

# PERMIT AGENCY REVIEW PLAN

FOR

“THE HILL CREST CONDOMINIUMS”

ASSESSOR'S MAP 13

LOTS 658 AND 659

COWESETT AVENUE

in

WEST WARWICK, RHODE ISLAND



LOCUS MAP  
SCALE 1" = 500'

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### ZONING TABLE:

ZONE: R-6 RESIDENTIAL DISTRICT

PARCEL ID: A.P. 13 LOTS 658 AND 659  
TOTAL LOT AREA: 1.55 ± ACRES

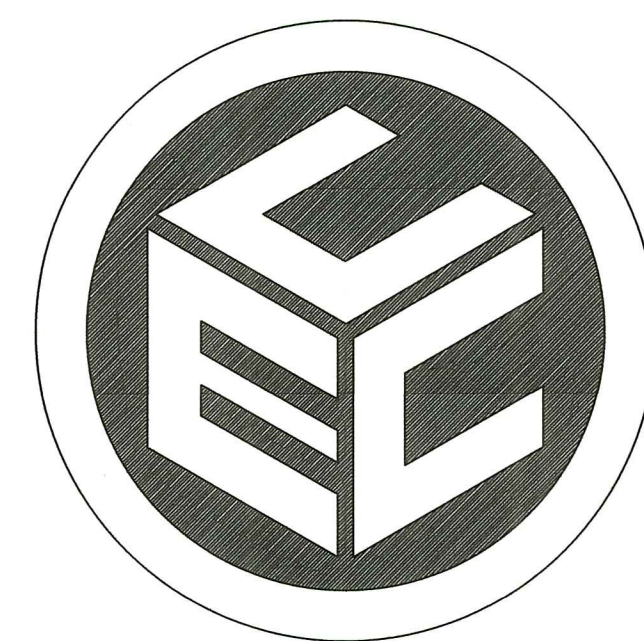
	REQUIRED	PROVIDED
MIN. LOT AREA	6,000 S.F.	67,560 S.F.
MIN. LOT DIMENSIONS		
WIDTH	60 FT.	189± FT.
DEPTH	100 FT.	431± FT.
FRONTAGE	55 FT.	189±
MIN. YARD SETBACKS		
FRONT	20 FT.	20 FT.
SIDE	6 FT.	6 FT.
REAR	20 FT.	240± FT.
MAX. BLDG. HEIGHT	35 FT.	<35 FT.
MAX. BLDG. COVERAGE	45%	37%
MAX. IMPERV. COVERAGE	30%	15.1%

SPECIAL USE PERMIT WAS GRANTED

USABLE LOT AREA = TOTAL LOT AREA - WETLANDS AREA  
(67,620 - 11,248) S.F. = 56,372 S.F.

LOT COVERAGE = BUILDING AREA / USABLE LOT AREA X 100%  
(5,499 / 56,372) S.F. X 100% = 15.1%

LOT DENSITY  
56,372 S.F. / 6,000 S.F. PER UNIT = 9.4 UNITS  
8 UNITS PROPOSED

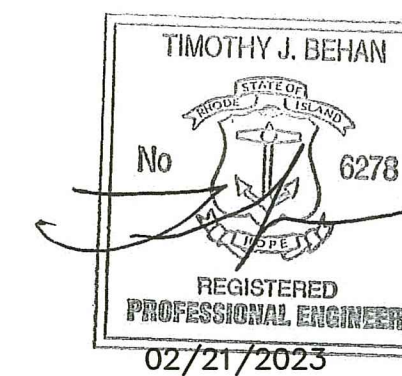


PREPARED BY:

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DATE: JUNE 2022  
REVISED: 10/03/2022  
01/25/2023  
01/31/2023  
02/21/2023



RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS AS  
SPECIFIED IN THE LETTER OF APPROVAL  
DATED: MAR 16 2023 FILE #: 22-0367  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Andy Clayton*

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ALL PLANS AND IMPROVEMENTS CONFORM TO ALL EXISTING AND AMENDED STANDARDS OF THE STATE OF RHODE ISLAND AND PROVIDENCE PLANTATIONS, BOARD OF REGISTRATION FOR PROFESSIONAL ENGINEERS AND BOARD OF REGISTRATION FOR LAND SURVEYORS.

### PERMITTING NOTE:

THE FOLLOWING LOCAL, STATE, FEDERAL AND OTHER PERMITS/ APPROVALS SHALL BE REQUIRED FOR THE PROPOSED PROJECT:

#### STATE

1. RIDEM FRESHWATER WETLANDS PERMIT (ANTICIPATED INSIGNIFICANT ALTERATION); THIS INCLUDES THE RIPDES PROGRAM APPROVAL
2. RIDOT PARTIAL ALTERATION PERMIT

#### OTHER

1. KENT COUNTY WATER AUTHORITY (KCWA) APPROVAL
2. WEST WARWICK SEWER AUTHORITY APPROVAL
3. LOCAL FIRE DEPARTMENT APPROVAL

### PLAN NOTE:

1. ONLY PLANS STAMPED 'ISSUED FOR CONSTRUCTION' AFTER RECEIPT OF LOCAL/STATE APPROVALS SHALL BE USED FOR CONSTRUCTION.

PROJECT NO. 22026.00

**LEGEND**

###	EXISTING PROPERTY LINE
---	PROPERTY LINE SETBACK
---	ABUTTER PROPERTY LINE
~~~~~	TREELINE
ORIS	IRON ROD SET
■ or □	GRANITE/CONCRETE BOUND
○ or ○	DRILL HOLE
● or ●	IRON ROD/IRON PIN
Δ-#-#	WETLAND FLAG
---	WETLAND EDGE
98	EXISTING CONTOUR
98	EXISTING CONTOUR FROM NOAA LIDAR
○	UTILITY POLE
--- OHW ---	OVERHEAD WIRES (ELEC/TELECOM)
WV	WATER GATE VALVE
⊕	WATER SHUTOFF (CURB STOP)
---	WATER MAIN
⊕	WATER HYDRANT
---	PROP WATER SERVICE
CB	CATCH BASIN
---	SEWER MANHOLE
---	SEWER MAIN
---	GAS LINE
---	PROP SEWER SERVICE
DMH	PROP DRAINAGE MANHOLE
CB	PROP CATCH BASIN
SMH-4	PROP SEWER MANHOLE

APPROX	APPROXIMATE
BIT	BITUMINOUS
BOT	BOTTOM
CB	CATCH BASIN
CEM	CEMENT
CF	CUBIC FEET
CFS	CUBIC FEET PER SECOND
CL	CENTERLINE
CL##	PRESSURE RATING CLASS
CLDI	CEMENT-LINED DUCTILE IRON
CONC	CONCRETE
CPP	CORRUGATED PLASTIC PIPE
CY	CUBIC YARD
DG	DOUBLE-GRATE
DMH	DRAIN MANHOLE
ELEV	ELEVATION
EX	EXISTING
ESHGWT	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GWT	GROUNDWATER TABLE
GG	GAS GATE VALVE
HDPE	HIGH-DENSITY POLYETHYLENE
HMA	HOT MIX ASPHALT
INV	INVERT
L	LENGTH
LOD	LIMIT OF DISTURBANCE
LT	LEFT
MAX	MAXIMUM
MCU	MODULAR CONCRETE UNIT
MIN	MINIMUM
PROP	PROPOSED
PVC	POLY-VINYL CHLORIDE
PSI	POUNDS PER SQUARE INCH (PRESSURE RATING)
PC	POINT OF CURVATURE
PT	POINT/POINT OF TANGENCY
PVI	POINT OF VERTICAL INFLECTION
R&D	REMOVE & DISPOSE
R&R	REMOVE & RESET
R&S	REMOVE & STOCKPILE
RCP	REINFORCED CONCRETE PIPE
RT	RIGHT
SCH	SCHEDULE (PIPES)
SDR	STANDARD DIMENSION RATIO
SED	SEDIMENT
SESC	SOIL EROSION & SEDIMENTATION CONTROL
SEV	SOIL EVALUATION
SF	SQUARE FEET
SG	SINGLE-GRATE
SMH	SEWER MANHOLE
SS	STAINLESS STEEL
STA	STATION
SY	SQUARE YARD
TEMP	TEMPORARY
TH	TEST HOLE
VERT	VERTICAL
W	WIDTH
WF	WETLAND FLAG
WQ	WATER QUALITY
YR	YEAR
'	FEET
"	INCHES
/'	VERTICAL FEET/HORIZONTAL FOOT

**GENERAL NOTES:**

- THESE PLANS HAVE BEEN ISSUED FOR LOCAL AND/OR STATE AGENCY REVIEW. ONLY PLANS STAMPED 'ISSUED FOR CONSTRUCTION' AFTER RECEIPT OF ALL LOCAL AND STATE APPROVALS SHALL BE USED FOR CONSTRUCTION.
- SPECIFICATIONS & DETAILS GOVERNING THIS PROJECT ARE THE RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION, 2018 EDITION & TOWN OF WEST WARWICK SUBDIVISION & LAND DEVELOPMENT STANDARDS. THE TOWN'S STANDARDS SHALL OVERRIDE RIDOT STANDARDS OUTSIDE OF STATE R.O.W.'S.
- THE CONTRACTOR SHALL READ AND FAMILIARIZE ITSELF WITH THE TOWN'S SUBDIVISION & LAND DEVELOPMENT REGULATIONS (AS THEY PERTAIN TO CONSTRUCTION) PRIOR TO CONSTRUCTION.
- THE CONTRACTOR SHALL CONSTRUCT THE PROPOSED DRIVEWAY AND DRAINAGE SYSTEM IN ACCORDANCE WITH THE TOWN'S SPECIFICATIONS FOR CONSTRUCTION OF REQUIRED IMPROVEMENTS, AS SPECIFIED IN THE TOWN'S SUBDIVISION & LAND DEVELOPMENT REGULATIONS.
- ANY REQUIRED AUTHORIZATION/PERMITS TO PERFORM WORK NOT PREVIOUSLY SECURED & PROVIDED BY THE OWNER SHALL BE OBTAINED BY THE CONTRACTOR PRIOR TO THE START OF CONSTRUCTION; THE CONTRACTOR SHALL ADHERE TO THE TERMS, CONDITIONS AND REQUIREMENTS OF ALL STATE & LOCAL PERMITS ISSUED FOR THE PROJECT.
- THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR ANY CONSTRUCTION OPERATIONS, INCLUDING ALL ACTIONS OR OMISSIONS OF ANY SUBCONTRACTORS, AGENTS OR EMPLOYEES. THE CONTRACTOR IS ALSO RESPONSIBLE FOR ALL ASPECTS OF ON-SITE SAFETY, INCLUDING ANY DAMAGE TO EXISTING STRUCTURES.
- ALL ELEVATIONS ON SUBJECT PROPERTY ARE BASED ON NGVD88 DATUM, AND HAVE A POTENTIAL VERTICAL VARIANCE OF 1± FEET.
- NO EXISTING DRAINAGE STRUCTURE OR FACILITY SHALL BE ALTERED OR DISTURBED UNLESS SPECIFICALLY INDICATED ON THESE DRAWINGS. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO REPAIR.
- ALL DISTURBED AREAS/STRUCTURES SHALL BE REPLACED IN-KIND, UNLESS OTHERWISE SHOWN OR AUTHORIZED BY THE TOWN.
- THE CONTRACTOR SHALL THOROUGHLY EXAMINE THE CONTRACT DOCUMENTS AND PLANS, AND SHALL INSPECT THE SITE. ANY CHANGES TO THE PROJECT, OR THE INSTALLATION OF AN ITEM FOR WHICH NO PARTICULAR DETAIL OR SPECIFICATION WAS PROVIDED, SHALL BE REVIEWED BY, AND MUST BE ACCEPTABLE TO, THE ENGINEER.
- THE ABSENCE OF PARTICULAR DETAILS OR SPECIFICATIONS FOR WORK CALLED FOR ON THE PLANS SHALL NOT RELIEVE THE CONTRACTOR FROM FURNISHING AND INSTALLING THE PROPOSED WORK.
- ALL CONSTRUCTION IS SUBJECT TO THE INSPECTION OF AND APPROVAL BY THE TOWN. PROPER NOTIFICATION SHALL BE GIVEN PRIOR TO THE COMMENCEMENT OF ANY WORK, AND NO WORK SHALL PROCEED WITHOUT THE AUTHORIZATION OF THE TOWN.
- PRIOR TO THE START OF CONSTRUCTION, THE APPROVED LIMIT OF DISTURBANCE SHALL BE LOCATED AND FIELD-DELIMITED BY A RI PLS; NO CLEARING OR DISTURBANCE SHALL TAKE PLACE OUTSIDE THE ESTABLISHED LIMIT AT ANY POINT DURING CONSTRUCTION, UNLESS EXPLICITLY AUTHORIZED BY THE TOWN.
- PRIOR TO THE START OF EARTH-DISTURBING ACTIVITIES, THE CONTRACTOR SHALL INSTALL ALL SEDIMENT & SOIL EROSION CONTROL (SESC) DEVICES IN ACCORDANCE WITH RIDEM & TOWN STANDARDS.
- PROPOSED GRADING ON THE SITE IS TO BE USED AS A GUIDE, SUCH THAT THE DEVELOPED AREA IS GRADED TO DRAIN ALL SURFACE RUNOFF. SITE GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THE R.I. STATE BUILDING CODE, LATEST EDITION.
- COMMUNICATION LINES (ELECTRIC, TELEPHONE, AND CABLE TV) SHALL BE INSTALLED UNDERGROUND, UNLESS OTHERWISE SPECIFIED BY THE TOWN.
- ALL ROOT SYSTEMS, TREES, STUMPS, BUSHES, BOULDERS AND OTHER UNSUITABLE MATERIAL SHALL BE REMOVED AND TRANSPORTED AWAY FROM THE PROJECT SITE, UNLESS ON-SITE DISPOSAL AT AN APPROPRIATE LOCATION (OR LOCATIONS) IS APPROVED BY THE TOWN.
- MANHOLE AND CATCH BASIN FRAME & COVERS SHALL BE ADJUSTED TO FINISH GRADE WITH RED BRICK AND MORTAR. OTHER TYPES OF BRICK AND/OR PRECAST CONCRETE RINGS ARE NOT ACCEPTABLE. GRATES SHALL BE SET 0.1 FEET BELOW ROAD GRADE. RIM ELEVATIONS SHOWN ON PROFILES ARE APPROXIMATE. ENGINEER TO SPECIFY FINAL RIM ELEVATIONS ON SHOP DRAWINGS. MANHOLES SHALL BE CONSTRUCTED SO AT LEAST TWO COURSES OF BRICKS ARE BENEATH THE FRAME.
- ALL MANHOLE AND CATCH BASIN FRAME & COVERS SHALL BE ADJUSTED TO THE FIRST COURSE OF PAVEMENT. THE FRAME AND COVERS SHALL BE RE-ADJUSTED IMMEDIATELY PRIOR TO PLACEMENT OF THE SECOND COURSE OF PAVEMENT.
- ALL DRIVEWAY DRAINAGE SHALL REMAIN ON THE SITE AND SHALL NOT BE DIRECTED OFF SITE. OFF SITE ROADWAY RUNOFF SHALL NOT BE ALLOWED TO ENTER THE SITE. AT THE PROPOSED ENTRANCE A BITUMINOUS BERM SHALL BE CONSTRUCTED TO PREVENT ROADWAY RUNOFF FROM ENTERING THE SITE.
- PROPOSED ROAD AND DRIVEWAY SIGHT DISTANCE TRIANGLES SHALL BE CLEARED BY THE CONTRACTOR TO THE SATISFACTION OF THE TOWN.
- ANY SLOPES GREATER THAN 2H:1V SHALL BE STABILIZED WITH RIDOT CLASS R-4 RIP RAP LAID ON TOP OF FILTER FABRIC (MIRAFI 180N OR APPROVED EQUAL). DEPTH OF RIP RAP TO BE 1.5 TIMES MAXIMUM STONE SIZE.
- ALL HDPE PIPE SHALL BE ADS N-12 INTEGRAL BELL WATER-TIGHT PIPE OR APPROVED EQUAL.

**RIDOT R.O.W. NOTES:**

- ALL WORK WITHIN THE STATE'S R.O.W. WILL CONFORM TO RIDOT'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2014 EDITION AMENDED MARCH 2018, WITH ALL REVISIONS AND R.I. STANDARD DETAILS, 1998 EDITION AMENDED JUNE 2019, WITH ALL REVISIONS.
- ALL TRAFFIC CONTROL SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES 2009, INCLUDING ALL REVISIONS.
- CONTRACTOR MUST SUBMIT AN APPLICATION AND APPLY FOR SEPARATE UTILITY PERMIT FOR ALL UTILITY WORK TO BE PERFORMED IN THE RIDOT R.O.W..

**EXISTING CONDITIONS/UTILITIES NOTES:**

- THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ALL EXISTING DRAINAGE AND UTILITIES, BOTH UNDERGROUND AND OVERHEAD BEFORE EXCAVATION BEGINS IN ACCORDANCE WITH 'DIG SAFE'. NO DRAINAGE STRUCTURE OR FACILITY SHALL BE DISTURBED WITHOUT PROPER PERMITS UNLESS SPECIFICALLY INDICATED ON THESE DRAWINGS.
- ALL EXISTING UTILITIES HAVE BEEN PLOTTED BASED UPON THE BEST INFORMATION AVAILABLE AT THE TIME OF PLAN PREPARATION AND REPRESENT APPROXIMATE LOCATIONS. SOME OBSTRUCTIONS, OBSTACLES, OR DIFFICULTIES IN THE PATH OF THE WORK, EITHER ANTICIPATED OR DISCOVERED IN THE PERFORMANCE OF THE WORK, MAY NOT HAVE BEEN INDICATED BY DRAWINGS. THE CONTRACTOR SHALL BE UNDERSTOOD TO HAVE ENTERED INTO THE CONTRACT WITH FULL KNOWLEDGE THAT IN ANY WORK INVOLVING EXCAVATION OPERATIONS IN PUBLIC HIGHWAYS OR ADJACENT TO OTHER DEVELOPMENTS, SOME UNFORESEEN OBSTACLES, DIFFICULTIES, SOIL OR GROUND WATER CONDITIONS, ETC., MAY BE ENCOUNTERED, AND THAT THE CONTRACTOR HAS INCLUDED IN HIS BID AND CONTRACT OBLIGATIONS THE ASSUMPTIONS OF THE RISKS AND COSTS TO WHICH SUCH OBSTACLES, ETC. MAY SUBJECT HIM/HER.
- THE LOCATION OF EXISTING UNDERGROUND PIPES, CONDUITS, AND STRUCTURES AS SHOWN HAS BEEN COLLECTED FROM THE BEST AVAILABLE SOURCES, AND THE OWNER, TOGETHER WITH HIS AGENTS, DOES NOT IMPLY OR GUARANTEE THE DATA AND INFORMATION IN CONNECTION WITH UNDERGROUND PIPES, CONDUITS, STRUCTURES, AND SUCH OTHER PARTS, AS TO THEIR COMPLETENESS, NOR THEIR LOCATIONS AS INDICATED. THE CONTRACTOR SHALL ASSUME THAT THERE ARE EXISTING WATER, GAS AND OTHER UTILITY CONNECTIONS IN ROUTE, WHETHER THEY APPEAR ON THE DRAWINGS OR NOT. ANY EXPENSE AND/OR DELAY OCCASIONED BY UTILITIES AND STRUCTURES OR DAMAGE THERETO, INCLUDING THOSE NOT SHOWN, SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR, AT NO ADDITIONAL EXPENSE TO THE OWNER.
- BEFORE PROCEEDING WITH CONSTRUCTION OPERATIONS, THE CONTRACTOR SHALL MAKE SUCH SUPPLEMENTAL INVESTIGATIONS, INCLUDING EXPLORATORY EXCAVATIONS BY HAND DIGGING, AS HE DEEMS NECESSARY TO UNCOVER AND DETERMINE THE EXACT LOCATIONS OF UTILITIES AND STRUCTURES AND SHALL HAVE NO CLAIMS FOR DAMAGES DUE TO ENCOUNTERING SUBSURFACE STRUCTURES OR UTILITIES IN LOCATIONS OTHER THAN THOSE SHOWN ON THE DRAWINGS, OR WHICH ARE MADE KNOWN TO THE CONTRACTOR PRIOR TO CONSTRUCTION OPERATIONS. THE CONTRACTOR SHALL BE RESPONSIBLE AND LIABLE FOR ALL DAMAGES TO EXISTING UTILITIES AND STRUCTURES. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL ENGAGE A RI PROFESSIONAL LAND SURVEYOR TO SET AND VERIFY ALL LINES AND GRADES. ALL EXISTING AND PROPOSED UTILITY LOCATIONS AND ELEVATIONS ARE TO BE CONFIRMED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY ITEM FOUND WHICH DOES NOT MATCH THE PLANS MUST BE BROUGHT TO THE ENGINEER'S ATTENTION PRIOR TO CONSTRUCTION FOR REVIEW.
- ANY DAMAGE TO EXISTING PAVEMENT, BRIDGES, CONDUIT, SIDEWALK, FENCES, ETC., CAUSED BY THE CONTRACTOR SHALL BE REPAIRED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER/STATE/TOWN.
- WHENEVER IT MAY BE NECESSARY TO CROSS OR INTERFERE WITH EXISTING CULVERTS, DRAINS, SEWERS, WATER PIPES, FIXTURES, GUARDRAILS, FENCES, GAS PIPES, OR OTHER STRUCTURES NEEDING SPECIAL CARE, DUE NOTICE SHALL BE GIVEN TO THE OWNER. WHENEVER REQUIRED, ALL OBJECTS SHALL BE STRENGTHENED TO MEET ANY ADDITIONAL STRESS THAT THE WORK HEREIN SPECIFIED MAY IMPOSE UPON IT, AND ANY DAMAGE CAUSED SHALL BE THOROUGHLY REPAIRED. THE ENTIRE WORK SHALL BE PERFORMED AT NO EXPENSE TO THE OWNER. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL BROKEN MAINS OR UTILITIES ENCOUNTERED DURING THE PROGRESS OF THE WORK AND SHALL BE RESPONSIBLE FOR CORRECTING ALL DAMAGES TO EXISTING UTILITIES, STRUCTURES AND PERSONAL PROPERTY WHICH MAY HAVE BEEN CAUSED BY BROKEN LINES AT NO ADDITIONAL COST TO THE OWNER. THE CONTRACTOR SHALL CONTACT THE PROPER UTILITY OR AUTHORITY TO CORRECT OR MAKE ANY CHANGES DUE TO UTILITIES OR OTHER OBSTRUCTIONS DURING CONSTRUCTION, BUT THE ENTIRE RESPONSIBILITY AND EXPENSE SHALL BE WITH THE CONTRACTOR. ALL DAMAGED ITEMS OF WORK OR ITEMS REQUIRED TO BE REMOVED AND REPAIRED DUE TO CONSTRUCTION SHALL BE REPLACED OR REPAIRED BY THE CONTRACTOR TO THE COMPLETE SATISFACTION OF THE OWNER, AND AT NO ADDITIONAL EXPENSE TO THE OWNER.

**SUBSURFACE CONDITIONS NOTES:**

- ALL SOIL AND TEST HOLE DATA, WATER TABLE ELEVATIONS, AND SOIL ANALYSIS SHOWN/REFERENCED ON THE DRAWINGS OR INCLUDED IN THE SPECIFICATIONS APPLY ONLY AT THE LOCATION OF THE TEST HOLES AND TO THE DEPTHS INDICATED. SOIL TEST REPORTS ARE AVAILABLE FOR INSPECTION AT THE OFFICE OF THE DESIGN ENGINEER. ANY ADDITIONAL SUBSURFACE EXPLORATION SHALL BE DONE BY THE CONTRACTOR AT THEIR OWN EXPENSE. IT IS UNDERSTOOD THAT THE MAKING OF THE DEDUCTIONS, INTERPRETATIONS AND CONCLUSIONS FROM ALL THE ACCESSIBLE FACTUAL INFORMATION, INCLUDING THE NATURE OF THE MATERIALS TO BE EXCAVATED, THE DIFFICULTIES OF MAKING AND MAINTAINING THE REQUIRED EXCAVATIONS, AND THE DIFFICULTIES OF DOING OTHER WORK AFFECTED BY THE GEOLOGY AND OTHER SUBSURFACE CONDITIONS AT THE SITE OF THE WORK, ARE THE CONTRACTOR'S SOLE RESPONSIBILITY.
- THE INDICATED ELEVATION OF THE WATER TABLE IS THAT EXISTING AT THE DATE THE TEST HOLE DATA WAS DETERMINED. IT IS THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE AND ALLOW FOR THE ELEVATION OF GROUNDWATER AT THE DATE OF PROJECT CONSTRUCTION. A DIFFERENCE IN ELEVATION BETWEEN GROUNDWATER SHOWN IN SOIL LOGS AND GROUNDWATER ACTUALLY ENCOUNTERED DURING CONSTRUCTION WILL NOT BE CONSIDERED AS A BASIS FOR EXTRA WORK.

**CONSTRUCTION NOTES:**

- DEVELOPER SHALL RETAIN THE SERVICES OF A RHODE ISLAND PROFESSIONAL ENGINEER TO REVIEW AND APPROVE SHOP DRAWINGS, SAMPLES, AND OTHER SUBMITTALS OF THE CONTRACTOR FOR CONFORMANCE WITH THE DESIGN CONCEPT (THIS PLAN SET) AND TOWN REGULATIONS, WHICH INCLUDE (BUT ARE NOT LIMITED TO) THE FOLLOWING:
  - DRAINAGE SYSTEM** SHOP DRAWINGS/SKETCHES FOR PIPE, PIPE JOINTS, PIPE BEDDING/BACKFILL MATERIALS (SIEVE ANALYSIS, ETC.), COMPACTION METHODS, MANHOLE STRUCTURES, FRAME & COVERS, FRAME & GRATES, FRAME & COVER ADJUSTMENT METHODS TO FINISH GRADE, PROPOSED RIM ELEVATIONS, PIPE INVERTS AND PIPE DIAMETERS. ANY SUBSTANTIAL CHANGES TO THE DESIGN CONCEPT SHALL BE BROUGHT TO THE TOWN'S ATTENTION.
  - ROADWAY CONSTRUCTION** SHOP DRAWINGS/SKETCHES FOR GRAVEL BASE MATERIALS, BITUMINOUS CONCRETE COURSES, SIGNAGE/STRIPING, UNDERDRAINS, GUARDRAILS, RETAINING WALLS AND CURBING/BERMS.
  - SOIL EROSION CONTROL** AND DEWATERING METHODS.
  - COMPACTION METHODS** FOR INSTALLING PIPE/MANHOLES, GRAVEL ROAD BASE AND BITUMINOUS CONCRETE COURSES.
  - TESTING METHODS** AND TESTING FREQUENCY FOR DRAINAGE AND ROAD SYSTEMS. TESTING FREQUENCY SHALL BE IN ACCORDANCE WITH RIDOT AND TYPICAL ENGINEERING STANDARDS.
- THE SHOP DRAWING SUBMITTAL PACKAGE SHALL BE STAMPED BY A RHODE ISLAND PROFESSIONAL ENGINEER AND SUBMITTED TO THE TOWN/TOWN ENGINEER FOR REVIEW AND APPROVAL. SHOP DRAWING RECORDS SHALL BE MAINTAINED FOR THE DURATION OF THE PROJECT, INCLUDING THE WARRANTY PERIOD.
- MARKED-UP CONSTRUCTION DRAWINGS SHALL BE MAINTAINED AND KEPT AT THE JOB SITE FOR THE DURATION OF THE PROJECT.
- CONTRACTOR SHALL PREPARE AND SUBMIT AS-BUILT DRAWINGS IN ACCORDANCE WITH TOWN REGULATIONS AND KENT COUNTY WATER AUTHORITY REQUIREMENTS. AS-BUILT DRAWING SHALL COMPLY WITH KENT COUNTY WATER AUTHORITY RULES AND REGULATIONS. AS-BUILTS SHALL BE STAMPED BY A RI PROFESSIONAL LAND SURVEYOR AND R.I. PROFESSIONAL ENGINEER.
- PRIOR TO ACCEPTANCE OF INFRASTRUCTURE, A RI P.E. SHALL CERTIFY THE INFRASTRUCTURE WAS INSTALLED IN ACCORDANCE WITH THE DESIGN INTENT AND MEETS RIDOT/TOWN STANDARDS & PERMIT STIPULATIONS, AND IS READY FOR USE. AS-BUILT DRAWING SHALL COMPLY WITH KENT COUNTY WATER RULES AND REGULATIONS AND BE ACCEPTED AND APPROVED BY THE KENT COUNTY WATER AUTHORITY.

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
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**MAINTENANCE AND PROTECTION OF TRAFFIC NOTES:**

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE AND PROTECTION OF PEDESTRIAN AND VEHICULAR TRAFFIC DURING CONSTRUCTION, INCLUDING POLICE PROTECTION. ALL TEMPORARY AND VEHICULAR SIGNS, BARRICADES AND LANE CLOSURES SHALL BE IN CONFORMANCE WITH THE MAY 2012 MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD), INCLUDING ALL SUBSEQUENT REVISIONS.
- TRAFFIC CONTROL DEVICES (MUTCD), INCLUDING ALL APPLICABLE TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF WORK IN ANY AREA OPEN TO TRAFFIC.
- PRIVATE VEHICLES OF CONSTRUCTION WORKERS WILL NOT BE PARKED IN THE STREET RIGHT-OF-WAYS.
- SIGN MOUNTINGS SHALL BE IN ACCORDANCE WITH R.I.D.O.T. SPECIFICATIONS FOR TEMPORARY CONSTRUCTION SIGNS.

**EARTHWORK NOTES:**

- SPECIFICATIONS & DETAILS TO GOVERN THIS PROJECT ARE THE RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD & BRIDGE CONSTRUCTION - AUGUST 2018 EDITION (INCLUDING ALL SUBSEQUENT ADDENDA) AS WELL AS TOWN STANDARDS; WHERE APPLICABLE, THE TOWN'S STANDARDS SHALL OVERRIDE RIDOT STANDARDS.
- RIDOT STANDARDS ARE AVAILABLE FOR DOWNLOAD FROM THE RIDOT WEBSITE UNDER 'STANDARDS AND SPECIFICATIONS' (WWW.DOT.STATE.RI.US/ENGINEERING/STANDARDS/INDEX.ASP). TOWN STANDARDS ARE AVAILABLE FOR DOWNLOAD FROM THE TOWN OF WEST WARWICK WEBSITE UNDER THE LINK 'PLANNING DEPARTMENT,' 'SUBDIVISION AND LAND DEVELOPMENT REGULATIONS' (HTTPS://WWW.WESTWARWICKRI.ORG/INDEX.ASP?SEC=6FF3F8C0-061C-4B14-8AF5-40C3B866D49B&DE=64F1BA35-62B1-49A6-B058-4ED8B5DFD4D4&TYPE=B\_BASIC).
- EMBANKMENT SLOPES AND ALL DISTURBED AREAS ARE TO RECEIVE 4" OF TOPSOIL AND GRASS SEED UNLESS OTHERWISE NOTED.
- ALL EXCAVATION AND PLACEMENT OF FILL SHALL BE IN ACCORDANCE WITH R.I.D.O.T. STANDARD SPECIFICATIONS SECTION 202 AND TOWN SUBDIVISION AND LAND DEVELOPMENT REGULATIONS. ALL MATERIALS AND METHODS SHALL BE PERFORMED IN ACCORDANCE WITH THESE STANDARDS AND SPECIFICATIONS. ALL FILL BENEATH PAVEMENTS SHALL BE GRAVEL AS DEFINED IN THE RIDOT SPECIFICATIONS.
- ALL AREAS COMPACTED BY CONSTRUCTION ACTIVITIES (OTHER THAN ROADWAYS AND BENEATH STRUCTURES) SHALL BE RESTORED TO PROMOTE INFILTRATION BY TILLING THE TOP 12 INCHES OF SOIL PRIOR TO FINAL STABILIZATION.
- ALL UNSUITABLE MATERIAL (LOAM, SUBSOIL, ROOTS, TREE TRUNKS, CLAY, SILT, ORGANIC MATTER, LARGE STONES, ETC.) SHALL BE REMOVED FROM THE ROADWAY, SURFACE AND EMBANKMENT AREAS PRIOR TO THE PLACEMENT OF THE GRAVEL SUBBASE/BERM MATERIAL AS DIRECTED AND APPROVED.
- SUITABLE SURPLUS MATERIAL GENERATED BY EXCAVATIONS WITHIN THE PROJECT AREA (SAND, GRAVEL, LOAM, ETC.) SHALL BE RE-USED, TO THE EXTENT POSSIBLE, IN OTHER LOCATIONS WITHIN THE PROJECT AREA; MINING OF SITE MATERIALS (I.E. REMOVAL OF SUITABLE IN-SITU MATERIALS FROM THE SITE AND REPLACEMENT WITH IMPORTED BORROW MATERIALS) SHALL NOT BE PERMITTED.

**GROUNDWATER REMOVAL & PROTECTION FROM FLOODING:**

- SOME EXCAVATIONS FOR PIPELINES, STRUCTURES, AND APPURTENANT WORK REQUIRED MAY OCCUR BELOW EXISTING GROUNDWATER LEVELS.
- THE CONTRACTOR SHALL CONSTRUCT AND MAINTAIN ALL PUMPS, DRAINS, WELL POINTS AND/OR ANY OTHER FACILITIES FOR THE CONTROL, COLLECTION, AND DISPOSAL OF GROUNDWATER OR SURFACE AND SUBSURFACE WATER ENCOUNTERED IN THE PERFORMANCE OF THE WORK, AND SHALL PROVIDE ALL PUMPS, PIPING, AND DITCHING FOR THE REMOVAL OF WATER FROM THE TRENCHES AND EXCAVATIONS SO THAT ALL TRENCHES AND EXCAVATIONS MAY BE KEPT FREE FROM WATER AT ALL TIMES, AND SO THAT THE WORK MAY BE PERFORMED IN THE DRY.
- DEWATERING OF EXCAVATIONS SHALL BE ACCOMPLISHED BY METHODS THAT HAVE BEEN APPROVED PRIOR TO COMMENCEMENT OF WORK BY THE ENGINEER, AND WHICH HAVE A BACKGROUND OF SUCCESSFUL DEWATERING OF EXCAVATIONS OF THE TYPE TO BE EMPLOYED FOR THE WORK.
- PUMPING SHALL BE CONTINUOUS WHERE DIRECTED AND/OR AS NECESSARY TO PROTECT THE WORK, AND TO MAINTAIN SATISFACTORY PROGRESS OF SAME.
- THE CONTRACTOR'S DEWATERING AND PUMPING OPERATIONS SHALL BE CARRIED OUT IN SUCH A MANNER THAT NO LOSS OF GROUND WILL RESULT FROM THESE OPERATIONS. ANY DAMAGE TO EXISTING FEATURES OR TO THE CONTRACT WORK RESULTING FROM THE CONTRACTOR'S DEWATERING OPERATIONS SHALL BE REPAIRED BY THE CONTRACTOR, AS DIRECTED BY THE OWNER, AT NO ADDITIONAL EXPENSE TO THE OWNER. PRECAUTIONS SHALL BE TAKEN TO PROTECT NEW AND EXISTING WORK FROM FLOODING OR DAMAGE DURING STORMS OR OTHER CAUSES.
- ALL PIPELINES OR STRUCTURES NOT STABLE AGAINST UPLIFT DURING CONSTRUCTION OR PRIOR TO COMPLETION SHALL BE THOROUGHLY BRACED OR OTHERWISE PROTECTED.
- WATER FROM THE TRENCHES, EXCAVATIONS, AND DRAINAGE OPERATIONS SHALL BE DISPOSED OF IN SUCH A MANNER AS WILL CAUSE NEITHER INJURY TO PUBLIC HEALTH OR PRIVATE PROPERTY, NOR DAMAGE TO THE WORK COMPLETED OR IN PROGRESS.
- THE CONTRACTOR SHALL CONSTRUCT DITCHES, ESTABLISH GRADING, AND PERFORM ANY AND ALL OTHER WORK AS MAY BE NECESSARY TO DRY AND PREVENT SURFACE WATER AND WATER FROM DEWATERING OPERATIONS FROM ENTERING EXCAVATION AND WORK AREAS.

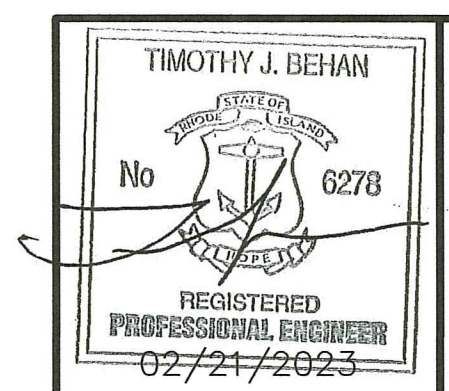
**STORMWATER SYSTEM OPERATION & MAINTENANCE NOTES:**

- INSPECTIONS AND PROPER MAINTENANCE ARE ESSENTIAL FOR THE LONGEVITY OF THE DRAINAGE SYSTEMS. THE DRAINAGE SYSTEM SHALL BE INSPECTED IN ACCORDANCE WITH THE OPERATION AND MAINTENANCE (O&M) PLAN PREPARED SPECIFICALLY FOR THIS DEVELOPMENT.
- THE PROPERTY OWNER SHALL MAINTAIN ALL ELEMENTS OF THE PROPOSED DRAINAGE SYSTEM (CATCH BASINS, DRAINAGE MANHOLES, DRAINAGE PIPING, ADS STORMWATER INFILTRATION/STORAGE AREA, SEDIMENT FOREBAY AND INFILTRATION POOLS) AND ENFORCEABLE MAINTENANCE AGREEMENT SHALL BE EXECUTED BETWEEN THE OWNER AND A MAINTENANCE COMPANY TRAINED AND EXPERIENCED WITH THE MAINTENANCE REQUIREMENTS DETAILED IN THE O&M PLAN FOR THIS DEVELOPMENT, AS WELL AS THE 'RHODE ISLAND STORMWATER DESIGN AND INSTALLATION STANDARDS MANUAL,' LATEST EDITION (KNOWN AS THE 'MANUAL').

**DRAWING ISSUE:**

- CONCEPT
- CUSTOMER APPROVAL
- PERMITTING
- CONSTRUCTION
- AS-BUILT
- OTHER:

OWNER/APPLICANT:  
 MD CAPITAL, LLC  
 PO BOX 1205  
 NORTON, MASSACHUSETTS 02766  
 TELEPHONE: (508) 887-6805  
 EMAIL: DELDONATO1@GMAIL.COM



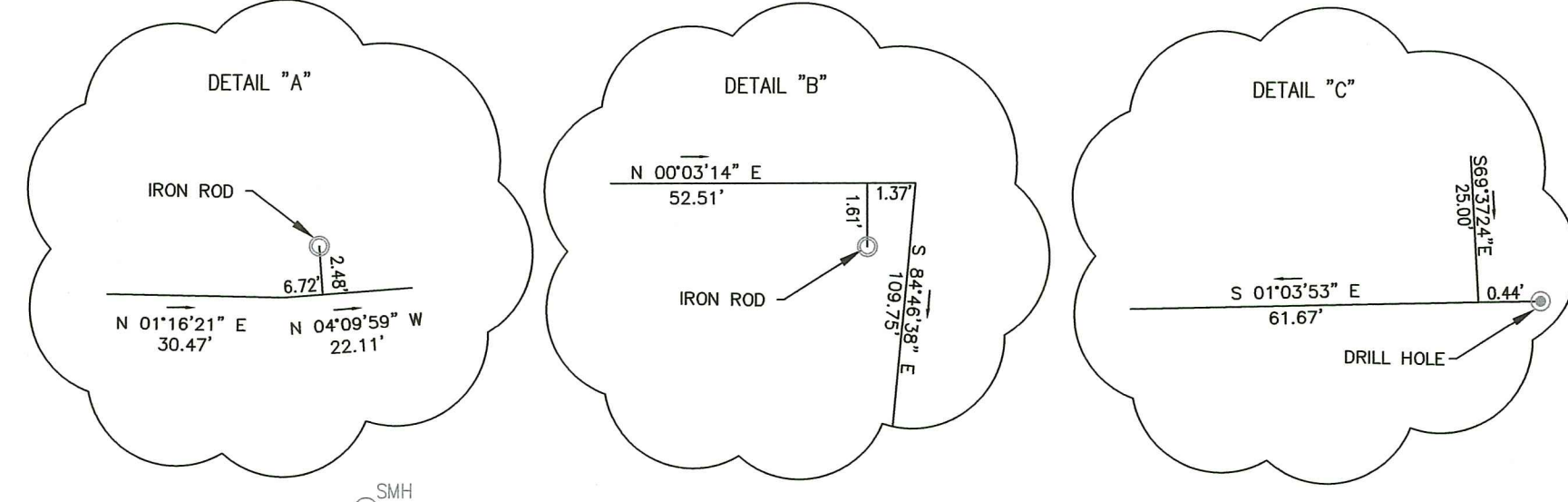
REVISIONS			
No.	DATE	DRWN	CHKD
1	10/03/22	SMA	TJB
2	01/25/23	SMA	TJB
3	01/31/23	SMA	TJB
4	02/21/23	SMA	TJB

**COMMONWEALTH ENGINEERS & CONSULTANTS, INC.**  
 400 SMITH STREET  
 PROVIDENCE, RHODE ISLAND 02908  
 (401) 273-6800

**PERMIT AGENCY REVIEW PLAN**  
 FOR  
**THE HILL CREST CONDOMINIUMS**  
 ON  
 A.P. 13, LOTS 658 AND 659  
 COWESSETT AVENUE  
 WEST WARWICK, RHODE ISLAND

NOTES AND LEGEND PLAN

SCALE: AS NOTED	SHEET NO: 2 OF 18
DRAWN BY: SMA	DESIGN BY: SMA
DATE: JUNE 2022	CHECKED BY: TJB
	PROJECT NO 22026.00



Environmental Management  
FEB 22 2023  
Office of Water Resources

**LEGEND**

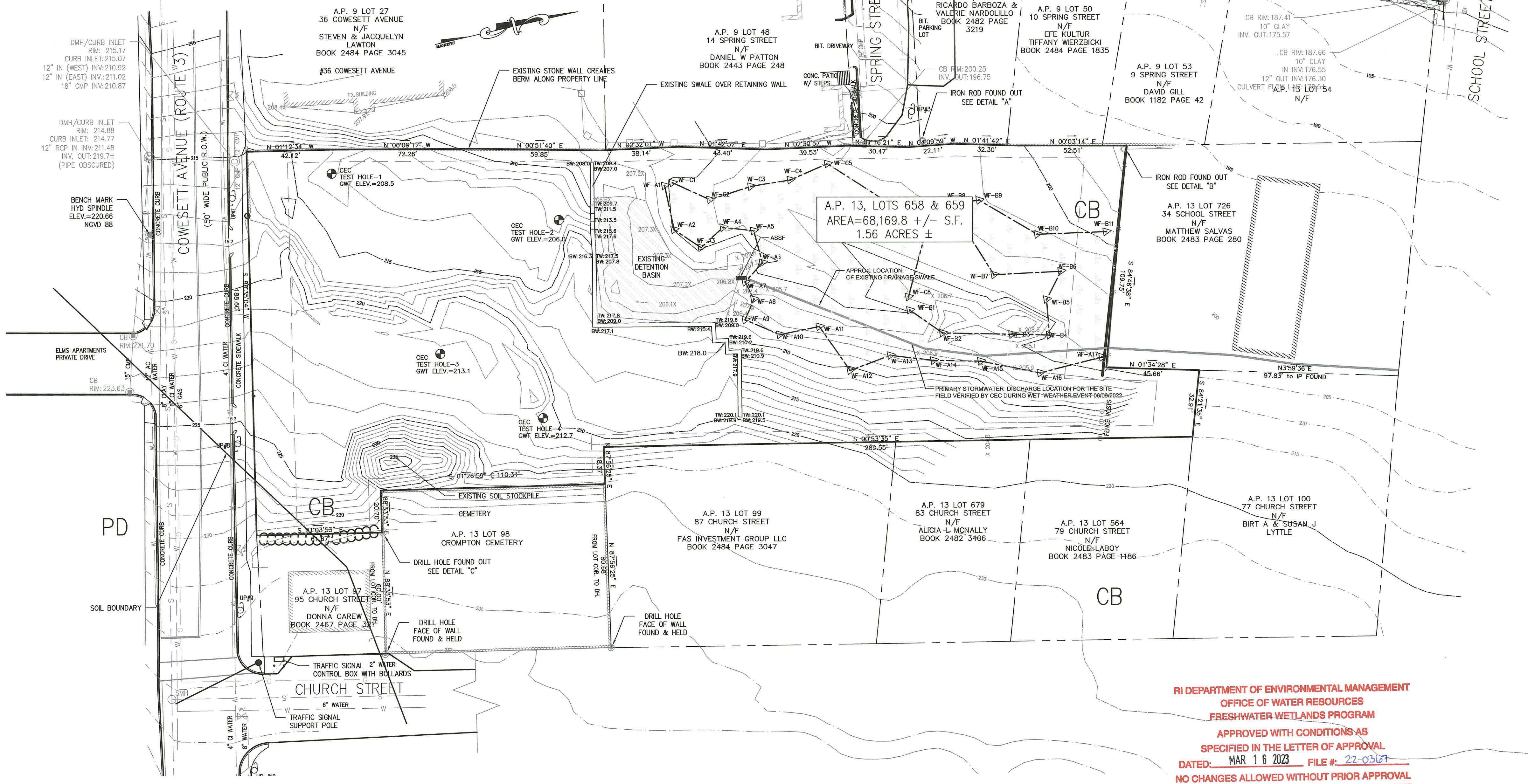
###	EXISTING PROPERTY LINE
---	PROPERTY LINE SETBACK
---	ABUTTER PROPERTY LINE
---	TREELINE
OR	IRON ROD SET
GC	GRANITE/CONCRETE BOUND
OH	DRILL HOLE
OP	IRON ROD/IRON PIN
WF-###	WETLAND FLAG
---	WETLAND EDGE
98	EXISTING CONTOUR
98	EXISTING CONTOUR FROM NOAA LIDAR
U	UTILITY POLE
---	OVERHEAD WIRES (ELEC/TELECOM)
W	WATER GATE VALVE
W	WATER SHUTOFF (CURB STOP)
W	WATER MAIN
W	WATER HYDRANT
W	PROP WATER SERVICE
CB	CATCH BASIN
SMH	SEWER MANHOLE
---	SEWER MAIN
---	GAS LINE
---	PROP SEWER SERVICE
DMH	PROP DRAINAGE MANHOLE
CB	PROP CATCH BASIN
SMH-4	PROP SEWER MANHOLE

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**DRAWING ISSUE:**

<input type="checkbox"/>	CONCEPT
<input type="checkbox"/>	CUSTOMER APPROVAL
<input checked="" type="checkbox"/>	PERMITTING
<input type="checkbox"/>	CONSTRUCTION
<input type="checkbox"/>	AS-BUILT
<input type="checkbox"/>	OTHER:

ONLY PLANS ISSUED FOR CONSTRUCTION SHALL BE USED FOR CONSTRUCTION



RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED: MAR 16 2023 FILE # 22-0317  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

**TEST HOLE NOTES:**

1. TEST HOLES AT VARIOUS LOCATIONS ON THE PARCEL WERE PERFORMED IN JUNE 2022.
2. ALL TEST HOLES WERE EXCAVATED TO A MINIMUM DEPTH OF 120".
3. GROUNDWATER SEEPAGE WAS ENCOUNTERED IN TEST HOLE-1 AT 108". GROUND WATER SEEPAGE WAS NOT ENCOUNTERED IN THE REMAINING TEST HOLES.
4. ESHGW IS 60" FOR TEST HOLE 1, 84" FOR TEST HOLES 2 AND 96" FOR TEST HOLES 3 AND 4.
5. NO LEDGE WAS ENCOUNTERED IN ANY TEST HOLE.
6. FILL DEPTHS VARY ACROSS THE SITE.

**MAP NOTES:**

1. EXISTING SITE AND ROADWAY CONTOURS FROM COMMONWEALTH LAND SURVEYORS INC.
2. ADJACENT PROPERTIES 5-FOOT CONTOURS FROM NOAA 2011 LIDAR.
3. THE LOCATION OF UNDERGROUND UTILITIES IS APPROXIMATE. CONTRACTORS TO VERIFY THE LOCATION OF UNDERGROUND UTILITIES PRIOR TO ANY EXCAVATION, DIGGING, BORING, OR TESTING (CALL DIGSAFE). UTILITIES SHOWN ARE QUALITY LEVEL D OF THE ASCE 38-02 STANDARDS.
4. GAS MAINS ON COWESETT AVENUE AND SPRING STREET TAKEN FROM INFORMATION PROVIDED BY NATIONAL GRID GAS AND PLANS OF RECORD. GAS LOCATIONS ARE APPROXIMATE AND MUST BE FIELD VERIFIED PRIOR TO EXCAVATION.
5. EXISTING WATER MAINS ON COWESETT AVENUE AND SPRING STREET TAKEN FROM INFORMATION PROVIDED BY KOWA AND PLANS OF RECORD.
6. DEPICTED DWELLINGS ON ABUTTING PROPERTIES WERE TAKEN FROM COMMONWEALTH LAND SURVEYORS AND PLANS OF RECORD.

**PLAN REFERENCES:**

1. WETLANDS FLAGGING DELINEATED BY AVIZINIS ENVIRONMENTAL SERVICES, INC. IN MARCH OF 2022.
2. PLAN ENTITLED "PLAT OF ALBY WATSON ESTATE; DATED: NOVEMBER 25, 1891; SCALE: 1"=50'.

**SITE NOTES:**

1. WHERE REFERENCED HEREIN, THE TERM "PARCEL" SHALL BE APPLICABLE TO THE COMBINED LAND AREA ENCOMPASSED BY LOTS 658 AND 659.
2. THE SUBJECT PARCEL LIES WITHIN "ZONE X--AREAS OF MINIMAL FLOOD HAZARD" AS DELINEATED ON THE FIRM FLOOD INSURANCE RATE MAP FOR KENT COUNTY, RHODE ISLAND (ALL JURISDICTIONS), MAP NUMBER 440030109H, EFFECTIVE DATE OCTOBER 2, 2015.
3. SUBJECT PARCEL IS COVERED PREDOMINANTLY WITH GRASS AND WOODS.
4. THERE IS A CEMETERY LOCATED ADJACENT TO THIS PROPERTY.
5. SUBJECT PARCEL IS NOT LOCATED WITHIN EITHER OF THE FOLLOWING:
  - HISTORIC DISTRICTS
  - RIDEM GROUNDWATER PROTECTION AREA
  - A NATURAL HERITAGE AREA
6. THERE ARE NO EXISTING BUILDINGS ON THE PARCEL. THERE IS A LARGE RETAINING WALL IN THE CENTER OF THE PARCEL.
7. THERE ARE APPROXIMATELY 11,248 SQUARE FEET OF WETLANDS LOCATED ON THE NORTHERN PORTION OF THE SITE.
8. NO PORTION OF THE PARCEL FALLS WITHIN A COMMUNITY OR NON-COMMUNITY WELLHEAD PROTECTION AREA OR A GROUNDWATER RECHARGE AREA.
9. SUBJECT PARCEL IS SERVICED BY KENT COUNTY WATER AUTHORITY.
10. SUBJECT PARCEL IS SERVICED BY WEST WARWICK SEWER AUTHORITY.

**SOILS ANALYSIS:**

CB-CANTON-URBAN LAND COMPLEX HYDROLOGIC SOIL GROUP B  
PD-PAXTON-URBAN LAND COMPLEX HYDROLOGIC SOIL GROUP C

REFER TO TEST HOLE LOGS FOR TEST HOLE DATA.

**SURVEY CERTIFICATION:**

THIS SURVEY HAS BEEN CONDUCTED AND THE PLAN HAS BEEN PREPARED PURSUANT TO SECTION 9 OF THE RULES AND REGULATIONS ADOPTED BY THE RHODE ISLAND STATE BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS ON MARCH 16, 2020 AS FOLLOWS:

LIMITED CONTENT BOUNDARY SURVEY: CLASS I  
DATA ACCUMULATION SURVEY: CLASS III

THE PURPOSE FOR THE CONDUCT OF THE SURVEY AND FOR THE PREPARATION OF THE PLAN IS TO ESTABLISH AND SET BOUNDARY LINES WITH TOPOGRAPHIC INFORMATION FOR FUTURE DEVELOPMENT.

REGISTERED LAND SURVEYOR: CURT A. NUNES  
DATE: 06/27/2022

COMMONWEALTH LAND SURVEYORS, INC.  
4 PATRIOT STREET  
ATTLEBORO, MASSACHUSETTS 02703  
(508) 455-2634  
C.O.A. # LS-A395

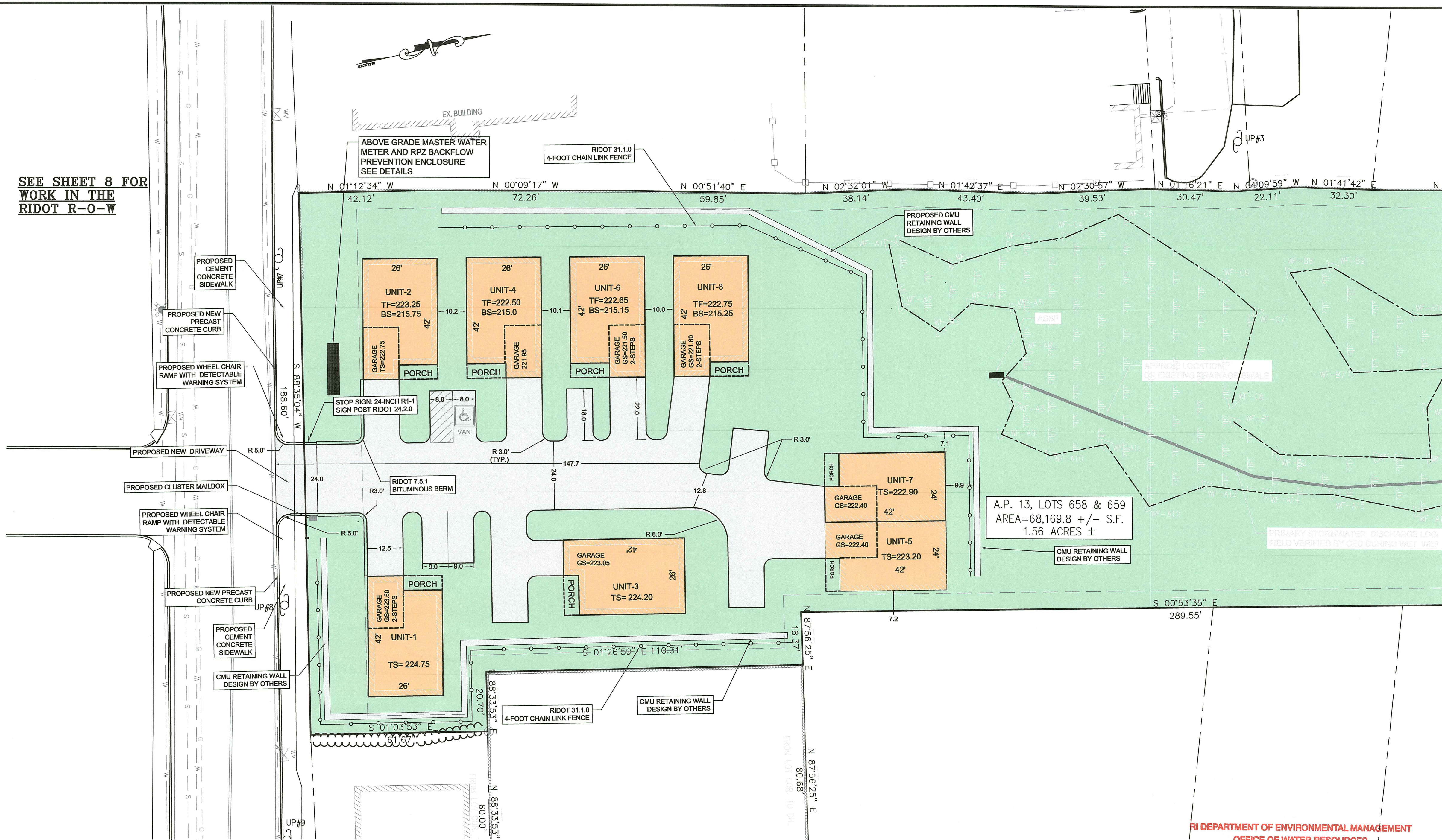
TIMOTHY J. BEHAN  
REGISTERED PROFESSIONAL ENGINEER  
02/21/2023

**COMMONWEALTH ENGINEERS & CONSULTANTS, INC.**  
400 SMITH STREET  
PROVIDENCE, RHODE ISLAND 02908  
(401) 273-6600

**PERMIT AGENCY REVIEW PLAN**  
FOR  
**THE HILL CREST CONDOMINIUMS**  
ON  
**A.P. 13, LOTS 658 AND 659**  
**COWESETT AVENUE**  
**WEST WARWICK, RHODE ISLAND**  
EXISTING CONDITIONS PLAN

SCALE: 1-INCH = 30-FOOT	SHEET NO: 3 OF 18	
DRAWN BY: SMA	DESIGN BY: SMA	CHECKED BY: TJB
DATE: JUNE 2022	PROJECT NO: 22026.00	

SEE SHEET 8 FOR WORK IN THE RIDOT R-O-W



**LEGEND**

- EXISTING PROPERTY LINE
- PROPERTY LINE SETBACK
- ABUTTER PROPERTY LINE
- TREELINE
- IRON ROD SET
- GRANITE/CONCRETE BOUND
- DRILL HOLE
- IRON ROD/IRON PIN
- WETLAND FLAG
- WETLAND EDGE
- 98 --- EXISTING CONTOUR
- 98 --- EXISTING CONTOUR FROM NOAA LIDAR
- UTILITY POLE
- OVERHEAD WIRES (ELEC/TELECOM)
- WATER GATE VALVE
- WATER SHUTOFF (CURB STOP)
- WATER MAIN
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- SEWER MANHOLE
- SEWER MAIN
- GAS LINE
- PROP SEWER SERVICE
- DMH --- PROP DRAINAGE MANHOLE
- CB --- PROP CATCH BASIN
- SMH-4 --- PROP SEWER MANHOLE

**RIDOT R.O.W. NOTES:**

- ALL WORK WITHIN THE STATE'S R.O.W. WILL CONFORM TO RIDOT'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2014 EDITION AMENDED MARCH 2018, WITH ALL REVISIONS AND R.I. STANDARD DETAILS, 1998 EDITION AMENDED JUNE 2019, WITH ALL REVISIONS.
- ALL TRAFFIC CONTROL SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES 2009, INCLUDING ALL REVISIONS.
- CONTRACTOR MUST SUBMIT AN APPLICATION AND APPLY FOR SEPARATE UTILITY PERMIT FOR ALL UTILITY WORK TO BE PERFORMED IN THE RIDOT R.O.W..

**PARKING CALCULATION:**

TWO (2) PARKING SPACES PER DWELLING UNIT REQUIRED  
 8 UNITS PROPOSED X 2 PARKING SPACES = 16 SPACES REQUIRED

SPACES PROVIDED  
 8 GARAGES + 8 DRIVEWAYS + 5 PARKING SPACES = 21 SPACES PROVIDED

HANDICAP SPACES REQUIRED  
 1 SPACE PER 25 TOTAL PARKING SPACES REQUIRED  
 1 HANDICAP PARKING SPACE PROVIDED

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED: MAR 16 2023 FILE # 22-0367  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Environmental Management  
 FEB 22 2023  
 Office of Water Resources

**DRAWING ISSUE:**

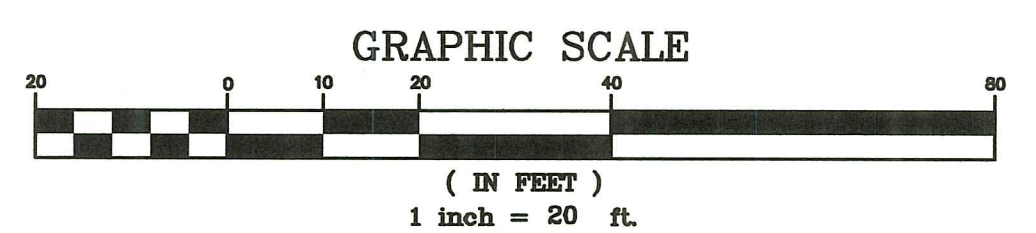
- CONCEPT
  - CUSTOMER APPROVAL
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  - CONSTRUCTION
  - AS-BUILT
  - OTHER:
- ONLY PLANS ISSUED FOR CONSTRUCTION SHALL BE USED FOR CONSTRUCTION

OWNER/APPLICANT:  
 MD CAPITAL, LLC  
 PO BOX 1205  
 NORTON, MASSACHUSETTS 02766  
 TELEPHONE: (508) 887-6805  
 EMAIL: DELDONATO1@GMAIL.COM

**LOCAL/STATE/FEDERAL PERMITS & APPROVALS REQUIRED:**

- RIDEM FRESHWATER WETLANDS/RIPDES
- RIDOT PARTIAL ALTERATION PERMIT
- LOCAL FIRE DEPARTMENT APPROVAL
- KCWA WATER SYSTEM TIE IN APPROVAL
- WEST WARWICK SEWER TIE IN APPROVAL
- RIDOT PARTIAL ALTERATION PERMIT

**PLAN VIEW**



**ZONING TABLE:**

ZONE: R-6 RESIDENTIAL DISTRICT  
 PARCEL ID: A.P. 13 LOTS 658 AND 659  
 TOTAL LOT AREA: 1.56 ± ACRES

**SITE UTILITY NOTES:**

- THE SITE IS PROPOSED TO BE SERVICED BY THE KENT COUNTY WATER AUTHORITY (KCWA)
- THE SITE IS PROPOSED TO BE SERVICED BY WEST WARWICK SEWERS.
- STORMWATER MANAGEMENT (COLLECTION, CONVEYANCE AND TREATMENT) SYSTEM SHALL BE PRIVATE.
- ELECTRICAL/TELECOMMUNICATION/CATV SERVICE SHALL BE EITHER OVERHEAD OR UNDERGROUND.

**PROPOSED DEVELOPMENT NOTES:**

- THIS PROPOSAL CONSISTS OF EIGHT (8)-THREE (3) BEDROOM RESIDENTIAL UNITS
- NO SIDEWALKS ARE PROPOSED.
- SANITARY SEWER IS PROPOSED FOR THE CONDOMINIUMS VIA A GRAVITY CONNECTION TO THE EXISTING TOWN SYSTEM IN COWESETT AVENUE.
- WATER SERVICE IS PROPOSED VIA A CONNECTION TO THE KCWA MAIN IN COWESETT AVENUE.
- THESE PLANS HAVE NOT BEEN ISSUED FOR CONSTRUCTION AND ARE SUBJECT TO FURTHER REVISIONS AND LOCAL/STATE APPROVALS.
- PROPOSED CONSTRUCTION ACCESS ROUTE WILL BE THE PROPOSED ENTRANCE FROM COWESETT AVENUE.
- THE TOWN WILL NOT BE PROVIDING ANY SERVICES FOR ROAD MAINTENANCE, SNOW PLOWING AND REMOVAL OR TRASH REMOVAL.
- TRASH AND RECYCLING CARTS SHALL BE PROVIDED FOR EACH UNIT.

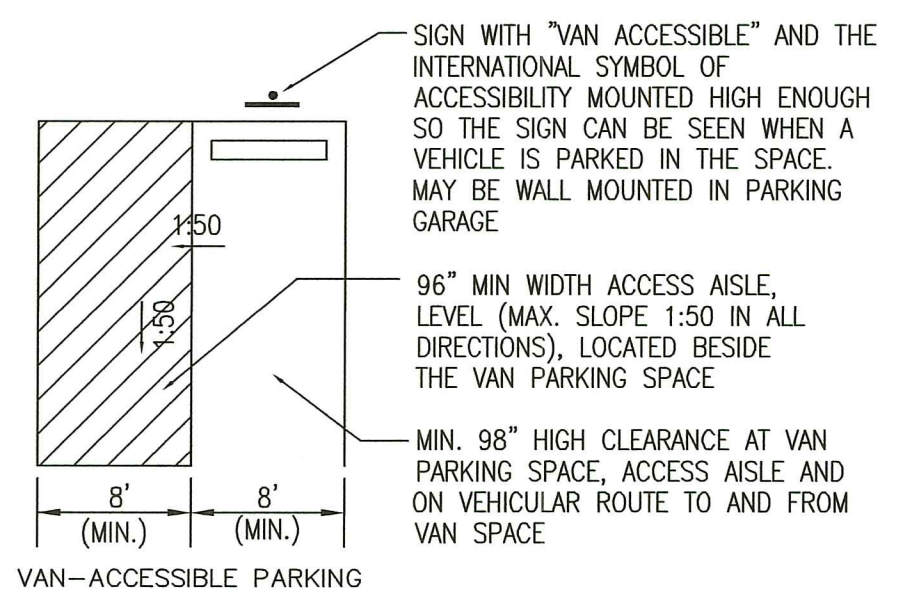
	REQUIRED	PROVIDED
MIN. LOT AREA	6,000 S.F.	68,169 S.F.
MIN. LOT DIMENSIONS		
WIDTH	60 FT.	189± FT.
DEPTH	100 FT.	431± FT.
FRONTAGE	55 FT.	189±
MIN. YARD SETBACKS		
FRONT	20 FT.	20 FT.
SIDE	6 FT.	6 FT.
REAR	20 FT.	240± FT.
MAX. BLDG. HEIGHT	35 FT.	<35 FT.
MAX. BLDG. COVERAGE	45%	37%
MAX. IMPERV. COVERAGE	30%	15.1%

SPECIAL USE PERMIT WAS GRANTED

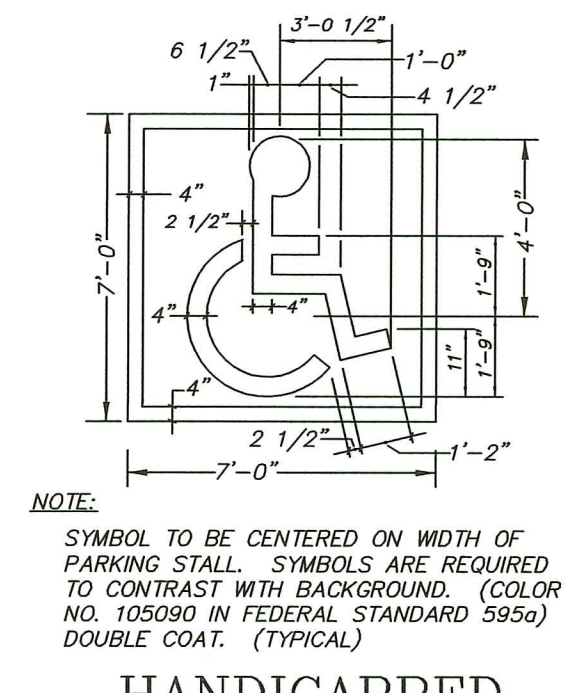
USABLE LOT AREA = TOTAL LOT AREA - WETLANDS AREA  
 (68,169 - 11,260) S.F. = 56,909 S.F.

LOT COVERAGE = BUILDING AREA / USABLE LOT AREA X 100%  
 (9,430 / 56,909) S.F. X 100% = 16.5%

LOT DENSITY  
 56,909 S.F. / 6,000 S.F. PER UNIT = 9.4 UNITS  
 8 UNITS PROPOSED



**HANDICAP PARKING SPACES**  
 NOT TO SCALE



**HANDICAPPED PARKING SYMBOL**  
 NOT TO SCALE

REVISIONS

No.	DATE	DRWN	CHKD
1	10/03/22	SMA	TJB
2	01/25/23	SMA	TJB
3	01/31/23	SMA	TJB
4	02/21/23	SMA	TJB

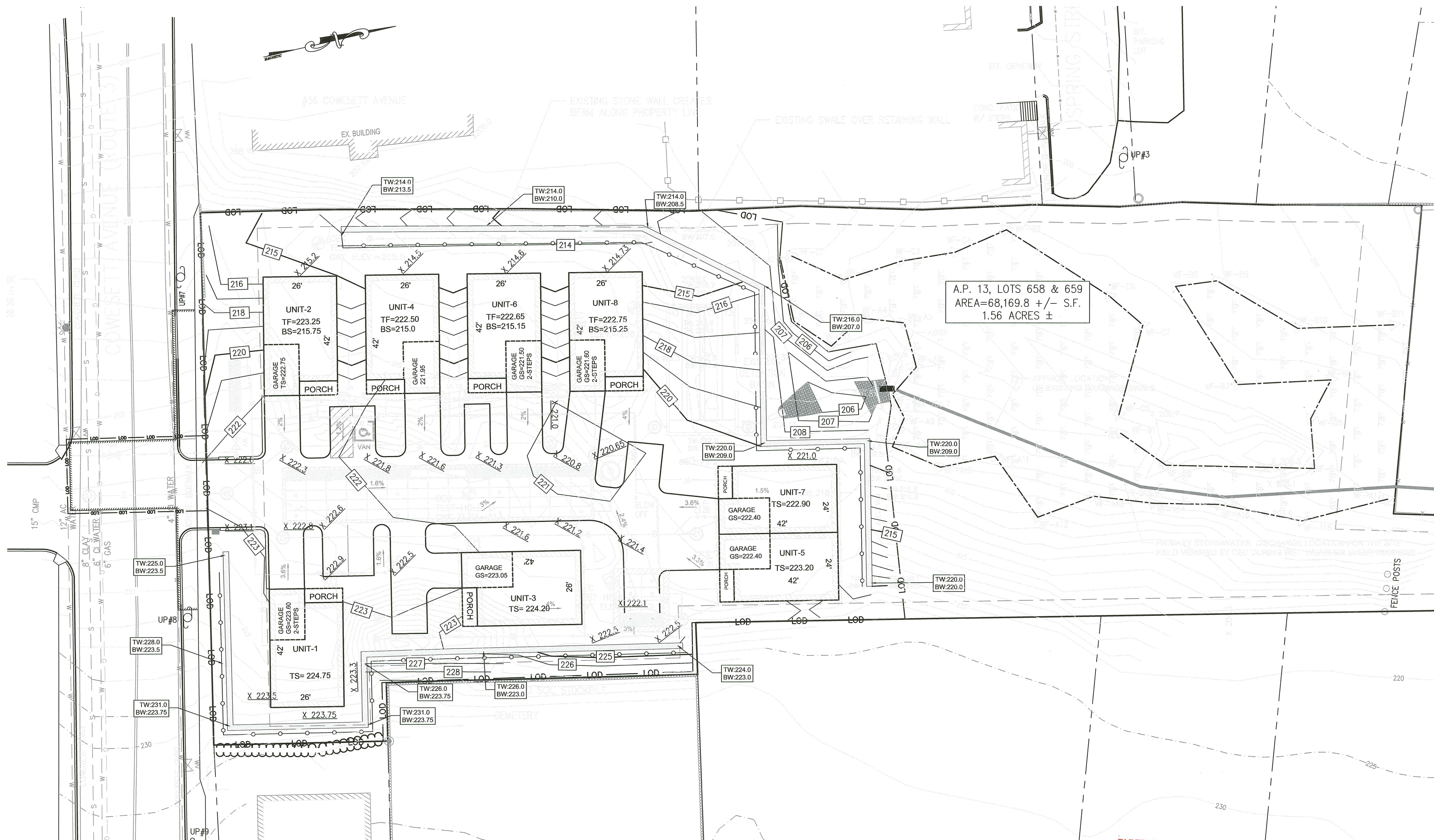
**COMMONWEALTH ENGINEERS & CONSULTANTS, INC.**  
 400 SMITH STREET  
 PROVIDENCE, RHODE ISLAND 02908  
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PERMIT AGENCY REVIEW PLAN  
 FOR  
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**WEST WARWICK, RHODE ISLAND**  
**PROPOSED LAYOUT PLAN**

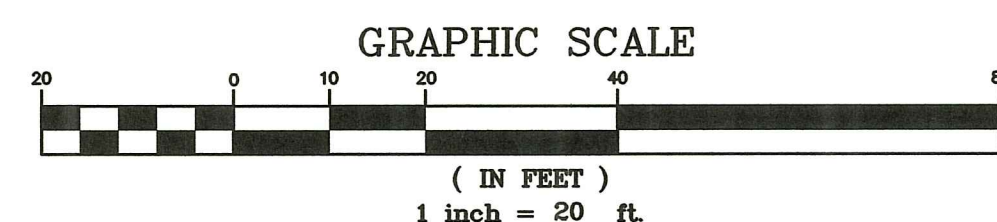
SCALE: 1-INCH = 20-FOOT	SHEET NO: 4 OF 18
DRAWN BY: SMA	DESIGN BY: SMA
CHECKED BY: TJB	
DATE: JUNE 2022	PROJECT NO 22026.00

**LEGEND**

- ### EXISTING PROPERTY LINE
- - - PROPERTY LINE SETBACK
- - - ABUTTER PROPERTY LINE
- ~~~~~ TREELINE
- IRON ROD SET
- GRANITE/CONCRETE BOUND
- DRILL HOLE
- IRON ROD/IRON PIN
- ▲ WETLAND FLAG
- WETLAND EDGE
- 98 EXISTING CONTOUR
- 98 EXISTING CONTOUR FROM NOAA LIDAR
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- SEWER MAIN
- GAS LINE
- PROP SEWER SERVICE
- DMH PROP DRAINAGE MANHOLE
- ⊕ CB PROP CATCH BASIN
- SMH-4 PROP SEWER MANHOLE



