



March 28, 2022

Adam R. Kaufman, AICP  
Director of Planning  
Town of North Castle  
15 Bedford Road  
Armonk, NY 10504

Re: Mistis Properties Inc, 176 Virginia Road  
Site Plan Response Memo

Dear Mr. Kaufman,

This Memorandum responds to the outstanding Site Plan comments set forth in the Kellard Sessions Consulting, P.C. Memorandum, dated May 7, 2021. Kellard's comments are provided attached, Our responses are noted below in bold, blue and italics.  
Included here within:

### **General Comments**

1. The plan requires a retaining wall along the rear and sides of the property with a maximum height of approximately 28 feet. For clarity, the proposed retaining wall shown on the grading plan shall include top of wall and bottom of wall elevations at each change in elevation to be coordinated with the elevation changes shown in section provided on Sheet S-7. The plan shall also illustrate the required grading of the slopes above the retaining wall necessary to maintain the proposed 1V:2H slope and include a detail of the armored slope referenced in the typical retaining wall section.  
*Plans were updated as per comment. (See Retaining Wall Section on Sheet S-7.)*
2. Provide a site lighting and photometric plan for review and consideration by the Planning Board include specifications and details of all fixtures, poles, and pole bases.  
*Plans were updated as per comment. (See Site Lighting & Photometric Plans, Schedules, Specifications and Detail on Sheet E-1 to E-3.)*
3. The proposed Frame and Cover Detail on Sheet S-5 shall require that manhole covers for sanitary sewers be stamped with "SEWER" on the casting.  
*Plans were updated as per comment. (See Frame and Cover Detail on Sheet S-2 & S-5.)*
4. The sanitary manhole detail included on Sheet S-2 shall be revised to required two (2) coats of bitumastic sealant to be applied to the exterior.

*Plans were updated as per comment. (See note in Sewer Manhole Detail on Sheet S-2.)*

5. Please clarify the purpose and intent of the proposed pipe entering the proposed sewer manhole from the east. It is assumed that this is the sanitary connection for the bathroom in the building. Please specify the pipe size and material as necessary.

*Plans were updated as per comment. (Pipe size and material added to plan.)*

6. The hydrologic model demonstrates that the proposed stormwater management system will effectively mitigate the increased stormwater runoff generated by the project. However, it is suggested that the plan be revised to also connect the roof leaders of the proposed 2-bay warehouse (north building) and proposed Drain Inlet, DI-1. Doing so would allow for the connection of Drain Inlet, DI-1, to the proposed Stormtrap System, rather than the current proposed 6"x6" PVC TEE connection, (which would not be acceptable) and eliminate the multiple connections at Drain Inlet, DI-2. This would also provide mitigation and treatment for all impervious surfaces. The outlet structure shall be labeled on plan Sheet S-2.

*Plans were updated as per comment. (All roof and driveway area to DI-1 now directed to Stormtrap system. Outlet Structure labeled on S-2.)*

7. The proposed outlet structure need clarification. The Detail on Sheet S-5 indicates a connection to the hydrodynamic separator: however, there is no indication of this on plan Sheet S-2. The detail also indicates outlet pipes of twelve (12) inch and four (4) inch diameter, while the plan illustrates a six (6) inch outlet pipe to Drain Inlet, DI-2. Please clarify. It appears that an additional structure will be required for the pipe transition or an alternate outlet structure design. The six (6) inch pipe connection should also be included in the hydrologic model. It currently appears to be undersized.

*Plans were updated as per comment. (See plan on Sheet S-2 and Detail on Sheet S-5)*

8. Drainage area maps shall be included in the Stormwater pollution Prevention Plan (SWPPP). The areas and cover types tributary to each sub-catchment shall be clarified.

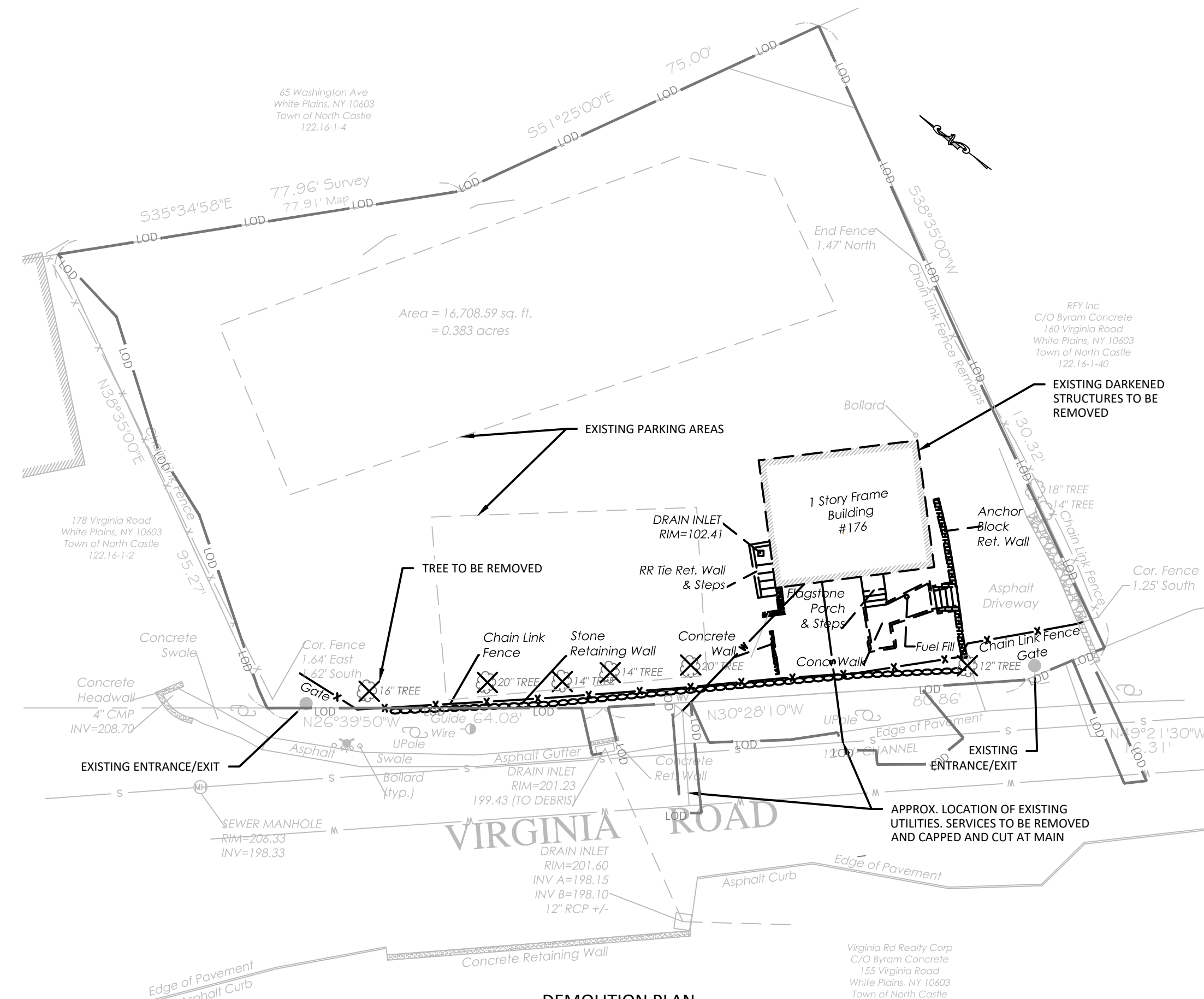
*Plans were updated as per comment. (Please see the attached SWPPP)*

Sincerely,

**ARQ PC**



**Paul Berté**



DEMOLITION PLAN  
1" = 20' - 0"

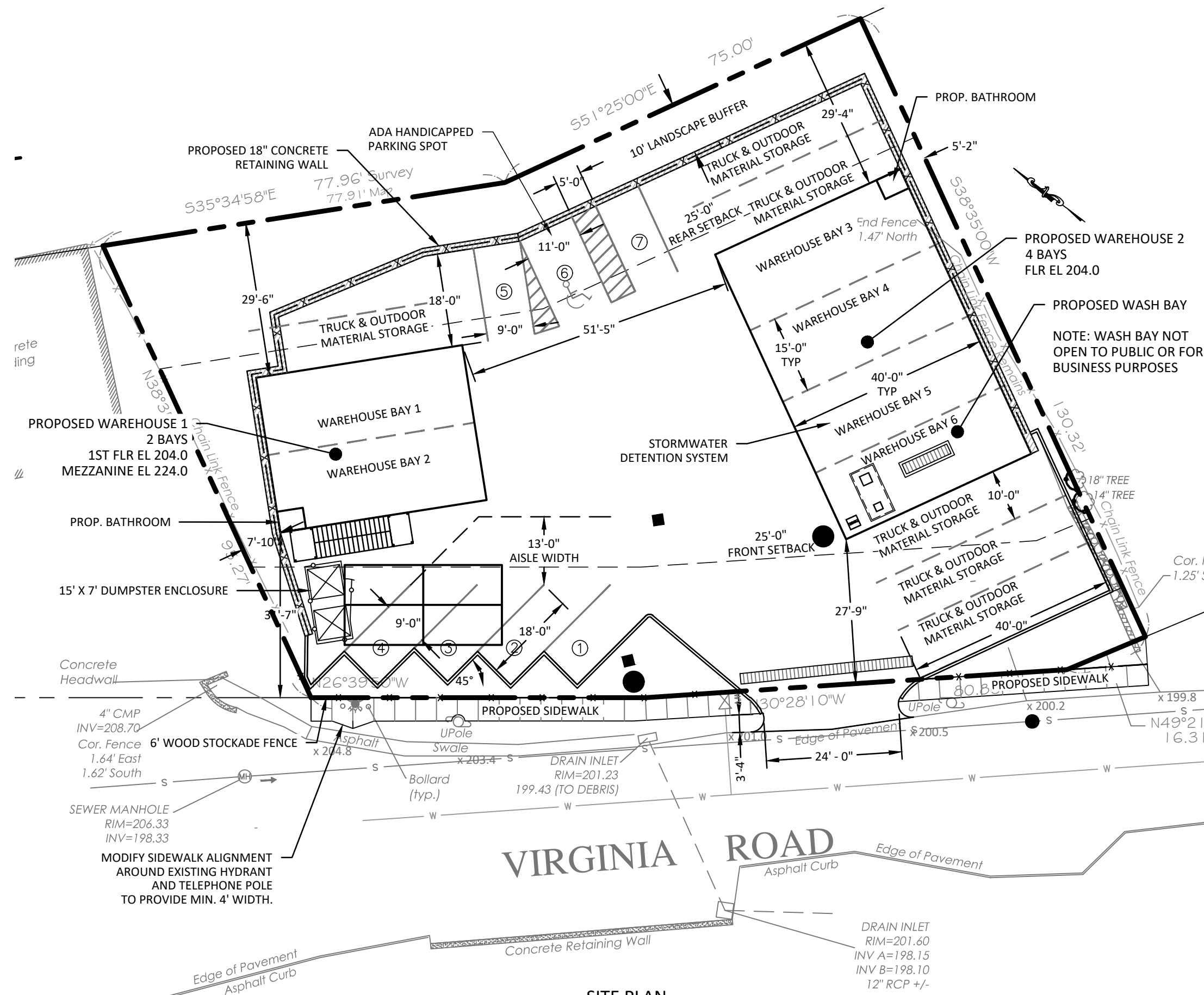
ZONING ANALYSIS			
176 VIRGINIA ROAD   SECTION 122.16   BLOCK 1   LOT 3			
ZONE IND-A			
REQUIREMENTS	ALLOWABLE	PROPOSED	
LOT AREA (SQ. FT.)	5000.0	16708.6	
STREET FRONTAGE	50.0	161.0	
LOT DEPTH	100.0	112.8	
FRONT SETBACK	10.0	30.8	
SETBACK FROM STREET	25.0	39.0	
SIDE SETBACK	0.0	4.3	
REAR SETBACK	10.0	26.0	
BUILDING COVERAGE	40%	22%	
BUILDING STORIES	2.0	2.0	
BUILDING HEIGHT	35.0	30.0	
FAR	0.6	0.29	
PARKING	6.0	8.00	

FLOOR AREA

WAREHOUSE 1	1200 Sq Ft
1ST FLR	1200 Sq Ft
MEZZANINE	1200 Sq Ft
WAREHOUSE 2	2400 Sq Ft
1ST FLR	2400 Sq Ft
TOTAL AREA	4800 Sq Ft

PARKING REQUIREMENTS

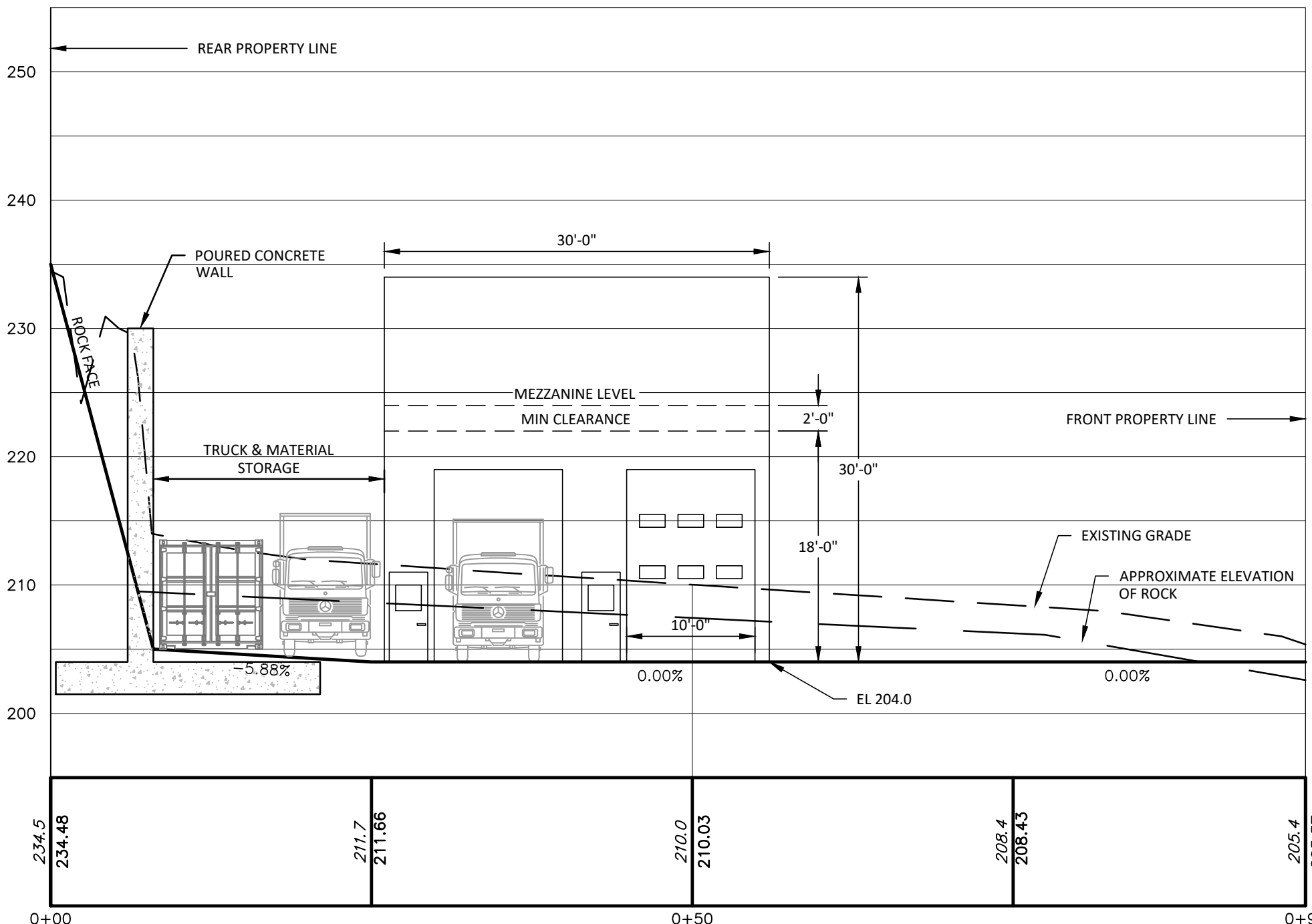
EITHER 1 SPACE/1200 SF OR 1 PER BAY  
4800/1200 = 4 PARKING SPACES  
6 BAYS = 6 PARKING SPACES  
6 > 4 THEREFORE 6 PARKING SPACES ARE REQUIRED



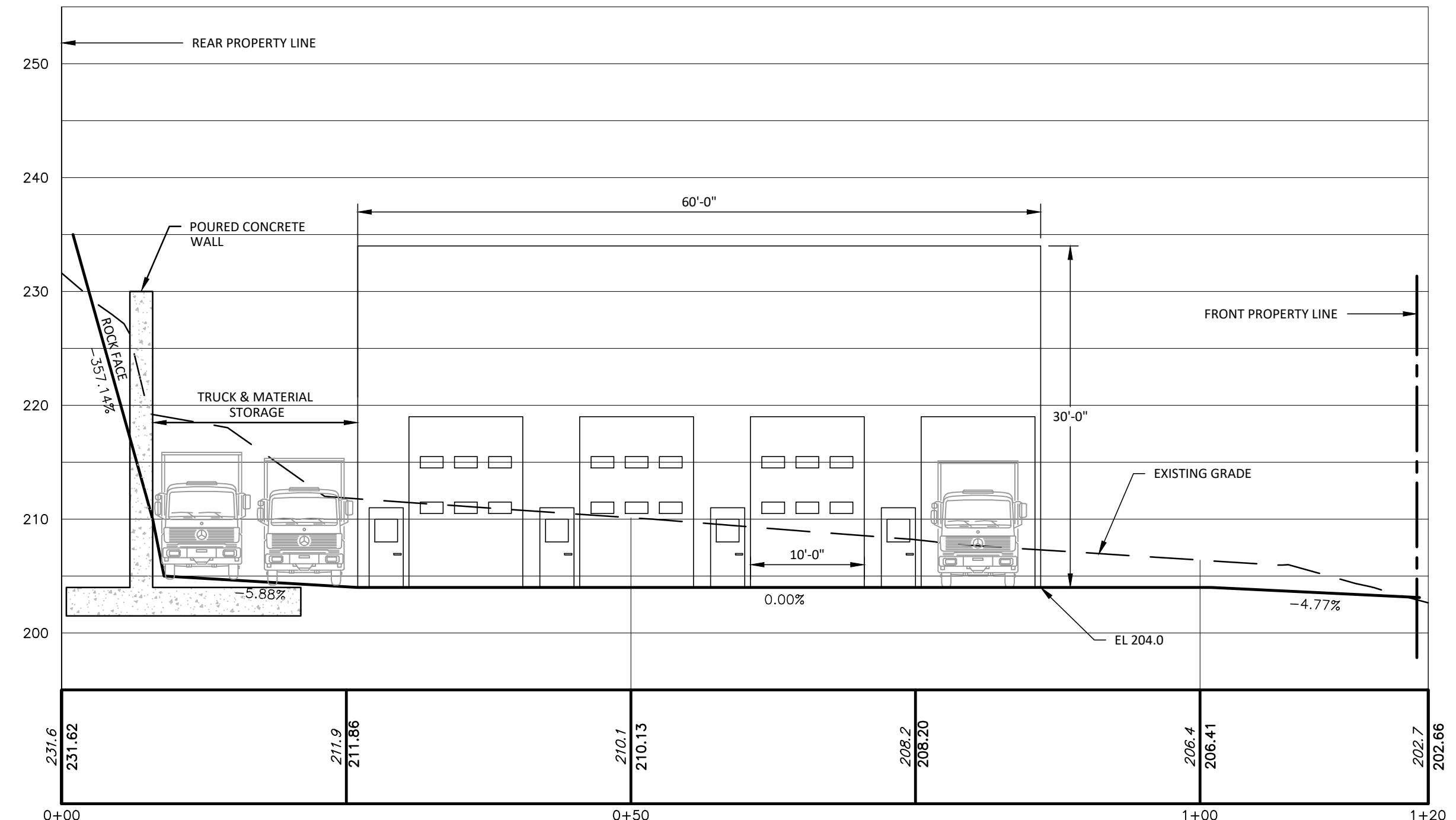
SITE PLAN  
1" = 20' - 0"

SITE PLAN NOTES:

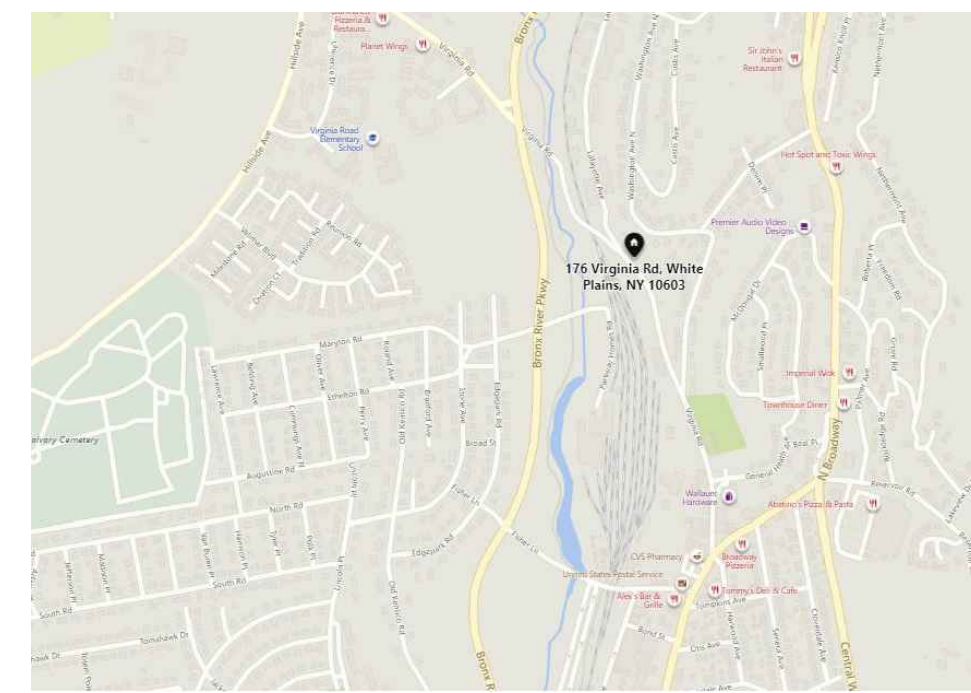
- TRUCK WASHING IS LIMITED TO THE TRUCKS STORED ON THE SITE AND A MAXIMUM USE OF 200 GALLONS/DAY.
- VEHICLE REPAIR SHALL BE PROHIBITED ON SITE.
- ANY OUTDOOR STORAGE OF VEHICLES AND MATERIAL NOT DEPICTED ON THE APPROVED SITE PLAN SHALL BE PROHIBITED.



PROPOSED 2 BAY WAREHOUSE  
1" = 10' - 0"



PROPOSED 4 BAY WAREHOUSE  
1" = 10' - 0"



LOCATION MAP  
N.T.S.

GENERAL NOTES

- THIS PLAN WAS PREPARED TO COMPLY WITH THE APPLICATION REQUIREMENT FOR BUILDING PERMIT IN THE TOWN OF NORTH CASTLE.
- EXISTING TOPOGRAPHIC AND SURVEY INFORMATION SHOWN HEREON PROVIDED BY A SURVEYOR PREPARED BY TC MERRITS LAND SURVEYORS ON AUGUST 30, 2018. PROPOSED GRADING SHALL DRAIN AWAY FROM THE PROPOSED STRUCTURE AT A MINIMUM SLOPE REQUIRED TO PROVIDE POSITIVE DRAINAGE AWAY FROM THE FOUNDATION.
- UNDERGROUND UTILITIES, FACILITIES AND STRUCTURES MAY NOT BE ALL SHOWN HEREON. THE LOCATIONS OF PORTIONS OF THE UNDERGROUND UTILITIES INDICATED HEREON WHERE OBTAIN FROM THE MAP REFERRED TO ABOVE AND FIELD MARK-OUTS BY THE UTILITY COMPANY PERSONNEL. THERE MAY BE OTHER UNDERGROUND UTILITIES TO WHICH THE LOCATIONS ARE CURRENTLY UNKNOWN. ANY PARTY UTILIZING THE INFORMATION AND DATA DEPICTED ON THIS PLAN SHALL CONTACT "DIG SAFELY, NEW YORK" AT PHONE NUMBER 1-800-962-7962 OR 811 A MINIMUM OF 48 HOURS PRIOR TO ANY CONSTRUCTION ACTIVITIES TO VERIFY THE LOCATION OF ANY AND ALL UNDERGROUND UTILITIES.
- CONTRACTOR IS SOLELY RESPONSIBLE FOR THE MEANS AND METHODS AND SEQUENCES OF CONSTRUCTION AND FOR THE SAFETY OF WORKERS AND OTHERS ON THE CONSTRUCTION SITE. THE CONTRACTOR SHALL LOCATE AND VERIFY THE SIZE, LOCATION, DEPTH AND INVERTS OF ANY AND ALL EXISTING UTILITIES PRIOR TO COMMENCING OPERATIONS.
- PVC DRAIN PIPES SHALL BE SCHEDULE 40, SLOPES HAVING A MINIMUM SLOPE OF 1%.
- NO SOIL STOCKPILES, CONSTRUCTION MATERIALS, AND NO EQUIPMENT SHALL BE STORED IN THE AREA OF THE PROPOSED (AND EXISTING) STORMWATER INFILTRATION PRACTICES.
- THE CONTRACTOR SHALL PROVIDE A TRAINED INDIVIDUAL (CARRYING CARD/CERTIFICATION BY THE NYSDEC) TO BE PRESENT ON SITE AT ALL TIMES DURING SOIL DISTURBING ACTIVITIES.
- DURING CONSTRUCTION, SEDIMENT AND EROSION CONTROLS SHALL BE IN ACCORDANCE WITH THE CURRENT DPW STANDARDS FOR SEDIMENT AND EROSION CONTROL. DPW RESERVES THE RIGHT TO ORDER ADDITIONAL SEDIMENT CONTROL PRACTICES INSTALLED DURING CONSTRUCTION.
- OWNERS/OWNER'S REPRESENTATIVE SHALL CONTACT TOWN BUILDING DEPARTMENT TO INSPECT SEDIMENT AND EROSION CONTROL PRACTICES PRIOR TO START OF CONSTRUCTION. ANY DESIGN CHANGES TO THE STORMWATER SYSTEM DURING CONSTRUCTION DUE TO SHALLOW GROUNDWATER, ROCK, ETC. MUST BE RESUBMITTED TO THE TOWN ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION START.
- STORMWATER SYSTEM MUST BE INSPECTED AND CERTIFIED BY A PROFESSIONAL ENGINEER.
- UNDERGROUND UTILITIES (ELECTRIC, GAS, & COMMUNICATION) TO BE FIELD LOCATED BY CONTRACTOR.
- ROOF LEADER CONNECTIONS SHOWN HEREON ARE APPROXIMATE AND SHALL BE COORDINATED WITH GUTTER/DOWNSPOUT INSTALLATION. DRAINAGE SHALL BE INSTALLED TO PROVIDE A CONNECTION TO ALL REQUIRED ROOF LEADER DOWNSPOUTS.
- NO SOIL STOCKPILING ALLOWED ON SITE. ALL EXCAVATED SOIL TO BE IMMEDIATELY TRUCKED OFF SITE.

MISCELLANEOUS DATA:

SURVEYOR: TC MERRITS LAND SURVEYORS  
394 BEDFORD ROAD  
PLEASANTVILLE NY 10570  
914-769-8003

ENGINEER: FUSION ENGINEERING  
600 NORTH BROADWAY  
SUITE 215  
WHITE PLAINS NY 10603  
914-358-5009

MUNICIPALITY: TOWN OF NORTH CASTLE

WATERSHED: BRONX RIVER BASIN

SECTION: 122.16

BLOCK: 1

LOT: 3

OWNER: MANUEL YANEZ  
MISTIS PROPERTIES INC.  
132 FULTON STREET  
WHITE PLAINS, NY 10608  
914-774-3625

FIRE DISTRICT: NORTH WHITE PLAINS FD

ZONE: IND-A

SCHOOL: VALHALLA

LOT SIZE: 0.383 ACRES

EROSION CONTROL NOTES:

- TREE PROTECTION MEASURES SHALL BE INSTALLED PRIOR TO THE COMMENCEMENT OF WORK.
- SUGGESTED LOCATIONS OF EROSION AND SEDIMENT CONTROL MEASURES ARE SHOWN HEREON. PLACEMENT OF BEST MANAGEMENT PRACTICES TO MANAGE SOIL EROSION AND POLLUTION PREVENTION ON SITE MAY BE MODIFIED IN THE FIELD AFTER CONSULTATION WITH THE APPROPRIATE REGULATORY AGENCY HAVING JURISDICTION PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. PRACTICES MUST BE PROPERLY INSTALLED PRIOR TO START OF CONSTRUCTION AND SHALL BE INSPECTED AND MAINTAINED AS NEEDED TO INSURE THE CONTROLS ARE FUNCTIONING AS DESIGNED. CONTRACTOR SHALL TAKE CARE TO VISUALLY INSPECT CONTROLS, ESPECIALLY PRIOR TO PRECIPITATION EVENTS AND MAKE ANY CORRECTIONS OR PROVIDE ADDITIONAL MEASURES AS NECESSARY TO TRY TO PREVENT SEDIMENT OR POLLUTANTS FROM LEAVING THE SITE.
- CONSTRUCTION ACCESS TO EXPOSED/GRADED SOILS SHALL BE DEFINED BY THE PLACEMENT OF AN ANTI-TRACKING MANAGEMENT PRACTICE PRIOR TO THE START OF CONSTRUCTION. TRACK OUT ONTO PUBLIC STREETS SHALL BE SWEEP DAILY AND BEFORE PRECIPITATION EVENTS.
- DISTURBED SOILS SHALL BE TEMPORARILY STABILIZED WITHIN 14 DAYS.
- ALL EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH NYSDEC 'NEW YORK STATE STANDARDS AND SPECIFICATIONS FOR EROSION AND SEDIMENT CONTROL.
- THE ENGINEER MAY AT HIS DISCRETION REQUIRE ADDITIONAL EROSION CONTROL MEASURES THROUGHOUT CONSTRUCTION TO MITIGATE UNFORESEEN EROSION AND SILTATION.
- PROVISIONS SHALL BE MADE TO PREVENT SURFACE WATER FROM DAMAGING THE CUT FACE OF EXCAVATIONS OR THE SLOPING SURFACES FILLS.
- TREES, ROOT SYSTEMS AND OTHER VEGETATION REMOVED FOR CONSTRUCTION PURPOSES SHALL BE CHIPPED OR REMOVED FROM SITE. NO ON-SITE BURIAL OR BURNING SHALL BE PERMITTED.
- DURING GRADING OPERATIONS, APPROPRIATE MEASURES FOR DUST CONTROL SHALL BE EXERCISED.
- ALL FILLS SHALL BE COMPACTED TO PROVIDE STABILITY OF MATERIAL AND TO PREVENT UNDESIRABLE SETTLEMENT.
- AFTER FINAL GRADES ARE ESTABLISHED, DISTURBED AREAS SHALL BE COVERED WITH FOUR INCHES OF TOPSOIL AND SEEDED; LANDSCAPE AREAS SHALL BE MULCHED.
- FOR DEWATERING ACTIVITIES: A DEWATERING PUMP SHALL BE LOCATED IN A PERFORATED TUB SURROUNDED BY FILTER FABRIC AND STONE (OR APPROVED ALTERNATIVE). CLEAN DISCHARGE SHOULD BE DIRECTED TO ONSITE DRAINAGE APPURTENANCES TO MINIMIZE EROSION OF SOILS. DISCHARGE WITH SUSPENDED SEDIMENT SHALL BE CONNECTED TO A SEDIMENT BAG ON UNDISTURBED GROUND IN A LOCATION WHERE THE DISCHARGE WILL NOT CAUSE EROSION OR FLOW OVER EXPOSED SOILS.



100 EXECUTIVE BLVD. SUITE 204  
OSSING, NY 10562  
PHONE: (914) 944-3377  
FAX: (866) 567-6240

JORGE B. HERNANDEZ R.A. A.I.A.  
LICENSE NUMBER: 030424-1  
CERTIFICATE NUMBER: 0973256

PAUL A. BERTE, P.E.

100 EXECUTIVE BLVD. SUITE 204  
OSSING, NY 10562

REVISIONS	DATE	BY
CONSULTING CMT.	3/23/2022	ARQ.

DRAWING TITLE:  
SITE PLANS, MAP, & NOTES

PROJECT:  
MISTIS PROPERTIES INC.

PROJECT ADDRESS:  
176 VIRGINIA ROAD  
WHITE PLAINS  
NEW YORK, 10603

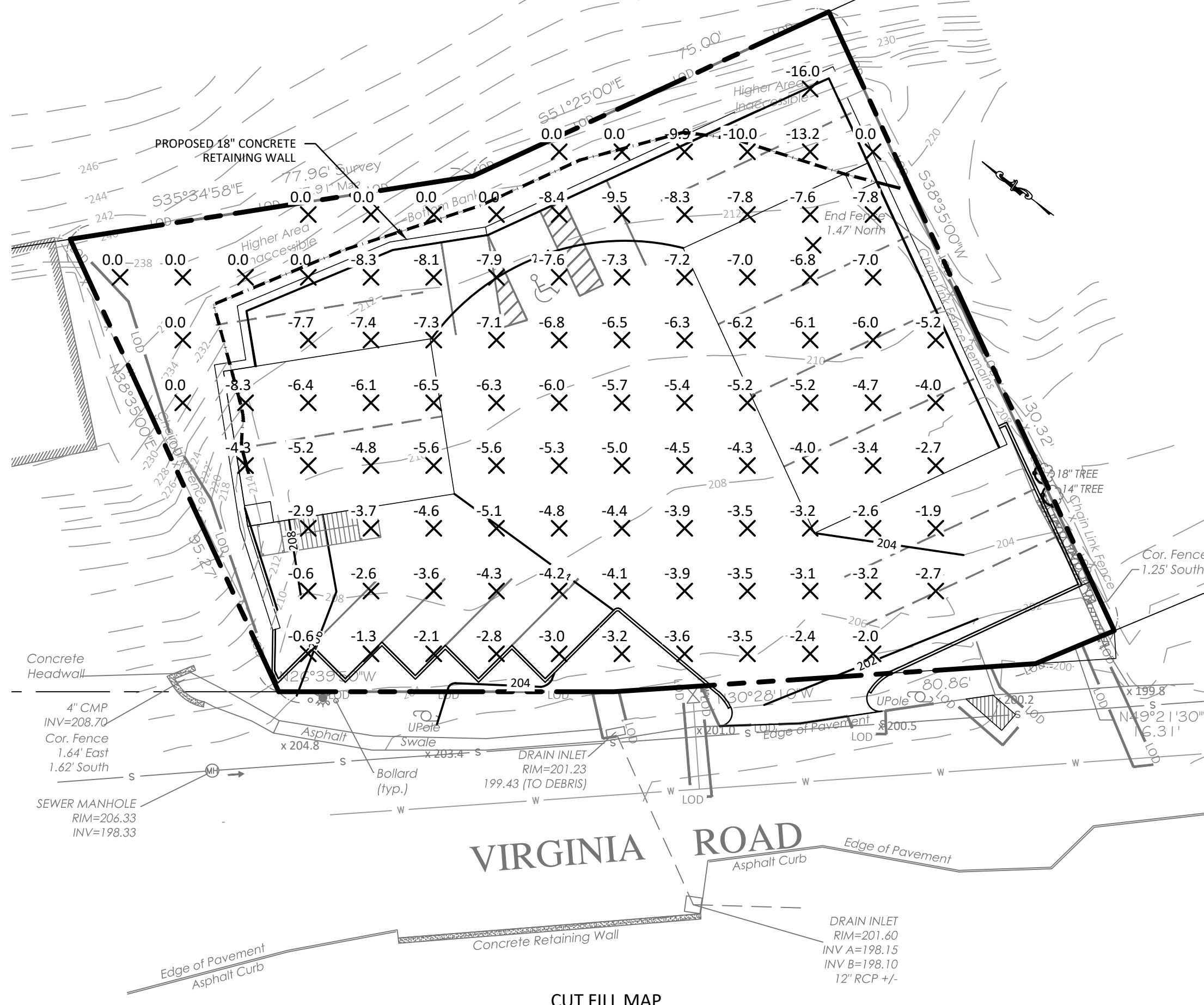
DOB EXAMINER SIGNATURE:

DOB BSCAN STICKER:



DATE: 03/08/2021  
PROJECT NO.: 21029  
DRAWING BY: ARQ  
CHECKED BY: PB

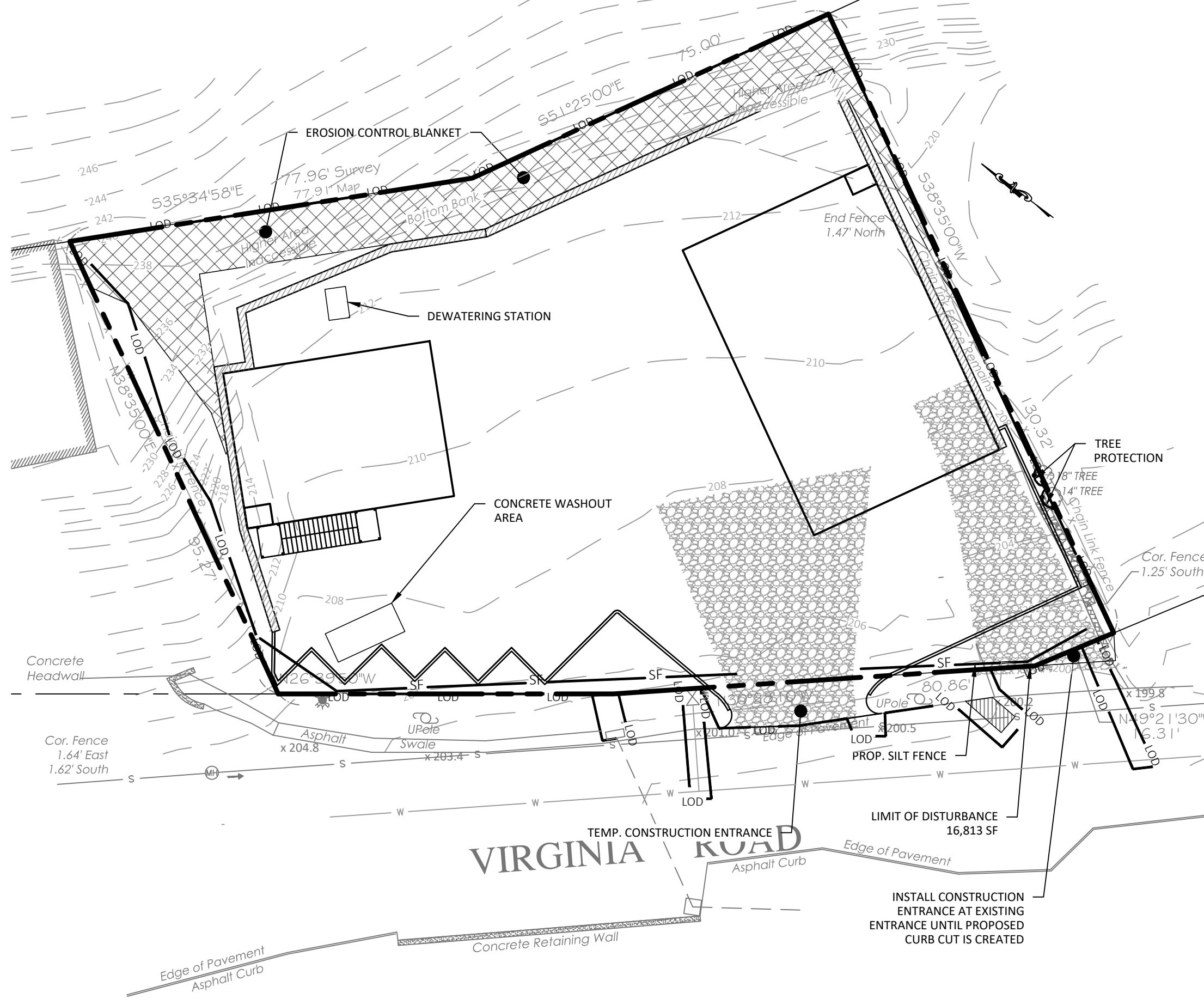
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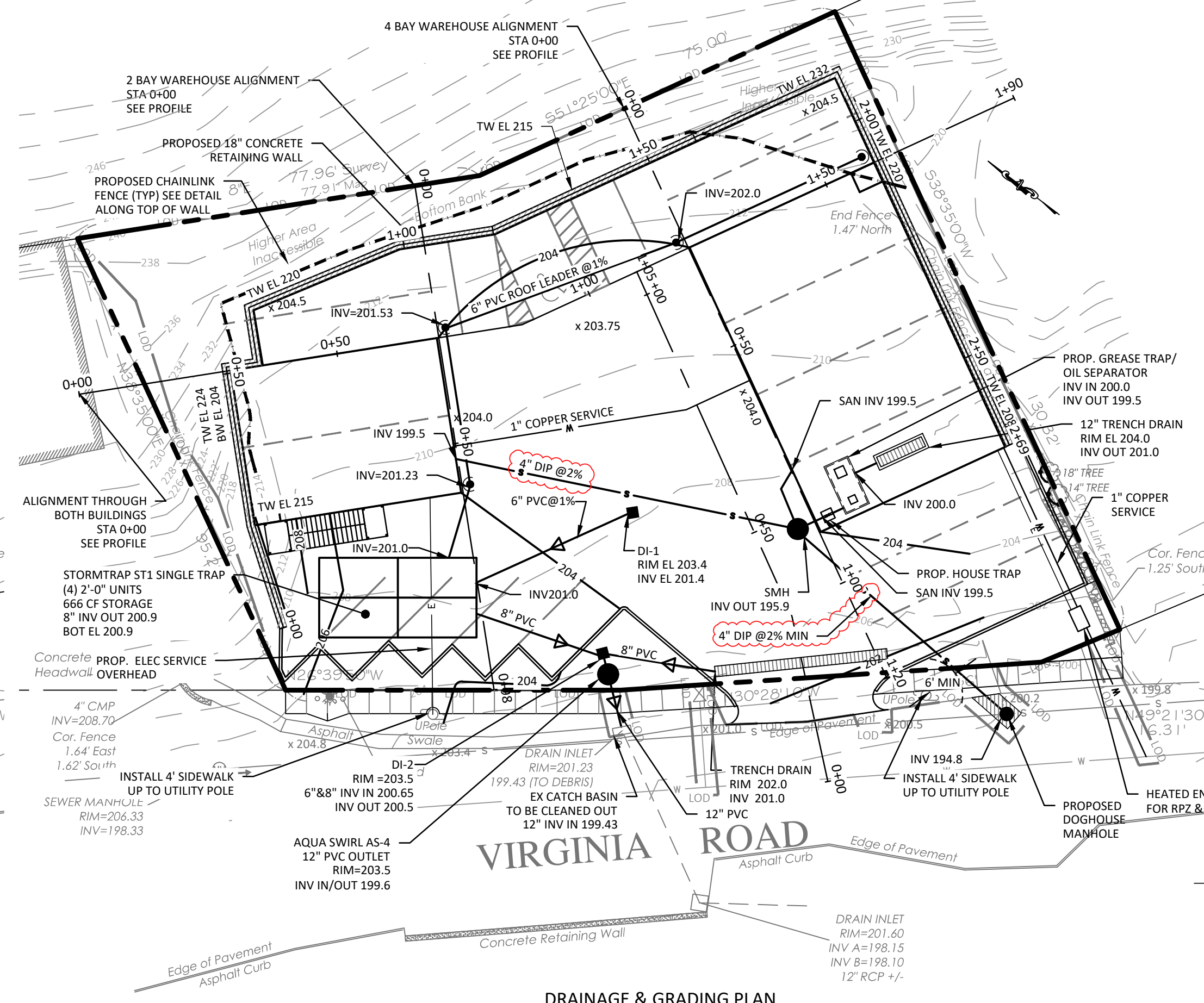
**CUT FILL MAP**  
1" = 20' - 0"

CUT (YDS)	FILL (YDS)	NET (YDS)
2,686	121	2,565

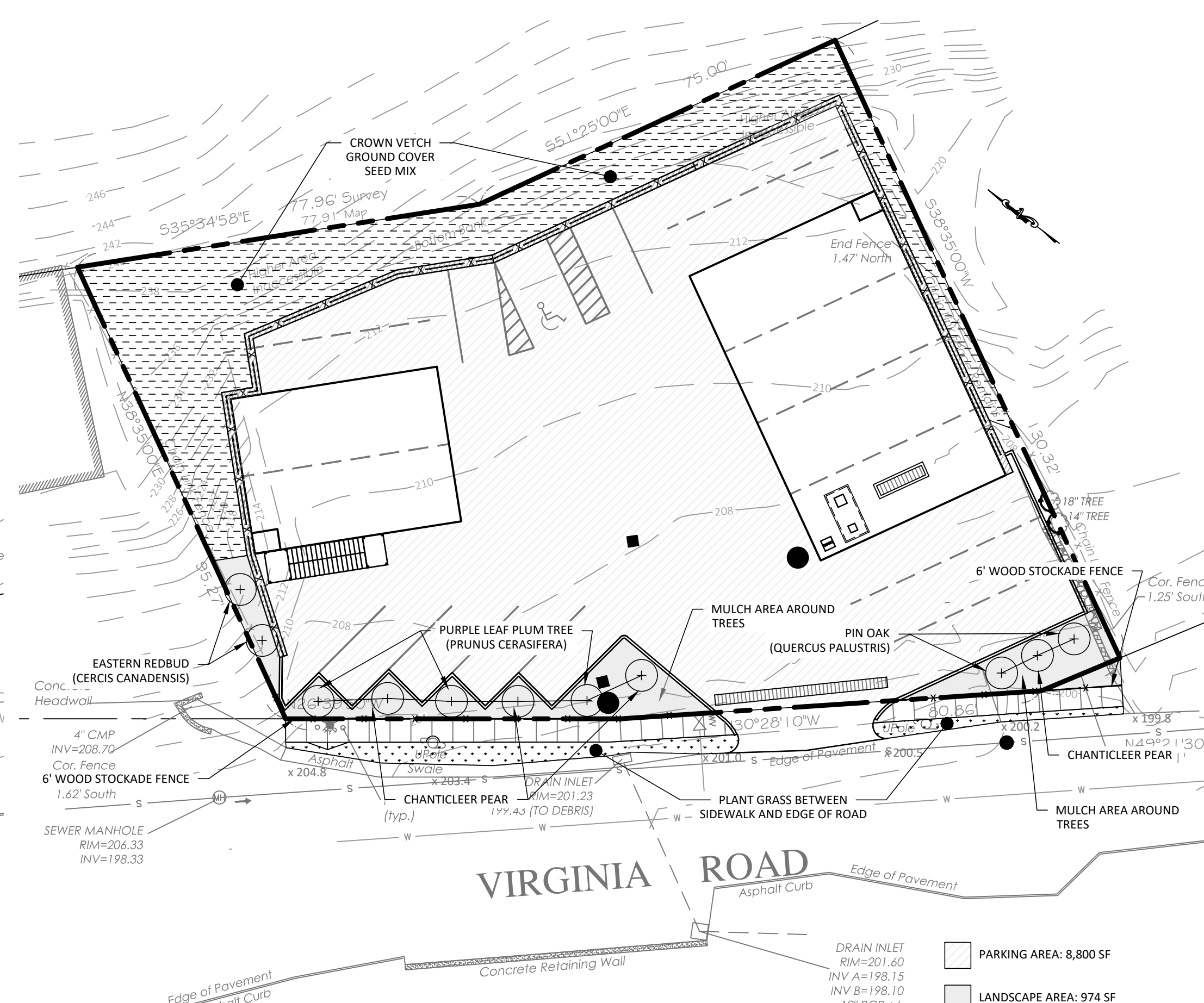
\* CUT MATERIAL TO BE IMMEDIATELY REMOVED FROM THE SITE AND MOVED TO AN APPROVED SITE



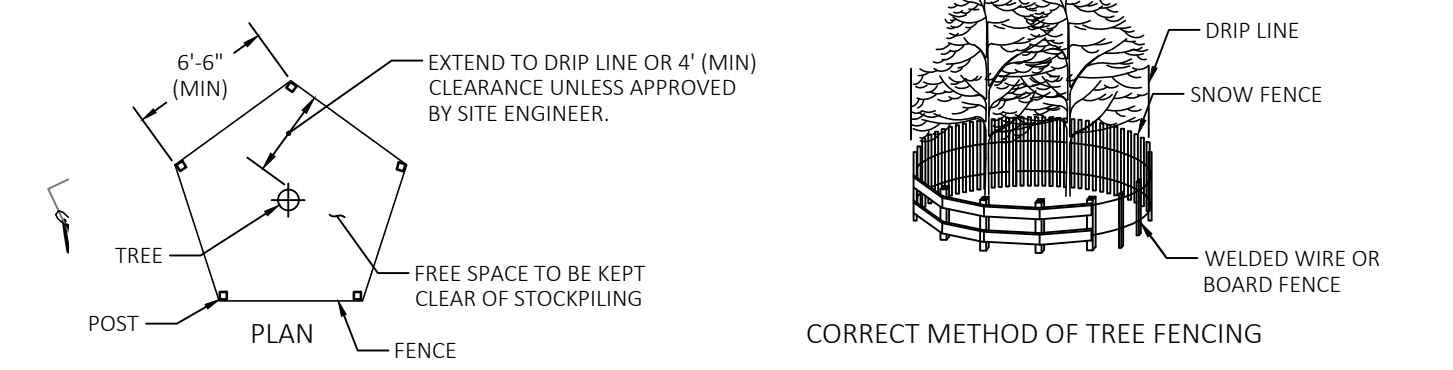
**EROSION CONTROL PLAN**  
1" = 20' - 0"



**DRAINAGE & GRADING PLAN**  
1" = 20' - 0"

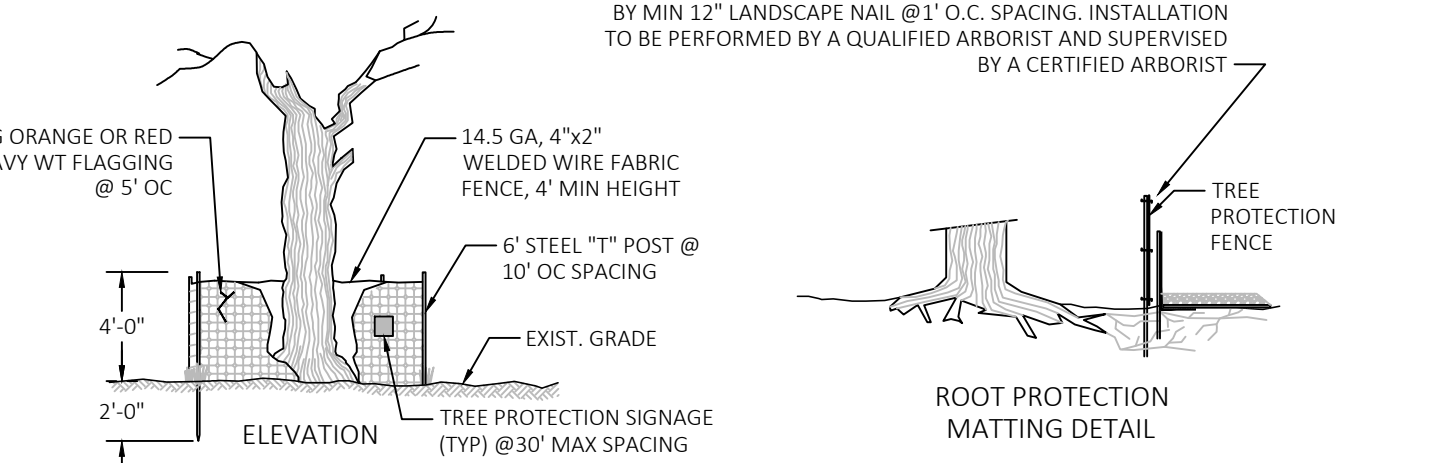


**LANDSCAPING PLAN**  
1" = 20' - 0"



**CORRECT METHOD OF TREE FENCING**

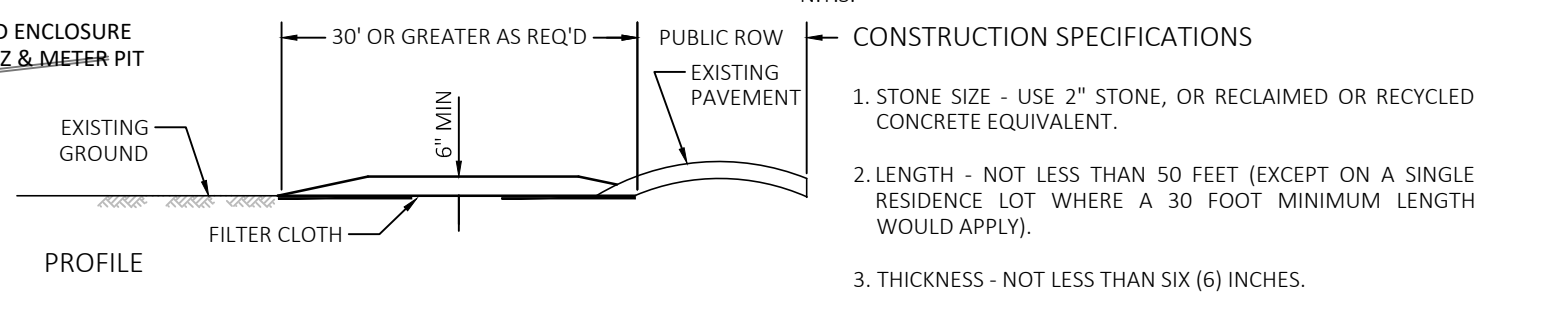
NOTE: THE TREE PROTECTION SHOULD BE INSTALLED PRIOR TO ANY WORK IN AREA, AND REMAIN UNTIL END OF ALL WORK.



**CONSTRUCTION SPECIFICATIONS:**

1. TREE PROTECTION AREA WILL BE DETERMINED AS PART OF THE PLAN REVIEW PROCESS. EXACT LOCATION, DEPTH AND METHODS OF ROOT PRUNING TO BE DETERMINED IN FIELD BY PROJECT FORESTER.
2. EXACT LOCATION OF TREE PROTECTION AREAS SHALL BE STAKED OR FLAGGED PRIOR TO TRENCHING.
3. TRENCH SHOULD BE BACKFILLED IMMEDIATELY OR INCORPORATED WITH SILT FENCE INSTALLATION.
4. ROOTS SHOULD BE SEVERED BY TRENCHER, VIBRATORY PLOW OR APPROVED EQUIVALENT. ROOTS OVER 1.5" DIAMETER SHOULD BE CLEANLY CUT BY HAND. ROOT PRUNING ADJACENT TO SPECIMEN TREES MAY REQUIRE SOIL REMOVAL BY SUPERSONIC AIR TOOL TO MINIMIZE TREE AND ROOT IMPACTS.

