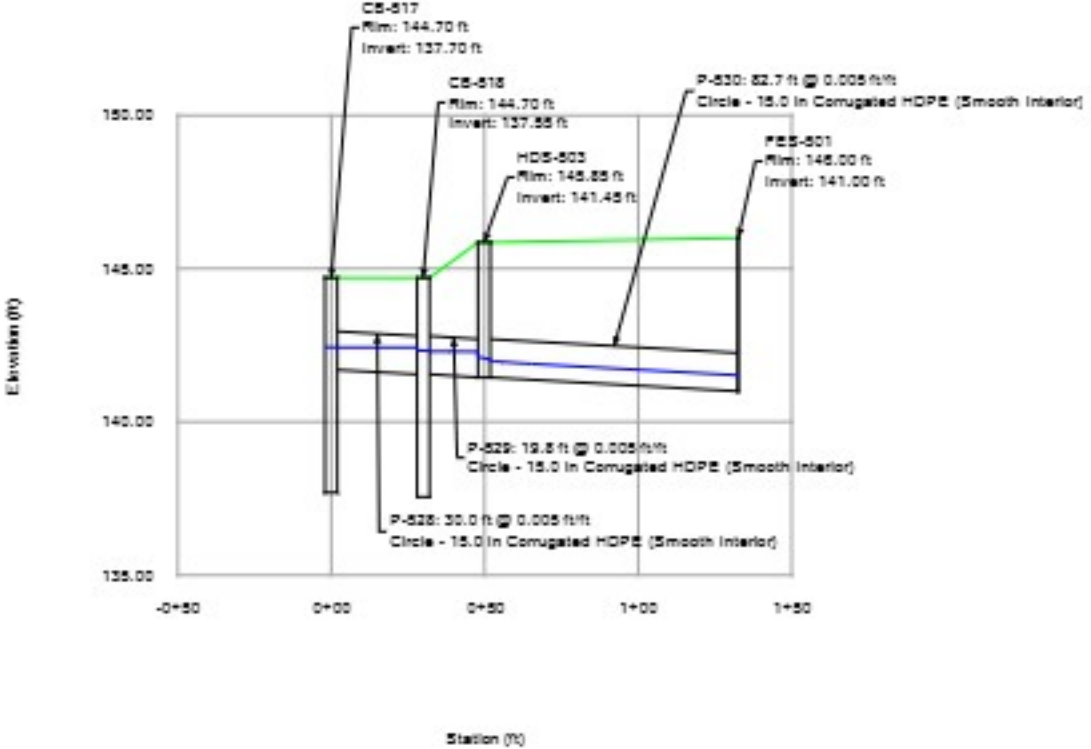
Profile Report

Engineering Profile - CB-515 TO FES-500 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



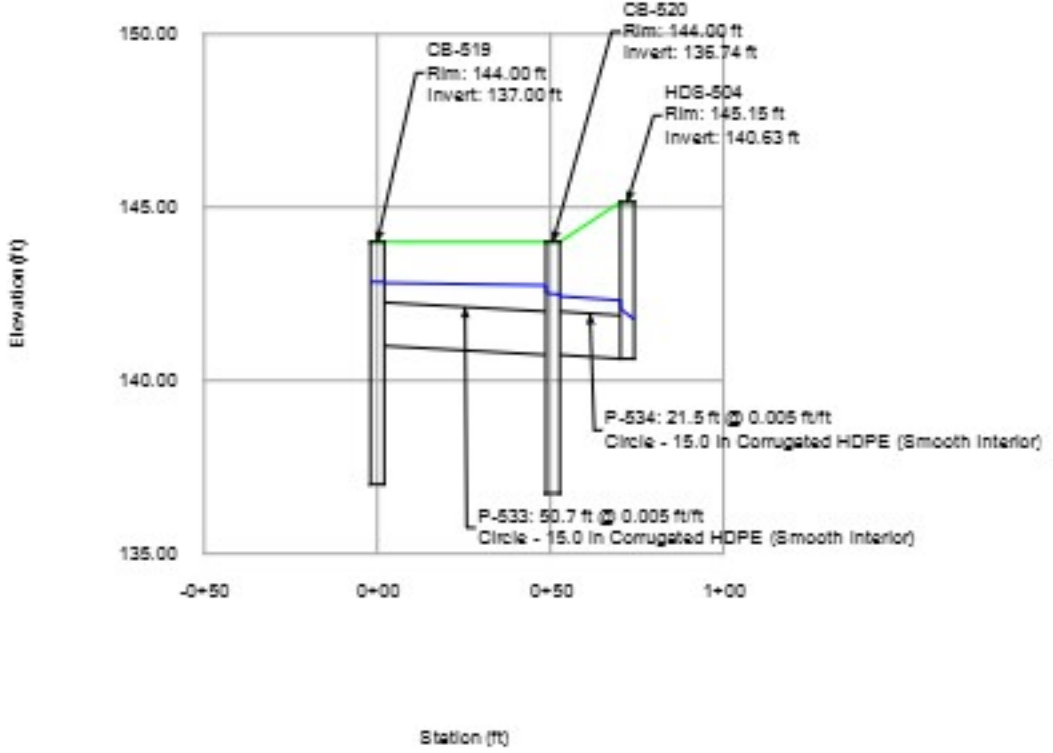
Profile Report

Engineering Profile - CB-517 TO FES-501 (C-DAT-2500161-Proposed-Hydraulics-PDA-5D-2025-04-24.stsw)



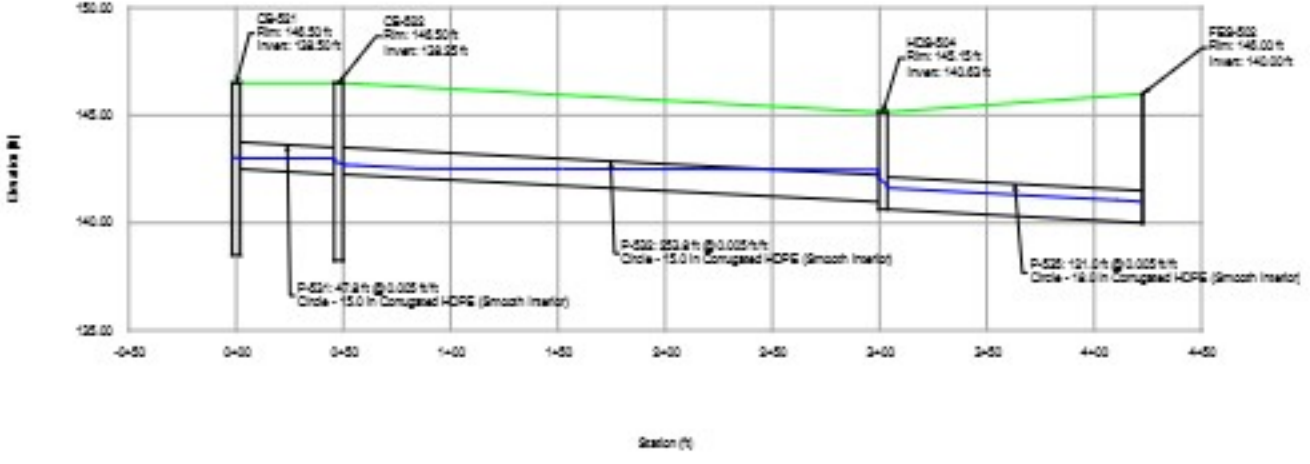
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Engineering Profile - CB-519 TO HDS-504 (C-DAT-2500161-Proposed-Hydraulics-PDA-SD-2025-04-24.stsw)



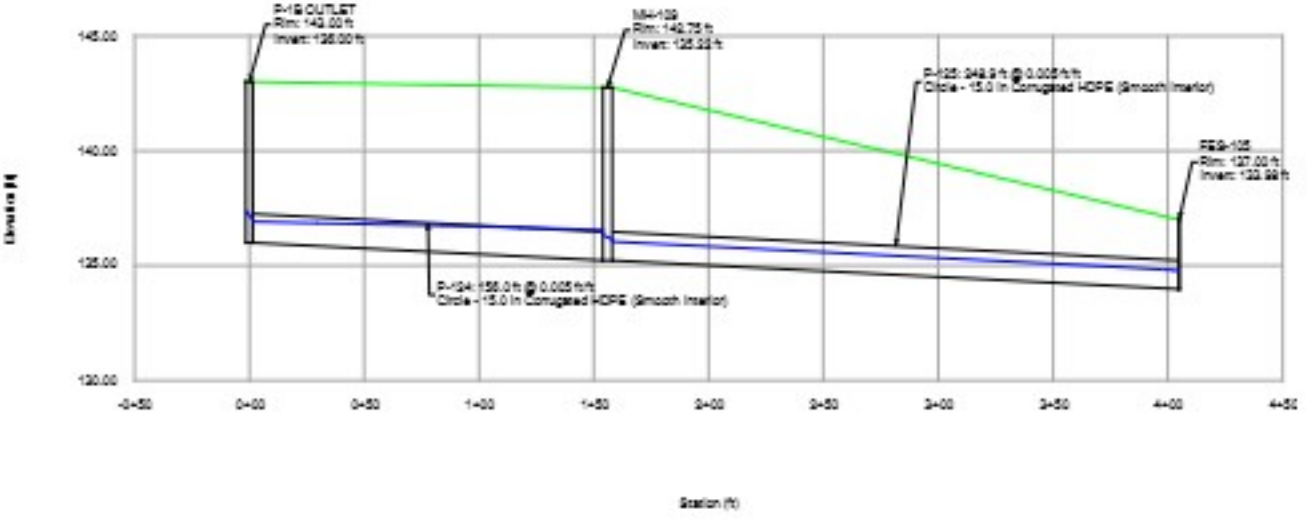
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Engineering Profile - CB-521 TO FES-502 (C-DAT-2500161-Proposed-Hydraulics-PDA-5D-2025-04-24.stsw)



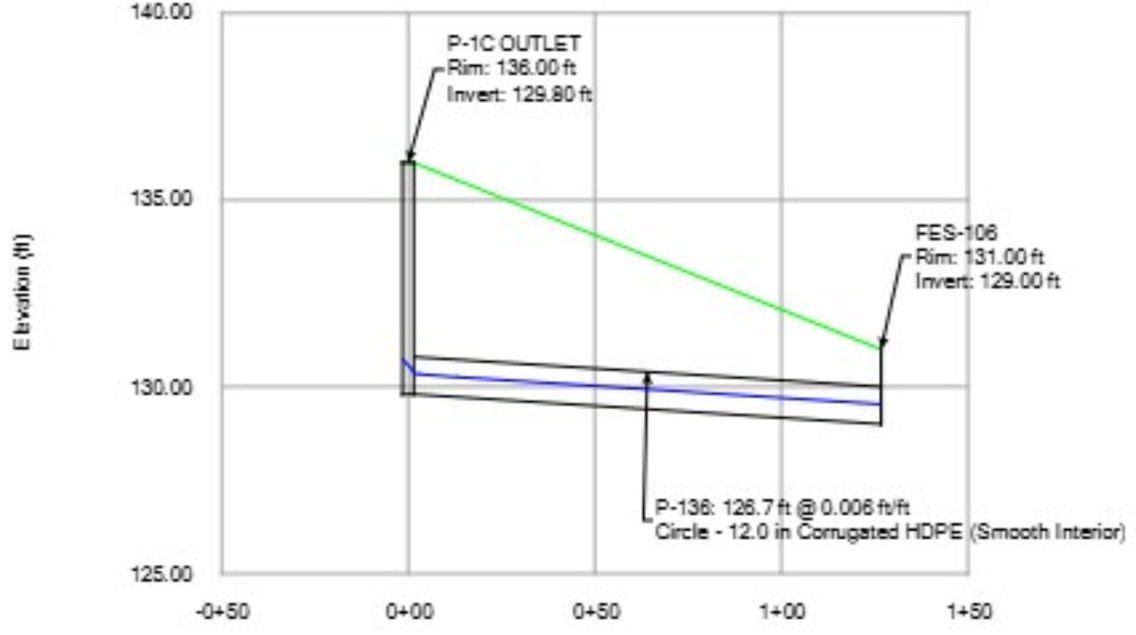
Profile Report

Engineering Profile - P-1B TO FES-105 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



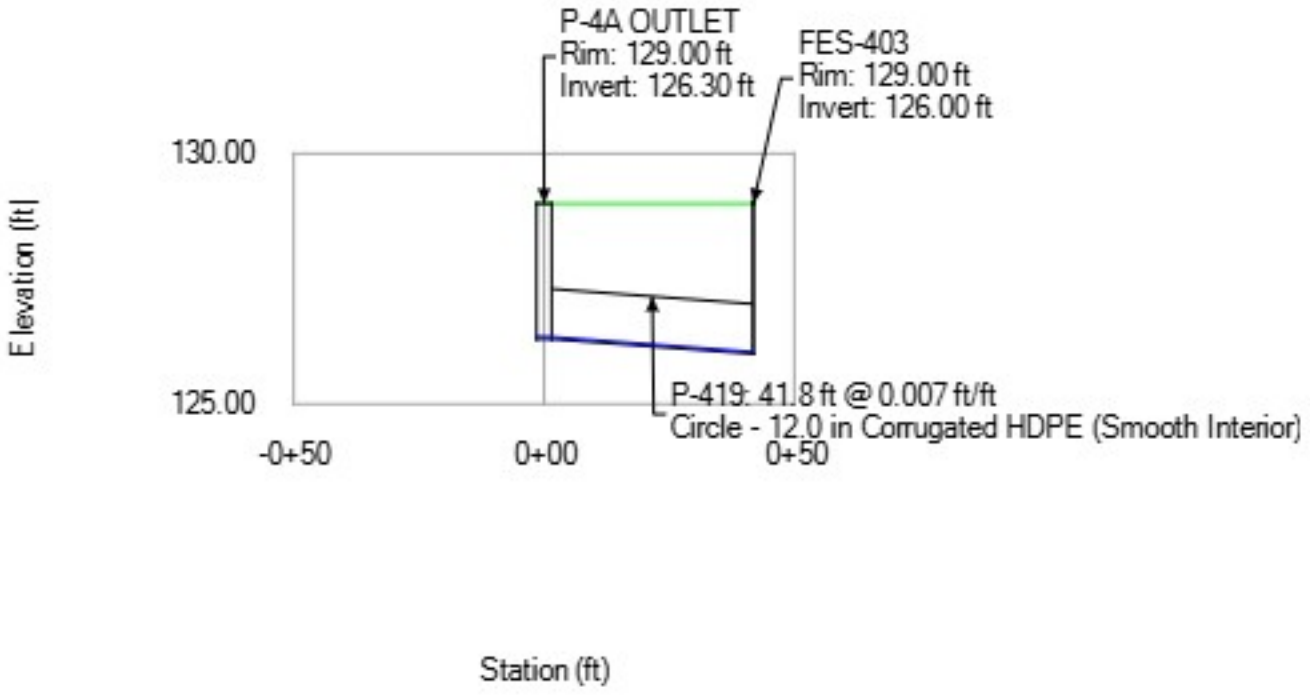
Profile Report

Engineering Profile - P-1C TO FES-106 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



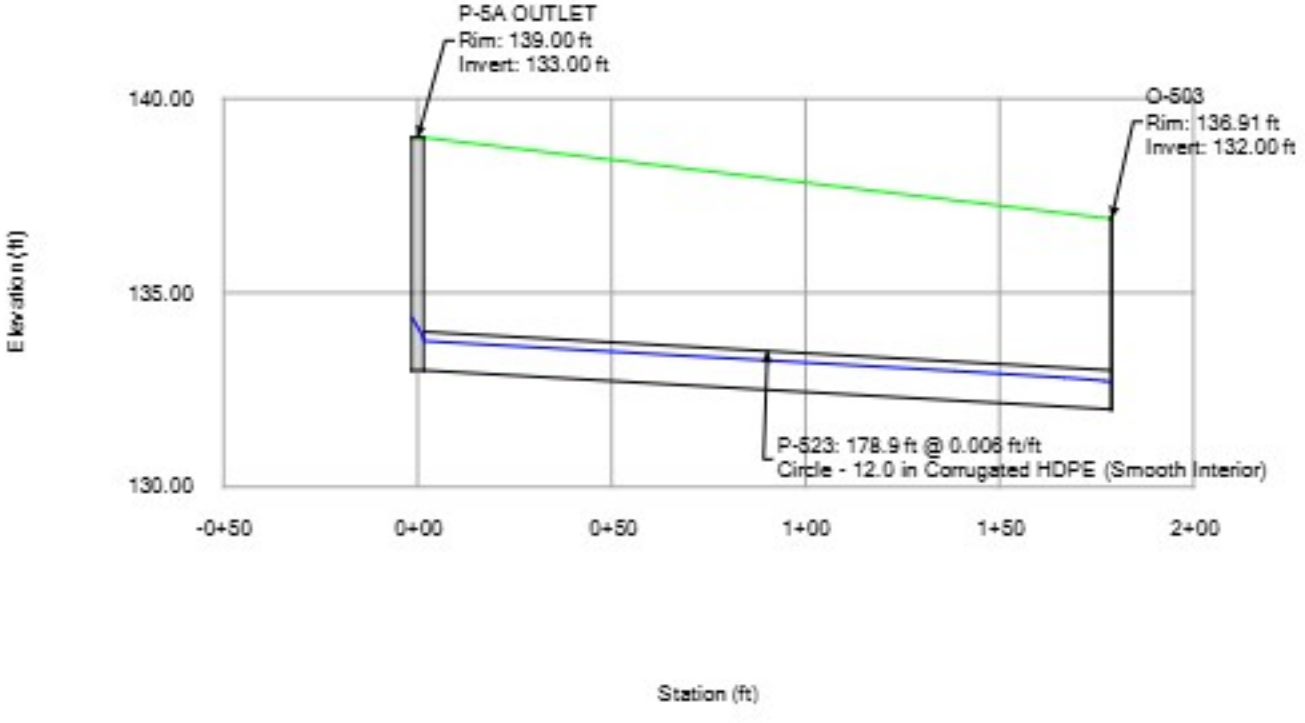
Profile Report

Engineering Profile - P-4A TO FES-403 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



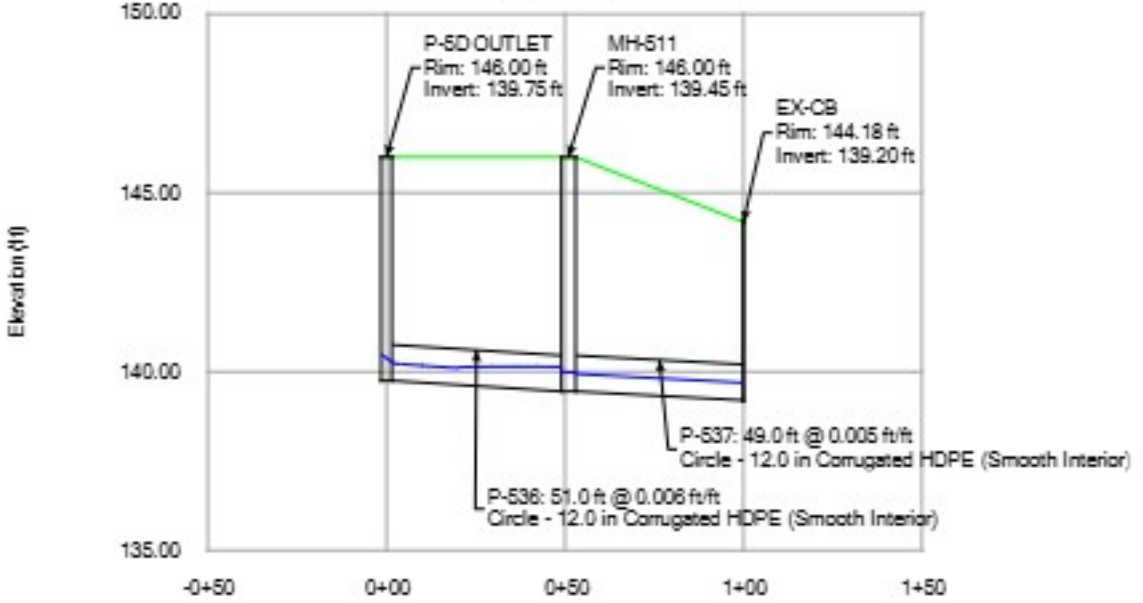
Profile Report

Engineering Profile - P-5A TO O-503 (C-DAT-2500161-Proposed-Hydraulics-2025-04-23.stsw)



Profile Report

Engineering Profile - P-5D TO EX-CB (C-DAT-2500161-Proposed-Hydraulics-PDA-5D-2025-04-24.stsw)



APPENDIX F

WATER QUALITY CALCULATIONS

Water Quality Calculations

Standard 1 - Detention Water Quality Volume

From CT 2004 Stormwater Quality Manual

$$WQV = \frac{(1.2")(R)(A)}{12}$$

$$R = 0.05 + 0.009(I)$$

WQV = water quality volume (ft^3)

R = volumetric runoff coefficient

I = post-development impervious area (percent) after application of non-structural LID site planning and design strategies and before application of structural stormwater BMPs

A = post-development total drainage area of site or design point (square feet)

Area ID	Total Area		Impervious Area		Impervious Cover	Volumetric Runoff Coefficient	Water Quality Volume (WQV) Required	Water Quality Volume Provided		
	ac	ft^2	ac	ft^2	%	R	ft^3	ft^3		
PDI-1B	10.017	436,130	8.004	348,630	80.47	0.808	41,000	44,000		
PDI-1C	11.000	300,000	10.038	483,000	93.43	0.893	47,000	48,400		
PDI-1D	16.833	710,711	13.283	578,000	80.30	0.774	69,348	81,681		
PDI-2B	11.877	317,331	10.130	442,913	93.31	0.917	43,700	49,000		
PDI-3C	3.314	139,084	2.484	93,127	67.00	0.663	13,000	13,000	Total WQV Required =	213,370 CF
PDI-4D	4.164	181,424	1.471	64,068	35.33	0.368	7,333	7,334	Total WQV Provided =	237,000 CF

Notes: The provided Water Quality Volumes for the Underground Detention Systems were derived from the Stage Volume tables in HydroCAD as the volume below the first orifice elevation for each system.

WQF HDS Printed [illegible]

Water Quality Calculations

Calculating Water Quality Flow

From CT 2004 Stormwater Quality Manual

$$CN = \frac{1000}{\left[10 + 5P + 10Q - 10\left(Q^2 + 1.25QP\right)^{\frac{1}{2}}\right]}$$

$$Q = \frac{\left[WQV\,(acre-feet)\cdot\left(12\,(inches/foot)\right)\right]}{DrainageArea\,(acres)}$$

$$WQF = (q_u)(A)(Q)$$

CN = Runoff Curve Number
P = design precipitation (inches, 1.0" for water quality storm)
Q = runoff depth (in watershed inches)
T_c = time of concentration
I_a = initial abstraction (inches, from Table 4-1, Chapter 4, TR-55)
q_u = unit peak discharge
WQF = water quality flow (cfs)

Hydrodynamic Separator	Total Area			Imp Area		Imp Area	R	WQV	Q	P	CN	T_c		I_a	I_a/P	q_u	WQF
	ft²	ac	mi²	ft²	ac	%	-	acre-feet	in	in	-	mins	hours	in	-	cfs/mi²/in	cfs
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Hydrodynamic Separator	Required WQF	Unit Max. WQF	HDS Unit
	cfs	cfs	
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
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Groundwater Recharge Volume Calculations

Groundwater Recharge Volume

From CT 2023 Stormwater Quality Manual:

$$GVR = \frac{(D)(A)(I)}{12}$$

GRV Groundwater Recharge Volume (ac-ft)
D = Depth of Runoff to be Recharged (table 7-4)
A = site area in acres
I = Impervious cover (decimal)

	A					I										
	Total Site Area (AC)	Site Area by NRCS Hydrologic Soil Group				Impervious Cover by NRCS Hydrologic Soil Group				Site Imperviousness (Decimal) by NRCS Hydrologic Soil Group				GRV Required (ac-ft)	Provided Recharge Volume (ac-ft) (Underground Detention Only)	Req. Met
		A	B	C	D	A	B	C	D	A	B	C	D			
															-	-
Proposed	130.93	130.55	0.38	0.00	0.00	47.08	0.00	0.00	0.00	0.37	0.00	0.00	0.00	1.399	4.927	YES
														1.399*	4.927	YES

Table 7-4
Groundwater Recharge Depth

NRCS Hydrologic Soil Group	Average Annual Recharge	Groundwater Recharge Depth (D)
A	9 inches/year	0.5 inches
B	3 inches/year	0.25 inches
C	1 inches/year	0.10 inches
D	1 inches/year	0 inches (waived)

Source: MACDEP, CIRCT
NRCS – Natural Resources Conservation Service

Best Management Practice (BMP) Treatment Train Efficiency Worksheet

Prepared for:
Proposed Development
Old County Road
Windsor Locks, Connecticut

Prepared by:
BL Companies
100 Constitution Plaza, 10th Floor
Hartford, CT

Date prepared:
April 29, 2020

Overall Site Treatment Train Efficiency to Underground Stormwater Detention System

	BMP	BMP Description	Type of Treatment	Efficiency Rate %
BMP(1-2)-BMP(3-4)-BMP(4)-BMP(5)-BMP(6)	B1	Deep Sump Hooded Catch Basin	Primary	25
	B2	Hydrodynamic Separator**	Primary	75
	B3	Infiltration Basin	Primary	80
	B4	Street Sweeping	Secondary	10

Overall Treatment Train Efficiency (OTE)* | % Total Suspended Solids (TSS) Removal

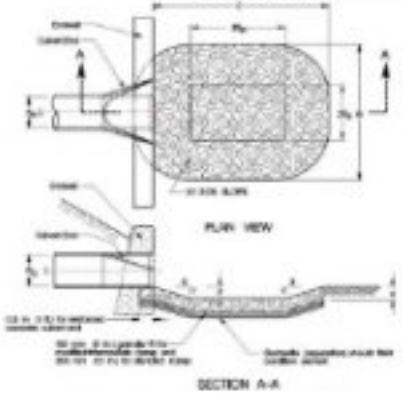
* 80% required per CT DEEP
** Manufacturer Claims 75% TSS Removal
*** Schueler 1995 & EPA 1993

TSS Removal Rates (adapted from Schueler, 1996, & EPA, 1993)

BMP Use	Design Rate	Range of Average TSS Removal Rates	Brief Design Requirements
Extended Detention Pond	75%	40-60%	Sediment forebay
Wet Pond (a)	75%	40-60%	Sediment forebay
Constructed Wetland (b)	85%	40-60%	Designed to infiltrate or retain
Water Quality Swale	70%	40-60%	Designed to infiltrate or retain
Infiltration Trench	80%	75-80%	Pretreatment critical
Infiltration Basin	80%	75-80% (projected)	Pretreatment critical
Dry Well	80%	80% (projected)	Rooftop runoff (as determined above)
Sand Filter (c)	80%	80%	Pretreatment
Organic Filter (d)	80%	80%+	Pretreatment
Water Quality Inlet	25%	10-25% w/ sediment	Off-line only; 0.1" wet/depth Water Quality Volume (WQV) storage
Sediment Trap (Forebay)	25%	10% w/ sediment	Storm flows for 2-year event must not cause erosion; 0.1" wet/depth WQV storage
Drainage Channel	25%	10%	Check dams; non-erosive for 2-yr.
Deep Sump and Hooded Catch Basin	25%	10% w/ sediment	Deep sump general rule = 4 x pipe diameter or 4.0' for pipes 18" or less
Street Sweeping	10%	10%	Supplementary non-structural credit; must be part of approved plan

Preformed Scour Hole Outlet Protection

PROJECT NAME: WINDSOR LOCKS INDUSTRIAL PARK
LOCATION: OLD COUNTY ROAD, WINDSOR LOCKS, CT
PREPARED BY: P.S.M. DATE: 4/28/2025
LAST REVISED BY: P.S.M. DATE: 4/28/2025



LEGEND

Type of riprap required is as follows:

Modified	$d_{50} = 0.42$ ft
Intermediate	0.42 ft $< d_{50} < 0.67$ ft
Standard	0.67 ft $< d_{50} < 1.33$ ft
Special	1.33 ft $< d_{50}$

Where d_{50} is calculated as follows:

Type I $d_{50} = (0.01)(Q_o)^{1.71}(V)^{3}/(D)(S_o)^{1.71}$

Type II $d_{50} = (0.0060)(Q_o)^{1.71}(V)^{3}/(D)(S_o)^{1.71}$

Where TW= Tailwater depth in ft.