**PLAN VIEW**



**PROPOSED DEVELOPMENT NOTES:**

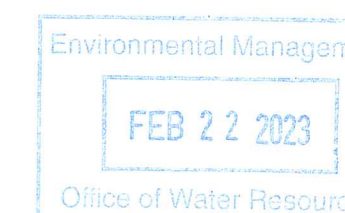
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8. TRASH AND RECYCLING CARTS SHALL BE PROVIDED FOR EACH UNIT.

**GRADING & DRAINAGE NOTES:**

1. CONTRACTOR TO FINE GRADE LOTS IN ACCORDANCE WITH STATE OF RHODE ISLAND ONE AND TWO FAMILY DWELLING CODE. LOTS SHALL BE GRADED SO THAT ADDITIONAL ACCUMULATION OF SURFACE WATER DOES NOT OCCUR ACROSS ADJOINING PROPERTY. SURFACE DRAINAGE SHALL BE DIVERTED TO A STORM SEWER CONVEYANCE OR OTHER POINT OF COLLECTION SO AS NOT TO CREATE A HAZARD. LOTS SHALL BE GRADED SO AS TO DRAIN SURFACE WATER AWAY FROM FOUNDATION WALLS. THE GRADE AWAY FROM FOUNDATION WALLS SHALL FALL A MINIMUM OF 6" WITHIN THE FIRST 10 FEET. IMPERVIOUS SURFACES (DRIVEWAY) SHALL BE SLOPED AWAY FROM HOUSE AT A SLOPE OF 2% FOR AT LEAST 10 FEET.
2. DIRECT STORMWATER RUNOFF FROM ENTIRE DEVELOPED AREA OF THE SITE TO DISCHARGE INTO STORMWATER COLLECTION SYSTEM TO MAXIMUM EXTENT POSSIBLE.
3. DO NOT ALLOW STREET RUNOFF TO ENTER SUBJECT PROPERTY.

**RIDOT R.O.W. NOTES:**

1. ALL WORK WITHIN THE STATE'S R.O.W. WILL CONFORM TO RIDOT'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2014 EDITION AMENDED MARCH 2018, WITH ALL REVISIONS AND R.I. STANDARD DETAILS, 1998 EDITION AMENDED JUNE 2019, WITH ALL REVISIONS.
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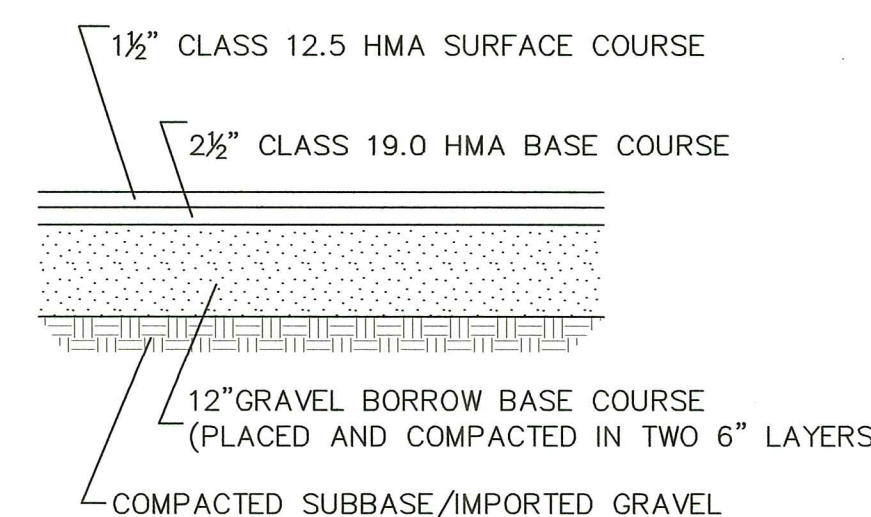
**DRAWING ISSUE:**

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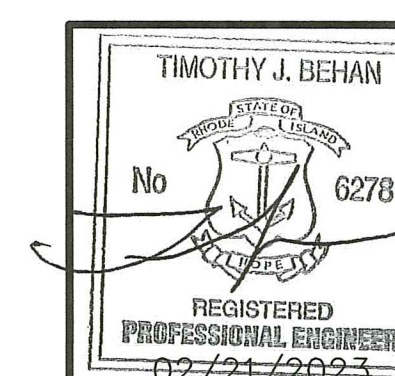
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**RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**  
**OFFICE OF WATER RESOURCES**  
**FRESHWATER WETLANDS PROGRAM**  
**APPROVED WITH CONDITIONS AS**  
**SPECIFIED IN THE LETTER OF APPROVAL**  
**DATED: MAR 16 2023 FILE #: 22-0367**  
**NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL**  
**APPROVED PLANS MUST BE AT CONSTRUCTION SITE**

*Andy Clapton*



**SITE PAVEMENT**  
**TYPICAL CROSS SECTION**  
 NOT TO SCALE



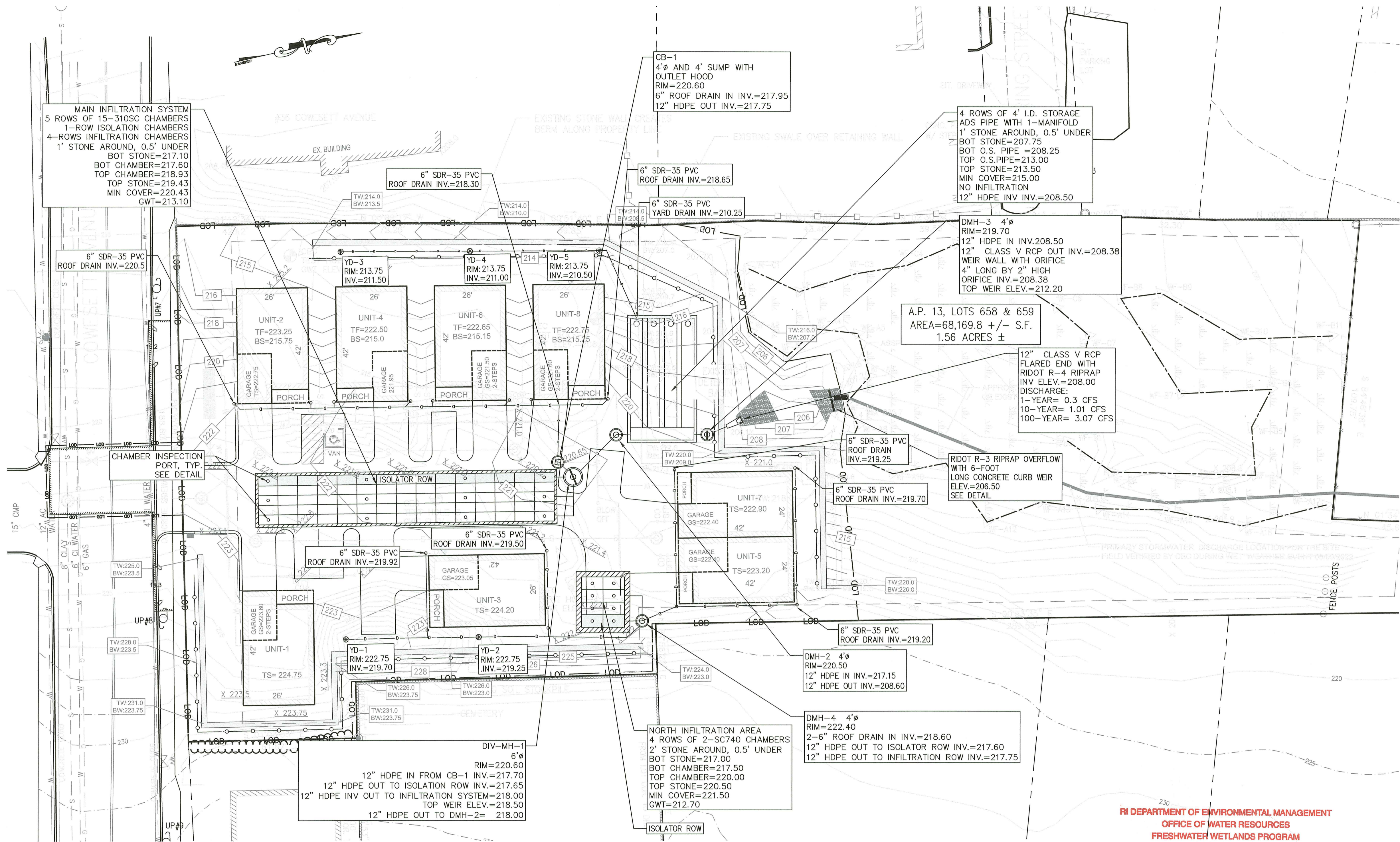
**REVISIONS**

No.	DATE	DRWN	CHKD
1	10/03/22	SMA	TJB
2	01/25/23	SMA	TJB
3	01/31/23	SMA	TJB
4	02/21/23	SMA	TJB



**PERMIT AGENCY REVIEW PLAN**  
 FOR  
**THE HILL CREST CONDOMINIUMS**  
 ON  
**A.P. 13, LOTS 658 AND 659**  
**COWESETT AVENUE**  
**WEST WARWICK, RHODE ISLAND**  
**PROPOSED GRADING PLAN**

SCALE: 1-INCH = 20-FOOT SHEET NO: 5 OF 18  
 DRAWN BY: SMA DESIGN BY: SMA CHECKED BY: TJB  
 DATE: JUNE 2022 PROJECT NO 22026.00



