

TRANSMITTAL

Date: 2/11/21

To: Town of North Castle
Planning Board
17 Bedford Road
Armonk, NY 10504-189

Project: Graff Residence
3 Middle Patent Road
Tax ID: 95.03-1-52

Copies	Drawing No.	Description	Date
1		Project Narrative	2/11/2
1	S-1	Site Plan/ Steep Slopes Analysis by B and T	2/11/21
1	PL-1	Preliminary Pool Location Plan by B and T	2/11/21
1	D-1	Details by B and T	2/11/21
1	C-101	Stormwater Mitigation Plan by Provident Design Engineering	2/15/21
1	C-102	Construction Details by Provident Design Engineering	2/15/21
1		Topographic Survey by TC Merritts	10/21/20
1		Wetland Report by Paul Jaehnig	7/30/20
1		Stormwater Calculations	January 2021

February 11, 2021

Planning Board
Town of North Castle
17 Bedford Road
Armonk, NY 10504

RE: The Graff Residence
3 Middle Patent Road
95.03/1/52

Dear Members of the Planning Board,

Please see our following responses from the Planning Department Staff Report, dated 1/14/21 and Kellard Sessions Consulting Memorandum, dated 1/21/21.

Planning Department Staff Report

1. We are waiting for a referral from the Planning Board to submit an application to the Zoning Board of Appeals to locate the swimming pool in the front yard.
2. The Wetland Mitigation Plan, which was previously submitted, addresses the proposed mitigation, which exceeds the required 2:1 mitigation ratio. This plan has been submitted to the Conservation Board for the 3/16/21 meeting.
3. We are hoping that the existing rock will be able to be removed with the bucket of a backhoe. If this does not work, we will develop a chipping plan for review. We do not plan on blasting.
4. (7) trees will be removed from the site for the project. The sizes and varieties are shown and noted on sheet S-1, Site Plan/ Steep Slopes Analysis.
5. 2,351 s.f. of town regulated steep slopes are located within the limit of disturbance. This is noted on sheet S-1, Site Plan/ Steep Slopes Analysis.

Kellard Sessions Memorandum

1. We are waiting for a referral from the Planning Board to submit an application to the Zoning Board of Appeals to locate the swimming pool in the front yard.
2. An existing conditions survey completed by T.C. Merritts is included with this submission.

3. The wetland boundary was delineated by Paul Jaehnig, Certified Geologist, Soil Scientist and Wetland Scientist, on July 30, 2020. The survey was updated on August 21, 2020 to show the delineated wetland boundary. Both the survey, by T.C. Merritts and the Wetlands Report by Paul Jaehnig are included with this submission. Due to steep slopes (25% and greater) being located within the 100' wetlands setback, the wetland buffer has been modified to reflect the lesser of 150' or the top of the steep slope, whichever is lesser, as defined by the Town Code. In this case the top of the steep slope is the lesser. The wetland setback, as determined by Peter Gregory, PE, is shown on the plans submitted by Benedek and Ticehurst as well as Provident Design Engineering.
4. Stormwater mitigation and design calculations for the runoff generated by the net increase in impervious surface for the 25 year, 24 hour design storm or a 6 inch pool draw down, whichever is greater, has been prepared by Provident Design Engineering and is included with this submission.
5. The Stormwater Mitigation Plan, by Provident Design Engineering, has been updated to show the connection between the pool equipment and the proposed drawdown mitigation practice.
6. The separation distances between the existing septic system and well and proposed stormwater mitigation system and pool are now dimensioned and illustrated on the Site Plan/ Steep Slopes Analysis.
7. All trees to be removed are shown and listed on the Site Plan/ Steep Slopes Analysis and Preliminary Pool Location Plan.
8. Construction details, including the concrete equipment pad, are shown on the Details sheet, by Benedek and Ticehurst, and Construction Details sheet, by Provident Design Engineering.

We look forward to meeting with you to discuss this challenging and interesting project.

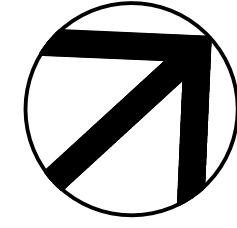
Please contact us if you have any questions prior to our scheduled Planning Board meeting.

Sincerely,



Glenn Ticehurst, RLA, ASLA
for B & T

SURVEY INFORMATION TAKEN FROM
DRAWING TITLED: "TOPOGRAPHY
PREPARED FOR DAVID GRAFF AND
LISA GRAFF SITUATE
IN THE TOWN OF NORTH CASTLE
WESTCHESTER COUNTY, NEW YORK"
DATED: JULY 10, 2020
PREPARED BY TC MERRITT'S LAND SURVEYORS
394 BEDFORD ROAD
PLEASANTVILLE, NY 10910
TEL. 914-769-8003 AND 203-622-8899
WETLANDS FLAGGED BY PAUL J. JAEHNIG ON JULY 30, 2020



R-2A ZONE LOT SIZE = 2.176 ACRES/ 94,789 SF.		
BUILDING COVERAGE: 8% ALLOWABLE (7,583 SF.)		
	EXISTING	PROPOSED
RESIDENCE	1,911 SF.	1,911 SF.
TOTAL BUILDING COVERAGE	1,911 SF.	1,911 SF.
PERCENTAGE OF BUILDING COVERAGE	2.02%	2.02%
ALLOWABLE GROSS LAND COVERAGE IS 13,270 SF. PLUS 7.5% OF AREA IN EXCESS OF 2 ACRES = (13,845 SF.)		
	EXISTING	PROPOSED
RESIDENCE	1,911 SF.	1,911 SF.
DRIVEWAY	4,668	4,148
WALK, PATIOS, DECKS, WALLS, STEPS, COPING	1,884	2,578
SWIMMING POOL	0	646
SFA	0	48
POOL EQUIPMENT PAD	0	60
TOTAL IMPERVIOUS SURFACE	8,469 SF.	9,391 SF.

*520 SF. OF THE EXISTING DRIVEWAY WILL BE REMOVED.

SCHEDULE OF MINIMUM ZONING REQUIREMENTS R-2A ZONE			
	EXISTING	PROPOSED	ALLOWABLE
MINIMUM LOT SIZE			
AREA	2.176 AC.	2.176 AC.	2 AC.
FRONTAGE	448'-9"	448'-9"	150'
WIDTH	421'-0"	421'-0"	150'
DEPTH	309'-6"	309'-6"	150'
MINIMUM YARDS			
FRONT	136.63'	51'-0"	50'
SIDE	138.13'	45'-9"	30'
REAR	93.94'	93.94'	50'

- SLOPES 15% - 24.93%
- STEEP SLOPE/ 25% AND GREATER
- FLAGGED WETLANDS
- WETLAND SETBACK
- LIMIT OF DISTURBANCE

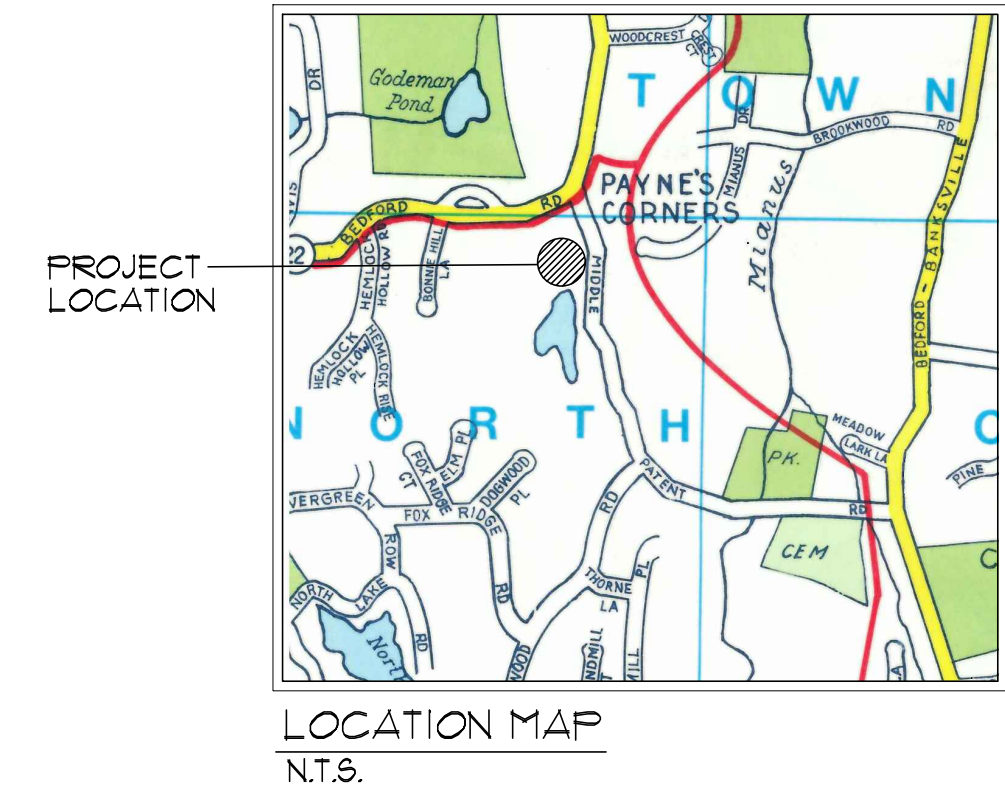
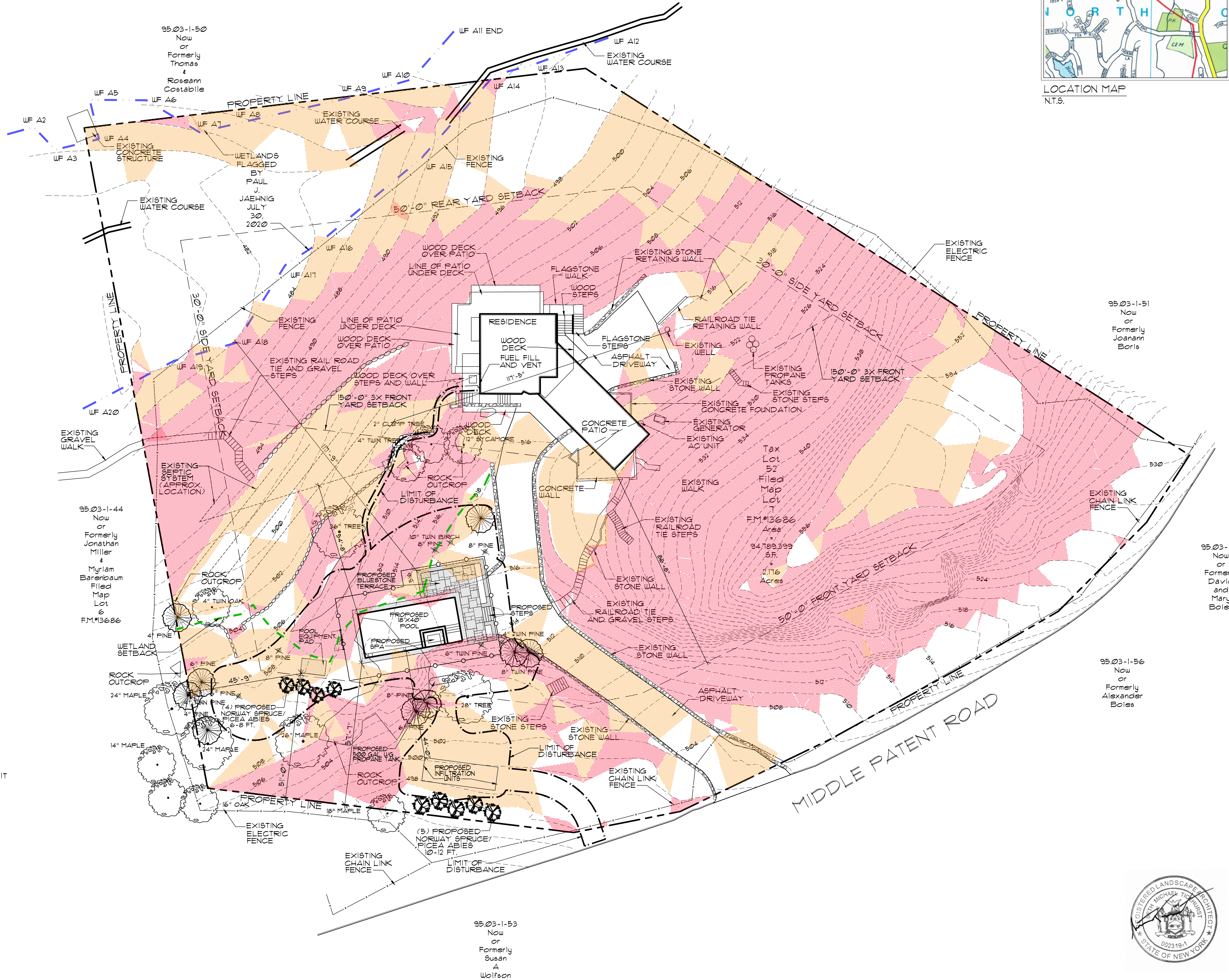
- NOTES:
- CONSTRUCTION OF ALL WALLS GREATER THAN 4'-0" IN HEIGHT, SHALL BE CERTIFIED BY THE DESIGN PROFESSIONAL, PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY.
 - THE LIMIT OF DISTURBANCE SHOWN ON THE PLAN IS 8,450 SF.
 - THE LIMIT OF DISTURBANCE SHALL BE STAKED IN THE FIELD PRIOR TO CONSTRUCTION.
 - SEE STORMWATER MITIGATION PLAN AND DETAILS BY PROVIDENT DESIGN ENGINEERING FOR DETAILED DRAINAGE AND GRADING INFORMATION AND TREE REMOVAL/ PROTECTION AND UTILITY CONNECTIONS.
 - 2,351 SF. OF TOWN REGULATED STEEP SLOPES ARE LOCATED WITHIN THE LIMIT OF DISTURBANCE.
 - THE FOLLOWING (7) TREES WILL BE REMOVED DURING THE COURSE OF CONSTRUCTION. THESE TREES ARE ALL IN MODERATELY GOOD HEALTH.
 - (3) 8" PINES
 - (2) 6" PINES
 - (1) 4" PINE
 - (1) 10" BIRCH

Approved by Town of North Castle Planning Board Resolution, Dated: _____

Christopher Carthy, Chairman, _____ Date _____
Town of North Castle Planning Board

Engineering Plans Reviewed for Conformance to Resolution: _____

Joseph M. Cermele, PE _____ Date _____
Kellard Sessions Consulting
Consulting Town Engineers



SITE PLAN/ STEEP SLOPES ANALYSIS
FOR
THE GRAFF RESIDENCE
ARMONK, NY
3 MIDDLE PATENT ROAD

Scale: 1"=20'-0"
Drawn: S.T.
Date: 2/2/21

Revisions:	Date	Item
	2/11/21	Tree removal notes, dimensions, etc.

BENEDEK & TICEHURST
LANDSCAPE ARCHITECTS & SITE PLANNERS, P.C.
448H Old Post Road, Bedford Village, New York 10506
P. 914.234.9666 / F. 914.234.8882
www.btlandscape.com
Members American Society of Landscape Architects



Drawing Number:
S-1

Approved by Town of North Castle Planning Board Resolution, Dated: _____

Christopher Carthy, Chairman, Date _____
Town of North Castle Planning Board

Engineering Plans Reviewed for Conformance to Resolution: _____

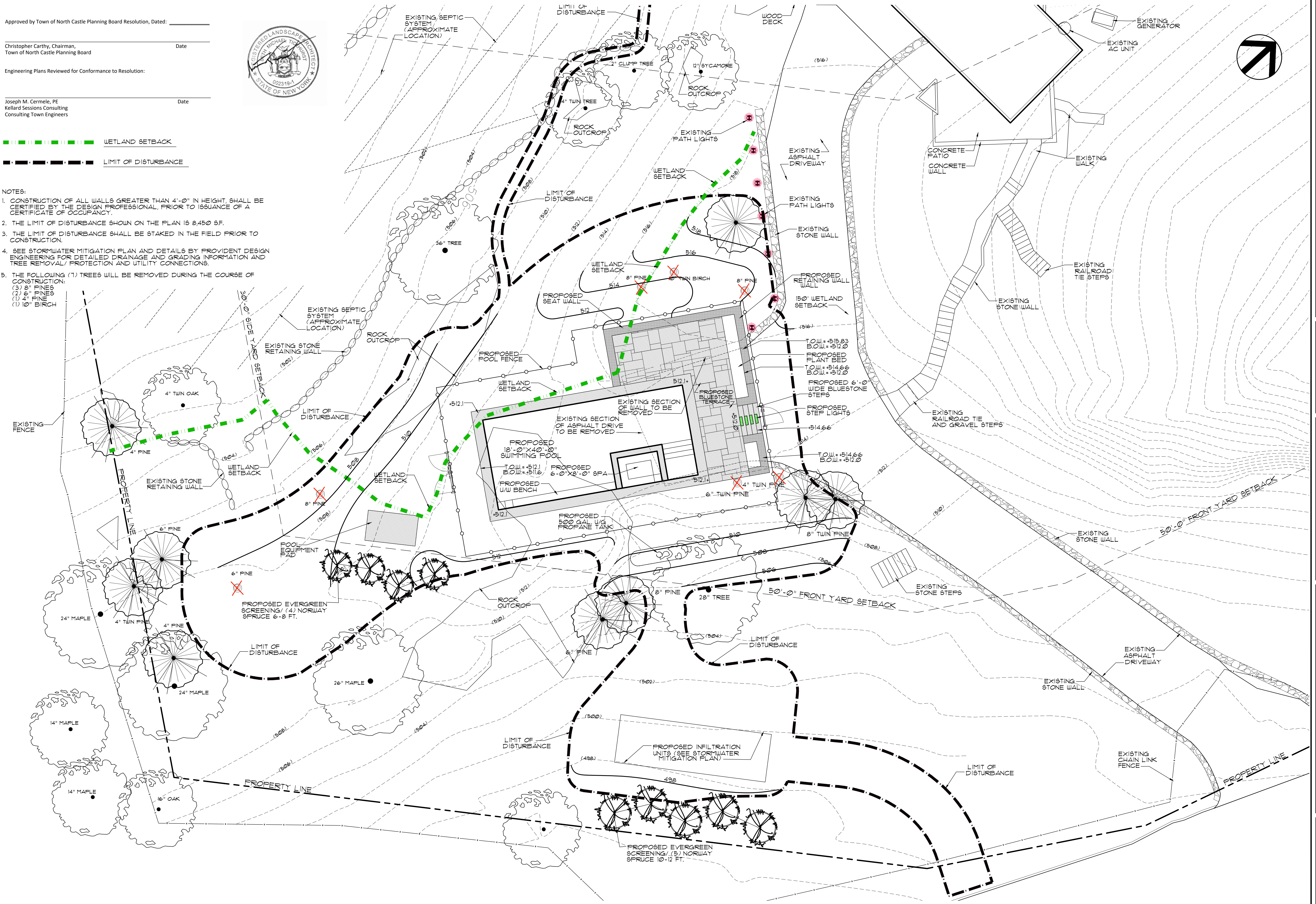
Joseph M. Cermele, PE Date _____
Kellard Sessions Consulting
Consulting Town Engineers



- WETLAND SETBACK
- LIMIT OF DISTURBANCE

NOTES:

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- THE FOLLOWING (1) TREES WILL BE REMOVED DURING THE COURSE OF CONSTRUCTION:
 - (3) 8" PINES
 - (2) 6" PINES
 - (1) 4" PINE
 - (1) 10" BIRCH



PRELIMINARY POOL LOCATION PLAN

FOR THE GRAFF RESIDENCE

3 MIDDLE PATENT ROAD

ARMONK, NY

Scale: 1/8"=1'-0"

Drawn: S.T.

