

# **BOLTON PLANNING & ZONING COMMISSION**

## **Regular Meeting**

**7:30 p.m., Wednesday, August 10, 2022**

### **Virtual**

### **Minutes & Motions**

**Members Present:** Chairman Tom Manning, Vice Chairman James Cropley, Arlene Fiano, Jeffrey Scala, Jeremy Flick, Brittany Clark, Kawan Gordon (alternate), Rodney Fournier (alternate).

**Members Excused:** Tom Crockett (alternate), Thomas Robbins.

**Staff Present:** Patrice Carson, AICP, Consulting Director of Community Development, Michael D'Amato, Interim Zoning Enforcement Officer (arrived at 8:17 p.m.), and Yvonne Filip, Recording Secretary.

**Others Present:** Milton Hathaway, Joseph Villanova, Bill Jodis from PDS, Steve Rockerfeller, Randy Becker, Asim Etem.

**1. Call to Order:** T. Manning called the meeting to order at 7:32 p.m.  
Fournier was seated for Robbins.

**2. Approval of Minutes: July 13, 2022, Regular Meeting Minutes**  
**J. Scala moved** to accept the minutes of the July 13, 2022, Regular Meeting. **J. Cropley seconded.** Vote: 7-0-0.

**3. Residents' Forum**  
No one present wished to speak on a non-agenda item.

#### **4. Staff Reports**

P. Carson reported:

- Prior to COVID development four towns, Bolton, Coventry, Tolland, Mansfield, began working on a regional economic plan. We have been working on that with a steering committee and staff from the four towns. UConn intern Joshua Hall will be coming on board soon to work on some of the projects.
- M. D'Amato sent notice of violation to Clark Road. There was a response to that notice.
- M. D'Amato was notified that work was being done on Notch Road that was approved for storage. The problem is that the plan, permit and E&S bond had not been submitted. They were asked to stop the work and they have.

K. Gordon: What are the violations? P. Carson: Storage of equipment beyond what he was allowed. He had purchased the Notch Road property to move his business down there.

J. Cropley: Is there an update on the Howard Road violation? P. Carson: The drop dead date to respond to several letters was this afternoon. There has been no response. She believes this is being forwarded to the attorney.

J. Cropley: And the other violation on Route 44? P. Carson: M. D'Amato has been working with one of the tenants on site.

J. Crolley: For the new gas station building – he thought the entrance closest to Bolton Center was going to be closed? P. Carson: That will have a break-away gate for fire purposes.

## **5. Public Hearings (begin at 7:45 p.m.)**

### **a. Continuation: Special Permit Application for 12,000-15,000 SF Pre-Engineered Metal Building Addition for Light Manufacturing, 837 Boston Turnpike, Able Coil and Electronics Co. (#PL-22-4)**

Randy Becker and Steve Rockerfeller were present.

R. Becker: Has submitted a revised site plan. He had an opportunity to meet with the Town Engineer and go over the drainage related issues. R. Becker has responded to some comments but there are others that require a bit more surveying. Detention basin grew in size so revision calculations and drainage areas were submitted. A guardrail was added along the top of the basin at the end of the parking lot to prevent someone from driving too far and ending up in the basin.

J. Scala: Is noticing there is no P.E. stamp. All drawing will have to be stamped and sealed. R. Becker: He will stamp the final drawings. J. Scala: The calculations will need stamps to. R. Becker: Yes. J. Scala: The revisions to the basin is making it bigger, why? R. Becker: The post development flow decreased from 20 minutes to 8 minutes so the flow was more intense. He has added a low curb on the west side of the parking lot to have the water go into the basin. J. Scala: Isn't there a high point 200' - 300' east of the building? S. Rockerfeller: That is correct. R. Becker: Anything coming downhill will get directed east of the basin. J. Scala: Have the calculations been done so there is no erosion in the swale? R. Becker: That is a grass swale with a level spreader and rip rap. J. Scala: Will the proposed outlet design be shown? R. Becker: Yes. J. Scala: Is the engineer going to submit a stormwater calculations report so the information is all in one place? R. Becker: Yes.

P. Carson: Are the lighting notes on the plan? R. Becker: He put those on the plans that were submitted yesterday. P. Carson: With the new design and grading the bond amount will have to be adjusted.

J. Scala: Does the applicant have to give us more time on this? P. Carson: The applicant has to grant an extension of time. A 30-day extension will get us to next meeting.

Bill Jodis: Can a condition of approval be that we meet the Town Engineer's comments? T. Manning: I think not. B. Jodis: His concern is that they would like to get the plans approved and submit plans to obtain the building permit. They would like to start construction.

J. Flick: Can the detention basin accept the extra load and retain and remediate the water? R. Becker: Yes.

T. Manning: The PZC needs 30-day extension in order to complete this hearing at the September 19, 2022 meeting. In absence of that the PZC can close the hearing this evening and likely vote on the application with an uncertain result. Steve Rockerfeller emailed P. Carson that an extension would be approved. What are we missing here? J. Scala: The Town Engineer's approval. J. Scala does not see any infiltration calculations. It is not showing the calculations that the stormwater will seep into the ground. R. Becker: He sized the basin as if there is no infiltration. With the outlet structure it will



allow, within 48 hours, room for another storm's runoff. J. Scala: Is there any perc rates here? R. Becker: That is not on the plan but the information is shown elsewhere. J. Scala: You should be fine after seeing the perc test information.

T. Manning: The Town Engineer has written a substantial list of comments. Your engineer is clear with what has to be done to respond to the engineer. Steve Rockefeller granted the 30-day extension.

Audience:

No one was present to speak.

J. Cropley: Did anyone visit the site with Mr. Rockefeller? S. Rockefeller: No one has contacted him. J. Cropley: Will the neighbors be able to see the lights in the parking lot? S. Rockefeller: When they are activated. J. Cropley: As a neighbor he would rather have the light on rather than coming on and off. S. Rockefeller: A timer and motion sensor lights combination can be used. This business is primarily a daytime operation. He does not expect any bothersome activity in the back parking lot. His intent was not to have any lights at all. P. Carson: If the building code will let you not light the parking lot, you do not have to light the parking area. J. Flick: Parking area lighting is for safety concerns. P. Carson: There is no light spillage off the property. R. Fournier: It is a safety item to have some lighting. Otherwise, people can park back there and can do anything.

M. D'Amato: After Dollar General was built the calls he got where in regards to lighting. There was a minimum threshold they had to reach for insurance purposes. P. Carson: Shields can be put on the sides of the lights so there is no direct vision to the neighbors. S. Rockefeller: That is a good idea.

**T. Manning moved to** continue this hearing, with the extension granted by the applicant, until September 14, 2022, at 7:45 p.m.. **J. Cropley seconded.**

**J. Scala: Friendly amendment accepted by T. Manning and J. Cropley:** The hearing is scheduled for 7:30 p.m. Vote: 7-0-0. Motion passed.

**b. Special Permit for Bed & Breakfast, 60 Villa Louisa Road, (A Villa Louisa), Asim Etem (#PL-22-7)**

T. Manning: We are opening the public hearing. P. Carson: Read the legal notice on this application for the record.

J. Scala: Is recusing himself from this matter. T. Manning seated K. Gordon for this hearing.

Asim Etem was present. His intention is to build a B&B. This will act as his primary residence as the regulations require a B&B to be owner occupied. The B&B portion will be used mostly for the bride and grooms that have events at A Villa Louisa. T. Manning: Owner occupied is with the state code.

P. Carson: The plans were shared. There is a question about the water; what is the reason they will not let you share the water from the restaurant with the B&B? A. Etem: When he asked the local health department they recommended he get in touch with State Health Department. He has sent them an email to get their feedback. P. Carson: Staff comments included needing more parking, a dumpster, and questions from fire department. A. Etem:

Why is a dumpster needed? Can he use regular trash collection or the current dumpster?  
P. Carson: She think they need to see the location. For six patrons you may need more than standard collection.

J. Flick: Will there be a service road between the buildings? One issue for the fire department is that they did not see a road between the buildings that would be accessible by the fire department. There is no emergency access. A. Etem: The driveway for the residence is not sufficient for the fire department? J. Flick: In addition, no one should be walking on the side of the road at night going between the buildings. A. Etem: That is a very good point. P. Carson: It could be a walking trail between the buildings. R. Fournier: It is 200' to the house? A. Etem: He could have a golf cart path from top right corner of the restaurant to the house. R. Fournier: The fire department has access to both properties with the driveway. P. Carson: There was some comment about the shape of the driveway for fire department access. A. Etem: The roundabout at the top of the driveway was with the idea to drop off the bride. Would they be able to park cars along there? P. Carson: The fire department commented they did not want cars parked there. There is some question about wetlands. A. Etem: Trying to get a hold of the person that would come in to delineate any wetlands. P. Carson: Has heard a Soil Scientist is performing the work. If there are wetlands a permit would be needed before the PZC hears the matter. The owner will have to withdraw the application and go before the IWC for a permit first.

J. Flick: Thinks it is a great idea. It will be a great thing for people to have the wedding and have part of the wedding party stay there.

P. Carson: Indicated to the owner the following will have to be included - a landscaping plan, a lighting plan, drainage comments and calculations, bond estimates, and address the fire department's comments.

Audience:

No one was present to speak.

**T. Manning moved to** continue this hearing, with the extension granted by the applicant, until September 14, 2022, at 7:30 p.m.. **A. Fiano seconded.** Vote: 7-0-0. Motion passed.

**c. Adoption of an update to the 2015 Town of Bolton Plan of Conservation & Development to incorporate the 2022 Affordable Housing Plan in accordance with Section 8-23 of the Connecticut General Statutes**

P. Carson: Read the public notice into the record.

J. Scala was reseated. R. Fournier was unseated.

A. Fiano: There was a discussion previously about the soft money for paying for this. Once we met open space requirements we were thinking of a fee with the idea for funding what needs to be happening. P. Carson: A housing trust fund? A. Fiano: Federal monies available to the developer. P. Carson: There is no financing for this. There is a component of establishing an affordable housing trust. A. Fiano: Talked about having monies through fees with the town creating a fund similar to the open space fund. M. D'Amato: One of the mechanisms is to establish funds for fees in lieu of affordable housing. That goes into the trust. P. Carson: That would be established through the BOS. J. Flick: Affordable housing has funding that is not local. P. Carson: This would be creating a way to fund for maintenance, creating, or building affordable

housing. D. Amato: Mansfield is poised to get 1.2 mill. for a development in the hopper. The fees are set by the state; Bolton would need to create the fund. J. Cropley: So, the town could build low-income housing? P. Carson: Yes. J. Cropley: The location of the Notch Road Municipal building would be ideal. There is no formal plan about the drive-in property. They could hook into the sewer system but still have to prove the property can support a septic system. The water authority would have to approach that. P. Carson: Staff is satisfied with the plan.

Audience:

None

**T. Manning moved to close this hearing. J. Flick seconded.** Vote: 7-0-0. Motion passed.

**6. Old Business**

**a. Discussion/Possible Decision: Special Permit Application for 12,000-15,000 SF Pre-Engineered Metal Building Addition for Light Manufacturing, 837 Boston Turnpike, Able Coil and Electronics Co. (#PL-22-4)**

No action.

**b. Discussion/Possible Decision: Special Permit for Bed & Breakfast, 60 Villa Louisa Road, (A Villa Louisa), Asim Etem (#PL-22-7)**

No action.

**c. Discussion/Possible Decision: Adoption of an update to the 2015 Town of Bolton Plan of Conservation & Development to incorporate the 2022 Affordable Housing Plan in accordance with Section 8-23 of the Connecticut General Statutes**

**T. Manning:** I make a **MOTION** that the update to the Plan of Conservation and Development for Affordable Housing as presented, discussed and approved tonight be incorporated into the Plan of Conservation & Development for the Town of Bolton and adopted by the Commission as the updated Plan of Conservation & Development for the Town of Bolton in accordance with Section 8-23 of the Connecticut General Statutes with an effective date of *September 1, 2022*. **J. Scala seconded.** Vote 7-0-0. Motion passed.

**d. Discussion: Regulations Regarding the Cultivation, Sale, and Distribution of Adult Use Cannabis Bolton PZC (#PL-22-6)**

P. Carson: If Members have comments on the general points these can be sent to staff via email. Staff will gather information.

J. Scala: Are there strong feelings one way or another about this? R. Fournier: The previous discussion was to handle the sale as a package store. J. Flick: Do you have the cultivation information?

M. D'Amato: The law was changed in May regarding the density for retail. There is no cap on cultivation. The only location criteria is that large corporations obtaining six licenses has to have the facilities 20 miles apart.

T. Manning: We would list as permitted or prohibited use in each of the zones. P. Carson: Retail would be commercial zones only with separation distances between certain establishments. M. D'Amato: Has seen other towns struggling to get a consensus on how to regulate this. Some towns are running the prohibition and

regulating in tandem. The Land Use attorneys are opining that retail may have to be treated as a pharmacy. It is not clear that you can say it is like a liquor store and all the separating distances apply.

T. Manning: If allowing guns/gun repair as home occupancy he does not see a reason to restrict cultivation. It is industrial use because it is indoors. M. D'Amato: Cannabis is not considered to be farming. P. Carson: But you are not going to regulate backyard growing.

A. Fiano: Industrial zones need a certain amount of land. It does not seem we have the space for cultivation. Would we be setting ourselves up for issues if we prohibit growing? P. Carson: You can prohibit it. D'Amato: There is one facility in Simsbury that is over 100,000 sq. feet. There is nothing to stop them from moving into an existing building. They are looking for 80-90 sq. feet. It does require a lot of water.

J. Cropley: Able Coil will be building new building and moving. Is their old building in an industrial zone? P. Carson: Yes.

A. Fiano: Feels we should set regulations to control this in industrial areas. J. Cropley agrees. A. Fiano: Hemp is a by-product. P. Carson: Showed the zoning map – anything in blue is industrial property in town. Boston Turnpike is on sewer.

T. Manning: Members can send comments to Staff with staff creating a brief report on where this stands for the next meeting.

J. Scala: Would like to get more clarification on treating as a pharmacy. M. D'Amato: If there are no regulations cultivation would be manufacturing and retail would be pharmacy based on each of those regulations. The risk is not with the cultivation. Massachusetts has 150 retail location. There could be 70 - 100 state-wide in CT. The town would get 2% - 3% of the tax revenue to go into the General Fund.

A. Fiano: Does M. D'Amato have some sample regulations that we can review for allowing cultivation in an industrial zone and treat the retail like a liquor store? Model regulations would be great. D'Amato: Yes, Willington approved some a while ago. We can mark those up with some suggested changes.

P. Carson: You can prohibit this.

T. Manning: Bolton was limited to one liquor store. The reason there are more is because they were here before that restriction. Treating cannabis like a liquor store is not the way to go.

#### **e. Other**

### **7. New Business**

#### **a. Other**

None

### **8. Correspondence**

None

A. Fiano: Can we get the items the intern is working on for the Four Town Economic Development plan? P. Carson: Once the list is decided upon it will be shared. The report is on the website as the Economic Vitality Plan. Will have another summit to see where we are with the original people on the committee invited to attend.

## **9. Adjournment**

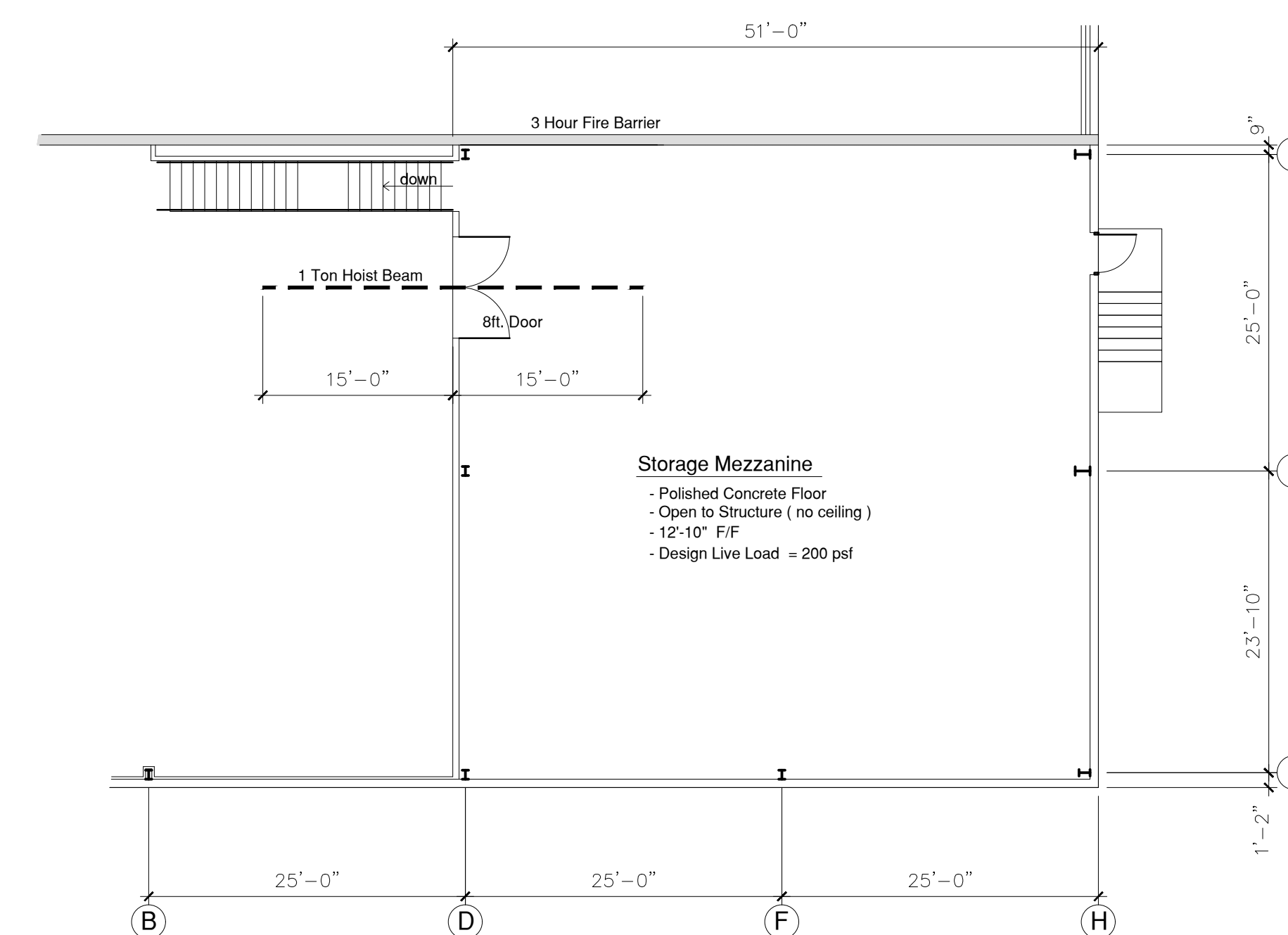
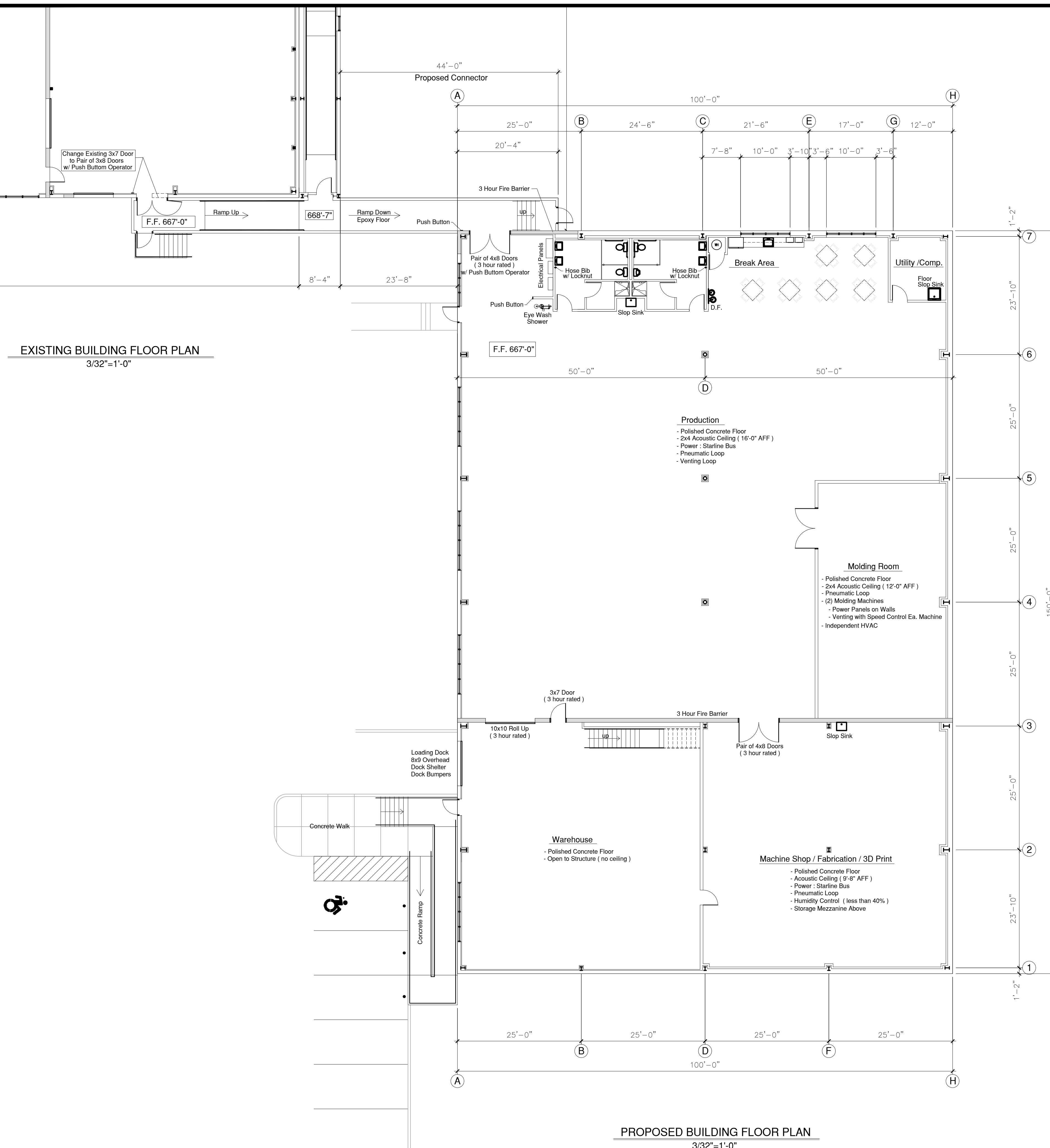
**J. Cropley moved to** adjourn the meeting at 9:32 p.m. **J. Scala seconded.**

Respectfully Submitted,

Yvonne B. Filip

Yvonne B. Filip, Planning & Zoning Commission Recording Secretary

*Please see minutes of subsequent meetings for approval of these minutes and any corrections hereto.*



DATE	ISSUE
6-2-2022	P&Z APPLICATION
6-13-2022	PROJECT ADDRESS
6-21-2022	INTERIOR LAYOUT
6-22-2022	15,000 SF FOOTPRINT
8-22-2022	FLOOR PLAN LAYOUT
8-25-2022	FLOOR PLAN LAYOUT PRODUCTION CEILING HGT.
8-31-2022	WAREHOUSE EXITS



**PDS ENGINEERING &  
CONSTRUCTION, INC.**

107 Old Windsor Road  
Bloomfield, Connecticut 06002  
Telephone: (860) 242-8586  
FAX (860) 242-8587

CONSULTANTS:

PROJECT NAME:

## ABLE COIL - PROPOSED WAREHOUSE

837 BOSTON TURNPIKE  
BOLTON, CONNECTICUT

DRAWING TITLE:  
**FLOOR PLAN**

**DRAWING TITLE:**  
**FLOOR PLAN**

SEAL

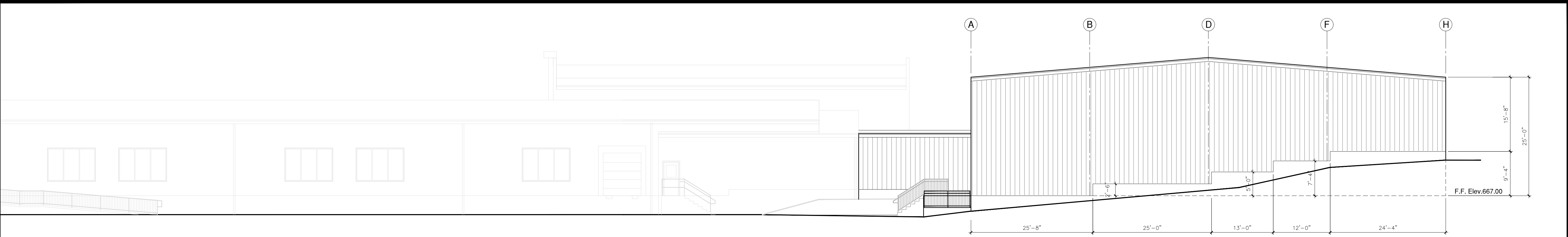
ENGINEER: FB

ARCHITECT:

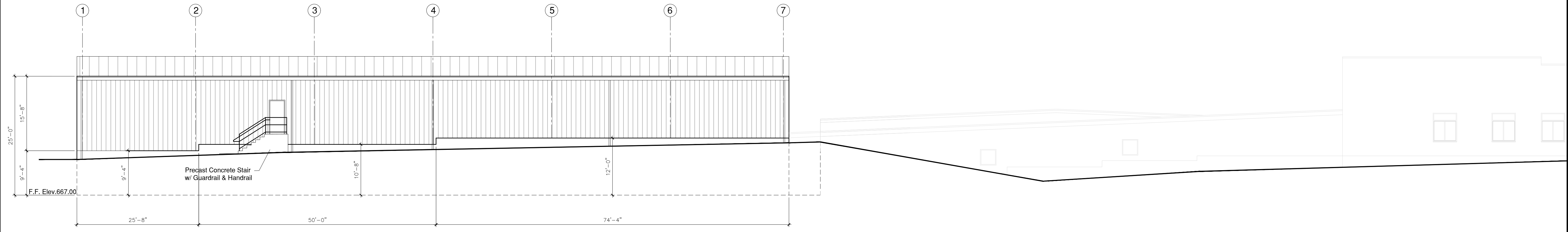
PROJECT MGR

DRAFTED BY: BF

# A-100



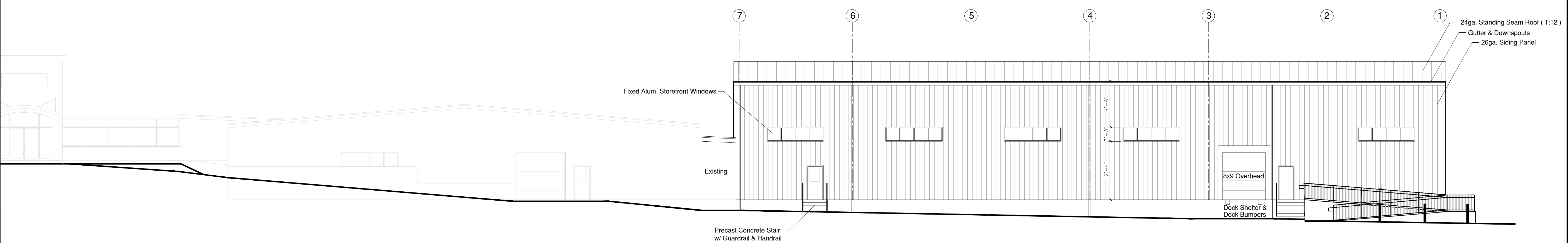
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EAST ELEVATION  
3/32"=1'-0"



NORTH ELEVATION  
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WEST ELEVATION  
3/32"=1'-0"

DATE	ISSUE
6-2-2022	P&Z APPLICATION
6-13-2022	PROPERTY ADDRESS
6-21-2022	WINDOWS WEST ELEV.
6-22-2022	15,000 SF FOOTPRINT
8-22-2022	WINDOW ELEVATIONS
8-25-2022	RAISED WINDOWS 2 FT.
8-31-2022	WAREHOUSE EXITS



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CONSTRUCTION, INC.

107 Old Windsor Road  
Bloomfield, Connecticut 06002  
Telephone: (860) 242-8586  
FAX (860) 242-8587

CONSULTANTS:

PROJECT NAME:  
**ABLE COIL - PROPOSED WAREHOUSE**

837 BOSTON TURNPIKE  
BOLTON, CONNECTICUT

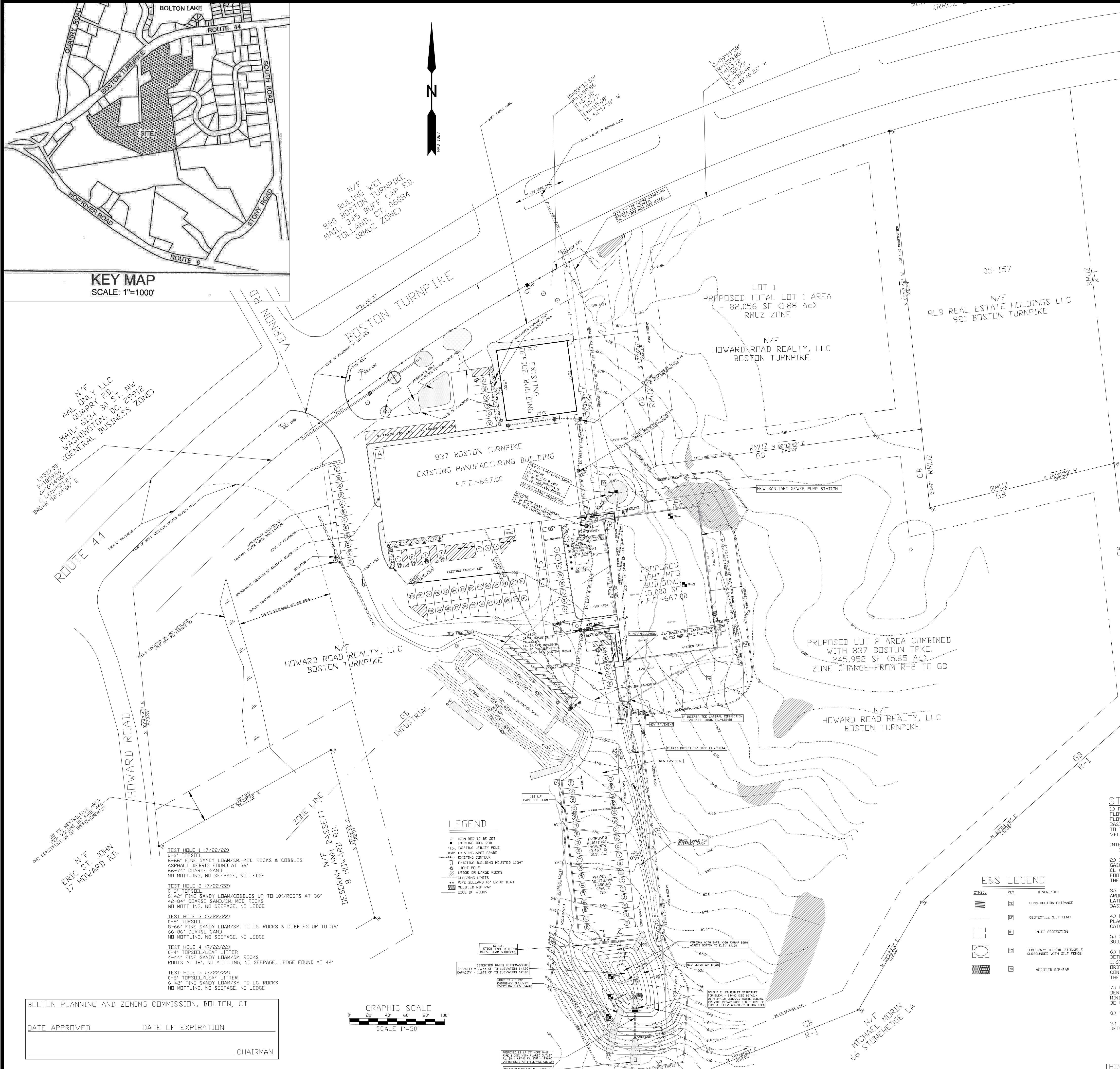
DRAWING TITLE:  
**EXTERIOR ELEVATIONS**

SEAL

ENGINEER: FB  
ARCHITECT:  
PROJECT MGR:  
DRAFTED BY: BF

**A-200**





SITEWORK NOTES:

- 1) THIS SITE PLAN IS BASED ON A-2 SURVEY INFORMATION OBTAINED FROM REFERENCE MAPS BY BUSHNELL ASSOCIATES LLC AND HOLMES & HENRY ASSOCIATES LLC, WITH ADDITIONAL FIELDWORK PERFORMED BY PDS ENGINEERING & CONSTRUCTION, INC.
- 2) THE PORTION OF THE PROPERTY LOCATED WITHIN 300FT OF THE BOUNDARY WITH BOSTON TURNPIKE (ROUTE 44) PROPERTY IS LOCATED IN A GENERAL BUSINESS ZONE. THE REMAINING PORTION OF THE PROPERTY IS LOCATED IN AN INDUSTRIAL ZONE. ADJACENT LOT 1 IN RMUZ ZONE HAS BEEN MODIFIED IN AREA, AND LOT 2 HAS BEEN CHANGED TO GENERAL BUSINESS ZONE. THE ZONE CHANGE APPLICATION WAS SUBMITTED ON JUNE 7, 2022, AND SUBSEQUENTLY APPROVED.
- 3) THE PROPERTY IS NOT LOCATED FLOOD HAZARD ZONE A PER FIRM FLOOD INSURANCE RATE MAP COMMUNITY-PANEL NUMBER 090109 - 000E EFFECTIVE DATE JUNE 1, 1981. WETLANDS EXIST ON THE PROPERTY BUT ARE NOT WITHIN 200 FEET OF SITE DEVELOPMENT.
- 4) TOPOGRAPHY SHOWN WAS FIELD DERIVED BY BUSHNELL ASSOCIATES LLC AND HOLMES & HENRY ASSOCIATES LLC USING AN ASSUMED BENCHMARK. ADDITIONAL GRADES NEEDED FOR PREPARING THIS SITE PLAN BY PDS ENGINEERING & CONSTRUCTION, INC. ARE IN THE SAME VERTICAL DATUM.
- 5) THE PROPERTY IS SUBJECT TO RESTRICTIVE COVENANTS BETWEEN LAN HOLDING LLC AND DEBORAH BASSETT FILED IN VOLUME 100 PAGE 446 OF THE TOWN OF BOLTON LAND RECORDS.
- 6) A SPECIAL PERMIT FOR A RETAIL BUILDING WAS GRANTED FOR THE PROPERTY BY THE BOLTON PLANNING AND ZONING COMMISSION ON OCTOBER 20, 1999 AND FILED ON THE TOWN OF BOLTON LAND RECORDS VOLUME 98 PAGE 610.
- 7) THE SOILS IN THE AREA OF THE PROPERTY SHOWN CONSIST OF CHARLTON-CHATFIELD COMPLEX 0 TO 10 IS PERCENT SLOPES VERY ROCKY PER THE USDA NRCS WEB SOIL SURVEY. LEDGE IS PRESENT ON SITE AND, IF ENCOUNTERED WHILE EXCAVATING, MUST BE REMOVED IN AN APPROVED MANNER.
- 8) SANITARY SEWER FORCE MAIN LATERAL LOCATION SHOWN WERE TAKEN FROM AS-BUILT INFORMATION ON FILE IN THE TOWN OF BOLTON LAND USE DEPARTMENT.
- 9) THE PROPERTY IS TOGETHER WITH A SPECIAL PERMIT FOR LIGHT MANUFACTURING AND OFFICE USE GRANTED BY THE TOWN OF BOLTON PLANNING AND ZONING COMMISSION ON JANUARY 9, 2019. A SPECIAL PERMIT APPLICATION FOR THE PROPOSED 1,500 SF LIGHT MANUFACTURING BUILDING WAS SUBMITTED ON JUNE 7, 2022.
- 10) THE PROPERTY IS SUBJECT TO A GRINDER PUMP EASEMENT AGREEMENT BY AND BETWEEN LAN HOLDING, LLC AND BOLTON LAKE REGIONAL WATER POLLUTION CONTROL AUTHORITY FILED ON VOLUME 151 PAGE 634 OF THE TOWN OF BOLTON LAND RECORDS.
- 11) REFER TO AND COMPLY WITH DRAWING ES-1 EROSION AND SEDIMENTATION CONTROL PLAN FOR ALL EAS CONTROL AND LANDSCAPING/LAWN ESTABLISHMENT WORK ON THIS PROJECT. FINISHED GRADES SHOWN ARE APPROXIMATE AND MAY BE ALTERED TO FIT FIELD CONDITIONS WITH ENGINEER'S APPROVAL. ALL DISTURBED AREAS THAT REMAIN AFTER BUILDING AND PAVING SHALL BE RESTORED AS LAWN AREAS. STABILIZE MODERATE SLOPES OF 4:1 OR 4:1 WITH GRASS EROSION CONTROL. BLANKETS PER MANUFACTURER'S INSTALLATION INSTRUCTIONS. STABILIZE STEEPER SLOPES WITH POLYPROPYLENE TURF REINFORCEMENT MATS PER MANUFACTURER'S INSTRUCTIONS.
- 12) EXISTING YARD DRAINS AND PIPING NEED TO BE CLEANED OF SEDIMENT AND DEBRIS TO ENSURE PROPER FLOW. INSTALL FOOTING DRAINS AND ROOF LEADER DRAINS WITH CLEANDOUTS AS SHOWN.
- 13) CALL BEFORE YOU DIG (800) 982-4455 FOR LOCATING EXISTING UNDERGROUND UTILITIES PRIOR TO EXCAVATION. LOCATION OF EXISTING UTILITIES SHOWN IN THIS PLAN ARE APPROXIMATE. BURIED LP GAS TO BE CONNECTED TO A REGULATOR LOCATED ON THE NEW BUILDING. FINAL CONNECTIONS ARE BY HIGH GRADE GAS SERVICE, STAFFORD SPRINGS, CT. ELECTRIC AND WATER SERVICES SHALL BE RUN THROUGH THE NEW CONNECTOR.
- 14) WALL PACK LIGHTS SHALL BE PROVIDED AT ALL NEW EXTERIOR ENTRIES AND HANDICAP RAMP. TWO (2) LIGHT POLES WITH MOTION SENSORS SHALL BE PROVIDED IN THE NEW PARKING LOT. LOCATIONS WERE DETERMINED BY PHOTOMETRIC STUDY.

SANITARY SEWER PUMP STATION NOTES:

- 1) DESIGN FLOW, MANUFACTURING BUILDING = 25 EMPLOYEES X 25 GAL. PER EMPLOYEE = 625 GPD.
- 2) FURNISH, INSTALL, TEST, AND STARTUP LOW PRESSURE SANITARY SEWER PIPING AND DUPLEX GRINDER PUMP STATION IN ACCORDANCE WITH BOLTON LAKE REGIONAL WATER POLLUTION CONTROL AUTHORITY'S CONSTRUCTION STANDARDS FOR SANITARY SEWERS, ADOPTED JULY 25, 2002, AND MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- 3) FURNISH AND INSTALL E-ONE MODEL IDHSE-93 DUPLEX GRINDER PUMP STATION WITH APPURTENANCES. 600-GALLON CAPACITY COMBINATION PUMPS WITH TWO COMBINATOR CHECK VALVE/ SHUTOFF VALVE, ANTI-SIPHON VALVE, 93-INCH TALL POLYETHYLENE TANK, VELL VENT AND ACCESS WAY VENT, GASKETED LID, CONTROLS, AND ALARM BELL. THIS IS A VIBED MODEL W/EL-ELECTRA. DISCONNECTS WHERE A SUPPLY CABLE CONNECTS THE MOTOR CONTROLS TO THE LEVEL CONTROLS THROUGH WATER TIGHT PENETRATIONS. MOTOR IS 1 HP 240-VOLT. INSTALL TANK ON 8-INCH GRAVEL BEDDING, POUR A 20-INCH DEEP (APPROX. 1/4 CY) CONCRETE ANCHOR TO ENGAGE BALLAST CONTAINMENT KING, THEN BACKFILL AND COMPACT WITH CLEAN SOIL IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS.
- 4) INSTALL THE UL-LISTED DUPLEX GRINDER PUMPS, CONNECT SUPPLY PANEL TO NEMA 4X UL-LISTED A/V ALARM PANEL (E-LINE REMOTE SENTRY DISPLAY MODE WITH BATTERY B/U INSIDE BUILDING) IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS. INSTALL BURIED RIGID PVC WATER TIGHT ELECTRICAL CONDUIT.
- 5) FURNISH AND INSTALL A 4" SCH40 PVC SEWER PIPE FROM THE BUILDING TO THE PUMP CHAMBER. MAINTAIN A MINIMUM OF 2% DROP FOR GRAVITY FEED FROM OUTLET TO GRINDER PUMP INLET CONNECTION.
- 6) INSTALL 1-1/2" IN. HIGH DENSITY POLYETHYLENE ASTM D 3035 (160 PSI) FORCE MAIN PIPE, SERVICE CONNECTION, VALVE ACCESS BETWEEN THE GRINDER PUMP STATION AND THE SEWER IN THE STREET. COMBINATION CHECK VALVE/BRASS CURB STOP AND C.I. CURB STOP BOX BORED, WHEELS, OR COW CURB STOP BOX CONNECTION. INSTALL FORCE MAIN WITH MINIMUM 4.5 FT. OF GROUND COVER TO EXISTING STUB INTO PROPERTY NEAR BOSTON TURNPIKE. ROUTING SHOWING ON PLAN IS APPROXIMATE. MAINTAIN A MINIMUM 2% SLOPE. THE FORCE MAIN DOES NOT AVOID THE BURIED ELECTRICAL SERVICE AND PROPERTY LINE SETBACKS. COORDINATE INSPECTIONS AND TIE-IN WITH BOLTON LAKE REGIONAL WATER POLLUTION CONTROL AUTHORITY.
- 7) PROVIDE A 2-YEAR WARRANTY FOR THE SANITARY SEWER PUMP STATION AND PIPING FROM DATE OF ACCEPTANCE. PROVIDE OPERATION AND MAINTENANCE MANUALS AND OWNER TRAINING.
- 8) PROVIDE AND INSTALL DETECTABLE WARNING TAPE OVER FORCE MAIN (2.5 FT. ABOVE PIPE AND 2 FT. BELOW FINISHED GRADE) AND MARK TERMINAL END WITH DETECTABLE REINFORCING STEEL ROD AT GRADE 3 INCHES BELOW GRADE.

MAP REFERENCES:

- 1) PLAN PREPARED FOR LAN HOLDING, LLC NO. 837 BOSTON TURNPIKE U.S. ROUTE 44 & HOWARD ROAD BOLTON, CT. PROPERTY SURVEY SCALE: 1"=100' DATE: 8/17/99 FILE NO. 99010 SHEET 1 OF 1 HOLMES & HENRY ASSOCIATES LLC CONSULTING ENGINEERS LAND SURVEYORS LAND PLANNERS 2179 BOSTON TURNPIKE COVENTRY, CT. 06238 (860) 742-0340 REVISED TO 5/16/2000
- 2) PLAN PREPARED FOR LAN HOLDING, LLC U.S. ROUTE 44 & HOWARD ROAD BOLTON, CT. SITE PLAN SCALE: 1"=20' DATE: 9/14/99 FILE NO. 99010 SHEET 2 OF 2 HOLMES & HENRY ASSOCIATES LLC CONSULTING ENGINEERS LAND SURVEYORS LAND PLANNERS 2179 BOSTON TURNPIKE COVENTRY, CT. 06238 (860) 742-0340 REVISED TO 11/2/00 SEPTIC SYSTEM AS-BUILT
- 3) PLAN PREPARED FOR HOWARD ROAD REALTY, LLC, 837 BOSTON TURNPIKE, BOLTON, CT. PLAN SCALE: 1"=30' DATE: 11/07/2018 FILE NO. 2017-77, SHEET 1 OF 2 BUSHNELL ASSOCIATES LLC CIVIL ENGINEERING AND LAND SURVEYING, 563 WOODBRIDGE STREET, MANCHESTER, CT. (860) 643-7875. REVISED TO 2/04/2020

PARKING:

- 1) THERE EXISTS A TOTAL OF 99 SPACES, INCLUDING 3 HANDICAP SPACES. PROPOSED PARKING WILL BE INCREASED TO A TOTAL OF 100 SPACES, INCLUDING 3 HANDICAP SPACES. MAXIMUM ALLOWABLE SPACES EQUALS 5 PER 1000 SF FOR OFFICE AND 2 PER 1000 SF FOR MANUFACTURING. OFFICE SPACE EQUALS 5,625 SF, OR 28 PARKING SPACES. MANUFACTURING WITH THE NEW BUILDING, COULD BE 10,000 SF, OR 10 PARKING SPACES. FOR A TOTAL OF 98 PARKING SPACES. THE OWNER IS SEEKING APPROVAL FOR 100 PARKING SPACES.

ZONE COMPLIANCE TABLE:

LAND USE: LIGHT MANUFACTURING	REQUIRED	PROPOSED
ZONING DISTRICT: GENERAL BUSINESS		
MAXIMUM STORIES	3	3
MAXIMUM HEIGHT	40 FEET	440 FEET
TOTAL BUILDING AREA (ALL BLDGS.)		40,625 SQ. FT.
MAXIMUM LOT COVERAGE (ALL BLDGS.)	25%	
TOTAL IMPERVIOUS AREA (ENTIRE SITE)		101,576 SQ. FT.
MAX. IMPERVIOUS COVERAGE	65%	58%
MINIMUM LOT AREA	40,000 SQ. FT.	1,738,881 SQ. FT.
MINIMUM LOT FRONTAGE	200 FEET	642.77 FEET
MINIMUM FRONT YARD	35 FEET	35 FEET
MINIMUM SIDE YARD	25 FEET	25 FEET
MINIMUM REAR YARD	25 FEET	25 FEET
PARKING SPACES	98 MAX/46 MIN.	100
2 MAX/1 MIN PER 1000 SQ. FT. GROSS FLOOR AREA MANUFACTURING (35,000 SQ. FT.) 1 SHIFT		
5 MAX/2 MIN PER 1000 SQ. FT. GROSS FLOOR AREA GENERAL OFFICE (5,625 SQ. FT.)		

STORM DRAINAGE NOTES:

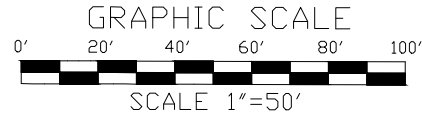
- 1) FOR THE 1-ACRE LAWN/WOODED DRAINAGE AREA IN THE NORTHEAST CORNER OF THE PROPERTY, THE EXISTING STORM FLOW IS CAPTURED BY YARD DRAINS AND IS DIRECTED TO THE EXISTING DETENTION BASIN. THERE IS NO CHANGE TO THIS FLOW DUE TO THE BUILDING SITE DEVELOPMENT. A 25-FT. DIA. RIP-RAP ENERGY DISSIPATOR AND NEW CL TYPE CATCH BASIN WILL INTERCEPT THE FLOW SO THAT IT DOES NOT GET TRAPPED IN THE LOW POINT AT THE PROPOSED CONNECTOR TO THE NEW BUILDING. CAPACITY OF PIPE FROM PLUNGE POOL B IN PVC PIPE, LENGTH=45FT., DROP=0.49FT. VELOCITY=5.98FPS, FLOW=209CFS. THE PEAK DISCHARGE OF A 100-YEAR STORM IN THIS 1-ACRE AREA IS 1.93 CFS.
- 2) IN ADDITION, TO ENSURE THERE IS NO CHANGE OF FLOODING IN THIS CORNER, A 275'-FT. LONG 15-INCH BELLEY X GASKETED SPIGOT HDPE 11-12 OVERFLOW DRAIN BE INSTALLED THROUGH THE BUILDING FOUNDATION FROM THE CL CATCH BASIN TO A FLARED-END SECTION DOWNSTREAM THAT FLOWS INTO TO A GRASSED SWALE. TO THE SOUTH NO FLOODING INTERFERING. ALSO INSTALL A GRASSED SWALE FROM THE NEW BUILDING TO PROVIDE DRAINAGE AWAY FROM THE BUILDING. REGRADE WITHIN THE CLEARANCE LIMITS AS SHOWN ON THIS SITE PLAN.
- 3) THE NEW BUILDING'S ROOF DOWNSPOUTS SHALL DRAIN INTO A BURIED 6-INCH TO 8-INCH SCH40 PVC PIPE THAT RUNS AROUND THE PERIMETER OF THE BUILDING, SLOPING DOWN AND TIED INTO THE 15" HDPE PIPE WITH ADS INSERTA TEE. LATERAL CONNECTIONS WHERE SHOWN SO THAT THE NEW ROOF DRAINAGE RUNS INTO THE SWALE TO THE NEW DETENTION BASIN.
- 4) FOOTING DRAIN SHALL CONSIST OF A PERFORATED 6-INCH HDPE ENVELOPED WITH CRUSHED STONE AND FILTER FABRIC, PLACED ON TOP OF THE FOOTING AROUND THE PERIMETER OF THE BUILDING, AND TIED-IN TO THE TWO (2) EXISTING CATCH BASINS TO THE WEST.
- 5) SEE STORMWATER MANAGEMENT REPORT REV. 4 DATED SEPTEMBER 6, 2022 FOR DRAINAGE CALCULATIONS FOR THE NEW BUILDING, PARKING AREA, AND OVERLAND FLOW TO THE NEW DETENTION BASIN WITH OUTLET STRUCTURE.
- 6) FOR A 100-YEAR STORM, 24 HR DURATION, THE CAPACITY OF THE DETENTION BASIN NEEDS TO BE 7,044 CF. THE NEW DETENTION BASIN PROVIDES 7,745 CF OF STORAGE VOLUME PLUS 1 FOOT OF FREEBOARD. TOTAL CAPACITY PROVIDED = 11,676 CF. TOP OF THE OUTLET STRUCTURE SHALL BE INSTALLED AT ELEVATION 644.80, WITH A 6-10 40" DIA. INLET ORIFICES AS SHOWN IN THE DETAIL, AND RIP-RAP AT THE END OF THE OUTLET PIPE TO PREVENT SCOURING. INSTILL CONTINUOUS 3-FT. HIGH 20-FT. WIDE TRAPEZOIDAL SHEAR KEY FROM ELEVATION 639.00 TO ELEVATION 642.00 AROUND THE DETENTION POND. RIP-RAP WHERE SHOWN.
- 7) POND BERM EMBANKMENT SHALL BE CONSTRUCTED IN 6-INCH LIFTS COMPACTED TO AT LEAST 95% OF MAXIMUM DRY DENSITY, WITHIN 2% OF THE OPTIMUM MOISTURE CONTENT. MODIFIED PROCTOR METHOD ASTM D1557. SOIL USED SHALL BE A MINIMUM OF 20% SILT AND CLAY, A MAXIMUM OF 60% SAND, AND A MAXIMUM OF 60% SILT AND CLAY. LAID Boulders SHALL BE USED FOR EROSION CONTROL ON THE BOTTOM EXTERIOR SLOPES OF THE EMBANKMENT.
- 8) WATER QUALITY VOLUME IS 2,296 CF, WHICH IS AT ELEVATION 641.80 IN THE DETENTION BASIN.
- 9) INSTALL A CAPE CODE ASPHALT BERM ALONG THE WEST EDGE OF THE NEW PARKING LOT TO DIRECT DRAINAGE TO THE DETENTION BASIN.