**TREE/VEGETATION PROTECTION BARRIER**

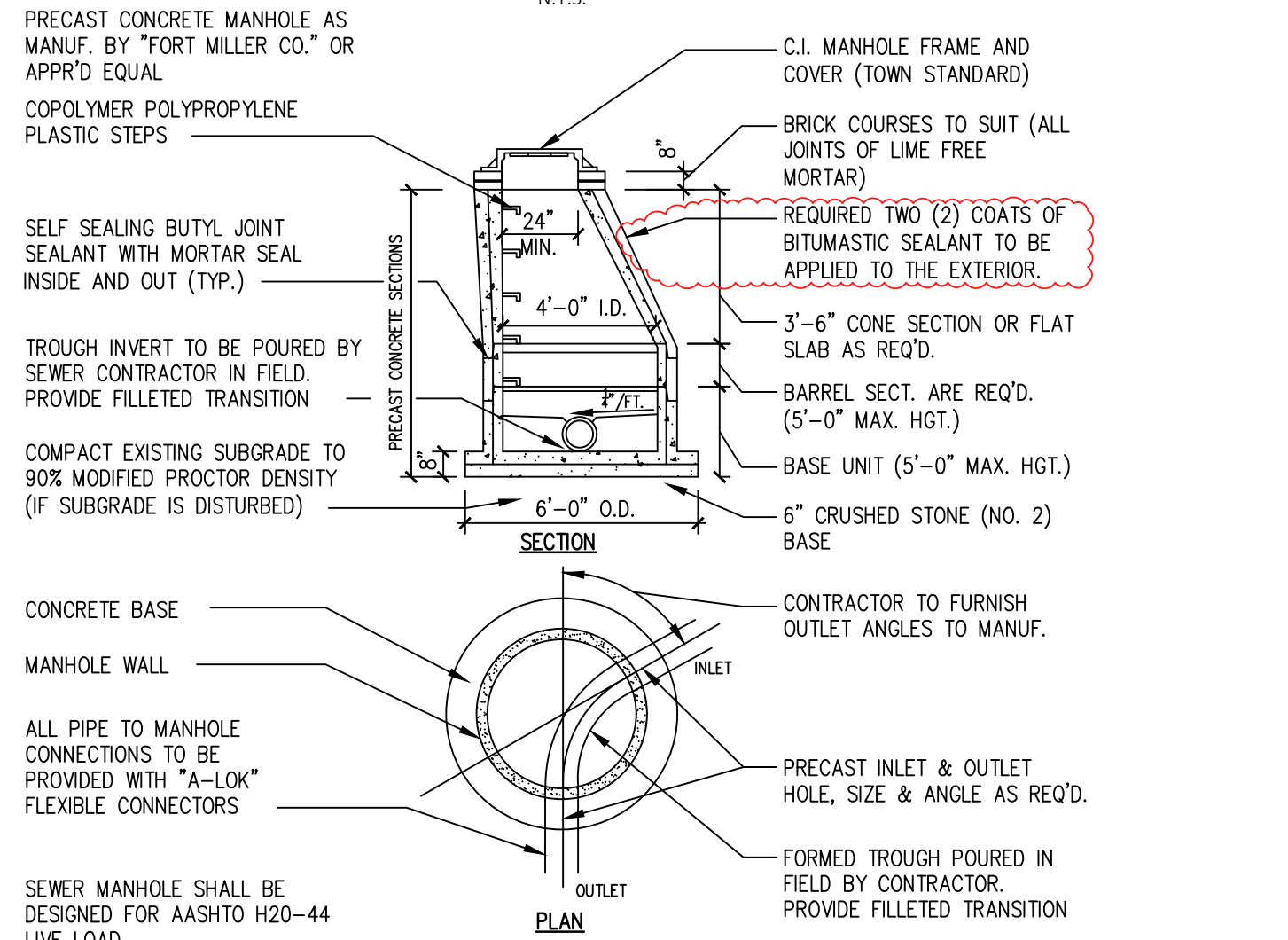


NOTE: PROVIDE APPROPRIATE TRANSITION BETWEEN STABILIZED CONSTRUCTION ENTRANCE AND PUBLIC R.O.W.

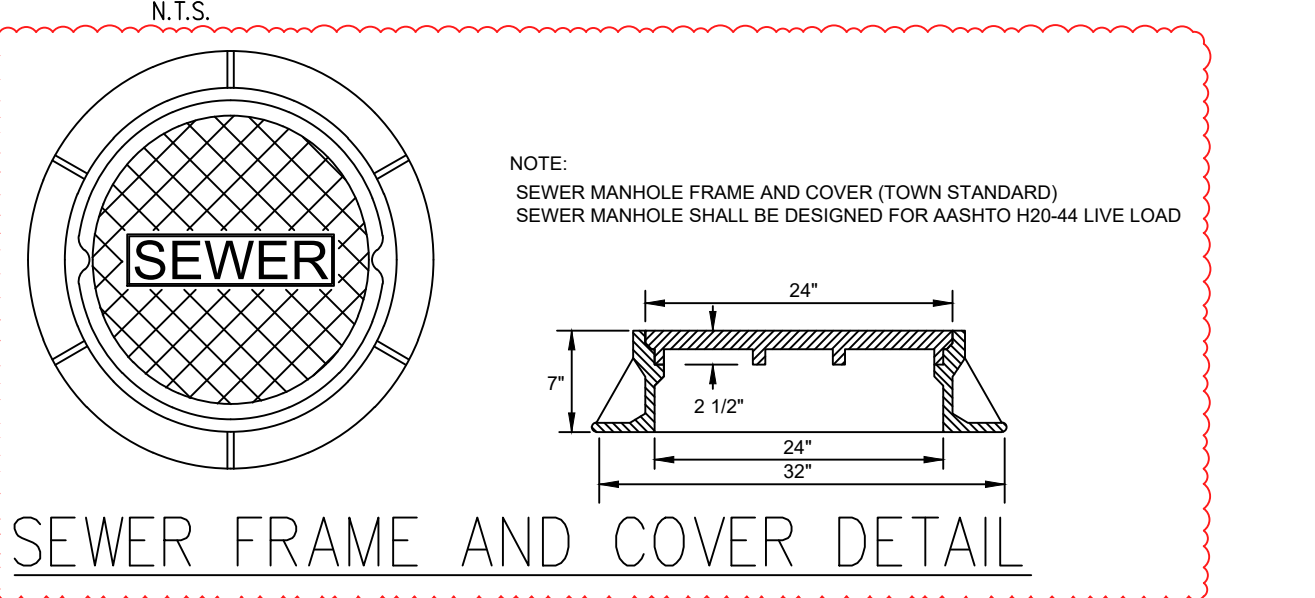
**CONSTRUCTION SPECIFICATIONS**

1. STONE SIZE - USE 2" STONE, OR RECYCLED CONCRETE EQUIVALENT.
2. LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
3. THICKNESS - NOT LESS THAN SIX (6) INCHES.
4. WIDTH - TWELVE (12) FOOT MINIMUM. BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS. TWENTY-FOUR (24) FOOT IF SINGLE ENTRANCE TO SIGHT.
5. FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
6. SURFACE WATER - ALL SURFACE WATER FLOWING OR DIVERTED TOWARD CONSTRUCTION ENTRANCES SHALL BE PIPED ACROSS THE ENTRANCE. IF PIPING IS IMPRACTICAL A MOUNTABLE BERM WITH 5:1 SLOPES WILL BE PERMITTED.
7. MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC RIGHTS-OF-WAY. ALL SEDIMENT SPILLED, DROPPED, WASHED OR TRACED ONTO PUBLIC RIGHTS-OF-WAY MUST BE REMOVED IMMEDIATELY.
8. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
9. PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

**STABILIZED CONSTRUCTION ENTRANCE**



**SEWER MANHOLE DETAIL**



**SEWER FRAME AND COVER DETAIL**



100 EXECUTIVE BLVD. SUITE 204  
OSSINING, NY 10562  
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**JORGE B. HERNANDEZ R.A. A.I.A.**  
LICENSE NUMBER: 030424-1  
CERTIFICATE NUMBER: 0973256

**PAUL A. BERTE, P.E.**  
100 EXECUTIVE BLVD. SUITE 204  
OSSINING, NY 10562

REVISIONS	DATE	BY
CONSULTING CMT.	3/23/2022	ARQ.
REVISED DRAINAGE LAYOUT	3/29/2022	

DRAWING TITLE:  
**DRAINAGE, GRADING & EROSION CONTROL**

PROJECT:  
MISTIS PROPERTIES INC.

PROJECT ADDRESS:  
176 VIRGINIA ROAD  
WHITE PLAINS  
NEW YORK, 10603

DOB EXAMINER SIGNATURE:

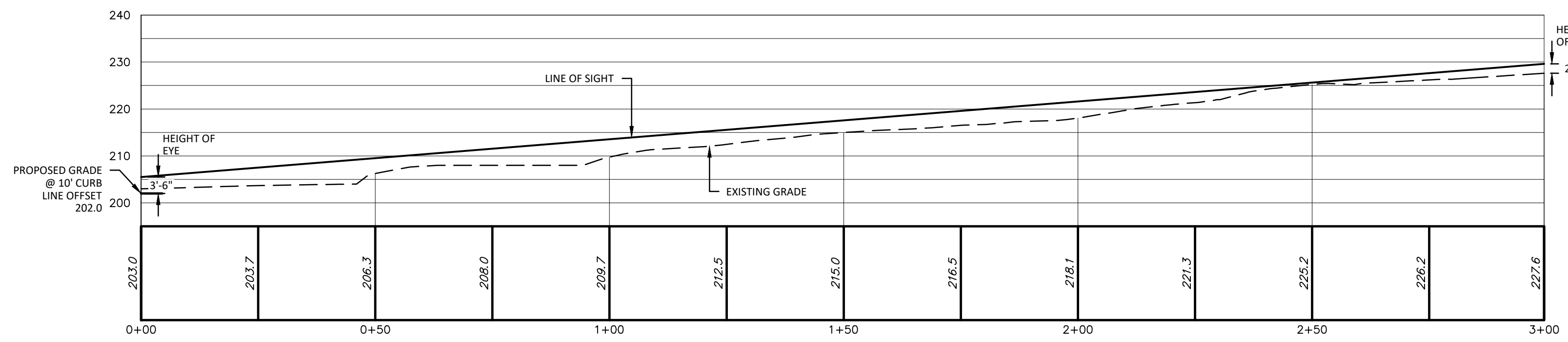
DOB BSCAN STICKER:

SEAL & SIGNATURE

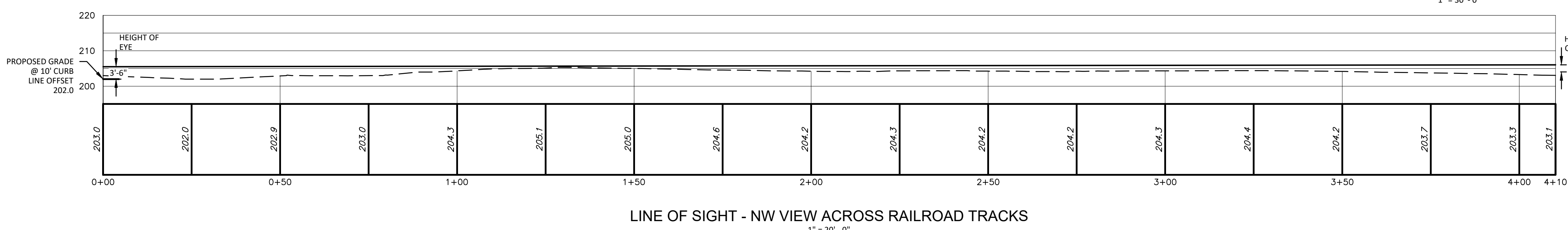


DATE: 03/08/2021  
PROJECT NO.: 21029  
DRAWING BY: ARQ  
CHECKED BY: PB

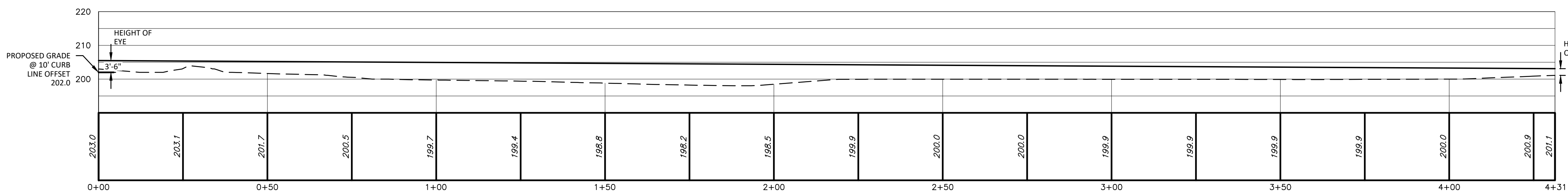
DWG. NO.: S-2  
CAD FILE NO.: 2 OF 14



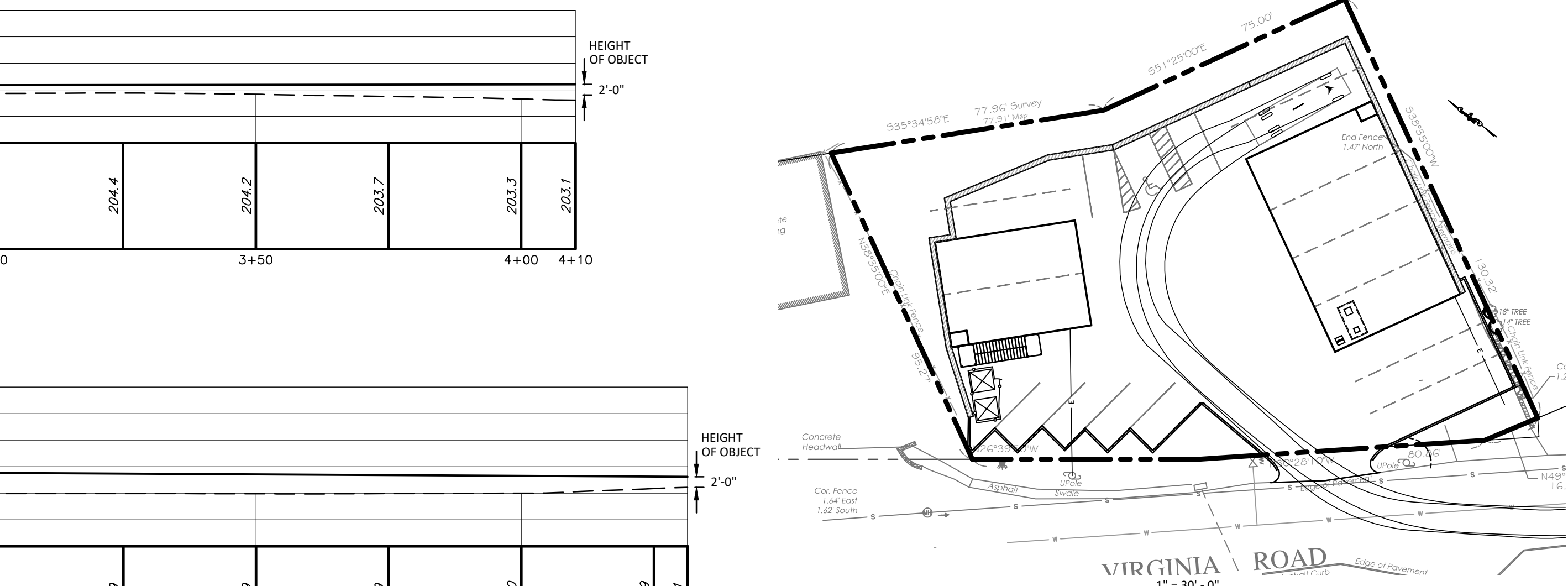
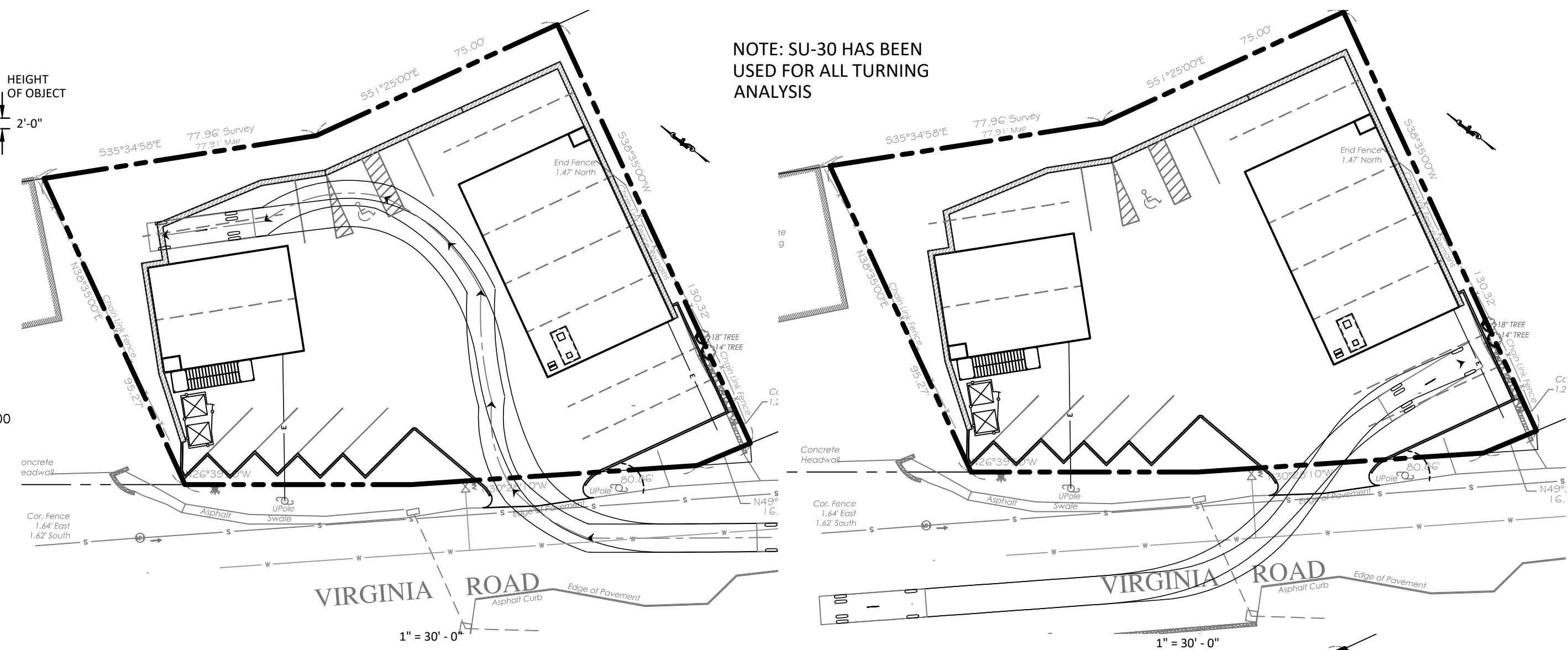
LINE OF SIGHT - NORTH VIEW LAFAYETTE AVENUE  
1" = 20' - 0"



LINE OF SIGHT - NW VIEW ACROSS RAILROAD TRACKS  
1" = 20' - 0"



LINE OF SIGHT - SE VIEW  
1" = 20' - 0"



SIGHT DISTANCE STUDY	
DIRECTION	SIGHT DISTANCE
TO THE NORTH ACROSS RAIL ROAD TRACKS	410'
TO THE NORTH UP LAFAYETTE AVENUE	299'
TO THE SOUTH	431'

NOTE: AASHTO POLICY ON GEOMETRIC DESIGN OF HIGHWAYS AND STREETS GUIDELINES WERE USED TO MEASURE THE SIGHT DISTANCE. THIS SPECIES VALUES FOR HEIGHT OF EYE AND HEIGHT OF OBJECT EQUAL TO 3.5 FT AND 2.0 FT RESPECTIVELY. THE HEIGHT OF EYE WAS CENTERED WITHIN THE PROPOSED DRIVEWAY OFFSET 10 FEET FROM THE EDGE OF VIRGINIA ROAD. THE HEIGHT OF OBJECT WAS MEASURED FROM THE CENTER OF THE EXISTING TRAVELED WAY.



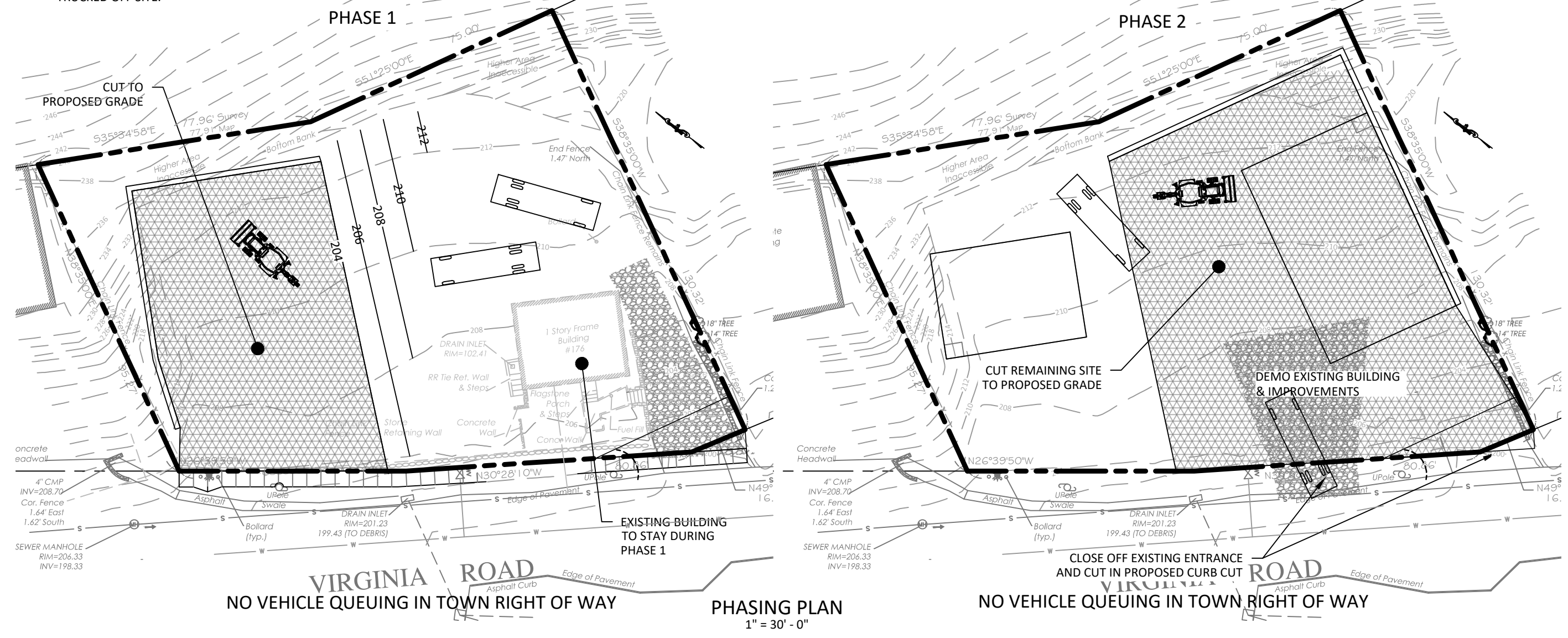
SIGHT DISTANCE STUDY  
1" = 60' - 0"

NOTE: NO MORE THAN TWO DUMP TRUCKS AND ONE EXCAVATOR TO BE ON SITE AT ONCE DURING CONSTRUCTION.

- CONSTRUCTION SEQUENCE**
- EROSION AND SEDIMENT CONTROL (ESC) MEASURES AND POLLUTION PREVENTION (PP) IMPLEMENTATION.
    - INSTALL SILT FENCES ALONG EASTERLY PROJECT LIMITS
    - UTILIZE EXISTING DRIVEWAY FOR CONSTRUCTION ACCESS. IF REQUIRED, INSTALL STONE (PER DETAIL) IF ACCESS IS REQUIRED ON AND OFF EXPOSED AREAS.
    - INSTALL TREE PROTECTION
    - INSTALL TEMPORARY SANITARY FACILITIES (PORTABLE TOILETS) IN A LOCATION THAT IS AT LEAST 20 FROM ANY DRAINAGE FACILITY OR FLOW PATH. RECOMMEND STAKING THE FACILITY TO PREVENT ACCIDENTAL TIPPING BY CONSTRUCTION ACTIVITY OR WIND.
    - INSTALL WASTE CONTAINER - MAINTAIN RIGOROUS SITE CLEANING SCHEDULE TO PREVENT DEBRIS FROM BLOWING OFF SITE. CONSTRUCTION WASTE SHALL BE STORED IN A DUMPSTER AND CARRIED OFF-SITE ON A REGULAR BASIS
    - ALLOCATE CONCRETE WASHOUT AREAS IN ADVANCE OF POUR.
  - PHASE 1 CLEARING, DEMO & EXCAVATION.
    - CLEAR ALL TREES MARKED TO BE REMOVED ON THE DEMOLITION PLAN. CLEAR & GRUB NORTH HALF OF THE PROPERTY, NORTH OF THE EXISTING 1 STORY RESIDENCE. THE EXISTING RESIDENCE IS TO REMAIN UNTIL PHASE 2.
    - EXCAVATE TO PROPOSED GRADE. IT IS ANTICIPATED THAT ROCK WILL BE PRESENT ON PORTIONS OF THE SITE. A MINIMUM PRODUCTIVITY RATE OF 55 YARDS PER DAY WITH A 2000TBF HAMMER IS PROPOSED TO REMOVE ANY ROCK ENCOUNTERED.
    - DUE TO THE LIMITED SITE AREA, ALL EXCAVATED SOILS & ROCK ARE TO BE IMMEDIATELY TRUCKED OFF SITE.

- DISTURBED AREAS WHERE CONSTRUCTION WILL CEASE FOR MORE THAN 14 DAYS WILL BE STABILIZED WITH EROSION CONTROLS, SUCH HYDRO-SEEDING, HYDRO-MULCH, OR HAY
- FORM AND POUR PROPOSED RETAINING WALL ALONG REAR PROPERTY LINE UP TO THE NEXT PHASE SECTION. IF STABLE ROCK IS ENCOUNTERED ALONG THE LIMITS OF THE PROPOSED CUT, THE RETAINING WALL WILL NOT BE NECESSARY.
- CONSTRUCT RETAINING WALL ON WEST SIDE OF LOT AS SHOWN IN PHASE 1 PHASING PLAN.
- CUT IN CURB AT PROPOSED LOCATION AND INSTALL TEMPORARY CONSTRUCTION ENTRANCE.
- PHASE 2 CLEARING, DEMO & EXCAVATION
  - DISCONNECT AND CAP ALL UTILITIES TO EXISTING 1 STORY RESIDENCE. RESTORE PAVEMENT AS SPECIFIED.
  - DEMOLISH ALL EXISTING IMPROVEMENTS REMAINING ON THE DEMOLITION PLAN.
  - CLEAR & GRUB SOUTH END OF PROPERTY.
  - EXCAVATE TO PROPOSED GRADE. IT IS ANTICIPATED THAT ROCK WILL BE PRESENT ON PORTIONS OF THE SITE. A MINIMUM PRODUCTIVITY RATE OF 55 CUBICYARDS PER DAY WITH A 2000TBF HAMMER IS PROPOSED TO REMOVE ANY ROCK ENCOUNTERED.
  - DUE TO THE LIMITED SITE AREA, ALL EXCAVATED SOILS & ROCK ARE TO BE IMMEDIATELY TRUCKED OFF SITE.
  - DISTURBED AREAS WHERE CONSTRUCTION WILL CEASE FOR MORE THAN 14 DAYS WILL BE STABILIZED WITH EROSION CONTROLS, SUCH HYDRO-SEEDING, HYDRO-MULCH, OR HAY.
- FORM AND POUR PROPOSED RETAINING WALL ALONG REAR PROPERTY LINE UP TO THE NEXT PHASE SECTION. IF STABLE ROCK IS ENCOUNTERED ALONG THE LIMITS OF THE PROPOSED CUT, THE RETAINING WALL WILL NOT BE NECESSARY.
- INSTALL SUBSURFACE STORAGE SYSTEM, SITE DRAINAGE AND HYDRODYNAMIC SEPARATOR TO CAPTURE ROOF LEADER RUNOFF. PROTECT INLETS WITH SEDIMENT CONTROL INLET PROTECTION.

- VERTICAL CONSTRUCTION (INSTALL FOUNDATION AND CONSTRUCT PREFAB METAL WAREHOUSE STRUCTURES)
- INSTALL UNDERGROUND UTILITIES. RESTORE PAVEMENT AS SPECIFIED.
- INSTALL PROPOSED CURB AND ASPHALT PARKING LOT
- PAINT ALL STRIPING FOR PROPOSED LOT
- PLANT ALL PROPOSED LANDSCAPING
- FINAL STABILIZATION OF DISTURBED AREAS
  - REMOVE ALL ESC AND PP MEASURES UPON APPROVAL OF DESIGN ENGINEER AND/OR ESC INSPECTOR
  - AWARDED CONTRACTOR SHALL BE RESPONSIBLE FOR THE PROPER IMPLEMENTATION OF THE ESC AND PP PRACTICES. THE FOLLOWING MAINTENANCE PROGRAM IS PROPOSED IN ORDER TO MAINTAIN THE PROPER FUNCTION OF ALL DRAINAGE AND EROSION AND SEDIMENT CONTROL FACILITIES:
    - INSPECT SEDIMENT CONTROL DEVICES AND CONSTRUCTION ACCESS POINT ROUTINELY AND IF NECESSARY REMOVE ACCUMULATED SEDIMENTATION AND DEBRIS. AT NO POINT SHOULD THE FILTER BED BE ALLOWED TO CONTINUE OPERATIONS BEYOND 50% OF ITS CAPACITY BEING COMPROMISED BY DEBRIS.
    - ALL DISTURBED AREA WILL BE STABILIZED AND THE SEDIMENT BUILD-UP IN THE FILTER REMOVED. AFTER THE CONSTRUCTION IS COMPLETED, ANY AREAS DISTURBED SHALL BE STABILIZED IMMEDIATELY AFTER THE REQUIRED WORK IS COMPLETED.
    - RESTORE AND RE-SEED ANY ERODED AREAS AS SOON AS POSSIBLE THE STORMWATER MANAGEMENT FACILITIES MAINTENANCE PROGRAM WILL BE MANAGED BY THE HOME OWNER AND SHALL INCLUDE YEARLY INSPECTION OF THE ON-SITE CATCH BASINS AND UNDERGROUND STORAGE FACILITIES AND THE REMOVAL OF SEDIMENT, AS NECESSARY.



PHASING PLAN  
1" = 30' - 0"



100 EXECUTIVE BLVD. SUITE 204  
OSSINING, NY 10562  
PHONE: (914) 944-3377  
FAX: (866) 567-6240

JORGE B. HERNANDEZ R.A. A.I.A.  
LICENSE NUMBER: 030424-1  
CERTIFICATE NUMBER: 0973256

PAUL A. BERTE, P.E.  
100 EXECUTIVE BLVD. SUITE 204  
OSSINING, NY 10562

REVISIONS	DATE	BY
CONSULTING CMT.	3/23/2022	ARQ.

DRAWING TITLE:  
TURNS & SIGHT DISTANCE

PROJECT:  
MISTIS  
PROPERTIES INC.

PROJECT ADDRESS:  
176 VIRGINIA ROAD  
WHITE PLAINS  
NEW YORK, 10603

DOB EXAMINER SIGNATURE:

DOB BSCAN STICKER:

SEAL & SIGNATURE



DATE: 03/08/2021  
PROJECT NO.: 21029  
DRAWING BY: ARQ  
CHECKED BY: PB  
DWG. NO.: S-3  
CAD FILE NO.: 3 OF 14



REVISIONS	DATE	BY
CONSULTING CMT.	3/23/2022	ARQ.

DRAWING TITLE:  
 SITE DETAILS

PROJECT:  
 MISTIS  
 PROPERTIES INC.

PROJECT ADDRESS:  
 176 VIRGINA ROAD  
 WHITE PLAINS  
 NEW YORK, 10603

DOB EXAMINER SIGNATURE:

DOB BSCAN STICKER:

SEAL & SIGNATURE



DATE: 03/08/2021

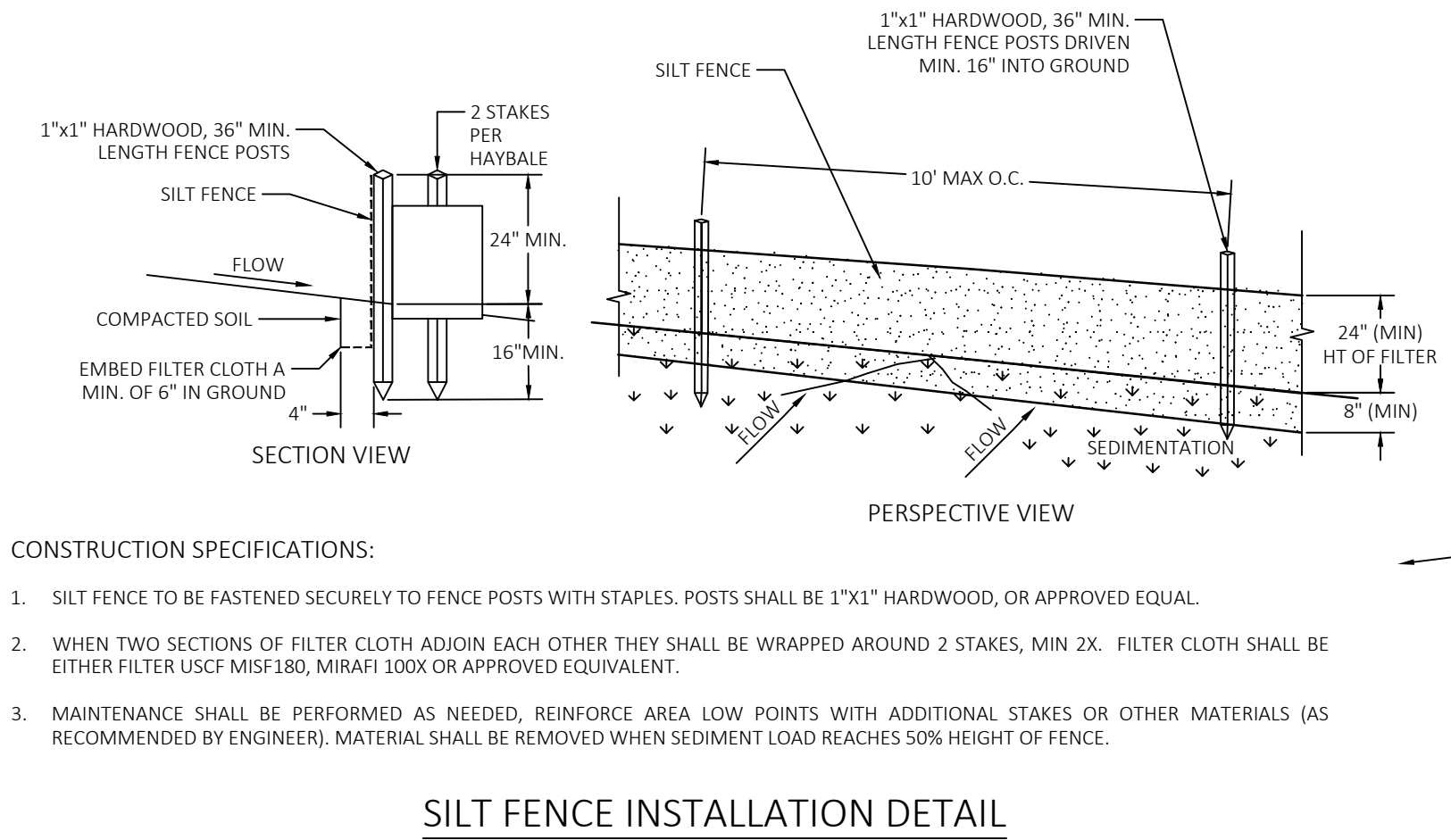
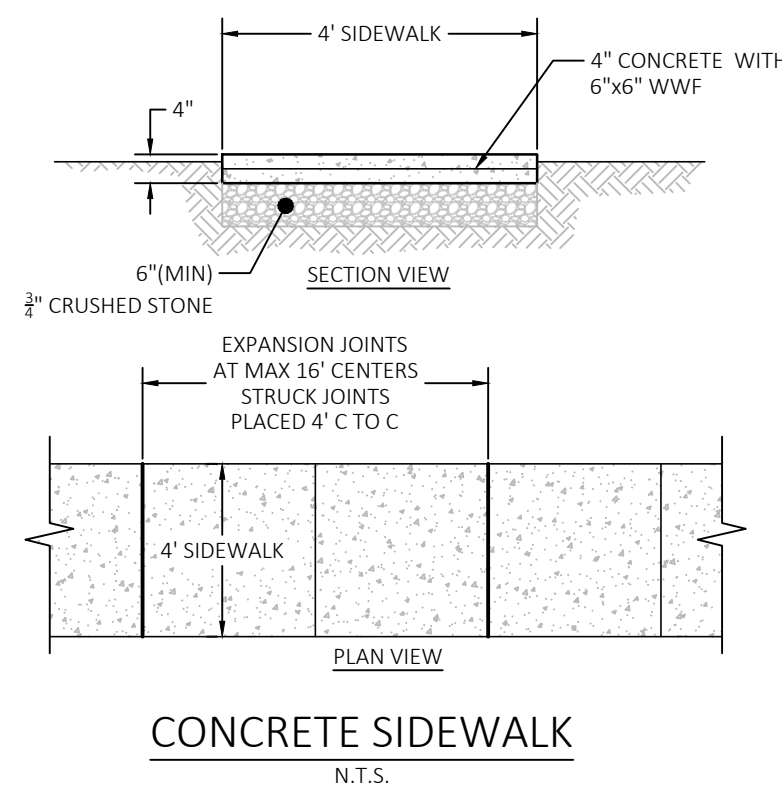
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DRAWING BY: ARQ

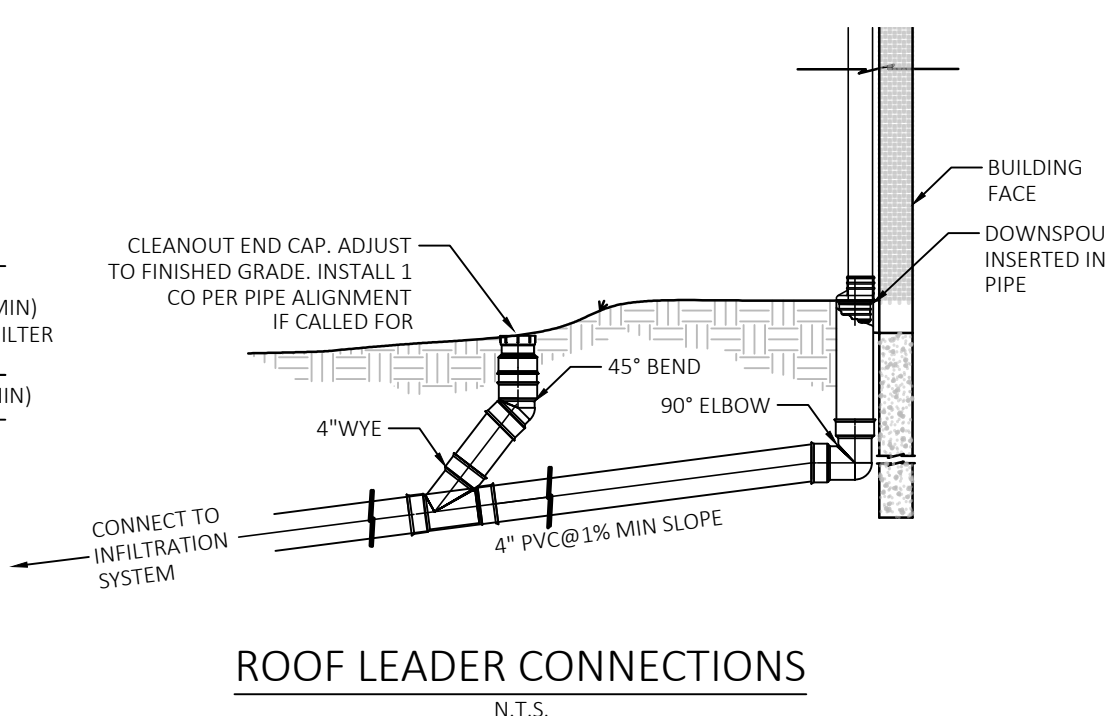
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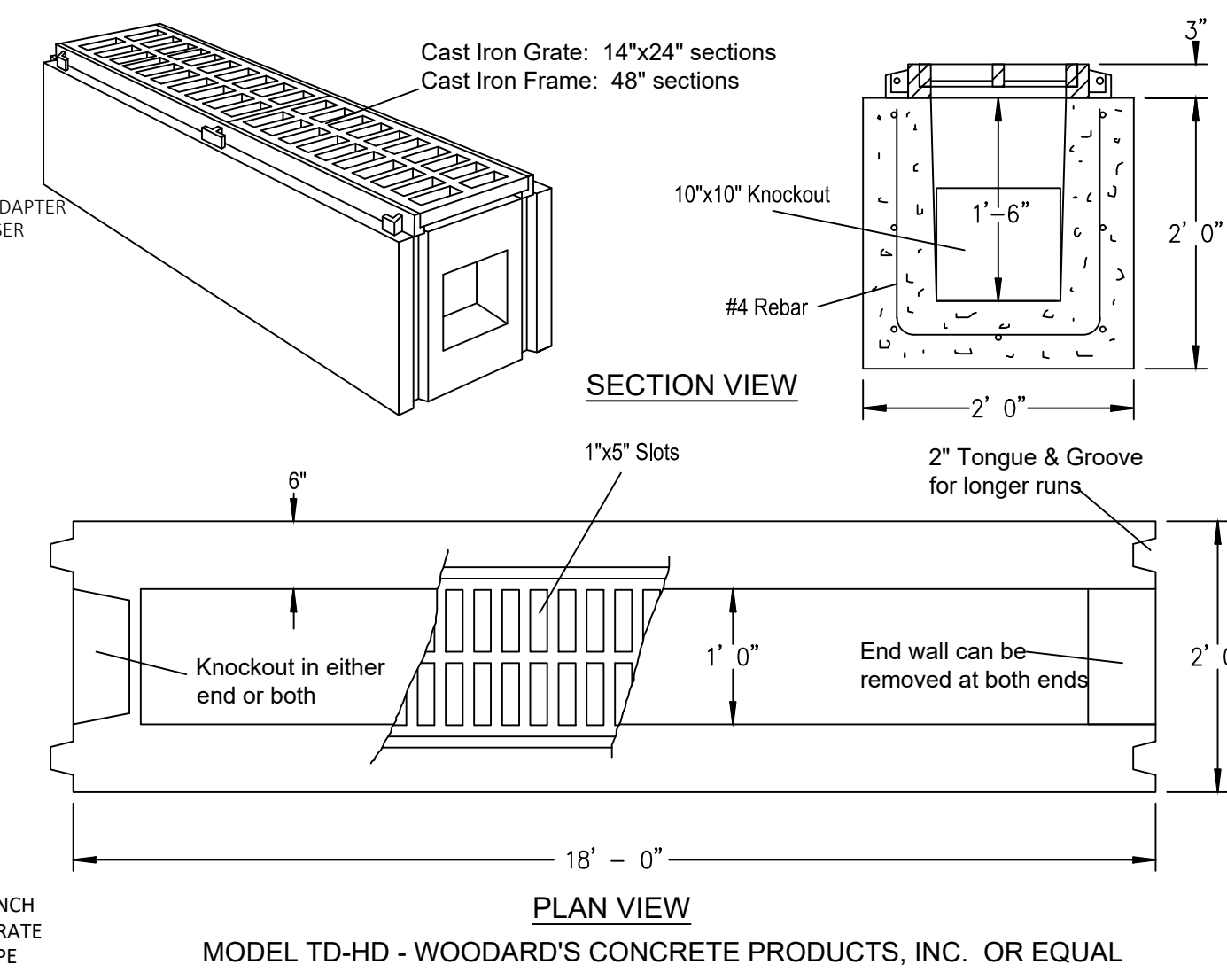
CAD FILE NO.: 5 OF 14



- CONSTRUCTION SPECIFICATIONS:
- SILT FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH STAPLES. POSTS SHALL BE 1"x1" HARDWOOD, OR APPROVED EQUAL.
  - WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE WRAPPED AROUND 2 STAKES, MIN 2X. FILTER CLOTH SHALL BE EITHER FILTER USCF M5F180, MIRAF1 100K OR APPROVED EQUIVALENT.
  - MAINTENANCE SHALL BE PERFORMED AS NEEDED, REINFORCE AREA LOW POINTS WITH ADDITIONAL STAKES OR OTHER MATERIALS (AS RECOMMENDED BY ENGINEER). MATERIAL SHALL BE REMOVED WHEN SEDIMENT LOAD REACHES 50% HEIGHT OF FENCE.

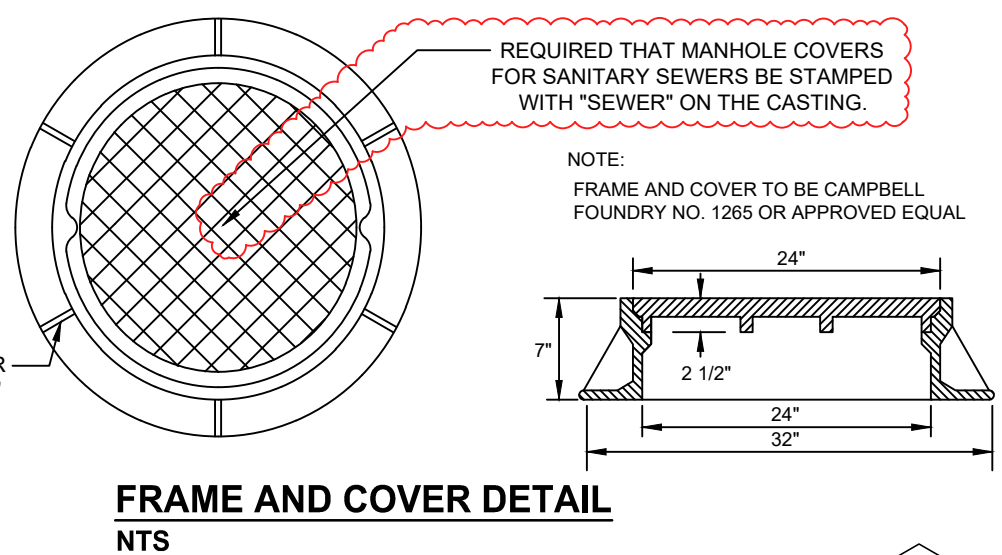
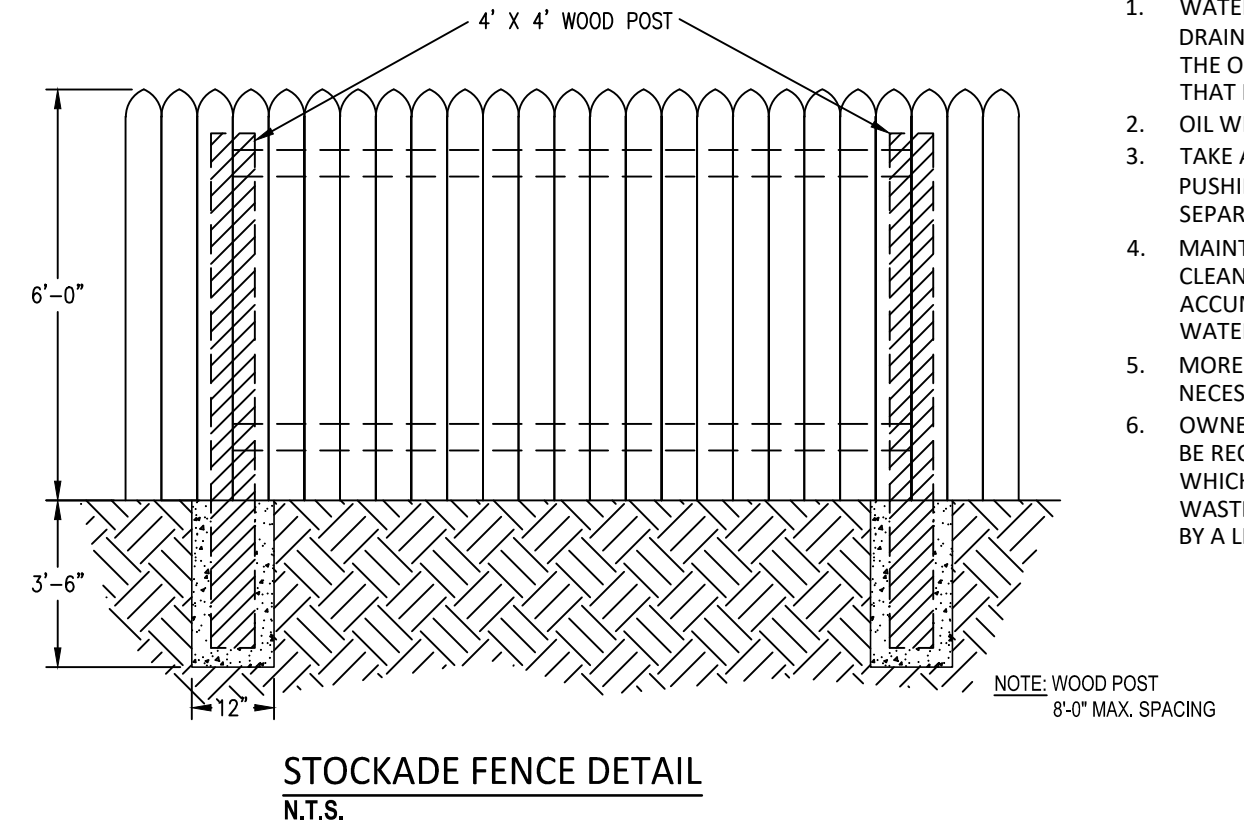
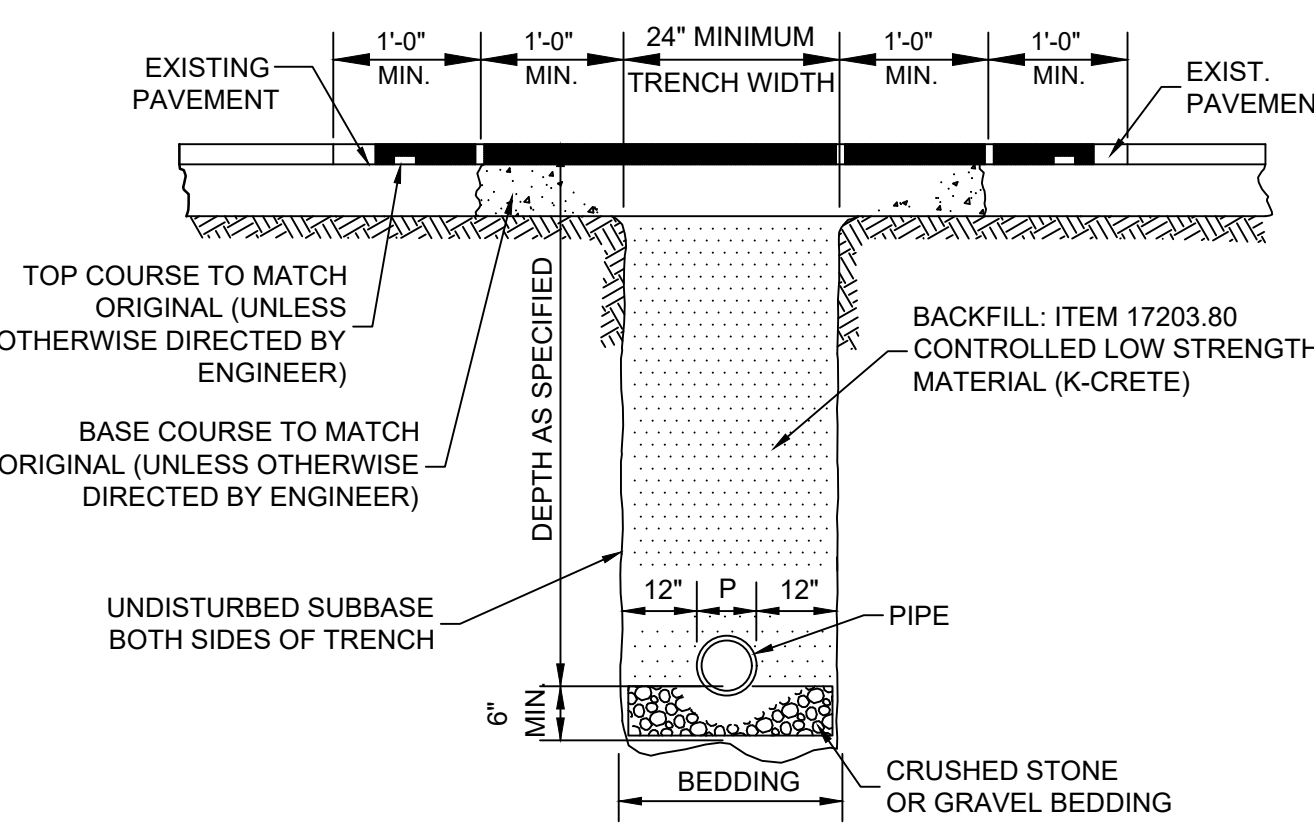


- GREASE TRAP / OIL SEPARATOR  
 OPERATION AND MAINTENANCE
- WATER GENERATED FROM THE TRUCK WASH WILL BE CAPTURED BY THE FLOOR TRENCH DRAIN AND DIRECTED TO THE GREASE TRAP/OIL SEPARATOR. THE BAFFLE WILL SEPARATE THE OIL FROM WATER, THEN THE WATER WILL CONTINUE TOWARDS THE OUTLET PIPE THAT IS FOLLOWED BY THE HOUSE TRAP AND SEWER LINE.
  - OIL WILL RISE AND BUILD UP IN THE INLET CHAMBER UNTIL IT GETS REMOVED.
  - TAKE A LONG STICK THAT WILL REACH THE BOTTOM OF THE CHAMBER. ANY RESISTANCE PUSHING TO THE BOTTOM SIGNIFIES SLUDGE BUILD UP. SERVICE THE OIL/WATER SEPARATOR WHEN BUILD UP IS ABOUT 6 INCHES DEEP IN THE INLET CHAMBER.
  - MAINTENANCE OF OIL/WATER SEPARATOR MUST INCLUDE THROUGH PUMP-OUT AND CLEANING A MINIMUM OF ONCE A YEAR. CLEANING SHALL BE DONE BEFORE THE OIL ACCUMULATION INSIDE THE SEPARATOR IS WITHIN 2 INCHES FROM THE TOP OF THE WATER LEVEL.
  - MORE FREQUENT CLEANING OF OIL/WATER SEPARATOR MAY BE REQUIRED IF DEEMED NECESSARY BY BUILDING DEPARTMENT INSPECTOR.
  - OWNER SHALL BE RESPONSIBLE FOR THE PROPER REMOVAL AND DISPOSAL. OWNER MAY BE REQUIRED TO MAINTAIN ON-SITE RECORDS OF DATES AND MEANS OF DISPOSAL WHICH ARE SUBJECT TO REVIEW BY BUILDING DEPARTMENT. ANY REMOVAL OF THE WASTE MATERIAL NOT PERFORMED BY THE OWNER'S PERSONNEL MUST BE PERFORMED BY A LICENSED WASTE DISPOSAL FIRM.