Date: 12/21/20

Revisions:

Date	Item
2/11/21	Tree removal notes, etc.

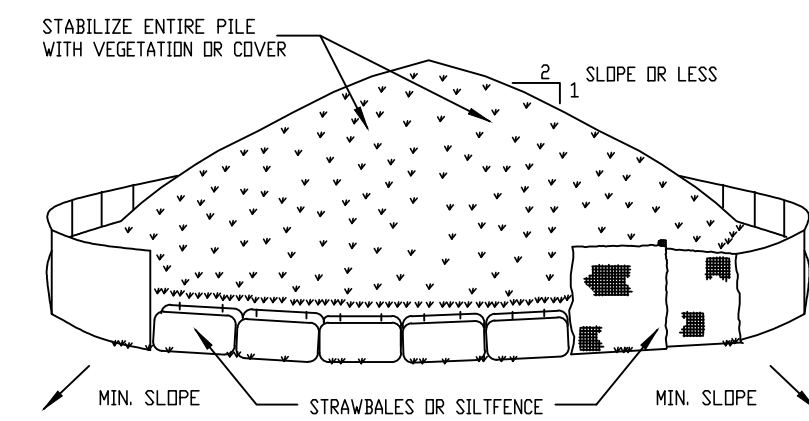
BENEDEK & TICEHURST

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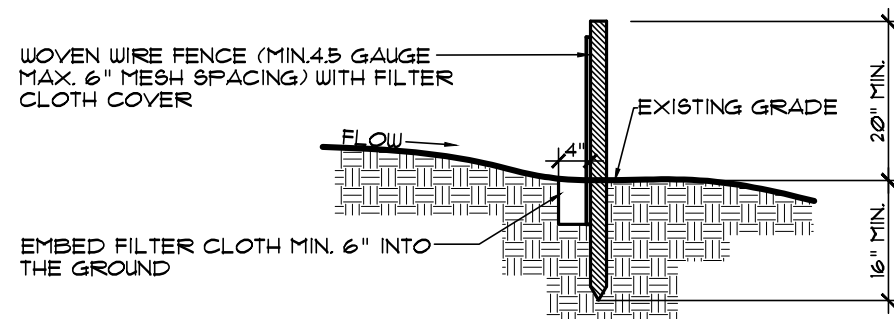
PL-1

- INSTALLATION NOTES**
1. AREA CHOSEN FOR STOCKPILING OPERATIONS SHALL BE DRY AND STABLE.
 2. MAXIMUM SLOPE OF STOCKPILE SHALL BE 1:2.
 3. UPON COMPLETION OF SOIL STOCKPILING, EACH PILE SHALL BE SURROUNDED WITH EITHER SILT FENCING OR STRAWBALES, THEN STABILIZED WITH VEGETATION OR COVERED.
 4. SEE SPECIFICATIONS (THIS MANUAL) FOR INSTALLATION OF SILT FENCE.

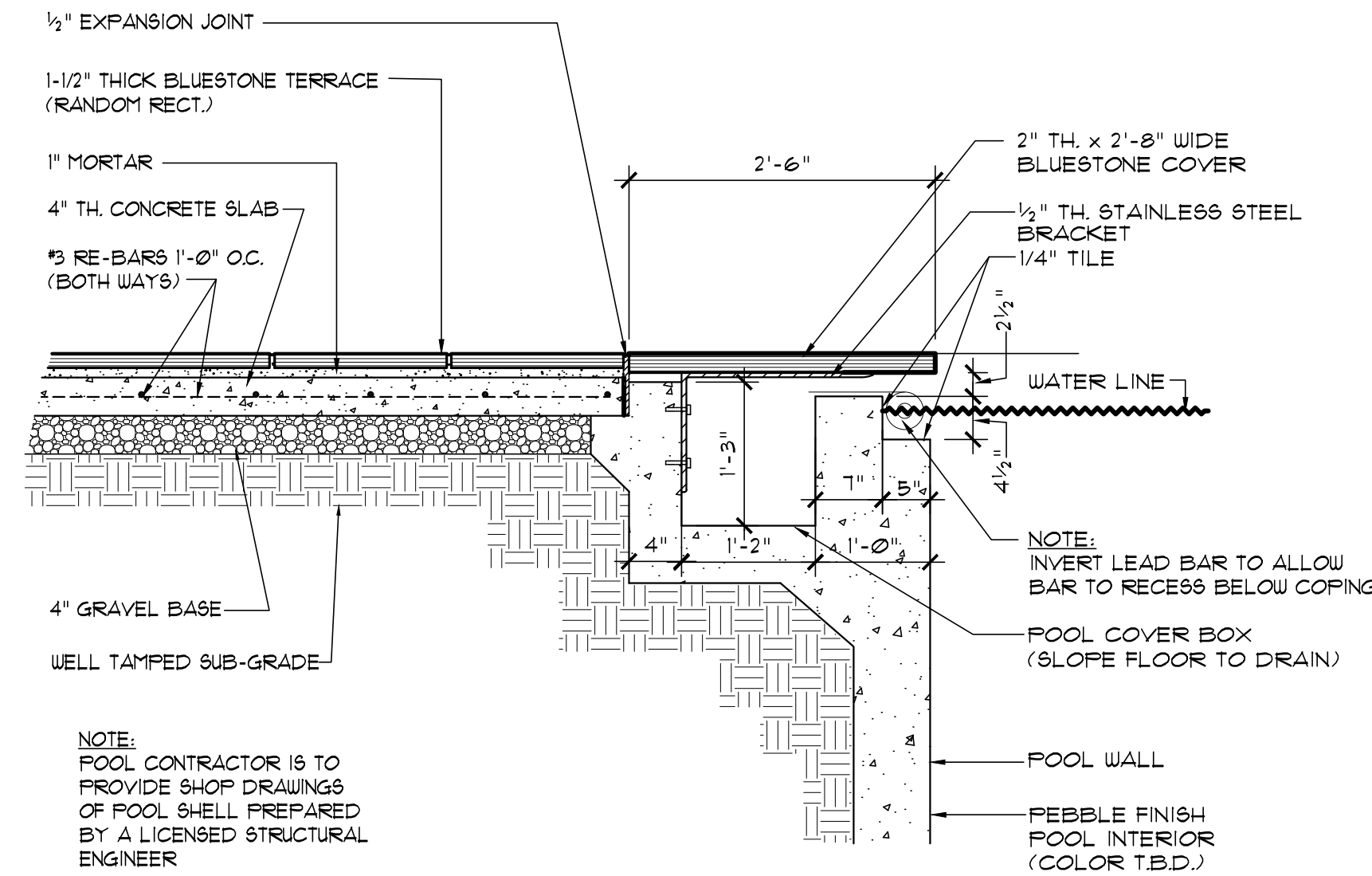


SOIL STOCKPILE DETAIL
SCALE: 1/2"=1'-0"

- SILT FENCE NOTES:**
1. WOVEN WIRE FENCING TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE OR STAPLES.
 2. FILTER CLOTH TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MIDDLE.
 3. WHEN TWO SECTIONS OF FILTER CLOTH ARE JOINED TOGETHER, THEY NEED TO BE OVERLAPPED BY 6" AND FOLDED.
 4. MAINTENANCE SHALL BE PERFORMED WHEN NEEDED AND MATERIAL REMOVED WHEN BULGES OR RIPS OCCUR IN FENCE.



SILT FENCE DETAIL
SCALE: 1/2"=1'-0"



AUTO-COVER STORAGE BOX DETAIL

SCALE: 3/4"=1'-0"

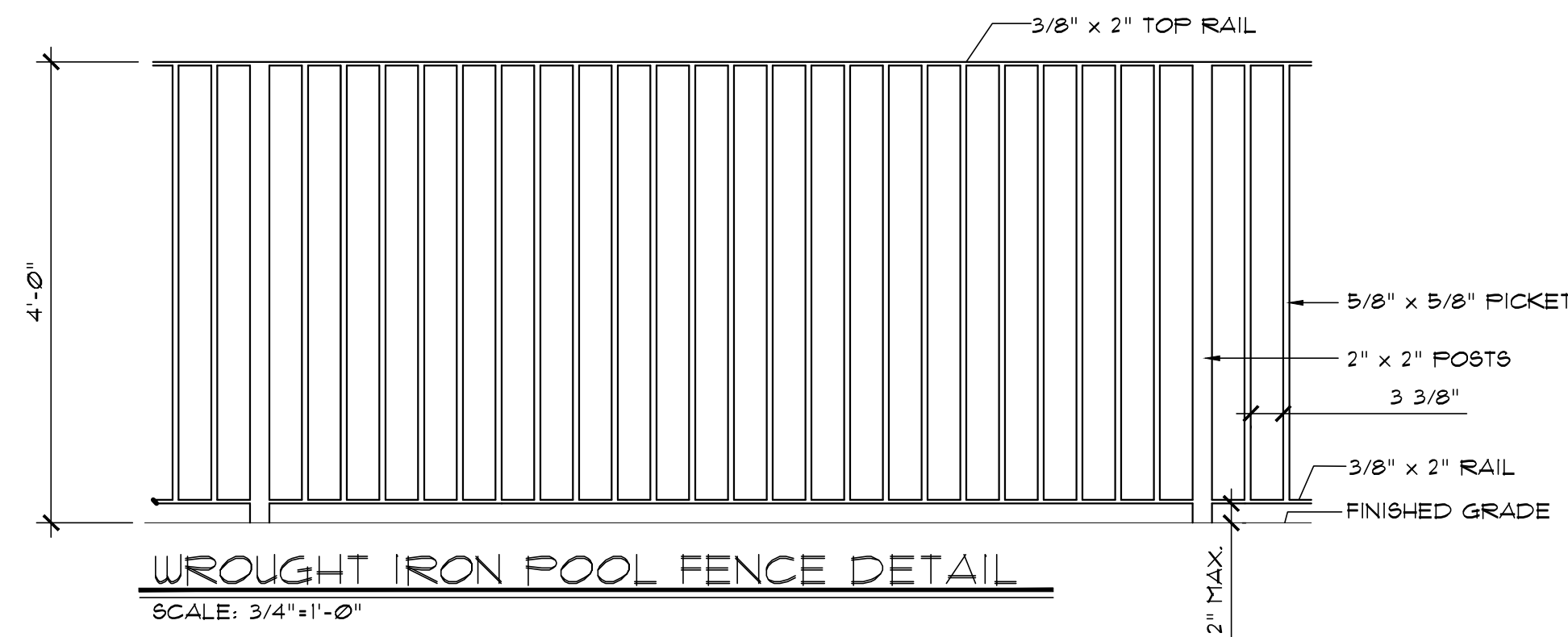
NOTES: (TAKEN FROM THE STATE OF NEW YORK BUILDING CODE)

ENTRAPMENT PROTECTION REQUIREMENTS:

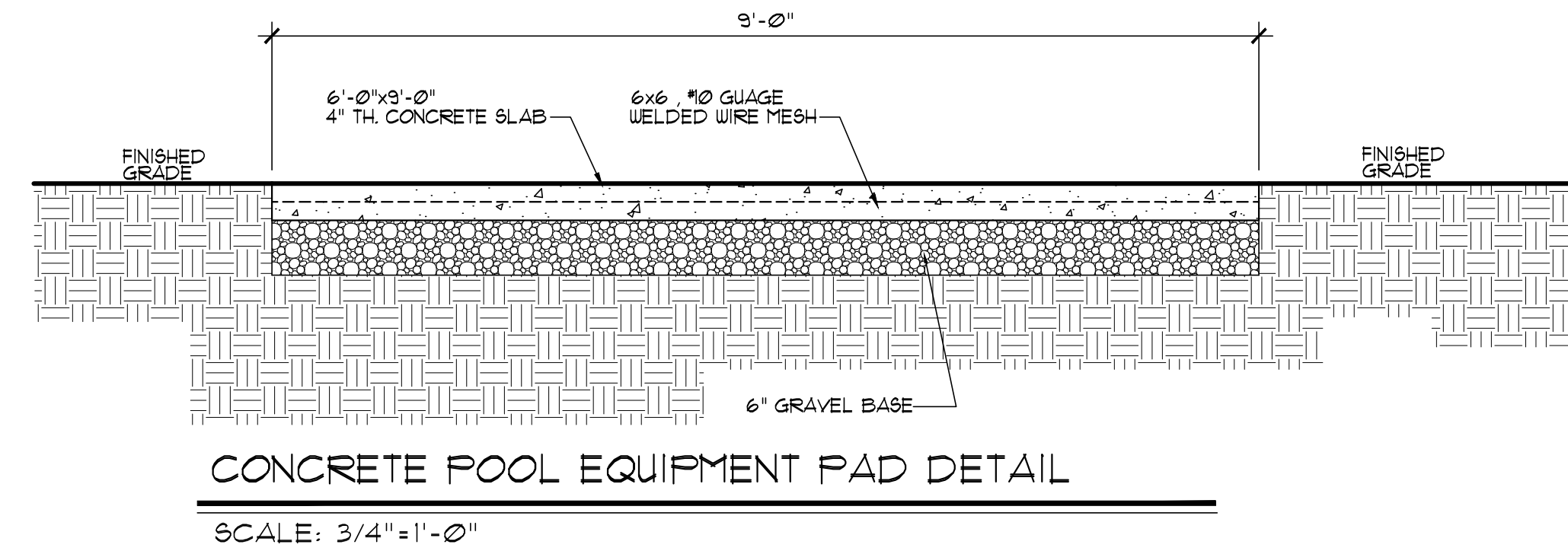
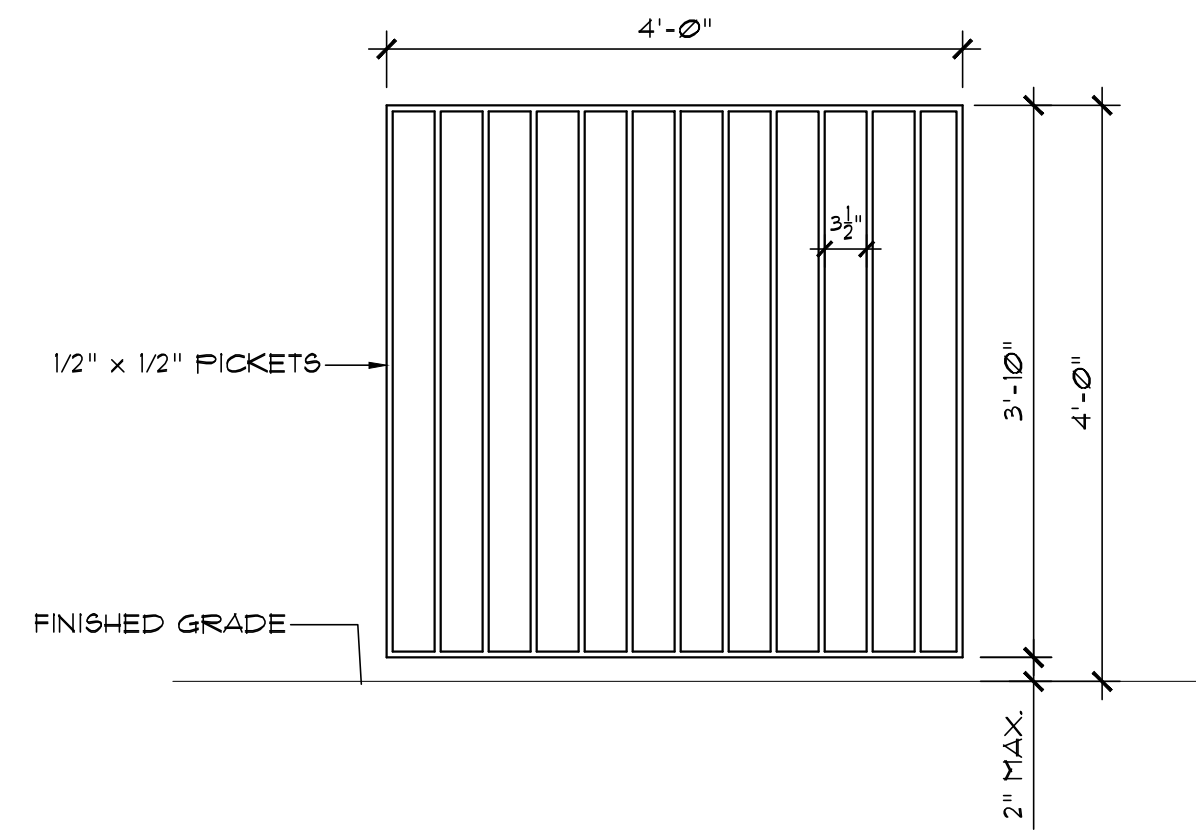
- SUCTION OUTLETS MUST BE DESIGNED TO PRODUCE CIRCULATION THROUGHOUT THE POOL OR SPA.
 - SINGLE OUTLET SYSTEMS, SUCH AS AUTOMATIC VACUUM CLEANER SYSTEMS, OR OTHER SUCH MULTIPLE SUCTION OUTLETS WHETHER ISOLATED BY VALVES OR OTHERWISE MUST BE PROTECTED AGAINST USER ENTRAPMENT.
- SUCTION FITTINGS:**
- ALL POOL AND SPA SUCTION OUTLETS (EXCEPT SURFACE SKIMMERS) MUST BE PROVIDED WITH:
 - A COVER THAT CONFORMS WITH REFERENCE STANDARD ASME/ANSI A12.19.2.1, ENTITLED SUCTION FITTINGS FOR USE IN SWIMMING POOLS, WADING POOLS, SPAS, HOT TUBS, AND WHIRLPOOL BATHTUB APPLIANCES, OR
 - A DRAIN GRATE THAT IS 12" x 12" OR LARGER, OR
 - A CHANNEL DRAIN SYSTEM APPROVED BY THE LOCAL CODE ENFORCEMENT OFFICIAL.
- ATMOSPHERIC VACUUM RELIEF SYSTEM REQUIRED:**
- ALL POOL AND SPA SINGLE OR MULTIPLE OUTLET CIRCULATION SYSTEMS MUST BE EQUIPPED WITH ATMOSPHERIC VACUUM RELIEF SHOULD GRATE COVERS LOCATED THEREIN BECOME MISSING OR BROKEN. SUCH VACUUM RELIEF SYSTEMS SHALL INCLUDE AT LEAST ONE OF THE FOLLOWING:
 - SAFETY VACUUM RELEASE SYSTEM CONFORMING TO REFERENCE STANDARD ASME A12.19.1, ENTITLED MANUFACTURERS SAFETY VACUUM RELEASE SYSTEMS (SVRS) FOR RESIDENTIAL AND COMMERCIAL SWIMMING POOL, SPA, HOT TUB AND WADING POOL, OR
 - A GRAVITY DRAINAGE SYSTEM APPROVED BY THE LOCAL CODE ENFORCEMENT OFFICIAL.
- DUAL DRAIN SEPARATION:**
- SINGLE OR MULTIPLE PUMP CIRCULATION SYSTEMS MUST BE PROVIDED WITH A MINIMUM OF TWO (2) SUCTION OUTLETS OF THE APPROVED TYPE.
 - THE SUCTION OUTLETS MUST BE SEPARATED BY A MINIMUM HORIZONTAL OR VERTICAL DISTANCE OF THREE (3) FEET.
 - THESE SUCTION OUTLETS MUST BE PIPED SO THAT WATER IS DRAIN THROUGH THEM SIMULTANEOUSLY THROUGH A VACUUM RELIEF-PROTECTED LINE TO THE PUMP OR PUMPS.
- IF THE POOL OR SPA IS EQUIPPED WITH VACUUM OR PRESSURE CLEANER FITTINGS(S), EACH FITTING MUST BE LOCATED:
 - IN AN ACCESSIBLE POSITION WHICH IS AT LEAST (6) INCHES AND NOT GREATER THAN (12) INCHES BELOW THE MINIMUM OPERATIONAL WATER LEVEL, OR
 - AS AN ATTACHMENT TO THE SKIMMER(S).