E&S LEGEND

SYMBOL	KEY	DESCRIPTION
[Pattern]	ES	CONSTRUCTION ENTRANCE
[Pattern]	EP	GEOTECHNICAL SALT FENCE
[Pattern]	EP	INLET PROTECTION
[Pattern]	ET	TEMPORARY TOPSOIL STOCKPILE SURROUNDED WITH SALT FENCE
[Pattern]	ER	MODIFIED RIP-RAP

BOLTON PLANNING AND ZONING COMMISSION, BOLTON, CT

DATE APPROVED	DATE OF EXPIRATION
CHAIRMAN	



DATE	ISSUE
6-02-2022	SPECIAL PERMIT APP.
6-13-2022	PROGRESS DRAWING
6-22-2022	EXISTING CONTOURS
6-27-2022	BUILDING FOOTPRINT, GRADING & NOTES
7-13-2022	DRAINAGE REVISIONS
8-04-2022	TEST HOLE DATA, GRADING
8-08-2022	DETENTION BASIN REVISION
8-09-2022	ADD GUARDRAIL, NOTES
9-06-2022	DRAINAGE & DET. BASIN
9-09-2022	ROTATE EMERG. OVERFLOW ADD SCOUR HOLE



PDS ENGINEERING & CONSTRUCTION, INC.

107 Old Windsor Road  
Bloomfield, Connecticut 06002  
Telephone: (860) 242-8586  
FAX (860) 242-8587

OWNER :  
HOWARD ROAD REALTY, LLC.  
25 HOWARD ROAD  
PO BOX 9127  
BOLTON, CONNECTICUT 06043

APPLICANT :  
ABLE COIL AND ELECTRONICS CO.  
25 HOWARD ROAD  
PO BOX 9127  
BOLTON, CONNECTICUT 06043

ABLE COIL & ELECTRONICS

837 BOSTON TURNPIKE  
BOLTON, CONNECTICUT

DRAWING TITLE:

PROPOSED SITE PLAN

PROJECT NAME:

SEAL

ENGINEER: FB  
SCALE: 1" = 50'  
PROJECT MGR:  
DRAFTED BY: BF

C-1

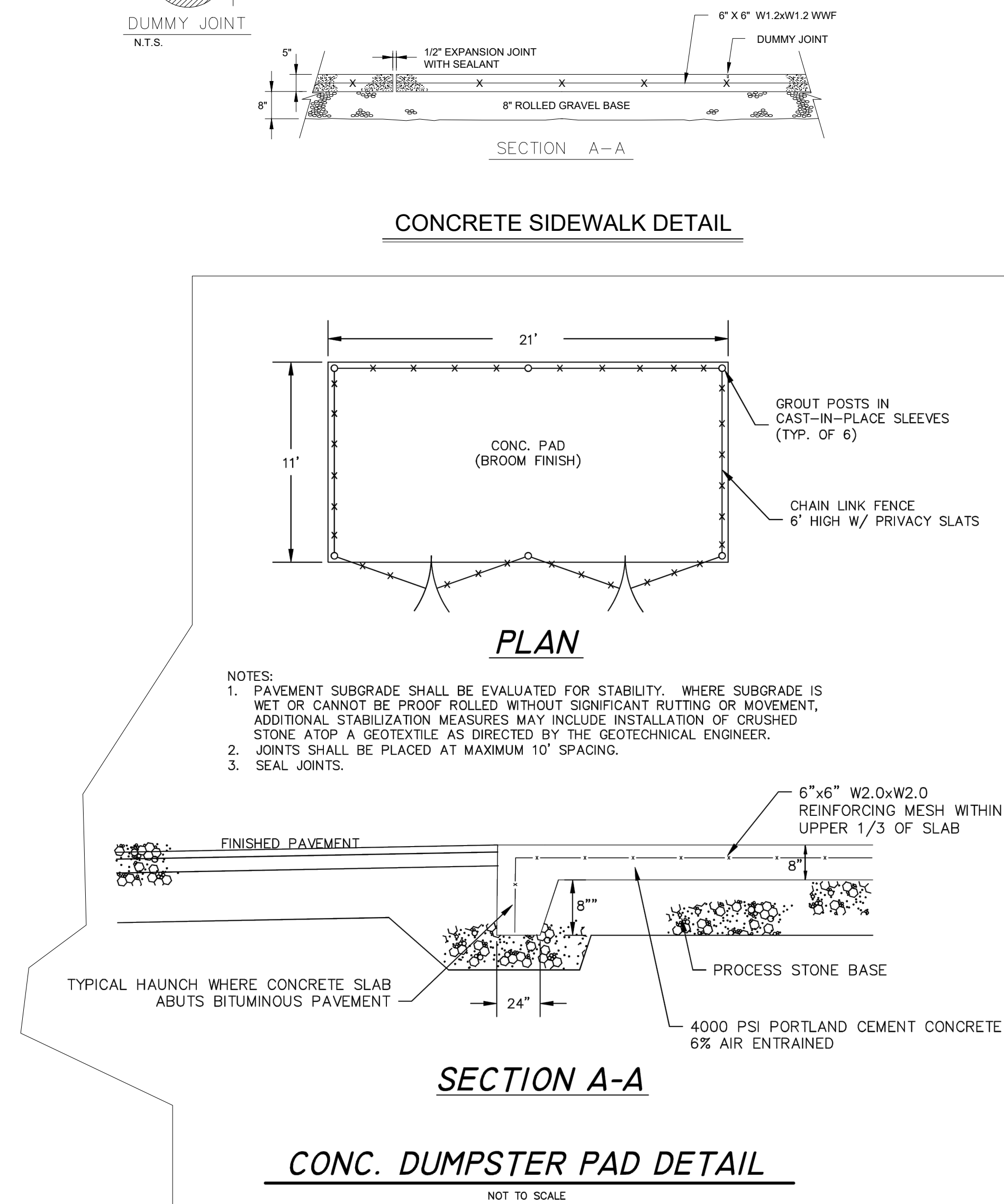
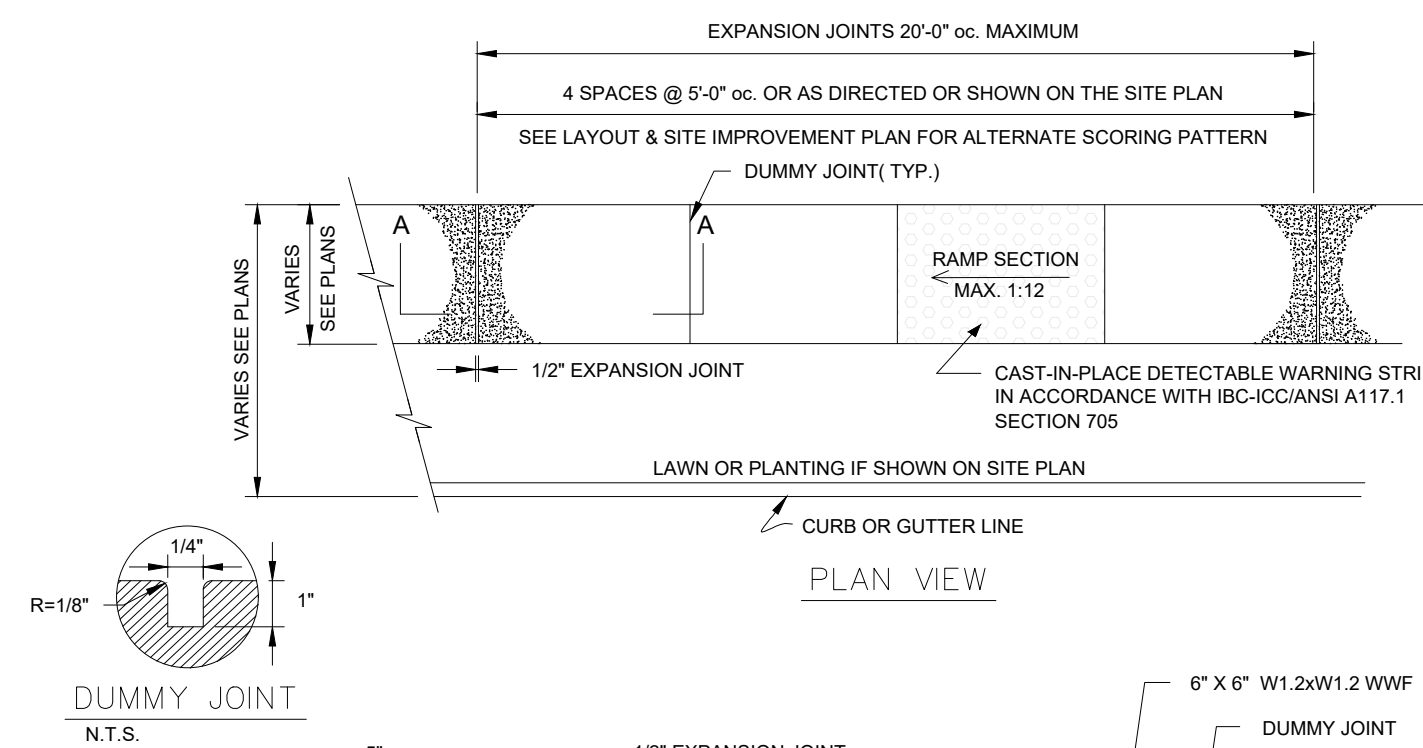
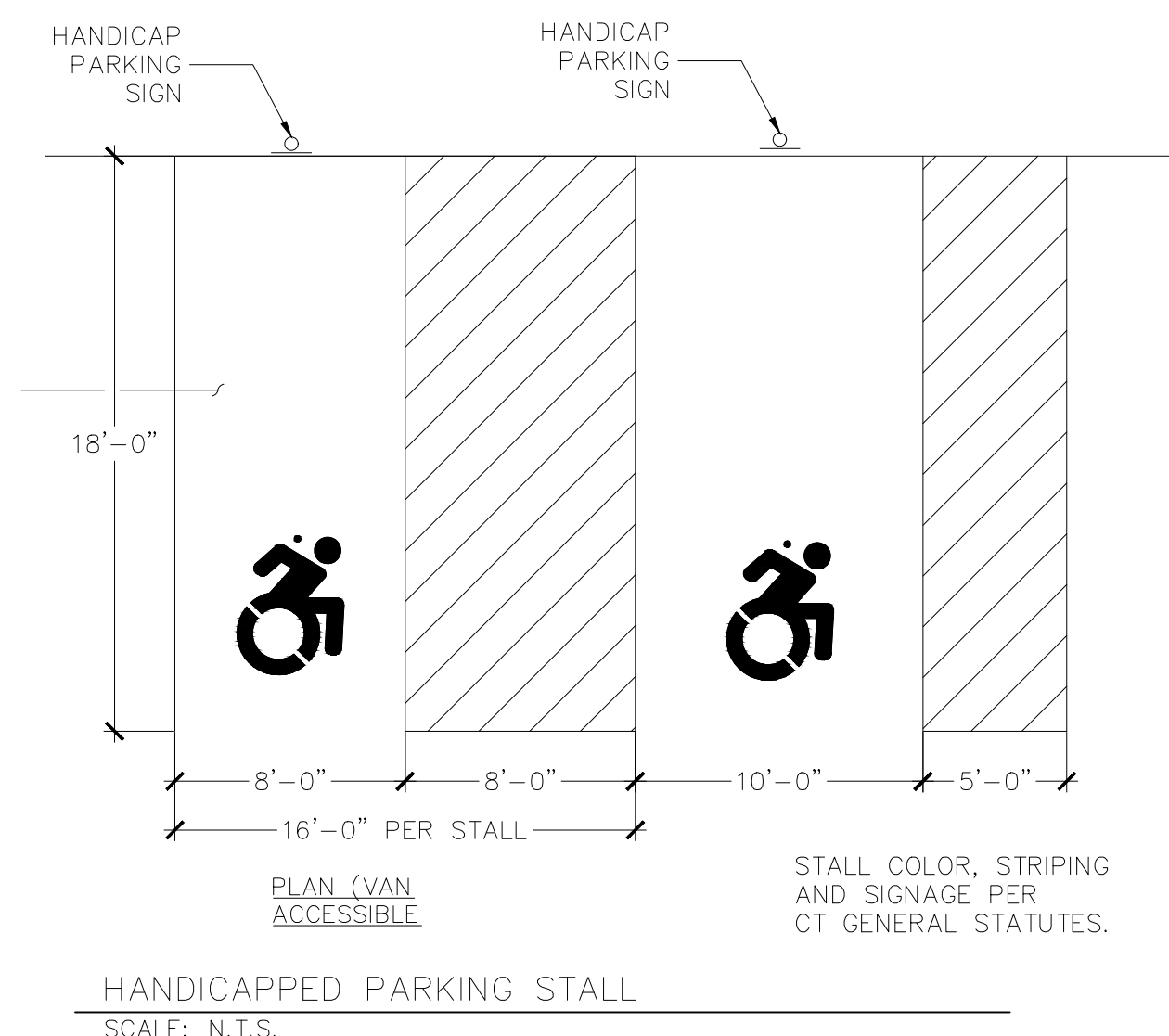
THIS SITE PLAN IS NOT VALID UNLESS IT BEARS THE SEAL OF THE LICENSED CIVIL ENGINEER WHOSE REGISTRATION NUMBER AND SIGNATURE APPEAR ABOVE.

RANDALL J. BECKER, P.E. 20603







[illegible]









PDS ENGINEERING &  
CONSTRUCTION, INC

Revised September 6, 2022

# Stormwater Management Report

**Able Coil & Electronics, Inc.**

## **15,000 Sq. Ft. Light Manufacturing Building Addition**

**By: Randy J. Becker, P.E.**  
PDS Engineering & Construction, Inc.  
107 Old Windsor Road  
Bloomfield, CT 06002  
(860) 242-8586

### **1. Applicant/Site Information**

**Howard Road Realty, LLC / Able Coil & Electronics, Inc.**

**837 Boston Turnpike, Bolton, CT 06043**

**Ph. (860) 646-5686**

**Special Permit #PL-22-4**

### **2. Project Narrative**

Since 1969 Able Coil & Electronics has manufactured precision-wound coils, toroids, transformers, solenoids, cable and connector harnesses, and many other electrical assemblies. We're currently operating out of two facilities, 837 Boston Turnpike and 25 Howard Road. In an effort to increase operational efficiencies and reduce cost, we're proposing to build a new 15,000 sq-ft building behind our existing 20,000 sq-ft facility at 837 Boston Turnpike. When complete, we plan to move operations from 25 Howard Road to 837 Boston Turnpike. Manufacturing operations performed in the new building will be light industrial and typical for our business. This includes coil winding, electrical assembly, and mechanical assembly. The following operations will also be performed in the new building:

- Small fabrication and repair work center to support operations, repair, and maintenance needs.
  - 3D print room to support prototype and custom tooling requirements.
  - 2 small plastic injection molding machines to over mold coils.
  - Storage of spooled wire, slow moving inventory, and finished goods.
  - We estimate 25 employees will work in the new building. The buildings will be connected via a connector so we can share both technical and supervisory resources in a more efficient manner.
- 
- The property is not located in Flood Hazard Zone A per Flood Insurance Rate Map (FIRM) Community-Panel Number 09109 - 0001B effective date June 1, 1981.
  - Wetlands exist on the property but are not within 200 feet of the proposed site development.

- A relatively new 5,625 sq-ft office building and existing 20,000 sq-ft light manufacturing building lie to the north of the proposed building addition.
- An existing 38-space paved parking lot lies to the west of the proposed addition. The office building entrance has a smaller, 6-space paved parking lot.
- Mature woods surround the developed site on three sides (Boston Turnpike / Route 44 borders on the north). Maintained lawns and landscaping separates the woods from the buildings and parking lots. Some clearing is necessary (approx. 1 acre) to do the sitework and grading on this project.
- The terrain generally slopes down from northeast to southwest, with most of the northeastern corner stormwater flowing above elevation 658.00 captured in a series of yard drains and directed to the existing detention basin, which was designed to handle all the overland flow from this sloping terrain, the existing building roofs and impervious paved surfaces. The new building roof shall drain to the new detention basin with connections to the new 15" HDPE gasketed storm pipe. Most of the stormwater in the wooded areas to the east and south of the new building flows to the south, bypassing the new detention basin.
- There is no change to the existing flow north of the new building due to the proposed site development. Even though the existing 8" storm drain system can handle the peak discharge of a 100-year storm, provisions for an emergency overflow pipe are planned at the new catch basin where the new building connects to the existing building in the event of a blockage by debris or ice/snow. This 15" diameter 275-ft long belled and gasketed spigot HDPE N-12 pipe will run under the new building at 2.5% slope and daylight into a grassed swale at elevation 658.14. The emergency flow would follow the grassed swale and eventually empty into the new detention basin on the south end of the proposed parking lot.
- Only about 1.7 acres will be disturbed of this 40-acre site. Total impervious area will increase to 5.8% with the addition of 13,467 sq-ft of pavement, including a new 36-space parking lot to the southwest of the new building, and by 15,000 sq-ft of roof area. This area shall drain to the new detention basin. Overland flow from east of the parking lot will not enter the new detention basin.
- Footing drains from the new building will connect to the existing stormwater drainage system. Roof drains from the new building will connect to the new stormwater system to the detention basin.
- Site soils as defined by USDA NRCS soil surveys consist of Type 73C Charlton-Chatfield complex, 3 -15% slopes, very rocky, gently sloping to very steep, well-drained and somewhat excessively drained (5 - 10 min./in.), gravelly, fine sandy loam soils on glacial till uplands. The soils in this map unit make up about 10 percent of the state. The landscape is predominantly upland hill and ridges landscapes. These gravelly, fine sandy loam soils formed in melt-out till. Stones and boulders are common above and below the surface in most places, and many areas have outcrops of bedrock. Depth to seasonal water table is greater than 6 feet. Charlton soils make up about 45 percent of this map unit. They are very deep, well drained, fine sandy loam soils with moderate or moderately rapid permeability in the substratum. Charlton soils are gently sloping to steep and are on hills. Chatfield soils make up about 30 percent of this map unit. They are moderately deep to bedrock, well drained, loamy soils with moderate or moderately rapid permeability in the substratum. Chatfield soils are gently sloping to steep and are on bedrock-controlled hills and ridges. Minor components make up about 25 percent of the map unit, including areas of moderately well-drained Sutton soils and poorly-drained Leicester soils. Sutton soils are in slight depressions in the landscape. Leicester soils are in depressions and drainageways. Also included are small areas of shallow, somewhat excessively drained Hollis soils where bedrock is 10 to 20 inches deep.
- Moderate depth to bedrock, buried rocks, rock outcrops, slope, frost action, and thin soil layer are major limiting factors of Chatfield soils. Large stones are a limitation of Charlton soils, although the depth to bedrock is very deep. Most areas of this map unit are in woodland and some areas are in community development. The soils of this map unit are suited to forestry and wildlife habitat. Stones and boulders need to be removed from above and below the surface in some areas. Ledge

is present on site and, if encountered while excavating, must be removed in an approved manner. The proposed building will be constructed into the slope with the finished floor 4 feet above the exterior front grade to accommodate a loading dock. See test hole data for more information.

- Stormwater discharges from this site may carry negligible amounts of pollutants such as oil, dirt, chemicals, and lawn fertilizers to streams and rivers, and will not seriously harm water quality. The calculated Water Quality Volume will be detained in the new detention basin to mitigate downstream channel impacts and to provide long-term, low-maintenance pollutant removal.
- To protect surface water quality and groundwater resources, the proposed development is designed to be built to minimize increases in runoff. The post-development drainage pattern closely matches the pre-development drainage pattern on this project. The main difference is the new pavement area and building area have an increased runoff coefficient as opposed to the existing lawn in these areas. Again, most of the overland flow from the wooded area to the east of the new parking lot will bypass the detention basin.
- This development does not adversely affect critical areas, buffers, and setbacks established by the local, state, and federal regulatory authorities.
- The DEEP Water Quality Classification Map for Bolton indicates an on-site groundwater classification of GA. Class GA designated uses are existing private and potential public or private supplies of water suitable for drinking without treatment and baseflow for hydraulically-connected surface water bodies. Surface waters which are not specifically classified (as in this case) shall be considered as Class A. Class A designated uses are habitat for fish and other aquatic life and wildlife; potential drinking water supplies; recreation; navigation; and water supply for industry and agriculture.
- None of the on-site or adjacent waterbodies to this property (i.e. Lower Bolton Lake, Bolton Pond Brook, Hop River) are included on the Connecticut 303(d) 2020 List of Impaired Waters for Connecticut (EPA Category 5).

#### **Potential stormwater impacts**

- Potential pollution sources – Erosive soils, moderately steep slopes, vehicle fueling, vehicle washing, stockpiling of materials, and hazardous chemicals – No vehicle fueling/washing, material stockpiling, or hazardous chemicals anticipated.
- Summary of calculated pre- and post-development peak flows
- Summary of calculated pre- and post-development groundwater recharge

#### **Critical on-site resources**

- Wells, aquifers – Existing onsite private well.
- Wetlands, streams, ponds – None within 200 feet of the development.
- Public drinking water supplies – None.

#### **Critical off-site (adjacent to or downstream of site) resources**

- Neighboring land uses – Residential, Commercial
- Wells, aquifers – Existing onsite private wells.
- Wetlands, streams, ponds – Lower Bolton Lake to the north (not in drainage area). Bolton Pond Brook to the east and Hop River to the south.
- Public drinking water supplies – None.

### **Proposed stormwater management practices**

- Source controls and pollution prevention – Pollution potential is very limited on this site since erosive soils and moderately steep slopes are stabilized with lawns, curbs, pavement, or walls, no fueling or vehicle washing is anticipated, no stockpiling is anticipated, and no hazardous chemicals will be used outdoors.
- Alternative site planning and design – Emergency overflow pipe is being installed.
- Stormwater treatment practices – Catch basin will have a sump for collecting sediment and debris, to be maintained by the Owner. Rip-rap surrounds the catch basin. The new detention basin collects stormwater from the added impervious area, allowing for settlement of solids and pollutant dissipation.
- Flood control and peak runoff attenuation management practices – Emergency overflow pipe is being installed in the new catch basin to prevent flooding at the lower inside of the northeast corner, where the buildings connect, if and when debris or snow/ice covers the 8" pipe in the catch basin. Grassed swales are provided from behind the new building and from the outfall of this pipe to the detention basin. There is a riprap berm to create a forebay in the bottom of the detention basin, and a riprap sump at the outlet structure, which promotes the collection of sediment prior to discharge through the outlet structure. The detention basin is oversized for the peak flow, plus 1-foot of freeboard, which discharges from the outlet structure at pre-development peak flow rates or less, and rip-rap energy dissipator at the outlet prevents scouring downslope.

### **Site plan (See Drawing C-1 for existing and proposed conditions)**

- Topography to determine drainage patterns, drainage boundaries, and flow paths
- Locations of stormwater discharges
- Perennial and intermittent streams, if any (none)
- USDA soil types
- Vegetation and proposed limits of clearing and disturbance
- Resource protection areas such as wetlands, lakes, ponds, and other setbacks (stream buffers, drinking water well setbacks, septic setbacks, etc.)
- Roads, buildings, parking lots, and other structures
- Utilities and easements
- Temporary and permanent conveyance systems (grass channels, swales, ditches, storm drains, etc.) including grades, dimensions, and direction of flow
- Location of floodplain and floodway limits and relationship of site to upstream and downstream properties and drainage systems (not in a flood hazard zone)
- Location, size, maintenance access, and limits of disturbance of proposed structural stormwater management practices
- Final landscaping for structural stormwater management practices and site revegetation
- Locations of non-structural stormwater management practices (i.e., source controls)
- Sitework notes, sanitary sewer pump station notes, map references, parking notes, zone compliance table, and storm drainage notes.

### 3. Calculations

➤ **Drainage Areas** (see highlighted maps)

Post-Development drainage area equals 40,724 Sq-Ft (0.93 Acre) consisting of:

13,467 Sq-Ft (0.31 Acre) of Additional Pavement,

15,000 Sq-Ft Building (0.34 Acre), and

12,257 Sq-Ft (0.28 Acre) of Lawn Area.

Pre-Development drainage area is 40,352 Sq-Ft (0.93 Acre) of Lawn Area.

➤ **Time of Concentration (Rational Method)**

Pre-Development:

Rational runoff coefficient,  $c = 0.25$

Watercourse slope,  $S = 0.0704 \text{ ft/ft}$

Longest flow length,  $L = 625 \text{ feet}$

Time of concentration,  $t = 19.95755 \text{ minutes} \approx 20 \text{ min.}$

Velocity,  $V = 0.52194116 \text{ ft/s}$

Post-Development:

Rational runoff coefficient,  $c = 0.77$

Watercourse slope,  $S = 0.0666 \text{ ft/ft}$

Longest flow length,  $L = 630 \text{ feet}$

Time of concentration,  $t = 7.9243803 \approx 7.9 \text{ min.}$

Velocity,  $V = 1.3250247 \text{ ft/s}$

Pre-Development drainage area is 40,352 Sq-Ft (0.93 Acre) of Lawn Area.

➤ **Pollutant Reduction – Post-Development**

- **Calculate Water Quality Volume (WQV)** = the volume of runoff (in acre-ft) generated by 1" of rainfall on the site; the amount that should be captured & treated in order to remove pollutants.

$$WQV = (1'')(R)(A)/12 \quad A = \text{area} = 40,724/43,560 = 0.93 \text{ Acre}$$

$R = \text{volumetric runoff coefficient} = 0.05 + 0.009 (I)$ , where  $I = \% \text{ Impervious cover}$



$$I = 28,467/40,724 = 70\%$$

$$R = 0.05 + 0.009(I) = 0.05 + 0.009(70) = 0.68$$

**Water Quality Volume, WQV** =  $(1)(0.68)(0.93)/12 = 0.0527$  Ac-ft = **2,296 cu ft** stormwater to be treated with post-construction BMP's

➤ **Calculate Pre- and Post-Development Flow and Detention Basin Size (SCS Method)**

Hydraflow Hydrographs v9.22 software was utilized to calculate and prepare Pre-Development, Post-Development, and Detention hydrographs and reports, and the detention pond size as well as the outlet structure culvert/orifice information for this project. The SCS method was determined to be a more conservative approach than the Rational method. The latest revision of the detention basin design includes an outlet structure with two (2) orifices for a 2-inch and an 8-inch pipe plus the top grate. The depth and volume of the detention basin have decreased due to this outlet structure, however, the area has increased due to the very moderate 4:1 slopes inside the basin. The steeper exterior slopes shall be stabilized with polypropylene turf reinforcement mats.

The attached Hydraflow Hydrographs Report provides the following information:

- Hydrograph Return Period Recap	Page 1
- Hydrograph Report for 1-Year Storm	Pages 2 – 5
- Detention Pond Report	Page 6
- Hydrograph Report for 2-Year Storm	Pages 7 – 10
- Hydrograph Report for 5-Year Storm	Pages 11 – 14
- Hydrograph Report for 10-Year Storm	Pages 15 – 18
- Hydrograph Report for 25-Year Storm	Pages 19 – 22
- Hydrograph Report for 50-Year Storm	Pages 23 – 26
- Hydrograph Report for 100-Year Storm	Pages 27 – 30

Stormwater peak discharge following development on this site cannot exceed the runoff peak discharge prior to development. Detention basin storage is being incorporated into this development to reduce the peak stormwater runoff discharge for the 1-year through 100-year events. Prior to development, the calculated peak runoff from a 100-year storm is 3.143 cfs. Post-development, due to the increased surface coefficient, the calculated peak runoff is 5.845 cfs. Enough detention storage must be incorporated to reduce the predicted stormwater runoff peak discharge to the pre-development flow of 3.143 cfs or less. This detention basin design with outlet structure reduces the 100-year pre-development discharge flow by 0.3% to 2.237cfs. (See Pg. 1 of the Hydrograph Report).

PEAK OUTFLOW (cfs)							
DESCRIPTION	1-Yr	2-Yr	5-Yr	10-Yr	25-Yr	50-Yr	100-Yr
PRE-DEVELOPMENT	0.264	0.502	0.974	1.416	2.069	2.573	3.143
POST-DEVELOPMENT	1.345	1.848	2.693	3.396	4.361	5.069	5.845
DETENTION DISCHARGE	0.163	0.206	0.793	1.275	1.742	1.993	2.237
Δ (%)	-0.10 (-0.4%)	-0.296 (-0.6%)	-0.181 (-0.2%)	-0.141 (-0.1%)	-0.327 (-0.2%)	-0.580 (-0.3%)	-0.906 (-0.3%)

Page 6 of the Hydrograph Report is the "Pond Report" uses user-defined contour areas (from the Site Plan) and average end area method to determine the detention basin volume calculation. This data is summarized in the table below:

DETENTION BASIN SIZING (CF)			
ELEVATION	AREA (SF)	VOLUME (CF)	CUMULATIVE (CF)
645	4,432	3,931	11,676
644	3,430	2,973	7,745
643	2,516	2,128	4,772
642	1,740	1,417	2,644
641	1,094	837	1,227
640	580	390	390
639	200		

The detention basin has been designed with a 4:1 interior slope and a 2:1 exterior slope. These slopes will be seeded and stabilized as specified. There is a 2-foot high rip-rap berm across the middle of the bottom to create a forebay for settlement of solids. The outlet structure consists of a heavy duty precast CTDOT Type CL Double Grate Type II catch basin with a sump, riser sections, corbel, top, grate, and trash rack. The Pond Report indicates a 2-inch orifice/pipe tee at Elevation 639.00 (the bottom of the detention basin), which can be accessed by providing a 1-foot deep rip-rapped sump at the base of the outlet structure. A second orifice is an 8-inch pipe tee located at Elevation 642.00. The grate at the top of the outlet structure is at Elevation 644.00. A modified rip-rap emergency spillway overflow is also at Elevation 644.00. There is a foot of freeboard at the top of the detention basin to Elevation 645.00. The outlet pipe is a 28-foot long 15-inch gasketed HDPE N-12 at 3.5% slope from the outlet structure to the rip-rap energy dissipator which runs downslope to Elevation 628.00 or so.

The detention pond requires grooved concrete waste blocks stacked 3-high at either side of the outlet structure to retain the slopes so that the orifices can be utilized. The proposed 15" HDPE outlet pipe has an anti-seepage collar in the berm embankment.

Pond berm embankments must be constructed on native consolidated soil (or adequately compacted and stable fill soils) free of loose surface soil materials, roots, and other organic debris. The minimum top width shall be 8 feet. Pond berm embankments on this project are greater than 4 feet in height and must be constructed by first excavating a trapezoidal shear key equal to 50% of the berm embankment cross-sectional height and width. The cross section of the berm is approximately 6 feet high x 40 feet wide. The trapezoidal shear key shall be excavated approximately 3 feet high x 20 feet wide (see detail). The shear key shall be located along the centerline of the berm all around the pond.

The pond berm embankment shall be constructed of soil placed in 6-inch lifts compacted to at least 95% of maximum dry density, within 2 percentage points of the optimum moisture content, modified proctor method ASTM D1557. Density tests shall be performed for each lift to confirm compliance with this specification. The soil used for construction shall have the following soil characteristics: a minimum of 20% silt and clay, a maximum of 60% sand, a maximum of 60% silt and clay, with nominal gravel and cobble content. Large boulders, if desired, may be used for erosion control on the bottom of exterior slopes of the embankment.

Drainage Area = 0.93 Acre

Pre-Development Time of concentration,  $t = 19.95755$  minutes  $\approx 20$  min.

Post-Development Time of concentration,  $t = 7.9243803 \approx 7.9$  min.

Time Interval = 2 min.

Storm Duration = 24 hours

Distribution = Type III

SCS HYDROGRAPH SUMMARY									
STORM FREQ.	TOTAL PRECIP (IN.)	PRE-D PEAK DISCH (cfs)	PRE-D HYD VOL (CF)	POST-D PEAK DISCH. (cfs)	POST-D HYD VOL (CF)	DETEN PEAK DISCH (cfs)	DETEN HYD VOL (CF)	MAX. ELEV.	STORAGE USED (CF)
1-YR	2.56	0.264	1,514	1.345	4,596	0.163	4,593	641.48	1,908
2-YR	3.15	0.502	2,537	1.848	6,315	0.206	6,313	642.07	2,789
5-YR	4.12	0.974	4,542	2.693	9,273	0.793	9,271	642.46	3,626
10-YR	4.92	1.416	6,412	3.396	11,789	1.275	11,786	642.74	4,226
25-YR	6.02	2.069	9,210	4.361	15,314	1.742	15,312	643.16	5,257
50-YR	6.83	2.573	11,394	5.069	17,943	1.993	17,941	643.45	6,103
<b>100-YR</b>	<b>7.72</b>	3.143	13,884	5.845	20,854	2.237	20,851	<b>643.76</b>	<b>7,044</b>

#### **CONCLUSION:**

Detention Basin Capacity required = 7,044 cu ft. to Elevation 643.76

Detention Basin Capacity provided = 7,745 cu ft. to Elevation 644.00, plus 1-foot of freeboard to Elevation 645.00. Capacity to Elevation 645.00 = 11,676 cu ft

Water Quality Volume = 2,296 cu ft. = Capacity to Elevation 640.80

#### **4. Design Drawings and Specifications**

- ✓ Recommended size (no larger than 24" x 36" and no smaller than 8-1/2" x 11")
- ✓ Recommended scale (maximum scale of 1" = 40', larger scales up to 1" = 100' may be used to represent overall site development plans or for conceptual plans)
- ✓ Design details (cross-sections, elevation views, and profiles as necessary)
- ✓ Specifications
- ✓ Construction materials
- ✓ Reference to applicable material and construction standards
- ✓ Title block

- ✓ Legend
- ✓ North arrow
- ✓ Property boundary of subject property (including parcels, or portions thereof, of abutting land and roadways within one hundred feet of the property boundary)
- ✓ Site locus map (recommended scale 1" = 1,000') with a north arrow
- ✓ Seals of a licensed professionals (original design plans, calculations, and reports)
- ✓ Survey plan prepared according to the *Minimum Standards for Surveys and Maps in Connecticut*
- ✓ The class of survey represented on the plan
- ✓ Stamped by a professional land surveyor
- ✓ Depict topography at contour intervals of two feet
- ✓ The referenced or assumed elevation datum
- ✓ Two (2) benchmarks on the site within one hundred feet of the proposed construction
- ✓ Outside limits of disturbances
- ✓ Plan references

## **5. Construction Erosion and Sediment Controls**

- ✓ Erosion and sediment control plan that complies with the requirements of the 2002 Connecticut *Guidelines for Soil Erosion and Sediment Control, DEP Bulletin 34*.

## **6. Supporting Documents and Studies**

- ✓ Provide other sources of information used in the design of construction and post-construction stormwater controls for the site development, as applicable.
- ✓ Hydrograph Report, 30 pages.
- ✓ Cross Section of Detention Basin and Outlet Structure, 2 pages.
- ✓ Drawing of CTDOT Type CL Double Grate Type II Catch Basin Components Over 10' from United Concrete Products Inc, 1 page.
- ✓ Pre-Development and Post-Development Drainage Area Maps, Time of Concentration Calculator Worksheets, 4 pages.
- ✓ NOAA Point Precipitation Frequency Estimates (in inches) for Bolton, CT, 4 pages.
- ✓ NOAA Point Precipitation Frequency Estimates (in inches/hour) for Bolton, CT, 2 pages.
- ✓ Rainfall Intensity Spreadsheets for 1-, 2-, 10-, 50-, and 100-Year Storms, Bolton, CT, 5 pages.

END OF REPORT



# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.22

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.264	2	740	1,514	----	-----	-----	PRE DEVELOPMENT
2	SCS Runoff	1.345	2	726	4,596	----	-----	-----	POST DEVELOPMENT
3	Reservoir	0.163	2	776	4,593	2	641.48	1,908	DETENTION
BECKER.gpw					Return Period: 1 Year			Friday, Sep 2, 2022	

# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22

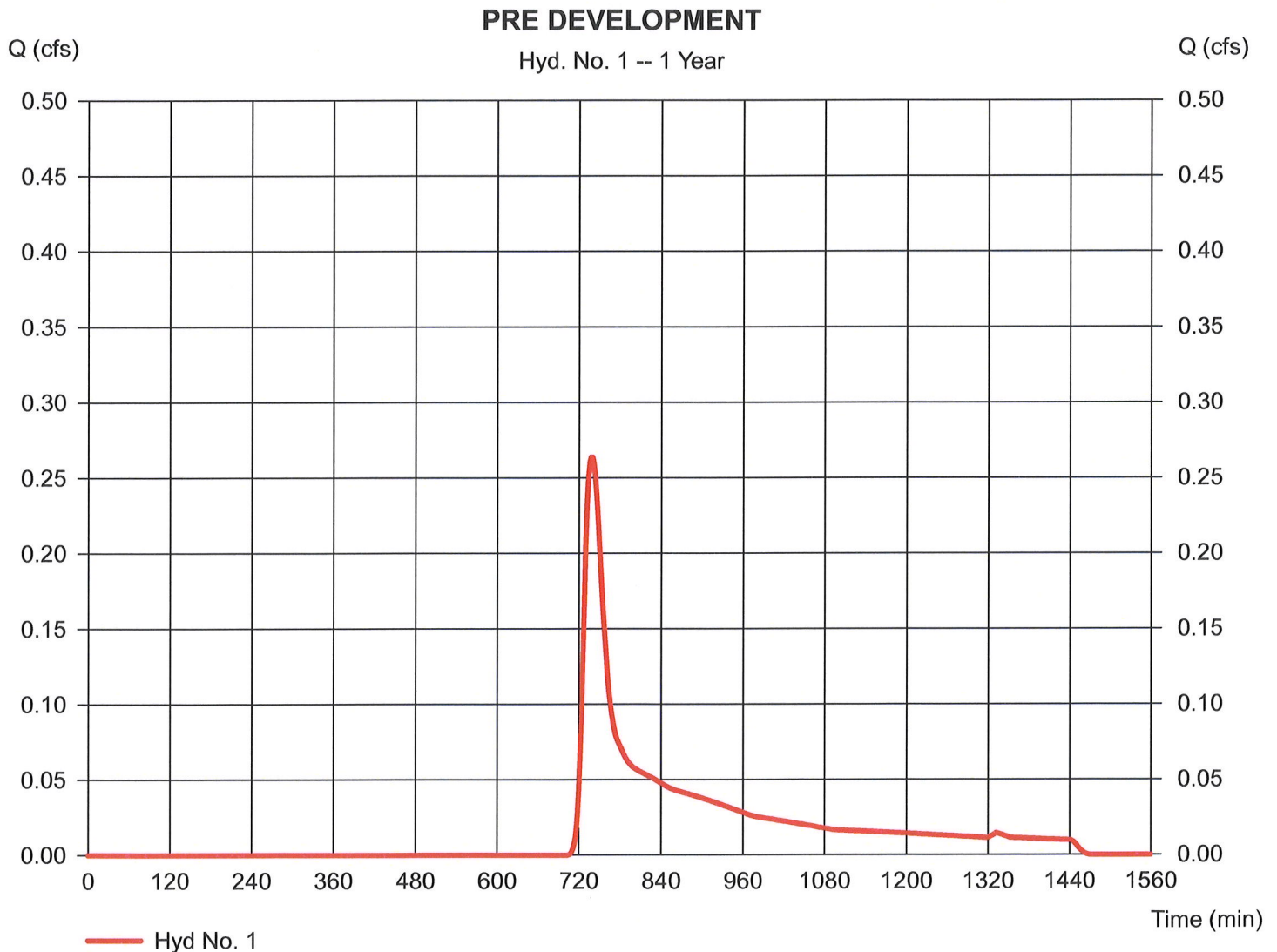
Friday, Sep 2, 2022

## Hyd. No. 1

### PRE DEVELOPMENT

Hydrograph type = SCS Runoff  
 Storm frequency = 1 yrs  
 Time interval = 2 min  
 Drainage area = 0.930 ac  
 Basin Slope = 0.0 %  
 Tc method = USER  
 Total precip. = 2.56 in  
 Storm duration = 24 hrs

Peak discharge = 0.264 cfs  
 Time to peak = 740 min  
 Hyd. volume = 1,514 cuft  
 Curve number = 69  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 20.00 min  
 Distribution = Type III  
 Shape factor = 484





# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22

Friday, Sep 2, 2022

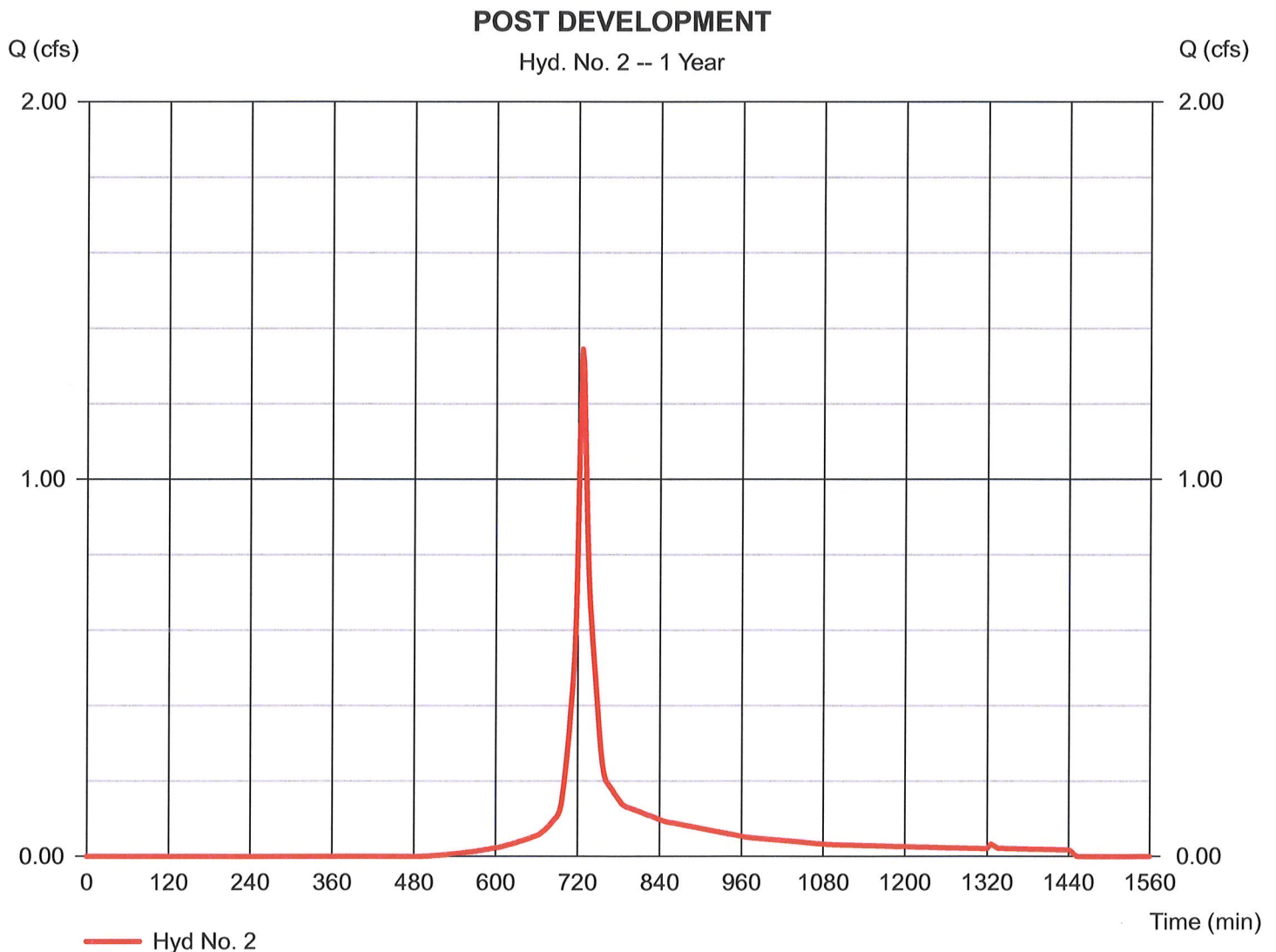
## Hyd. No. 2

### POST DEVELOPMENT

Hydrograph type = SCS Runoff  
 Storm frequency = 1 yrs  
 Time interval = 2 min  
 Drainage area = 0.930 ac  
 Basin Slope = 0.0 %  
 Tc method = USER  
 Total precip. = 2.56 in  
 Storm duration = 24 hrs

Peak discharge = 1.345 cfs  
 Time to peak = 726 min  
 Hyd. volume = 4,596 cuft  
 Curve number = 87\*  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 7.90 min  
 Distribution = Type III  
 Shape factor = 484

\* Composite (Area/CN) =  $[(0.650 \times 98) + (0.280 \times 69)] / 0.930$





# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22

Friday, Sep 2, 2022

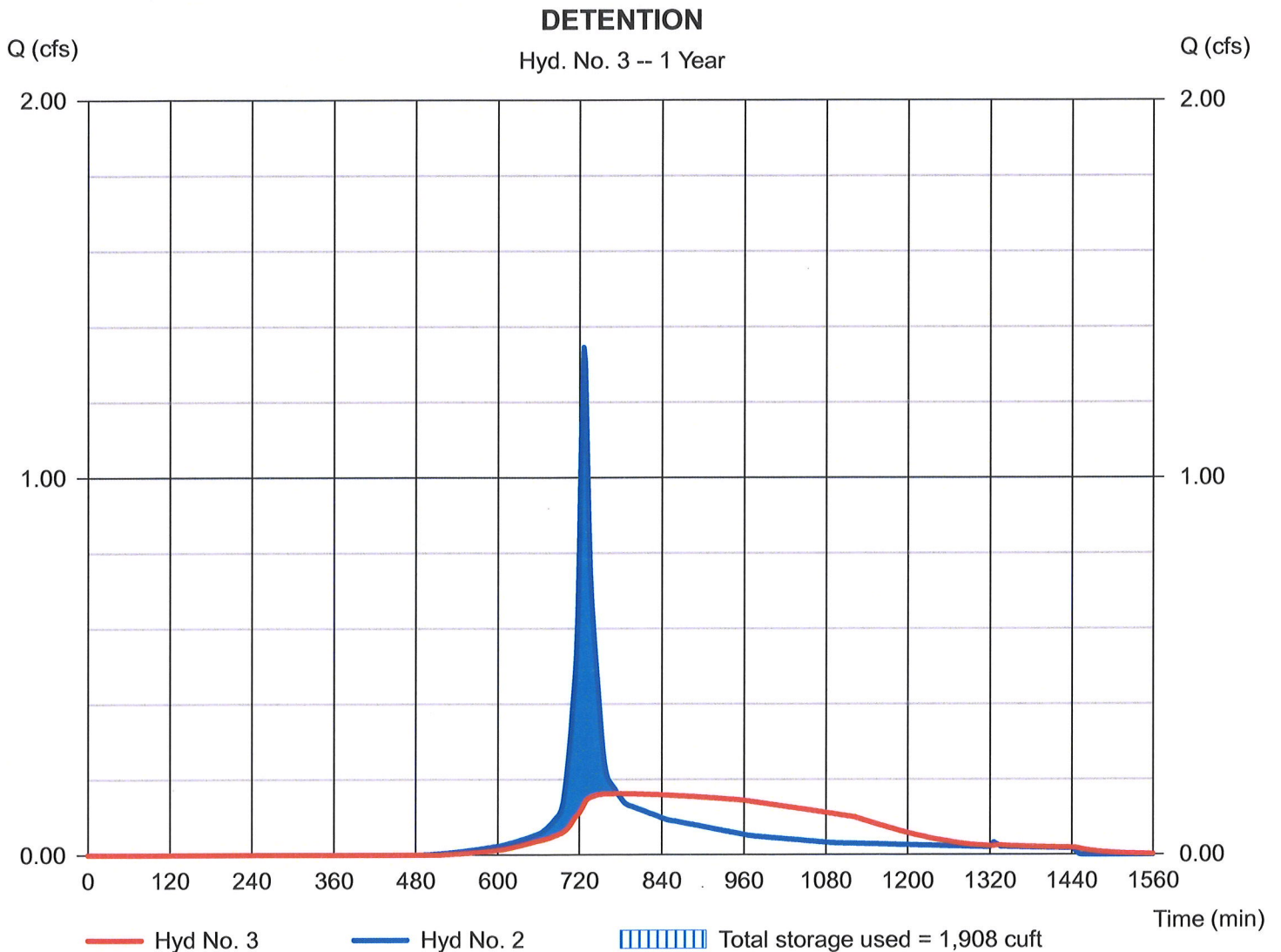
## Hyd. No. 3

### DETENTION

Hydrograph type = Reservoir  
 Storm frequency = 1 yrs  
 Time interval = 2 min  
 Inflow hyd. No. = 2 - POST DEVELOPMENT  
 Reservoir name = DETENTION

Peak discharge = 0.163 cfs  
 Time to peak = 776 min  
 Hyd. volume = 4,593 cuft  
 Max. Elevation = 641.48 ft  
 Max. Storage = 1,908 cuft

Storage Indication method used.