SPECIFICATIONS

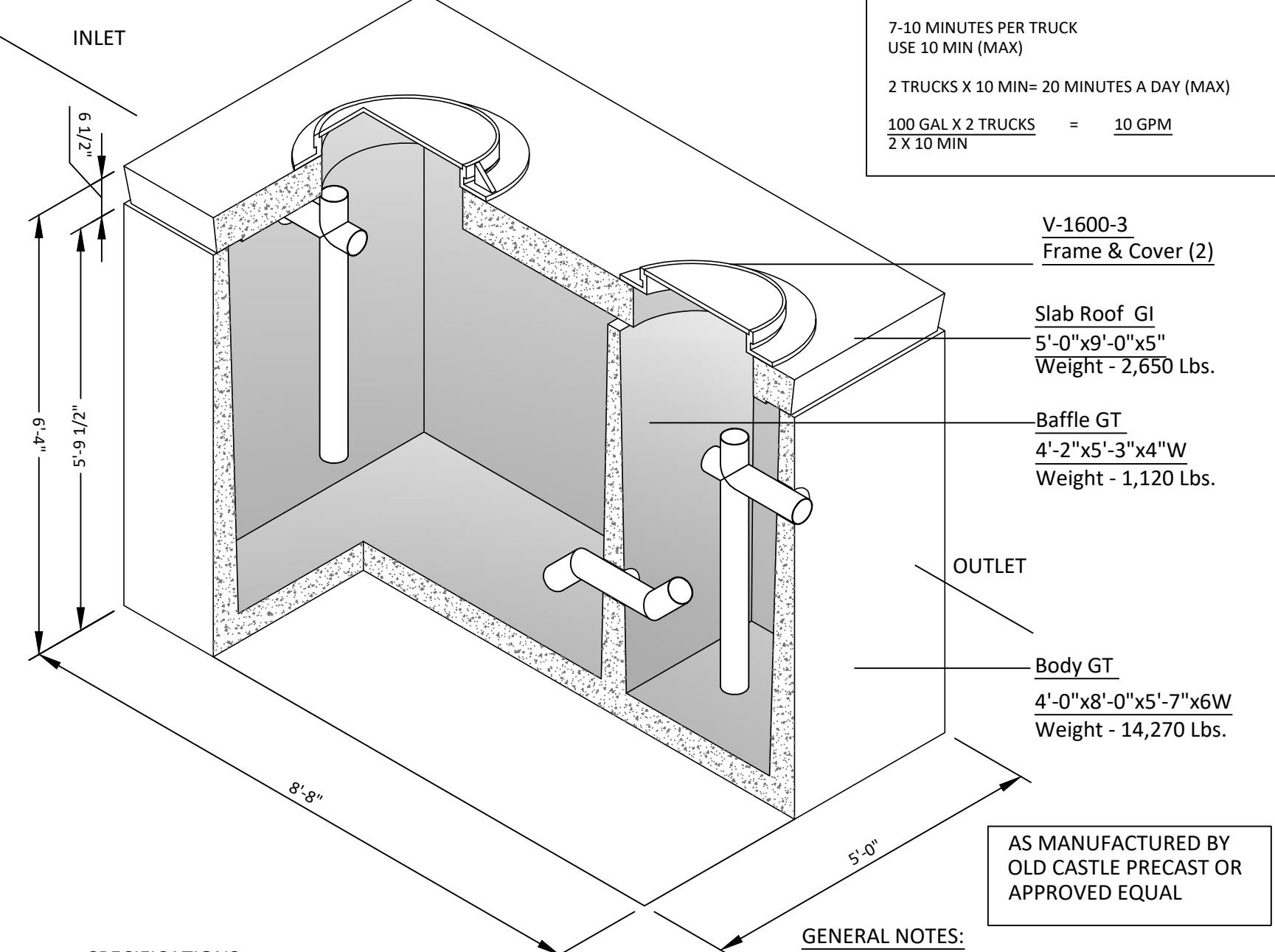
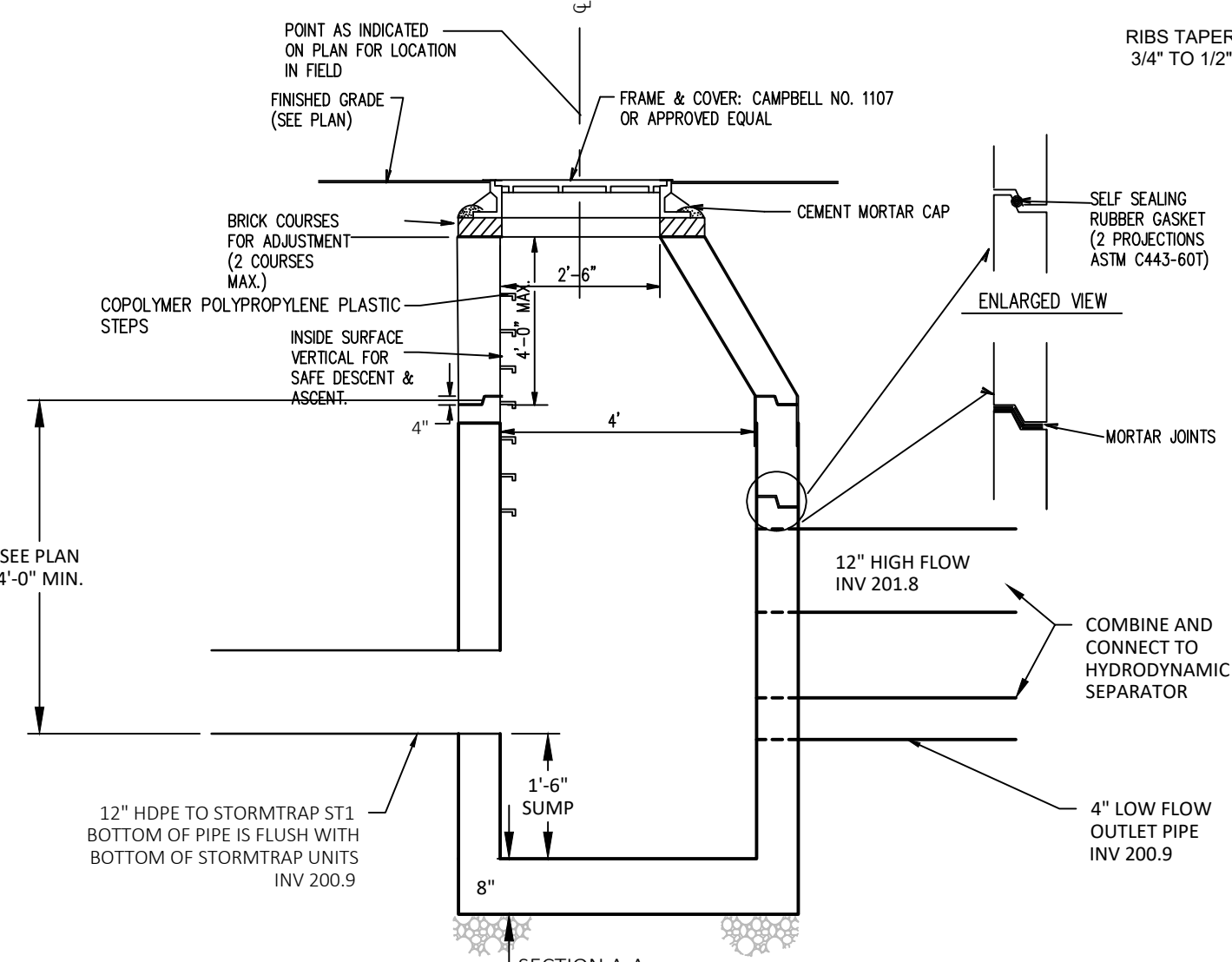
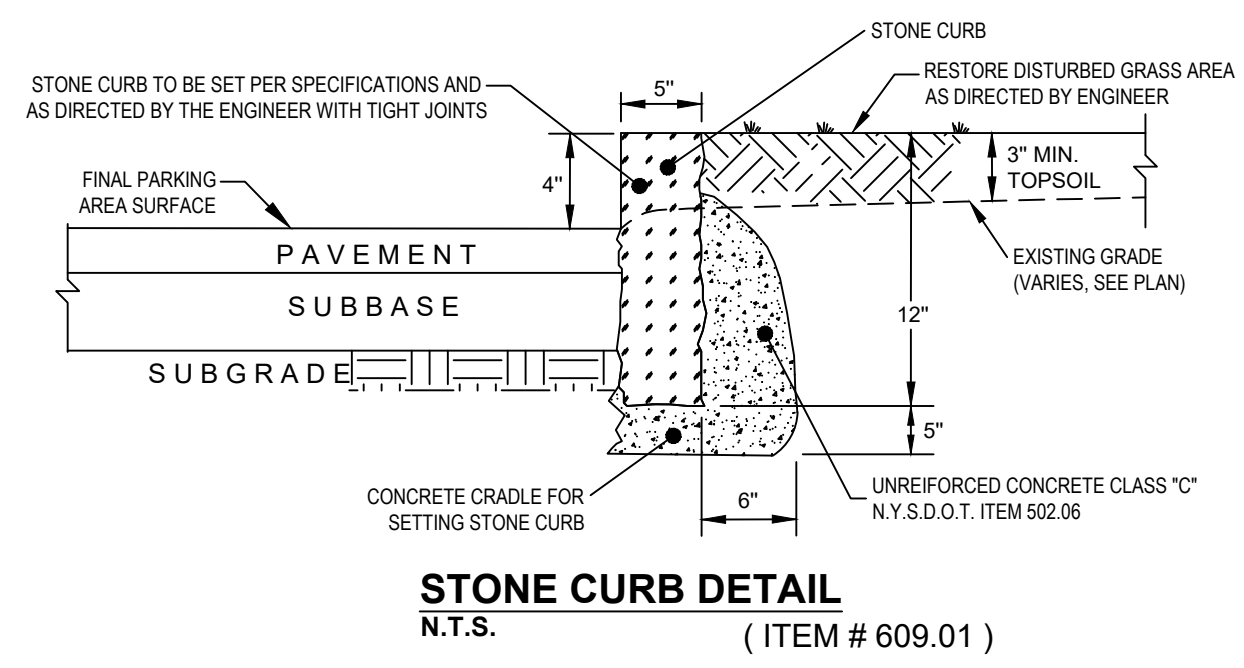
Concrete Minimum Strength: 4,000 psi at 28 days
Reinforcement: #4 Rebar
Air Entrainment: 5%
Weight: 3,000 lbs
Load Rating: H20, truck traffic



WATER FLOW CALCULATIONS

APPROX 5 TRUCKS WASHED PER MONTH (PROVIDED BY OWNER)  
 A MAX OF 2 TRUCKS TO BE WASHED A DAY

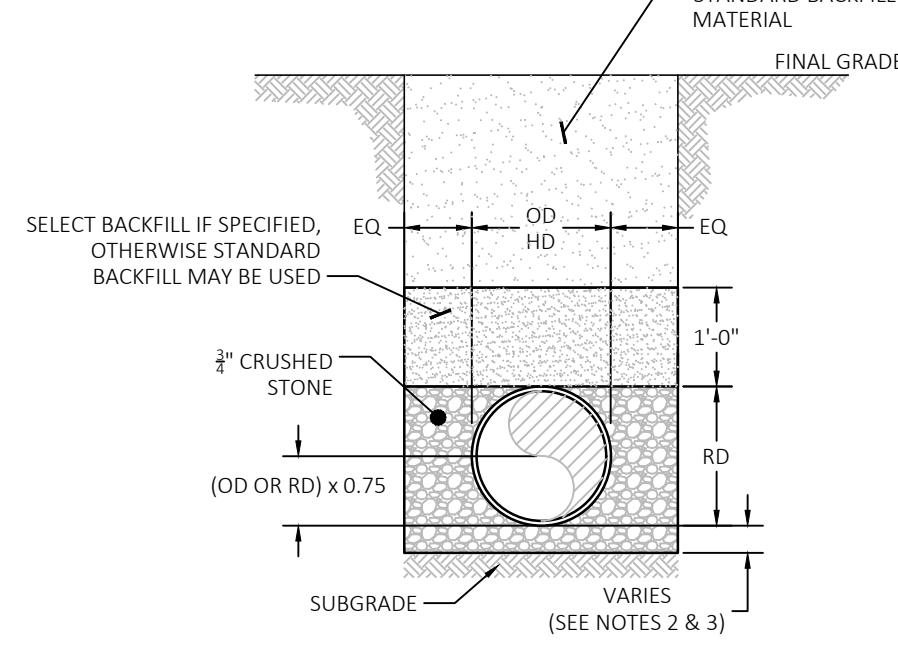
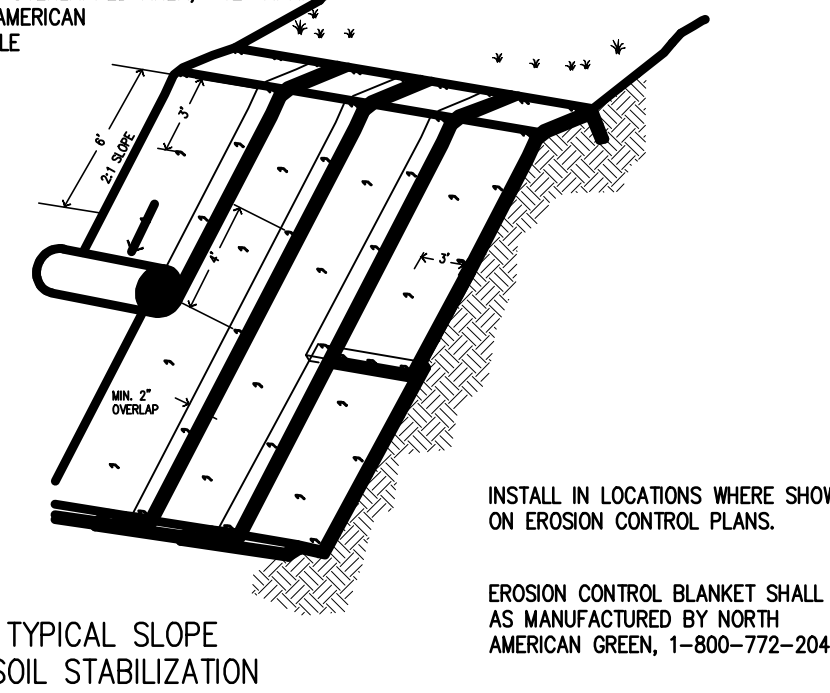
WATER USAGE:  
 30-100 GAL/TRUCK  
 USE 100GAL (MAX)  
 7-10 MINUTES PER TRUCK  
 USE 10 MIN (MAX)  
 2 TRUCKS X 10 MIN = 20 MINUTES A DAY (MAX)  
 100 GAL X 2 TRUCKS = 10 GPM  
 2 X 10 MIN



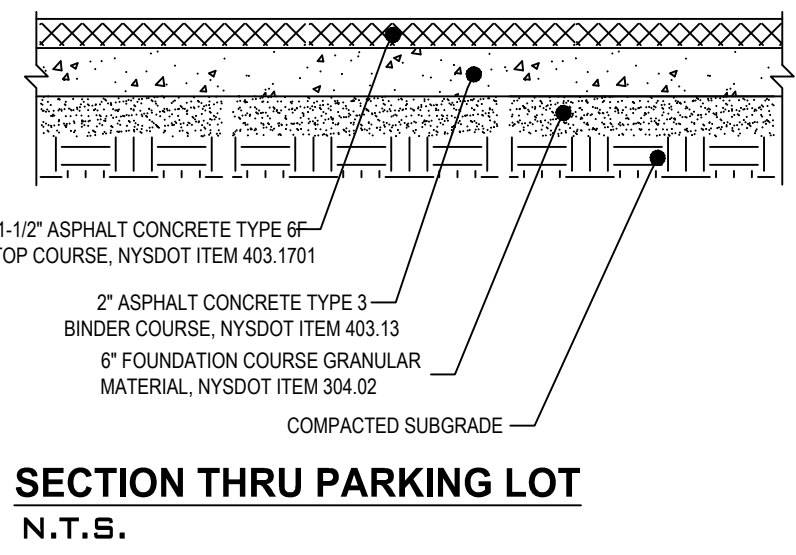
- SPECIFICATIONS:
- Concrete: Design Strength of 5500 PSI at 28 Days.
  - Steel Reinforcement: ASTM A-615 Grade 60.
  - Loading: Designed for HS-20 Loading.
  - C.I. Castings: ASTM A-48 Class 30/35.

- GENERAL NOTES:
- Interceptor is Structurally and Hydraulically Engineered Conforming to Uniform Plumbing Code.
  - Liquid Capacity is 1,033 Gallons with Solids Retention Capacity of Approx. 2,600 Pounds.
  - Recommended for Flow Rate up to 28 GAL Per Minute.

- INSTALLATION NOTES:
- PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING SEED AND FERTILIZER. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. BLANKETS SHALL HAVE GOOD SOIL CONTACT.
  - BEGIN AT THE TOP OF SLOPE BY ANCHORING THE BLANKET IN 6" DEEP x 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
  - ROLL THE BLANKETS DOWN THE SLOPE.
  - THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH ±2" OVERLAP.
  - WHEN BLANKETS MUST BE SPLICED DOWN THE SLOPE, PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH ±4" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, ±12" APART.
  - CONSULT WITH NORTH AMERICAN GREEN FOR REQUIRED STAPLE PATTERNS.



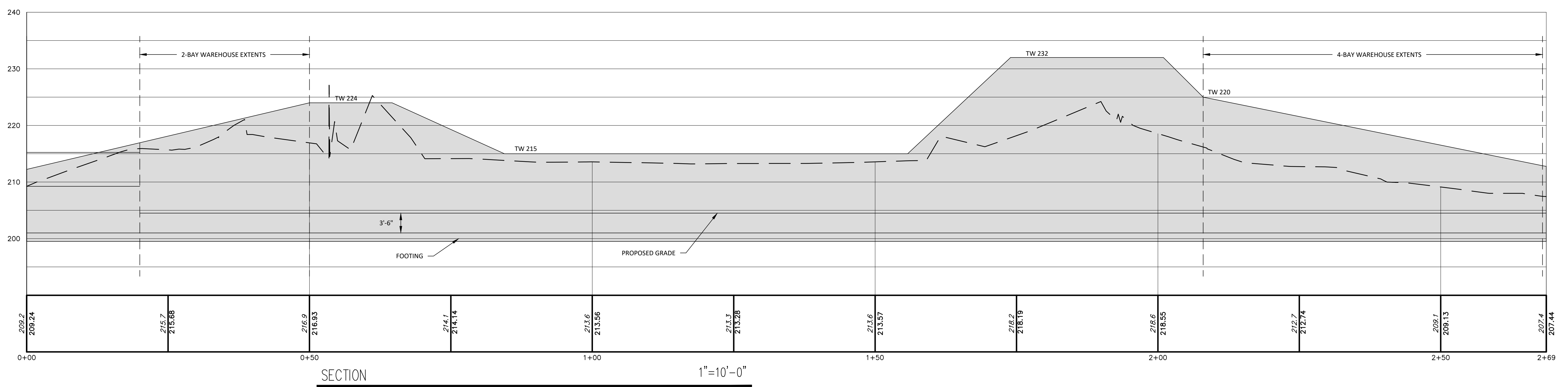
- NOTES:
- FILL SECTION AREA MUST BE GRADED TO 2"-0" MIN. ABOVE TOP OF PIPE BEFORE EXCAVATING TRENCH.
  - REMOVE TRENCH ROCK TO 6" BELOW BOTTOM OF PIPE
  - WHERE UNSUITABLE MATERIAL IS ENCOUNTERED IN TRENCH BOTTOM, UNDERCUT AS DIRECTED BY OWNER'S FIELD REPRESENTATIVE.
  - PAYMENT LIMIT IN ROCK NOT TO EXCEED W (MIN) AND UNDERCUT EQUALS 6".





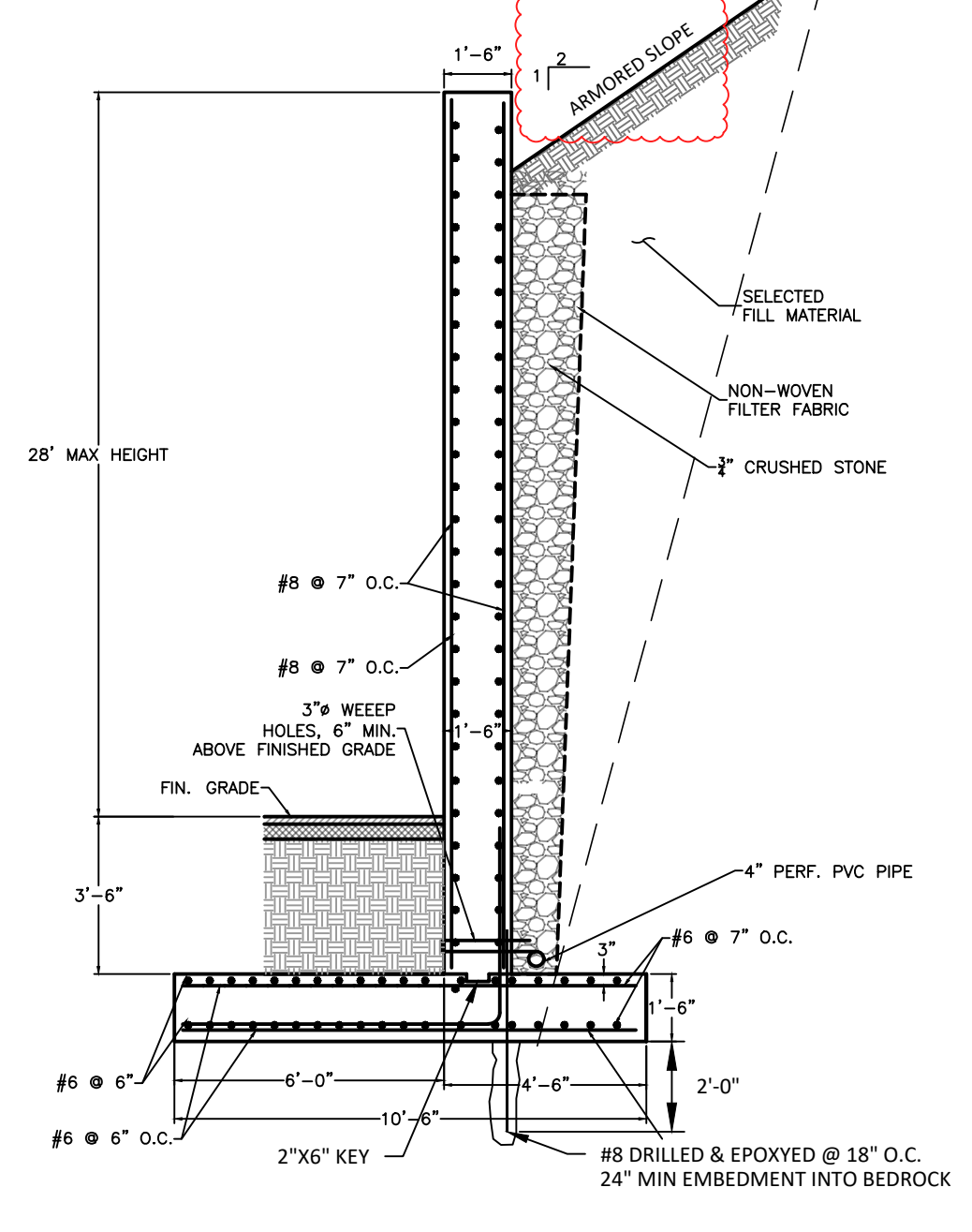


REVISIONS	DATE	BY
CONSULTING CMT.	3/23/2022	ARQ.

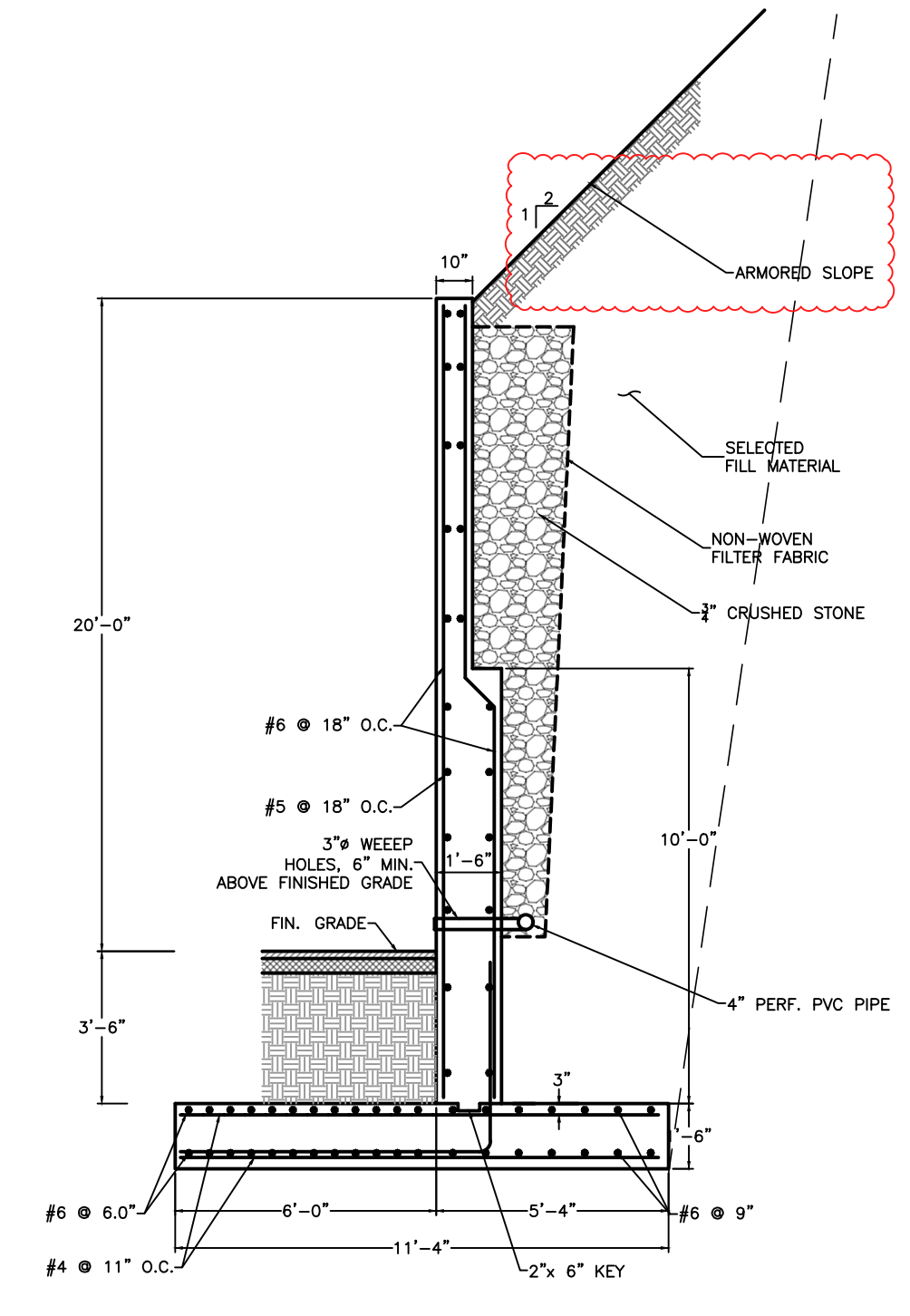


- DATA:**
1. CONCRETE STRENGTH ( $f_c$ ) = 4000 PSI
  2. REINFORCING BAR STRENGTH ( $f_s$ ) = 60,000 PSI (Grade 60)
  3. SOIL BEARING CAPACITY = 4,000 PSF
  4. SLUMP: 3" MIN. - 5" MAX.
  5. AIR OF ENTRAINMENT: 5% MIN. - 7% MAX.

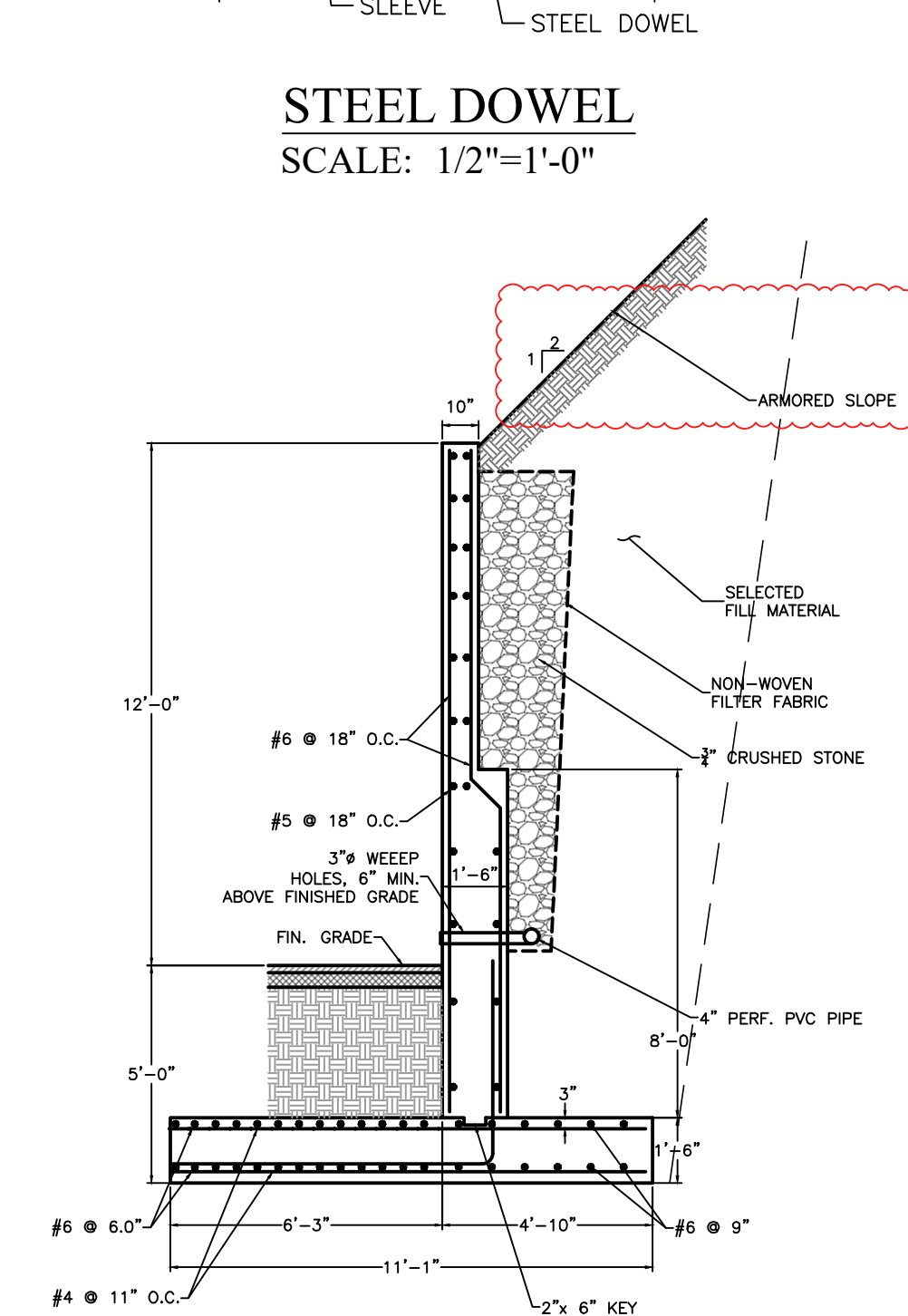
NOTE: CONSTRUCTION OF ALL WALLS SHALL BE CERTIFIED BY THE DESIGN ENGINEER PRIOR TO THE ISSUANCE OF A CERTIFICATE OF OCCUPANCY



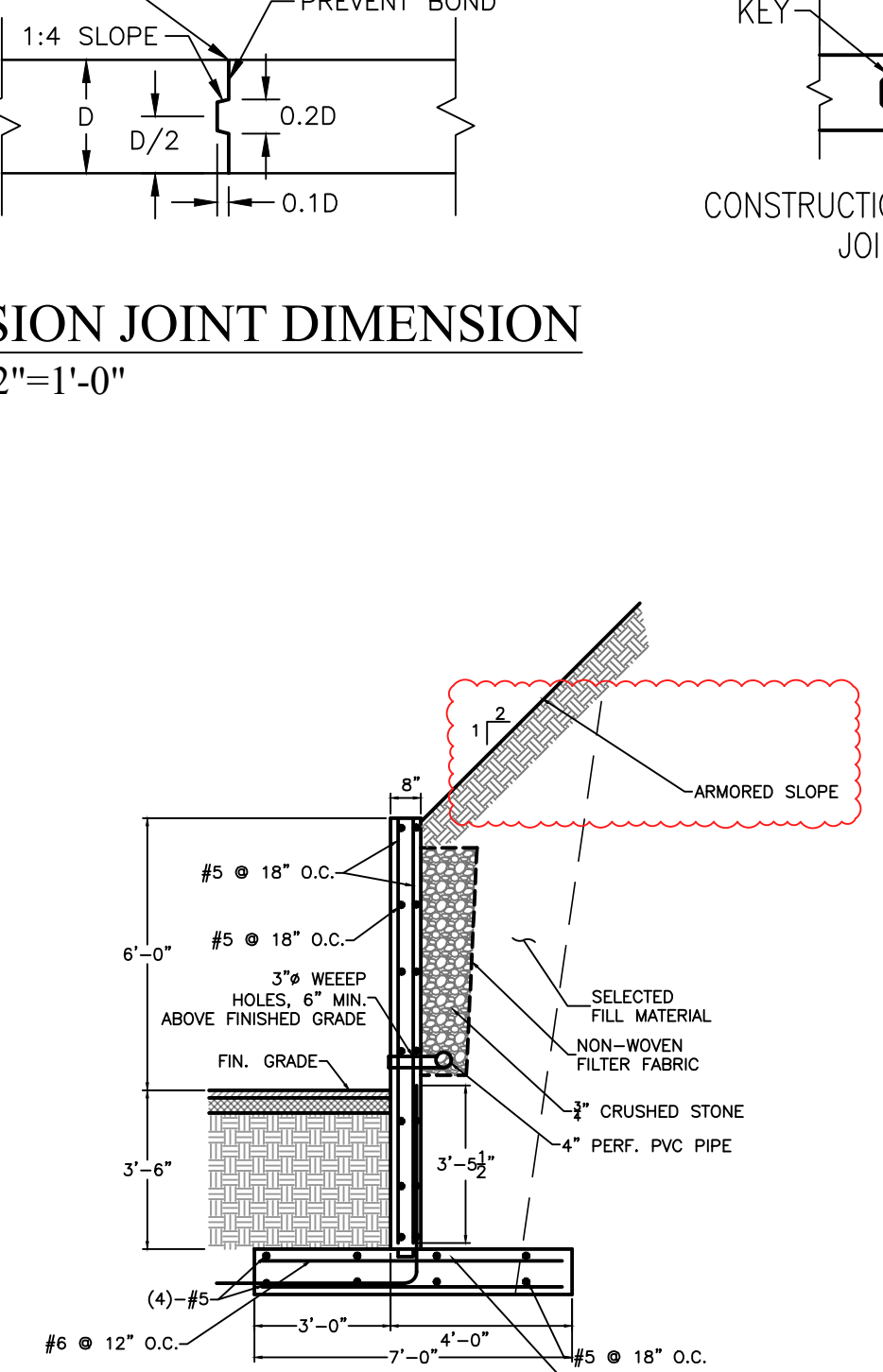
**REINFORCED CONCRETE WALL**  
SCALE: 1/2"=1'-0"



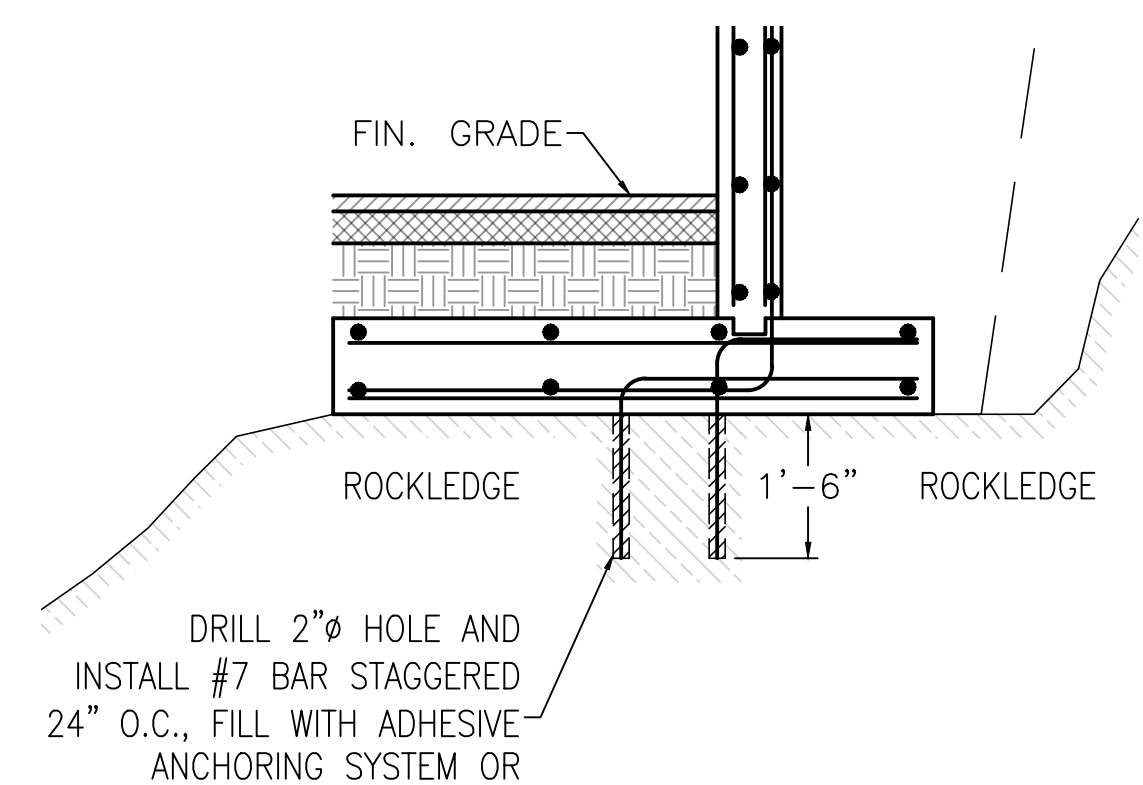
**20 FT HGT. WALL**  
SCALE: 1/2"=1'-0"



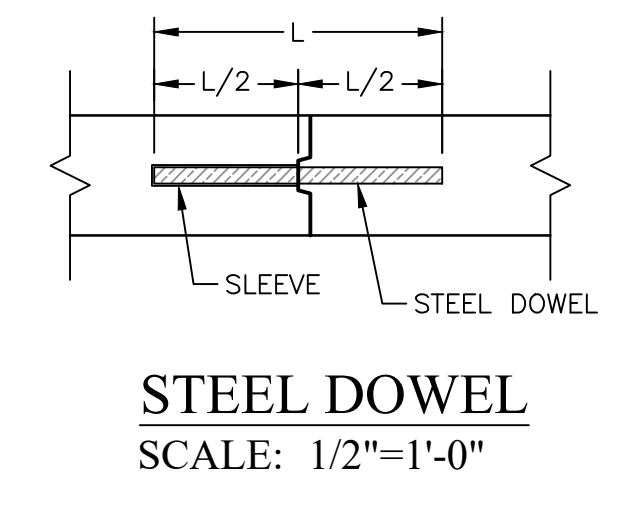
**12 FT HGT. WALL**  
SCALE: 1/2"=1'-0"



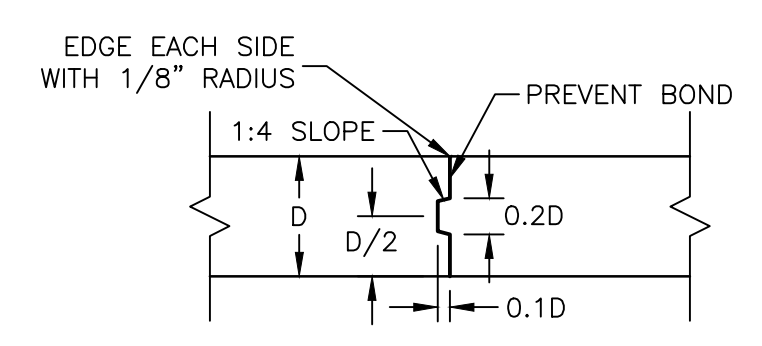
**6 FT HGT. WALL**  
SCALE: 1/2"=1'-0"



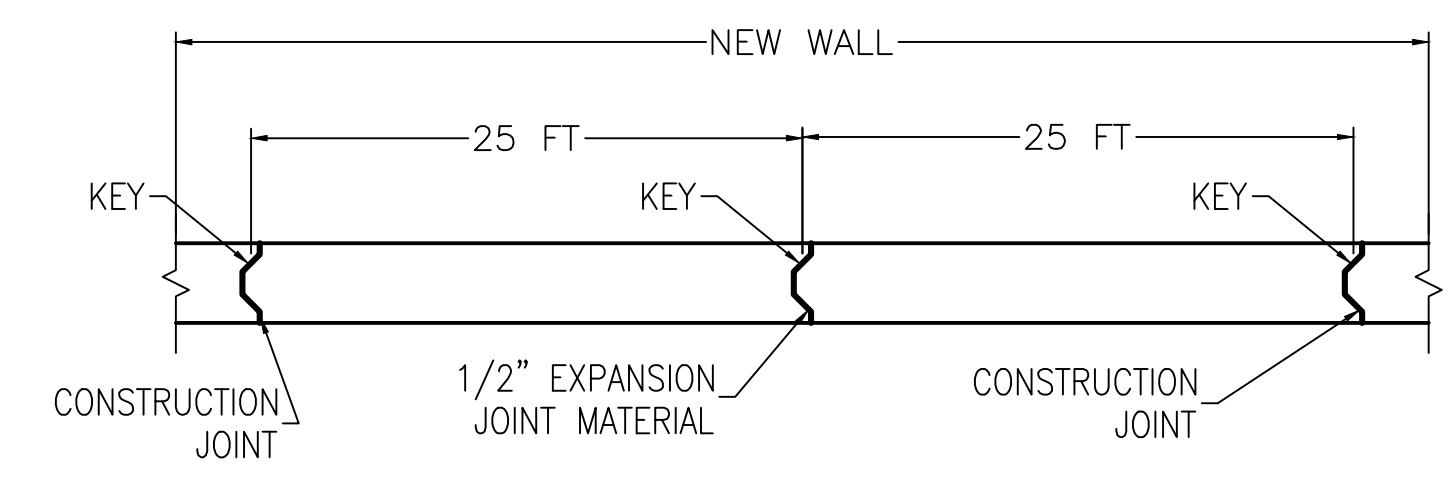
**FOOTING ON ROCKLEDGE**  
SCALE: 1/2"=1'-0"



**STEEL DOWEL**  
SCALE: 1/2"=1'-0"



**EXPANSION JOINT DIMENSION**  
SCALE: 1/2"=1'-0"



**WALL EXPANSION JOINT**  
SCALE: 1/2"=1'-0"

DRAWING TITLE:  
SECTION & SITE DETAILS

PROJECT:  
MISTIS PROPERTIES INC.

PROJECT ADDRESS:  
176 VIRGINA ROAD  
WHITE PLAINS  
NEW YORK, 10603

DOB EXAMINER SIGNATURE:

DOB BSCAN STICKER:

SEAL & SIGNATURE



DATE: 03/08/2021	DWG. NO.:
PROJECT NO.:	S-7
DRAWING BY: ARQ	CAD FILE NO.:
CHECKED BY: PB	7 OF 14







100 EXECUTIVE BLVD. SUITE 204  
 OSSINING, NY 10562  
 PHONE: (914) 944-3377  
 FAX: (866) 567-6240

JORGE B. HERNANDEZ R.A. A.I.A.  
 LICENSE NUMBER: 030424-1  
 CERTIFICATE NUMBER: 0973256

PAUL A. BERTE, P.E.  
 100 EXECUTIVE BLVD. SUITE 204  
 OSSINING, NY 10562

REVISIONS	DATE	BY
CONSULTING CMT.	3/23/2022	ARQ.

DRAWING TITLE:  
 2-BAY WAREHOUSE ELEVATIONS

PROJECT:  
 MISTIS  
 PROPERTIES INC.

PROJECT ADDRESS:  
 176 VIRGINIA ROAD  
 WHITE PLAINS  
 NEW YORK, 10603

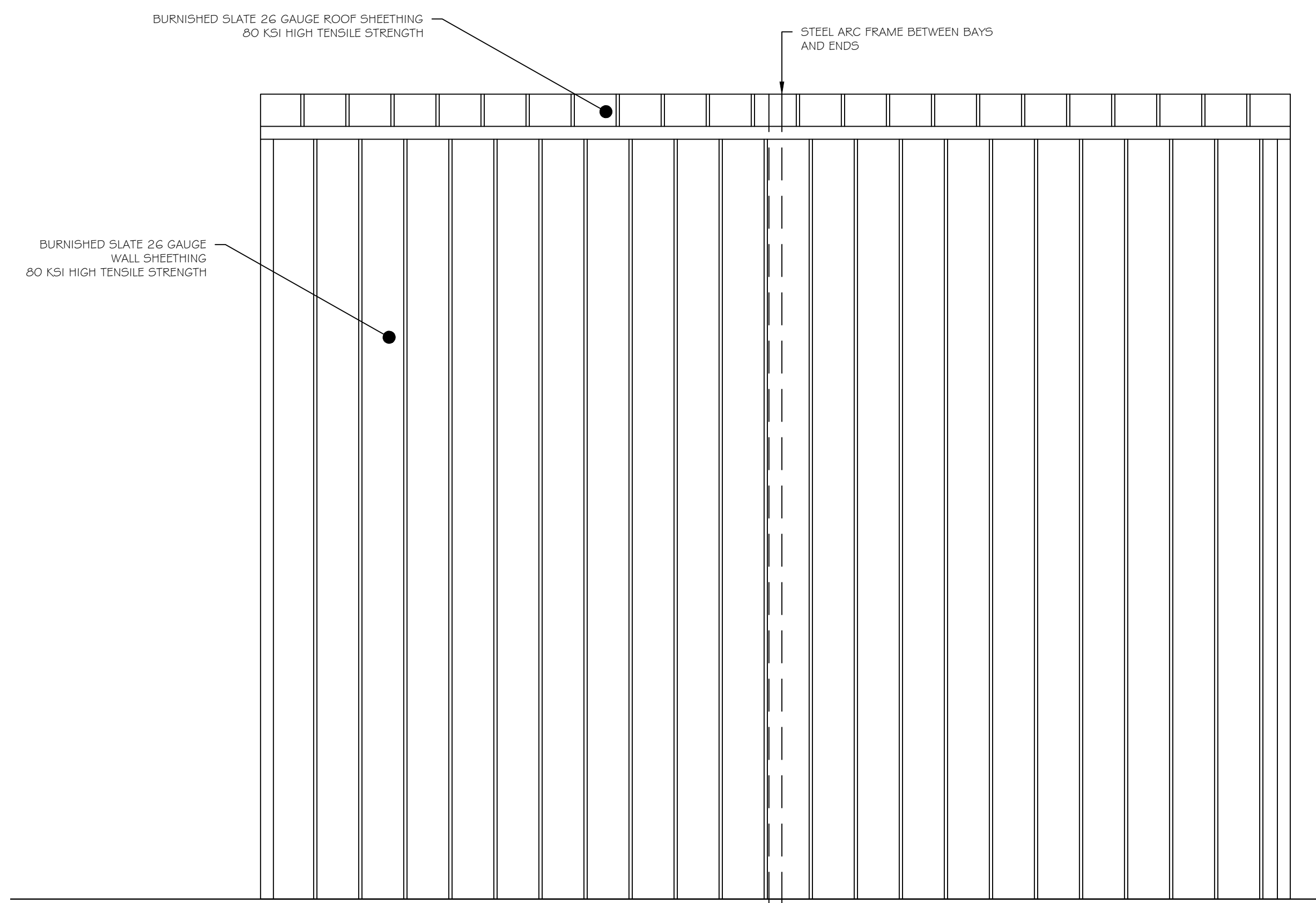
DOB EXAMINER SIGNATURE:

DOB BSCAN STICKER:

SEAL & SIGNATURE

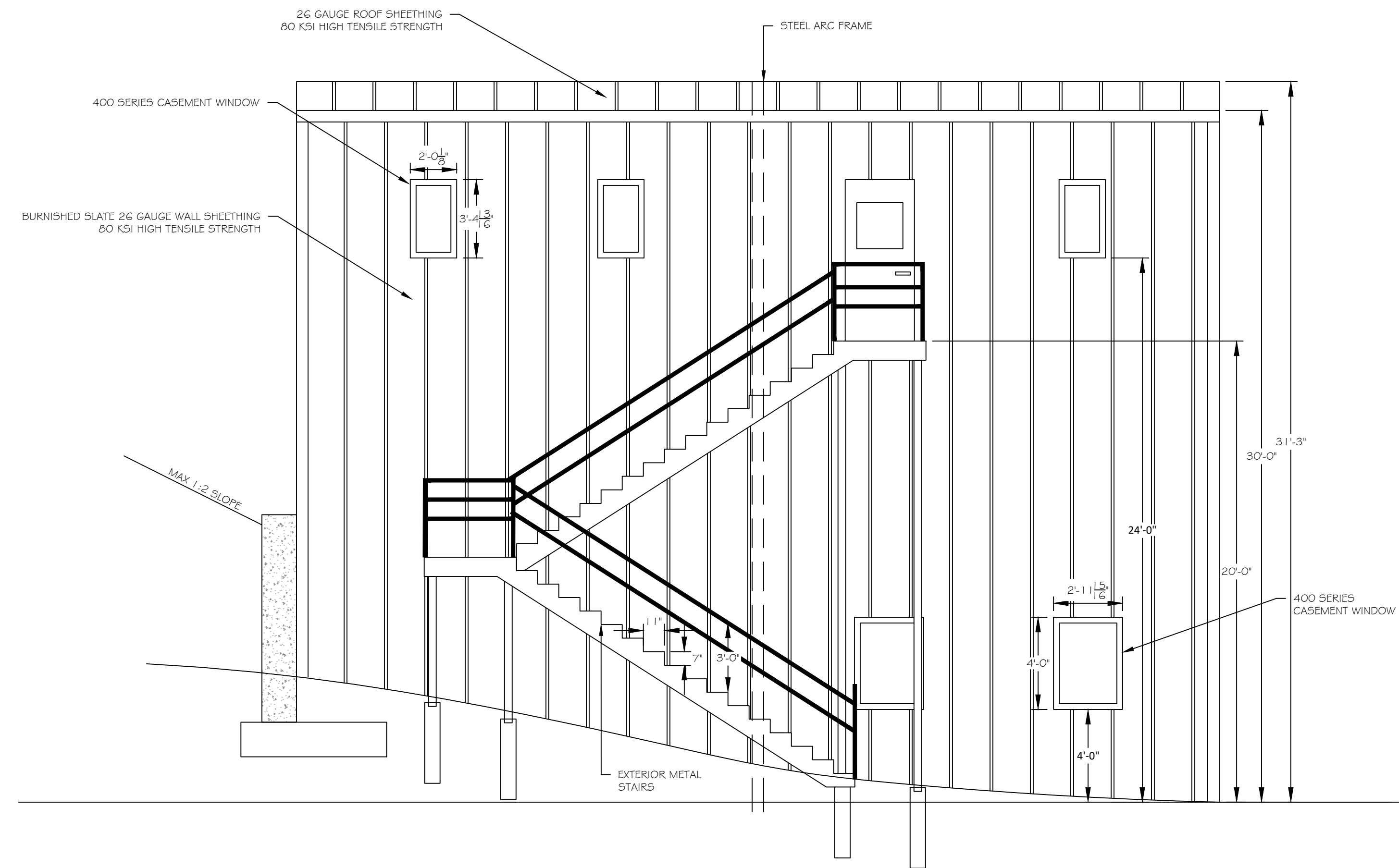


DATE: 03/08/2021	DWG. NO.:
PROJECT NO.:	A-3
DRAWING BY: ARQ	CAD FILE NO.:
CHECKED BY: PB	10 OF 14



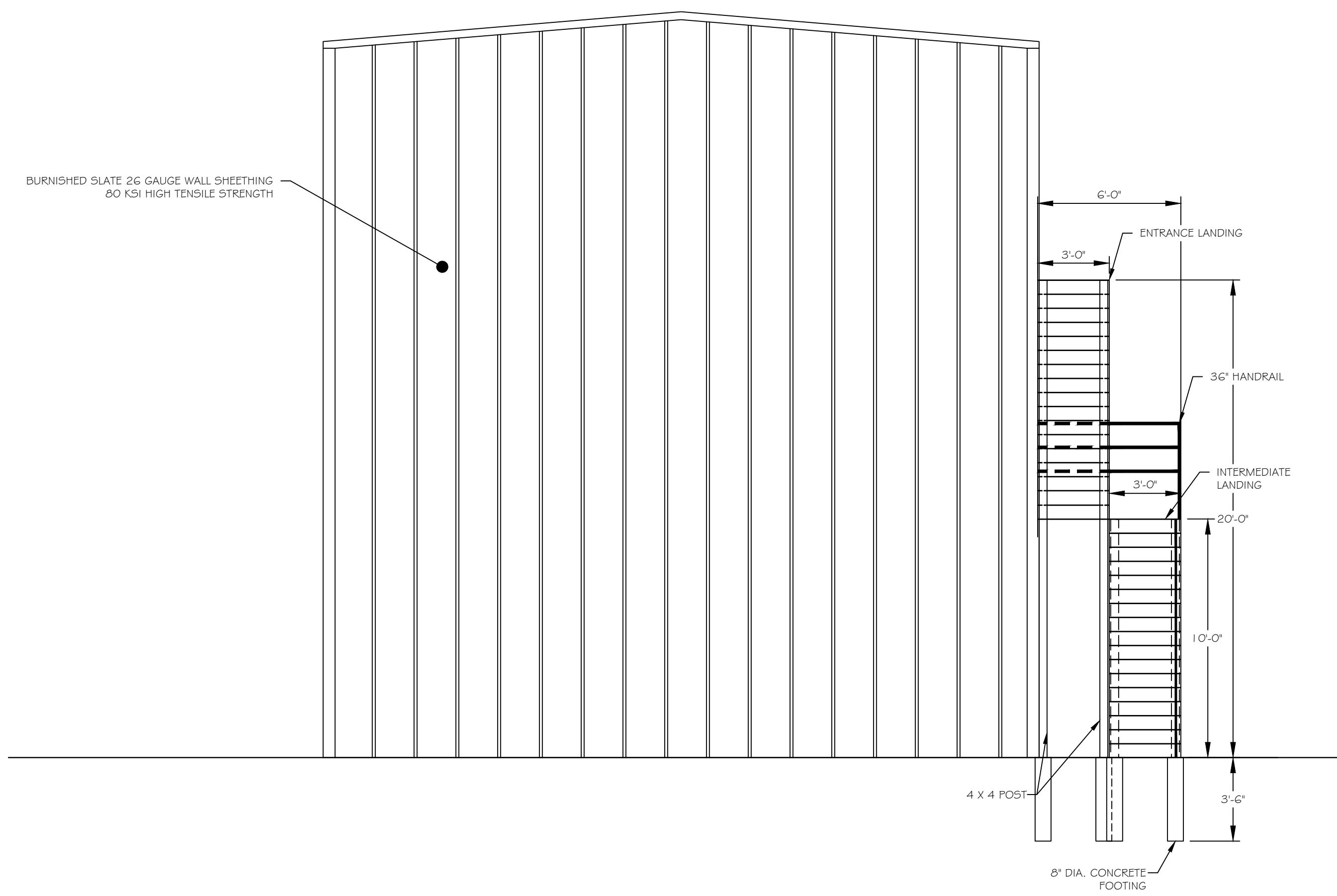
2-BAY WAREHOUSE  
 RIGHT ELEVATION

1/4"=1'-0"



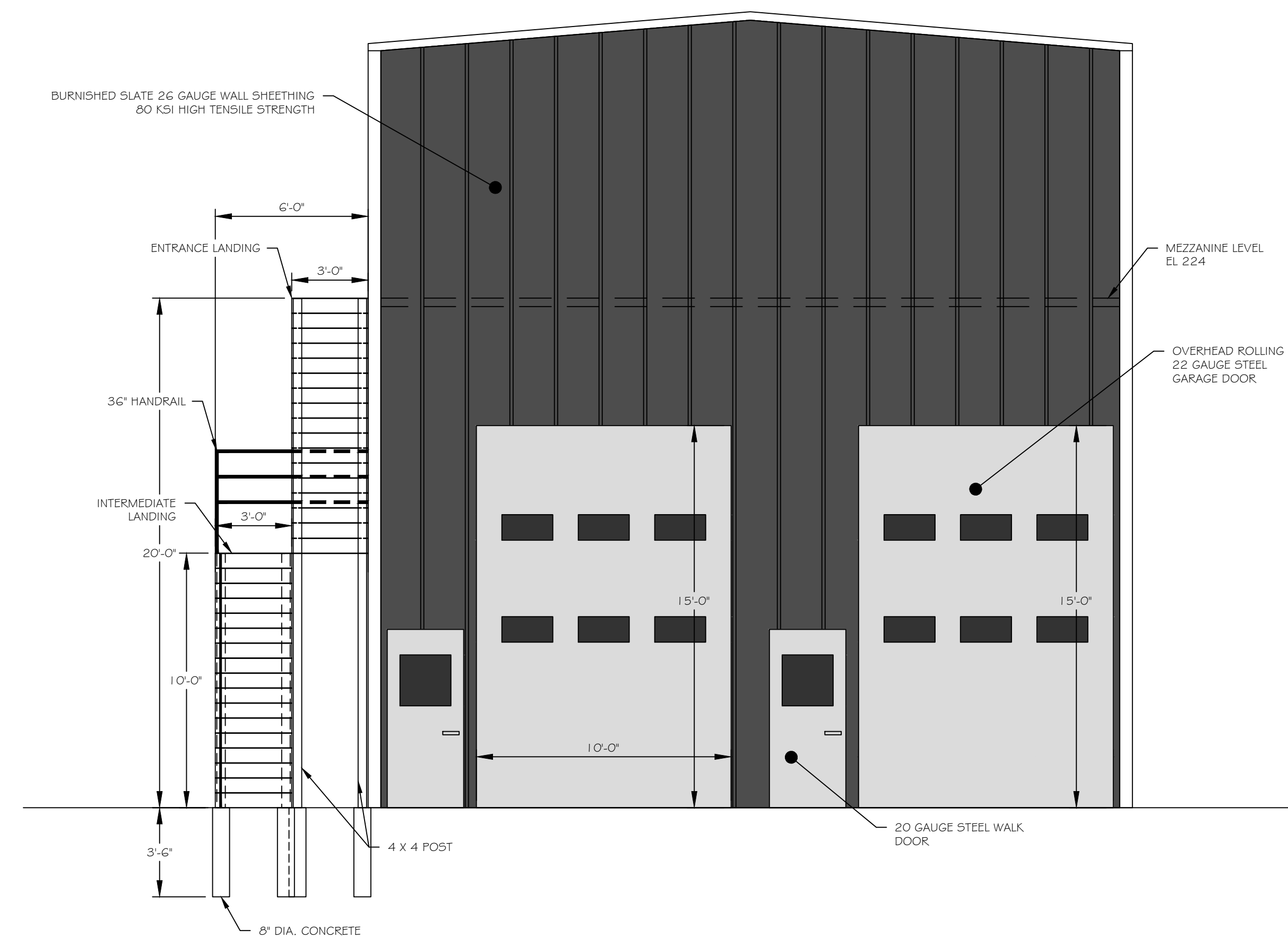
2-BAY WAREHOUSE  
 LEFT ELEVATION

1/4"=1'-0"



2-BAY WAREHOUSE  
 REAR ELEVATION

1/4"=1'-0"



2-BAY WAREHOUSE  
 FRONT ELEVATION

1/4"=1'-0"



100 EXECUTIVE BLVD. SUITE 204  
 OSSINING, NY 10562  
 PHONE: (914) 944-3377  
 FAX: (866) 567-6240

JORGE B. HERNANDEZ R.A. A.I.A.  
 LICENSE NUMBER: 030424-1  
 CERTIFICATE NUMBER: 0973256

PAUL A. BERTE, P.E.