WROUGHT IRON FENCE NOTES:

1. WROUGHT IRON RAIL TO RECEIVE ONE COAT PRIMER AND TWO COATS FLAT BLACK FINISH COAT.
2. FENCE CONTRACTOR TO PROVIDE FINISH SAMPLE OF GATES/ FENCE FOR OWNERS APPROVAL PRIOR TO INSTALLATION.
3. WROUGHT IRON FENCE 4 GATES ARE TO BE IN ACCORDANCE WITH STATE OF NEW YORK 4 CITY OF RYE CODES FOR POOL ENCLOSURES

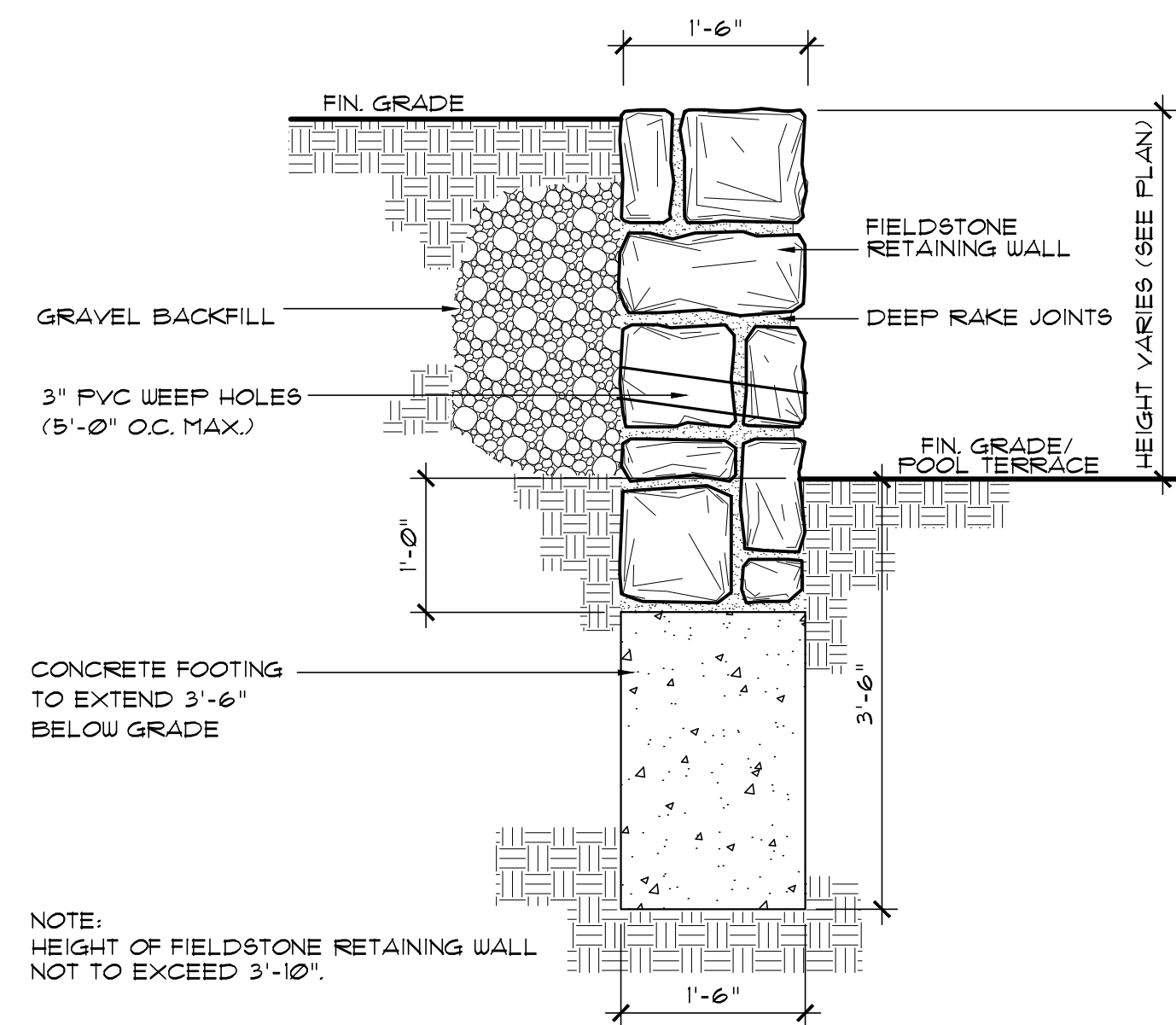


WROUGHT IRON POOL FENCE DETAIL
SCALE: 3/4"=1'-0"



CONCRETE POOL EQUIPMENT PAD DETAIL

SCALE: 3/4"=1'-0"



NOTE: HEIGHT OF FIELDSTONE RETAINING WALL NOT TO EXCEED 3'-10".

FIELDSTONE RETAINING WALL DETAIL

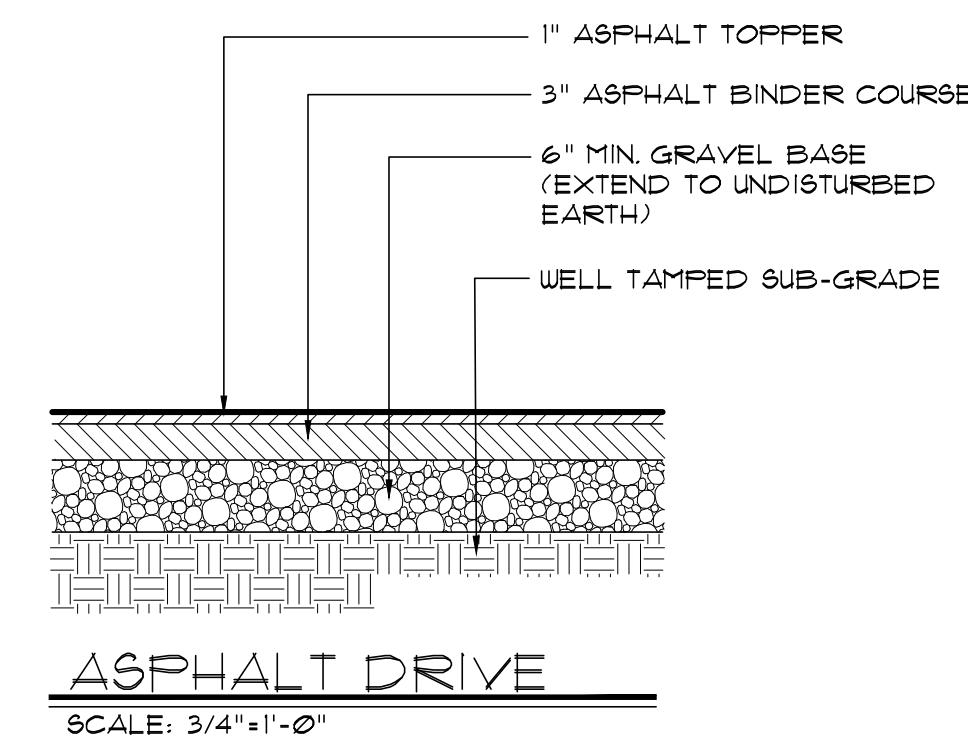
SCALE: 3/4"=1'-0"



EXISTING PATH LIGHTS
EXISTING PATH LIGHTS ARE USED FROM DUSK UNTIL APPROXIMATELY 9:00 PM.



PROPOSED HADCO R6C2 LED STEP LIGHT
PROPOSED STEP LIGHTS ARE TO BE USED FROM DUSK UNTIL APPROXIMATELY 9:00 PM.



ASPHALT DRIVE

SCALE: 3/4"=1'-0"



Approved by Town of North Castle Planning Board Resolution, Dated: _____

Christopher Carthy, Chairman, Date _____
Town of North Castle Planning Board

Engineering Plans Reviewed for Conformance to Resolution:

Joseph M. Cermele, PE Date _____
Kellard Sessions Consulting
Consulting Town Engineers

DETAILS
FOR
THE GRAFF RESIDENCE
3 MIDDLE PATENT ROAD
ARMONK, NY

Scale: AS NOTED
Drawn: S.T.
Date: 12/21/20

Revisions:
Date: 2/11/21
Item: Additional details

BENEDEK & TICEHURST
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Drawing Number:
D-1

CONSTRUCTION SEQUENCE :

1. INSTALL SILT FENCE PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITY THAT COULD RESULT IN DISTURBANCE OF SOIL. IN ADDITION, SILT FENCE TO BE INSTALLED IMMEDIATELY DOWNHILL OF CONSTRUCTION AREA. TREES TO BE PROTECTED SHALL BE CORDONED OFF WITH CONSTRUCTION FENCE.
2. PROVIDE A GRAVEL ANTI-TRACKING PAD AS STABILIZED CONSTRUCTION ENTRANCE.
3. CONTRACTOR SHALL STRIP TOPSOIL AND TEMPORARILY STOCKPILE AND SURROUND WITH SILT FENCE WHERE INDICATED ON PLAN.
4. CONTRACTOR SHALL BEGIN SITE WORK INCLUDING EXCAVATION OF AND CONSTRUCTION OF PROPOSED POOL. UPON COMPLETION OF GUNITE, BACKFILL POOL AND ROUGH GRADE POOL AREA.
5. CONTRACTOR TO INSTALL STORMWATER MITIGATION SYSTEM AND CAP OFF FOR FUTURE CONNECTION.
6. INSTALL DRAIN INLETS AND PRE-TREATMENT STRUCTURE. PROVIDE INLET PROTECTION AND CAP UNTIL SITE IS STABLE.
7. INSTALL PROPOSED POOL TERRACE, PITCH TOWARD DRAIN INLETS.
8. INSTALL POOL EQUIPMENT.
9. INSTALL FENCING, RESTORE DISTURBED AREAS WITH TOPSOIL AND SEED. INSTALL LANDSCAPING.
10. VERIFY THE SITE IS STABLE BEFORE THE EROSION CONTROL MEASURES ARE REMOVED AND THE STORMWATER MITIGATION SYSTEM IS PLACED "ON-LINE."

GENERAL NOTES

1. THE CONSTRUCTION OF THE POOL, SPA, TERRACE AND STORMWATER MITIGATION WILL CREATE A TOTAL AREA OF DISTURBANCE OF 8,450 SF.
2. TOTAL AREA OF DISTURBANCE WITHIN THE WETLAND BUFFER WILL BE APPROXIMATELY 1,763 SF.
3. THE PROJECT WILL RESULT IN THE CREATION OF APPROXIMATELY 1,550 SF OF NEW IMPERVIOUS SURFACE.
4. THE CONSTRUCTION OF THE POOL, SPA, TERRACE AND STORMWATER MITIGATION SYSTEM WILL RESULT IN THE REMOVAL OF SEVEN (7) TREES.

GENERAL EROSION CONTROL NOTES:

1. PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION SILT FENCING SHALL BE INSTALLED ON THE DOWNHILL SLOPE OF WORK AREA AND SHALL BE IN PLACE AS INDICATED ON THIS SEDIMENT AND EROSION CONTROL PLAN.
2. EROSION CONTROL MEASURES SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE NEW YORK STATE STANDARDS AND SPECIFICATION FOR EROSION AND SEDIMENT CONTROL, AUGUST 2005.
3. ANY DRAINS OR CATCH BASINS SHALL BE PROTECTED WITH STONE AND BLOCK DRAIN INLET PROTECTION THROUGHOUT THE CONSTRUCTION PERIOD AND UNTIL ALL AREAS ARE THOROUGHLY STABILIZED.
4. SOIL STOCK PILES SHALL NOT BE ALLOWED ON STEEP SLOPES, IN DRAINAGE SWALES OR IN WETLAND AREAS. STOCK PILES SHALL BE SURROUNDED WITH SILT FENCING AND SEEDED WITH TOTAL ANNUAL RYE WITHIN TWO DAYS.
5. EROSION CONTROL MEASURES ARE TO BE INSPECTED AFTER EACH RAINFALL AND SHALL BE CLEANED, REPAIRED, OR REPLACED AS INDICATED IN THE EROSION AND SEDIMENT CONTROL MAINTENANCE SCHEDULE ON THIS SHEET.
6. FINAL GRADES SHALL BE ESTABLISHED WITHIN 7 DAYS AND TOP SOILED AND SEED TO PROVIDE A PERMANENT TURF WHICH WILL STABILIZE SLOPES AND PREVENT EROSION.
7. GRADED OR CLEAR AREAS SUBJECT TO EROSION SHALL BE STABILIZED WITH A MULCH COVER WHERE SEEDING MAY NOT HAVE A SUITABLE GROWING SEASON TO PRODUCE AN EROSION RETARDANT COVER.
8. FINAL LANDSCAPING WILL BE REQUIRED OVER ANY PREVIOUSLY DISTURBED AREAS. SPREAD A MIN. 4" TOPSOIL OVER DISTURBED SOIL. APPLY SEED MIXTURE AS PER PLANTING SCHEDULE, APPLY STRAW MULCH AND WATER WITHIN TWO DAYS OF COMPLETION OF TOPSOILING.
9. EROSION CONTROL MEASURES SHALL REMAIN IN PLACE UNTIL 80% GRASS IS ESTABLISHED, SOIL IS STABILIZED, AND THERE IS NO EVIDENCE OF POTENTIAL FOR EROSION AS A RESULT OF CONSTRUCTION ACTIVITY.
10. EROSION CONTROL MEASURES MAY ONLY BE REMOVED AT SUCH TIME THAT FINAL LANDSCAPING IS ESTABLISHED WHICH IS AT THE DISCRETION OF THE TOWN ENGINEER. AT THAT TIME, STRUCTURES ARE TO BE REMOVED IN REVERSE ORDER WITH THE UP SLOPE STRUCTURES BEING REMOVED FIRST AND THEN PROCEEDING DOWN SLOPE.