# Pond Report

6

Hydraflow Hydrographs by Intelisolve v9.22

Friday, Sep 2, 2022

## Pond No. 1 - DETENTION

### Pond Data

Contours - User-defined contour areas. Average end area method used for volume calculation. Beginning Elevation = 639.00 ft

### Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	639.00	200	0	0
1.00	640.00	580	390	390
2.00	641.00	1,094	837	1,227
3.00	642.00	1,740	1,417	2,644
4.00	643.00	2,516	2,128	4,772
5.00	644.00	3,430	2,973	7,745
6.00	645.00	4,432	3,931	11,676

### Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 15.00	2.00	8.00	0.00
Span (in)	= 15.00	2.00	8.00	0.00
No. Barrels	= 1	1	1	0
Invert El. (ft)	= 637.00	639.00	642.00	0.00
Length (ft)	= 28.00	0.00	0.00	0.00
Slope (%)	= 3.50	0.00	0.00	n/a
N-Value	= .012	.012	.012	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	Yes	Yes	No

### Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.00	2.00	Inactive	Inactive
Crest El. (ft)	= 644.00	644.00	0.00	0.00
Weir Coeff.	= 3.33	2.60	2.60	3.33
Weir Type	= Riser	Broad	Broad	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 0.000 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

### Stage / Storage / Discharge Table

Stage ft	Storage cuft	Elevation ft	Clv A cfs	Clv B cfs	Clv C cfs	PrfRsr cfs	Wr A cfs	Wr B cfs	Wr C cfs	Wr D cfs	Exfil cfs	User cfs	Total cfs
0.00	0	639.00	0.00	0.00	0.00	---	0.00	0.00	---	---	---	---	0.000
1.00	390	640.00	6.93 ic	0.10 ic	0.00	---	0.00	0.00	---	---	---	---	0.101
2.00	1,227	641.00	6.93 ic	0.15 ic	0.00	---	0.00	0.00	---	---	---	---	0.145
3.00	2,644	642.00	6.93 ic	0.18 ic	0.00	---	0.00	0.00	---	---	---	---	0.179
4.00	4,772	643.00	6.93 ic	0.21 ic	1.37 ic	---	0.00	0.00	---	---	---	---	1.580
5.00	7,745	644.00	6.93 ic	0.23 ic	2.17 ic	---	0.00	0.00	---	---	---	---	2.402
6.00	11,676	645.00	6.93 ic	0.26 ic	2.74 ic	---	1.34 ic	5.20	---	---	---	---	9.544

# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.22

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.502	2	736	2,537	----	-----	-----	PRE DEVELOPMENT
2	SCS Runoff	1.848	2	726	6,315	----	-----	-----	POST DEVELOPMENT
3	Reservoir	0.206	2	778	6,313	2	642.07	2,789	DETENTION
BECKER.gpw					Return Period: 2 Year			Friday, Sep 2, 2022	

# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22

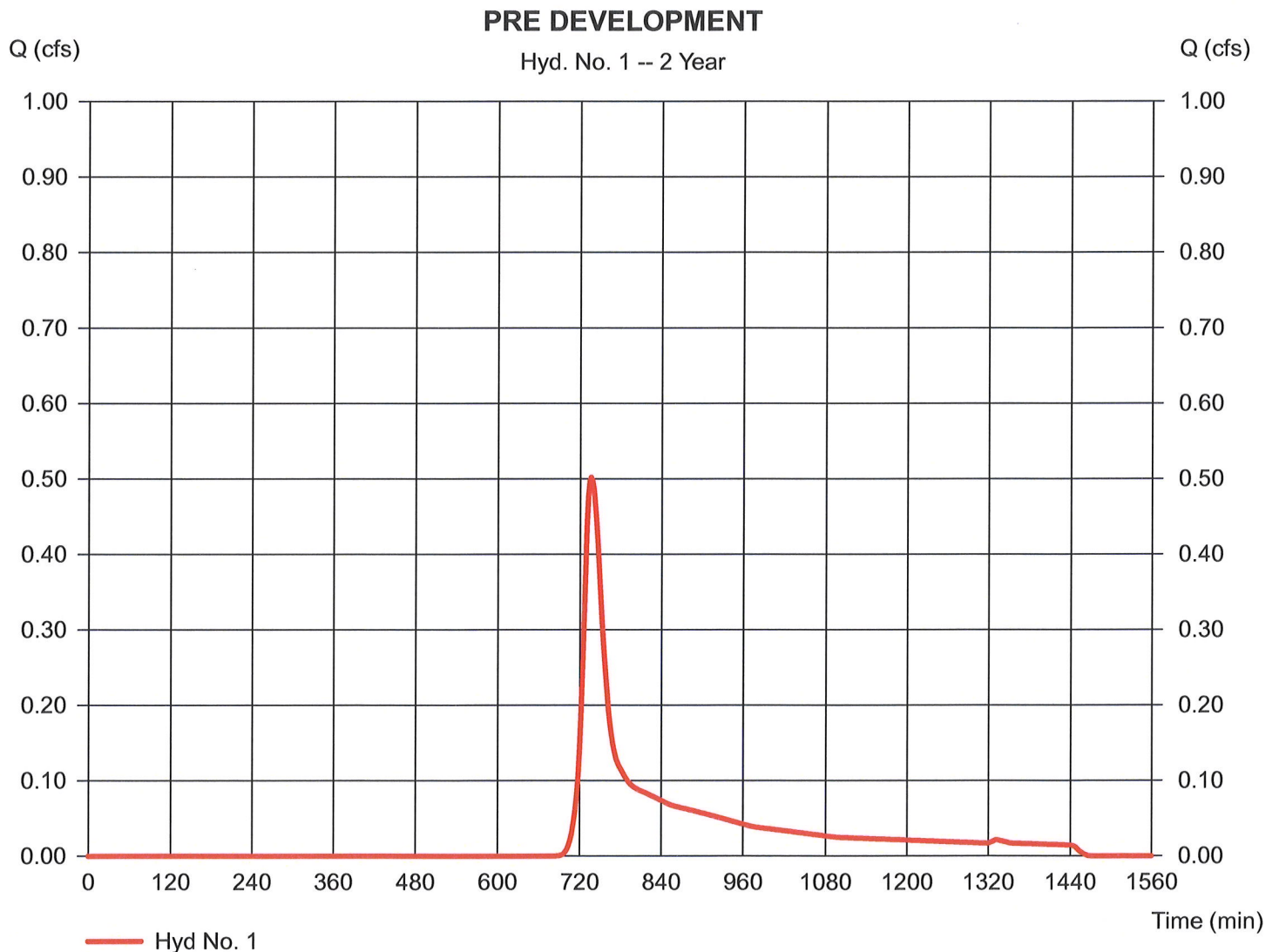
Friday, Sep 2, 2022

## Hyd. No. 1

### PRE DEVELOPMENT

Hydrograph type = SCS Runoff  
 Storm frequency = 2 yrs  
 Time interval = 2 min  
 Drainage area = 0.930 ac  
 Basin Slope = 0.0 %  
 Tc method = USER  
 Total precip. = 3.15 in  
 Storm duration = 24 hrs

Peak discharge = 0.502 cfs  
 Time to peak = 736 min  
 Hyd. volume = 2,537 cuft  
 Curve number = 69  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 20.00 min  
 Distribution = Type III  
 Shape factor = 484



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22

Friday, Sep 2, 2022

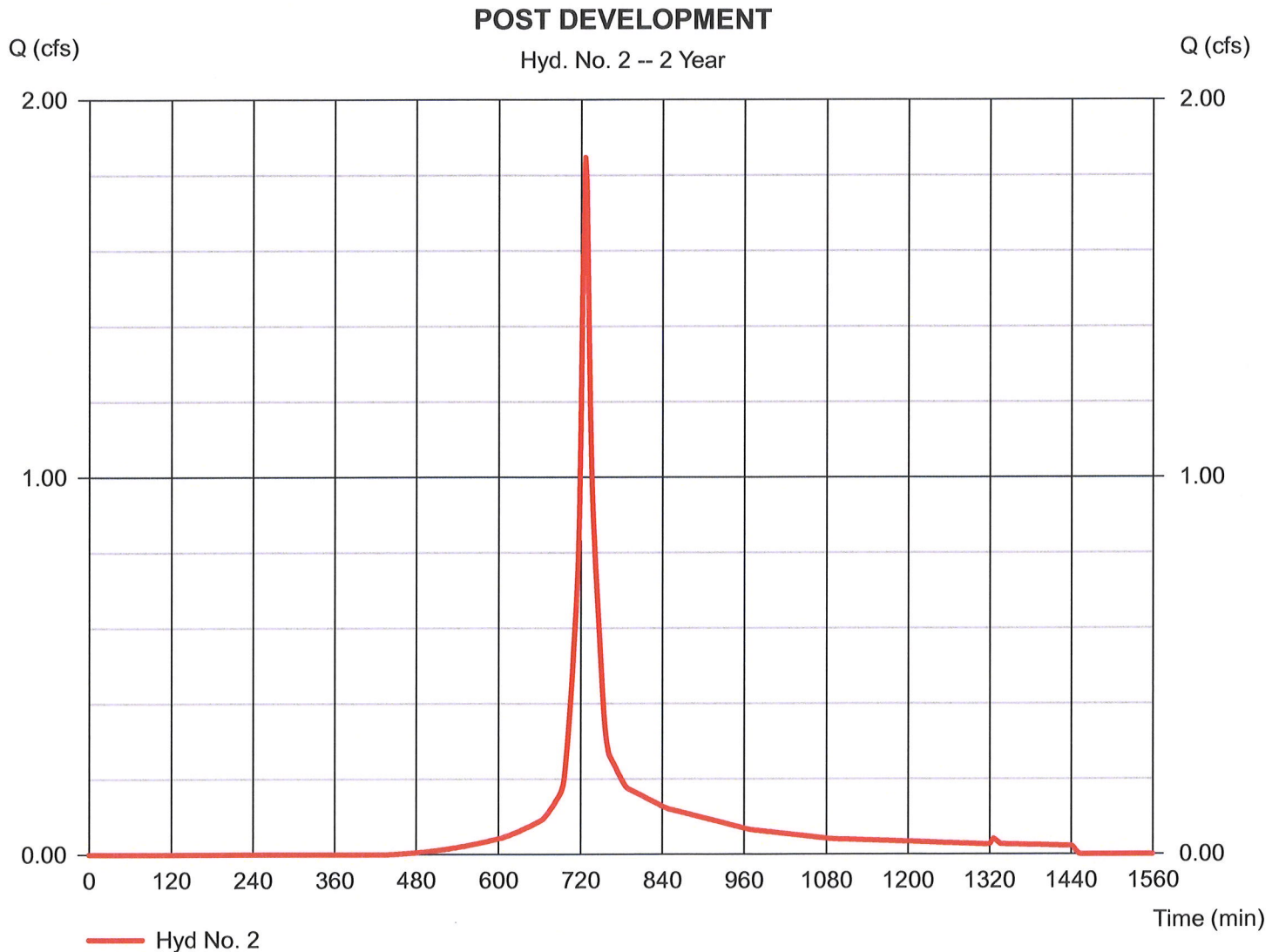
## Hyd. No. 2

### POST DEVELOPMENT

Hydrograph type = SCS Runoff  
 Storm frequency = 2 yrs  
 Time interval = 2 min  
 Drainage area = 0.930 ac  
 Basin Slope = 0.0 %  
 Tc method = USER  
 Total precip. = 3.15 in  
 Storm duration = 24 hrs

Peak discharge = 1.848 cfs  
 Time to peak = 726 min  
 Hyd. volume = 6,315 cuft  
 Curve number = 87\*  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 7.90 min  
 Distribution = Type III  
 Shape factor = 484

\* Composite (Area/CN) =  $[(0.650 \times 98) + (0.280 \times 69)] / 0.930$



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22

Friday, Sep 2, 2022

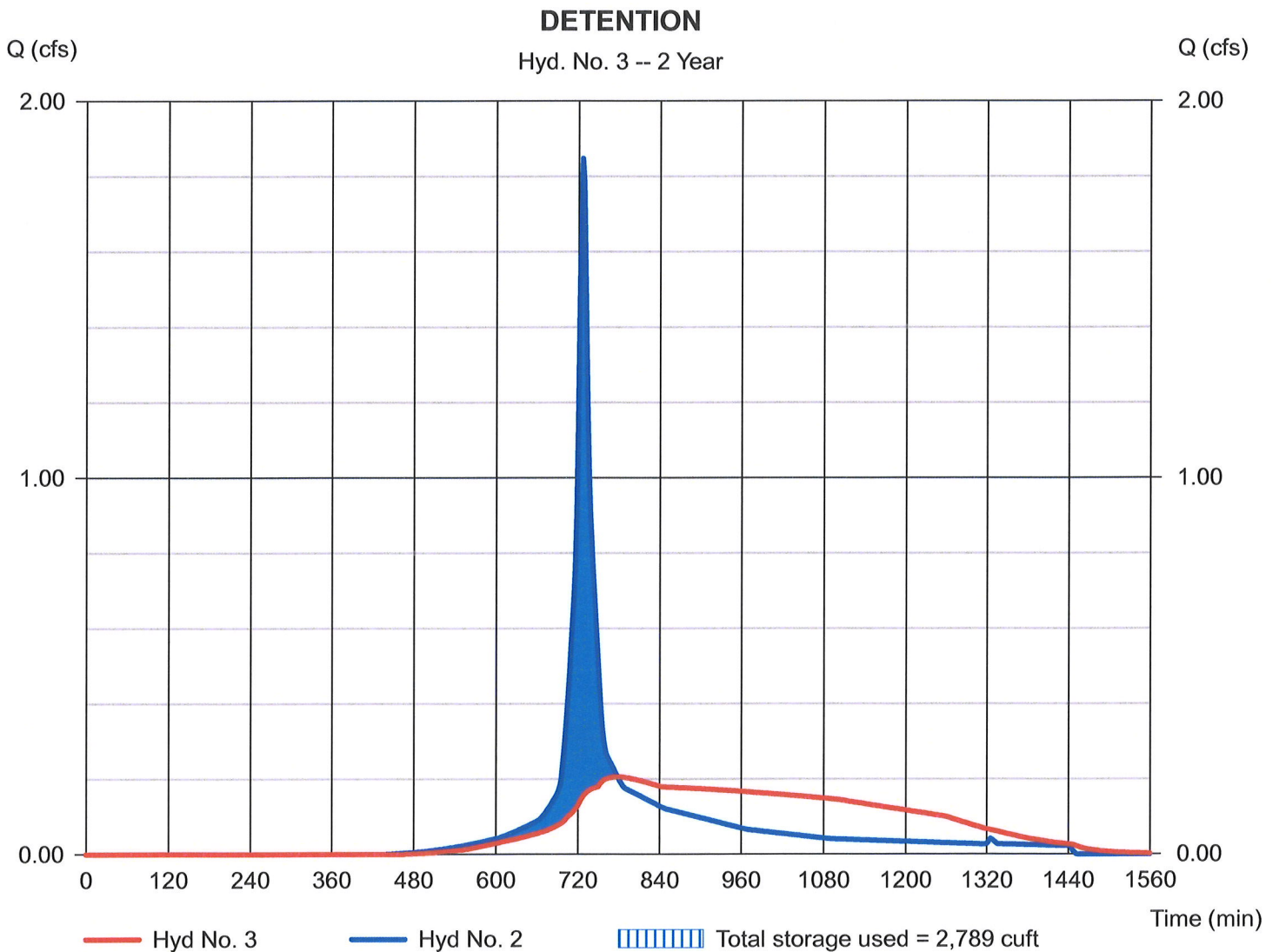
## Hyd. No. 3

### DETENTION

Hydrograph type = Reservoir  
 Storm frequency = 2 yrs  
 Time interval = 2 min  
 Inflow hyd. No. = 2 - POST DEVELOPMENT  
 Reservoir name = DETENTION

Peak discharge = 0.206 cfs  
 Time to peak = 778 min  
 Hyd. volume = 6,313 cuft  
 Max. Elevation = 642.07 ft  
 Max. Storage = 2,789 cuft

Storage Indication method used.





# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.22

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	0.974	2	734	4,542	----	-----	-----	PRE DEVELOPMENT
2	SCS Runoff	2.693	2	726	9,273	----	-----	-----	POST DEVELOPMENT
3	Reservoir	0.793	2	748	9,271	2	642.46	3,626	DETENTION
BECKER.gpw					Return Period: 5 Year			Friday, Sep 2, 2022	

# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22

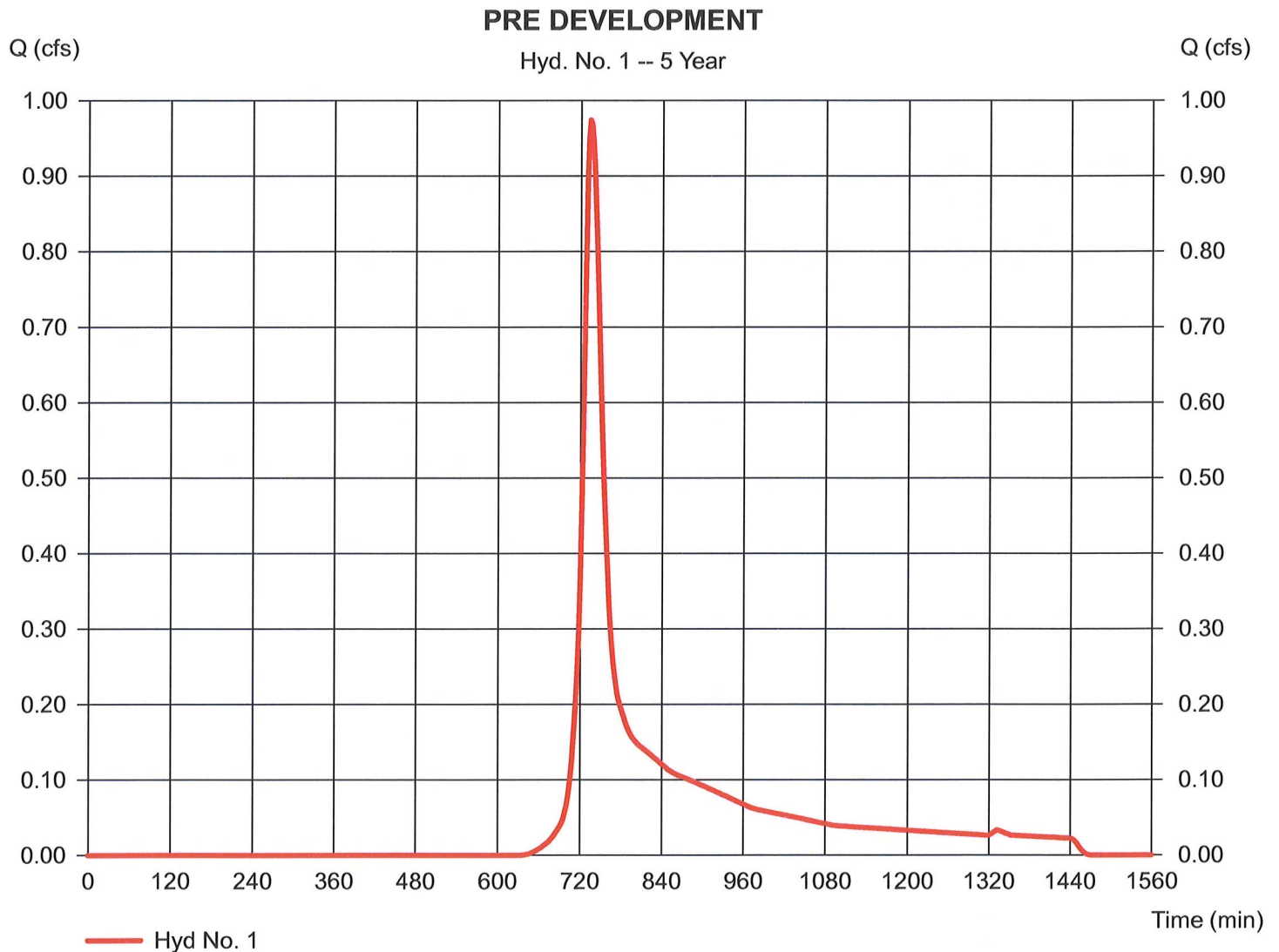
Friday, Sep 2, 2022

## Hyd. No. 1

### PRE DEVELOPMENT

Hydrograph type = SCS Runoff  
 Storm frequency = 5 yrs  
 Time interval = 2 min  
 Drainage area = 0.930 ac  
 Basin Slope = 0.0 %  
 Tc method = USER  
 Total precip. = 4.12 in  
 Storm duration = 24 hrs

Peak discharge = 0.974 cfs  
 Time to peak = 734 min  
 Hyd. volume = 4,542 cuft  
 Curve number = 69  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 20.00 min  
 Distribution = Type III  
 Shape factor = 484





# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22

Friday, Sep 2, 2022

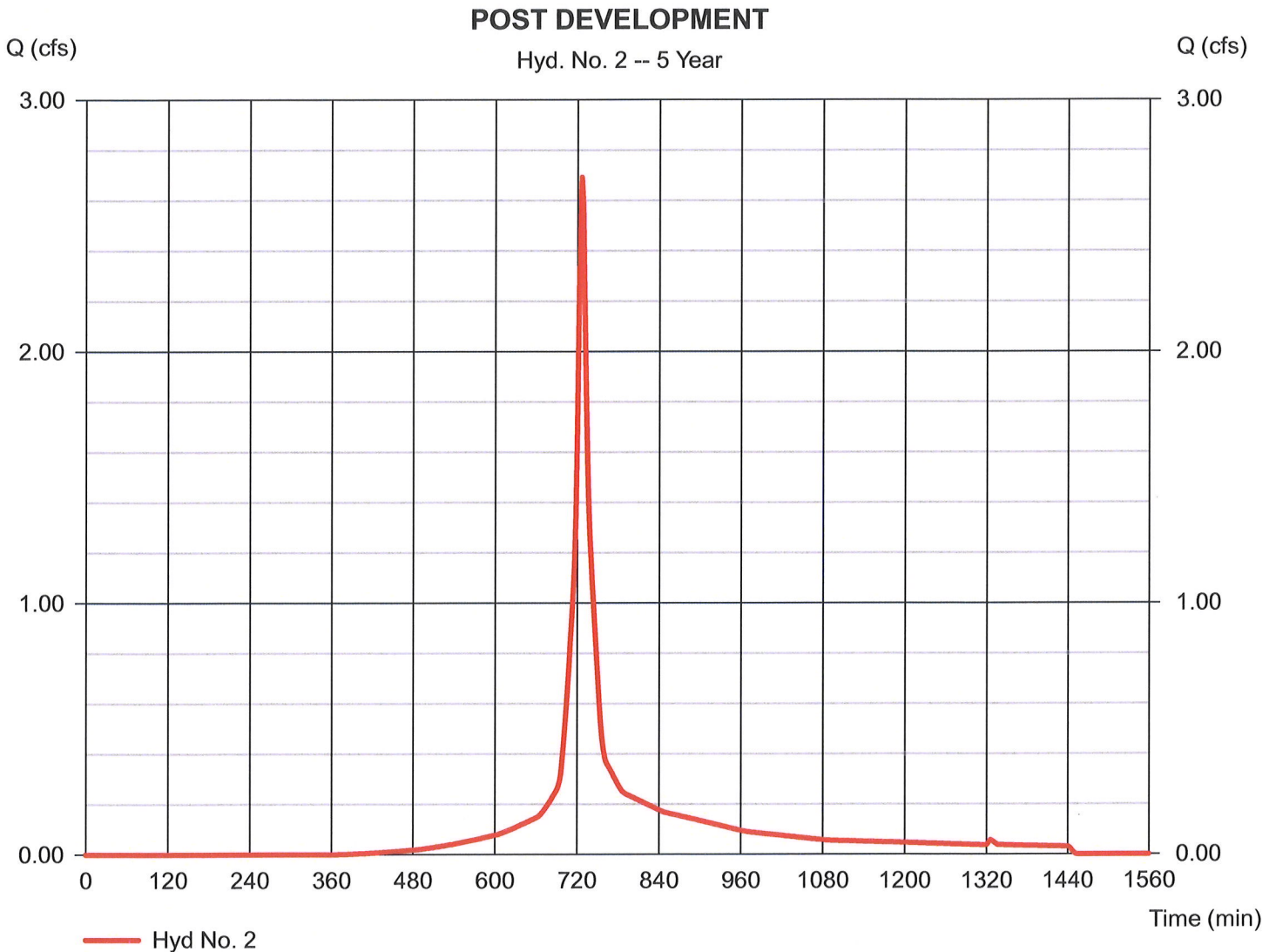
## Hyd. No. 2

### POST DEVELOPMENT

Hydrograph type = SCS Runoff  
 Storm frequency = 5 yrs  
 Time interval = 2 min  
 Drainage area = 0.930 ac  
 Basin Slope = 0.0 %  
 Tc method = USER  
 Total precip. = 4.12 in  
 Storm duration = 24 hrs

Peak discharge = 2.693 cfs  
 Time to peak = 726 min  
 Hyd. volume = 9,273 cuft  
 Curve number = 87\*  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 7.90 min  
 Distribution = Type III  
 Shape factor = 484

\* Composite (Area/CN) =  $[(0.650 \times 98) + (0.280 \times 69)] / 0.930$



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22

Friday, Sep 2, 2022

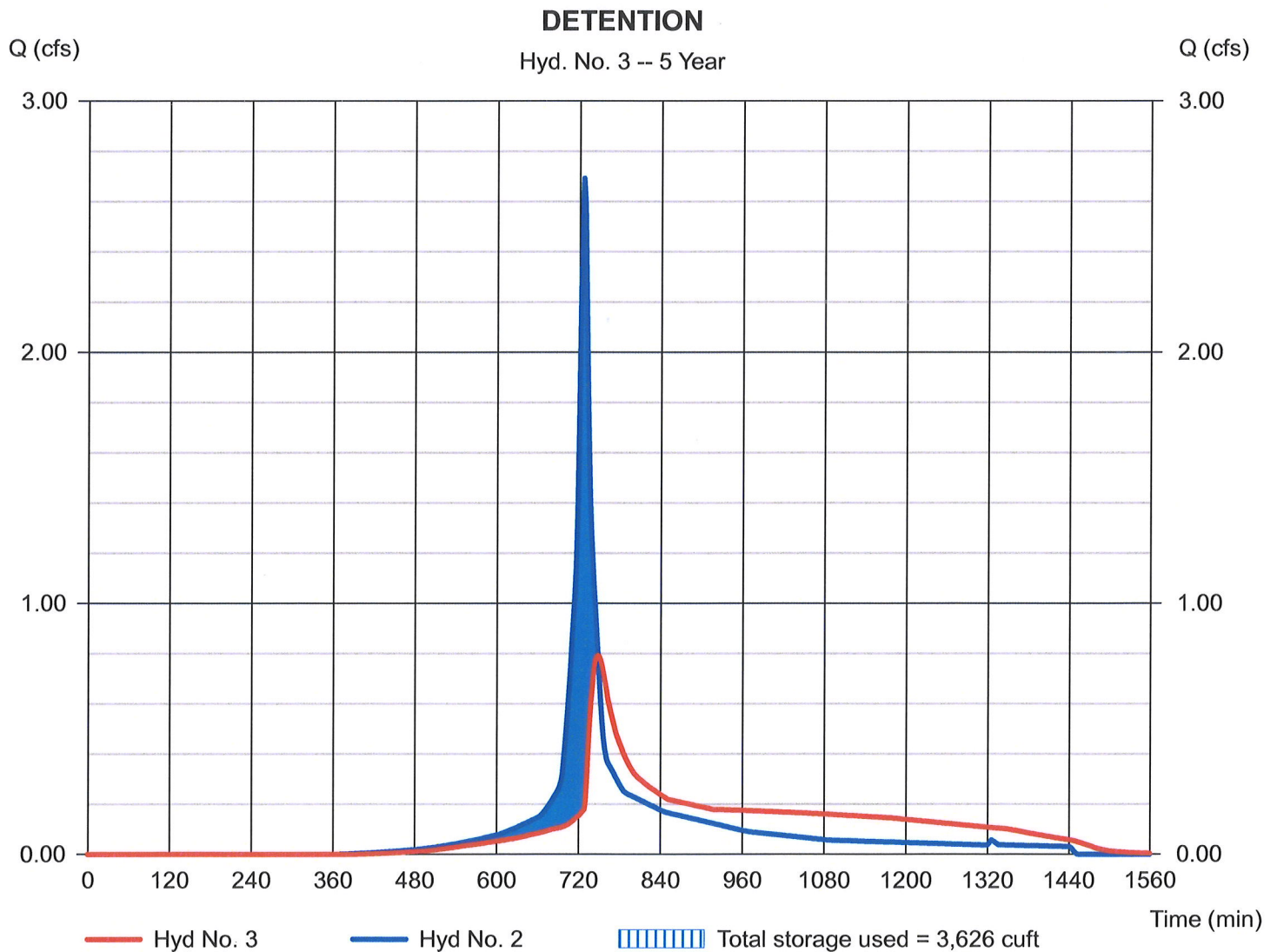
## Hyd. No. 3

### DETENTION

Hydrograph type = Reservoir  
 Storm frequency = 5 yrs  
 Time interval = 2 min  
 Inflow hyd. No. = 2 - POST DEVELOPMENT  
 Reservoir name = DETENTION

Peak discharge = 0.793 cfs  
 Time to peak = 748 min  
 Hyd. volume = 9,271 cuft  
 Max. Elevation = 642.46 ft  
 Max. Storage = 3,626 cuft

Storage Indication method used.



# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.22

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	1.416	2	734	6,412	----	-----	-----	PRE DEVELOPMENT
2	SCS Runoff	3.396	2	726	11,789	----	-----	-----	POST DEVELOPMENT
3	Reservoir	1.275	2	744	11,786	2	642.74	4,226	DETENTION
BECKER.gpw					Return Period: 10 Year			Friday, Sep 2, 2022	

# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22

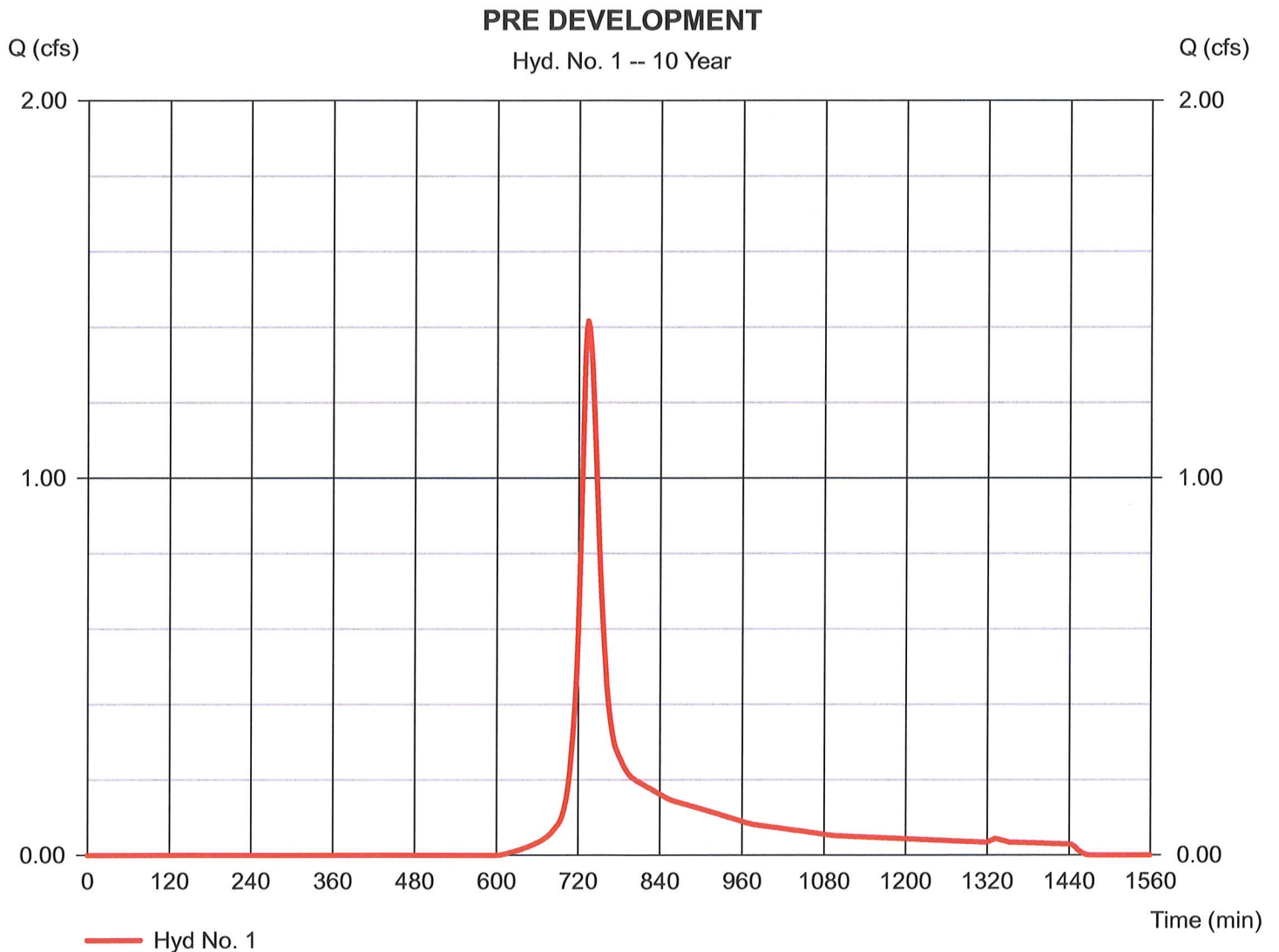
Friday, Sep 2, 2022

## Hyd. No. 1

### PRE DEVELOPMENT

Hydrograph type = SCS Runoff  
 Storm frequency = 10 yrs  
 Time interval = 2 min  
 Drainage area = 0.930 ac  
 Basin Slope = 0.0 %  
 Tc method = USER  
 Total precip. = 4.92 in  
 Storm duration = 24 hrs

Peak discharge = 1.416 cfs  
 Time to peak = 734 min  
 Hyd. volume = 6,412 cuft  
 Curve number = 69  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 20.00 min  
 Distribution = Type III  
 Shape factor = 484



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22

Friday, Sep 2, 2022

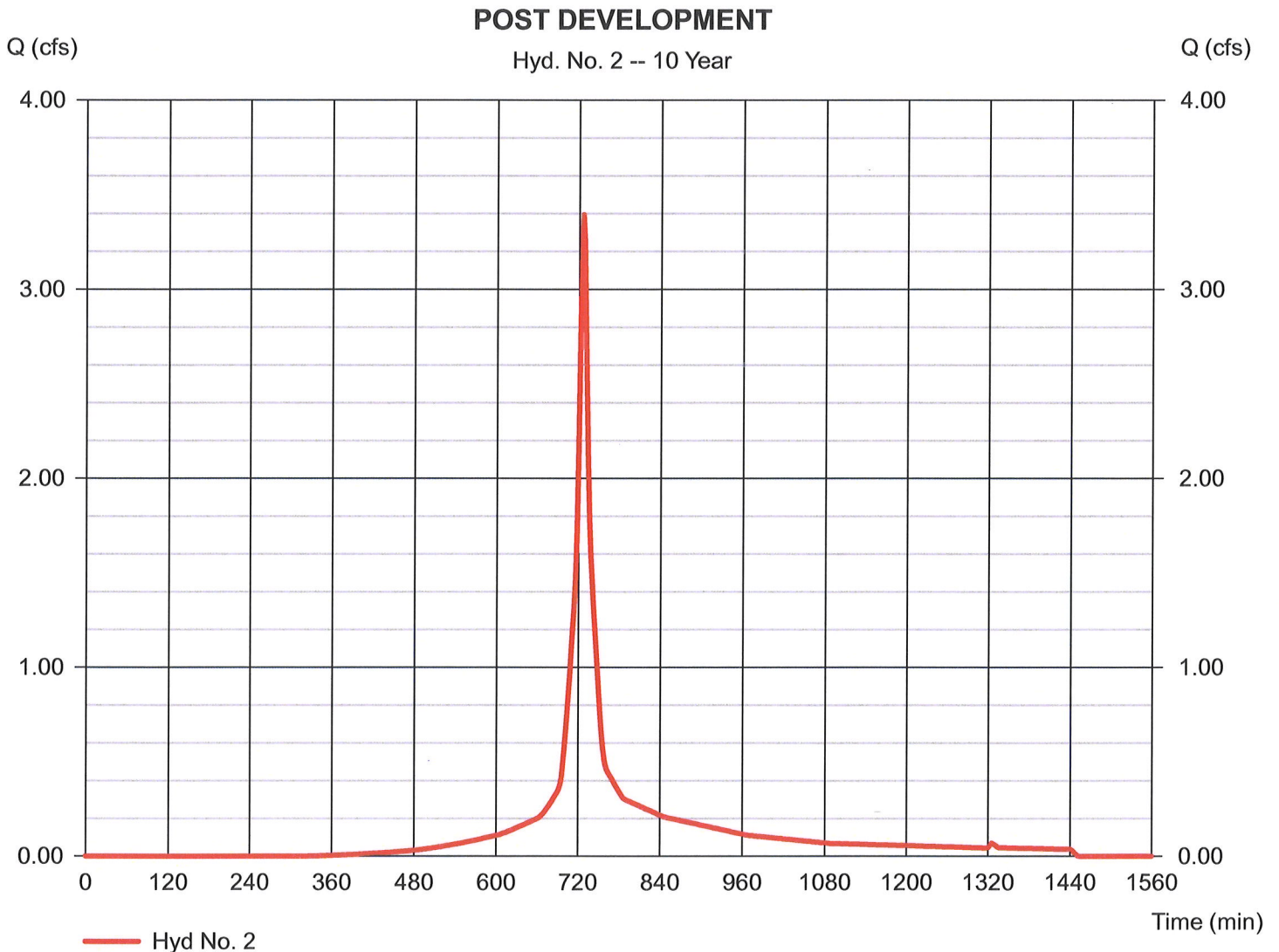
## Hyd. No. 2

### POST DEVELOPMENT

Hydrograph type = SCS Runoff  
 Storm frequency = 10 yrs  
 Time interval = 2 min  
 Drainage area = 0.930 ac  
 Basin Slope = 0.0 %  
 Tc method = USER  
 Total precip. = 4.92 in  
 Storm duration = 24 hrs

Peak discharge = 3.396 cfs  
 Time to peak = 726 min  
 Hyd. volume = 11,789 cuft  
 Curve number = 87\*  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 7.90 min  
 Distribution = Type III  
 Shape factor = 484

\* Composite (Area/CN) =  $[(0.650 \times 98) + (0.280 \times 69)] / 0.930$





# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22

Friday, Sep 2, 2022

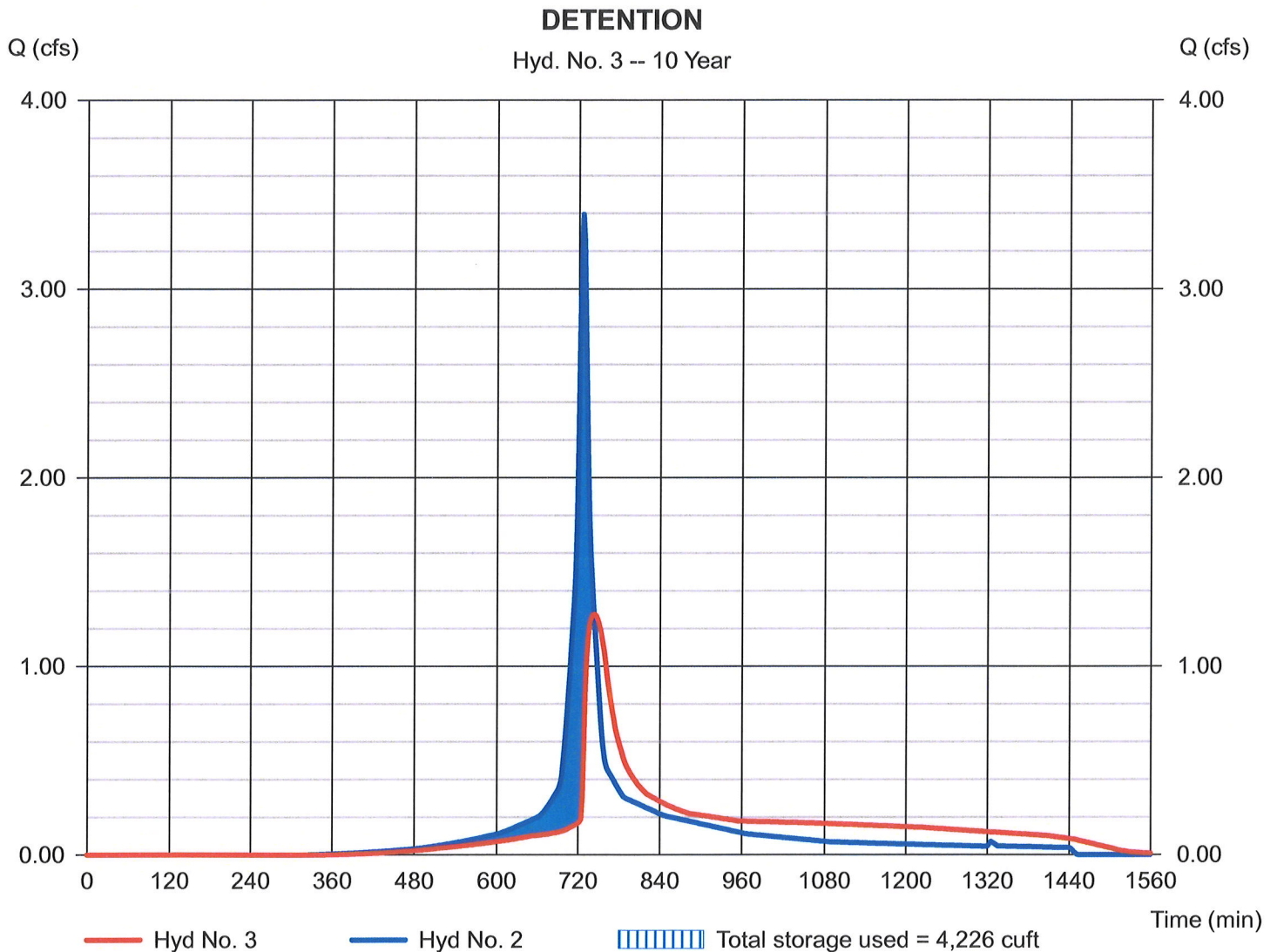
## Hyd. No. 3

### DETENTION

Hydrograph type = Reservoir  
 Storm frequency = 10 yrs  
 Time interval = 2 min  
 Inflow hyd. No. = 2 - POST DEVELOPMENT  
 Reservoir name = DETENTION

Peak discharge = 1.275 cfs  
 Time to peak = 744 min  
 Hyd. volume = 11,786 cuft  
 Max. Elevation = 642.74 ft  
 Max. Storage = 4,226 cuft

Storage Indication method used.



# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.22

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	2.069	2	734	9,210	----	-----	-----	PRE DEVELOPMENT
2	SCS Runoff	4.361	2	726	15,314	----	-----	-----	POST DEVELOPMENT
3	Reservoir	1.742	2	742	15,312	2	643.16	5,257	DETENTION
BECKER.gpw					Return Period: 25 Year			Friday, Sep 2, 2022	



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22

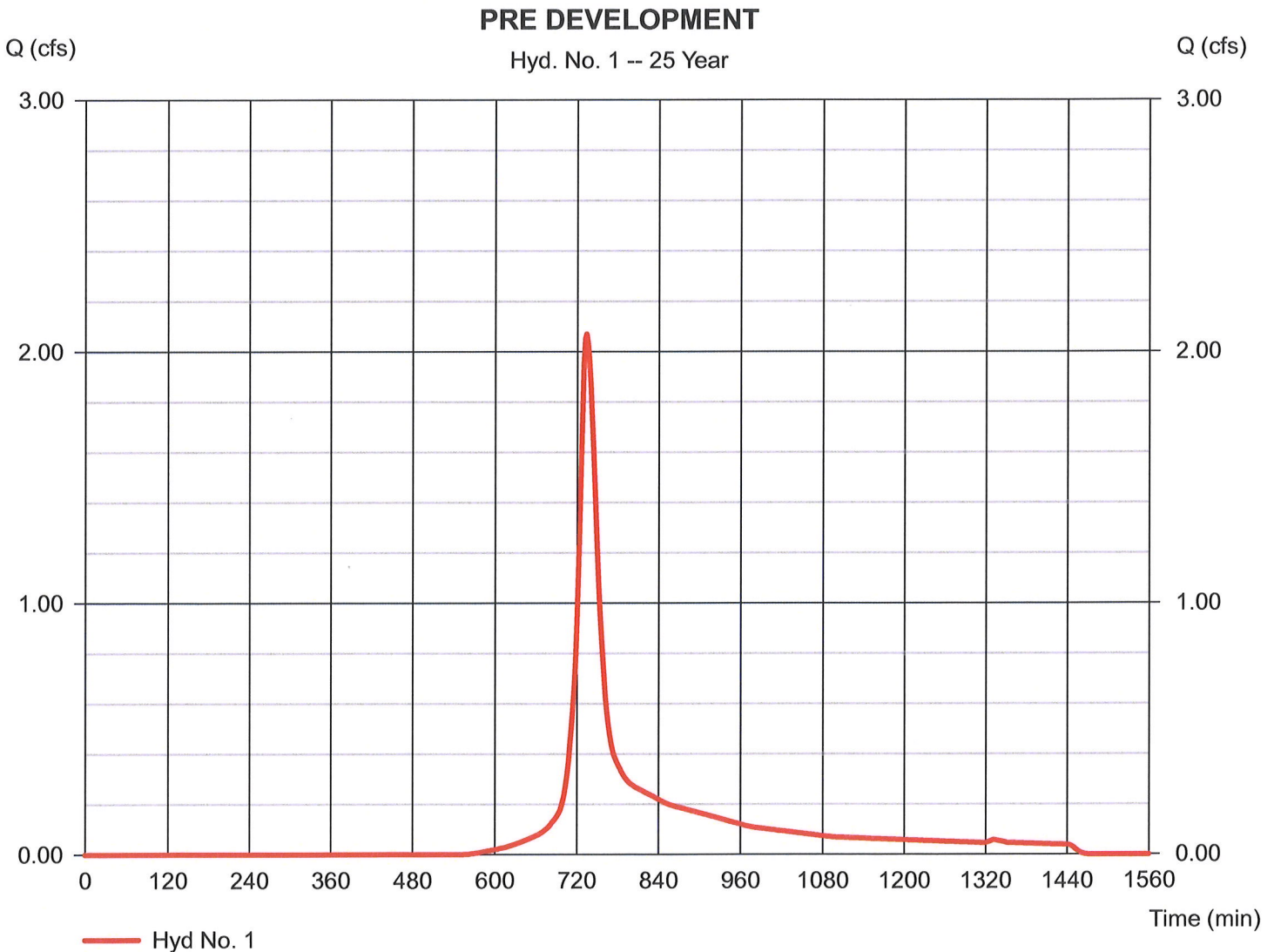
Friday, Sep 2, 2022

## Hyd. No. 1

### PRE DEVELOPMENT

Hydrograph type = SCS Runoff  
 Storm frequency = 25 yrs  
 Time interval = 2 min  
 Drainage area = 0.930 ac  
 Basin Slope = 0.0 %  
 Tc method = USER  
 Total precip. = 6.02 in  
 Storm duration = 24 hrs

Peak discharge = 2.069 cfs  
 Time to peak = 734 min  
 Hyd. volume = 9,210 cuft  
 Curve number = 69  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 20.00 min  
 Distribution = Type III  
 Shape factor = 484



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22

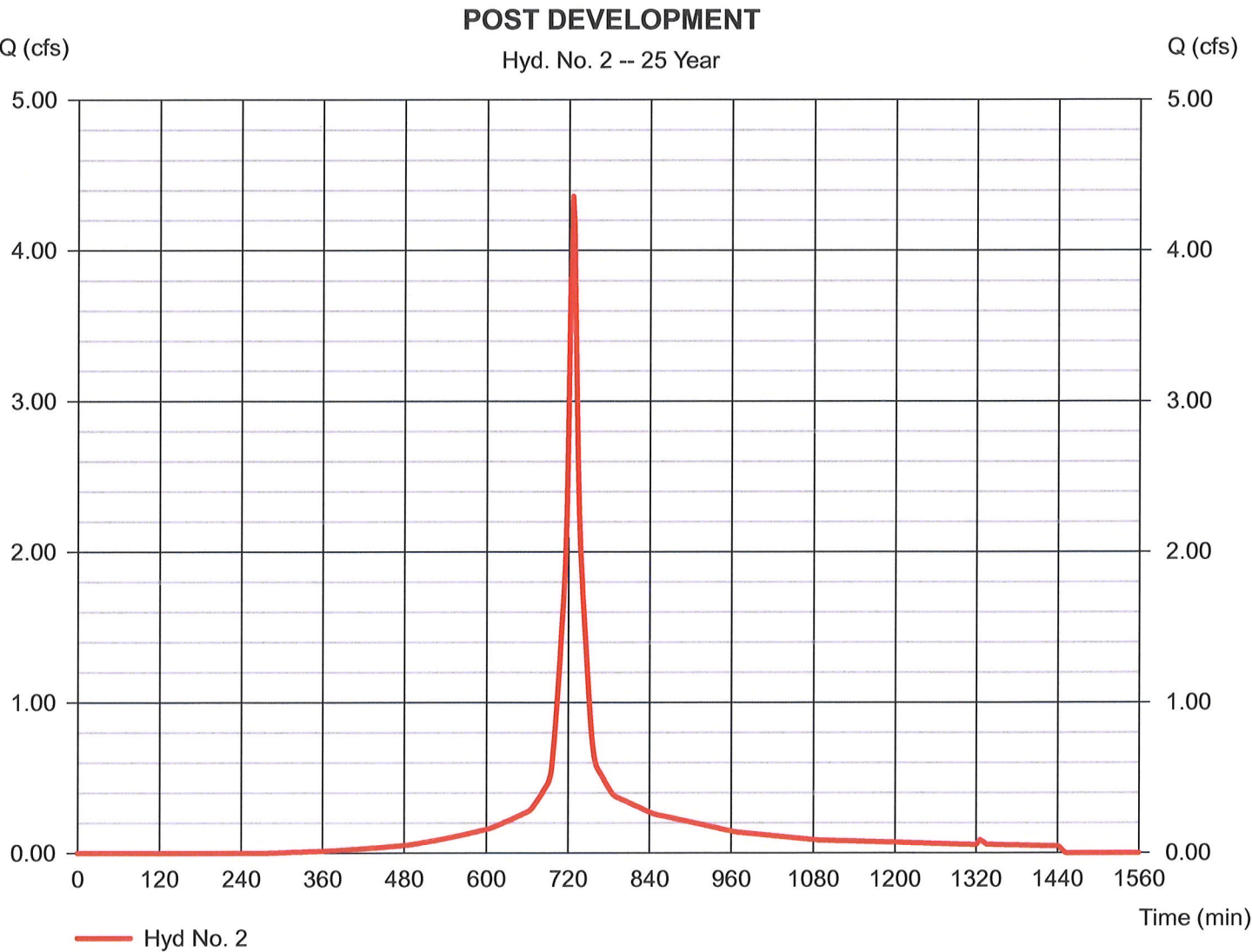
Friday, Sep 2, 2022

## Hyd. No. 2

### POST DEVELOPMENT

Hydrograph type	=	SCS Runoff	Peak discharge	=	4.361 cfs
Storm frequency	=	25 yrs	Time to peak	=	726 min
Time interval	=	2 min	Hyd. volume	=	15,314 cuft
Drainage area	=	0.930 ac	Curve number	=	87*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	USER	Time of conc. (Tc)	=	7.90 min
Total precip.	=	6.02 in	Distribution	=	Type III
Storm duration	=	24 hrs	Shape factor	=	484

\* Composite (Area/CN) = [(0.650 x 98) + (0.280 x 69)] / 0.930



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22

Friday, Sep 2, 2022

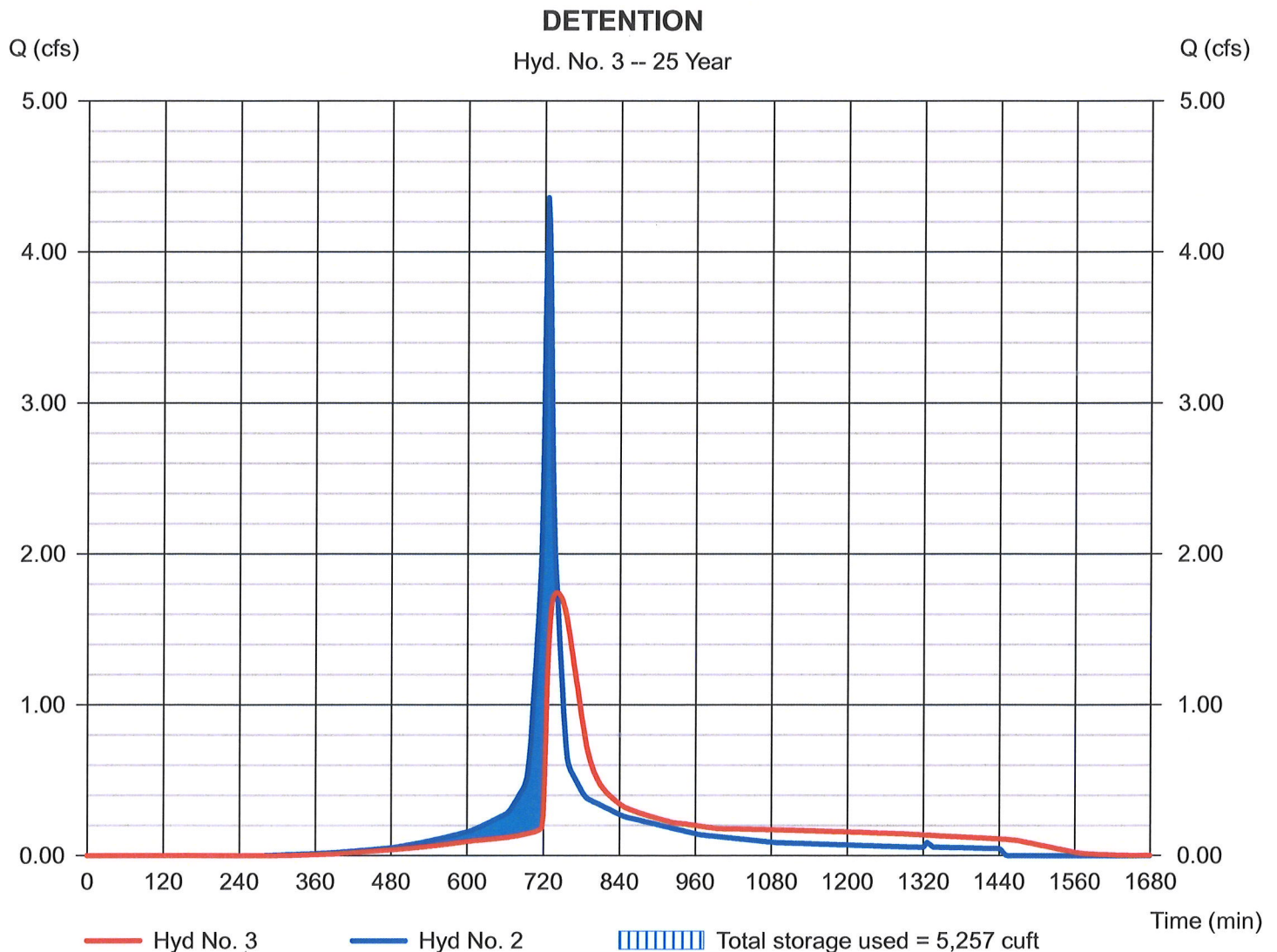
## Hyd. No. 3

### DETENTION

Hydrograph type = Reservoir  
 Storm frequency = 25 yrs  
 Time interval = 2 min  
 Inflow hyd. No. = 2 - POST DEVELOPMENT  
 Reservoir name = DETENTION

Peak discharge = 1.742 cfs  
 Time to peak = 742 min  
 Hyd. volume = 15,312 cuft  
 Max. Elevation = 643.16 ft  
 Max. Storage = 5,257 cuft

Storage Indication method used.



# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.22

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	2.573	2	734	11,394	----	-----	-----	PRE DEVELOPMENT
2	SCS Runoff	5.069	2	726	17,943	----	-----	-----	POST DEVELOPMENT
3	Reservoir	1.993	2	742	17,941	2	643.45	6,103	DETENTION
BECKER.gpw					Return Period: 50 Year			Friday, Sep 2, 2022	



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22

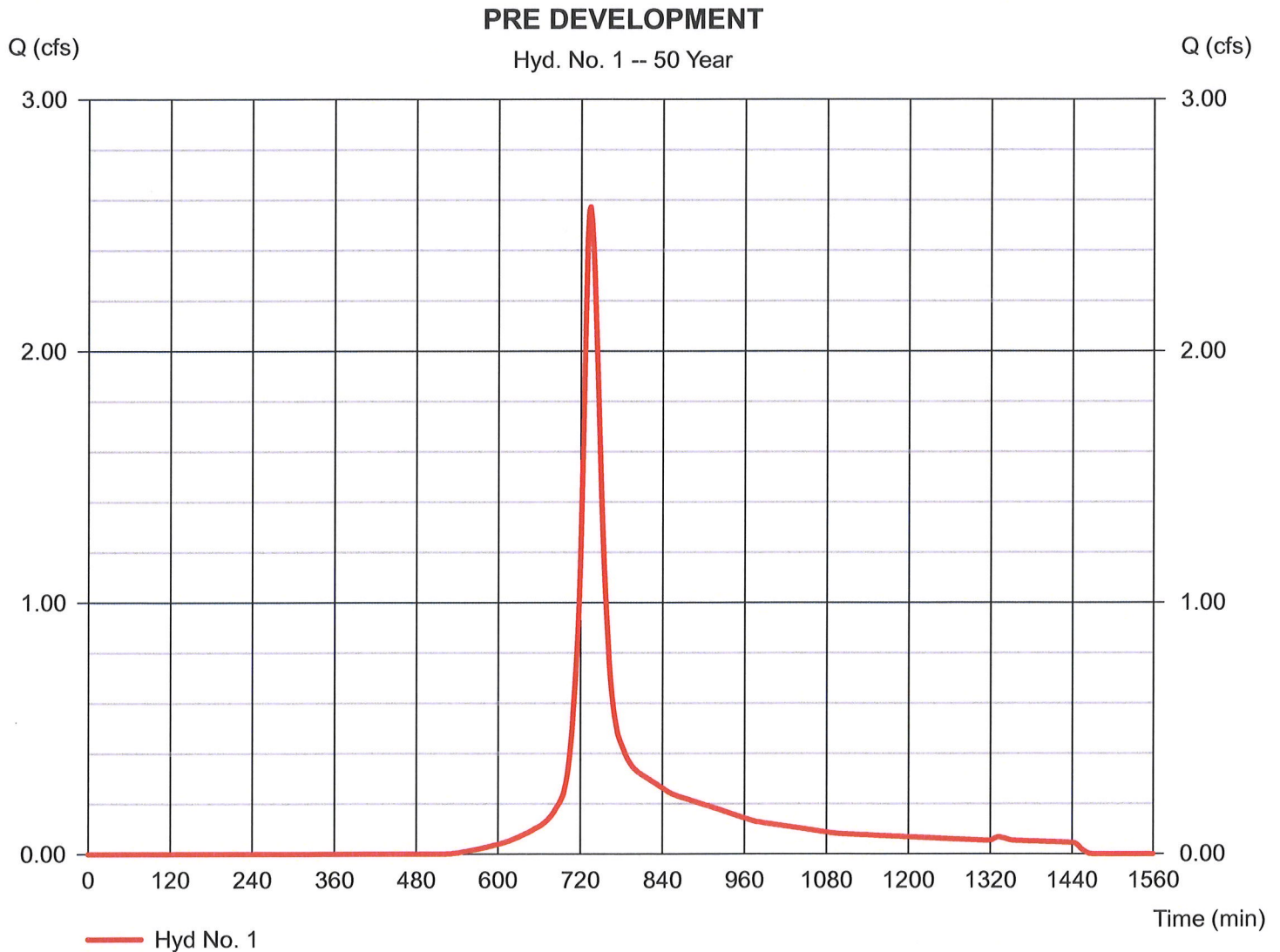
Friday, Sep 2, 2022

## Hyd. No. 1

### PRE DEVELOPMENT

Hydrograph type = SCS Runoff  
Storm frequency = 50 yrs  
Time interval = 2 min  
Drainage area = 0.930 ac  
Basin Slope = 0.0 %  
Tc method = USER  
Total precip. = 6.83 in  
Storm duration = 24 hrs

Peak discharge = 2.573 cfs  
Time to peak = 734 min  
Hyd. volume = 11,394 cuft  
Curve number = 69  
Hydraulic length = 0 ft  
Time of conc. (Tc) = 20.00 min  
Distribution = Type III  
Shape factor = 484



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22

Friday, Sep 2, 2022

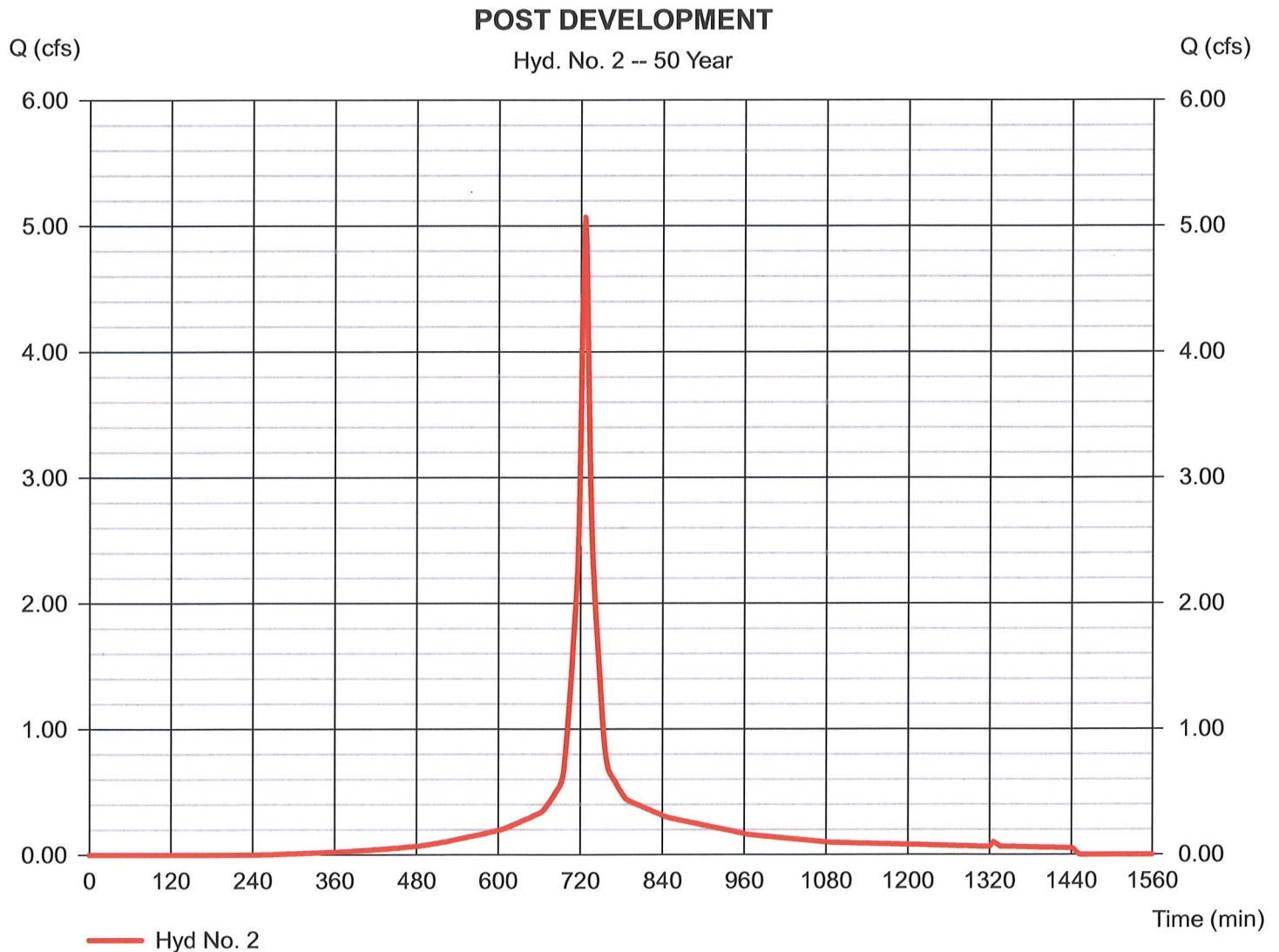
## Hyd. No. 2

### POST DEVELOPMENT

Hydrograph type = SCS Runoff  
 Storm frequency = 50 yrs  
 Time interval = 2 min  
 Drainage area = 0.930 ac  
 Basin Slope = 0.0 %  
 Tc method = USER  
 Total precip. = 6.83 in  
 Storm duration = 24 hrs

Peak discharge = 5.069 cfs  
 Time to peak = 726 min  
 Hyd. volume = 17,943 cuft  
 Curve number = 87\*  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 7.90 min  
 Distribution = Type III  
 Shape factor = 484

\* Composite (Area/CN) =  $[(0.650 \times 98) + (0.280 \times 69)] / 0.930$



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22

Friday, Sep 2, 2022

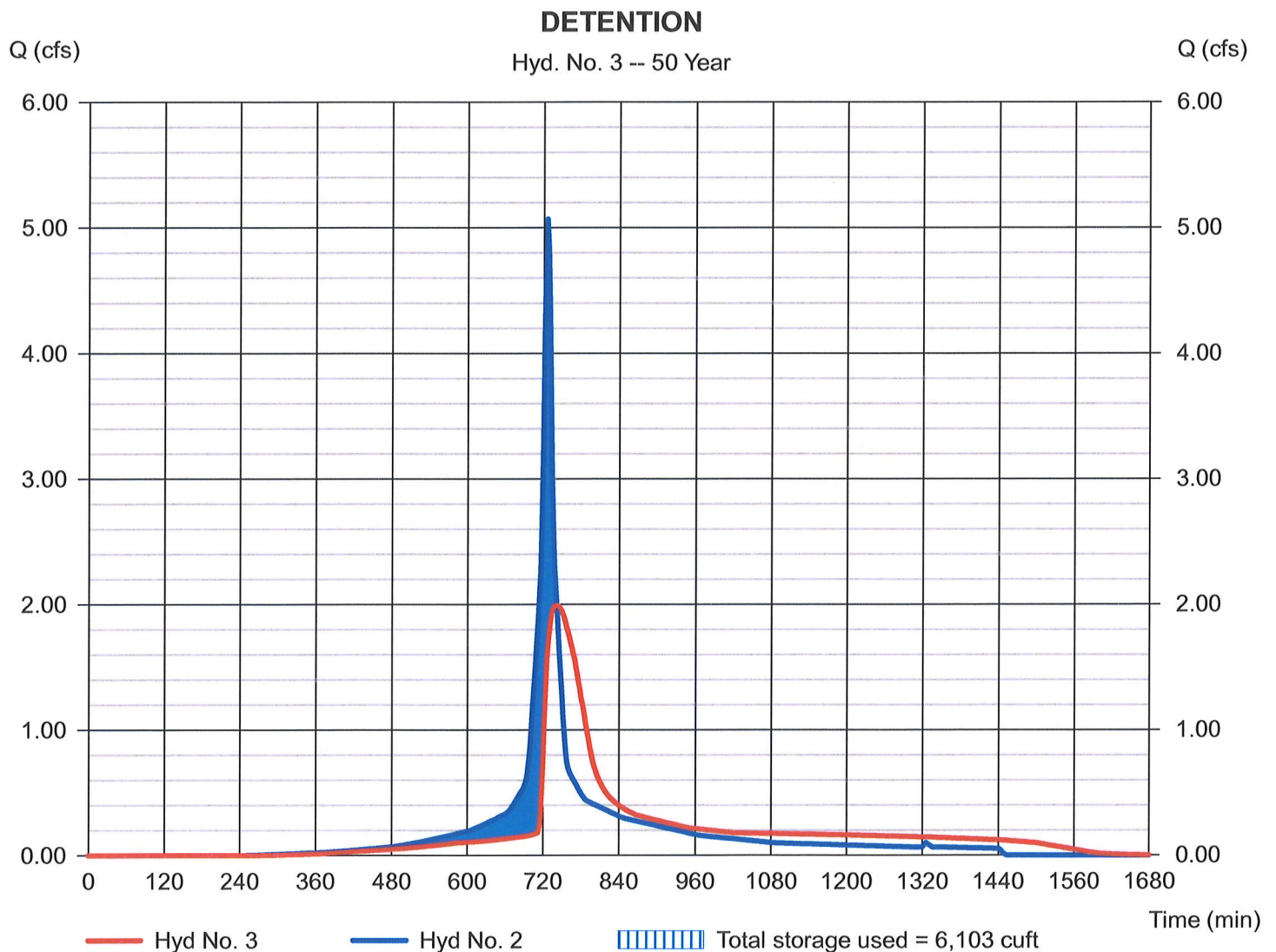
## Hyd. No. 3

### DETENTION

Hydrograph type = Reservoir  
 Storm frequency = 50 yrs  
 Time interval = 2 min  
 Inflow hyd. No. = 2 - POST DEVELOPMENT  
 Reservoir name = DETENTION

Peak discharge = 1.993 cfs  
 Time to peak = 742 min  
 Hyd. volume = 17,941 cuft  
 Max. Elevation = 643.45 ft  
 Max. Storage = 6,103 cuft

Storage Indication method used.





# Hydrograph Summary Report

Hydraflow Hydrographs by Intelisolve v9.22

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph description
1	SCS Runoff	3.143	2	734	13,884	----	-----	-----	PRE DEVELOPMENT
2	SCS Runoff	5.845	2	726	20,854	----	-----	-----	POST DEVELOPMENT
3	Reservoir	2.237	2	742	20,851	2	643.76	7,044	DETENTION
BECKER.gpw					Return Period: 100 Year			Friday, Sep 2, 2022	

# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22

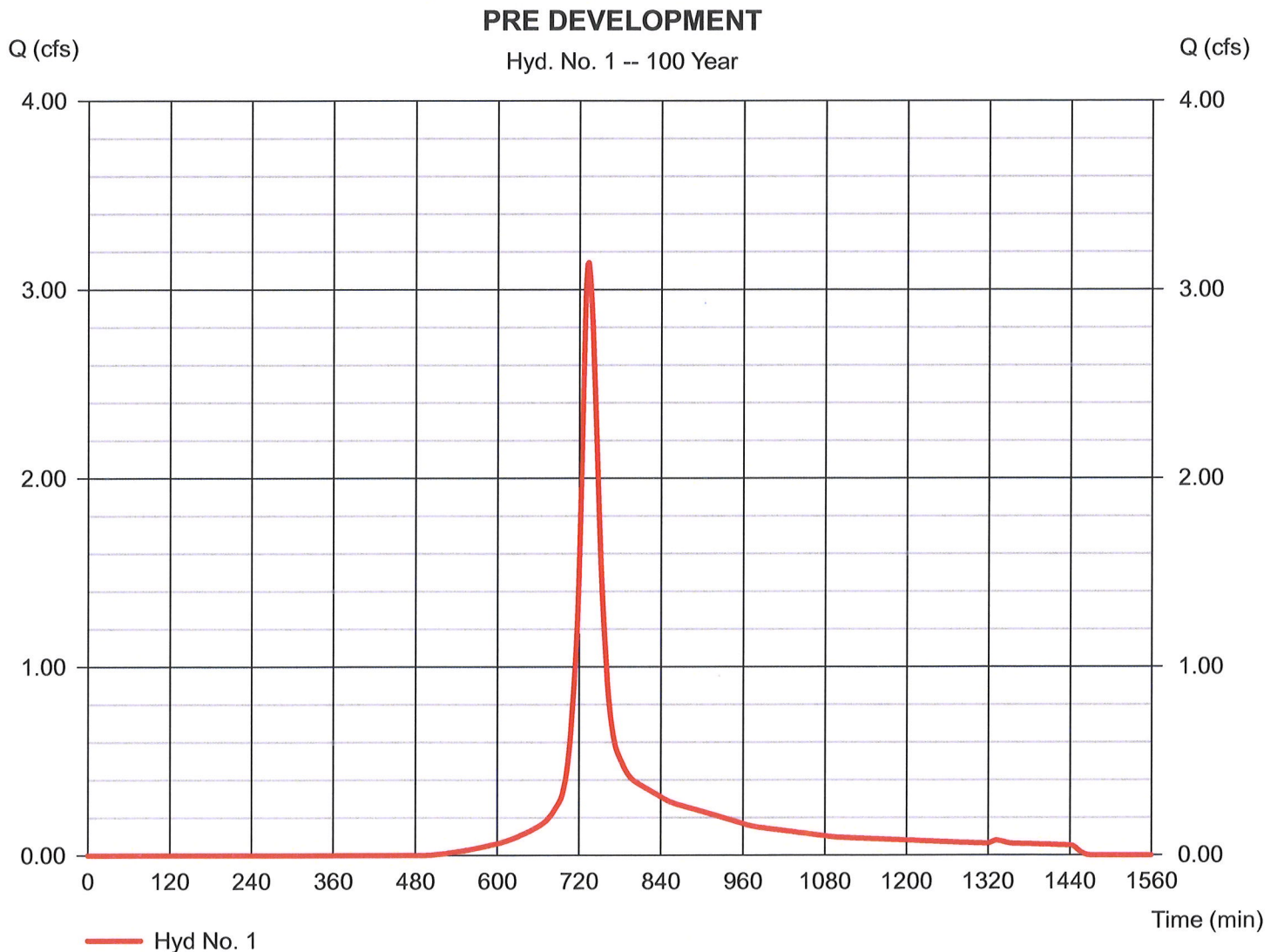
Friday, Sep 2, 2022

## Hyd. No. 1

### PRE DEVELOPMENT

Hydrograph type = SCS Runoff  
 Storm frequency = 100 yrs  
 Time interval = 2 min  
 Drainage area = 0.930 ac  
 Basin Slope = 0.0 %  
 Tc method = USER  
 Total precip. = 7.72 in  
 Storm duration = 24 hrs

Peak discharge = 3.143 cfs  
 Time to peak = 734 min  
 Hyd. volume = 13,884 cuft  
 Curve number = 69  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 20.00 min  
 Distribution = Type III  
 Shape factor = 484



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22

Friday, Sep 2, 2022

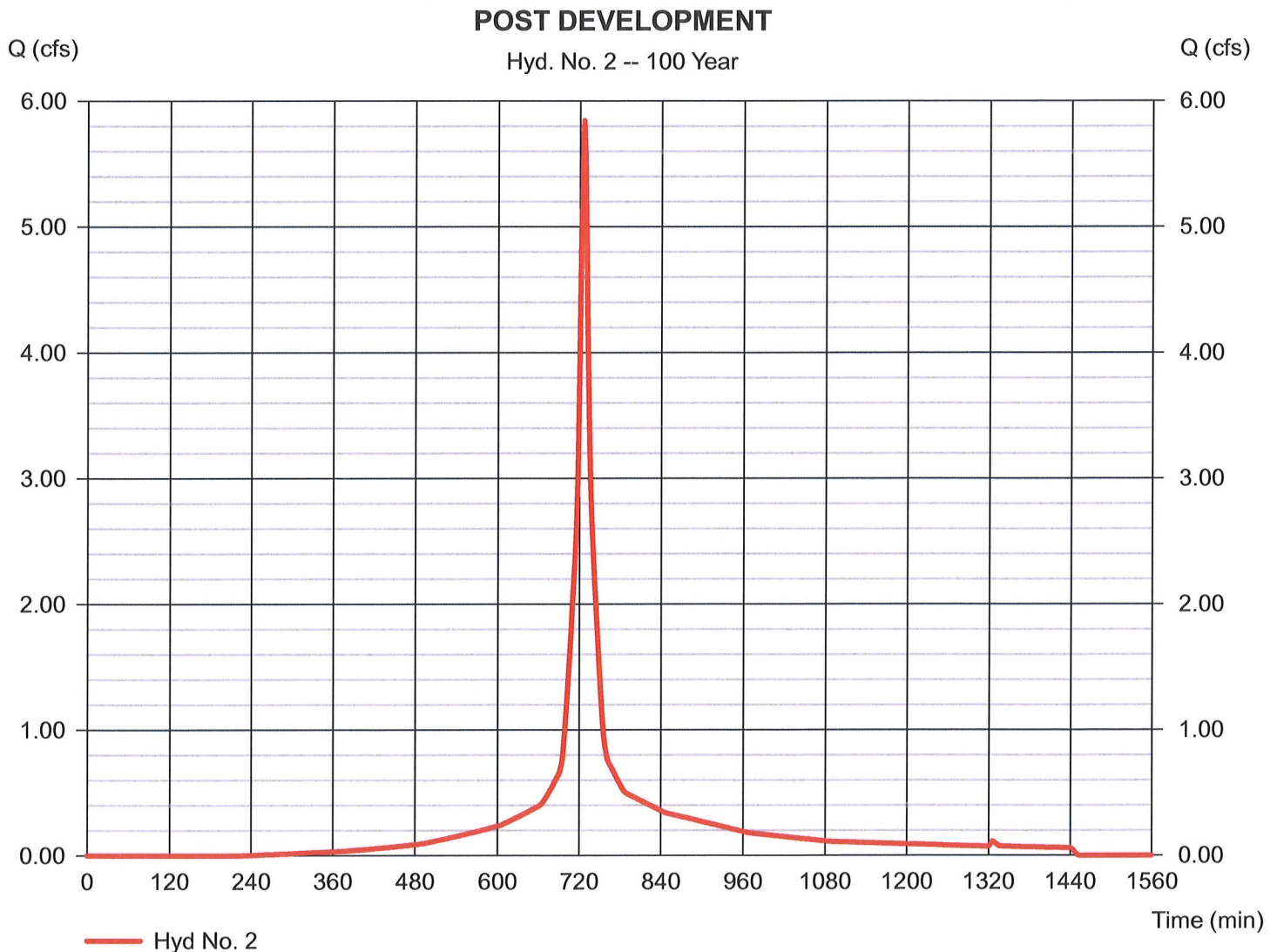
## Hyd. No. 2

### POST DEVELOPMENT

Hydrograph type = SCS Runoff  
 Storm frequency = 100 yrs  
 Time interval = 2 min  
 Drainage area = 0.930 ac  
 Basin Slope = 0.0 %  
 Tc method = USER  
 Total precip. = 7.72 in  
 Storm duration = 24 hrs

Peak discharge = 5.845 cfs  
 Time to peak = 726 min  
 Hyd. volume = 20,854 cuft  
 Curve number = 87\*  
 Hydraulic length = 0 ft  
 Time of conc. (Tc) = 7.90 min  
 Distribution = Type III  
 Shape factor = 484

\* Composite (Area/CN) =  $[(0.650 \times 98) + (0.280 \times 69)] / 0.930$



# Hydrograph Report

Hydraflow Hydrographs by Intelisolve v9.22

Friday, Sep 2, 2022

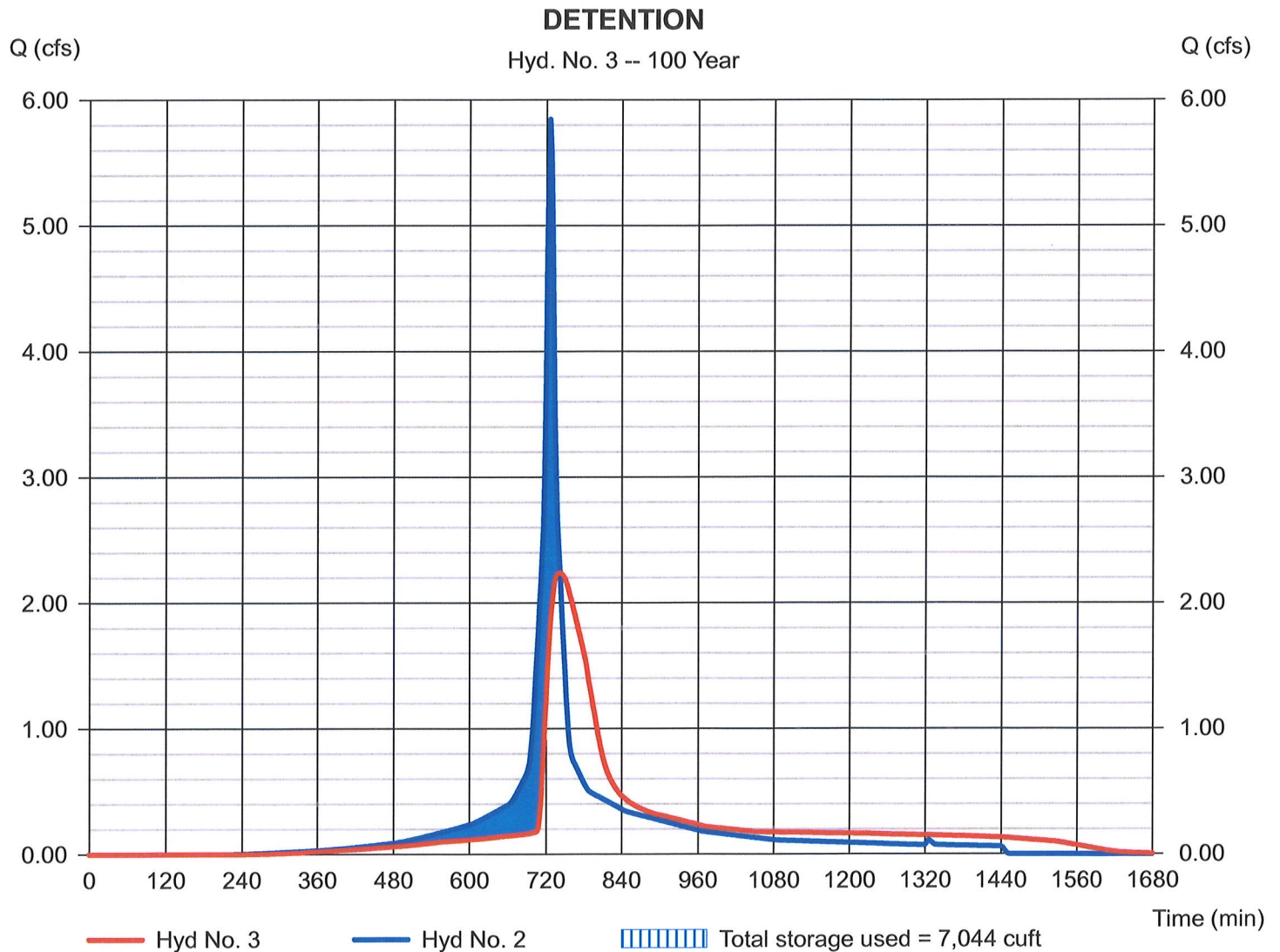
## Hyd. No. 3

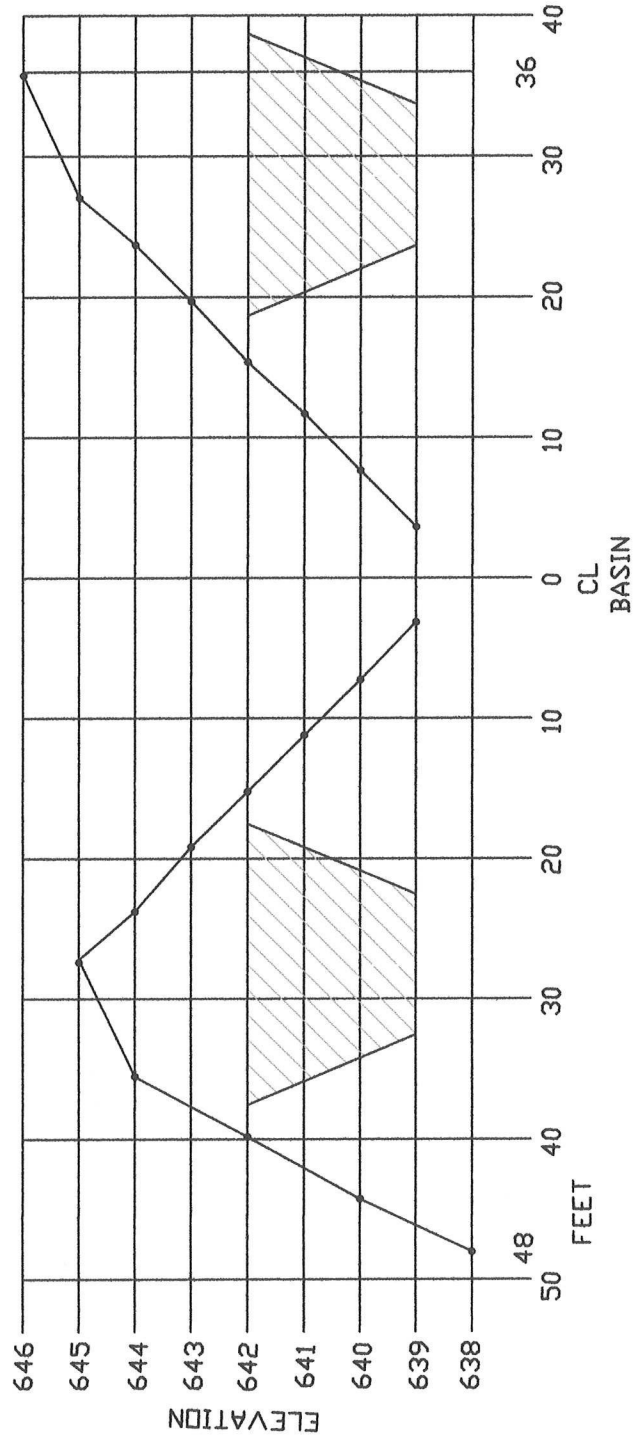
### DETENTION

Hydrograph type = Reservoir  
 Storm frequency = 100 yrs  
 Time interval = 2 min  
 Inflow hyd. No. = 2 - POST DEVELOPMENT  
 Reservoir name = DETENTION

Peak discharge = 2.237 cfs  
 Time to peak = 742 min  
 Hyd. volume = 20,851 cuft  
 Max. Elevation = 643.76 ft  
 Max. Storage = 7,044 cuft

Storage Indication method used.

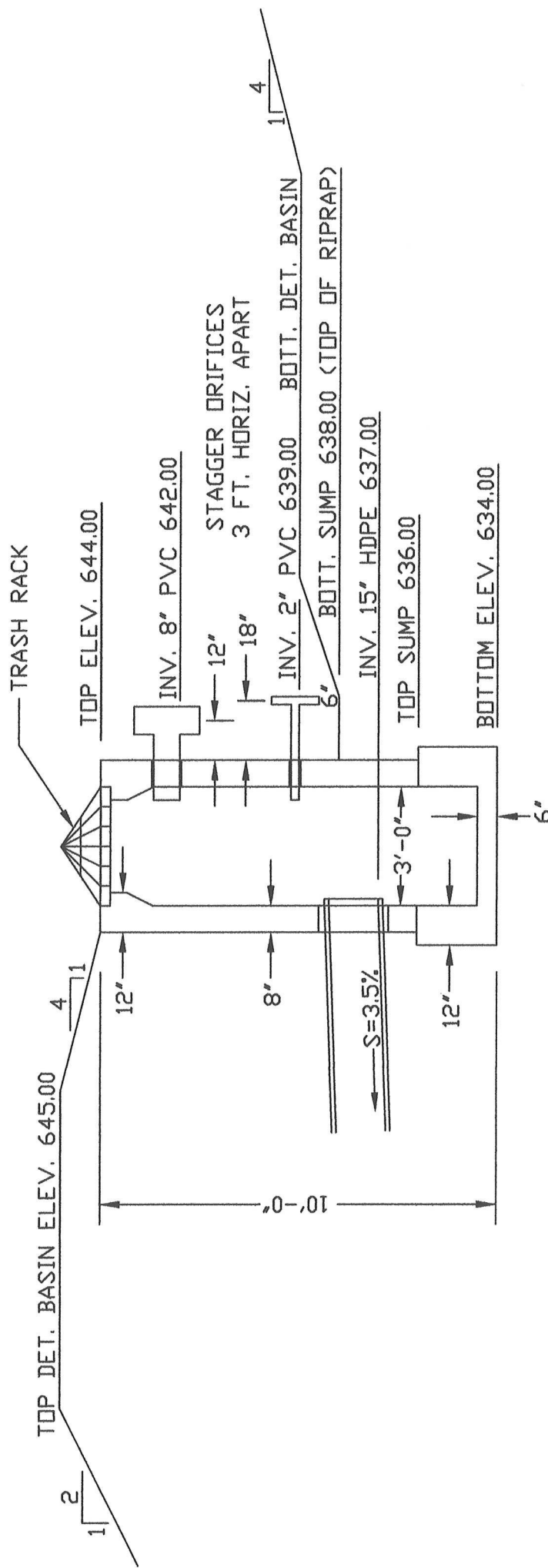




# TRAPEZOIDAL SHEAR KEYS AT DETENTION BASIN

(N.T.S.)





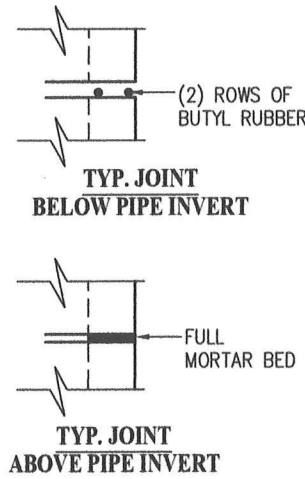
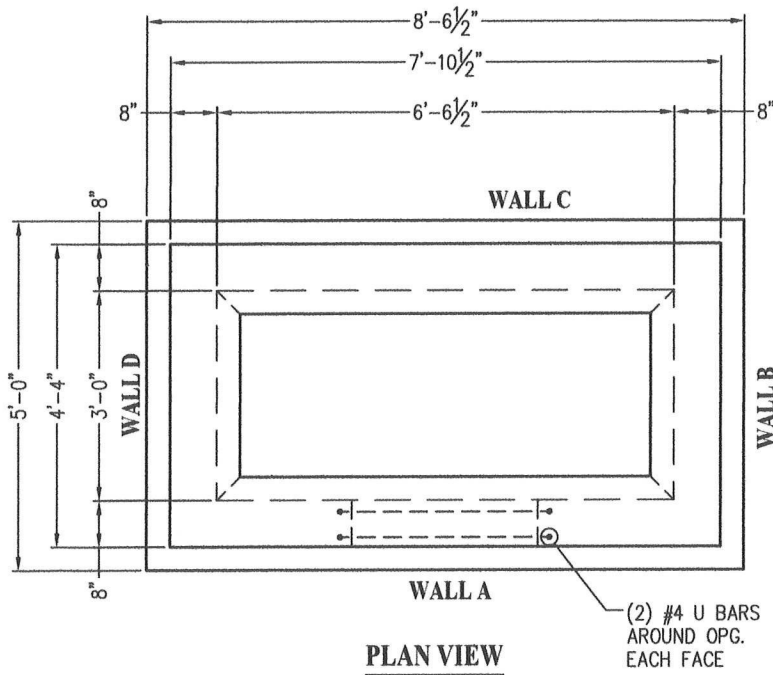
## OUTLET STRUCTURE

(N.T.S.)

CTDOT TYPE CL DOUBLE GRATE TYPE II  
 CATCH BASIN BY UNITED CONCRETE PRODUCTS INC.  
 OR EQUAL WITH ALUMINUM OR GALVANIZED TRASH RACK  
 (INSIDE DIMENSIONS 6'-6 1/2" x 3'-0")  
 LOOKING WEST THROUGH DETENTION BASIN



# CTDOT TYPE CL DOUBLE GRATE TYPE II CATCH BASIN COMPONENTS OVER 10'

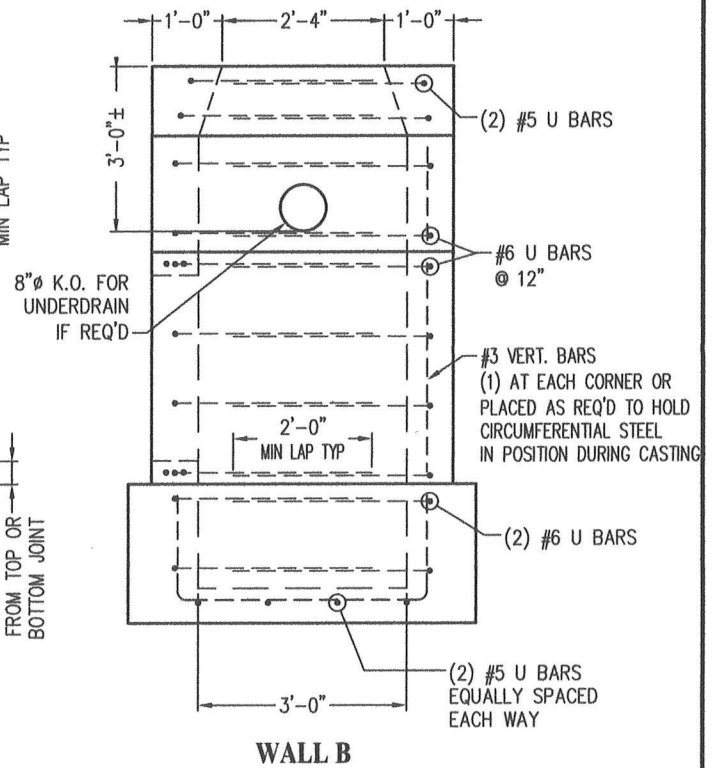
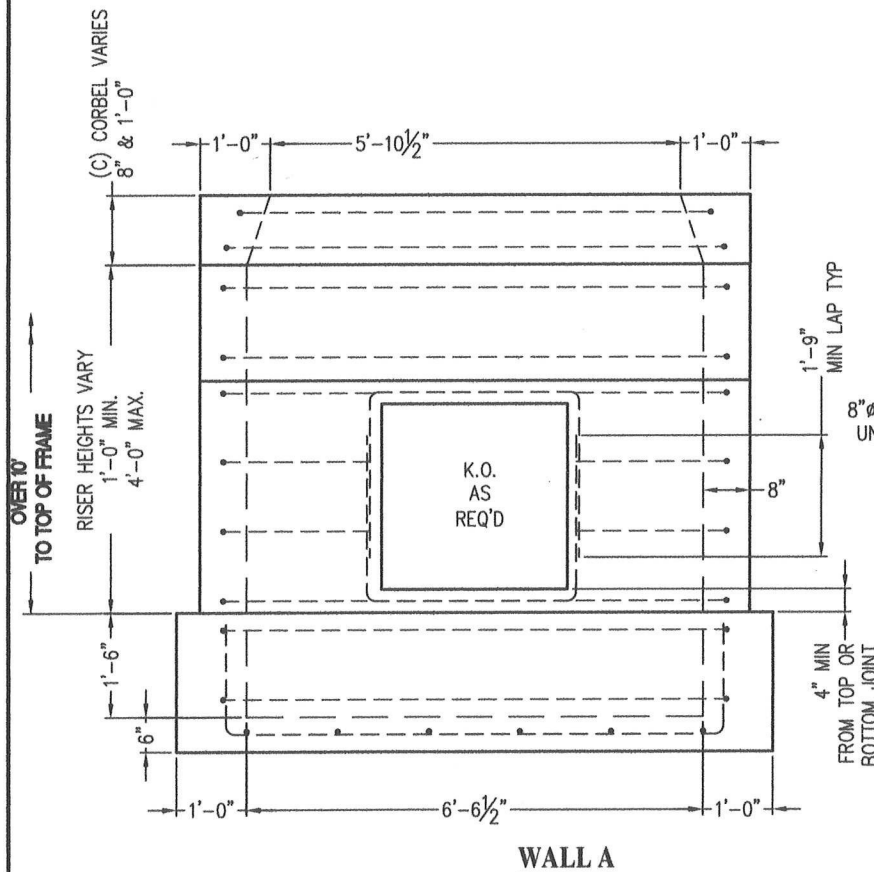


## NOTES:

1. JOINT SEALANT IS BUTYL RUBBER MASTIC TYPE SEAL THAT CONFORMS TO LATEST AASHTO SPECIFICATION SPECIFICATION SS-S-210(210-A).
2. REINFORCING STEEL DEFORMED BARS CONFORM TO LATEST ASTM SPECIFICATION A615, GRADE 60 MIN. COVER 2" UNLESS NOTED.
3. CONCRETE COMPRESSIVE STRENGTH- 4,000 PSI AT 28 DAYS, SELF COMPACTING CONCRETE MIX.
4. METHOD OF MANUFACTURE: WET CAST.
5. SUMP SECTION IS MONOLITHIC.
6. CONFORMS TO CTDOT STANDARD SHEET #HW-507\_06, DATED 9-18-2009

## WEIGHT CHART

PRODUCT	APPROX. WEIGHT
8" WALL RISER	2,300 LBS./LF
12" WALL RISER	3,600 LBS./LF
SUMP SECTION	8,700 LBS.



**UNITED CONCRETE PRODUCTS INC.**

173 CHURCH STREET  
YALESVILLE, CT 06492

TEL. (800) 234-3119  
TEL. (203) 269-3119

FAX. (203) 265-4941  
WWW.UNITEDCONCRETE.COM

F.F.E.=667.00

F.F.E. = 667.00

~~245,952 SF (5.05 AC)~~  
~~ZONE CHANGE FROM R-2 TO GB~~

HOWARD ROAD REALTY, LLC  
BOSTON TURNPIKE

~~PRE-DEVELOPMENT~~

$$\begin{aligned} C &= 0.25 \\ S &= 0.0704 \\ L &= 625' \\ T_c &\approx 20 \text{ min.} \\ V &= 0.5219 \text{ ft/s} \\ A &= 40,352 \text{ SF} \\ &= 0.93 \text{ Ac} \end{aligned}$$

IR  
N/F MORIN  
MICHAEL  
66 STONEHEDGE LA

# PRE-DEVELOPMENT DRAINAGE AREA MAP

Time of Concentration  
Calculator

Compute watershed time of  
concentration using FAA equation  
(rational method), Kirpich equation,  
or Kerby equation

Welcome registered user!

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Research, and Software, Ltd.

All features enabled

<http://www.LMNOeng.com>

Select Equation and Units:

Click to Calculate

FAA (Rational method)

Rational runoff coefficient, c:

0.25

Watercourse slope, S:

0.0704

ft/ft or m/m

Longest flow length, L:

625

feet

Time of concentration, t:

19.95755

minutes

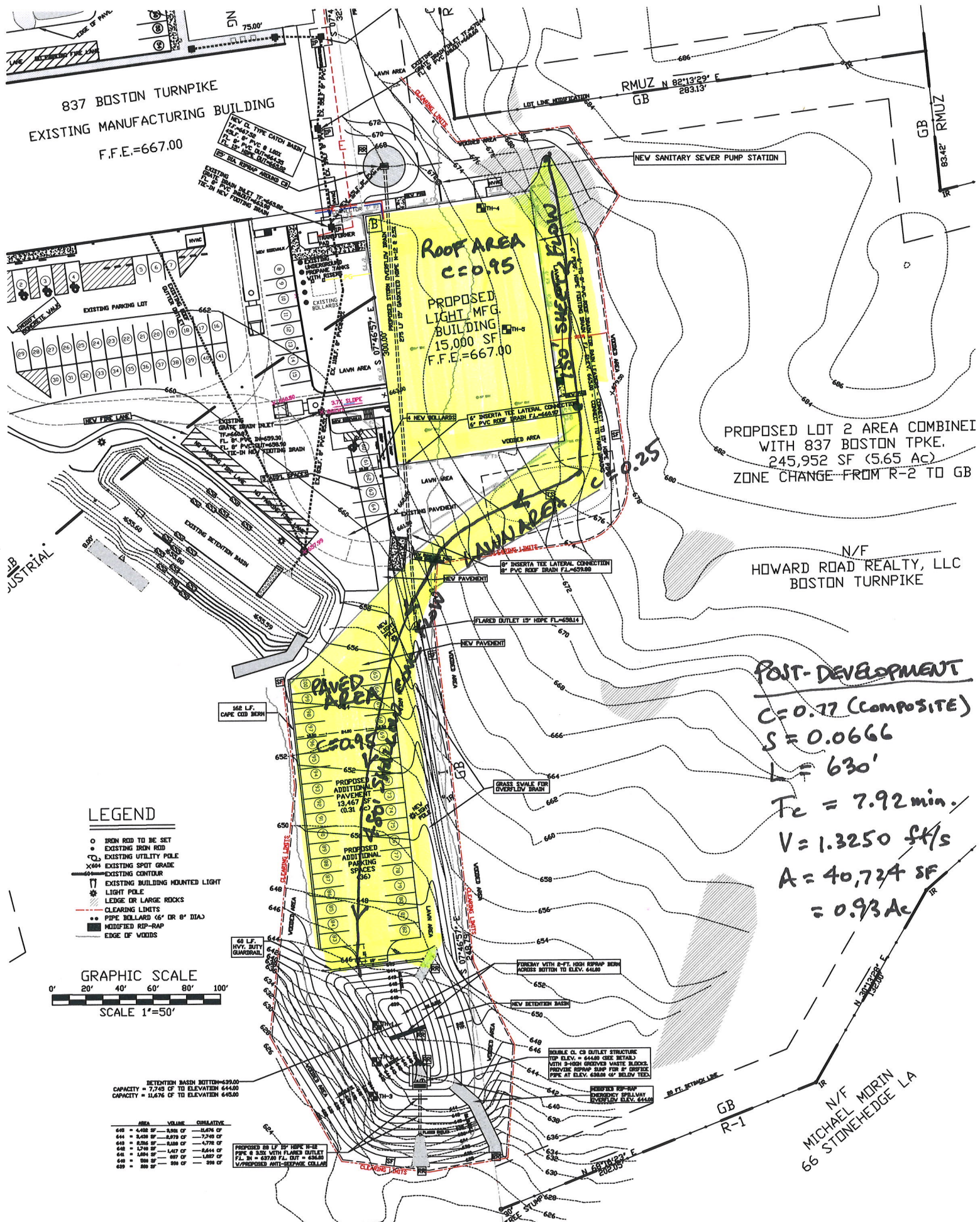
Velocity, V:

0.52194116

ft/s

Units for time of concentration calculation: ft=foot, km=kilometer, m=meter, min=minute,  
s=second.