100 EXECUTIVE BLVD. SUITE 204  
 OSSINING, NY 10562

REVISIONS	DATE	BY
CONSULTING CMT.	3/23/2022	ARQ.

DRAWING TITLE:  
 4-BAY WAREHOUSE ELEVATIONS

PROJECT:  
 MISTIS  
 PROPERTIES INC.

PROJECT ADDRESS:  
 176 VIRGINA ROAD  
 WHITE PLAINS  
 NEW YORK, 10603

DOB EXAMINER SIGNATURE:

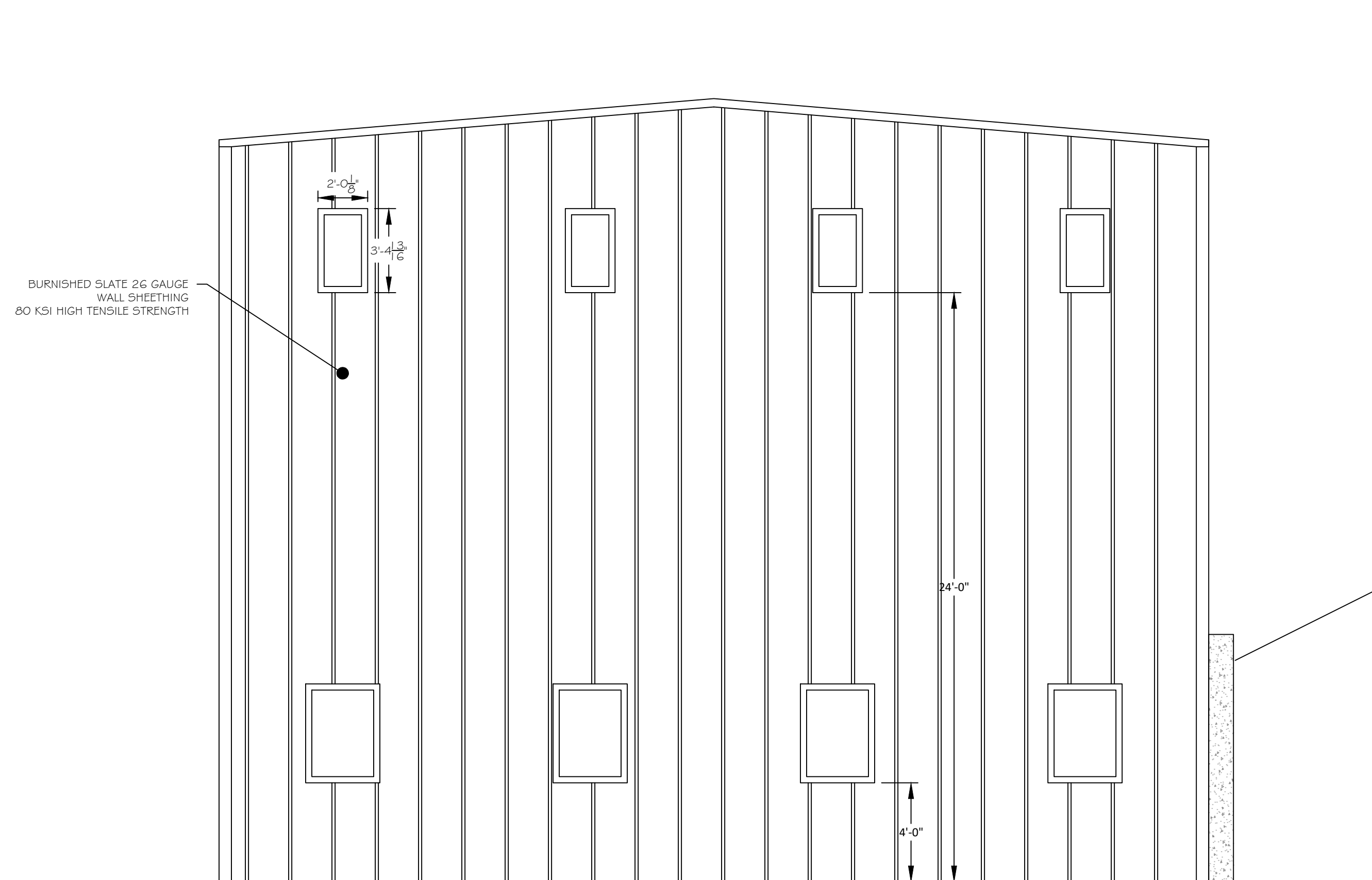
DOB BSCAN STICKER:

SEAL & SIGNATURE



DATE:  
 03/08/2021  
 PROJECT NO.:  
 21029  
 DRAWING BY:  
 ARQ  
 CHECKED BY:  
 PB

DWG. NO.:  
 A-4  
 CAD FILE NO.:  
 11 OF 14



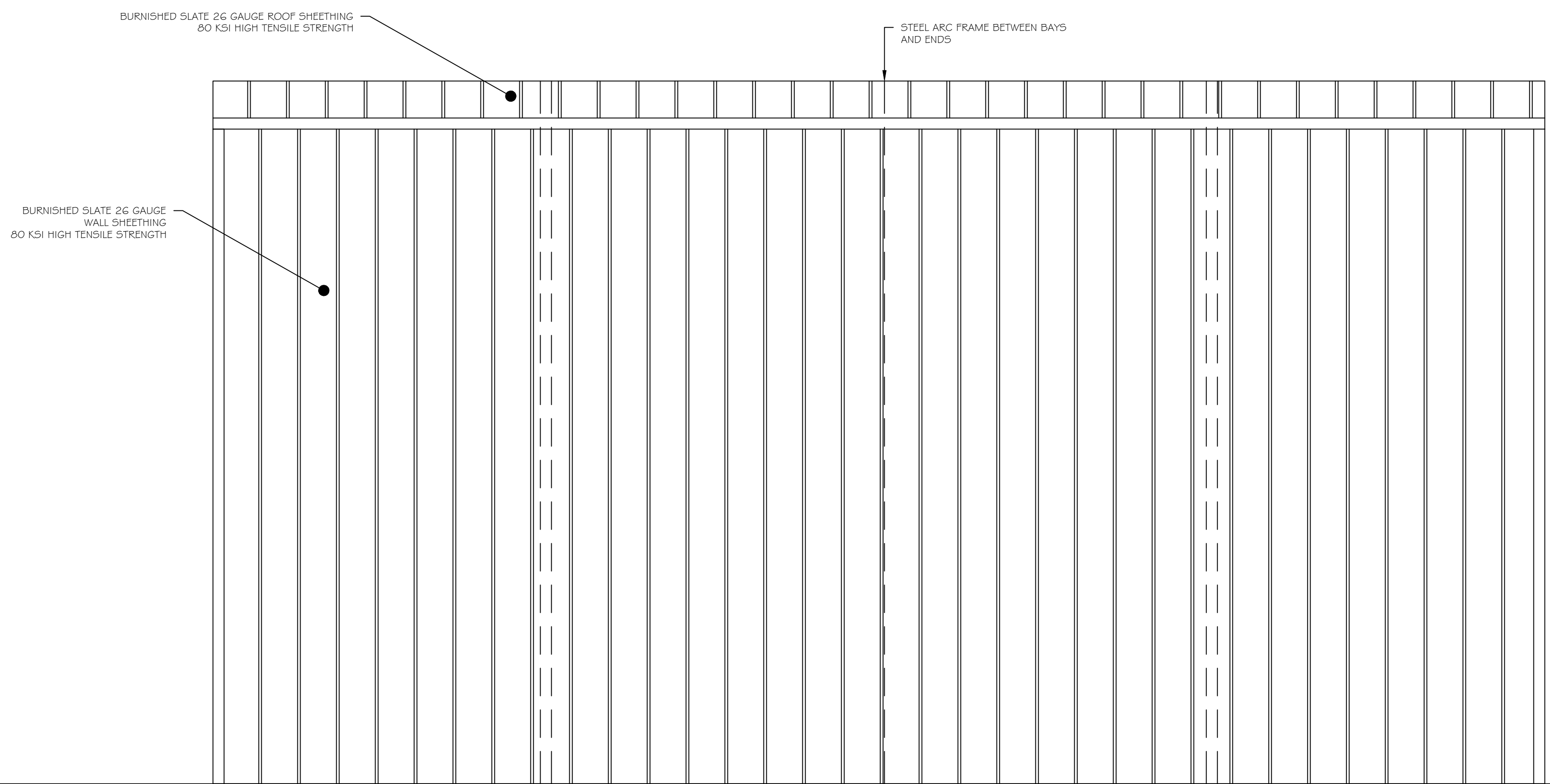
4-BAY WAREHOUSE  
 RIGHT ELEVATION

1/4"=1'-0"



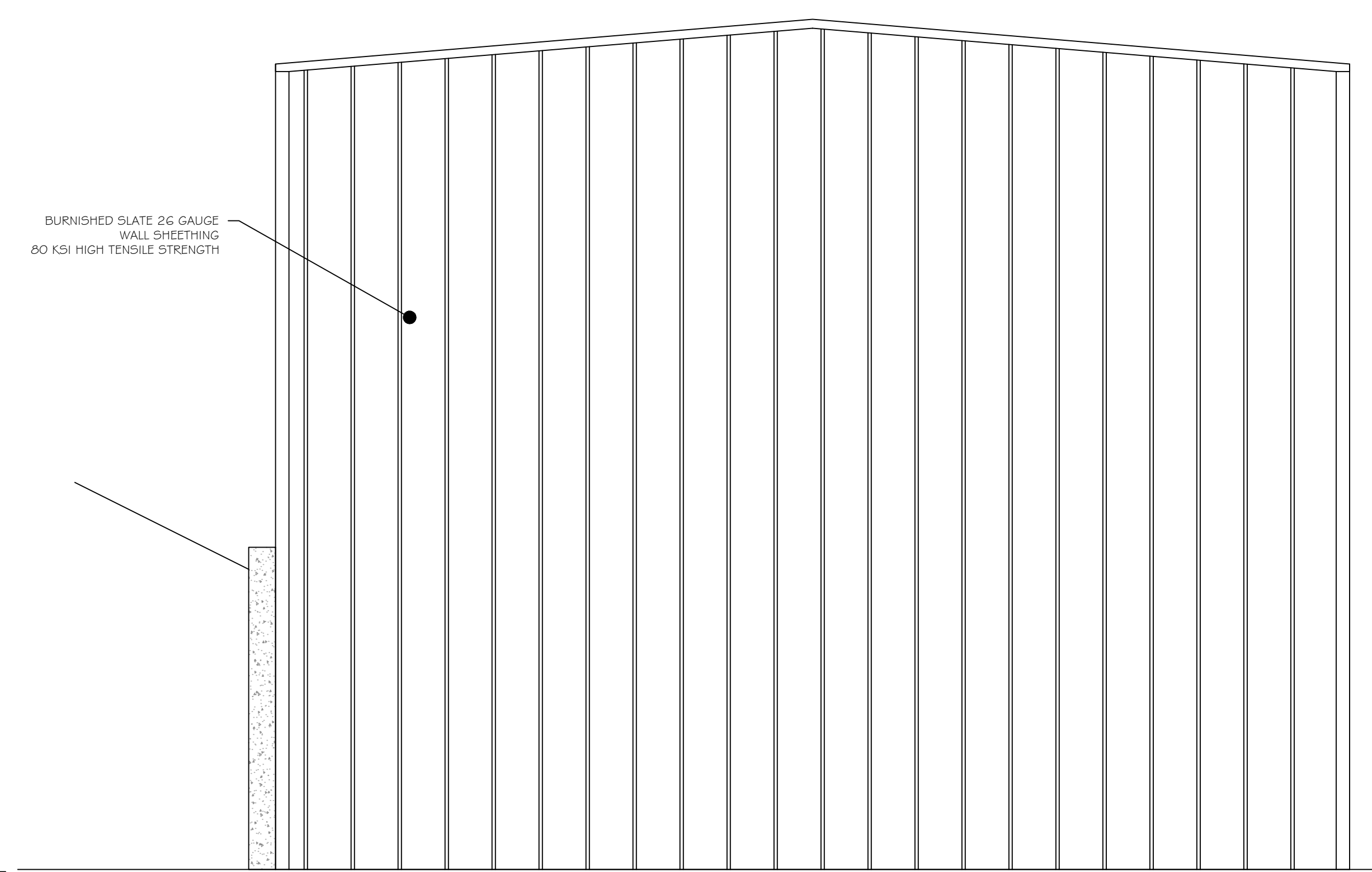
4-BAY WAREHOUSE  
 FRONT ELEVATION

1/4"=1'-0"



4-BAY WAREHOUSE  
 REAR ELEVATION

1/4"=1'-0"



4-BAY WAREHOUSE  
 LEFT ELEVATION

1/4"=1'-0"



100 EXECUTIVE BLVD, SUITE 204  
 OSSINING, NY 10562  
 PHONE: (914) 944-3377  
 FAX: (866) 567-6240

JORGE B. HERNANDEZ R.A. A.I.A.  
 LICENSE NUMBER: 030424-1  
 CERTIFICATE NUMBER: 0973256

PAUL A. BERTE, P.E.

100 EXECUTIVE BLVD, SUITE 204  
 OSSINING, NY 10562

REVISIONS	DATE	BY
CONSULTING CMT.	3/23/2022	ARQ.

DRAWING TITLE:  
 LIGHTING PLAN

PROJECT:  
 MISTIS  
 PROPERTIES INC.

PROJECT ADDRESS:  
 176 VIRGINIA ROAD  
 WHITE PLAINS  
 NEW YORK, 10603

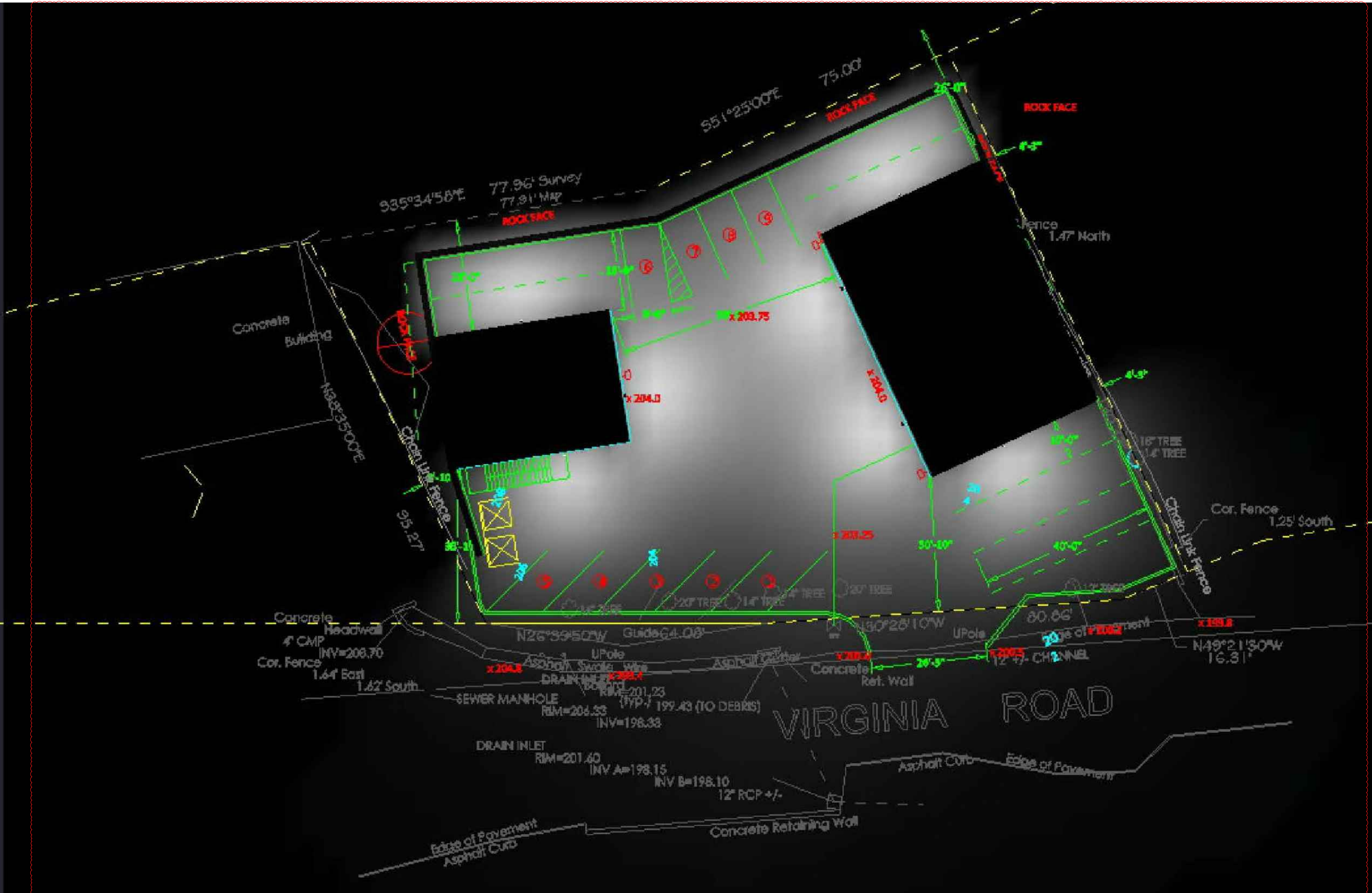
DOB EXAMINER SIGNATURE:

DOB BSCAN STICKER:

SEAL & SIGNATURE



DATE: 03/08/2021	DWG. NO.:
PROJECT NO.:	E-1
21029	
DRAWING BY:	CAD FILE NO.:
ARQ	
CHECKED BY:	12 OF 14
PB	



LIGHTING PLAN

N.T.S.



100 EXECUTIVE BLVD. SUITE 204  
OSSING, NY 10562  
PHONE: (914) 944-3377  
FAX: (866) 567-6240

JORGE B. HERNANDEZ R.A. A.I.A.  
LICENSE NUMBER: 030424-1  
CERTIFICATE NUMBER: 0973256

PAUL A. BERTÉ, P.E.

100 EXECUTIVE BLVD. SUITE 204  
OSSING, NY 10562

REVISIONS	DATE	BY
CONSULTING CMT.	3/23/2022	ARQ.

DRAWING TITLE:  
PHOTOMETRIC PLAN

PROJECT:  
MISTIS  
PROPERTIES INC.

PROJECT ADDRESS:  
176 VIRGINA ROAD  
WHITE PLAINS  
NEW YORK, 10603

DOB EXAMINER SIGNATURE:

DOB BSCAN STICKER:

SEAL & SIGNATURE



DATE:

03/08/2021

PROJECT NO.:

21029

DRAWING BY:

ARQ

CHECKED BY:

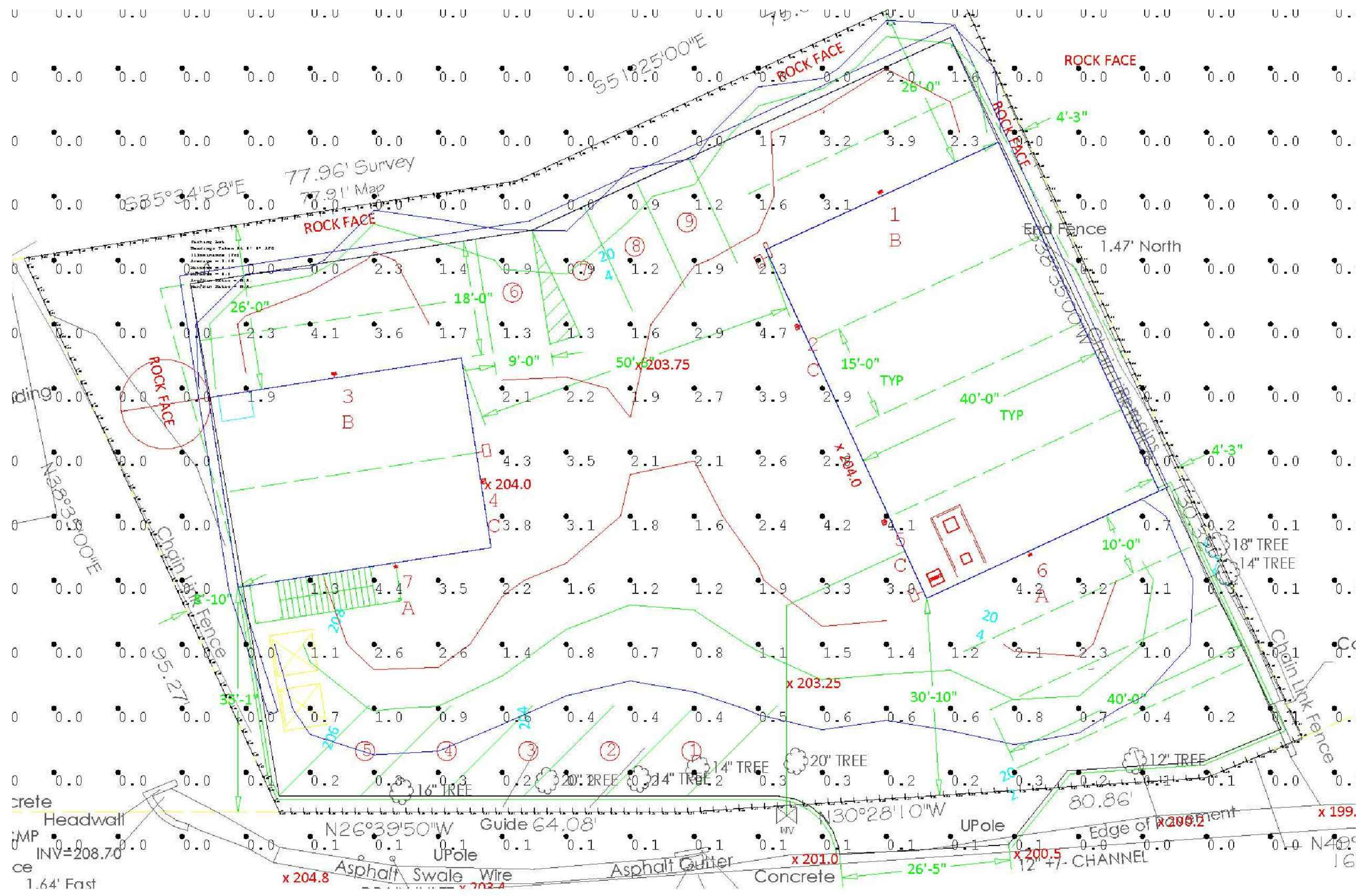
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DWG. NO.:

E-2

CAD FILE NO.:

13 OF 14



PHOTOMETRIC PLAN N.T.S.

Tag	Symbol	Qty	Label	Arrangement	Lum. Lumens	LLF	Description	Lum. Watts	Arr. Watts	Total Watts
A		2	SLIM18	SINGLE	2560	1.000	Wall Mount	21.1	21.1	42.2
B		2	SLIMFC37	SINGLE	3565	1.000	Wall Mount	35.3	35.3	70.6
C		3	WPLED26	SINGLE	3475	1.000	Wall Mount	30	30	90

Label	CalcType	Units	Avg	Max	Min	Avg/Min	Max/Min	Description	PtSpcLr	PtSpcTb	Meter Type
Property Line	Illuminance	Fc	0.11	0.49	0.00	N.A.	N.A.	Readings Taken On Vertical @ 5'	2	N.A.	Vert-PerpCCW
Site	Illuminance	Fc	0.22	4.7	0.0	N.A.	N.A.	Readings Taken At 0° 0' AFG	10	10	Horizontal
Parking Lot	Illuminance	Fc	1.46	4.7	0.0	N.A.	N.A.	Readings Taken At 0° 0' AFG			

LumNo	Label	Mounting Height
1	SLIMFC37	20
2	WPLED26	18
3	SLIMFC37	20
4	WPLED26	18
5	WPLED26	18
6	SLIM18	16
7	SLIM18	16

NOTES:  
 \* The light loss factor (LLF) is a product of many variables, only lamp lumen depreciation (LLD) has been applied to the calculated results unless otherwise noted. The LLF is the result (quotient) of mean lumens / initial lumens per lamp manufacturers' specifications.  
 \* Illumination values shown (in footcandles) are the predicted results for planes of calculation either horizontal, vertical or inclined as designated in the calculation summary. Meter orientation is normal to the plane of calculation.  
 \* The calculated results of this lighting simulation represent an anticipated prediction of system performance. Actual measured results may vary from the anticipated performance and are subject to means and methods which are beyond the control of Damin Sales.  
 \* Mounting height determination is job site specific, our lighting simulations assume a mounting height (insertion point of the luminaire symbol) to be taken at the top of the symbol for ceiling mounted luminaires and at the bottom of the symbol for all other luminaire mounting configurations.  
 \* Damin Sales luminaire and product designs are protected under U.S. and International intellectual property laws. Patents issued or pending apply.

Isoline Legend	
Illuminance (Fc)	Color
0.5	
1	
2	

## WPLED26



Color: Bronze Weight: 7.2 lbs

### Technical Specifications

**Listings:**  
 UL Listing: Suitable for wet locations. Suitable for mounting within 1.2m (4ft) of the ground.  
 DLC Listed: This product is on the Design Lights Consortium (DLC) Qualified Products List and is eligible for rebates from DLC Member Utilities.  
 DLC Product Code: P00001101  
**LED Characteristics:**  
 Lifespan: 100,000-hour LED lifespan based on IES LM-80 results and TM-21 calculations.  
 Color Consistency: 7-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color.  
 Color Stability: LED color temperature is warranted to shift no more than 200K in CCT over a 5-year period.  
 Color Uniformity: RAB's range of CCT (Correlated Color Temperature) follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2017.  
**Construction:**  
 IP Rating: Ingress Protection rating of IP66 for dust and water.

**Finish:**  
 Formulated for high durability and long-lasting color.  
**Ambient Temperature:**  
 Suitable for use in 40 °C (104 °F)  
**Cold Weather Starting:**  
 Minimum starting temperature is -40 °C (-40 °F)  
**Green Technology:**  
 Mercury and UV free. RoHS-compliant components.  
**Other:**  
 Patents: The WPLED design is protected by U.S. Pat. D634,975, Canada Pat. 13,4878, China Pat. CN3016430845.  
 Equivalency: Equivalent to 175v Metal Halide  
**Warranty:**  
 RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish. RAB's warranty is subject to all terms and conditions found at www.rablighting.com/legal/warranty.

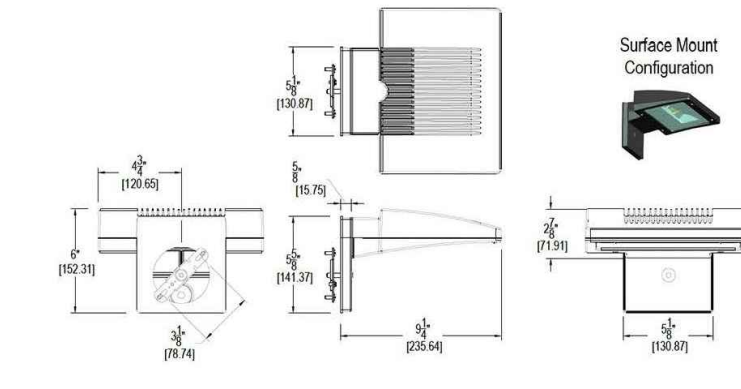
**Buy American Act Compliance:**  
 RAB values USA manufacturing! Upon request, RAB may be able to manufacture this product to be compliant with the Buy American Act (BAA). Please contact customer service to request a quote for the product to be made BAA compliant.  
**Optical:**  
**BUG Rating:**  
 B1 U0 G0  
**Electrical:**  
**Driver:**  
 Multi-chip 26W high output long life LED Driver Constant Current, 720 mA, Class 2, 8kV Surge Protection, 100V-277V, 50-60 Hz, 100-240V 4 Amps.  
**THD:**  
 11.31% at 120V, 9.58% at 277V  
**Power Factor:**  
 99.1% at 120V, 99.1% at 277V

## RAB Outdoor

Project:	Type:
Prepared By:	Date:
<b>Driver Info</b>	<b>LED Info</b>
Type: 120V	Watts: 26W
Constant Current: 0.26A	Color Temp: 5000K (Cool)
208V: 0.16A	Color Accuracy: 72 CRI
240V: 0.14A	L70 Lifespan: 100,000
277V: 0.12A	Lumens: 3,483
Input Watts: 29.1W	Efficiency: 119.7 LP/W

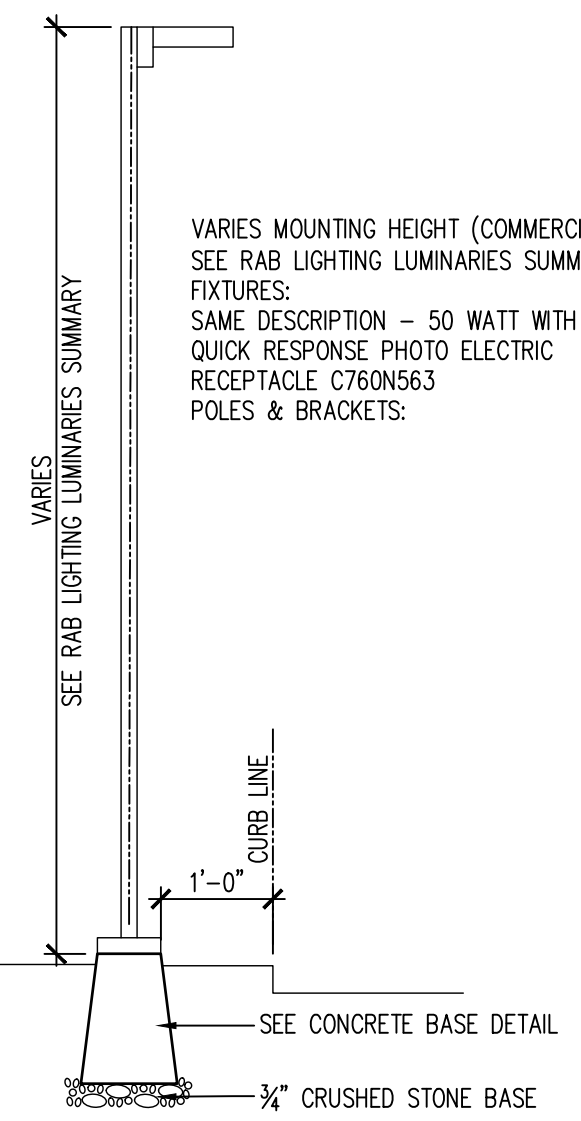
## WPLED26

### Dimensions

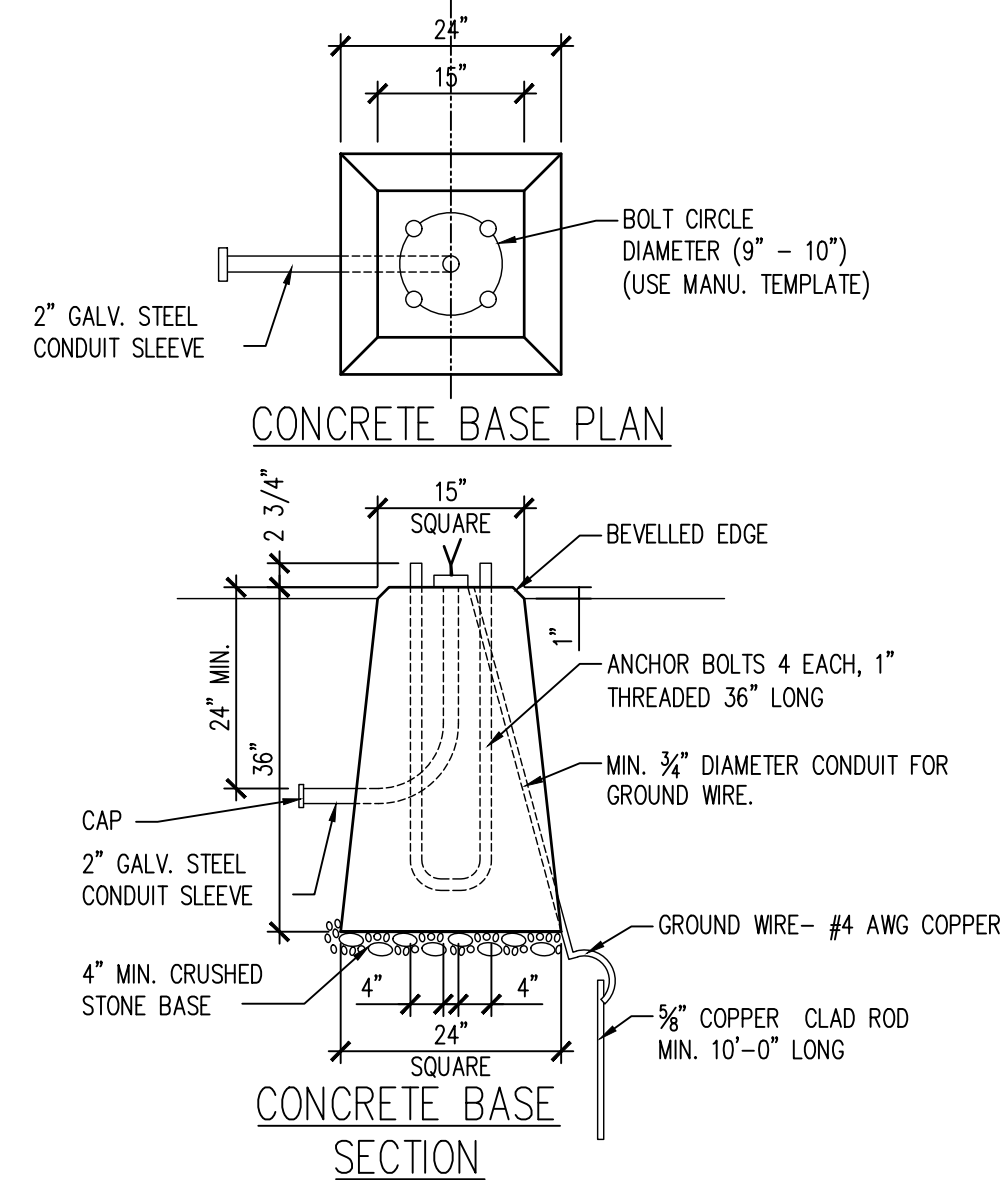


### Features

Maintains 70% of initial lumens at 100,000-hours  
 Weatherproof high temperature silicone gaskets  
 Superior heat sinking with die cast aluminum housing and external fins  
 100 up to 277 Volts  
 5-Year, No-Compromise Warranty



### LIGHTING POLE DETAIL



1/4" = 1'-0"

## SLIM18



12, 18 and 26 Wall SLM wall packs are ultra efficient and deliver impressive light distribution with a compact low-profile design that's super easy to install as a downlight or uplight.  
 Color: Bronze Weight: 4.3 lbs

### Technical Specifications

**Listings:**  
 UL Listing: Suitable for wet locations. Suitable for mounting within 1.2m (4ft) of the ground.  
 ADA Compliant: SLIM™ is ADA Compliant.  
 IESNA LM-79 & LM-80 Testing: RAB LED luminaires and LED components have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80.  
 DLC Listed: This product is listed by Design Lights Consortium (DLC) as an ultra-efficient premium product that qualifies for the highest tier of rebates from DLC Member Utilities.  
 DLC Product Code: PSPV0307  
**Construction:**  
 IP Rating: Ingress Protection rating of IP66 for dust and water.  
**Cold Weather Starting:**  
 Minimum starting temperature is -40 °C (-40 °F)  
**Maximum Ambient Temperature:**  
 Suitable for use in 40 °C (104 °F)

**Housing:**  
 Precision die-cast aluminum housing  
**Mounting:**  
 Heavy-duty mounting bracket with hinged housing for easy installation  
**Recommended Mounting Heights:**  
 Up to 14 ft.  
**Lens:**  
 Tempered glass lens  
**Reflector:**  
 Specular thermoplastic  
**Gaskets:**  
 High-temperature silicone  
**Finish:**  
 Formulated for high durability and long-lasting color

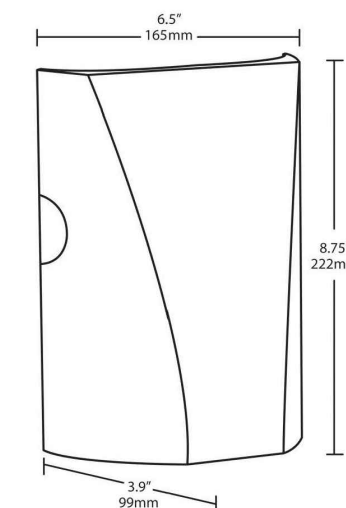
## SLIM18

### Technical Specifications (continued)

**LED Characteristics:**  
 Color Uniformity: RAB's range of CCT (Correlated Color Temperature) follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2017.  
**Other:**  
 Patents: The design of the SLIM™ is protected by patents in U.S. Pat. 9581,864, and pending patents in Canada, China, Taiwan and Mexico.  
**HID Replacement Range:**  
 Replaces 100W Metal Halide

**Warranty:**  
 RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish. RAB's warranty is subject to all terms and conditions found at www.rablighting.com/legal/warranty.  
**Buy American Act Compliance:**  
 RAB values USA manufacturing! Upon request, RAB may be able to manufacture this product to be compliant with the Buy American Act (BAA). Please contact customer service to request a quote for the product to be made BAA compliant.  
**Optical:**  
**BUG Rating:**  
 B1 U0 G0

### Dimensions



### Ordering Matrix

Family	Wattage	Color Temp	Finish	Driver	Options
SLIM	18	Blank = 5000K (Cool) 12 = 12W 18 = 18W 26 = 26W	Blank = Bronze W = White	Blank = Standard (120-277V) /D16 = Dimmable	Blank = No Option /PC = 120V Button /PC2 = 277V Button /LC = LightOutput Controller

## SLIMFC37



37, 57 and 62 Wall SLM Wall packs are designed to cover the footprint of most traditional wall packs. They are suitable for mounting heights from 20 to 30', and replace HID packages from 200W HID to 320W HID. These ultra high efficiency fixtures are available in cutoff or full cutoff models.  
 Color: Bronze Weight: 7.5 lbs

### Technical Specifications

**Listings:**  
 UL Listing: Suitable for Wet Locations, Wall Mount Only  
 IESNA LM-79 & LM-80 Testing: RAB LED luminaires and LED components have been tested by an independent laboratory in accordance with IESNA LM-79 and LM-80.  
**Construction:**  
 Footprint: Designed to replace RAB HID WP1 wall packs, both in size and footprint template, so upgrading to LED is easy and seamless.  
**IP Rating:**  
 Ingress Protection rating of IP66 for dust and water  
**Cold Weather Starting:**  
 Minimum starting temperature is -40 °C (-40 °F)  
**Maximum Ambient Temperature:**  
 Suitable for use in 40 °C (104 °F)  
**Housing:**  
 Precision die-cast aluminum housing and clear frame

**Mounting:**  
 Die-cast back box with four (4) conduit entry points and knockout pattern for junction box or direct wall mounting. Hinged housing and bubble level for easy installation.  
**Full Cutoff:**  
 Full-cutoff meets dark-sky requirements.  
**Recommended Mounting Height:**  
 Up to 20 ft.  
**Lens:**  
 Microprismatic diffusion glass lens reduces glare and has smooth and even light distribution  
**Reflector:**  
 Specular thermoplastic  
**Gaskets:**  
 The unique design of the light-tight gasket ensures no water or environmental elements will ever get inside the SLM  
**Finish:**  
 Formulated for high durability and long-lasting color

**Driver Info**

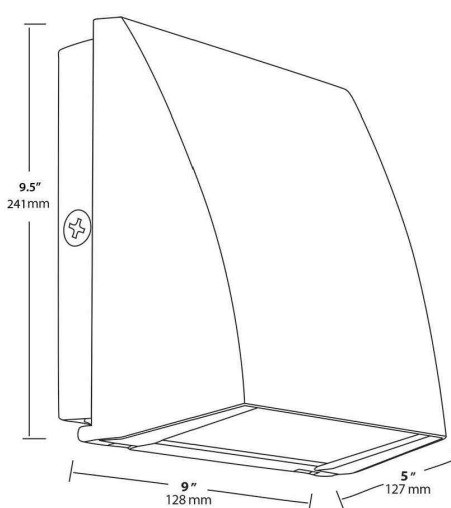
Type	Watts	37W
120V	0.31A	Color Temp: 5000K (Cool)
208V	0.19A	Color Accuracy: 73 CRI
240V	0.16A	L70 Lifespan: 100,000
277V	0.14A	Lumens: 3,565
Input Watts	38.9W	Efficiency: 101 LP/W

## SLIMFC37

### Technical Specifications (continued)

**Other:**  
 Accessories: Available accessories include polyhail and wire guard. Click www.rablighting.com/interWallPackAccessories to see all accessories.  
 Patents: The design of the SLIM™ is protected by patents pending in U.S., Canada, China, Taiwan and Mexico  
**HID Replacement Range:**  
 Replaces 200W Metal Halide  
**Warranty:**  
 RAB warrants that our LED products will be free from defects in materials and workmanship for a period of five (5) years from the date of delivery to the end user, including coverage of light output, color stability, driver performance and fixture finish. RAB's warranty is subject to all terms and conditions found at www.rablighting.com/legal/warranty.  
**Buy American Act Compliance:**  
 RAB values USA manufacturing! Upon request, RAB may be able to manufacture this product to be compliant with the Buy American Act (BAA). Please contact customer service to request a quote for the product to be made BAA compliant.  
**Optical:**  
**BUG Rating:**  
 B1 U0 G0

### Dimensions



### Ordering Matrix

Family	Cutoff	Wattage	Color Temp	Finish	Driver Options	Options	Other Options
SLIM	FC	37	Blank = 5000K (Cool) 37 = 37W 57 = 57W 62 = 62W	Blank = Bronze W = White /D16 = Dimmable	Blank = Standard (120-277V) /BL = Bi-Level /D16 = Dimmable /480 = 480V	Blank = No Option /PC = 120V Button Photocell /PC2 = 277V Button Photocell /PC3 = 120V Swivel Photocell /PC32 = 277V Swivel Photocell	Blank = Standard USA = BAA Compliant



100 EXECUTIVE BLVD, SUITE 204  
 OSSING, NY 10562  
 PHONE: (914) 944-3377  
 FAX: (866) 567-6240

JORGE B. HERNANDEZ R.A. A.I.A.  
 LICENSE NUMBER: 030424-1  
 CERTIFICATE NUMBER: 0973256

## PAUL A. BERTE, P.E.

100 EXECUTIVE BLVD, SUITE 204  
 OSSING, NY 10562

REVISIONS	DATE	BY
CONSULTING CMT.	3/23/2022	ARQ

DRAWING TITLE:  
 SCHEDULES, SPECIFICATIONS & DETAIL

PROJECT:  
 MISTIS  
 PROPERTIES INC.

PROJECT ADDRESS:  
 176 VIRGINA ROAD  
 WHITE PLAINS  
 NEW YORK, 10603

DOB EXAMINER SIGNATURE:

DOB BSCAN STICKER:

SEAL & SIGNATURE



DATE: 03/08/2021

PROJECT NO.: 21029

DRAWING BY: ARQ

CHECKED BY: PB

DWG. NO.: E-3

CAD FILE NO.: 14 OF 14



**MEMORANDUM**

TO: North Castle Planning Board

CC: Adam Kaufman, AICP  
Paul Berte, P.E.  
Mistis Properties, Inc.

FROM: Joseph M. Cermele, P.E., CFM  
Kellard Sessions Consulting  
Consulting Town Engineers



DATE: May 7, 2021

RE: Mistis Properties  
176 Virginia Road  
Section 122.16, Block 1, Lot 3

---

As requested, Kellard Sessions Consulting has reviewed the site plans submitted in conjunction with the above-referenced project. The applicant is proposing the installation of two (2) prefabricated warehouse buildings and associated parking, stormwater mitigation and utilities. The plan requires the construction of retaining walls greater than six (6) feet in height. The property is 16,709 s.f. in size and located in the IND-A Zoning District.

Our comments are outlined below.

**GENERAL COMMENTS**

1. The plan requires a retaining wall along the rear and sides of the property with a maximum height of approximately 28 feet. For clarity, the proposed retaining wall shown on the grading plan shall include top of wall and bottom of wall elevations at each change in elevation to be coordinated with the elevation changes shown in section provided on Sheet S-7. The plan shall also illustrate the required grading of the slopes above the retaining wall necessary to maintain the proposed 1V:2H slope and include a detail of the armored slope referenced in the typical retaining wall sections.

2. Provide a site lighting and photometric plan for review and consideration by the Planning Board. Include specifications and details of all fixtures, poles and pole bases.
3. The proposed Frame and Cover Detail on Sheet S-5 shall require that manhole covers for sanitary sewers be stamped with "SEWER" on the casting.
4. The sanitary manhole detail included on Sheet S-2 shall be revised to require two (2) coats of bitumastic sealant to be applied to the exterior.
5. Please clarify the purpose and intent of the proposed pipe entering the proposed sewer manhole from the east. It is assumed that this is the sanitary connection for the bathroom in the building. Please specify the pipe size and material as necessary.
6. The hydrologic model demonstrates that the proposed stormwater management system will effectively mitigate the increased stormwater runoff generated by the project. However, it is suggested that the plan be revised to also connect the roof leaders of the proposed 2-bay warehouse (north building) and proposed Drain Inlet, DI-1. Doing so would allow for the connection of Drain Inlet, DI-1, to the proposed Stormtrap System, rather than the current proposed 6"x 6" PVC TEE connection, (which would not be acceptable) and eliminate the multiple connections at Drain Inlet, DI-2. This would also provide mitigation and treatment for all impervious surfaces. The outlet structure shall be labeled on plan Sheet S-2.
7. The proposed outlet structure needs clarification. The detail on Sheet S-5 indicates a connection to the hydrodynamic separator; however, there is no indication of this on plan Sheet S-2. The detail also indicates outlet pipes of twelve (12) inch and four (4) inch diameter, while the plan illustrates a six (6) inch outlet pipe to Drain Inlet, DI-2. Please clarify. It appears that an additional structure will be required for the pipe transition or an alternate outlet structure design. The six (6) inch pipe connection should also be included in the hydrologic model. It currently appears to be undersized.
8. Drainage area maps shall be included in the Stormwater Pollution Prevention Plan (SWPPP). The areas and cover types tributary to each sub-catchment shall be clarified.

As additional information becomes available, we will continue our review. It is noted that an itemized response to all comments will facilitate completeness and efficiency of review.

**PLANS REVIEWED, PREPARED BY PAUL BERTE, P.E., DATED MARCH 8, 2021:**

- Site Plan, Map, & Notes (S-1)
- Drainage, Grading & Erosion Control (S-2)

North Castle Planning Board

Mistis – 176 Virginia Road

May 7, 2021

Page 3 of 3

- Turns & Sight Distance (S-3)
- Site Details (S-4 & S-5 & S-6)
- Section & Site Details (S-7)
- 2-Bay Warehouse First & Mezzanine Flood Plans (A-1)
- 4-Bay Warehouse Flood Plan (A-2)
- 2-Bay Warehouse Elevations (A-3)
- 4-Bay Warehouse Elevations (A-4)
- Engineer's Report

JMC/dc

[https://kellardsessionsconsulti.sharepoint.com/sites/Kellard/Municipal/Northcastle/Corresp/018SitePlans/2021-05-07\\_NCPB\\_Mistis - 176 Virginia Rd\\_Review Memo.docx](https://kellardsessionsconsulti.sharepoint.com/sites/Kellard/Municipal/Northcastle/Corresp/018SitePlans/2021-05-07_NCPB_Mistis - 176 Virginia Rd_Review Memo.docx)



## Engineers Report

for

## 176 Virginia Road

White Plains, NY

Westchester County, New York

Calculations and Report By: Paul Berté

Date: 3/29/2022

Last Revised: \_\_\_\_\_



NYS Professional Engineer Lic # 071859

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*APPENDIX A Stormwater Routings Pre-Development Calculations*

*APPENDIX B Post Development Calculations*

*APPENDIX C USDA Soils Report*

*APPENDIX D FEMA Flood Plain Map*

## **A. Introduction**

This report has been prepared in accordance with Chapter 267 of the town of North Castle for the improvements on site on the subject property 176 Virginia Road.

This site is 0.383 acres as shown on a survey prepared by T.C. Merritts Surveyors, map of survey dated August 30, 2018 entitled "TOPOGRAPHY OF PROPERTY PREPARED FOR MISTIS PROPERTIES 100 INC".

This existing impervious surfaces on this lot is approximately 13,586 sf. 11,510 sf of the lot is covered in a heavily compacted subbase type material over asphalt pavement so it has been modeled as an impervious surface. The proposed impervious surfaces is estimated to be 13,340 sf.

An underground stormwater detention system is designed to reduce the post development peak rates of runoff to the pre-development rates for the 2, 10, 25, 100 24-hour storm events. Proposed grading has been designed to minimize the impact to adjacent properties and the Erosion and Sediment controls have been designed to manage stormwater and pollutants from the active site in accordance with the New York Standards and Specifications for Erosion and Sediment Control. Detailed flow control calculations (routings) are also included herewith.

## **B. Site Description**

### Existing Improvement

Existing improvements include a single-family home.

### Existing Tress

Six (6) trees are to be removed from the property.

### Soils

The site consists primarily of CuD Chatfield-Hollis-Rock described by the USDA NRCS as outcrop complex, 15 to 35 percent slopes. A soil report is included in Appendix B.

### Flood Plain

The FEMA floodplain map (attached herewith in section 2) does not show potential floodplains in the immediate vicinity of the site.

### Site Drainage Characteristics

Most of the site currently drains via sheet flow from north to south. Runoff drains into a concrete swale and catch basin in the street. Other than collecting and treating the runoff from the proposed impervious areas, no changes to the site drainage patterns are proposed with this application.

### C. Project Description

#### Proposed Improvements

Proposed improvements include the installation of two (2) prefabricated warehouse buildings and parking areas.

### D. Stormwater Management Methodology

#### Stormwater Runoff Rate

The on-site stormwater management design was analyzed using HydroCAD stormwater modeling software V10.00, which models Type III 24 hour stormwater flows using those methods contained in "Urban Hydrology for Small Watersheds Technical Release No. 55," prepared by the United States Department of Agriculture Soil Conservation Service. The stormwater management plan has been implemented to provide quality of runoff and flow control by means of the storage provided within the 4 Stormtrap ST1 Units. The system provides 666 cf of storage. The design was based on detention values for the 100, 25, 10, and 2-year storm events, to mitigate the post-development runoff flow to a rate that is less than the pre-development condition.

#### Grading and Drainage Design

This proposal includes a drainage design in accordance with chapter 9 of the 2015 Stormwater Management Design manual for redevelopment activity. It is anticipated that the subsurface stormwater treatment system will be installed in bedrock. Because infiltration will not be possible, the system has been designed as a detention system. The water quality volume has been achieved with a hydrodynamic separator which provides a total of 666 cf. Calculations can be seen in Appendix E. The runoff from roof leaders of the warehouse building 1 and 2 and the area Drain Inlet DI-1 will be sent to the Stormtrap ST1 units and then be directed to the hydrodynamic separator to be treated and finally out to the catch basin in the street. Runoff from the Trench Drain at the driveway entrance will be captured and directed to the hydrodynamic separator for treatment before going to the catch basin in Virginia Road. Runoff is captured and treated to mitigate the peak flows to the predevelopment rates.

Run off from the rain events will be detained in the Stormtrap ST1 single trap units and metered out to catch basin via a 8" orifice located at the base of the proposed underground detention system. The system is designed to reduce the peak rate of discharge from the existing condition.

Throughout the construction process, strict adherence to the **Site Plan** which specifies all erosion and sediment controls will be maintained to minimize sediment and pollutants from discharging off site.

The following table (Table 1) is a summary of the results of the hydrograph routings for the Pre-Development and Post Development stormwater flows for the entire property:

**Table 1: Summary of Stormwater Runoff Rates**

Storm Event	Rainfall Depth	Pre Development Rate (cfs)	Post Development Rate (cfs)
2 year	3.4"	1.03	.94
10 year	5.1"	1.61	1.44
25 year	6.4"	2.06	1.79
100 year	9.0"	2.93	2.47

## E. Construction Phasing Plan and Stormwater Management Facilities Maintenance Program

### Maintenance of Temporary and Permanent Structures and Practices

Temporary and permanent erosion controls measures will be maintained and inspected in accordance with the Site Plans and Details. All proposed soil erosion and sediment control practices are designed in accordance with the following publications:

- New York State Standards and Specifications for Erosion and Sediment Control, August 2005, latest edition.
- New York State Guidelines for Urban Erosion and Sediment Control, latest edition,
- New York State General Permit for Stormwater Discharges,
- "Reducing the Impacts of Stormwater Runoff from New Development", as published by the New York State Department of Environmental Conservation (NYSDEC).

The proposed soil erosion and sediment control devices include: protective earthmoving procedures and grading practices, soil stabilization, inlet protection, stabilized construction entrance and silt fencing. The approach of the plan is to control off-site sedimentation and re-establish vegetation as soon as practicable.

Additionally, contractor shall adhere to the recommended material stockpile location and construction entrance shown on the plans attached herewith. The plan will be implemented prior to commencement of earthmoving activities.