**LEGEND**

- ### EXISTING PROPERTY LINE
- - - PROPERTY LINE SETBACK
- - - ABUTTER PROPERTY LINE
- ~~~~~ TREELINE
- IRON ROD SET
- GRANITE/CONCRETE BOUND
- DRILL HOLE
- IRON ROD/IRON PIN
- △ WETLAND FLAG
- - - WETLAND EDGE
- 98 EXISTING CONTOUR
- 98 EXISTING CONTOUR FROM NOAA LIDAR
- UTILITY POLE
- - - OVERHEAD WIRES (ELEC/TELECOM)
- ⊕ WATER GATE VALVE
- ⊕ WATER SHUTOFF (CURB STOP)
- WATER MAIN
- WATER HYDRANT
- PROP WATER SERVICE
- CB CATCH BASIN
- SEWER MANHOLE
- SEWER MAIN
- GAS LINE
- PROP SEWER SERVICE
- DMH PROP DRAINAGE MANHOLE
- CB PROP CATCH BASIN
- PROP SEWER MANHOLE

**RIDOT R.O.W. NOTES:**

- ALL WORK WITHIN THE STATES R.O.W WILL CONFORM TO RIDOT'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2014 EDITION AMENDED MARCH 2018, WITH ALL REVISIONS AND R.I. STANDARD DETAILS, 1998 EDITION AMENDED JUNE 2019, WITH ALL REVISIONS.
- ALL TRAFFIC CONTROL SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES 2009, INCLUDING ALL REVISIONS.

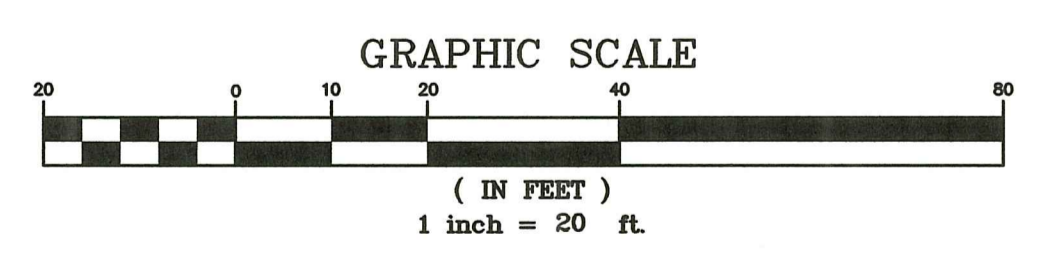
**ROOF DRAIN NOTES:**

- ALL ROOF DRAINS TO BE CONNECTED TO THE STORMWATER COLLECTION SYSTEM AS SHOWN.
- BUILDING UNITS 2, 4, 6 AND 8 GUTTERS SHALL START ON THE WEST END OF THE BUILDING AND DRAIN TO THE EAST AS SHOWN.
- BUILDING UNIT 1 SHALL DRAIN TO THE GROUND AND FLOW TO CB-1.
- BUILDING UNITS 3, 5 AND 7 SHALL BE PIPED AS SHOWN.
- SEE ROOF LEADER DETAIL, SHEET 13 OF 18, CONSTRUCTION DETAILS-2.

**RIDOT R.O.W. NOTES:**

- ALL WORK WITHIN THE STATES R.O.W. WILL CONFORM TO RIDOT'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2014 EDITION AMENDED MARCH 2018, WITH ALL REVISIONS AND R.I. STANDARD DETAILS, 1998 EDITION AMENDED JUNE 2019, WITH ALL REVISIONS.
- ALL TRAFFIC CONTROL SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES 2009, INCLUDING ALL REVISIONS.
- CONTRACTOR MUST SUBMIT AN APPLICATION AND APPLY FOR SEPARATE UTILITY PERMIT FOR ALL UTILITY WORK TO BE PERFORMED IN THE RIDOT R.O.W.

**PLAN VIEW**



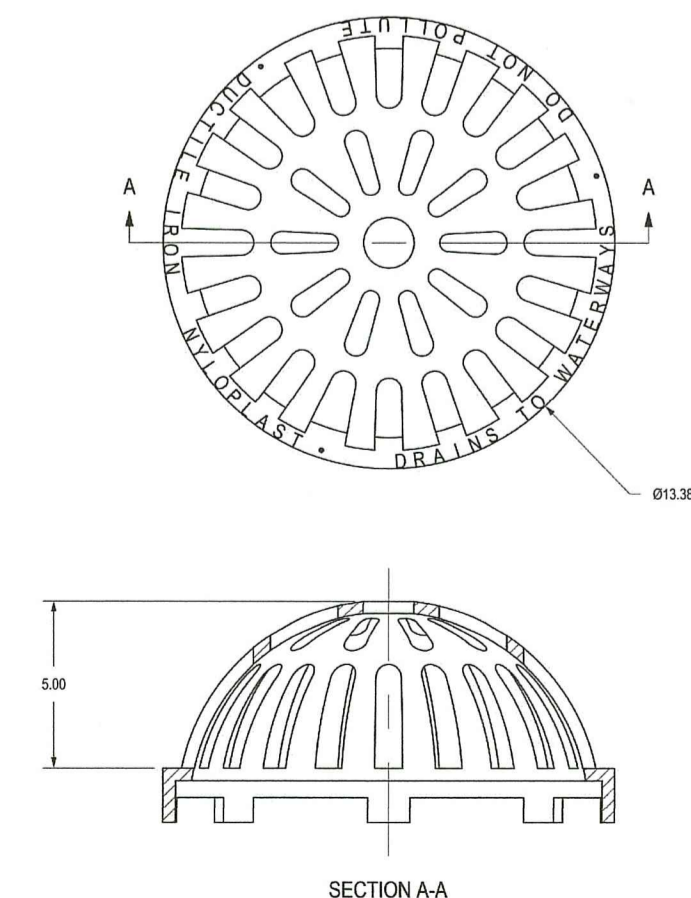
**RIDEM SEPTIC GRAVEL SPECIFICATION:**

SIEVE SIZE	% PASSING
3"	100%
3/4"	90%-100%
#4	55%-100%
#10	40%-100%
#40	10%-50%
#100	0%-20%
#200	0%-5%

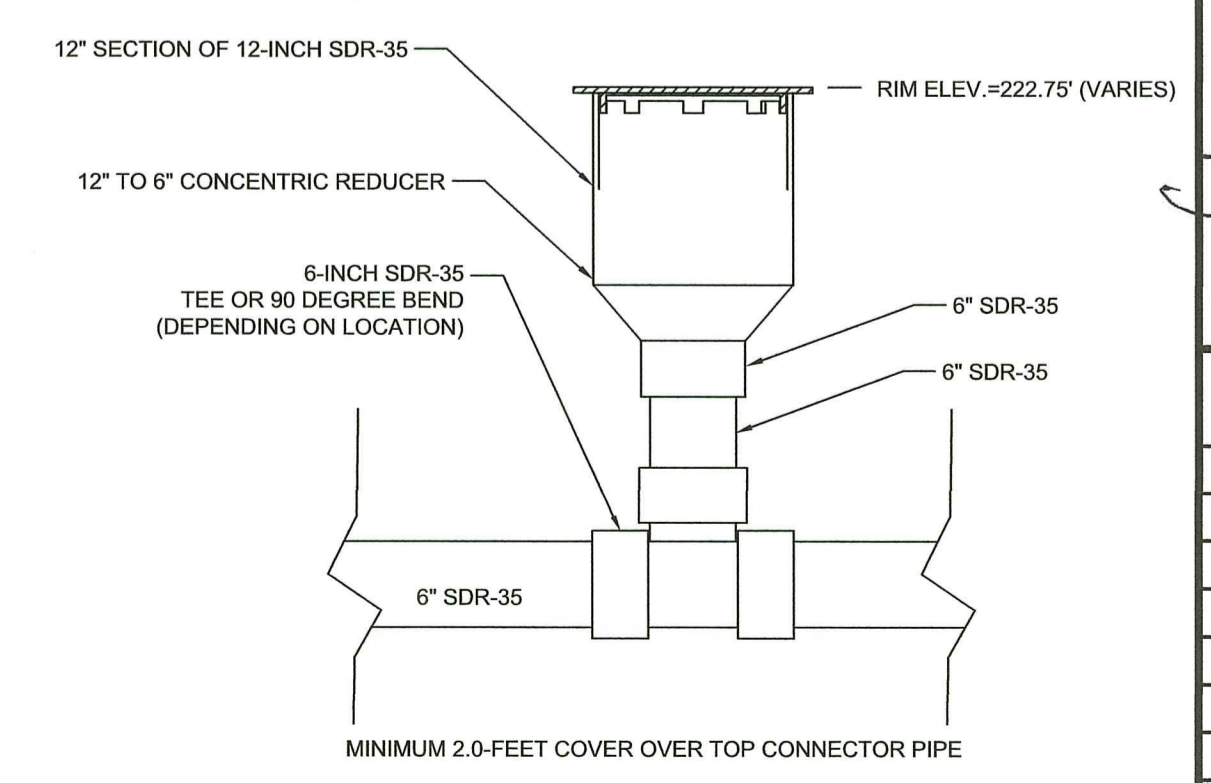
**STORMWATER MANAGEMENT SYSTEM NOTES:**

- ALL STORMWATER DRAIN MANHOLES SHALL HAVE RI STD 6.2.1 FRAMES & COVERS.
- ALL STORMWATER SINGLE CATCH BASINS SHALL HAVE RI STD 6.3.2 FRAMES & GRATES.
- THE DEEP SUMP CATCH BASIN SHALL HAVE 4' DEEP SUMP, AS MEASURED FROM THE INVERT OF THE LOWEST (OUTGOING) PIPE.
- MAIN STORMWATER INFILTRATION/STORAGE AREA IS COMPRISED OF 5 ROW OF CHAMBER THAT EACH CONTAIN 15 CHAMBERS FOR A TOTAL OF 75 ADS STORMTECH SC-310 CHAMBERS INSTALLED OVER 6-INCHES OF CRUSHED STONE, SEE DETAILS.
- NORTH STORMWATER INFILTRATION/STORAGE AREA IS COMPRISED OF 6 ROW OF CHAMBER THAT EACH CONTAIN 4 CHAMBERS FOR A TOTAL OF 24 ADS STORMTECH SC-310 CHAMBERS INSTALLED OVER 12-INCHES OF CRUSHED STONE, SEE DETAILS.
- DIVERSION MH-1 IS 6- FEET IN DIAMETER STRUCTURE.
- ADS 4-FOOT DIAMETER STORMWATER STORAGE SYSTEM SHALL HAVE A MANIFOLD ON THE EAST END AND 24-INCH DIAMETER ACCESS RISERS WITH COVERS ON EACH MANIFOLD CORNER. THE SYSTEM SHALL BE SET TO SLOPE TO THE NORTHEAST CORNER (OUTLET CORNER).
- ALL UNSUITABLE MATERIALS, INCLUDING FILL, SAND/SUBSOIL, SHALL BE REMOVED FROM BENEATH INFILTRATION AREAS AND BACKFILLED WITH BANK RUN GRAVEL MEETING RIDEM SEPTIC GRAVEL SPECIFICATION.
- ENGINEER TO INSPECT BOTTOM OF INFILTRATION AREAS PRIOR TO PLACING ANY FILL MATERIAL.

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED: MAR 16 2023 FILE #: 22-0367  
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**NYLOPLAST 12-INCH DOME GRATE**  
NOT TO SCALE



**YARD DRAIN DETAIL**  
NOT TO SCALE

**DRAWING ISSUE:**

- CONCEPT
- CUSTOMER APPROVAL
- PERMITTING
- CONSTRUCTION
- AS-BUILT
- OTHER:

ONLY PLANS ISSUED FOR CONSTRUCTION SHALL BE USED FOR CONSTRUCTION

Environmental Management  
 FEB 22 2023  
 Office of Water Resources

OWNER/APPLICANT:  
 MD CAPITAL, LLC  
 PO BOX 1205  
 NORTON, MASSACHUSETTS 02766  
 TELEPHONE: (508) 887-6805  
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TIMOTHY J. BEHAN  
 No. 6278  
 REGISTERED PROFESSIONAL ENGINEER  
 02/21/2023

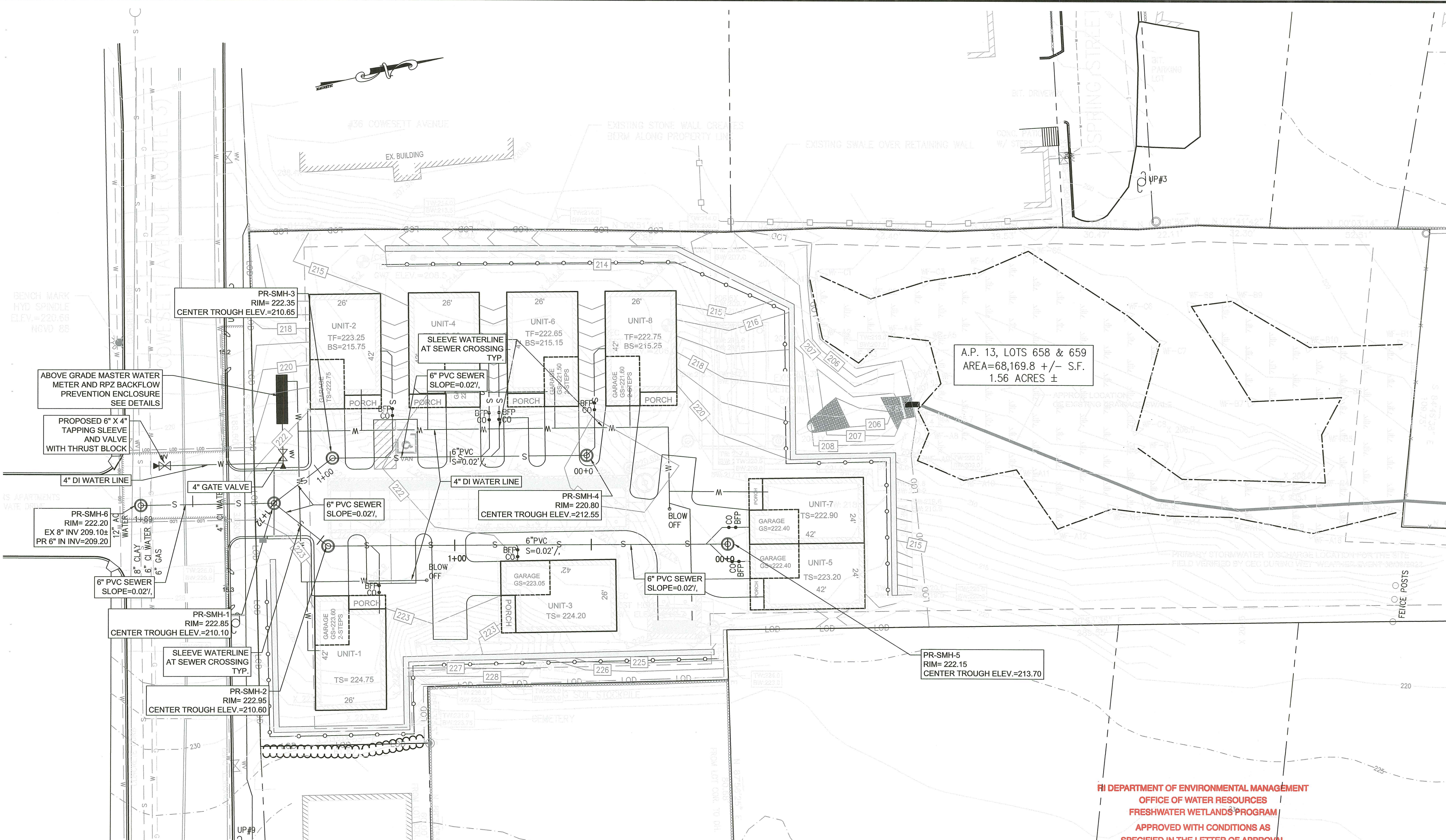
**COMMONWEALTH**  
 ENGINEERS & CONSULTANTS, INC.  
 400 SMITH STREET  
 PROVIDENCE, RHODE ISLAND 02908  
 (401) 273-6600

**REVISIONS**

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 ON  
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 WEST WARWICK, RHODE ISLAND  
**PROPOSED DRAINAGE PLAN**

SCALE: 1-INCH = 20- FEET SHEET NO: 6 OF 18  
 DRAWN BY: SMA DESIGN BY: SMA CHECKED BY: TJB  
 DATE: JUNE 2022 PROJECT NO 22026.00



**LEGEND**

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- - - - -	ABUTTER PROPERTY LINE
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ORF	IRON ROD SET
■	GRANITE/CONCRETE BOUND
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○	SEWER MANHOLE
---	SEWER MAIN
---	GAS LINE
---	PROP SEWER SERVICE
○	PROP DRAINAGE MANHOLE
○	PROP CATCH BASIN
○	PROP SEWER MANHOLE

- SEWER TRENCH MATERIAL SPECIFICATION:**
- GRAVEL SHALL BE FREE OF FOREIGN MATERIAL SUCH AS LOAM, SILT, CLAY AND VEGETATIVE MATTER AND MEET THE FOLLOWING REQUIREMENTS:
 

PASSING 3-INCH SIEVE	60-100%
PASSING 1/2-INCH SIEVE	50-85%
PASSING 3/8-INCH SIEVE	75-80%
PASSING #40-INCH SIEVE	40-75%
PASSING #40-INCH SIEVE	0-45%
PASSING #200 SIEVE	0-10%
  - CRUSHED STONE BEDDING MATERIAL: THE BEDDING MATERIAL SHALL BE CRUSHED STONE CONSISTING OF DURABLE CRUSHED ROCK IN DURABLE CRUSHED GRAVEL STONE, FREE FROM ICE, SNOW, SAND, CLAY, LOAM, OR OTHER DELETERIOUS MATERIAL. THE CRUSHED STONE SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
 

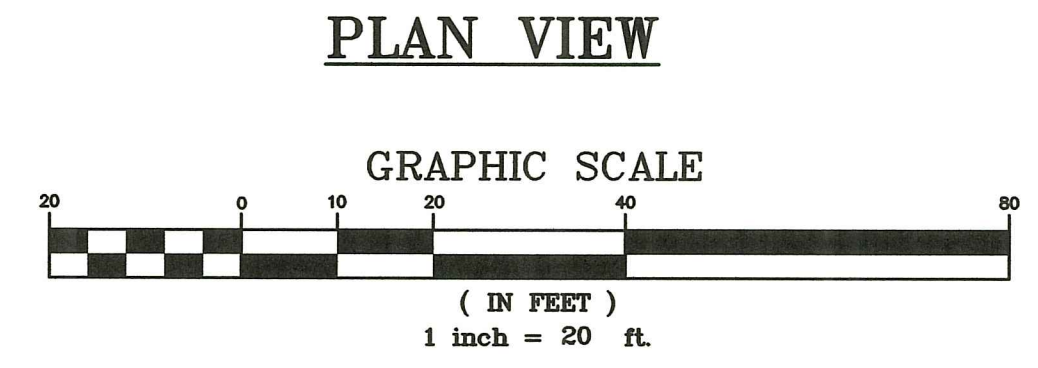
PASSING 1-INCH SIEVE	100%
PASSING 3/4-INCH SIEVE	90-100%
PASSING 1/2-INCH SIEVE	20-25%
PASSING 3/8-INCH SIEVE	0-20%
PASSING NO. 4 SIEVE	0-5%
  - SAND BLANKET: THE SAND SHALL BE FREE FROM ICE, SNOW, ROOTS, RUBBISH, AND OTHER DELETERIOUS OR ORGANIC MATERIAL. THE SAND BLANKET SHALL CONFORM TO THE FOLLOWING REQUIREMENTS:
 

PASSING 1/4-INCH SIEVE	100%
PASSING NO. 20 SIEVE	30-60%
PASSING NO. 50 SIEVE	7-30%
PASSING NO. 100 SIEVE	3-8%
  - BACKFILL: BACKFILL SHALL BE EXCAVATED MATERIALS FREE-DRAINING CLEAN GRANULAR SOIL SUITABLE FOR BACKFILL UP TO 20 PERCENT OF BACKFILL MATERIAL MAY BE ROCK-LIKE MATERIALS NOT TO EXCEED 0.05 CUBIC FEET IN VOLUME, NOR MORE THAN 3 INCHES IN LENGTH. THE BACKFILL SHALL NOT CONTAIN ANY DEBRIS, PAVEMENT, FROZEN MATERIAL, ORGANIC MATTER, OR PEAT.

**RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**  
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- PROPOSED SEWER CONSTRUCTION NOTES:**
- THE PROPOSED SEWER COLLECTION CONSTRUCTION SHALL START AT THE PROPOSED SMH-6 CONNECTION TO THE EXISTING 8" TILE LINE (CLAY) SEWER LOCATED ON THE SOUTH SIDE OF COWESSETT AVENUE AND WORK UPWARD FROM THAT POINT TO SMH-1.
  - CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER IF EXISTING 8-INCH EXISTING 8" TILE SEWER LINE INVERT VARIES FROM THE INVERT SHOWN ON THE PLANS.
  - ONCE THE CONNECTION TO THE EXISTING LINE AND SMH-1 HAVE BEEN INSTALLED TO THE INVERTS SHOWN ON THE PLANS, THE REMAINING SEWER LINES AND SMH STRUCTURES MAY BE INSTALLED.
  - THE TOWN OF WEST WARWICK DOES NOT ALLOW DOGHOUSE MANHOLES. SMH-6 SHALL BE PRECAST CONCRETE.
  - ALL SEWER MANHOLE PENETRATIONS SHALL HAVE KOR-N-SEAL SERIES 406 BY TRELLEBORG OR EQUIVALENT PIPE SEALS.
  - MINIMUM SLOPE FOR ALL SEWER LINES IS 0.02 %.



- PROPOSED UTILITY NOTES:**
- THE PROPOSED SIZING OF THE WATER MAIN IS 4" DUCTILE IRON FOR AN APPROXIMATE LENGTH OF 350 FT.
  - THE PROPOSED SIZING OF ALL RESIDENTIAL WATER SERVICE LINES IS 3/4" TYPE K COPPER DESIGNED FOR POTABLE WATER SERVICE, CONFORMING TO ANSI/ASTM B88. TOTAL LENGTH OF SERVICE PIPE IS APPROXIMATELY 210 FT.
  - EACH CONDOMINIUM UNIT IS TO BE EQUIPPED WITH AN INDIVIDUAL RESIDENTIAL WATER METER, BACK FLOW PREVENTER AND PRESSURE REDUCER.
  - THE PROPOSED DEVELOPMENT IS TO BE SERVICED BY UNDERGROUND ELECTRIC, TELEPHONE, CABLE. (NOT SHOWN ON PLANS) UTILITIES TO BE CONNECTED TO AN EXISTING UTILITY POLE.
  - EACH CONDOMINIUM UNIT SHALL BE PROVIDED WITH INDEPENDENT WATER AND SANITARY SEWER SERVICE CONNECTIONS.
  - WATER & SANITARY SEWER SERVICE CONNECTIONS SHALL CONFORM TO ALL APPLICABLE REQUIREMENTS OF THE KCWA AND THE WEST WARWICK SEWER AUTHORITY (WWSA), RESPECTIVELY. ALL WATER MAINS AND SERVICES SHALL BE MIN 10" FROM SANITARY SEWER MAIN & SERVICE PIPES AND MANHOLES, WHERE THE 10-FOOT SEPARATION CANNOT BE ACHIEVED, THE WATER MAIN OR SERVICE LINE SHALL BE SLEEVED FOR A MINIMUM OF 10- FEET PAST THE SANITARY SEWER MAIN, SERVICE PIPES OR MANHOLES. WATER LINE SLEEVE LOCATIONS ARE SHOWN ON THIS SHEET.
  - DEPVED WATER AND SANITARY SEWER SERVICE CONNECTION LOCATIONS MAY BE ADJUSTED BY CONTRACTOR DURING CONSTRUCTION, PROVIDED THAT ALL APPLICABLE CLEARANCE REQUIREMENTS OF BOTH THE KCWA AND WWSA ARE MET.
  - BUILDING SEWER SERVICE PIPES SHALL BE 4-INCH PVC WITH A MINIMUM SLOPE OF 2%.
  - EACH UNIT SHALL HAVE A BACK FLOW PREVENTER AND CLEANOUT LOCATED BETWEEN THE BUILDING AND CONNECTION TO THE SANITARY SEWER MAIN.
  - EXISTING SANITARY SEWER LINE LOCATION AND ELEVATION IS TAKEN FROM PLANS OF RECORD. CONTRACTOR TO VERIFY LOCATION AND ELEVATION PRIOR TO START OF SANITARY SEWER CONSTRUCTION.
  - MAINTAIN A MINIMUM VERTICAL SEPARATION OF 18-INCHES BETWEEN ALL WATER, SEWER AND DRAINAGE PIPES.
  - ALL CONSTRUCTION SHALL CONFORM TO THE TOWN OF WEST WARWICK SEWER ORDINANCE AND ALL CONSTRUCTION MUST BE INSPECTED BY THE TOWN OF WEST WARWICK. NO SEWER FLOWS ARE ALLOWED UNTIL THE INSTALLED SYSTEM HAS BEEN APPROVED BY THE TOWN OF WEST WARWICK.
  - CONTRACTOR SHALL SUBMIT AN AS-BUILT PLAN OF THE COMPLETED SEWER SYSTEM TO THE TOWN OF WEST WARWICK.
  - CONTRACTOR SHALL SUBMIT AN AS-BUILT PLAN OF THE COMPLETED WATER SYSTEM TO KCWA. CONTRACTOR SHALL RETAIN THE SERVICES OF A RHODE ISLAND PROFESSIONAL LAND SURVEYOR TO INSPECT THE SERVICE AND PREPARE THE AS-BUILT PLAN IN ACCORDANCE WITH THE KCWA RULES AND REGULATIONS.
  - METALIZED DETECTABLE IDENTIFICATION TAPE 2" IN WIDTH OR GREATER, BLUE IN COLOR AND PRINTED WITH "CAUTION WATER LINE BURIED BELOW" SHALL BE UTILIZED OVER ALL WATER LINES AND SERVICES. SET TO A DEPTH FROM FINISHED GRADE OF NO MORE THAN 1'-0". MINIMUM SLOPE FOR 8-INCH AND 6-INCH SEWER MAIN IS 0.8%.
  - DETECTABLE TRACER TAPE SHALL BE INSTALLED ABOVE ALL SEWER PIPES. THE COLOR SHALL BE GREEN AND THE TAPE SHALL READ "BURIED SEWER LINE BELOW".
  - BUILDING SEWERS SHALL CONFORM TO THE REQUIREMENTS OF THE TOWN OF WEST WARWICK SEWER ORDINANCE. ALL SUCH CONNECTIONS SHALL BE MADE GAS-TIGHT AND WATERTIGHT AND VERIFIED BY PROPER TESTING. ANY DEVIATION FROM THE PRESCRIBED PROCEDURES AND MATERIALS MUST BE APPROVED BY THE DIRECTOR OF PUBLIC WORKS BEFORE INSTALLATION.
  - THE CONTRACTOR FOR THE BUILDING SEWER PERMIT SHALL NOTIFY THE DIRECTOR OF PUBLIC WORKS WHEN THE BUILDING SEWER IS READY FOR INSPECTION AND CONNECTION TO THE PUBLIC SEWER. THE CONNECTION AND TESTING SHALL BE MADE UNDER THE SUPERVISION OF THE DIRECTOR OF PUBLIC WORKS OR HIS/HER REPRESENTATIVE. ALL EXPENSES RELATING TO SUCH TESTING AND INSPECTION SHALL BE THE RESPONSIBILITY OF THE OWNER/APPLICANT.

**ESTIMATED PROPOSED DAILY DESIGN WASTEWATER FLOWS PER RIDEM REGULATIONS**

TYPE	DESIGN FLOW	DESIGN UNITS	DESIGN FLOW
BEDROOMS	115 GAL/BEDROOM/DAY	24	2,760
<b>TOTAL ESTIMATED MAXIMUM DAILY DESIGN FLOW (GAL.)</b>			<b>2,760</b>

DESIGN FLOW = MAXIMUM DAILY FLOW (PEAK FLOW)  
 AVERAGE DAILY FLOW = DESIGN FLOW / 2.0 (SEE RULE 21)  
 HOURLY PEAK FLOW FACTOR IS 5.7 (TR-16, FIGURE 2-1)

PEAK FLOW	= 2,760 GAL/DAY
AVERAGE DAILY FLOW	= 1,380 GAL/DAY
HOURLY PEAK FLOW	= 1,380 GAL/DAY X 5.7 / 1,440 = 5.46 GAL/MIN.

**DRAWING ISSUE:**

CONCEPT  
 CUSTOMER APPROVAL  
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 AS-BUILT  
 OTHER:

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Environmental Management  
 FEB 22 2023  
 Office of Water Resources

**OWNER/APPLICANT:**  
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 PO BOX 1205  
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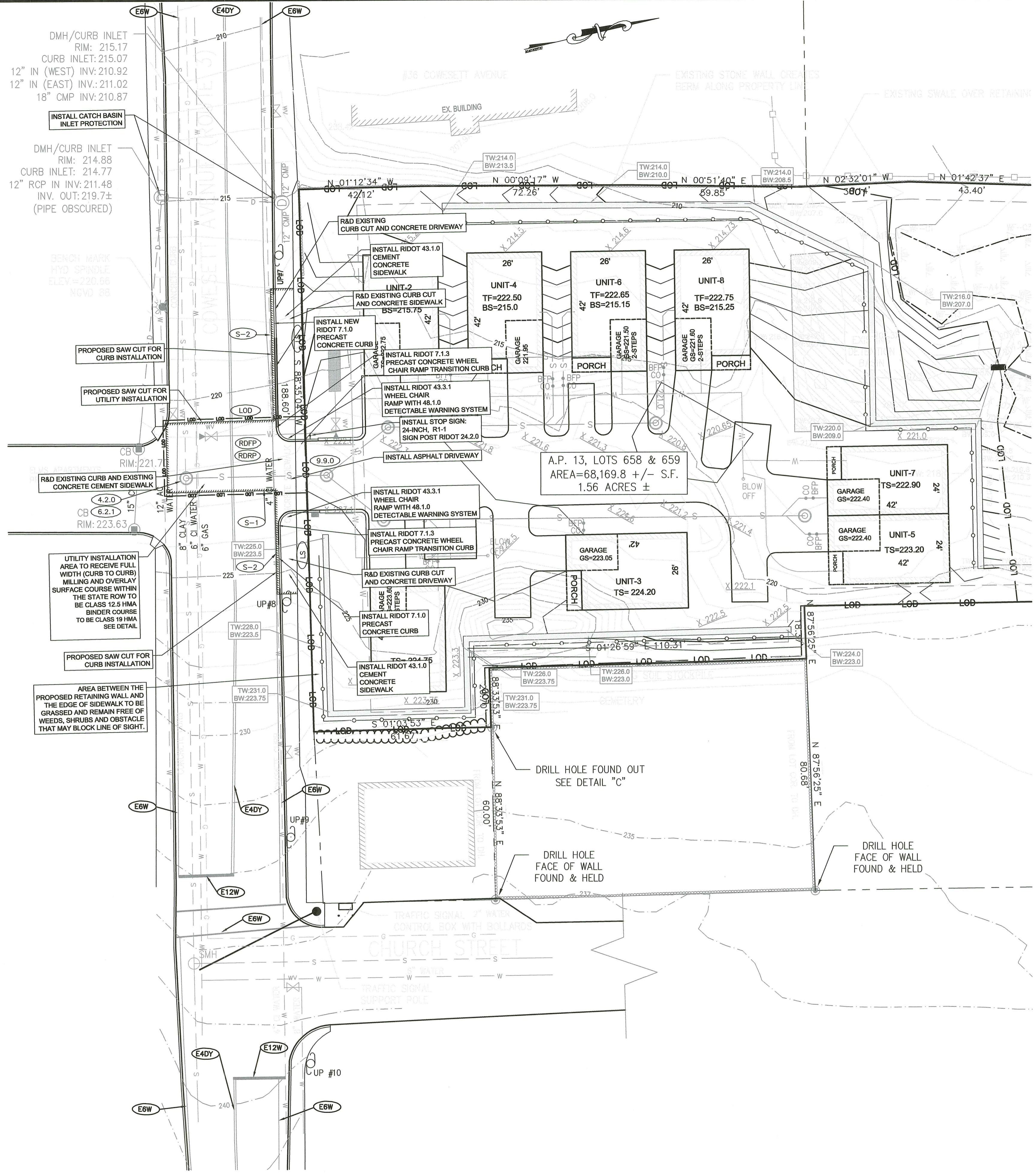
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**REVISIONS**

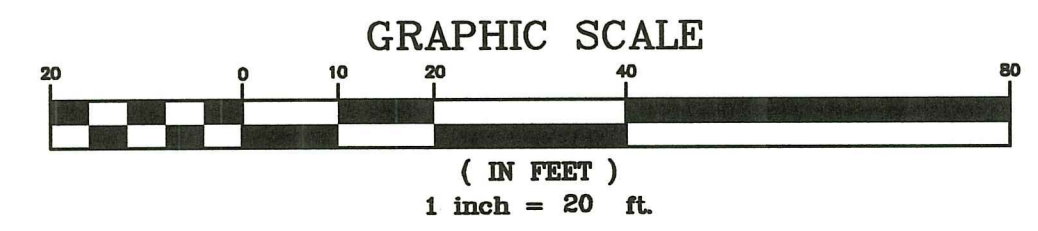
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 ON  
 A.P. 13, LOTS 658 AND 659  
 COWESSETT AVENUE  