SYMBOL FOR DEEP TEST HOLE

DEEP TEST HOLE RESULTS 11/24/2020

TEST PIT 1

498.77	G.L.	FOREST LITTER
497.77	0"-12"	ORGANIC
496.77	12"-24"	SANDY LOAM
493.44	24"-64"	SANDY SILT

*64" TOTAL DEPTH, BEDROCK AT 64"

TEST PIT 2

498.50	G.L.	FOREST LITTER
497.50	0"-12"	ORGANIC
496.50	12"-24"	SANDY LOAM
494.33	24"-50"	SANDY SILT

*50" TOTAL DEPTH, BEDROCK @ 50"

TEST PIT 3

501.33	G.L.	FOREST LITTER
500.33	0"-12"	ORGANIC
499.33	12"-24"	SANDY LOAM
497.08	24"-51"	SANDY SILT

*51" TOTAL DEPTH, BEDROCK @ 51"

SYMBOL FOR INFILTRATION TEST

PERCOLATION TEST RESULTS DEPTH = 24" 11/24/2020

HOLE #	DROP MIN.	DROP INCH	RATE (IN/HR)
①	30 min.	2.75 inches	5.50
	30 min.	2.50 inches	5.00
	30 min.	2.50 inches	5.00

NO.	REVISION	DATE
1	EQUIPMENT PAD CONN. - IMP. AREA	02/18/2021

LEGEND

- STABILIZED CONSTRUCTION ENTRANCE
- LIMITS OF DISTURBANCE
- SILT FENCE/SEDIMENT BARRIER
- CONSTRUCTION FENCE
- TREE TO BE REMOVED
- TREE TO BE PROTECTED
- TOPSOIL STOCKPILE
- PROPOSED DRAINAGE INLET (DI)
- PROPOSED STORM DRAIN
- 508 PROPOSED CONTOUR LINE
- + 512.0 PROPOSED SPOT ELEVATION
- TP-1 TEST PIT LOCATION & DESIGNATION
- P-1 PERCOLATION LOCATION & DESIGNATION
- PROPOSED DRAINAGE SWALE
- PROPOSED ELECTRIC LINE
- PROPOSED WATER SERVICE
- PROPOSED GAS SERVICE

North

20 15 10 5 0 20 40

SCALE IN FEET

Surveyor: TC Merritts Land Surveyors, P.C.
394 Bedford Road
Pleasantville, New York 10570
Tel: (914) 769-8003

Landscaper Arch.: Benedek & Ticehurst
Landscape Architects
448 Old Post Road
Bedford Village, NY 10506
Tel: 914-234-9666
Email: btlandarch.com

Owner: David & Lisa Graff
3 Middle Patent Road
Armonk, NY 10504

Provident design engineering

7 SKYLINE DRIVE, HAWTHORNE, NEW YORK 10532
TEL: (914) 592-4040 WWW.PDERESULTS.COM

UNDER NEW YORK STATE EDUCATION LAW ARTICLE 145 (ENGINEERING), SECTION 7209 (2), IT IS A VIOLATION OF THIS LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.

© PROVIDENT DESIGN ENGINEERING, PLLC

GRAFF RESIDENCE
3 Middle Patent Road
Town of North Castle
Westchester County, New York

TITLE: **STORMWATER MITIGATION PLAN**

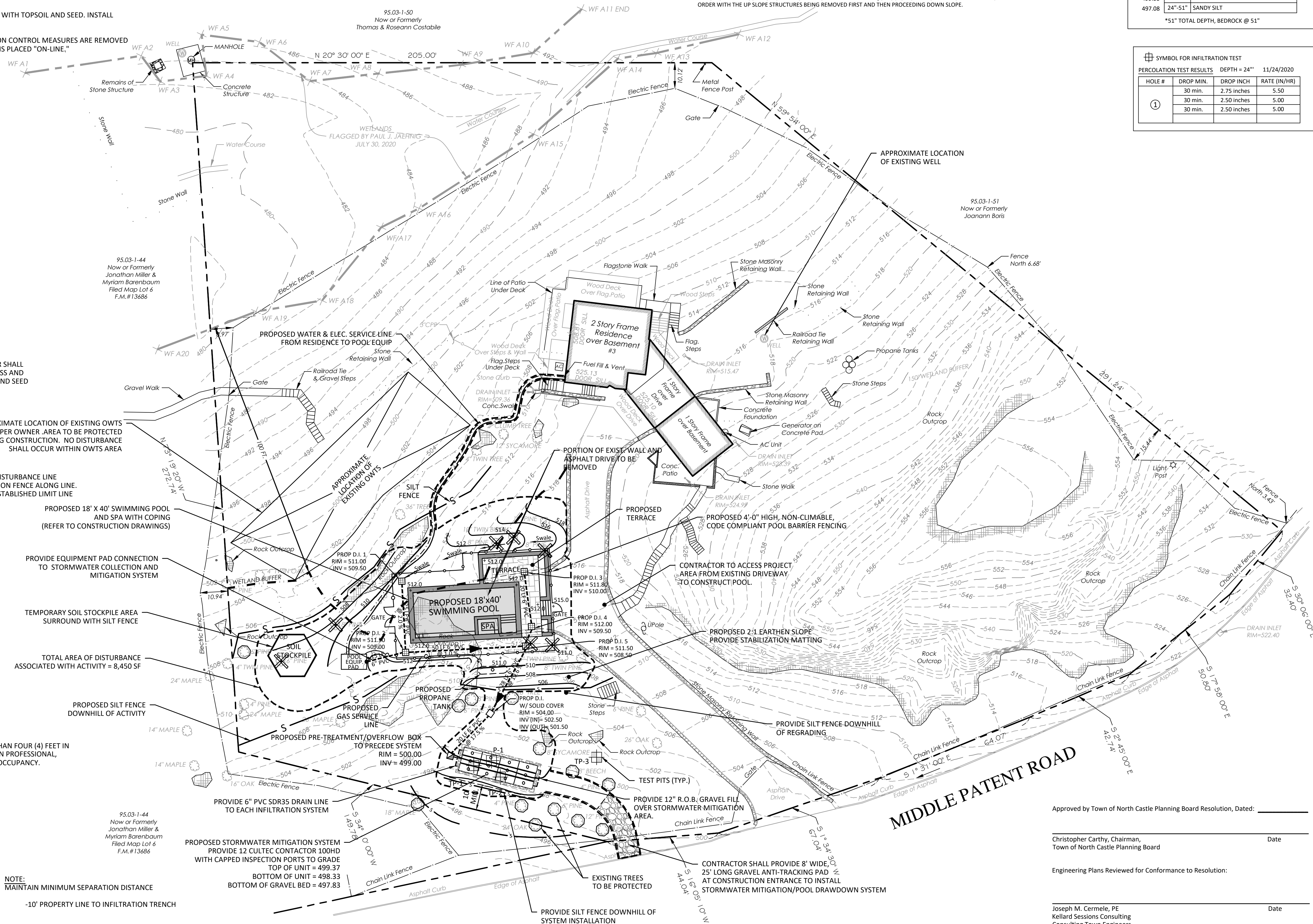
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Christopher Carthy, Chairman, Town of North Castle Planning Board Date _____

Engineering Plans Reviewed for Conformance to Resolution: _____

Joseph M. Cermele, PE
Kellard Sessions Consulting
Consulting Town Engineers Date _____

Scale: 1" = 20'
Date: 12/21/2020
Drawn By: KMM
Checked By: PIG
Project No.: 20-071
Sheet No.: 1 of 2
Dwg. No.: C-101



INDICATES TREE TO BE REMOVED

NOTE: UPON COMPLETION OF WORK, CONTRACTOR SHALL REMOVE TEMPORARY CONSTRUCTION ACCESS AND RESTORE AREA WITH LANDSCAPE, TOPSOIL AND SEED

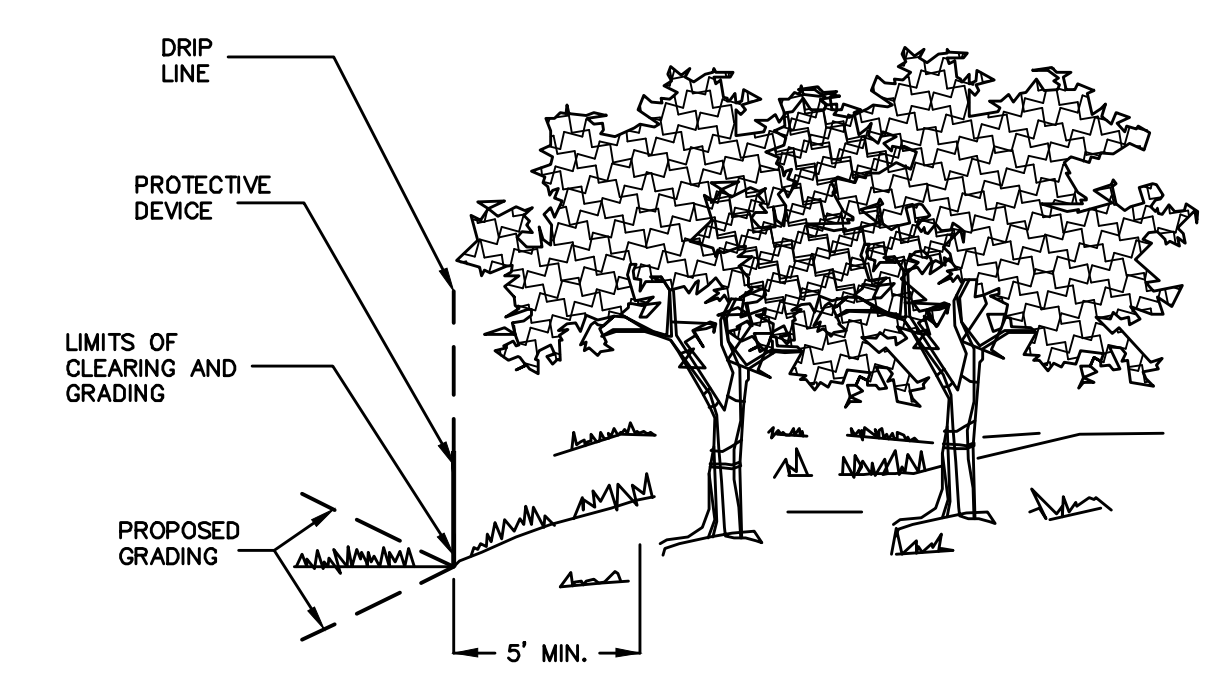
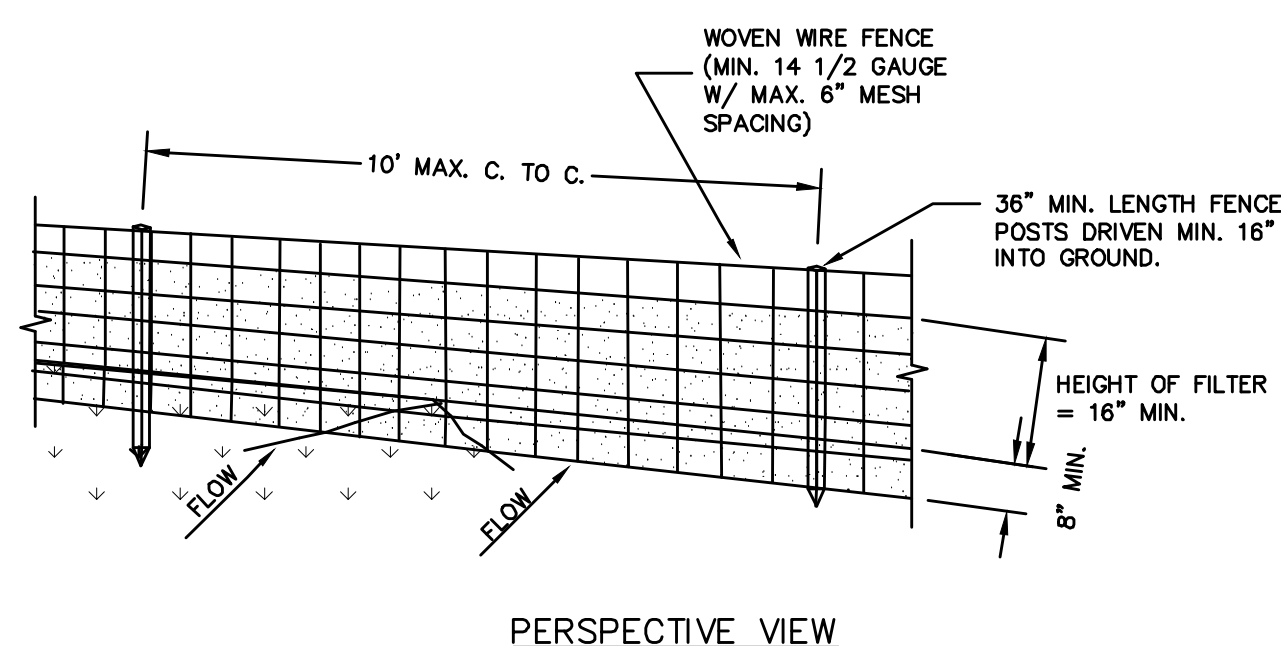
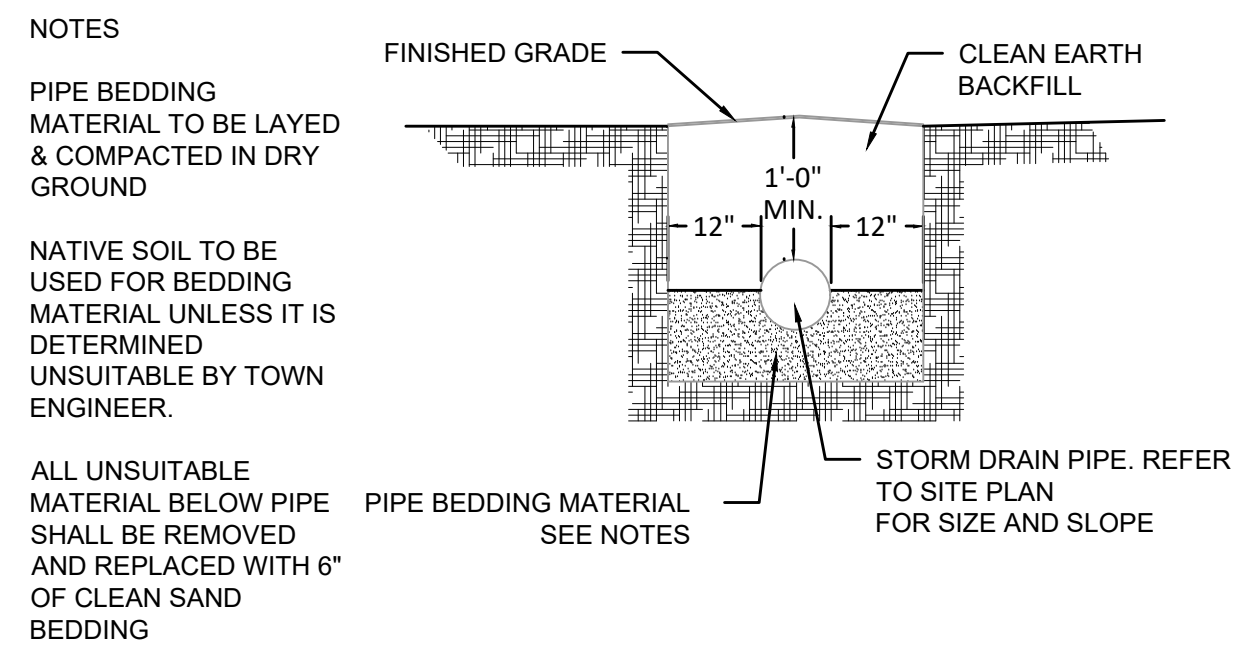
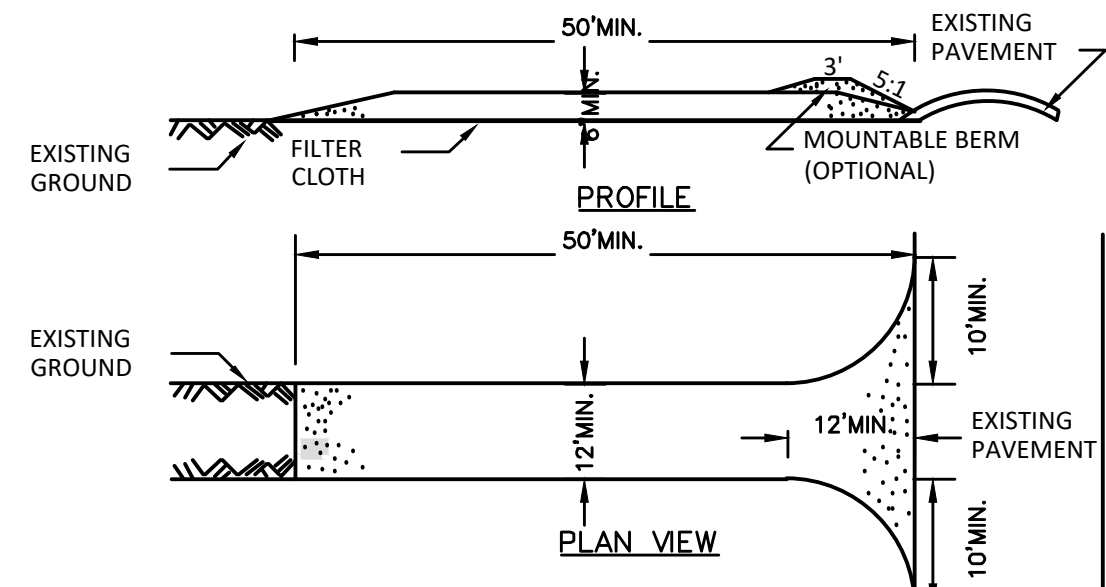
NOTE: CONTRACTOR SHALL DELINEATE LIMIT OF DISTURBANCE LINE BY INSTALLING ORANGE MESH CONSTRUCTION FENCE ALONG LINE. NO DISTURBANCE SHALL OCCUR BEYOND ESTABLISHED LIMIT LINE

NOTE: CONSTRUCTION OF ALL WALLS GREATER THAN FOUR (4) FEET IN HEIGHT, SHALL BE CERTIFIED BY THE DESIGN PROFESSIONAL, PRIOR TO ISSUANCE OF A CERTIFICATE OF OCCUPANCY.