Shear Stress of riprap at outlet calculated as follows:

$T_o = \gamma dS$ 2000 CTDOT Drainage Manual Eq. 7-12

T_o= Maximum Shear Stress (lb/ft²)
γ= Unit Weight of Water (62.4 lb/ft³)
d= Maximum flow depth (assumed to be 3/4 (pipe diam.) (ft)
S= Average bed slope (assumed to be pipe slope) (ft/ft)

OUTLET NO.	Sp (Diameter, in.)	Pipe Slope (ft/ft)	Q (CFS)	V (FPS)	Type (number only)	F (ft.)	G (ft.)	B (ft.)	TW (ft.)	d_{50} (ft.)	Riprap Specification	Permissible Shear Stress (lb/ft²)	Calculated Shear Stress (lb/ft²)
PSH-101	24	0.005	7.65	6.07	1	5.50	8	8	0.78	0.57	Modified	0.60	0.28
PSH-102	24	0.005	7.65	6.07	1	5.50	8	8	0.78	0.57	Modified	0.60	0.28
PSH-103	18	0.007*	3.21	5.21	1	4.50	6	6	0.51	0.38	Modified	0.60	0.22

Note: Preformed scour hole design calculations based off of standards provided by the Connecticut Department of Transportation Drainage Manual and the Connecticut Guidelines for Soil Erosion and Sediment Control. Permissible shear stress for riprap ground cover duplicated from the 2000 CTDOT Drainage Manual Table 7-4.
All outlet pipe flows (Q), velocities (V), and tailwater depths (TW) represent the conditions during the 100-year storm event.

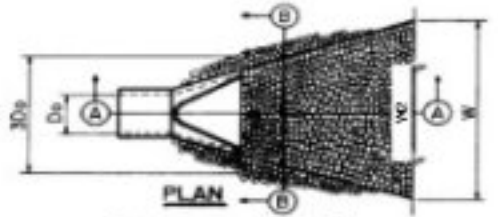
Riprap Apron Outlet Protection

PROJECT NAME: Windsor Locks Industrial Park

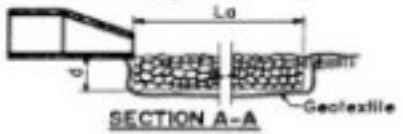
LOCATION: Windsor Locks, Connecticut

PREPARED BY: PGM DATE: 4/23/2025

LAST REVISED BY: _____ DATE: _____







OUTLET NO.	So (Diameter, in.)	Q (CFS)	V (FPS)	Apron Type (wier only)	Lo (ft.)	W1 (ft.)	W2 (ft.)	Riprap Specification
FES-100	24	4.17	1.41	S	10	6	10	Modified
FES-101	18	4.86	2.95	S	10	5	9	Modified
FES-102	18	7.11	4.11	S	13	5	10	Modified
FES-103	18	2.69	3.20	S	10	4	8	Modified
FES-104	24	2.47	0.88	S	10	6	10	Modified
FES-400	24	20.88	6.71	S	27	6	17	Modified
FES-401	18	3.28	10.43	S	10	5	9	Standard
FES-402	15	5.39	13.66	S	17	4	11	Standard
FES-500	18	6.40	3.80	S	13	4	9	Modified
FES-501	15	1.54	5.13	S	10	4	8	Modified
FES-502	18	8.30	3.87	S	13	5	9	Modified

APPENDIX G

OPERATIONS AND MAINTENANCE PLAN

Stormwater System
Operations and Maintenance Plan

For the:
Proposed Industrial Development

Located at:
Old County Road
Windsor Locks, Connecticut

Prepared for Submission to:
Town of Windsor Locks, Connecticut

May 6, 2025

Prepared for:
Scannell Properties #698, LLC
8801 River Crossing Blvd, Suite 300
Indianapolis, Indiana

Prepared by:

BL Companies
100 Constitution Plaza, 10th Floor
Hartford, Connecticut 06103
Phone: (860) 249-2200
Fax: (860) 249-2400

BL Project Number: 2500161

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GENERAL OVERVIEW 2

- Purpose & Goals 2
- Responsible Parties 2
- List of Permits & Special Conditions 3
- Maintenance Logs and Checklists 3
- Forms 3
- Employee Training 3
- Spill Control 3

STORMWATER MANAGEMENT SYSTEM AND MAINTENANCE 4

- System Components 4
- *Surface Infiltration Basin* 4
- *Underground Infiltration System* 4
- *Catch Basins and Manholes* 5
- *Hydrodynamic Separator* 5
- *Rip Rap Outlet Protection* 5

ADDITIONAL SITE MAINTENANCE 6

- Parking Lots 6
- Landscaping 6
- Outdoor Storage 6
- De-icing and Snow Removal & Storage 6

General Overview

This Stormwater Operation and Maintenance Plan shall support the Site Plan Application submitted to the Town of Windsor Locks by Scannell Properties for a proposed industrial development located on Old County Road. The purpose of this Plan is to establish the Operational and Maintenance requirements of the site during and after construction to comply with local and state requirements.

The proposed site development will include the construction of two warehouses (one 387,500 SF and the other 494,000 SF), associated parking facilities, truck docks, trailer spaces, stormwater management, utilities, and landscaping. The proposed improvements will require the removal of the existing farmland and landscaping.

The site is located in a FEMA Zone "X" (Un-shaded) per the FEMA Flood Insurance Rate Map (FIRM) for the Town of Windsor Locks, Connecticut dated 09/26/2008, community panel number 09003C0218F.

The proposed stormwater management system installed for the site complies with the Town of Windsor Locks Zoning Regulations, the 2023 Connecticut Guidelines for Soil Erosion and Sediment Control, and the 2023 Connecticut Stormwater Quality Manual, latest editions.

The following Operations and Maintenance Plan, hereby referred to as Plan, was prepared specifically for the development located within the Town of Windsor Locks, Connecticut. The Plan was developed to satisfy the requirements of the Connecticut Department of Energy and Environmental Protection's 2023 *Connecticut Guidance for Soil Erosion and Sediment Control*.

Purpose & Goals

The purpose of this Plan is to ensure that the stormwater management components are operated in accordance with all approvals and permits. The primary goal is to inform all property managers on how the system operates and what maintenance items are necessary to protect downstream wetlands and watercourses. The secondary goal is to provide a practical, efficient means of maintenance, planning, and record keeping, verifying permit compliance.

Responsible Parties

The Property Owner, and other parties as listed below, will be responsible for implementing this Plan for the subject property.

Company: Scannell Properties #888, LLC
Business Address: 8801 River Crossing Blvd, Suite 300, Indianapolis, IN

Maintenance inspections shall be performed by a qualified professional.

Some utilities located on the site will be owned and maintained by various utility companies in accordance with their standards. The property owner may maintain the service connections and shall coordinate with the corresponding utility provider.

List of Permits & Special Conditions

The project will receive several permits, which may contain special conditions that require compliance by the property owner and maintenance contractors. This permit may include the following:

- Town of Windsor Locks – Site Plan Approval, Inland Wetlands Permit, Building Permit

Maintenance Logs and Checklists

The property owner shall keep a record of all maintenance procedures performed, date of inspection/ cleanings, etc. Copies of inspection reports and maintenance records shall be kept on-site and readily available at the request of local municipalities or state authorities.

Upon the request by the Town of Windsor Locks, all documented inspections, reports, or other supporting information pertaining to this plan shall be provided to the town annually and submitted per their requirements. The responsibility party shall contact the Town of Windsor Locks for any pertinent information not specifically noted within this section.

Forms

The following forms shall be developed by the responsible party to record periodic maintenance and inspections. All inspection and maintenance forms prepared by the responsible party shall be kept on-site as part of the Stormwater Management Plan.

- Annual Checklist
- Quarterly Checklist
- Monthly Checklist

Employee Training

The property owner will have an employee-training program, with annual updates, to ensure that the qualified employees charged with maintaining the buildings and grounds do so in accordance with the approved permit conditions. All employees that have maintenance duties will be adequately informed of their responsibilities.

Spill Control

In addition to the good housekeeping and material management practices discussed in the previous sections of this plan, the following practices will be followed for spill prevention and clean-up:

- Manufacturer's recommended methods for spill clean-up will be clearly posted, and site personnel will be made aware of the procedures and the location of the information and cleanup supplies.
- Materials and equipment necessary for spill cleanup will be kept in the material storage area on-site. Equipment and materials will include but not be limited to: absorbent booms

or mats, brooms, dust pans, mops, rags, gloves, goggles, sand, and plastic and metal trash containers specifically for this purpose.

- All spills will be cleaned immediately after discovery.
- The spill area will be kept well ventilated, and personnel will wear appropriate protective clothing to prevent injury from contact with hazardous substance.
- Spills of toxic or hazardous material, regardless of size, will be reported to the appropriate State or local government agency.
- If a spill occurs, this plan will be adjusted to include measures to prevent this type of spill from reoccurring and how to clean the spill if there is another one. A description of the spill, the cause, and the remediation measures shall also be included.

A spill report shall be prepared by the property owner following each occurrence. The spill report shall present a description of the release, including quantity and type of material, date of spill, circumstances leading to the release, location of spill, response actions and personnel, documentation of notifications and corrective measures implemented to prevent reoccurrence.

The property owner shall identify an appropriately qualified and trained site employee involved with day-to-day site operations to be the spill prevention and clean up coordinator. The name(s) of responsible spill personnel shall be posted on-site. Each employee shall be instructed that all spills are to be reported to the spill prevention and clean-up coordinator.

Stormwater Management System and Maintenance

System Components

The stormwater management system has several components that are shown on the Grading and Drainage Plan and perform various functions in capturing, routing, and treating stormwater runoff.

Surface Infiltration Basin

The surface infiltration basins are used to detain and infiltrate stormwater runoff for a period of time to delay and reduce the peak discharged rates for various design storms. The basin shall be inspected every six (6) months and in the months of April and October. It should be inspected to ensure that sediment does not accumulate so that stormwater runoff is not working properly. The basin should also be inspected after large rainstorms to ensure that it is dewatering within 72 hours or less.

Underground Infiltration System

A subsurface detention system is a series of underground chambers or vaults that are used to detain stormwater runoff for a period of time to delay and reduce the peak discharged rates for various design storms. Although difficult to identify from the surface, many systems will have one manhole with a series of orifices called an outlet structure. The detention system is typically attached upstream of this structure. An employee can also identify an underground detention system by identifying inspection ports at the surface and removing the lid for the required routine inspections.

The subsurface detention system shall be inspected every six (6) months and in the months of April and October. Each of the inspection ports provided shall be opened and visually checked from the surface. Observation of grit inside of the detention system shall be noted and any deposits found to be 3 inches or more, as measured from the invert of pipe, shall be cleaned and removed. The underground detention system qualifies as a Confined Space under OSHA regulations, and any maintenance involving entry into the pipes should comply with OSHA Confined Space Entry Regulations. The chamber system will be visually inspected through the manholes. If deemed necessary, the chambers can be TV inspected.

Catch Basins and Manholes

The property owner is responsible for cleaning the catch basins and manholes on the property. A Connecticut Licensed hauler shall clean the sumps and dispose of removed sediment and debris legally. The road sand may be reused for winter sanding but may not be stored on-site. The owner shall contact the local municipality for all requirements related to disposal and reuse of sediment. As part of the hauling contract, the hauler shall notify the property owner in writing where the material is being disposed.

Each catch basin shall be inspected every four (4) months, with one (1) inspection occurring during the month of April. Any debris occurring within one foot from the bottom of each sump shall be removed by a Vacuum "Vactor" type, maintenance equipment.

During the inspection of each catch basin sump, the hoods (where provided) on each of the outlet pipes shall also be observed. In the event that a hood is damaged or off the hanger, it shall be reset or repaired.

Hydrodynamic Separator

The hydrodynamic separator shall be cleaned periodically during construction, with one cleaning and inspection occuring at the end of construction after landscaped areas are fully stabilized.

For the first year of operation following construction, inspect each structure once each month during January, February, March, and April, and once every four months thereafter. A graduated measuring device (stadia rod) shall be inserted into each grit chamber and measurements of any accumulations shall be recorded. Any debris, which has accumulated to within one foot of the water surface inside the grit chamber portion of each tank, shall be removed by vacuum "Vactor" type equipment.

After the first year of operation, each structure shall be inspected at a minimum, three times yearly with one inspection occurring in the month of April in the same manner as described above for the first season of operation. Any accumulations found to be occurring within one foot of the water surface shall be removed from the structure and properly disposed off-site. Also, any floating material discovered during inspections should be removed from the tank.

Rip Rap Outlet Protection

The riprap aprons or swales are excavated depressions which are lined with rock riprap to prevent scouring. The depressions permit the dissipation of excessive energy and turbulence associated with the flow of stormwater being discharged from a conduit system.

Management actions include the following measures:

1. Inspect the surface of the scour hole quarterly for the first year and adjust as necessary (but at least annually) to ensure surface is free of debris and the discharge is flowing via sheet flow and not concentrated. Remove accumulated sediment when sediment depth within the scour hole reaches 50% of the total depth. Frequency of cleaning depends on loading rate.
2. Inspect the discharge lip area for low points and down gradient flow areas for active scour or soil erosion. Repair scour and rills with compacted sandy till, and riprap as needed to prevent scouring.

Additional Site Maintenance

Parking Lots

Parking lots and sidewalks shall be swept as necessary by the property owner to remove trash and other debris. The property owner will sweep parking lots on the property in the spring to remove winter accumulations of road sand and is requirement to maintain the functionality of the required stormwater quality treatment.

Landscaping

The management company retained by the property owner shall maintain all landscaped areas. Typical landscaping maintenance shall consist of pruning, mulching, planting, mowing lawns, raking leaves, etc. Use of fertilizers and pesticides will be controlled and limited to minimal amounts necessary for healthy landscape maintenance and as approved by the town.

Established lawn areas shall be maintained at a typical height of 3-1/2". This will allow the grass to be maintained with minimal impact from weeds and/or pests. Topsoil, brush, leaves, clippings, woodchips, mulch, equipment, and other material shall be stored off site.

Outdoor Storage

There will be no outdoor storage of hazardous chemicals, de-icing agents, fertilizer, pesticides, or herbicides anywhere around the buildings.

De-icing and Snow Removal & Storage

The use of clean sand may be used to aid in traction. Snow shall be shoveled and plowed from sidewalk and parking areas within 24 hours of the storm's conclusion. Sand accumulation shall be removed from the site at the end of the winter season or appropriate time when seasonal snow has melted. Alternative de-icing methods not specified within this section shall be submitted to the Town of Windsor Locks for approval prior to use.

Maintenance Schedule

MAINTENANCE SCHEDULE

During the First Year of Operation:		
Task:	Completion Date:	Manager's Initials:
JANUARY:		
Employee Training Program with Spill Program		
*Subsurface Infiltration System Inspection		
*Hydrodynamic Separator Inspection		
*Catch Basin Inspection		
FEBRUARY:		
*Hydrodynamic Separator Inspection		
MARCH:		
*Hydrodynamic Separator Inspection		
APRIL:		
* Subsurface Infiltration System Inspection		
*Hydrodynamic Separator Inspection		
*Catch Basin Inspection		
Sweeping of Paved Surfaces and Dumpster Enclosure		
Shrub Fertilization		
Lawn Liming (if necessary)		
JULY:		
Sweeping of Paved Surfaces and Dumpster Enclosure		
AUGUST:		
*Hydrodynamic Separator Inspection		
*Catch Basin Inspection		
SEPTEMBER:		
* Subsurface Infiltration System Inspection		
Tree and Lawn Fertilization		
Sweeping of Paved Surfaces and Dumpster Enclosure		
DECEMBER:		
* Subsurface Infiltration System Inspection		
Sweeping of Paved Surfaces and Dumpster Enclosure		
*Hydrodynamic Separator Inspection		
*Catch Basin Inspection		

*NOTE: Use appropriate worksheet found in this plan to conduct the inspection.

After the First Year of Operation:			
FOR YEAR_____			
Task:		Completion Date:	Manager's Initials:
JANUARY:			
Employee Training Program with Spill Program			
APRIL:			
* Subsurface Infiltration System Inspection			
Sweeping of Paved Surfaces and Dumpster Enclosure			
Shrub Fertilization			
Lawn Liming (if necessary)			
*Hydrodynamic Separator Inspection			
*Catch Basin Inspection			
JUNE:			
Sweeping of Paved Surfaces and Dumpster Enclosure			
AUGUST:			
*Hydrodynamic Separator Inspection			
*Catch Basin Inspection			
SEPTEMBER:			
* Subsurface Infiltration System Inspection			
Tree and Lawn Fertilization			
Sweeping of Paved Surfaces and Dumpster Enclosure			
DECEMBER:			
Sweeping of Paved Surfaces and Dumpster Enclosure			
*Hydrodynamic Separator Inspection			
*Catch Basin Inspection			

*NOTE: Use appropriate worksheet found in this plan to conduct the inspection.

Catch Basin Inspection Log

CATCH BASIN / HDS INSPECTION LOG

Name of Inspector: Date:

Catch Basin or HDS ID	Condition (circle one)		Debris above 1' within sump? (If yes then catch basin is to be cleaned)		Date of Catch Basin/Cleaning (If debris is greater than 1')		Condition of Hood (If applicable, remove trash/debris if necessary)	Comments:
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							
	Fair	Poor	Yes	No	Yes	No		
	Excellent							

On-site Procedures for Inspection and Maintenance of Catch Basin Inserts

• Secure traffic and pedestrian traffic with cones, barrels, etc.

• Clean surface area around each catch basin.

• Remove grates and set aside

• Clean grates, remove litter and debris that may be trapped within the grate

• Visually inspect condition of outlet hood and remove trash and debris from hood if necessary.

• Remove by vactor hose the debris that has been trapped in the trough area. Dispose of in accordance with local, state and federal regulatory agency requirements. Most debris that is captured in the trough or sump area will fall into the non-hazardous waste category.

• Visually inspect and check the condition of the trough area.

• Replace grate and lockdown as needed.

• Un-secure traffic control area.

• Complete service report and submit to facility owner.

Subsurface Detention Inspection Log

SUBSURFACE STORMWATER DETENTION SYSTEM INSPECTION LOG

Name of Inspector: Date:

Basin ID	Overall condition of Inlet Pipe (circle one)			Condition of Facility (circle one)			Debris and Sediment Removal from Basin?*		Inlets and Outlets are Clear and Functioning?		Date of Cleaning Performed	Comments
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		
	Excellent	Fair	Poor	Excellent	Fair	Poor	Yes	No	Yes	No		

* = Sediment deposits shall be removed from the subsurface detention basin when the deposited material reaches a height of 3" measured from the top of the storm bedding

April 2025



TRAFFIC STUDY

Proposed Warehouse Development
Old County Road
Windsor Locks, CT

PREPARED BY:
BL Companies
Architecture
Engineering
Environmental

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SIGNAL WARRANT ANALYSIS
CORRESPONDENCE
TRAFFIC SIGNAL PLANS

EXECUTIVE SUMMARY

This traffic study has been prepared for the development of two warehouses on Old County Road in Windsor Locks, Connecticut. The focus of this study was to evaluate the traffic flows and operating conditions on the roadways and intersections projected to be used by motorists traveling to and from the proposed development, and to quantify the potential traffic impacts on those roadways and intersections. The proposed development Site is located on the eastern side of Old County Road and north of the Connecticut Route 20 (Bradley International Airport Connector) Westbound On and Off Ramps. The ±74.0-acre site was formerly cultivated farmland. The proposed development has no other roadway frontage. The proposed development site will include:

- One ±887,500 SF warehouse
- One ±404,000 SF warehouse

For the traffic study, a traffic signal warrant analysis was performed at the proposed development driveway along Old County Road. The proposed intersection of Old County Road at Site Drive does not warrant a signal by MUTCD Condition A or Condition B under the eight-hour warrant. Although this intersection does not meet the signal warrant requirements described in the MUTCD as a stand-alone location, installation of a traffic signal should be considered due to the proximity of the proposed Site driveway to the existing signalized intersection of Old County Road and CT Route 20 Westbound On/Off Ramps.

The study investigated the potential traffic impacts associated with the development in the weekday morning and evening commuting peak.

Traffic operations were analyzed during the weekday morning and weekday evening hours for the Existing, No Build and Build scenarios. Due to the close proximity of the driveway along Old County Road to the existing signalized intersection of Old County Road at CT Route 20 Westbound On/Off Ramps, it was assumed the Site driveway intersection would be signalized, thus was only analyzed as a signalized intersection.

Traffic operations, at the two signalized intersections, are projected to have little impact from the projected traffic of the proposed development. All movements are projected to operate within acceptable ranges, at LOS D or better in the Existing, No Build, and Build scenarios for the AM and PM peak hours.

For the development, these recommendations and offsite improvements are suggested:

- Although not warranted, the installation of a traffic signal at Old County Road at Site Drive, incorporated into the existing signalized intersection of Old County Road at CT Route 20 Westbound On/Off Ramps, due to the Site Drives close proximity to the existing traffic signal.
- Installation of signs and pavement markings along Old County Road and Site Driveway in conformance with the Site Plans and in accordance with the "Manual on Uniform Traffic Control Devices", latest edition.
- Installation of "TRUCKS NO RIGHT TURN" signage for traffic exiting the Site Driveway in conformance with the Site Plans.
- Provide selective clearing of vegetation within the Right of Way to improve sight lines of Site Drives egress along Old County Road.
- Appropriate modification of non-access highway line along Old County Road located in Rights of Way File No. 164-178.002D.
- Due to the proposed square footage for warehouse development, as well as the proposed number of parking spaces, the Project must be reviewed by the Office of State Traffic Administration (OSTA) in accordance with Section 14-311 of the Connecticut General Statutes.

I. INTRODUCTION

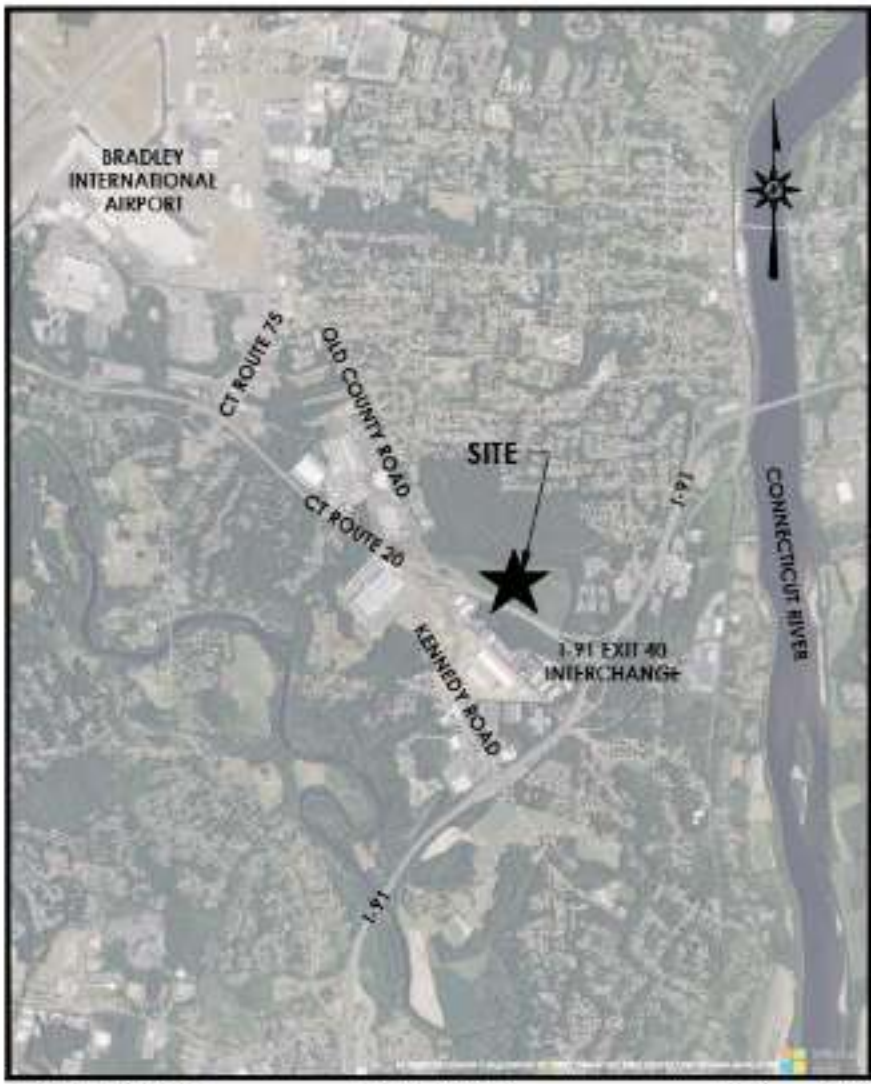
This traffic study has been prepared for the development of two warehouses on Old County Road in Windsor Locks, Connecticut. The focus of this study was to evaluate the traffic flows and operating conditions on the roadways and intersections projected to be used by motorists traveling to and from the proposed development, and to quantify the potential traffic impacts on these roadways and intersections. The site, formerly cultivated farmland, is located on the east side of Old County Road and north of the Connecticut Route 20 (Bradley International Airport Connector) Westbound On and Off Ramps. The proposed development also has an approximate total site size of ±76.0-acres. The study area is located in a commercial zone with a nearby industrial zone to the west, multi-family zone and Open Space/Park/Greenway to the north, and multi-family zone and mixed-use zone to the east. See **figure 1** for a location map.

The Site was previously (2019) approved for the following: Retail (67,000 SF), Restaurant (40,000 SF), Hotel (148 rooms), Fitness Center (40,000 SF), Medical Office (10,000 SF), Theater (64,600 SF), Dorms (926,782 SF), Cafeteria/Convention Space (66,736 SF), Reception/Office/Lounge (26,488 SF), Gym (221,232 SF), Concession Stands (9,600 SF), and 9 athletic fields. This approval was under OSTA TIR No. 165-1901-01.