### **Construction Phasing Plan:**

1. Erosion and sediment control (esc) measures and pollution prevention (pp) implementation,
  - a. Install silt fences along easterly project limits
  - b. Utilize existing driveway for construction access. If required, install stone (per detail) if access is required on and off exposed areas.
  - c. Install tree protection
  - d. Install temporary sanitary facilities (portable toilets) in a location that is at least 20 from any drainage facility or flow path. Recommend staking the facility to prevent accidental tipping by construction activity or wind.
  - e. Install waste container – maintain rigorous site cleaning schedule to prevent debris from blowing off site. Construction waste shall be stored in a dumpster and carried off-site on a regular basis
  - f. Allocate concrete washout areas in advance of pour.
2. Phase 1 clearing, demo & excavation.
  - a. Clear all trees marked to be removed on the demolition plan. Clear & grub north half of the property, north of the existing 1 story residence. The existing residence is to remain until phase 2.
  - b. Excavate to proposed grade. It is anticipated that rock will be present on portions of the site. A minimum productivity rate of 55yards per day with a 2000ftlb hammer is proposed to remove any rock encountered.
  - c. Due to the limited site area, all excavated soils & rock are to be immediately trucked off site.
  - d. Disturbed areas where construction will cease for more than 14 days will be stabilized with erosion controls, such hydro-seeding, hydro-mulch, or hay
  - e. Form and pour proposed retaining wall along rear property line up to the next phase section. If stable rock is encountered along the limits of the proposed cut, the retaining wall will not be necessary.
3. Construct retaining wall on west side of lot as shown in phase 1 phasing plan.



4. Cut in curb at proposed location and install temporary construction entrance.
5. Phase 2 clearing, demo & excavation
  - a. Disconnect and cap all utilities to existing 1 story residence. Restore pavement as specified.
  - b. Demolish all existing improvements remaining on the demolition plan.
  - c. Clear & grub south end of property.
  - d. Excavate to proposed grade. It is anticipated that rock will be present on portions of the site. A minimum productivity rate of 55cubicyards per day with a 2000ftlb hammer is proposed to remove any rock encountered.
  - e. Due to the limited site area, all excavated soils & rock are to be immediately trucked off site.
  - f. Disturbed areas where construction will cease for more than 14 days will be stabilized with erosion controls, such hydro-seeding, hydro-mulch, or hay.
6. Form and pour proposed retaining wall along rear property line up to the next phase section. If stable rock is encountered along the limits of the proposed cut, the retaining wall will not be necessary.
7. Install subsurface storage system, site drainage and hydrodynamic separator to capture roof leader runoff. Protect inlets with sediment control inlet protection.
8. Vertical construction (install foundation and construct prefab metal warehouse structures)
9. Install underground utilities. Restore pavement as specified.
10. Install proposed curb and asphalt parking lot
11. Paint all striping for proposed lot.
12. Plant all proposed landscaping.
13. Final stabilization of disturbed areas
  - a. Remove all esc and pp measures upon approval of design engineer and/or esc inspector.
  - b. Awarded contractor shall be responsible for the proper implementation of the esc and pp practices. The following maintenance program is proposed in order to maintain the proper function of all drainage and erosion and sediment control facilities:
    - i. Inspect sediment control devices and construction access point routinely and if necessary remove accumulated sedimentation and debris; at no point should the filter bed be allowed to continue operations beyond 50% of its capacity being compromised by debris.
    - ii. All disturbed area will be stabilized and the sediment build-up in the filter removed. After the construction is completed, any areas disturbed shall be stabilized immediately after the required work is completed.
    - iii. Restore and re-seed any eroded areas as soon as possible
    - iv. The stormwater management facilities maintenance program will be managed by the home owner and shall include yearly inspection of the on-site catch basins and underground storage facilities and the removal of sediment, as necessary.

## **F. Narrative Report**

The primary goal of the soil erosion and sediment control measures is to reduce soil erosion from areas stripped of vegetation during and after construction, and to prevent discharge of silt offsite. Erosion control barriers shall be placed around exposed areas during construction. The barriers shall consist of silt fence. Alternate practice may be implemented by the contractor after approval from the Design Engineer and the City Engineer.

Any areas stripped of vegetation during construction will be left bare for the shortest time possible. Any topsoil removed during construction will be temporarily stockpiled for future use in grading and landscaping. Stockpile locations have been provided on the Erosion and Sediment Control Plan and shall be contained within a silt fence/hay bale barrier.

Temporary vegetation will be established to protect exposed soil areas during construction. If growing conditions are not suitable for the temporary vegetation, mulch will be used. Materials that may be used for mulching include; straw, hay, salt hay, wood fiber, synthetic soil stabilizers, mulch netting, and sod. A permanent vegetative cover will be established upon completion of construction of those areas that have been brought to finish grade and to remain undisturbed.

A temporary stabilized construction entrance comprised of a stone anti-track pad shall be installed as necessary to minimize dirt tracking onto Virginia Road. The purpose of a stabilized entrance is to remove as much soil from the construction vehicle tires prior to exiting the site and traveling on the existing roadways. During construction, inlet protection (as applicable) will be installed at each storm sewer inlet to minimize the conveyance of silt and sediment through the storm sewer system.

For dewatering activities during excavation of the footings, a dewatering pump shall be in a perforated tub surrounded by filter fabric and stone (or approved alternative). Clean discharge should be directed to onsite drainage appurtenances to minimize erosion of soils. Discharge with suspended sediment shall be connected to a sediment bag on undisturbed ground in a location where the discharge will not cause erosion or flow over exposed soils.

Portable toilets shall be provided and located at least 20 feet from a drainage facility and shall be staked down to minimize overtopping from wind.

If the contractor encounters ground water during the excavation of the filtering system, he shall notify the design engineer immediately. The contractor shall store all excavated material at the designated location show on the Grading and Erosion Control Plan with the appropriate erosion control measures corresponding to the stockpile detail.

#### **G. Material Handling and Waste Management**

Contractor shall be responsible for all waste materials being collected and disposed of into one (1) metal trash dumpster. Dumpster shall have a secure watertight lid, be placed away from stormwater conveyances and drains, and meet all local and state solid-waste management regulations. Only trash and construction debris from the site will be deposited in the dumpster.

Contractor shall not store erodible or hazardous materials on any roadway. Oil and machinery fuels shall be kept to a necessary minimum and stored in structurally sound and sealed shipping containers or stored in the contractor's vehicles. Hazardous-material storage should be segregated from other non-waste materials. All hazardous materials will be disposed of in accordance with federal, state, and municipal regulations.

Contractor shall be responsible for maintaining the cleanliness of the streets (driveways/parking and adjacent areas) and storm drain inlet protection (as applicable) Best Management Practices (BMPs) throughout the construction project.

Contractor shall provide adequate designated concrete washout areas throughout the construction project and will be responsible for proper disposal of the concrete, mortar or grout collected there.

One (1) temporary sanitary facility (portable toilet) shall be provided at the site in the combined staging area. The toilet shall be away from a concentrated flow path and traffic flow and shall have collection pans underneath as secondary containment. The unit shall be staked down to prevent wind overtopping the unit.

Wood pallets, cardboard boxes, and other recyclable construction scraps will be disposed of in a designated dumpster for recycling. Construction equipment and maintenance materials shall be stored at the combined staging area.

All spills shall be cleaned up immediately upon discovery. Spent absorbent materials and rags will be hauled

off-site immediately after the spill is cleaned up for disposal. Spill large enough to discharge to surface water will be reported to the National Response Center at 1-800-424-8802. Material safety data sheets, a material inventory, and emergency contact information will be maintained on site.

## H. Inspection and Maintenance

### 1. Stormtrap ST1 Singletrap:

Units shall be inspected once a year, sediment shall be removed. Owner shall be responsible for maintenance.

- Locate manholes connected to the system
- Remove grates or covers
- Vacuum pump the sediment. Do not flush sediment out inlet pipes.
- Replace grates and covers
- Record depth and date and schedule next inspection

### 2. Catch Basins/Inlets:

- Shall be inspected once a year, trash and debris shall be removed.
- Owner shall be responsible for maintenance.

### 3. Grease trap/oil separator

- Water generated from the truck wash will be captured by the floor trench drain and directed to the grease trap/oil separator, the baffle will separate the oil from water, then the water will continue towards the outlet pipe that is followed by the house trap and sewer line.
- Oil will rise and build up in the inlet chamber until it gets removed.
- Take a long stick that will reach the bottom of the chamber. Any resistance pushing to the bottom signifies sludge build up. Service the oil/water separator when build up is about 6 inches deep in the inlet chamber.
- Maintenance of oil/water separator must include through pump-out and cleaning a minimum of once a year. Cleaning shall be done before the oil accumulation inside the separator is within 2 inches from the top of the water level
- More frequent cleaning of oil/water separator may be required if deemed necessary by building department inspector.
- Owner shall be responsible for the proper removal and disposal. Owner may be required to maintain on-site records of dates and means of disposal which are subject to review by building department. Any removal of the waste material not performed by the owner's personnel must be performed by a licensed waste water disposal firm.

### 4. Aqua-Swirl: AS-4:

- During the first year post-construction, the unit should again be inspected every three months and cleaned as needed.
- It is also recommended that the system be inspected and cleaned once annually regardless of whether it has reached its sediment or floatable pollutant storage capacity.
- For the second and subsequent years post-construction, the Aqua-Swirl can be inspected and cleaned once annually if the system did not reach full sediment or floatable pollutant capacity in the first year post-construction.
- If the Aqua-Swirl® reached full sediment or floatable pollutant capacity in less than 12 months in the first year post-construction, the system should be inspected once every six months and cleaned as needed.

- AquaShield further recommends that external bypass (diversion) and convergence structures should be inspected and cleaned when feasible during inspection and maintenance events.
- Essential elements of a swirl chamber inspection include observing floating materials and measuring the accumulated sediment at the base of the swirl chamber. These two activities can be performed at the ground surface and there is no need to enter the device. A typical maintenance event includes the vacuuming and disposal of floatable pollutants and sediment from the swirl chamber. Proper health and safety protocols should be followed during all inspection and maintenance events. AquaShield™ recommends that all materials removed during the maintenance process be handled and disposed in accordance with all applicable federal, state and local guidelines. Depending on the influent pollutant characteristics of the system drainage area, it may be appropriate to perform Toxicity Characteristics Leaching Procedure (TCLP) analyses on representative samples of the removed material to ensure that the handling and disposition of materials complies with applicable environmental regulations.
- Owner shall be responsible for maintenance.

**I. Final Stabilization**

Permanent seeding shall be applied immediately after the final design grades are achieved as applicable throughout the site but no later than fourteen (14) days after construction activities have ceased. After stabilization, accumulated sediment shall be removed from site for disposal along with construction debris, trash and temporary BMPs e.g. silt fences, straw bales, material storage areas, sanitary toilets, etc.

*Seedbed preparation/grass application*

A minimum depth of 2 to 6 inches shall be applied on areas where disturbance results in subsoil being the final grade surface. The seedbed shall be free of large clods, rocks, woody debris and other intrusive materials; fertilizer shall be applied accordingly.

**J. Conclusion:**

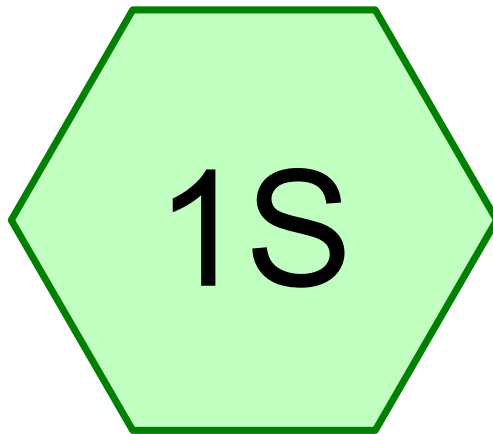
The implementation of this stormwater management plan will mitigate the post development stormwater flows to the predevelopment rates and not adversely affect the adjacent properties or the existing drainage system in Virginia Road.

Respectfully Submitted,

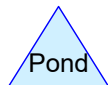
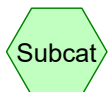
**ARQ PC**

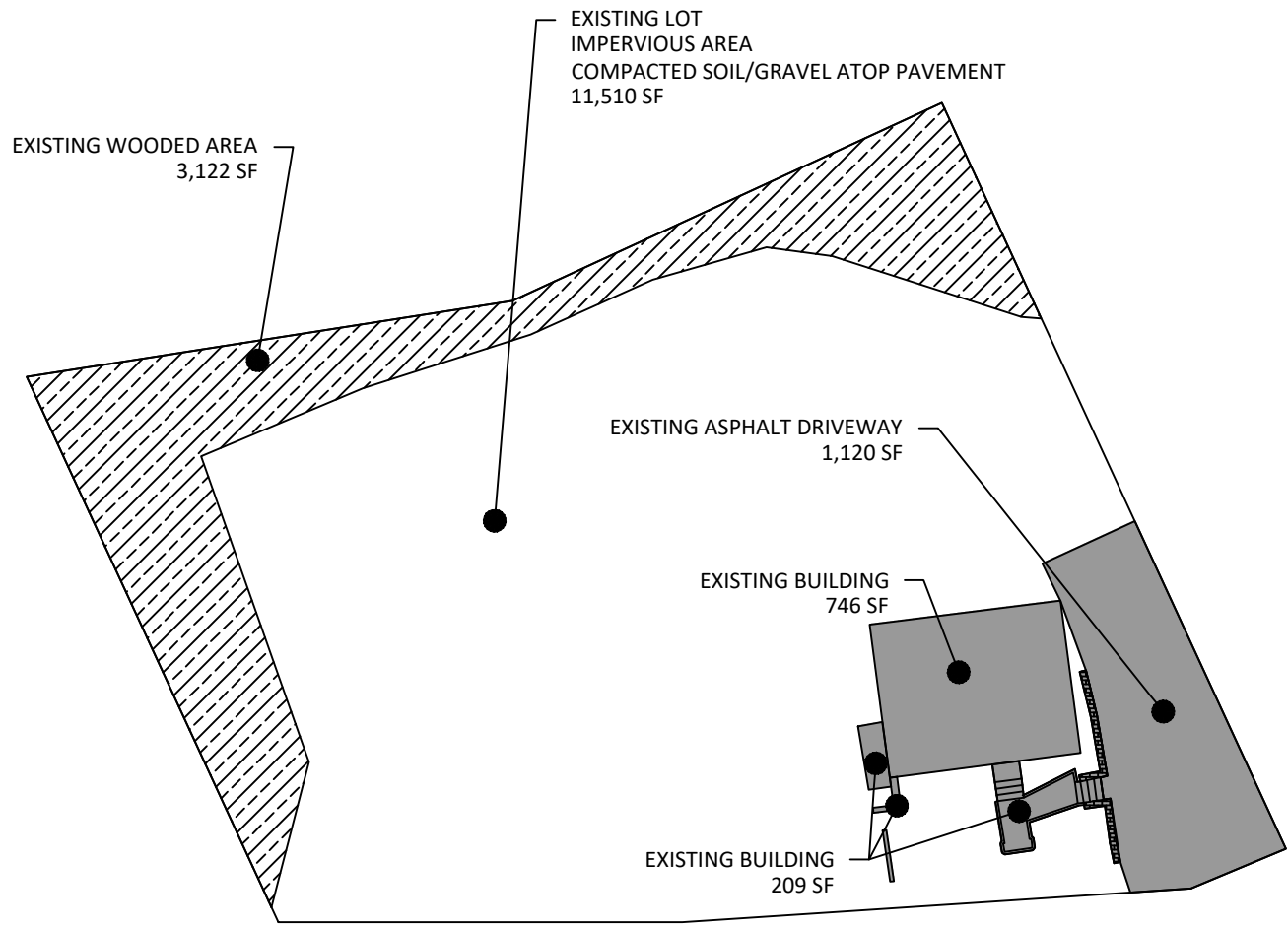
## ***APPENDIX A***

### *Stormwater Routings Pre Development Calculations*



# Existing Conditions





# PRE DEVELOPMENT

SCALE: 1" = 30'

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176 Virginia Road

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**Area Listing (selected nodes)**

Area (sq-ft)	CN	Description (subcatchment-numbers)
13,586	98	Impervious (Building, Driveway & Lot) (1S)
3,122	76	Woods/grass comb., Fair, HSG C (1S)



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**Soil Listing (selected nodes)**

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
3,122	HSG C	1S
0	HSG D	
13,586	Other	1S

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Type III 24-hr 2-Year Rainfall=3.40"

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**Summary for Subcatchment 1S: Existing Conditions**

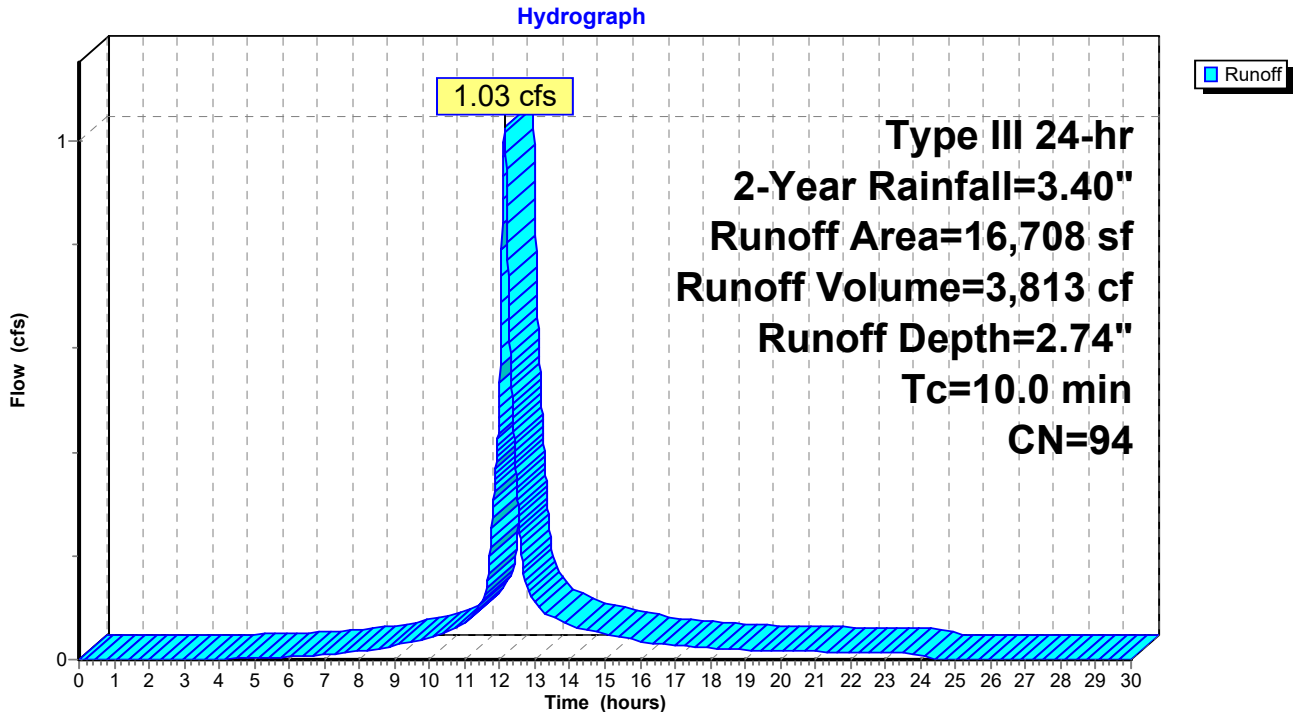
Runoff = 1.03 cfs @ 12.14 hrs, Volume= 3,813 cf, Depth= 2.74"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.40"

	Area (sf)	CN	Description
*	13,586	98	Impervious (Building, Driveway & Lot)
	3,122	76	Woods/grass comb., Fair, HSG C
	0	98	Unconnected pavement, HSG C
	16,708	94	Weighted Average
	3,122		18.69% Pervious Area
	13,586		81.31% Impervious Area

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

**Subcatchment 1S: Existing Conditions**



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Type III 24-hr 10-Year Rainfall=5.10"

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**Summary for Subcatchment 1S: Existing Conditions**

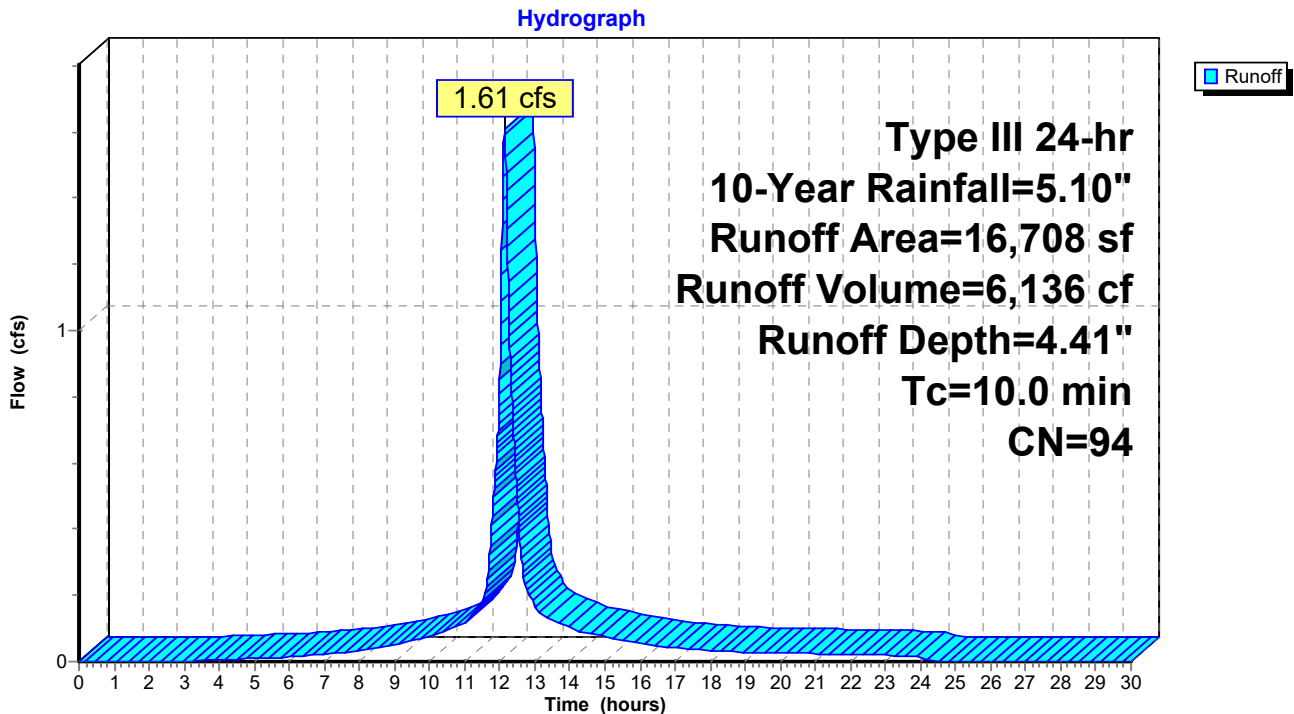
Runoff = 1.61 cfs @ 12.13 hrs, Volume= 6,136 cf, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=5.10"

	Area (sf)	CN	Description
*	13,586	98	Impervious (Building, Driveway & Lot)
	3,122	76	Woods/grass comb., Fair, HSG C
	0	98	Unconnected pavement, HSG C
	16,708	94	Weighted Average
	3,122		18.69% Pervious Area
	13,586		81.31% Impervious Area

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

**Subcatchment 1S: Existing Conditions**



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Type III 24-hr 25-Year Rainfall=6.40"

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**Summary for Subcatchment 1S: Existing Conditions**

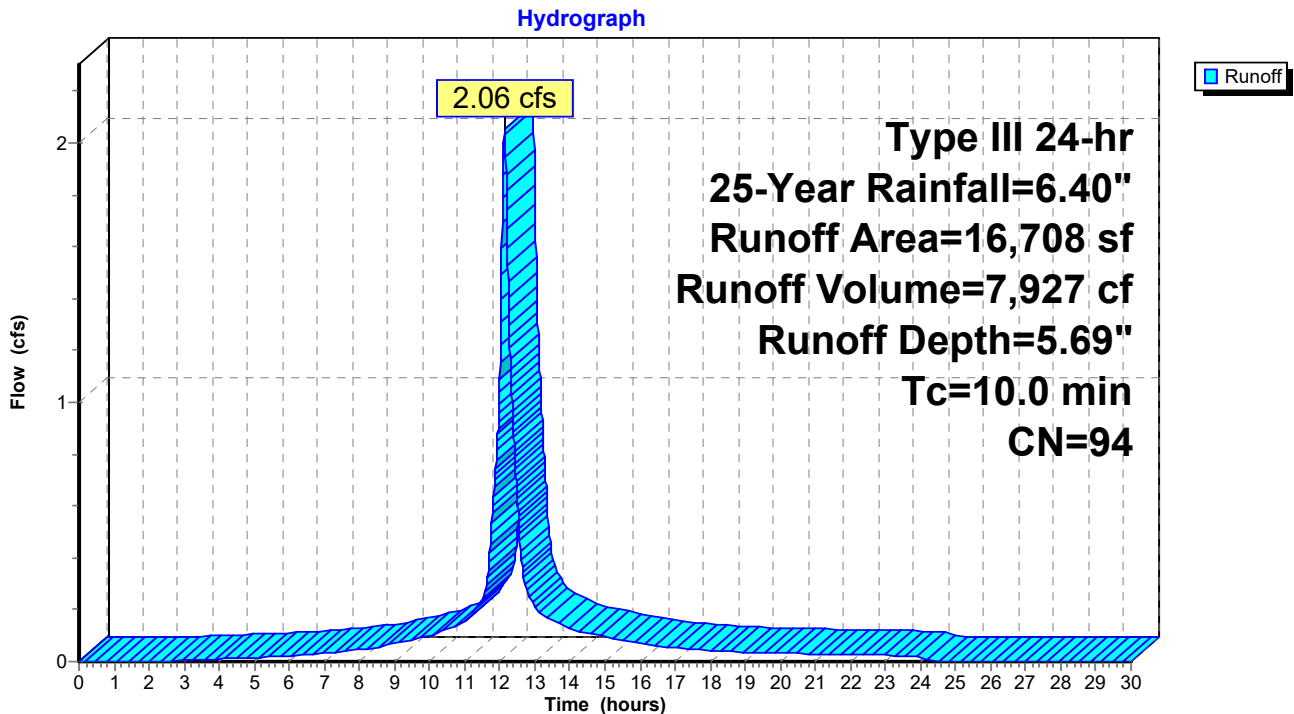
Runoff = 2.06 cfs @ 12.13 hrs, Volume= 7,927 cf, Depth= 5.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=6.40"

	Area (sf)	CN	Description
*	13,586	98	Impervious (Building, Driveway & Lot)
	3,122	76	Woods/grass comb., Fair, HSG C
	0	98	Unconnected pavement, HSG C
	16,708	94	Weighted Average
	3,122		18.69% Pervious Area
	13,586		81.31% Impervious Area

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

**Subcatchment 1S: Existing Conditions**



**176 Virginia Road 22.3.29**

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176 Virginia Road  
Type III 24-hr 100-Year Rainfall=9.00"

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**Summary for Subcatchment 1S: Existing Conditions**

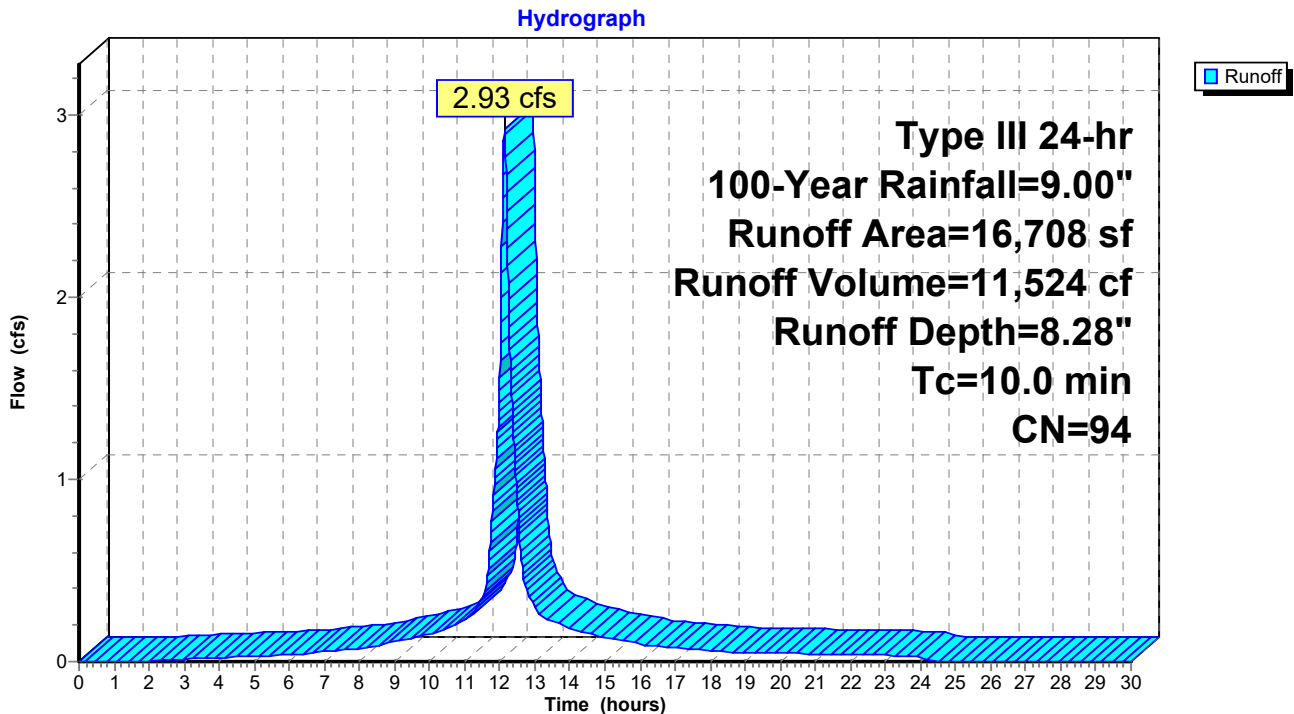
Runoff = 2.93 cfs @ 12.13 hrs, Volume= 11,524 cf, Depth= 8.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-Year Rainfall=9.00"

	Area (sf)	CN	Description
*	13,586	98	Impervious (Building, Driveway & Lot)
	3,122	76	Woods/grass comb., Fair, HSG C
	0	98	Unconnected pavement, HSG C
	16,708	94	Weighted Average
	3,122		18.69% Pervious Area
	13,586		81.31% Impervious Area

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

**Subcatchment 1S: Existing Conditions**



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Type III 24-hr WQ 90% Rainfall=1.50"

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## Summary for Subcatchment 1S: Existing Conditions

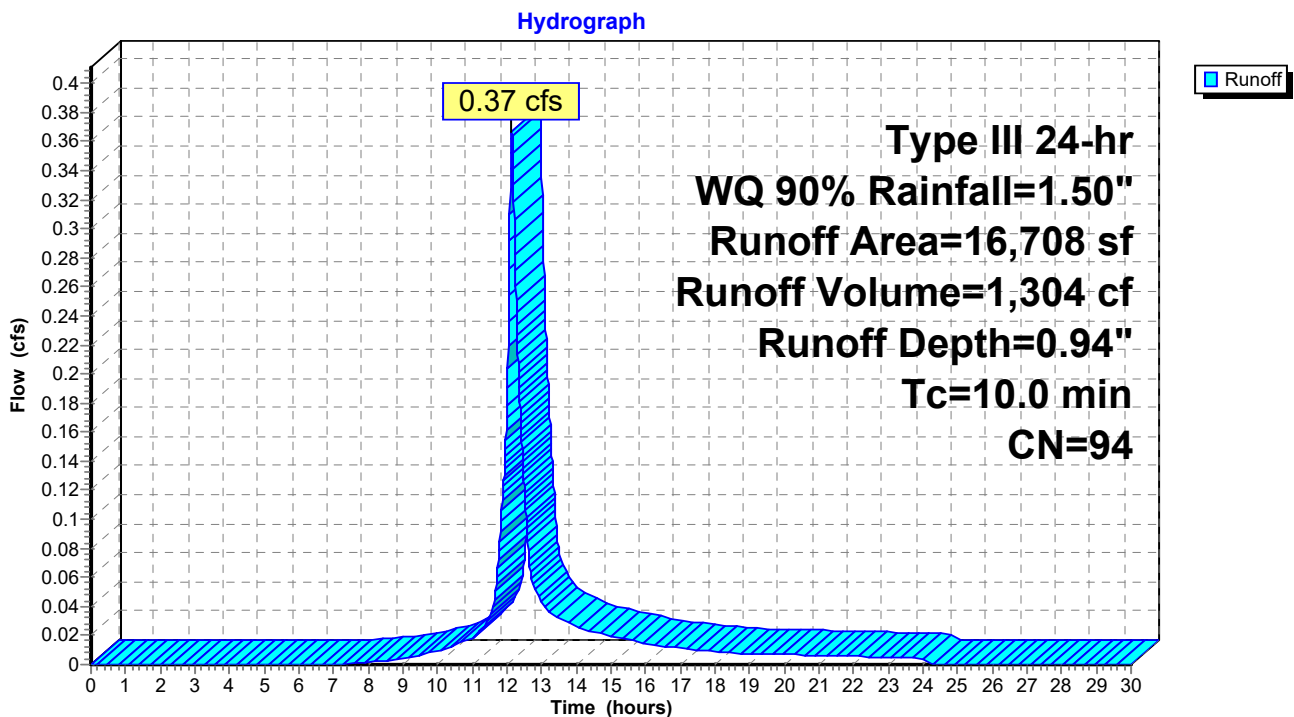
Runoff = 0.37 cfs @ 12.14 hrs, Volume= 1,304 cf, Depth= 0.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr WQ 90% Rainfall=1.50"

	Area (sf)	CN	Description
*	13,586	98	Impervious (Building, Driveway & Lot)
	3,122	76	Woods/grass comb., Fair, HSG C
	0	98	Unconnected pavement, HSG C
	16,708	94	Weighted Average
	3,122		18.69% Pervious Area
	13,586		81.31% Impervious Area

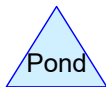
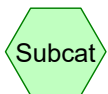
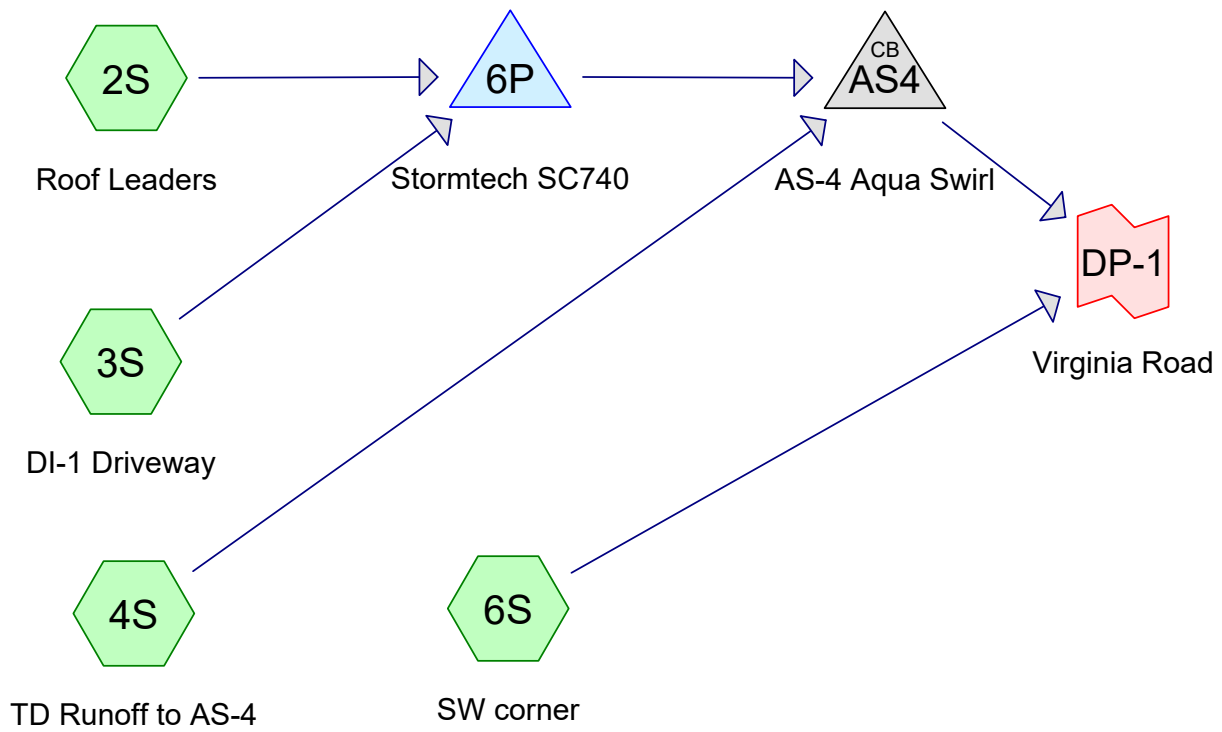
Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Minimum

## Subcatchment 1S: Existing Conditions

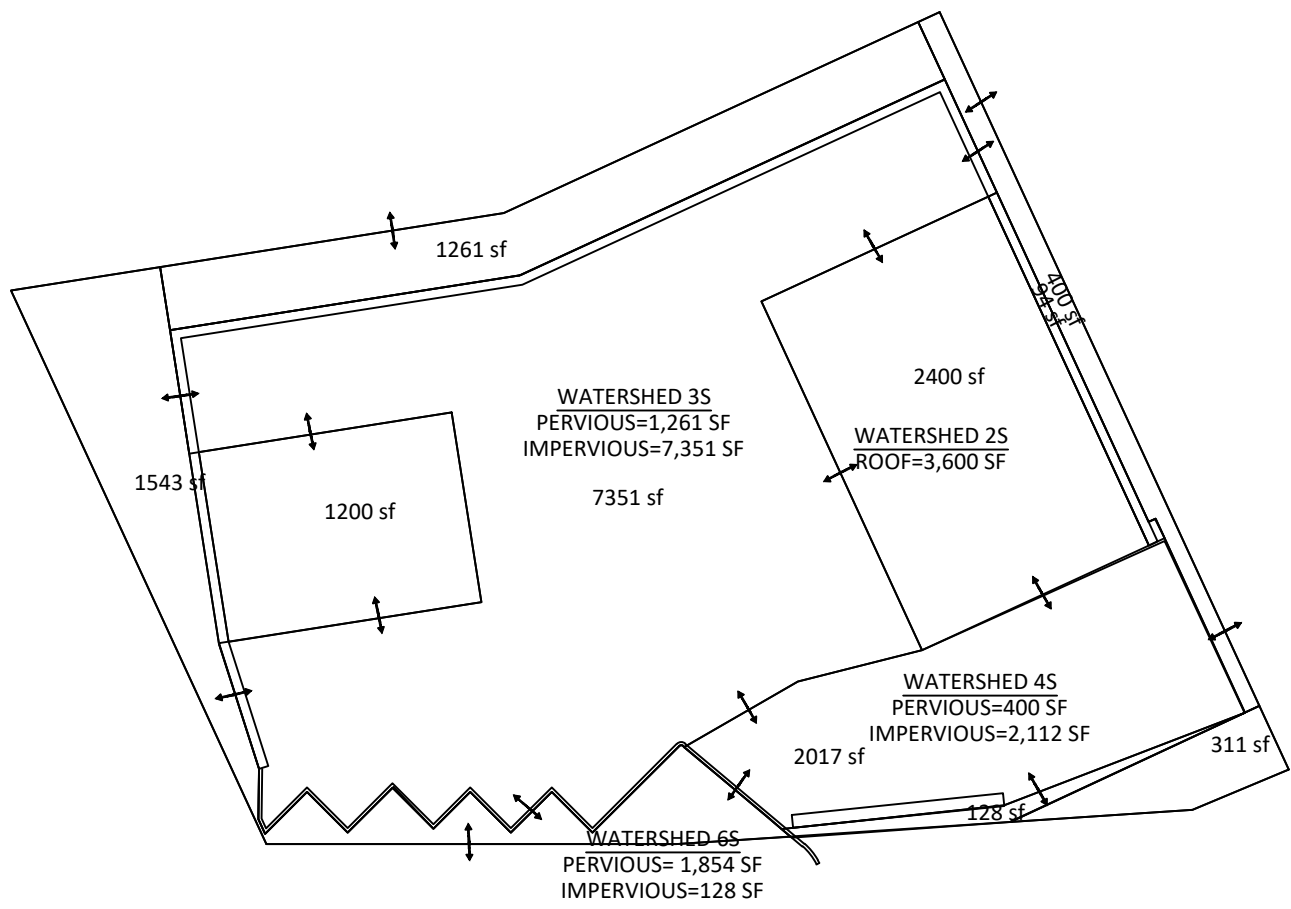


## ***APPENDIX B***

### *Stormwater Routings Post Development Calculations*







## POST DEVELOPMENT

SCALE: 1" = 30'

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**Area Listing (selected nodes)**

Area (sq-ft)	CN	Description (subcatchment-numbers)
1,261	76	Area behind wall (3S)
400	76	Behind Bldg Bay 3-6 (4S)
7,351	98	Driveway (3S)
2,112	98	Dvwy to Trench Drain (4S)
128	98	Impervious (6S)
311	76	Landscape area (6S)
1,543	76	Northerly landscape area (6S)
3,600	98	ROOF LEADERS (2S)

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**Soil Listing (selected nodes)**

Area (sq-ft)	Soil Group	Subcatchment Numbers
0	HSG A	
0	HSG B	
0	HSG C	
0	HSG D	
16,706	Other	2S, 3S, 4S, 6S

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Type III 24-hr 2-Year Rainfall=3.40"

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## Summary for Subcatchment 2S: Roof Leaders

Runoff = 0.24 cfs @ 12.13 hrs, Volume= 950 cf, Depth= 3.17"

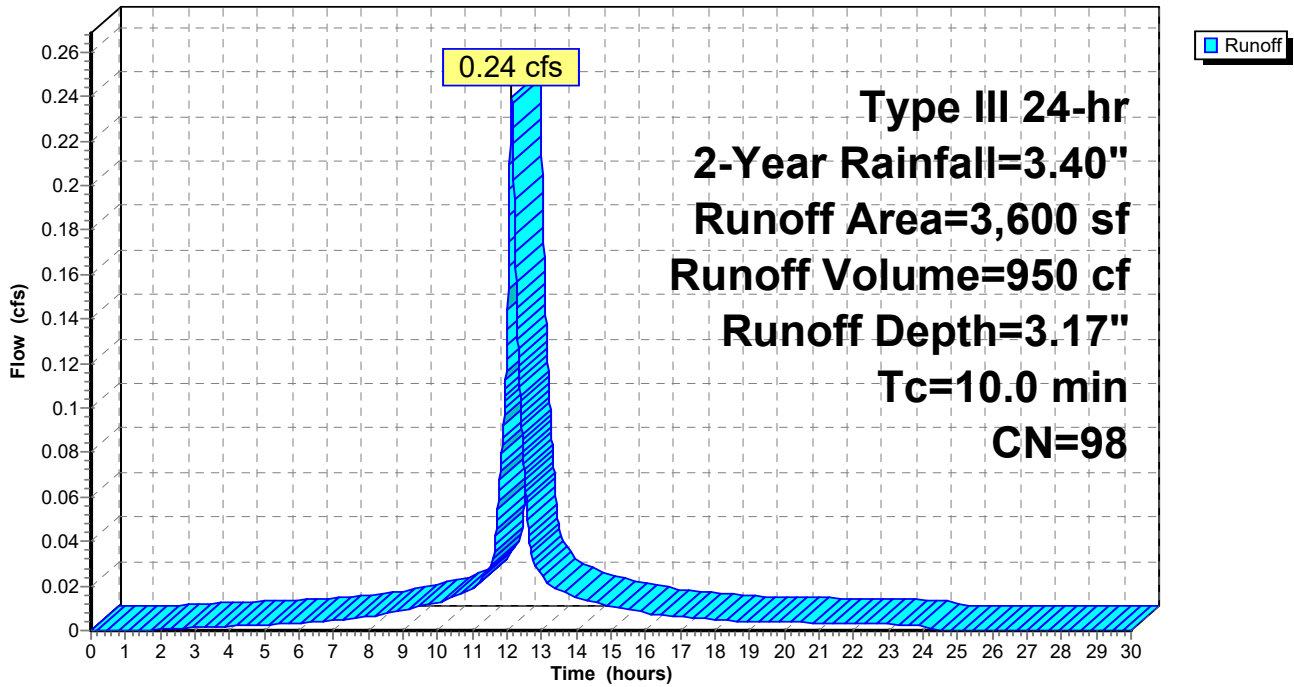
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.40"

Area (sf)	CN	Description
* 3,600	98	ROOF LEADERS
3,600		100.00% Impervious Area

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

## Subcatchment 2S: Roof Leaders

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.40"

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**Summary for Subcatchment 3S: DI-1 Driveway**

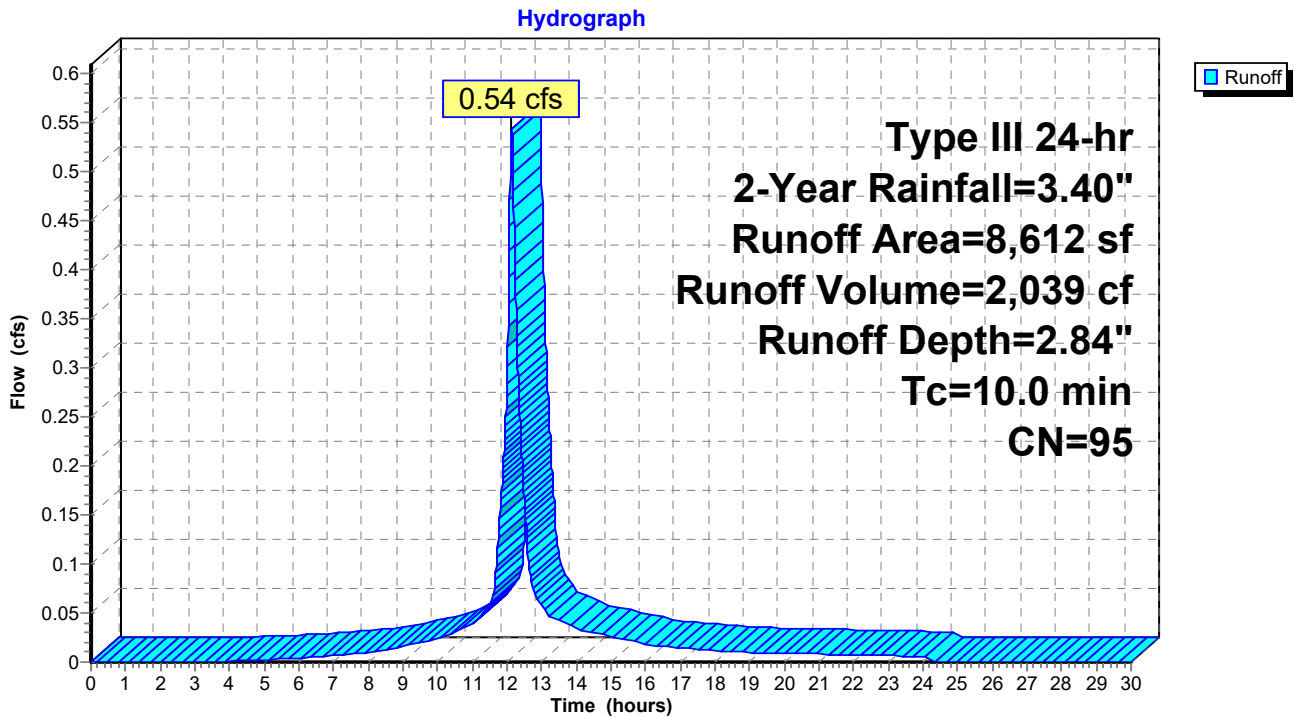
Runoff = 0.54 cfs @ 12.13 hrs, Volume= 2,039 cf, Depth= 2.84"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.40"

	Area (sf)	CN	Description
*	7,351	98	Driveway
*	1,261	76	Area behind wall
	8,612	95	Weighted Average
	1,261		14.64% Pervious Area
	7,351		85.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Overland Flow to Inlet

**Subcatchment 3S: DI-1 Driveway**



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Type III 24-hr 2-Year Rainfall=3.40"

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**Summary for Subcatchment 4S: TD Runoff to AS-4**

Runoff = 0.15 cfs @ 12.14 hrs, Volume= 573 cf, Depth= 2.74"

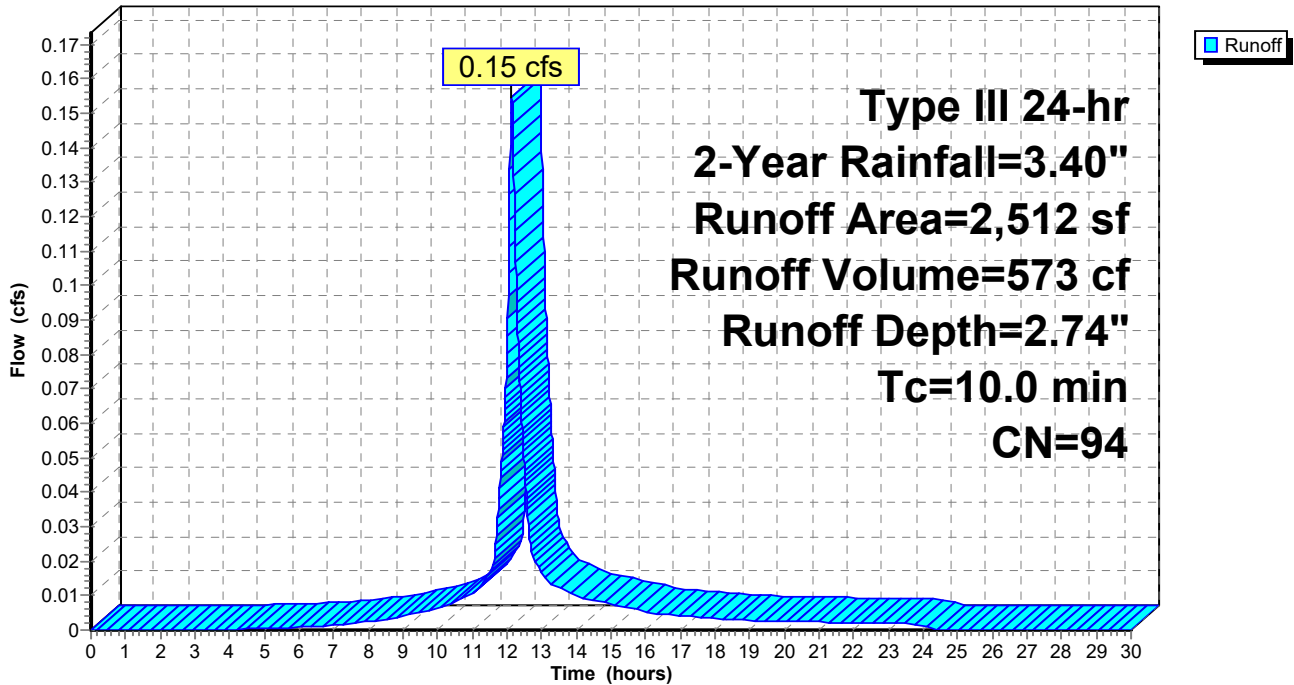
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.40"

	Area (sf)	CN	Description
*	2,112	98	Dvwy to Trench Drain
*	400	76	Behind Bldg Bay 3-6
	2,512	94	Weighted Average
	400		15.92% Pervious Area
	2,112		84.08% Impervious Area

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

**Subcatchment 4S: TD Runoff to AS-4**

Hydrograph



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Type III 24-hr 2-Year Rainfall=3.40"

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**Summary for Subcatchment 6S: SW corner**

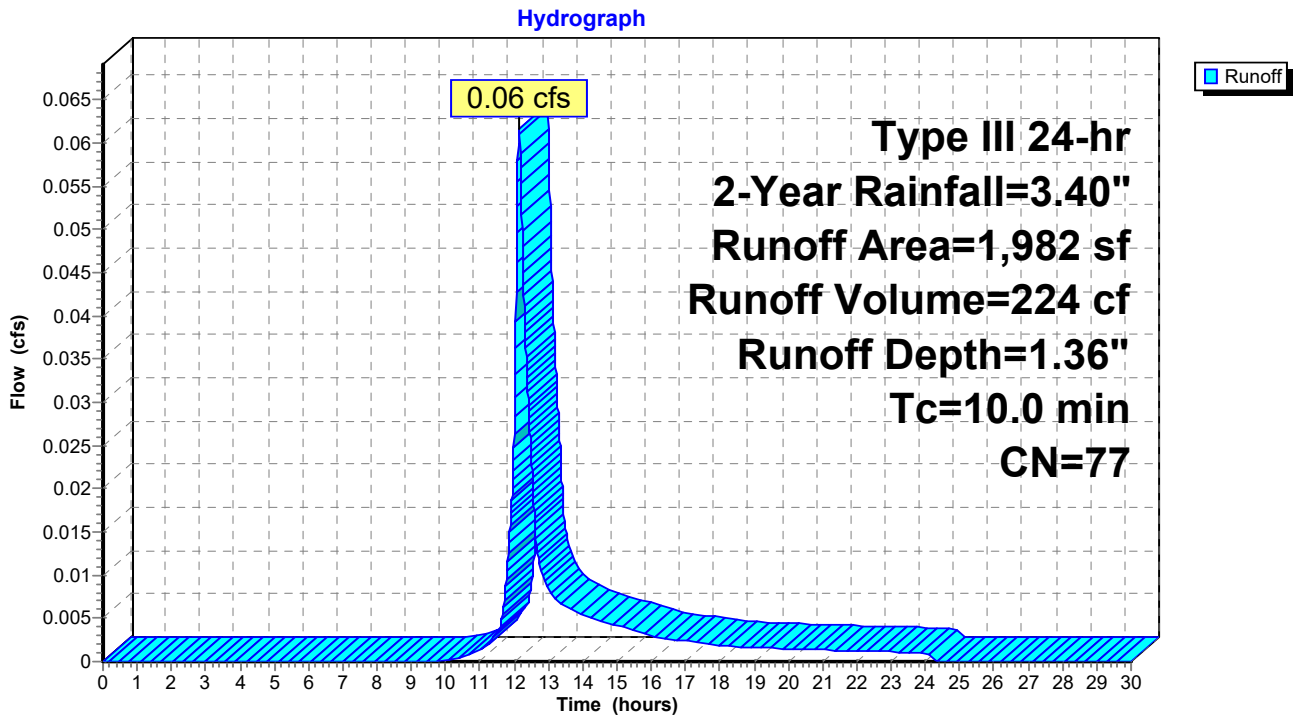
Runoff = 0.06 cfs @ 12.15 hrs, Volume= 224 cf, Depth= 1.36"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 2-Year Rainfall=3.40"

	Area (sf)	CN	Description
*	128	98	Impervious
*	311	76	Landscape area
*	1,543	76	Northerly landscape area
	1,982	77	Weighted Average
	1,854		93.54% Pervious Area
	128		6.46% Impervious Area

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

**Subcatchment 6S: SW corner**



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Type III 24-hr 2-Year Rainfall=3.40"

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**Summary for Pond 6P: Stormtech SC740**

Inflow Area = 12,212 sf, 89.67% Impervious, Inflow Depth = 2.94" for 2-Year event  
Inflow = 0.78 cfs @ 12.13 hrs, Volume= 2,989 cf  
Outflow = 0.73 cfs @ 12.17 hrs, Volume= 2,989 cf, Atten= 7%, Lag= 2.4 min  
Primary = 0.73 cfs @ 12.17 hrs, Volume= 2,989 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Peak Elev= 201.43' @ 12.17 hrs Surf.Area= 461 sf Storage= 176 cf

Plug-Flow detention time= 12.1 min calculated for 2,989 cf (100% of inflow)  
Center-of-Mass det. time= 12.1 min ( 787.3 - 775.2 )

Volume	Invert	Avail.Storage	Storage Description
#1A	200.40'	0 cf	<b>15.29'W x 30.13'L x 3.67'H Field A</b> 1,689 cf Overall - 1,071 cf Embedded = 618 cf x 0.0% Voids
#2A	200.90'	666 cf	<b>StormTrap ST1 SingleTrap 2-0 x 4 Inside #1</b> Inside= 82.7"W x 24.0"H => 11.84 sf x 14.06'L = 166.5 cf Outside= 82.7"W x 32.0"H => 18.39 sf x 14.06'L = 258.6 cf 4 Chambers in 2 Rows 13.79' x 28.13' Core + 0.00' x 0.50' Border = 13.79' x 29.13' System
		666 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	200.90'	<b>8.0" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=0.73 cfs @ 12.17 hrs HW=201.43' (Free Discharge)  
↑1=Orifice/Grate (Orifice Controls 0.73 cfs @ 2.47 fps)