NOTE: MAINTAIN MINIMUM SEPARATION DISTANCE

-10' PROPERTY LINE TO INFILTRATION TRENCH

G:\PROJECTS\2020\071 Middle Patent Road, Armonk\AutoCAD\Construction\Graff_SitePlan.dwg

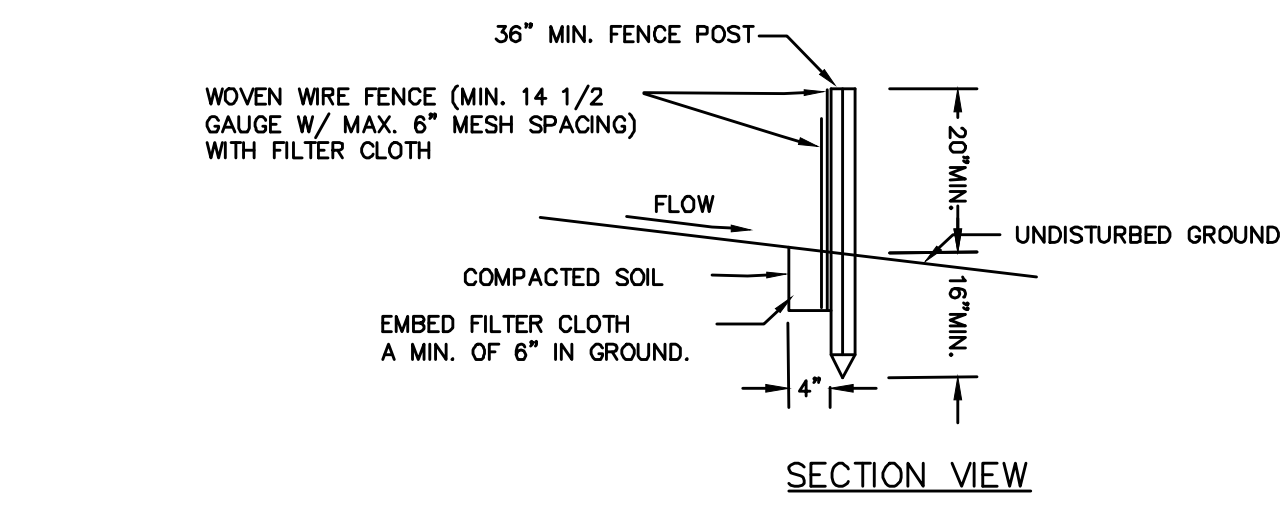


NO.	REVISION	DATE
1	EQUIPMENT PAD CONN. - IMP. AREA	02/16/2021

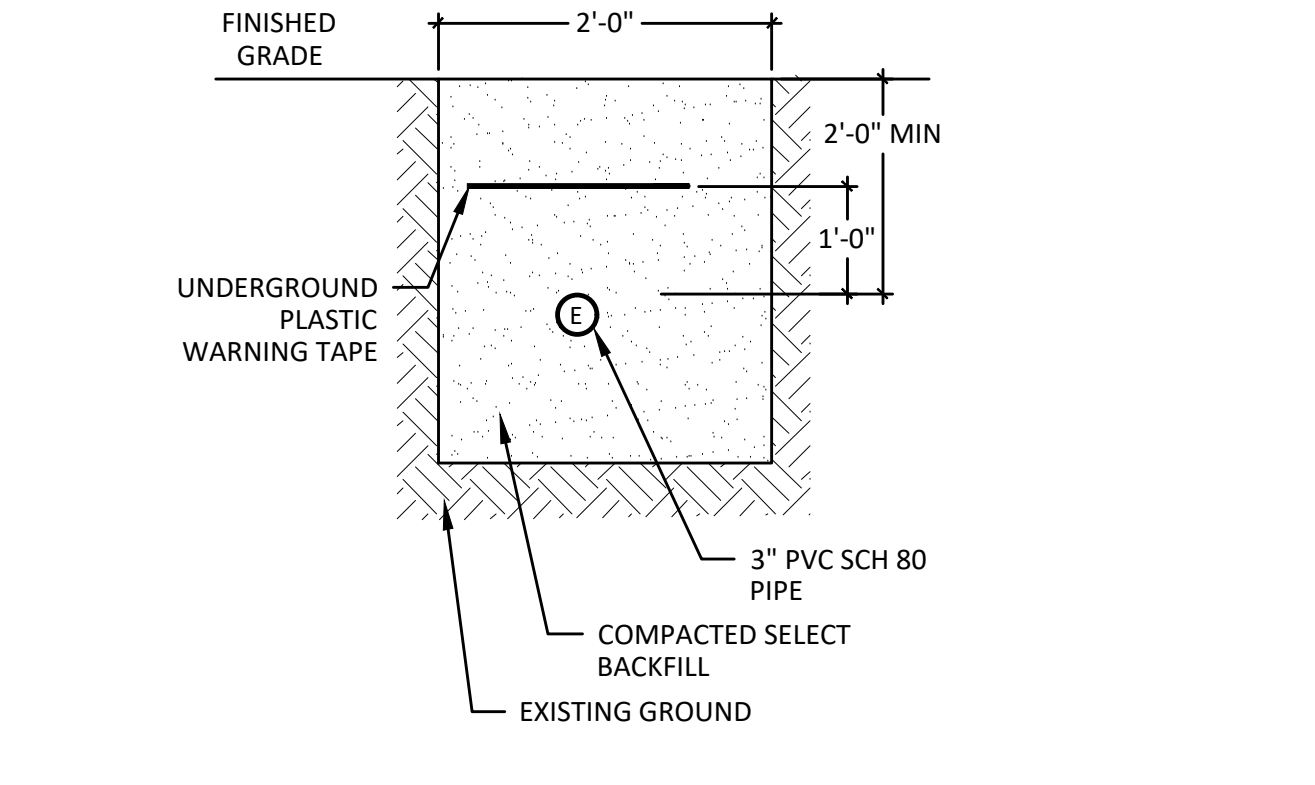
CONSTRUCTION SPECIFICATIONS

- STONE SIZE - USE 1-4" STONE, OR RECLAIMED OR RECYCLED CONCRETE EQUIVALENT.
- LENGTH - NOT LESS THAN 50 FEET (EXCEPT ON A SINGLE RESIDENCE LOT WHERE A 30 FOOT MINIMUM LENGTH WOULD APPLY).
- THICKNESS - NOT LESS THAN SIX (6) INCHES.
- 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 SITE.
- FILTER CLOTH - WILL BE PLACED OVER THE ENTIRE AREA PRIOR TO PLACING OF STONE.
- 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.
- 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.
- WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON A AREA STABILIZED WITH STONE AND WHICH DRAINS INTO AN APPROVED SEDIMENT TRAPPING DEVICE.
- PERIODIC INSPECTION AND NEEDED MAINTENANCE SHALL BE PROVIDED AFTER EACH RAIN.

STORM DRAIN TRENCH DETAIL
NOT TO SCALE 2

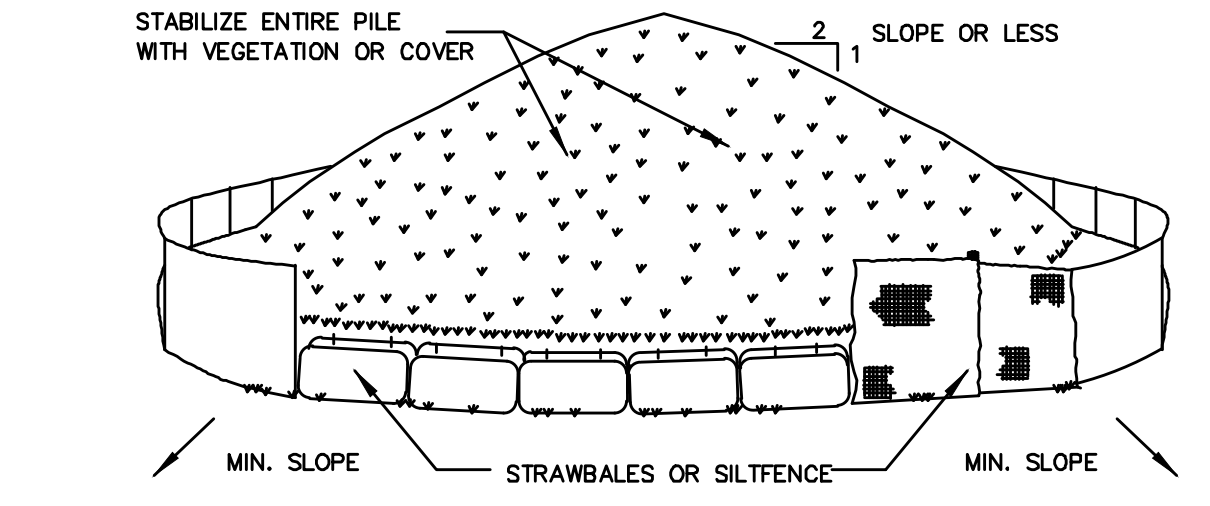


TREE PROTECTION
NOT TO SCALE 5



CONSTRUCTION SPECIFICATIONS

- WOVEN WIRE FENCE TO BE FASTENED SECURELY TO FENCE POSTS WITH WIRE TIES OR STAPLES. POSTS SHALL BE STEEL EITHER "T" OR "U" TYPE OR HARDWOOD.
- FILTER CLOTH TO BE TO BE FASTENED SECURELY TO WOVEN WIRE FENCE WITH TIES SPACED EVERY 24" AT TOP AND MID SECTION. FENCE SHALL BE WOVEN WIRE, 12 1/2 GAUGE, 6" MAXIMUM MESH OPENING.
- WHEN TWO SECTIONS OF FILTER CLOTH ADJOIN EACH OTHER THEY SHALL BE OVER-LAPPED BY SIX INCHES AND FOLDED. FILTER CLOTH SHALL BE EITHER FILTER X, MIRAFI 100X, STABILINKA T140N, OR APPROVED EQUIVALENT. PREFABRICATED UNITS SHALL BE GEOFAB, ENVIROFENCE, OR APPROVED EQUIVALENT.
- MAINTENANCE SHALL BE PERFORMED AS NEEDED AND MATERIAL REMOVED WHEN "BULGES" DEVELOP IN THE SILT FENCE.



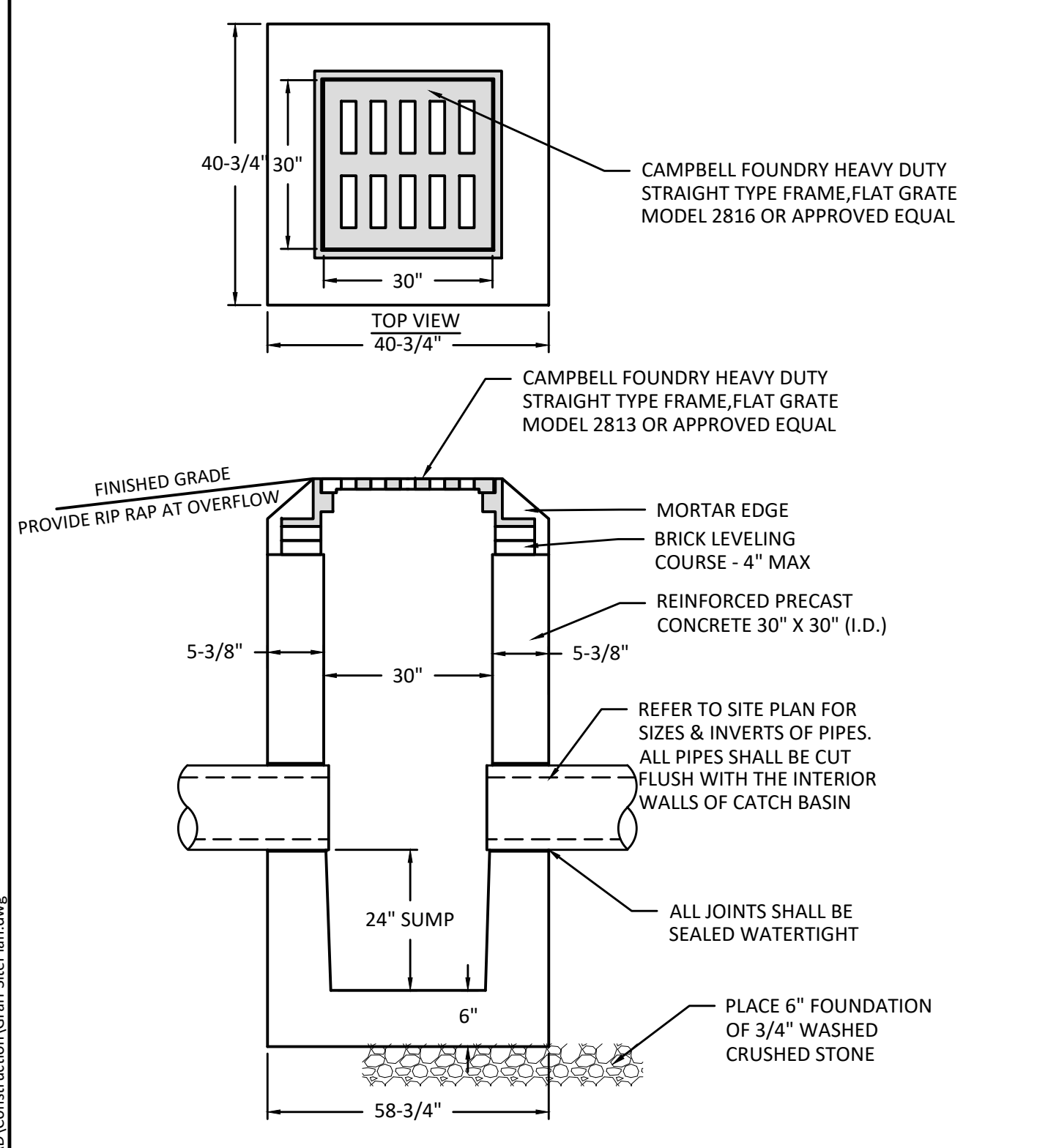
- INSTALLATION NOTES**
- AREA CHOSEN FOR STOCKPILING OPERATIONS SHALL BE DRY AND STABLE.
 - MAXIMUM SLOPE OF STOCKPILE SHALL BE 1:2.
 - UPON COMPLETION OF SOIL STOCKPILING, EACH PILE SHALL BE SURROUNDED WITH EITHER SILT FENCING OR STRAWBALES, THEN STABILIZED WITH VEGETATION OR COVERED.
 - SEE SPECIFICATIONS (THIS MANUAL) FOR INSTALLATION OF SILTFENCE.