The proposed development Site will include:

- One ±387,500 SF warehouse
- One ±494,000 SF warehouse

Site access will be provided at a proposed signalized intersection on Old County Road, approximately 100' from the existing signalized intersection of Old County Road at CT Route 20 Westbound On/Off Ramps.



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LOCATION MAP

PROPOSED DEVELOPMENT
OLD COUNTY ROAD/ROUTE 20, WINDSOR LOCKS, CT
DRAWING NOT TO SCALE

PROJECT NO. 2007101
DATE APRIL 2008

FIGURE 1

The study investigated the potential traffic impacts associated with the development during the weekday morning and evening commuting peak periods. The greatest cumulative impacts of project related traffic are likely to occur during the two time periods, when traffic volumes are highest along the roadway network. As such, traffic operating conditions at the study intersections were analyzed during these peak periods.

II. EXISTING CONDITIONS

An investigation of the existing traffic conditions on the adjacent roadway network formed the basis for assessing any traffic issues associated with the proposed development. This investigation included field reconnaissance, traffic counting, and research of pertinent planning and traffic data available from Connecticut Department of Transportation (CTDOT), Town of Windsor Locks, and Town of Windsor.

Access Network

The project study area consists of the following intersections:

- Old County Road at CT Route 20 Westbound On/Off Ramps (Signalized; Windsor Locks)
- Kennedy Road at CT Route 20 Eastbound On/Off Ramps (Signalized; Windsor)

Major roadways in the vicinity of the project include Old County Road, Kennedy Road, and CT Route 20. There are several local roads that serve the residents living in the study area.

Old County Road is a north-south major collector, approximately 1.9 miles in length, originating at CT Route 140 (Elm Street) and continuing to the Windsor Locks town line at CT Route 20 where it continues as Kennedy Road into the Town of Windsor. Old County Road primarily has two travel lanes in each direction, delineated with a double yellow centerline (DYCL) and white shoulder markings. At the intersection of Old County Road and CT Route 20 On/Off Ramps, there is an exclusive right turn lane on Old County Road in the southbound direction and a permitted left turn/through lane on Old County Road in the northbound direction. Old County Road has a posted speed limit of 35 mph. Sidewalks are not present on Old County Road near the Site. Street lighting is present at the intersection of Old County Road and CT Route 20 On/Off Ramps but is nowhere else along Old County Road. The average daily traffic (ADT), provided by CTDOT in 2021, was approximately 10,300 vehicles per day (VPD).

Kennedy Road is a north-south major collector, approximately 1.9 miles in length, originating at the Windsor town line at CT Route 20 and continuing south to

CT Route 159, Kennedy Road is approximately 3.3 miles in length. Between its northern limit with CT Route 20 and Interstate 91, Kennedy Road primarily has two travel lanes in each direction with a grassy median separating the travel ways and exclusive turn lanes at select intersections. Between Interstate 91 and CT Route 159, there is one travel lane in each direction. Kennedy Road has a posted speed limit of 35 mph. Sidewalks are present on both sides or at least one side of most of Kennedy Road between its northern limit with CT Route 20 and Interstate 91. The sidewalk ends just before the intersection of Kennedy Road and CT Route 20 On/Off Ramps. Street lighting is present at the intersection of Kennedy Road and CT Route 20 On/Off Ramps and along the grassy median between CT Route 20 and Interstate 91. The ADT, provided by CTDOT in 2021 between CT Route 20 and Interstate 91, was approximately 10,200 VPD. The ADT, provided by CTDOT in 2021 between Interstate 91 and CT Route 159, was approximately 2,700 VPD.

The **CT Route 20** is an urban freeway/expressway section originates at Interstate 91 and terminates near Bradley International Airport. The posted speed limit is 65 mph and the average daily traffic, provided by CTDOT in 2021, was approximately 25,100 VPD and 29,300 VPD for eastbound and westbound, respectively, in the vicinity of the study area.

Intersection Characteristics

Two key intersections were reviewed in Windsor Locks and Windsor for this study to determine if they would be impacted by the expected Site traffic volumes. The intersections studied are as follows:

Old County Road at CT Route 20 Westbound On/Off Ramps is a signalized four-way intersection. The northbound approach has two lanes entering the intersection, one lane turning left and through and one through lane. The southbound approach has three lanes entering the intersection, one exclusive right turning lane and two through lanes. The westbound approach is the CT Route 20 Westbound Off Ramp, which has three lanes entering the intersection, one exclusive left turning lane, one through and right turning lane, and one exclusive right turning lane. The western leg of the intersection has a single through lane leaving the intersection and is the

CT Route 20 Westbound On Ramp. There is no emergency pre-emption or pedestrian phasing installed at this signal and this signal is part of a coordinated system with the Kennedy Road at CT Route 20 Eastbound On/Off Ramps intersection.

Kennedy Road at CT Route 20 Eastbound On/Off Ramps is a signalized fourway intersection. The SB approach has two lanes entering the intersection, one lane turning left and through and one through lane. The northbound approach has three lanes entering the intersection, one exclusive right turning lane and two through lanes. The eastbound approach is the CT Route 20 Eastbound Off Ramp and has two lanes entering the intersection, one exclusive left turning lane and one through and right turning lane. The eastern leg of the intersection has a single through lane leaving the intersection and is the CT Route 20 Eastbound On Ramp. There is no emergency pre-emption or pedestrian phasing installed at this signal and this signal is part of a coordinated system with the Old County Road at CT Route 20 Westbound On/Off Ramps intersection.

Sight Distance Requirements

The American Association of State Highway and Transportation Officials' (AASHTO) publication, *A Policy on Geometric Design, 2018 Edition*, defines minimum sight distances at intersections based on the design speed and roadway geometry attributes. The CTDOT follows these methods for unsignalized and signalized intersection in the *CTDOT Highway Design Manual (including revisions to October 2023)*.

Two distances to consider are the stopping sight distance (SSD) for vehicles traveling along the main road and intersection sight distance (ISD) from the proposed driveways.

Old County Road and Kennedy Road both have a posted speed limit of 35 mph. An automatic traffic recorder (ATR) count was obtained in the vicinity of the proposed Site Drive. The 85th percentile speeds obtained from this traffic count was 41.6 mph in the northbound direction and 42.5 mph in the southbound direction. The sight distances looking in both directions along Old County Road at the Site driveway appears adequate due to Old County Road at the intersecting drive being relatively flat and

straight. To increase sight lines, clearing of vegetation/overgrown shrubs from surrounding Site driveway area, within the Right of Way, is recommended where needed. **Table 1** below summarizes the required SSD and ISD at the proposed Site Drive for a left and right turn movement. The left turn (looking right) movement SSD/ISD distance is limited to approximately 390', due to the sight line being measured from the left turn lane against the property line to the center of the travel lane of Old County Road southbound.

Table 1 – Sight Distances

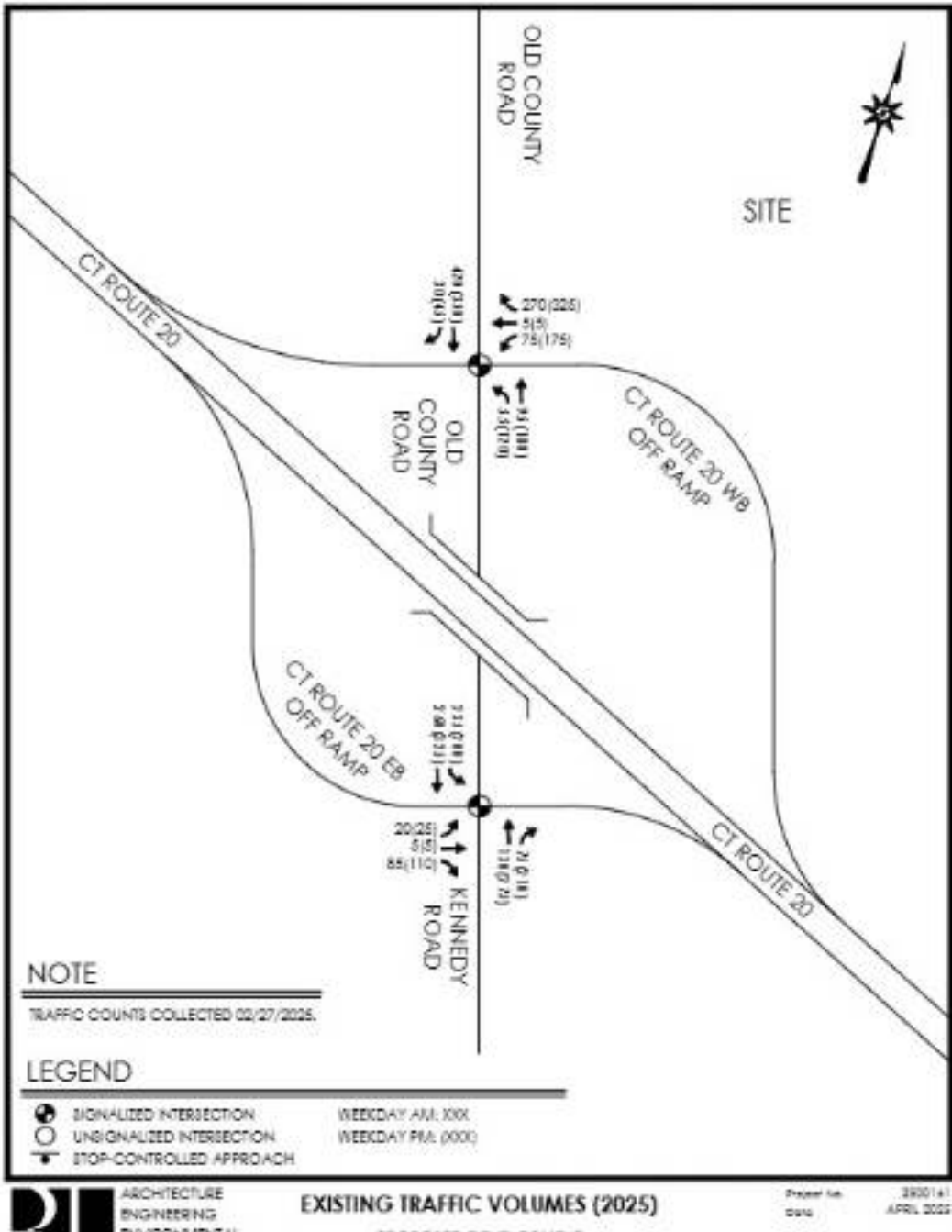
Intersection	Direction		Design Speed (mph)	SSD Required (ft)	ISD Required (ft)	SSD/ISD Provided (approx.)
Old County Road at Site Drive	Driveway Approach (Passenger Cars)	Looking Left	40	325	500	550
		Looking Right	40	325	500	390
	Driveway Approach (Trucks)	Looking Left	40	325	755	550
		Looking Right	40	325	755	390

Multi-Modal

There is a CTtransit route that operates through the roadway network for this study area in Windsor Locks and Windsor. Along Old County Road and Kennedy Road, CTtransit operates Bus Route 34 with stops on both sides of both streets. This route runs from Downtown Hartford to International Drive in Windsor Locks every hour from 4:00 AM to 12:00 AM except during peak AM (7 AM – 9 AM) and PM (4 PM – 6 PM) hours when it runs every 30 minutes.

Existing Traffic Volumes

Traffic counts were collected on Thursday, February 27, 2025, from 7:00 AM to 9:00 AM and 4:00 PM – 6:00 PM for the morning commuter peak period and evening peak period. A 24-Hour automatic traffic recorder (ATR) count was also collected in the vicinity of the proposed Site drive. This ATR provided traffic counts, vehicle classification and speed data. The volumes were reviewed and approved by CTDOT. The current peak hour traffic volumes for the intersections are illustrated in **Figure 2**.



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EXISTING TRAFFIC VOLUMES (2025)

PROPOSED DEVELOPMENT
OLD COUNTY ROAD/ROUTE 20, WINDSOR LOCKS, CT
SCHEMATIC, NOT TO SCALE

Project No. 29001.61
Date APRIL 2026

FIGURE 2

Crash Data Review

As part of the existing conditions analysis, crash data for the most recent full three-year period from January 1, 2022 through December 31, 2024, was obtained from the Connecticut Crash Data Repository. Crash data is requested by CTDOT, and often by local agencies, and therefore included herein, although in the context of a traffic impact study, is not particularly useful.

Twenty (20) crashes in the study area were reviewed, thirteen (13) associated with intersections and seven (7) along the Kennedy Road/Old County Road segment between the intersections. The most common crash was "angle" crashes with 6 recorded crashes (30%) followed by "front to rear" with 5 recorded crashes (25%). The majority of crashes resulted in "No Apparent Injury" at sixty-five percent (65%). There were six "Suspected Minor Injury" crashes in the study area, most occurring at the intersection of Old County Road and CT Route 20 Westbound On/Off Ramps. There were no fatalities reported at the intersections of this study area during the three-year period. Below **Table 1** summarizes the crash data.

Table 2 – Crash Data Review

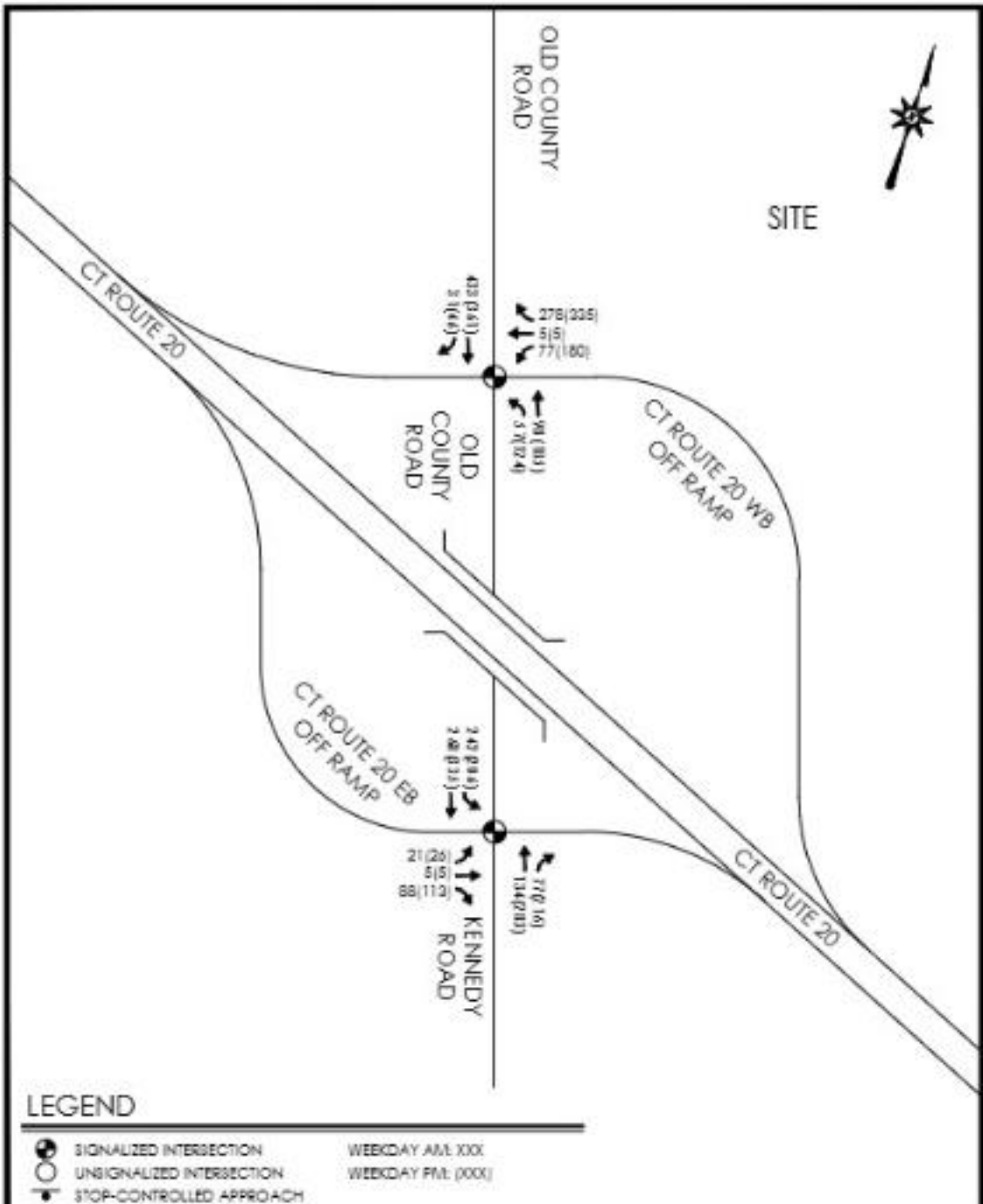
	Old County Road at Route 20 WB Ramps	Old County Road Segment between Route 20 WB Ramps and Route 20 EB Ramps	Old County Road / Kennedy Road at Route 20 EB Ramps	Total
Year				
2022	1	0	2	3
2023	6	0	4	10
2024	5	1	1	7
Total	**12**	**1**	**7**	**20**
Crash Type				
Angle	3	0	3	6
Front to Front	0	0	0	0
Front to Rear	4	0	1	5
Front to Side	2	0	0	2
Rear to Rear	0	0	0	0
Rear to Side	0	0	0	0
Sideswipe, Opposite Direction	2	1	1	4
Sideswipe, Same Direction	1	0	1	2
Single Vehicle, Crash with Roadside object	0	0	1	1
Total	**12**	**1**	**7**	**20**
Severity				
Fatal Injury (K)	0	0	0	0
Suspected Serious Injury (A)	0	0	0	0
Suspected Minor Injury (B)	6	0	0	6
Possible Injury (C)	0	0	1	1
No Apparent Injury (O)	6	1	6	13
Unknown	0	0	0	0
Total	**12**	**1**	**7**	**20**

III. PROJECTED TRAFFIC CONDITIONS

In order to evaluate traffic conditions when the proposed development is expected to be completed in 2028, future traffic volumes were forecast under the 2028 No Build conditions (without the proposed development) and under 2028 Build conditions (with the proposed development). The projected traffic volumes on the roadway network under 2028 No Build conditions were assumed to include all existing traffic and new traffic resulting from background sources of traffic growth, independent of the proposed development. The project traffic volumes on the roadway network under 2028 Build conditions were assumed to include the anticipated project site-generated traffic volumes in addition to the assumed background traffic growth.

No Build Traffic Volumes

A 1% annual growth rate was applied to the existing traffic volumes to develop the 2028 No Build traffic volumes. In addition to applying a growth rate, any approved or pending developments in the area that may add substantial traffic volume to the study intersections were considered. In discussions with Connecticut Department of Transportation, the Town of Windsor, and the Town of Windsor Locks, there are no sites identified that will impact the traffic in the vicinity of the Site. The No Build Traffic Volumes are graphically illustrated in **Figure 3**.



ARCHITECTURE
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NO BUILD TRAFFIC VOLUMES (2028)

PROPOSED DEVELOPMENT
OLD COUNTY ROAD/ROUTE 20, WINDSOR LOCKS, CT
SCHEMATIC, NOT TO SCALE

Project No. 2000141
Date APRIL 2020

FIGURE 3

Trip Generation

The anticipated traffic volumes generated by the proposed development were projected based upon guidelines set forth by CTDOT and data provided by the *ITE Trip Generation Manual 11th Edition*. This widely used reference manual provided trip generation rates for various land uses based on traffic count data collected at similar sites. **Table 3** shows projected trip generation for the land uses.

For the proposed warehouse development along Old County Road, during weekday morning peak hour there are 150 projected trips generated (116 enter, 34 exit) and 159 projected trips generated (45 enter, 114 exit) during the weekday evening peak hour. The trips were further broken down by truck traffic generated; during weekday morning peak hour there are 18 projected truck trips generated (9 enter, 9 exit) and 27 projected truck trips generated (14 enter, 13 exit) during the weekday evening peak hour.

Table 3 – Site-Generated Traffic Volumes

Land Use	ITE Land Use Code	Size	Trips					
			AM Peak Hour Adjacent Street Traffic			PM Peak Hour Adjacent Street Traffic		
			Total	In	Out	Total	In	Out
Warehouse	**150 Warehousing (Total)**	**494 KSF**	**84**	**65**	**19**	**89**	**25**	**64**
	150 Warehousing (Truck)		10	5	5	15	8	7
	150 Warehousing (Cars)		74	60	14	74	17	57
Warehouse	**150 Warehousing (Total)**	**387.5 KSF**	**66**	**51**	**15**	**70**	**20**	**50**
	150 Warehousing (Truck)		8	4	4	12	6	6
	150 Warehousing (Cars)		58	47	11	58	14	44
	Gross Trips		**150**	**116**	**34**	**159**	**45**	**114**

Ref: Trip Generation, 11th Edition

Trip Distribution

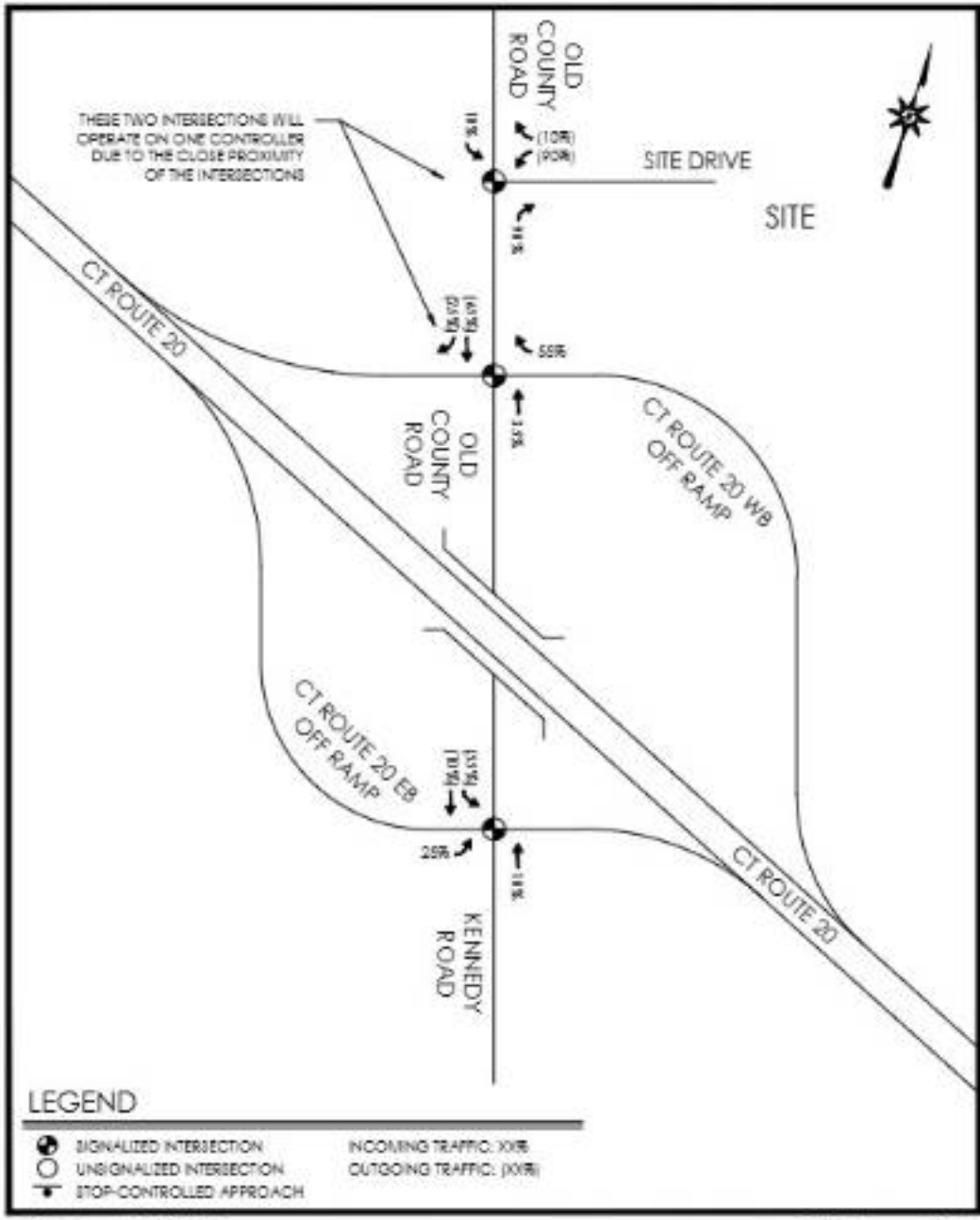
The directional distribution of traffic is typically a function of population densities, competing opportunities, existing travel patterns adjacent to the Site, and the efficiency and limitations of the existing roadway system. All traffic turning right out of the Site is assumed to be passenger car traffic, due to the "TRUCKS NO RIGHT TURN" signage proposed on the Site Drive approach. **Figure 4** shows the anticipated distribution of new Site trips, based on a review of arrival/departure traffic patterns and general knowledge of the area. It was assumed that car and truck trips were to use the same trip distribution.

Assigned Site-Generated Traffic Volumes

The generated trips are multiplied by the corresponding proportions to ascertain the site-generated traffic volumes. **Figure 5** shows the total site-generated peak hour traffic generated by the Site and distributed to the nearby roadway network.

Build Traffic Volumes

The assigned site-generated traffic volumes were superimposed onto the 2028 No Build Traffic volumes to establish the future 2028 Build Traffic volumes, as illustrated in **Figure 6**. A signal warrant analysis is provided in a later section of the report.