 WEST WARWICK, RHODE ISLAND  
**PROPOSED UTILITY PLAN**

SCALE: 1-INCH = 20- FEET SHEET NO: 7 OF 18  
 DRAWN BY: SMA DESIGN BY: SMA CHECKED BY: TJB  
 DATE: JUNE 2022 PROJECT NO 22026.00



PLAN VIEW



RIDOT LEGEND

- (E4DY) EXISTING 4" PAVEMENT MARKINGS - DOUBLE YELLOW
- (E6W) EXISTING 6" PAVEMENT MARKINGS - WHITE
- (LS) 4" LOAM AND SEED
- (RDFP) REMOVE & DISPOSE FLEXIBLE PAVEMENT
- (RDRP) REMOVE & DISPOSE RIGID PAVEMENT
- (S-1) FULL DEPTH SAWCUT & MATCH BITUMINOUS AND CEMENT CONCRETE ROADWAY PAVEMENT; FOR INSTALLATION OF NEW CEMENT CONCRETE BASE: DRILL AND DOWEL C/C 24"
- (S-2) FULL DEPTH SAWCUT & MATCH BITUMINOUS ROADWAY PAVEMENT (DO NOT CUT CEMENT CONCRETE PAVEMENT)
- (LOD) LIMIT OF DISTURBANCE
- (4.2.0) PRECAST MANHOLE 4'-0" DIAMETER
- (6.2.1) FRAME AND COVER
- (9.9.0) CONSTRUCTION ACCESS
- (7.3.3) GRANITE WHEELCHAIR RAMP TRANSITION CURB
- (7.6.0) CURB SETTING DETAIL
- (43.1.0) CEMENT CONCRETE SIDEWALK
- (43.3.0) WHEEL CHAIR RAMP
- (48.1.0) DETECTABLE WARNING PANEL PLACEMENT

LEGEND

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- WETLAND FLAG
- WETLAND EDGE
- EXISTING CONTOUR
- 98 EXISTING CONTOUR FROM NOAA LIDAR
- UTILITY POLE
- OVERHEAD WIRES (ELEC/TELECOM)
- WATER GATE VALVE
- WATER SHUTOFF (CURB STOP)
- WATER MAIN
- WATER HYDRANT
- PROP WATER SERVICE
- CATCH BASIN
- SEWER MANHOLE
- SEWER MAIN
- GAS LINE
- PROP SEWER SERVICE
- PROP DRAINAGE MANHOLE
- CB PROP CATCH BASIN
- SMH-4 PROP SEWER MANHOLE

PROPOSED DEVELOPMENT NOTES:

- THIS PROPOSAL CONSISTS OF 8 TOTAL RESIDENTIAL UNITS
- NO SIDEWALKS ARE PROPOSED.
- SANITARY SEWER IS PROPOSED FOR THE CONDOMINIUMS VIA A GRAVITY CONNECTION TO THE EXISTING TOWN SYSTEM IN COWESETT AVENUE.
- WATER SERVICE IS PROPOSED VIA A CONNECTION TO THE KCWA MAIN IN COWESETT AVENUE.
- THESE PLANS HAVE NOT BEEN ISSUED FOR CONSTRUCTION AND ARE SUBJECT TO FURTHER REVISIONS AND LOCAL/STATE APPROVALS.
- PROPOSED CONSTRUCTION ACCESS ROUTE WILL BE THE PROPOSED ENTRANCE FROM COWESETT AVENUE.

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LOCAL/STATE/FEDERAL PERMITS & APPROVALS REQUIRED:

- RIDEM FRESHWATER WETLANDS/RIPDES
- RIDOT PARTIAL ALTERATION PERMIT
- LOCAL FIRE DEPARTMENT APPROVAL
- KCWA WATER SYSTEM TIE IN APPROVAL
- WEST WARWICK SEWER TIE IN APPROVAL
- RIDOT PARTIAL ALTERATION PERMIT

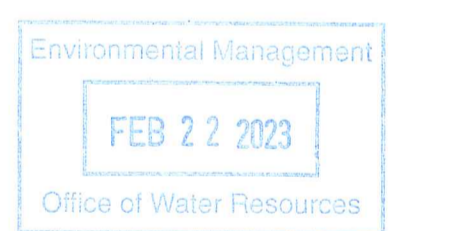
SITE UTILITY NOTES:

- THE SITE IS PROPOSED TO BE SERVICED BY THE KENT COUNTY WATER AUTHORITY (KCWA).
- THE SITE IS PROPOSED TO BE SERVICED BY WEST WARWICK SEWERS.
- STORMWATER MANAGEMENT (COLLECTION, CONVEYANCE AND TREATMENT) SYSTEM SHALL BE PRIVATE.
- ELECTRICAL/TELECOMMUNICATION/CATV SERVICE SHALL BE EITHER OVERHEAD OR UNDERGROUND.

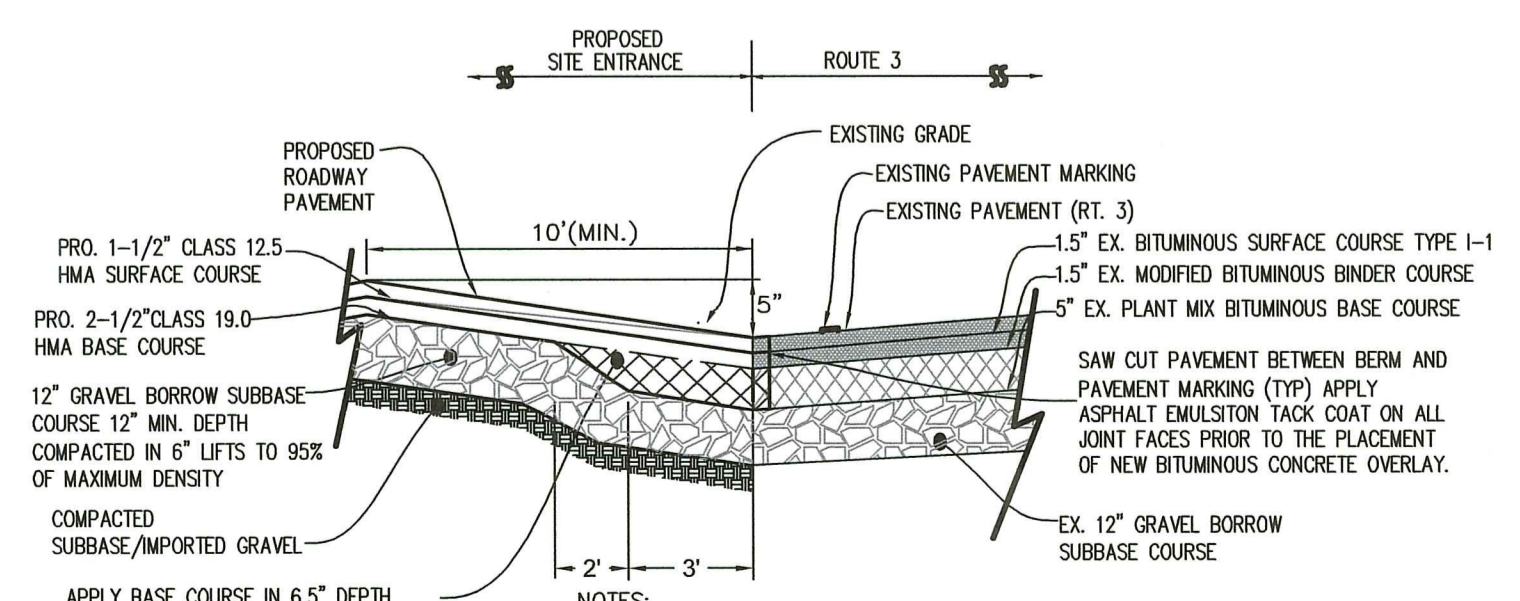
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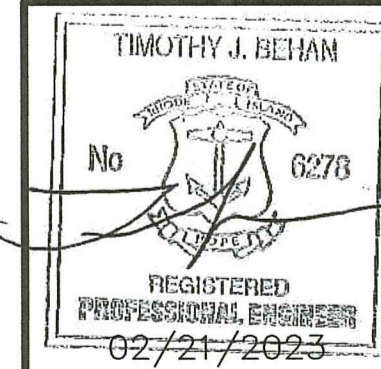
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OWNER/APPLICANT:  
 MD CAPITAL, LLC  
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TYPICAL DRIVEWAY SECTION AT EDGE OF EXISTING ROADWAY  
 NOT TO SCALE



REVISIONS

No.	DATE	DRWN	CHKD
1	10/03/22	SMA	TJB
2	01/25/23	SMA	TJB
3	01/31/23	SMA	TJB
4	02/21/23	SMA	TJB

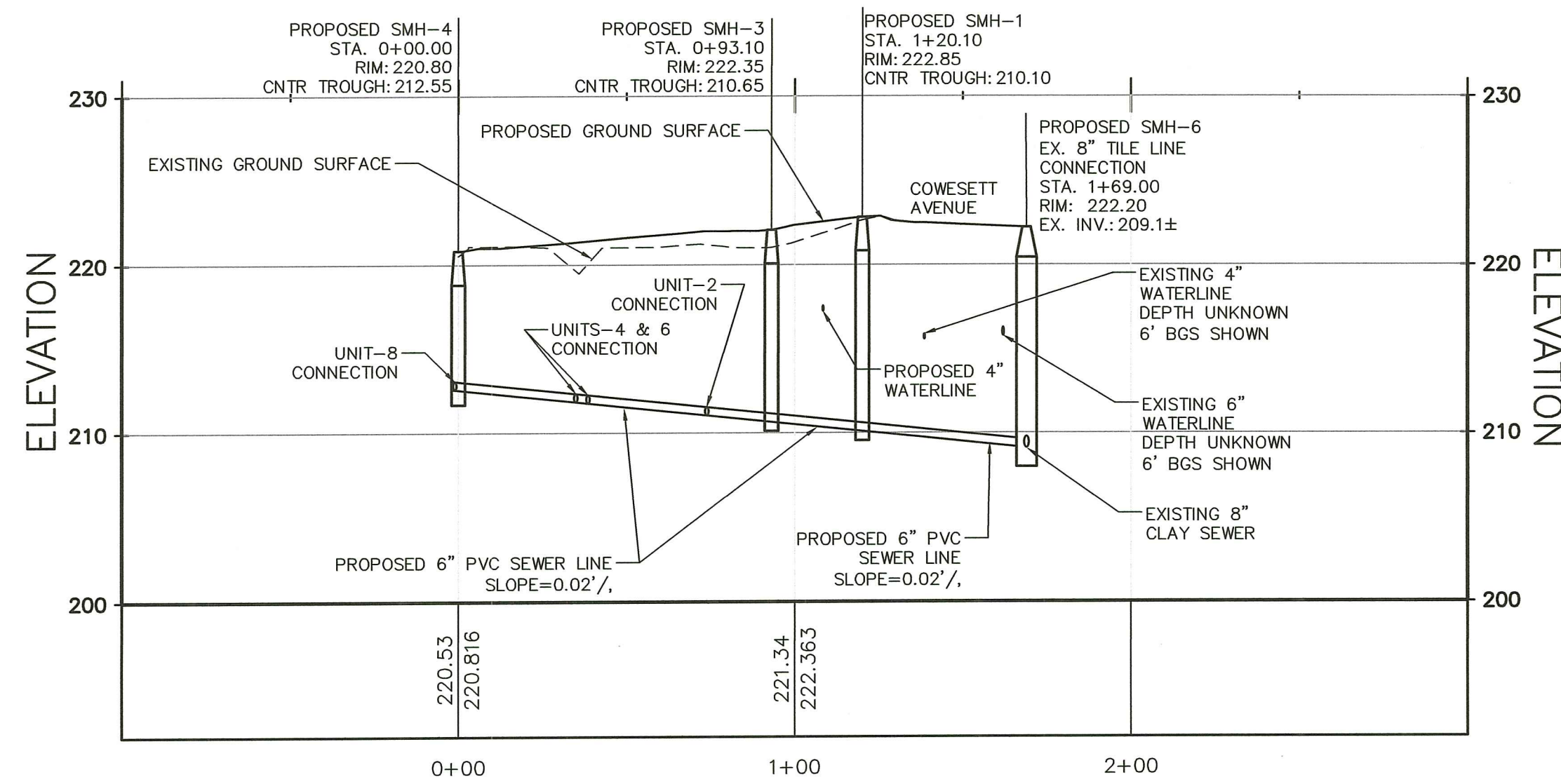


PERMIT AGENCY REVIEW PLAN  
 FOR  
 THE HILL CREST CONDOMINIUMS  
 ON  
 A.P. 13, LOTS 658 AND 659  
 COWESETT AVENUE  
 WEST WARWICK, RHODE ISLAND  
 PROPOSED WORK IN RIDOT R-O-W PLAN

SCALE: 1-INCH = 20-FOOT SHEET NO: 8 OF 18  
 DRAWN BY: SMA DESIGN BY: SMA CHECKED BY: TJB  
 DATE: JUNE 2022 PROJECT NO 22026.00

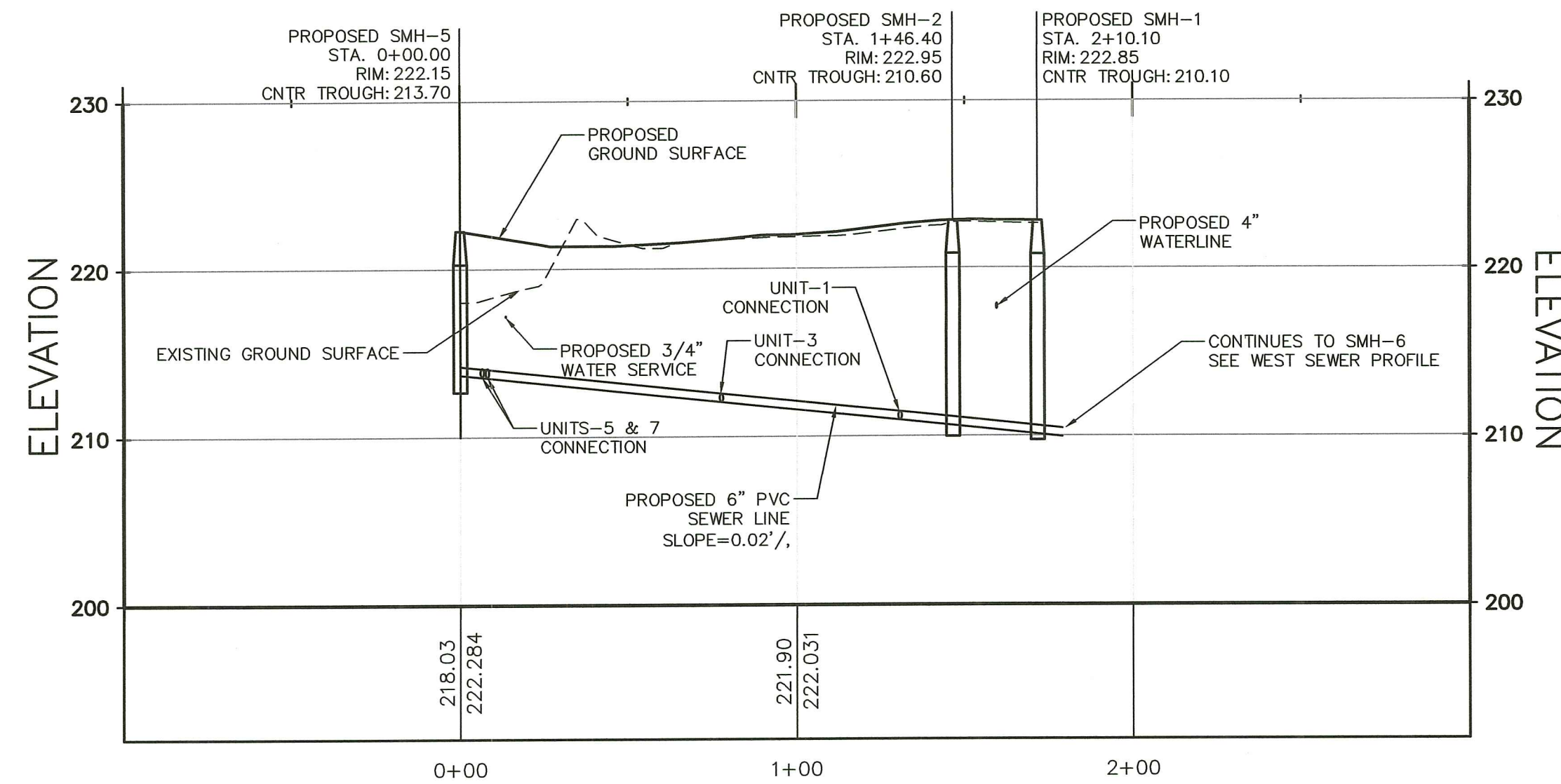
**WEST SEWER PROFILE**

HORIZONTAL SCALE: 1" = 40'  
VERTICAL SCALE: 1" = 8'



**EAST SEWER PROFILE**

HORIZONTAL SCALE: 1" = 40'  
VERTICAL SCALE: 1" = 8'



**SEWER NOTES:**

- ALL CONSTRUCTION, MATERIALS, SPECIFICATIONS, AND PROCEDURES SHALL CONFORM WITH THE TOWN OF WEST WARWICK SEWER ORDINANCE AND THE "STANDARD SANITARY SEWER REQUIREMENTS OF THE TOWN OF WEST WARWICK" AND ALL APPLICABLE FEDERAL, STATE AND TOWN BUILDING AND PLUMBING CODES. ANY DEVIATIONS FROM THESE PRESCRIBED PROCEDURES AND MATERIALS SHALL BE APPROVED BY THE SUPERINTENDENT BEFORE INSTALLATION. THE CONTRACTOR SHALL REVIEW SAID STANDARD PRIOR TO ANY WORK. THE SEWER AUTHORITY'S STANDARDS SUPERSEDE THESE DESIGN PLANS WHERE CONFLICTS EXIST.
- PROTECTION OF WATER LINES.
  - HORIZONTAL SEPARATION: SEWERS SHALL BE LAID AT A MINIMUM OF AT LEAST 10 FEET, HORIZONTALLY, FROM ANY EXISTING OR PROPOSED WATER MAIN OR SERVICE.
  - VERTICAL SEPARATION: WHENEVER SEWERS CROSS UNDER WATER MAINS, OR SERVICES, THE SEWER SHALL BE LAID AT SUCH AN ELEVATION THAT THE TOP OF THE SEWER IS AT LEAST 18 INCHES BELOW THE BOTTOM OF THE WATER MAIN. SEWERS SHALL ALWAYS CROSS UNDER THE WATER MAIN OR SERVICE.
- PIPE SHALL BE LAID IN THE DRY AND AT NO TIME SHALL WATER IN THE TRENCH BE PERMITTED TO FLOW INTO THE SEWER.
- BACKFILL FROM THE CENTERLINE OF THE PIPE TO A HEIGHT OF TWO FEET ABOVE THE PIPE SHALL BE SAND BLANKET MATERIAL PLACED EVENLY FOR THE FULL WIDTH OF THE TRENCH AND COMPACTED IN 12-INCH LAYERS. THE REMAINDER OF THE TRENCH SHALL BE BACKFILLED EVENLY WITH SUITABLE (EXCAVATED OR BORROW) BACKFILL MATERIAL AND COMPACTED IN 12-INCH LAYERS. CUSHION AND BACKFILL MATERIAL SHALL BE COMPACTED TO 95% MAXIMUM DENSITY BY TAMPING AND COMPACTING IN LAYERS (ONE (1) FOOT MAXIMUM) TO ACHIEVE THE REQUIRED COMPACTION.
- THE CONTRACTOR SHALL SUBMIT TO THE TOWN OF WEST WARWICK AN AS-BUILT DRAWING OF THE ENTIRE SEWER SYSTEM AFTER COMPLETION OF THE SERVICE CONNECTIONS UTILIZING DISTANCES FROM PERMANENT STRUCTURES. THE DEPTH OF THE SEWER MAIN AT THE PROPERTY LINE AND AT THE DWELLING UNIT SHALL BE RECORDED AS WELL AS TIES TO ALL CLEANOUTS AND BENDS.
- ALL GRAVITY PIPE AND FITTINGS SHALL BE PVC SDR35 MEETING ASTM D3034 UNLESS NOTED OTHERWISE.
- ALL BUILDING SEWER CONNECTION INSTALLATIONS SHALL BE GAS AND WATER TIGHT AND VERIFIED BY PROPER TESTING. TEST MUST BE WITNESSED BY THE TOWN OF WEST WARWICK PUBLIC WORKS SUPERINTENDENT.
- BACKFLOW PREVENTER: ALL CONNECTIONS ARE TO BE EQUIPPED WITH A BACKFLOW PREVENTER. BACKFLOW PREVENTERS MUST CONFORM WITH THE TOWN OF WEST WARWICK BUILDING INSPECTOR'S REQUIREMENTS AND THE BUILDING OFFICIALS CODE ADMINISTRATORS BASIC NATIONAL PLUMBING CODE, ARTICLE 10, SECTION P-1003.0.
- INSPECTION: ALL SEWER LINE CONSTRUCTION SHALL BE INSPECTED BY THE TOWN OF WEST WARWICK SEWER AUTHORITY PRIOR TO BACKFILLING.
- TESTING: THE CONTRACTOR WILL BE REQUIRED TO PERFORM THE PIPE DEFLECTION TEST ON EACH SECTION OF PIPE INSTALLED. ALL TESTING SHALL BE WITNESSED BY THE TOWN OF WEST WARWICK PUBLIC WORKS SUPERINTENDENT OR THE SEWER AUTHORITY. NO SEWER FLOWS ARE ALLOWED UNTIL AUTHORIZED BY THE TOWN OF WEST WARWICK SEWER AUTHORITY.
- MAINTENANCE OF SEWAGE FLOWS: THE CONTRACTOR SHALL MAINTAIN SEWAGE FLOWS ON SUBJECT SITE UNTIL ALL WORK HAS BEEN ACCEPTED BY THE SEWER AUTHORITY. SEWAGE DISCHARGES OR OVERFLOWS ARE STRICTLY PROHIBITED.

**SEWER TRENCH MATERIAL SPECIFICATION:**

- BEDDING MATERIAL:** THE BEDDING MATERIAL SHALL BE CRUSHED STONE CONSISTING OF DURABLE CRUSHED ROCK IN DURABLE CRUSHED GRAVEL STONE, FREE FROM ICE, SNOW, SAND, CLAY, LOAM, OR OTHER DELETERIOUS MATERIAL. THE CRUSHED STONE SHALL CONFORM TO THE REQUIREMENTS OF 100% PASSING THE ONE (1) INCH SCREEN, 90-100% PASSING THE THREE-QUARTER (3/4) INCH SCREEN, 10- 50% PASSING THE ONE-HALF (1/2) INCH SCREEN, 0-20% PASSING THE THREE-EIGHTHS (3/8) INCH SCREEN AND 0-5% PASSING THE NUMBER FOUR (4) SIEVE.
- SAND BLANKET:** THE SAND SHALL BE FREE FROM ICE, SNOW, ROOTS, RUBBISH, AND OTHER DELETERIOUS OR ORGANIC MATTER. THE SAND BLANKET SHALL CONFORM TO 22 THE REQUIREMENTS OF 100% PASSING ONE-HALF (1/2) INCH SCREEN, 85-100% PASSING THE THREE-EIGHTHS (3/8) INCH SCREEN, 60-85% PASSING THE NUMBER FOUR (#4) SIEVE, 35-60% PASSING THE NUMBER SIXTEEN (#16) SIEVE, 10-35% PASSING THE NUMBER FIFTY (#50) SIEVE AND 2-10% PASSING THE NUMBER ONE-HUNDRED (#100) SIEVE.
- BACKFILL:** BACKFILL SHALL BE EXCAVATED MATERIALS FREE-DRAINING CLEAN GRANULAR SOIL SUITABLE FOR BACKFILL. UP TO 20 PERCENT OF BACKFILL MATERIAL MAY BE ROCK-LIKE MATERIALS NOT TO EXCEED 0.05 CUBIC FEET IN VOLUME, NOR MORE THAN 6 INCHES IN LENGTH. THE BACKFILL SHALL NOT CONTAIN ANY DEBRIS, PAVEMENT, FROZEN MATERIAL, ORGANIC MATTER, OR PEAT.

**MAINTENANCE AND PROTECTION OF TRAFFIC NOTES:**

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE AND PROTECTION OF PEDESTRIAN AND VEHICLE TRAFFIC INCLUDING POLICE PROTECTION, ALL TEMPORARY AND VEHICULAR SIGNS, BARRICADES AND LANE CLOSURES SHALL BE IN CONFORMANCE WITH THE LATEST REVISIONS OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES 2003 (M.U.T.C.D.) INCLUDING ALL REVISIONS.
- TEMPORARY CONSTRUCTION SIGNS AND ALL APPLICABLE TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF WORK IN ANY AREA OPEN TO TRAFFIC.
- THE PRIVATE VEHICLES OF CONSTRUCTION WORKERS WILL NOT BE PARKED IN THE STATE RIGHT-OF-WAY.
- SIGN MOUNTINGS SHALL BE IN ACCORDANCE WITH THE R.I.D.O.T. SPECIFICATIONS FOR TEMPORARY CONSTRUCTION SIGNS.

**RIDOT R.O.W. NOTES:**

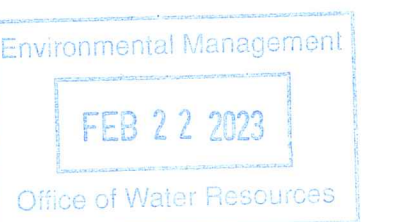
- ALL WORK WITHIN THE STATE'S R.O.W. WILL CONFORM TO RIDOT'S STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2014 EDITION AMENDED MARCH 2018, WITH ALL REVISIONS AND R.I. STANDARD DETAILS, 1998 EDITION AMENDED JUNE 2019, WITH ALL REVISIONS.
- ALL TRAFFIC CONTROL SHALL CONFORM TO THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES 2009, INCLUDING ALL REVISIONS.
- CONTRACTOR MUST SUBMIT AN APPLICATION AND APPLY FOR SEPARATE UTILITY PERMIT FOR ALL UTILITY WORK TO BE PERFORMED IN THE RIDOT R.O.W..

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS AS  
SPECIFIED IN THE LETTER OF APPROVAL  
DATED: MAR 16 2023 FILE #: 22-0367  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

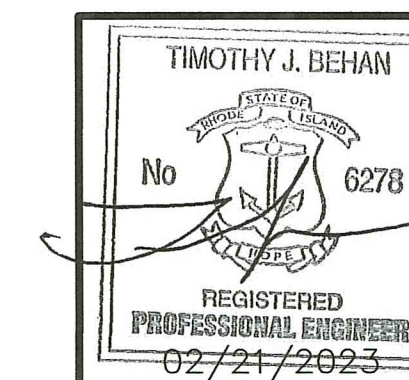
*Andy Chapman*

**DRAWING ISSUE:**

- CONCEPT
  - CUSTOMER APPROVAL
  - PERMITTING
  - CONSTRUCTION
  - AS-BUILT
  - OTHER:
- ONLY PLANS ISSUED FOR CONSTRUCTION SHALL BE USED FOR CONSTRUCTION



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**REVISIONS**

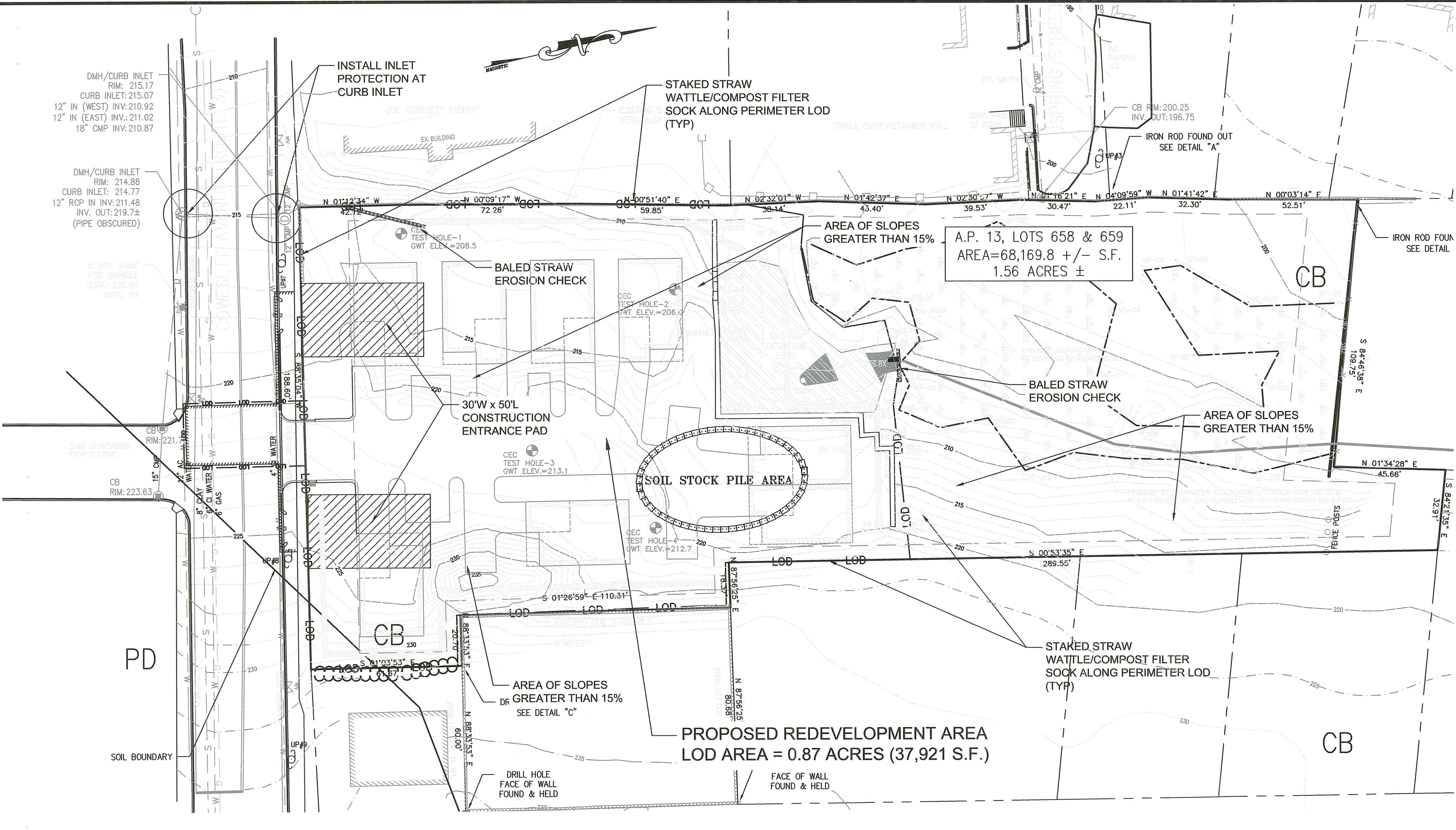
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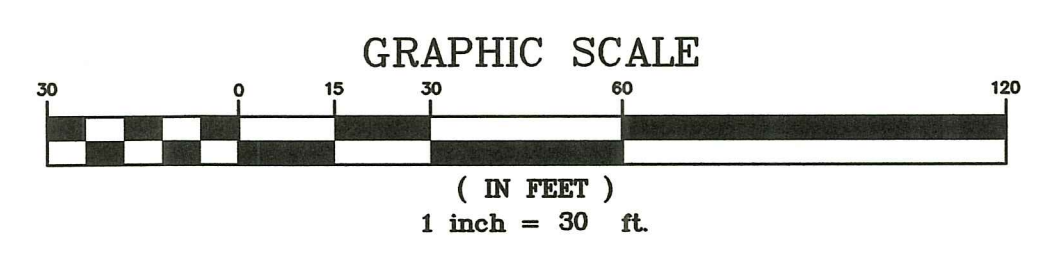
**PERMIT AGENCY REVIEW PLAN**  
FOR  
**THE HILL CREST CONDOMINIUMS**  
ON  
A.P. 13, LOTS 658 AND 659  
COWESETT AVENUE  
WEST WARWICK, RHODE ISLAND

**PROPOSED SEWER PROFILES PLAN**

SCALE: 1-INCH = 20- FEET SHEET NO: 9 OF 18  
DRAWN BY: SMA DESIGN BY: SMA CHECKED BY: TJB  
DATE: JUNE 2022 PROJECT NO 22026.00



**PLAN VIEW**



**EROSION CONTROL AND SOIL STABILIZATION PROGRAM:**

- TEMPORARY TREATMENTS SHALL CONSIST OF A STRAW, FIBER MULCH OR PROTECTIVE COVERS SUCH AS A MAT OR FIBER LINING (BURLAP, JUTE, FIBERGLASS NETTING, EXCELSIOR BLANKETS). THEY SHALL BE INCORPORATED INTO THE WORK AS WARRANTED OR AS ORDERED BY THE ENGINEER.
- STRAW APPLICATIONS SHOULD BE IN THE AMOUNT OF 2000 LBS/ACRE.
- ALL STRAW BALES OR TEMPORARY PROTECTION SHALL REMAIN IN-PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED.
- THE TOPSOIL SHALL HAVE A SANDY LOAM TEXTURE RELATIVELY FREE OF SUBSOIL MATERIAL, STONES, ROOTS, LUMPS OF SOIL, TREE LIMBS, TRASH OR CONSTRUCTION DEBRIS AND SHALL CONFORM WITH RHODE ISLAND STANDARD SPECIFICATION M.20.01, AS AMENDED.
- THE SEED MIX SHALL BE INOCULATED WITHIN 24-HOURS BEFORE MIXING AND PLANTING, WITH APPROPRIATE INOCULUM FOR EACH VARIETY.
- THE DESIGN MIX UTILIZED IN ALL DISTURBED AREAS TO BE SEEDING SHALL BE COMPRISED OF THE FOLLOWING:
 

TYPE	% BY WEIGHT	SEEDING DATE
CREeping RED FESCUE	70	APRIL 1 - JUNE 15
ASTORIA BENTGRASS	5	AUGUST 15 - OCT.
BIRDFOOT TREEFOIL	15	
PERENNIAL RYEGRASS	10	
- APPLICATION RATE 100 LBS/ACRE  
LIMING AND FERTILIZING AS REQUIRED TO COMPLIMENT OR UPGRADE EXISTING CONDITIONS.
- THE CONTRACTOR MUST REPAIR AND/OR RESEED ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE YEAR, AND SHALL DO SO AT NO ADDITIONAL EXPENSE.
- THE NORMAL ACCEPTABLE SEASONAL SEEDING DATES ARE APRIL 1ST THROUGH OCTOBER 15TH.
- STABILIZATION OF ONE FORM OR ANOTHER AS DESCRIBED ABOVE SHALL BE ACHIEVED WITHIN FIFTEEN (15) DAYS OF FINAL GRADING.
- TREES TO BE RETAINED SHALL BE FENCED OR ROPED OFF TO PROTECT THEM FROM CONSTRUCTION EQUIPMENT.
- ALL PROPOSED PLANTINGS MUST BE ACCOMPLISHED AS EARLY AS POSSIBLE UPON COMPLETION OF GRADING AND CONSTRUCTION, AND AT LEAST PRIOR TO ANY ON-SITE OCCUPANCY.