PROPOSED LOT 2 AREA COMBINED  
WITH 837 BOSTON TPKE.  
245,952 SF (5.65 AC)  
ZONE CHANGE FROM R-2 TO GB

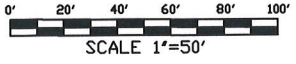
N/F  
HOWARD ROAD REALTY, LLC  
BOSTON TURNPIKE

**POST-DEVELOPMENT**  
 $C = 0.77$  (COMPOSITE)  
 $S = 0.0666$   
 $L = 630'$   
 $T_c = 7.92 \text{ min.}$   
 $V = 1.3250 \text{ ft/s}$   
 $A = 40,724 \text{ SF}$   
 $= 0.93 \text{ AC}$

**LEGEND**

- IRON ROD TO BE SET
- EXISTING IRON ROD
- EXISTING UTILITY POLE
- × EXISTING SPOT GRADE
- EXISTING CONTOUR
- EXISTING BUILDING MOUNTED LIGHT
- LIGHT POLE
- LEDGE OR LARGE ROCKS
- CLEARING LIMITS
- PIPE BOLLARD 6" OR 8" DIA.
- MODIFIED RIP-RAP
- EDGE OF WOODS

**GRAPHIC SCALE**



RETENTION BASIN BOTTOM=639.00  
CAPACITY = 7,745 CF TO ELEVATION 644.00  
CAPACITY = 11,676 CF TO ELEVATION 648.00

AREA	VOLUME	CUMULATIVE
640 = 4,408 SF	8,908 CF	8,908 CF
644 = 8,616 SF	8,973 CF	17,881 CF
648 = 8,264 SF	8,338 CF	26,219 CF
648 = 1,748 SF	1,437 CF	27,656 CF
648 = 1,894 SF	887 CF	28,543 CF
648 = 888 SF	938 CF	29,481 CF

PROPOSED 8" UP 12" HOLE IN-PIPE  
PIPE @ 30' WITH FLARED OUTLET  
F.L. IN = 637.85 F.L. OUT = 638.00  
V=PROPOSED 400' DRAINAGE COLLECTOR

**POST-DEVELOPMENT  
DRAINAGE AREA MAP**

## Time of Concentration Calculator

Compute watershed time of concentration using FAA equation (rational method), Kirpich equation, or Kerby equation

Welcome registered user!

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Research, and Software, Ltd.

All features enabled

<http://www.LMNOeng.com>

Select Equation and Units:

Click to Calculate

FAA (Rational method) ▼

Rational runoff coefficient, c: 0.77

Watercourse slope, S: 0.0666

ft/ft or m/m

Longest flow length, L: 630

feet ▼

Time of concentration, t: 7.9243803

minutes ▼

Velocity, V: 1.3250247

ft/s ▼

Units for time of concentration calculation: ft=foot, km=kilometer, m=meter, min=minute, s=second.



Location name: Bolton, Connecticut,

USA\*

Latitude: 41.785°, Longitude:

-72.4644°

Elevation: 593.66 ft\*\*

\* source: ESRI Maps

\*\* source: USGS



## POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk,  
Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

[PF\\_tabular](#) | [PF\\_graphical](#) | [Maps & aerals](#)

### PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches) <sup>1</sup>										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.331 (0.255-0.429)	0.402 (0.309-0.522)	0.519 (0.398-0.676)	0.616 (0.469-0.806)	0.750 (0.555-1.03)	0.850 (0.618-1.19)	0.956 (0.677-1.39)	1.08 (0.722-1.59)	1.25 (0.808-1.91)	1.39 (0.880-2.17)
10-min	0.468 (0.361-0.607)	0.570 (0.438-0.740)	0.736 (0.564-0.958)	0.874 (0.667-1.14)	1.06 (0.787-1.45)	1.21 (0.875-1.68)	1.36 (0.959-1.96)	1.53 (1.02-2.25)	1.77 (1.15-2.71)	1.97 (1.25-3.07)
15-min	0.551 (0.424-0.714)	0.671 (0.516-0.870)	0.867 (0.664-1.13)	1.03 (0.784-1.35)	1.25 (0.926-1.71)	1.42 (1.03-1.98)	1.59 (1.13-2.31)	1.79 (1.20-2.65)	2.08 (1.35-3.18)	2.32 (1.47-3.61)
30-min	0.745 (0.574-0.966)	0.907 (0.697-1.18)	1.17 (0.898-1.52)	1.39 (1.06-1.82)	1.69 (1.25-2.31)	1.92 (1.39-2.68)	2.16 (1.53-3.12)	2.43 (1.63-3.59)	2.82 (1.82-4.30)	3.14 (1.99-4.89)
60-min	0.939 (0.723-1.22)	1.14 (0.879-1.48)	1.48 (1.13-1.92)	1.75 (1.34-2.29)	2.13 (1.58-2.92)	2.42 (1.76-3.38)	2.72 (1.92-3.94)	3.06 (2.05-4.52)	3.55 (2.30-5.43)	3.96 (2.51-6.17)
2-hr	1.21 (0.937-1.56)	1.47 (1.13-1.89)	1.88 (1.45-2.44)	2.23 (1.71-2.90)	2.70 (2.01-3.69)	3.06 (2.24-4.26)	3.44 (2.46-4.99)	3.89 (2.62-5.72)	4.58 (2.97-6.95)	5.16 (3.28-7.99)
3-hr	1.40 (1.08-1.80)	1.69 (1.31-2.17)	2.16 (1.67-2.79)	2.56 (1.96-3.32)	3.10 (2.32-4.22)	3.50 (2.57-4.88)	3.94 (2.83-5.72)	4.47 (3.01-6.55)	5.29 (3.44-8.01)	6.00 (3.81-9.25)
6-hr	1.76 (1.37-2.26)	2.13 (1.66-2.73)	2.73 (2.12-3.51)	3.23 (2.50-4.18)	3.92 (2.95-5.32)	4.43 (3.27-6.14)	4.98 (3.60-7.21)	5.67 (3.83-8.25)	6.74 (4.39-10.1)	7.66 (4.89-11.7)
12-hr	2.18 (1.71-2.77)	2.65 (2.07-3.38)	3.42 (2.67-4.37)	4.05 (3.15-5.21)	4.93 (3.72-6.65)	5.58 (4.14-7.70)	6.29 (4.56-9.03)	7.15 (4.86-10.3)	8.50 (5.56-12.7)	9.66 (6.18-14.7)
24-hr	2.56 (2.02-3.25)	3.15 (2.48-4.00)	4.12 (3.23-5.24)	4.92 (3.83-6.29)	6.02 (4.57-8.08)	6.83 (5.10-9.39)	7.72 (5.64-11.1)	8.83 (6.01-12.7)	10.6 (6.93-15.7)	12.1 (7.75-18.2)
2-day	2.89 (2.29-3.64)	3.61 (2.85-4.55)	4.78 (3.77-6.05)	5.75 (4.51-7.32)	7.09 (5.42-9.50)	8.07 (6.07-11.1)	9.16 (6.75-13.1)	10.6 (7.21-15.1)	12.8 (8.44-18.9)	14.8 (9.55-22.2)
3-day	3.14 (2.49-3.95)	3.93 (3.11-4.94)	5.21 (4.12-6.58)	6.28 (4.93-7.97)	7.75 (5.94-10.4)	8.82 (6.66-12.1)	10.0 (7.42-14.4)	11.6 (7.92-16.5)	14.1 (9.29-20.7)	16.3 (10.5-24.4)
4-day	3.37 (2.68-4.22)	4.20 (3.34-5.28)	5.57 (4.41-7.02)	6.71 (5.28-8.49)	8.27 (6.35-11.0)	9.41 (7.11-12.9)	10.7 (7.92-15.3)	12.3 (8.46-17.5)	15.0 (9.92-22.0)	17.4 (11.2-26.0)
7-day	3.98 (3.18-4.98)	4.92 (3.93-6.16)	6.46 (5.13-8.10)	7.73 (6.11-9.75)	9.49 (7.30-12.6)	10.8 (8.15-14.6)	12.2 (9.04-17.3)	14.0 (9.64-19.8)	16.9 (11.2-24.7)	19.5 (12.6-28.9)
10-day	4.61 (3.69-5.75)	5.61 (4.48-6.99)	7.23 (5.76-9.05)	8.58 (6.80-10.8)	10.4 (8.05-13.8)	11.8 (8.94-15.9)	13.3 (9.85-18.7)	15.2 (10.5-21.4)	18.2 (12.0-26.4)	20.7 (13.5-30.6)
20-day	6.61 (5.32-8.19)	7.67 (6.17-9.52)	9.41 (7.54-11.7)	10.9 (8.64-13.6)	12.8 (9.90-16.7)	14.3 (10.8-19.0)	15.9 (11.7-21.8)	17.7 (12.3-24.7)	20.4 (13.6-29.4)	22.6 (14.7-33.2)
30-day	8.32 (6.71-10.3)	9.41 (7.58-11.6)	11.2 (8.99-13.9)	12.7 (10.1-15.8)	14.7 (11.4-19.0)	16.3 (12.3-21.4)	17.9 (13.0-24.2)	19.6 (13.6-27.2)	21.9 (14.7-31.4)	23.8 (15.5-34.8)
45-day	10.5 (8.46-12.9)	11.6 (9.36-14.3)	13.4 (10.8-16.6)	14.9 (12.0-18.6)	17.0 (13.2-21.8)	18.7 (14.1-24.3)	20.3 (14.7-27.1)	21.9 (15.3-30.2)	23.9 (16.0-34.1)	25.4 (16.6-37.0)
60-day	12.3 (9.94-15.1)	13.4 (10.9-16.5)	15.3 (12.3-18.9)	16.9 (13.5-20.9)	19.0 (14.7-24.3)	20.7 (15.6-26.8)	22.3 (16.2-29.6)	23.8 (16.7-32.8)	25.7 (17.3-36.5)	26.9 (17.6-39.1)

<sup>1</sup> Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

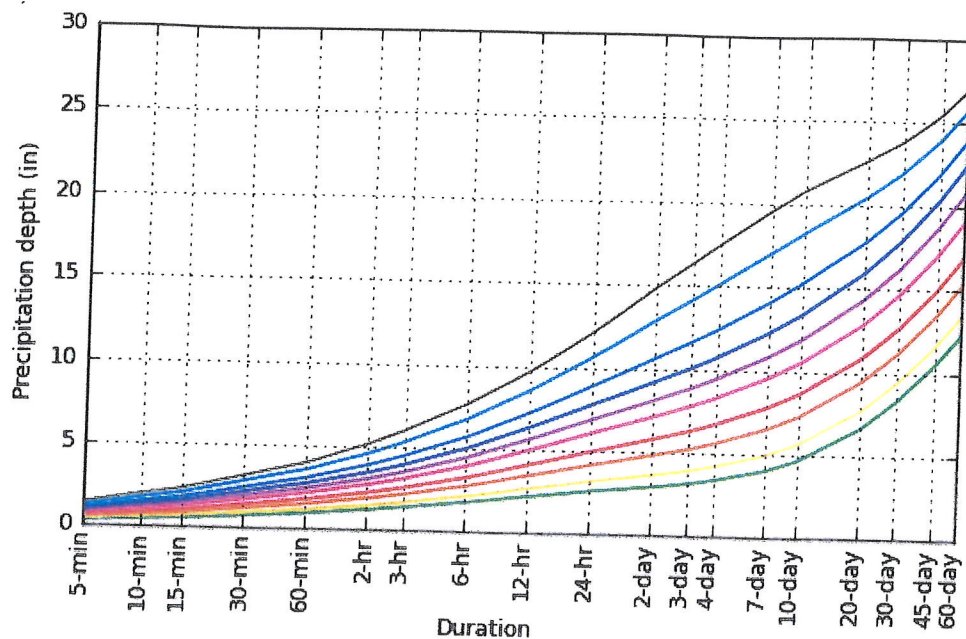
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

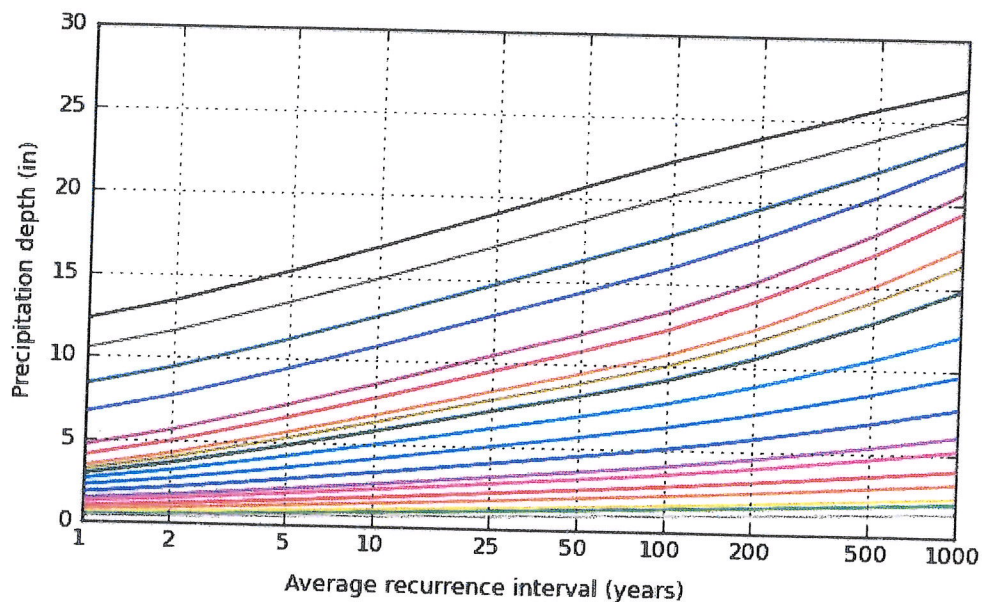
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PDS-based depth-duration-frequency (DDF) curves  
Latitude: 41.7850°, Longitude: -72.4644°



Average recurrence interval (years)
1
2
5
10
25
50
100
200
500
1000

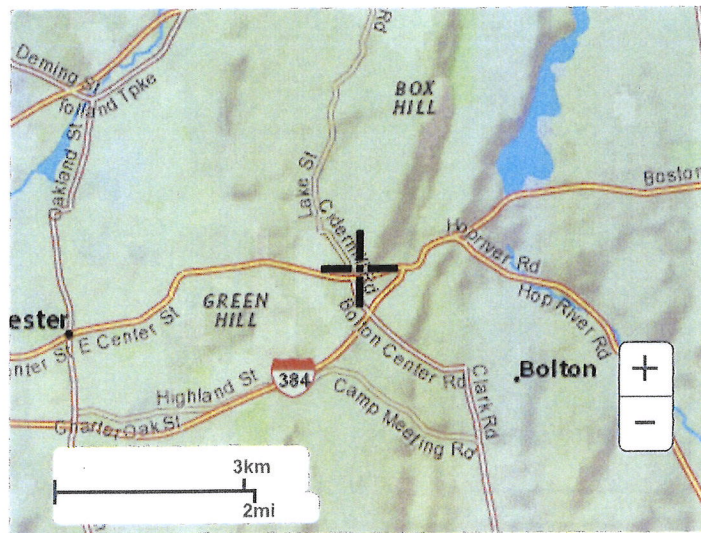


Duration	
5-min	2-day
10-min	3-day
15-min	4-day
30-min	7-day
60-min	10-day
2-hr	20-day
3-hr	30-day
6-hr	45-day
12-hr	60-day
24-hr	

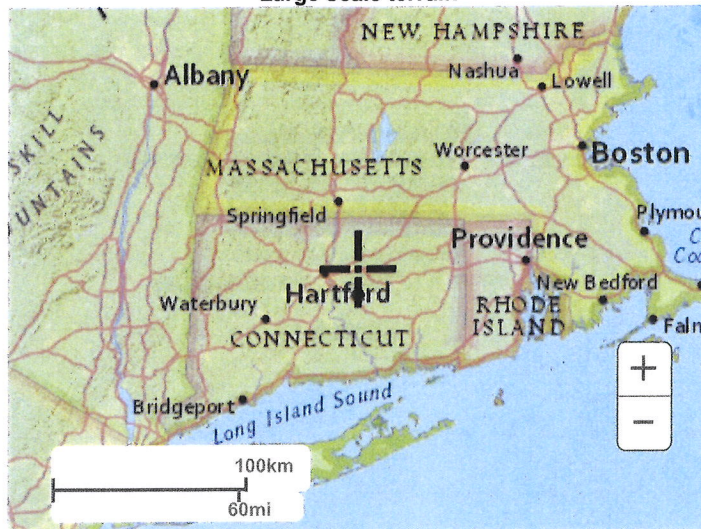
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**Maps & aerials**

**Small scale terrain**



Large scale terrain

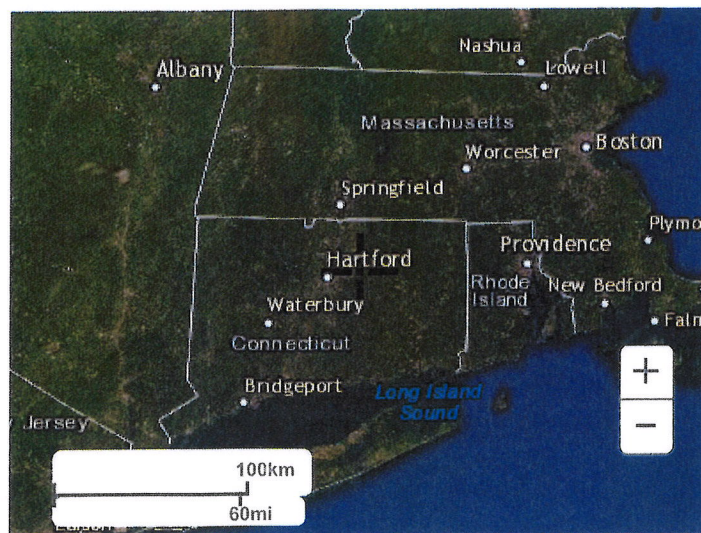


Large scale map



Large scale aerial





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[National Weather Service](#)  
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1325 East West Highway  
Silver Spring, MD 20910  
Questions?: [HDSC.Questions@noaa.gov](mailto:HDSC.Questions@noaa.gov)

[Disclaimer](#)



NOAA Atlas 14, Volume 10, Version 3  
Location name: Bolton, Connecticut, USA\*  
Latitude: 41.785°, Longitude: -72.4644°  
Elevation: 593.66 ft\*\*

\* source: ESRI Maps  
\*\* source: USGS



## POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sandra Pavlovic, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Orlan Wilhite

NOAA, National Weather Service, Silver Spring, Maryland

[PF tabular](#) | [PF graphical](#) | [Maps & aeries](#)

### PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches/hour) <sup>1</sup>										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	3.97 (3.06-5.15)	4.82 (3.71-6.26)	6.23 (4.78-8.11)	7.39 (5.63-9.67)	9.00 (6.66-12.3)	10.2 (7.42-14.3)	11.5 (8.12-16.6)	12.9 (8.66-19.1)	15.0 (9.70-22.9)	16.7 (10.6-26.0)
10-min	2.81 (2.17-3.64)	3.42 (2.63-4.44)	4.42 (3.38-5.75)	5.24 (4.00-6.86)	6.38 (4.72-8.72)	7.23 (5.25-10.1)	8.13 (5.75-11.8)	9.15 (6.14-13.5)	10.6 (6.87-16.2)	11.8 (7.48-18.4)
15-min	2.20 (1.70-2.86)	2.68 (2.06-3.48)	3.47 (2.66-4.51)	4.11 (3.14-5.38)	5.00 (3.70-6.84)	5.67 (4.12-7.92)	6.38 (4.51-9.24)	7.17 (4.82-10.6)	8.33 (5.39-12.7)	9.28 (5.87-14.5)
30-min	1.49 (1.15-1.93)	1.81 (1.39-2.35)	2.34 (1.80-3.05)	2.78 (2.12-3.64)	3.38 (2.50-4.63)	3.84 (2.79-5.36)	4.31 (3.05-6.25)	4.85 (3.26-7.17)	5.63 (3.64-8.61)	6.28 (3.97-9.78)
60-min	0.939 (0.723-1.22)	1.14 (0.879-1.48)	1.48 (1.13-1.92)	1.75 (1.34-2.29)	2.13 (1.58-2.92)	2.42 (1.76-3.38)	2.72 (1.92-3.94)	3.06 (2.05-4.52)	3.55 (2.30-5.43)	3.96 (2.51-6.17)
2-hr	0.606 (0.468-0.781)	0.733 (0.566-0.946)	0.941 (0.724-1.22)	1.11 (0.853-1.45)	1.35 (1.01-1.84)	1.53 (1.12-2.13)	1.72 (1.23-2.49)	1.95 (1.31-2.86)	2.29 (1.49-3.48)	2.58 (1.64-4.00)
3-hr	0.465 (0.361-0.598)	0.562 (0.436-0.723)	0.720 (0.556-0.930)	0.851 (0.654-1.11)	1.03 (0.772-1.41)	1.17 (0.857-1.62)	1.31 (0.942-1.90)	1.49 (1.00-2.18)	1.76 (1.15-2.67)	2.00 (1.27-3.08)
6-hr	0.294 (0.229-0.377)	0.356 (0.277-0.456)	0.457 (0.354-0.587)	0.540 (0.417-0.698)	0.655 (0.492-0.888)	0.739 (0.547-1.03)	0.832 (0.602-1.20)	0.947 (0.640-1.38)	1.13 (0.733-1.69)	1.28 (0.816-1.96)
12-hr	0.181 (0.142-0.230)	0.220 (0.172-0.280)	0.284 (0.221-0.363)	0.336 (0.261-0.433)	0.409 (0.309-0.552)	0.463 (0.344-0.639)	0.522 (0.378-0.750)	0.594 (0.403-0.859)	0.705 (0.461-1.05)	0.802 (0.513-1.22)
24-hr	0.107 (0.084-0.135)	0.131 (0.103-0.167)	0.172 (0.134-0.218)	0.205 (0.160-0.262)	0.251 (0.190-0.337)	0.285 (0.212-0.391)	0.322 (0.235-0.461)	0.368 (0.251-0.529)	0.440 (0.289-0.653)	0.503 (0.323-0.760)
2-day	0.060 (0.048-0.076)	0.075 (0.059-0.095)	0.100 (0.078-0.126)	0.120 (0.094-0.153)	0.148 (0.113-0.198)	0.168 (0.126-0.231)	0.191 (0.141-0.274)	0.220 (0.150-0.315)	0.267 (0.176-0.394)	0.309 (0.199-0.463)
3-day	0.044 (0.035-0.055)	0.055 (0.043-0.069)	0.072 (0.057-0.091)	0.087 (0.069-0.111)	0.108 (0.083-0.144)	0.123 (0.092-0.168)	0.139 (0.103-0.199)	0.161 (0.110-0.229)	0.196 (0.129-0.288)	0.227 (0.146-0.339)
4-day	0.035 (0.028-0.044)	0.044 (0.035-0.055)	0.058 (0.046-0.073)	0.070 (0.055-0.088)	0.086 (0.066-0.115)	0.098 (0.074-0.134)	0.111 (0.083-0.159)	0.129 (0.088-0.183)	0.157 (0.103-0.229)	0.181 (0.117-0.270)
7-day	0.024 (0.019-0.030)	0.029 (0.023-0.037)	0.038 (0.031-0.048)	0.046 (0.036-0.058)	0.056 (0.043-0.075)	0.064 (0.049-0.087)	0.073 (0.054-0.103)	0.083 (0.057-0.118)	0.101 (0.067-0.147)	0.116 (0.075-0.172)
10-day	0.019 (0.015-0.024)	0.023 (0.019-0.029)	0.030 (0.024-0.038)	0.036 (0.028-0.045)	0.043 (0.034-0.057)	0.049 (0.037-0.066)	0.055 (0.041-0.078)	0.063 (0.044-0.089)	0.076 (0.050-0.110)	0.086 (0.056-0.128)
20-day	0.014 (0.011-0.017)	0.016 (0.013-0.020)	0.020 (0.016-0.024)	0.023 (0.018-0.028)	0.027 (0.021-0.035)	0.030 (0.023-0.040)	0.033 (0.024-0.045)	0.037 (0.026-0.052)	0.042 (0.028-0.061)	0.047 (0.031-0.069)
30-day	0.012 (0.009-0.014)	0.013 (0.011-0.016)	0.016 (0.012-0.019)	0.018 (0.014-0.022)	0.020 (0.016-0.026)	0.023 (0.017-0.030)	0.025 (0.018-0.034)	0.027 (0.019-0.038)	0.030 (0.020-0.044)	0.033 (0.022-0.048)
45-day	0.010 (0.008-0.012)	0.011 (0.009-0.013)	0.012 (0.010-0.015)	0.014 (0.011-0.017)	0.016 (0.012-0.020)	0.017 (0.013-0.023)	0.019 (0.014-0.025)	0.020 (0.014-0.028)	0.022 (0.015-0.032)	0.024 (0.015-0.034)
60-day	0.009 (0.007-0.010)	0.009 (0.008-0.011)	0.011 (0.009-0.013)	0.012 (0.009-0.015)	0.013 (0.010-0.017)	0.014 (0.011-0.019)	0.016 (0.011-0.021)	0.017 (0.012-0.023)	0.018 (0.012-0.025)	0.019 (0.012-0.027)

<sup>1</sup> Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

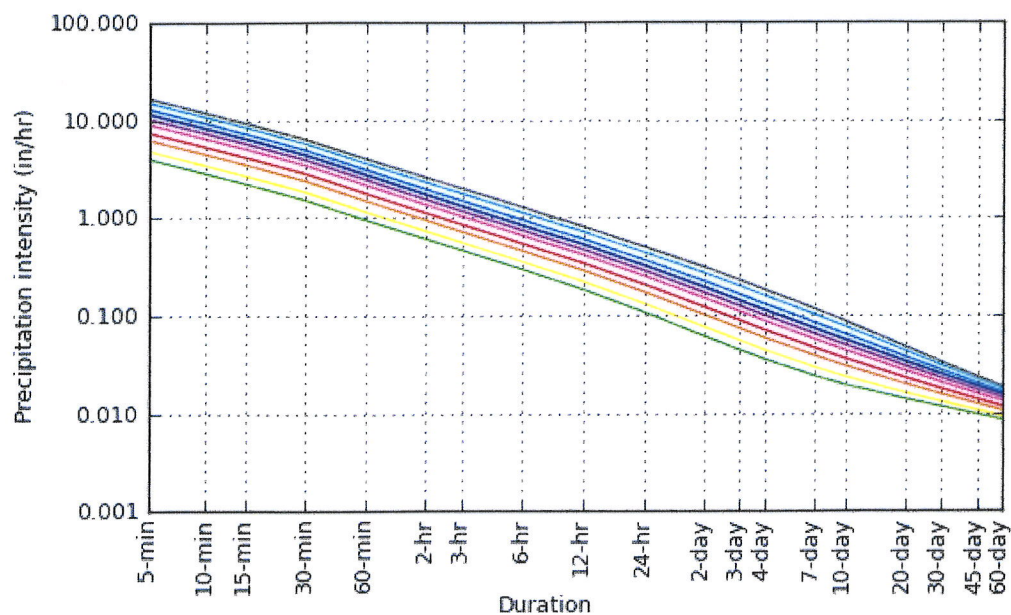
Please refer to NOAA Atlas 14 document for more information.

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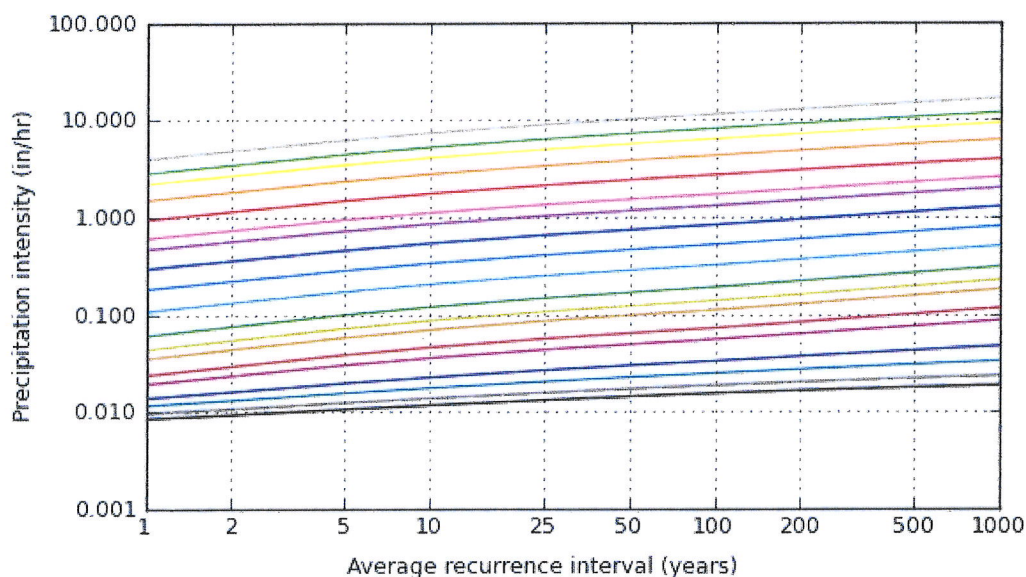
### PF graphical



PDS-based intensity-duration-frequency (IDF) curves  
Latitude: 41.7850°, Longitude: -72.4644°



Average recurrence interval (years)	
1	2
5	10
25	50
100	200
500	1000



Duration	
5-min	2-day
10-min	3-day
15-min	4-day
30-min	7-day
60-min	10-day
2-hr	20-day
3-hr	30-day
6-hr	45-day
12-hr	60-day
24-hr	

## Maps & aerials

Small scale terrain







Proposed Conditions										
2 Year Design Storm										
Rainfall Intensity (in/hr)										
Project: Able Coil Building Addition										
Bolton, Connecticut										
Duration (min)	5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9
Rainfall Intensity (in/hr)	4.82	4.79	4.76	4.74	4.71	4.68	4.65	4.62	4.60	4.57
Duration (min)	6.0	6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9
Rainfall Intensity (in/hr)	4.54	4.51	4.48	4.46	4.43	4.40	4.37	4.34	4.32	4.29
Duration (min)	7.0	7.1	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9
Rainfall Intensity (in/hr)	4.26	4.23	4.20	4.18	4.15	4.12	4.09	4.06	4.04	4.01
Duration (min)	8.0	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9
Rainfall Intensity (in/hr)	3.98	3.95	3.92	3.90	3.87	3.84	3.81	3.78	3.76	3.73
Duration (min)	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9
Rainfall Intensity (in/hr)	3.70	3.67	3.64	3.62	3.59	3.56	3.53	3.50	3.48	3.45
Duration (min)	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9
Rainfall Intensity (in/hr)	3.42	3.41	3.39	3.38	3.36	3.35	3.33	3.32	3.30	3.29
Duration (min)	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9
Rainfall Intensity (in/hr)	3.27	3.26	3.24	3.23	3.21	3.20	3.18	3.17	3.15	3.14
Duration (min)	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9
Rainfall Intensity (in/hr)	3.12	3.11	3.09	3.08	3.06	3.05	3.04	3.02	3.01	2.99
Duration (min)	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9
Rainfall Intensity (in/hr)	2.98	2.96	2.95	2.93	2.92	2.90	2.89	2.87	2.86	2.84
Duration (min)	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9
Rainfall Intensity (in/hr)	2.83	2.81	2.80	2.78	2.77	2.75	2.74	2.72	2.71	2.69
Duration (min)	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9
Rainfall Intensity (in/hr)	2.68	2.67	2.67	2.66	2.66	2.65	2.65	2.64	2.63	2.63
Duration (min)	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9
Rainfall Intensity (in/hr)	2.62	2.62	2.61	2.60	2.60	2.59	2.59	2.58	2.58	2.57
Duration (min)	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9
Rainfall Intensity (in/hr)	2.56	2.56	2.55	2.55	2.54	2.54	2.53	2.52	2.52	2.51
Duration (min)	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9
Rainfall Intensity (in/hr)	2.51	2.50	2.49	2.49	2.48	2.48	2.47	2.47	2.46	2.45
Duration (min)	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9
Rainfall Intensity (in/hr)	2.45	2.44	2.44	2.43	2.42	2.42	2.41	2.41	2.40	2.40
Duration (min)	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9
Rainfall Intensity (in/hr)	2.39	2.38	2.38	2.37	2.37	2.36	2.36	2.35	2.34	2.34
Duration (min)	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9
Rainfall Intensity (in/hr)	2.33	2.33	2.32	2.31	2.31	2.30	2.30	2.29	2.29	2.28
Duration (min)	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9
Rainfall Intensity (in/hr)	2.27	2.27	2.26	2.26	2.25	2.25	2.24	2.23	2.23	2.22
Duration (min)	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9
Rainfall Intensity (in/hr)	2.22	2.21	2.20	2.20	2.19	2.19	2.18	2.18	2.17	2.16
Duration (min)	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9
Rainfall Intensity (in/hr)	2.16	2.15	2.15	2.14	2.13	2.13	2.12	2.12	2.11	2.11
Duration (min)	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9
Rainfall Intensity (in/hr)	2.10	2.09	2.09	2.08	2.08	2.07	2.07	2.06	2.05	2.05
Duration (min)	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9
Rainfall Intensity (in/hr)	2.04	2.04	2.03	2.02	2.02	2.01	2.01	2.00	2.00	1.99
Duration (min)	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9
Rainfall Intensity (in/hr)	1.98	1.98	1.97	1.97	1.96	1.96	1.95	1.94	1.94	1.93
Duration (min)	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9
Rainfall Intensity (in/hr)	1.93	1.92	1.91	1.91	1.90	1.90	1.89	1.89	1.88	1.87
Duration (min)	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9
Rainfall Intensity (in/hr)	1.87	1.86	1.86	1.85	1.84	1.84	1.83	1.83	1.82	1.82
Duration (min)	30.0									
Rainfall Intensity (in/hr)	1.81									
Directions: 1. Determine the NOAA Atlas 14, Volume 10, Version 3 Point Precipitation Frequency Estimate for the project location. 2. Input the 5-minute, 10-minute, 15 minute and 30 minute rainfall intensities in the corresponding shaded boxes. 3. The rainfall intensities will populate after hitting return.										
Project No.										



Proposed Conditions 10 Year Design Storm										
Rainfall Intensity (in/hr)										
Project: Able Coil Building Addition Bolton, Connecticut										
Duration (min)	5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9
Rainfall Intensity (in/hr)	7.39	7.35	7.30	7.26	7.22	7.18	7.13	7.09	7.05	7.00
Duration (min)	6.0	6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9
Rainfall Intensity (in/hr)	6.96	6.92	6.87	6.83	6.79	6.75	6.70	6.66	6.62	6.57
Duration (min)	7.0	7.1	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9
Rainfall Intensity (in/hr)	6.53	6.49	6.44	6.40	6.36	6.32	6.27	6.23	6.19	6.14
Duration (min)	8.0	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9
Rainfall Intensity (in/hr)	6.10	6.06	6.01	5.97	5.93	5.89	5.84	5.80	5.76	5.71
Duration (min)	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9
Rainfall Intensity (in/hr)	5.67	5.63	5.58	5.54	5.50	5.46	5.41	5.37	5.33	5.28
Duration (min)	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9
Rainfall Intensity (in/hr)	5.24	5.22	5.19	5.17	5.15	5.13	5.10	5.08	5.06	5.04
Duration (min)	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9
Rainfall Intensity (in/hr)	5.01	4.99	4.97	4.95	4.92	4.90	4.88	4.86	4.83	4.81
Duration (min)	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9
Rainfall Intensity (in/hr)	4.79	4.77	4.74	4.72	4.70	4.68	4.65	4.63	4.61	4.58
Duration (min)	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9
Rainfall Intensity (in/hr)	4.56	4.54	4.52	4.49	4.47	4.45	4.43	4.40	4.38	4.36
Duration (min)	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9
Rainfall Intensity (in/hr)	4.34	4.31	4.29	4.27	4.25	4.22	4.20	4.18	4.16	4.13
Duration (min)	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9
Rainfall Intensity (in/hr)	4.11	4.10	4.09	4.08	4.07	4.07	4.06	4.05	4.04	4.03
Duration (min)	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9
Rainfall Intensity (in/hr)	4.02	4.01	4.00	3.99	3.99	3.98	3.97	3.96	3.95	3.94
Duration (min)	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9
Rainfall Intensity (in/hr)	3.93	3.92	3.91	3.91	3.90	3.89	3.88	3.87	3.86	3.85
Duration (min)	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9
Rainfall Intensity (in/hr)	3.84	3.84	3.83	3.82	3.81	3.80	3.79	3.78	3.77	3.76
Duration (min)	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9
Rainfall Intensity (in/hr)	3.76	3.75	3.74	3.73	3.72	3.71	3.70	3.69	3.68	3.68
Duration (min)	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9
Rainfall Intensity (in/hr)	3.67	3.66	3.65	3.64	3.63	3.62	3.61	3.60	3.60	3.59
Duration (min)	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9
Rainfall Intensity (in/hr)	3.58	3.57	3.56	3.55	3.54	3.53	3.52	3.52	3.51	3.50
Duration (min)	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9
Rainfall Intensity (in/hr)	3.49	3.48	3.47	3.46	3.45	3.45	3.44	3.43	3.42	3.41
Duration (min)	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9
Rainfall Intensity (in/hr)	3.40	3.39	3.38	3.37	3.37	3.36	3.35	3.34	3.33	3.32
Duration (min)	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9
Rainfall Intensity (in/hr)	3.31	3.30	3.29	3.29	3.28	3.27	3.26	3.25	3.24	3.23
Duration (min)	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9
Rainfall Intensity (in/hr)	3.22	3.21	3.21	3.20	3.19	3.18	3.17	3.16	3.15	3.14
Duration (min)	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9
Rainfall Intensity (in/hr)	3.13	3.13	3.12	3.11	3.10	3.09	3.08	3.07	3.06	3.05
Duration (min)	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9
Rainfall Intensity (in/hr)	3.05	3.04	3.03	3.02	3.01	3.00	2.99	2.98	2.98	2.97
Duration (min)	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9
Rainfall Intensity (in/hr)	2.96	2.95	2.94	2.93	2.92	2.91	2.90	2.90	2.89	2.88
Duration (min)	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9
Rainfall Intensity (in/hr)	2.87	2.86	2.85	2.84	2.83	2.82	2.82	2.81	2.80	2.79
Duration (min)	30.0									
Rainfall Intensity (in/hr)	2.78									
Directions: 1. Determine the NOAA Atlas 14, Volume 10, Version 3 Point Precipitation Frequency Estimate for the project location. 2. Input the 5-minute, 10-minute, 15 minute and 30 minute rainfall intensities in the corresponding shaded boxes. 3. The rainfall intensities will populate after hitting return.										
Project No.										



Proposed Conditions										
50 Year Design Storm										
Rainfall Intensity (in/hr)										
Project: Able Coil Building Addition										
Bolton, Connecticut										
Duration (min)	5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9
Rainfall Intensity (in/hr)	10.20	10.14	10.08	10.02	9.96	9.90	9.84	9.78	9.72	9.67
Duration (min)	6.0	6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9
Rainfall Intensity (in/hr)	9.61	9.55	9.49	9.43	9.37	9.31	9.25	9.19	9.13	9.07
Duration (min)	7.0	7.1	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9
Rainfall Intensity (in/hr)	9.01	8.95	8.89	8.83	8.77	8.72	8.66	8.60	8.54	8.48
Duration (min)	8.0	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9
Rainfall Intensity (in/hr)	8.42	8.36	8.30	8.24	8.18	8.12	8.06	8.00	7.94	7.88
Duration (min)	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9
Rainfall Intensity (in/hr)	7.82	7.76	7.71	7.65	7.59	7.53	7.47	7.41	7.35	7.29
Duration (min)	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9
Rainfall Intensity (in/hr)	7.23	7.20	7.17	7.14	7.11	7.07	7.04	7.01	6.98	6.95
Duration (min)	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9
Rainfall Intensity (in/hr)	6.92	6.89	6.86	6.82	6.79	6.76	6.73	6.70	6.67	6.64
Duration (min)	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9
Rainfall Intensity (in/hr)	6.61	6.57	6.54	6.51	6.48	6.45	6.42	6.39	6.36	6.33
Duration (min)	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9
Rainfall Intensity (in/hr)	6.29	6.26	6.23	6.20	6.17	6.14	6.11	6.08	6.04	6.01
Duration (min)	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9
Rainfall Intensity (in/hr)	5.98	5.95	5.92	5.89	5.86	5.83	5.79	5.76	5.73	5.70
Duration (min)	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9
Rainfall Intensity (in/hr)	5.67	5.66	5.65	5.63	5.62	5.61	5.60	5.58	5.57	5.56
Duration (min)	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9
Rainfall Intensity (in/hr)	5.55	5.54	5.52	5.51	5.50	5.49	5.47	5.46	5.45	5.44
Duration (min)	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9
Rainfall Intensity (in/hr)	5.43	5.41	5.40	5.39	5.38	5.37	5.35	5.34	5.33	5.32
Duration (min)	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9
Rainfall Intensity (in/hr)	5.30	5.29	5.28	5.27	5.26	5.24	5.23	5.22	5.21	5.19
Duration (min)	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9
Rainfall Intensity (in/hr)	5.18	5.17	5.16	5.15	5.13	5.12	5.11	5.10	5.08	5.07
Duration (min)	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9
Rainfall Intensity (in/hr)	5.06	5.05	5.04	5.02	5.01	5.00	4.99	4.97	4.96	4.95
Duration (min)	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9
Rainfall Intensity (in/hr)	4.94	4.93	4.91	4.90	4.89	4.88	4.86	4.85	4.84	4.83
Duration (min)	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9
Rainfall Intensity (in/hr)	4.82	4.80	4.79	4.78	4.77	4.76	4.74	4.73	4.72	4.71
Duration (min)	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9
Rainfall Intensity (in/hr)	4.69	4.68	4.67	4.66	4.65	4.63	4.62	4.61	4.60	4.58
Duration (min)	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9
Rainfall Intensity (in/hr)	4.57	4.56	4.55	4.54	4.52	4.51	4.50	4.49	4.47	4.46
Duration (min)	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9
Rainfall Intensity (in/hr)	4.45	4.44	4.43	4.41	4.40	4.39	4.38	4.36	4.35	4.34
Duration (min)	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9
Rainfall Intensity (in/hr)	4.33	4.32	4.30	4.29	4.28	4.27	4.25	4.24	4.23	4.22
Duration (min)	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9
Rainfall Intensity (in/hr)	4.21	4.19	4.18	4.17	4.16	4.15	4.13	4.12	4.11	4.10
Duration (min)	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9
Rainfall Intensity (in/hr)	4.08	4.07	4.06	4.05	4.04	4.02	4.01	4.00	3.99	3.97
Duration (min)	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9
Rainfall Intensity (in/hr)	3.96	3.95	3.94	3.93	3.91	3.90	3.89	3.88	3.86	3.85
Duration (min)	30.0									
Rainfall Intensity (in/hr)	3.84									
Directions: 1. Determine the NOAA Atlas 14, Volume 10, Version 3 Point Precipitation Frequency Estimate for the project location. 2. Input the 5-minute, 10-minute, 15 minute and 30 minute rainfall intensities in the corresponding shaded boxes. 3. The rainfall intensities will populate after hitting return.										
Project No.										



Proposed Conditions										
100 Year Design Storm										
Rainfall Intensity (in/hr)										
Project: Able Coil Building Addition										
Bolton, Connecticut										
Duration (min)	5.0	5.1	5.2	5.3	5.4	5.5	5.6	5.7	5.8	5.9
Rainfall Intensity (in/hr)	11.50	11.43	11.37	11.30	11.23	11.16	11.10	11.03	10.96	10.89
Duration (min)	6.0	6.1	6.2	6.3	6.4	6.5	6.6	6.7	6.8	6.9
Rainfall Intensity (in/hr)	10.83	10.76	10.69	10.62	10.56	10.49	10.42	10.35	10.29	10.22
Duration (min)	7.0	7.1	7.2	7.3	7.4	7.5	7.6	7.7	7.8	7.9
Rainfall Intensity (in/hr)	10.15	10.08	10.02	9.95	9.88	9.82	9.75	9.68	9.61	9.55
Duration (min)	8.0	8.1	8.2	8.3	8.4	8.5	8.6	8.7	8.8	8.9
Rainfall Intensity (in/hr)	9.48	9.41	9.34	9.28	9.21	9.14	9.07	9.01	8.94	8.87
Duration (min)	9.0	9.1	9.2	9.3	9.4	9.5	9.6	9.7	9.8	9.9
Rainfall Intensity (in/hr)	8.80	8.74	8.67	8.60	8.53	8.47	8.40	8.33	8.26	8.20
Duration (min)	10.0	10.1	10.2	10.3	10.4	10.5	10.6	10.7	10.8	10.9
Rainfall Intensity (in/hr)	8.13	8.10	8.06	8.03	7.99	7.96	7.92	7.89	7.85	7.82
Duration (min)	11.0	11.1	11.2	11.3	11.4	11.5	11.6	11.7	11.8	11.9
Rainfall Intensity (in/hr)	7.78	7.75	7.71	7.68	7.64	7.61	7.57	7.54	7.50	7.47
Duration (min)	12.0	12.1	12.2	12.3	12.4	12.5	12.6	12.7	12.8	12.9
Rainfall Intensity (in/hr)	7.43	7.40	7.36	7.33	7.29	7.26	7.22	7.19	7.15	7.12
Duration (min)	13.0	13.1	13.2	13.3	13.4	13.5	13.6	13.7	13.8	13.9
Rainfall Intensity (in/hr)	7.08	7.05	7.01	6.98	6.94	6.91	6.87	6.84	6.80	6.77
Duration (min)	14.0	14.1	14.2	14.3	14.4	14.5	14.6	14.7	14.8	14.9
Rainfall Intensity (in/hr)	6.73	6.70	6.66	6.63	6.59	6.56	6.52	6.49	6.45	6.42
Duration (min)	15.0	15.1	15.2	15.3	15.4	15.5	15.6	15.7	15.8	15.9
Rainfall Intensity (in/hr)	6.38	6.37	6.35	6.34	6.32	6.31	6.30	6.28	6.27	6.26
Duration (min)	16.0	16.1	16.2	16.3	16.4	16.5	16.6	16.7	16.8	16.9
Rainfall Intensity (in/hr)	6.24	6.23	6.21	6.20	6.19	6.17	6.16	6.15	6.13	6.12
Duration (min)	17.0	17.1	17.2	17.3	17.4	17.5	17.6	17.7	17.8	17.9
Rainfall Intensity (in/hr)	6.10	6.09	6.08	6.06	6.05	6.04	6.02	6.01	5.99	5.98
Duration (min)	18.0	18.1	18.2	18.3	18.4	18.5	18.6	18.7	18.8	18.9
Rainfall Intensity (in/hr)	5.97	5.95	5.94	5.92	5.91	5.90	5.88	5.87	5.86	5.84
Duration (min)	19.0	19.1	19.2	19.3	19.4	19.5	19.6	19.7	19.8	19.9
Rainfall Intensity (in/hr)	5.83	5.81	5.80	5.79	5.77	5.76	5.75	5.73	5.72	5.70
Duration (min)	20.0	20.1	20.2	20.3	20.4	20.5	20.6	20.7	20.8	20.9
Rainfall Intensity (in/hr)	5.69	5.68	5.66	5.65	5.63	5.62	5.61	5.59	5.58	5.57
Duration (min)	21.0	21.1	21.2	21.3	21.4	21.5	21.6	21.7	21.8	21.9
Rainfall Intensity (in/hr)	5.55	5.54	5.52	5.51	5.50	5.48	5.47	5.46	5.44	5.43
Duration (min)	22.0	22.1	22.2	22.3	22.4	22.5	22.6	22.7	22.8	22.9
Rainfall Intensity (in/hr)	5.41	5.40	5.39	5.37	5.36	5.35	5.33	5.32	5.30	5.29
Duration (min)	23.0	23.1	23.2	23.3	23.4	23.5	23.6	23.7	23.8	23.9
Rainfall Intensity (in/hr)	5.28	5.26	5.25	5.23	5.22	5.21	5.19	5.18	5.17	5.15
Duration (min)	24.0	24.1	24.2	24.3	24.4	24.5	24.6	24.7	24.8	24.9
Rainfall Intensity (in/hr)	5.14	5.12	5.11	5.10	5.08	5.07	5.06	5.04	5.03	5.01
Duration (min)	25.0	25.1	25.2	25.3	25.4	25.5	25.6	25.7	25.8	25.9
Rainfall Intensity (in/hr)	5.00	4.99	4.97	4.96	4.94	4.93	4.92	4.90	4.89	4.88
Duration (min)	26.0	26.1	26.2	26.3	26.4	26.5	26.6	26.7	26.8	26.9
Rainfall Intensity (in/hr)	4.86	4.85	4.83	4.82	4.81	4.79	4.78	4.77	4.75	4.74
Duration (min)	27.0	27.1	27.2	27.3	27.4	27.5	27.6	27.7	27.8	27.9
Rainfall Intensity (in/hr)	4.72	4.71	4.70	4.68	4.67	4.66	4.64	4.63	4.61	4.60
Duration (min)	28.0	28.1	28.2	28.3	28.4	28.5	28.6	28.7	28.8	28.9
Rainfall Intensity (in/hr)	4.59	4.57	4.56	4.54	4.53	4.52	4.50	4.49	4.48	4.46
Duration (min)	29.0	29.1	29.2	29.3	29.4	29.5	29.6	29.7	29.8	29.9
Rainfall Intensity (in/hr)	4.45	4.43	4.42	4.41	4.39	4.38	4.37	4.35	4.34	4.32
Duration (min)	30.0									
Rainfall Intensity (in/hr)	4.31									
Directions: 1. Determine the NOAA Atlas 14, Volume 10, Version 3 Point Precipitation Frequency Estimate for the project location. 2. Input the 5-minute, 10-minute, 15 minute and 30 minute rainfall intensities in the corresponding shaded boxes. 3. The rainfall intensities will populate after hitting return.										
Project No.										



## Palazzini, Danielle

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**From:** Randy Becker  
**Sent:** Thursday, August 11, 2022 12:57 PM  
**To:** Laura Bonola  
**Subject:** Fwd: Bolton Town Engineer Review for Able Coil  
**Attachments:** Able Coil Pre Development Drainage Area.pdf; Able Coil Post Development Drainage Area.pdf

Laura:

Please post my email response and attachments to ViewPoint.

Thanks,

Randy

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**From:** Randy Becker <randyb@pdsec.com>  
**Sent:** Wednesday, August 10, 2022 5:49:28 PM  
**To:** patricecarson@boltonct.org <patricecarson@boltonct.org>; Steven Rockefeller <srockefeller@ablecoil.com>; Bill Jodice <billj@pdsec.com>; Joseph M. Dillon, P.E. <jdillon@nlja.com>  
**Subject:** Fwd: Bolton Town Engineer Review for Able Coil

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**From:** Randy Becker <r.becker@charter.net>  
**Sent:** Wednesday, August 10, 2022 5:43 PM  
**To:** Randy Becker <randyb@pdsec.com>  
**Subject:** RE: Bolton Town Engineer Review for Able Coil

Patrice:

I received Joe Dillon's comments today at 3:30 pm and will address each one for final approval:

1. *Separate pre and post development drainage area maps should be provided. Each map should identify the drainage area, coverage type and Time of Concentration flow path. Additionally, the Time of Concentration flow path should be within the limits of the drainage area boundaries. I have attached preliminary maps showing the pre and post development drainage areas. I will discuss these with Joe.*
2. *Calculations should be provided for the determination of the pre and post development runoff coefficients, including a list of the coefficients selected for the various cover types. Runoff coefficients are provided in the drainage calcs.*
3. *Additional existing topography is necessary to the south of the proposed stormwater basin to determine the slope at which the stormwater basin will discharge to. The existing slope should be suitably flat to avoid*

erosion. Additionally, the proposed 630 and 632 contours do not tie into an existing contour along the west side of the basin. Additional topographic surveying is needed downslope of the proposed basin. The detention basin increased in size from the original design.