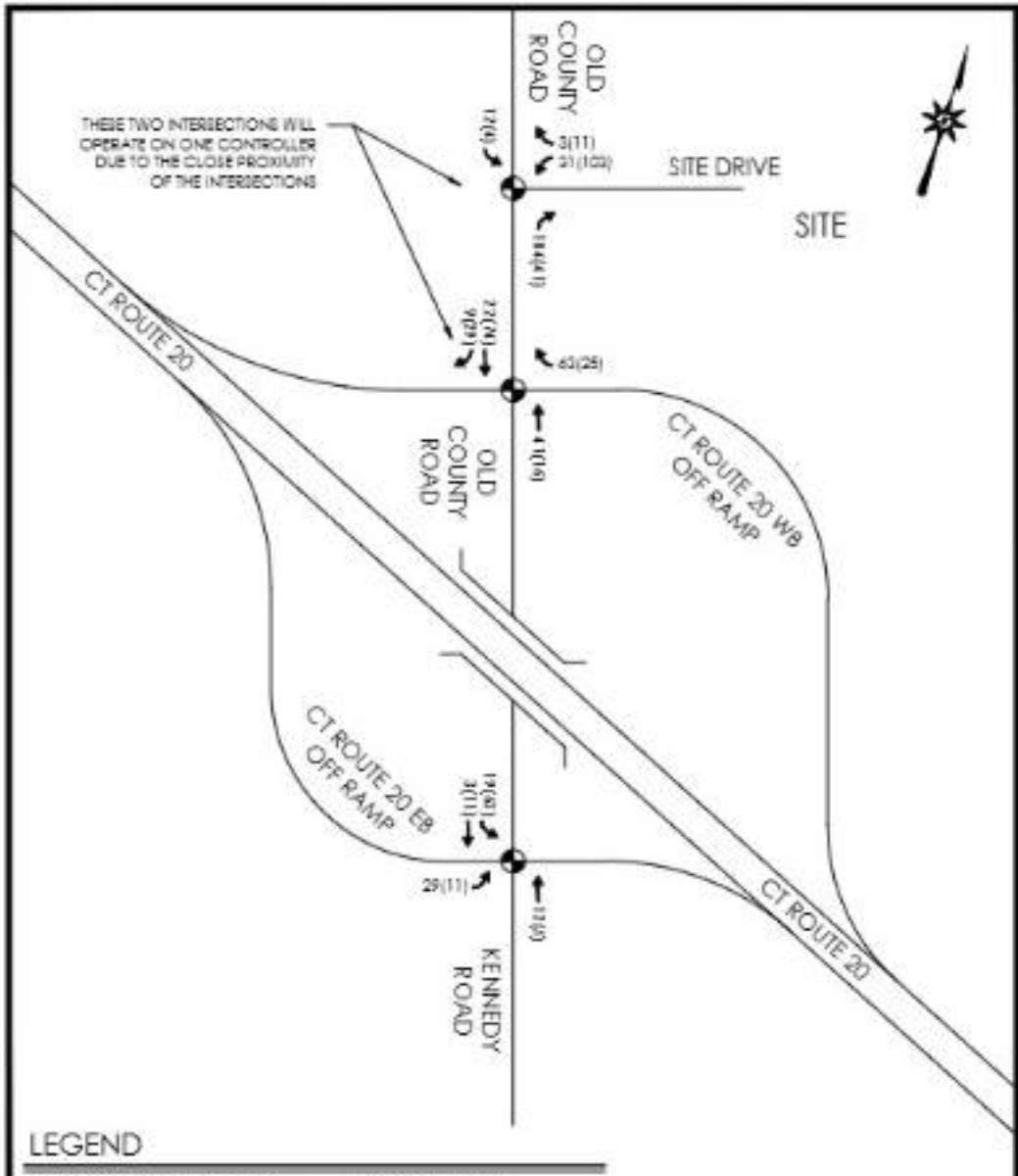
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

TRIP DISTRIBUTION

PROPOSED DEVELOPMENT
OLD COUNTY ROAD/ROUTE 20, WINDSOR LOCKS, CT
SCHEMATIC, NOT TO SCALE

Project No. 29301(4)
Date APRIL 2022

FIGURE 4



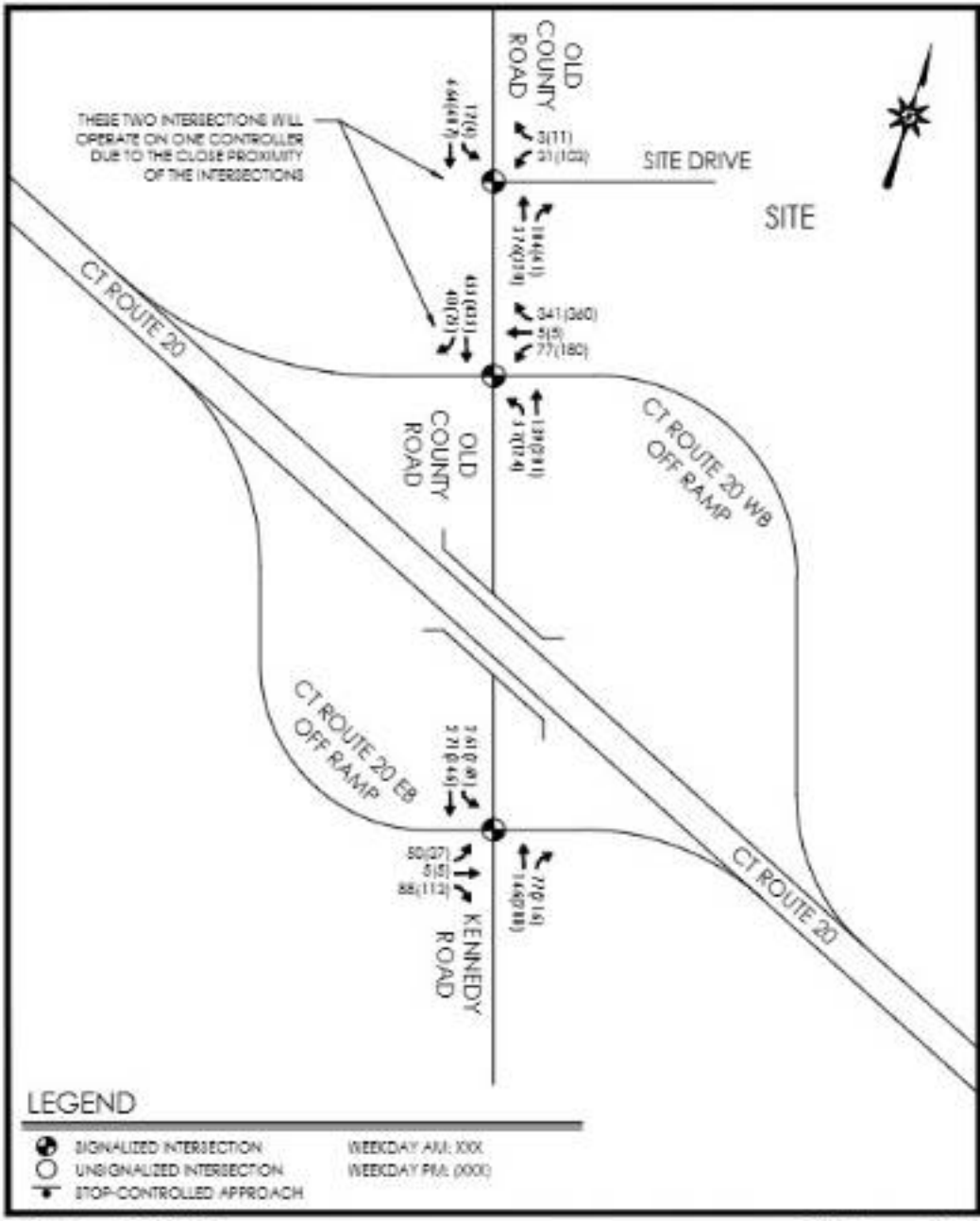
ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

SITE GENERATED TRAFFIC VOLUMES

PROPOSED DEVELOPMENT
OLD COUNTY ROAD/ROUTE 20, WINDSOR LOCKS, CT
SCHEMATIC, NOT TO SCALE

Project No. 29301(4)
Date APRIL 2022

FIGURE 5



ARCHITECTURE
ENGINEERING
ENVIRONMENTAL
LAND SURVEYING

BUILD TRAFFIC VOLUMES (2028)

PROPOSED DEVELOPMENT
OLD COUNTY ROAD/ROUTE 20, WINDSOR LOCKS, CT
SCHEMATIC, NOT TO SCALE

Project No.
Date

APRIL 2022

FIGURE 6

Complete Streets

Due to the nature of this development serving as warehousing, only vehicle (cars and trucks) traffic was considered. Public transit, walking, and bicycle trips were not analyzed or considered for the trip generation of this development. Within the Site, sidewalks are proposed along the building frontage on sides with employee parking to assist employees traveling between their personal vehicles and the building. No bicycle accommodations are proposed on the Site. Approximately 1,000' south of the proposed Site driveway, sidewalks are present on the westerly side of Kennedy Road. Sidewalks are present on the easterly side of Kennedy Road, but only until Hayden Station Road and do not continue north of this intersection. Approximately 700' north of the Site driveway, sidewalks are present on the easterly side of Old County Road and continues north.

Traffic Signal Warrant Analysis

For this traffic study, a traffic signal warrant analysis was performed at the proposed Site driveway along Old County Road. The Manual on Uniform Traffic Control Devices (MUTCD), published by the Federal Highway Administration, is recognized as the national standard for all traffic control devices installed on roads open to public travel in accordance with 23 U.S.C. 109(d) and 402(a), part 655.603. In Connecticut, this is supplemented by the Office of State Traffic Administration (OSTA) regulations, Section 14-298-700, which state that the decision to install a traffic control signal shall be based on an engineering study and shall conform to the standards in the Manual on Uniform Traffic Control Devices. For the purpose of standardization and uniformity, per Section 14-299 of the Connecticut General Statutes, no installation of any traffic control signal shall be made by any town, city, or borough until the same has been approved by the OSTA.

For the MUTCD, an engineering study of traffic conditions and physical characteristics of the location must be performed to determine whether installation of a traffic control signal is justified at a location. Satisfying conditions are referred to as "warrants". Note that the satisfaction of a traffic signal warrant or warrants does not require the

installation of a traffic control signal. Many locations warranting signals function well in the real world without them.

There are nine (9) warrants stipulated in the MUTCD:

1) Eight Hour Vehicular Volume
2) Four Hour Vehicular Volume
3) Peak Hour
4) Pedestrian Volume
5) School Crossing
6) Coordinated Signal Systems
7) Crash Experience
8) Roadway Network
9) Intersection near a railroad grade crossing

Their application takes up thirteen pages in the MUTCD and an explanation of each would serve no purpose in this analysis, as most can be quickly eliminated from consideration without any detailed analysis. In Connecticut, the CSTA rarely approves the installation of traffic control signals based on traffic volumes unless they meet the eight-hour warrant, which is the criteria used here.

This traffic signal warrant analysis studied the full Site buildout volumes for the driveway hourly volume information.

The site-generated volumes were applied, using the trip distribution that was based on the directional volumes in the vicinity of the Site. The site-generated volumes were superimposed onto the collected volumes of the adjacent roadway network to ascertain the Build Volumes. The warrant analysis performed for the Site driveway is attached to this study with the necessary driveway hourly volume information.

The proposed intersection of Old County Road at Site Drive does not warrant a signal by MUTCD Condition A or Condition B under the eight-hour warrant. Although this signal does not meet the signal warrant requirements described in the MUTCD, CSTA should consider the installation of a traffic signal as the intersection is less than 100' from an existing traffic signal. If a traffic signal is installed for the Site driveway approach, it shall operate on the same traffic controller as the adjacent existing intersection of Old County Road at CT Route 20 Westbound On/Off Ramps. A traffic signal warrant analysis for the Site driveway can be found in the **Appendix**.

IV. ROADWAY ADEQUACY

The intersection capacity analyses were prepared using the methodology described in the Highway Capacity Manual (HCM), published by the Transportation Research Board (TRB) for the existing and build traffic volume scenarios to simulate the traffic impact of a proposed development on the adjacent roadway network. As documented in the HCM, intersection performance is influenced by several factors, including traffic demand; lane configurations; lane widths; turning restrictions; roadway grades; and signal phasing. The existing physical roadway characteristics and signal phasing and timing settings were determined by observing conditions in the field and reviewing the current traffic control signal plans provided by the Connecticut Department of Transportation.

Synchro™ software (Version 11) was used to model the study intersections based on the parameters mentioned above. The Synchro software is widely utilized by the traffic engineering industry and is consistent with the procedures in the HCM.

Signalized Intersections

Signalized intersections are analyzed in terms of vehicle capacity and motorist delay. Capacity is the maximum rate of vehicle flow through an intersection given typical operating conditions. The number of vehicles traveling through an intersection is divided by the capacity of the intersection to determine an overall volume to capacity ratio (v/c). A v/c value under 1.00 indicates that the number of vehicles traveling through an intersection is less than capacity.

As stated in the HCM, level of service for signalized intersections is defined in terms of control delay. Control delay measures the increase in delay a motorist experiences while encountering a traffic control signal. These factors include initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. This delay is measured per vehicle for a 15-minute analysis period and is associated with the levels of service, which are summarized in **Table 4** below:

Table 4 – Signalized Intersection – Level of Service

Level of Service[1]	Average Control Delay (seconds per vehicle)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

[1] If volume-to-capacity ratio is over 1.0 for a lane group, LOS F, intersection and approach-based LOS is based solely on control delay.

Level of Service A represents the optimum level where most motorists arrive at the subject intersection during the green phase and thus experience virtually no delay. Conversely, Level of Service F indicates that motorists are delayed over 80 seconds while traveling through the intersection and can often imply a complete breakdown of that location. Level of Service D is generally considered the limit of acceptable motorist delay.

Table 5 below shows the Peak Hour Traffic Operations with Level of Service (LOS) along with other traffic operational parameters. A detailed report of the analysis results can be found in the **Appendix**.

Table 5 – Peak Hour Traffic Operations

	Weekday AM			Weekday PM		
	2023 Existing	2028 No Build	2028 Build	2023 Existing	2028 No Build	2028 Build
Kennedy Road/Old County Road at CT Route 20 EB On/Off Ramps [1]	A/8	A/8	A/8	A/9	A/9	A/8
CT Route 20 EB Off Ramp Left	D/0.15/33/50	D/0.16/33/50	D/0.29/56/92	D/0.16/33/55	D/0.16/33/55	D/0.30/56/93
CT Route 20 EB Off Ramp Thru/Right	B/0.41/14/68	B/0.42/14/68	B/0.45/16/80	B/0.47/13/80	B/0.47/13/80	B/0.51/14/88
Kennedy Road NB Thru	A/0.07/8/50	A/0.08/8/50	A/0.08/7/55	A/0.13/8/93	A/0.13/8/93	A/0.14/7/95
Kennedy Road NB Right	A/0.07/2/33	A/0.07/2/33	A/0.07/2/33	A/0.22/3/35	A/0.22/3/35	A/0.22/3/35
Old County Road SB Left/Thru	A/0.26/3/50	A/0.27/3/50	A/0.28/1/28	A/0.27/4/70	A/0.28/4/70	A/0.54/1/28
Old County Road at CT Route 20 WB On/Off Ramps [1]	B/13	B/13	C/21	B/13	B/13	C/23
CT Route 20 WB Off Ramp Left	D/0.44/38/78	D/0.47/38/80	E/0.93/52/80	D/0.46/39/140	D/0.48/39/134	D/0.87/38/180
CT Route 20 WB Off Ramp Thru/Right	B/0.50/12/55	B/0.50/12/55	D/0.70/47/165	A/0.47/9/50	A/0.47/9/50	D/0.71/46/170
CT Route 20 WB Off Ramp Right	B/0.47/11/50	B/0.47/11/50	D/0.71/47/170	A/0.47/8/50	A/0.47/7/50	D/0.72/47/170
Old County Road NB Left/Thru	A/0.08/3/28	A/0.09/3/28	B/0.16/15/99	A/0.17/8/60	A/0.18/8/58	D/0.33/21/126
Old County Road SB Thru	B/0.39/11/100	B/0.39/11/100	A/0.50/6/35	B/0.34/13/95	B/0.33/13/95	A/0.37/5/35
Old County Road SB Right	A/0.04/1/28	A/0.05/1/28	A/0.05/1/28	A/0.07/1/28	A/0.04/1/28	A/0.13/2/28
Old County Road at Site Drive [1]	-	-	C/22	-	-	B/20
Site Drive WB Left	-	-	D/0.28/41/80	-	-	D/0.62/48/110
Site Drive WB Right	-	-	C/0.03/25/25	-	-	B/0.04/17/25
Old County Road NB Thru/Right	-	-	A/0.20/1/28	-	-	A/0.24/1/28
Old County Road SB Left/Thru	-	-	D/0.73/47/140	-	-	D/0.45/37/120

Overall Intersection – X/XX.X – Level of Service/Intersection Signal Delay in sec
Approaches – X/X.XX/XX/XXX – Level of Service/Volume to Capacity Ratio/Control Delay in seconds/95% Queue Length in ft

As illustrated in **Table 5**, the existing intersections are projected to operate with acceptable Levels of Service (LOS) during the Existing, No Build, and Build scenarios. The proposed signalized intersection is also projected to operate within acceptable ranges during the Build scenario. Due to the close proximity of Site driveway along Old County Road to the existing signalized intersection of Old County Road at CT Route 20 Westbound On/Off Ramps, the Site driveway intersection was only analyzed as a signalized intersection.

During the AM peak hour, the existing signalized intersection of Kennedy Road/Old County Road at CT Route 20 Eastbound On/Off Ramps is projected to experience negligible impacts from the projected traffic generated by the proposed development. After incorporating the signal revisions as mentioned at the Old County Road at CT Route 20 Westbound On/Off Ramps, this intersection is proposed to operate at LOS C, a degradation from LOS B in the No Build scenario, but still within acceptable ranges. The proposed intersection of Old County Road at Site Drive is projected to operate at LOS C.

During the PM peak hour, the existing signalized intersection of Kennedy Road/Old County Road at CT Route 20 Eastbound On/Off Ramps is projected to experience negligible impacts from the projected traffic generated by the proposed development, remaining at LOS A in the Existing, No Build, and Build scenarios. After incorporating the signal revisions as mentioned at the Old County Road at CT Route 20 Westbound On/Off Ramps, this intersection is proposed to operate at LOS C, a degradation from LOS B in the No Build scenario, but still within acceptable ranges. The proposed intersection of Old County Road at Site Drive is projected to operate at LOS B.

All movements are projected to operate within acceptable ranges, at LOS D or better in the Existing, No Build, and Build scenarios for the AM and PM peak hours.

V. CONCLUSIONS AND RECOMMENDATIONS

This traffic study has been prepared for the development of two warehouses on Old County Road in Windsor Locks, Connecticut. The focus of this study was to evaluate the traffic flows and operating conditions on the roadways and intersections projected to be used by motorists traveling to and from the proposed development, and to quantify the potential traffic impacts on these roadways and intersections. The Site, formerly cultivated farmland, is located on the east side of Old County Road and north of the Connecticut Route 20 (Bradley International Airport Connector) Westbound On and Off Ramps. The proposed development Site will include:

- One ±387,500 SF warehouse
- One ±494,000 SF warehouse

The proposed warehouse development along Old County Road, during weekday morning peak hour, is projected to generate approximately 150 trips (116 enter, 34 exit) and 159 trips generated (45 enter, 114 exit) during the weekday evening peak hour. The trips were further broken down by truck traffic generated: during weekday morning peak hour there are 18 truck trips (9 enter, 9 exit) and 27 truck trips generated (14 enter, 13 exit) during the weekday evening peak hour. The proposed intersection of Old County Road at Site Drive does not warrant a signal by MUTCD Condition A or Condition B under the eight-hour warrant. Although the Site driveway at its intersection with Old County Road does not meet the signal warrant requirements described in the MUTCD, CSTA should consider incorporating the Site driveway approach into the existing signalized intersection of Old County Road at CT Route 20 Westbound On/Off Ramps as the intersection is less than 100' from an existing traffic signal. During the AM and PM peak hours, the greatest impacts are observed at the Old County Road at CT Route 20 Westbound On/Off Ramps, due to the incorporation of the Site driveway approach into the existing traffic signal. Although, traffic operations are projected to remain within acceptable ranges, during the AM and PM peak hours, after including projected trips from the proposed development.

For the development, these recommendations and offsite improvements are suggested:

- Although not warranted, the installation of a traffic signal at Old County Road at Site Drive, incorporated into the existing signalized intersection of Old County Road at CT Route 20 Westbound On/Off Ramps, due to the Site Drives close proximity to the existing traffic signal.
- Installation of signs and pavement markings along Old County Road and Site Driveway in conformance with the Site Plans and in accordance with the "Manual on Uniform Traffic Control Devices", latest edition.
- Installation of "TRUCKS NO RIGHT TURN" signage for traffic exiting the Site Driveway in conformance with the Site Plans.
- Provide selective clearing of vegetation within the Right of Way to improve sight lines of Site Drives egress along Old County Road.
- Appropriate modification of non-access highway line along Old County Road, located in Rights of Way File No. 164-178.002D.
- Due to the proposed square footage for warehouse development, as well as the proposed number of parking spaces, the Project must be reviewed by the Office of State Traffic Administration (OSTA) in accordance with Section 14-311 of the Connecticut General Statutes.

APPENDIX

A: TRAFFIC COUNTS


Restaurants
Hotels
Things to do
Museums
Transit
Pharmacies
ATMs
ATR 1
2
1
Hayden Station Rd
Hayden Station Rd
Google

Client:	Mike Kaiker, P.E.
Project #:	1616_1_SL
RTD #:	Location 1
Location:	Windsor Locks, CT
Street 1:	Kennedy Road
Street 2:	Route 20 EB On Off Ramps
Count Date:	2/27/2023
Day of Week:	Thursday
Weather:	Cloudy, 40°F

New England COUNTS
PO Box 9725
Framingham, MA 01701

PASSENGER CARS & HEAVY VEHICLES COMBINED

	Kennedy Road Northbound				Kennedy Road Southbound				Route 20 EB Off Ramp Eastbound				Route 20 EB On Ramp Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	25	8	0	69	72	0	0	8	0	21	0	0	0	0
7:15 AM	0	0	32	10	0	93	78	0	0	2	0	12	0	0	0	0
7:30 AM	0	0	29	20	0	77	83	0	0	2	1	25	0	0	0	0
7:45 AM	0	0	42	9	0	94	97	0	0	8	0	23	0	0	0	0
8:00 AM	0	0	37	17	0	82	96	0	0	6	0	20	0	0	0	0
8:15 AM	0	0	31	13	0	88	94	0	0	5	0	20	0	0	0	0
8:30 AM	0	0	27	17	0	70	98	0	0	7	1	18	0	0	0	0
8:45 AM	0	0	23	12	0	68	82	0	0	3	0	19	0	0	0	0

	Kennedy Road Northbound				Kennedy Road Southbound				Route 20 EB Off Ramp Eastbound				Route 20 EB On Ramp Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	61	0	0	64	101	0	0	4	0	19	0	0	0	0
4:15 PM	0	0	59	28	0	46	93	0	0	4	0	27	0	0	0	0
4:30 PM	0	0	61	46	0	77	89	0	0	8	0	28	0	0	0	0
4:45 PM	0	0	69	40	0	62	93	0	0	7	0	25	0	0	0	0
5:00 PM	0	0	67	38	0	67	104	0	0	6	0	32	0	0	0	0
5:15 PM	0	0	59	40	0	59	77	0	0	7	0	25	0	0	0	0
5:30 PM	0	0	67	31	0	69	76	0	0	9	0	28	0	0	0	0
5:45 PM	0	0	79	38	0	68	112	0	0	8	1	24	0	0	0	0

AM PEAK HOUR 7:00 AM to 8:00 AM	Kennedy Road Northbound				Kennedy Road Southbound				Route 20 EB Off Ramp Eastbound				Route 20 EB On Ramp Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	0	123	74	0	322	339	0	0	21	1	92	0	0	0	0
PHF	0.75				0.97				0.91				0.00			
PHF%	0.0%	0.0%	72.3%	72.3%	0.0%	7.3%	8.8%	0.0%	0.0%	23.8%	0.0%	7.1%	0.0%	0.0%	0.0%	0.0%

PM PEAK HOUR 3:00 PM to 4:00 PM	Kennedy Road Northbound				Kennedy Road Southbound				Route 20 EB Off Ramp Eastbound				Route 20 EB On Ramp Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	0	274	209	0	252	324	0	0	27	1	109	0	0	0	0
PHF	0.82				0.82				0.87				0.00			
PHF%	0.0%	0.0%	4.0%	3.1%	0.0%	4.2%	4.2%	0.0%	0.0%	19.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%

Client:	Mike Kaiser, P.E.
Project #:	1616_1_RL
RTD #:	Location 1
Location:	Windsor Locks, CT
Street 1:	Kennedy Road
Street 2:	Route 20 EB On Off Ramps
Count Date:	2/27/2023
Day of Week:	Thursday
Weather:	Cloudy, 40°F

New England COUNTS

PO Box 9725
Framingham, MA 01701

HEAVY VEHICLES

	Kennedy Road Northbound				Kennedy Road Southbound				Route 20 EB Off Ramp Eastbound				Route 20 EB On Ramp Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	2	0	0	0	5	0	0	2	0	1	0	0	0	0
7:15 AM	0	0	6	5	0	1	1	0	0	1	0	1	0	0	0	0
7:30 AM	0	0	4	1	0	0	0	0	0	1	0	1	0	0	0	0
7:45 AM	0	0	3	1	0	0	3	0	0	1	0	1	0	0	0	0
8:00 AM	0	0	1	1	0	1	0	0	0	0	0	1	0	0	0	0
8:15 AM	0	0	0	2	0	0	12	0	0	0	0	1	0	0	0	0
5:30 PM	0	0	3	5	0	15	6	0	0	1	0	1	0	0	0	0
5:45 PM	0	0	3	7	0	29	20	0	0	1	0	0	0	0	0	0

	Kennedy Road Northbound				Kennedy Road Southbound				Route 20 EB Off Ramp Eastbound				Route 20 EB On Ramp Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	0	2	1	0	2	4	0	0	0	0	2	0	0	0	0
4:15 PM	0	0	3	1	0	0	5	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	3	4	0	1	3	0	0	0	0	1	0	0	0	0
4:45 PM	0	0	1	0	0	0	6	0	0	1	0	1	0	0	0	0
5:00 PM	0	0	2	0	0	0	5	0	0	1	0	0	0	0	0	0
5:15 PM	0	0	3	0	0	0	3	0	0	2	0	0	0	0	0	0
5:30 PM	0	0	0	2	0	4	4	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	6	2	0	0	6	0	0	0	0	0	0	0	0	0

AM PEAK HOUR	Kennedy Road Northbound				Kennedy Road Southbound				Route 20 EB Off Ramp Eastbound				Route 20 EB On Ramp Westbound			
8:00 AM	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
to 9:00 AM	0	0	7	13	0	48	30	0	0	3	0	2	0	0	0	0
PHF	0.88				0.80				0.43				0.00			

PM PEAK HOUR	Kennedy Road Northbound				Kennedy Road Southbound				Route 20 EB Off Ramp Eastbound				Route 20 EB On Ramp Westbound			
5:00 PM	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
to 6:00 PM	0	0	11	7	0	0	14	0	0	0	0	0	0	0	0	0
PHF	0.56				0.52				0.50				0.00			

Client:	Mike Kuriker, P.E.
Project #:	1636_1_BL
BTD #:	Location 1
Location:	Windsor Locks, CT
Street 1:	Kennedy Road
Street 2:	Route 20 EB On/Off Ramps
Count Date:	2/27/2025
Day of Week:	Thursday
Weather:	Cloudy, 40°F

New England COUNTS
PO Box 1721
Framingham, MA 01701

PEDESTRIANS & BICYCLES

	Kennedy Road Northbound				Kennedy Road Southbound				Route 20 EB Off Ramp Eastbound				Route 20 EB On Ramp Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Kennedy Road Northbound				Kennedy Road Southbound				Route 20 EB Off Ramp Eastbound				Route 20 EB On Ramp Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR[1]	Kennedy Road Northbound				Kennedy Road Southbound				Route 20 EB Off Ramp Eastbound				Route 20 EB On Ramp Westbound			
7:00 AM																
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PEAK HOUR[1]	Kennedy Road Northbound				Kennedy Road Southbound				Route 20 EB Off Ramp Eastbound				Route 20 EB On Ramp Westbound			
5:00 PM																
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

[1] NOTE: Peak hour summaries have corresponded to peak hours identified for passenger cars and heavy vehicles combined.