- ALL PROPOSED PLANTINGS MUST BE MAINTAINED BY THE PROPERTY OWNER TO ENSURE SURVIVAL.
- SHOULD ANY OR ALL OF THE PROPOSED PLANTS FAIL TO SURVIVE AT LEAST ONE (1) FULL GROWING SEASON FROM THE TIME THEY HAVE BEEN PLANTED, THE OWNER SHALL BE FULLY RESPONSIBLE FOR REPLACING AND MAINTAINING THE SAME PLANT SPECIES FOR ONE (1) ADDITIONAL GROWING SEASON.
- ALL DISTURBED AREAS MUST BE SEEDING OR PLANTED WITHIN THE CONSTRUCTION SEASON.
- TEMPORARY SEEDING MUST BE DONE WITHIN ONE (1) MONTH AFTER DISTURBANCE.
- ALL DISTURBED AREAS MUST BE PERMANENTLY SEEDING OR PLANTED BEFORE OCTOBER 1ST, IF NOT THEY MUST BE TEMPORARILY SEEDING.
- SLOPES CONSTRUCTED AT, OR STEEPER THAN, 15% SHALL HAVE TEMPORARY EROSION CONTROL MATTING UTILIZED AS A SUPPORTIVE METHOD IN ADDITION TO THE METHODS DESCRIBED ABOVE.
- ALL PROPOSED INLETS AND OUTLETS SHALL BE PROTECTED WITH RIPRAP BOTH TEMPORARILY AND PERMANENTLY. SEE DETAIL.
- ALL CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE STANDARDS AND PROCEDURES SET FORTH IN THE TOWN SUBDIVISION REGULATIONS AND ZONING ORDINANCES; RHODE ISLAND STORMWATER DESIGN AND INSTALLATION STANDARDS MANUAL DEC. 2010 AS PREPARED BY THE RIDEM AND CRMC; AND RHODE ISLAND EROSION AND SEDIMENT CONTROL HANDBOOK AS PREPARED BY RHODE ISLAND STATE CONSERVATION COMMITTEE, REVISED 2014, (AS REVISED).

- INFILTRATION PRACTICES SHALL NEVER SERVE AS A SEDIMENT CONTROL DEVICE DURING SITE CONSTRUCTION PHASE. GREAT CARE MUST BE TAKEN TO PREVENT ANY INFILTRATION AREA FROM COMPACTION BY MARKING OFF THE LOCATION BEFORE THE START OF CONSTRUCTION AT THE SITE AND CONSTRUCTING THE INFILTRATION PRACTICE LAST, CONNECTING UPSTREAM DRAINAGE AREAS ONLY AFTER CONSTRUCTION IS COMPLETE, AND THE CONTRIBUTING AREA IS STABILIZED. THE CONTRACTOR SHALL SUBMIT A PLAN TO THE TOWN (FOR APPROVAL) HOW SEDIMENT WILL BE PREVENTED FROM ENTERING THE SITE OF AN INFILTRATION FACILITY.
- EXTREME CARE SHALL BE EXERCISED AS TO PREVENT ANY MATERIALS FROM ENTERING WETLANDS, THE ROADWAYS, ROADWAY DRAINAGE SYSTEMS, AND ADJACENT PROPERTY.
- STAKED STRAW BALES OR SILT FENCE SHALL BE INSTALLED WHERE SHOWN ON THE PLAN AND AS REQUIRED TO PREVENT SEDIMENTATION ONTO ADJACENT PROPERTIES, WETLANDS AND THE ROADWAY DRAINAGE SYSTEM.
- DENUDED SLOPES SHALL NOT BE UNATTENDED OR EXPOSED FOR MORE THAN 2 WEEKS OF TIME OR FOR THE INACTIVE WINTER SEASON.
- NO UNDISTURBED AREAS SHALL BE CLEARED OF EXISTING VEGETATION AFTER OCTOBER 15 OF ANY CALENDAR YEAR OR DURING ANY PERIOD OF FULL OR LIMITED WINTER SHUTDOWN. ALL DISTURBED SOILS EXPOSED PRIOR TO OCTOBER 15 OF ANY CALENDAR YEAR SHALL BE SEEDING OR PROTECTED BY THAT DATE. ANY SUCH AREAS THAT DO NOT HAVE ADEQUATE VEGETATIVE STABILIZATION, AS DETERMINED BY THE RESIDENT ENGINEER OR ENVIRONMENTAL INSPECTOR, BY NOVEMBER 15 OF ANY CALENDAR YEAR, MUST BE STABILIZED THROUGH THE USE OF EROSION CONTROL MATTING OR STRAW MULCH, IN ACCORDANCE WITH SPECIFICATIONS CONTAINED WITHIN THE R.I. SOIL EROSION AND SEDIMENT CONTROL HANDBOOK. IF WORK CONTINUES WITHIN ANY OF THESE AREAS DURING THE PERIOD FROM OCTOBER 15 THROUGH APRIL 15, CARE MUST BE TAKEN TO ENSURE THAT ONLY THE AREA REQUIRED FOR THAT DAY'S WORK IS EXPOSED, AND ALL ERODIBLE SOIL MUST BE RESTABILIZED WITHIN 5 WORKING DAYS. ANY WORK TO CORRECT PROBLEMS RESULTING FROM FAILURE TO COMPLY WITH THIS PROVISION SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THERE WILL BE NO SEPARATE PAYMENT FOR THIS PROVISION. IT SHALL BE CONSIDERED AN INCIDENTAL TO CONSTRUCTION OPERATIONS. STABILIZATION OF ONE FORM OR ANOTHER AS DESCRIBED ABOVE SHALL BE ACHIEVED WITHIN 2 WEEKS OF FINAL GRADING.
- PREPARE TEMPORARY SEEDING AREA, PROVIDE AND PLANT SEED IN ACCORDANCE WITH "RHODE ISLAND EROSION AND SEDIMENT CONTROL HANDBOOK" AS PREPARED BY THE RHODE ISLAND STATE CONSERVATION COMMITTEE, REVISED 2014, (AS REVISED).
- SEED MIX:  
ANNUAL RYE GRASS 1.5 LBS/1,000 SQ. FT.
- TEMPORARY TREATMENTS TO STABILIZE EXPOSED SOILS SHALL CONSIST OF STRAW OR FIBER MULCH OR PROTECTIVE COVERS, SUCH AS A MAT OR FIBER LINING (BURLAP, JUTE, FIBERGLASS NETTING, EXCELSIOR BLANKETS). THEY SHALL BE INCORPORATED INTO THE WORK WHEN SOILS ARE EXPOSED FOR TWO WEEKS OR MORE OR AS ORDERED BY THE TOWN, ENGINEER OR OWNER AT NO ADDITIONAL COST.
- STRAW APPLICATIONS SHALL BE IN THE AMOUNT OF 3,000-4,000 LBS/ACRE.
- ALL NEW STRAW BALES OR TEMPORARY PROTECTION SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED AND POTENTIAL SEDIMENTATION SOURCES ARE REMOVED.
- STOCKPILES SHALL HAVE NO SLOPE GREATER THAN 2:1 AND SHALL BE SURROUNDED BY STAKED STRAW BALES OR SILT FENCE. STOCKPILES EXPOSED FOR EXCESSIVE PERIODS OF TIME SHALL RECEIVE TEMPORARY TREATMENT CONSISTING OF PLANTING ANNUAL RYE GRASS OR PROTECTING WITH STRAW OR FIBER MATTING.
- DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EROSION CONTROL MAINTENANCE AND SHALL INSPECT/REPLACE AS NEEDED. ADDITIONAL STRAW BALES/SILT FENCE OR OTHER TREATMENTS SHALL BE PROVIDED AS DIRECTED BY ENGINEER, RIDEM OR LOCAL REPRESENTATIVES AT NO ADDITIONAL COST.
- THE CONTRACTOR SHALL INSPECT THE SOIL EROSION CONTROL DEVICES AFTER EVERY RAIN STORM EVENT AND EVERY 7 DAYS (WHICH EVER COMES FIRST). ANY SOIL MIGRATION PAST THE DEVICES SHALL BE REMOVED AND THE SOIL EROSION CONTROL DEVICES SHALL BE RE-ESTABLISHED TO PREVENT SOIL EROSION. ALL ACCUMULATED SEDIMENT IN FRONT OF THE DEVICES SHALL BE REMOVED AFTER EVERY RAIN STORM EVENT.
- ALL DISTURBED SOIL AREAS SHALL BE PROTECTED AGAINST SOIL EROSION BY PLACEMENT OF STRAW BALES AND/OR SILT FENCE ON THE DOWN GRADIENT SIDE OF THE DISTURBED AREA(S). SHOULD THE VOLUME AND/OR RATE OF STORMWATER RUNOFF BE TOO GREAT FOR A SINGLE DEVICE, THEN MULTIPLE DEVICES ARE REQUIRED SUCH AS SILT FENCE BACKED-UP WITH STRAW BALES. THESE ADDITIONAL DEVICES ARE NOT SHOWN ON THE PLAN BUT SHALL BE PROVIDED AND INSTALLED BY THE CONTRACTOR AT NO ADDITIONAL COST TO THE OWNER.
- AT THE END OF THE PROJECT ALL SEDIMENT IN MANHOLE SUMPS SHALL BE REMOVED.

**GENERAL EROSION CONTROL NOTES:**

- THE STATE OF RHODE ISLAND STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2004 EDITION, AND THE RHODE ISLAND STANDARD DETAILS ARE MADE A PART HEREOF AS FULLY AND COMPLETELY AS IF ATTACHED HERETO. THE 2004 STANDARD SPECIFICATIONS MAY BE OBTAINED AT THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION WEB PAGE. THESE SPECIFICATIONS ARE MADE A PART HEREOF AS FULLY AND COMPLETELY AS IF ATTACHED HERETO.
- ALL REQUIRED SITE IMPROVEMENTS SHALL BE INSPECTED BY THE TOWN ENGINEER TO ENSURE SATISFACTORY COMPLETION. IN NO CASE SHALL THE INSTALLATION OF ANY IMPROVEMENTS BE STARTED UNTIL PRIOR NOTIFICATION IS GIVEN TO THE TOWN ENGINEER. AT LEAST A 48-HOUR NOTICE SHALL BE GIVEN TO THE TOWN ENGINEER PRIOR TO ANY SUCH START OF CONSTRUCTION. A FINAL INSPECTION OF ALL SITE IMPROVEMENTS, UTILITIES AND GRADING WILL BE MADE TO DETERMINE WHETHER THE WORK IS SATISFACTORY AND IN SUBSTANTIAL AGREEMENT WITH THE APPROVED FINAL CONSTRUCTION DRAWING AND THE TOWN SPECIFICATIONS.
- LOCATION AND DEPTH OF EXISTING UTILITIES ARE APPROXIMATE AND HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL CHECK AND VERIFY LOCATIONS OF ALL EXISTING UTILITIES BOTH UNDERGROUND AND OVERHEAD. ANY DAMAGE TO EXISTING UTILITIES AS SHOWN OR NOT SHOWN ON THE PLANS SHALL BE THE CONTRACTOR'S RESPONSIBILITY. COSTS OF SUCH DAMAGE SHALL BE BORNE BY THE CONTRACTOR. NO EXCAVATION SHALL BE DONE UNTIL ALL INVOLVED UTILITY COMPANIES ARE NOTIFIED 48-HOURS IN ADVANCE. THE CONTRACTOR SHALL BE RESPONSIBLE TO NOTIFY DIG-SAFE (1-800-344-7233) A MINIMUM OF 48 WORKING HOURS, EXCLUDING WEEKENDS AND HOLIDAYS, PRIOR TO THE START OF ANY EXCAVATION AND/OR BLASTING WORK. THE NAME OF THE COMPANY PERFORMING THE EXCAVATION AND/OR BLASTING WORK MUST BE SUPPLIED TO DIG-SAFE, IF IT IS DIFFERENT FROM THE CALLER.
- IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO OBTAIN ANY AND ALL PERMITS REQUIRED BY, BUT NOT LIMITED TO, THE STATE OF RHODE ISLAND, THE FEDERAL GOVERNMENT, LOCAL (TOWN/CITY) GOVERNMENT AND ALL INDIVIDUAL UTILITY COMPANIES PRIOR TO COMMENCING ANY WORK.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL TEMPORARY SEDIMENTATION AND EROSION CONTROLS.
- ALL MATERIAL FOR FILL SHALL BE CLEAN AND FREE OF MATTER WHICH COULD POLLUTE ANY DOWN STREAM WATERCOURSE.
- FILL MATERIAL SHALL BE COMPACTED IN ONE FOOT (MAXIMUM) LIFTS TO AT LEAST 95% OF THE MAXIMUM DRY DENSITY AS DETERMINED IN ACCORDANCE WITH ASTM D-1557 (MODIFIED PROCTOR TEST).
- ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
- ALL AREAS COMPACTED BY CONSTRUCTION ACTIVITIES SHALL BE RESTORED BY TILLING THE TOP 12" OF SOIL.

**SEQUENCE AND STAGING OF LAND DISTURBING ACTIVITIES:**

- SURVEY AND STAKE LIMIT OF DISTURBANCE FOR PLACEMENT OF SEDIMENTATION CONTROL DEVICES.
- PLACE PERIMETER SEDIMENTATION CONTROL DEVICES (STRAW WATTLE OR COMPOST FILTER SOCK). IN NO CASE SHALL THE LIMIT OF WORK EXTEND BEYOND THE SEDIMENTATION CONTROL DEVICES.
- CONSTRUCT CONSTRUCTION ENTRANCE DEVICE 9.9.0.
- CLEAR AND GRUB SITE.
- CONSTRUCT PROPOSED RETAINING WALLS.
- REMOVE FILL FROM STORMWATER INFILTRATION AREAS AND BACKFILL WITH BANK RUN GRAVEL MEETING SPECIFICATIONS, SEE DETAILS.
- CONSTRUCT UTILITIES (ELECTRIC, WATER, SEWER, ETC.) AND ROUGH GRADE PARKING AREA.
- ROUGH-GRADE PROPOSED COMMON DRIVEWAY TO PROPOSED SUBBASE ELEVATIONS. CONSTRUCT STORMWATER INFILTRATION/STORAGE AREAS AND STABILIZE.
- INSTALL PROPOSED STORM DRAINAGE COLLECTION, CONVEYANCE SYSTEMS. SET CATCH BASIN GRATES TO PROPOSED BASE COURSE PAVEMENT GRADES (I.E. ABOVE SUBBASE GRADES); ENSURE THAT NO RUNOFF FROM UNSTABILIZED AREAS ENTERS THE NEW DRAINAGE SYSTEM. INSTALL SEDIMENTATION PROTECTION DEVICES IN EACH CATCH BASIN.
- EXCAVATE AND INSTALL BUILDING FOUNDATIONS, AND FLOOR SLABS.
- CONSTRUCT BUILDING.
- INSTALL ASPHALT PARKING LOT AND ADDITIONAL SITE IMPROVEMENTS.
- INSTALL SITE LANDSCAPING. ALL DISTURBED AREAS SHALL BE LOADED AND SEEDING WITH GRASS AT A MINIMUM.
- REMOVE TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES AFTER A PERMANENT GROWTH OF VEGETATION IS ESTABLISHED.

**SEDIMENTATION CONTROL PROGRAM:**

- EXTREME CARE SHALL BE EXERCISED SO AS TO PREVENT ANY UNSUITABLE MATERIAL FROM ENTERING DOWNSTREAM WATERCOURSES AND STORMWATER DRAINAGE SYSTEMS.
- DURING CONSTRUCTION, THE CONTRACTOR AND/OR DEVELOPER SHALL BE RESPONSIBLE FOR MAINTAINING DRAINAGE AND RUN-OFF FLOW DURING STORMS.
- SEDIMENTATION CONTROL DEVICES SHALL BE INSPECTED CLOSELY AND MAINTAINED PROMPTLY AFTER EACH RAINFALL.
- CARE SHALL BE TAKEN SO AS NOT TO PLACE "REMOVED SEDIMENTS" WITHIN THE PATH OF EXISTING, NEWLY CREATED (BOTH TEMPORARY AND PERMANENT) OR PROPOSED WATERCOURSES OR THOSE AREAS SUBJECTED TO STORMWATER FLOWAGE.
- ADDITIONAL STRAW BALES OR SANDBAGS SHALL BE LOCATED AS CONDITIONS WARRANT OR AS DIRECTED BY THE ENGINEER.
- EROSION AND SEDIMENTATION CONTROLS SHALL BE INSTALLED AT THE SITE PRIOR TO THE START OF CONSTRUCTION AND BE PROPERLY MAINTAINED UNTIL ALL DISTURBED AREAS ARE STABILIZED INCLUDING:
- ALL DISTURBED AREAS ARE TO BE PERMANENTLY STABILIZED WITH APPROVED GROUND COVER PRIOR TO THE COMPLETION OF THE PROJECT. AREAS EXPOSED FOR EXTENDED PERIODS ARE TO BE COMPLETELY COVERED WITH SPREAD STRAW MULCH.
- ALL CONTROL MEASURES WILL BE MAINTAINED IN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD.
- THE LIMITS OF ALL CLEARING, GRADING AND DISTURBANCE SHALL BE KEPT TO A MINIMUM WITHIN THE PROPOSED AREA OF CONSTRUCTION. ALL AREAS OUTSIDE OF THE LIMITS OF ALL DISTURBANCE SHALL REMAIN TOTALLY UNDISTURBED.
- INSPECT TEMPORARY DIVERSIONS AND THEIR COMPONENTS ONCE A WEEK AND AFTER EVERY RAINFALL. DAMAGE CAUSED BY CONSTRUCTION TRAFFIC OR OTHER ACTIVITY SHOULD BE REPAIRED BEFORE THE END OF EACH WORKING DAY.

**SOILS ANALYSIS:**

CB-CANTON-URBAN LAND COMPLEX HYDROLOGIC SOIL GROUP B  
 PD-PAXTON-URBAN LAND COMPLEX HYDROLOGIC SOIL GROUP C  
 REFER TO TEST HOLE LOGS FOR TEST HOLE DATA.

**TEST HOLE NOTES:**

- TEST HOLES AT VARIOUS LOCATIONS ON THE PARCEL WERE PERFORMED IN JUNE 2022.
- ALL TEST HOLES WERE EXCAVATED TO A MINIMUM DEPTH OF 120".
- GROUNDWATER SEEPAGE WAS ENCOUNTERED IN TEST HOLE-1 AT 108". GROUND WATER SEEPAGE WAS NOT ENCOUNTERED IN THE REMAINING TEST HOLES.
- ESHGWT IS 60" FOR TEST HOLE 1, 84" FOR TEST HOLES 2 AND 96" FOR TEST HOLES 3 AND 4.
- NO LEDGE WAS ENCOUNTERED IN ANY TEST HOLE.
- FILL DEPTHS VARY ACROSS THE SITE.

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS AS  
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 DATED: MAR 16 2023 FILE # 22-0367  