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Type III 24-hr 2-Year Rainfall=3.40"

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**Pond 6P: Stormtech SC740 - Chamber Wizard Field A**

**Chamber Model = StormTrap ST1 SingleTrap 2-0 (StormTrap ST1 SingleTrap® Type VI)**

Inside= 82.7"W x 24.0"H => 11.84 sf x 14.06'L = 166.5 cf

Outside= 82.7"W x 32.0"H => 18.39 sf x 14.06'L = 258.6 cf

82.7" Wide + 6.0" Spacing = 88.7" C-C Row Spacing

2 Chambers/Row x 14.06' Long = 28.13' Row Length +6.0" Border x 2 +6.0" End Stone x 2 = 30.13' Base Length

2 Rows x 82.7" Wide + 6.0" Spacing x 1 + 6.0" Side Stone x 2 = 15.29' Base Width

6.0" Base + 32.0" Chamber Height + 6.0" Cover = 3.67' Field Height

4 Chambers x 166.5 cf = 666.0 cf Chamber Storage

4 Chambers x 258.6 cf + 36.8 cf Border = 1,071.2 cf Displacement

1,689.1 cf Field - 1,071.2 cf Chambers = 617.9 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 666.0 cf = 0.015 af

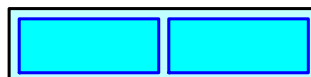
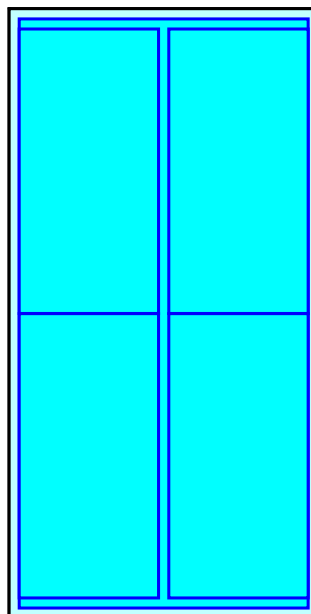
Overall Storage Efficiency = 39.4%

Overall System Size = 30.13' x 15.29' x 3.67'

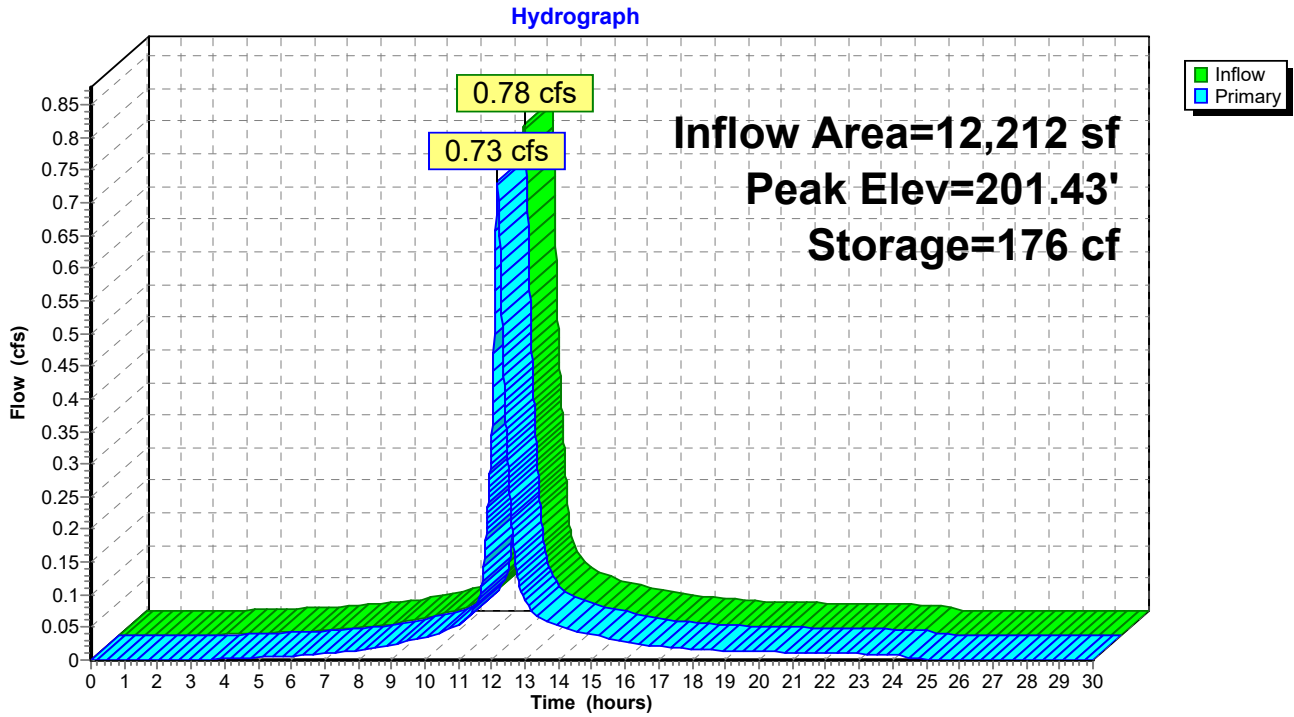
4 Chambers (plus border)

62.6 cy Field

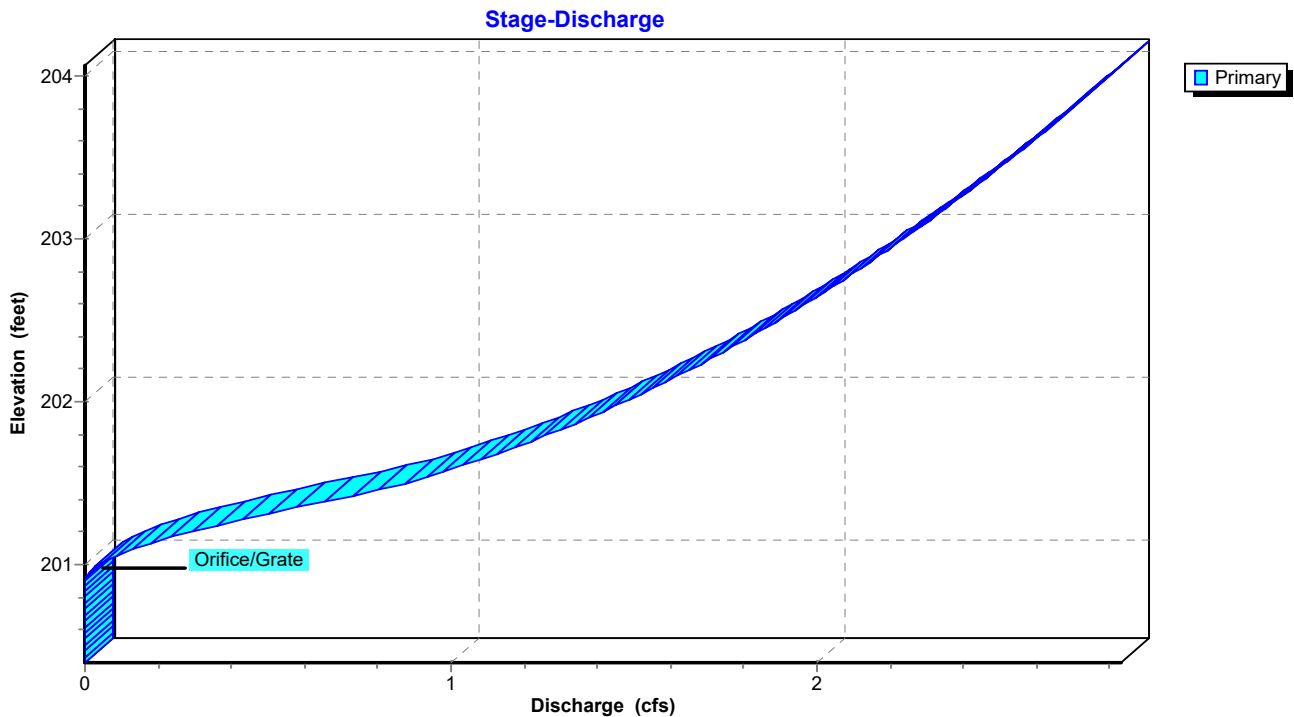
22.9 cy Stone



### Pond 6P: Stormtech SC740



### Pond 6P: Stormtech SC740



**Summary for Pond AS4: AS-4 Aqua Swirl**

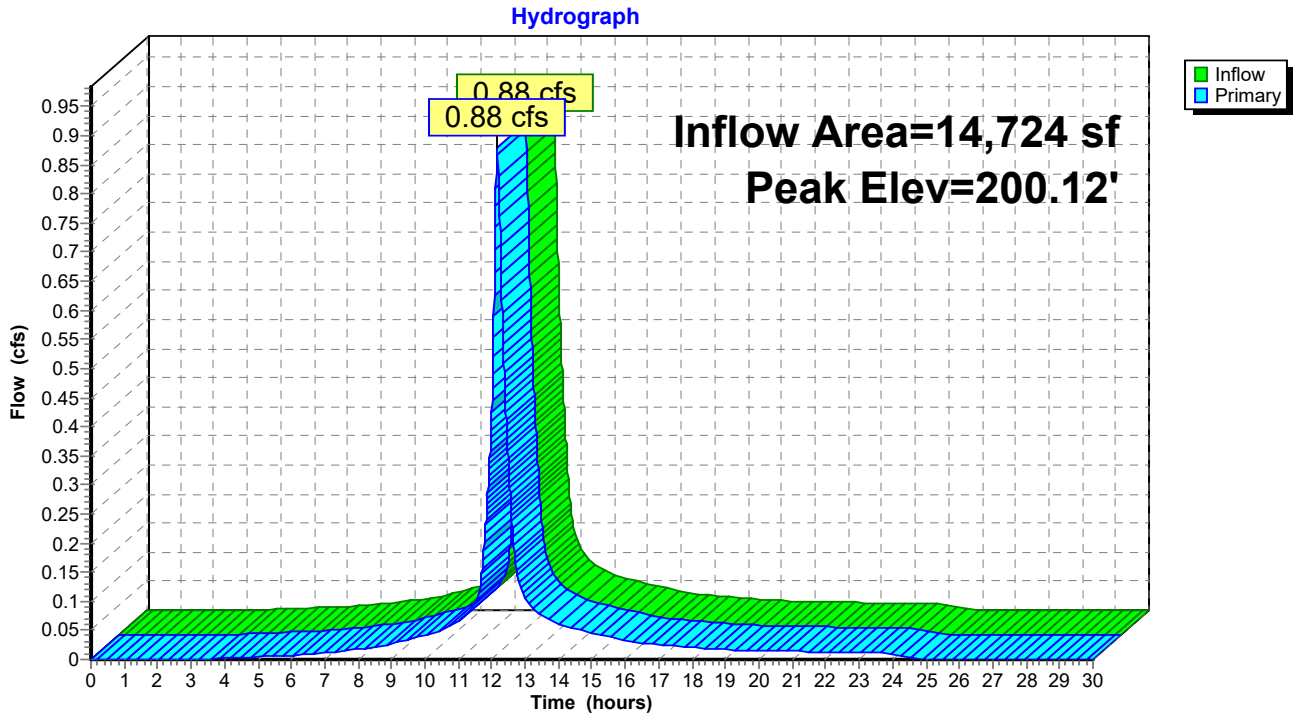
Inflow Area = 14,724 sf, 88.72% Impervious, Inflow Depth = 2.90" for 2-Year event  
 Inflow = 0.88 cfs @ 12.17 hrs, Volume= 3,562 cf  
 Outflow = 0.88 cfs @ 12.17 hrs, Volume= 3,562 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.88 cfs @ 12.17 hrs, Volume= 3,562 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 200.12' @ 12.17 hrs

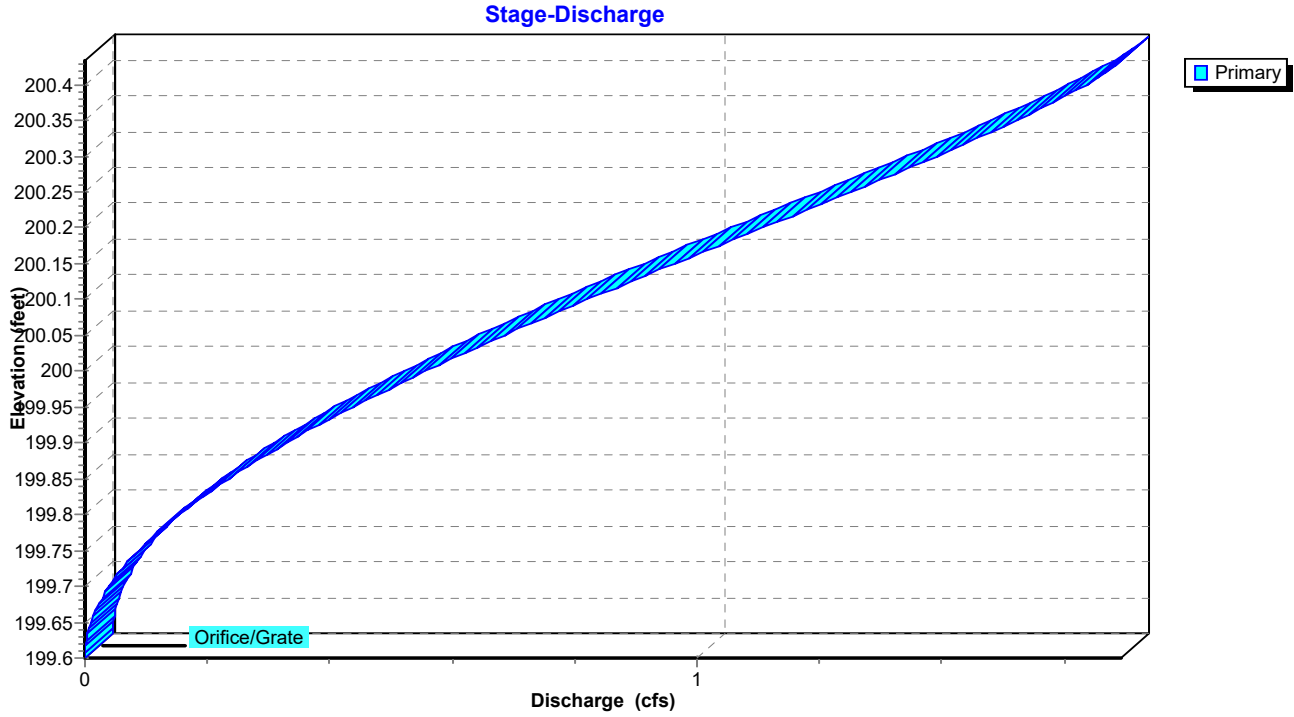
Device	Routing	Invert	Outlet Devices
#1	Primary	199.60'	10.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.88 cfs @ 12.17 hrs HW=200.12' (Free Discharge)  
 ←1=Orifice/Grate (Orifice Controls 0.88 cfs @ 2.45 fps)

**Pond AS4: AS-4 Aqua Swirl**



### Pond AS4: AS-4 Aqua Swirl



**176 Virginia Road 22.3.29**

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176 Virginia Road

Type III 24-hr 2-Year Rainfall=3.40"

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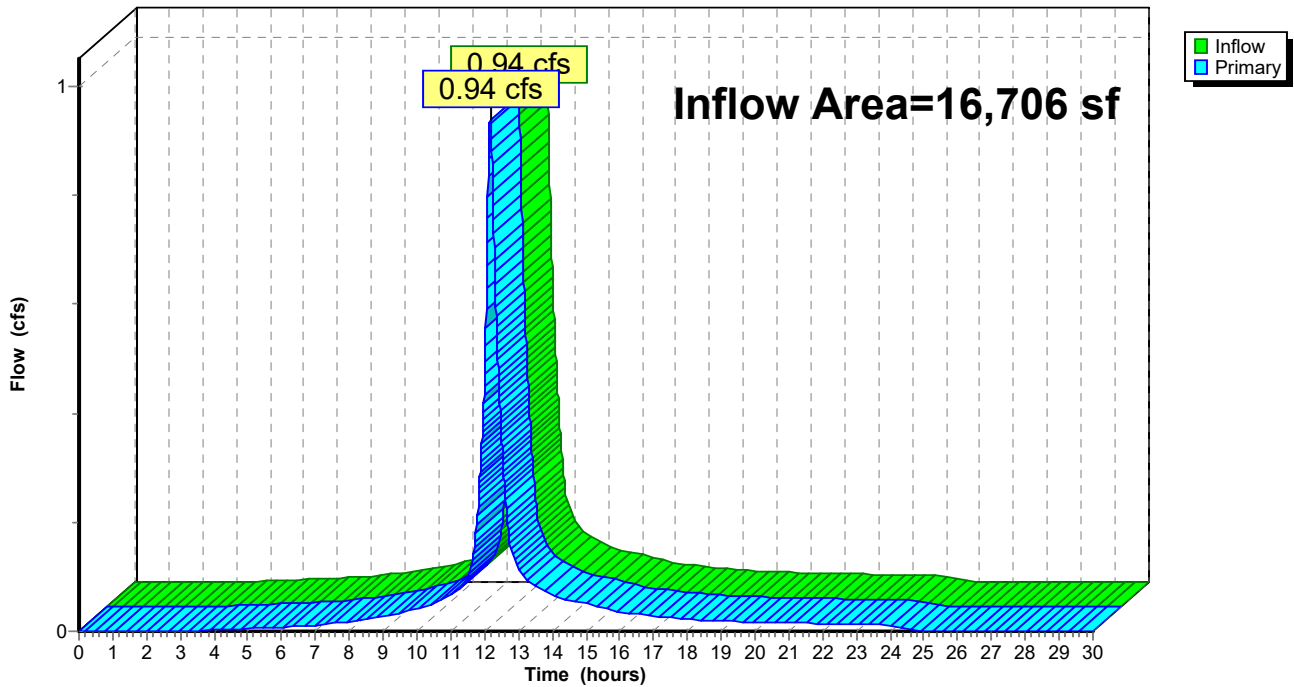
**Summary for Link DP-1: Virginia Road**

Inflow Area = 16,706 sf, 78.96% Impervious, Inflow Depth = 2.72" for 2-Year event  
Inflow = 0.94 cfs @ 12.17 hrs, Volume= 3,786 cf  
Primary = 0.94 cfs @ 12.17 hrs, Volume= 3,786 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

**Link DP-1: Virginia Road**

Hydrograph



# 176 Virginia Road 22.3.29

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176 Virginia Road  
Type III 24-hr 10-Year Rainfall=5.10"

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## Summary for Subcatchment 2S: Roof Leaders

Runoff = 0.36 cfs @ 12.13 hrs, Volume= 1,459 cf, Depth= 4.86"

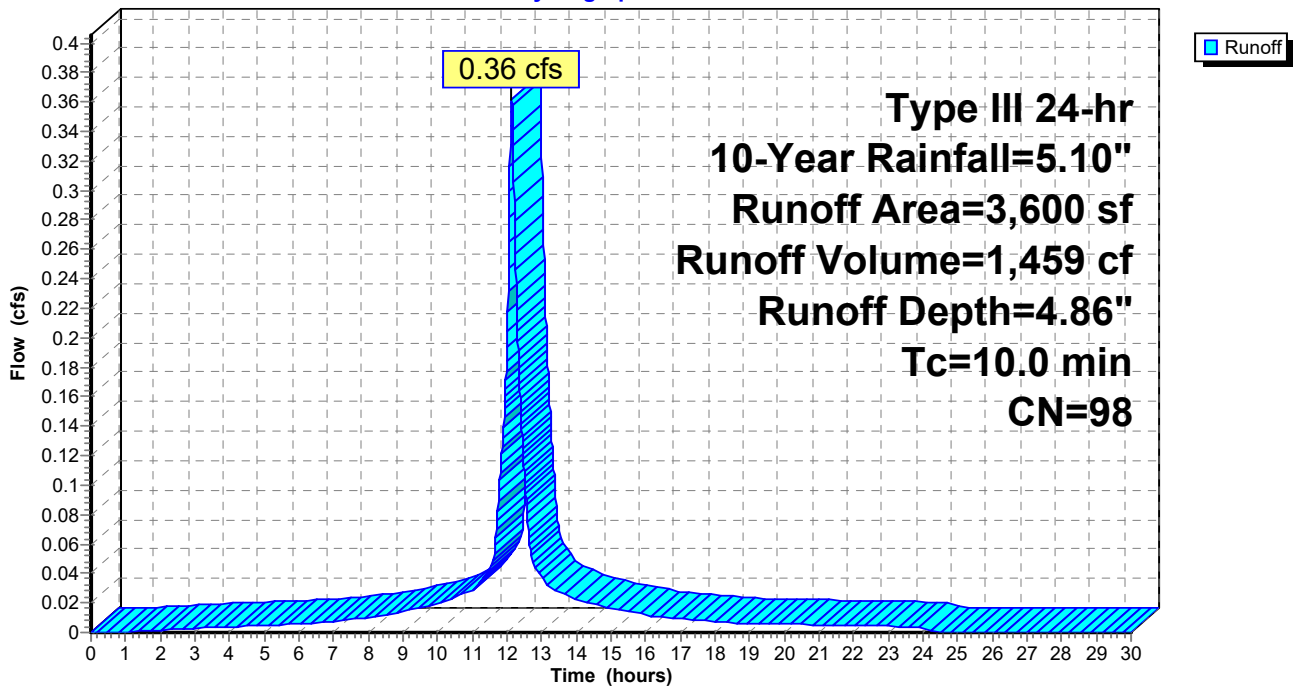
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=5.10"

Area (sf)	CN	Description
* 3,600	98	ROOF LEADERS
3,600		100.00% Impervious Area

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

## Subcatchment 2S: Roof Leaders

Hydrograph



**176 Virginia Road 22.3.29**

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176 Virginia Road  
Type III 24-hr 10-Year Rainfall=5.10"

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**Summary for Subcatchment 3S: DI-1 Driveway**

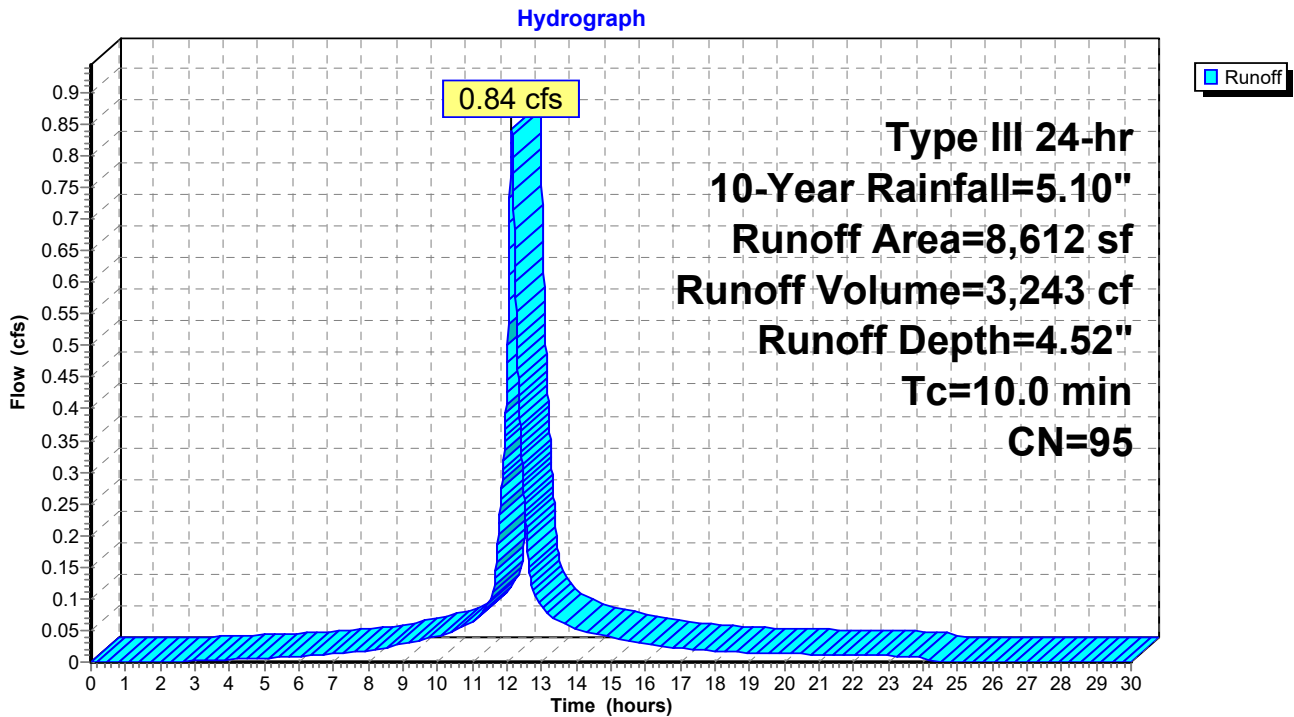
Runoff = 0.84 cfs @ 12.13 hrs, Volume= 3,243 cf, Depth= 4.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=5.10"

	Area (sf)	CN	Description
*	7,351	98	Driveway
*	1,261	76	Area behind wall
	8,612	95	Weighted Average
	1,261		14.64% Pervious Area
	7,351		85.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Overland Flow to Inlet

**Subcatchment 3S: DI-1 Driveway**



**176 Virginia Road 22.3.29**

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176 Virginia Road  
Type III 24-hr 10-Year Rainfall=5.10"

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**Summary for Subcatchment 4S: TD Runoff to AS-4**

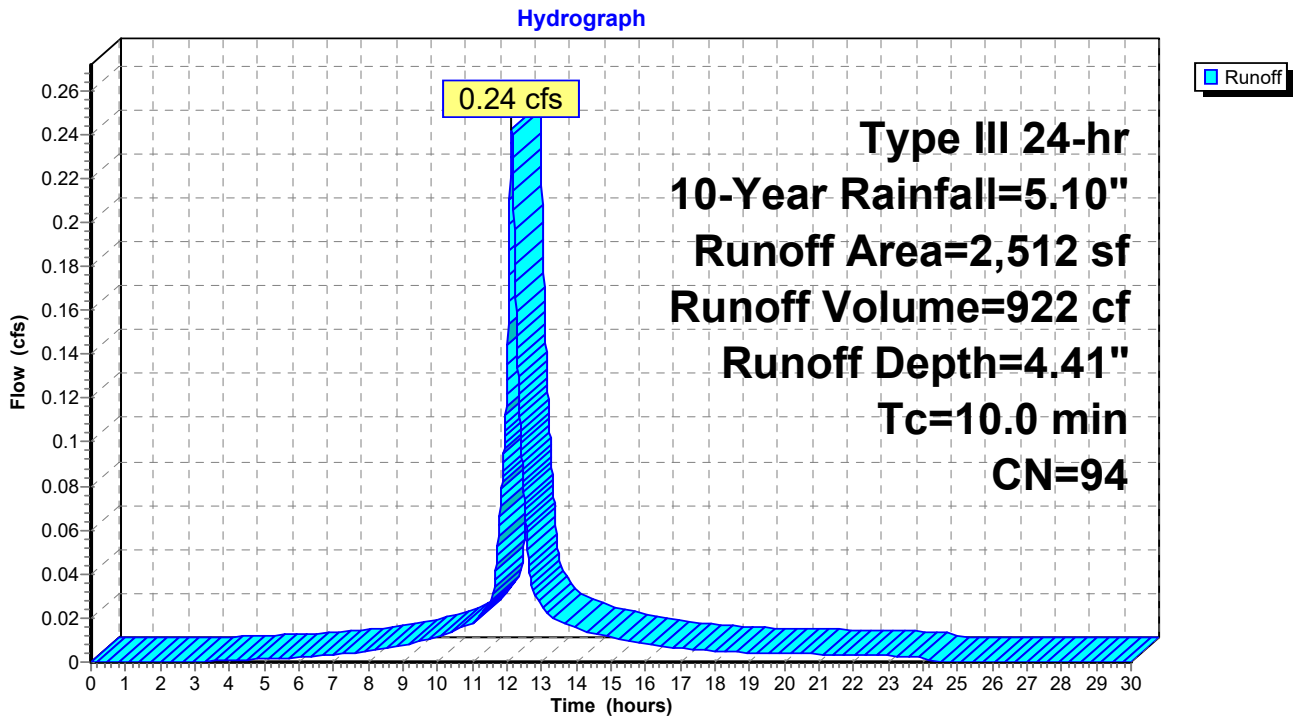
Runoff = 0.24 cfs @ 12.13 hrs, Volume= 922 cf, Depth= 4.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=5.10"

	Area (sf)	CN	Description
*	2,112	98	Dvwy to Trench Drain
*	400	76	Behind Bldg Bay 3-6
	2,512	94	Weighted Average
	400		15.92% Pervious Area
	2,112		84.08% Impervious Area

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

**Subcatchment 4S: TD Runoff to AS-4**





**176 Virginia Road 22.3.29**

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176 Virginia Road  
Type III 24-hr 10-Year Rainfall=5.10"

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**Summary for Subcatchment 6S: SW corner**

Runoff = 0.13 cfs @ 12.14 hrs, Volume= 447 cf, Depth= 2.71"

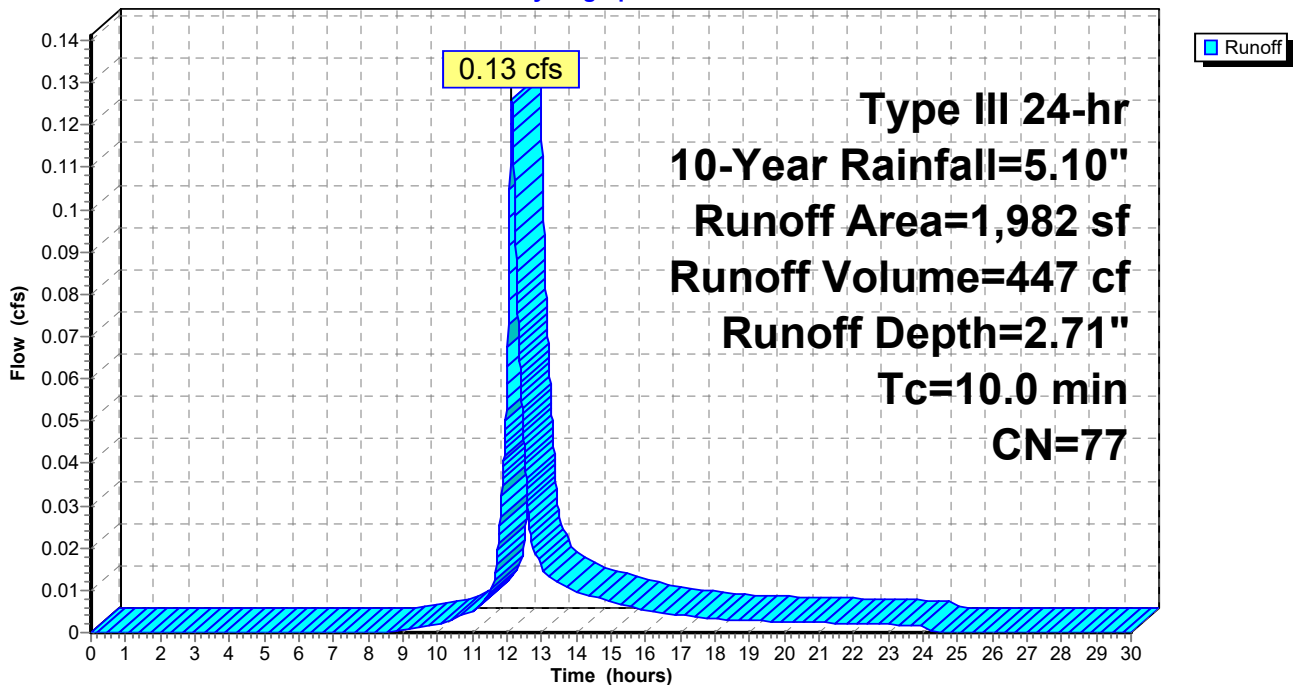
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 10-Year Rainfall=5.10"

	Area (sf)	CN	Description
*	128	98	Impervious
*	311	76	Landscape area
*	1,543	76	Northerly landscape area
	1,982	77	Weighted Average
	1,854		93.54% Pervious Area
	128		6.46% Impervious Area

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

**Subcatchment 6S: SW corner**

Hydrograph



**176 Virginia Road 22.3.29**

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176 Virginia Road  
Type III 24-hr 10-Year Rainfall=5.10"

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**Summary for Pond 6P: Stormtech SC740**

Inflow Area = 12,212 sf, 89.67% Impervious, Inflow Depth = 4.62" for 10-Year event  
Inflow = 1.20 cfs @ 12.13 hrs, Volume= 4,702 cf  
Outflow = 1.09 cfs @ 12.18 hrs, Volume= 4,701 cf, Atten= 10%, Lag= 2.9 min  
Primary = 1.09 cfs @ 12.18 hrs, Volume= 4,701 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Peak Elev= 201.65' @ 12.18 hrs Surf.Area= 461 sf Storage= 251 cf

Plug-Flow detention time= 10.1 min calculated for 4,701 cf (100% of inflow)  
Center-of-Mass det. time= 10.0 min ( 775.2 - 765.2 )

Volume	Invert	Avail.Storage	Storage Description
#1A	200.40'	0 cf	<b>15.29'W x 30.13'L x 3.67'H Field A</b> 1,689 cf Overall - 1,071 cf Embedded = 618 cf x 0.0% Voids
#2A	200.90'	666 cf	<b>StormTrap ST1 SingleTrap 2-0 x 4 Inside #1</b> Inside= 82.7"W x 24.0"H => 11.84 sf x 14.06'L = 166.5 cf Outside= 82.7"W x 32.0"H => 18.39 sf x 14.06'L = 258.6 cf 4 Chambers in 2 Rows 13.79' x 28.13' Core + 0.00' x 0.50' Border = 13.79' x 29.13' System
		666 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	200.90'	<b>8.0" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=1.09 cfs @ 12.18 hrs HW=201.65' (Free Discharge)  
↑1=Orifice/Grate (Orifice Controls 1.09 cfs @ 3.12 fps)

**176 Virginia Road 22.3.29**

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176 Virginia Road  
Type III 24-hr 10-Year Rainfall=5.10"

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**Pond 6P: Stormtech SC740 - Chamber Wizard Field A**

**Chamber Model = StormTrap ST1 SingleTrap 2-0 (StormTrap ST1 SingleTrap® Type VI)**

Inside= 82.7"W x 24.0"H => 11.84 sf x 14.06'L = 166.5 cf

Outside= 82.7"W x 32.0"H => 18.39 sf x 14.06'L = 258.6 cf

82.7" Wide + 6.0" Spacing = 88.7" C-C Row Spacing

2 Chambers/Row x 14.06' Long = 28.13' Row Length +6.0" Border x 2 +6.0" End Stone x 2 = 30.13' Base Length

2 Rows x 82.7" Wide + 6.0" Spacing x 1 + 6.0" Side Stone x 2 = 15.29' Base Width

6.0" Base + 32.0" Chamber Height + 6.0" Cover = 3.67' Field Height

4 Chambers x 166.5 cf = 666.0 cf Chamber Storage

4 Chambers x 258.6 cf + 36.8 cf Border = 1,071.2 cf Displacement

1,689.1 cf Field - 1,071.2 cf Chambers = 617.9 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 666.0 cf = 0.015 af

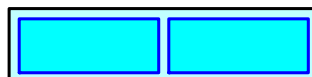
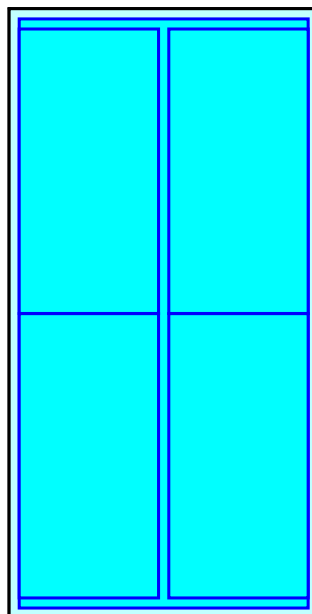
Overall Storage Efficiency = 39.4%

Overall System Size = 30.13' x 15.29' x 3.67'

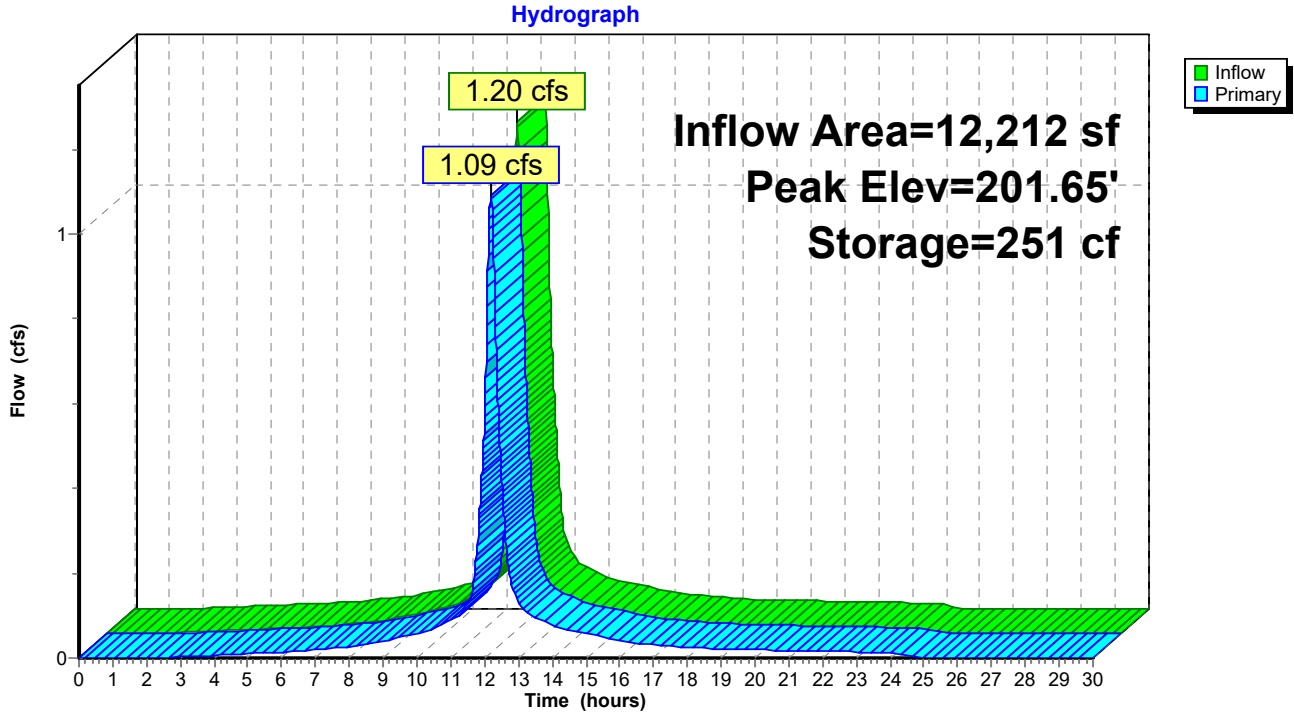
4 Chambers (plus border)

62.6 cy Field

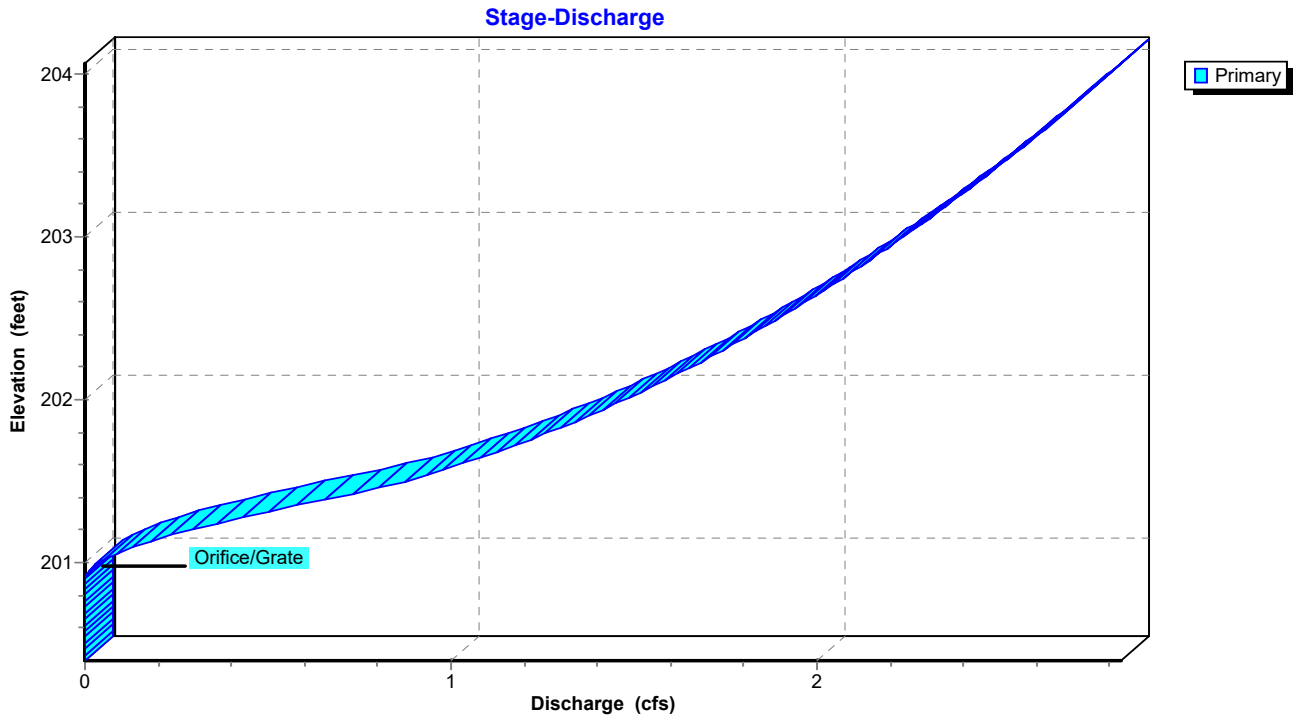
22.9 cy Stone



### Pond 6P: Stormtech SC740



### Pond 6P: Stormtech SC740



**Summary for Pond AS4: AS-4 Aqua Swirl**

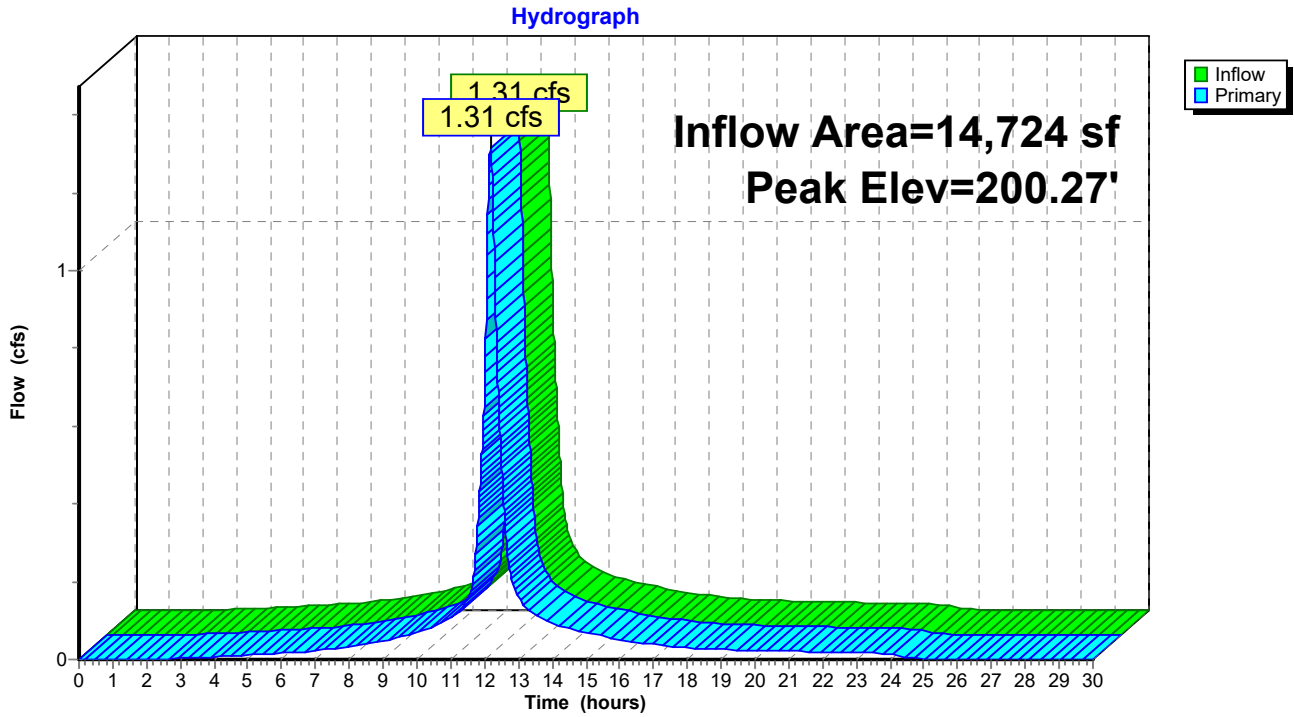
Inflow Area = 14,724 sf, 88.72% Impervious, Inflow Depth = 4.58" for 10-Year event  
 Inflow = 1.31 cfs @ 12.17 hrs, Volume= 5,624 cf  
 Outflow = 1.31 cfs @ 12.17 hrs, Volume= 5,624 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 1.31 cfs @ 12.17 hrs, Volume= 5,624 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 200.27' @ 12.17 hrs

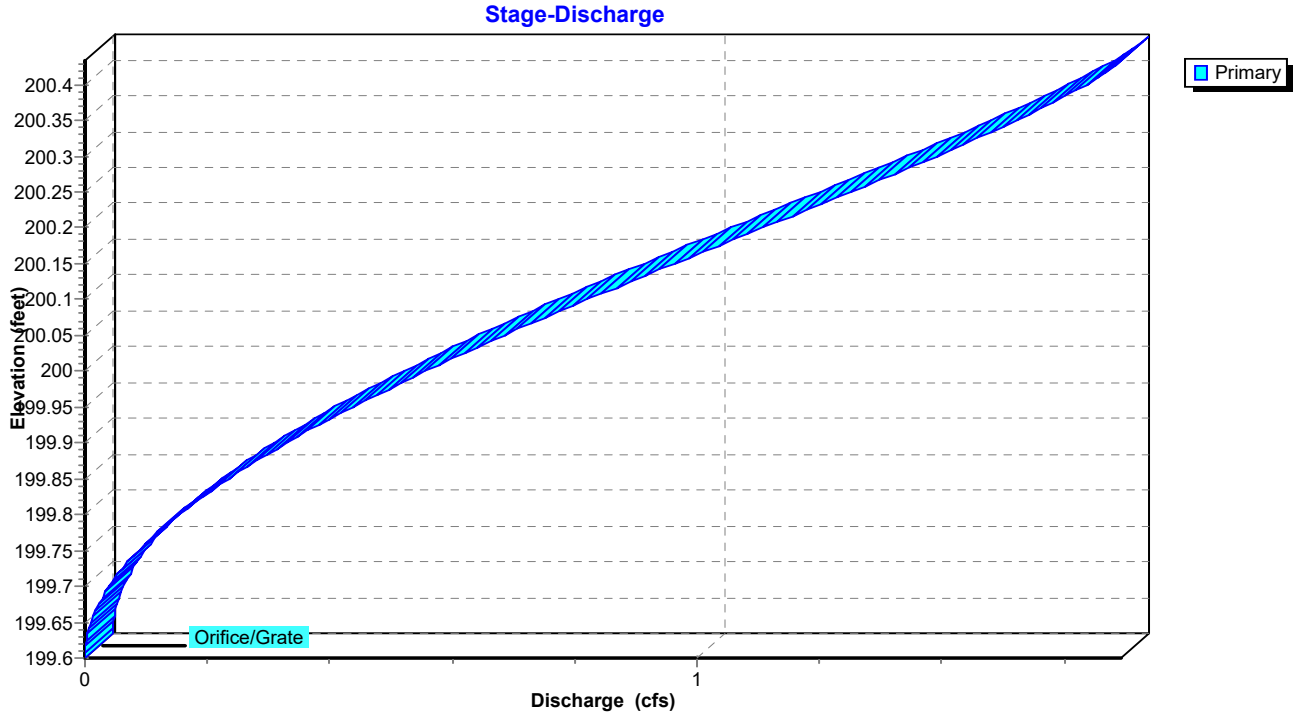
Device	Routing	Invert	Outlet Devices
#1	Primary	199.60'	10.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=1.31 cfs @ 12.17 hrs HW=200.27' (Free Discharge)  
 ←1=Orifice/Grate (Orifice Controls 1.31 cfs @ 2.79 fps)

**Pond AS4: AS-4 Aqua Swirl**



### Pond AS4: AS-4 Aqua Swirl



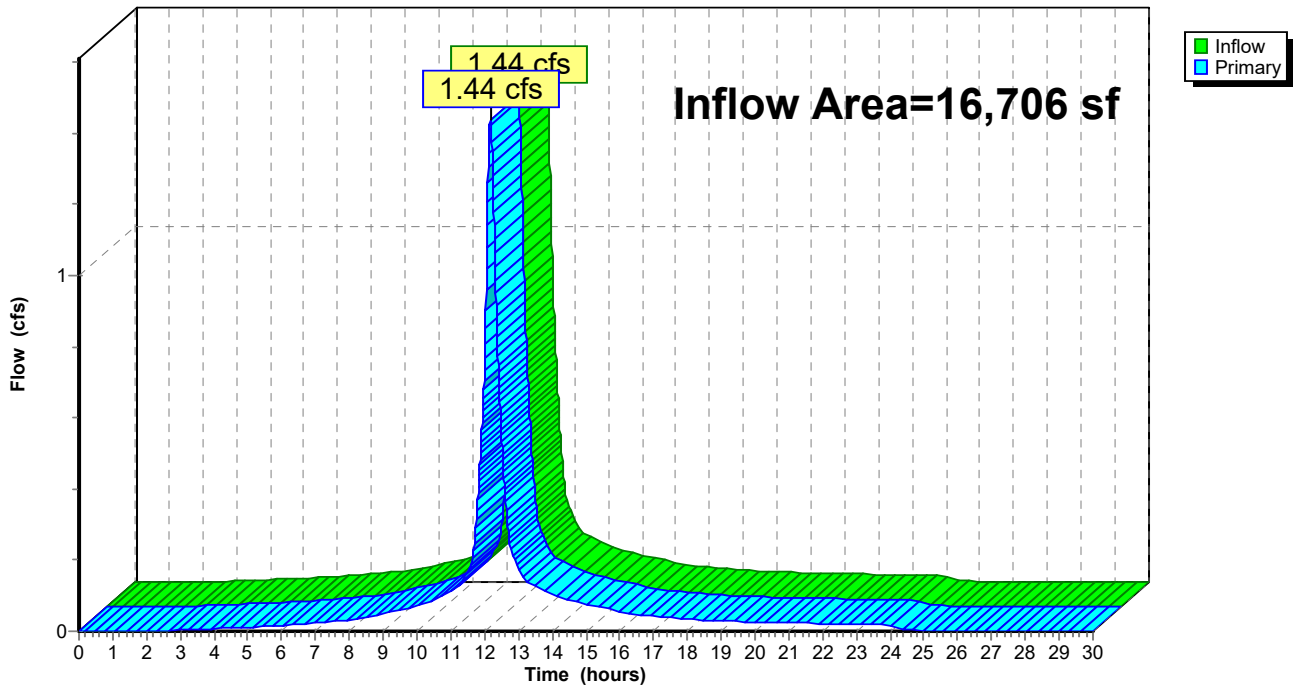
### Summary for Link DP-1: Virginia Road

Inflow Area = 16,706 sf, 78.96% Impervious, Inflow Depth = 4.36" for 10-Year event  
Inflow = 1.44 cfs @ 12.17 hrs, Volume= 6,071 cf  
Primary = 1.44 cfs @ 12.17 hrs, Volume= 6,071 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

### Link DP-1: Virginia Road

Hydrograph



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176 Virginia Road

Type III 24-hr 25-Year Rainfall=6.40"

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**Summary for Subcatchment 2S: Roof Leaders**

Runoff = 0.46 cfs @ 12.13 hrs, Volume= 1,848 cf, Depth= 6.16"

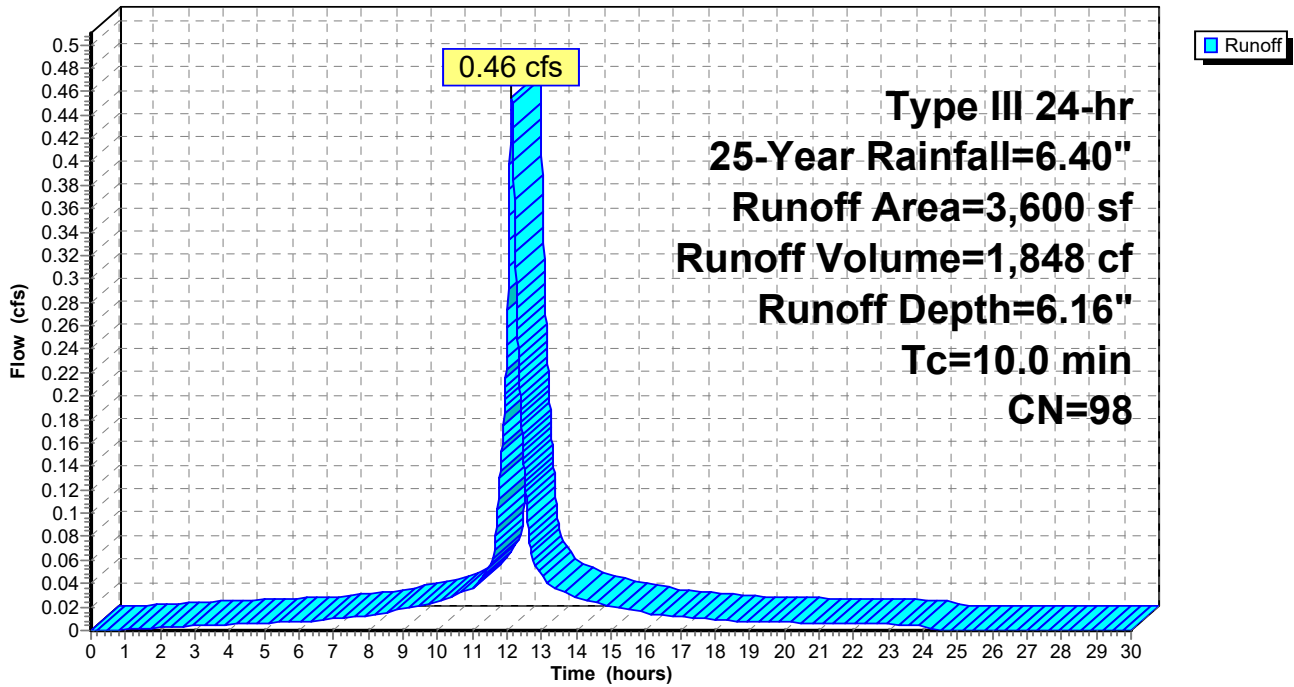
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=6.40"

Area (sf)	CN	Description
* 3,600	98	ROOF LEADERS
3,600		100.00% Impervious Area

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

**Subcatchment 2S: Roof Leaders**

Hydrograph





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176 Virginia Road

Type III 24-hr 25-Year Rainfall=6.40"

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**Summary for Subcatchment 3S: DI-1 Driveway**