4. Contour elevations should be shown for the proposed contours within the stormwater basin. Contour elevations will be added.
5. We would recommend that an outlet structure be proposed for the stormwater basin. Currently as shown, the stormwater basin will impound 5.75' of water before cresting at the weir. This poses a hazardous condition and the rate at which the level would drop is indeterminate. An outlet structure would allow the basin to drain to at least the level of the water quality volume and the discharge pipe could be extended to the south to a location with a suitable slope. The recommendation for an outlet structure is valid, even in well-drained soils. A design will be submitted and will be discussed with Joe.
6. The top of the proposed embankment should be a minimum of 8 ft wide. The top of the basin is at least 8 feet wide.
7. A cross-sectional detail should be provided through the detention basin to show where the cuts and fills occur and how the fill embankment will be constructed with regards to existing topography. Additionally, a trapezoidal shear key should be constructed at the interconnection of the fill embankment with the existing subgrade. A cross section will be provided.
8. The 2004 Connecticut Stormwater Quality Manual recommends that that, for pond side slopes steeper than 4:1, a 10 ft. safety bench be provided 10' outward from the normal water edge to the toe of the pond side slope. A design will be submitted and will be discussed with Joe.
9. Erosion control fabric should be provided for the slopes within the interior of the stormwater basin. Erosion control for the inside of the basin will be noted.

I believe that all of these items can be easily resolved within a two-week period.

Thank you.

Randy Becker

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**From:** Randy Becker <randyb@pdsec.com>  
**Sent:** Wednesday, August 10, 2022 3:39 PM  
**To:** Randy Becker <r.becker@charter.net>  
**Subject:** Fwd: Bolton Town Engineer Review for Able Coil

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**From:** Carson, Patrice <pcarson@boltonct.org>  
**Sent:** Wednesday, August 10, 2022 3:30:55 PM  
**To:** Randy Becker <randyb@pdsec.com>; Steven Rockefeller <srockefeller@ablecoil.com>; Lynne Thompson <lthompson@Ablecoil.com>; Bill Jodice <billj@pdsec.com>; Brian Farrell <brianf@pdsec.com>  
**Subject:** FW: Bolton Town Engineer Review for Able Coil

Good afternoon,

Below please find Town Engineer Joe Dillon's review of what was submitted as revised information for your application #PL-22-4.

Thank you and see you at tonight's meeting via zoom.

Patrice

*Patrice L. Carson, AICP  
Consulting Director of Community Development  
Town of Bolton  
860.359.1454*

---

**From:** Joseph M. Dillon, P.E. [<mailto:jdillon@nlja.com>]  
**Sent:** Wednesday, August 10, 2022 2:58 PM  
**To:** Carson, Patrice <[pcarson@boltonct.org](mailto:pcarson@boltonct.org)>  
**Cc:** Rupert, Jim <[jrupert@boltonct.org](mailto:jrupert@boltonct.org)>  
**Subject:** Abel Coil Review

The following is a review of the information submitted received through 08-09-22, for the Abel Coil expansion project.

- Separate pre and post development drainage area maps should be provided. Each map should identify the drainage area, coverage type and Time of Concentration flow path. Additionally, the Time of Concentration flow path should be within the limits of the drainage area boundaries.
- Calculations should be provided for the determination of the pre and post development runoff coefficients, including a list of the coefficients selected for the various cover types.
- Additional existing topography is necessary to the south of the proposed stormwater basin to determine the slope at which the stormwater basin will discharge to. The existing slope should be suitably flat to avoid erosion. Additionally, the proposed 630 and 632 contours do not tie into an existing contour along the west side of the basin.
- Contour elevations should be shown for the proposed contours within the stormwater basin.
- We would recommend that an outlet structure be proposed for the stormwater basin. Currently as shown, the stormwater basin will impound 5.75' of water before cresting at the weir. This poses a hazardous condition and the rate at which the level would drop is indeterminate. An outlet structure would allow the basin to drain to at least the level of the water quality volume and the discharge pipe could be extended to the south to a location with a suitable slope.
- The top of the proposed embankment should be a minimum of 8 ft wide.
- A cross-sectional detail should be provided through the detention basin to show where the cuts and fills occur and how the fill embankment will be constructed with regards to existing topography. Additionally, a trapezoidal shear key should be constructed at the interconnection of the fill embankment with the existing subgrade.
- The 2004 Connecticut Stormwater Quality Manual recommends that that, for pond side slopes steeper than 4:1, a 10 ft. safety bench be provided 10' outward from the normal water edge to the toe of the pond side slope.
- Erosion control fabric should be provided for the slopes within the interior of the stormwater basin.

Should you have any question, please feel free to contact me.

Joe

---

Joseph M. Dillon, P.E.

 **Nathan L. Jacobson & Associates**  
*Consulting Civil and Environmental Engineers*

***Celebrating our 50th Anniversary 1972-2022***

86 Main Street, P.O. Box 337, Chester, Connecticut 06412-0337

860.526.9591 • [jdillon@nlja.com](mailto:jdillon@nlja.com) • [www.nlja.com](http://www.nlja.com)





**PDS ENGINEERING &  
CONSTRUCTION, INC**

September 6, 2022

Town of Bolton  
222 Bolton Center Road  
Bolton, CT 06043

Attention: Patrice L. Carson, AICP, Consulting Director of Community Development

Reference: **Howard Road Realty, LLC / Able Coil & Electronics, Inc., 837 Boston Turnpike**  
Proposed 15,000 Sq. Ft. Light Manufacturing Pre-Engineered Metal Building

Subject: **Response to Special Permit #PL-22-4 Site Plan Review Comments**

Dear Patrice:

PDS Engineering & Construction, Inc. has received the Town Engineer's review comments of August 10<sup>th</sup>, and is providing the responses below for each, which we trust will be satisfactory:

**A. COMMENTS FROM THE TOWN'S ENGINEER**

1. **Pre- and Post-Development Drainage Area Maps** – Separate pre and post development drainage area maps should be provided. Each map should identify the drainage area, coverage type and Time of Concentration flow path. Additionally, the Time of Concentration flow path should be within the limits of the drainage area boundaries.

*Response: Preliminary maps showing the pre and post development drainage areas were sent to the Engineer on 8/11/22. Subsequently, I have attached revised drainage area maps with Time of Concentration calculator worksheets to the revised Stormwater Management Report dated 9/06/22.*

2. **Pre- and Post-Development Runoff Coefficients** – Calculations should be provided for the determination of the pre and post development runoff coefficients, including a list of the coefficients selected for the various cover types.

*Response: See table of Rational Method runoff coefficients below. Runoff coefficients are provided in the drainage calcs where the Rational Method was used for the determination of Time of Concentration. For pre-development, runoff coefficient  $c = 0.25$  was used. For post-development  $c = 0.77$  was used (as an estimated composite). For Water Quality Volume, runoff coefficient  $c = 0.68$  was calculated with the formula  $R = \text{volumetric runoff coefficient} = 0.05 + 0.009(I)$ , where  $I = \% \text{ Impervious cover}$ .  
 $I = 28,467/40,724 = 70\%$   
 $R = 0.05 + 0.009(I) = 0.05 + 0.009(70) = 0.68$*

Simplified Table of Rational Method Runoff Coefficients

GROUND COVER	RUNOFF COEFFICIENT, c
Lawns	0.05 - 0.35
Forest	0.05 - 0.25
Cultivated land	0.08-0.41
Meadow	0.1 - 0.5
Parks, cemeteries	0.1 - 0.25
Unimproved areas	0.1 - 0.3
Pasture	0.12 - 0.62
Residential areas	0.3 - 0.75
Business areas	0.5 - 0.95
Industrial areas	0.5 - 0.9
Asphalt streets	0.7 - 0.95
Brick streets	0.7 - 0.85
Roofs	0.75 - 0.95
Concrete streets	0.7 - 0.95

3. **Additional Existing Topography** – Additional existing topography is necessary to the south of the proposed stormwater basin to determine the slope at which the stormwater basin will discharge to. The existing slope should be suitably flat to avoid erosion. Additionally, the proposed 630 and 632 contours do not tie into an existing contour along the west side of the basin.

*Response: Additional topographic surveying was done downslope and west of the proposed basin. The detention basin increased in area from the original design, and now has 4:1 interior slopes and 2:1 exterior slopes. Erosion will be controlled with straw erosion control blankets on the inside and polypropylene turf reinforcement mats on the outside of the detention basin.*

4. **Contour Elevations Within the Stormwater Basin** – Contour elevations should be shown for the proposed contours within the stormwater basin.

*Response: Contour elevations within the detention basin have been added to the revised drawings.*

5. **Outlet Structure** – We would recommend that an outlet structure be proposed for the stormwater basin. Currently as shown, the stormwater basin will impound 5.75' of water before cresting at the weir. This poses a hazardous condition and the rate at which the level would drop is indeterminate. An outlet structure would allow the basin to drain to at least the level of the water quality volume and the discharge pipe could be extended to the south to a location with a suitable slope.

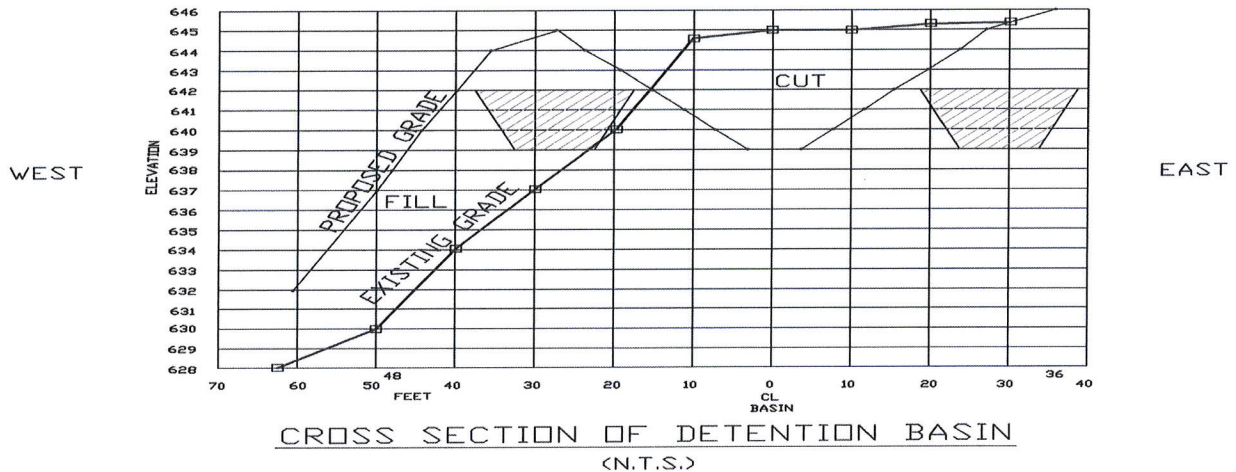
*Response: An outlet structure was added to the design. It is a double CL Type II catch basin with two (2) PVC pipe inlets and one (1) 15" HDPE pipe outlet with rip-rap. The Hydraflow Hydrographs program was utilized to size the basin and determine the orifice sizes and elevations. See revised Stormwater Management Report dated 9/06/22.*

6. **Top of Embankment Width** – The top of the proposed embankment should be a minimum of 8 ft wide.

*Response: The top of the basin is at least 8 feet wide. See revised Site Plan.*

7. **Cross Section of Basin** – A cross-sectional detail should be provided through the detention basin to show where the cuts and fills occur and how the fill embankment will be constructed with regards to existing topography. Additionally, a trapezoidal shear key should be constructed at the interconnection of the fill embankment with the existing subgrade.

Response: A cross section of the detention basin, with a trapezoidal shear key equal to 50% of the berm embankment cross-sectional height and width, is shown below:



8. **Pond Slopes** – The 2004 Connecticut Stormwater Quality Manual recommends that that, for pond side slopes steeper than 4:1, a 10 ft. safety bench be provided 10' outward from the normal water edge to the toe of the pond side slope.

Response: The detention basin has been designed with a 4:1 interior slope and a 2:1 exterior slope. These slopes will be seeded and stabilized as specified. There is a 2-foot high rip-rap berm across the middle of the bottom to create a forebay for settlement of solids.

9. **Erosion Control Fabric** – Erosion control fabric should be provided for the slopes within the interior of the stormwater basin.

Response: There are notes on the drawings that state to seed and stabilize moderate slopes of 3:1 or 4:1 with straw erosion control blankets per manufacturer's installation instructions. Seed and stabilize steeper slopes with polypropylene turf reinforcement mats per manufacturer's installation instructions.

I hope that these responses are acceptable to you and your staff. PDS has been working very closely with the Owner and the Town of Bolton on the Zoning Change Application and Special Permit Application approval process. I really appreciate the guidance and feedback from your staff. I believe that we are well-prepared for the Public Hearing on September 14, 2022. If you should need additional information, please do not hesitate to contact me.

Sincerely,

PDS ENGINEERING & CONSTRUCTION, INC.

*Randy J. Becker*

**Randy J. Becker, P.E.**  
Senior Construction Manager  
Cell (860) 978-6316  
Email: [randyb@pdsec.com](mailto:randyb@pdsec.com)

cc: Steven Rockefeller, President, Able Coil & Electronics, Inc.  
Bill Jodice, President, PDS Engineering & Construction, Inc.  
Jim Rupert, Bolton Fire Marshal  
Bruce Dixon, Bolton Fire Chief  
Barbara Kelly, Inland Wetlands Commission  
Thad King, EHHD  
Joe Dillon, P.E., Jacobson



837 BOSTON TURNPIKE  
EXISTING MANUFACTURING BUILDING  
F.F.E.=667.00

PROPOSED LIGHT MFG.  
BUILDING  
15,000 SF  
F.F.E.=667.00

PROPOSED LOT 2 AREA COMBINED  
WITH 837 BOSTON TPKE.  
245,952 SF (5.65 AC)  
ZONE CHANGE FROM R-2 TO GB

N/F  
HOWARD ROAD REALTY, LLC  
BOSTON TURNPIKE

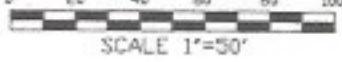
PRE-DEVELOPMENT

$C = 0.25$   
 $S = 0.0704$   
 $L = 625'$   
 $T_c = 19.95755 \approx 20 \text{ min.}$   
 $V = 0.5249416 \text{ ft/s}$

# LEGEND

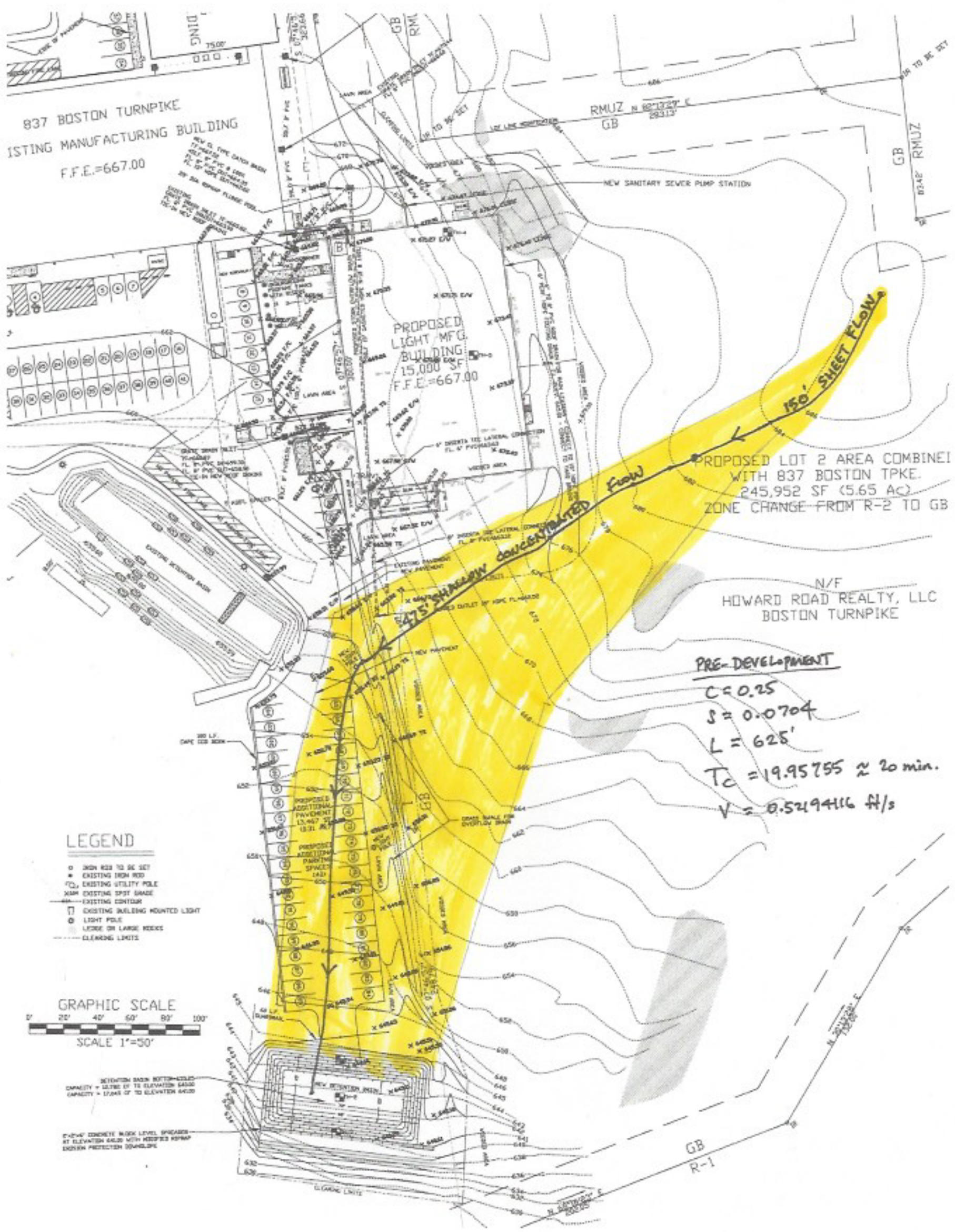
- JOHN 822 TO BE SET
- EXISTING IRON ROD
- EXISTING UTILITY POLE
- EXISTING SPOT SHADE
- EXISTING CONTIGR
- EXISTING BUILDING MOUNTED LIGHT
- LIGHT POLE
- LENSES ON LARGE ROCKS
- CLEARING LIMITS

## GRAPHIC SCALE



RETENTION BASIN BUTTER-CEDED  
CAPACITY = 12,786 OF TO ELEVATION 645.00  
CAPACITY = 17,046 OF TO ELEVATION 640.00

6" DIA CONCRETE MARK LEVEL SPEAKERS  
AT ELEVATION 640.00 WITH HORIZONTAL KOPRA  
EXPOSED PROTECTION SHAWLS





837 BOSTON TURNPIKE  
EXISTING MANUFACTURING BUILDING  
F.F.E.=667.00

NEW 12" D.I. GUYOT BATH  
FLOORING  
FL. 8" PVC FLOOR  
FL. 12" D.I. GUYOT BATH  
20' DIA. GUYOT PLUMBING

NEW SANITARY SEWER PUMP STATION

PROPOSED LOT 2 AREA COMBINED  
WITH 837 BOSTON TPKE.  
245,952 SF (5.65 AC)  
ZONE CHANGE FROM R-2 TO GB

HOWARD ROAD REALTY, LLC  
BOSTON TURNPIKE

Past Development  
C=0.77 (Composite)  
S=0.0666  
L=630'  
Tc=7.9243803 min.  
V=1.3250247

LEGEND

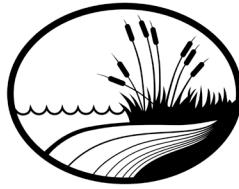
- OPEN PLOT TO BE SET
- EXISTING IRON PIPES
- EXISTING UTILITY POLE
- EXISTING SPOT GRADE
- EXISTING CONTOUR
- EXISTING BUILDING MOUNTED LIGHT
- LIGHT POLE
- LARGE OR LARGE ROCKS
- CLEARING LIMITS

GRAPHIC SCALE  
0' 20' 40' 60' 80' 100'  
SCALE 1"=50'

NEW CONCRETE BLOCK LEVEL SPREADER  
AT ELEVATION 645.0 WITH 18" DIA. IRON  
DESIGN PROTECTION DOWNHILL

N/F  
HOWARD ROAD REALTY, LLC  
BOSTON TURNPIKE

POST DEVELOPMENT  
 $C = 0.77$  (COMPOSITE)  
 $S = 0.0666$   
 $L = 630'$   
 $T_c = 7.9243803 \text{ min.}$   
 $V = 1.3250247$  ✓



**NEW ENGLAND ENVIRONMENTAL SERVICES**

*Wetland Consulting Specialists Since 1983*

August 17, 2022

Mr. Kevin Grindle, ASLA, PLA  
Barton & Loguidice Company  
41 Sequin Drive, Suite 3  
Glastonbury, CT 06033

Re: 60 Villa Louisa Road, LLC  
Bolton, Connecticut

Dear Mr. Grindle:

I inspected the property at 60 Villa Louisa Road, LLC for wetlands and watercourses on August 14, 2022.

There are no wetlands or watercourses on the property.

If you have any questions, feel free to contact me.

Respectively Submitted,

New England Environmental Services

R. Richard Snarski  
Professional Wetlands Scientist #1391  
Registered Professional Soil Scientist  
Consulting Botanist

RRS/srh

**Proposed Prohibition Language:**

**SECTION 5 – PROHIBITED USES**

(new)5J: Any Cannabis Establishment, as defined by PA 21-1 “An Act Concerning Responsible and Equitable Regulation of Adult Use Cannabis” or “RERACA” including but not limited to: Retailer, Hybrid Retailer, Dispensary Facility, Cultivator, Micro-Cultivator, Food and Beverage Manufacturer, Product Packager or Producer. However, for the purposes of this Section, the lawful delivery and/or transportation of Cannabis within Bolton by any person or entity who has obtained and maintains all necessary licenses by the State of CT and, as defined by RERACA shall not be subject to this prohibition.

**Proposed Language to allow by Special Permit:**

**SECTION 10- Golf Courses Special Provisions**

**Golf Courses-10A-10G (to remain)**

**New 10H- Cannabis Establishments**

**1. Purpose**

The purpose of this section is to allow for the comprehensive review and deliberation of cannabis establishments to ensure any cannabis establishment proposed is in harmony with and will not have a detrimental effect upon the surrounding area and, that both the operation and location are protective of public health and welfare.

**2. Definition of Terms:**

For the purposes of this section only, the terms referred to herein shall be defined and used as outlined and defined in PA-21-1 (SB 1201) as amended.

**Cannabis Establishment:** a non-profit, person(s) or business entity otherwise engaged in an activity which would be defined as a producer, dispensary facility, cultivator, micro-cultivator, retailer, hybrid retailer, food and beverage manufacturer, product manufacturer, and product packager-by PA-21-1 (SB 1201).

**Cannabis Hybrid Retailer:** A person that is licensed to purchase cannabis and sell cannabis and medical marijuana products.

**Cannabis Retailer:** A person, excluding a dispensary facility and hybrid retailer, that is licensed to purchase cannabis from producers, cultivators, micro-cultivators, product manufacturers and food and beverage manufacturers and sell cannabis to consumers and research programs.

**Cultivator:** A person that is licensed to engage in the cultivation, growing and propagation of the cannabis plant at an establishment with no less than fifteen thousand square feet of grow space.

**Micro-cultivator:** A person licensed to engage in the cultivation, growing and propagation of the cannabis plant at an *establishment containing not less than two thousand square feet and not more than ten thousand square feet of grow space*, prior any expansion authorized by the Commissioner of DCP.



**Food and Beverage Manufacturer:** A person that is licensed to own and operate a place of business that acquires cannabis and creates food and beverages.

**Producer:** A person that is licensed as a producer pursuant to section 21a-408i of the general statutes and any regulations adopted thereunder.

**Product Manufacturer:** A person that is licensed to obtain cannabis, extract and manufacture products exclusive to such license type.

**Product packager:** A person that is licensed to package and label cannabis.

**3. Cannabis Establishments Allowed by Special Use Permit**

Cannabis Establishments may be permitted in the Gateway Mixed Use Industrial Zone, General Business Zone and the Industrial Zone subject to the standards specified herein in addition to the standards set forth in Section 16 of these Regulations.

Cannabis Establishment Type	GMUIZ	I	B
Retailer or Dispensary Facility	SP	X	SP
Hybrid Retailer	SP	X	SP
Cultivator	SP	SP	SP
Micro-Cultivator	SP	SP	SP
Food and Beverage Manufacturer	SP	SP	X
Product Manufacturer	SP	SP	X
Product Packager	SP	SP	X
Producer	SP	SP	SP

**4. Cannabis Retailers, Hybrid Retailers and Dispensaries:**

**A. All retail establishments shall meet the following criteria:**

1. Shall not be located within one thousand (1000) feet of any other cannabis establishment as defined herein or, within 500ft of any child day-care facility, park, playground, school or church when measured using a direct line between any part of the permit premises and any part of a lot used as such.
2. Hours of operation will be limited to no earlier than 8:00 AM or later than 9:00 PM.
3. No consumption of any cannabis product may take place on site.
4. Signage shall be in accordance with Section 300-29 of these Regulations and comply with the provisions of RERACA.

**B. Any application for a Cannabis Retailer shall include:**

1. An operational plan to indicate at a minimum, how the facility will be managed related to:
  - i. Hours of operation
  - ii. Security and access
  - iii. Installed signage
  - iv. Odor monitoring and mitigation
  - v. Parking and Circulation and Traffic



**5. Cultivation and Production Establishments:**

**A. All Cultivation and Production Establishments shall be reviewed in accordance with the following criteria:**

1. All activity shall be conducted within a permanent building.
2. A building or portion thereof containing a cultivation and/or production use shall not be located within seven-hundred fifty (750) feet of a residential structure or within one thousand (1000) feet of any other cannabis establishment as defined herein.
3. Limited retail may be allowed in accordance with State Licensing provided the request is made at the time of application to the Town or, following initial approval a new Special Permit is sought.

**B. Any application for Cultivation or Production shall include:**

1. An operational plan to indicate at a minimum, how the facility will be managed related to:
  - i. Hours of Operation
  - ii. Number of employees
  - iii. Security and Access
  - iv. Water Demands
  - v. Odor Monitoring and Mitigation to demonstrate that odors and fumes will be substantially removed from the air prior to being vented from the building.

**6. Accessory/Co-Located Uses:**

Limited Retail, Manufacturing and/or packaging of cannabis products may be allowed in accordance with the State of Connecticut licensing requirements provided such request is made at the time of application. If a Special Permit for a cultivation establishment, has been issued, a modification of the Special Permit will be required to establish and/or co-locate an additional cannabis related use on the property.

**7. Conditional Approval:**

In addition to any conditions imposed pursuant to Section 16 of the Regulations, all special permits for cannabis establishments shall be subject to the following conditions:

- A.** Special Permits shall be approved with the condition that the applicant continuously maintains all necessary approvals required by the State of Connecticut for the duration of the operation.
- B.** The conditional approval shall not be considered fully executed until a copy of the State issued license has been provided to the Land Use Office. Such approval must be filed with the Town within six (6) months of the issuance of the Special Permit.
  1. The Zoning Officer may issue not more than two six-month extensions to this requirement provided the applicant can demonstrate that an application has been filed with the Department of Consumer Protection and the expected decision date will fall within the timeframe of the extension.
- C.** No entity shall commence operations, sales or advertisements without a valid, current license from the State and fully executed Special Permit from the Town.



PL-22-8

Planning Permit

Status: Active

Date Created: Aug 17, 2022

Applicant

Nathaniel Fleming  
nfleming@fedusengineering.com  
70 ESSEX STREET  
MYSTIC, CT 06355  
8024406130

Primary Location

271 HOP RIVER RD  
BOLTON, CT 06043

Owner:

IMS Petroleum, LLC  
271 HOP RIVER RD BOLTON, CT 06043

Permit Info

Permit For

Special Permit Modification

Building Type

Automotive Service Station

Development Title

271 Hop River Road

Occupancy Type

Commercial

Project Cost

--

Project Description

AN EXISTING AUTO REPAIR SHOP TO BE REMOVED AND REPLACED WITH A CONVENIENCE STORE. EXISTING DEBRIS AREAS ON SITE TO BE CLEANED AND REMOVED. DEBRIS AREAS DEPICTED ON SITE PLAN ARE NOT LIMITED TO CLEAN UP AREAS.

Is this a modification of a previously approved application?

Yes, this is a modification.

Comments

--

Additional Applicant Info

Applicant Type

Other

Application Contact Name

Nathaniel Fleming

Additional Project Info

Date of Receipt

--

Hearing Not Required

☐

<b>Legal Notice Date 1</b>	<b>Legal Notice Date 2</b>
--	--
<b>Hearings Commencement Deadline</b>	<b>Hearings Completion Deadline</b>
--	--
<b>Decision Deadline</b>	<b>Extended</b>
--	<input type="checkbox"/>
<b>Existing Gross Sqft</b>	<b>Proposed Gross Sqft</b>
5,708	4,960
<b>Existing Parking Spaces</b>	<b>Proposed Parking Spaces</b>
--	23
<b>Total Acreage / Sqft</b>	<b>Linear Feet of Frontage</b>
14.6	180
<b>Distance to Town Line</b>	
--	

Parcels Included in Project

<b>MBL / Parcel ID</b>	<b>Land Records: Vol.</b>
8/106	185
<b>Land Records: Page</b>	
947	

Internal Use

Conditions

--

Petition Received?

--

Date of Newspaper Publication for Public Hearing

--

Date of Newspaper Publication of Planning and Zoning Commission Action

--

Summary of Planning and Zoning Commission Action

--

Bond Required?

--

Legal/Technical Review NOT Required

☐

Date of Planning and Zoning Commission Action

--

Date Application Received by Inland/Wetlands Commission (if applicable)

--

Date in Inland/Wetlands Commission Action (if applicable)



--

Construction Progress	
Construction Progress	Time Spent (hrs)
--	--

Setbacks	
Front Required	Front Provided
35	142
Back Required	Back Provided
--	997
Left Required	Left Provided
--	73
Right Required	Right Provided
--	78
Open Space Required	Open Space Provided
--	--
Lot Coverage Required	Lot Coverage Provided
--	0.8

Engineer Information	
Company Name	Engineer Name
Fedus Engineering, LLC	Gregg Fedus
Address	City
70 Essex Street	Mystic
State	Zip
CT	06355
Phone	Registration #
--	21231
Insurance Expiration	AOR
--	--
Email	
gfedus@fedusengineering.com	

Architect Information	
Company Name	Architect Name
--	--

<b>Registration #</b>	<b>License Expiration</b>
--	--
<b>Address</b>	<b>City</b>
--	--
<b>State</b>	<b>Zip</b>
--	--
<b>Phone</b>	<b>Email</b>
--	--
<b>AOR</b>	
--	

---

**Attorney Info**

<b>Name</b>	<b>Address</b>
--	--
<b>City</b>	<b>State</b>
--	--
<b>Zip</b>	<b>Phone</b>
--	--
<b>Email</b>	
--	

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**Zoning Site Plan and Special Permit Checklist**

**All draft deeds for any roads, road widenings and easements for drainage, conservation, driveways, utilities**  
Included

**Evidence of request for approval by the Health District and/or Sewer Authority for review, as appropriate**  
Included

**Evidence of submission of application to the Inland Wetlands Commission if it is within that Commission's jurisdiction**  
Included

**Evidence of submission of a request for review and approval by the Fire Marshal and Fire Chief of the water supply for fire protection**  
Not Included

**Copies of any required applications to other local, state or federal regulatory approvals**  
Included

**Written evidence of applicant's legal interest in the subject property (deed, lease option to purchase, bond for deed, etc.)**  
Included

**List of mailing address of all current property owners within 500 feet of the subject property, from the Town Assessor records (for special permit only)**  
Included

**List of all hazardous or potentially hazardous materials which will be present on the property with a full description of procedures that will be used to assure safety with the material safety data sheets**

Not Included

Digital copy of plans in DXF or DGN format if available

Not Included

Paper and digital copies of all reports including hydrology, hydraulic and drainage computations and

Not Included

14 sets of complete stamped and signed site plans measuring 24" x 36

Not Included

A-2 boundary survey of the subject property showing all existing and proposed boundary lines and markers, easements, adjoining property lines and the names of all current abutting property owners

Included

Names of abutting lot owners

USDA Soils boundaries and types

Included

--

Plan title block in the extreme lower right corner (not sideways) to include the name of the town of Bolton

Included

All plan sheets numbered with the format "sheet x of y"

Included

Clear legible plans with all lines, symbols and features readily identifiable

Included

North arrow on each plan including the reference meridian

Included

Graphic bar scale on each plan sheet, not smaller than 1"= 40' unless otherwise approved by the Commission

Included

Overall plan of site at a smaller scale, with sheet index, if the site does not fit on one sheet at a scale of 1"=40'

Included

Key map at a scale of 1"= 500' showing the relation of the site to abutting properties and streets, shown on plan and zoning district boundaries within 500' of site

Included

Original and revision plan dates and revision explanations shown on the affected plan sheets

Included

Existing and proposed grading with two foot contours to T-2 standards, for all ground surfaces, shown on plan

Included

Existing and proposed structures and features, their uses and those to be removed, shown on the plan

Included

HVAC equipment located outside the building(s)

Included

Existing and proposed driveway entrances to street, parking, loading areas, fire lanes, sidewalks and construction detail drawings, shown on plan

Included

Sight distances from property entrances along public roads shown on plan and on profile if grading is needed

Included



**Soil test locations and soil test results shown on plan**

Included

**Existing and proposed sewage disposal systems and design information, shown on plan**

Included

**Outside Storage Areas\**tField

Included

**Underground / overhead utilities, existing and proposed**

Included

**Existing and proposed water supply shown on plan**

Included

**Existing wells and sewage disposal systems on other properties that could conflict with proposed site improvements, shown on plan**

Included

**Existing and proposed footing drains, curtain drains and dry wells, shown on plan**

Included

**Existing and proposed drainage systems, any affected floodway or floodplain and construction detail drawings, shown on plan, including base flood elevation and floor elevation data.**

Included

**Existing and proposed bridges and culverts on or adjacent to the site, shown on plan**

Not Included

**Existing and proposed signs with dimensions and construction detail drawings, shown on plan**

Included

**Existing and proposed fences and walls with dimensions and construction detail drawings, shown on plan**

Included

**Zoning district boundaries affecting the site, shown on plan**

Included

**Table shown on plan of zoning dimensions required and provided for lot area, street frontage, lot width, yard setbacks, impervious area, building coverage and the height and floor area of each building**

Included

**Table on plan of parking / loading spaces required / provided**

Included

**Fire lanes**

Not Included

**New Sidewalks and other pedestrian ways**Field

Included

**Off-site traffic improvements**

Included

**Limits of wetlands as delineated by a certified soil scientist with the soil scientist’s signed certification, shown on plan or a certification signed by a soil scientist that no wetlands are within 100 feet**

Included

<b>Natural features including 100 year flood plain areas, ponds, vernal pools, aquifers, slopes steeper than 25% and potential areas of endangered species, shown on plan</b>	
Included	
<b>Landscaping plan including the locations, numbers, installed sizes, anticipated mature sizes, species and common names of proposed plants plus cost estimate based on published Connecticut DOT unit prices</b>	
Included	
<b>Existing trees of 6” caliper or greater</b>	<b>Significant archaeological sites</b>
Included	Included
<b>Lighting plan including the location, size, height, light intensity coverage areas and manufacturer’s product descriptions for each light type</b>	
Included	
<b>Erosion and Sedimentation Control Plan, with narrative and construction detail drawings, in accordance with the latest Connecticut Guidelines for Soil Erosion and Sediment Control</b>	
Included	
<b>Best management practices to remove contaminants, including sediments and oils, from runoff water, shown on plan, in construct detail drawings, and explained in a report by a qualified professional</b>	
Included	
<b>Architectural elevation drawings of proposed buildings</b>	
Included	
<b>Architectural floor plans of existing and proposed buildings</b>	
Included	
<b>Perspective color drawings or digital views of the site as seen from adjacent roads and from abutting property lines showing the proposed conditions including buildings, landscaping and appurtenant features</b>	
Included	
<b>Traffic Impact Report for applicable sites as described in Zoning Regulations Section 16A.2.k.</b>	
Not Included	
<b>Thorough, well organized drainage design report for before and after development conditions, that conforms to the latest Conn. Dept. of Transportation and Conn. Dept. of Environmental Protection guidelines and requirements with appropriate calculations, maps, graphics and narrative descriptions of hydrology, hydraulics, assumptions, erosion controls, drainage paths and systems for the 1, 2, 10, 50 and 100 year storm events</b>	
Included	
<b>Thorough, well organized drainage design report for before and after development conditions, that conforms to the latest Conn. Dept. of Transportation and Conn. Dept. of Environmental Protection guidelines and requirements with appropriate calculations, maps, graphics and narrative descriptions of hydrology, hydraulics, assumptions, erosion controls, drainage paths and systems for the 1, 2, 10, 50 and 100 year storm events</b>	
--	
<b>Statement in drainage report that the after development flows for all storm events do not exceed the before development flows</b>	
Included	
<b>Sanitary Waste Disposal Plan (if community sewerage system)</b>	
Included	
<b>Evaluation of the impact of proposed development upon existing and potential public surface and ground drinking water supplies, pursuant to CGS, Section 8-2</b>	
Included	
<b>Certified copy of Certificate of Public Convenience and Necessity in connection with a “water company”, in accordance with CGS, Section 8-25a</b>	
Included	

Existing and proposed Covenants or Restrictions

Not Included

Engineer’s itemized cost estimate for the installation of all erosion and sediment controls based on published Connecticut DOT unit prices

Included

Engineer's itemized cost estimate for public improvements based on published Connecticut DOT unit prices as basis for the establishment of a performance bond.

--

Engineer’s itemized cost estimate in connection with any restoration guarantee required pursuant to Section 12

--

Application Submission and Certification

I hereby certify that I am the owner of the record of the named property or that the proposed work is authorized by the owner of record and I have been authorized to make this application as agent, and we agree to conform to all applicable laws, regulations, and ordinances. All information contained within is true and accurate to the best of my knowledge.

Electronic Signature

NATHANIEL FLEMING  
08/17/2022

Applicant Name

Nathaniel Fleming

Attachments

-  21-000985 - Bolton - 271 Hop River Road - Asif Choudrey - Site Plan - Planning Zoning 2022.pdf  
Uploaded by Nathaniel Fleming on Aug 17, 2022 at 3:22 pm
-  21-000985 - Bolton - 271 Hop River Road - Asif Choudrey - Sign Plan.pdf  
Uploaded by Nathaniel Fleming on Aug 17, 2022 at 3:22 pm
-  21-000985 - Bolton - 271 Hop River Road - Asif Choudrey -Drive-thru Cueing Plan.pdf  
Uploaded by Nathaniel Fleming on Aug 17, 2022 at 3:22 pm
-  21-000985 - Bolton - 271 Hop River Road - Asif Choudrey -Turning Template Diagram DOT.pdf  
Uploaded by Nathaniel Fleming on Aug 17, 2022 at 3:22 pm
-  BOLTON CONCEPT-2 -NEW STORE (1).pdf  
Uploaded by Nathaniel Fleming on Aug 17, 2022 at 3:22 pm
-  V185-P947.pdf  
Uploaded by Nathaniel Fleming on Aug 17, 2022 at 3:24 pm
-  21-000985 - Bolton - 271 Hop River Road - Asif Choudrey - Abutters List 500'.pdf  
Uploaded by Nathaniel Fleming on Aug 17, 2022 at 3:24 pm
-  21-000985 - Bolton - 271 Hop River Road - Asif Choudrey - A2 and Class D Survey.pdf  
Uploaded by Nathaniel Fleming on Aug 17, 2022 at 3:25 pm
-  E and S Control Bond estimate 2022 05-11.xls  
Uploaded by Nathaniel Fleming on Aug 18, 2022 at 9:55 am






History

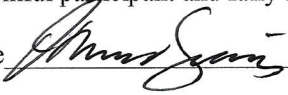

Date	Activity
Aug 17, 2022 at 10:49 am	Nathaniel Fleming started a draft of Record PL-22-8
Aug 17, 2022 at 10:51 am	Nathaniel Fleming altered Record PL-22-8, changed ownerEmail from "" to ""Asif Choudhry' "
Aug 17, 2022 at 10:51 am	Nathaniel Fleming altered Record PL-22-8, changed ownerName from "" to "IMS Petroleum, LLC"



Date	Activity
Aug 17, 2022 at 3:22 pm	Nathaniel Fleming added attachment 21-000985 - Bolton - 271 Hop River Road - Asif Choudrey - Sign Plan.pdf to Record PL-22-8
Aug 17, 2022 at 3:22 pm	Nathaniel Fleming added attachment 21-000985 - Bolton - 271 Hop River Road - Asif Choudrey - Drive-thru Cueing Plan.pdf to Record PL-22-8
Aug 17, 2022 at 3:22 pm	Nathaniel Fleming added attachment 21-000985 - Bolton - 271 Hop River Road - Asif Choudrey - Turning Template Diagram DOT.pdf to Record PL-22-8
Aug 17, 2022 at 3:22 pm	Nathaniel Fleming added attachment BOLTON CONCEPT-2 -NEW STORE (1).pdf to Record PL-22-8
Aug 17, 2022 at 3:24 pm	Nathaniel Fleming added attachment V185-P947.pdf to Record PL-22-8
Aug 17, 2022 at 3:24 pm	Nathaniel Fleming added attachment 21-000985 - Bolton - 271 Hop River Road - Asif Choudrey - Abutters List 500'.pdf to Record PL-22-8
Aug 17, 2022 at 3:25 pm	Nathaniel Fleming added attachment 21-000985 - Bolton - 271 Hop River Road - Asif Choudrey - A2 and Class D Survey.pdf to Record PL-22-8
Aug 17, 2022 at 3:25 pm	Nathaniel Fleming submitted Record PL-22-8
Aug 17, 2022 at 3:27 pm	completed payment step Permit Fee on Record PL-22-8
Aug 17, 2022 at 3:27 pm	approval step Application Reviewwas assigned to Danielle Palazzini on Record PL-22-8
Aug 18, 2022 at 9:55 am	Nathaniel Fleming added attachment E and S Control Bond estimate 2022 05-11.xls to Record PL-22-8

### Timeline

Label		Status	Activated	Completed	Assignee	Due Date
	Permit Fee	Paid	Aug 17, 2022 at 3:25 pm	Aug 17, 2022 at 3:27 pm	-	-
	Application Review	Active	Aug 17, 2022 at 3:27 pm	-	Danielle Palazzini	-
	Legal/Technical Review	Inactive	-	-	-	-
	Engineering Approval	Inactive	-	-	-	-
	Fire Marshal Approval	Inactive	-	-	-	-
	Planning Approval	Inactive	-	-	-	-
	Application Approval	Inactive	-	-	-	-
	Bond Received	Inactive	-	-	-	-
	Legal/Technical Review Release	Inactive	-	-	-	-

13. Project Engineer: \_\_\_\_\_  
Address \_\_\_\_\_ Zip \_\_\_\_\_  
Phone # \_\_\_\_\_ Fax # \_\_\_\_\_ E-mail \_\_\_\_\_
14. Project Architect: \_\_\_\_\_  
Address \_\_\_\_\_ Zip \_\_\_\_\_  
Phone # \_\_\_\_\_ Fax # \_\_\_\_\_ E-mail \_\_\_\_\_
15. Other Experts Retained by Applicant: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
16. Briefly describe the proposed use of the subject property. Provide greater detail in Project Narrative.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
17. Square footage of new / expanded space: \_\_\_\_\_ # of new parking spaces \_\_\_\_\_
18. List the Section(s) of the Zoning Regulations under which application is made: \_\_\_\_\_  
\_\_\_\_\_
19. Provide all the applicable items for a complete application including a completed Checklist for Site Plan Review and Special Permit Applications. A completed checklist must be provided to comprise a complete application.
20. Applicant's Endorsement:  
I am a willful participant and fully familiar with the contents of this application.  
Signature  Date 9/8/22
21. Owner's Endorsement:  
I am a willful participant and fully familiar with the contents of this application.  
Signature  Date 9/8/22

**NOTE:** If there are any material changes to this application, the Applicant shall immediately notify the Town Staff in writing.

Applicants may be subject to Supplemental Review fees to defray the cost of Professional Review Services such as engineering or legal reviews.



PLANNING AND ZONING SUBMISSION

# 271 HOP RIVER ROAD

PROPOSED CONVENIENCE STORE

271 HOP RIVER ROAD, BOLTON - CONNECTICUT

APPLICANT:

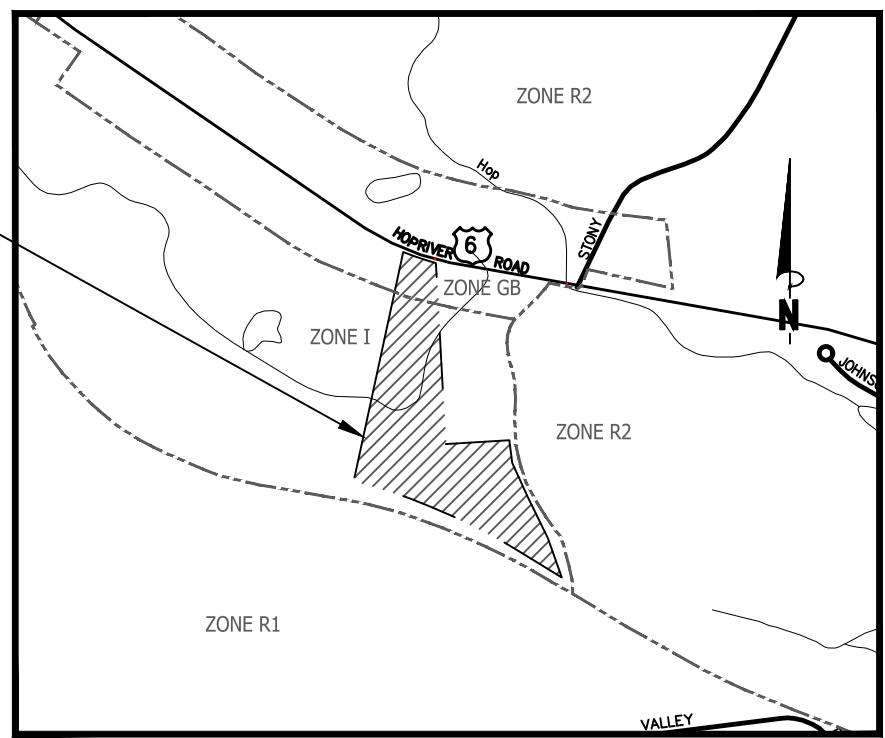
IMS PETROLEUM, LLC

### Project Description

AN EXISTING AUTO REPAIR SHOP TO BE REMOVED AND REPLACED WITH A CONVENIENCE STORE. EXISTING DEBRIS AREAS ON SITE TO BE CLEANED AND REMOVED. DEBRIS AREAS DEPICTED ON SITE PLAN ARE NOT LIMITED TO CLEAN UP AREAS.

#### SHEET LIST TABLE

1 OF 10	COVER SHEET
2 OF 10	EXISTING & DEMOLITION PLAN
3 OF 10	SITE PLAN
4 OF 10	GRADING & UTILITY PLAN
5 OF 10	LANDSCAPING & LIGHTING PLAN
6 OF 10	DETAIL SHEET
7 OF 10	DETAIL SHEET
8 OF 10	DETAIL SHEET
9 OF 10	SIGHT LINES
10 OF 10	DETAIL SHEET



#### Location Map

Scale: 1"=1000'

0 500 1000 2000

#### Legend

##### EXISTING

SYMBOL	DESCRIPTION
□	MONUMENT
○	EX. TP / REBAR
●	DRILL HOLE
—○—	UTILITY POLE W/ LIGHT
—○—	STONEWALL
—X—X—	FENCE LINE
—W—	WATER VALVE
—OH—	OVERHEAD WIRES
---	PROPERTY LINE
---	ADJACENT PROPERTY LINE
---	INDEX CONTOUR
---	CONTOUR
WF-X	WETLANDS BOUNDARY/FLAG
---	MEAN LOW WATER LINE
---	MEAN HIGH WATER LINE
---	HIGH TIDE LINE
---	COUNTY JURISDICTIONAL LINE
---	ZONE LINE
---	EASEMENT LINE
---	BUILDING SETBACK LINE
W	EXISTING WATER LINE
SS	EXISTING SEWER LINE
N/F	NOW OR FORMERLY CATCH BASIN
(TYP.)	TYPICAL
5.8	SPOT ELEVATION
DH	DRILL HOLE
(POB)	POINT OF BEGINNING
TP1	TEST PIT
P1	PERCOLATION TEST
○	UTILITY POLE
○	DRAINAGE MANHOLE
○	SEWER MANHOLE
○	HYDRANT
○	WATER SHUTOFF

##### PROPOSED

○ IRON PIN TO BE SET

#### Subject Parcel Information

OWNER:	IMS PETROLEUM, LLC
PARCEL ADDRESS:	271 HOP RIVER ROAD, BOLTON, CT 06043
MAILING ADDRESS:	271 HOP RIVER ROAD, BOLTON, CT 06043
MBL	8/106
DEED:	VOLUME 185 PAGE 947
AREA:	639,104.1± SF 14.6± AC
FLOOD ZONE:	ZONE X PER FIRM MAP # 09011C0228G
	EFFECTIVE DATE: 6/1/1981

NO.	DATE	REVISIONS

#### Cover Sheet

of

271 Hop River Road

Bolton, Connecticut

Prepared For:

IMS PETROLEUM, LLC

August 11, 2022

DRAWING SCALE: 1"=20'

0 10 20 40

**FEDUS ENGINEERING, LLC**

CIVIL ENGINEERS

Mailing Address: 70 Essex Street Mystic, Connecticut 06355

Office: (860) 536-7390 Fax: (860) 536-1644

SHEET NO. 1 OF 10 JOB NO. 21-000985 DRAWN BY: CAC

Gregg T. Fedus P.E.