Client:	Mike Kaiser, P.E.
Project #:	1616_1_SL
RTD #:	Location 2
Location:	Windsor Locks, CT
Street 1:	Old County Road
Street 2:	Route 20 WB On/Off Ramps
Count Date:	2/27/2023
Day of Week:	Thursday
Weather:	Cloudy, 40°F

New England COUNTS
PO Box 9725
Framingham, MA 01701

PASSENGER CARS & HEAVY VEHICLES COMBINED

	Old County Road Northbound				Old County Road Southbound				Route 20 WB On Ramp Eastbound				Route 20 WB Off Ramp Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	13	19	0	0	0	68	10	0	0	0	0	0	42	0	58
7:15 AM	0	18	17	0	0	0	69	8	0	0	0	0	0	46	0	49
7:30 AM	0	14	18	0	0	0	51	9	0	0	0	0	0	35	1	73
7:45 AM	0	23	23	0	0	0	62	14	0	0	0	0	0	51	0	82
8:00 AM	0	18	23	0	0	0	69	8	0	0	0	0	0	38	3	67
8:15 AM	0	14	21	0	0	0	114	1	0	0	0	0	0	19	0	61
8:30 AM	0	13	21	0	0	0	110	5	0	0	0	0	0	20	0	70
8:45 AM	0	7	23	0	0	0	140	17	0	0	0	0	0	12	1	52

	Old County Road Northbound				Old County Road Southbound				Route 20 WB On Ramp Eastbound				Route 20 WB Off Ramp Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	18	24	0	0	0	102	12	0	0	0	0	0	27	1	68
4:15 PM	0	10	28	0	0	0	70	7	0	0	0	0	0	35	0	58
4:30 PM	0	20	43	0	0	0	116	14	0	0	0	0	0	44	0	83
4:45 PM	0	16	48	0	0	0	86	6	0	0	0	0	0	19	0	77
5:00 PM	0	14	54	0	0	0	64	14	0	0	0	0	0	27	1	58
5:15 PM	0	21	48	0	0	0	93	14	0	0	0	0	0	40	4	70
5:30 PM	0	22	43	0	0	0	81	11	0	0	0	0	0	40	0	75
5:45 PM	0	12	48	0	0	0	93	9	0	0	0	0	0	19	0	68

AM PEAK HOUR	Old County Road Northbound				Old County Road Southbound				Route 20 WB On Ramp Eastbound				Route 20 WB Off Ramp Westbound			
8:00 AM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
9:00 AM	0	70	90	0	0	0	421	49	0	0	0	0	0	177	4	260
PHF	0.88				0.88				0.00				0.93			
PH%	0.0%	1.0%	15.0%	0.0%	0.0%	0.0%	78.3%	20.7%	0.0%	0.0%	0.0%	0.0%	0.0%	26.0%	0.0%	6.7%

PM PEAK HOUR	Old County Road Northbound				Old County Road Southbound				Route 20 WB On Ramp Eastbound				Route 20 WB Off Ramp Westbound			
3:00 PM																
to	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	119	263	0	0	0	351	47	0	0	0	0	0	177	3	325
PHF	0.95				0.95				0.00				0.95			
PH%	0.0%	4.2%	9.3%	0.0%	0.0%	0.0%	12.4%	1.7%	0.0%	0.0%	0.0%	0.0%	0.0%	6.3%	0.1%	11.5%

Client:	Mike Kaelin, P.E.
Project #:	1616_1_SL
RTD #:	Location 2
Location:	Windsor Locks, CT
Street 1:	Old County Road
Street 2:	Route 20 WB On/Off Ramps
Count Date:	2/27/2023
Day of Week:	Thursday
Weather:	Cloudy, 40°F

New England COUNTS
PO Box 9725
Framingham, MA 01701

HEAVY VEHICLES

	Old County Road Northbound				Old County Road Southbound				Route 20 WB On Ramp Eastbound				Route 20 WB Off Ramp Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
7:00 AM	0	0	4	0	0	0	11	2	0	0	0	0	0	0	0	7
7:15 AM	0	4	2	0	0	0	3	2	0	0	0	0	0	0	0	4
7:30 AM	0	2	2	0	0	0	4	3	0	0	0	0	0	4	1	1
7:45 AM	0	2	6	0	0	0	7	5	0	0	0	0	0	2	0	6
8:00 AM	0	1	0	0	0	0	6	1	0	0	0	0	0	3	0	4
8:15 AM	0	0	0	0	0	0	8	0	0	0	0	0	0	6	0	2
8:30 AM	0	0	5	0	0	0	20	1	0	0	0	0	0	1	0	5
8:45 AM	0	0	4	0	0	0	48	4	0	0	0	0	0	4	0	8

	Old County Road Northbound				Old County Road Southbound				Route 20 WB On Ramp Eastbound				Route 20 WB Off Ramp Westbound			
Start Time	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
4:00 PM	0	1	0	0	0	0	4	0	0	0	0	0	0	1	0	1
4:15 PM	0	1	3	0	0	0	0	2	0	0	0	0	0	4	0	1
4:30 PM	0	0	3	0	0	0	3	1	0	0	0	0	0	1	0	2
4:45 PM	0	0	2	0	0	0	0	0	0	0	0	0	0	2	0	0
5:00 PM	0	1	1	0	0	0	3	2	0	0	0	0	0	1	0	0
5:15 PM	0	1	5	0	0	0	2	0	0	0	0	0	0	3	0	10
5:30 PM	0	0	0	0	0	0	4	1	0	0	0	0	0	4	0	11
5:45 PM	0	1	4	0	0	0	4	0	0	0	0	0	0	4	0	12

AM PEAK HOUR 8:00 AM to 9:00 AM	Old County Road Northbound				Old County Road Southbound				Route 20 WB On Ramp Eastbound				Route 20 WB Off Ramp Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	1	9	0	0	0	77	0	0	0	0	0	0	35	0	10
PHF	0.80				0.42				0.00				0.88			

PM PEAK HOUR 5:00 PM to 6:00 PM	Old County Road Northbound				Old County Road Southbound				Route 20 WB On Ramp Eastbound				Route 20 WB Off Ramp Westbound			
	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right	U-Turn	Left	Thru	Right
	0	3	12	0	0	0	12	3	0	0	0	0	0	12	0	42
PHF	0.54				0.75				0.00				0.54			

Client:	Mike Kunkes, P.E.
Project #:	1636_1_BL
RTD #:	Location 2
Location:	Windsor Locks, CT
Street 1:	Old County Road
Street 2:	Route 20 WB On/Off Ramps
Count Date:	2/27/2025
Day of Week:	Thursday
Weather:	Cloudy, 40°F

New England COUNTS
PO Box 1721
Framingham, MA 01701

PEDESTRIANS & BICYCLES

	Old County Road Northbound				Old County Road Southbound				Route 20 WB On Ramp Eastbound				Route 20 WB Off Ramp Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	Old County Road Northbound				Old County Road Southbound				Route 20 WB On Ramp Eastbound				Route 20 WB Off Ramp Westbound			
Start Time	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

AM PEAK HOUR*	Old County Road Northbound				Old County Road Southbound				Route 20 WB On Ramp Eastbound				Route 20 WB Off Ramp Westbound			
8:00 AM																
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
9:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

PM PEAK HOUR*	Old County Road Northbound				Old County Road Southbound				Route 20 WB On Ramp Eastbound				Route 20 WB Off Ramp Westbound			
5:00 PM																
to	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED	Left	Thru	Right	PED
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

*NOTE: Peak hour summaries have corresponded to peak hours identified for passenger cars and heavy vehicles combined.

Classification Report

Job #: 1934_1_BL
Area: Whitter Lasita CT ATR 1
Location: Old County Road, north of Route 33 WB Ramps
Direction: Northbound
Thursday, February 27, 2025



Time	Total	Class 1 Motorcycle	Class 2 Passenger Car	Class 3 Pass. Veh. w/ Trailer	Class 4 Bus	Class 5 2 Axle 6 Tires	Class 6 3 Axle Single	Class 7 4 Axle or more Single	Class 8 3 or 4 Axle Trailer	Class 9 5 Axle Trailer	Class 10 6 Axle or more Trailer	Class 11 5 Axle or less Multi Trailer	Class 12 6 Axle Multi Trailer	Class 13 7 Axle or more Multi Trailer
[illegible]	61	0	45	7	0	0	1	0	0	0	0	0	0	0
[illegible]	89	0	81	6	1	0	1	0	0	1	0	0	0	0
[illegible]	66	1	60	3	1	0	0	0	0	1	0	0	0	0
[illegible]	85	1	69	5	0	0	0	0	0	0	0	1	0	0
[illegible]	106	0	86	11	0	1	0	0	0	0	0	0	0	0
[illegible]	143	0	109	31	0	0	1	0	0	0	1	1	0	0
[illegible]	233	1	210	12	0	0	1	0	0	0	0	0	0	0
[illegible]	277	0	233	30	0	0	1	0	0	1	1	0	0	1
[illegible]	226	1	203	17	0	1	0	0	1	0	1	0	0	0
[illegible]	210	1	203	10	1	0	1	0	0	0	0	0	0	0
[illegible]	273	0	218	43	1	1	0	0	0	0	1	0	0	0
[illegible]	228	0	208	10	0	0	0	0	0	0	0	0	0	0
[illegible]	411	0	266	132	1	11	1	1	1	0	1	1	0	1
[illegible]	218	0	208	10	0	1	0	0	0	0	0	0	0	0
[illegible]	260	0	211	43	10	1	1	0	0	1	0	0	0	0
[illegible]	426	0	366	44	0	0	1	0	0	0	0	0	0	0
[illegible]	426	0	366	39	1	1	1	0	0	0	0	0	0	0
[illegible]	211	0	124	72	0	12	1	1	0	0	0	0	0	1
[illegible]	379	0	331	39	1	13	0	0	0	0	0	1	0	0
[illegible]	272	0	224	41	1	1	0	0	0	0	0	0	0	1
[illegible]	333	0	183	39	1	0	1	0	0	0	0	1	0	0
[illegible]	138	0	121	14	1	0	0	0	1	1	0	0	0	0
[illegible]	119	0	99	14	0	0	0	0	0	0	0	0	1	0
[illegible]	61	0	61	11	1	0	1	0	1	0	0	0	0	0
Total:	[illegible]	17	[illegible]	871	37	78	37	8	4	48	6	33	1	8
	100.00%	0.28%	80.39%	14.24%	1.42%	1.32%	0.61%	0.08%	0.07%	0.70%	0.12%	0.54%	0.02%	0.10%

Classification Report

Job #: [illegible]
Area: Windsor Locks CT ATR 1
Location: Old County Road, north of Route 20 WB Ramps
Direction: Southbound
Thursday, February 27, 2025

Time	Total	Class 1 Motorcycle	Class 2 Passenger Car	Class 3 Vans, Pick up Trucks	Class 4 Bus	Class 5 2 Axle 6 Tire	Class 6 3 Axle Unit	Class 7 4 Axle or more Unit	Class 8 3 or 4 Axle Trailer	Class 9 5 Axle Trailer	Class 10 6 Axle or more Trailer	Class 11 5 Axle or less Multi Trailer	Class 12 6 Axle Multi Trailer	Class 13 7 Axle or more Multi Trailer
0000	55	1	43	6	2	0	3	0	0	0	0	1	0	0
0100	55	1	37	8	4	0	3	0	0	1	0	0	0	0
0200	50	1	41	3	2	0	2	0	0	1	0	4	0	0
0300	44	0	30	7	1	0	0	0	1	0	0	0	0	0
0400	57	0	43	6	0	0	0	0	0	7	1	0	0	0
0500	135	0	98	18	4	0	3	0	0	0	0	0	0	0
0600	264	0	214	30	7	7	4	1	1	0	0	0	0	0
0700	359	0	303	48	6	3	3	0	1	0	0	1	0	0
0800	425	1	284	101	12	20	1	1	1	3	0	0	0	1
0900	351	4	236	73	7	20	3	0	1	0	0	0	0	0
1000	355	0	311	40	4	8	3	1	0	0	0	0	0	1
1100	308	0	244	38	4	7	1	1	0	0	0	0	0	0
1200	348	0	281	48	8	4	3	0	1	0	0	0	0	0
1300	425	0	333	58	8	24	0	0	0	0	0	0	0	0
1400	361	0	300	48	7	4	1	0	0	0	0	0	0	0
1500	442	3	373	54	4	4	3	1	1	0	0	0	0	0
1600	455	0	388	58	1	1	3	0	0	0	0	0	0	0
1700	308	0	243	42	3	1	0	1	1	0	0	0	0	0
1800	304	1	287	37	0	1	3	0	1	0	0	0	0	0
1900	243	0	218	38	1	0	1	0	0	0	0	0	0	0
2000	178	1	141	33	8	1	1	1	0	0	0	0	0	1
2100	173	0	148	24	0	1	1	1	1	0	0	0	0	0
2200	111	1	81	13	1	3	3	0	0	1	0	1	0	0
2300	87	0	73	11	4	0	1	0	1	0	0	0	0	0
Total	6073	23	4813	871	68	127	43	9	11	61	1	19	0	5
	100.00%	0.22%	79.60%	14.20%	1.28%	2.12%	0.70%	0.17%	0.19%	1.02%	0.02%	0.32%	0.00%	0.07%

Speed Report

Job 1636_1_RL
Area Windsor Locks OT ATR 1
Location Old County Road, north of Route 20 WB Ramps
Dir Northbound
Thursday, February 27, 2020



Time	Total	Speed Bins (mph)															
		0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80
0000	61	0	0	0	0	0	0	4	18	27	7	4	0	0	0	0	0
0100	39	0	0	0	0	0	0	6	7	20	6	0	0	0	0	0	0
0200	65	0	0	0	0	0	2	5	10	30	15	2	1	0	0	0	0
0300	60	0	0	0	0	0	0	7	9	30	11	2	0	0	0	0	0
0400	108	0	0	0	0	1	10	36	33	23	5	1	0	0	0	0	0
0500	143	0	0	0	1	3	10	58	53	16	3	3	0	0	0	0	0
0600	303	0	0	0	2	3	23	80	133	13	8	4	0	0	0	0	0
0700	337	0	0	1	1	4	31	76	128	18	31	3	0	0	0	0	0
0800	366	0	1	3	7	13	30	76	142	75	11	3	0	0	0	0	0
0900	315	0	1	3	4	12	15	53	134	53	6	3	1	0	0	0	0
1000	272	0	3	1	1	10	5	65	115	60	10	1	1	0	0	0	0
1100	335	0	3	0	1	5	16	51	134	75	12	1	0	0	0	0	0
1200	411	0	3	1	3	5	9	84	154	91	20	3	1	0	0	0	0
1300	315	0	0	0	1	7	12	54	133	85	12	4	1	0	0	0	0
1400	369	0	1	1	3	10	14	54	161	75	15	3	0	0	0	0	0
1500	426	0	0	0	1	7	10	101	186	97	22	1	0	0	0	0	0
1600	488	0	0	0	1	8	10	103	200	114	24	3	0	0	0	0	0
1700	511	0	0	0	1	3	14	139	228	97	16	4	0	0	0	0	0
1800	378	0	0	0	1	4	26	109	161	56	17	3	0	0	0	0	0
1900	278	0	0	0	1	1	16	83	131	44	8	1	0	0	0	0	0
2000	209	0	0	0	0	1	12	60	93	33	8	1	1	0	0	0	0
2100	138	0	0	0	0	0	4	37	67	26	3	0	0	0	0	0	0
2200	118	0	0	1	2	2	11	34	44	15	3	3	1	0	0	0	0
2300	84	0	0	0	1	3	0	25	29	13	3	1	0	0	0	0	0
Total	6874	0	3	5	31	109	394	1927	2910	1217	334	64	8	0	0	0	0
		100.00%	0.00%	0.04%	0.18%	0.61%	1.66%	4.84%	28.14%	42.87%	20.04%	5.06%	0.72%	0.08%	0.00%	0.00%	0.00%

Maximum = 57.5 mph, Minimum = 6.0 mph, Mean = 36.6 mph
50% Speed = 41.61 mph, 90% Speed = 44.91 mph, Median = 37.05 mph
10 mph Pace = 32 - 42, Number in Pace = 4354 (72.04%)
Variance = 31.20, Standard Deviation = 5.61 mph

Speed Report

Job 1630_1_RL
Area Windsor Locks OT ATR 1
Location Old County Road, north of Route 20 WB Ramps
Dir Southbound
Thursday, February 27, 2020



Time	Total	Speed Bins (mph)															
		0 - 5	5 - 10	10 - 15	15 - 20	20 - 25	25 - 30	30 - 35	35 - 40	40 - 45	45 - 50	50 - 55	55 - 60	60 - 65	65 - 70	70 - 75	75 - 80
0000	80	0	0	0	0	2	4	3	9	33	12	3	0	0	0	0	0
0100	83	0	0	0	0	2	2	3	13	15	9	3	0	0	0	0	0
0200	80	0	0	1	2	3	10	14	20	6	3	1	0	0	0	0	0
0300	64	0	0	0	0	3	4	20	18	3	1	0	0	0	0	0	0
0400	87	0	0	0	0	1	8	31	31	8	3	0	0	0	0	0	0
0500	128	0	0	0	1	0	7	31	48	27	11	3	1	0	0	0	0
0600	304	0	0	1	0	3	13	67	115	78	33	8	0	0	0	0	0
0700	360	0	0	1	4	1	8	40	107	122	37	3	0	0	0	0	0
0800	460	1	2	15	16	30	55	105	135	88	16	3	0	0	0	0	0
0900	351	0	0	3	10	13	47	99	123	46	10	0	0	0	0	0	0
1000	265	0	0	4	6	1	6	61	113	60	10	3	0	0	0	0	0
1100	302	0	0	0	0	1	10	66	119	72	33	4	0	0	0	0	0
1200	343	0	0	0	9	6	10	64	145	53	16	3	1	0	0	0	0
1300	438	0	0	0	13	13	33	96	163	96	21	4	0	0	0	0	0
1400	391	0	0	3	11	1	9	90	166	119	33	9	0	0	0	0	0
1500	442	0	0	3	13	1	14	97	181	130	31	3	0	0	0	0	0
1600	458	0	0	3	11	1	13	87	181	119	34	4	0	0	0	0	0
1700	398	0	0	1	3	4	7	89	161	117	30	7	0	0	0	0	0
1800	304	0	0	1	3	3	16	84	116	68	12	0	0	0	0	0	0
1900	243	0	0	3	8	6	7	60	100	50	8	1	0	0	0	0	0
2000	178	0	0	1	0	3	16	45	75	33	6	1	1	0	0	0	0
2100	176	0	0	4	3	3	23	44	67	31	7	3	0	0	0	0	0
2200	111	0	0	1	3	3	12	29	41	16	6	3	0	0	0	0	0
2300	87	0	0	1	4	1	11	18	29	17	7	1	0	0	0	0	0
Total	6472	1	4	62	139	113	382	1371	2301	1388	521	96	3	0	0	0	0
	100.00%	0.02%	0.07%	0.97%	2.14%	1.98%	5.89%	21.20%	35.56%	22.91%	8.05%	0.84%	0.05%	0.00%	0.00%	0.00%	0.00%

Maximum = 58.0 mph, Minimum = 3.0 mph, Mean = 36.7 mph
50% Speed = 40.45 mph, 90% Speed = 45.69 mph, Median = 37.47 mph
10 mph Pace = 33 - 43, Number in Pace = 3930 (60.79%)
Variance = 43.26, Standard Deviation = 6.58 mph

Volume Report

Job 1838_1_BL
Area Windsor Locks CT ATR 1
Location Old County Road, north of Route 20 WB Ramps

New England COUNTS

Thursday, February 27, 2025

Time	Total		NB		SB		Time	Total		NB		SB	
0000	39		18		21		1200	196		119		77	
0015	28		15		13		1215	197		96		101	
0030	27		15		12		1230	186		100		86	
0045	25	119	13	61	12	58	1245	176	764	96	411	80	343
0100	27		12		15		1300	229		87		142	
0115	23		10		13		1315	193		81		112	
0130	22		9		13		1330	160		91		69	
0145	20	92	6	38	13	53	1345	152	754	59	318	93	436
0200	30		10		20		1400	171		70		101	
0215	51		29		22		1415	170		83		87	
0230	40		13		27		1430	205		94		109	
0245	27	148	16	68	11	80	1445	216	760	122	369	94	391
0300	12		7		5		1500	202		90		112	
0315	18		16		8		1515	207		97		110	
0330	27		16		11		1530	242		110		132	
0345	46	103	26	59	20	44	1545	218	869	129	426	89	443
0400	27		18		9		1600	214		116		98	
0415	33		23		10		1615	198		110		88	
0430	59		36		23		1630	244		111		133	
0445	46	165	31	108	15	57	1645	304	960	121	458	83	502
0500	43		28		15		1700	220		122		98	
0515	44		22		22		1715	240		144		96	
0530	91		41		50		1730	223		122		101	
0545	90	268	52	143	38	125	1745	226	909	123	511	103	398
0600	75		35		40		1800	173		94		79	
0615	132		66		66		1815	206		109		97	
0630	100		63		37		1830	160		89		71	
0645	210	597	109	303	101	294	1845	143	682	86	378	57	304
0700	177		79		98		1900	141		79		62	
0715	160		67		93		1915	134		73		61	
0730	168		69		99		1930	122		66		56	
0745	201	696	112	327	89	369	1945	120	517	67	276	53	242
0800	175		89		86		2000	109		64		45	
0815	195		100		95		2015	93		46		47	
0830	215		96		119		2030	94		50		44	
0845	221	805	71	356	150	450	2045	89	385	49	209	40	176
0900	189		72		117		2100	112		49		63	
0915	164		86		84		2115	77		28		49	
0930	157		82		85		2130	69		35		34	
0945	146	696	81	315	65	381	2145	55	313	26	136	29	178
1000	140		61		79		2200	62		33		29	
1015	119		60		59		2215	59		29		30	
1030	141		77		64		2230	45		23		22	
1045	152	552	74	272	78	280	2245	53	229	33	118	20	111
1100	143		68		75		2300	54		28		26	
1115	157		65		72		2315	41		20		21	
1130	166		83		83		2330	53		23		30	
1145	165	631	92	326	73	303	2345	23	171	13	84	10	87
							Total	12646		6074		5573	

B: CAPACITY ANALYSES

EXISTING

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	5	85	0	0	0	0	130	75	235	260	0
Future Volume (vph)	20	5	85	0	0	0	0	130	75	235	260	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	12	12	12	12	12	12	12
Storage Length (ft)	150		0	0		0	0		215	0		0
Storage Lanes	1		0	0		0	0		1	0		0
Taper Length (ft)	100			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	1.00
Frt		0.858							0.850			
Flt Protected	0.950										0.977	
Satd. Flow (prot)	1456	1027	0	0	0	0	0	3195	1442	0	3296	0
Flt Permitted	0.950										0.720	
Satd. Flow (perm)	1456	1027	0	0	0	0	0	3195	1442	0	3429	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		91							87			
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		576			703			388			599	
Travel Time (s)		11.2			13.7			6.5			10.2	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	24%	2%	7%	2%	2%	2%	2%	13%	12%	7%	7%	2%
Adj. Flow (vph)	22	5	91	0	0	0	0	140	81	253	280	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	22	96	0	0	0	0	0	140	81	0	533	0
Turn Type	Perm	NA						NA	Perm	pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2	6		
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						15.0	15.0	5.0	15.0	
Minimum Split (s)	12.0	12.0						20.0	20.0	9.0	20.0	
Total Split (s)	30.0	30.0						30.0	30.0	15.0	45.0	
Total Split (%)	40.0%	40.0%						40.0%	40.0%	20.0%	60.0%	
Yellow Time (s)	4.0	4.0						4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0						1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0						0.0	0.0		0.0	
Total Lost Time (s)	5.0	5.0						5.0	5.0		5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?												
Recall Mode	None	None						C-Max	C-Max	Max	C-Max	
Act Effct Green (s)	7.5	7.5						44.9	44.9		59.9	
Actuated g/C Ratio	0.10	0.10						0.60	0.60		0.80	
v/c Ratio	0.15	0.41						0.07	0.09		0.26	
Control Delay	33.0	14.1						7.5	2.2		2.4	
Queue Delay	0.0	0.0						0.0	0.0		0.0	
Total Delay	33.0	14.1						7.5	2.2		2.4	
LOS	C	B						A	A		A	
Approach Delay		17.7						5.5			2.4	
Approach LOS		B						A			A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	10	2						13	0		22	
Queue Length 95th (ft)	30	42						27	16		29	
Internal Link Dist (ft)		496			625			308			519	
Turn Bay Length (ft)	150								215			
Base Capacity (vph)	485	569						1913	898		2056	
Starvation Cap Reductn	0	0						0	0		0	
Spillback Cap Reductn	0	0						0	0		0	
Storage Cap Reductn	0	0						0	0		0	
Reduced v/c Ratio	0.05	0.17						0.07	0.09		0.25	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 1 (1%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.41
Intersection Signal Delay: 5.2 — Intersection LOS: A
Intersection Capacity Utilization 44.8% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Kennedy/Old County & 20 EB Off/20 EB ON



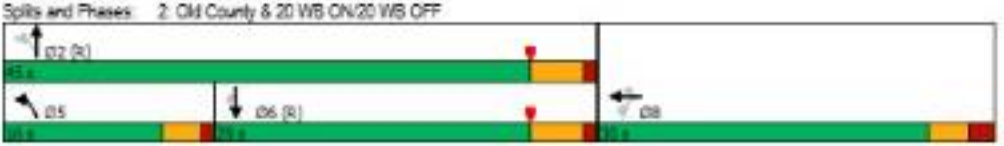
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	75	5	270	55	95	0	0	420	30
Future Volume (vph)	0	0	0	75	5	270	55	95	0	0	420	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	650		650	0		0	0		300
Storage Lanes	0		0	1		1	0		0	0		1
Taper Length (ft)	25			100			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.05	0.05	0.95	0.95	1.00	1.00	0.95	1.00
Frt					0.865	0.850						0.850
Flt Protected				0.950				0.982				
Satd. Flow (prot)	0	0	0	1429	1447	1434	0	3811	0	0	3039	1395
Flt Permitted				0.950				0.778				
Satd. Flow (perm)	0	0	0	1429	1447	1434	0	2823	0	0	3039	1395
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					147	152						69
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		491			853			599			391	
Travel Time (s)		9.5			16.6			10.2			6.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	20%	2%	7%	2%	10%	2%	2%	18%	21%
Adj. Flow (vph)	0	0	0	83	6	300	61	106	0	0	467	33
Shared Lane Traffic (%)						49%						
Lane Group Flow (vph)	0	0	0	83	153	153	0	167	0	0	467	33
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	5.0	15.0			15.0	15.0
Minimum Split (s)				12.1	12.1	12.1	9.0	20.2			20.2	20.2
Total Split (s)				30.0	30.0	30.0	15.0	45.0			29.0	29.0
Total Split (%)				40.0%	40.0%	40.0%	21.3%	60.0%			38.7%	38.7%
Yellow Time (s)				3.0	3.0	3.0	3.0	4.1			4.1	4.1
All-Red Time (s)				2.1	2.1	2.1	1.0	1.1			1.1	1.1
Lost Time Adjust (s)				0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)				5.1	5.1	5.1		5.2			5.2	5.2
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Recall Mode				None	None	None	Max	C-Max			C-Max	C-Max
Act Effct Green (s)				9.4	9.4	9.4		55.9			50.9	50.9
Actuated g/C Ratio				0.13	0.13	0.13		0.74			0.52	0.52
v/c Ratio				0.46	0.50	0.49		0.08			0.29	0.04
Control Delay				39.3	11.9	11.1		2.9			11.1	0.1
Queue Delay				0.0	0.0	0.0		0.0			0.0	0.0
Total Delay				39.3	11.9	11.1		2.9			11.1	0.1
LOS				D	B	B		A			B	A
Approach Delay					17.2			2.9			10.4	
Approach LOS					B			A			B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)				37	3	0		7			58	0
Queue Length 95th (ft)				74	52	49		17			99	0
Internal Link Dist (ft)		354			773			519			311	
Turn Bay Length (ft)				650		650						300
Base Capacity (vph)				475	578	578		2033			1602	741
Starvation Cap Reductn				0	0	0		0			0	0
Spillback Cap Reductn				0	0	0		0			0	0
Storage Cap Reductn				0	0	0		0			0	0
Reduced v/c Ratio				0.17	0.26	0.26		0.08			0.29	0.04