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Environmental Management  
 FEB 22 2023  
 Office of Water Resources

**DRAWING ISSUE:**

- CONCEPT
  - CUSTOMER APPROVAL
  - PERMITTING
  - CONSTRUCTION
  - AS-BUILT
  - OTHER:
- ONLY PLANS ISSUED FOR CONSTRUCTION SHALL BE USED FOR CONSTRUCTION

OWNER/APPLICANT:  
 MD CAPITAL, LLC  
 PO BOX 1205  
 NORTON, MASSACHUSETTS 02768  
 TELEPHONE: (508) 887-6805  
 EMAIL: DELDONATO1@GMAIL.COM

TIMOTHY J. BEHAN  
 No. 6278  
 REGISTERED PROFESSIONAL ENGINEER  
 02/21/2023

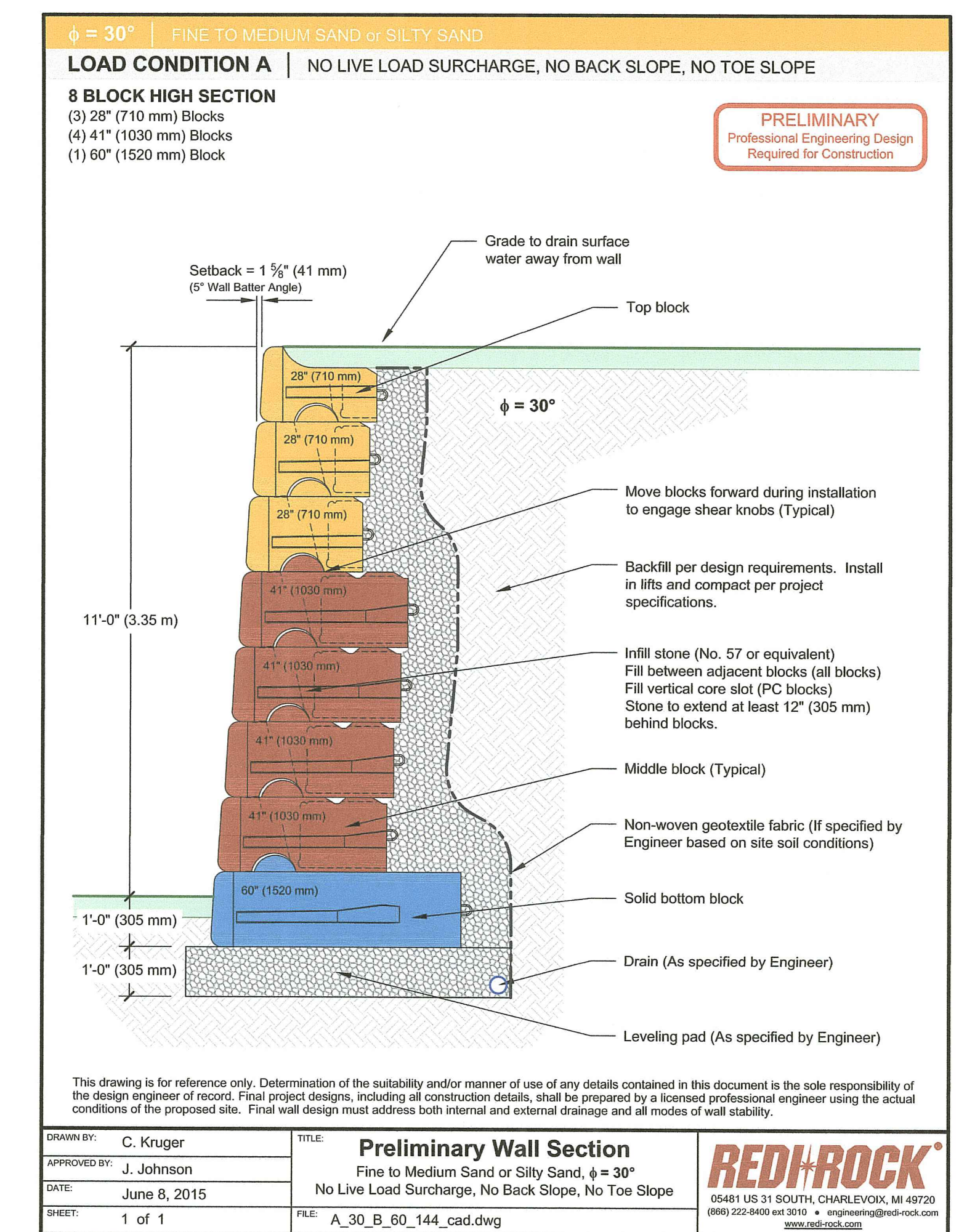
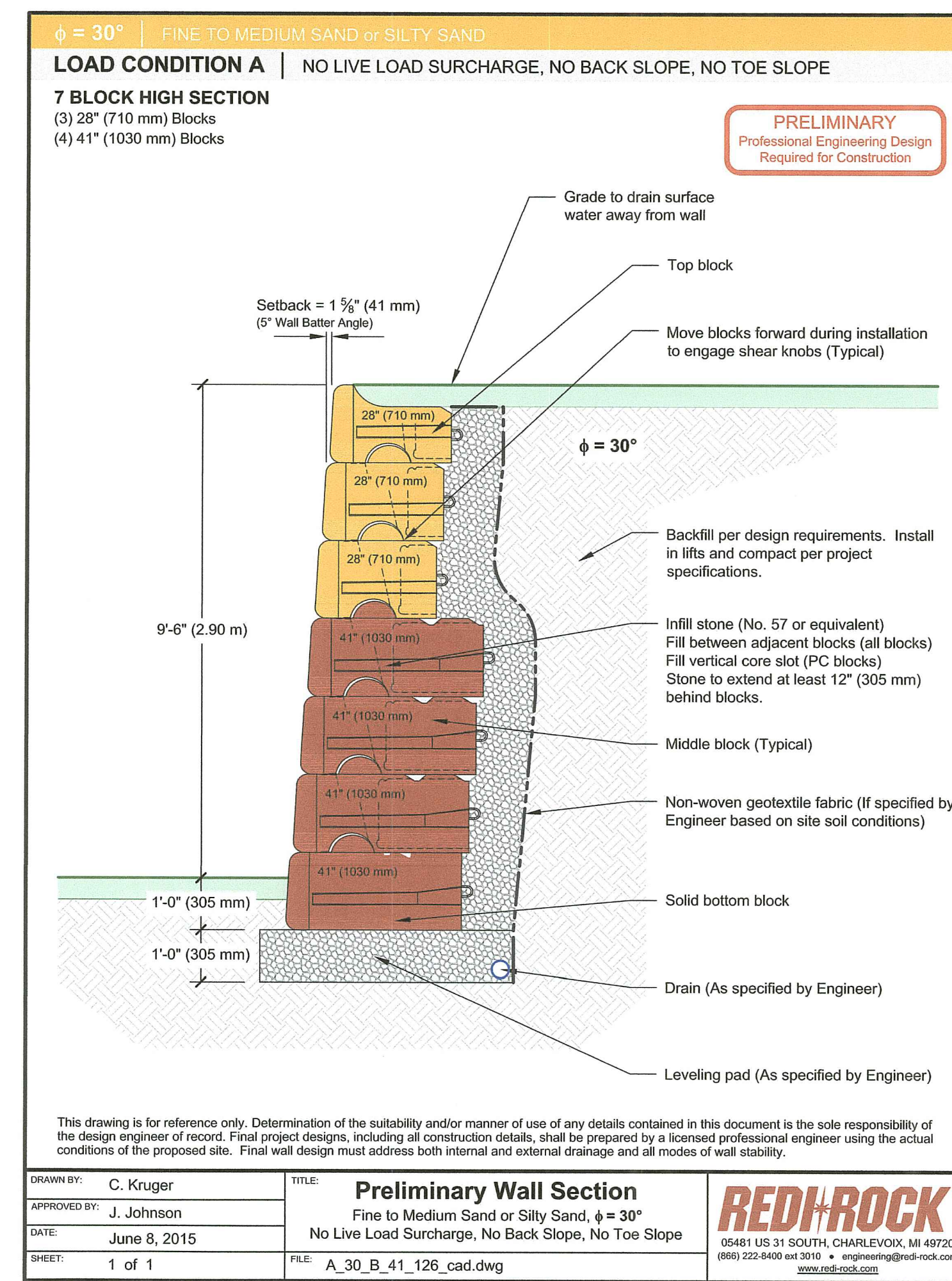
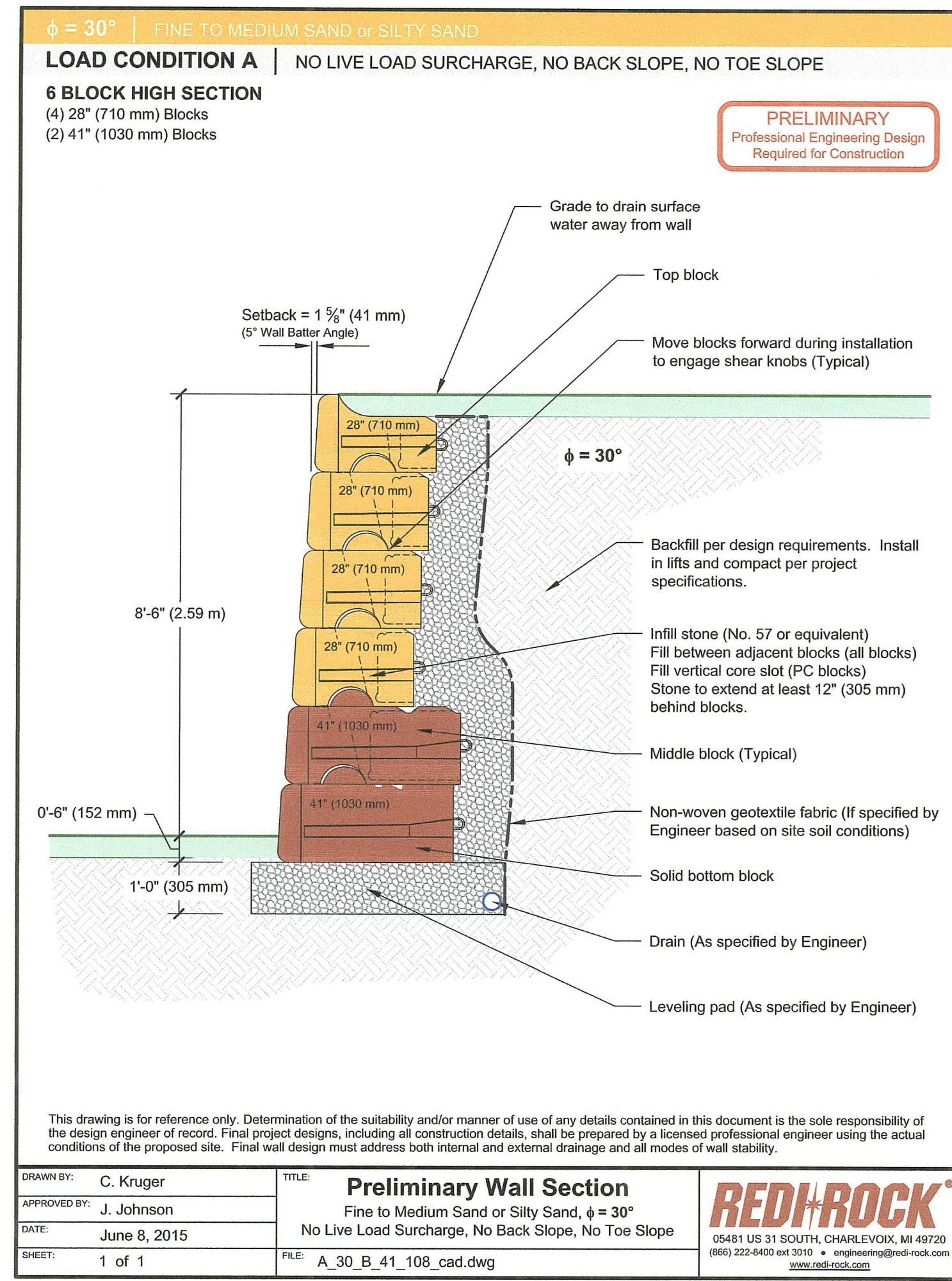
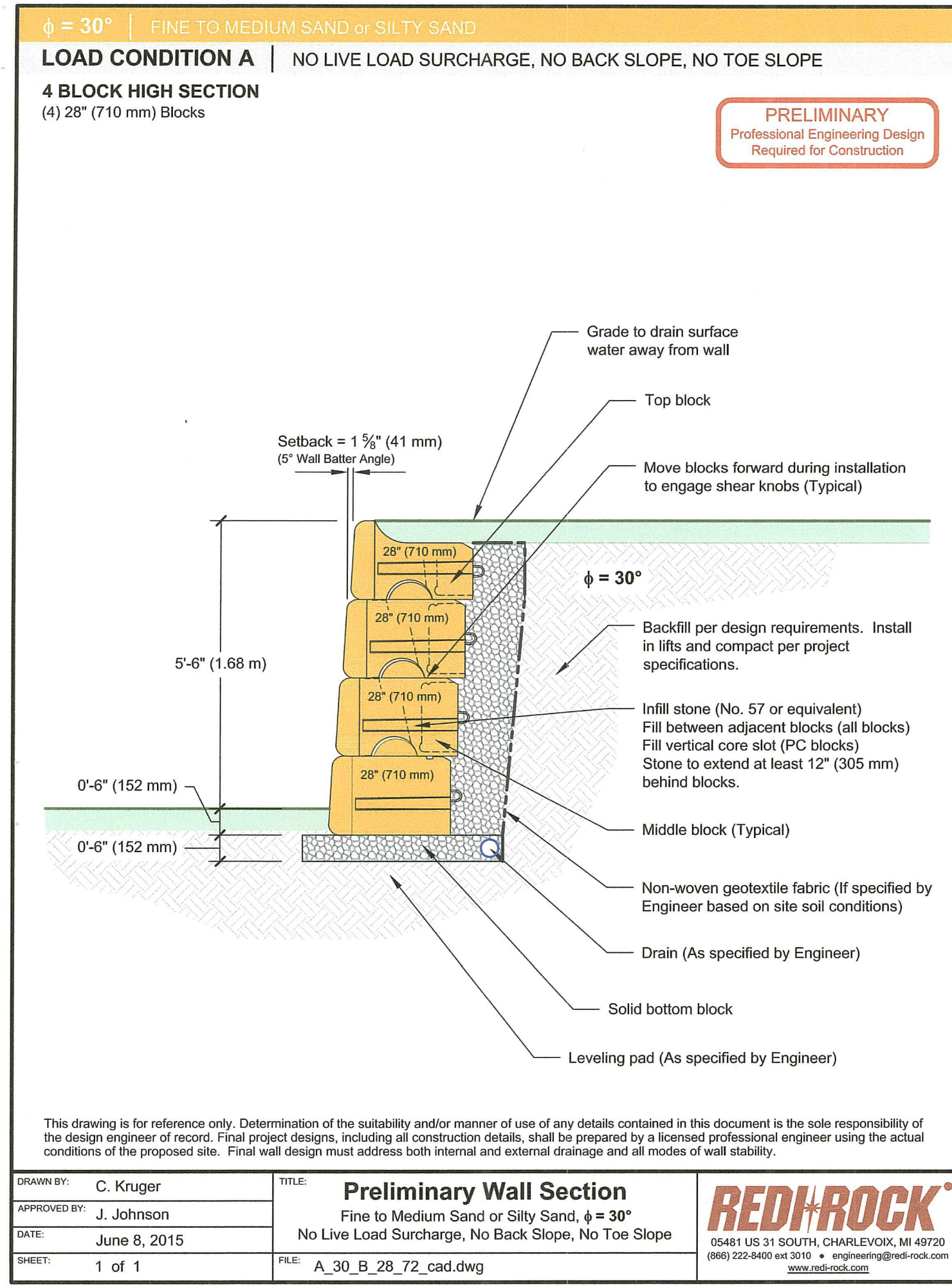
COMMONWEALTH ENGINEERS & CONSULTANTS, INC.  
 400 SMITH STREET  
 PROVIDENCE, RHODE ISLAND 02908  
 (401) 273-6600

**REVISIONS**

No.	DATE	DRWN	CHKD
1	10/03/22	SMA	TJB
2	01/25/23	SMA	TJB
3	01/31/23	SMA	TJB
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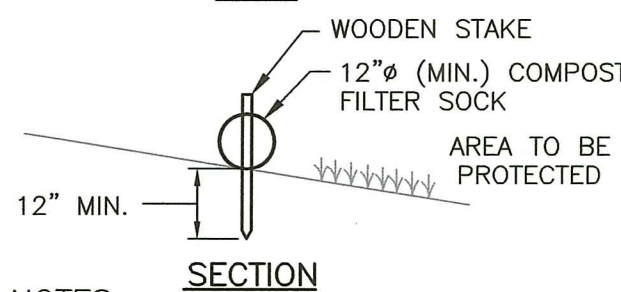
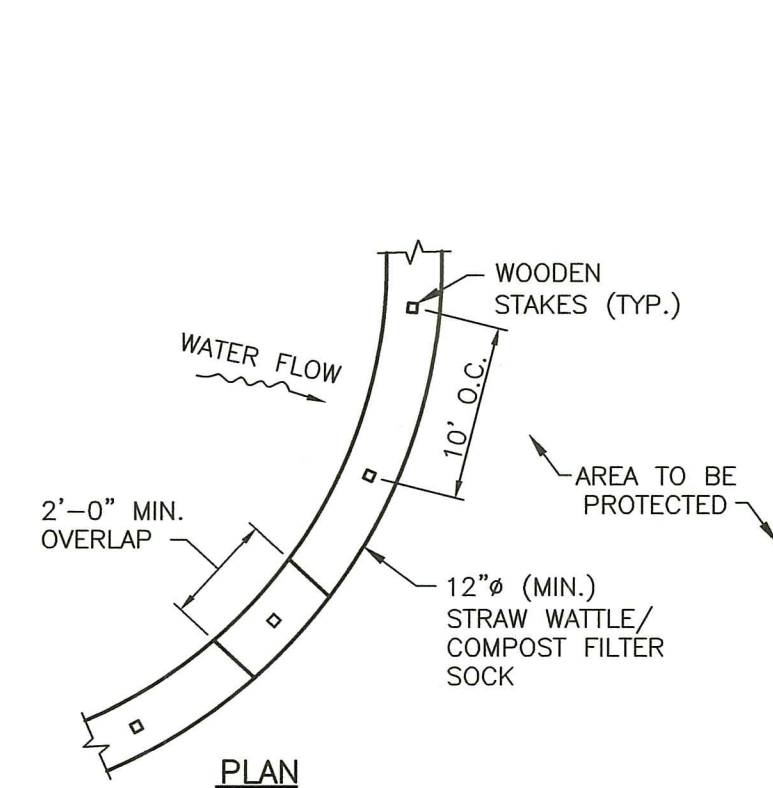
**PERMIT AGENCY REVIEW PLAN**  
 FOR  
**THE HILL CREST CONDOMINIUMS**  
 ON  
 A.P. 13, LOTS 658 AND 659  
 COWESSETT AVENUE  
 WEST WARWICK, RHODE ISLAND  
**SOIL EROSION AND SEDIMENT CONTROL PLAN**

SCALE: 1-INCH = 30-FOOT SHEET NO: 10 OF 18  
 DRAWN BY: SMA DESIGN BY: SMA CHECKED BY: TJB  
 DATE: JUNE 2022 PROJECT NO: 22026.00



**RETAINING WALL NOTES**

1. CONCEPT CMU RETAINING WALLS SHOWN FOR REFERENCE.
2. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING RETAINING WALL DESIGNED THAT SHALL BE STAMPED BY A RHODE ISLAND REGISTERED PROFESSIONAL ENGINEER.
3. CONTRACTOR SHALL SUBMIT STAMPED ENGINEERED RETAINING WALL DESIGN FOR REVIEW AND APPROVAL.
4. RETAINING WALL DESIGN MUST INCLUDE FOUNDATION/WALL DRAINS AS SHOWN.

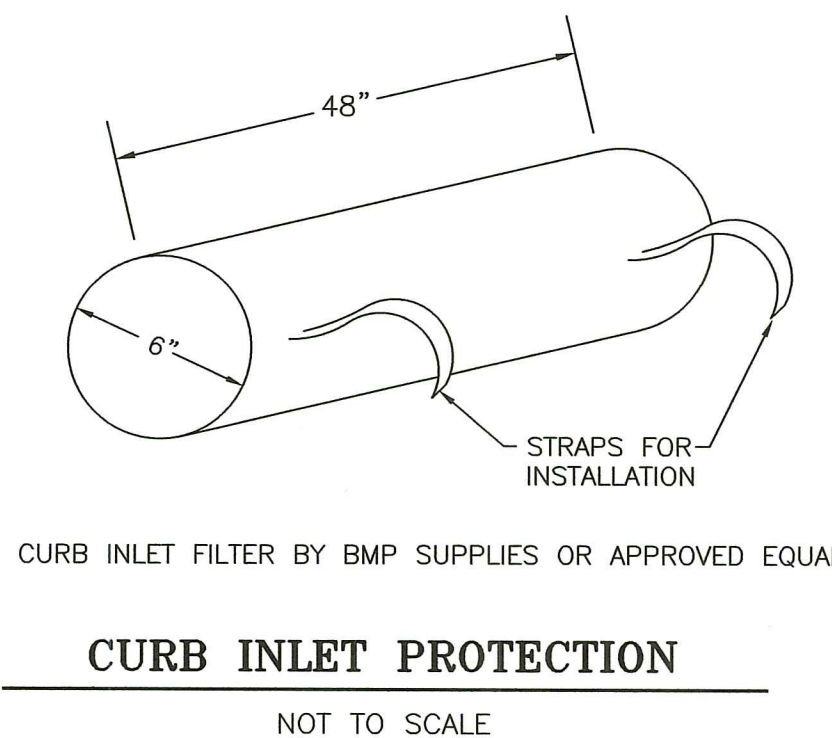
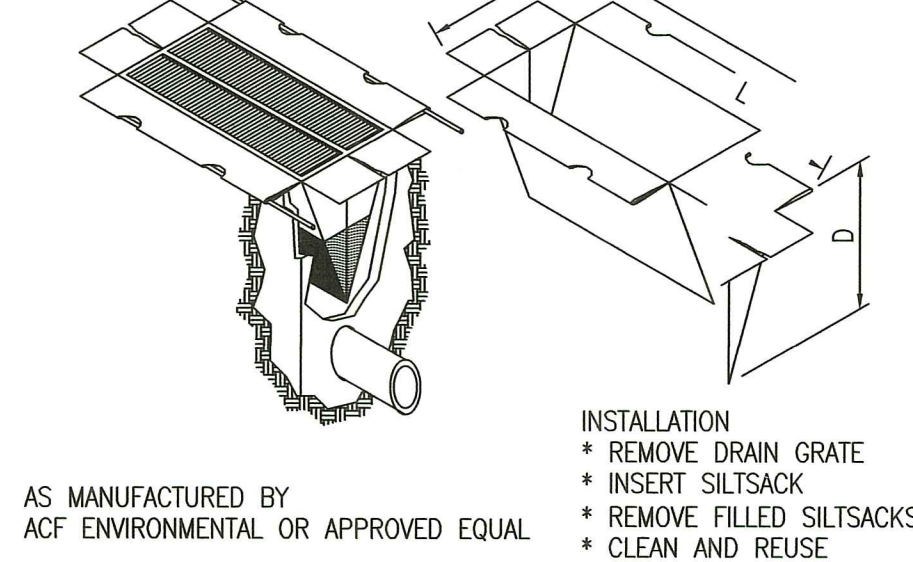
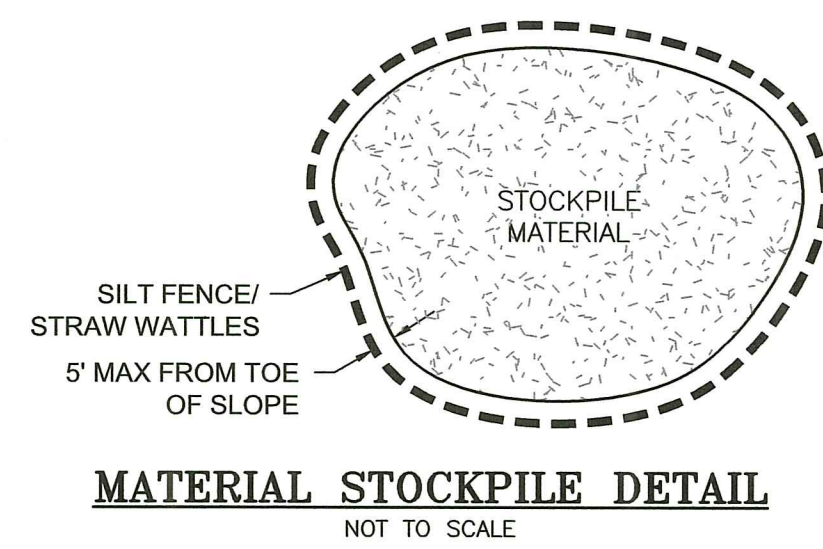


- NOTES:
1. ALL MATERIAL TO MEET REQUIREMENTS OF SECTION 206 OF RI STANDARD SPECIFICATIONS.
  2. SUBMIT SHOP DRAWING OF COMPOST MATERIAL FOR REVIEW AND APPROVAL PRIOR TO PLACEMENT.
  3. COMPOST FILTER SOCK IS AN APPROVED "OR EQUAL" TO COMPOST FILTER BERM WHEN INSTALLED IN ACCORDANCE WITH THE TABLE BELOW:

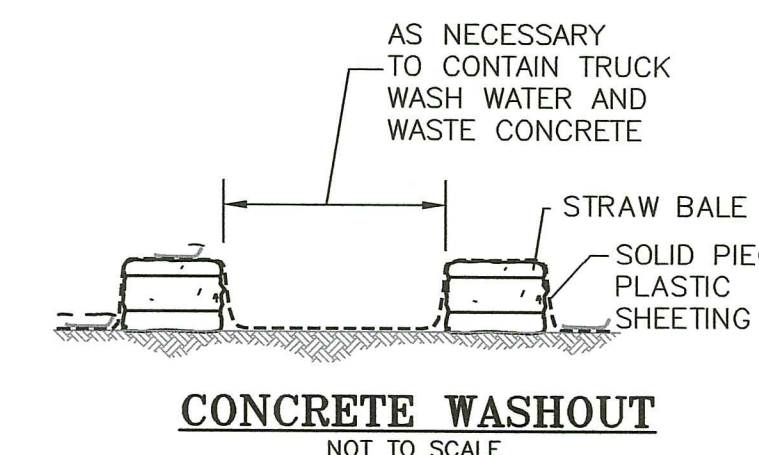
MAXIMUM LENGTH ABOVE COMPOST FILTER SOCK (FEET) AND CORRESPONDING DIAMETER OF SOCK REQUIRED:

UPGRADIENT SLOPE	8°	12°	18°	24°
2%	300'	375'	500'	650'
5%	200'	250'	275'	325'
10%	100'	125'	150'	200'
20%	50'	65'	70'	130'
30%	30'	40'	45'	85'
40%	30'	40'	45'	50'
50%	20'	25'	30'	35'

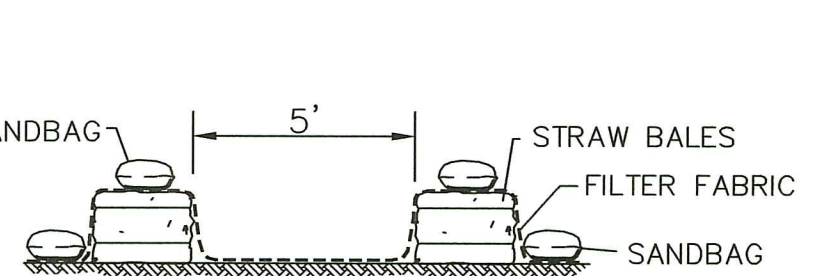
**STRAW WATTLE/COMPOST FILTER SOCK**  
 NOT TO SCALE



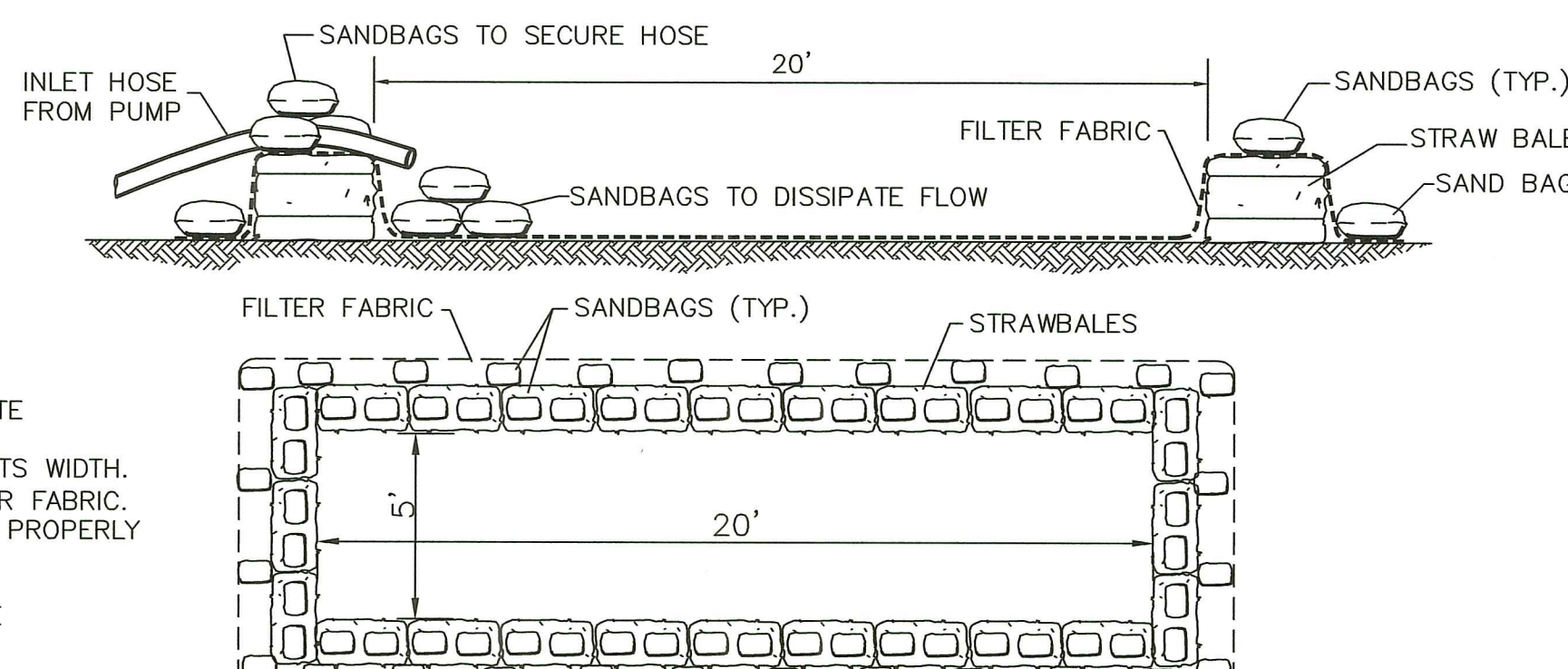
RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
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Environmental Management  
 FEB 22 2023  
 Office of Water Resources



- NOTES:
1. LOCATE SEDIMENT TRAP WHERE FLOW CAN DISSIPATE THROUGH FILTER FABRIC AND STRAWBALES.
  2. SEDIMENT TRAP LENGTH SHOULD BE FOUR TIMES ITS WIDTH.
  3. USE SAND BAGS AS NEEDED TO HOLD/SECURE FILTER FABRIC.
  4. ALL COLLECTED SEDIMENT IS TO BE DISPOSED OF PROPERLY PER ANY APPLICABLE LOCAL, STATE OR FEDERAL REGULATIONS.
  5. DEWATERING BASINS MUST BE LOCATED WITHIN THE PROPOSED LIMITS OF DISTURBANCE.



MATERIALS SIZE

SQUARE MESH SIEVES	2" CRUSHED STONE OR GRAVEL	ASTM C-33 NO. 2	ASTM C-33 NO. 3
	% FINER	% FINER	% FINER
2-1/2 INCHES	100	90-100	100
2 INCHES	95-100	35-70	90-100
1-1/2 INCHES	30-55	0-15	35-70
1-1/4 INCHES	0-25	-	-
1 INCH	0-5	-	0-15
3/4 INCH	-	0-5	-
1/2 INCH	-	-	0-5
3/8 INCH	-	-	-

NOTE:  
 STABILIZATION PAD TO BE IN CONFORMANCE WITH STANDARDS SET FORTH IN THE "RHODE ISLAND GUIDELINES FOR SOIL & SEDIMENT CONTROL."

TIMOTHY J. BEHAN  
 No. 6278  
 REGISTERED PROFESSIONAL ENGINEER  
 02/21/2023

COMMONWEALTH ENGINEERS & CONSULTANTS, INC.  
 400 SMITH STREET  
 PROVIDENCE, RHODE ISLAND 02908  
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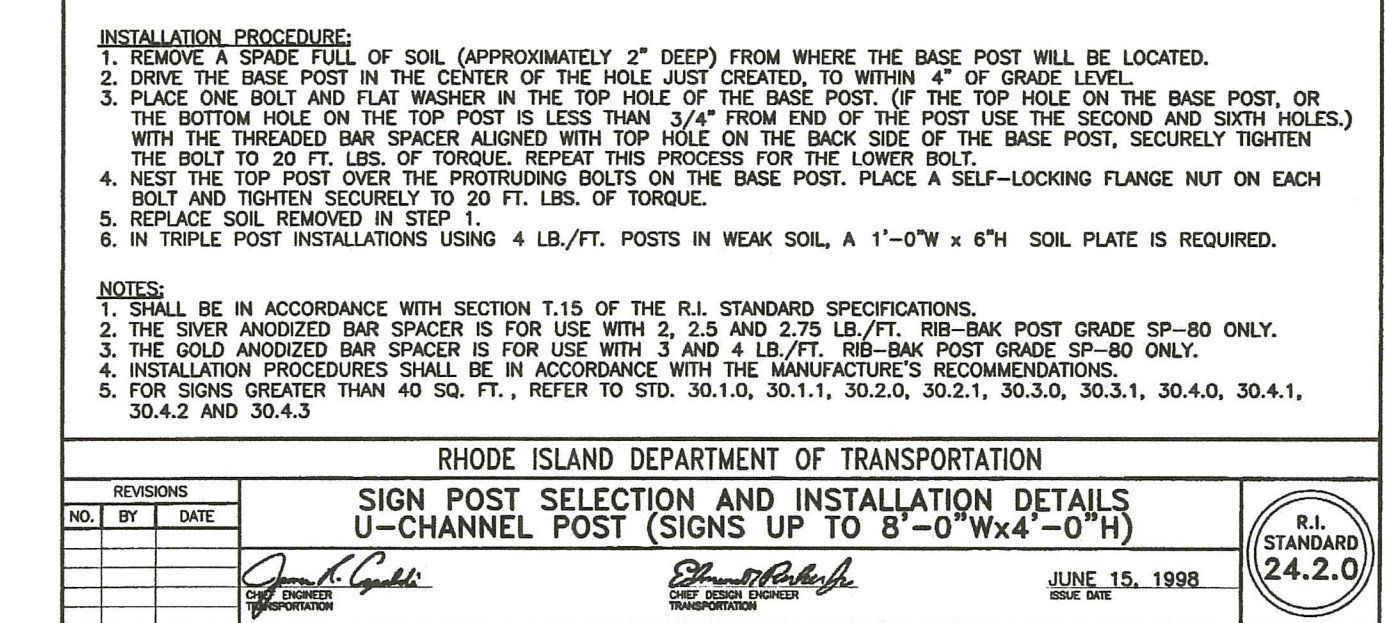
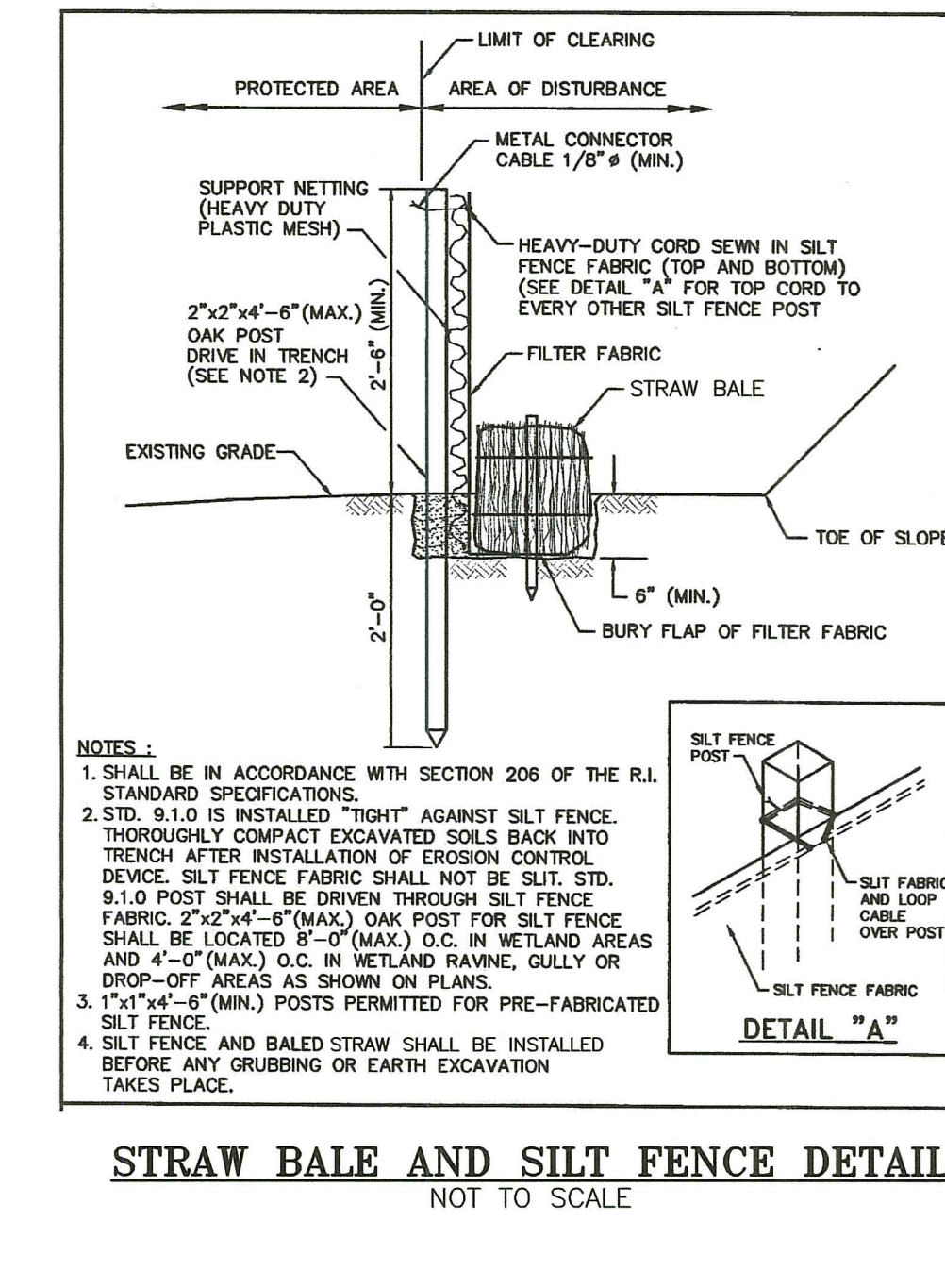
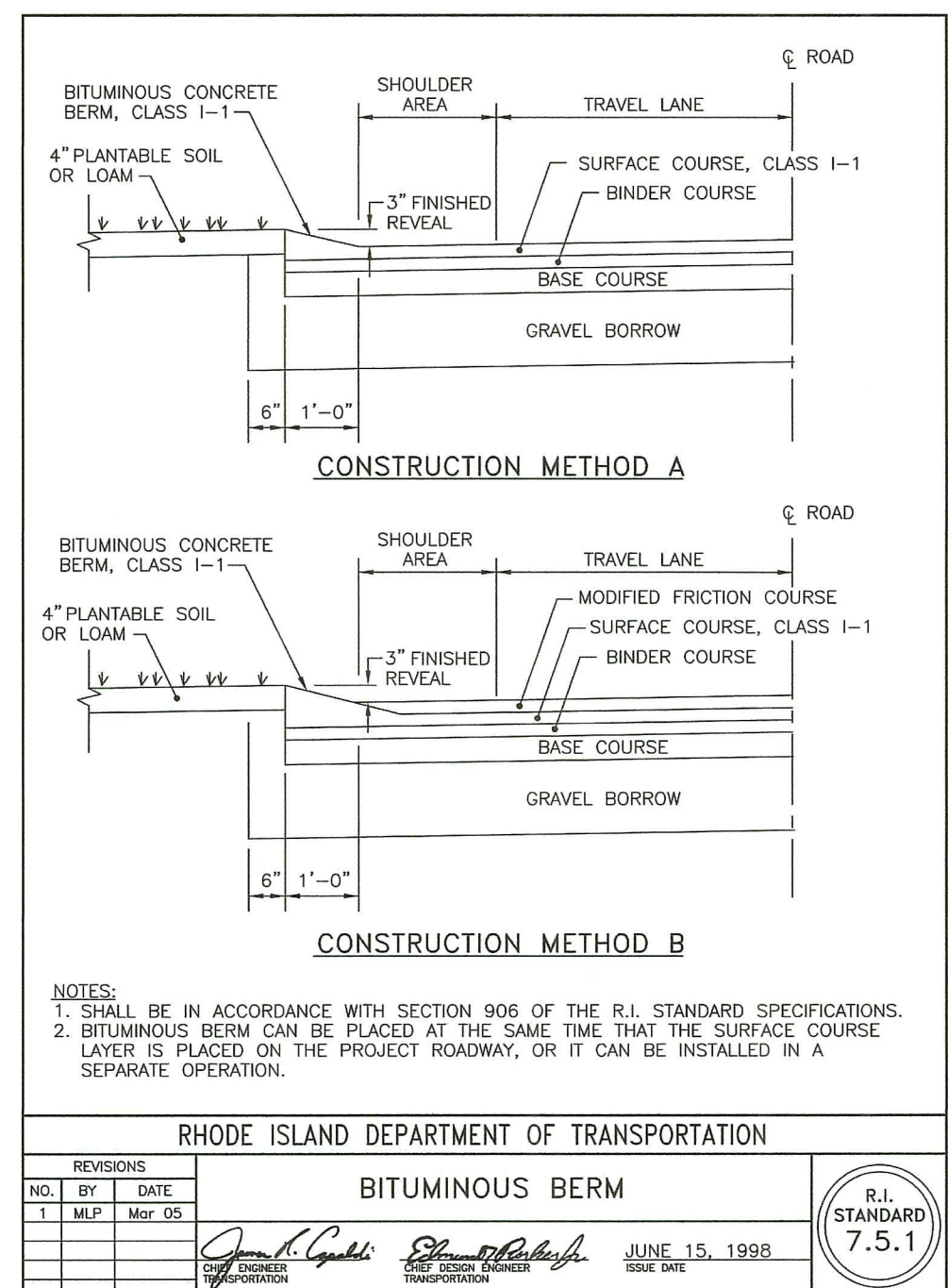
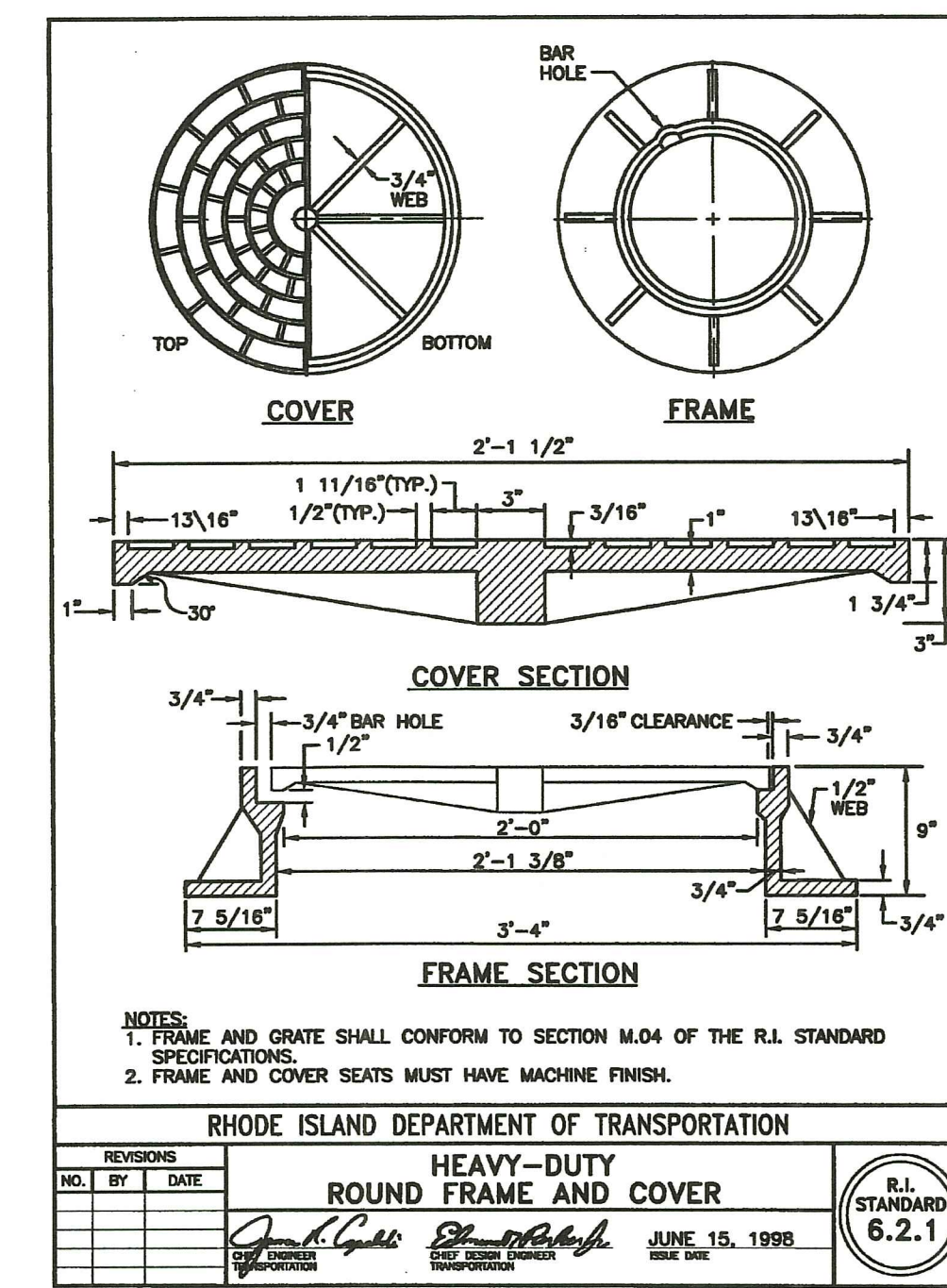
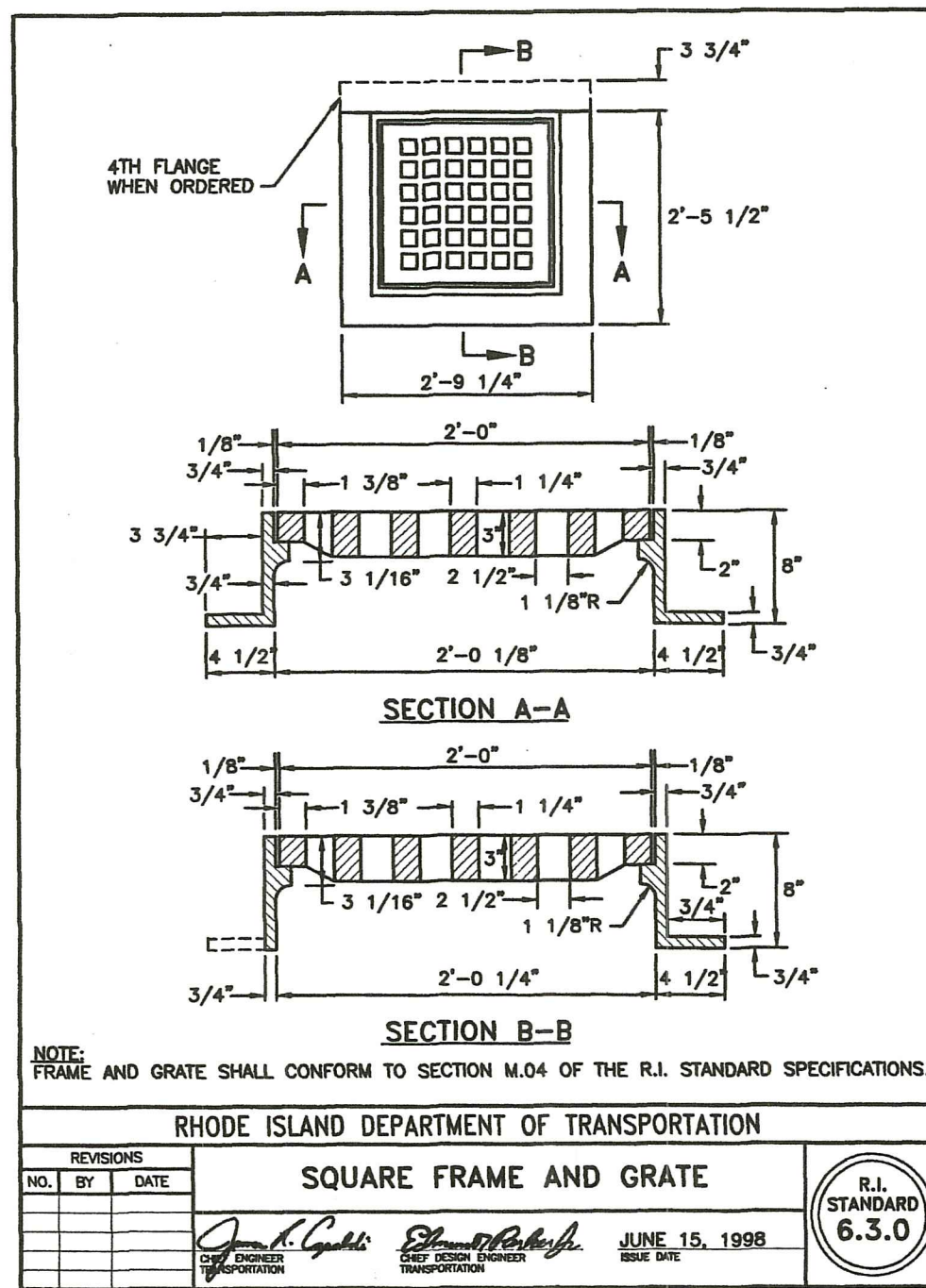
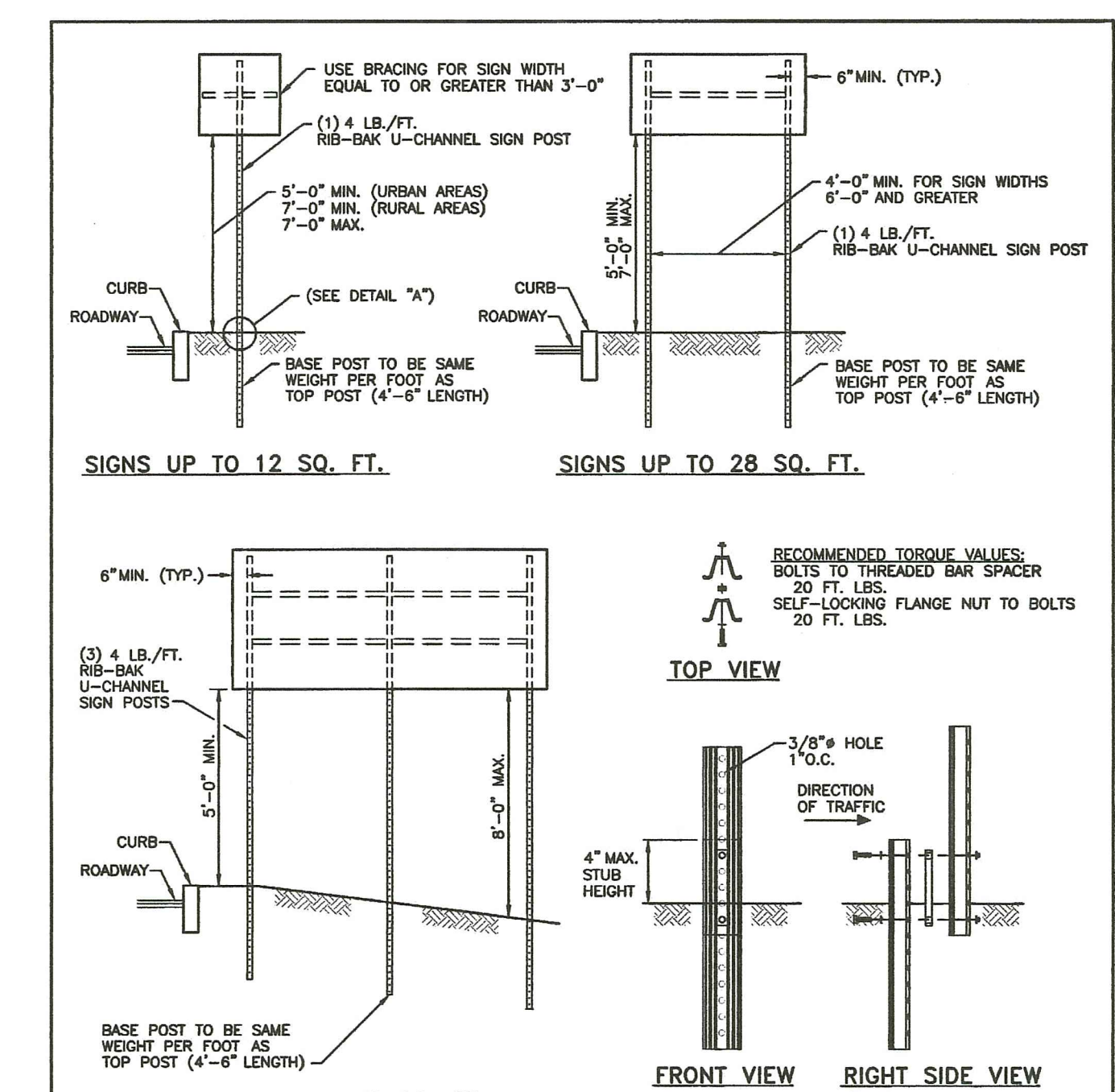
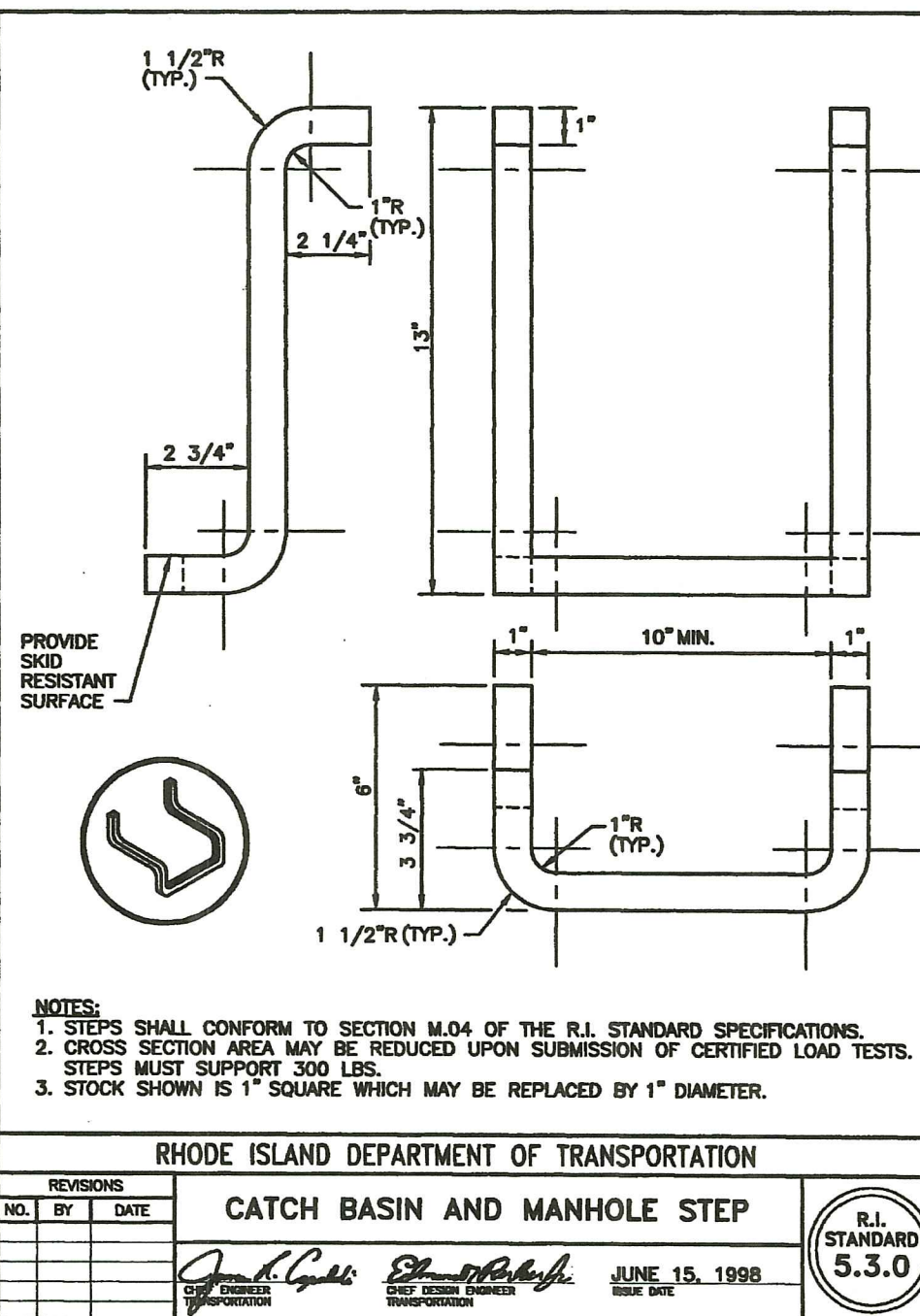
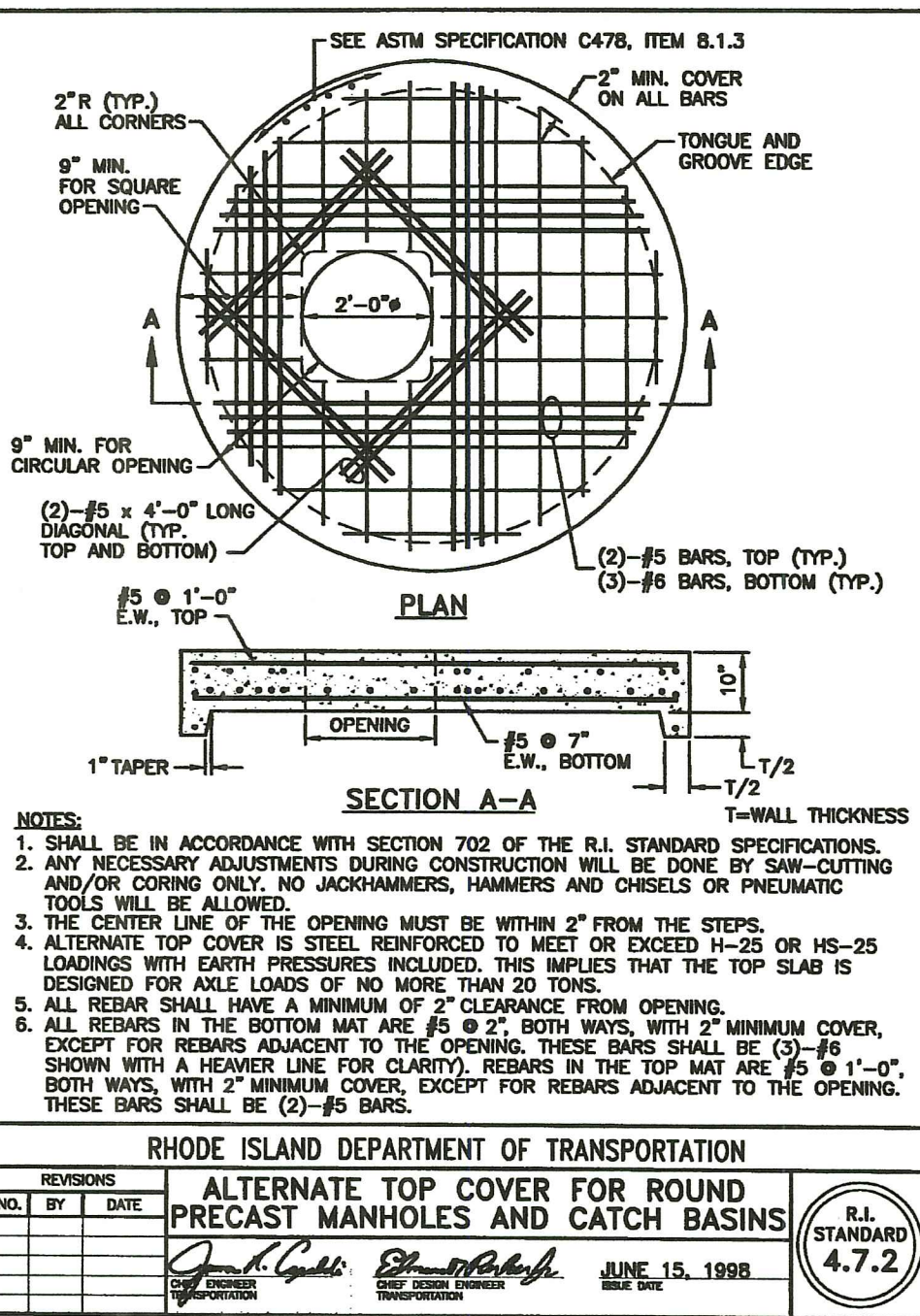
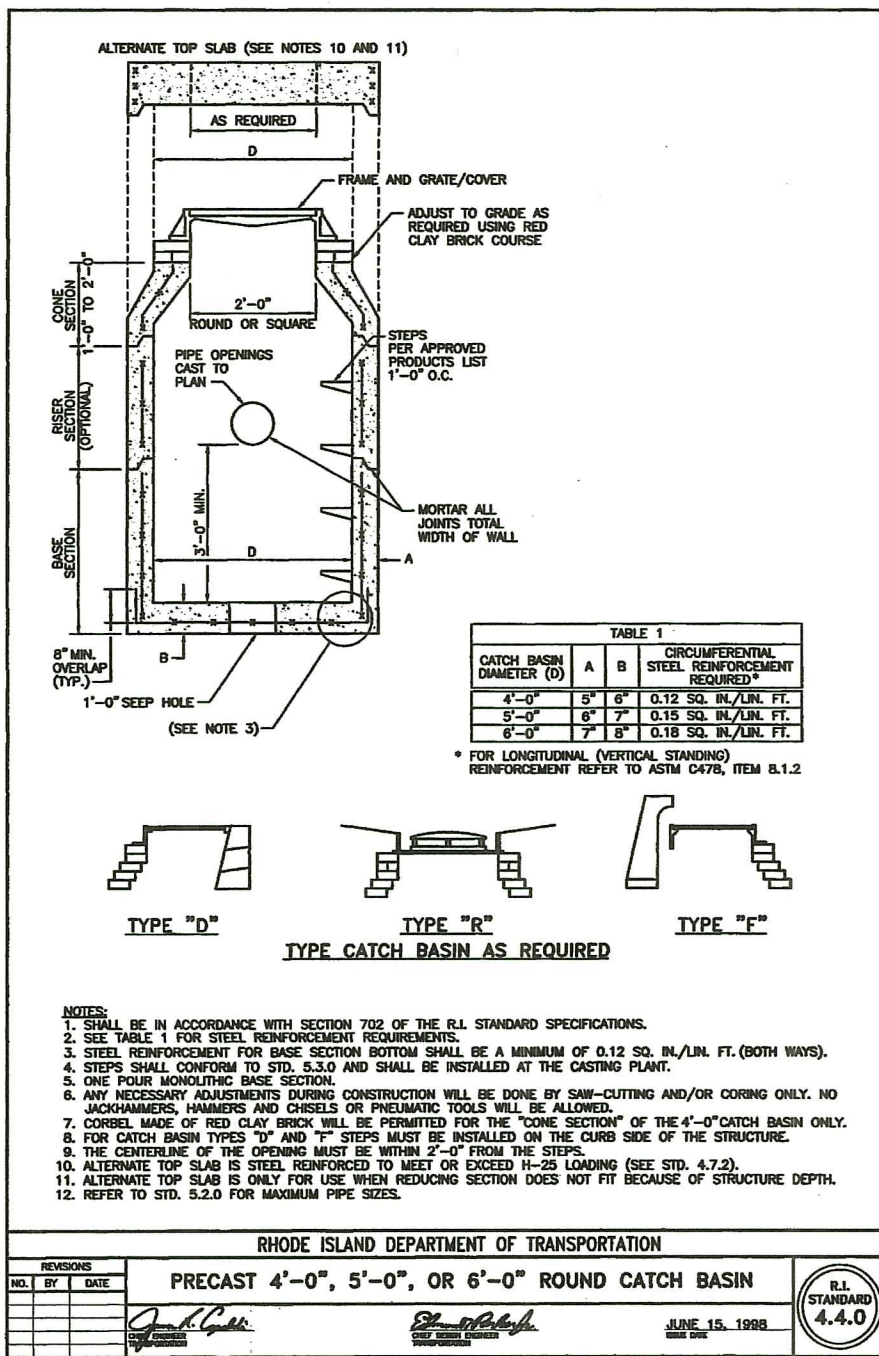
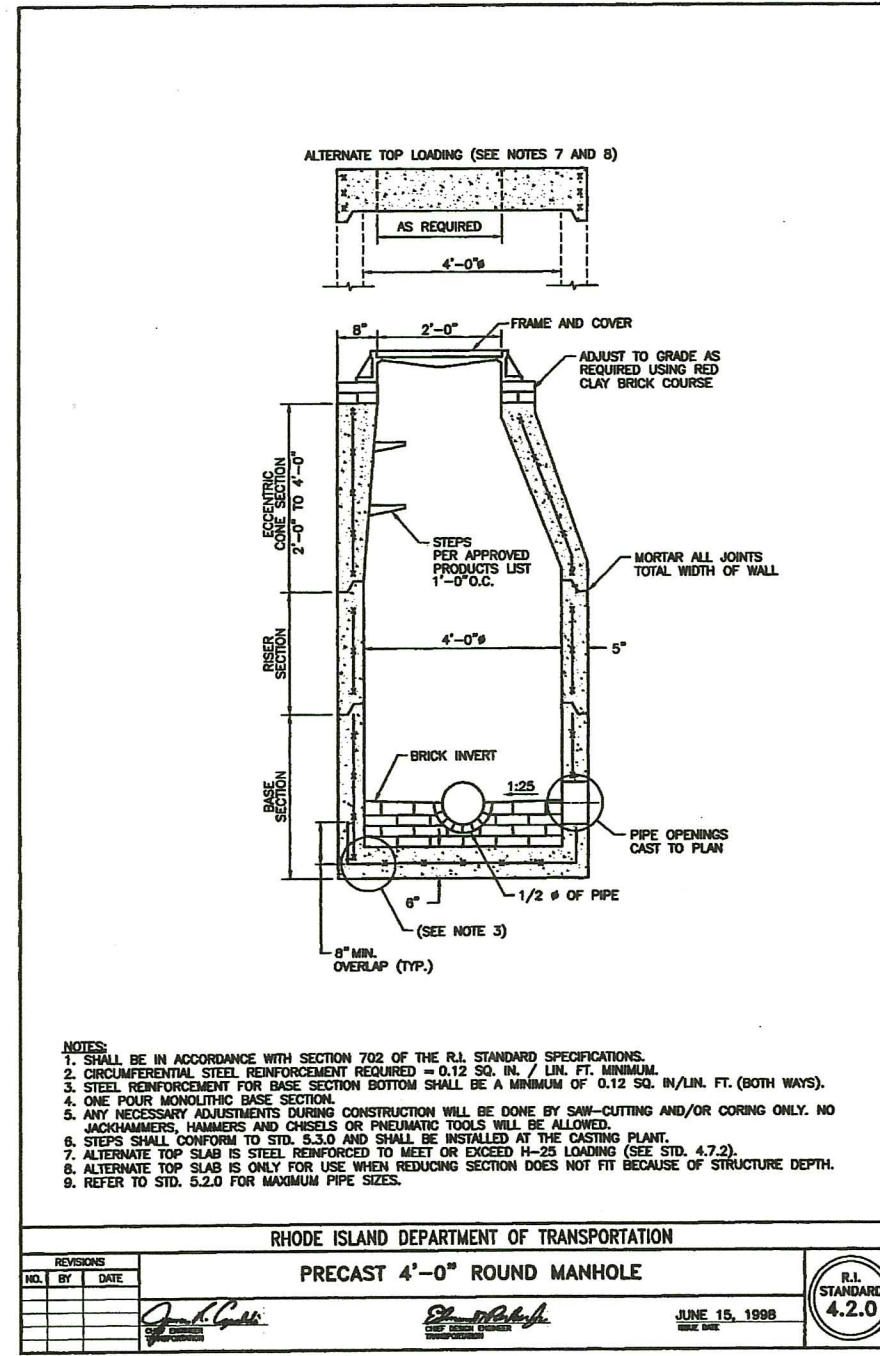
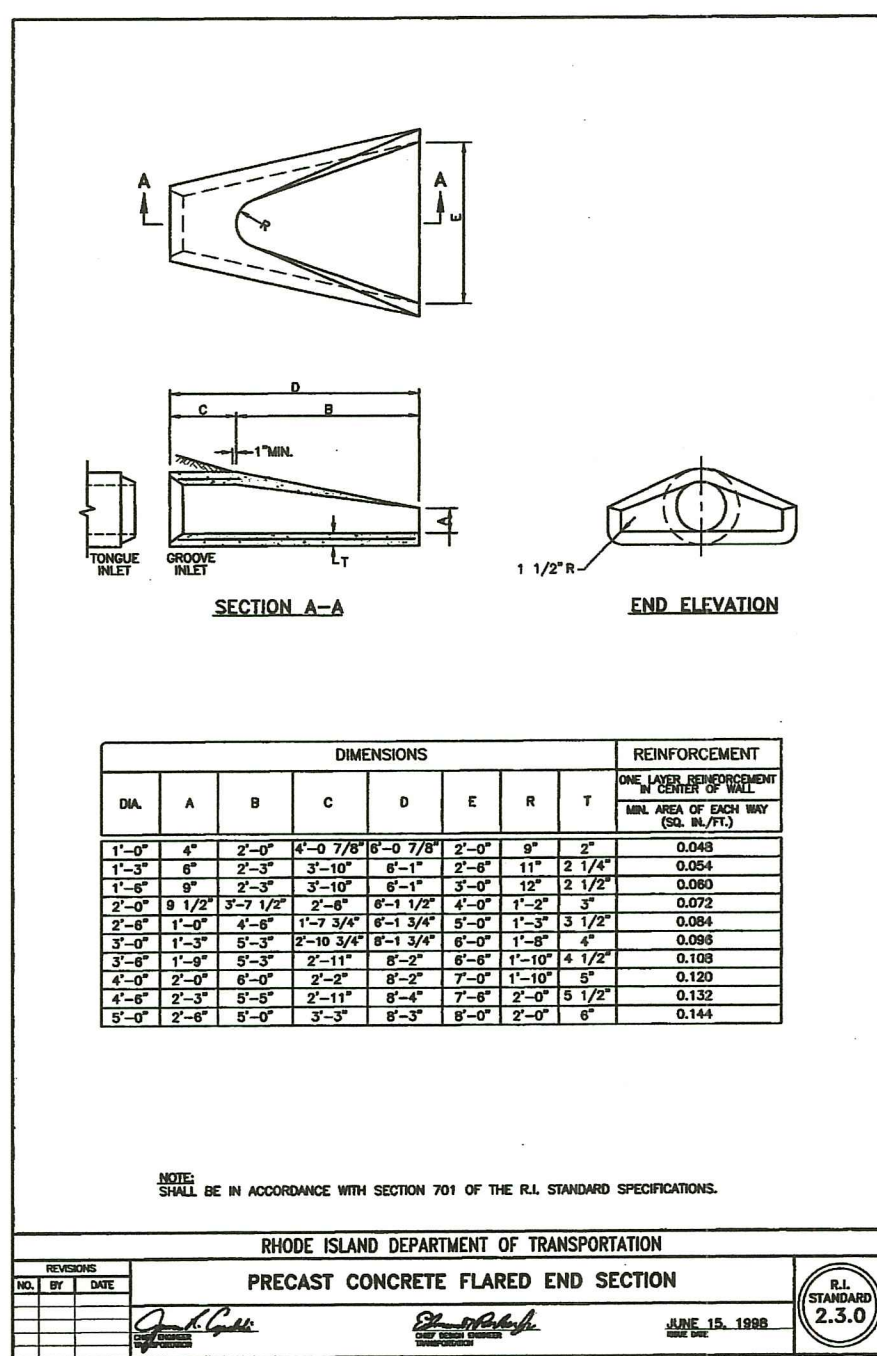
REVISIONS

No.	DATE	DRWN	CHKD
1	10/03/22	SMA	TJB
2	01/25/23	SMA	TJB
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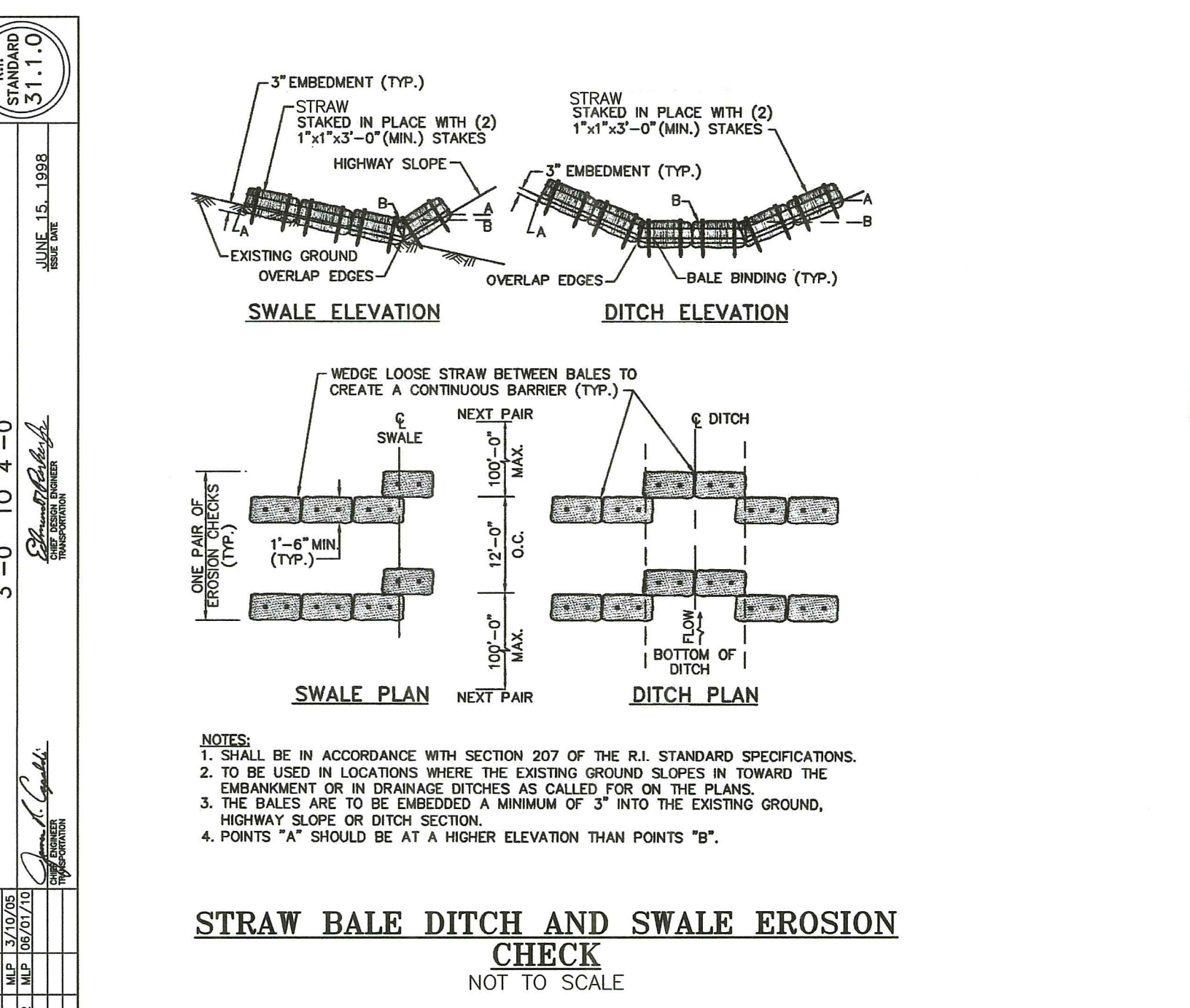
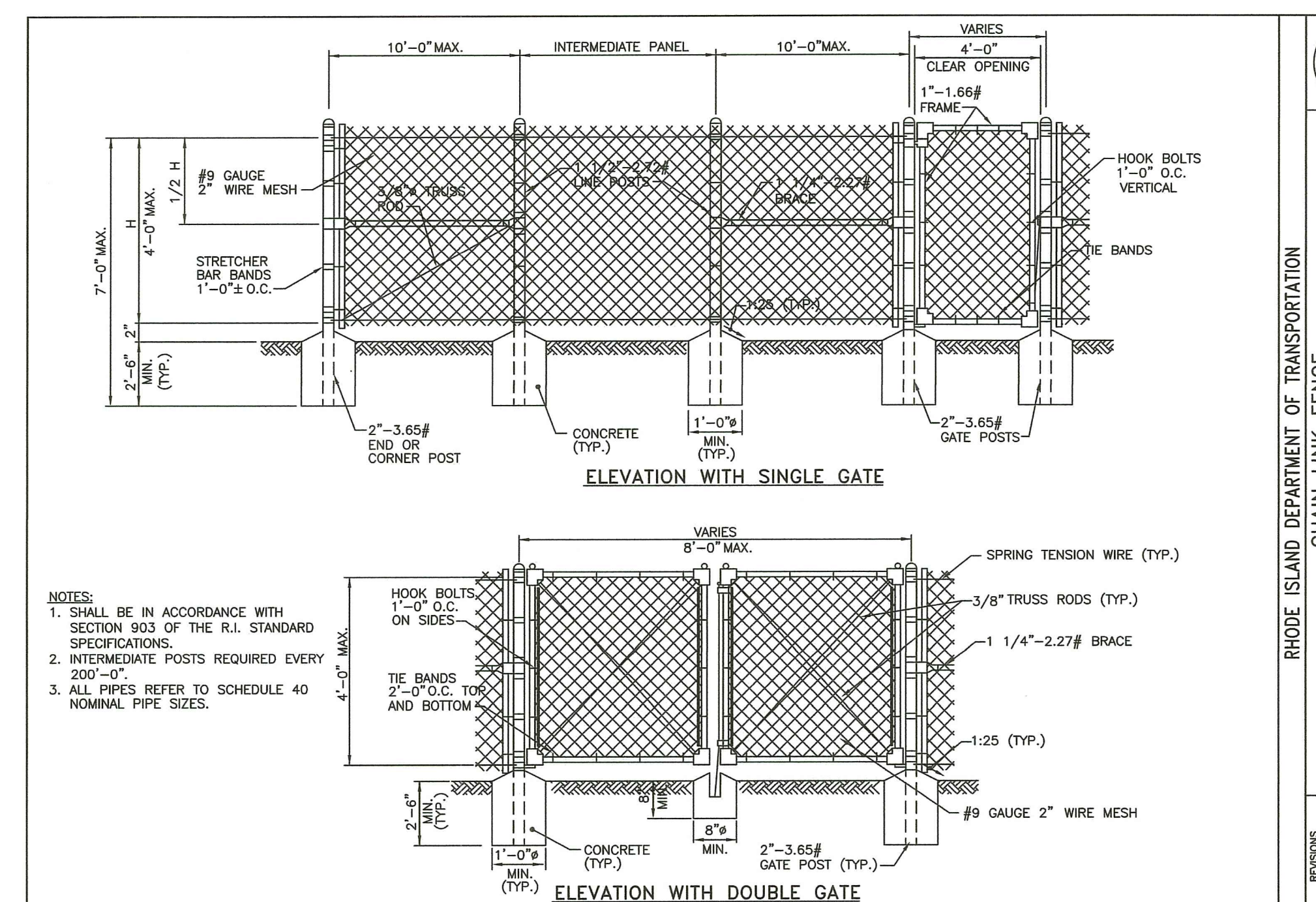
PERMIT AGENCY REVIEW PLAN  
 FOR  
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 ON  
 A.P. 13, LOTS 658 AND 659  
 COWSETT AVENUE  
 WEST WARWICK, RHODE ISLAND

SCALE: AS SHOWN SHEET NO: 11 OF 18  
 DRAWN BY: SMA DESIGN BY: SMA CHECKED BY: TJB  
 DATE: JUNE 2022 PROJECT NO 22026.00

OWNER/APPLICANT:  
 MD CAPITAL, LLC  
 PO BOX 1205  
 NORTON, MASSACHUSETTS 02766  
 TELEPHONE: (508) 887-6805  
 EMAIL: DELDONATO1@GMAIL.COM



SIGN NUMBER	*R1-1
<b>LEGEND</b>	
COLOR	BACKGROUND
	RED
	WHITE
SIGN DIMENSION	WIDTH
	24" 30" 36" 48"
	HEIGHT
	24" 30" 36" 48"



**RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM

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DATED: MAR 16 2023 FILE #: 22-0367

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*Andy Chapman*

**DRAWING ISSUE:**

- CONCEPT
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- PERMITTING
- CONSTRUCTION
- AS-BUILT
- OTHER:

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**REVISIONS**

No.	DATE	DRWN	CHKD
1	10/03/22	SMA	TJB
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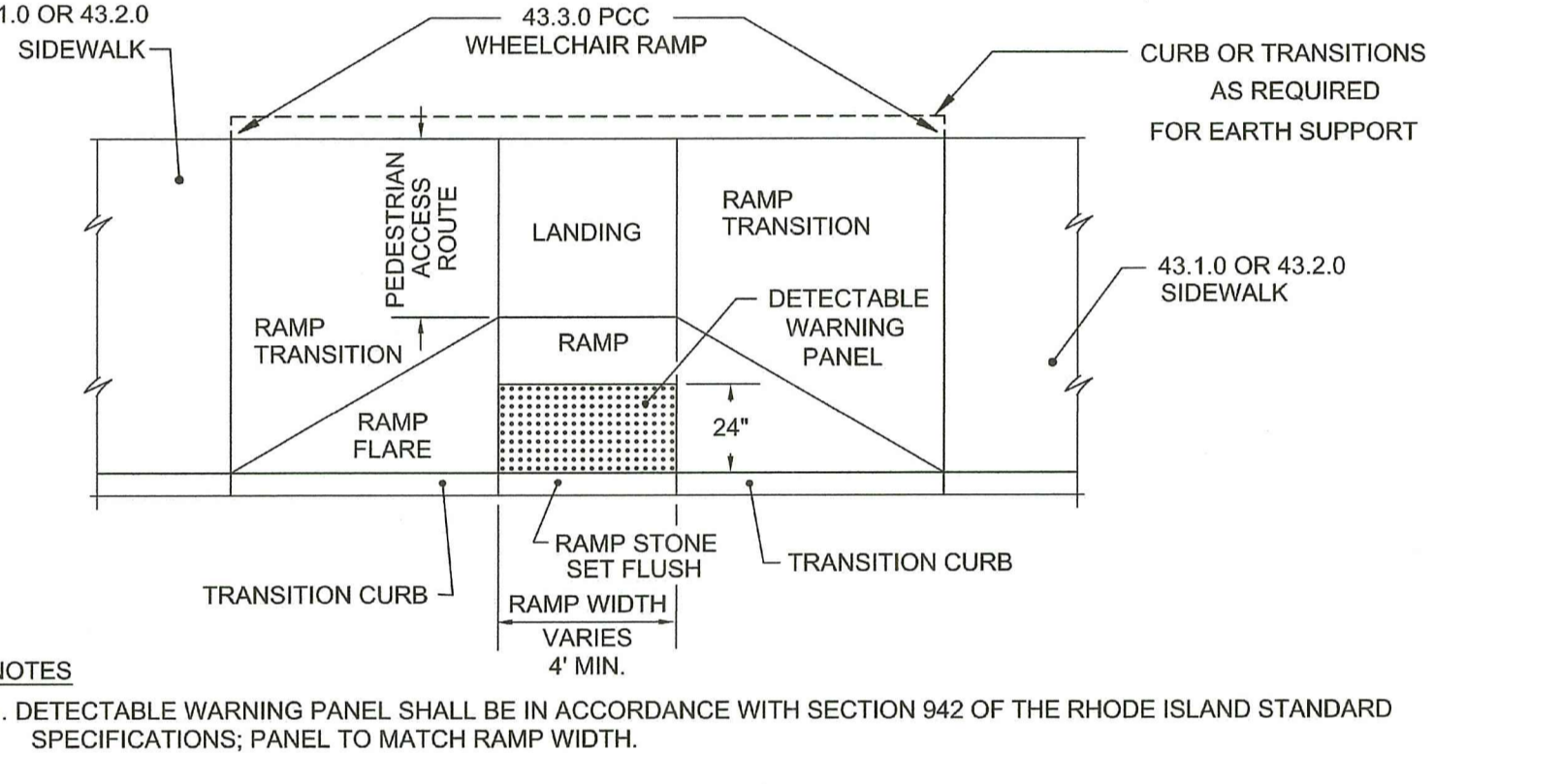
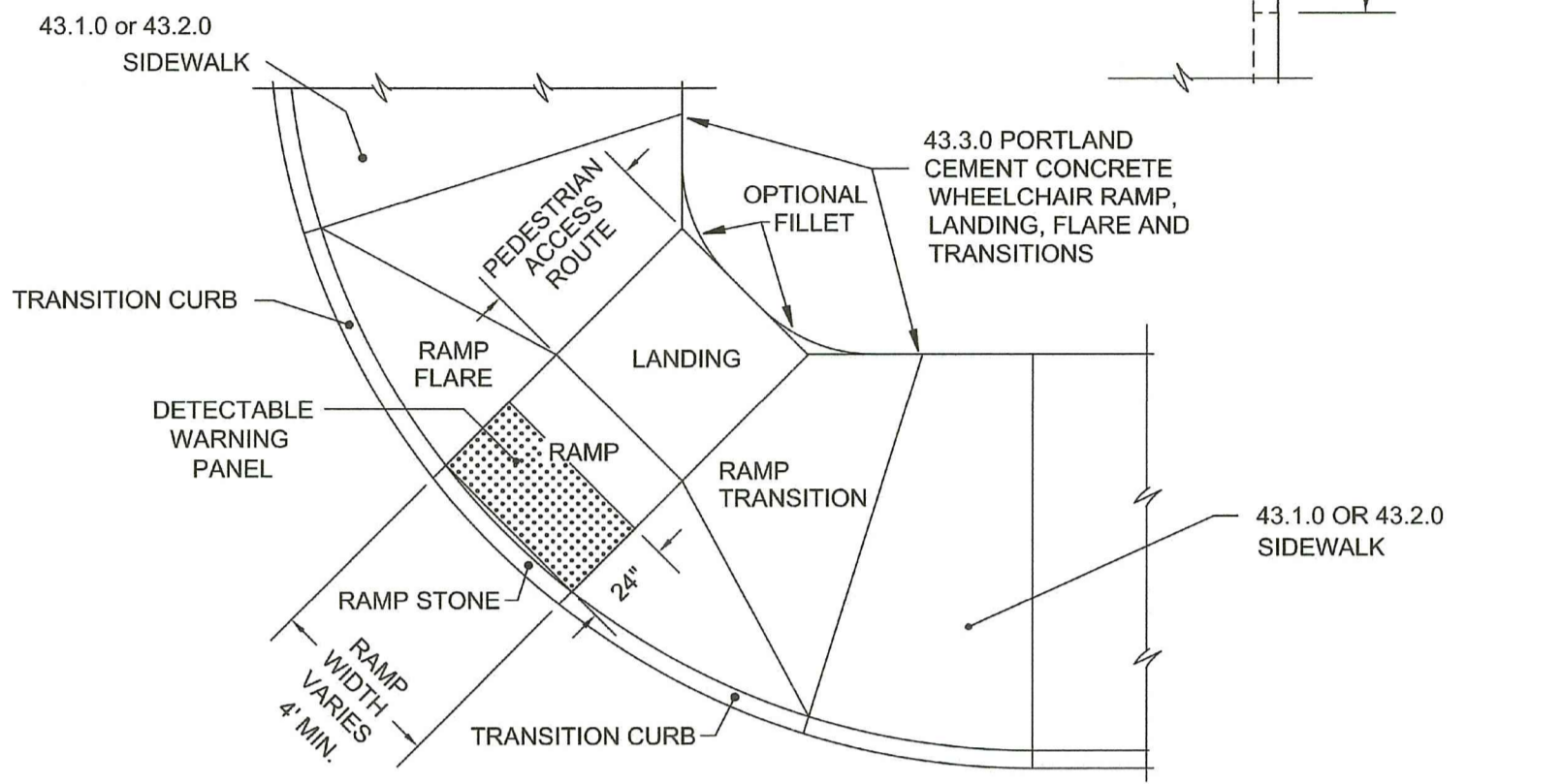
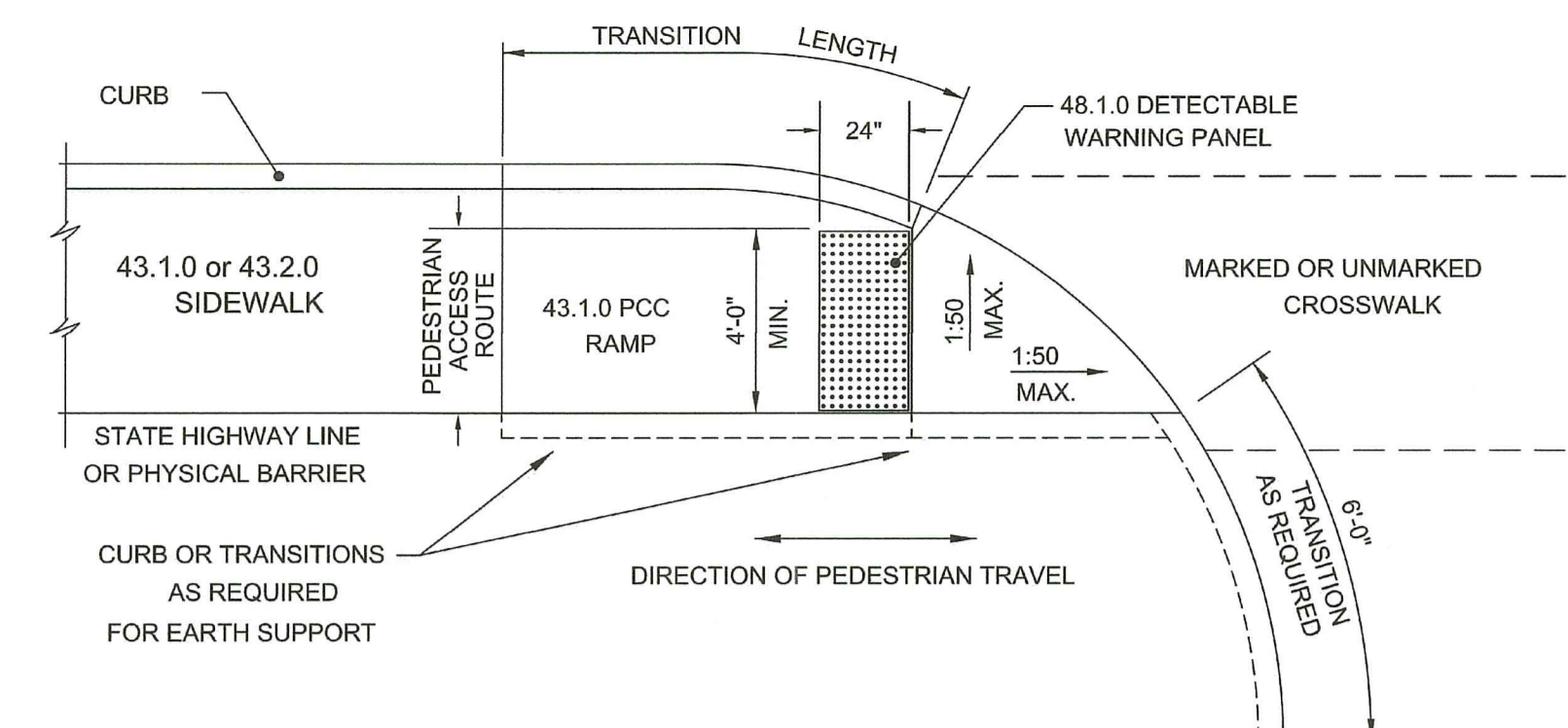
**COMMONWEALTH ENGINEERS & CONSULTANTS, INC.**

400 SMITH STREET  
PROVIDENCE, RHODE ISLAND 02908  
(401) 273-6600

**PERMIT AGENCY REVIEW PLAN**  
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ON  
A.P. 13, LOTS 658 AND 659  
COWESETT AVENUE  
WEST WARWICK, RHODE ISLAND

**CONSTRUCTION DETAILS-1**

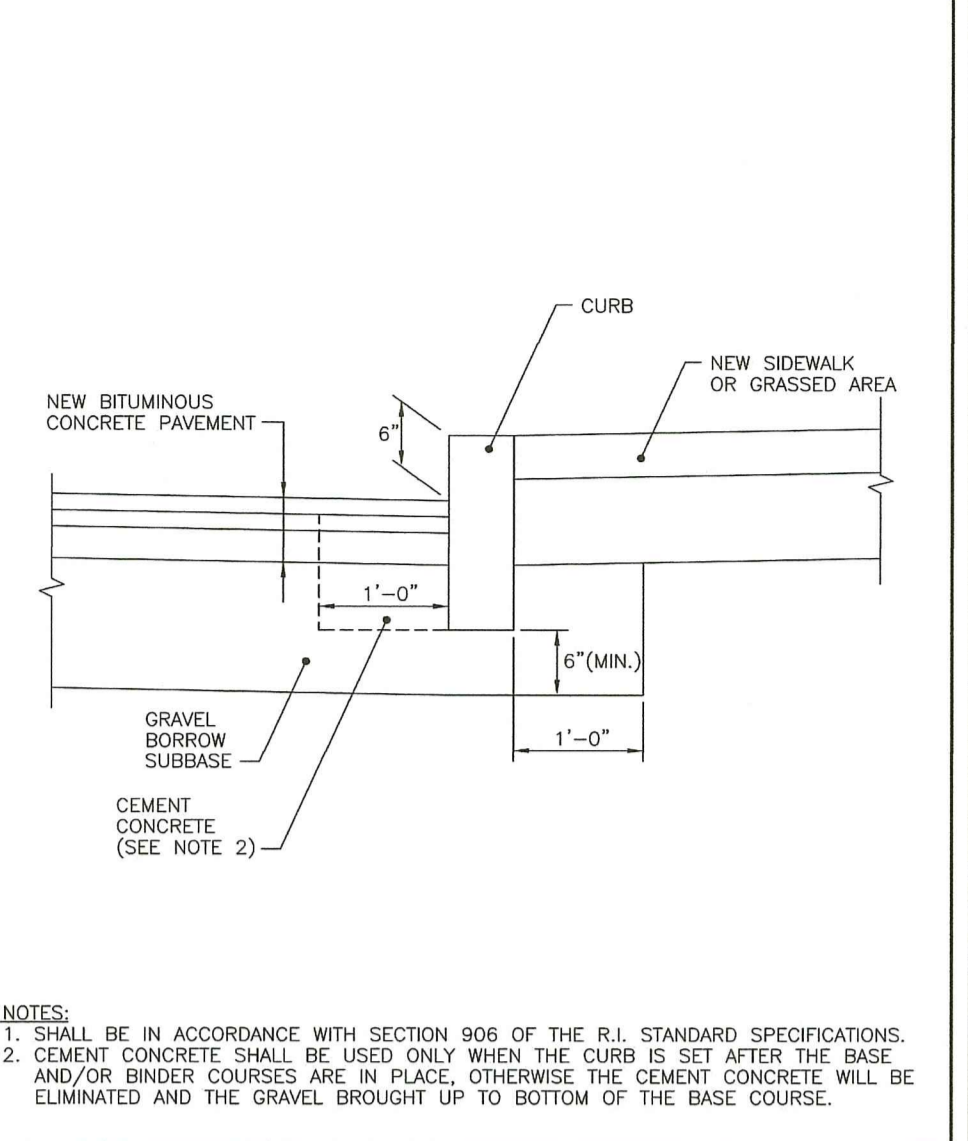
SCALE: AS SHOWN SHEET NO: 12 OF 18  
DRAWN BY: SMA DESIGN BY: SMA CHECKED BY: TJB  
DATE: JUNE 2022 PROJECT NO 22026.00



RHODE ISLAND DEPARTMENT OF TRANSPORTATION  
DETECTABLE WARNING PANEL PLACEMENT

NO.	BY	DATE
1	MLP	Mar 2005
2	MLP	Sep 2012

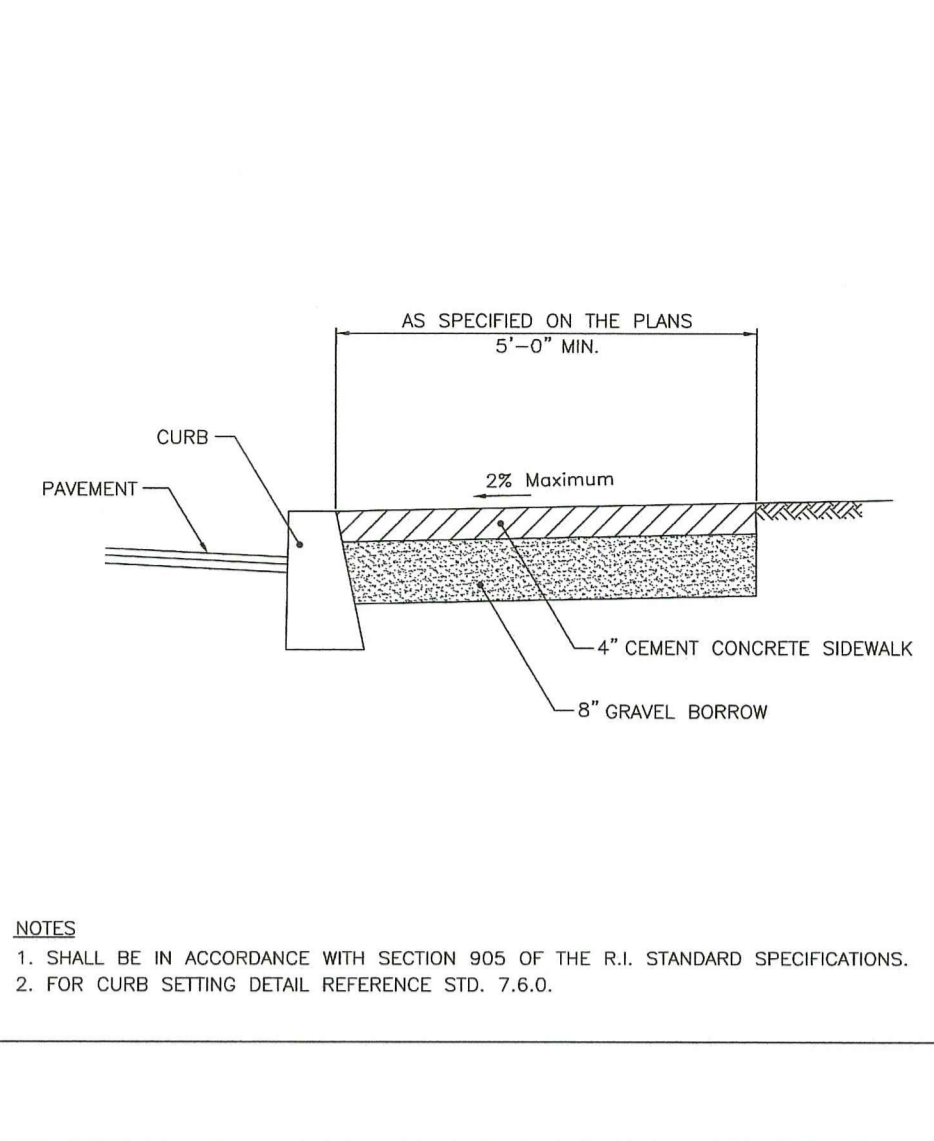
JUN 15, 1998  
 R.I. STANDARD 48.1.0



RHODE ISLAND DEPARTMENT OF TRANSPORTATION  
CURB SETTING DETAIL

NO.	BY	DATE
1	MLP	Mar 05
2	MLP	05/01/10

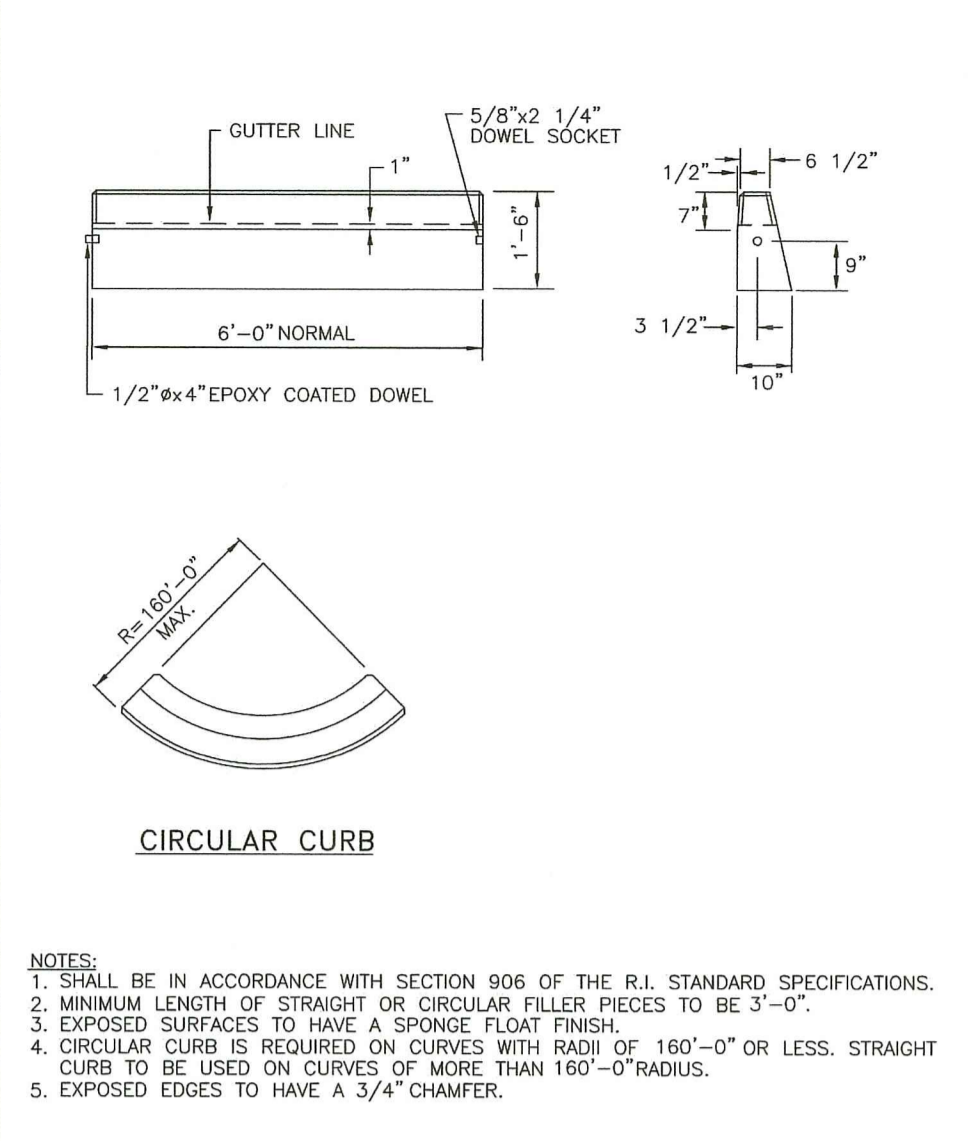
JUN 15, 1998  
 R.I. STANDARD 7.6.0



RHODE ISLAND DEPARTMENT OF TRANSPORTATION  
CEMENT CONCRETE SIDEWALK

NO.	BY	DATE
1	MLP	3/7/05
2	MLP	05/01/10

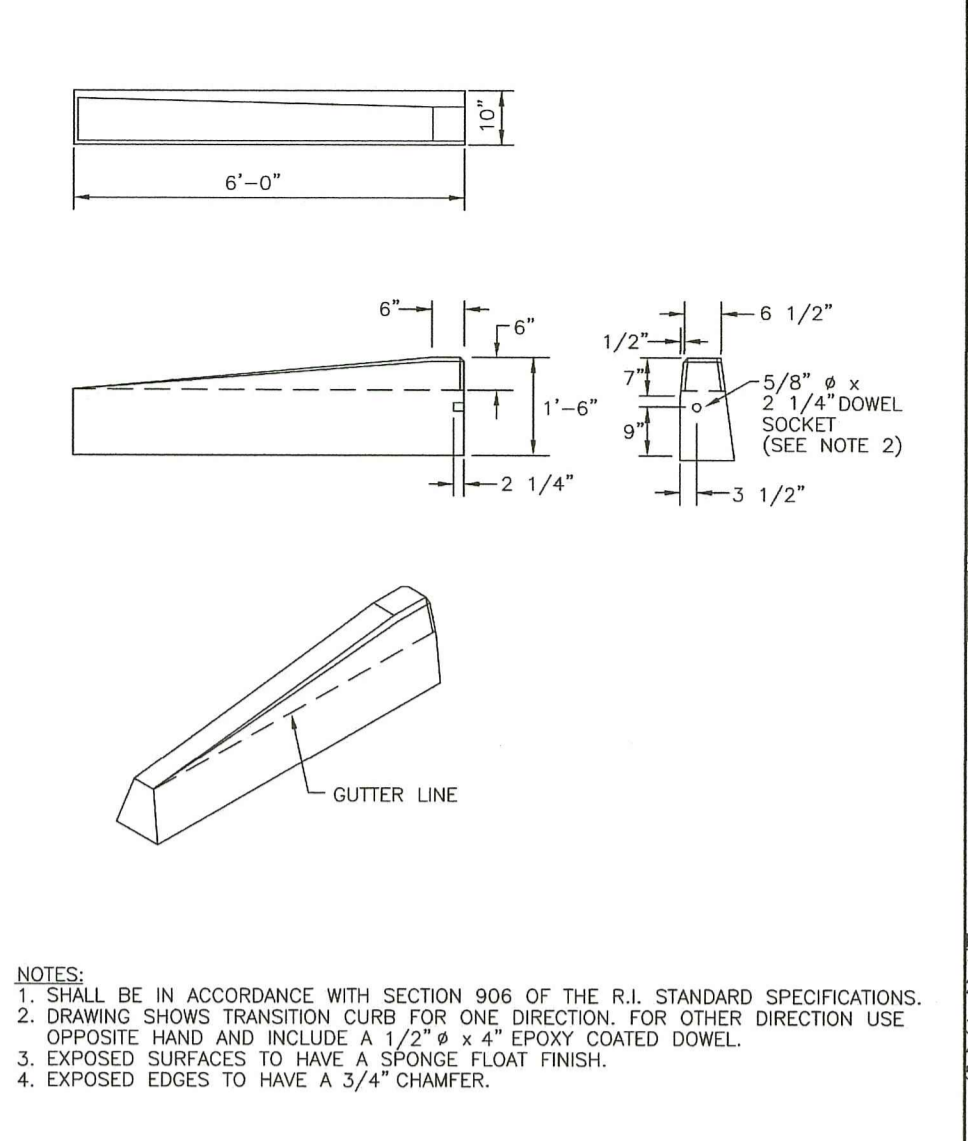
JUN 15, 1998  
 R.I. STANDARD 43.1.0



RHODE ISLAND DEPARTMENT OF TRANSPORTATION  
PRECAST CONCRETE CURB

NO.	BY	DATE
1	MLP	Mar 05

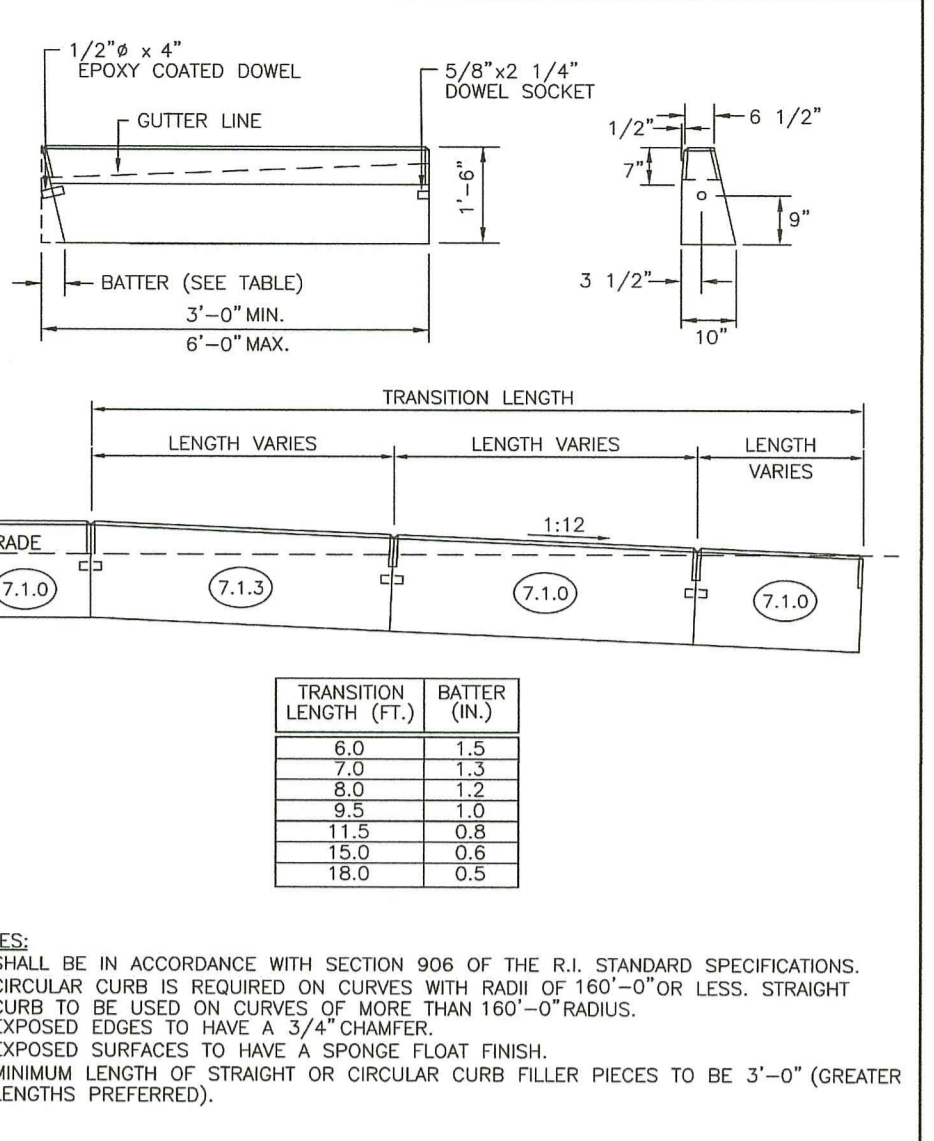
JUN 15, 1998  
 R.I. STANDARD 7.1.0



RHODE ISLAND DEPARTMENT OF TRANSPORTATION  
6'-0\"/>

NO.	BY	DATE
1	MLP	Mar 05

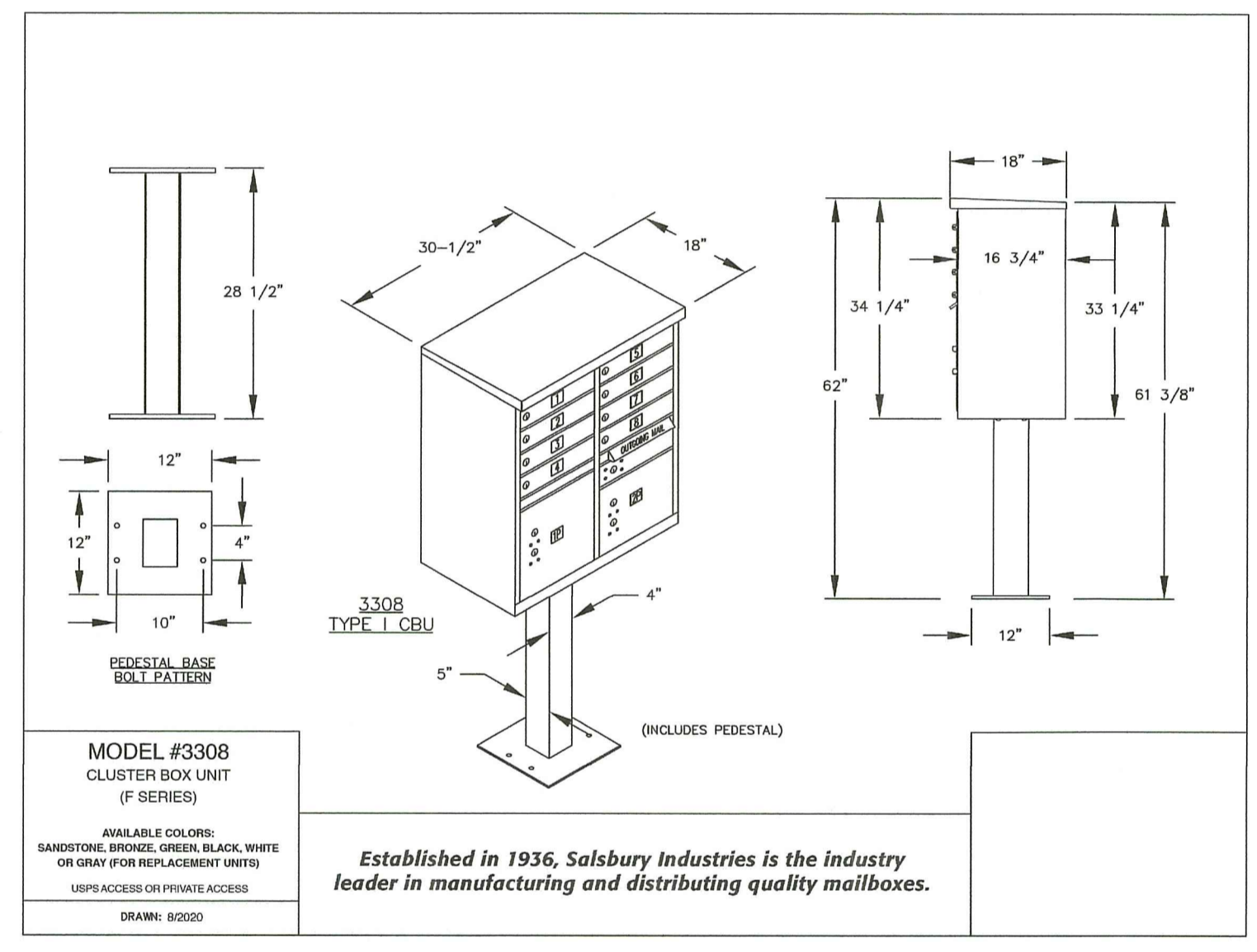
JUN 15, 1998  
 R.I. STANDARD 7.1.2



RHODE ISLAND DEPARTMENT OF TRANSPORTATION  
PRECAST CONCRETE WHEELCHAIR RAMP TRANSITION CURB

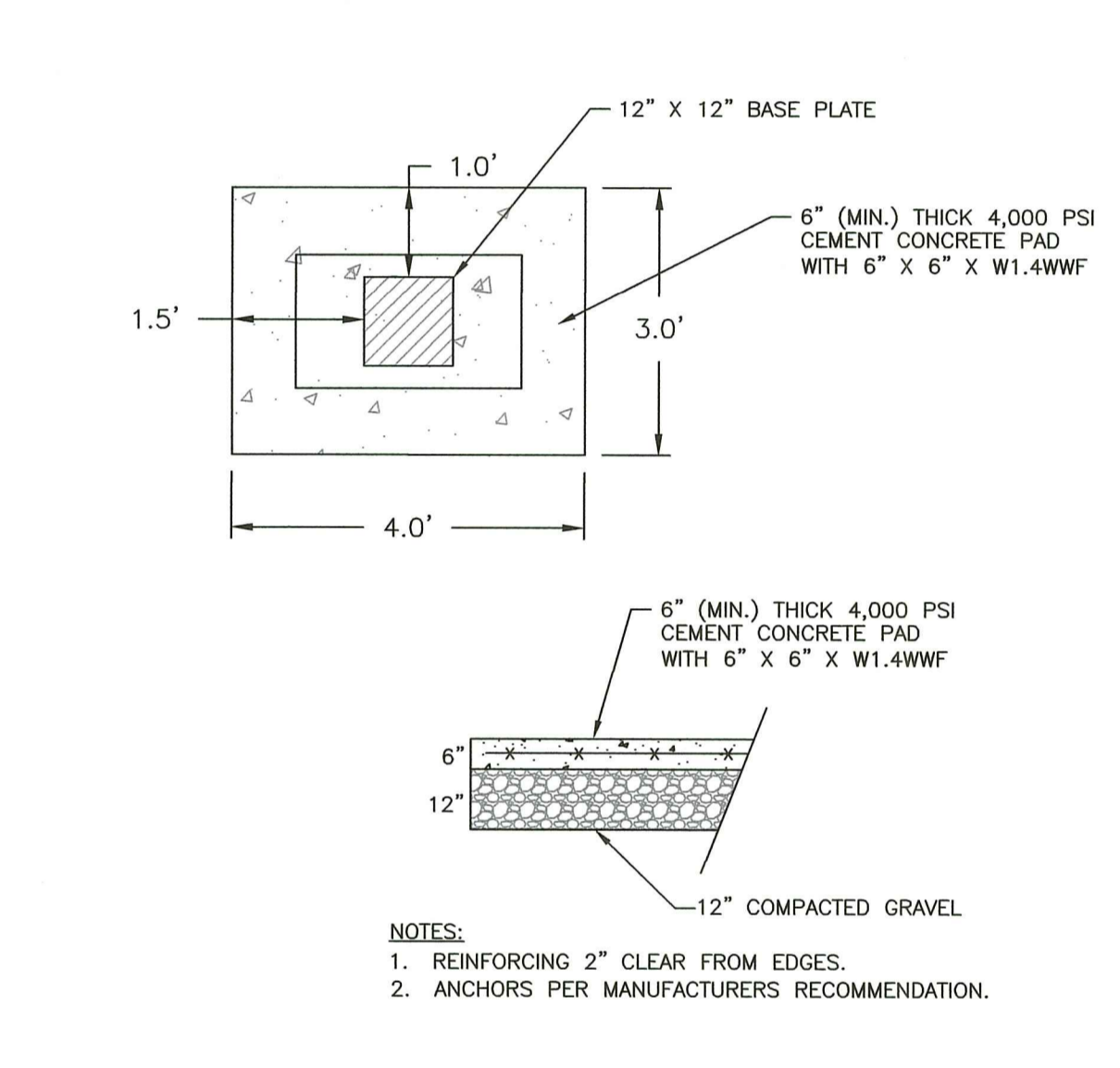
NO.	BY	DATE
1	MLP	Mar 05

JUN 15, 1998  
 R.I. STANDARD 7.1.3

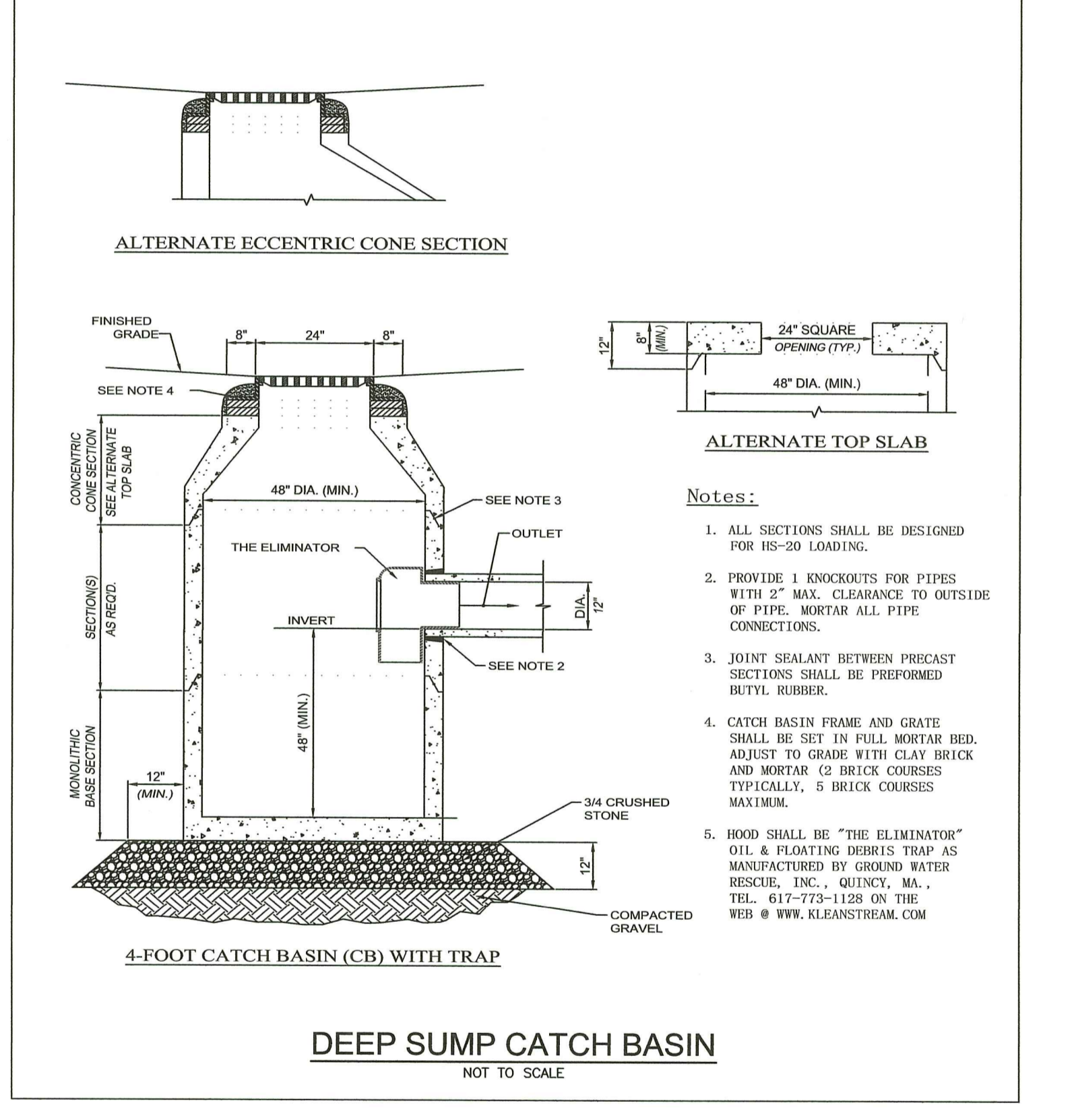


MODEL #3308 CLUSTER BOX UNIT (F SERIES)  
 AVAILABLE COLORS: SANDSTONE, BRONZE, ORNATE, BLACK, WHITE OR GRAY (FOR REPLACEMENT UNITS)  
 UPS ACCESS OR PRIVATE ACCESS  
 DRAWN: 8/20/20

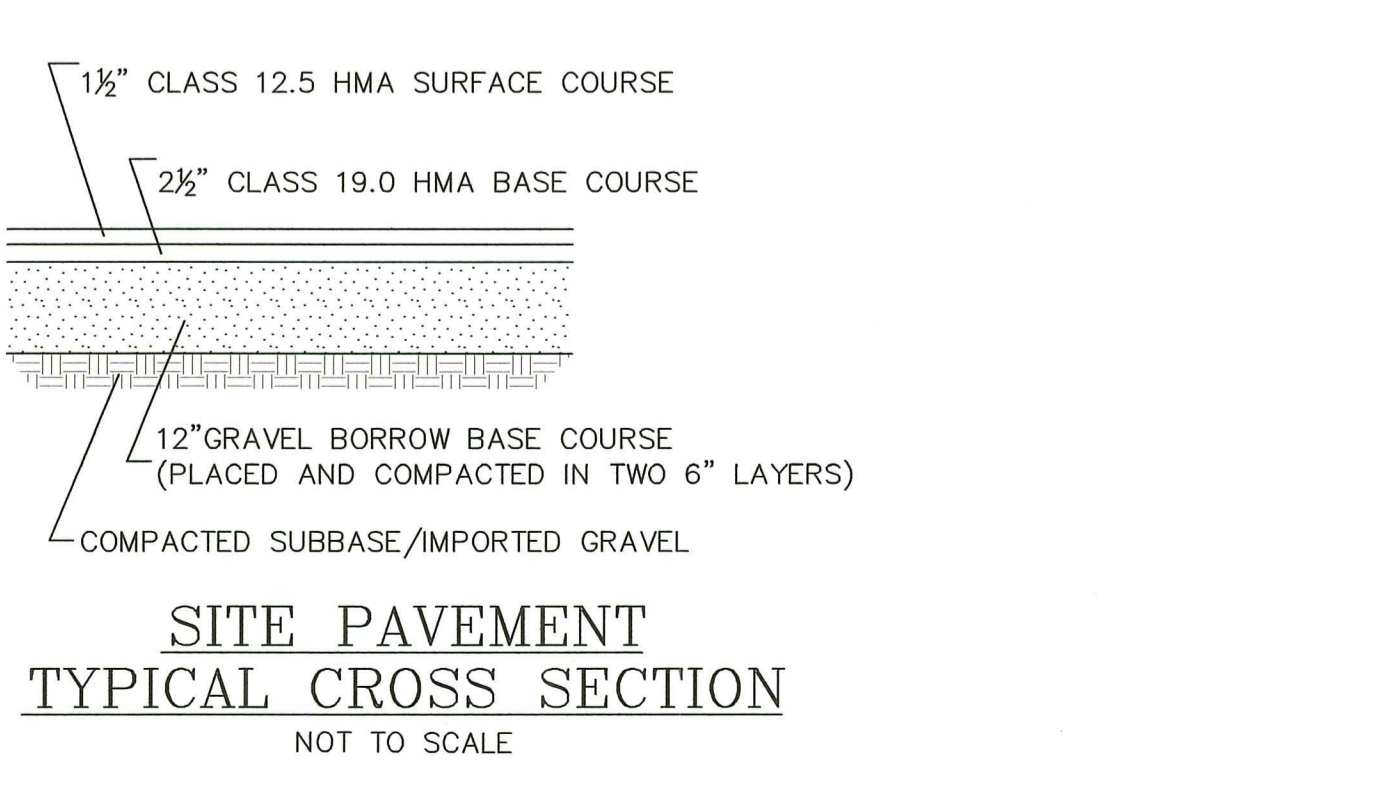
*Established in 1936, Salsbury Industries is the industry leader in manufacturing and distributing quality mailboxes.*



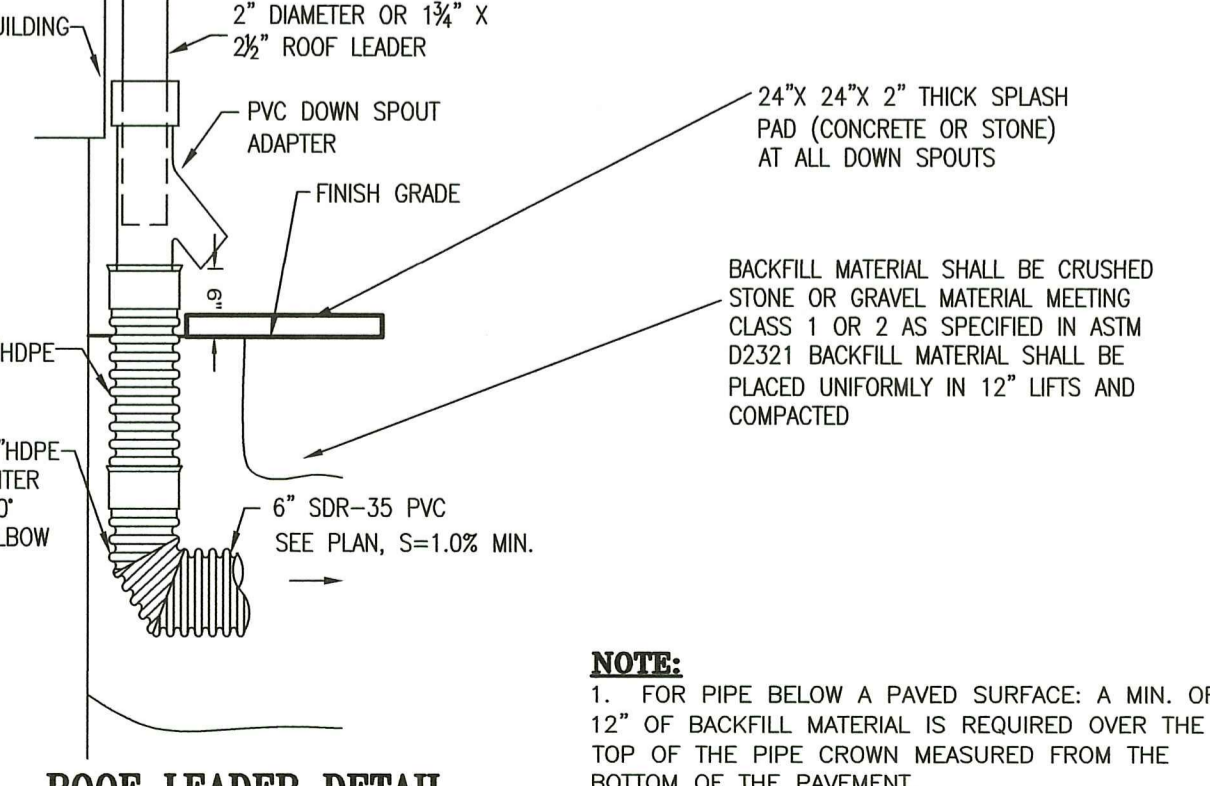
NOTES:  
 1. REINFORCING 2\"/>



4-FOOT CATCH BASIN (CB) WITH TRAP  
 NOT TO SCALE



SITE PAVEMENT  
 TYPICAL CROSS SECTION  
 NOT TO SCALE



ROOF LEADER DETAIL  
 NOT TO SCALE

NOTE:  
 1. FOR PIPE BELOW A PAVED SURFACE, A MIN. OF 12\"/>

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TIMOTHY J. BEHAN  
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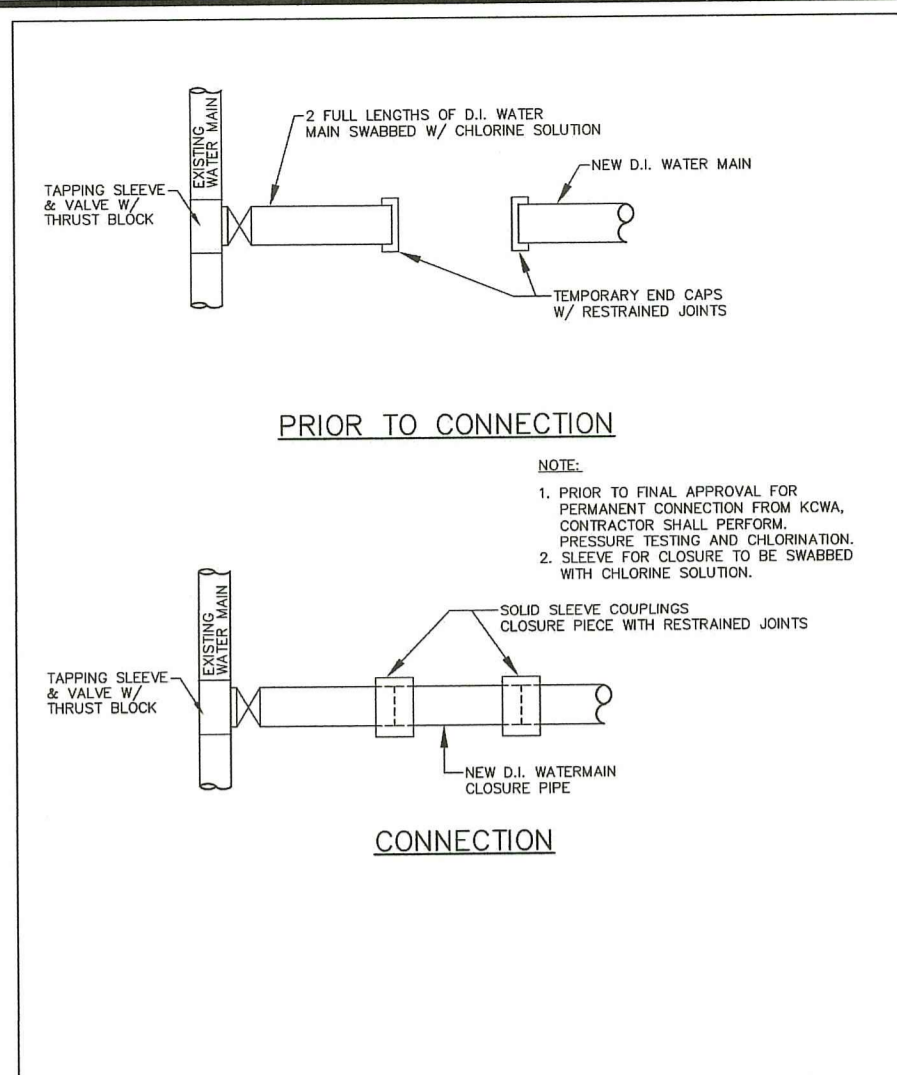
NO.	DATE	DRWN	CHKD
1	10/03/22	SMA	TJB
2	01/25/23	SMA	TJB
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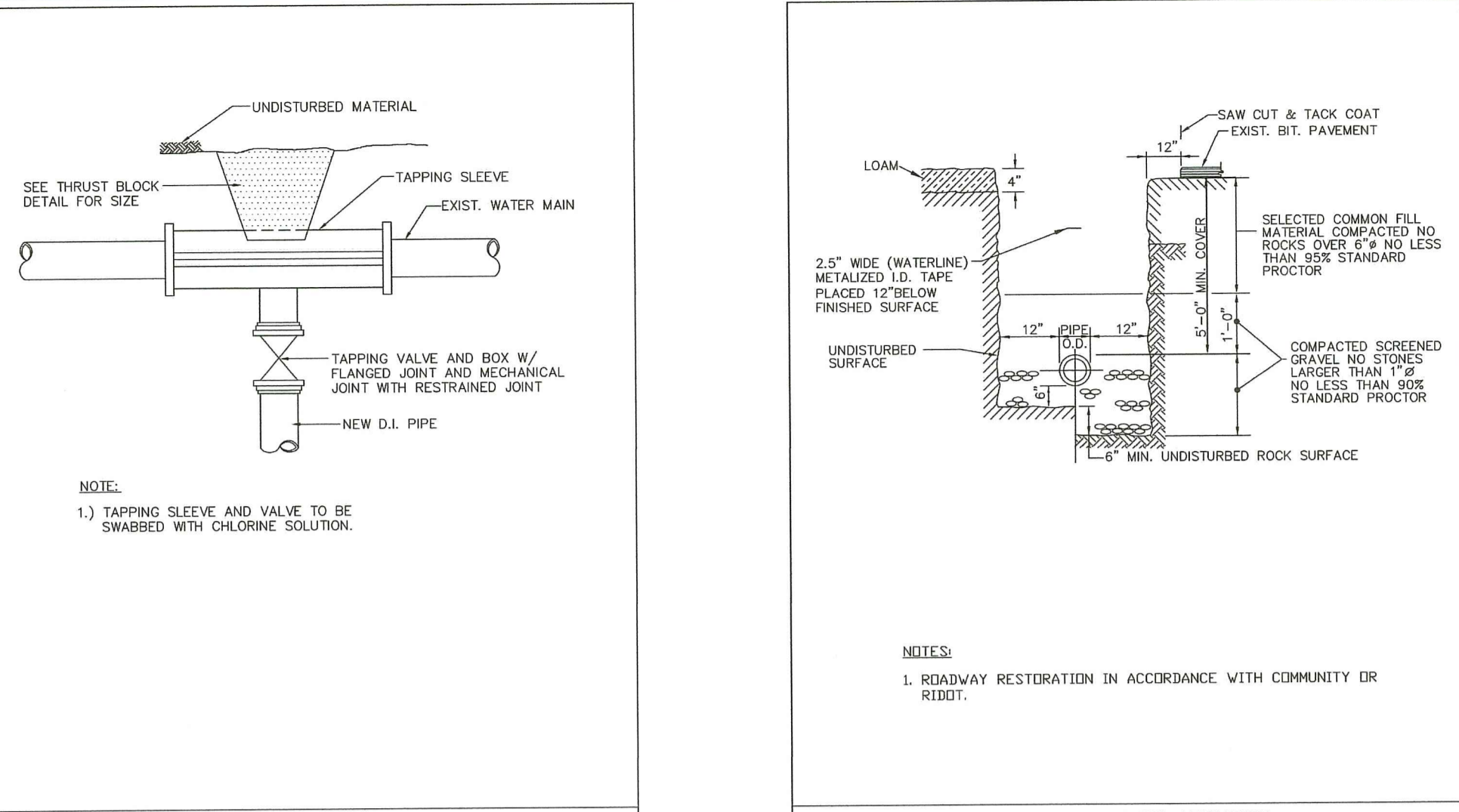
PERMIT AGENCY REVIEW PLAN  
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 CONSTRUCTION DETAILS-2

SCALE: AS SHOWN SHEET NO: 13 OF 18  
 DRAWN BY: SMA DESIGN BY: SMA CHECKED BY: TJB  
 DATE: JUNE 2022 PROJECT NO 22026.00

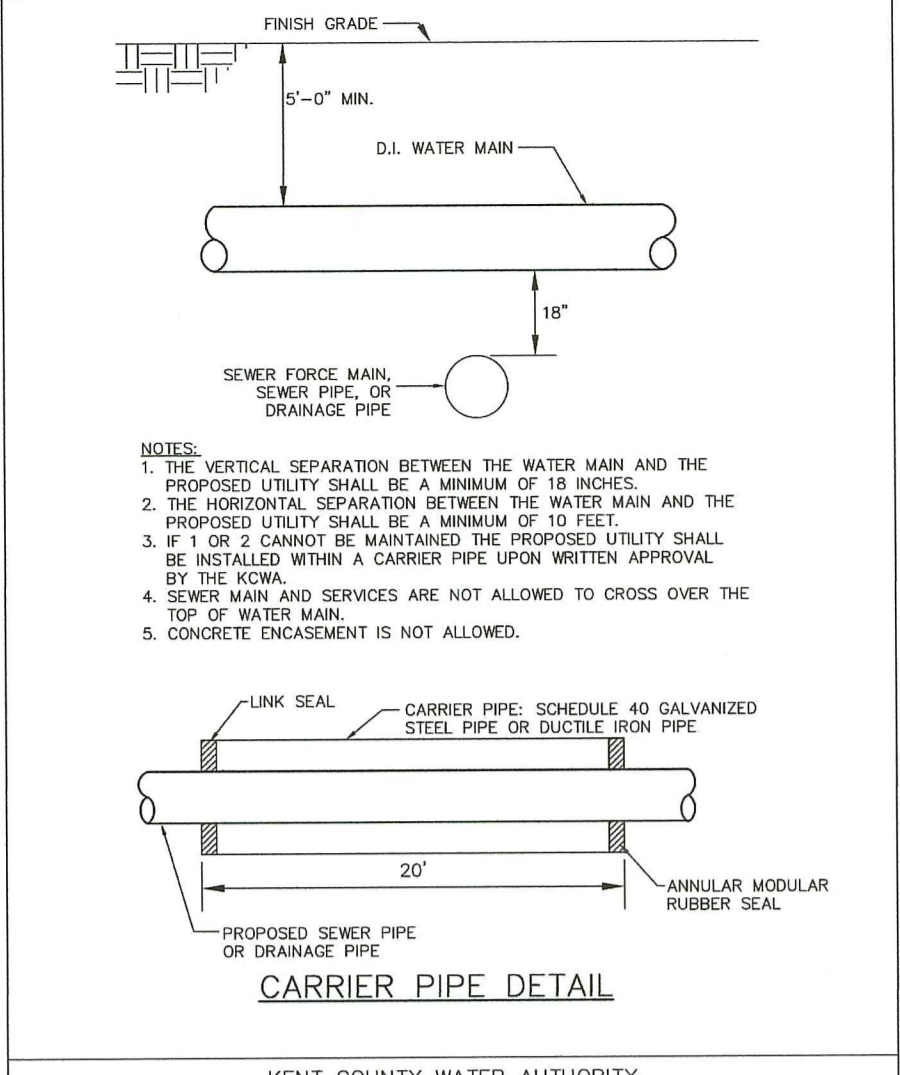
Environmental Management  
 FEB 22 2023  
 Office of Water Resources



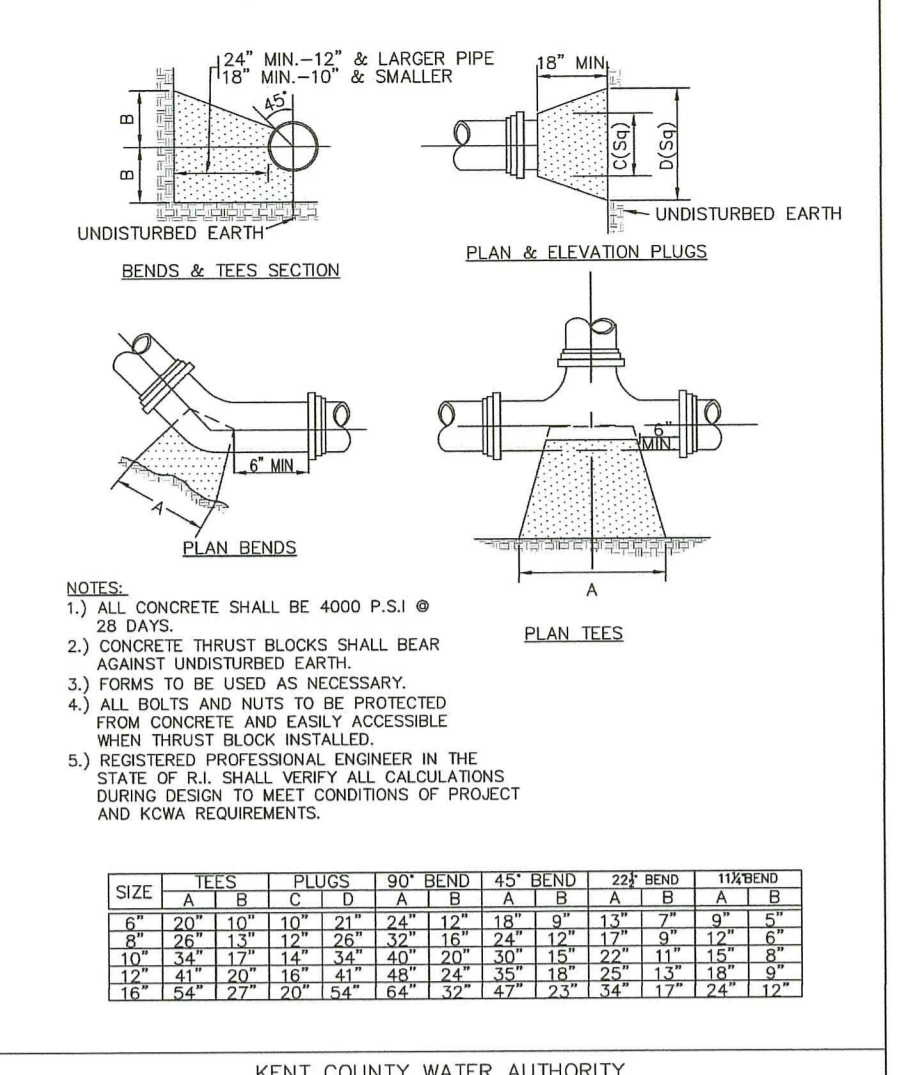
**KCWA** KENT COUNTY WATER AUTHORITY  
**CONNECTION OF NEW WATER MAIN TO EXISTING WATER MAIN**  
 NOT TO SCALE DATE: 09/2006



**KCWA** KENT COUNTY WATER AUTHORITY  
**TAPPING SLEEVE AND VALVE**  
 NOT TO SCALE DATE: 09/2006



**KCWA** KENT COUNTY WATER AUTHORITY  
**UTILITY SEPARATION**  
 NOT TO SCALE DATE: 09/2006



**KCWA** KENT COUNTY WATER AUTHORITY  
**THRUST BLOCK**  
 NOT TO SCALE DATE: 09/2006

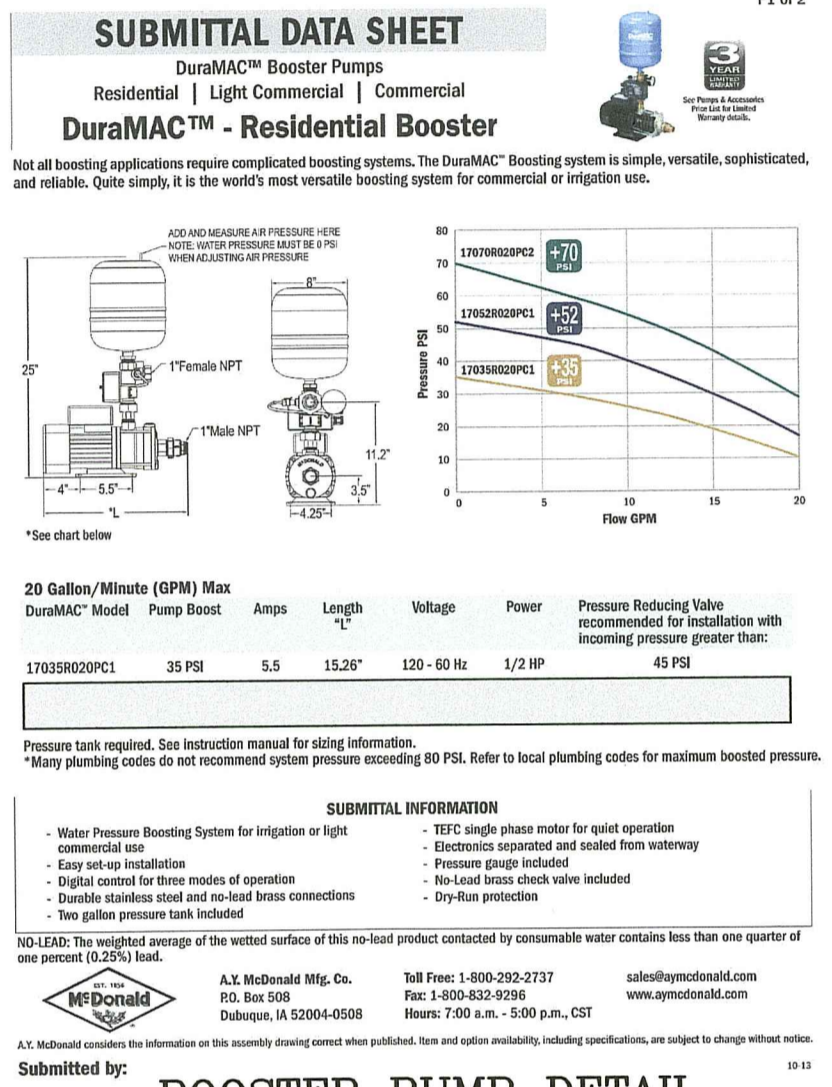
**RESTRAINED PIPE LENGTHS FOR RESTRAINED FITTINGS**

FITTING	RESTRAINED LENGTH
1/2" FLUG	44"
1/2" BEE	44"
1/2" 90°	44"
1/2" 45°	44"
1/2" 22 1/2°	22"
1/2" 11 1/4°	22"
1/2" 90°	44"
1/2" 45°	44"
1/2" 22 1/2°	22"
1/2" 11 1/4°	22"
1/2" 90°	44"
1/2" 45°	44"
1/2" 22 1/2°	22"
1/2" 11 1/4°	22"
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1/2" 22 1/2°	22"
1/2" 11 1/4°	22"

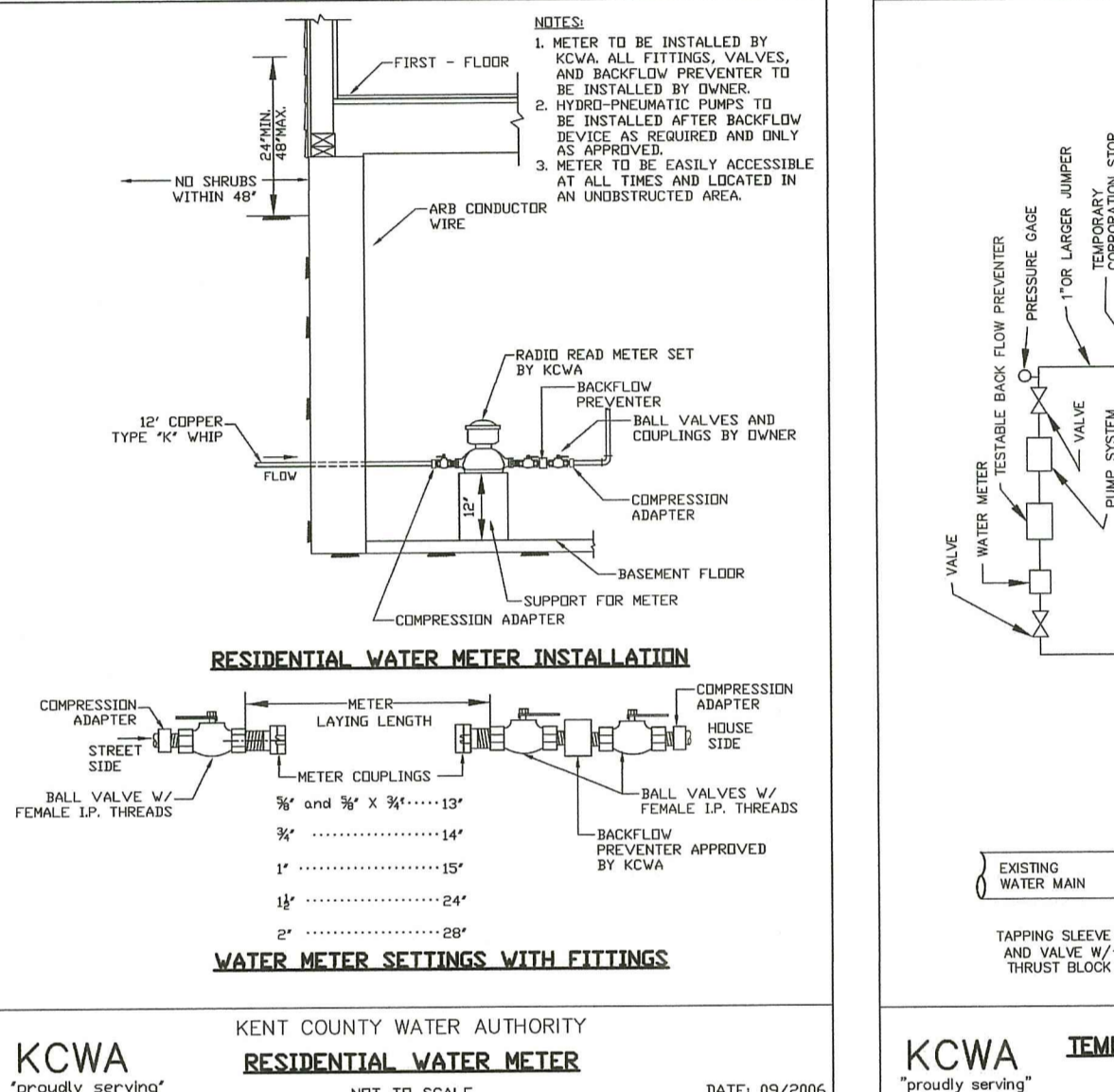
**KCWA** KENT COUNTY WATER AUTHORITY  
**RESTRAINED PIPE LENGTHS**  
 NOT TO SCALE DATE: 09/2006

**WATER SYSTEM NOTES:**

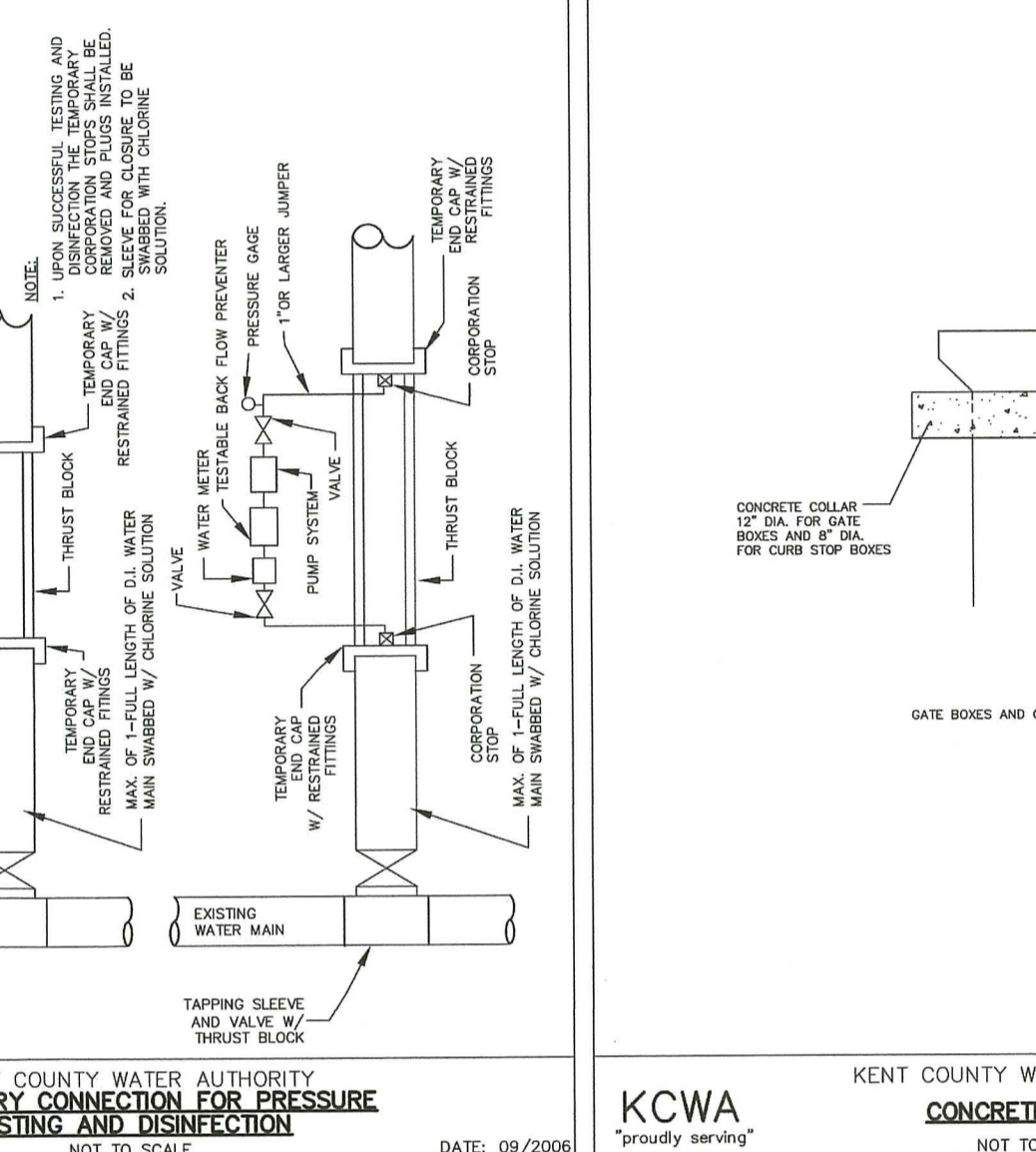
- CONTRACTOR SHALL REVIEW AND COMPLY WITH ALL KENT COUNTY WATER AUTHORITY (KCWA) RULES, REGULATIONS, AND INSTALLATION REQUIREMENTS.
- CONTRACTOR TO COORDINATE ANY NECESSARY SHUTDOWN OF EXISTING WATER MAIN WITH KCWA PRIOR TO ANY WORK.
- CONSTRUCTION MATERIALS AND METHODS FOR WATER MAINS AND SERVICE CONNECTIONS HAVE BEEN STANDARDIZED BY KCWA. THE CONTRACTOR SHALL ONLY USE KCWA APPROVED MATERIALS AND METHODS. THE CONTRACTOR SHALL USE KCWA MATERIALS AND METHODS WHEN IN CONFLICT WITH DRAWINGS.
- WATER MAIN PIPE:** ALL DUCTILE-IRON PIPE AND APPURTENANCES SHALL BE FROM A SINGLE MANUFACTURER SOURCE. FOREIGN PIPE FITTINGS AND GASKETS ARE STRICTLY FORBIDDEN. DUCTILE IRON PIPE SHALL CONFORM TO ANS/AWWA C151/A21.51. ANS/AWWA C150/A21.50 CLASS 52 DOUBLE CEMENT MORTAR LINED. GASKETS SHALL CONFORM TO ANS/AWWA C111/A21.1. ALL PIPES SHALL HAVE A BITUMINOUS OUTSIDE COATING IN ACCORDANCE WITH ANS/AWWA C151/A21.51 AND ANS/AWWA C153/A21.53 RESPECTIVELY. ALL PIPES SHALL BE CEMENT-MORTAR LINED AND SEAL COATED IN ACCORDANCE WITH ANS/AWWA C104/A21.14 EXCEPT THE LINING THICKNESS SHALL BE TWICE THAT SPECIFIED. JOINTS FOR PIPE SHALL BE PUSH-ON (TYTON STYLE ONLY) OR MECHANICAL JOINT CONFORMING TO ANS/AWWA C111. ALL MECHANICAL JOINT PIPES SHALL BE SUPPLIED WITH ACCESSORIES. RESTRAINED JOINTS SHALL BE SUITABLE FOR 150 PSI WORKING PRESSURE AND FABRICATED OF HEAVY SECTION DUCTILE IRON CASTING. GASKETS SHALL MEET THE MATERIAL REQUIREMENTS OF ANS/AWWA AND MADE IN THE USA.
- TYPE:** DUCTILE IRON MEETING ANS/AWWA C151/A21.51 ANS/AWWA C150/A21.50.  
**CLASS:** SPECIAL THICKNESS CLASS 52.  
**LINING:** DOUBLE CEMENT MORTAR MEETING ANS/AWWA C151/A21.51.  
**END JOINTS:** PUSH ON (TYTON STYLE ONLY) - MEETING ANS/AWWA C111/A21.51.  
**MECHANICAL JOINT MEETING ANS/AWWA C111/A21.11:**  
**EXTERIOR:** ANS/AWWA C104/A21.4.  
**ALL REQUIREMENTS OF EPA FOR POTABLE WATER.**  
**RUBBER MEETING ANS/AWWA C111/A21.11.**  
**NITRILE (IN CONTAMINATED SOIL).**



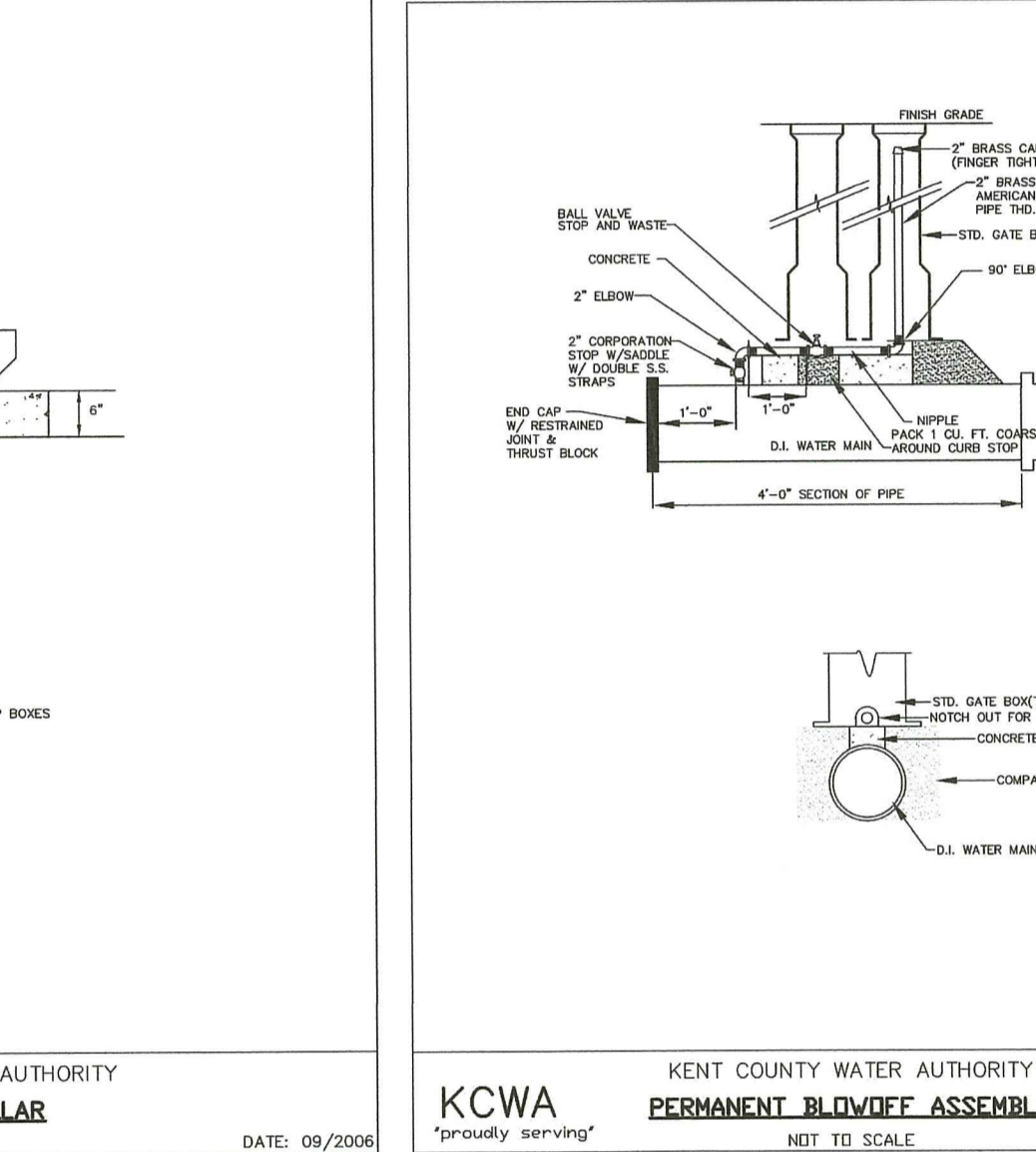
**KCWA** KENT COUNTY WATER AUTHORITY  
**BOOSTER PUMP DETAIL**  
 NOT TO SCALE DATE: 09/2006



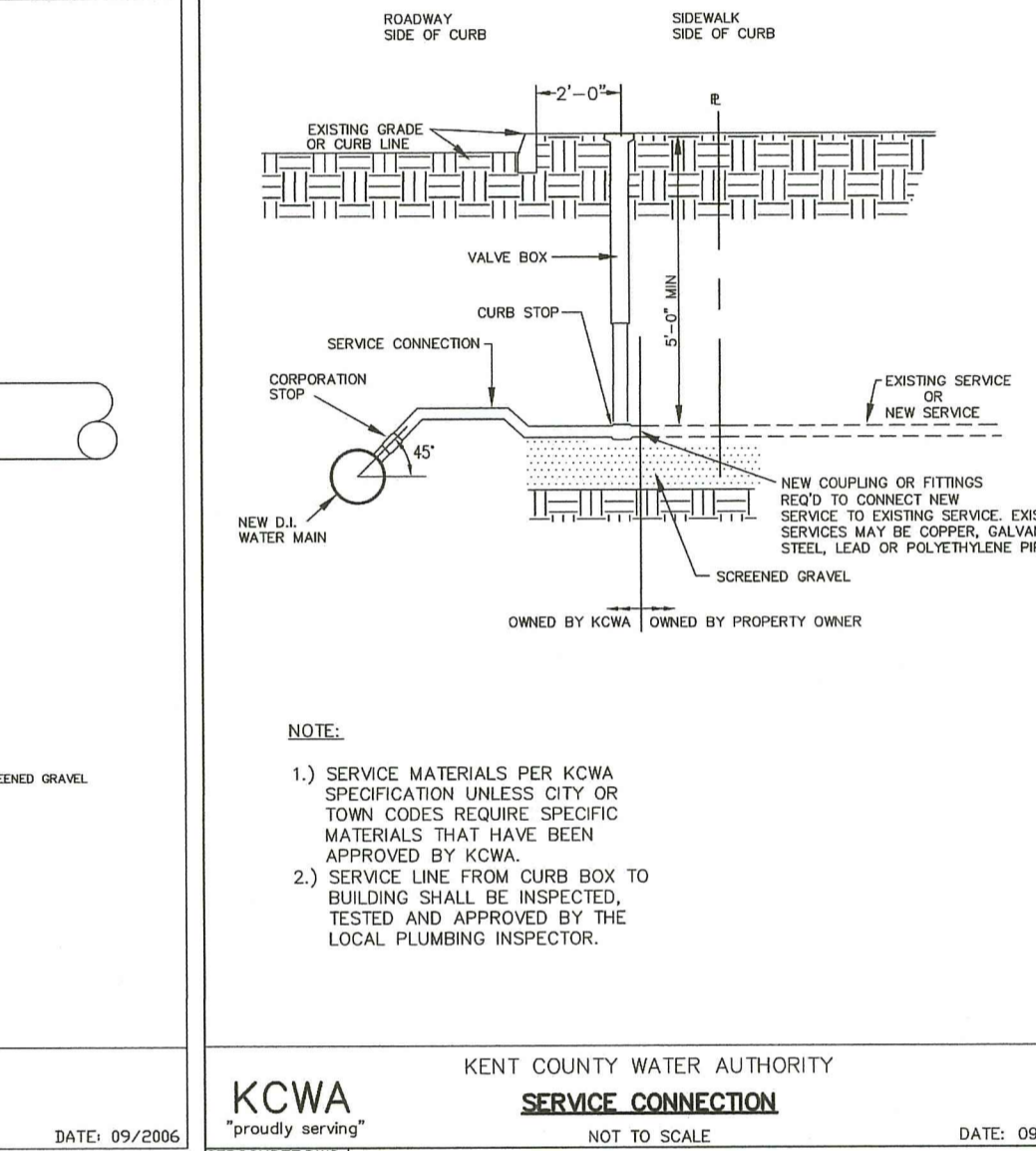
**KCWA** KENT COUNTY WATER AUTHORITY  
**RESIDENTIAL WATER METER**  
 NOT TO SCALE DATE: 09/2006



**KCWA** KENT COUNTY WATER AUTHORITY  
**TEMPORARY CONNECTION FOR PRESSURE TESTING AND DISINFECTION**  
 NOT TO SCALE DATE: 09/2006



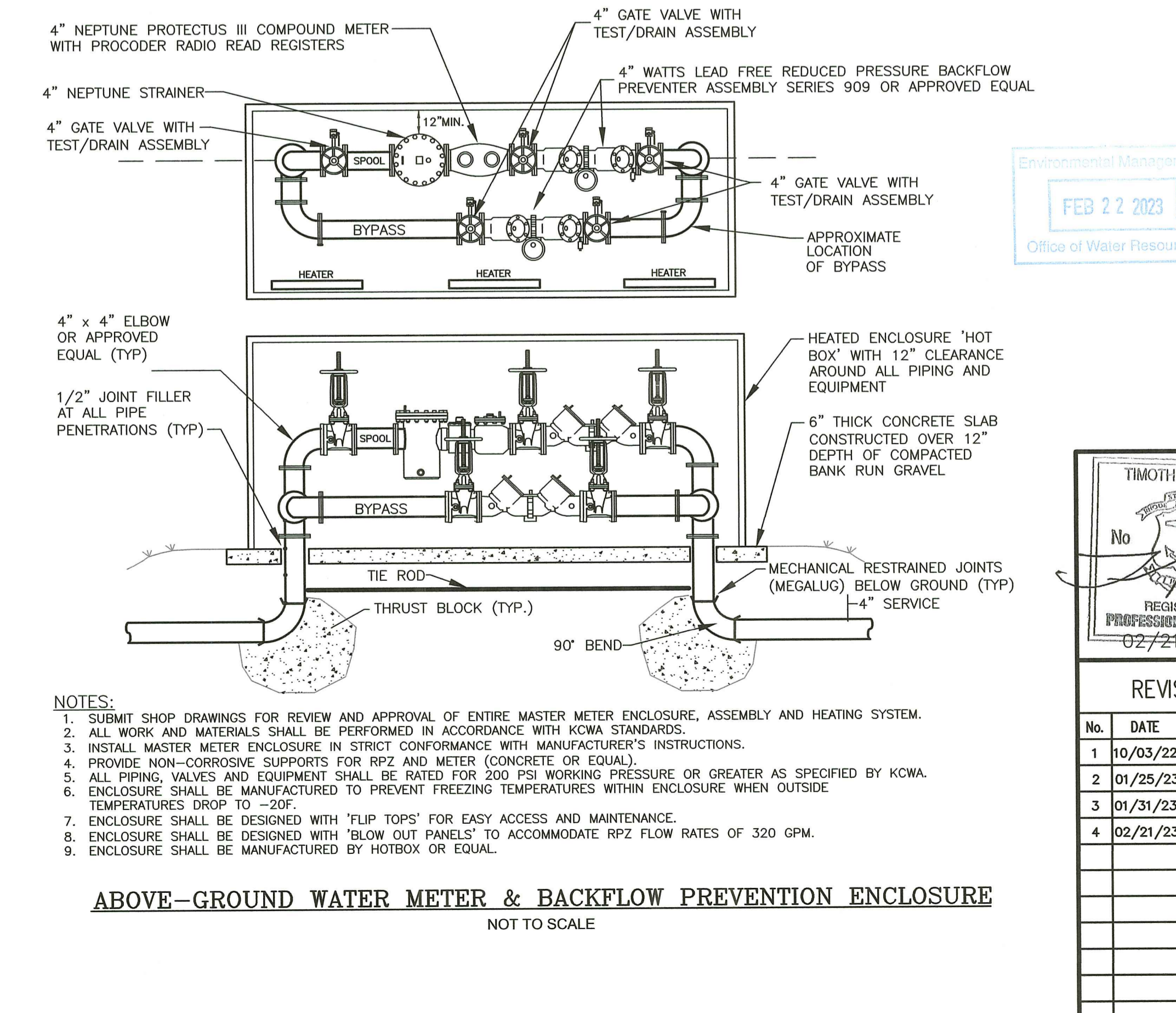
**KCWA** KENT COUNTY WATER AUTHORITY  
**CONCRETE COLLAR**  
 NOT TO SCALE DATE: 09/2006



**KCWA** KENT COUNTY WATER AUTHORITY  
**PERMANENT BLOWOFF ASSEMBLY**  
 NOT TO SCALE DATE: 09/2006