CT. License No. 21231



255 HOP RIVER RD  
N/F  
255 HOP RIVER RD, LLC  
M/B/L: 8/105  
V180/774  
MAILING ADDRESS  
255 HOP RIVER RD  
BOLTON, CT 06403

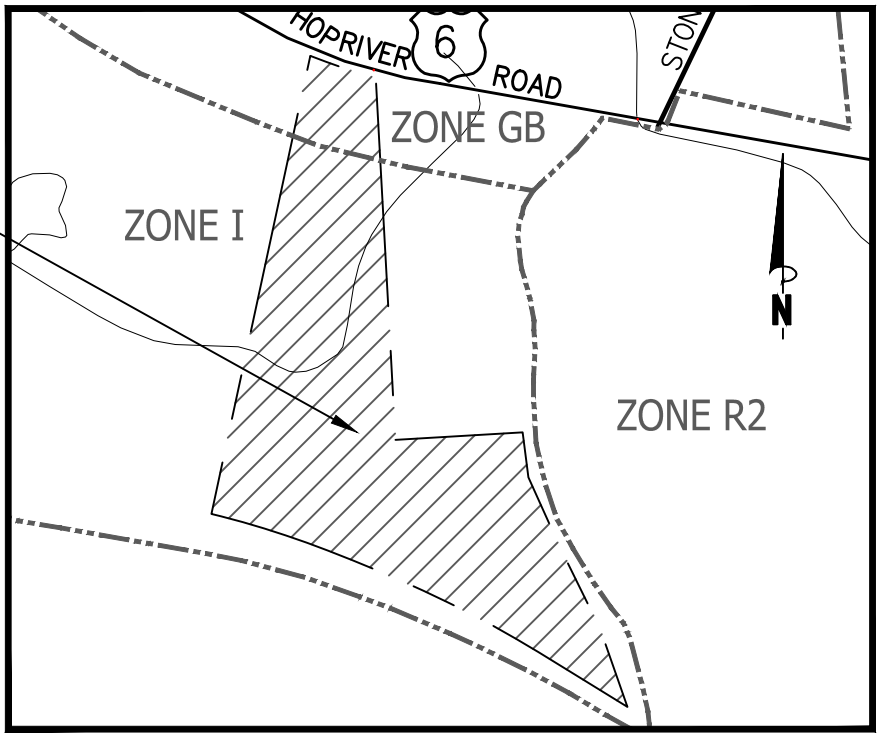
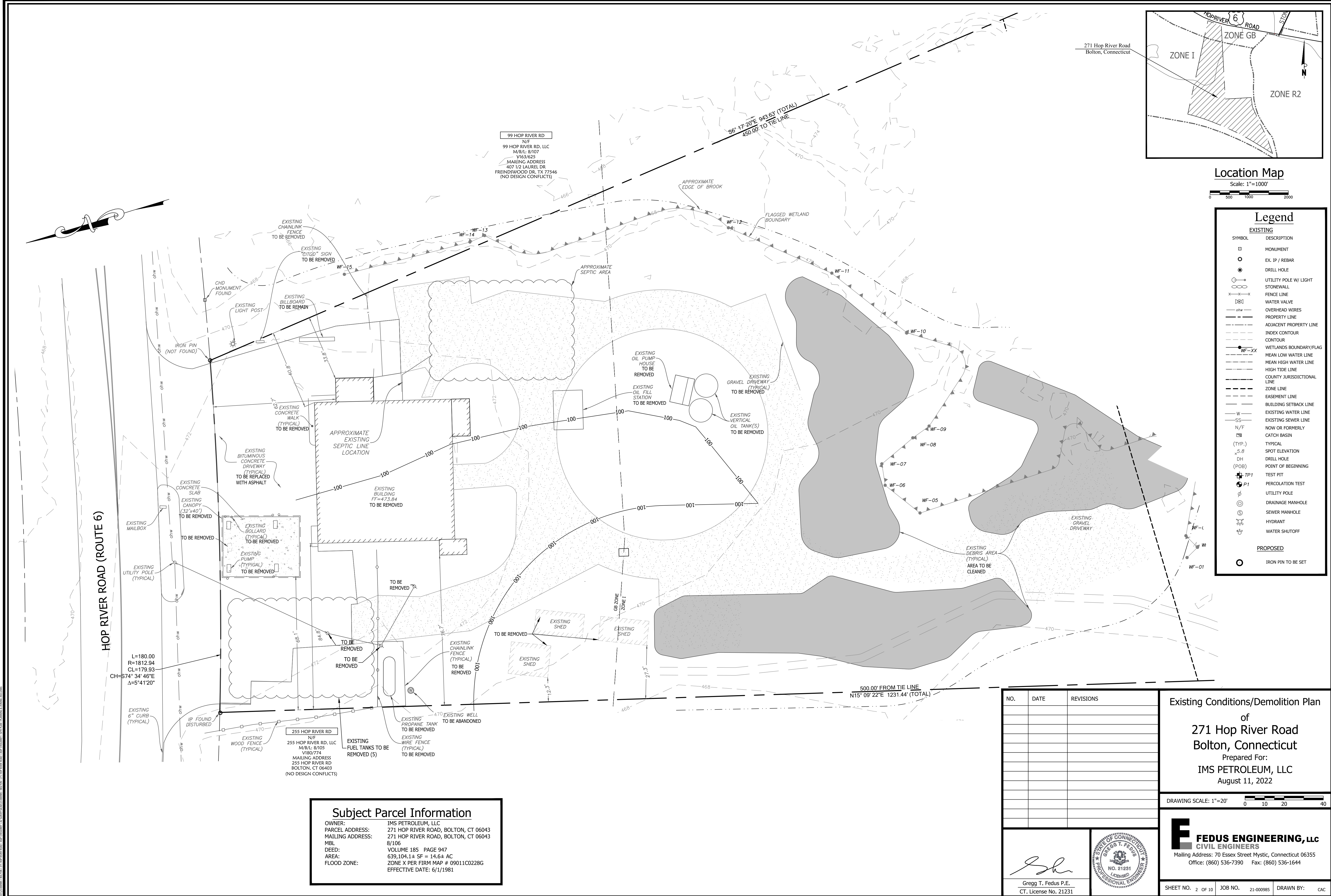
99 HOP RIVER RD  
N/F  
99 HOP RIVER RD, LLC  
M/B/L: 8/107  
V163/625  
MAILING ADDRESS  
407 1/2 LAUREL DR  
FREINDSWOOD DR, TX 77546

STEELES CROSSING ROAD  
N/F  
STATE OF CONNECTICUT/DEP  
M/B/L: 8/112  
V110/576  
MAILING ADDRESS  
79 ELM ST  
HARTFORD, CT 06106

TOOMEY RD  
N/F  
STATE OF CONNECTICUT  
M/B/L: 12/87A  
V47/1061  
MAILING ADDRESS  
79 ELM ST  
HARTFORD, CT 06106

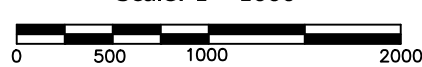
77 JOHNSON RD  
N/F  
JOHN & FRADERICA JOHNSON MEMORIAL CAMP, INC.  
M/B/L: 8/110  
V99/1095  
MAILING ADDRESS  
287 JAGGER LN  
HEBRON, CT 06248





Location Map

Scale: 1"=1000'



Legend

EXISTING

SYMBOL	DESCRIPTION
	MONUMENT
	EX. IP / REBAR
	DRILL HOLE
	UTILITY POLE W/ LIGHT
	STONEWALL
	FENCE LINE
	WATER VALVE
	OVERHEAD WIRES
	PROPERTY LINE
	ADJACENT PROPERTY LINE
	INDEX CONTOUR
	CONTOUR
	WETLANDS BOUNDARY/FLAG
	MEAN LOW WATER LINE
	MEAN HIGH WATER LINE
	HIGH TIDE LINE
	COUNTY JURISDICTIONAL LINE
	ZONE LINE
	EASEMENT LINE
	BUILDING SETBACK LINE
	EXISTING WATER LINE
	EXISTING SEWER LINE
	NOW OR FORMERLY CATCH BASIN
	TYPICAL SPOT ELEVATION
	DRILL HOLE
	POINT OF BEGINNING
	TEST PIT
	PERCOLATION TEST
	UTILITY POLE
	DRAINAGE MANHOLE
	SEWER MANHOLE
	HYDRANT
	WATER SHUTOFF
	IRON PIN TO BE SET

Subject Parcel Information

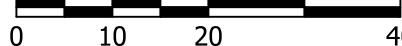
OWNER: IMS PETROLEUM, LLC  
PARCEL ADDRESS: 271 HOP RIVER ROAD, BOLTON, CT 06043  
MAILING ADDRESS: 271 HOP RIVER ROAD, BOLTON, CT 06043  
MBL: 8/106  
DEED: VOLUME 185 PAGE 947  
AREA: 639,104.1± SF = 14.6± AC  
FLOOD ZONE: ZONE X PER FIRM MAP # 09011C0228G  
EFFECTIVE DATE: 6/1/1981

Existing Conditions/Demolition Plan

of  
271 Hop River Road  
Bolton, Connecticut

Prepared For:  
IMS PETROLEUM, LLC  
August 11, 2022

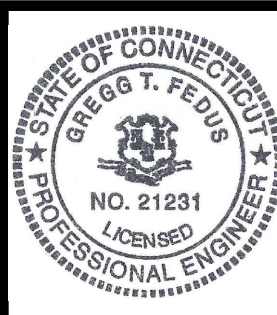
DRAWING SCALE: 1"=20'



**FEDUS ENGINEERING, LLC**  
CIVIL ENGINEERS  
Mailing Address: 70 Essex Street Mystic, Connecticut 06355  
Office: (860) 536-7390 Fax: (860) 536-1644

SHEET NO. 2 OF 10 JOB NO. 21-000985 DRAWN BY: CAC

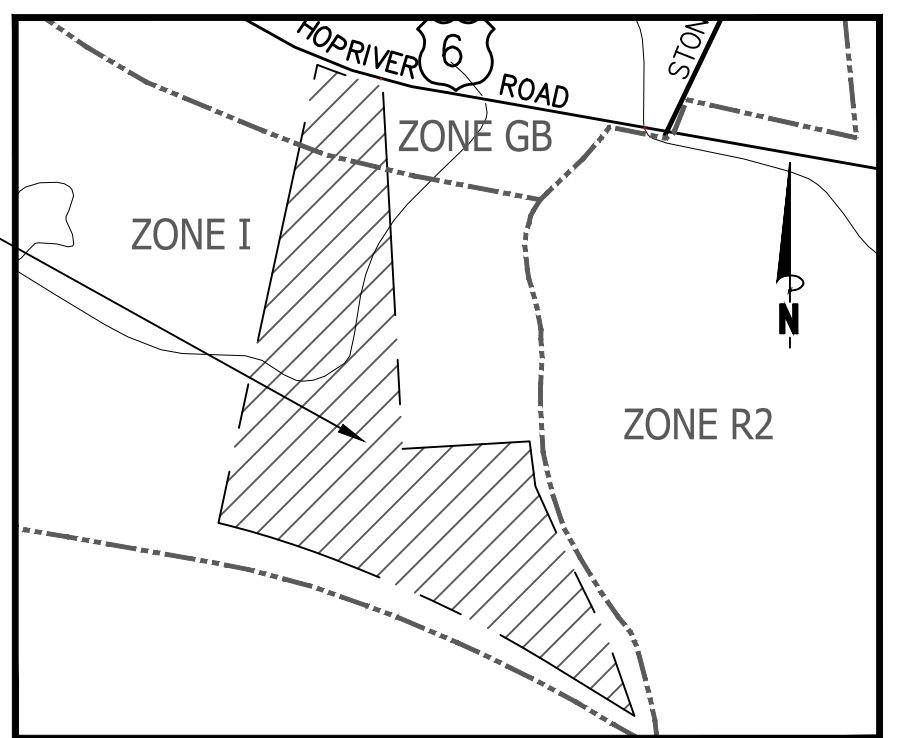
Gregg T. Fedus P.E.  
CT. License No. 21231





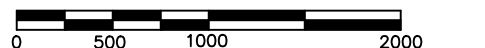






### Location Map

Scale: 1"=1000'



egend

## ING

SYMBOL	DESCRIPTION
	MONUMENT
	EX. IP. / REBAR
	DRILL HOLE
	UTILITY POLE W/ LIGHT
	STONEWALL
	FENCE LINE
	WATER VALVE
	OVERHEAD WIRES
	PROPERTY LINE
	ADJACENT PROPERTY LINE
	INDEX CONTOUR
	CONTOUR
	WETLANDS BOUNDARY/FLAG
	MEAN LOW WATER LINE
	MEAN HIGH WATER LINE
	HIGH TIDE LINE
	COUNTY JURISDICTIONAL
	ZONE LINE
	EASEMENT LINE
	BUILDING SETBACK LINE
	EXISTING WATER LINE
	EXISTING SEWER LINE
	NOW OR FORMERLY
	CATCH BASIN
	TYPICAL
	SPOT ELEVATION
	DH
	POB
	POINT OF BEGINNING
	TEST PIT
	PERCOLATION TEST
	UTILITY POLE
	DRAINAGE MANHOLE
	SEWER MANHOLE
	HYDRANT
	WATER SHUTOFF

**PROPOSED**

	IRON PIN TO BE SET
--	--------------------

### Subject Parcel Information

OWNER: IMS PETROLEUM, LLC  
PARCEL ADDRESS: 271 HOP RIVER ROAD, BOLTON, CT 06043  
MAILING ADDRESS: 271 HOP RIVER ROAD, BOLTON, CT 06043  
MBL 8/106  
DEED: VOLUME 185 PAGE 947  
AREA: 639,104.1± SF = 14.6± AC  
FLOOD ZONE: ZONE X PER FIRM MAP # 09011C0228G  
EFFECTIVE DATE: 6/1/1981

## Grading & Utility Plan

of  
271 Hop River Road  
Bolton, Connecticut

Prepared For:

PETROLEUM, LLC  
 August 11, 2022

DRAWING SCALE: 1"=20'

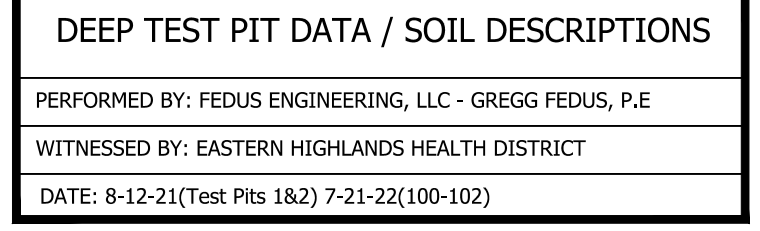
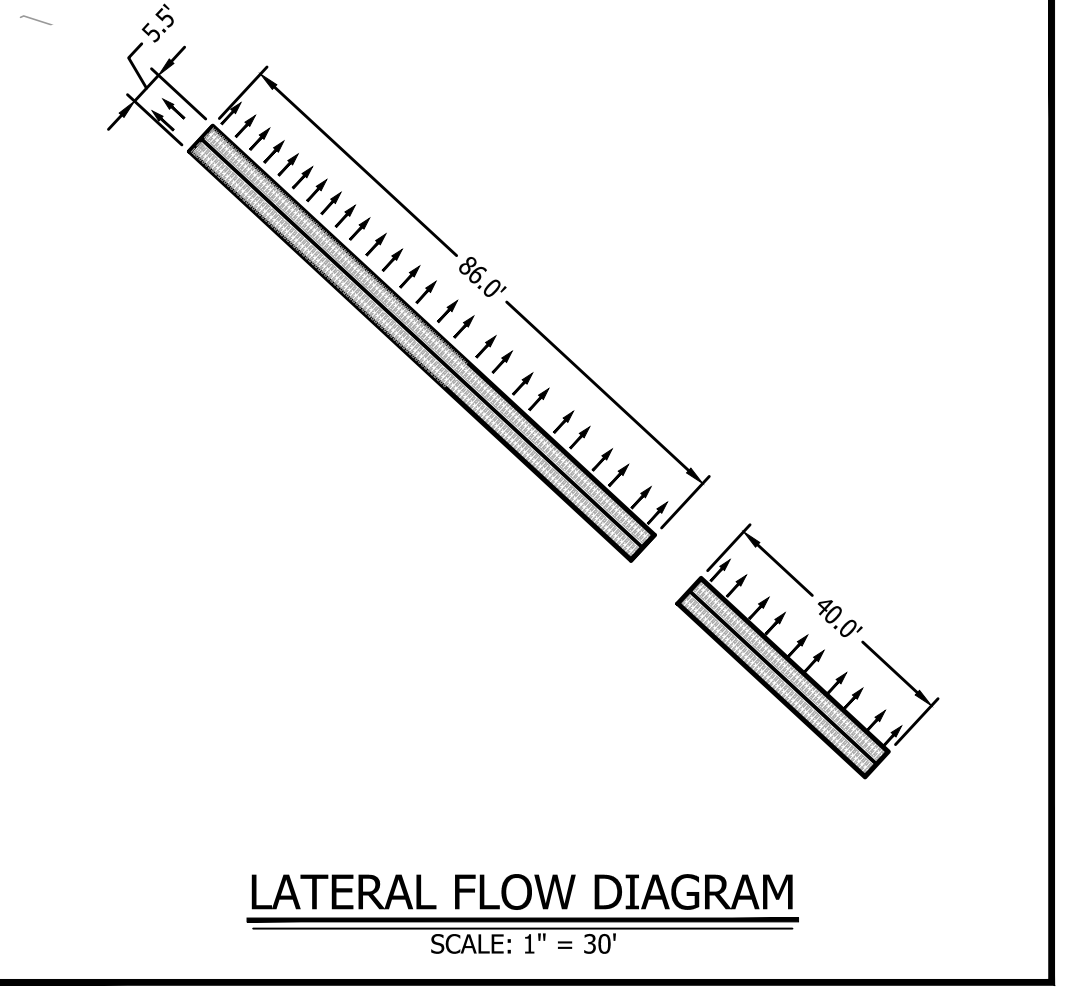


**FEDUS ENGINEERING, LLC**  
CIVIL ENGINEERS

Mailing Address: 70 Essex Street Mystic, Connecticut 06355  
Office: (860) 536-7390 Fax: (860) 536-1644

SHEET NO. 4 OF 10	JOB NO. 21-000985	DRAWN BY: CAC
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PERCOLATION TEST TABLE - P1				
PROJECT	271 Hop River Road, Bolton			08/14/21
Client	42" with Shelf at 27" - Measurements from Shelf			
Pre-soak 2 hours				
ELAPSED TIME (MINUTES)	READING (INCHES)	DROP (INCHES)	PERCOLATION RATE MINUTES/INCH	
0	5			
5		3	1.67	
10	10	2	2.50	
15	11	1	5.00	
20	12	1	5.00	
25	12 1/2	1/2	10.00	
30	13	1/2	10.00	



TEST PIT: 1		TEST PIT: 2	
0'-33"	TOPSOIL FILL	0'-30"	TOPSOIL
33'-54"	BROWN SANDY LOAM	30'-39"	ORGANIC
57'-66"	RED BROWN SAND, WITH GRAVEL	39'-53"	RED-BROWN SAND
66'-95"	BROWN SILTY SAND	53'-96"	GRAVEL
MOTTLES: 66"		MOTTLES:	
GROUNDWATER:	95"	GROUNDWATER:	
LEDGE:	NO	LEDGE:	
ROOTS:	NO	ROOTS:	
RESTRICTIVE:	66"	RESTRICTIVE:	

**217 HOP RIVER ROAD - SEPTIC DESIGN DATA**  
**RETAIL STORE DESIGN**

4,960 SF RETAIL STORE = 4,960 SF x 0.1 GPD/SF= 496 GPD  
DESIGN FLOW USED = 1,200 GPD  
PERCOLATION TEST - USE LESS THAN 10.1 MIN/INCH

TABLE 7 PROBLEMATIC SEWAGE  
REQUIRED ELA = DESIGN FLOW/APPLICATION RATE  
1,200 GPD / 0.80 RATE = 1,500 SF

LEACHING TRENCH GST 6224 = 18.1 SF/LF  
MINIMUM REQUIRED TRENCH = 82.9 LF

TRENCH PROVIDED =126  
EFFECTIVE LEACHING PROVIDED = 2,280.6 SF

MLSS = HF x FF x PF	RS = 36"
HF = 28.0	HYDRAULIC GRADIENT = (471.19'-467.61')/72' = 4.97%
FF = 4.0	
PF = 1.0	
MLSS = 28 x 4.0 x 1.0 = 112 LF	
PROVIDED 86 LF + 40 LF = 126 LF. NEEDED 112 LF OKAY WITH 2 SIDE LATERAL FLOW.	

FEDUS ENGINEERING, LLC.			
PERCOLATION TEST TABLE - P2			
PROJECT		271 Hop River Road, Bolton	
Depth		50' with Shelf at 38' - Measurements from Shelf	
Pre-soak 2 hours		08/14/21	
ELAPSED TIME (MINUTES)	READING (INCHES)	DROP (INCHES)	PERCOLATION RATE MINUTES/INCH
0	2		
5	4	2	2.50
10	5	1	5.00
15	6	1	5.00
20	7	1	5.00
25	7 3/4	3/4	6.67
30	8 1/2	3/4	6.67
35	9	1/2	10.00
40	9 1/2	1/2	10.00

TEST PIT: 100	
0"-48"	SANDY FILL
48"-84" RED SAND AND GRAVEL FINE TO MEDIUM	
MOTTLES:	NO
GROUNDWATER:	NO
LEDGE:	NO
ROOTS:	NO
RESTRICTIVE:	NO

TEST PIT: 101	
0"-52"	FILL SANDY SILTY LOAM
52"-58"	ORIGINAL TOP SOIL
58"-72"	GRAY/BROWN SILTY SAND
MOTTLES:	70"
GROUNDWATER:	NO
LEDGE:	NO
ROOTS:	NO
RESTRICTIVE:	70"

TEST PIT: 102	
0'-45"	FILL SILTY SAND
45"-50"	ORIGINAL TOP SOIL
50"-57"	GRAY SILTY SAND
MOTTLES:	57"
GROUNDWATER:	NO
LEDGE:	NO
ROOTS:	NO
RESTRICTIVE:	57"

TEST PIT: 1	
0'-33"	TOPSOIL FILL
33"-54"	BROWN SANDY LOAM
57"-66"	RED BROWN SAND, WITH GRAVEL
66"-95"	BROWN SILTY SAND
MOTTLES:	66"
GROUNDWATER:	95"
LEDGE:	NO
ROOTS:	NO
RESTRICTIVE:	66"

TEST PIT: 2	
0'-30"	TOPSOIL FILL
30'-39"	ORGANIC TOPSOIL
39'-53"	RED-BROWN SANDY LOAM
53'-96"	GRAVEL/BROWN SILTY LOAM
MOTTLES:	53"
GROUNDWATER:	NO
LEDGE:	NO
ROOTS:	NO
RESTRICTIVE:	NO

255 HOP RIVER RD  
N/F  
255 HOP RIVER RD, LLC  
M/B/L: 8/105  
V180/774  
MAILING ADDRESS  
255 HOP RIVER RD  
BOLTON, CT 06403  
NO DESIGN CONFLICTS)

PROPOSED  
CATCH BASIN TYPE - CL  
TF = 471.27'  
INV. IN = 466.95'  
INV OUT = 466.70"

HOP RIVER ROAD (ROUTE 6)

L=180.00  
R=1812.94  
CL=179.93  
CH=S74° 34' 46"E  
 $\Delta=5^{\circ}41'20''$

WF-07

SPILLWAY TO DRAIN TO WETLANDS (TYP.)

PROPOSED  
ROOF LEADER TO  
DETENTION BASIN

HE 15 HDLE  
S= 0.9%

PROPOSED  
HYDRO-DYNAMIC  
SEPARATOR 1  
TF = 470.00'

**RAIL STORE DESIGN**

APPLICATION RATE  
D RATE = 1,500 SF

= 2,280.6 SF

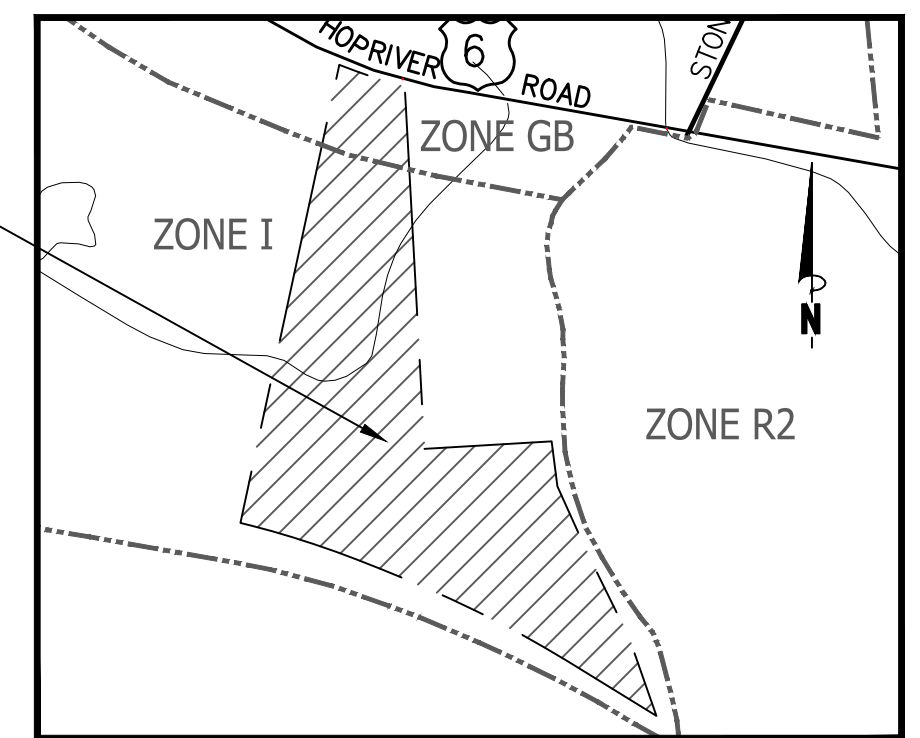
= 36"

F. NEEDED 112 LF OKAY



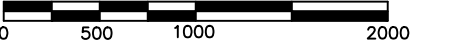
PLANT LIST				
<u>KEY</u>	<u>QUANTITY</u>	<u>BOTANICAL NAME</u>	<u>COMMON NAME</u>	<u>SIZE, ROOTS, REMARKS</u>
BP	1	BETULA POPULIFOLIA	GRAY BIRCH	10'-15' TALL
KL	27	KALMIA LATIFOLIA	MOUNTAIN LAUREL	6'-10'

99 HOP RIVER RD  
N/F  
99 HOP RIVER RD, LLC  
M/B/L: 8/107  
VI63/625  
MAILING ADDRESS  
407 1/2 LAUREL DR  
FREINDSWOOD DR, TX 77546  
(NO DESIGN CONFLICTS)



### Location Map




































Scale: 1"=1000'



**NOTE:**  
ALL LIGHTING PHOTOMETRICS WERE DONE BY  
USING "COOPER PHOTOMETRIC TOOLBOX"  
FROM COOPER LIGHTING SOLUTIONS.

### Legend

## EXISTING

SYMBOL	DESCRIPTION
	MONUMENT
	EX. IP / REBAR
	DRILL HOLE
	UTILITY POLE W/ LIGHT
	STONEWALL
	FENCE LINE
	WATER VALVE
	OVERHEAD WIRES
	PROPERTY LINE
	ADJACENT PROPERTY LINE
	INDEX CONTOUR
	CONTOUR
	WETLANDS BOUNDARY/FLAG
	MEAN LOW WATER LINE
	MEAN HIGH WATER LINE
	HIGH TIDE LINE
	COUNTY JURISDICTIONAL LINE
	ZONE LINE
	EASEMENT LINE
	BUILDING SETBACK LINE
	EXISTING SEWER LINE
	EXISTING SEWER LINE
	NOW OR FORMERLY
	CATCH BASIN
	TYPICAL
	SPOT ELEVATION
	DRILL HOLE
	POINT OF BEGINNING
	TEST PIT
	PERCOLATION TEST
	UTILITY POLE
	DRAINAGE MANHOLE
	SEWER MANHOLE
	HYDRANT
	WATER SHUTOFF

## PROPOSED

ON PIN TO BE SET

HOP RIVER ROAD (ROUTE 6)

255 HOP RIVER RD  
N/F  
255 HOP RIVER RD, LLC  
M/B/L: 8/105  
V180/774  
MAILING ADDRESS  
255 HOP RIVER RD  
BOLTON, CT 06403  
(NO DESIGN CONFLICTS)

### Subject Parcel Information

OWNER: IMS PETROLEUM, LLC  
PARCEL ADDRESS: 271 HOP RIVER ROAD, BOLTON, CT 06043  
MAILING ADDRESS: 271 HOP RIVER ROAD, BOLTON, CT 06043  
MBL 8/106  
DEED: VOLUME 185 PAGE 947  
AREA: 639,104.1± SF = 14.6± AC  
FLOOD ZONE: ZONE X PER FIRM MAP # 09011C0228G  
EFFECTIVE DATE: 6/1/1981

## VEGETATIVE TURF ESTABLISHMENT PROCEDURE

SCARIFY ALL AREAS TO BE TOPSOILED AND SEEDED. APPLY A MINIMUM OF 4 INCHES OF TOPSOIL ON ALL AREAS TO BE SEEDED. APPLY GRASS SEED, LIME, FERTILIZER AND MULCH ACCORDING TO THE FOLLOWING SCHEDULE:

PERMANENT SEED MIXTURE:

2.4 LBS. PER 1,000 SQ. FT.  
0.2  
2.4  
5.0

FERTILIZER:

10-10-10 APPLY AT 7.5 LBS. PER 1,000 SQ. FT.

LIMESTONE:

APPLY AT 150 LBS. PER 1,000 SQ. FT.

**MULCHING:**

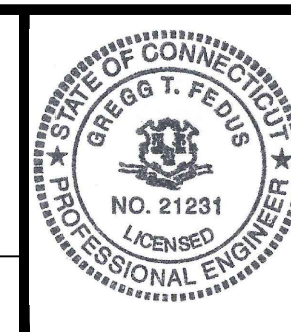
SPREAD HAY OR STRAW OVER ALL AREAS AFTER SEEDING. USE 1 1/2 TO 2 BALES PER 1,000 SQ. FT. TARGET FOR 100% COVERAGE. ANCHOR BY USING NETTING OR TRACKING AS NECESSARY.

## SEEDING DATES:

SEEDING DATES:  
SEEDING DATES IN CONNECTICUT ARE NORMALLY APRIL 1 THROUGH JUNE 15 AND AUGUST 15 THROUGH OCTOBER 1. SEED GERMINATION NORMALLY CANNOT BE EXPECTED FROM NOVEMBER THROUGH FEBRUARY. IF ADEQUATE SEED GERMINATION IS NOT POSSIBLE DUE TO TIME OF YEAR CONSTRAINTS, MULCHING SHALL BE ADEQUATELY PROVIDED TO PROTECT THE SEED FROM WIND AND SURFACE EROSION UNTIL THE WEATHER IMPROVES AND THE SEEDING BECOMES WELL ESTABLISHED.

[illegible]

Gregg T. Fedus P.E.  
CT. License No. 21231



## Landscaping & Lighting Plan

of  
271 Hop River Road  
Bolton, Connecticut

Prepared For:  
IMS PETROLEUM, LLC  
August 11, 2022

DRAWING SCALE: 1"=20'



SHEET NO. 5 OF 10	JOB NO. 21-000985	DRAWN BY: CAC
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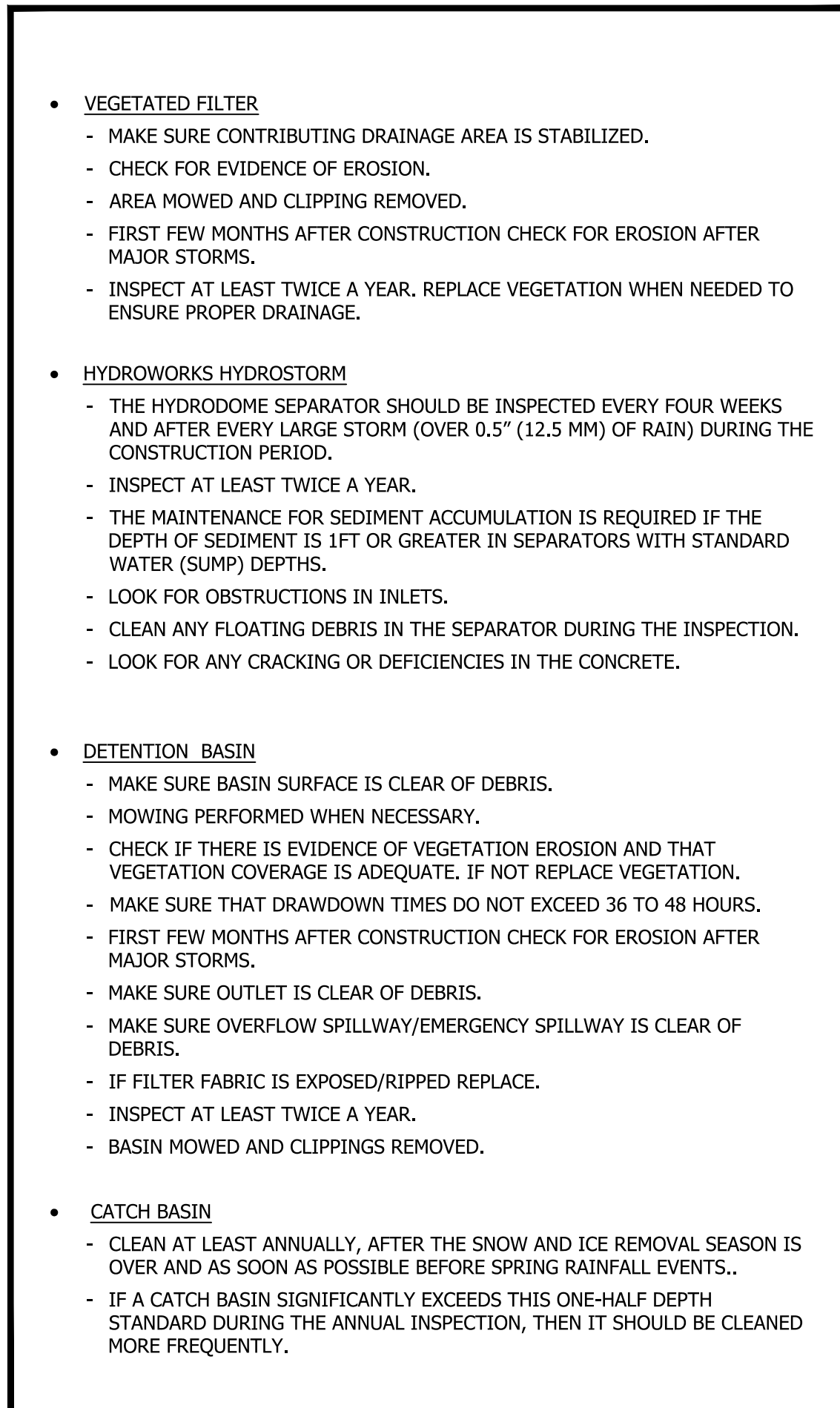
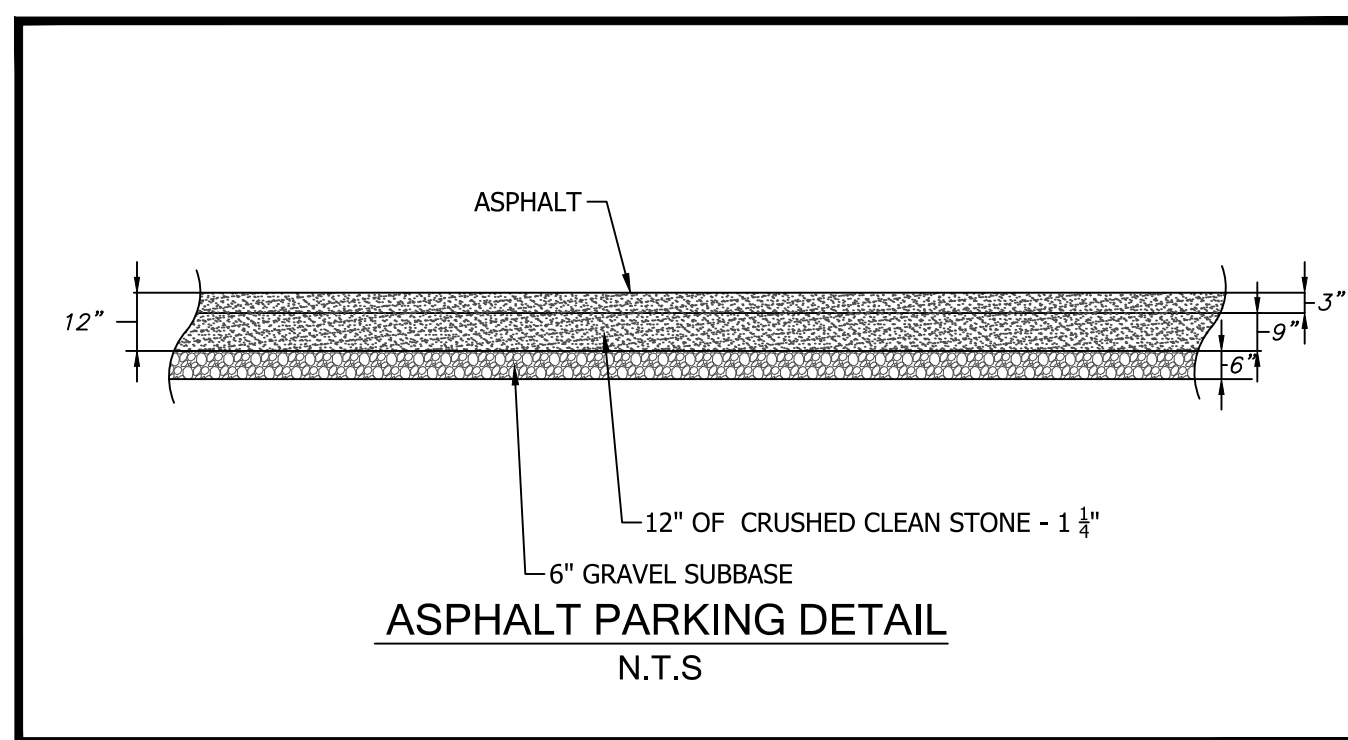
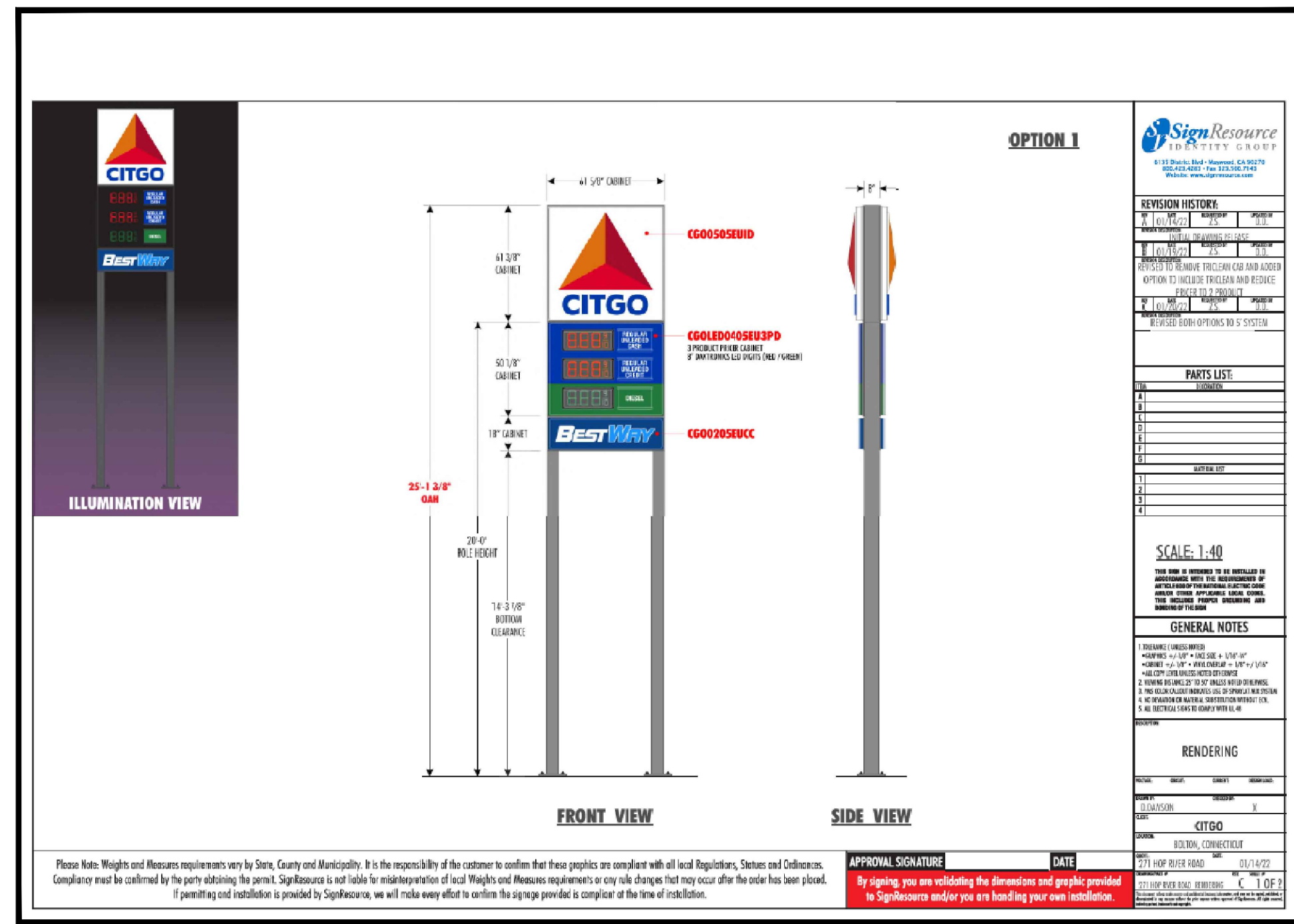















# Lumark

## Accent

### Wall Mount Luminaire

#### Product Features

#### Product Certifications

#### Interactive Menu

- Ordering Information [page 2](#)
- Mounting Details [page 8](#)
- Product Specifications [page 4](#)
- Energy and Performance Data [page 4](#)
- Control Options [page 6](#)

#### Quick Facts

- Available in 14W - 123W (1,800 - 17,000 lumens) models
- Full cutoff and refractive lens models available
- Energy and maintenance savings up to 95% compared to HID
- Energy efficient illumination results in up to 144 LPW
- Replaces 70W up to 450W HID equivalents

#### Dimensional Details



Full Cutoff



Refractive Lens



Deep Back Housing

Dimensional Data

	ACLS Small	ACLS Large
A	4" (102mm)	11 1/4" (286mm)
B	7 1/2" (191mm)	10 3/4" (273mm)
C	5 5/8" (143mm)	4 9/16" (114mm)
D	6 1/4" (159mm)	7 1/8" (181mm)



PLS14102EN page 1  
October 26, 2011 6:58 PM

TYPE:

PROJECT:

CATALOG #:

# Galaxy II

PETROLEUM GAS CANOPY

# GALAXY II

## FEATURES

- Value focused, budget-friendly canopy lighting solution
- Available in 4 wattages-30, 65, 100 and 120 Watts
- Low glare, even illumination and no pixelation for outstanding illumination
- High efficacy up to 155 LPW for maximum energy savings
- Universal retrofit solution for HID replacements for various sizes
- Driver accessible and field serviceable under canopy
- Pendant or surface mount options with 3/4" conduit
- IP66 rating to keep water and insects out





IP66



WET  
LOCATION



DLC  
PREMIUM



DLC  
PREMIUM

## SPECIFICATIONS

## CERTIFICATIONS

### CONSTRUCTION

- Die-cast aluminum, low profile housing
- New construction or retrofit solution
- Targets a large range of applications
- Easy installation
- White powder coat finish
- Heat sink design to disperse heat away from fixture
- Suitable for wet locations

### CERTIFICATIONS

- UL Listed
- DLC® (DesignLights Consortium Qualified), with some Premium Qualified configurations. Please refer to the DLC website for specific product qualifications at [www.designlights.org](http://www.designlights.org)
- Wet Location Listed
- IP66 Rated

### INSTALLATION

- Surface or pendant mounted
- Easy installation and serviceable below the deck

### WARRANTY

- 5 year warranty
- See [HLI Standard Warranty](#) for additional information

### ELECTRICAL

- Universal 120-277 input voltage
- Power Factor > 0.9 at full load
- Total Harmonic Distortion < 20% at full load
- 6 kV Surge Protection
- 0-10 Volt Dimmable Driver
- Operating temperature: -40°C to +40°C

### ELECTRICAL

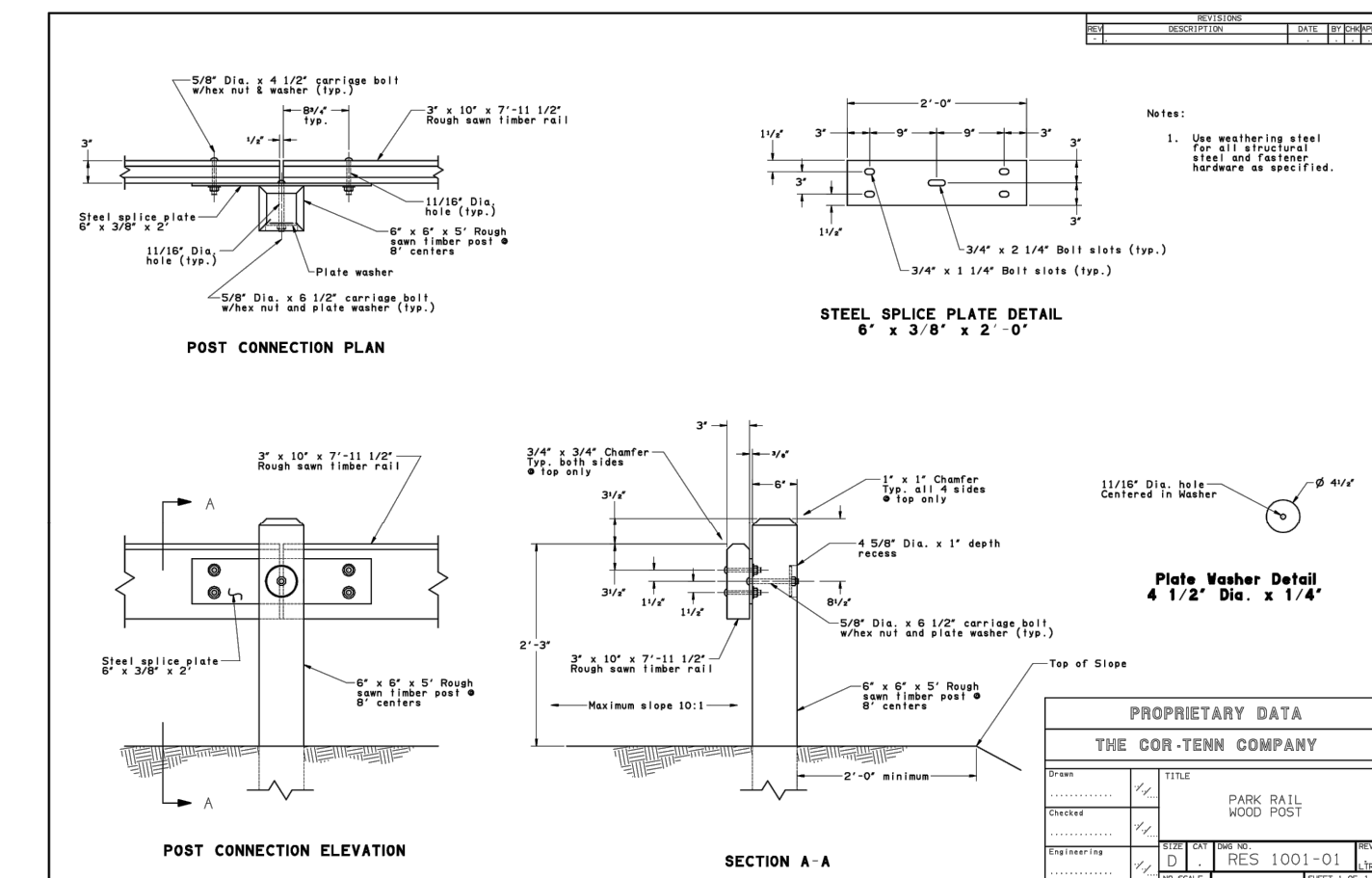
- Universal 120-277 input voltage
- Power Factor > 0.9 at full load
- Total Harmonic Distortion < 20% at full load
- 6 kV Surge Protection
- 0-10 Volt Dimmable Driver
- Operating temperature: -40°C to +40°C