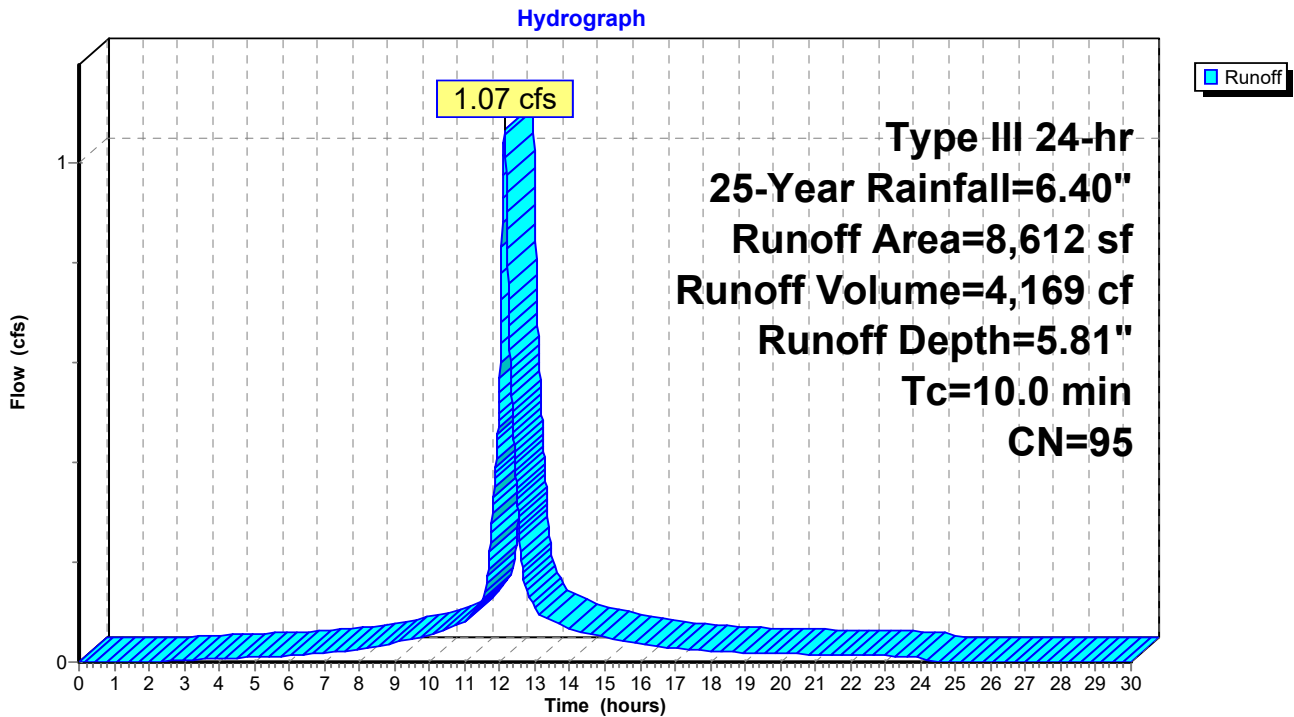
Runoff = 1.07 cfs @ 12.13 hrs, Volume= 4,169 cf, Depth= 5.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=6.40"

	Area (sf)	CN	Description
*	7,351	98	Driveway
*	1,261	76	Area behind wall
	8,612	95	Weighted Average
	1,261		14.64% Pervious Area
	7,351		85.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Overland Flow to Inlet

**Subcatchment 3S: DI-1 Driveway**



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176 Virginia Road  
Type III 24-hr 25-Year Rainfall=6.40"

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**Summary for Subcatchment 4S: TD Runoff to AS-4**

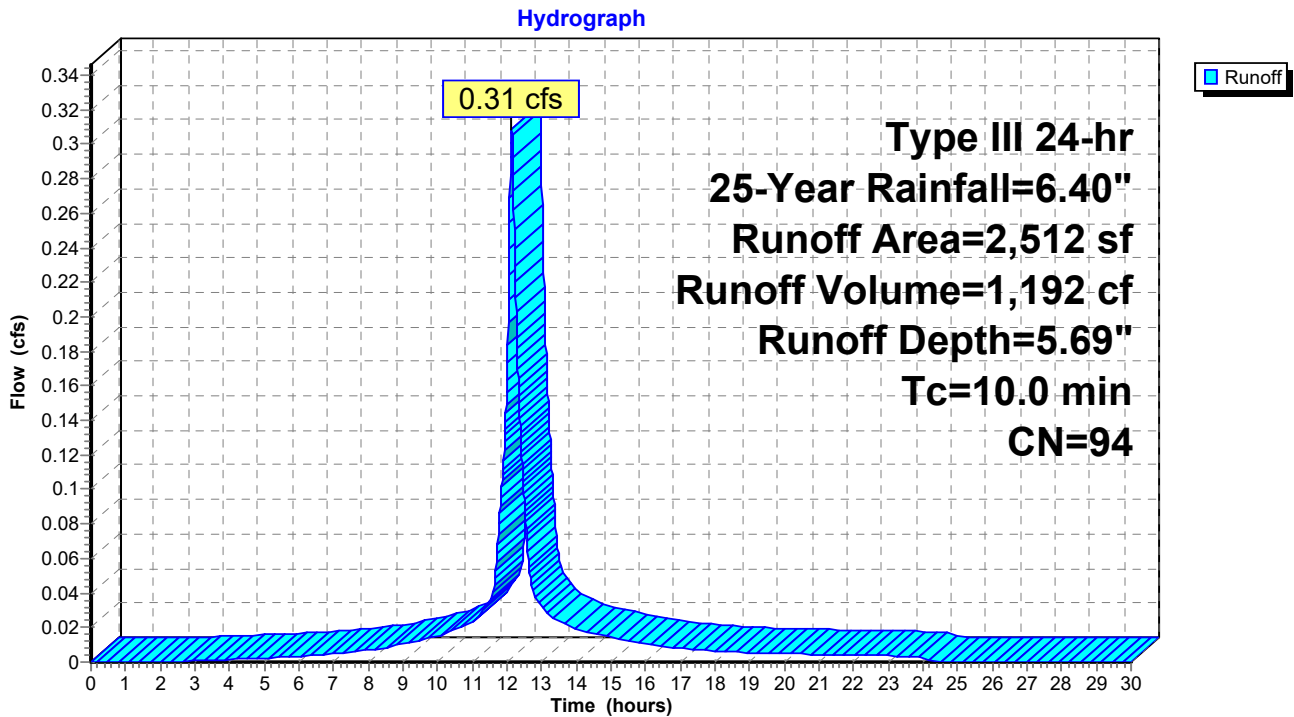
Runoff = 0.31 cfs @ 12.13 hrs, Volume= 1,192 cf, Depth= 5.69"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=6.40"

	Area (sf)	CN	Description
*	2,112	98	Dvwy to Trench Drain
*	400	76	Behind Bldg Bay 3-6
	2,512	94	Weighted Average
	400		15.92% Pervious Area
	2,112		84.08% Impervious Area

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

**Subcatchment 4S: TD Runoff to AS-4**



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176 Virginia Road  
Type III 24-hr 25-Year Rainfall=6.40"

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**Summary for Subcatchment 6S: SW corner**

Runoff = 0.18 cfs @ 12.14 hrs, Volume= 633 cf, Depth= 3.83"

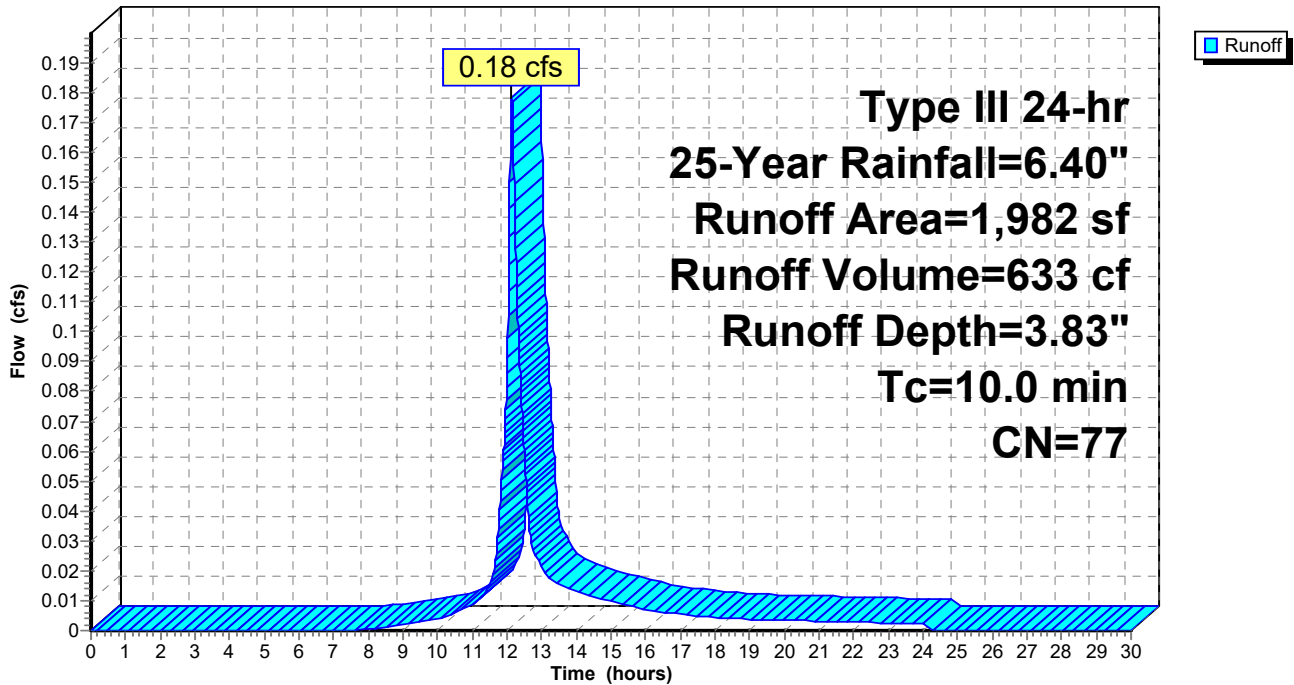
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 25-Year Rainfall=6.40"

	Area (sf)	CN	Description
*	128	98	Impervious
*	311	76	Landscape area
*	1,543	76	Northerly landscape area
	1,982	77	Weighted Average
	1,854		93.54% Pervious Area
	128		6.46% Impervious Area

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

**Subcatchment 6S: SW corner**

Hydrograph



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176 Virginia Road  
Type III 24-hr 25-Year Rainfall=6.40"

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**Summary for Pond 6P: Stormtech SC740**

Inflow Area = 12,212 sf, 89.67% Impervious, Inflow Depth = 5.91" for 25-Year event  
Inflow = 1.52 cfs @ 12.13 hrs, Volume= 6,017 cf  
Outflow = 1.34 cfs @ 12.19 hrs, Volume= 6,017 cf, Atten= 12%, Lag= 3.4 min  
Primary = 1.34 cfs @ 12.19 hrs, Volume= 6,017 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Peak Elev= 201.87' @ 12.19 hrs Surf.Area= 461 sf Storage= 324 cf

Plug-Flow detention time= 9.2 min calculated for 6,017 cf (100% of inflow)  
Center-of-Mass det. time= 9.1 min ( 769.4 - 760.3 )

Volume	Invert	Avail.Storage	Storage Description
#1A	200.40'	0 cf	<b>15.29'W x 30.13'L x 3.67'H Field A</b> 1,689 cf Overall - 1,071 cf Embedded = 618 cf x 0.0% Voids
#2A	200.90'	666 cf	<b>StormTrap ST1 SingleTrap 2-0 x 4 Inside #1</b> Inside= 82.7"W x 24.0"H => 11.84 sf x 14.06'L = 166.5 cf Outside= 82.7"W x 32.0"H => 18.39 sf x 14.06'L = 258.6 cf 4 Chambers in 2 Rows 13.79' x 28.13' Core + 0.00' x 0.50' Border = 13.79' x 29.13' System
		666 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	200.90'	<b>8.0" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=1.34 cfs @ 12.19 hrs HW=201.87' (Free Discharge)  
↑1=Orifice/Grate (Orifice Controls 1.34 cfs @ 3.85 fps)

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176 Virginia Road  
Type III 24-hr 25-Year Rainfall=6.40"

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**Pond 6P: Stormtech SC740 - Chamber Wizard Field A**

**Chamber Model = StormTrap ST1 SingleTrap 2-0 (StormTrap ST1 SingleTrap® Type VI)**

Inside= 82.7"W x 24.0"H => 11.84 sf x 14.06'L = 166.5 cf

Outside= 82.7"W x 32.0"H => 18.39 sf x 14.06'L = 258.6 cf

82.7" Wide + 6.0" Spacing = 88.7" C-C Row Spacing

2 Chambers/Row x 14.06' Long = 28.13' Row Length +6.0" Border x 2 +6.0" End Stone x 2 = 30.13' Base Length

2 Rows x 82.7" Wide + 6.0" Spacing x 1 + 6.0" Side Stone x 2 = 15.29' Base Width

6.0" Base + 32.0" Chamber Height + 6.0" Cover = 3.67' Field Height

4 Chambers x 166.5 cf = 666.0 cf Chamber Storage

4 Chambers x 258.6 cf + 36.8 cf Border = 1,071.2 cf Displacement

1,689.1 cf Field - 1,071.2 cf Chambers = 617.9 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 666.0 cf = 0.015 af

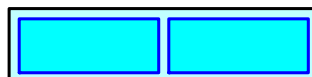
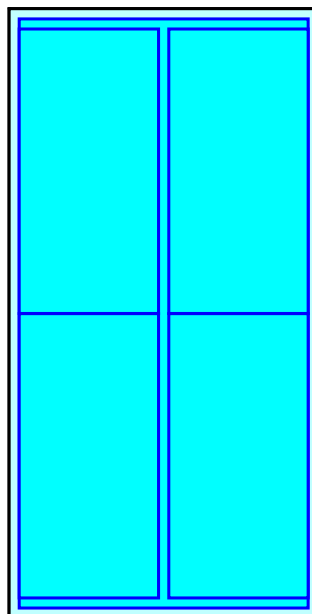
Overall Storage Efficiency = 39.4%

Overall System Size = 30.13' x 15.29' x 3.67'

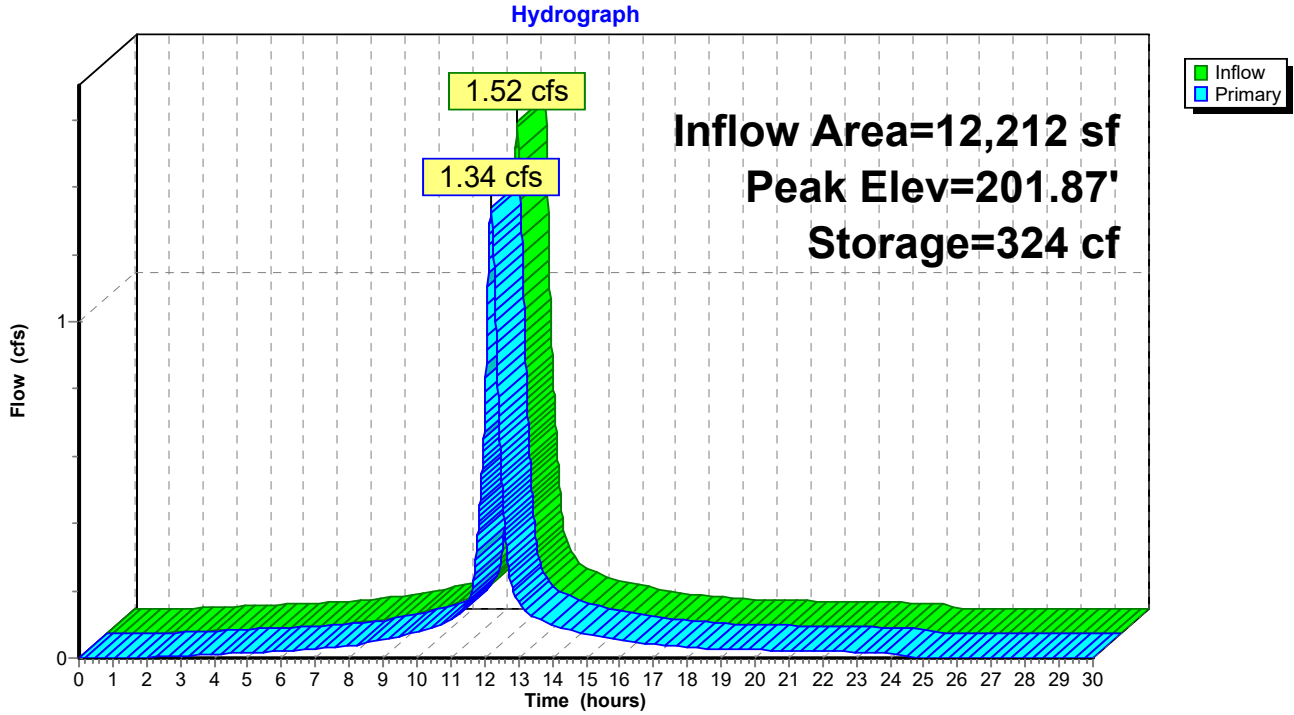
4 Chambers (plus border)

62.6 cy Field

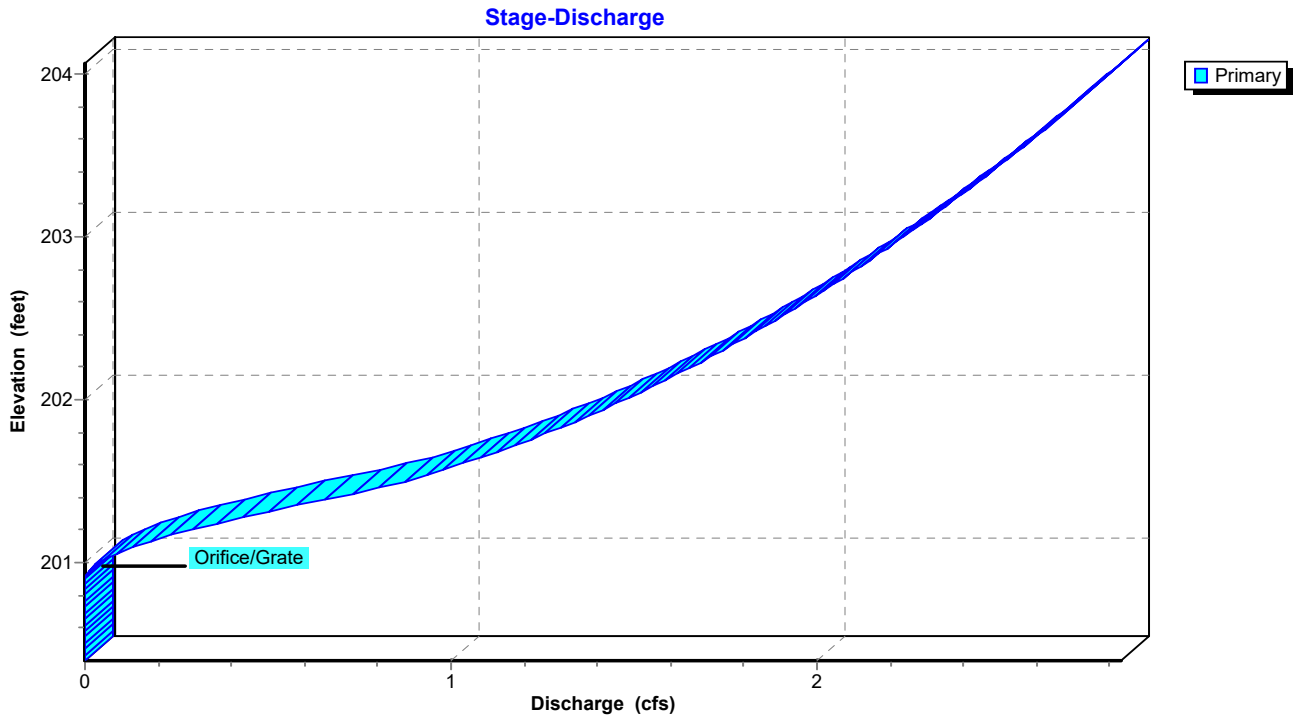
22.9 cy Stone



### Pond 6P: Stormtech SC740



### Pond 6P: Stormtech SC740



### Summary for Pond AS4: AS-4 Aqua Swirl

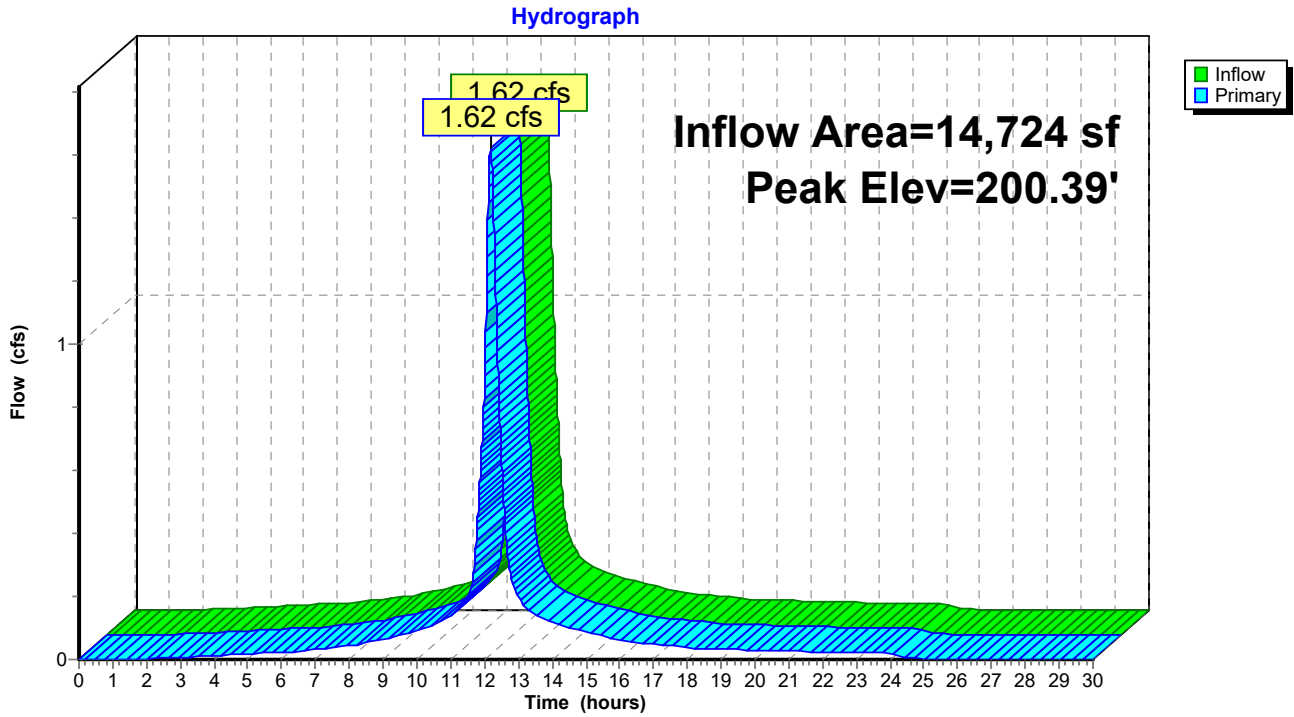
Inflow Area = 14,724 sf, 88.72% Impervious, Inflow Depth = 5.88" for 25-Year event  
 Inflow = 1.62 cfs @ 12.17 hrs, Volume= 7,209 cf  
 Outflow = 1.62 cfs @ 12.17 hrs, Volume= 7,209 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 1.62 cfs @ 12.17 hrs, Volume= 7,209 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 200.39' @ 12.17 hrs

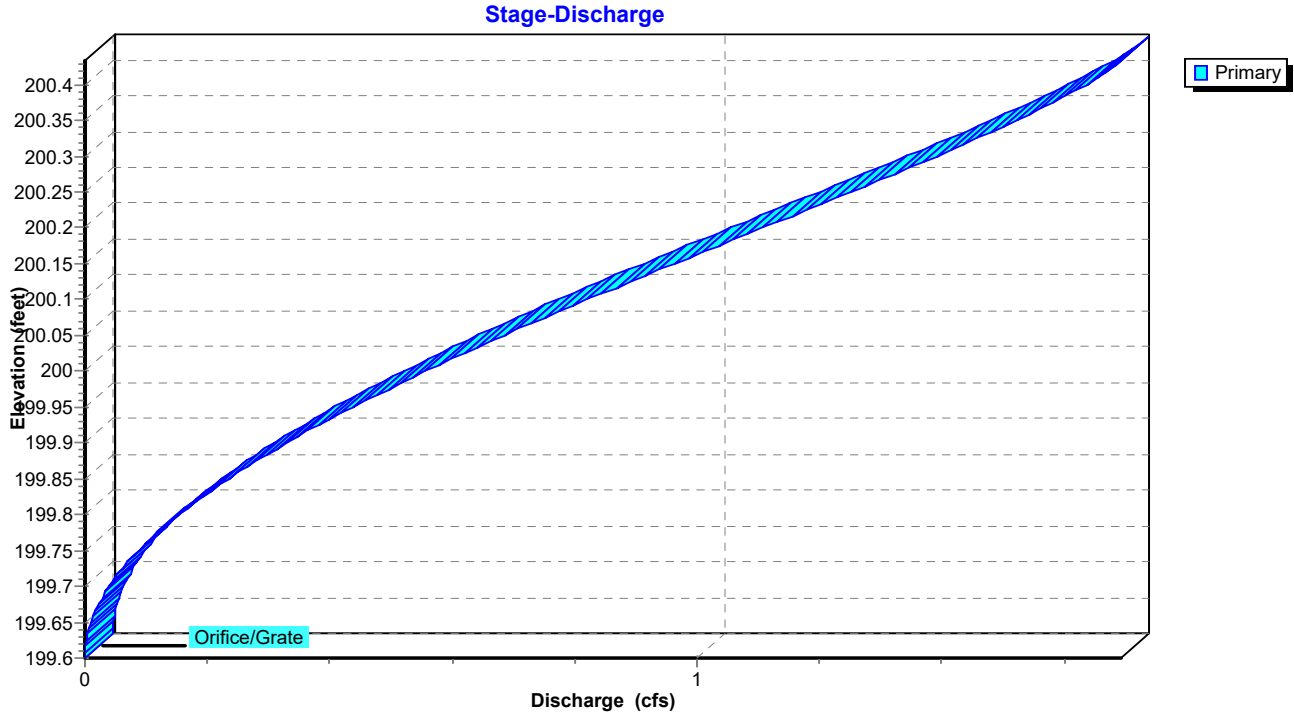
Device	Routing	Invert	Outlet Devices
#1	Primary	199.60'	10.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=1.62 cfs @ 12.17 hrs HW=200.39' (Free Discharge)  
 ←1=Orifice/Grate (Orifice Controls 1.62 cfs @ 3.03 fps)

### Pond AS4: AS-4 Aqua Swirl



### Pond AS4: AS-4 Aqua Swirl





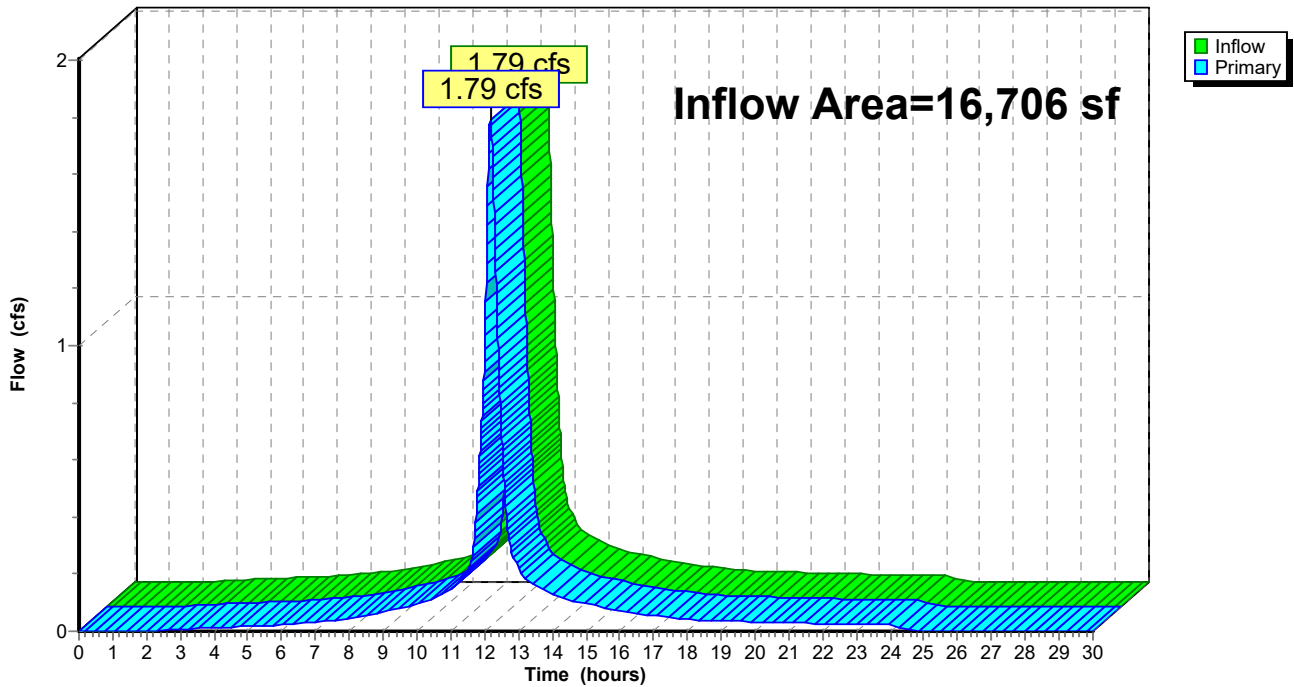
### Summary for Link DP-1: Virginia Road

Inflow Area = 16,706 sf, 78.96% Impervious, Inflow Depth = 5.63" for 25-Year event  
Inflow = 1.79 cfs @ 12.17 hrs, Volume= 7,841 cf  
Primary = 1.79 cfs @ 12.17 hrs, Volume= 7,841 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

### Link DP-1: Virginia Road

Hydrograph



# 176 Virginia Road 22.3.29

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176 Virginia Road

Type III 24-hr 100-Year Rainfall=9.00"

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## Summary for Subcatchment 2S: Roof Leaders

Runoff = 0.64 cfs @ 12.13 hrs, Volume= 2,628 cf, Depth= 8.76"

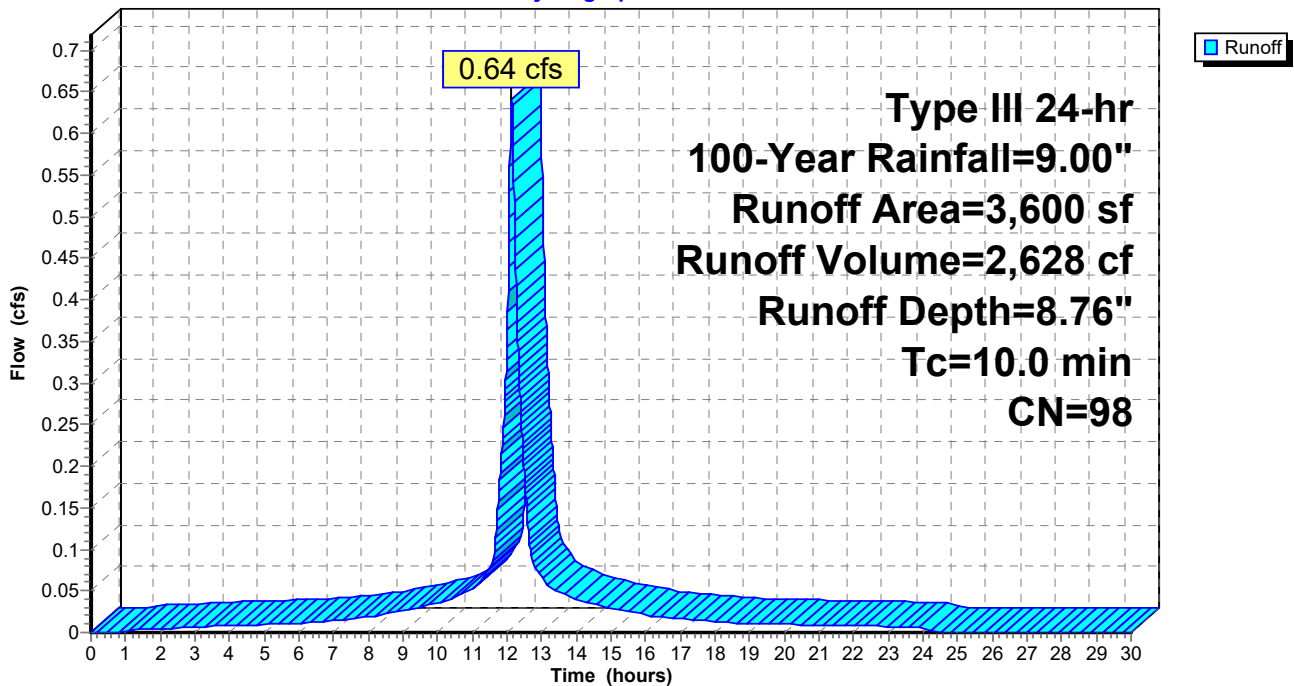
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-Year Rainfall=9.00"

Area (sf)	CN	Description
* 3,600	98	ROOF LEADERS
3,600		100.00% Impervious Area

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

## Subcatchment 2S: Roof Leaders

Hydrograph



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176 Virginia Road

Type III 24-hr 100-Year Rainfall=9.00"

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**Summary for Subcatchment 3S: DI-1 Driveway**

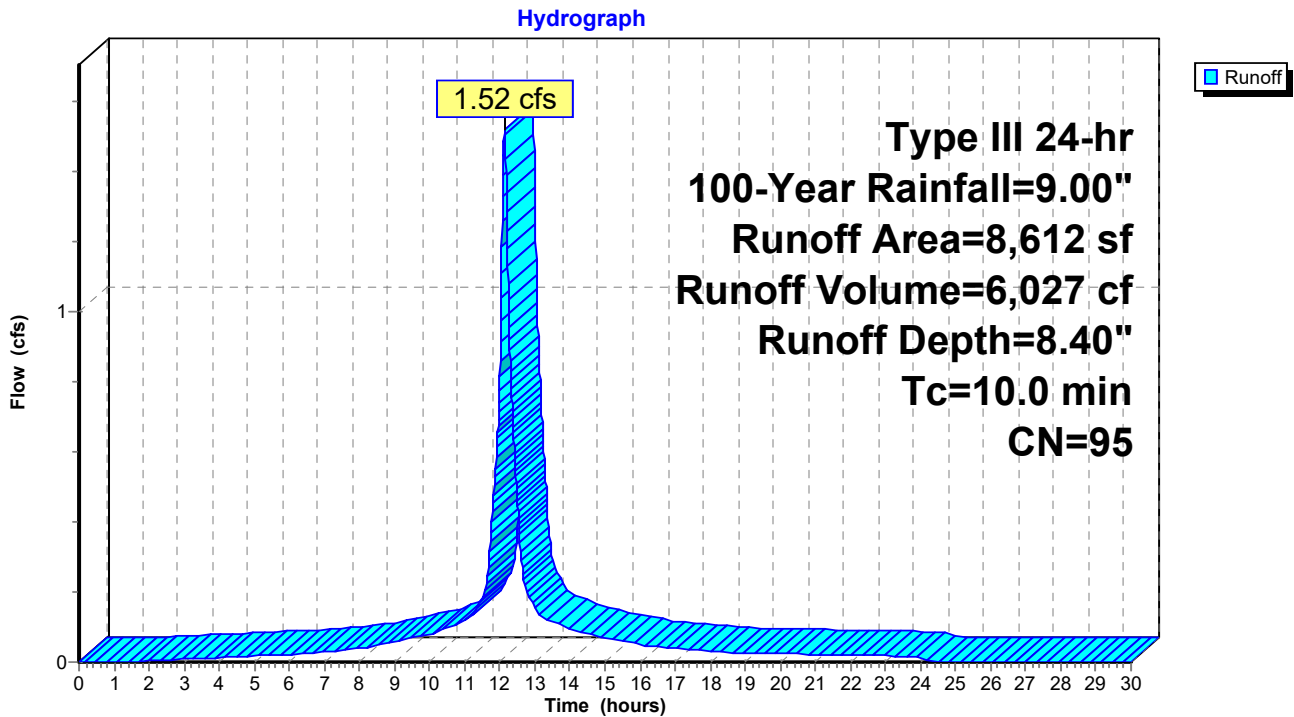
Runoff = 1.52 cfs @ 12.13 hrs, Volume= 6,027 cf, Depth= 8.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-Year Rainfall=9.00"

	Area (sf)	CN	Description
*	7,351	98	Driveway
*	1,261	76	Area behind wall
	8,612	95	Weighted Average
	1,261		14.64% Pervious Area
	7,351		85.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Overland Flow to Inlet

**Subcatchment 3S: DI-1 Driveway**



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176 Virginia Road

Type III 24-hr 100-Year Rainfall=9.00"

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**Summary for Subcatchment 4S: TD Runoff to AS-4**

Runoff = 0.44 cfs @ 12.13 hrs, Volume= 1,733 cf, Depth= 8.28"

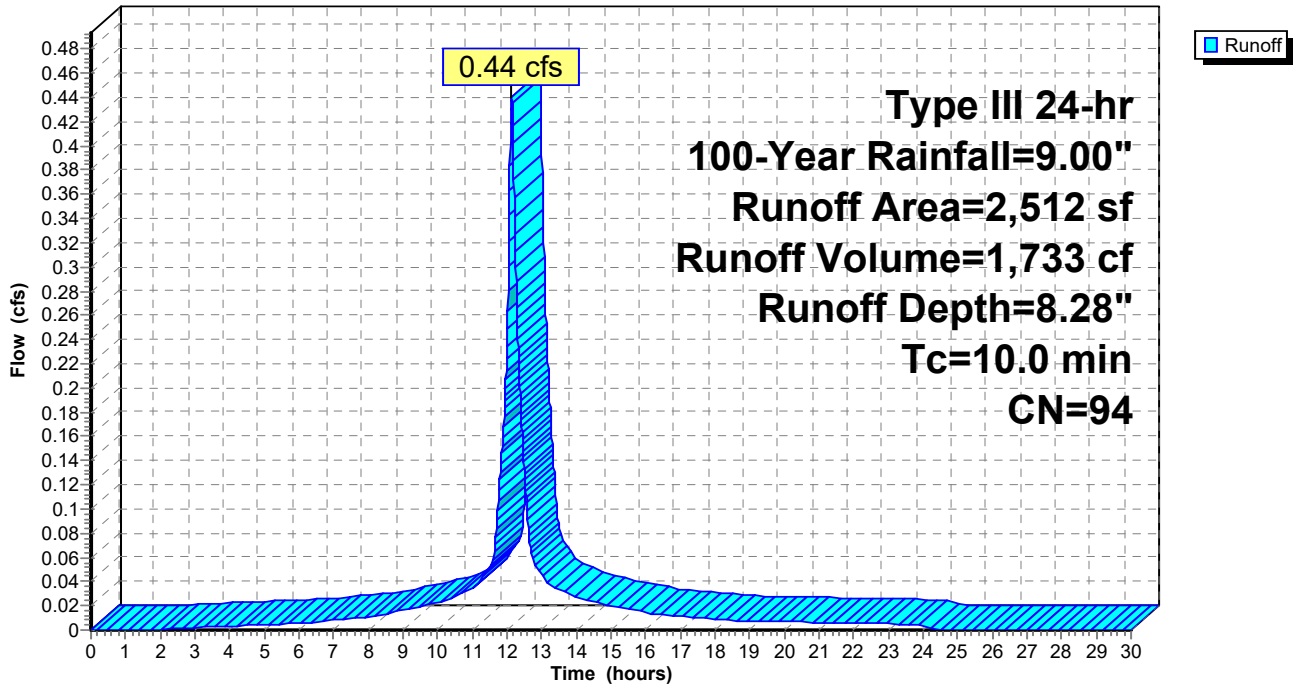
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-Year Rainfall=9.00"

	Area (sf)	CN	Description
*	2,112	98	Dvwy to Trench Drain
*	400	76	Behind Bldg Bay 3-6
	2,512	94	Weighted Average
	400		15.92% Pervious Area
	2,112		84.08% Impervious Area

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

**Subcatchment 4S: TD Runoff to AS-4**

Hydrograph



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176 Virginia Road  
Type III 24-hr 100-Year Rainfall=9.00"

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**Summary for Subcatchment 6S: SW corner**

Runoff = 0.29 cfs @ 12.14 hrs, Volume= 1,024 cf, Depth= 6.20"

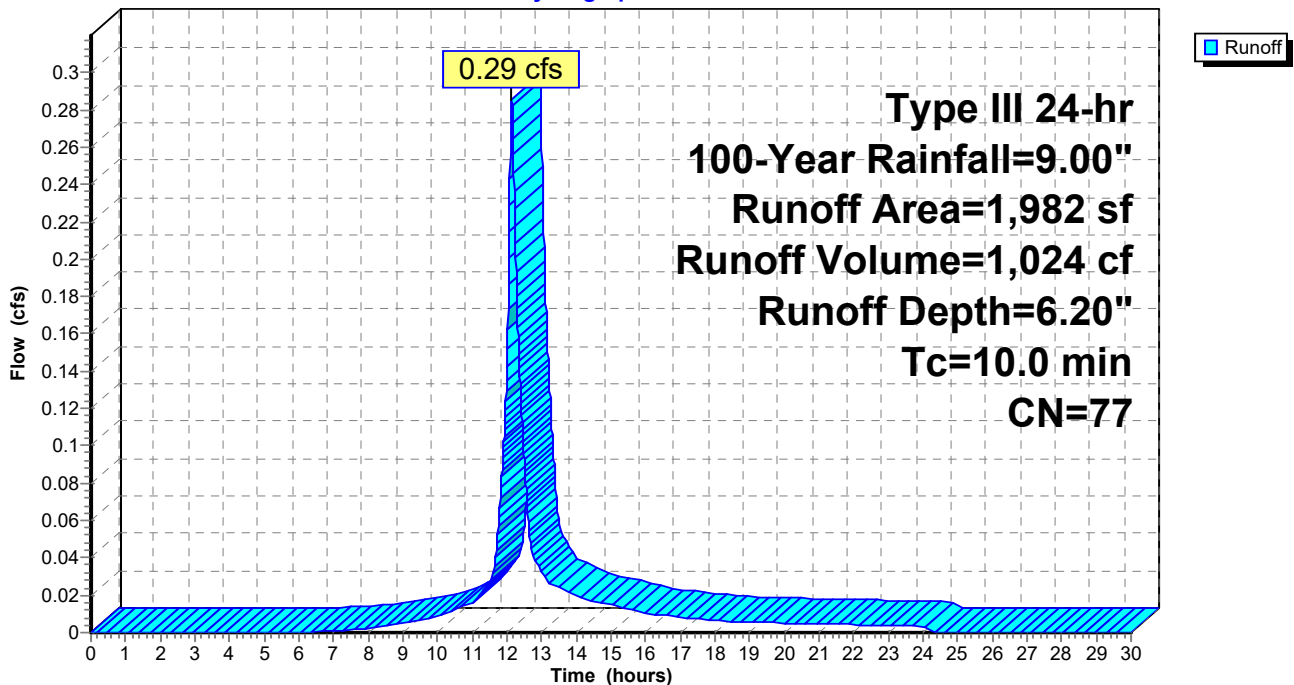
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr 100-Year Rainfall=9.00"

	Area (sf)	CN	Description
*	128	98	Impervious
*	311	76	Landscape area
*	1,543	76	Northerly landscape area
	1,982	77	Weighted Average
	1,854		93.54% Pervious Area
	128		6.46% Impervious Area

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

**Subcatchment 6S: SW corner**

Hydrograph



**176 Virginia Road 22.3.29**

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176 Virginia Road  
Type III 24-hr 100-Year Rainfall=9.00"

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**Summary for Pond 6P: Stormtech SC740**

Inflow Area = 12,212 sf, 89.67% Impervious, Inflow Depth = 8.50" for 100-Year event  
Inflow = 2.16 cfs @ 12.13 hrs, Volume= 8,655 cf  
Outflow = 1.81 cfs @ 12.20 hrs, Volume= 8,654 cf, Atten= 16%, Lag= 4.1 min  
Primary = 1.81 cfs @ 12.20 hrs, Volume= 8,654 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Peak Elev= 202.40' @ 12.20 hrs Surf.Area= 461 sf Storage= 499 cf

Plug-Flow detention time= 8.1 min calculated for 8,654 cf (100% of inflow)  
Center-of-Mass det. time= 8.1 min ( 761.9 - 753.8 )

Volume	Invert	Avail.Storage	Storage Description
#1A	200.40'	0 cf	<b>15.29'W x 30.13'L x 3.67'H Field A</b> 1,689 cf Overall - 1,071 cf Embedded = 618 cf x 0.0% Voids
#2A	200.90'	666 cf	<b>StormTrap ST1 SingleTrap 2-0 x 4 Inside #1</b> Inside= 82.7"W x 24.0"H => 11.84 sf x 14.06'L = 166.5 cf Outside= 82.7"W x 32.0"H => 18.39 sf x 14.06'L = 258.6 cf 4 Chambers in 2 Rows 13.79' x 28.13' Core + 0.00' x 0.50' Border = 13.79' x 29.13' System
		666 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	200.90'	<b>8.0" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=1.81 cfs @ 12.20 hrs HW=202.40' (Free Discharge)  
↑1=Orifice/Grate (Orifice Controls 1.81 cfs @ 5.19 fps)

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176 Virginia Road  
Type III 24-hr 100-Year Rainfall=9.00"

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**Pond 6P: Stormtech SC740 - Chamber Wizard Field A**

**Chamber Model = StormTrap ST1 SingleTrap 2-0 (StormTrap ST1 SingleTrap® Type VI)**

Inside= 82.7"W x 24.0"H => 11.84 sf x 14.06'L = 166.5 cf

Outside= 82.7"W x 32.0"H => 18.39 sf x 14.06'L = 258.6 cf

82.7" Wide + 6.0" Spacing = 88.7" C-C Row Spacing

2 Chambers/Row x 14.06' Long = 28.13' Row Length +6.0" Border x 2 +6.0" End Stone x 2 = 30.13' Base Length

2 Rows x 82.7" Wide + 6.0" Spacing x 1 + 6.0" Side Stone x 2 = 15.29' Base Width

6.0" Base + 32.0" Chamber Height + 6.0" Cover = 3.67' Field Height

4 Chambers x 166.5 cf = 666.0 cf Chamber Storage

4 Chambers x 258.6 cf + 36.8 cf Border = 1,071.2 cf Displacement

1,689.1 cf Field - 1,071.2 cf Chambers = 617.9 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 666.0 cf = 0.015 af

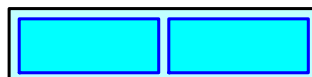
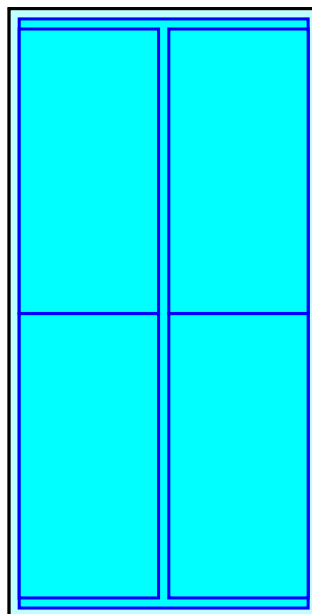
Overall Storage Efficiency = 39.4%

Overall System Size = 30.13' x 15.29' x 3.67'

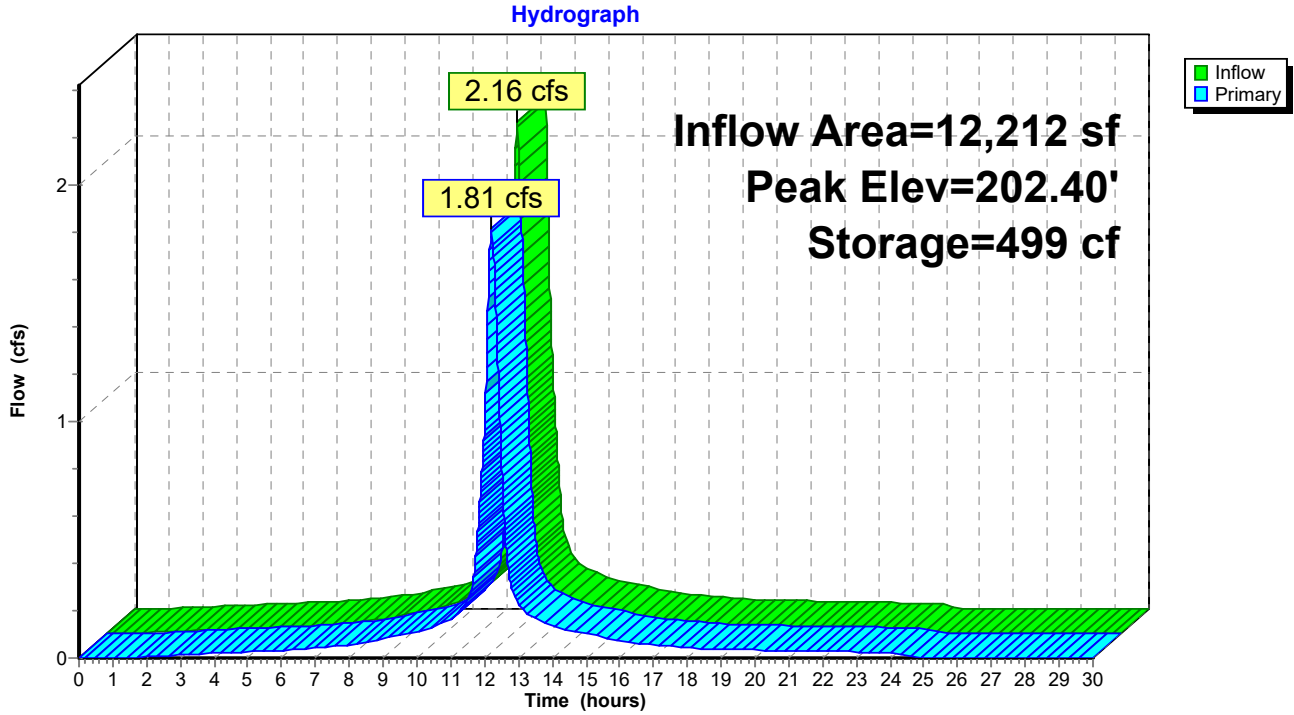
4 Chambers (plus border)

62.6 cy Field

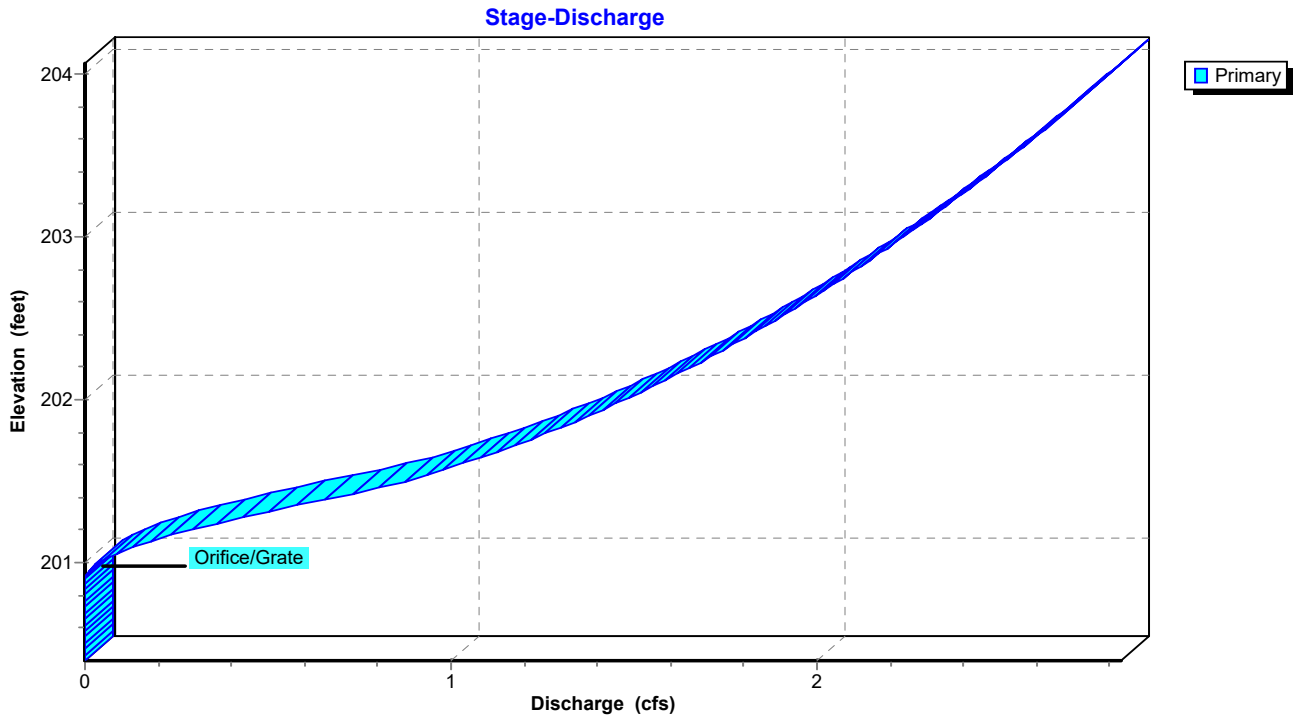
22.9 cy Stone



### Pond 6P: Stormtech SC740



### Pond 6P: Stormtech SC740





### Summary for Pond AS4: AS-4 Aqua Swirl

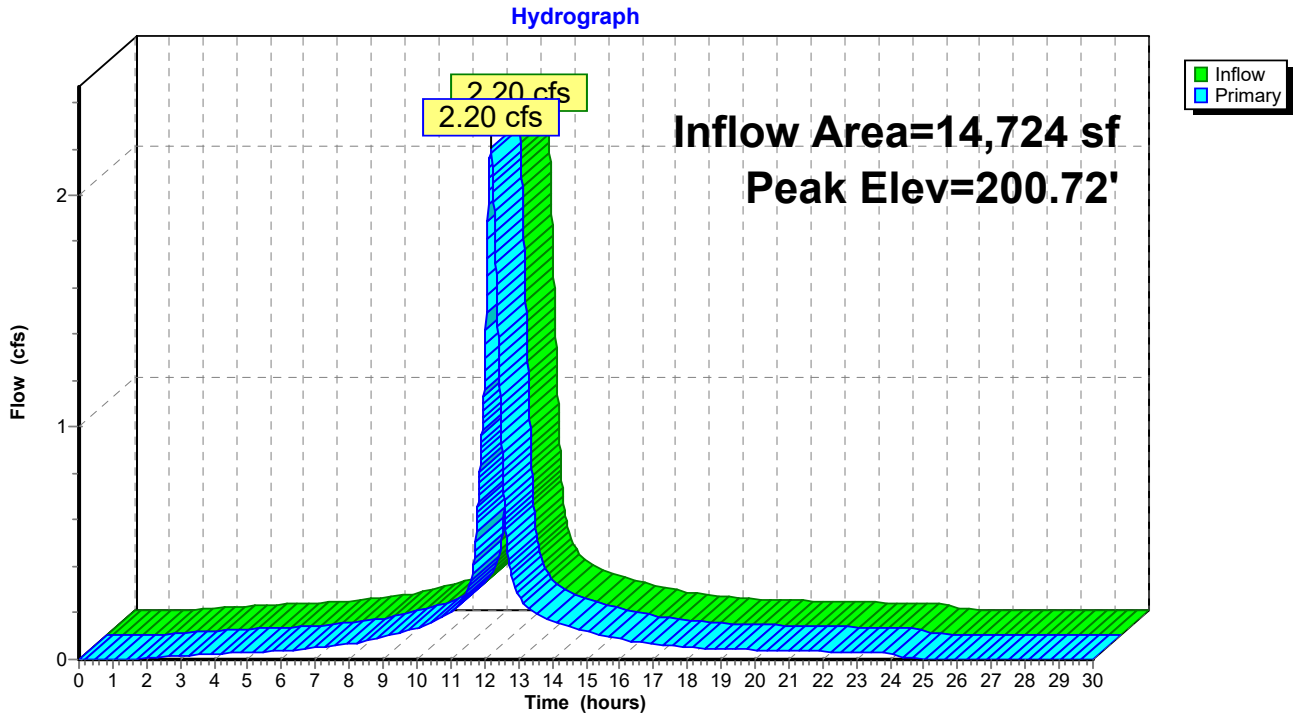
Inflow Area = 14,724 sf, 88.72% Impervious, Inflow Depth = 8.47" for 100-Year event  
 Inflow = 2.20 cfs @ 12.18 hrs, Volume= 10,387 cf  
 Outflow = 2.20 cfs @ 12.18 hrs, Volume= 10,387 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 2.20 cfs @ 12.18 hrs, Volume= 10,387 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 200.72' @ 12.18 hrs