**RD DEPARTMENT OF ENVIRONMENTAL MANAGEMENT**  
**OFFICE OF WATER RESOURCES**  
**FRESHWATER WETLANDS PROGRAM**  
**APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL**  
**DATED: MAR 16 2023 FILE #: 22-0367**  
**NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL**  
**APPROVED PLANS MUST BE AT CONSTRUCTION SITE**

- ALL METERS SHALL BE COMPATIBLE WITH THE SYSTEM UTILIZED BY THE KENT COUNTY WATER AUTHORITY, THE NEPTUNE E-CODER R-300. ALL METERS SHALL READ IN CUBIC FEET AND BE CAPABLE OF BEING READ BY REMOTE TELEPHONY SYSTEM USED BY KCWA. REGISTER SHALL CONTAIN A 9-DIGIT LOCAL REGISTRATION AND 4-8 DIGITS CAN BE COMMUNICATED FOR BILLING PURPOSES.
- SERVICE BOXES (LOCATED OFF ROADWAYS) SHALL BE MANUFACTURED IN NORTH AMERICA. THEY SHALL BE HEAVY PATTERN CAST IRON, BUFFALO STYLE, SLIP ADJUSTABLE TYPE WITH HEAVY CAST IRON COVER AND BRASS BOLT FASTENER TYPE LOCK. THE WORD "WATER" SHALL BE CAST UPON THE COVER IN HEAVY PATTERN RAISED LETTERS. COVERS SHALL BE DROP IN TYPE WITHOUT FINS. RING BOXES SHALL HAVE A BITUMINOUS INTERNAL AND EXTERNAL COATING IN ACCORDANCE WITH ANS/AWWA C151/A21.51 AND ANS/AWWA C153/A21.53 RESPECTIVELY. BOXES SHALL HAVE BARRELS OF NOT LESS THAN 2"-1/2" IN DIAMETER. THE UPPER SECTION OF EACH BOX SHALL HAVE A BOTTOM FLANGE OF SUFFICIENT BEARING AREA TO PREVENT SETTLING. THE BASE OF THE LOWER SECTION SHALL BE A REINFORCED ARCH CONFIGURATION AND SIZED TO ENCLOSE THE CURB STOP. BOX SECTIONS SHALL BE OF SUFFICIENT LENGTH TO PROVIDE COMPLETE COVERAGE FOR THE DEPTH OF BURY.
- VALVE ROAD BOXES ALL VALVES LOCATED IN ROADWAYS (EXCEPT SWING-CHECK) SHALL BE EQUIPPED WITH A CAST IRON "BUFFALO" TYPE, ADJUSTABLE (SLIDING) VALVE ROAD BOX. THE UPPER PORTION SHALL BE 26 INCH LONG AND THE BOTTOM SECTION 48 INCH (MIN). COVERS SHALL BE 5-1/4" IN DIAMETER SLID RING SEAT WITH THE WORD "WATER" (IN CAPS) CAST UPON THE UPPER PORTION OF THE BOX SHALL BE MANUFACTURED WITH A HEAVY FLANGE HAVING SUFFICIENT BEARING AREA TO PREVENT SETTLEMENT. THE LOWER SECTION SHALL BE CONFIGURED TO ENCLOSE THE VALVE STUFFING BOX WITH AN INSIDE DIAMETER AT LEAST 4-1/4 INCH. THE INSTALLED BOX SHALL BE CAPABLE OF VERTICAL ADJUSTMENT OF A MINIMUM OF 6 INCH WHILE MAINTAINING AN OVERLAP OF A LEAST 4 INCH BETWEEN SECTIONS.
- ALL HOSE BIBS PROVIDED FOR THE HOUSES SHALL BE OF THE DESIGN, WHICH INCORPORATES A BUILT-IN TAMPER PROOF WATER BREAKER FEATURE AS MANUFACTURED BY THE BOSE BIB MAKER. ALL HOSE BIB FITTINGS SHALL BE AMERICAN MADE. THIS REQUIREMENT IS APPLICABLE TO ALL INTERIOR AND EXTERIOR HOSE BIB APPLICATIONS. EXISTING ASSEMBLIES SPECIFICALLY DESIGNED TO ADAPT TO THE EXISTING HOSE BIB CONFIGURATION.
- THE PROPERTY OWNER SHALL BE RESPONSIBLE TO INSTALL AN APPROPRIATE THERMAL EXPANSION DEVICE IN THE FACILITY TO COMPLY WITH CROSS CONNECTION REQUIREMENTS OF THE RHODE ISLAND PLUMBING CODE.
- MINIMUM COVER OVER WATER PIPE IS 5 FEET.
- PROVIDE WARNING TAPE OVER SERVICE AS SHOWN IN TRENCH DETAIL.
- THE WATER MAIN AND SERVICES SHALL BE FLOWN, FLUSHED, HYDROSTATICALLY PRESSURE TESTED TO 180 PSI AND CHLORINATED/DISINFECTED IN ACCORDANCE WITH KCWA RULES & REGULATIONS, ANWA C651, RHODE ISLAND DEPARTMENT OF HEALTH, AND ANWA MANUAL OF WATER SUPPLY PRACTICE MSS - PE PIPE DESIGN AND INSTALLATION. REFER TO SECTION 3.2.2 "DISINFECTION/CHLORINATION" OF THE KCWA RULES AND REGULATIONS AND KCWA'S CUSTOMER WATER SERVICE DISINFECTION POLICY. NOTE: MAXIMUM VELOCITY WHEN FILLING THE PE PIPE WITH WATER SHALL BE 1 FT/SEC (1 GAL/MIN FOR 1" CTS PIPE).
- A MINIMUM OF TEN-FOOT HORIZONTAL SEPARATION SHALL BE MAINTAINED IN THE PLACEMENT OF WATER MAINS, SERVICES OR APPURTENANCES WITHIN THE VICINITY OF SEWER FACILITIES OR VICE VERSA, WHERE WATER MAINS CROSS SEWER MAINS. THE CROWN OF THE SEWER MAIN SHALL BE AT LEAST 18 INCHES BELOW THE BOTTOM OF THE WATER MAIN IN CASES WHERE IT IS NOT POSSIBLE TO MAINTAIN A 10-FOOT, HORIZONTAL SEPARATION OR IN THE CASE OF CROSSING THE EIGHTEEN-INCH, VERTICAL SEPARATION, A DEVIATION FROM THIS CROWN TO GRADE 18-INCH TYPE 304 STAINLESS STEEL DOUBLE RAMP. RESTRICTIONS MAY BE ALLOWED ON A CASE BY CASE BASIS WITH PRIOR APPROVAL FROM THE GENERAL MANAGER/CHIEF ENGINEER AS TO THE PROPOSED MATERIALS AND INTERVENTIONS TO BE TAKEN TO PROTECT THE WATER SYSTEM FROM THE POSSIBILITY OF CONTAMINATION. IN ALL CASES, FORCE MAIN SEWER INFRASTRUCTURE MUST BE LOCATED BELOW WATER MAINS.
- ALL METERS DETECTABLE IDENTIFICATION TAPE 2" IN WIDTH OR GREATER, BLUE IN COLOR AND PRINTED WITH "CAUTION WATER LINE BURIED BELOW" SHALL BE UTILIZED OVER ALL WATER LINES AND SERVICES. SET TO A DEPTH FROM FINISHED GRADE OF NO MORE THAN 1'-0".
- A TEMPORARY PATCH SHALL BE INSTALLED OVER THE FRESHLY BACKFILLED TRENCH IN AN EXISTING STREET OR SIDEWALK USING HOT BITUMINOUS CONCRETE. IT SHALL BE AT LEAST 3" THICK CONSISTING OF TWO LAYERS OF MOISTURE BARRIER AND TYPE 1 WEARING COURSE. AFTER 60 DAYS, THE TEMPORARY PATCH SHALL BE REMOVED AND REPLACED WITH A PERMANENT PATCH. ALL PAVEMENT EDGES SHALL BE SAW CUT.
- AN AS-BUILT PLAN IS REQUIRED. CONTRACTOR SHALL RETAIN THE SERVICES OF A RHODE ISLAND PROFESSIONAL LAND SURVEYOR TO INSPECT THE SERVICE AND PREPARE THE AS-BUILT PLAN IN ACCORDANCE WITH THE KCWA RULES AND REGULATIONS.



**KCWA** KENT COUNTY WATER AUTHORITY  
**ABOVE-GROUND WATER METER & BACKFLOW PREVENTION ENCLOSURE**  
 NOT TO SCALE DATE: 09/2006

**DRAWING ISSUE:**

CONCEPT  
 CUSTOMER APPROVAL  
 PERMITTING  
 CONSTRUCTION  
 AS-BUILT  
 OTHER:

ONLY PLANS ISSUED FOR CONSTRUCTION SHALL BE USED FOR CONSTRUCTION

**OWNER/APPLICANT:**  
**MD CAPITAL, LLC**  
 PO BOX 1205  
 NORTON, MASSACHUSETTS 02766  
 TELEPHONE: (508) 887-6800  
 EMAIL: DELDONATO1@GMAIL.COM

**COMMONWEALTH ENGINEERS & CONSULTANTS, INC.**  
 400 SMITH STREET  
 PROVIDENCE, RHODE ISLAND 02908  
 (401) 273-6600

**REGISTERED PROFESSIONAL ENGINEER**  
 02/21/2023

**REVISIONS**

No.	DATE	DRWN	CHKD
1	10/03/22	SMA	TJB
2	01/25/23	SMA	TJB
3	01/31/23	SMA	TJB
4	02/21/23	SMA	TJB

**PERMIT AGENCY REVIEW PLAN**  
 FOR  
**THE HILL CREST CONDOMINIUMS**  
 A.P. 13, LOTS 658 AND 659  
 COWESSETT AVENUE  
 WEST WARETT, RHODE ISLAND

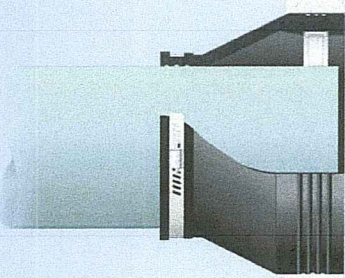
**CONSTRUCTION DETAILS-3**

SCALE: AS SHOWN SHEET NO: 14 OF 18  
 DRAWN BY: SMA DESIGN BY: SMA CHECKED BY: TJB  
 DATE: JUNE 2022 PROJECT NO 22026.00



# Kor-N-Seal® I

106/406 Series  
Pipe-to-Manhole  
Connector



### KEY FEATURES & BENEFITS

- Most widely used flexible connector in sanitary sewer applications throughout the world
- Easy-to-Install
- Meets the specifications of ASTM C923

### PATENT

Patented Waveband technology creates a more effective seal by concentrating the compressive force of the expansion band. The rubber is "captured" between the band and the concrete. **Covered under U.S. Patent No. 5,736,359**

### RECOMMENDED TORQUE VALUES

Connectors with 8" hole size and smaller:  
Steel Wedge - 1/2" Socket Wrench - 8 ft. lbs.  
Connectors with 10-20" hole sizes:  
Ex Series - 1/2" Socket Wrench - 12 ft. lbs.  
Steel Wedge - 1/2" Socket Wrench - 12 ft. lbs.  
Preset torque limiters are available. Contact Customer Service at 1-800-626-2180 for more information.

### FOR LARGER PIPE SIZES REFER TO KOR-N-SEAL II SERIES CONNECTORS

206 Series - For pipe sizes 15" - 51" in diameter. Larger sizes available - contact Customer Service.  
306 Series - To fit larger pipe into smaller diameter manholes.  
506 Series - Designed specifically for stormwater applications.

### USING CORRUGATED PIPE

Adapters are required when using Corrugated Pipe. Refer to the Corrugated Pipe Adapter Data Sheet for details.

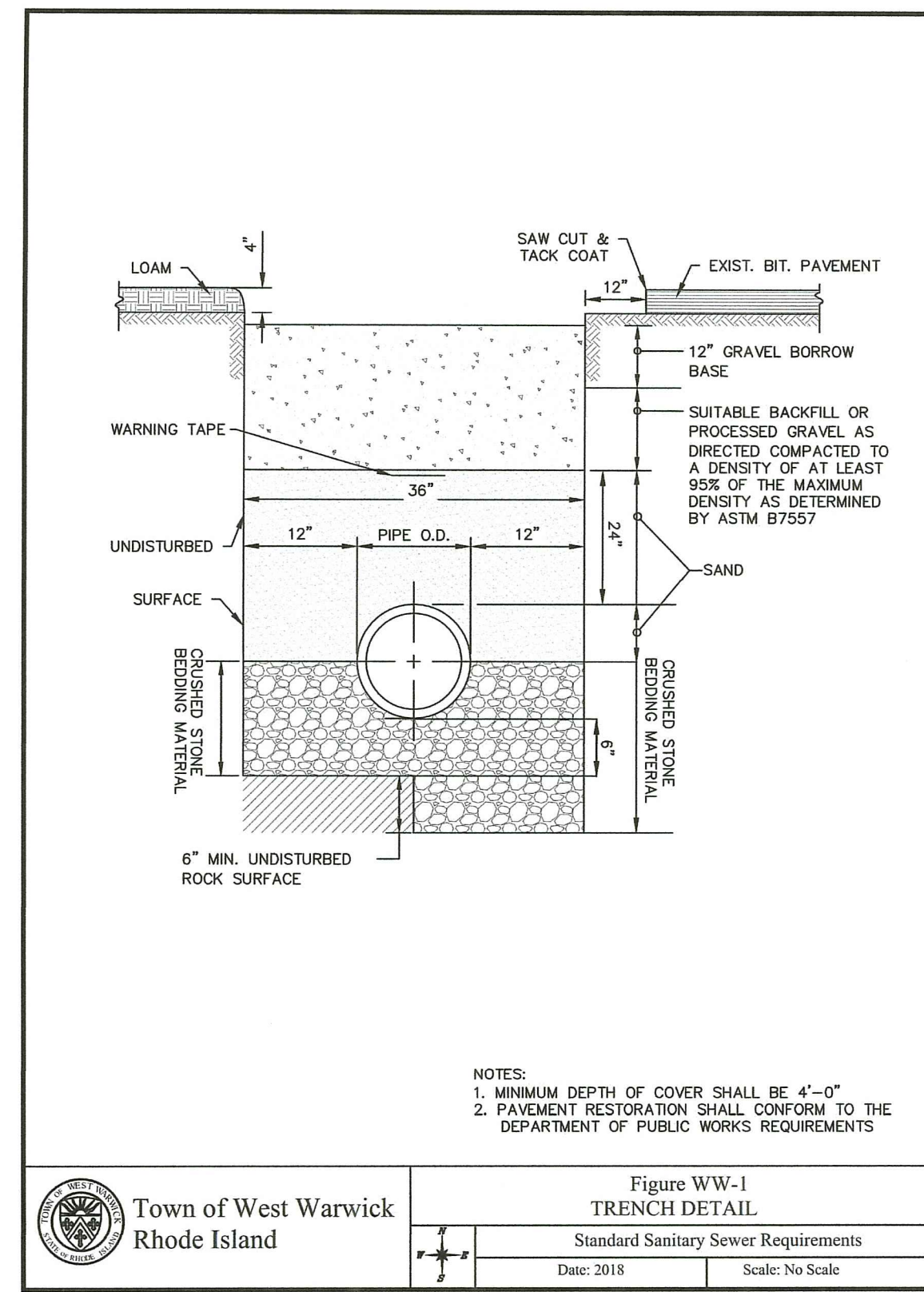


Figure WW-1  
TRENCH DETAIL  
Standard Sanitary Sewer Requirements  
Date: 2018 Scale: No Scale

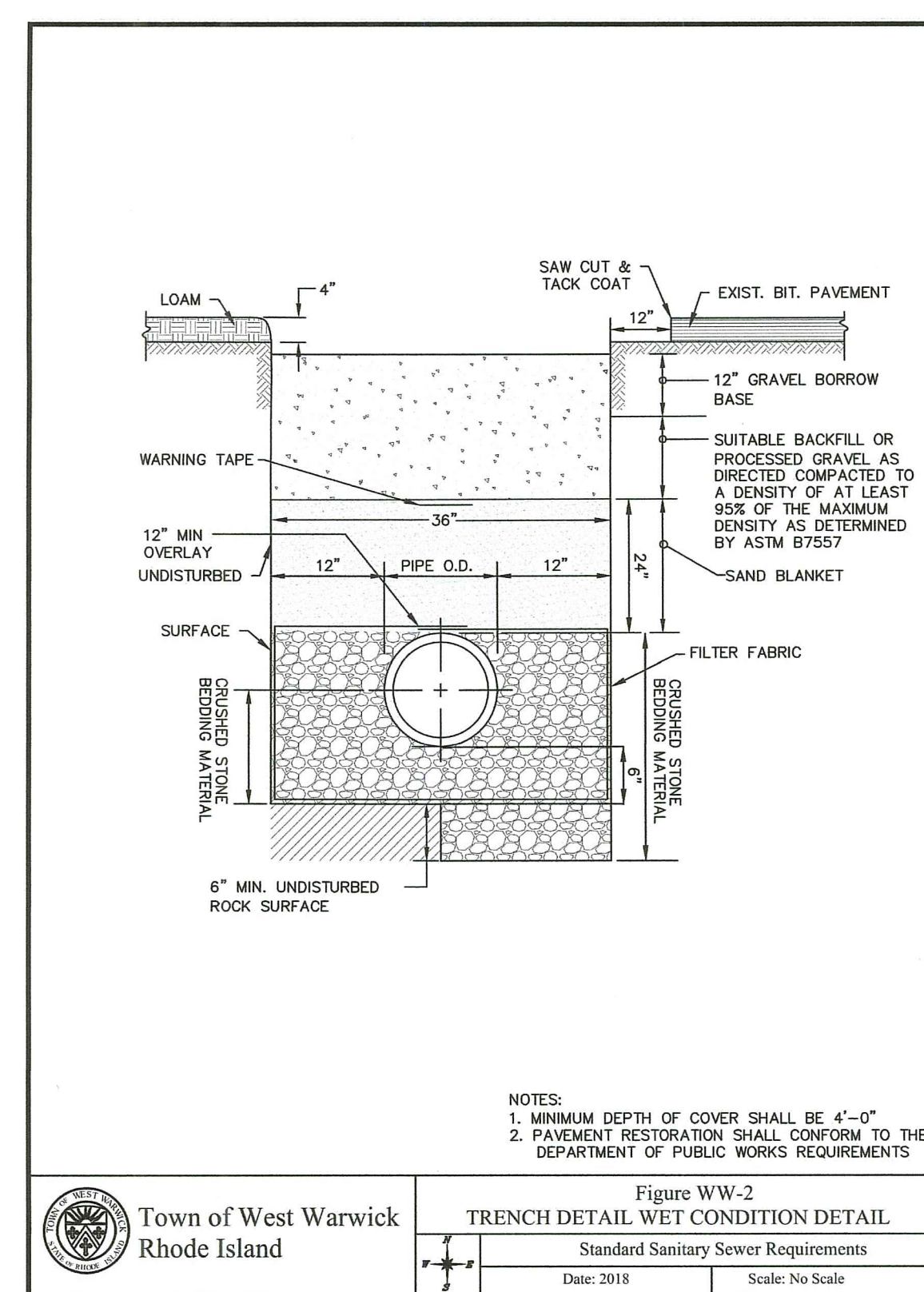


Figure WW-2  
TRENCH DETAIL WET CONDITION DETAIL  
Standard Sanitary Sewer Requirements  
Date: 2018 Scale: No Scale

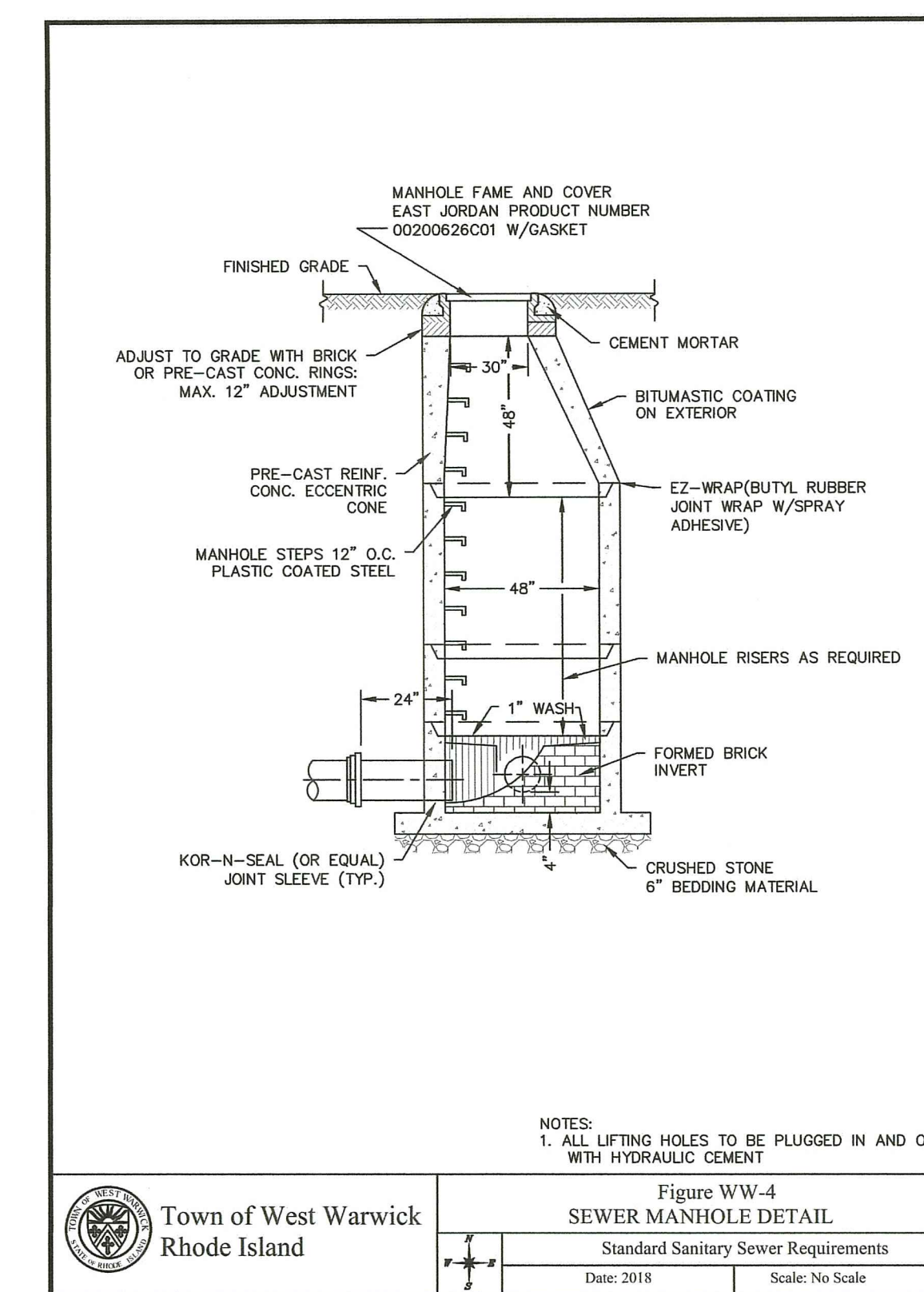


Figure WW-4  
SEWER MANHOLE DETAIL  
Standard Sanitary Sewer Requirements  
Date: 2018 Scale: No Scale

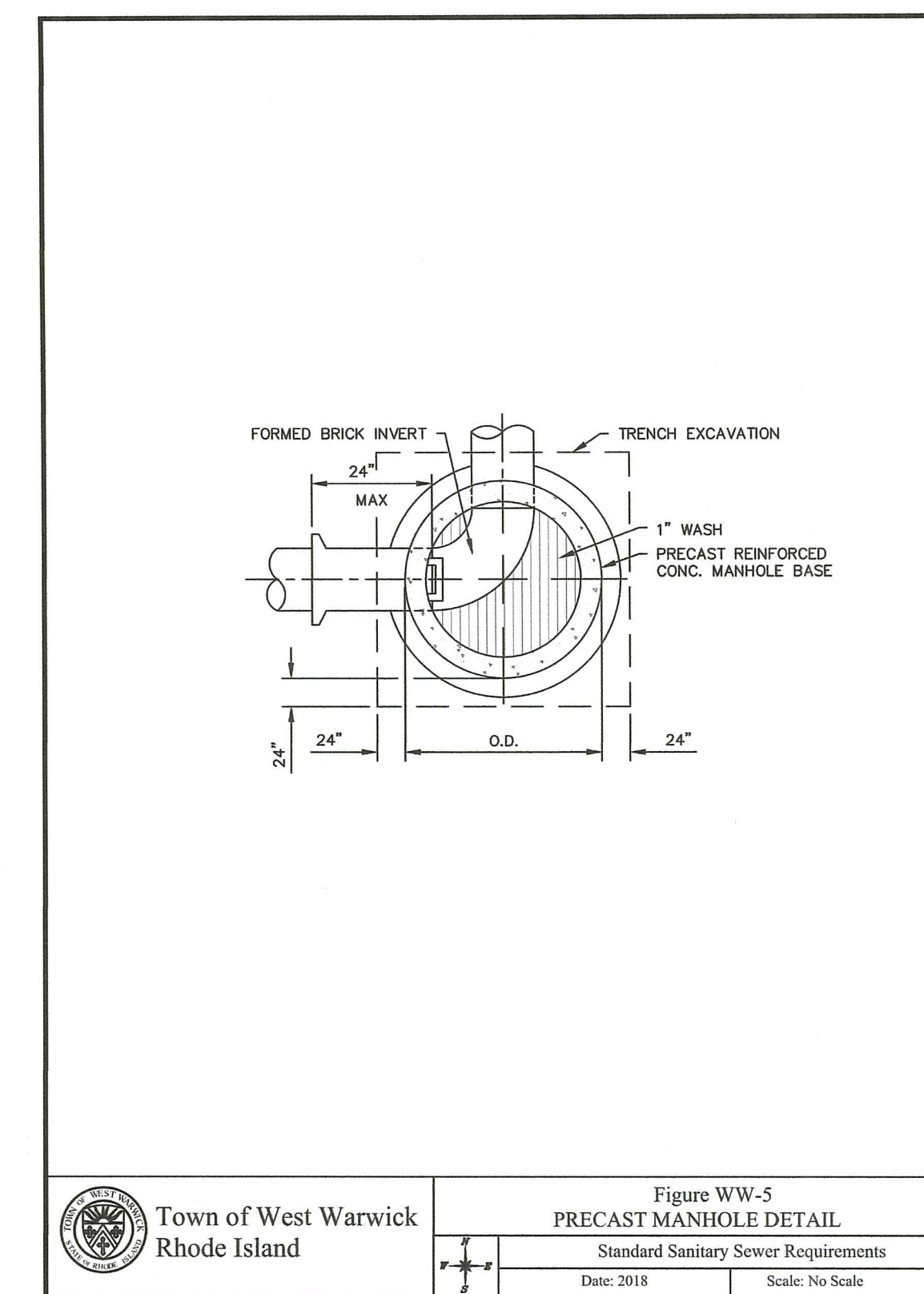


Figure WW-5  
PRECAST MANHOLE DETAIL  
Standard Sanitary Sewer Requirements  
Date: 2018 Scale: No Scale

### SEWER NOTES:

- ALL CONSTRUCTION, MATERIALS, SPECIFICATIONS, AND PROCEDURES SHALL CONFORM WITH THE TOWN OF WEST WARWICK SEWER ORDINANCE AND THE "STANDARD SANITARY SEWER REQUIREMENTS OF THE TOWN OF WEST WARWICK" AND ALL APPLICABLE FEDERAL, STATE AND TOWN BUILDING AND PLUMBING CODES. ANY DEVIATIONS FROM THESE PRESCRIBED PROCEDURES AND MATERIALS SHALL BE APPROVED BY THE SUPERINTENDENT BEFORE INSTALLATION. THE CONTRACTOR SHALL REVIEW SAID STANDARD PRIOR TO ANY WORK. THE SEWER AUTHORITY'S STANDARDS SUPERSEDE THESE DESIGN PLANS WHERE CONFLICTS EXIST.
- PROTECTION OF WATER LINES:
  - HORIZONTAL SEPARATION: SEWERS SHALL BE LAID AT A MINIMUM OF AT LEAST 10 FEET, HORIZONTALLY, FROM ANY EXISTING OR PROPOSED WATER MAIN OR SERVICE.
  - VERTICAL SEPARATION: WHENEVER SEWERS CROSS UNDER WATER MAINS, OR SERVICES, THE SEWER SHALL BE LAID AT SUCH AN ELEVATION THAT THE TOP OF THE SEWER IS AT LEAST 18 INCHES BELOW THE BOTTOM OF THE WATER MAIN. SEWERS SHALL ALWAYS CROSS UNDER THE WATER MAIN OR SERVICE.
- PIPE SHALL BE LAID IN THE DRY AND AT NO TIME SHALL WATER IN THE TRENCH BE PERMITTED TO FLOW INTO THE SEWER.
- BACKFILL FROM THE CENTERLINE OF THE PIPE TO A HEIGHT OF TWO FEET ABOVE THE PIPE SHALL BE SAND BLANKET MATERIAL PLACED EVENLY FOR THE FULL WIDTH OF THE TRENCH AND COMPACTED IN 12-INCH LAYERS. THE REMAINDER OF THE TRENCH SHALL BE BACKFILLED EVENLY WITH SUITABLE (EXCAVATED OR BORROW) BACKFILL MATERIAL AND COMPACTED IN 12-INCH LAYERS. CUSHION AND BACKFILL MATERIAL SHALL BE COMPACTED TO 95% MAXIMUM DENSITY BY TAMPING AND COMPACTING IN LAYERS (ONE (1) FOOT MAXIMUM) TO ACHIEVE THE REQUIRED COMPACTION.
- THE CONTRACTOR SHALL SUBMIT TO THE TOWN OF WEST WARWICK AN AS-BUILT DRAWING OF THE ENTIRE SEWER SYSTEM AFTER COMPLETION OF THE SERVICE CONNECTIONS UTILIZING DISTANCES FROM PERMANENT STRUCTURES. THE DEPTH OF THE SEWER MAIN AT THE PROPERTY LINE AND AT THE DWELLING UNIT SHALL BE RECORDED AS WELL AS TIES TO ALL CLEANOUTS AND BENDS.
- ALL GRAVITY PIPE AND FITTINGS SHALL BE PVC SDR35 MEETING ASTM D3034 UNLESS NOTED OTHERWISE.
- ALL BUILDING SEWER CONNECTION INSTALLATIONS SHALL BE GAS AND WATER TIGHT AND VERIFIED BY PROPER TESTING. TEST MUST BE WITNESSED BY THE TOWN OF WEST WARWICK PUBLIC WORKS SUPERINTENDENT.
- BACKFLOW PREVENTER: ALL CONNECTIONS ARE TO BE EQUIPPED WITH A BACKFLOW PREVENTER. BACKFLOW PREVENTERS MUST CONFORM WITH THE TOWN OF WEST WARWICK BUILDING INSPECTOR'S REQUIREMENTS AND THE BUILDING OFFICIALS CODE ADMINISTRATORS BASIC NATIONAL PLUMBING CODE, ARTICLE 10, SECTION P-1003.0.
- INSPECTION: ALL SEWER LINE CONSTRUCTION SHALL BE INSPECTED BY THE TOWN OF WEST WARWICK SEWER AUTHORITY PRIOR TO BACKFILLING.
- TESTING: THE CONTRACTOR WILL BE REQUIRED TO PERFORM THE PIPE DEFLECTION TEST ON EACH SECTION OF PIPE INSTALLED. ALL TESTING SHALL BE WITNESSED BY THE TOWN OF WEST WARWICK PUBLIC WORKS SUPERINTENDENT OR THE SEWER AUTHORITY. NO SEWER FLOWS ARE ALLOWED UNTIL AUTHORIZED BY THE TOWN OF WEST WARWICK SEWER AUTHORITY.
- MAINTENANCE OF SEWAGE FLOWS: THE CONTRACTOR SHALL MAINTAIN SEWAGE FLOWS ON SUBJECT SITE UNTIL ALL WORK HAS BEEN ACCEPTED BY THE SEWER AUTHORITY. SEWAGE DISCHARGES OR OVERFLOWS ARE STRICTLY PROHIBITED.

### SEWER TRENCH MATERIAL SPECIFICATION:

- BEDDING MATERIAL:** THE BEDDING MATERIAL SHALL BE CRUSHED STONE CONSISTING OF DURABLE CRUSHED ROCK IN DURABLE CRUSHED GRAVEL STONE, FREE FROM ICE, SNOW, SAND, CLAY, LOAM, OR OTHER DELETERIOUS MATERIAL. THE CRUSHED STONE SHALL CONFORM TO THE REQUIREMENTS OF 100% PASSING THE ONE (1) INCH SCREEN, 90-100% PASSING THE THREE-QUARTER (3/4) INCH SCREEN, 10- 50% PASSING THE ONE-HALF (1/2) INCH SCREEN, 0-20% PASSING THE THREE-EIGHTHS (3/8) INCH SCREEN AND 0-5% PASSING THE NUMBER FOUR (4) SIEVE.
- SAND BLANKET:** THE SAND SHALL BE FREE FROM ICE, SNOW, ROOTS, RUBBISH, AND OTHER DELETERIOUS OR ORGANIC MATTER. THE SAND BLANKET SHALL CONFORM TO 22 THE REQUIREMENTS OF 100% PASSING ONE-HALF (1/2) INCH SCREEN, 85-100% PASSING THE THREE-EIGHTHS (3/8) INCH SCREEN, 60-85% PASSING THE NUMBER FOUR (4) SIEVE, 35-60% PASSING THE NUMBER SIXTEEN (#16) SIEVE, 10-35% PASSING THE NUMBER FIFTY (#50) SIEVE AND 2-10% PASSING THE NUMBER ONE-HUNDRED (#100) SIEVE.