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 64 (85%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.50
Intersection Signal Delay: 11.7 — Intersection LOS: B
Intersection Capacity Utilization 43.8% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Old County & 20 WB ON/20 WB OFF



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	5	113	0	0	0	0	283	215	205	335	0
Future Volume (vph)	25	5	113	0	0	0	0	283	215	205	335	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	12	12	12	12	12	12	12
Storage Length (ft)	150		0	0		0	0		215	0		0
Storage Lanes	1		0	0		0	0		1	0		0
Taper Length (ft)	100			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	1.00
Frt		0.858							0.850			
Flt Protected	0.950										0.991	
Satd. Flow (prot)	1030	1585	0	0	0	0	0	3471	1568	0	3405	0
Flt Permitted	0.950										0.606	
Satd. Flow (perm)	1030	1585	0	0	0	0	0	3471	1568	0	2081	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		128							225			
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		576			703			388			599	
Travel Time (s)		11.2			13.7			6.5			10.2	
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
Heavy Vehicles (%)	18%	2%	2%	2%	2%	2%	2%	4%	3%	4%	4%	2%
Adj. Flow (vph)	28	5	123	0	0	0	0	308	234	224	364	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	128	0	0	0	0	0	308	285	0	588	0
Turn Type	Perm	NA						NA	Perm	pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2	6		
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						15.0	15.0	5.0	15.0	
Minimum Split (s)	12.0	12.0						20.0	20.0	9.0	20.0	
Total Split (s)	30.0	30.0						30.0	30.0	15.0	45.0	
Total Split (%)	40.0%	40.0%						40.0%	40.0%	20.0%	60.0%	
Yellow Time (s)	4.0	4.0						4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0						1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0						0.0	0.0		0.0	
Total Lost Time (s)	5.0	5.0						5.0	5.0		5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?												
Recall Mode	None	None						C-Max	C-Max	Max	C-Max	
Act Effct Green (s)	7.6	7.6						44.8	44.8		50.8	
Actuated g/C Ratio	0.10	0.10						0.60	0.60		0.68	
v/c Ratio	0.16	0.47						0.15	0.23		0.29	
Control Delay	33.3	13.3						7.7	1.9		4.3	
Queue Delay	0.0	0.0						0.0	0.0		0.0	
Total Delay	33.3	13.3						7.7	1.9		4.3	
LOS	C	B						A	A		A	
Approach Delay		16.8						5.2			4.3	
Approach LOS		B						A			A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	12	2						32	0		53	
Queue Length 95th (ft)	34	48						55	29		68	
Internal Link Dist (ft)		495			625			308			519	
Turn Bay Length (ft)	150								215			
Base Capacity (vph)	510	613						2074	1031		2035	
Starvation Cap Reductn	0	0						0	0		0	
Spillback Cap Reductn	0	0						0	0		0	
Storage Cap Reductn	0	0						0	0		0	
Reduced v/c Ratio	0.05	0.21						0.15	0.23		0.29	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 1 (1%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.47
Intersection Signal Delay: 6.2 — Intersection LOS: A
Intersection Capacity Utilization 48.4% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Kennedy/Old County & 20 EB Off/20 EB ON



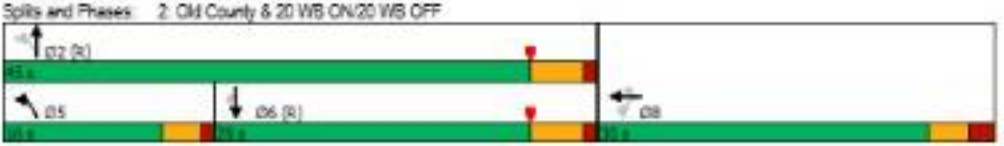
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	180	5	395	124	185	0	0	391	46
Future Volume (vph)	0	0	0	180	5	395	124	185	0	0	391	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	650		650	0		0	0		300
Storage Lanes	0		0	1		1	0		0	0		1
Taper Length (ft)	25			100			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	0.95	1.00
Frt					0.994	0.850						0.850
Flt Protected				0.950				0.980				
Satd. Flow (prot)	0	0	0	1687	1908	1938	0	3870	0	0	3505	1524
Flt Permitted				0.950				0.698				
Satd. Flow (perm)	0	0	0	1687	1908	1938	0	2460	0	0	3505	1524
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					178	196						69
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		491			853			599			391	
Travel Time (s)		9.5			16.6			10.2			6.7	
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
Heavy Vehicles (%)	2%	2%	2%	7%	2%	13%	2%	7%	2%	2%	3%	5%
Adj. Flow (vph)	0	0	0	196	5	364	135	201	0	0	342	50
Shared Lane Traffic (%)						42%						
Lane Group Flow (vph)	0	0	0	196	183	180	0	336	0	0	392	50
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	5.0	15.0			15.0	15.0
Minimum Split (s)				12.1	12.1	12.1	9.0	20.2			20.2	20.2
Total Split (s)				30.0	30.0	30.0	15.0	45.0			39.0	39.0
Total Split (%)				40.0%	40.0%	40.0%	21.3%	60.0%			38.7%	38.7%
Yellow Time (s)				3.0	3.0	3.0	3.0	4.1			4.1	4.1
All-Red Time (s)				2.1	2.1	2.1	1.0	1.1			1.1	1.1
Lost Time Adjust (s)				0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)				5.1	5.1	5.1		5.2			5.2	5.2
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Recall Mode				None	None	None	Max	C-Max			C-Max	C-Max
Act Effct Green (s)				13.9	13.9	13.9		31.4			30.4	30.4
Actuated g/C Ratio				0.18	0.18	0.18		0.69			0.47	0.47
v/c Ratio				0.66	0.47	0.47		0.19			0.24	0.07
Control Delay				38.6	8.9	8.4		4.8			13.1	1.4
Queue Delay				0.0	0.0	0.0		0.0			0.0	0.0
Total Delay				38.6	8.9	8.4		4.8			13.1	1.4
LOS				D	A	A		A			B	A
Approach Delay					19.0			4.8			11.8	
Approach LOS					B			A			B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)				86	2	0		22			54	0
Queue Length 95th (ft)				138	50	48		36			94	8
Internal Link Dist (ft)		354			773			519			311	
Turn Bay Length (ft)				650		650						300
Base Capacity (vph)				560	573	575		1784			1654	766
Starvation Cap Reductn				0	0	0		0			0	0
Spillback Cap Reductn				0	0	0		0			0	0
Storage Cap Reductn				0	0	0		0			0	0
Reduced v/c Ratio				0.35	0.32	0.32		0.19			0.24	0.07

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 64 (85%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 13.1 — Intersection LOS: B
Intersection Capacity Utilization 47.9% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Old County & 20 WB ON/20 WB OFF



NO BUILD

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	21	5	88	0	0	0	0	134	77	342	208	0
Future Volume (vph)	21	5	88	0	0	0	0	134	77	342	208	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	12	12	12	12	12	12	12
Storage Length (ft)	150		0	0		0	0		215	0		0
Storage Lanes	1		0	0		0	0		1	0		0
Taper Length (ft)	100			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	1.00
Frt		0.857							0.850			
Flt Protected	0.950										0.977	
Satd. Flow (prot)	1456	1225	0	0	0	0	0	3195	1442	0	3236	0
Flt Permitted	0.950										0.719	
Satd. Flow (perm)	1456	1225	0	0	0	0	0	3195	1442	0	2426	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		98							87			
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		576			703			388			599	
Travel Time (s)		11.2			13.7			6.5			10.2	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	24%	2%	7%	2%	2%	2%	2%	13%	13%	7%	7%	2%
Adj. Flow (vph)	23	5	95	0	0	0	0	144	83	368	224	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	28	100	0	0	0	0	0	144	83	0	548	0
Turn Type	Perm	NA						NA	Perm	pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2	6		
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						15.0	15.0	5.0	15.0	
Minimum Split (s)	12.0	12.0						20.0	20.0	9.0	20.0	
Total Split (s)	30.0	30.0						30.0	30.0	15.0	45.0	
Total Split (%)	40.0%	40.0%						40.0%	40.0%	20.0%	60.0%	
Yellow Time (s)	4.0	4.0						4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0						1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0						0.0	0.0		0.0	
Total Lost Time (s)	5.0	5.0						5.0	5.0		5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?												
Recall Mode	None	None						C-Max	C-Max	Max	C-Max	
Act Effct Green (s)	7.5	7.5						44.0	44.0		59.9	
Actuated g/C Ratio	0.10	0.10						0.60	0.60		0.80	
v/c Ratio	0.15	0.42						0.08	0.09		0.27	
Control Delay	33.1	14.1						7.5	2.2		2.4	
Queue Delay	0.0	0.0						0.0	0.0		0.0	
Total Delay	33.1	14.1						7.5	2.2		2.4	
LOS	C	B						A	A		A	
Approach Delay		17.9						5.5			2.4	
Approach LOS		B						A			A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	10	2						14	0		23	
Queue Length 95th (ft)	30	43						28	17		30	
Internal Link Dist (ft)		496			625			308			519	
Turn Bay Length (ft)	150								215			
Base Capacity (vph)	485	571						1912	897		2053	
Starvation Cap Reductn	0	0						0	0		0	
Spillback Cap Reductn	0	0						0	0		0	
Storage Cap Reductn	0	0						0	0		0	
Reduced v/c Ratio	0.05	0.18						0.08	0.09		0.27	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 1 (1%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.42
Intersection Signal Delay: 5.3 — Intersection LOS: A
Intersection Capacity Utilization 45.3% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Kennedy/Old County & 20 EB Off/20 EB ON



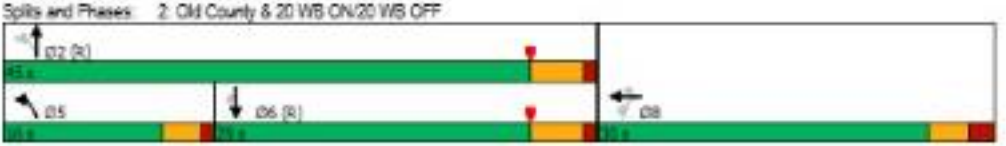
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	77	5	278	57	98	0	0	439	91
Future Volume (vph)	0	0	0	77	5	278	57	98	0	0	439	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	650		650	0		0	0		300
Storage Lanes	0		0	1		1	0		0	0		1
Taper Length (ft)	25			100			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	0.95	1.00
Frt					0.865	0.850						0.850
Flt Protected				0.950				0.982				
Satd. Flow (prot)	0	0	0	1429	1447	1434	0	3811	0	0	3039	1395
Flt Permitted				0.950				0.772				
Satd. Flow (perm)	0	0	0	1429	1447	1434	0	2969	0	0	3039	1395
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					151	158						69
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		491			853			599			391	
Travel Time (s)		9.5			16.6			10.2			6.7	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	20%	2%	7%	2%	10%	2%	2%	18%	21%
Adj. Flow (vph)	0	0	0	86	6	309	63	109	0	0	491	34
Shared Lane Traffic (%)						49%						
Lane Group Flow (vph)	0	0	0	86	157	158	0	172	0	0	491	34
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	5.0	15.0			15.0	15.0
Minimum Split (s)				12.1	12.1	12.1	9.0	30.2			20.2	20.2
Total Split (s)				30.0	30.0	30.0	15.0	45.0			20.0	20.0
Total Split (%)				40.0%	40.0%	40.0%	21.3%	60.0%			38.7%	38.7%
Yellow Time (s)				3.0	3.0	3.0	3.0	4.1			4.1	4.1
All-Red Time (s)				2.1	2.1	2.1	1.0	1.1			1.1	1.1
Lost Time Adjust (s)				0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)				5.1	5.1	5.1		5.2			5.2	5.2
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Recall Mode				None	None	None	Max	C-Max			C-Max	C-Max
Act Effct Green (s)				9.5	9.5	9.5		55.2			39.2	39.2
Actuated g/C Ratio				0.13	0.13	0.13		0.74			0.52	0.52
v/c Ratio				0.47	0.50	0.49		0.09			0.30	0.05
Control Delay				39.4	11.8	11.0		2.5			11.3	0.1
Queue Delay				0.0	0.0	0.0		0.0			0.0	0.0
Total Delay				39.4	11.8	11.0		2.5			11.3	0.1
LOS				D	B	B		A			B	A
Approach Delay					17.2			2.5			10.6	
Approach LOS					B			A			B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)				36	3	0		7			61	0
Queue Length 95th (ft)				76	52	49		17			103	0
Internal Link Dist (ft)		354			773			519			311	
Turn Bay Length (ft)				650		650						300
Base Capacity (vph)				475	581	581		2016			1597	739
Starvation Cap Reductn				0	0	0		0			0	0
Spillback Cap Reductn				0	0	0		0			0	0
Storage Cap Reductn				0	0	0		0			0	0
Reduced v/c Ratio				0.18	0.27	0.27		0.09			0.30	0.05

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 64 (85%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.50
Intersection Signal Delay: 11.8 — Intersection LOS: B
Intersection Capacity Utilization 43.9% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Old County & 20 WB ON/20 WB OFF



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	25	5	110	0	0	0	0	275	210	200	325	0
Future Volume (vph)	25	5	110	0	0	0	0	275	210	200	325	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	16	12	12	12	12	12	12	12
Storage Length (ft)	150		0	0		0	0		210	0		0
Storage Lanes	1		0	0		0	0		1	0		0
Taper Length (ft)	100			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.95	0.95	1.00
Frt		0.850							0.850			
Flt Protected	0.950										0.991	
Satd. Flow (prot)	1030	1566	0	0	0	0	0	3471	1568	0	3495	0
Flt Permitted	0.950										0.689	
Satd. Flow (perm)	1030	1566	0	0	0	0	0	3471	1568	0	2392	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		128							228			
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		576			703			388			599	
Travel Time (s)		11.2			13.7			6.5			10.2	
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
Heavy Vehicles (%)	18%	2%	2%	2%	2%	2%	2%	4%	3%	4%	4%	2%
Adj. Flow (vph)	27	5	120	0	0	0	0	299	228	217	353	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	27	125	0	0	0	0	0	299	228	0	570	0
Turn Type	Perm	NA						NA	Perm	pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2	6		
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						15.0	15.0	5.0	15.0	
Minimum Split (s)	12.0	12.0						20.0	20.0	9.0	20.0	
Total Split (s)	30.0	30.0						30.0	30.0	15.0	45.0	
Total Split (%)	40.0%	40.0%						40.0%	40.0%	20.0%	60.0%	
Yellow Time (s)	4.0	4.0						4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0						1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0						0.0	0.0		0.0	
Total Lost Time (s)	5.0	5.0						5.0	5.0		5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?												
Recall Mode	None	None						C-Max	C-Max	Max	C-Max	
Act Effct Green (s)	7.6	7.6						44.8	44.8		59.8	
Actuated g/C Ratio	0.10	0.10						0.60	0.60		0.80	
v/c Ratio	0.16	0.47						0.14	0.22		0.28	
Control Delay	33.1	13.4						7.7	1.9		4.3	
Queue Delay	0.0	0.0						0.0	0.0		0.0	
Total Delay	33.1	13.4						7.7	1.9		4.3	
LOS	C	B						A	A		A	
Approach Delay		16.8						5.2			4.3	
Approach LOS		B						A			A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	12	2						31	0		51	
Queue Length 95th (ft)	33	47						54	29		66	
Internal Link Dist (ft)		496			625			308			519	
Turn Bay Length (ft)	150								215			
Base Capacity (vph)	510	611						2074	1028		2042	
Starvation Cap Reductn	0	0						0	0		0	
Spillback Cap Reductn	0	0						0	0		0	
Storage Cap Reductn	0	0						0	0		0	
Reduced v/c Ratio	0.05	0.20						0.14	0.22		0.28	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 1 (1%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.47
Intersection Signal Delay: 6.2 Intersection LOS: A
Intersection Capacity Utilization 47.4% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 1: Kennedy/Old County & 20 EB Off/20 EB ON



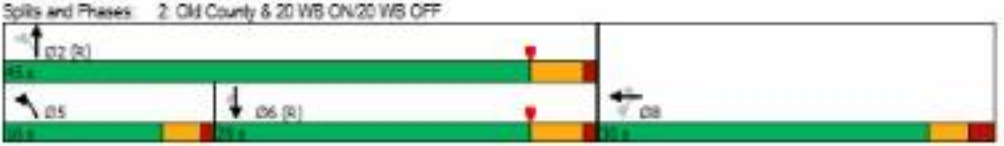
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	175	5	925	120	180	0	0	330	45
Future Volume (vph)	0	0	0	175	5	925	120	180	0	0	330	45
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	12	12	12	12	12	12	12	12
Storage Length (ft)	0		0	650		650	0		0	0		300
Storage Lanes	0		0	1		1	0		0	0		1
Taper Length (ft)	25			100			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	0.95	1.00
Frt					0.994	0.850						0.850
Flt Protected				0.950				0.980				
Satd. Flow (prot)	0	0	0	1687	1908	1938	0	3860	0	0	3505	1524
Flt Permitted				0.950				0.709				
Satd. Flow (perm)	0	0	0	1687	1908	1938	0	2454	0	0	3505	1524
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)					173	190						69
Link Speed (mph)		35			35			40			40	
Link Distance (ft)		491			853			599			391	
Travel Time (s)		9.5			16.6			10.2			6.7	
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
Heavy Vehicles (%)	2%	2%	2%	7%	2%	13%	2%	7%	2%	2%	3%	8%
Adj. Flow (vph)	0	0	0	190	5	353	130	196	0	0	359	49
Shared Lane Traffic (%)						42%						
Lane Group Flow (vph)	0	0	0	190	178	180	0	326	0	0	359	49
Turn Type				Perm	NA	Perm	pm+pt	NA			NA	Perm
Protected Phases					8		5	2			6	
Permitted Phases				8		8	2					6
Detector Phase				8	8	8	5	2			6	6
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	5.0	15.0			15.0	15.0
Minimum Split (s)				12.1	12.1	12.1	9.0	20.2			20.2	20.2
Total Split (s)				30.0	30.0	30.0	15.0	45.0			20.0	20.0
Total Split (%)				40.0%	40.0%	40.0%	21.3%	60.0%			38.7%	38.7%
Yellow Time (s)				3.0	3.0	3.0	3.0	4.1			4.1	4.1
All-Red Time (s)				2.1	2.1	2.1	1.0	1.1			1.1	1.1
Lost Time Adjust (s)				0.0	0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)				5.1	5.1	5.1		5.2			5.2	5.2
Lead/Lag							Lead				Lag	Lag
Lead-Lag Optimize?												
Recall Mode				None	None	None	Max	C-Max			C-Max	C-Max
Act Effct Green (s)				13.1	13.1	13.1		51.5			35.6	35.6
Actuated g/C Ratio				0.17	0.17	0.17		0.69			0.47	0.47
v/c Ratio				0.65	0.47	0.47		0.18			0.23	0.06
Control Delay				38.6	9.0	8.5		4.7			12.9	1.3
Queue Delay				0.0	0.0	0.0		0.0			0.0	0.0
Total Delay				38.6	9.0	8.5		4.7			12.9	1.3
LOS				D	A	A		A			B	A
Approach Delay					19.1			4.7			11.6	
Approach LOS					B			A			B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)				83	2	0		21			52	0
Queue Length 95th (ft)				134	50	48		35			91	7
Internal Link Dist (ft)		354			773			519			311	
Turn Bay Length (ft)				650		650						300
Base Capacity (vph)				560	569	571		1810			1665	771
Starvation Cap Reductn				0	0	0		0			0	0
Spillback Cap Reductn				0	0	0		0			0	0
Storage Cap Reductn				0	0	0		0			0	0
Reduced v/c Ratio				0.34	0.31	0.32		0.18			0.23	0.06

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 64 (85%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 13.0 — Intersection LOS: B
Intersection Capacity Utilization 47.6% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 2: Old County & 20 WB ON/20 WB OFF



BUILD

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	50	5	50	0	5	5	0	140	77	251	271	0
Future Volume (vph)	50	5	50	0	5	5	0	140	77	251	271	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	11	12	12
Storage Length (ft)	100		0	0		0	0		270	0		0
Storage Lanes	1		0	0		0	0		1	0		0
Taper Length (ft)	100			25			25			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.90	0.90	1.00
Frt		0.857							0.850			
Flt Protected	0.950										0.976	
Satd. Flow (prot)	1456	1320	0	0	0	0	0	3190	1492	0	3269	0
Flt Permitted	0.950										0.714	
Satd. Flow (perm)	1456	1320	0	0	0	0	0	3190	1492	0	2469	0
Right Turn on Red			Yes			No			Yes			No
Satd. Flow (RTOR)		65							65			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		576			705			388			599	
Travel Time (s)		13.1			16.0			8.8			13.6	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Heavy Vehicles (%)	24%	2%	7%	2%	2%	2%	2%	12%	12%	7%	7%	2%
Adj. Flow (vph)	54	5	54	0	5	5	0	151	83	270	291	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	100	0	0	0	0	0	151	83	0	372	0
Turn Type	Perm	NA						NA	Perm	pm+pt	NA	
Protected Phases		8						2		1	6	
Permitted Phases	4								2	6		
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						15.0	15.0	8.0	15.0	
Minimum Split (s)	12.0	12.0						20.0	20.0	9.0	20.0	
Total Split (s)	25.0	25.0						50.0	50.0	15.0	65.0	
Total Split (%)	27.8%	27.8%						55.6%	55.6%	16.7%	72.2%	
Maximum Green (s)	20.0	20.0						45.0	45.0	11.0	60.0	
Yellow Time (s)	4.0	4.0						4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0						1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0						0.0	0.0		0.0	
Total Lost Time (s)	5.0	5.0						5.0	5.0		5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0						4.0	4.0	2.0	4.0	
Recall Mode	None	None						C-Min	C-Min	Max	C-Min	
Act Effct Green (s)	8.6	8.6						58.6	58.6		73.6	
Actuated g/C Ratio	0.10	0.10						0.65	0.65		0.82	
v/c Ratio	0.36	0.43						0.08	0.09		0.26	
Control Delay	45.8	15.2						6.6	2.1		3.6	
Queue Delay	0.0	0.0						0.0	0.0		0.0	
Total Delay	45.8	15.2						6.6	2.1		3.6	
LOS	D	B						A	A		A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		25.9						5.2			0.6	
Approach LOS		C						A			A	
Queue Length 50th (ft)	30	3						15	0		2	
Queue Length 95th (ft)	64	47						31	17		0	
Internal Link Dist (ft)		496			625			308			519	
Turn Bay Length (ft)	150								215			
Base Capacity (vph)	323	412						2086	970		2072	
Starvation Cap Reductn	0	0						0	0		0	
Spillback Cap Reductn	0	0						0	0		0	
Storage Cap Reductn	0	0						0	0		0	
Reduced v/c Ratio	0.17	0.24						0.08	0.09		0.28	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 6 (7%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 5.8		Intersection LOS: A	
Intersection Capacity Utilization 45.9%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Kennedy/Old County & 20 EB Off/20 EB ON



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	77	5	341	57	139	0	0	455	40
Future Volume (vph)	0	0	0	77	5	341	57	139	0	0	455	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	12	12	12	12	12
Storage Length (ft)	0		0	500		350	0		0	0		0
Storage Lanes	0		0	1		1	0		0	0		1
Taper Length (ft)	25			100			75			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	0.95	1.00
Frt					0.850	0.850						0.850
Flt Protected				0.950				0.998				
Satd. Flow (prot)	0	0	0	1568	1568	1568	0	3390	0	0	3502	1585
Flt Permitted				0.950				0.819				
Satd. Flow (perm)	0	0	0	1432	1444	1434	0	2746	0	0	3264	1535
Right Turn on Red			No			No			No			Yes
Satd. Flow (RTOR)												119
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		434			847			580			144	
Travel Time (s)		8.5			16.9			10.2			2.5	
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Heavy Vehicles (%)	2%	2%	2%	20%	2%	7%	2%	10%	2%	2%	18%	21%
Adj. Flow (vph)	0	0	0	86	6	379	63	154	0	0	506	44
Shared Lane Traffic (%)						69%						
Lane Group Flow (vph)	0	0	0	86	162	120	0	217	0	0	506	44
Turn Type				Perm	NA	Perm	perm+pt	NA			NA	Perm
Protected Phases					6		1	1 2			2 9	
Permitted Phases				4		4	1 2					2 9
Detector Phase				4	6	4		1 2			2 9	2 9
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	5.0					
Minimum Split (s)				14.5	14.5	14.5	10.2					
Total Split (s)				35.0	35.0	35.0	10.0					
Total Split (%)				38.9%	38.9%	38.9%	11.1%					
Maximum Green (s)				27.4	27.4	27.4	4.8					
Yellow Time (s)				4.1	4.1	4.1	4.1					
All-Red Time (s)				3.5	3.5	3.5	1.1					
Lost Time Adjust (s)				0.0	0.0	0.0						
Total Lost Time (s)				7.6	7.6	7.6						
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0	2.0	2.0					
Recall Mode				None	None	None	Max					
Act Effct Green (s)				17.1	17.1	17.1		40.1			29.6	29.6
Actuated g/C Ratio				0.19	0.19	0.19		0.45			0.33	0.33
v/c Ratio				0.32	0.73	0.71		0.16			0.50	0.08
Control Delay				32.4	48.7	47.3		12.6			37	0.2
Queue Delay				0.0	0.0	0.0		0.0			1.0	0.7
Total Delay				32.4	48.7	47.3		12.6			4.7	1.0
LOS				C	D	D		B			A	A