SOIL STOCKPILING
NOT TO SCALE 6

STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE 1

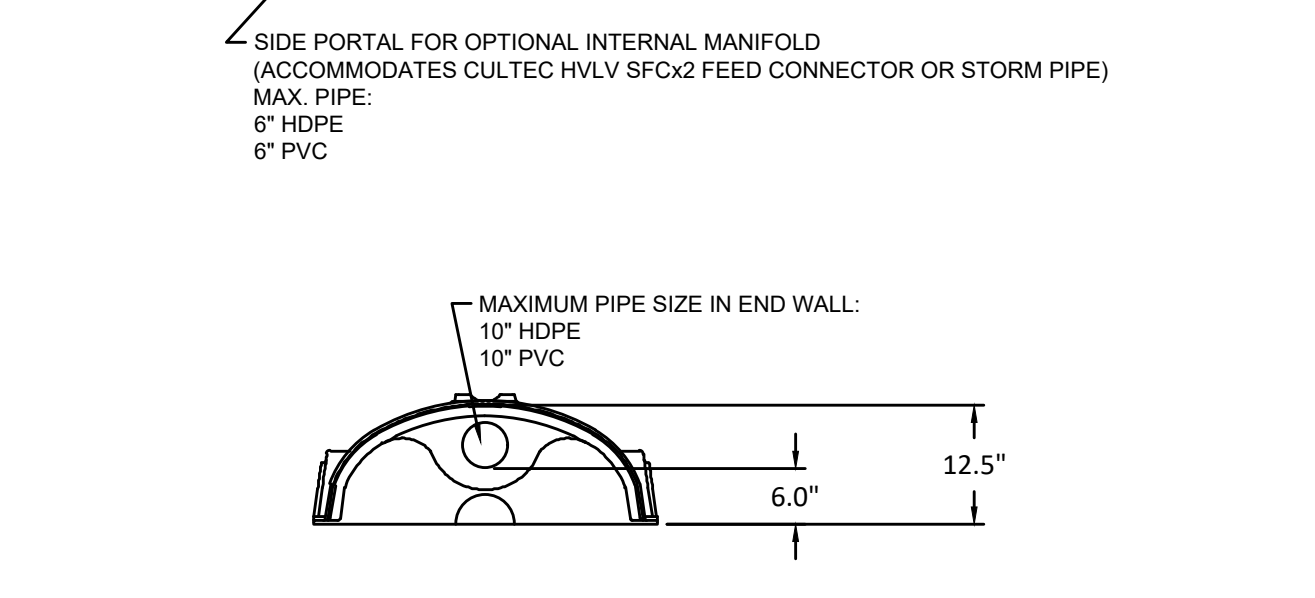
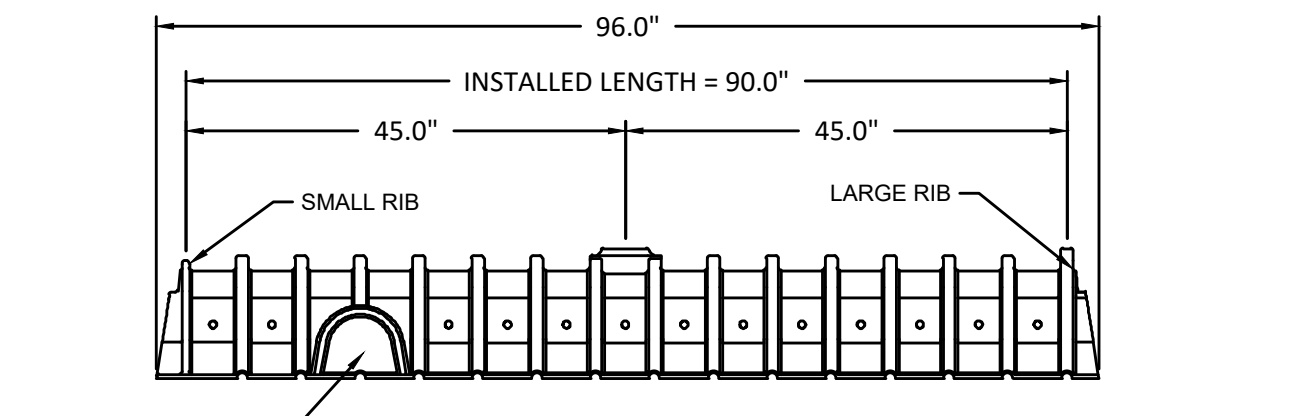
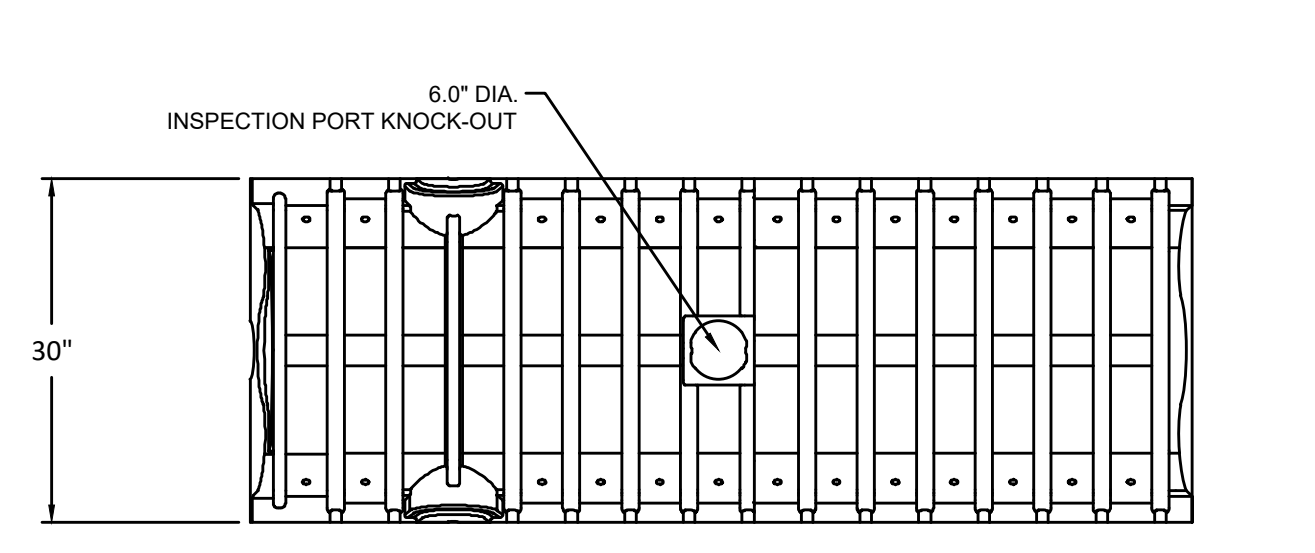
UTILITY TRENCH DETAIL
NOT TO SCALE 3

SILT FENCE
NOT TO SCALE 4



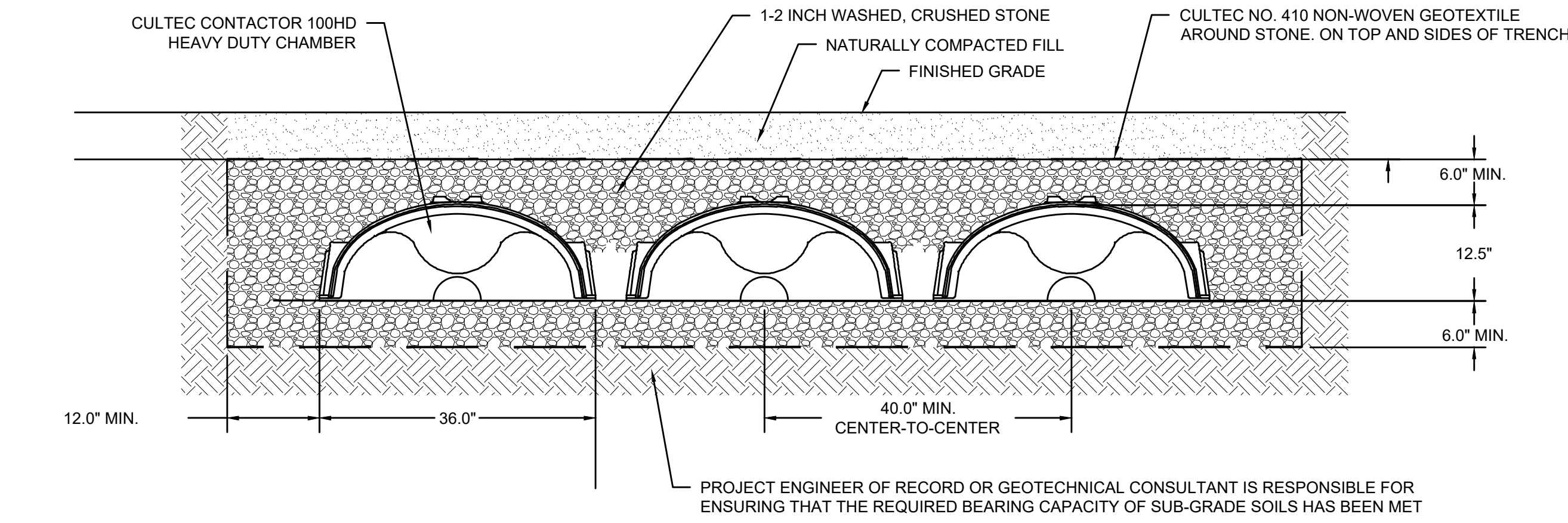
CONSTRUCTION SPECIFICATIONS

- CONCRETE MINIMUM STRENGTH: 4,000 PSI AT 28 DAYS.
- REINFORCEMENT: #4 REBAR / ASTM A615
- AIR ENTRAINMENT: 5%
- CONSTRUCTION JOINT: BUTYL RUBBER SEALANT
- LOAD RATING: H20 / ASTM C857

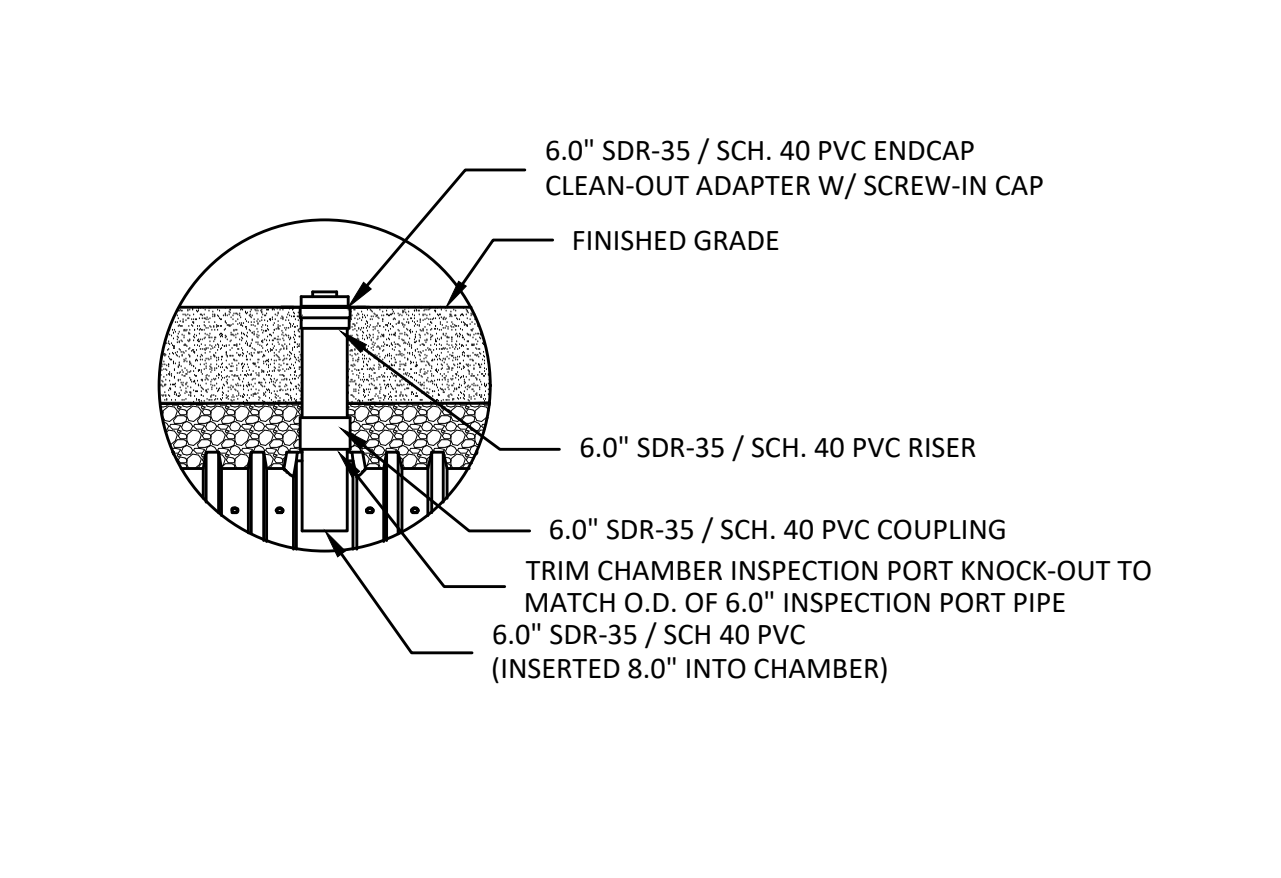


CULTEC CONTACTOR 100HD CHAMBER STORAGE = 1.866 CF/FT
INSTALLED LENGTH ADJUSTMENT = 0.5'

CULTEC RECHARGER 100HD HEAVY DUTY
NOT TO SCALE 8



CULTEC CONTACTOR 100HD SYSTEM CROSS SECTION
NOT TO SCALE



INSPECTION PORT - ZOOM DETAIL
NOT TO SCALE 10

9

PRE TREATMENT BOX WITH SUMP
NOT TO SCALE 7

Surveyor: TC Merritts Land Surveyors, P.C.
394 Bedford Road
Pleasantville, New York 10570
Tel: (914) 769-8003

Landscape Arch.: Benedek & Ticehurst
Landscape Architects
448H Old Post Road
Bedford Village, NY 10506
Tel: 914-234-9666
Email: btlandarch.com

Owner: David & Lisa Graff
3 Middle Patent Road
Armonk, NY 10504

Provident design engineering
7 SKYLINE DRIVE, HAWTHORNE, NEW YORK 10532
TEL: (914) 592-4040 WWW.PDERESULTS.COM
UNDER NEW YORK STATE EDUCATION LAW ARTICLE 145 (ENGINEERING), SECTION 7209 (2), IT IS A VIOLATION OF THIS LAW FOR ANY PERSON, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER, TO ALTER THIS DOCUMENT.
© PROVIDENT DESIGN ENGINEERING, PLLC

GRAFF RESIDENCE
3 Middle Patent Road
Town of North Castle
Westchester County, New York

CONSTRUCTION DETAILS

Approved by Town of North Castle Planning Board Resolution, Dated: _____

Christopher Carthy, Chairman, Date _____
Town of North Castle Planning Board

Engineering Plans Reviewed for Conformance to Resolution:

Joseph M. Cermele, PE, Date _____
Kellard Sessions Consulting
Consulting Town Engineers

Scale: NOT TO SCALE
Date: 12/18/2020
Drawn By: KMM
Checked By: PJG
Project No.: 20-071
Sheet No.: 2 of 2
Dwg. No.: C-102

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Wetlands Survey

The Graff Site

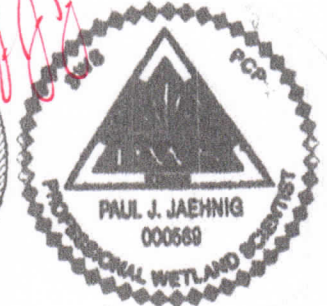
3 Middle Patent Road
Tax ID 95.03 – 1 - 52

North Castle, NY

Approx. 2.176 -Acres

Prepared for
Lisa and David Graff

July 30, 2020



20graff.3middlepatentrd.northcastlewrep

Introduction

A wetland investigation was completed on property identified as 3 Middle Patent Road in the Town of North Castle on July 30, 2020 by Paul J. Jaehnig, Certified Professional Geologist, Soil Scientist, and Wetland Scientist. The work consisted of the taking of soil borings to identify the presence of wetland or hydric soils, and the marking or flagging of the wetlands boundary. The work was conducted in accordance with the Town of North Castle Wetland Law. The work was done at the request of the client and property owner Lisa and David Graff.

Site Description

The site is an irregularly-shaped property situated off of the west side of Middle Patent Road. The site is located in a very low-density residential area where residences are commonly screened from neighbors by large woodland buffers. The site consists of: a residence; small lawn area; woodlands; and wetlands (see enclosed *Wetland and Soils Map* and *photos 1-10* in Appendix I).

Slopes across the site vary from nearly level and gently sloping to steep sloping. The land slopes down in all directions from a high point on the northeast portion of the site. Most of the site slopes down to the southwest. Nearly level land is on the central portion of the site. Gentle slopes are on the southwest corner and western edge of the site. Steep slopes are on the northeast portion of the site, as well as, many southern, central, and western portions of the site. Topography in the central portion of the site and some central-eastern portions of the site has been modified by past man-made disturbances, including soil cut and fill, as well as, machine re-grading of soil. These past disturbances have been carried-out in the course of developing the site.

A paved driveway comes off of Middle Patent Road and into the central-eastern portion of the site (see *photo 1* in Appendix I). The driveway continues southwest, climbing a moderate to steep sloped section of the land, to the east-central portion of the site where the driveway becomes more gently sloped. There is a vehicle parking area in this area (see *photo 2* in Appendix I). The driveway then continues more west and northwest as it approaches the residence. The driveway continues northwest under the residence, past the residence, and terminating to form another vehicle area (see *photo 3* in Appendix I).

The residence is located on the western-central portion of the site (see *photo 3 & 4* in Appendix I).

A small corridor of lawn area covers the southwest-central and central-southern portions of the site (see *photo 4* in Appendix I).

Non-wetland woodland cover much of the lands surrounding the site. Many of the woody cover closer to the residence consists of thickly planted mature shrubs. Beech, hemlock, black birch, and sugar maple trees dot the woodlands. Twig and leaf or evergreen needle litter covers the woodland floor. Walking paths traverse the woodlands, permitting easy access across the site (see *photo 5* in Appendix I).

Rock outcrop covers and extensive area of ridge across the northeast portion of the site, as well as, small areas on the southeast portion of the site (see *photo 6* in Appendix I). Talus deposits of loose rock collect at the steep rock slope near the road.

Wetlands

Introduction

The wetlands boundary was flagged in the field with consecutively numbered flagging (WL-A-1, WL-A-2, etc.) and plotted on the enclosed *Wetland and Soils Map*. Wetlands cover the western edge and southwest corner of the site. Wetlands consist of a gently sloped hillside wetland with and associated small, intermittent drainage course. The wetland extends to the northwest of the site and to the southwest of the site. The wetland is poorly drained and very poorly drained. Micro-topography is absent in the outer, more poorly drained portions, and but more developed in the very poorly drained, core portions. The surface wetland drainage is directed to the south.

Description

An intermittent drainage course flows south along a gently sloped valley which extends north for a couple of hundred on the neighboring site (see *photo 7* in Appendix I). The drainage channel is linear as it goes through this valley, but develops a slight meander as it enters the northwest and western edge of the site. The channel become ill-defined approx. 30 to 40 ft. into the site, as the slopes moderate. The channel is approx. 1.5 ft. wide and less than 1 ft. deep. The channel is un-vegetated and dry at this time. Small leaf dams and deposits of fine sand along the channel are indicative of intermittent drainage passing through the channel during storm events. The drainage channel is bordered by non-wetland, lightly wooded lands having a few widely-spaced, tall sugar maple and tulip as tree canopy, a few shrubs such winged euonymus, raspberry, Japanese stilt grass, and garlic mustard plants.

A gently sloped to nearly level swampland flanks the intermittent drainage course; it covers the western edge and the southwest corner of the site (see *photo 8* in Appendix I). The swampland extends slightly to the northwest of the site, and many acres to the southwest of the site. The swampland has a very thin tree canopy of a few tall red maples with shallow to exposed roots. There is a stand of phragmites on the central portion of the wetland. A few skunk cabbage, nettle, clearweed, and Japanese stilt grass herbaceous growth covers the wetland floor. Matted leaf litter covers un-vegetated portions of the wetland floor.