## ORDERING GUIDE

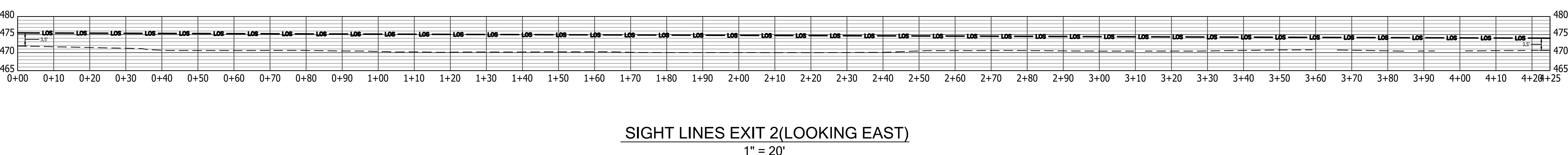
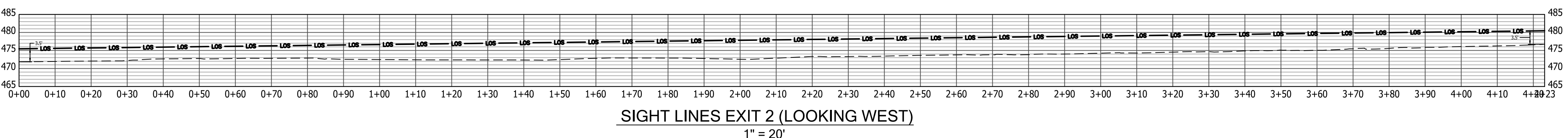
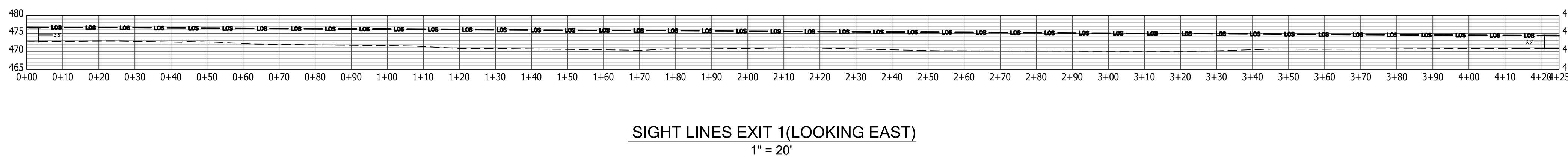
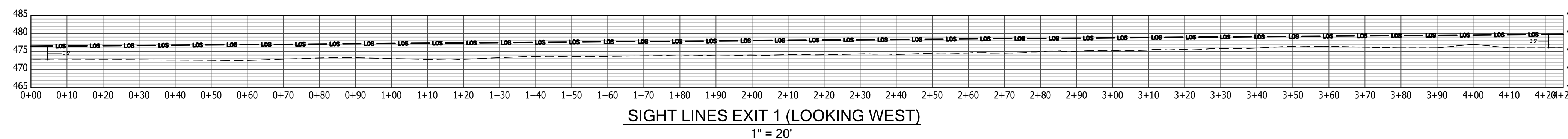
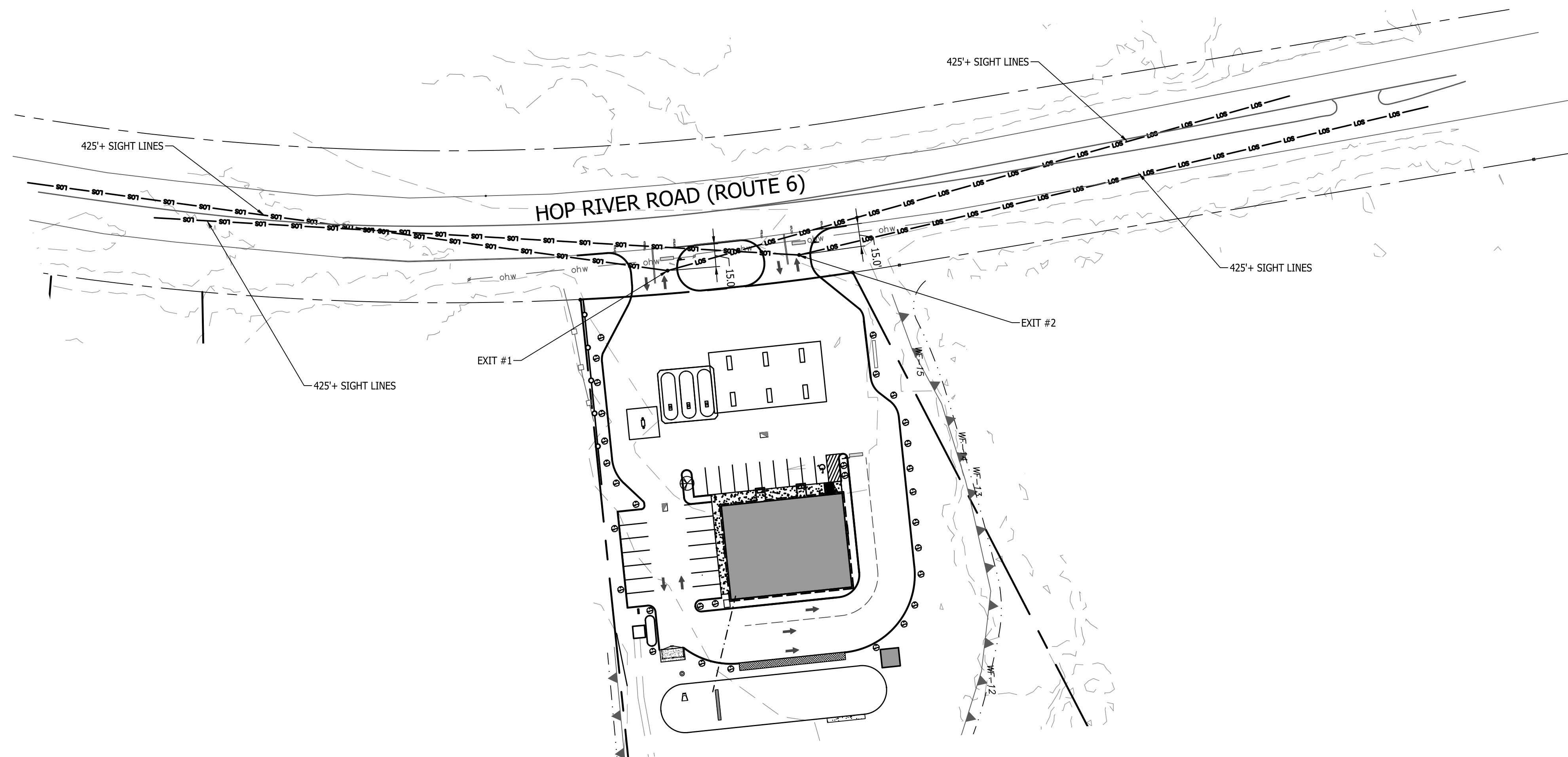
**Example:** GSY-100-4K7

CATALOG #

GSY

[illegible]






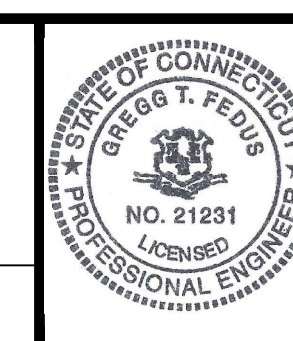
NO.	DATE	REVISIONS

Sight Line Plan  
of  
271 Hop River Road  
Bolton, Connecticut  
Prepared For:  
IMS PETROLEUM, LLC  
August 11, 2022

DRAWING SCALE: 1"=20'



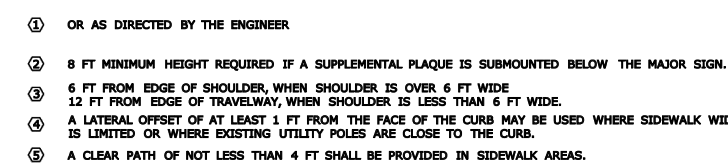
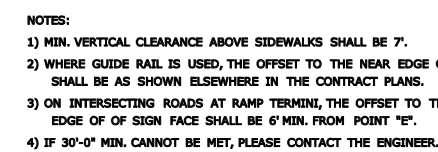
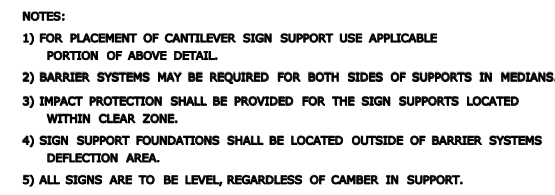
  
Gregg T. Fedus P.E.  
CT. License No. 21231



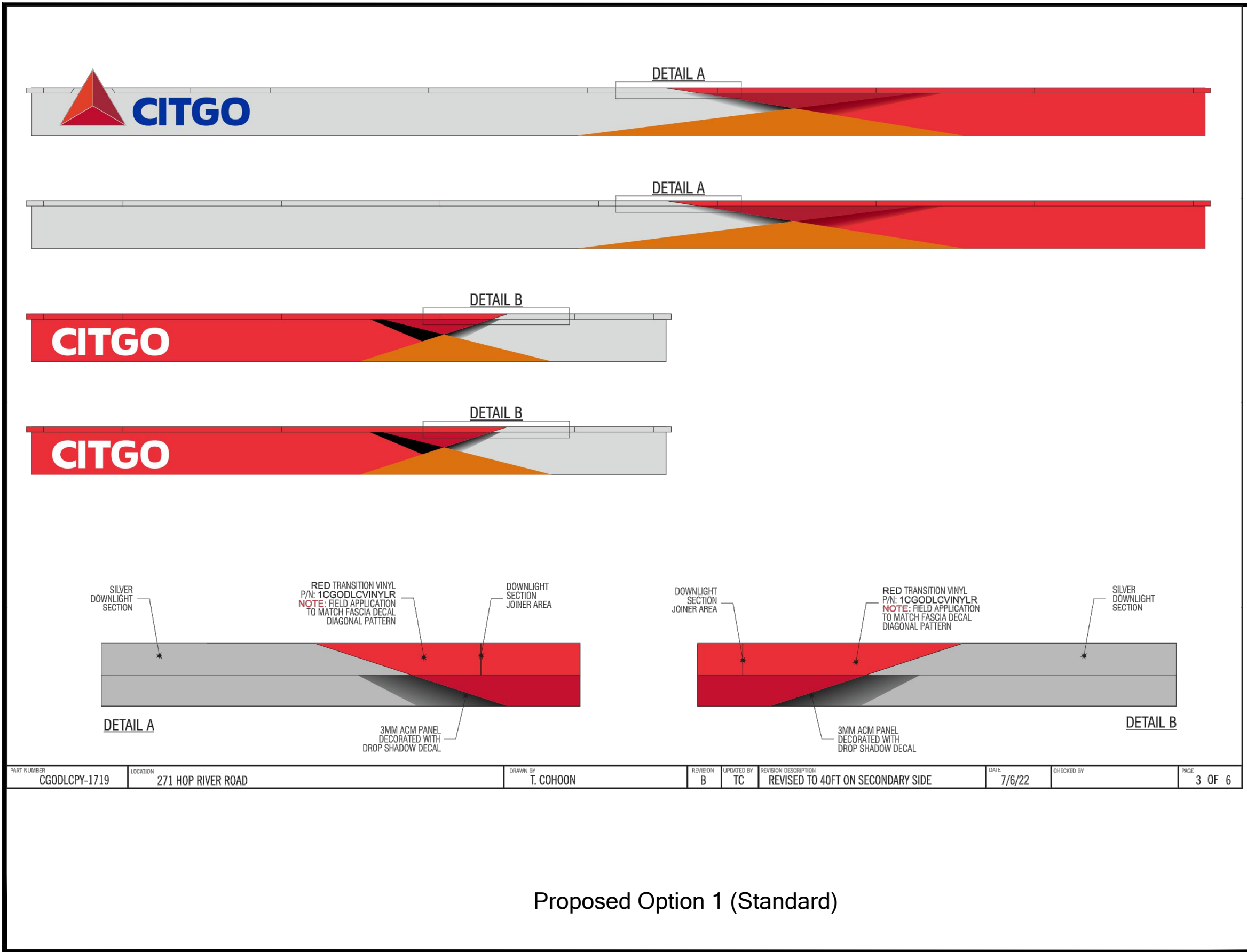
**FEDUS ENGINEERING, LLC**  
CIVIL ENGINEERS  
Mailing Address: 70 Essex Street Mystic, Connecticut 06355  
Office: (860) 536-7390 Fax: (860) 536-1644

SHEET NO. 9 OF 10 JOB NO. 21-000985 DRAWN BY: CAC





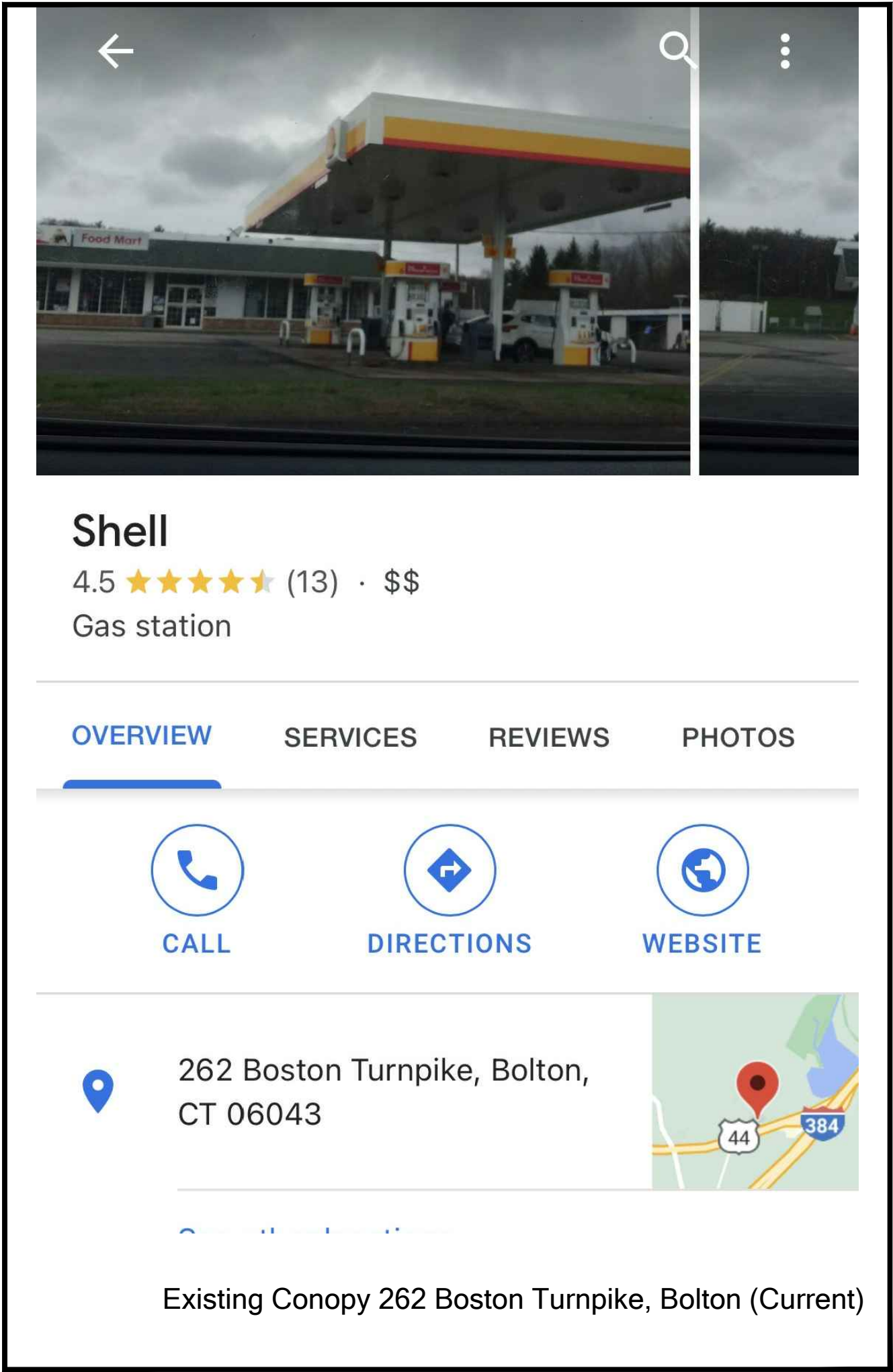
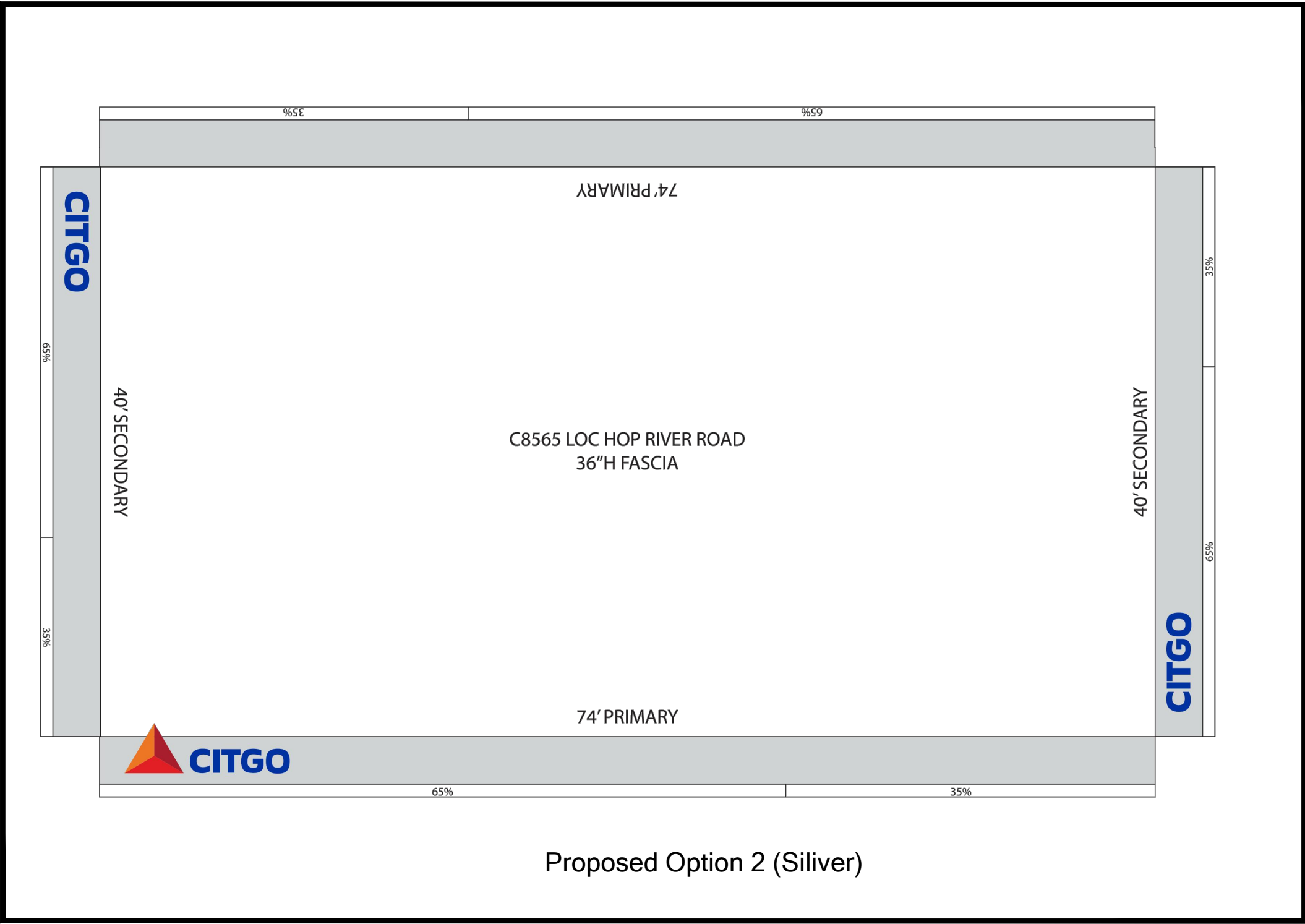




Proposed Option 1 (Standard)

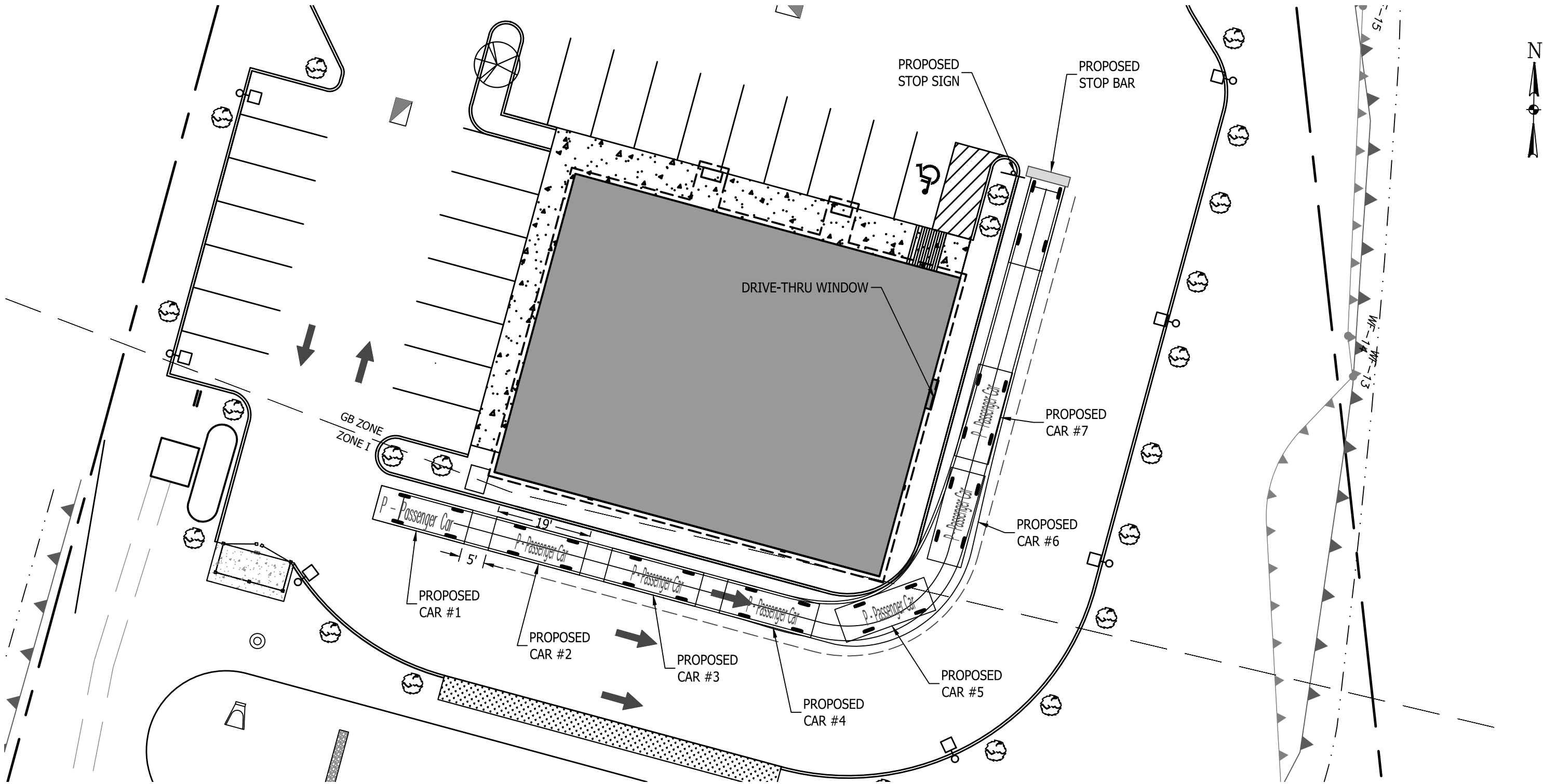


Existing Conopy 271 Hop River Road (2013)



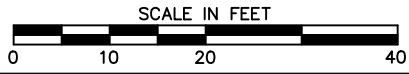
Existing Conopy 262 Boston Turnpike, Bolton (Current)

Sign Plan			of		
271 Hop River, Road			Bolton, Connecticut		
Prepared For:			Asif Choudrey		
July 30, 2022					
DRAWING SCALE: 1"=30'			0 15 30 60		
FEDUS ENGINEERING, LLC			CIVIL ENGINEERS		
Mailing Address: 70 Essex Street Mystic, Connecticut 06355			Office: (860) 536-7390 Fax: (860) 536-1644		
SHEET NO. 1 OF 1			JOB NO. 22-000985		
DRAWN BY: NCF					



**NOTE:**

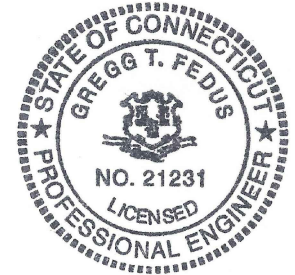
- 1. CAR SIZE WAS MODELED AFTER AASHTO STANDARDS FOR A PASSENGER CAR. (19' X 7')



**FEDUS ENGINEERING, LLC**  
CIVIL ENGINEERS  
Mailing Address: 70 Essex Street Mystic, Connecticut 06355  
Office: (860) 536-7390 Fax: (860) 536-1644

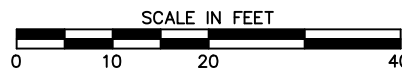
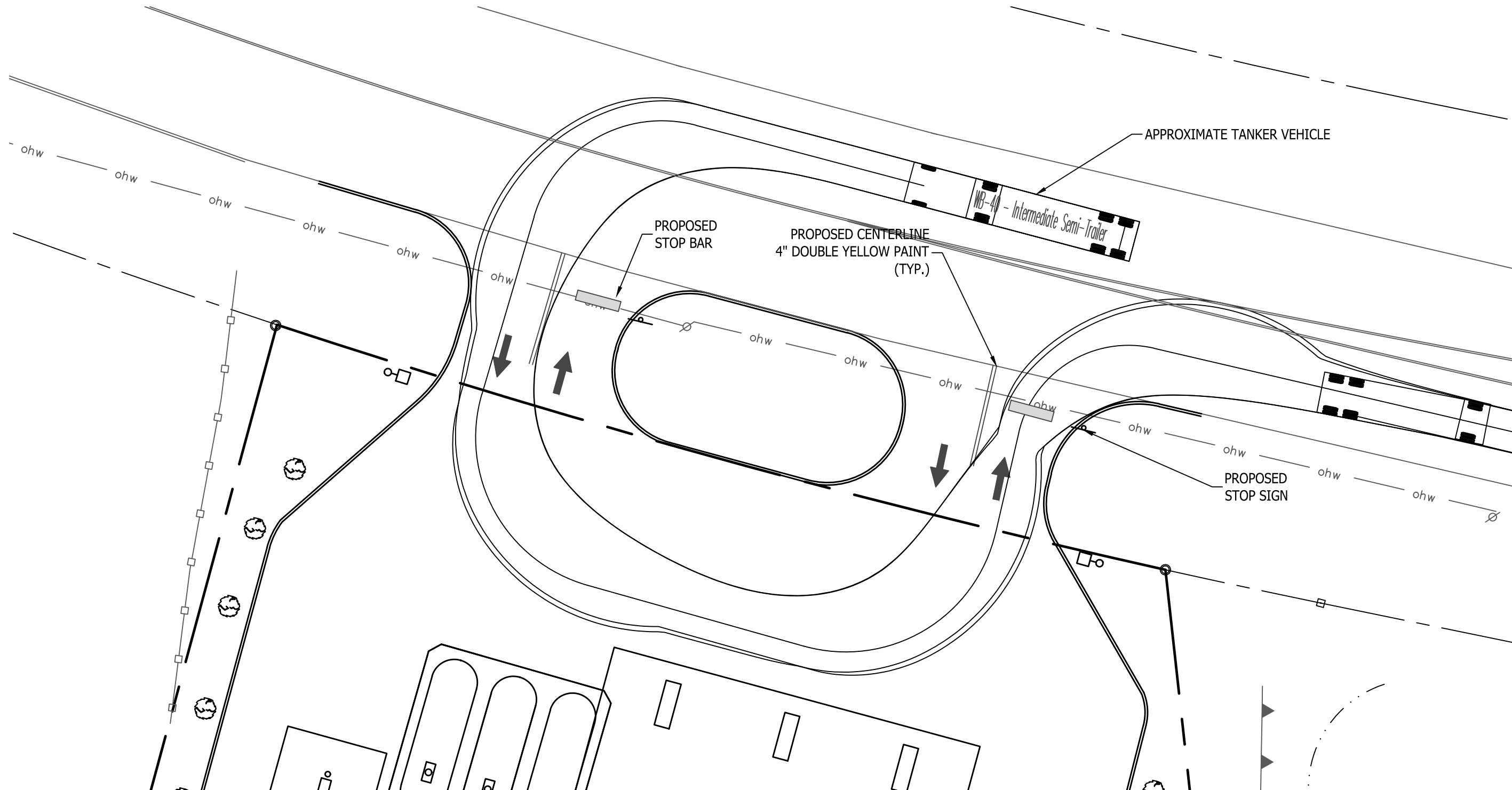
*Gregg T. Fedus*

Gregg T. Fedus P.E. CT. License No. 21231



Drive-Thru Cueing Plan  
of  
271 Hop River Road  
Bolton, Connecticut  
Prepared For:  
IMS PETROLEUM, LLC  
August 11, 2022



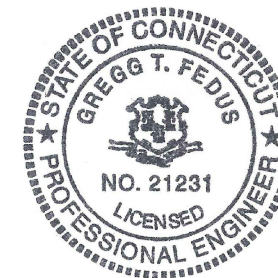


**FEDUS ENGINEERING, LLC**  
CIVIL ENGINEERS

Mailing Address: 70 Essex Street Mystic, Connecticut 06355  
Office: (860) 536-7390 Fax: (860) 536-1644

Gregg T. Fedus P.E.

CT. License No. 21231



Turning Template Diagram

of  
271 Hop River Road  
Bolton, Connecticut

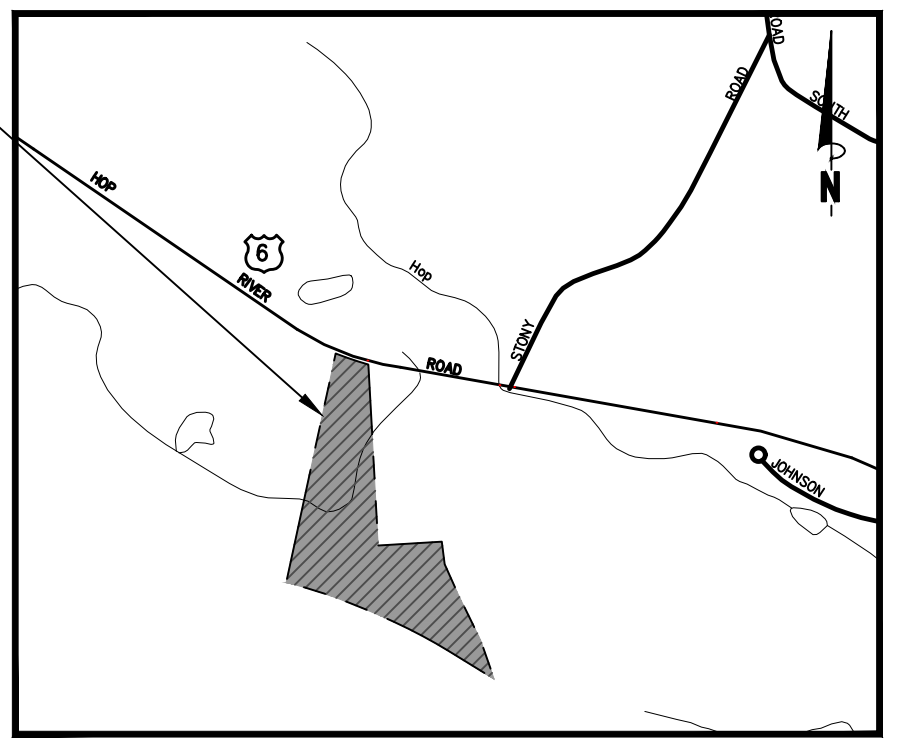
Prepared For:  
IMS PETROLEUM, LLC  
August 11, 2022

Scale: 1"=20'

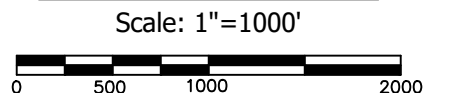
JOB NO. 21-000985

Sheet  
1 of 1





### Location Map



Survey Notes:

- THIS SURVEY PLAN HAS BEEN PREPARED IN ACCORDANCE WITH SECTIONS 20-300B-1 THROUGH 20-300B-20 OF THE CONNECTICUT STATE AGENCIES - "MINIMUM STANDARDS FOR SURVEYS AND MAPS IN THE STATE OF CONNECTICUT" AS ENDORSED BY THE CONNECTICUT ASSOCIATION OF LAND SURVEYORS, INC. ON SEPTEMBER 26, 1996.
- A. TYPE OF SURVEY: PROPERTY SURVEY/EXISTING CONDITIONS SURVEY
- B. BOUNDARY DETERMINATION: DEPENDANT RE-SURVEY.
- C. THE PORTION OF THIS SURVEY, NORTH OF THE TIE LINE, CONFORMS TO THE STANDARDS AND THE ACCURACY OF CLASS: A-2 HORIZONTAL.  
THAT PORTION OF THIS SURVEY SOUTH OF THE TIE LINE CONFORMS TO THE STANDARDS OF CLASS D HORIZONTAL.  
THIS PORTION OF THE SURVEY WAS COMPLIED FROM OTHER MAPS, RECORD RESEARCH OR OTHER SOURCES OF INFORMATION. IT IS NOT TO BE CONSTRUED AS HAVING BEEN OBTAINED AS THE RESULT OF A FIELD SURVEY AND IS SUBJECT TO SUCH CHANGE AS AN ACCURATE FIELD SURVEY MAY DISCLOSE
- D. THE PORTION OF SURVEY NORTH OF THE TIE LINE CONFORMS TO THE STANDARDS AND THE ACCURACY OF CLASS: T-3 VERTICAL.
2. BOUNDARY LINES OF ADJOINING PROPERTIES ARE SHOWN FOR GENERAL INFORMATIONAL PURPOSES ONLY AND ARE NOT TO BE CONSTRUED AS BEING ACCURATELY LOCATED OR DEPICTED.
3. THE WORD "CERTIFY" AS USED IS UNDERSTOOD TO BE AN EXPRESSION OF PROFESSIONAL OPINION BY THE SURVEYOR. IT IS A DECLARATORY STATEMENT, WHICH IS BASED ON HIS BEST KNOWLEDGE, INFORMATION AND BELIEF. AS SUCH IT CONSTITUTES NEITHER GUARANTEE NOR WARRANTY, EXPRESSED OR IMPLIED, OF ANY INFORMATION CONTAINED HEREON. NO CERTIFICATION IS EXPRESSED OR IMPLIED ON ANY ORIGINAL OR ANY DUPLICATE OF THIS MAP UNLESS IT BEARS AN ORIGINAL STAMP OR SEAL AND ORIGINAL SIGNATURE OF THE INDIVIDUAL WHOSE REGISTRATION NUMBER APPEARS HEREON.
4. THIS MAP IS THE PROPERTY OF FEDUS ENGINEERING, LLC AND HAS BEEN SPECIFICALLY PREPARED FOR THE OWNER OF THIS PROJECT OR PROPERTY. IT IS NOT TO BE DUPLICATED OR USED IN PART OR WHOLE FOR ANY OTHER PURPOSE, PROJECT, LOCATION, OR OWNER WITHOUT THE EXPRESS WRITTEN CONSENT OF FEDUS ENGINEERING, LLC.
5. UNDERGROUND UTILITY, STRUCTURE AND FACILITY LOCATIONS DEPICTED AND NOTED HEREON HAVE BEEN COMPILED, IN PART, FROM RECORD MAPPING AND LIMITED FIELD MEASUREMENTS. THESE LOCATIONS MUST BE CONSIDERED AS APPROXIMATE IN NATURE. ADDITIONALLY, OTHER SUCH FEATURES MAY EXIST ON THE SITE, THE EXISTENCE OF WHICH ARE UNKNOWN TO FEDUS ENGINEERING, LLC. THE SIZE LOCATION AND EXISTENCE OF ALL SUCH FEATURES MUST BE FIELD DETERMINED AND VERIFIED BY THE APPROPRIATE AUTHORITIES PRIOR TO CONSTRUCTION. CALL BEFORE YOU DIG 1-800-922-4455.
6. THE STONEWALLS, TIDAL DITCHES AND/OR FENCES SHOWN AS BOUNDARIES MAY HAVE IRREGULARITIES OF LOCATION FROM PRINCIPAL POINTS OF COURSE INDICATED.

### Legend

SYMBOL	DESCRIPTION
	CONNECTICUT HIGHWAY DEPARTMENT MONUMENT
	EX, IP / REBAR
	DRILL HOLE
	UTILITY POLE W/ LIGHT
	STONEWALL
	FENCE LINE
	WATER VALVE
	OVERHEAD WIRES
	PROPERTY LINE
	ADJACENT PROPERTY LINE
	INDEX CONTOUR
	CONTOUR
	WETLANDS BOUNDARY/FLAG
	MEAN LOW WATER LINE
	MEAN HIGH WATER LINE
	HIGH TIDE LINE
	COASTAL JURISDICTIONAL LINE
	ZONE LINE
	EASEMENT LINE
	BUILDING SETBACK LINE
	EXISTING WATER LINE
	EXISTING SEWER LINE
	NOW OR FORMERLY CATCH BASIN
	TYPICAL
	SPOT ELEVATION
	DRILL HOLE
	POINT OF BEGINNING
	PER REFERENCE MAP
	TEST PIT
	PERCOLATION TEST
	UTILITY POLE
	DRAINAGE MANHOLE
	SEWER MANHOLE
	HYDRANT
	WATER SHUTOFF
	PROPOSED
	IRON PIN TO BE SET

## Subject Parcel Information

OWNER: M&M OIL, LLC  
PARCEL ADDRESS: 271 HOP RIVER ROAD, BOLTON, CT 06043  
MAILING ADDRESS: 271 HOP RIVER ROAD, BOLTON, CT 06043  
MBL 8/106  
DEED: VOLUME 99 PAGE 120  
AREA: 639,104.1± SF = 14.6± AC  
FLOOD ZONE: ZONE X PER FIRM MAP # 09011C0228G  
EFFECTIVE DATE: 6/1/1981

## Reference Maps:

1. "RIGHT OF WAY AND TRACK MAP, THE NEW YORK NEW HAVEN AND HARTFORD R.R. CO., OPERATED BY THE NEW YORK NEW HAVEN AND HARTFORD R.R. CO., FROM BOSTON TO HUDSON RIVER, STATION 5230+00 TO STATION 5282+80, TOWN OF BOLTON, CONNECTICUT.", SCALE: 1"=100'; DATE: JUNE 30, 1915.
2. COMPILATION PLAN PROPERTY OF: JOHN AND FREDERICA JOHNSON MEMORIAL CAMP, INC. JOHNSON RD., BOLTON, CT., SHEET NO. 1 OF 2 AND 2 OF 2 DATED 06/29/99 JOB #99155 SCALE: 1"=100' BY: RUSS AND ONEIL INC.
3. "CONNECTICUT STATE HIGHWAY DEPARTMENT, RIGHT OF WAY MAP, TOWN OF BOLTON, HARTFORD-WILLIMANTIC ROAD FROM BOLTON NOTCH SOUTHEASTERLY ABOUT 5,400 FEET, ROUTE NO. 87", SCALE: 1"=40', DATED: JULY 29, 1932, NUMBER 12-01, SHEET NO. 2 OF 2 APPROVED BY JOHN A. MACDONALD.
4. "SURVEY MAP PREPARED FOR THE STATE OF CONNECTICUT DEPARTMENT OF ENVIRONMENTAL PROTECTION FOR PROPERTY OF DAVID C. TOOMEY JR. NORTH OF TOOMEY ROAD LOCATED IN BOLTON, CONNECTICUT", SCALE: 1"=100', DATE: OCTOBER, 2001 PREPARED BY JC SOMMERS ASSOCIATES, INC. VERNON, CONNECTICUT.

TOOMEY RD  
N/F  
STATE OF CONNECTICUT  
M/B/L: 12/87A  
V47/1061  
MAILING ADDRESS  
79 ELM ST  
HARTFORD, CT 06106

77 JOHNSON RD  
N/F  
JOHN & FREDERICA JOHNSON MEMORIAL CAMP, INC.  
M/B/L: 8/110  
V99/1095  
MAILING ADDRESS  
287 JAGGER LN  
HEBRON, CT 06248

SEE SHEET 2 OF 2  
FOR DETAILS IN THIS AREA

255 HOP RIVER RD  
N/F  
255 HOP RIVER RD, LLC  
M/B/L: 8/105  
V180/774  
MAILING ADDRESS  
255 HOP RIVER RD  
BOLTON, CT 06403

99 HOP RIVER RD  
N/F  
99 HOP RIVER RD, LLC  
M/B/L: 8/107  
V163/625  
MAILING ADDRESS  
407 1/2 LAUREL DR  
FREINDSWOOD DR, TX 77546

STEELES CROSSING ROAD  
N/F  
STATE OF CONNECTICUT/DEP  
M/B/L: 8/112  
V110/576  
MAILING ADDRESS  
79 ELM ST  
HARTFORD, CT 06106



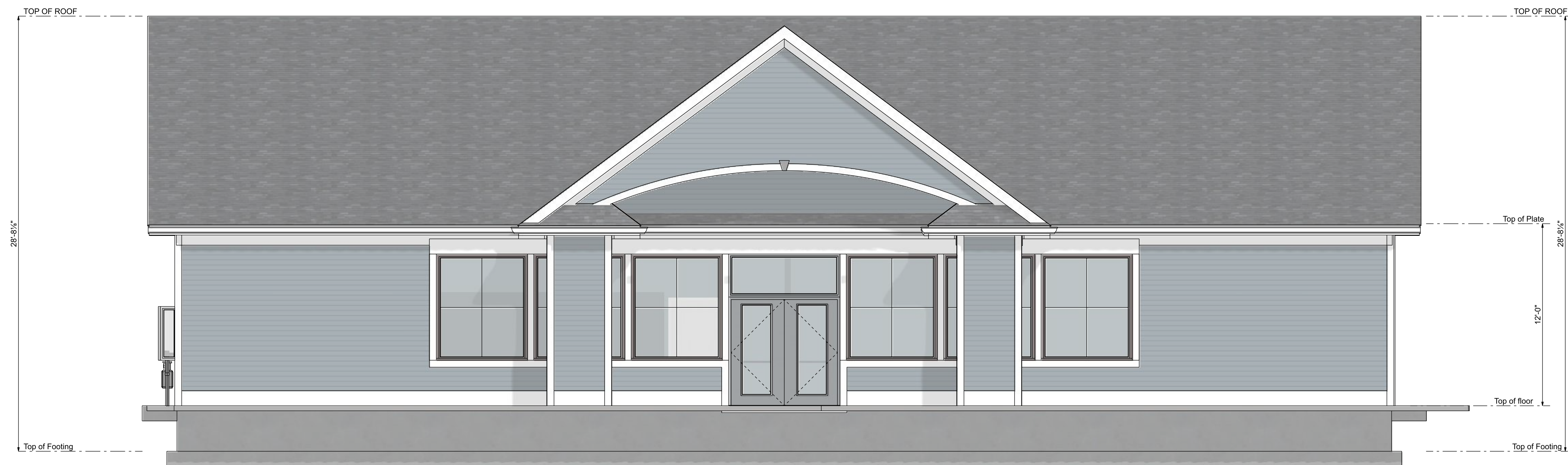






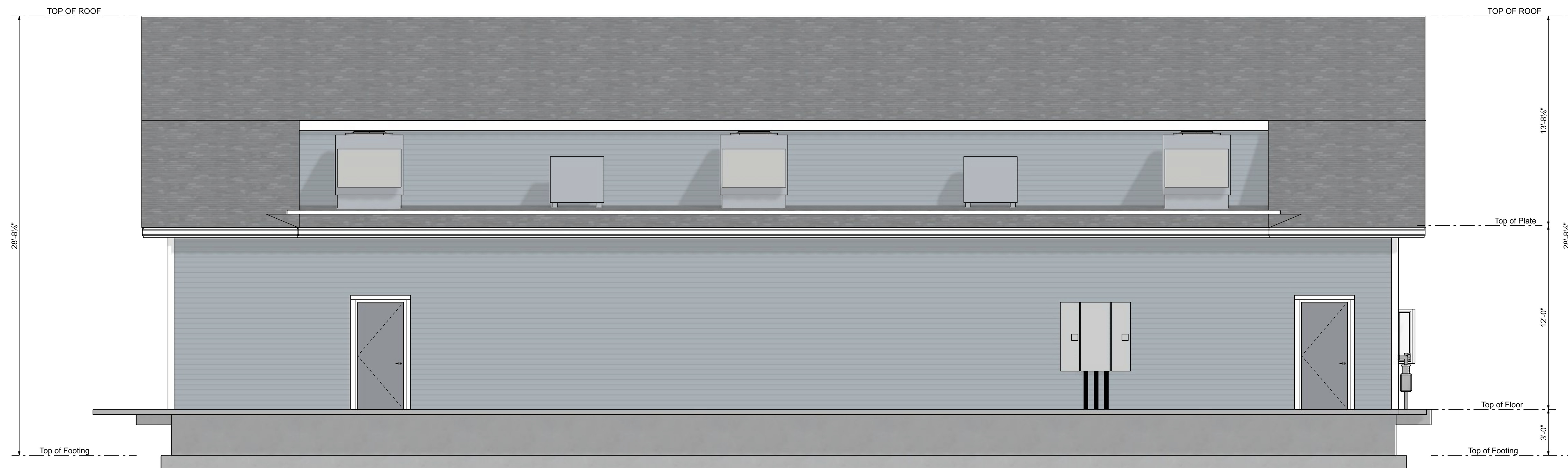
P.O. BOX 353  
GALES FERRY, CT. 06335  
860-460-6388





FRONT ELEVATION

SCALE: 1/4" = 1'-0"



### REAR ELEVATION

SCALE: 1/4" = 1'-0"

**COPYRIGHT NOTICE:**  
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 SONS .  
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 WRITTEN CONSENT OF W.W. CRAVEN & SONS IS  
 IN VIOLATION OF COPYRIGHT LAWS  
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**DO NOT SCALE**  
**CONTRACTOR TO VERIFY ALL**  
**DIMENSIONS**  
THESE PLANS HAVE BEEN PREPARED TO MEET  
FOR PROFESSIONAL STANDARDS AND PRACTICES  
HOWEVER, BUILDING CODE REQUIREMENTS VARY  
WITH LOCATION AND CHANGE TIME TO TIME  
BEFORE STARTING CONSTRUCTION THE  
CONTRACTOR SHOULD CHECK AND BE  
RESPONSIBLE  
FOR ANY DIMENSIONS AND OTHER DETAILS, AND  
SHOULD REVIEW THE PLANS TO  
INSURE THEY MEET CURRENT REQUIREMENTS

## REVISIONS

[illegible]

PHASE;  
CONSTRUCTION SET

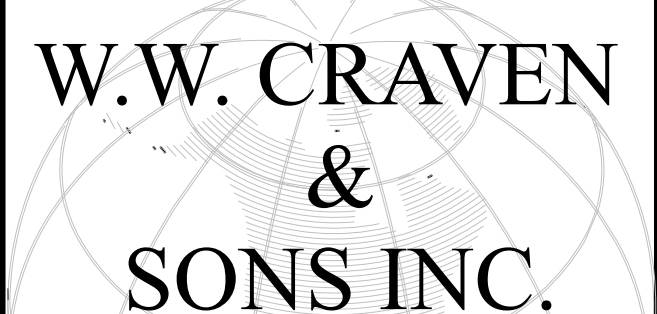
## PROJECT DETAILS

NEW  
BEST WAY CONVENIENCE  
STORE  
217 HOP RIVER ROAD  
BOLTON,CT

PREPARED FOR:  
IMF PETROLEUM  
271 HOP RIVER ROAD  
BOLTON, CT.

FILE REF:  
NATIONAL-N.C. T-5-B-M-U-NS  
BW-CS-271-HOP-RVR -RD-BOLTN-CT

DESIGN # 06043-2877181-2	
CODE REF: 2018 IBC	
DRAWN BY WWC	
DESIGN DATE 02-02-21	PAGE <b>A4</b>



W.W. CRAVEN  
&  
SONS INC.

COMMERCIAL, RESIDENTIAL  
DESIGN, PLANNING  
CONSTRUCTION

P.O. BOX 353  
GALES FERRY, CT. 06335  
860-460-6388



271 Hop River Road  
271 Hop River Road, Bolton, CT

4/11/2022

Erosion and Sedimentation Control Bond	Unit	Unit Cost	Quantity	Cost
Silt Fence	L.F.	\$6.48	821	\$5,320.08
Anti-tracking pad	Lump Sum	\$1,643.00	1	\$1,643.00

	Subtotal	\$6,963.08
15%	Contingency	\$1,044
	Total	\$8,008

CONVEYANCE TAX RECEIVED  
TOWN: \$1,125.00 STATE: \$5,625.00  
*Elizabeth C. Waters*  
TOWN OF BOLTON, CT TOWN CLERK



## Schedule A

That certain piece or parcel of land situated in the Town of Bolton, County of Tolland and State of Connecticut, bounded and described as follows:

Northerly: By U.S. Route 6, one hundred eighty (180) feet; Easterly: By land now or formerly of Robert J. McKinney, nine hundred fourteen (914) feet, more or less; Northerly: By land now or formerly of Robert J. McKinney, three hundred twelve (312) feet; Easterly: By land of others, seven hundred thirty-nine (739) feet, more or less; Southerly: By land now or formerly of the New York, New Haven and Hartford Railroad Company, one thousand one hundred ninety-four (1,194) feet, more or less; and Westerly: By land of others, one thousand two hundred twenty (1,220) feet.

Being the same premises conveyed to the Grantor herein by deeds recorded in the Bolton Land Records, Volume 20, Page 574; and Volume 25, Page 415. Reference is also made to a deed recorded in the said Land Records, Volume 20, Page 377.

The premises above-described are the same premises designated as "Edward J. Holl" and abutted by Robert J. McKinney on a certain map entitled "Property of Edward J. Holl U.S. Route No. 6, Bolton, Conn. Scale 1" = 100' Oct. 1948 Hayden L. Griswold".

Together with the right, in common with others, at all times hereafter, by foot or by vehicle, to pass and repass over and upon that certain piece or parcel of land situated in the said Town of Bolton, known and designated as the westerly one-half of the Old Road leading from Connecticut State Highway Route No. 6 to Bolton Center, as such Old Road presently exists, the center line of said Old Road being the easterly boundary of land now or formerly of The Clark Wellpoint Corporation.

The right of way herein granted shall be for all purposes for which a highway may be used, and is the same right of way conveyed to the Grantor herein by deed recorded in the said Land Records, Volume 33, Page 173.

Received for Record at Town of Bolton CT  
On 04/26/2021 At 2:40:00 pm

*Elizabeth C. Waters*

ID	Site Address	Owner Name	Owner Address	Owner City	Owner State	Owner Zip
08-106	271 HOP RIVER ROAD	IMS PETROLEUM, LLC	271 HOP RIVER ROAD	BOLTON	CT	6043
08-110	77 JOHNSON ROAD	JOHN & FREDERICA JOHNSON MEMORIAL CAMP INC.	287 JAGER LANE	HEBRON	CT	6248
08-107	299 HOP RIVER ROAD	299 HOP RIVER ROAD LLC	407 1/2 LAREL DRIVE	FRIENDWOOD	TX	77546
08-138	254 HOP RIVER ROAD	262 HOP RIVER, LLC	8 WEST STREET EXT	ANDOVER	CT	6232
08-112	TOOMEY ROAD	STATE OF CONNECTICUT	79 ELM STREET	HARTFORD	CT	6106
08-108	71 JOHNSON ROAD	ASPINALL MARGARET	71 JOHNSON ROAD	BOLTON	CT	6043
08-132A	HOP RIVER ROAD	STAVENS BROTHETRS INC.	PO BOX 406	WALLINGTON	CT	6279
08-105	255 HOP RIVER ROAD	255 HOP RIVER ROAD LLC	255 HOP RIVER ROAD	BOLTON	CT	6043
08-104	239 HOP RIVER ROAD	GOUCHOE BERNARD	239 HOP RIVER ROAD	BOLTON	CT	6043
08-103	229 HOP RIVER ROAD	TIMOTHY D. & SHELLEY M. ERICSON	229 HOP RIVER ROAD	BOLTON	CT	6043
08-136	310 HOP RIVER ROAD	MICHAEL R. MARTIN LLC	25 WATROUS ROAD	BOLTON	CT	6044
08-137	HOP RIVER ROAD	TOWN OF BOLTON	222 BOLTON CENTER RD	BOLTON	CT	6045