Lane Group	ø2	ø3
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	2	3
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	14.0	5.0
Minimum Split (s)	22.5	12.0
Total Split (s)	23.0	22.0
Total Split (%)	26%	24%
Maximum Green (s)	15.4	15.0
Yellow Time (s)	4.1	3.5
All-Red Time (s)	3.5	3.5
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		
Lead-Lag Optimize?		
Vehicle Extension (s)	2.0	3.0
Recall Mode	C-Min	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay					44.3			12.6			4.4	
Approach LOS					D			B			A	
Queue Length 50th (ft)				43	109	109		29			19	0
Queue Length 95th (ft)				76	164	160		54			34	m0
Internal Link Dist (ft)		354			767			519			54	
Turn Bay Length (ft)				650		650						
Base Capacity (vph)				436	459	436		1381			1167	583
Starvation Cap Reductn				0	0	0		0			401	388
Spillback Cap Reductn				0	0	0		0			0	0
Storage Cap Reductn				0	0	0		0			0	0
Reduced v/c Ratio				0.20	0.44	0.44		0.16			0.66	0.23

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 2 (2%), Referenced to phase 2:NBSB, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 21.0		Intersection LOS: C	
Intersection Capacity Utilization 42.4%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Old County & 20 WB ON/20 WB OFF



Lane Group	Ø2	Ø3
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary



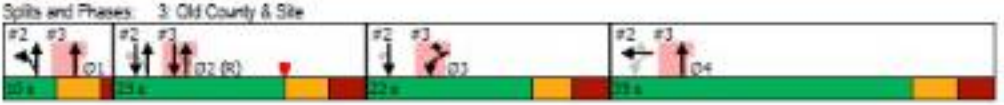
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ph1	ph4
Lane Configurations								
Traffic Volume (vph)	91	3	376	104	12	464		
Future Volume (vph)	91	3	376	104	12	464		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	11	11	11	11	11	11		
Storage Length (ft)	0	0		0	150			
Storage Lanes	1	1		0	0			
Taper Length (ft)	25				25			
Lane Util. Factor	1.00	1.00	0.95	0.95	0.91	0.91		
Frt		0.850	0.968					
Flt Protected	0.950					0.999		
Satd. Flow (prot)	1711	1531	3512	0	0	4911		
Flt Permitted	0.950					0.909		
Satd. Flow (perm)	1711	1531	3512	0	0	4468		
Right Turn on Red		Yes		Yes				
Satd. Flow (RTOR)		2	52					
Link Speed (mph)	25		35			35		
Link Distance (ft)	397		144			326		
Travel Time (s)	5.5		2.8			6.4		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Adj. Flow (vph)	94	3	409	113	13	504		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	94	3	522	0	0	517		
Turn Type	Prot	Prot	NA		Perm	NA		
Protected Phases	3	3	1 2 4			2	1	4
Permitted Phases					2			
Detector Phase	3	3	1 2 4		2	2		
Switch Phase								
Minimum Initial (s)	5.0	5.0			14.0	14.0	5.0	7.0
Minimum Split (s)	12.0	12.0			22.6	22.6	10.2	14.6
Total Split (s)	22.0	22.0			23.0	23.0	10.0	35.0
Total Split (%)	24.4%	24.4%			25.6%	25.6%	11%	39%
Maximum Green (s)	15.0	15.0			15.4	15.4	4.8	27.4
Yellow Time (s)	3.5	3.5			4.1	4.1	4.1	4.1
All-Red Time (s)	3.5	3.5			3.5	3.5	1.1	3.5
Lost Time Adjust (s)	0.0	0.0				0.0		
Total Lost Time (s)	7.0	7.0				7.6		
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0			2.0	2.0	3.0	3.0
Recall Mode	None	None			C-Min	C-Min	Max	None
Act Effct Green (s)	7.8	7.8	70.0			14.8		
Actuated g/C Ratio	0.09	0.09	0.78			0.16		
v/c Ratio	0.33	0.02	0.20			0.70		
Control Delay	41.4	25.0	0.2			41.2		
Queue Delay	0.0	0.0	0.6			0.0		
Total Delay	41.4	25.0	0.9			41.2		
LOS	D	C	A			D		
Approach Delay	40.1		0.9			41.2		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø1	Ø4
Approach LOS	D		A			D		
Queue Length 50th (ft)	19	0	0			101		
Queue Length 95th (ft)	46	8	0			139		
Internal Link Dist (ft)	127		64			246		
Turn Bay Length (ft)								
Base Capacity (vph)	285	257	2594			764		
Starvation Cap Reductn	0	0	1635			0		
Spillback Cap Reductn	0	0	0			6		
Storage Cap Reductn	0	0	0			0		
Reduced v/c Ratio	0.12	0.01	0.54			0.68		

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 2 (2%), Referenced to phase 2:NBSB, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 21.6 Intersection LOS: C
Intersection Capacity Utilization 33.9% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 3: Old County & Site



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	37	5	113	0	3	3	0	288	218	259	345	0
Future Volume (vph)	37	5	113	0	3	3	0	288	218	259	345	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	11	12	12
Storage Length (ft)	100		0	0		0	0		270	0		0
Storage Lanes	1		0	0		0	0		1	0		0
Taper Length (ft)	100			25			25			75		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	1.00	0.90	0.90	1.00
Frt		0.850							0.850			
Flt Protected	0.950										0.974	
Satd. Flow (prot)	1517	1305	0	0	3	0	0	3471	1568	0	3389	0
Flt Permitted	0.950										0.672	
Satd. Flow (perm)	1517	1305	0	0	3	0	0	3471	1568	0	2303	0
Right Turn on Red			Yes			No			Yes			No
Satd. Flow (RTOR)		108							235			
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		576			705			388			599	
Travel Time (s)		13.1			16.0			8.8			13.6	
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
Heavy Vehicles (%)	19%	2%	2%	2%	2%	2%	2%	4%	3%	5%	4%	2%
Adj. Flow (vph)	40	5	123	0	3	3	0	313	235	282	375	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	40	128	0	0	6	0	0	313	235	0	657	0
Turn Type	Perm	NA						NA	Perm	pm+pt	NA	
Protected Phases		4						2		1	6	
Permitted Phases	4								2	6		
Detector Phase	4	4						2	2	1	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0						15.0	15.0	9.0	15.0	
Minimum Split (s)	12.0	12.0						20.0	20.0	9.0	20.0	
Total Split (s)	25.0	25.0						50.0	50.0	15.0	65.0	
Total Split (%)	27.8%	27.8%						55.6%	55.6%	16.7%	72.2%	
Maximum Green (s)	20.0	20.0						45.0	45.0	11.0	60.0	
Yellow Time (s)	4.0	4.0						4.0	4.0	3.0	4.0	
All-Red Time (s)	1.0	1.0						1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0						0.0	0.0		0.0	
Total Lost Time (s)	5.0	5.0						5.0	5.0		5.0	
Lead/Lag								Lag	Lag	Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0						4.0	4.0	2.0	4.0	
Recall Mode	None	None						C-Min	C-Min	Max	C-Min	
Act Effct Green (s)	8.0	8.0						57.0	57.0		72.0	
Actuated g/C Ratio	0.09	0.09						0.63	0.63		0.80	
v/c Ratio	0.28	0.51						0.14	0.22		0.34	
Control Delay	43.8	15.6						7.0	1.5		1.2	
Queue Delay	0.0	0.0						0.0	0.0		0.0	
Total Delay	43.8	15.6						7.0	1.5		1.2	
LOS	D	B						A	A		A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay		22.3						4.7			1.2	
Approach LOS		C						A			A	
Queue Length 50th (ft)	22	3						32	0		10	
Queue Length 95th (ft)	52	53						55	27		8	
Internal Link Dist (ft)		496			625			308			519	
Turn Bay Length (ft)	150								215			
Base Capacity (vph)	337	450						2198	1079		1976	
Starvation Cap Reductn	0	0						0	0		0	
Spillback Cap Reductn	0	0						0	0		0	
Storage Cap Reductn	0	0						0	0		0	
Reduced v/c Ratio	0.12	0.28						0.14	0.22		0.34	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 6 (7%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow			
Natural Cycle: 45			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 5.2		Intersection LOS: A	
Intersection Capacity Utilization 50.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 1: Kennedy/Old County & 20 EB Off/20 EB ON



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	0	0	0	100	5	360	124	201	0	0	405	75
Future Volume (vph)	0	0	0	100	5	360	124	201	0	0	405	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	11	12	12	12	12	12
Storage Length (ft)	0		0	500		350	0		0	0		0
Storage Lanes	0		0	1		1	0		0	0		1
Taper Length (ft)	25			100			75			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	1.00	1.00	0.95	1.00
Frt					0.850	0.850						0.850
Flt Protected				0.950				0.991				
Satd. Flow (prot)	0	0	0	1597	1368	1368	0	3538	0	0	3505	1526
Flt Permitted				0.150				0.659				
Satd. Flow (perm)	0	0	0	1687	1368	1368	0	3557	0	0	3505	1534
Right Turn on Red			No			No			No			Yes
Satd. Flow (RTOR)												119
Link Speed (mph)		25			25			40			40	
Link Distance (ft)		434			847			580			148	
Travel Time (s)		8.5			15.5			10.2			2.5	
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
Heavy Vehicles (%)	2%	2%	2%	7%	2%	13%	3%	7%	2%	2%	3%	6%
Adj. Flow (vph)	0	0	0	109	5	391	135	218	0	0	440	82
Shared Lane Traffic (%)						49%						
Lane Group Flow (vph)	0	0	0	109	197	199	0	353	0	0	472	82
Turn Type				Perm	NA	Perm	perm+pt	NA			NA	Perm
Protected Phases					6		1	1 2			2 9	
Permitted Phases				4		4	1 2					2 9
Detector Phase				4	6	4		1 2			2 9	2 9
Switch Phase												
Minimum Initial (s)				7.0	7.0	7.0	5.0					
Minimum Split (s)				14.5	14.5	14.5	10.2					
Total Split (s)				35.0	35.0	35.0	10.0					
Total Split (%)				38.9%	38.9%	38.9%	11.1%					
Maximum Green (s)				27.4	27.4	27.4	4.8					
Yellow Time (s)				4.1	4.1	4.1	4.1					
All-Red Time (s)				3.5	3.5	3.5	1.1					
Lost Time Adjust (s)				0.0	0.0	0.0						
Total Lost Time (s)				7.6	7.6	7.6						
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)				2.0	2.0	2.0	2.0					
Recall Mode				None	None	None	Max					
Act Effct Green (s)				16.3	16.3	16.3		35.4			32.8	32.8
Actuated g/C Ratio				0.20	0.20	0.20		0.39			0.36	0.36
v/c Ratio				0.37	0.71	0.72		0.92			0.37	0.13
Control Delay				37.7	48.3	47.3		21.0			1.5	0.4
Queue Delay				0.0	0.0	0.0		0.0			1.0	1.9
Total Delay				37.7	48.3	47.3		21.0			2.5	2.3
LOS				D	D	D		C			A	A

Lane Group	ø2	ø3
Lane Configurations		
Traffic Volume (vph)		
Future Volume (vph)		
Ideal Flow (vphpl)		
Lane Width (ft)		
Storage Length (ft)		
Storage Lanes		
Taper Length (ft)		
Lane Util. Factor		
Frt		
Flt Protected		
Satd. Flow (prot)		
Flt Permitted		
Satd. Flow (perm)		
Right Turn on Red		
Satd. Flow (RTOR)		
Link Speed (mph)		
Link Distance (ft)		
Travel Time (s)		
Peak Hour Factor		
Heavy Vehicles (%)		
Adj. Flow (vph)		
Shared Lane Traffic (%)		
Lane Group Flow (vph)		
Turn Type		
Protected Phases	2	3
Permitted Phases		
Detector Phase		
Switch Phase		
Minimum Initial (s)	14.0	5.0
Minimum Split (s)	22.5	12.0
Total Split (s)	23.0	22.0
Total Split (%)	26%	24%
Maximum Green (s)	15.4	15.0
Yellow Time (s)	4.1	3.5
All-Red Time (s)	3.5	3.5
Lost Time Adjust (s)		
Total Lost Time (s)		
Lead/Lag		
Lead-Lag Optimize?		
Vehicle Extension (s)	2.0	3.0
Recall Mode	C-Min	None
Act Effct Green (s)		
Actuated g/C Ratio		
v/c Ratio		
Control Delay		
Queue Delay		
Total Delay		
LOS		

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Approach Delay					43.8			21.0			2.5	
Approach LOS					D			C			A	
Queue Length 50th (ft)				101	110	111		70			3	0
Queue Length 95th (ft)				150	168	169		123			4	m0
Internal Link Dist (ft)		354			767			519			64	
Turn Bay Length (ft)				650		650						
Base Capacity (vph)				513	416	413		1133			1278	631
Starvation Cap Reductn				0	0	0		0			533	437
Spillback Cap Reductn				0	0	0		0			0	0
Storage Cap Reductn				0	0	0		0			0	0
Reduced v/c Ratio				0.38	0.47	0.48		0.31			0.63	0.42

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 2 (2%), Referenced to phase 2:NBSB, Start of Yellow	
Natural Cycle: 65	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 23.1	Intersection LOS: C
Intersection Capacity Utilization 48.2%	ICU Level of Service A
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 2: Old County & 20 WB ON/20 WB OFF



Lane Group	Ø2	Ø3
Approach Delay		
Approach LOS		
Queue Length 50th (ft)		
Queue Length 95th (ft)		
Internal Link Dist (ft)		
Turn Bay Length (ft)		
Base Capacity (vph)		
Starvation Cap Reductn		
Spillback Cap Reductn		
Storage Cap Reductn		
Reduced v/c Ratio		

Intersection Summary



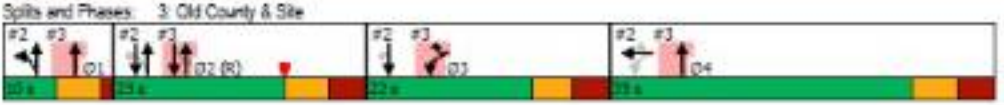
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	ph1	ph4
Lane Configurations								
Traffic Volume (vph)	103	11	520	41	4	407		
Future Volume (vph)	103	11	520	41	4	407		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width (ft)	11	11	11	11	11	11		
Storage Length (ft)	0	0		0	150			
Storage Lanes	1	1		0	0			
Taper Length (ft)	25				25			
Lane Util. Factor	1.00	1.00	0.95	0.95	0.91	0.91		
Frt		0.850	0.989					
Flt Protected	0.950							
Satd. Flow (prot)	1711	1591	3584	0	0	4916		
Flt Permitted	0.950					0.930		
Satd. Flow (perm)	1711	1591	3584	0	0	4572		
Right Turn on Red		Yes		Yes				
Satd. Flow (RTOR)		12	22					
Link Speed (mph)	25		55			55		
Link Distance (ft)	397		144			326		
Travel Time (s)	5.5		2.8			6.4		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92		
Adj. Flow (vph)	112	12	565	45	4	442		
Shared Lane Traffic (%)								
Lane Group Flow (vph)	112	12	610	0	0	446		
Turn Type	Prot	Prot	NA		Perm	NA		
Protected Phases	3	3	1 2 4			2	1	4
Permitted Phases					2			
Detector Phase	3	3	1 2 4		2	2		
Switch Phase								
Minimum Initial (s)	5.0	5.0			14.0	14.0	5.0	7.0
Minimum Split (s)	12.0	12.0			22.6	22.6	10.2	14.6
Total Split (s)	22.0	22.0			23.0	23.0	10.0	35.0
Total Split (%)	24.4%	24.4%			25.6%	25.6%	11%	39%
Maximum Green (s)	15.0	15.0			15.4	15.4	4.8	27.4
Yellow Time (s)	3.5	3.5			4.1	4.1	4.1	4.1
All-Red Time (s)	3.5	3.5			3.5	3.5	1.1	3.5
Lost Time Adjust (s)	0.0	0.0				0.0		
Total Lost Time (s)	7.0	7.0				7.6		
Lead/Lag								
Lead-Lag Optimize?								
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0	3.0
Recall Mode	None	None			C-Min	C-Min	Max	None
Act Effct Green (s)	11.3	11.3	65.5			14.6		
Actuated g/C Ratio	0.13	0.13	0.74			0.16		
v/c Ratio	0.52	0.06	0.24			0.60		
Control Delay	45.0	17.4	0.3			36.8		
Queue Delay	0.0	0.0	0.5			0.0		
Total Delay	45.0	17.4	0.7			36.8		
LOS	D	B	A			D		
Approach Delay	42.4		0.7			36.8		

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø1	Ø4
Approach LOS	D		A			D		
Queue Length 50th (ft)	61	0	0			88		
Queue Length 95th (ft)	109	15	0			120		
Internal Link Dist (ft)	127		64			246		
Turn Bay Length (ft)								
Base Capacity (vph)	285	265	2507			782		
Starvation Cap Reductn	0	0	1366			0		
Spillback Cap Reductn	0	0	0			0		
Storage Cap Reductn	0	0	0			0		
Reduced v/c Ratio	0.39	0.05	0.53			0.57		

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 2 (2%), Referenced to phase 2:NBSB, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 19.5 Intersection LOS: B
Intersection Capacity Utilization 31.6% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 3: Old County & Site



C: SIGNAL WARRANT ANALYSIS

TRAFFIC SIGNAL WARRANT #1 (8 HOUR VEHICULAR VOLUME) ANALYSIS

INTERSECT: Old County Road at Proposed Site Drive
LOCATION: Windsor Locks, CT
DATE: 4/3/2025
CONDITION: 2028 Build

BY: BL COMPANIES
333 RESEARCH PARKWAY, MERIDEN, CT

APPROACH LANES, MAJOR ST. 2
APPROACH LANES MINOR ST 2
APPROACH SPEED >40 MPH (Y/N): Y



CONDITION A - MINIMUM VEHICULAR VOLUME
CONDITION B - INTERRUPTION OF CONTINUOUS TRAFFIC
CONDITION A/B - COMBINATION OF CONDITIONS

	Major Street 1 Dir NB	Major Street 1 Dir SB	Major Street Both Dir	Minor Street 1 Dir WB	COND. A MEET HOURLY CRITERIA	COND. B MEET HOURLY CRITERIA	COMBINATION MEET 80% CRITERIA COND A	COMBINATION MEET 80% CRITERIA COND. B
		COND A	420	140		MAJOR>	480	720
		COND B	630	70		MINOR>	160	80
TIME BEGIN								
12:00 AM	64	60	124	3	N	N	N	N
1:00 AM	41	56	97	6	N	N	N	N
2:00 AM	72	82	154	3	N	N	N	N
3:00 AM	66	45	110	3	N	N	N	N
4:00 AM	119	60	179	9	N	N	N	N
5:00 AM	173	131	304	16	N	N	N	N
6:00 AM	371	305	676	20	N	N	N	N
7:00 AM	393	383	776	34	N	N	N	N
8:00 AM	417	468	885	36	N	N	N	N
9:00 AM	383	366	749	42	N	N	N	N
10:00 AM	320	293	613	44	N	N	N	N
11:00 AM	386	317	703	54	N	N	N	N
12:00 PM	487	359	846	57	N	N	N	N
1:00 PM	373	453	826	41	N	N	N	N
2:00 PM	432	408	840	46	N	N	N	N
3:00 PM	481	465	946	85	N	Y	N	Y
4:00 PM	506	421	927	71	N	Y	N	N
5:00 PM	558	417	975	66	N	N	N	N
6:00 PM	403	317	720	42	N	N	N	N
7:00 PM	288	260	539	12	N	N	N	N
8:00 PM	220	182	402	6	N	N	N	N
9:00 PM	147	183	330	28	N	N	N	N
10:00 PM	130	114	244	4	N	N	N	N
11:00 PM	92	91	183	8	N	N	N	N
				MET	0	2	0	1

A TRAFFIC CONTROL SIGNAL IS NOT WARRANTED BY MUTCD CONDITION A.

A TRAFFIC CONTROL SIGNAL IS NOT WARRANTED BY MUTCD CONDITION B.

A TRAFFIC CONTROL SIGNAL IS NOT WARRANTED BY COMBINATION.
(BOTH A AND B MUST BE MET @ 80% AND LESS RESTRICTIVE MEASURES TRIED)

D: CORRESPONDENCE

Gehring, Dennis, PE

From: Dion, Michael, PE, PTOE
Sent: Wednesday, April 23, 2025 10:18 AM
To: Gehring, Dennis, PE
Subject: FW: Windsor locks Counts

Please see below.

Michael Dion, P.E., PTOE
Senior Project Manager
Principal

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mobile: 203.231.4109 | fax: 203.630.2615
www.blcompanies.com

From: Jacobson, Richard C <Richard.Jacobson@ct.gov>
Sent: Monday, March 17, 2025 1:37 PM
To: Dion, Michael, PE, PTOE <mdion@blcompanies.com>
Cc: Sojka, Gary J <Gary.Sojka@ct.gov>
Subject: RE: Windsor locks Counts

Michael,

Hi, The existing volumes are acceptable as well as the 1% per year growth rate. There are no other developments you need to include in the background traffic.

RICK JACOBSON
Transportation Planner 2
Connecticut Department of Transportation
Trip and Traffic Analysis Unit
Office: 860-594-2035
Richard.Jacobson@ct.gov

From: Dion, Michael, PE, PTOE <mdion@blcompanies.com>
Sent: Friday, March 14, 2025 3:41 PM
To: Sojka, Gary J <Gary.Sojka@ct.gov>
Cc: Kurker, Michael, PE <mkurker@blcompanies.com>
Subject: Windsor locks Counts

EXTERNAL EMAIL: This email originated from outside of the organization. Do not click any links or open any attachments unless you trust the sender and know the content is safe.

Gary,

I hope this email finds you well. BL Companies is in the process of preparing a Traffic Impact Study for a proposed development in Windsor Locks, the site is located on Old County Road by the Route 20 Ramps. We have obtained turning movement counts for the Weekday AM and Weekday PM peak hours, as well as an ATR in front of the Site, for the following intersections.

- Old County Road at Route 20 On/Off Ramps
- Kennedy Road at Route 20 On/Off Ramps

Attached to this email you will find a location map and schematics with traffic volumes for the Study Area. Figure 2 shows the counts rounded and adjusted for continuity where applicable. We have also attached the raw count files from New England Counts.

We are looking to proceed with an annual growth rate of 1% out to our build year of 2027. Also, if you have any information regarding developments in the area that may impact our study, that would be helpful.

Best,

Michael Dion, P.E., PTOE
Senior Project Manager
Principal

I will be out on PTO on 4/5-4/6.

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Gehring, Dennis, PE

From: Dion, Michael, PE, PTOE
Sent: Monday, March 17, 2025 4:55 PM
To: Sealy, Todd; Choate, Suzanne
Cc: Gehring, Dennis, PE; Kurker, Michael, PE
Subject: RE: Pending or approved Developments in Vicinity

Thank you Todd.

Michael Dion, P.E., PTOE
Senior Project Manager
Principal

I will be out on PTO on 4/5-4/6.

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mobile: 203.231.4109 | fax: 203.630.2615
www.blcompanies.com

From: Sealy, Todd <sealy@townofwindsorct.com>
Sent: Monday, March 17, 2025 4:53 PM
To: Dion, Michael, PE, PTOE <mdion@blcompanies.com>; Choate, Suzanne <choate@townofwindsorct.com>
Cc: Gehring, Dennis, PE <dgehring@blcompanies.com>; Kurker, Michael, PE <mkurker@blcompanies.com>
Subject: RE: Pending or approved Developments in Vicinity

Michael,

There are no developments proposed in that area at this time.

Todd

William Todd Sealy, P.L.A.
Town Planner
Town of Windsor

275 Broad Street
Windsor, CT 06095
860-285-1981

From: Dion, Michael, PE, PTOE [mailto:mdion@blcompanies.com]
Sent: Monday, March 17, 2025 3:53 PM
To: Choate, Suzanne <choate@townofwindsorct.com>; Sealy, Todd <sealy@townofwindsorct.com>
Cc: Gehring, Dennis, PE <dgehring@blcompanies.com>; Kurker, Michael, PE <mkurker@blcompanies.com>
Subject: [EXTERNAL] Pending or approved Developments in Vicinity

Suzanne and Todd,

We are doing a traffic impact study in Windsor Locks on Old County Road by the Route 20 ramps. Photo below. As the property if very close to Windsor we are looking for confirmation of any approved or potentially approved developments in the area that could potentially impact the traffic in the area.

If you have any information on any developments it would be greatly appreciated.

Thanks,



Michael Dion, P.E., PTOE
Senior Project Manager
Principal

I will be out on PTO on 4/5-4/6.

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Dion, Michael, PE, PTOE

From: Justin LeFountain <jlefountain@wlocks.com>
Sent: Friday, March 14, 2025 9:13 AM
To: Dion, Michael, PE, PTOE; William Voelker
Cc: Kurker, Michael, PE
Subject: Re: Pending Developments in Vicinity

CAUTION: You do not have significant email history with jlefountain@wlocks.com. Please verify the sender before replying, clicking on links, or downloading attachments

What's this?

Hi Michael,

My apologies, we have been in a period of transition with who is staffing Windsor Locks. I am now stepping in for Bill. The only new construction which you may or may not know about is at 30 Hamilton Road (a decent distance away), which is currently being constructed. It includes the new Lego warehouse, and a tire warehouse. I don't imagine that would have an impact here. There is nothing else that I am aware of in this immediate vicinity.

Thanks,

Justin LeFountain, AICP
Windsor Locks Planning Consultant
Goman+York Property Advisors

From: Dion, Michael, PE, PTOE <mdion@blcompanies.com>
Sent: Friday, March 7, 2025 9:41 AM
To: William Voelker <wvoelker@wlocks.com>
Cc: Kurker, Michael, PE <mkurker@blcompanies.com>
Subject: Pending Developments in Vicinity

William,

We are doing a traffic impact study in Windsor Locks on Old County Road by the Route 20 ramps. Photo below. We are looking for confirmation of any approved or potentially approved developments in the area that could potentially impact the traffic in the area.

If you have any information on any developments it would be greatly appreciated.