Alongside the swampland, near the southwest corner of the site, are the remains of a pump / well house constructed of concrete, and a fieldstone-lined well (see *photos 9 & 10* in Appendix I).

Wetland Functions

Wetlands on the site function primarily as a contributory ground-water discharge area, providing contributing hydrologic input to wetland and a local water-body known as *Cobamong Pond*. The northern portion of the wetland functions also a local storm-water attention area for intermittent drainage carried in the intermittent drainage course as it

approaches the western edge of the site. The wetland provides important potential habitat area utilized by deer, squirrel, small songbirds, raccoon and coyote. Butterflies and dragon flies inhabit more open portions of the wetland.

Regional Drainage

Drainage from the site is directed southerly and away from the site into the north end of Cobamong Pond. Surface drainage discharges from the southeast end of Cobamong Pond, continues easterly along a well-defined watercourse, and to the headwaters of the Mianus River. The Mianus River flows north, then east, and southerly through the neighboring Town of Bedford. The Mianus River flows southerly into Connecticut, ultimately reaching the Long Island Sound (see *Regional Drainage Map* in Appendix II).

NYSDEC Jurisdiction

Wetlands on the site are not New York State Dept. of Environmental Conservation (NYSDEC) regulated wetlands, according to a review of their published maps (see *NYSDEC Wetland Map* in Appendix III).

Soils

Shallow soil borings were taken using a spade and Dutch auger at selected locations throughout the site in order to identify wetland soils. Soil boring locations (SS-1, SS-2, etc.) were plotted approx. on the enclosed *Wetland and Soils Map*. Soil borings were logged noting soil profile color, texture, redoximorphic (wetland soil) indicators, and water table. Detailed descriptions of soil borings are provided in Appendix IV.

Soils encountered on the study area include: non-wetland, well drained Charlton-Chatfield complex, very rocky (CrC), slopes 2 to 15 %, in the undisturbed, gently sloped woodland areas of the site; non-wetland, well drained Chatfield-Hollis Rock outcrop complex (CuD), slopes 15 to 35 %, in the undisturbed, moderate to steep sloped woodlands on the site; non-wetland, well drained Hollis-Rock outcrop complex, very steep (HrF), slopes 35 to 60 %, in the undisturbed, very steep sloped woodlands on the northeast portion of the site; non-wetland, well-drained Udorthents, cut, fill, & graded soil (Ud1), slopes varied, to describe areas around the residence, yard, and along the driveway, where past man-made disturbances have been carried-out as part of the development of the property; non-wetland, moderately well drained Udorthents, cut, fill, & graded soil (Ud2), slopes varied, to describe some areas adjacent to wetlands where the natural soil profile has been disturbed; wetland, poorly drained Leicester loam (LcA), slopes 0 to 3 %, in the undisturbed, very gently sloped outer portions of the wetland; wetland, poorly drained Leicester loam (LcB), slopes 3 to 8 %, in the undisturbed gently sloped outer portions of the wetland; and wetland, very poorly-drained Sun silt loam (Sh), slopes 0 to 2 %, in the undisturbed, core portions of the wetland. The distribution of these soil-types is depicted on the enclosed *Wetland and Soils Map*.

Appendix I

Selected Site Photos



Photo 1 Looking southwest and upslope along the beginning of the driveway.



Photo 2 Looking southwest toward vehicle parking area along driveway..

July 2020- The Graff Site, 3 Middle Patent Road, North Castle, NY



Photo 3 Looking northerly where driveway goes under residence.



Photo 4 Looking northwest and upslope across small lawn area and toward southern side of residence.
July 2020- The Graff Site, 3 Middle Patent Road, North Castle, NY



Photo 5 Looking southeast along trail through woodlands and toward northwest side of residence..



*Photo 6 Looking north at base of steep slope with rock outcrop and talus deposits on northeast portion of the site.
July 2020- The Graff Site, 3 Middle Patent Road, North Castle, NY*



Photo 7 Looking northerly and upslope along intermittent drainage course near northwest corner of the site. Note channel is in center of photo; neighboring residence in upper center edge of photo.



*Photo 8 Looking southeast across swampland on the southwest portion of the site.
July 2020- The Graff Site, 3 Middle Patent Road, North Castle, NY*



Photo 9 Looking southwest toward remains of pump / well house constructed of concrete and located on the southwest corner of the site.

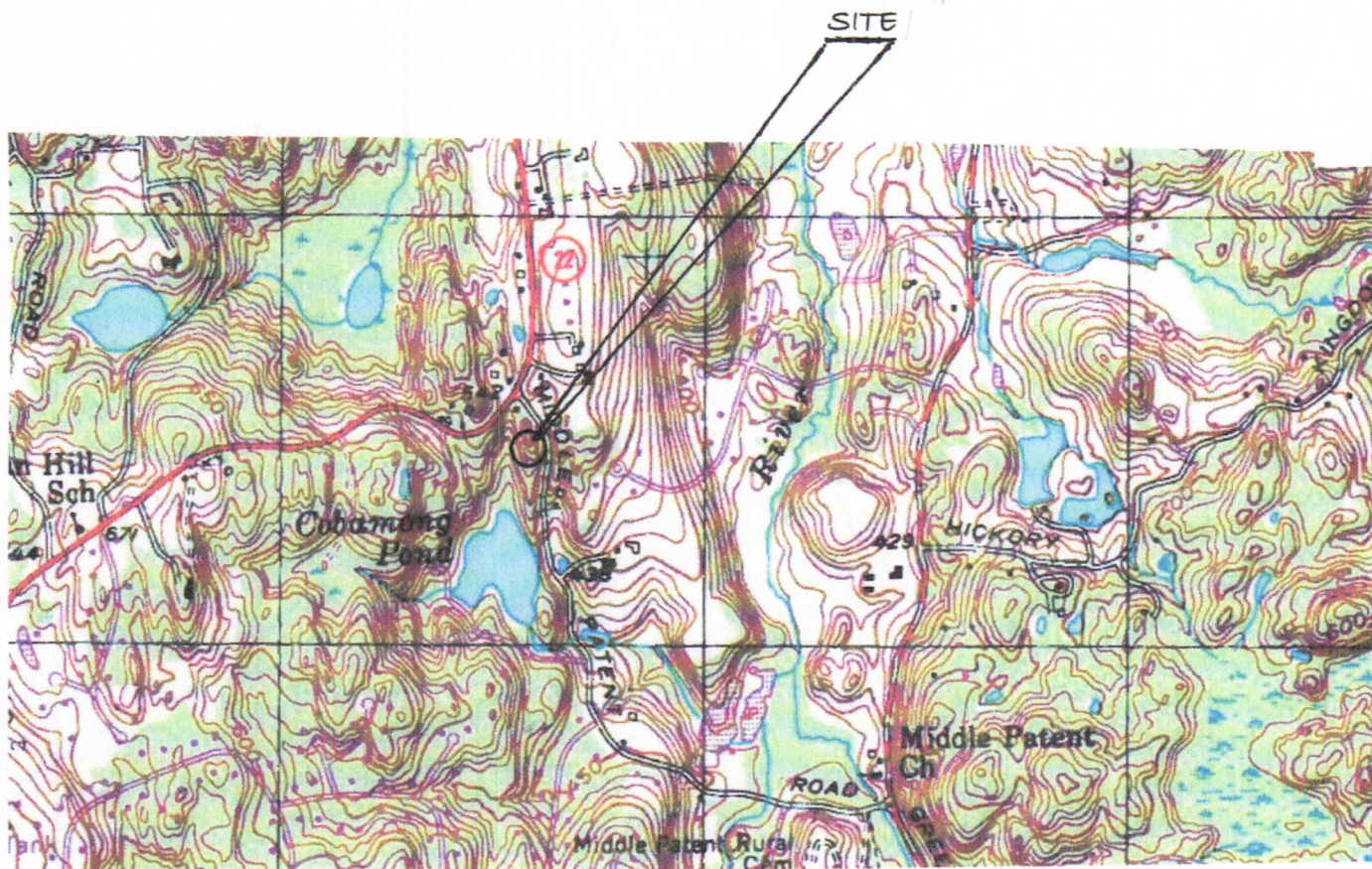


Photo 10 Looking southeast toward remains of fieldstone-lined well next to pump / well house and located next to southwest corner of the site.

July 2020- The Graff Site, 3 Middle Patent Road, North Castle, NY

Appendix II

Regional Drainage Map



REGIONAL DRAINAGE MAP
N.T.S.

Appendix III

New York State
Dept. of Environmental Conservation
Wetland Map



NYSDEC WETLAND MAP
N.T.S.

Appendix IV
Soil Boring Logs

KEY TO BORING LOGS

SS-1

SOIL BORING

0-4''

DEPTH IN INCHES FROM
THE GROUND SURFACE

COLOR

MUNSELL COLOR NOTATION

VERY DARK GRAY

HUE VALUE/ CHROMA
10YR 3 / 1

SS-1

SITE: GENTLY SLOPED INTERMITTENT DRAINAGE COURSE, DRY CHANNEL BED, CHANNEL IS APPROX. 1.5 FT. WIDE AND 1 FT. DEEP AND STEEP-SIDED; CHANNEL IS UN-VEGETATED; ADJACENT LANDS ARE LIGHTLY WOODED WITH THIN CANOPY OF SUGAR MAPLE AND TULIP TREES AND GROUND VEGETATED WITH JAPANESE STILT GRASS, AND RASPBERRY.

0-1/2" VERY DARK GRAY 10YR 3/1 LOAM.

1/2-28" BROWN 10YR 4/3 LOAM WITH DISCONTINUOUS AND WAVY LENSES OF VERY DARK GRAY 10YR 3/1 LOAM.

WATER TABLE NOT ENCOUNTERED.

SS-2

SITE: VERY GENTLY SLOPED WOODLANDS; TALL AND WIDE-SPACED TREE CANOPY OF SUGAR MAPLE; OPEN UNDERSTORY EXCEPT FOR A FEW WIDE-SPACED WINGED EUONYMUS AND BARBERRY SHRUBS; FEW GARLIC MUSTARD AND JAPANESE STILT GRASS; DUMPED LEAVES COVER MANY PORTIONS OF GROUND.

0-2" VERY DARK GRAY BROWN 10YR 3/2 LOAM.

2-8" BROWN 10YR 4/3 LOAM.

8-28" YELLOW BROWN 10YR 5/4 LOAM.

WATER TABLE NOT ENCOUNTERED.

SS-3

SITE: VERY GENTLY SLOPED OUTER PORTION OF SWAMPLAND; VERY POORLY DRAINED; WEAK MICRO-TOPOGRAPHY; NO TREE CANOPY BUT SHED BY ADJACENT NON-WETLAND FOREST; COMMON SKUNK CABBAGE; MATTED LEAF LITTER COVERS UN-VEGETATED WETLAND FLOOR.

0-8" VERY DARK GRAY 10YR 3/1 MUCK.

8-13" DARK GRAY 10YR 3/1 SILT LOAM.

13-28" GRAY 10YR 5/1 FINE SANDY LOAM.

WATER TABLE AT 4".

SS-4

SITE: LEVEL SWAMPLAND; VERY POORLY DRAINED; DEVELOPED MICRO-TOPOGRAPHY; VERY THIN TREE CANOPY OF RED MAPLE WITH GAPS IN CANOPY; DENSE COVER OF PHRAGMITES; FEW SKUNK CABBAGE AND CLEARWEED GROWTH.

0-24" BLACK 2.5Y2.5/1 MUCK WITH SILT INTERLAYERS.

WATER TABLE AT 4".

SS-5

SITE: LEVEL EDGE OF SWAMPLAND; VERY POORLY DRAINED; WEAK MICRO-TOPOGRAPHY DEVELOPMENT; 20% OF GROUND UN-VEGETATED; HERBACEOUS COVER OF PHRAGMITES, NETTLE, JAPANESE STILT GRASS, AND SKUNK CABBAGE.

0-4" BLACK 2.5Y 2.5/1 MUCK.

4-24" GRAY 10YR 5/1 SILT LOAM.

WATER TABLE AT 2".

Wetland & Soils Map The Graff Site

3 Middle Patent Road
TRX ID 95.03-1-52

North Castle, NY

Approx. 2.176 Acres Area Property

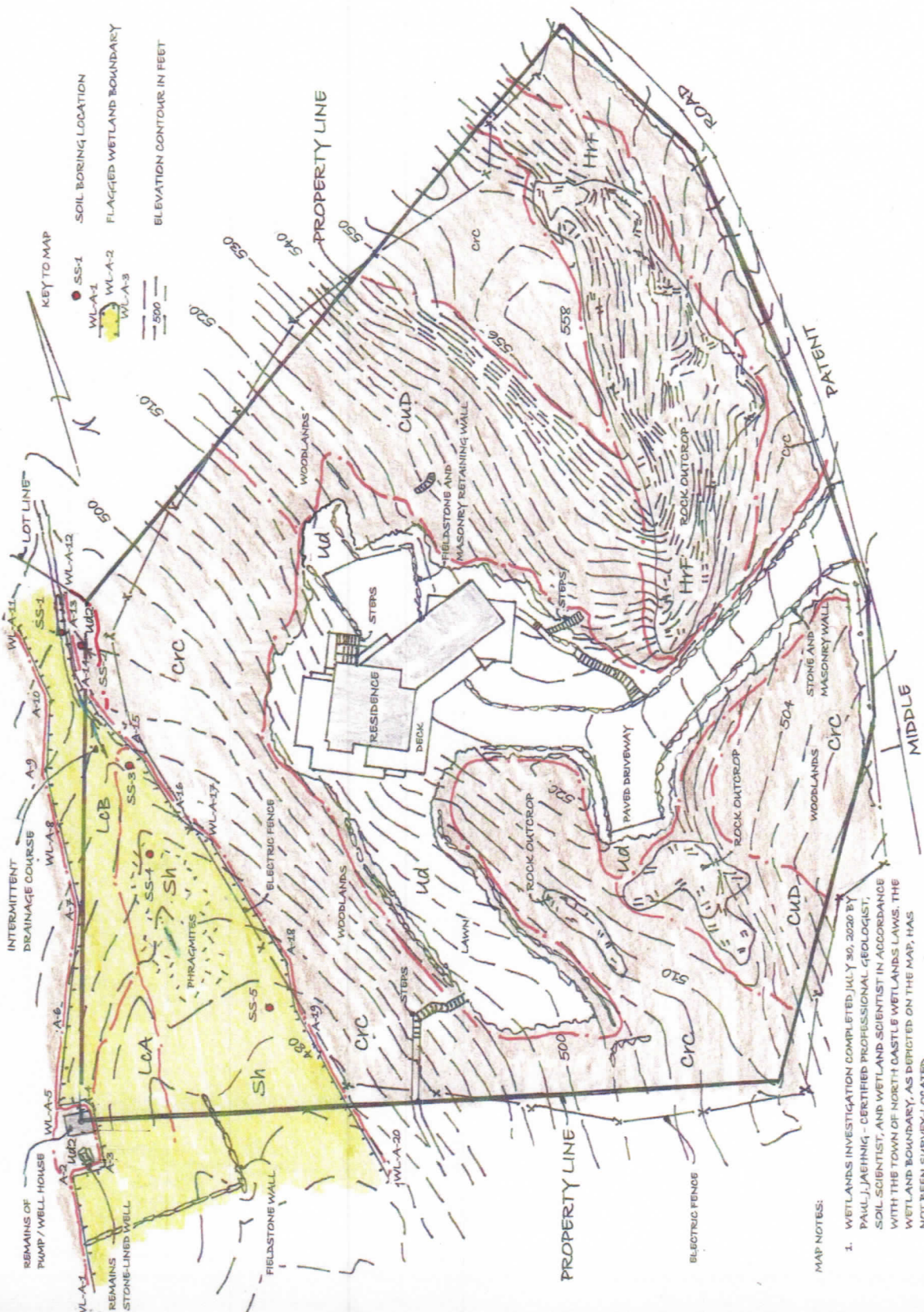
Prepared for
Lisa and David Graff

July 30, 2020

Prepared by
Paul J. Jaehning - Wetlands and Soils Consulting
P.O. Box 1079, Ridgefield, CT 06877

Map Scale: 1 inch = 40 ft.

SOILS INFORMATION	
NON-WETLAND SOILS	
CYC	Charlton-Charfield complex, very rocky well drained, slopes 2 to 15 %
CUD	Charfield-Hollis-rock outcrop complex well drained, slopes 15 to 35 %
HF	Hollis-rock outcrop complex, very steep well drained, slopes 35 to 60 %
Ud	udorthents soils well drained, slopes varied
Ud2	udorthents soils moderately well drained, slopes varied
WETLAND SOILS	
LeA	Leicester loam poorly drained, slopes 0 to 3 %
LoB	Leicester loam poorly drained, slopes 3 to 8 %
Sh	Shaw silt loam very poorly drained, slopes 0 to 2 %



MAP NOTES:

1. WETLANDS INVESTIGATION COMPLETED JULY 30, 2020 BY PAUL J. JAEHNING, CERTIFIED PROFESSIONAL GEOLOGIST, SOIL SCIENTIST, AND WETLAND SCIENTIST IN ACCORDANCE WITH THE TOWN OF NORTH CASTLE WETLANDS LAWS. THE WETLAND BOUNDARY, AS DEPICTED ON THE MAP, HAS NOT BEEN SURVEY-LOCATED.
2. LOCATION OF PROPERTY LINE, RESIDENCE, FENCES, WALLS, STONE WELL, PUMP HOUSE, ROCK OUTCROP AND DRIVEWAY FROM SURVEY PREPARED BY T.C. MERRITT'S LAND SURVEYING.
3. TOPOGRAPHY FROM WESTCHESTER COUNTY DEPT. OF PLANNING, GIS MAPPING.
4. LOCATION OF EDGE OF WOODLANDS, PLOTTED ONTO MAP DURING WETLAND INVESTIGATION.