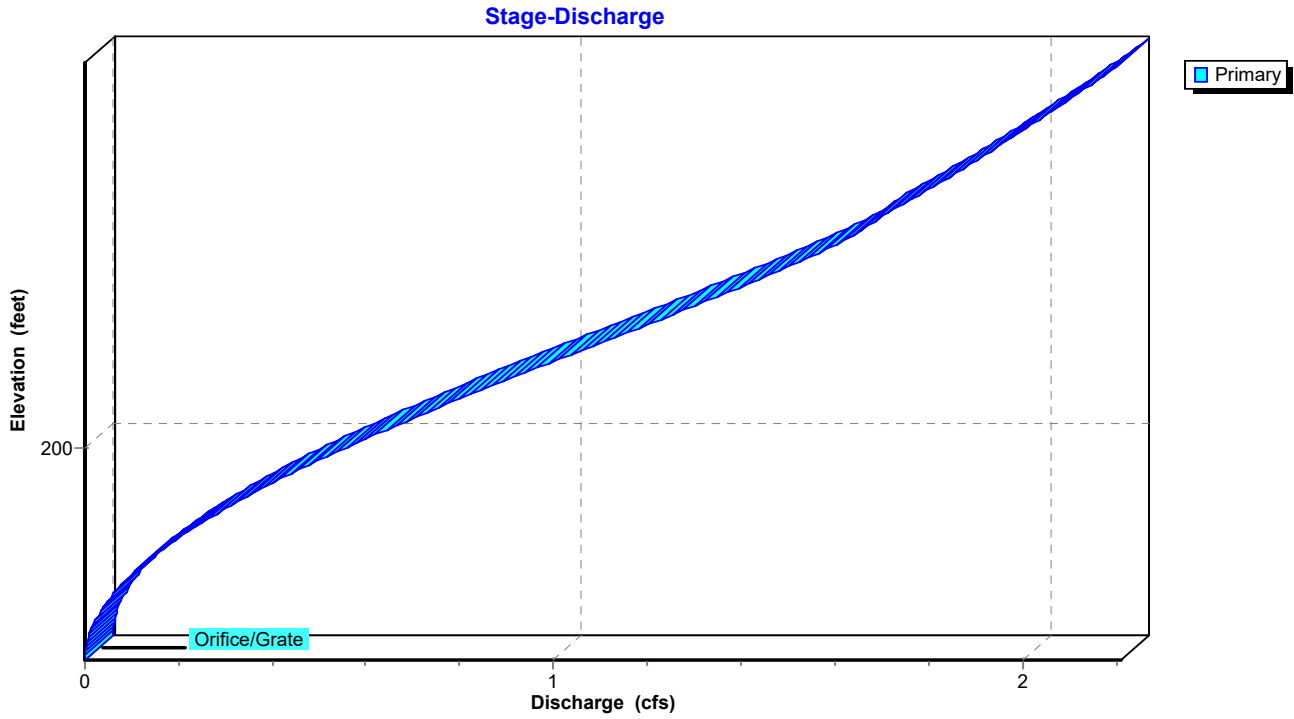
Device	Routing	Invert	Outlet Devices
#1	Primary	199.60'	10.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=2.20 cfs @ 12.18 hrs HW=200.72' (Free Discharge)  
 ↳ 1=Orifice/Grate (Orifice Controls 2.20 cfs @ 4.03 fps)

### Pond AS4: AS-4 Aqua Swirl



### Pond AS4: AS-4 Aqua Swirl



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176 Virginia Road

Type III 24-hr 100-Year Rainfall=9.00"

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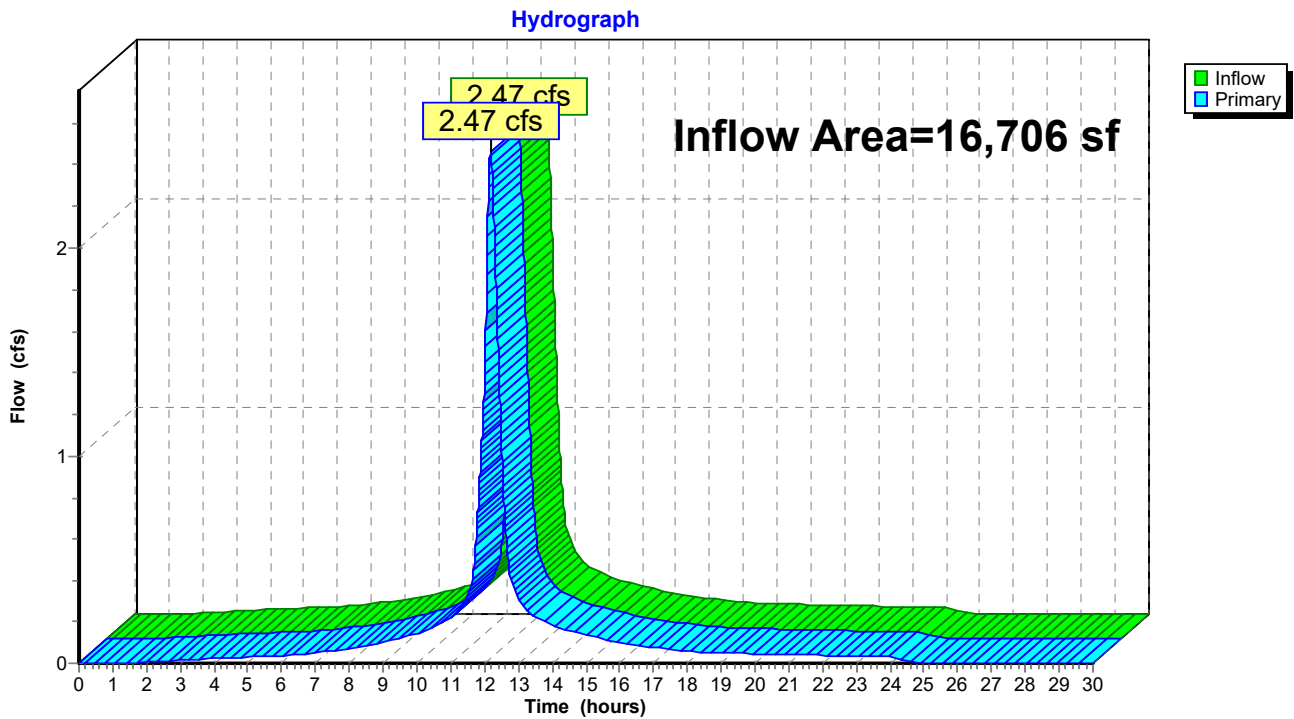
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## Summary for Link DP-1: Virginia Road

Inflow Area = 16,706 sf, 78.96% Impervious, Inflow Depth = 8.20" for 100-Year event  
Inflow = 2.47 cfs @ 12.17 hrs, Volume= 11,411 cf  
Primary = 2.47 cfs @ 12.17 hrs, Volume= 11,411 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

### Link DP-1: Virginia Road



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176 Virginia Road

Type III 24-hr WQ 90% Rainfall=1.50"

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## Summary for Subcatchment 2S: Roof Leaders

Runoff = 0.10 cfs @ 12.13 hrs, Volume= 384 cf, Depth= 1.28"

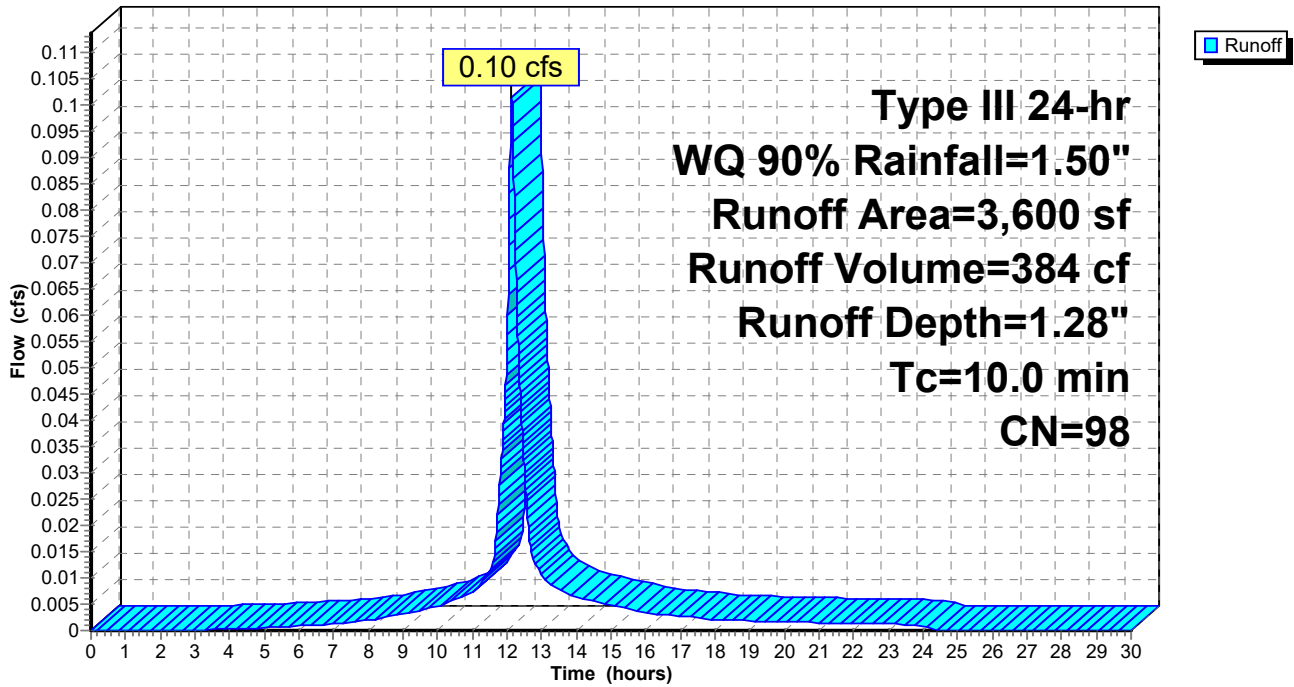
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr WQ 90% Rainfall=1.50"

Area (sf)	CN	Description
* 3,600	98	ROOF LEADERS
3,600		100.00% Impervious Area

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

## Subcatchment 2S: Roof Leaders

Hydrograph



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176 Virginia Road

Type III 24-hr WQ 90% Rainfall=1.50"

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**Summary for Subcatchment 3S: DI-1 Driveway**

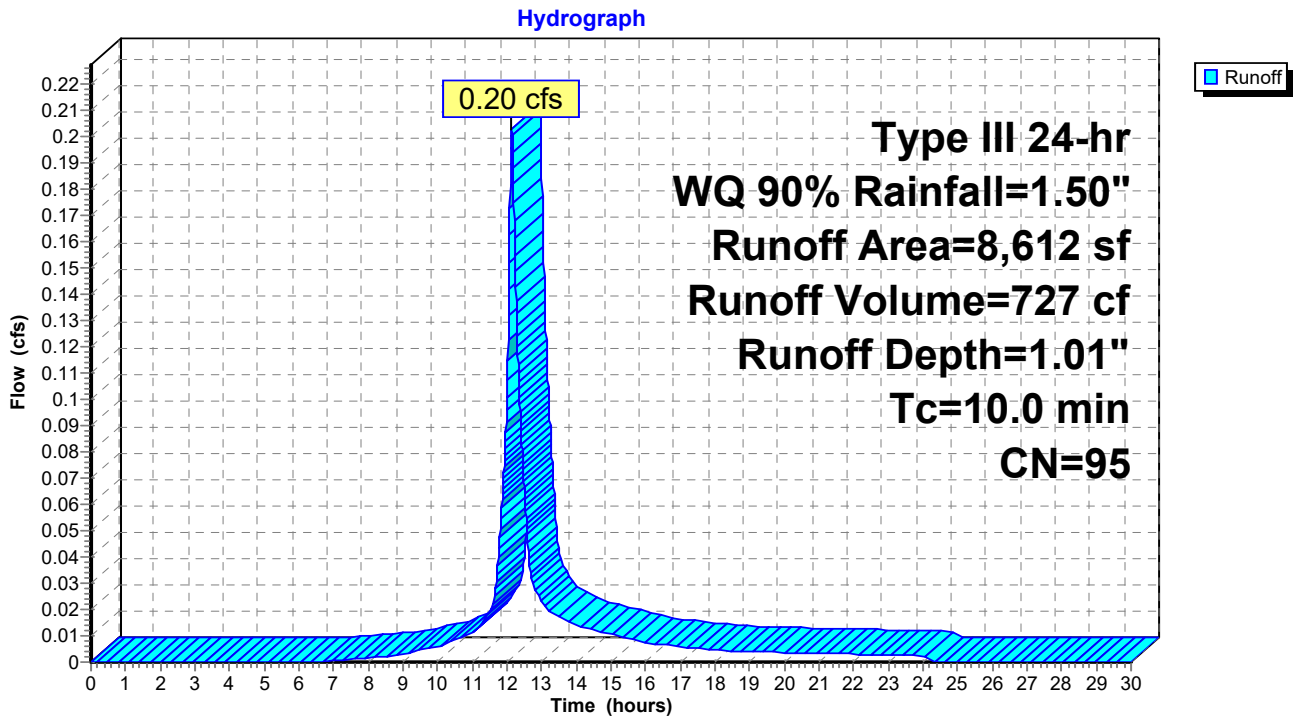
Runoff = 0.20 cfs @ 12.14 hrs, Volume= 727 cf, Depth= 1.01"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr WQ 90% Rainfall=1.50"

	Area (sf)	CN	Description
*	7,351	98	Driveway
*	1,261	76	Area behind wall
	8,612	95	Weighted Average
	1,261		14.64% Pervious Area
	7,351		85.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry, Overland Flow to Inlet

**Subcatchment 3S: DI-1 Driveway**



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176 Virginia Road

Type III 24-hr WQ 90% Rainfall=1.50"

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**Summary for Subcatchment 4S: TD Runoff to AS-4**

Runoff = 0.06 cfs @ 12.14 hrs, Volume= 196 cf, Depth= 0.94"

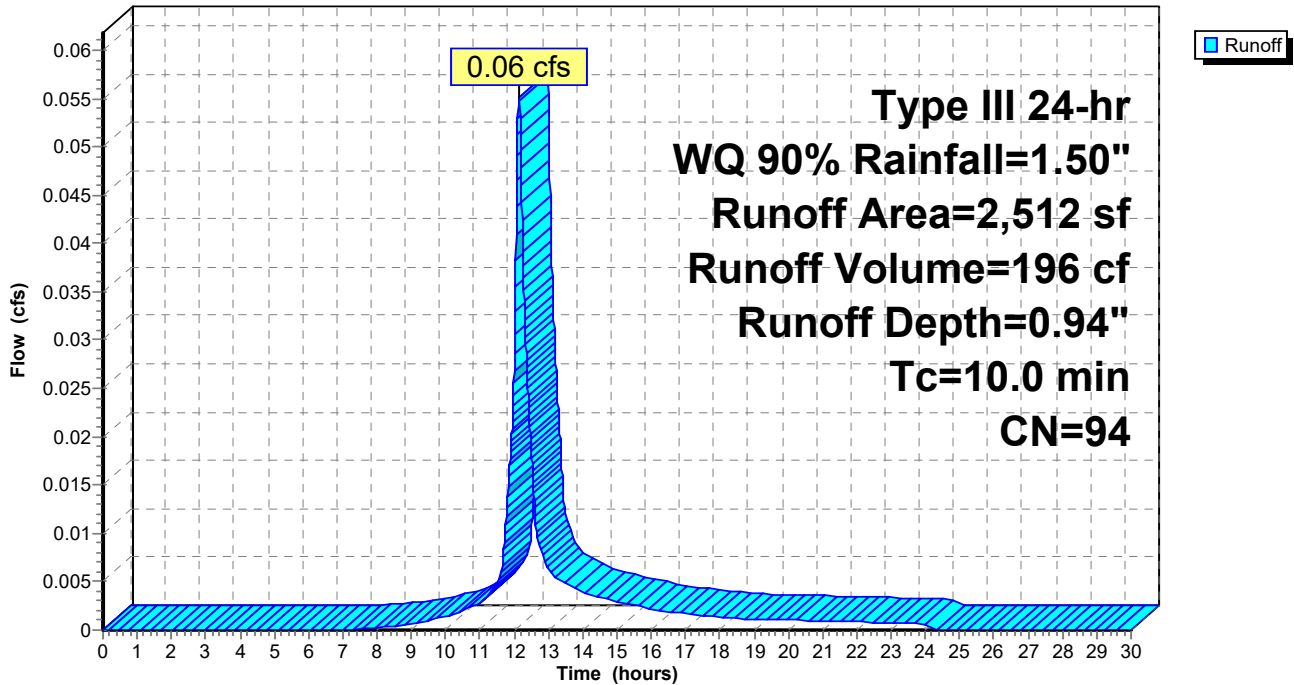
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Type III 24-hr WQ 90% Rainfall=1.50"

	Area (sf)	CN	Description
*	2,112	98	Dvwy to Trench Drain
*	400	76	Behind Bldg Bay 3-6
	2,512	94	Weighted Average
	400		15.92% Pervious Area
	2,112		84.08% Impervious Area

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

**Subcatchment 4S: TD Runoff to AS-4**

Hydrograph



**176 Virginia Road 22.3.29**

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176 Virginia Road  
 Type III 24-hr WQ 90% Rainfall=1.50"

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**Summary for Subcatchment 6S: SW corner**

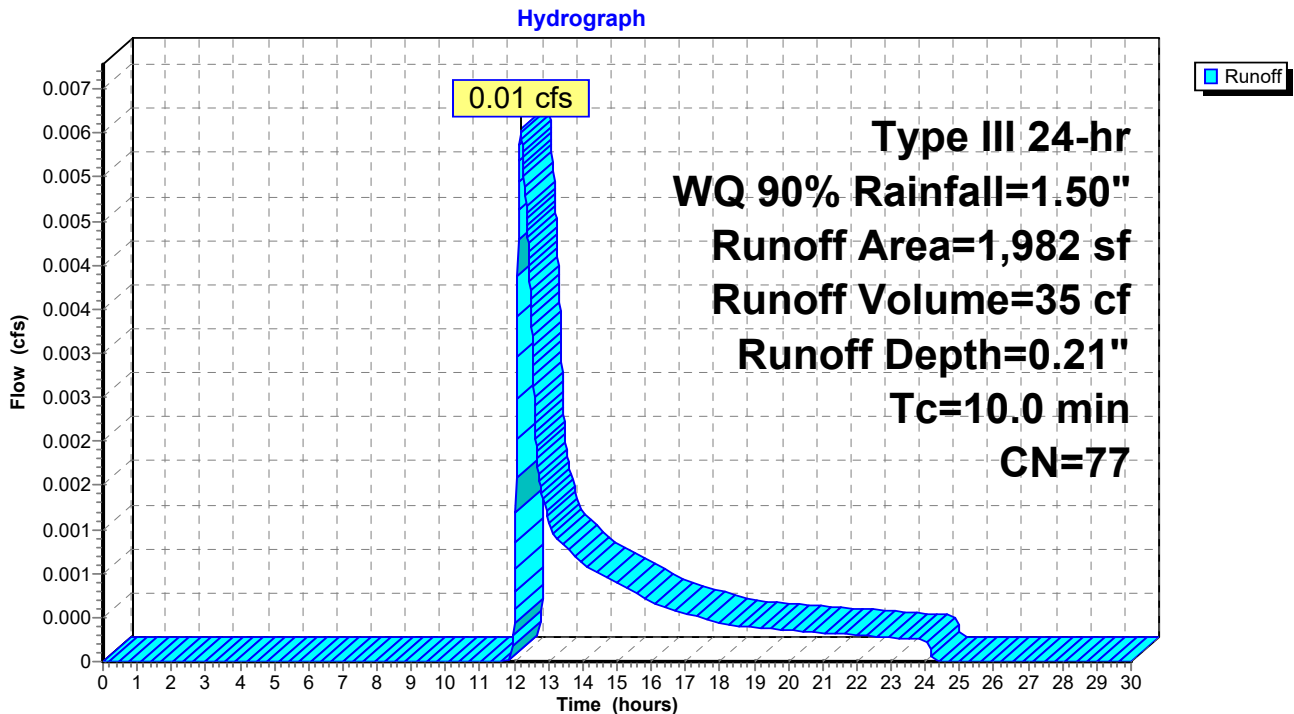
Runoff = 0.01 cfs @ 12.19 hrs, Volume= 35 cf, Depth= 0.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Type III 24-hr WQ 90% Rainfall=1.50"

	Area (sf)	CN	Description
*	128	98	Impervious
*	311	76	Landscape area
*	1,543	76	Northerly landscape area
	1,982	77	Weighted Average
	1,854		93.54% Pervious Area
	128		6.46% Impervious Area

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

**Subcatchment 6S: SW corner**



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176 Virginia Road  
Type III 24-hr WQ 90% Rainfall=1.50"

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**Summary for Pond 6P: Stormtech SC740**

Inflow Area = 12,212 sf, 89.67% Impervious, Inflow Depth = 1.09" for WQ 90% event  
Inflow = 0.30 cfs @ 12.14 hrs, Volume= 1,111 cf  
Outflow = 0.28 cfs @ 12.19 hrs, Volume= 1,110 cf, Atten= 10%, Lag= 3.0 min  
Primary = 0.28 cfs @ 12.19 hrs, Volume= 1,110 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
Peak Elev= 201.19' @ 12.19 hrs Surf.Area= 461 sf Storage= 98 cf

Plug-Flow detention time= 17.9 min calculated for 1,110 cf (100% of inflow)  
Center-of-Mass det. time= 17.8 min ( 817.8 - 800.0 )

Volume	Invert	Avail.Storage	Storage Description
#1A	200.40'	0 cf	<b>15.29'W x 30.13'L x 3.67'H Field A</b> 1,689 cf Overall - 1,071 cf Embedded = 618 cf x 0.0% Voids
#2A	200.90'	666 cf	<b>StormTrap ST1 SingleTrap 2-0 x 4 Inside #1</b> Inside= 82.7"W x 24.0"H => 11.84 sf x 14.06'L = 166.5 cf Outside= 82.7"W x 32.0"H => 18.39 sf x 14.06'L = 258.6 cf 4 Chambers in 2 Rows 13.79' x 28.13' Core + 0.00' x 0.50' Border = 13.79' x 29.13' System
		666 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	200.90'	<b>8.0" Vert. Orifice/Grate</b> C= 0.600

**Primary OutFlow** Max=0.27 cfs @ 12.19 hrs HW=201.19' (Free Discharge)  
↑1=Orifice/Grate (Orifice Controls 0.27 cfs @ 1.85 fps)



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176 Virginia Road  
Type III 24-hr WQ 90% Rainfall=1.50"

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**Pond 6P: Stormtech SC740 - Chamber Wizard Field A**

**Chamber Model = StormTrap ST1 SingleTrap 2-0 (StormTrap ST1 SingleTrap® Type VI)**

Inside= 82.7"W x 24.0"H => 11.84 sf x 14.06'L = 166.5 cf

Outside= 82.7"W x 32.0"H => 18.39 sf x 14.06'L = 258.6 cf

82.7" Wide + 6.0" Spacing = 88.7" C-C Row Spacing

2 Chambers/Row x 14.06' Long = 28.13' Row Length +6.0" Border x 2 +6.0" End Stone x 2 = 30.13' Base Length

2 Rows x 82.7" Wide + 6.0" Spacing x 1 + 6.0" Side Stone x 2 = 15.29' Base Width

6.0" Base + 32.0" Chamber Height + 6.0" Cover = 3.67' Field Height

4 Chambers x 166.5 cf = 666.0 cf Chamber Storage

4 Chambers x 258.6 cf + 36.8 cf Border = 1,071.2 cf Displacement

1,689.1 cf Field - 1,071.2 cf Chambers = 617.9 cf Stone x 0.0% Voids = 0.0 cf Stone Storage

Chamber Storage = 666.0 cf = 0.015 af

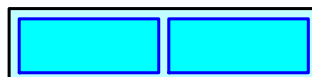
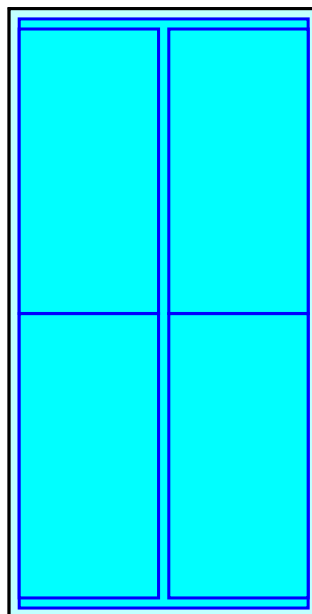
Overall Storage Efficiency = 39.4%

Overall System Size = 30.13' x 15.29' x 3.67'

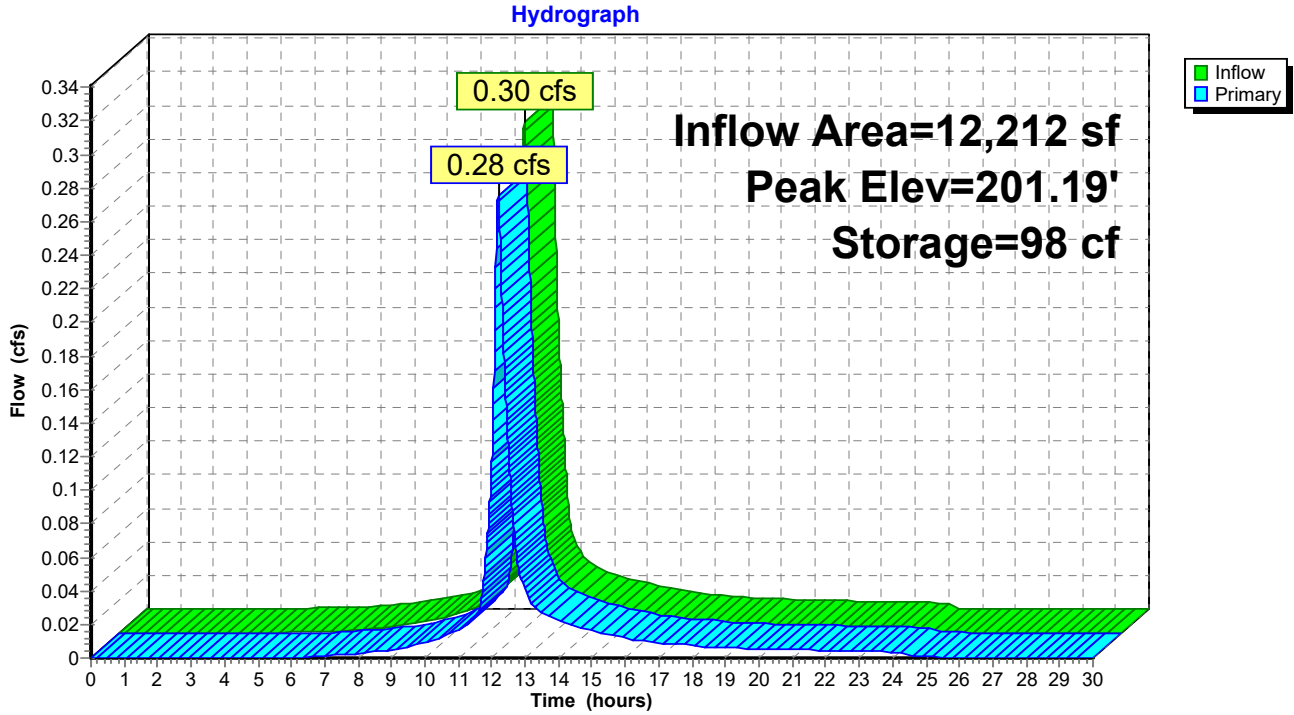
4 Chambers (plus border)

62.6 cy Field

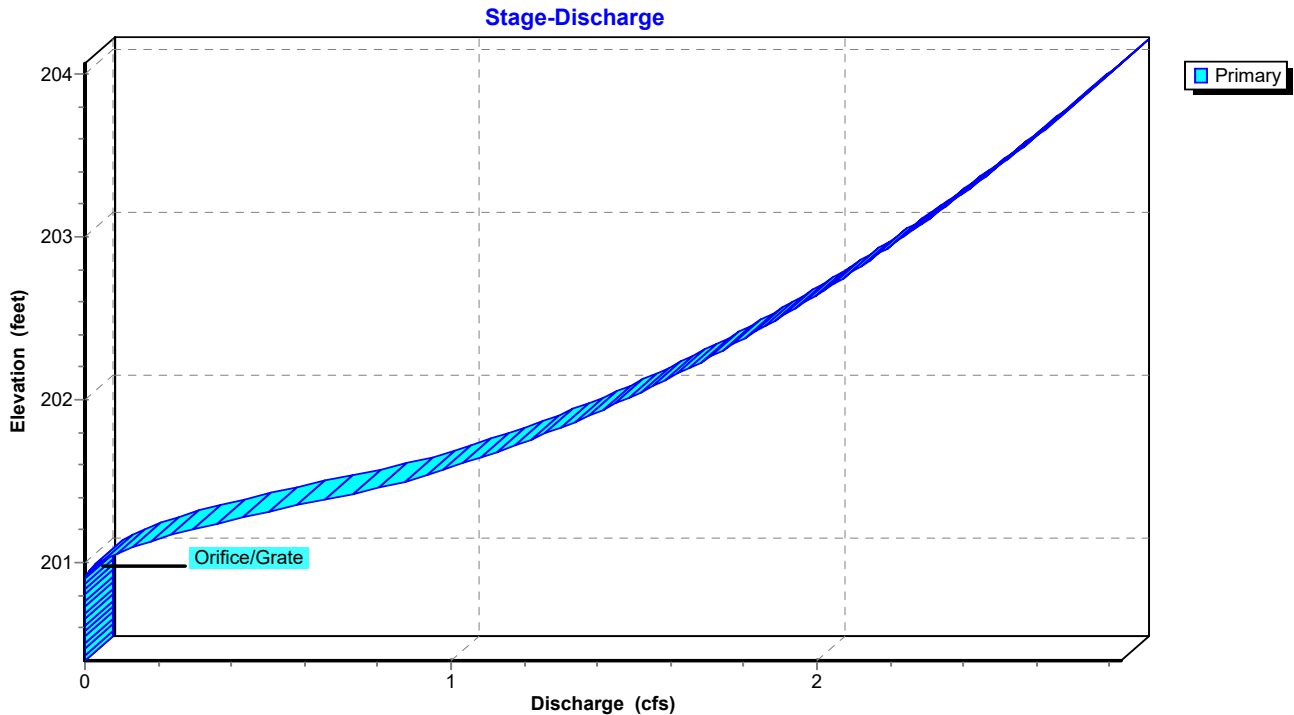
22.9 cy Stone



### Pond 6P: Stormtech SC740



### Pond 6P: Stormtech SC740



**Summary for Pond AS4: AS-4 Aqua Swirl**

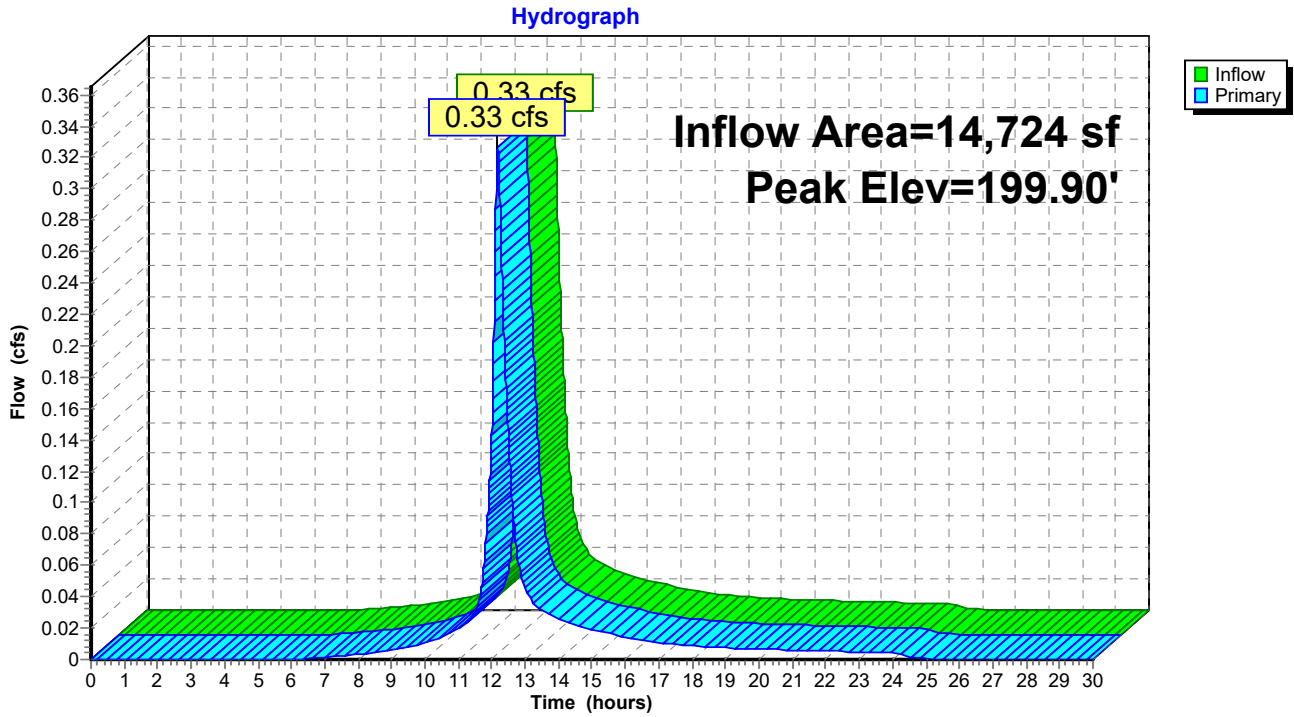
Inflow Area = 14,724 sf, 88.72% Impervious, Inflow Depth > 1.06" for WQ 90% event  
 Inflow = 0.33 cfs @ 12.18 hrs, Volume= 1,307 cf  
 Outflow = 0.33 cfs @ 12.18 hrs, Volume= 1,307 cf, Atten= 0%, Lag= 0.0 min  
 Primary = 0.33 cfs @ 12.18 hrs, Volume= 1,307 cf

Routing by Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs  
 Peak Elev= 199.90' @ 12.18 hrs

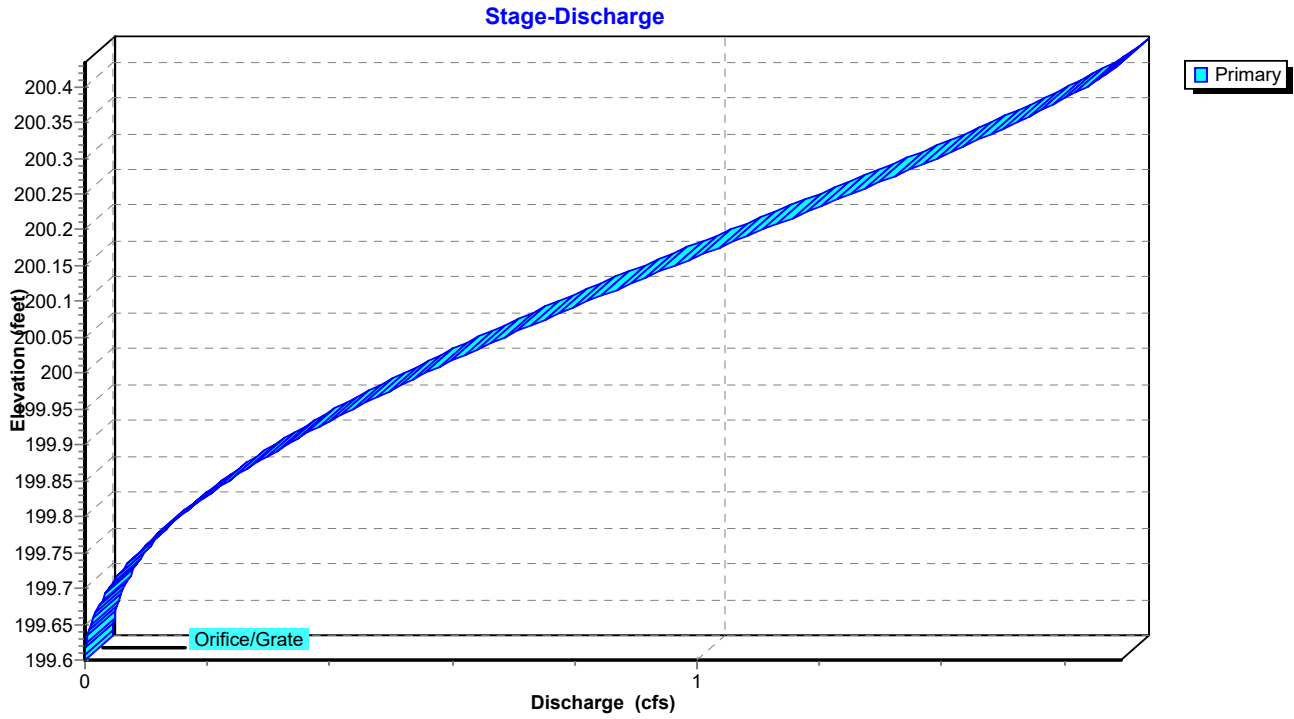
Device	Routing	Invert	Outlet Devices
#1	Primary	199.60'	10.0" Vert. Orifice/Grate C= 0.600

Primary OutFlow Max=0.33 cfs @ 12.18 hrs HW=199.90' (Free Discharge)  
 1=Orifice/Grate (Orifice Controls 0.33 cfs @ 1.86 fps)

**Pond AS4: AS-4 Aqua Swirl**



### Pond AS4: AS-4 Aqua Swirl



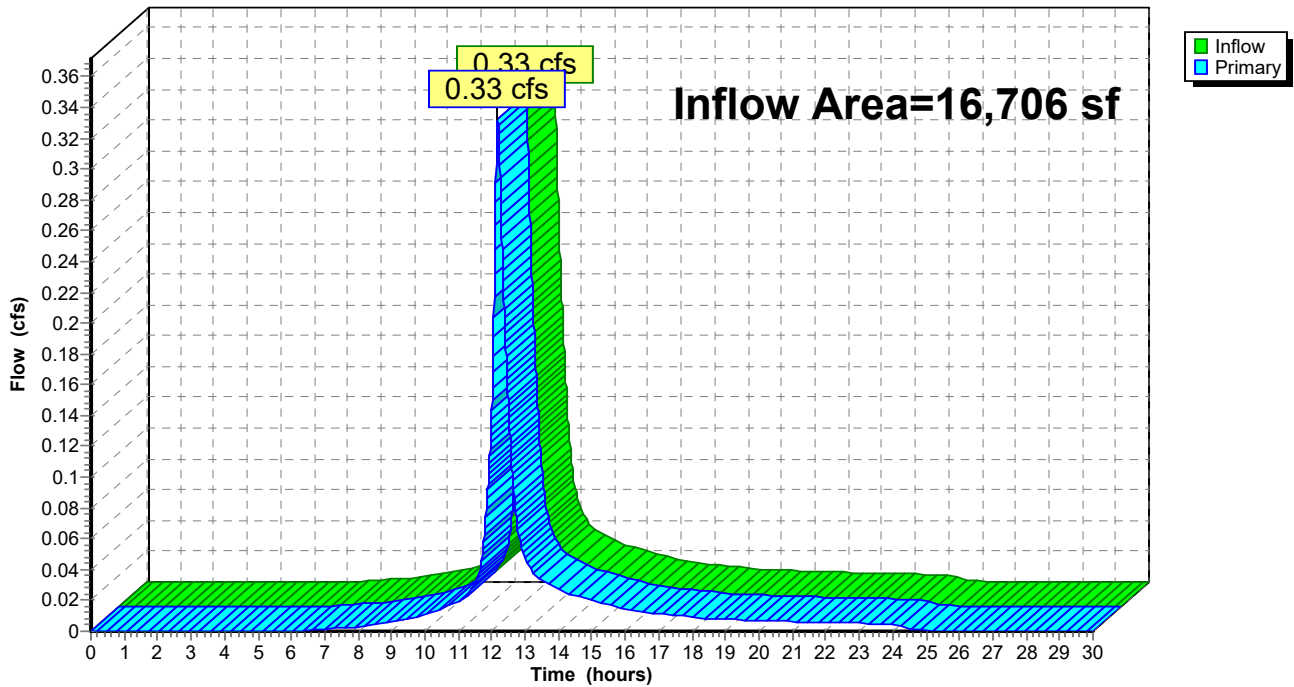
### Summary for Link DP-1: Virginia Road

Inflow Area = 16,706 sf, 78.96% Impervious, Inflow Depth > 0.96" for WQ 90% event  
Inflow = 0.33 cfs @ 12.18 hrs, Volume= 1,341 cf  
Primary = 0.33 cfs @ 12.18 hrs, Volume= 1,341 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs

### Link DP-1: Virginia Road

Hydrograph



***APPENDIX C***

*USDA Soils Report*

# Custom Soil Resource Report for **Westchester County, New York**



# Preface

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Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# How Soil Surveys Are Made

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Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

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scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

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identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

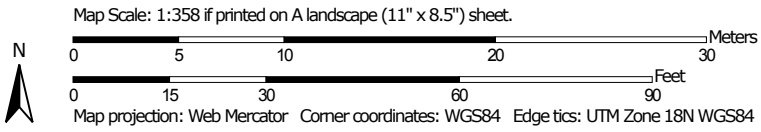
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The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report Soil Map




Soil Map may not be valid at this scale.



### MAP LEGEND

**Area of Interest (AOI)**

 Area of Interest (AOI)




















**Soils**







 Soil Map Unit Polygons

 Soil Map Unit Lines


 Soil Map Unit Points

**Special Point Features**






-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

**Water Features**

 Streams and Canals

**Transportation**

-  Rails
-  Interstate Highways
-  US Routes
-  Major Roads
-  Local Roads

**Background**

 Aerial Photography

### MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service  
 Web Soil Survey URL:  
 Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Westchester County, New York  
 Survey Area Data: Version 14, Sep 3, 2018

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

Date(s) aerial images were photographed: Jul 21, 2014—Aug 27, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.



## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
CuD	Chatfield-Hollis-Rock outcrop complex, 15 to 35 percent slopes	0.2	77.0%
Uf	Urban land	0.0	23.0%
<b>Totals for Area of Interest</b>		<b>0.2</b>	<b>100.0%</b>

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however,

## Custom Soil Resource Report

onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Westchester County, New York

### CuD—Chatfield-Hollis-Rock outcrop complex, 15 to 35 percent slopes

#### Map Unit Setting

*National map unit symbol:* 2w69h  
*Elevation:* 0 to 1,540 feet  
*Mean annual precipitation:* 36 to 71 inches  
*Mean annual air temperature:* 39 to 55 degrees F  
*Frost-free period:* 140 to 240 days  
*Farmland classification:* Not prime farmland

#### Map Unit Composition

*Chatfield, extremely stony, and similar soils:* 35 percent  
*Hollis, extremely stony, and similar soils:* 30 percent  
*Rock outcrop:* 20 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Chatfield, Extremely Stony

##### Setting

*Landform:* Ridges, hills  
*Landform position (two-dimensional):* Backslope, shoulder, summit  
*Landform position (three-dimensional):* Crest, side slope, nose slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex, linear  
*Parent material:* Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

##### Typical profile

*O<sub>i</sub> - 0 to 1 inches:* slightly decomposed plant material  
*A - 1 to 2 inches:* fine sandy loam  
*B<sub>w</sub> - 2 to 30 inches:* gravelly fine sandy loam  
*2R - 30 to 40 inches:* bedrock

##### Properties and qualities

*Slope:* 15 to 35 percent  
*Percent of area covered with surface fragments:* 9.0 percent  
*Depth to restrictive feature:* 20 to 41 inches to lithic bedrock  
*Natural drainage class:* Well drained  
*Runoff class:* High  
*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* Very low (0.00 to 0.00 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Salinity, maximum in profile:* Nonsaline (0.0 to 1.9 mmhos/cm)  
*Available water storage in profile:* Low (about 4.3 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 7s  
*Hydrologic Soil Group:* B  
*Hydric soil rating:* No

## Description of Hollis, Extremely Stony

### Setting

*Landform:* Hills, ridges

*Landform position (two-dimensional):* Backslope, shoulder, summit

*Landform position (three-dimensional):* Side slope, nose slope, crest

*Down-slope shape:* Convex

*Across-slope shape:* Linear, convex

*Parent material:* Coarse-loamy melt-out till derived from granite, gneiss, and/or schist

### Typical profile

*O<sub>i</sub> - 0 to 2 inches:* slightly decomposed plant material

*A - 2 to 7 inches:* gravelly fine sandy loam

*B<sub>w</sub> - 7 to 16 inches:* gravelly fine sandy loam

*2R - 16 to 26 inches:* bedrock

### Properties and qualities

*Slope:* 15 to 35 percent

*Percent of area covered with surface fragments:* 9.0 percent

*Depth to restrictive feature:* 8 to 23 inches to lithic bedrock

*Natural drainage class:* Somewhat excessively drained

*Runoff class:* Very high

*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* Very low (0.00 to 0.00 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Salinity, maximum in profile:* Nonsaline (0.0 to 1.9 mmhos/cm)

*Available water storage in profile:* Very low (about 2.7 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 7s

*Hydrologic Soil Group:* D

*Hydric soil rating:* No

## Description of Rock Outcrop

### Setting

*Landform:* Hills, ridges

*Parent material:* Igneous and metamorphic rock

### Typical profile

*R - 0 to 79 inches:* bedrock

### Properties and qualities

*Slope:* 15 to 35 percent

*Depth to restrictive feature:* 0 inches to lithic bedrock

*Runoff class:* Very high

*Capacity of the most limiting layer to transmit water (K<sub>sat</sub>):* Very low (0.00 to 0.00 in/hr)

*Available water storage in profile:* Very low (about 0.0 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 8

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*Hydrologic Soil Group:* D  
*Hydric soil rating:* No

### Minor Components

#### **Charlton, extremely stony**

*Percent of map unit:* 7 percent  
*Landform:* Hills, ridges  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear, convex  
*Across-slope shape:* Convex  
*Hydric soil rating:* No

#### **Leicester, extremely stony**

*Percent of map unit:* 4 percent  
*Landform:* Drainageways, hills, ground moraines, depressions  
*Landform position (two-dimensional):* Toeslope, footslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Linear, concave  
*Across-slope shape:* Concave  
*Hydric soil rating:* Yes

#### **Paxton, extremely stony**

*Percent of map unit:* 2 percent  
*Landform:* Hills, ground moraines, drumlins  
*Landform position (two-dimensional):* Backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Linear, convex  
*Across-slope shape:* Convex, linear  
*Hydric soil rating:* No

#### **Sutton, extremely stony**

*Percent of map unit:* 2 percent  
*Landform:* Ground moraines, hills  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Hydric soil rating:* No

## Uf—Urban land

### Map Unit Setting

*National map unit symbol:* bd7j  
*Elevation:* 50 to 2,400 feet  
*Mean annual precipitation:* 46 to 50 inches  
*Mean annual air temperature:* 46 to 52 degrees F

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*Frost-free period:* 115 to 215 days

*Farmland classification:* Not prime farmland

### **Map Unit Composition**

*Urban land:* 85 percent

*Minor components:* 15 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

### **Minor Components**

#### **Udorthents**

*Percent of map unit:* 5 percent

*Hydric soil rating:* No

#### **Riverhead**

*Percent of map unit:* 2 percent

*Hydric soil rating:* No

#### **Udorthents, wet substratum**

*Percent of map unit:* 2 percent

*Hydric soil rating:* No

#### **Unadilla**

*Percent of map unit:* 2 percent

*Hydric soil rating:* No

#### **Chatfield**

*Percent of map unit:* 2 percent

*Hydric soil rating:* No

#### **Sutton**

*Percent of map unit:* 2 percent

*Hydric soil rating:* No

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***APPENDIX D***

***FEMA Flood Plain Map***

# National Flood Hazard Layer FIRMette



## Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS		Without Base Flood Elevation (BFE) Zone A, V, A99
		With BFE or Depth Zone AE, AO, AH, VE, AR
		Regulatory Floodway
OTHER AREAS OF FLOOD HAZARD		0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X
		Future Conditions 1% Annual Chance Flood Hazard Zone X
		Area with Reduced Flood Risk due to Levee. See Notes. Zone X
		Area with Flood Risk due to Levee Zone D
OTHER AREAS		NO SCREEN Area of Minimal Flood Hazard Zone X
		Effective LOMRs
GENERAL STRUCTURES		Area of Undetermined Flood Hazard Zone D
		Channel, Culvert, or Storm Sewer
OTHER FEATURES		Levee, Dike, or Floodwall
		Cross Sections with 1% Annual Chance Water Surface Elevation
MAP PANELS		Coastal Transect
		Base Flood Elevation Line (BFE)
		Limit of Study
		Jurisdiction Boundary
		Coastal Transect Baseline
		Profile Baseline
		Hydrographic Feature
		Digital Data Available
		No Digital Data Available
		Unmapped

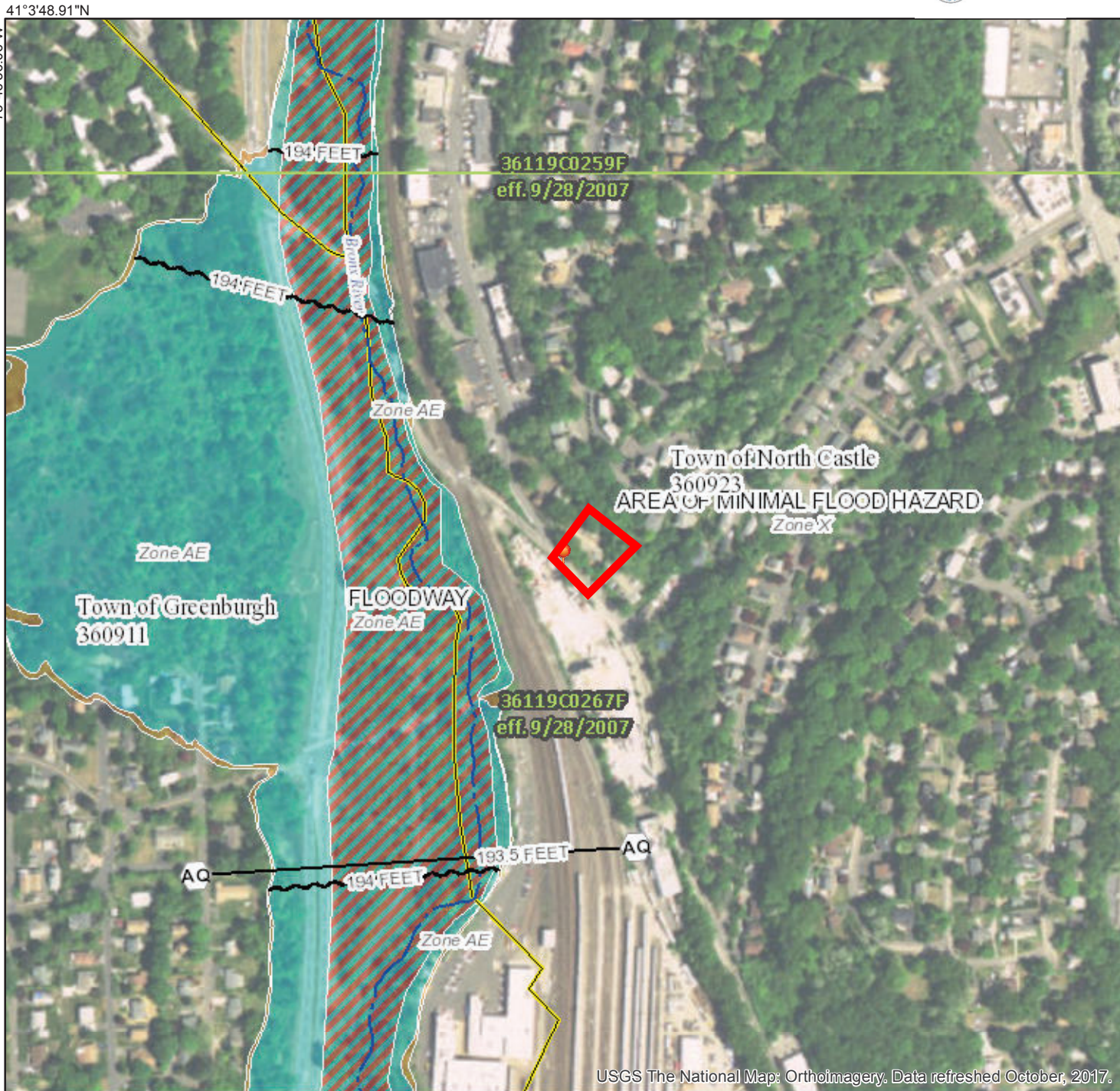


The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **1/23/2019 at 12:10:19 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



USGS The National Map: Orthoimagery. Data refreshed October, 2017.

Feet 1:6,000

41°3'21.78"N

0 250 500 1,000 1,500 2,000

41°3'48.91"N

73°46'36.06"W

73°45'58.60"W

***APPENDIX E***  
*Water Quality Calculations*

Project Mistis Properties  
 176 Virginia Road  
 Revised 11-Jun-19

### WATER QUALITY COMPUTATIONS, WQv

A = Total Site Area (Limit of Disturbance) = 0.386 ac = 16,813 s.f.  
 Ai = Impervious Area at Post Development Condition = 0.048 ac = 2,076 s.f. Total area reconstructed within project limits

I = percent Impervious Area =  $\frac{Ai}{A} \times 100 = \frac{0.048 \text{ ac}}{0.386 \text{ ac}} \times 100 = 12\%$

Rv = Volumetric Runoff Coeff. =  $se + \frac{I}{100} \times (12.35 - se) = 0.05 + \frac{12}{100} \times (12.35 - 0.009) = 0.161$

P = Precipitation Depth = 1.5 in.

WQv = Water Quality Volume =  $\frac{P \times Rv \times A}{12} = \frac{1.5 \text{ in.} \times 0.161 \times 0.386 \text{ ac}}{12} = 0.008 \text{ ac.ft} = 0,339 \text{ cf}$   
**WQv** = 0.008 ac.ft = 0,339 cf  
**25% WQv (required per re-development)** = 0.002 ac.ft = **0,085 cf**

A = Total Site Area (Limit of Disturbance) = 0.386 ac = 16,813 s.f.  
 Ai = Impervious Area at Post Development Condition = 0.259 ac = 11,264 s.f. Expanded Impervious Cover

I = percent Impervious Area =  $\frac{Ai}{A} \times 100 = \frac{0.259 \text{ ac}}{0.386 \text{ ac}} \times 100 = 67\%$

Rv = Volumetric Runoff Coeff. =  $se + \frac{I}{100} \times (12.35 - se) = 0.05 + \frac{67}{100} \times (12.35 - 0.009) = 0.653$

P = Precipitation Depth = 1.5 in.

WQv = Water Quality Volume =  $\frac{P \times Rv \times A}{12} = \frac{1.5 \text{ in.} \times 0.653 \times 0.386 \text{ ac}}{12} = 0.032 \text{ ac.ft} = 1,372 \text{ cf}$   
**WQv** = 0.032 ac.ft = 1,372 cf

**Total WQv 90% Rainfall Event** = 0.033 ac.ft = 1,457 cf

AquaSwirl AS-4  
 Note: See HydroCAD for storm routings = 0.030 ac.ft = 1,304 cf

**Total WQv (Provided)** = 0.033 ac.ft = 1,457 cf