Thanks,



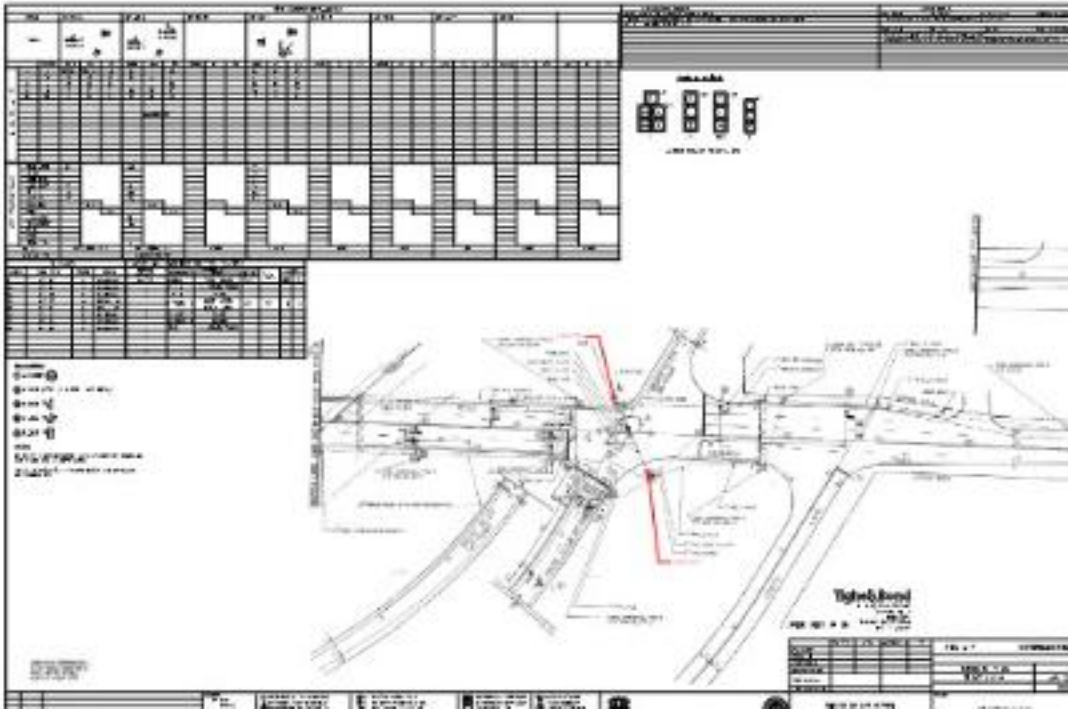
Michael Dion, P.E., PTOE
Senior Project Manager
Principal

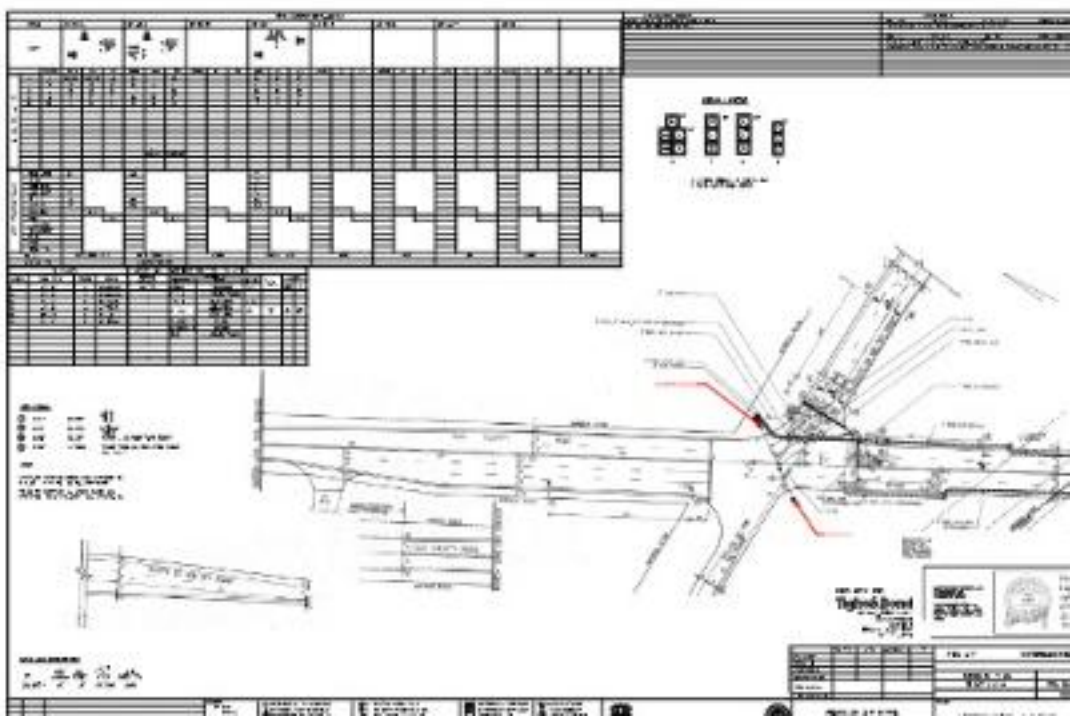
I will be out on PTO on 4/5-4/6.

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E: TRAFFIC SIGNAL PLANS







NORTH ELEVATION



ENLARGED NORTH ELEVATION



WEST ELEVATION



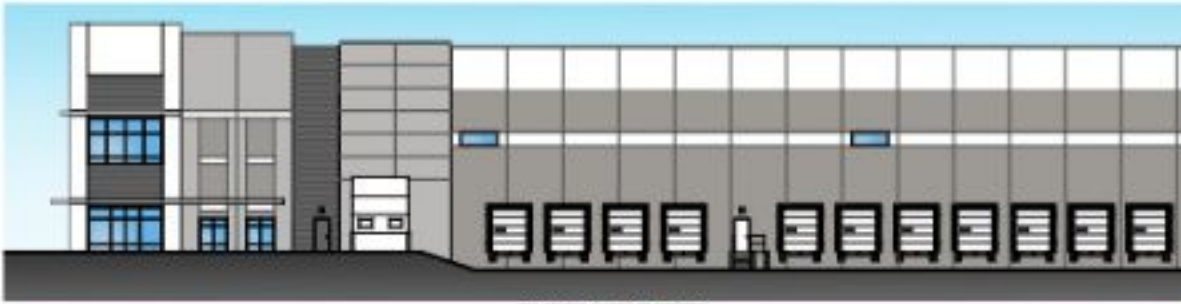
EAST ELEVATION



SOUTH ELEVATION

BDL BUSINESS PARK BUILDING 1 ELEVATIONS









SDL BUSINESS PARK BUILDING 2 ELEVATIONS

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Market Feasibility and Economic Impact Study:

"Old County Road" Development

Northeast Parcel at the corner of Old County Rd and Route 20 | Windsor Locks, CT



Prepared for Scannell Properties #698, LLC

GOMAN +YORK

111 Founders Plaza
East Hartford, CT 0
Tel: (860) 841-2270

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Executive Summary

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Executive Summary

Conclusions and Recommendations

Goman+York, received a request to prepare a Fiscal & Economic Impact Study (FEIS) from *Sconnel Properties* (the "Developer") regarding the development of a new logistics project in the Town of Windsor Locks, Connecticut (the "Property" or "Old County Road").

Goman+York reviewed the Developer's construction cost estimates and operating estimates to create a prospective proforma for the development. The general approach of our methodology is to make *conservative assumptions, given the high-risk nature of real estate development and the current market volatility.*

The development is uniquely attractive due to its superior access to Bradley Airport and major interstate highways, allowing access to major markets both in Connecticut and beyond.

Economic Impact – Summary of Findings

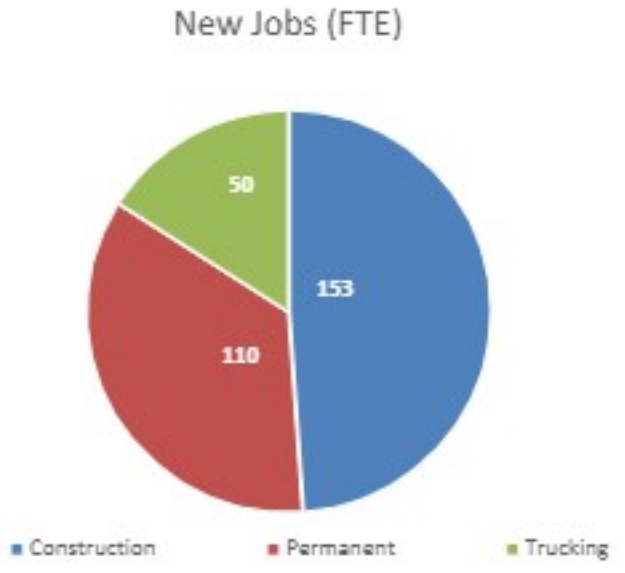
From the perspective of economic impact, the proposed project will create and/or sustain approximately 153 FTE construction jobs, 110 permanent warehouse jobs, 50 truck driving jobs, and approximately $6,954,250 in wealth creation per year after completion. In short, the proposed facility will have a meaningful positive economic impact on the Town of Windsor Locks.

Municipal Fiscal Impact – Summary of Findings:

Our municipal fiscal impact analysis concludes that the proposed 881,900 sq. ft. industrial warehouse will generate a net positive fiscal impact for the Town of Windsor Locks. The one-time permitting fees will result in approximately $965,945 in permit revenue, offsetting the costs associated with administering the entitlement process. Once occupied, we estimate that the warehouse will generate approximately $2,084,151 in real and personal property tax revenues per year, of which approximately $1,421,012 per year will be net fiscal positive tax revenue after the estimated expenses are incurred for general government services.

Executive Summary

Economic & Fiscal Impact



Municipal Fiscal Impact

The proposed development will cost the Town approximately **$663,139** per year or **$1,421,012** less than the estimated **$2,084,151** in total real and personal property taxes paid by the development. **The proposed development is a net fiscal positive for the Town of Windsor Locks.** In addition, the development will generate approximately **$965,945** in one-time development fees for the Town.

Assignment & Project Overview

GOMAN+YORK

The Assignment

Old County Road / Windsor Locks, CT

Gorman-York Property Advisors was asked to conduct a municipal fiscal and economic impact analysis of the proposed industrial development at the corner of Old County Road and Route 20 (Parcel ID: 00825900 and Map/Block/Lot: 056-127-001), Windsor Locks, Connecticut. The proposed Development consists of two buildings, with Building 1 measuring 387,500 SF and Building 2 measuring 494,000 SF.

Our analysis is designed to determine the municipal fiscal impact (revenues versus expenditures) of the proposed development on the Town of Windsor Locks.

Our analysis includes:

1. Reviewing the development cost pro forma and any related information, as provided by Scannell Properties.
2. Reviewing the pro forma Operating Statement for the completed project, as provided by the Developer.
3. Calculations showing the fiscal and economic impact on the Town, including:
   - the ongoing property and vehicle tax revenue likely to be realized by the Town,
   - estimates for one-time revenues to the Town, including building permits and associated fees.
   - the estimated increase in Disposable Incomes presented by the employees and customers of the planned project and the resultant increase in spending at local businesses.
4. Estimating the net increase in property taxes that the Town can reasonably expect to receive from the new development.

Professional Team



Mike Gorman
CRE, CLS, CBA
Principal



Don Pola
FRICS, A
Managing Direct
Urban Plann



Brad Senft
MSRE
SVP & Managing
Director



Derek O'Con
Research & I
An



Development Proposal

Source: Scannell Properties | BL Companies Engineering and Environmental Services Inc



Review of Develope
Proposal

GOMAN+YORK

Review of Developer Proposal

Pro forma Development Costs

In analyzing the proposed Old County Road project, Goman+York examined the expected valuation and projected returns of the development as provided.

Goman+York used the Developer's proposed development costs, alongside industry estimates to produce a prospective financial pro forma model.

Project Summary & Assumptions	
Project Name	Old County Road
Address	0 Old County Road, Windsor Locks, CT
Industrial NRSF	881,500
Emp. Parking Spaces	570
Trailer Parking Spaces	193
Construction Period	24 Months
Time to Stabilization	7 Months
Tax Abatement Terms	No Tax Abatement

Development Costs	$	$/SQFT	% Total
Site Costs	$20,206,813	$22.92	15.6%
Construction Costs	$95,811,080	$108.69	73.8%
Soft Costs	$5,761,759	$6.54	4.4%
Financing & Leasing Costs	$3,034,698	$3.44	2.3%
Developer Fees	$5,097,594	$5.78	3.9%
Total Development Cost	**$129,911,944**	**$147.38**	**100.0%**

Economic Impact Analysis

GOMAN+YORK

Economic & Demographic Trends

Assumptions & Trends

Background – Economic and Demographic Trends:

Demographics and socioeconomics help to inform us as to why and how change occurs. In addition, such trends provide context to understanding real estate asset classes, real estate development, and the market conditions that drive real estate investment. The following is a summary of trends at the national and state level.

United States:

- Like many developed countries, the median age in the U.S. is getting older. Median Age:
  - United States = 38.5
- The expected increase in the U.S. population in the coming years will be mostly the result of immigration as fertility (birth) rates have been in decline for over a half-century (U.S. fertility rate declined from 2.08 in 2008 to 1.64 in 2020).
- Traditional "blue collar" jobs are being replaced with jobs for "Knowledge Workers" and "Service Workers."
- Commercial space (office, retail, and industrial) markets vary greatly by metropolitan region depending on demand drivers (i.e., employment and population growth). Commercial office space has been stagnant, other than some activity in medical office space, especially in aging suburban metropolitan markets. Retail space has experienced disruption from ecommerce and changes in consumer behavior— newly constructed retail as part of mixed-use developments have fared better than older and conventional retail space. Industrial space, especially warehouse, distribution, and procurement centers, is robust and growing.

Connecticut:

- Connecticut reflects overall trends in the U.S., as described above
- Connecticut's increase in population is mostly the result of immig
  as fertility (birth) rates have been in decline for over a half centur
  fertility rate declined from 1.82 in 2008 to 1.43 in 2020). Connect
  will continue to be older than U.S. median age. Connecticut Medi
  Age = 42.0
- The U.S. Northeast and New England, especially, are in an extend
  period of slow or no growth in terms of job creation, population,
  business formation (other than the Boston metropolitan area that
  experienced moderate growth). Connecticut has been a slow to
  growth state for three decades and has suffered the slowest recov
  recovery of any state since 2008 Great Recession.
- Changing demographics, socioeconomics, and consumer preferences/behaviors continue to drive changes in demand across real estate asset classes.
- Industrial space, especially warehouse and distribution space, is experiencing considerable growth and robust demand. This is, in p the result of Connecticut's location between the New York and Bo markets, continued increases in ecommerce, and changing supply requirements for modern warehouse and distribution space. The Greater Hartford market is well-positioned to benefit from this renewed demand in industrial space—and has benefited from thi renewed demand.

Economic Impact Analysis

Methodology & Calculations

Assumptions – Construction and Permanent Jobs Impact:

To estimate construction jobs created (and/or sustained) by industrial construction, we use a multiplier of 5.3 labor hours per $1,000 of total construction costs (total project cost less the soft costs) that are derived from various sources on economic impacts.

- calculation: construction cost multiplied by labor hours of 5.3 hours per $1,000 construction cost and divided by 1,000 hours (average full-time hours worked per year) equals the total number of construction jobs created and/or sustained. For example, if the construction costs are estimated at $10,000,000 x 5.3 (labor hour multiplier) = $53,000,000 / 1,000 (per $1,000 construction cost) = 53,000 hours / 1,000 (Full-time employment hours) = 18 jobs.

To estimate permanent jobs created (and/or sustained) by industrial development in the Hartford Region, we derive multipliers from comparable recent developments.

Economic Impact

The aim of our economic impact assessment is to provide the Town of Windsor Locks with a reasonable and conservative estimate of the economic impact of the Old County Road development. To accomplish this, we utilize economic development research studies and industry sources to develop multipliers that allow us to estimate job creation.

Construction Jobs

Per the developer's pro forma and our testing of the pro forma numbers, the hard costs are expected to be approximately $96,106,600. Being conservative in our work and based on the formula calculation below, we project that 103 FTE construction jobs will be created (and/or sustained). The calculation, hard construction costs of $96,106,600 x 5.3 (labor hour multiplier) = $507,707,180 / $1,000 (per $1,000 of construction cost) = 507,707 hours / 1,000 (1-year full-time employment hours) = 188 full-time equivalent (FTE) construction jobs to be created and/or sustained during construction period of the industrial development.

Permanent Jobs

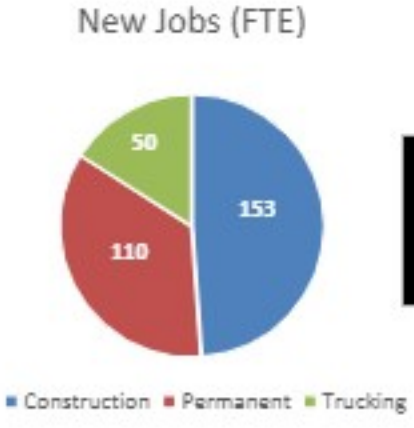
Based on similar projects that we have worked on in the Hartford Region recent developments with known benefits, have resulted in approximately employee per 8,000 sq. ft. considering this, we estimate that the 881,80 ft. industrial warehouse will result in 110 permanent jobs, of which 95 w as industrial Warehouse workers and 15 will be Management/Office workers. In addition to the 110 warehouse jobs, this development will al create trucking jobs. We conservatively estimate the creation of about 9 trucking jobs.

Total Jobs

Based on the estimates above, we conclude that the proposed industrial warehouse development will likely result in **approximately 188 construc jobs, 110 permanent warehouse jobs, 9.9 full-time trucking jobs, and $8,554,258 in yearly wealth creation.**

Economic Impact Analysis

Job Creation Estimates



Positive Economic Impact

Total FTE jobs created directly from development:

153

New, permanent, FTE jobs created on-site industrial warehous

110

New, permanent, FTE jobs created from trucking/freight jobs

50

	Proposed Warehouse	
Jobs by Type	Average Salary/Year	Wealth Creation
Construction = 153	$57,200	*$8,751,600*
Industrial Warehouse = 95	$35,000	$3,325,000/yr.
Industrial Office/Managers = 15	$68,950	$1,034,250/yr.
Truck Driving – Freight = 50	$51,900	$2,595,000/yr.
	Total Wealth/Year	**$6,954,250**

Fiscal Impact Analysis

GOMAN+YORK

Fiscal Impact Analysis

Economic Context of Change

The Changing Landscape of Commercial/Industrial Space

Today, with the arrival of e-commerce, the retail sector continues to change. Moreover, e-commerce retailing is not simply a spatial shift in the physical location of retail, it is a shift to a virtual space of an outward market share, while remaining as the physical locations and physical spaces of past and present brick and mortar retailing fundamentally associate. With all these shifts and changes in industry, business, and consumption, the one constant is a continued increased need for logistics, the distribution and transportation of goods and services and users. Most important, in addition to the traditional e-commerce of companies such as Amazon, new virtual products and services, such as meal delivery services (i.e., Daily Harvest, Hello Fresh, and Blue Apron) are further increasing the demand for logistics.

The ever-increasing demand for logistics has given rise to the global logistics and delivery firms such as DHL, UPS, and FedEx. The rise in the need for and importance of logistics has created new demand for fulfillment centers, processing facilities, warehouses, truck terminals, and distribution centers. Most important regarding this application, is that the need for manufacturing and distribution centers with good access to the regional market are driving demand for industrial land uses. In addition, with limited land available in the urban core of metropolitan regions, sites in less location with good access to highways, airports, and available land are capturing the bulk of this industrial expansion and are seeing activity.

From the perspective of land use and community planning, we are continually confronted with changing demand for new land uses, since though they often appear unbounding and unnecessary. For example, the restaurant patrons at shopping centers or malls, the drive-thru windows, the standalone or inventory only coffee shops, home delivery services, and distribution centers. The challenge faced by community planning is not to resist change, but to embrace and manage change. Innovation is the foundation of technical, managerial and institutional action and the remedies to combat scarcity, uncertainty, and functional obsolescence. Those who act now—with stay ahead of the curve and capture first-use opportunities. "Risk-products and services are generated by innovation, innovation, risk, trial, and effort..." and those who are first to "innovate" are likely will have the market." Whether Looks has been open to and a [illegible] in exploration with its radical product efforts. This application furthers Windows Looks' adaptation to ever-changing demand, land uses, and [illegible] development opportunities. While entrepreneurial spirit and efforts are often constrained by government structures, government can also be entrepreneurial in its efforts, allowing new technologies uses as a means of meeting the community demand, while providing jobs, new innovation, and growing the local tax



Fiscal Impact Analysis

Approach and Assumptions

Land Use and Municipal Fiscal Impacts

It is commonly understood that commercial and industrial land uses are fiscal positives regarding municipal tax revenue. For example, a 2003 study published by the American Farmland Trust and Connecticut Conference of Municipalities explained that commercial land uses in Connecticut require, on average, only $0.27 in community services for every $1.00 generated in tax revenue. The primary reason for this—commercial properties paying more in taxes than the services they require and receive—is the significant portion of municipal budgets allocated to public education and the fact that commercial properties do not utilize education related services. For example, the Town of Windsor Locks' 2022-23 budget totals $62,990,797, of which $42,166,331 (or 61.4%) is board of education expenditures. Municipal operations (general government services) total $17,096,525 (or 32.6%). There is an additional $3,138,245 (or 6.0%) for debt service.

In addition to education, there are other general government services, such as social services, senior centers, parks and recreation, and so on that commercial and industrial properties do not utilize. Based on the limited services utilized by commercial uses, the $0.27 per $1.00 in tax revenue from the study source, and the fact that general government (less education spending) and debt services only account for 38.6% of the total municipal budget, it is reasonable to assume that approximately 27% of the municipal expenditures support and provide services to commercial and industrial properties. To be conservative, for the purpose of our calculations, we assume that $0.35 of every $1.00 paid in taxes by commercial and industrial properties are used to provide general government services for those properties. Therefore, we assume that $0.65 of every $1.00 paid in taxes by commercial and industrial properties are fiscally positive revenue that helps fund other government services.

It is important to emphasize that the foregoing represents a conservative and generalized estimate of the additional expenses which could be generated the subject project. A more realistic estimate of the actual expenses to Town is derived utilizing a marginal cost approach which attempts to estimate the actual expenses generated by an operation of the specific and scope. In this example, we would expect the proposed project to ad little additional burden to the town's scope of services and therefore a r likely estimate would be that the marginal increase in expenses would n be in the range of 10% to 15% of revenues. For this specific project and we would still consider this to be a conservative range, in favor of the t position.

The Existing Undeveloped Property and Tax Revenue

The first step in assessing the municipal fiscal impact is to establish the baseline of current property values and taxes paid by the subject prope The subject property consists of approximately 76.17 acres. Based on th Assessor's records, the appraised land value is approximately $7,895,80 is reduced by the PA-490 designation to approximately $108,800. The t assessment for the parcel is approximately $76,880 and the subject pro pays approximately $25.08 per acre in taxes or a total of $1,910 per yea taxes for the 76.17 acres. From the perspective of municipal fiscal impa is reasonable to assume that the farmland requires fewer government services than the taxes paid. Therefore, we assume the existing subject to produce net positive revenue—be it very little—to the Town of Wind Locks.

Fiscal Impact Analysis

Expenditures for Government Services

Expenditures – Education

Commercial properties do not utilize any education-related services, which make up 61.4% of the Town of Windsor Locks 2023-2028 budget.

Expenditures – General Government Services

General government services, for the purpose of this analysis, are all local government functions (i.e. police, fire, town hall office, public works, etc.), excluding education. Therefore, the expenditures for general government services are based on the Town of Windsor Locks 2023-2028 budget, less education. The total Windsor Locks budget for 2023-2028 was $53,890,730 of which $33,105,200 (61.4%) was for education. Less the education budget, General Government Services were $17,006,525 and Capital Financing was $3,123,525.

General government services, such as social services, senior centers, parks and recreation, and so on are not utilized by commercial and industrial properties. Based on the limited services utilized by commercial uses, the $0.37 per $1.00 in tax revenue from the study above, and the fact that general government (less education spending) and debt services only accounts for 38.6% of the total municipal budget, it is reasonable to assume that approximately 37% of the municipal expenditures support and provide services to commercial and industrial properties. To be conservative, for the purpose of our calculations, we assume that $0.35 of every $1.00 paid in taxes by commercial and industrial properties are used to provide general government services for those properties. Therefore, we assume that $0.65 of every $1.00 paid in taxes by commercial and industrial properties are fiscally positive revenue that helps fund other government services.

Revenues – Real Property Taxes

For the proposed 897,500 sq. ft. of warehouse space, we estimate property (appraised/market) value when constructed to be approximately $99,166,805. Therefore, we estimate the assessed value at $67,220,622. The assessed value multiplied by the Mill Rate (28.14 or 0.02814) estimates that the warehouse space, once developed and occupied, will generate approximately $1,891,682 in real property taxes per year.

Revenues – Personal Property Taxes (Commercial Equipment)

Personal property taxes on commercial equipment for warehousing and distribution uses in Connecticut are approximately 10% of the real property tax value. The real property taxes for this proposed warehouse are estimated at $1,891,682 per year, therefore we estimate the personal property taxes to total approximately $189,168 per year.

Total Revenues – Real and Personal Property Taxes

Based on our development proforma calculations above, Commercial projects like this development will generate approximately $1,891,682 in new real property tax revenue per year and $189,168 in personal property tax revenue (commercial equipment) for a total of $2,080,851 in new tax revenue.

Municipal Fiscal Impact

Based on the General Government Services Expenditures being 37% of the total real property taxes, the proposed development will cost the Town approximately $697,194 in expenditures. Therefore, the proposed development will generate $2,080,851 in total real and personal property taxes paid by the development or $1,421,017 more than the cost of general government services. The proposed development is a fiscal positive for the Town of Windsor Locks.

Fiscal Impact Analysis

Evaluating the Value of Building Permit Fees

Understanding Building Permit Fees

Fees are charged by government to recoup the reasonable cost of providing the government services directly related to the activity upon which the fee is levied. In the case of building permits, the fees are collected to recoup the actual cost associated with providing the administration and documentation necessary for a building permit. For example, building permit fees can be used to recover staffing costs associated with processing the permit application, reviewing the plans, and conducting on-site inspections for compliance with codes and the proposed plans. It is not uncommon for building permit fees for large construction projects to be tens of thousands and even hundreds of thousands of dollars. Therefore, such fees can be a substantial cost to the developer.

Our experience, as past government officials and developers, has taught us that the structure of building permit fees often underestimates actual cost to the municipality for smaller development projects and overestimates them for larger projects. For the developer, building permit fees are like other soft cost—they are simply part of the cost of doing business—and are part of the total cost of the project. However, unlike property taxes that are paid yearly and after construction is completed, building permit fees are paid before construction commences. Therefore, while property taxes impact the operating expenses of the completed development, permitting fee impact the up-front costs of the development and become part of the capital stack (debt and equity investment structure).

Fiscal Impact Analysis

Estimation of Permit Fees

One-Time Development Fees

Based on the Windsor Locks Building Permit and Land Use Fees, we estimate one-time development fees to total approximately $965,945.

Permits	Fees/Rate	Base	Total
Building Permit	$16/$1,000 of construction cost	$48,093,301	$769,492
Fire Marshall Review	25% of Building Permit Fee	$769,492	$192,373
Planning & Zoning	Map Amendment $300, Special Permit $250, Site Plan $230	881,500 sf.	$780
Wetlands Application	Commercial Application	$150	$150
WPCA (Connection)	$3,000/unit plus inspection Fee	$3,150	$3,150
		Total	$965,945

As a conservative estimate Goman+York calculated the base construction costs for the building permit fee by taking 50% of the estimated hard construction costs







Thank You!

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David Mchael 55 Oak Ridge

Inbox x

Patricia Margolfo
to Justin, Peggy, me, Zoning

Mon, Jun 2, 10:11 AM (4 days ago)

David called to oppose the warehouse or Scannell property. He feels it is a bad idea That they should not be disturbing the park that was giving to the town.

Patsy Margolfo
Windsor Locks building / Administrative Assistant

Town of Windsor Locks, Connecticut