STORMWATER CALCULATIONS

3 MIDDLE PATENT ROAD

TOWN OF NORTH CASTLE, NEW YORK

SECTION 95.03, BLOCK 1, LOT 52

OWNER:

LISA GRAFF

PREPARED BY:

PROVIDENT DESIGN ENGINEERING, PLLC (PDE)

7 SKYLINE DRIVE

HAWTHORNE, NEW YORK 10532

TEL: (914) 592-4040

PROJECT No.: 20-071

JANUARY, 2021

Section I – Project Information

1. Project Description

The purpose of this report is to present the Stormwater Calculations for the sizing of mitigation practices associated with stormwater runoff associated with the construction of a proposed pool, spa, and terrace (the “Project”) located at 3 Middle Patent Road, Town of North Castle, Westchester County, New York. The Project Site, Tax Map Number 95.03-1-52, is comprised of one parcel totaling 2.176 acres (94,789 ft²) located in the R-2A One-Family Residential District.

The proposed work includes the construction of a pool, spa, and terrace in the designated front yard of the property. Their stormwater runoff will be directed toward a stormwater mitigation system. The Project will result in an increase of impervious surface totaling approximately 1,550 square feet (sf).

Section II - Storm Water Management

1. Methodology

Since the Project will generate stormwater runoff during and post-construction, the SWPPP includes design of water quantity and water quality controls as set forth in §[267-5](#) to assure that post-development peak runoff rates will be equal to or less than pre-development peak runoff rates for up to the 25-year storm event. The controls have been designed in accordance with the following publications:

- “Urban Hydrology for Small Watersheds” (Technical Release No. 55), published by the United States Department of Agriculture, Natural Resources Conservation Service (NRCS) (formerly Soil Conservation Service, SCS), dated June 1986.
- *New York State Storm Water Management Design Manual* (DEC Design Manual), January 2015.

As required by the DEC Design Manual, the 24-hour rainfall data value to be used in the hydrologic analysis and computations is based on the updated isohyetal maps from the Northeast Regional Climate Center (NRCC). Current 24-hour NRCC rainfall precipitation and distribution data was used to compute runoff hydrographs for the 25-year design storms. The rainfall value associated with the 25-year design storm is 6.43 inches.

The post-development runoff rate for the 25-year storm event was calculated using the computer software program entitled "HydroCAD", Version 10.0, Build 25. This program incorporates the methodology used in NRCS TR-20 and TR-55 to compute and route flood hydrographs.

2. Subsurface Investigation

Test Pit Excavations

Three (3) test pits in the front yard (designated TP-1, TP-2, and TP-3) of the existing dwelling were excavated on November 24, 2020 and witnessed by PDE personnel and consultant engineers for the Town of North Castle. The test pit locations are shown on Drawing C-101, "Site Plan" prepared by PDE. The depths of the test pits were 64, 50, and 51 inches below existing grade, respectively. PDE personnel and the consultant engineers for the Town of North Castle measured the depths of the contrasting soil layers, performed visual inspections of the excavated material at each layer encountered to determine generalized soil classifications, and logged the measurements and observations.

As shown on the test pit log sheets provided in Appendix A, the test pits yielded somewhat positive results with no presence of groundwater, but with a restrictive layer of bedrock. The three test pits were similar, containing an 12 inch organic layer, 12 inch layer of sandy loam, and finally sandy silt to the restrictive layer at the bottom of the test pit.

Infiltration Testing

PDE personnel also set up a soil infiltration test in the front yard (designated P-1) on November 24, 2020. An infiltration test hole was dug to 24" below existing grade with the Town of North Castle consultant engineers present to witness. The hole was filled with 10 inches of water and an initial reading was taken. A "final" reading was taken after a half hour had passed. This procedure was repeated two (2) additional times for a total of three (3) observations to obtain the infiltration rate. The data sheet of test results provided in Appendix A shows that the existing subsoils possess a consistent infiltration rate of 5 inches per hour (in/hr.) (12.00 min/in), greater than the minimum rate of 0.5 in/hr. required by the standards in the DEC Design Manual for infiltration SMPs.

3. Stormwater Management

a. Drainage Conditions

Under post-development conditions, drainage patterns to the Design Point will remain similar to existing conditions, and therefore the location of the design point, which is located at the front of the property, will remain unchanged.

However, the land cover area draining to the Design Point will change under post-development conditions as compared to existing conditions, due to the increase in impervious cover resulting from the Project. The proposed drainage calculations for the stormwater mitigation system are provided in Appendix B

Water Quantity Control

NYSDEC and Chapter 267 require that post-development rates of storm water runoff from a site must be equal to or less than pre-development runoff rates so that downstream and/or adjacent properties are not adversely impacted. Increases in runoff rates are typically caused by changes in land use that increase the amount of total impervious area.

SMP Application

Based on the results of the investigation summarized in Section 2 above, it is the professional opinion of PDE that a subsurface infiltration/recharge SMP can be provided in the front yard to capture and recharge the WQv, plus attenuate post-construction runoff associated with the Project construction.

The design of the subsurface infiltration/recharge SMP meets the criteria in Section 6.3 of the DEC Design Manual. The system will consist of infiltration chambers and a pretreatment practice.

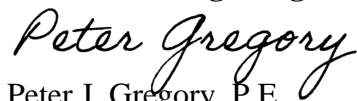
Swales, drain inlets, and subsurface drainage pipes will direct and capture the post-construction runoff from the new pool, spa and terrace to the proposed subsurface infiltration/recharge SMP as depicted on PDE Drawing C-101.

Summary and Conclusion

Based on the information presented in this report, the implementation of the proposed Storm Water Management Plan will meet the design objectives of Town of North Castle.

Respectfully submitted,

Provident Design Engineering, PLLC



Peter J. Gregory, P.E.
Senior Project Manager
New York PE# 071226

Under New York State Education Law Article 145 - Engineering, Section 7209 (2), it is a violation of this law for any person to alter an item in any way in this Report, unless acting under the direction of a licensed professional engineer. If an item bearing the seal of an engineer is altered, the altering engineer shall affix to the item his seal and the notation "altered by" followed by his signature and the date of such alteration, and a specific description of the alteration.

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APPENDIX A
SUBSURFACE INVESTIGATION

APPENDIX A-1
TEST PIT LOGS
INFILTRATION TESTING

TEST PIT DATA REQUIRED TO BE SUBMITTED WITH APPLICATION
DESCRIPTION OF SOILS ENCOUNTERED IN TEST HOLE

DEPTH	HOLE NO: 1	HOLE NO: 2	HOLE NO: 3	
G.L	Forest Litter	Forest Litter	Forest Litter	
0'-6"	Organic	Organic	Organic	
1'-0"	Sandy loam	Sandy loam	Sandy loam	
1'-6"				
2'-0"	Sandy silt	Sandy silt	Sandy silt	
2'-6"				
3'-0"				
3'-6"				
4'-0"				
4'-6"				
5'-0"				
5'-6"				
6'-0"				
6'-6"				
7'-0"				
7'-6"				
8'-0"				
8'-6"				
9'-0"	Total Depth = 64"	Total Depth =50"	Total Depth =51"	
9'-6"	Bedrock @ 64"	Bedrock @ 50"	Bedrock @ 51"	
10'-0"				

WAS GROUND WATER ENCOUNTERED? **No**

INDICATE LEVEL AT WHICH GROUND WATER WAS ENCOUNTERED: **N/A**

INDICATE LEVEL FOR WHICH WATER LEVEL RISES AFTER BEING ENCOUNTERED: **N/A**

DEEP TEST MADE BY: Provident Design Engineering, PLLC

DATE OF DEEP TESTS: **11/24/2020**

INFILTRATION TESTING DATA SHEET

Project Name: **Graff Residence Pool** Municipality: **North Castle**
 Owner: **David & Lisa Graff** Watershed: **Inland Long Island Sound-Mianus River Basin**
 Address: **3 Middle Patent Road** Sec/Bl/Lot: **95.03 / 1 / 52**
 Date: **November 24, 2020** Weather: **40 Degrees**
 Notes: _____

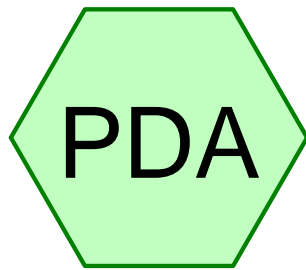
TEST #	CLOCK TIME					INFILTRATION RATE			
	Run #	Start	Stop	Elapse Time		Depth to Water from Top of Casing		Drop	Infiltration Rate
		HH:MM	HH:MM	Mins	Hours	Start In.'s	Stop In's	Inches	Inches/Hour
IT-1	1	9:50	10:20	30	0.50	14	16.75	2.75	5.50
	2	10:26	10:56	30	0.50	14	16.5	2.5	5.00
	3	10:57	11:27	30	0.50	14	16.5	2.5	5.00
Depth of Infiltration Testing: 24"									

APPENDIX B

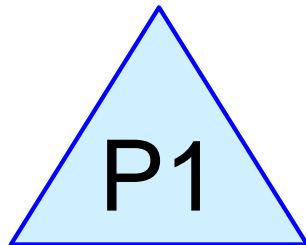
STORM WATER MANAGEMENT CALCULATIONS

APPENDIX B-1

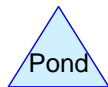
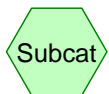
STORMWATER MITIGATION SYSTEM HYDROLOGIC CALCULATIONS



Drainage Area



Cultec C-100



Middle Patent Road Stormwater

Proposed Drainage
Type III 24-hr 25- Year Armonk Rainfall=6.43"

Prepared by Provident Design Engineering, PLLC

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Time span=0.00-30.00 hrs, dt=0.01 hrs, 3001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Dyn-Stor-Ind method - Pond routing by Dyn-Stor-Ind method

Subcatchment PDA: Drainage Area

Runoff Area=1,550 sf 100.00% Impervious Runoff Depth=6.19"
Tc=0.0 min CN=98 Runoff=0.27 cfs 0.018 af

Pond P1: Cultec C-100

Peak Elev=597.37' Storage=182 cf Inflow=0.27 cfs 0.018 af
Outflow=0.04 cfs 0.018 af

Total Runoff Area = 0.036 ac Runoff Volume = 0.018 af Average Runoff Depth = 6.19"
0.00% Pervious = 0.000 ac 100.00% Impervious = 0.036 ac

Middle Patent Road Stormwater

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Proposed Drainage
Type III 24-hr 25- Year Armonk Rainfall=6.43"

Summary for Subcatchment PDA: Drainage Area

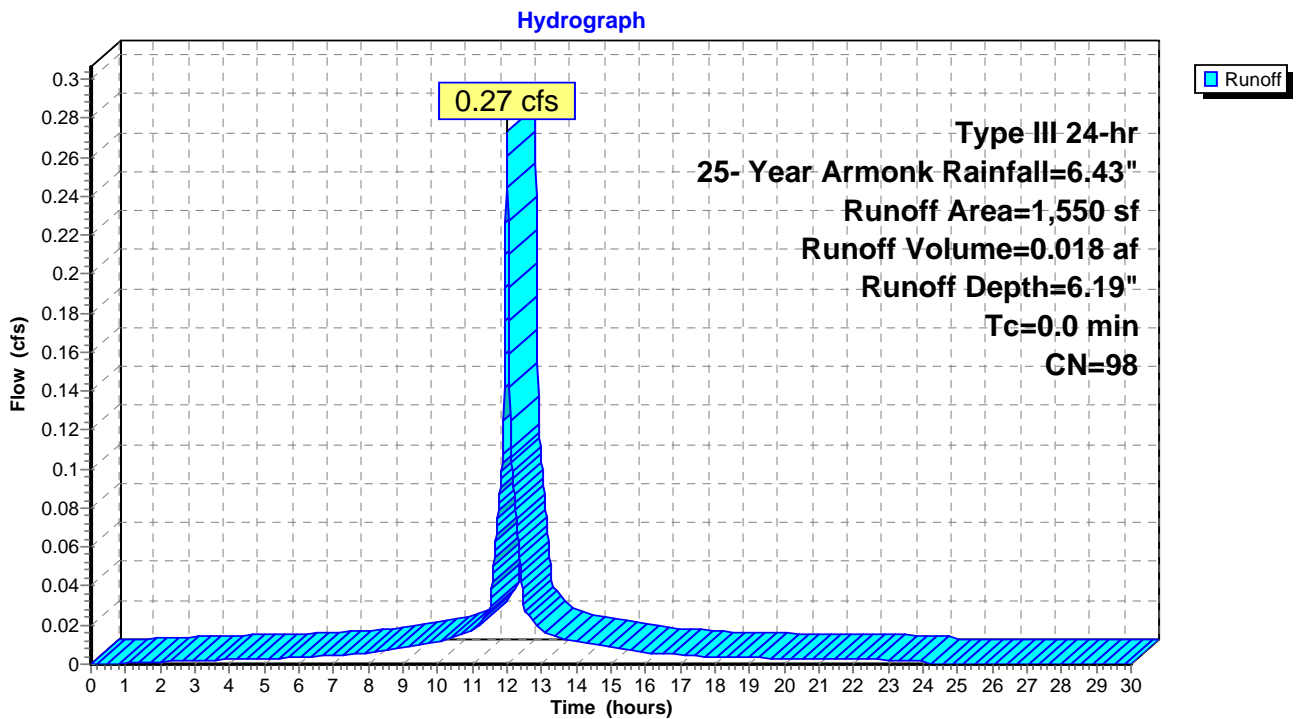
[46] Hint: Tc=0 (Instant runoff peak depends on dt)

Runoff = 0.27 cfs @ 12.00 hrs, Volume= 0.018 af, Depth= 6.19"

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 Armonk Rainfall=6.43"

	Area (sf)	CN	Description
*	1,550	98	Pool & Patio
	1,550		100.00% Impervious Area

Subcatchment PDA: Drainage Area



Middle Patent Road StormwaterProposed Drainage
Type III 24-hr 25- Year Armonk Rainfall=6.43"

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Summary for Pond P1: Cultec C-100

Inflow Area = 0.036 ac, 100.00% Impervious, Inflow Depth = 6.19" for 25- Year Armonk event
 Inflow = 0.27 cfs @ 12.00 hrs, Volume= 0.018 af
 Outflow = 0.04 cfs @ 11.64 hrs, Volume= 0.018 af, Atten= 84%, Lag= 0.0 min
 Discarded = 0.04 cfs @ 11.64 hrs, Volume= 0.018 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-30.00 hrs, dt= 0.01 hrs
 Peak Elev= 597.37' @ 12.42 hrs Surf.Area= 379 sf Storage= 182 cf

Plug-Flow detention time= 20.3 min calculated for 0.018 af (100% of inflow)
 Center-of-Mass det. time= 20.3 min (758.8 - 738.6)

Volume	Invert	Avail.Storage	Storage Description
#1A	596.50'	166 cf	11.67'W x 32.50'L x 1.54'H Field A 585 cf Overall - 170 cf Embedded = 414 cf x 40.0% Voids
#2A	597.00'	170 cf	Cultec C-100HD x 12 Inside #1 Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap Row Length Adjustment= +0.50' x 1.86 sf x 3 rows
		336 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Discarded	596.50'	5.000 in/hr Exfiltration over Surface area Phase-In= 0.01'

Discarded OutFlow Max=0.04 cfs @ 11.64 hrs HW=596.52' (Free Discharge)
 ↑1=Exfiltration (Exfiltration Controls 0.04 cfs)

Middle Patent Road Stormwater

Type III 24-hr 25- Year Armonk Rainfall=6.43"

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Pond P1: Cultec C-100 - Chamber Wizard Field A**Chamber Model = Cultec C-100HD (Cultec Contactor® 100HD)**

Effective Size= 32.1"W x 12.0"H => 1.86 sf x 7.50'L = 14.0 cf

Overall Size= 36.0"W x 12.5"H x 8.00'L with 0.50' Overlap

Row Length Adjustment= +0.50' x 1.86 sf x 3 rows

36.0" Wide + 4.0" Spacing = 40.0" C-C Row Spacing

4 Chambers/Row x 7.50' Long +0.50' Row Adjustment = 30.50' Row Length +12.0" End Stone x 2 =
32.50' Base Length

3 Rows x 36.0" Wide + 4.0" Spacing x 2 + 12.0" Side Stone x 2 = 11.67' Base Width

6.0" Base + 12.5" Chamber Height = 1.54' Field Height

12 Chambers x 14.0 cf +0.50' Row Adjustment x 1.86 sf x 3 Rows = 170.3 cf Chamber Storage

584.5 cf Field - 170.3 cf Chambers = 414.2 cf Stone x 40.0% Voids = 165.7 cf Stone Storage

Chamber Storage + Stone Storage = 336.0 cf = 0.008 af

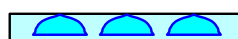
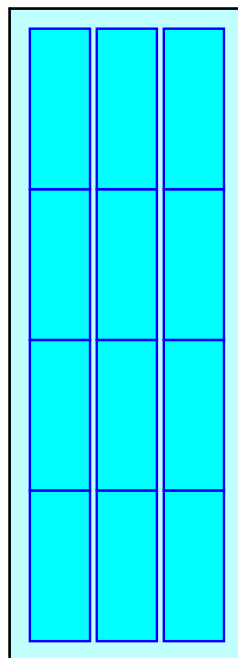
Overall Storage Efficiency = 57.5%

Overall System Size = 32.50' x 11.67' x 1.54'

12 Chambers

21.6 cy Field

15.3 cy Stone



Middle Patent Road Stormwater

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Proposed Drainage
Type III 24-hr 25- Year Armonk Rainfall=6.43"

Pond P1: Cultec C-100

Hydrograph