- BACKFILL:** BACKFILL SHALL BE EXCAVATED MATERIALS FREE-DRAINING CLEAN GRANULAR SOIL SUITABLE FOR BACKFILL. UP TO 20 PERCENT OF BACKFILL MATERIAL MAY BE ROCK-LIKE MATERIALS NOT TO EXCEED 0.05 CUBIC FEET IN VOLUME, NOR MORE THAN 6 INCHES IN LENGTH. THE BACKFILL SHALL NOT CONTAIN ANY DEBRIS, PAVEMENT, FROZEN MATERIAL, ORGANIC MATTER, OR PEAT.

### MAINTENANCE AND PROTECTION OF TRAFFIC NOTES:

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE AND PROTECTION OF PEDESTRIAN AND VEHICLE TRAFFIC INCLUDING POLICE PROTECTION. ALL TEMPORARY AND VEHICULAR SIGNS, BARRICADES AND LANE CLOSURES SHALL BE IN CONFORMANCE WITH THE LATEST REVISIONS OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES 2003 (M.U.T.C.D.) INCLUDING ALL REVISIONS.
- TEMPORARY CONSTRUCTION SIGNS AND ALL APPLICABLE TRAFFIC CONTROL DEVICES SHALL BE IN PLACE PRIOR TO THE START OF WORK IN ANY AREA OPEN TO TRAFFIC.
- THE PRIVATE VEHICLES OF CONSTRUCTION WORKERS WILL NOT BE PARKED IN THE STATE RIGHT-OF-WAY.
- SIGN MOUNTINGS SHALL BE IN ACCORDANCE WITH THE R.I.D.O.T. SPECIFICATIONS FOR TEMPORARY CONSTRUCTION SIGNS.

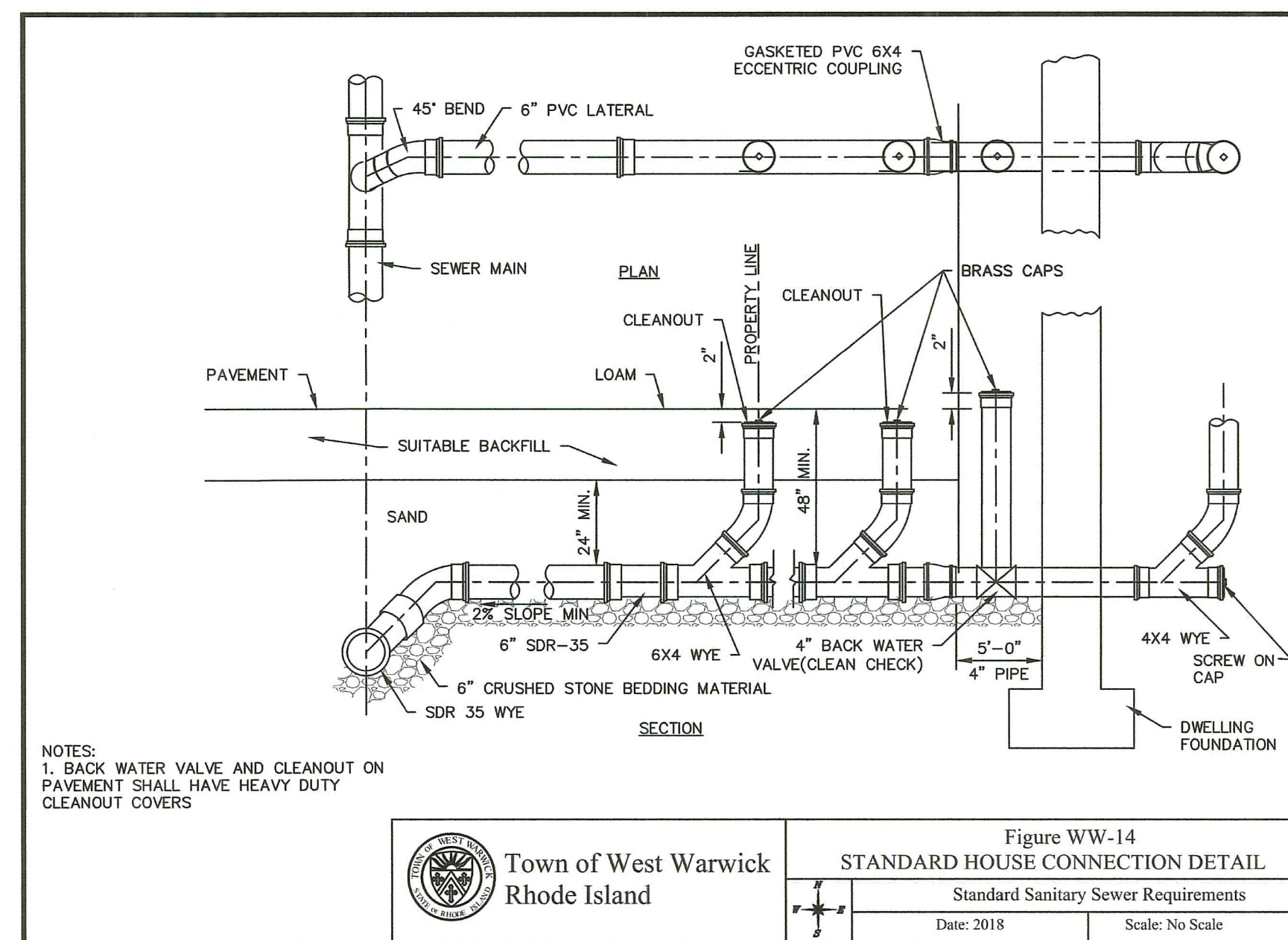
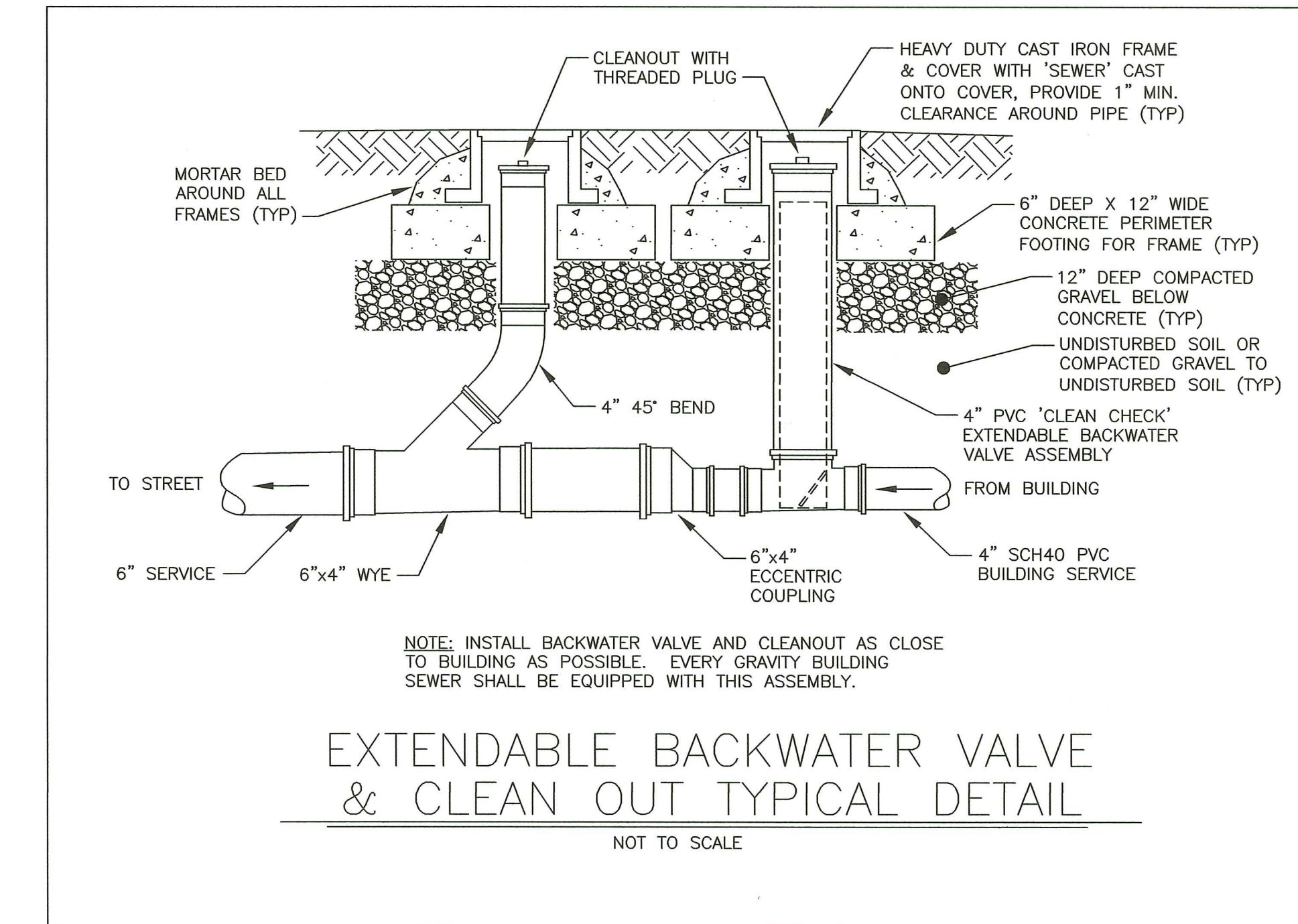


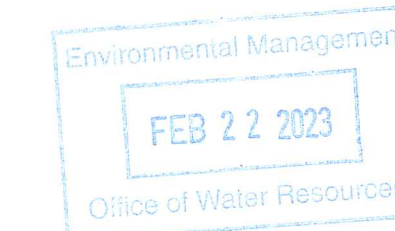
Figure WW-14  
STANDARD HOUSE CONNECTION DETAIL  
Standard Sanitary Sewer Requirements  
Date: 2018 Scale: No Scale



## EXTENDABLE BACKWATER VALVE & CLEAN OUT TYPICAL DETAIL

NOT TO SCALE

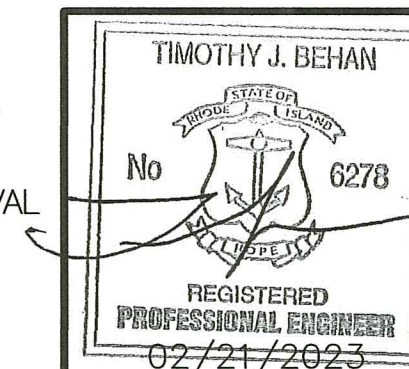
RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS AS  
SPECIFIED IN THE LETTER OF APPROVAL  
DATED: MAR 16 2023 FILE # 22-0367  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE



### DRAWING ISSUE:

- CONCEPT
- CUSTOMER APPROVAL
- PERMITTING
- CONSTRUCTION
- AS-BUILT
- OTHER:

ONLY PLANS ISSUED FOR CONSTRUCTION SHALL BE USED FOR CONSTRUCTION



### REVISIONS

No.	DATE	DRWN	CHKD
1	10/03/22	SMA	TJB
2	01/25/23	SMA	TJB
3	01/31/23	SMA	TJB
4	02/21/23	SMA	TJB

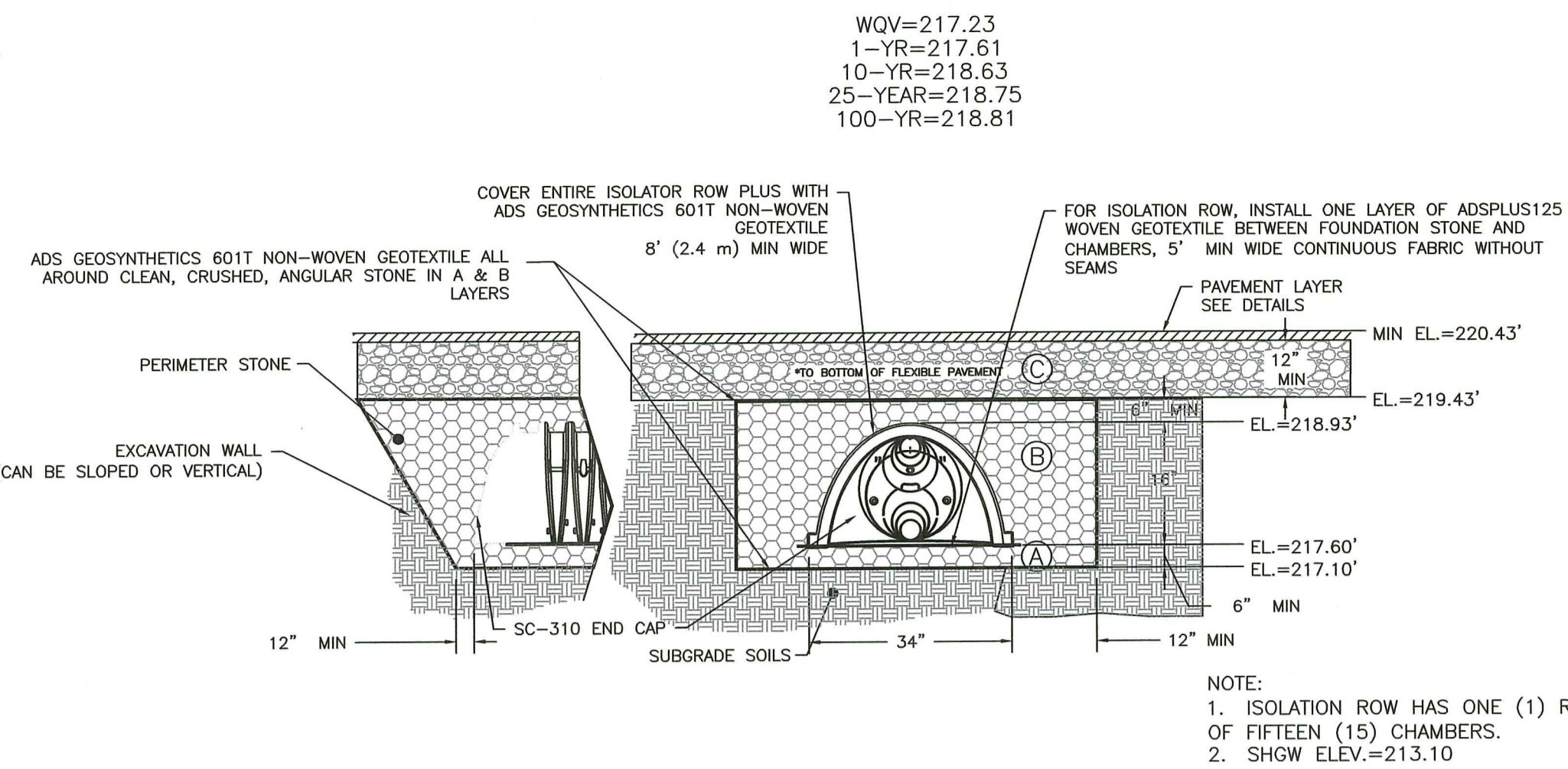
OWNER/APPLICANT:  
MD CAPITAL, LLC  
PO BOX 1205  
NORTON, MASSACHUSETTS 02766  
TELEPHONE: (508) 857-6805  
EMAIL: DELDONATO1@GMAIL.COM



PERMIT AGENCY REVIEW PLAN  
FOR  
THE HILL CREST CONDOMINIUMS  
ON  
A.P. 13, LOTS 658 AND 659  
COWESETT AVENUE  
WEST WARWICK, RHODE ISLAND  
CONSTRUCTION DETAILS-4

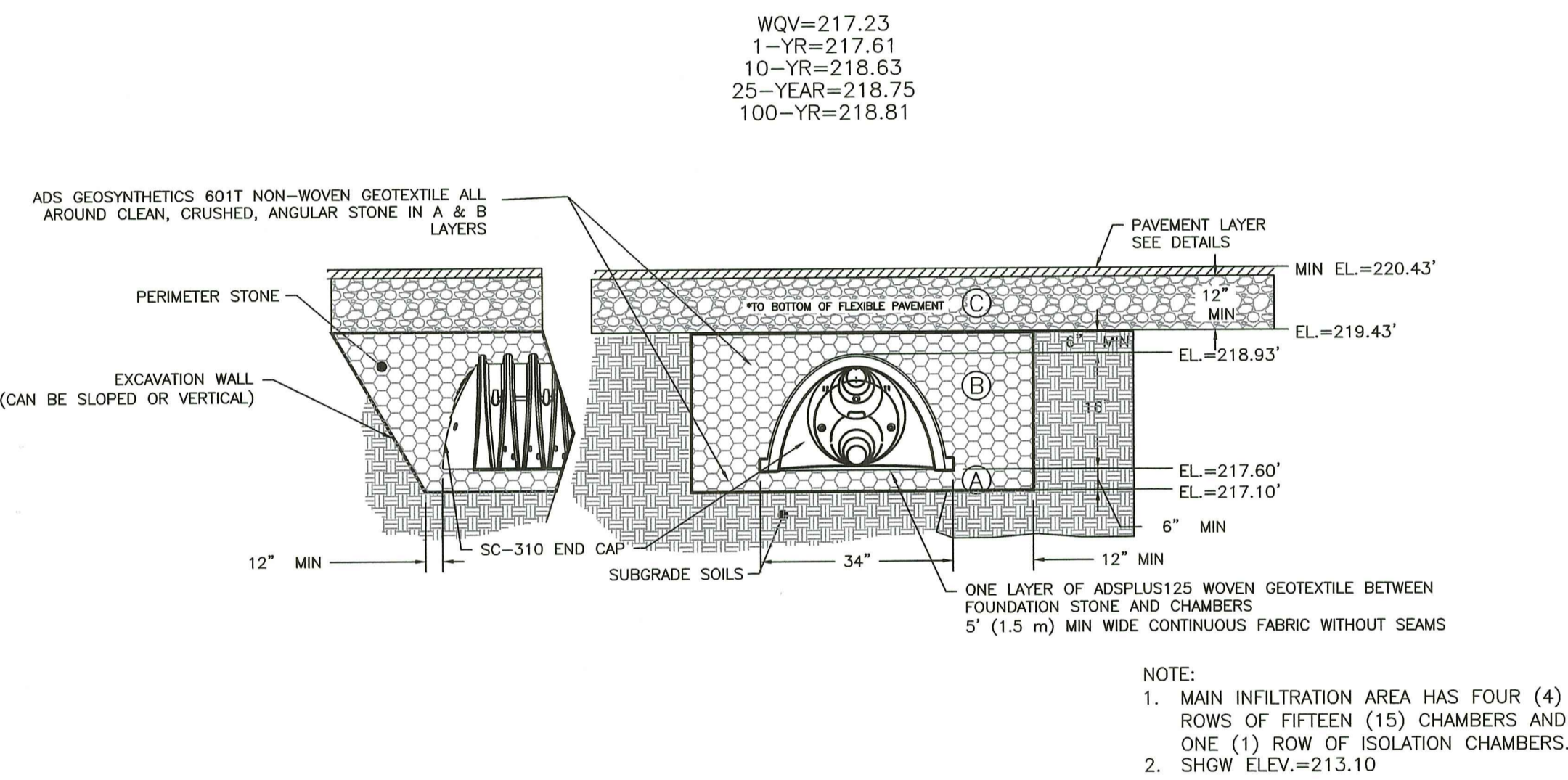
SCALE: AS SHOWN	SHEET NO: 15 OF 18
DRAWN BY: SMA	DESIGN BY: SMA
DATE: JUNE 2022	CHECKED BY: TJB
	PROJECT NO 22026.00

**ISOLATOR ROW WATER LEVELS**



**MAIN INFILTRATION SYSTEM  
STORMTECH SC-310 ISOLATION ROW CHAMBERS SYSTEMS CROSS SECTION**  
NOT TO SCALE

**INFILTRATION BED WATER LEVELS**



**MAIN INFILTRATION SYSTEM  
STORMTECH SC-310 ISOLATION CHAMBERS SYSTEMS CROSS SECTION**  
NOT TO SCALE

**SC-310 STORMTECH CHAMBER SPECIFICATIONS**

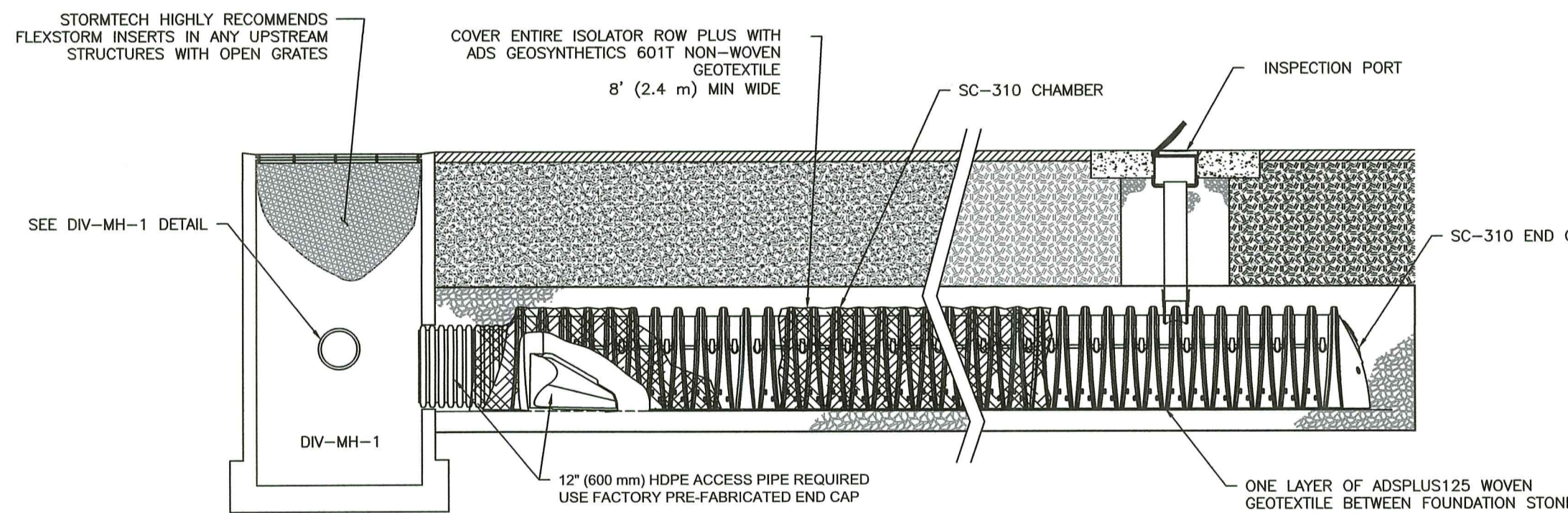
- CHAMBERS SHALL BE STORMTECH SC-310.
- CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBTURATED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
- THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
- CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
  - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
  - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
  - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F/21° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
- ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
  - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
  - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD. THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
  - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
- CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

**MAIN INFILTRATION SYSTEM  
ADS STORMTECH INSTALLATION NOTES:**

- PERIMETER STONE WIDTH IS 12".
- BASE STONE DEPTH IS 6"
- COVER STONE DEPTH IS 6"

MATERIAL LOCATION	SPECIFICATION	COMPACTION
A FOUNDATION STONE	CLEAN, CRUSHED, ANGULAR STONE 3/4" TO 2"	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE
B EMBEDMENT STONE	CLEAN, CRUSHED, ANGULAR STONE 3/4" TO 2"	PLACE EVENLY IN 6-INCH LIFT, WALK INTO PLACE
C BITUMINOUS PAVEMENT SUBGRADE	GRAVEL BURROW, RIDOT TYPE IA OR IB	MIN. 95% MAX DENSITY AS DETERMINED BY MOD. PROCTOR

**ACCEPTABLE FILL MATERIALS: STORMTECH SC-310 AND SC-740 CHAMBER SYSTEMS**



**SC-310 ISOLATOR ROW PLUS DETAIL**  
NOT TO SCALE

**IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-310 SYSTEM**

- STORMTECH SC-310 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
- STORMTECH SC-310 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
- CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
  - STONESHOOTER LOCATED OFF THE CHAMBER BED.
  - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
  - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
- THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
- MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4"-2" (20-50 mm).
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
- ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

**NOTES FOR CONSTRUCTION EQUIPMENT**

- STORMTECH SC-310 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
  - THE USE OF CONSTRUCTION EQUIPMENT OVER SC-310 CHAMBERS IS LIMITED:
    - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
    - NO RUBBER Tired LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
    - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
  - FULL 38" (960 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.
- USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.
- CONTACT STORMTECH AT 1-888-892-2894 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

**NORTH INFILTRATION SYSTEM  
ADS STORMTECH INSTALLATION NOTES:**

- PERIMETER STONE WIDTH IS 24".
- BASE STONE DEPTH IS 6"
- COVER STONE DEPTH IS 6"

**FILTER FABRIC SPEC.:**  
SHALL MEET THE FOLLOWING:

THICKNESS=0.08"  
RED FESCUE @ 1.75 LBS/1,000SF  
OPENING SIZE=#80 SIEVE  
FLOW RATE=125 GAL/MIN.  
ASTM D751=125 LB.  
ASTM D1117=400 PSI.  
ASTM D1682=300 LB.

**EMBANKMENT**

**SEED MIX:**  
RED FESCUE @ 1.75 LBS/1,000SF  
COLONIAL BENTGRASS, 'EXETER' @ 0.11 LBS/1,000SF  
PERENNIAL RYEGRASS @ 0.11 LBS/1,000SF  
BIRDSFOOT TREFOLI, 'EMPIRE' @ 0.35 LBS/1,000SF  
\* USE INOCULATED SEED

**EMBANKMENT MATERIAL:**

IMPERVIOUS MATERIAL (UNIFIED SOIL CLASSIFICATION GC, SC, CH OR CL AND AT LEAST 30% PASSING 200 SIEVE) COMPACTED TO 95% AT ALL EMBANKMENT AREAS WHICH HIGHER THAN SURROUNDING GRADES. MATERIAL SHALL BE FREE OF ROOTS, STUMPS, WOOD, RUBBISH, STONES GREATER THAN 6". FROZEN OR OTHER OBJECTIONABLE MATERIALS.

**BMP SEED MIX:**

CREEP, RED FESCUE @ 0.45 LBS/1,000SF  
TALL FESCUE @ 0.45 LBS/1,000SF

**BANK RUN GRAVEL SPEC.:**

GRAVEL SHALL NOT CONTAIN ANY MATERIAL LARGER THAN 3". UP TO 10% MAY BE SIZED BETWEEN 3/4" AND 3". GRAVEL SHALL MEET THE FOLLOWING:  
SIEVE SIZE % PASSING  
3/4" 100%  
#4 55%-100%  
#10 40%-100%  
#40 10%-50%  
#100 0%-20%  
#200 0%-2%

**TOPSOIL SPEC.:**

TOPSOIL SHALL HAVE A TEXTURE CLASSIFICATION OF SANDY LOAM AND BE FREE OF ROCKS GREATER THAN 3/4". ROOTS, DEBRIS AND ANY UNDESIRABLE MATERIALS AS DETERMINED BY THE TOWN OR ENGINEER. TOPSOIL SHALL ALSO MEET RIDOT SPECIFICATIONS AND HAVE A PERCOLATION RATE OF 10 MINUTES PER INCH OR FASTER.

**R-1 RIP RAP:**

100% PASS - 2"  
0-50% PASS - 1"  
0-15% PASS - NO.4  
MIN. DEPTH=6"  
BEDDING=FS-1  
MIN. DEPTH=3"

**WASHED 2-INCH CRUSHED STONE:**

100% PASS - 2"  
0-50% PASS - 1"  
0-15% PASS - NO.4

**ASTM C-33 SAND SPECIFICATION:**

SIEVE SIZE	% PASSING	SIEVE SIZE	% PASSING
3/8"	100%	#30	25%-60%
#4	95%-100%	#50	5%-35%
#8	80%-100%	#100	0%-10%
#16	50%-85%	#200	0%-5%

**R-2 RIP RAP:**

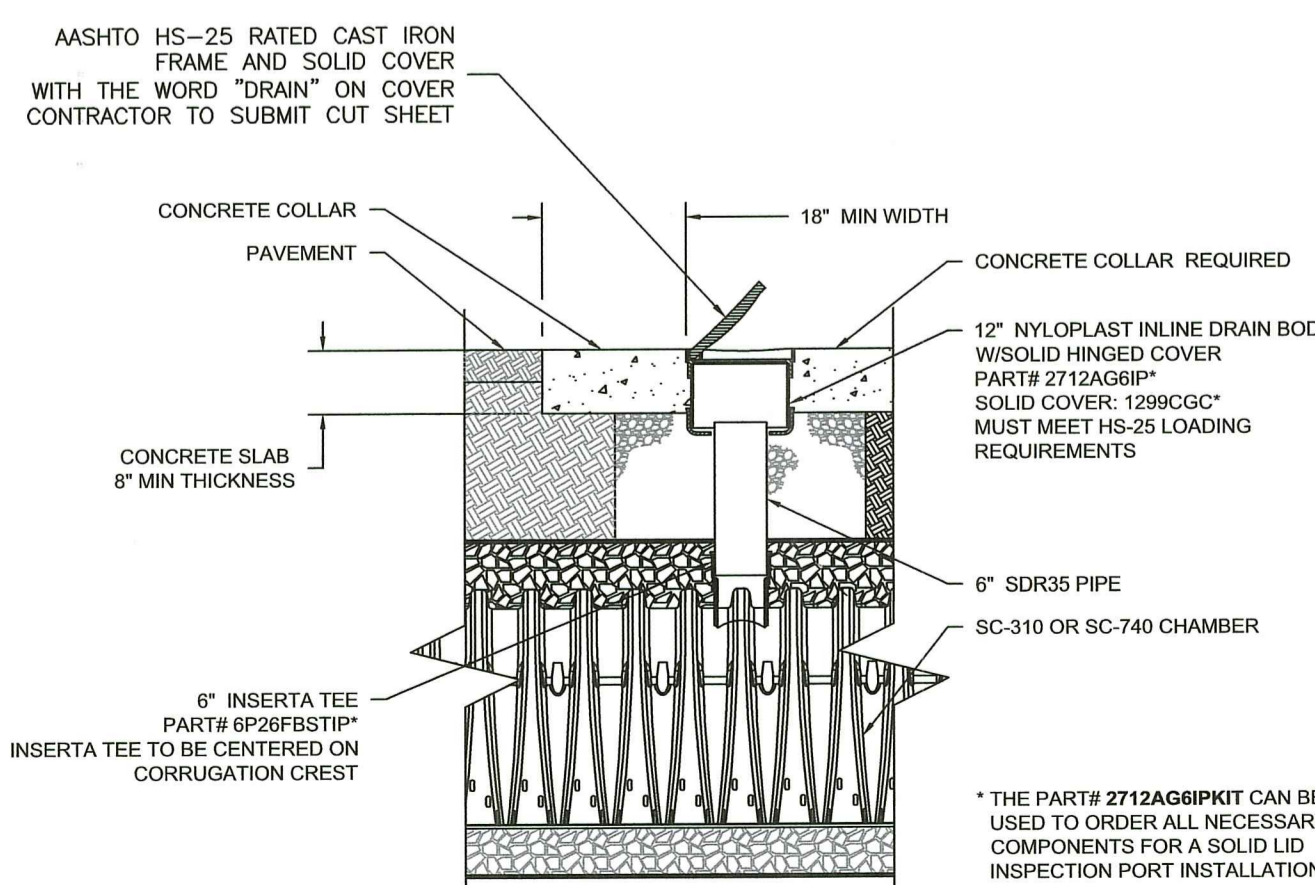
100% PASS - 4"  
0-50% PASS - 2"  
0-15% PASS - 1"  
MIN. DEPTH=6"  
BEDDING=FS-1  
MIN. DEPTH=3"

**DRAWING ISSUE:**

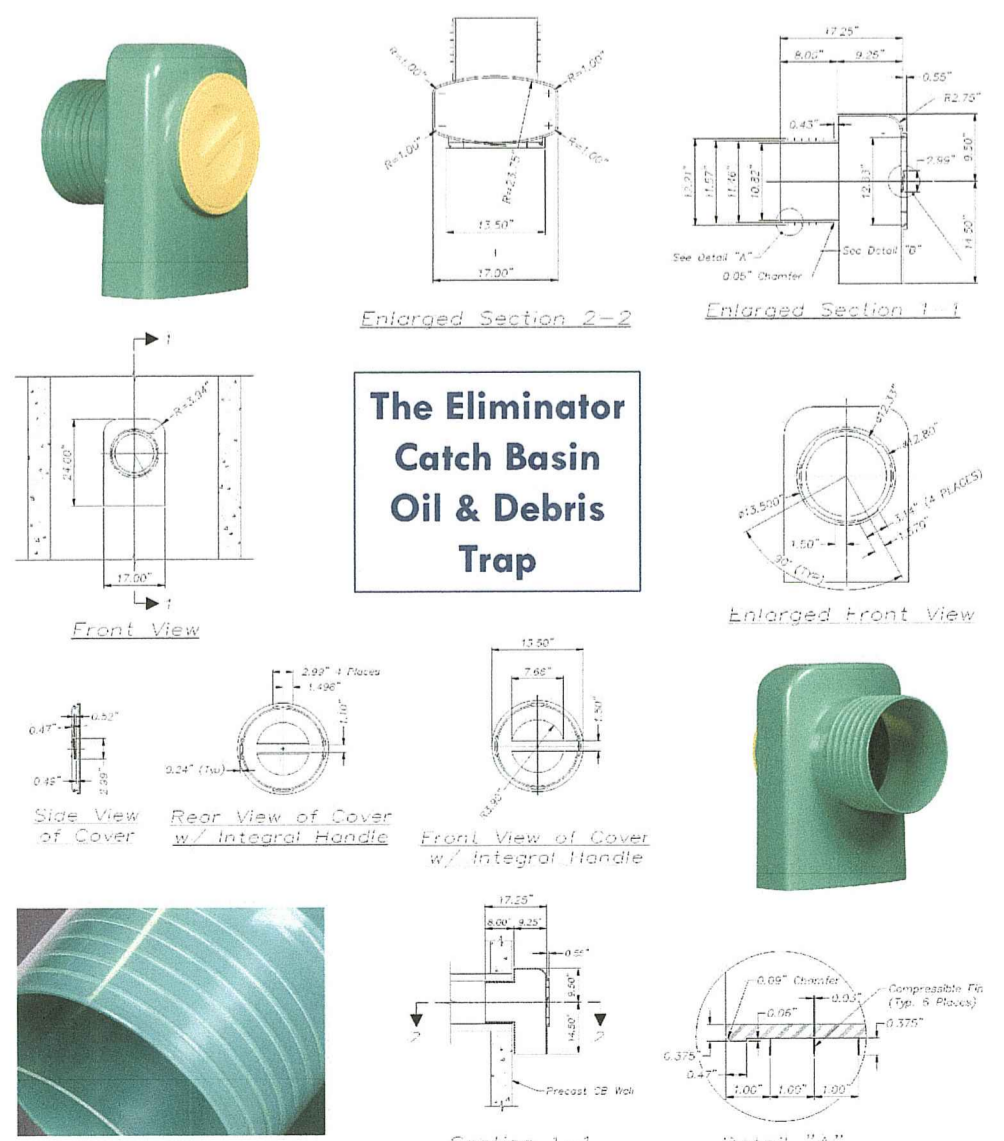
- CONCEPT
  - CUSTOMER APPROVAL
  - PERMITTING
  - CONSTRUCTION
  - AS-BUILT
  - OTHER:
- ONLY PLANS ISSUED FOR CONSTRUCTION SHALL BE USED FOR CONSTRUCTION



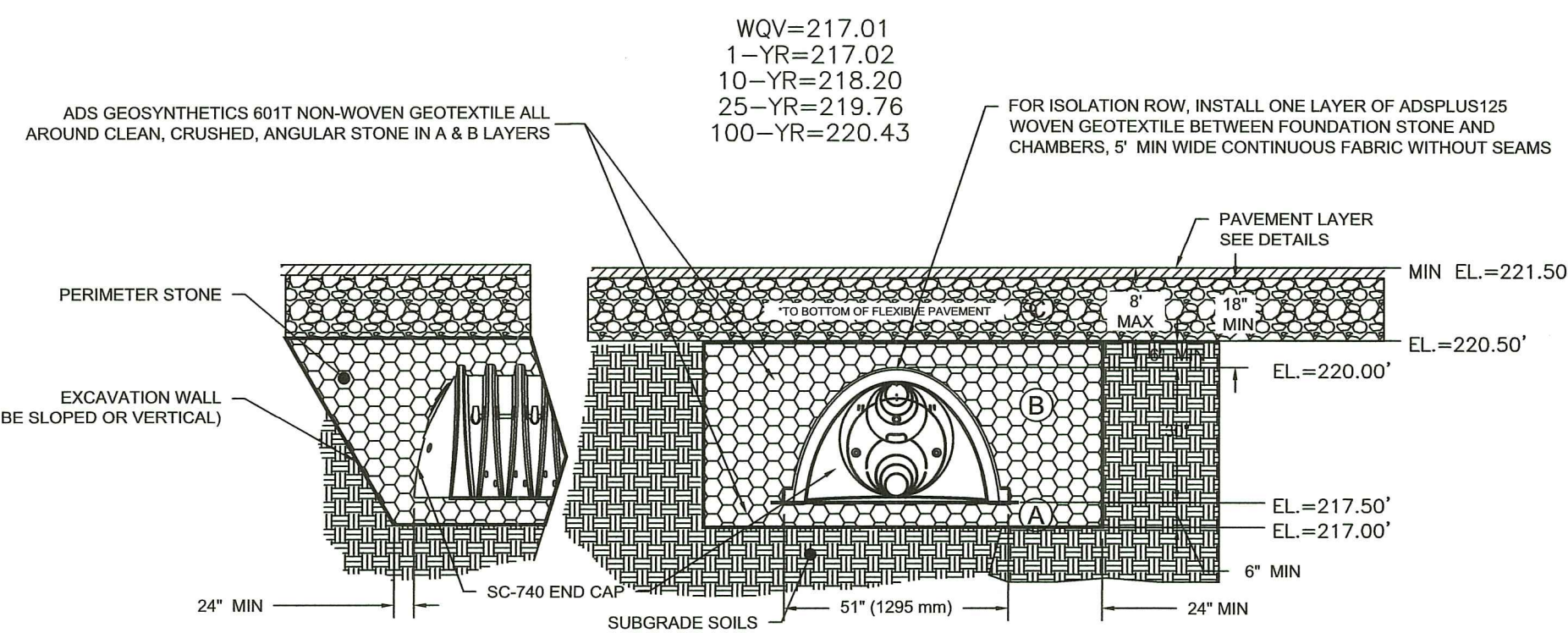
OWNER/APPLICANT:  
**MD CAPITAL, LLC**  
PO BOX 1205  
NORTON, MASSACHUSETTS 02768  
TELEPHONE: (508) 887-8805  
EMAIL: DELDONATO1@GMAIL.COM



**SC-310 & SC-740 6" INSPECTION PORT DETAIL**  
NOT TO SCALE



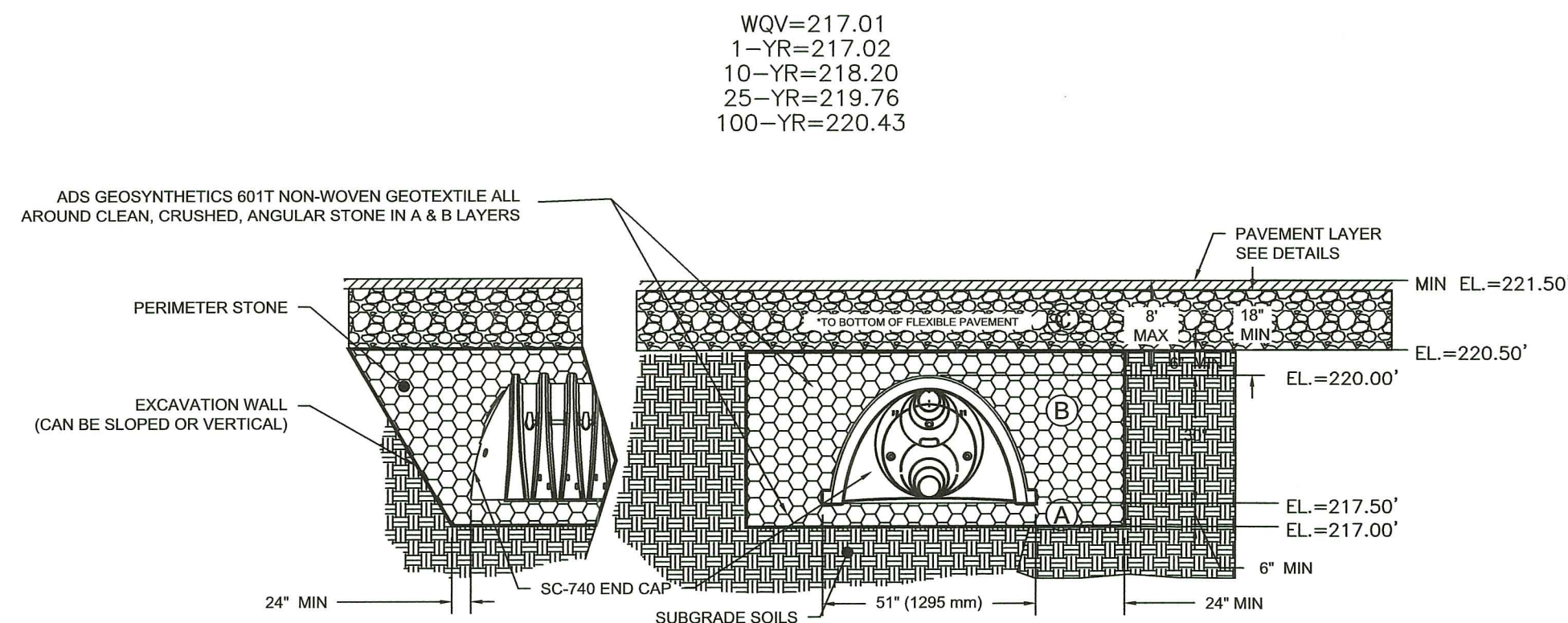
**ISOLATOR ROW WATER LEVELS**



NOTE:  
1. ISOLATOR ROW HAS ONE (1) ROW OF FOUR (4) CHAMBERS.  
2. SHGW ELEV.=212.70

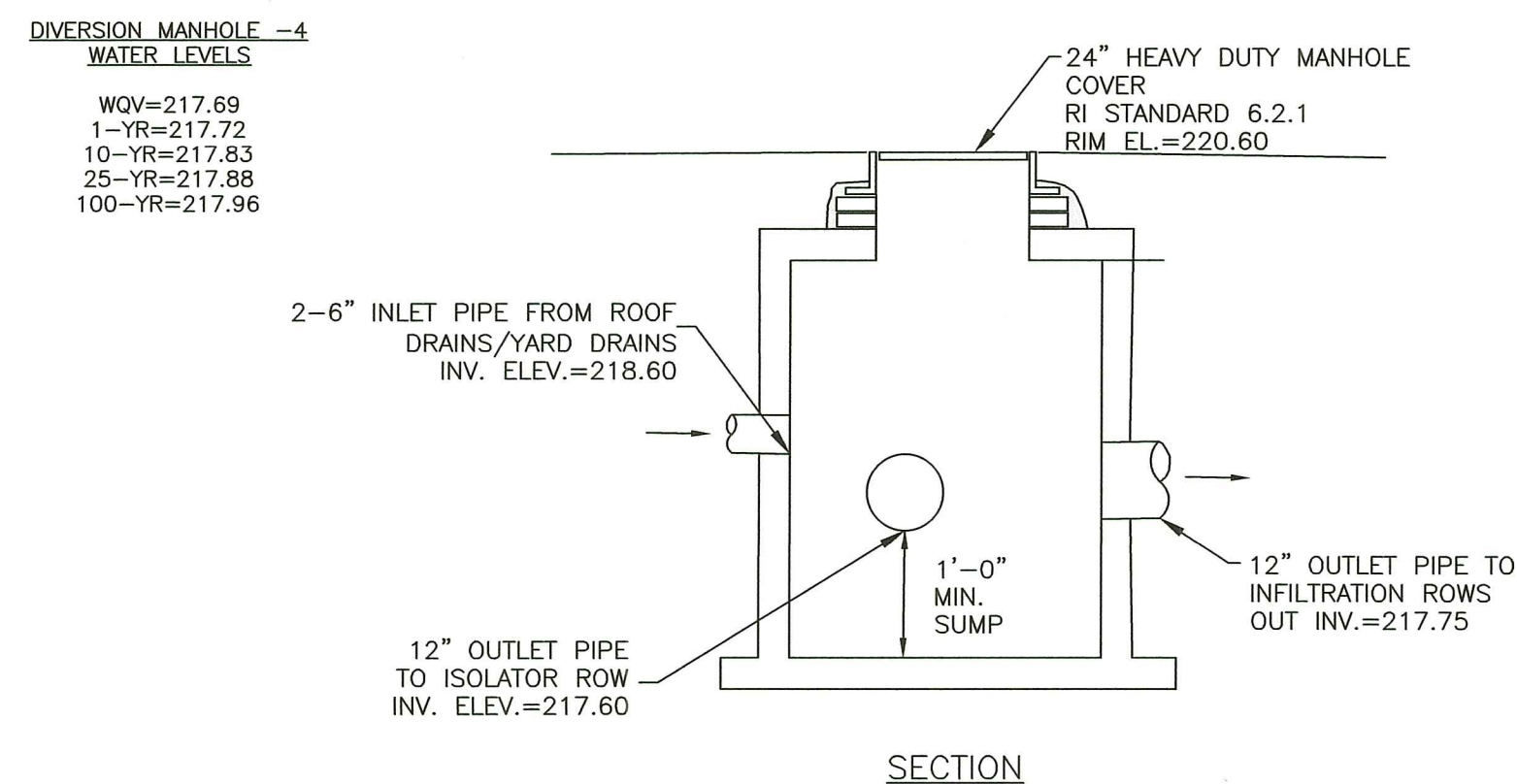
**NORTH INFILTRATION SYSTEM  
STORMTECH SC-740 ISOLATION ROW SYSTEMS CROSS SECTION  
NOT TO SCALE**

**INFILTRATION BED WATER LEVELS**



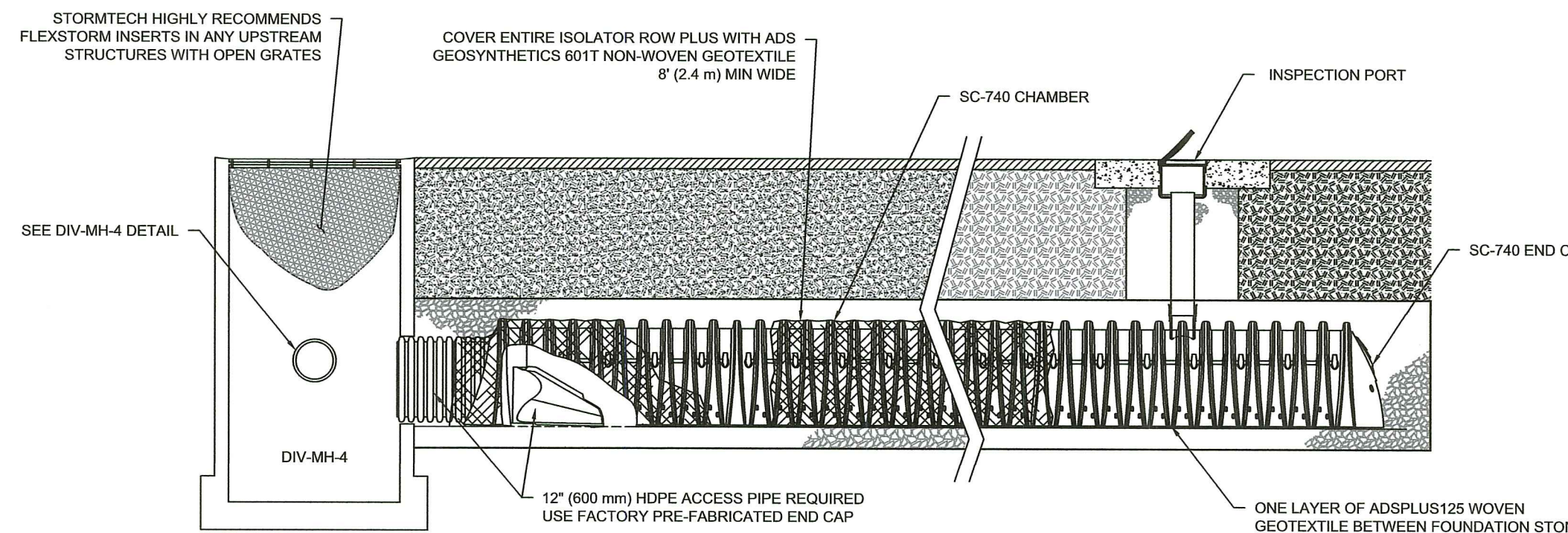
NOTE:  
1. INFILTRATION AREA HAS FOUR (4) ROWS OF TWO (2) CHAMBERS AND ONE (1) ROW OF ISOLATION CHAMBERS.  
2. SHGW ELEV.=212.70

**NORTH INFILTRATION SYSTEM  
STORMTECH SC-740 INFILTRATION CHAMBERS SYSTEMS CROSS SECTION  
NOT TO SCALE**



NOTES:  
1. PRECAST CONCRETE MANHOLE MANUFACTURER SHALL SUBMIT SHOP DRAWING OF STRUCTURE FOR REVIEW AND APPROVAL. LOCATE MANHOLE OPENING TO PROVIDE ACCESS TO ALL PIPE PENETRATIONS FOR MAINTENANCE AND ABILITY FOR CLEAN-OUT.

**DIVERSION MANHOLE-4  
NOT TO SCALE**



**SC-740 ISOLATOR ROW PLUS DETAIL  
NOT TO SCALE**

**SC-740 STORMTECH CHAMBER SPECIFICATIONS**

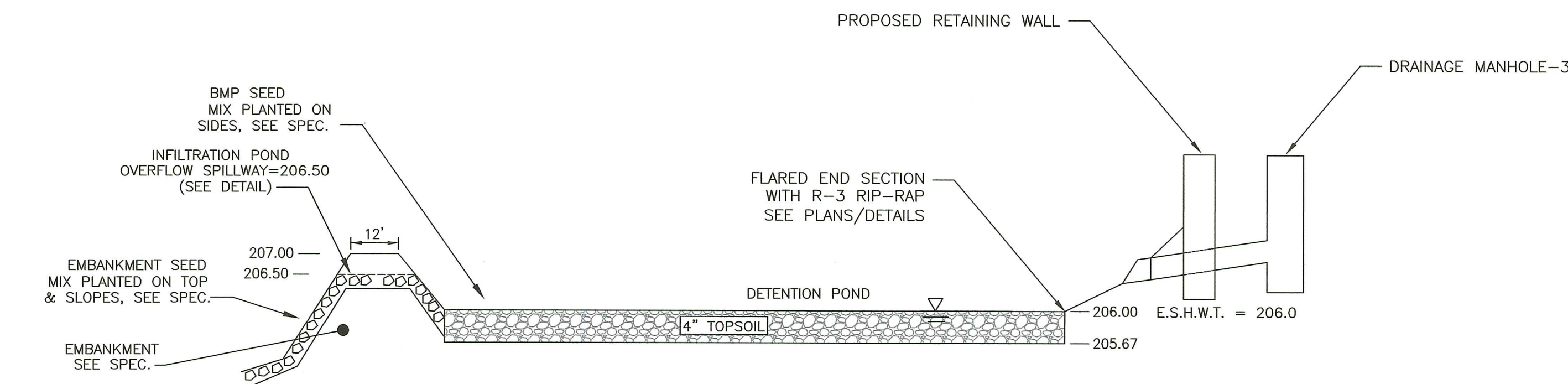
- CHAMBERS SHALL BE STORMTECH SC-740.
- CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
- THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
- CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
  - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
  - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
  - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
- ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
  - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
  - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
  - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
- CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

**IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-740 SYSTEM**

- STORMTECH SC-740 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
- STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
- CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
  - STONESHOOTER LOCATED OFF THE CHAMBER BED.
  - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
  - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
- THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
- MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4-2" (20-50 mm).
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
- ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

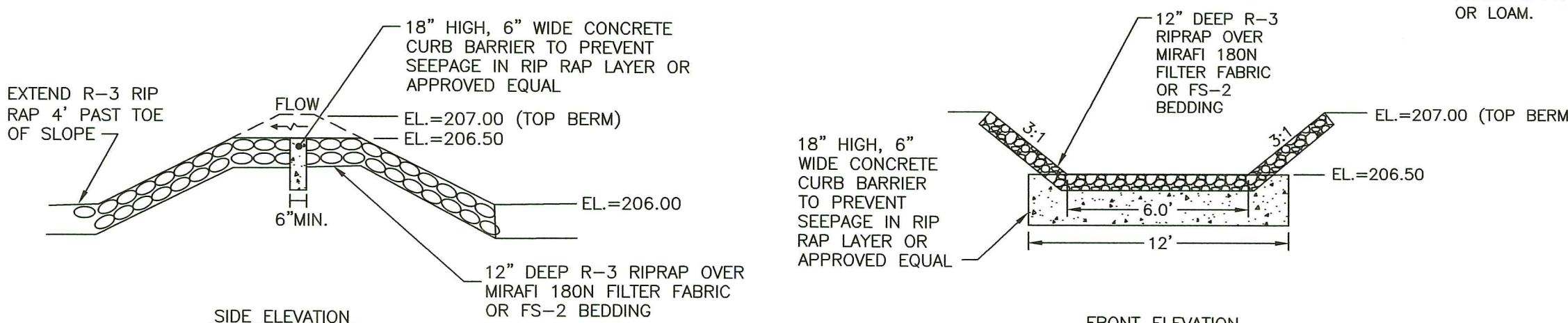
**NOTES FOR CONSTRUCTION EQUIPMENT**

- STORMTECH SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
  - THE USE OF CONSTRUCTION EQUIPMENT OVER SC-740 CHAMBERS IS LIMITED:
    - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
    - NO RUBBER Tired LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
    - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
  - FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.
- USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.
- CONTACT STORMTECH AT 1-888-882-2894 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.



NOTE:  
1. EXISTING GRADE VARIES FROM APPROX. 206.0 TO 209.0  
2. WQV = 0.0  
3. NO STORMWATER INFILTRATION

**DETENTION POND  
PROFILE VIEW  
NOT TO SCALE**



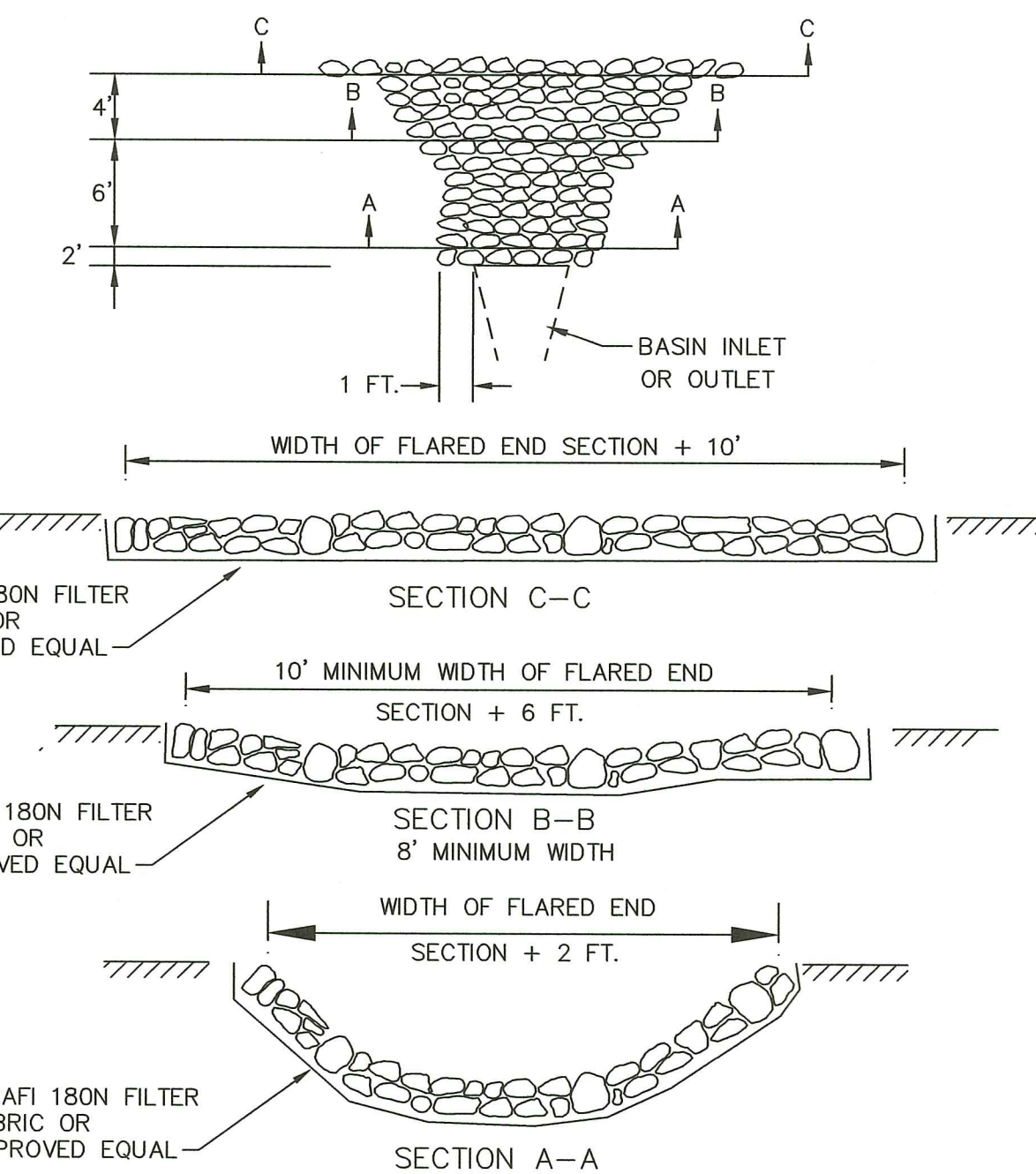
**DETENTION POND  
RIP RAP SPILLWAY  
NOT TO SCALE**

**DETENTION POND  
RIP RAP SPILLWAY  
NOT TO SCALE**

**DETENTION POND NOTES:**

- REMOVE ALL UNSUITABLE MATERIALS FROM DETENTION POND AREA.
- BACKFILL WITH WITH BANK RUN GRAVEL AS NEEDED.
- ENGINEER TO INSPECT POND BOTTOM PRIOR TO PLACEMENT OF ANY BACKFILL OR LOAM.

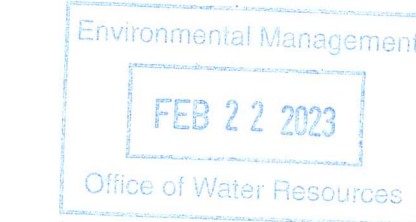
DETENTION POND  
WATER LEVELS  
WQV=NO FLOW  
1-YR=NO FLOW  
10-YR=206.62  
25-YR=206.74  
100-YR=206.87  
EXIT VELOCITY  
100-YEAR FLOW = 3.54 CFS  
FLOW AREA = 2.22 SF  
VELOCITY = 1.59 FT/SEC



NOTES:  
1. REFER TO PLANS FOR EXTENT OF RIP RAP AREAS.  
2. DIMENSIONS MAY BE MODIFIED BY ENGINEER TO MEET FIELD CONDITIONS UNLESS OTHERWISE SPECIFIED. DUMPED RIP-RAP SHALL BE USED. FILTER STONE CAN BE SUBSTITUTED FOR FILTER FABRIC ONLY WHEN APPROVED BY ENGINEER.

R-4 RIP RAP:  
100% PASS - 14"  
0-50% PASS - 7"  
0-15% PASS - 4"  
MIN. DEPTH=21"

**ROCK RIP-RAP  
@ FLARED END OUTLETS  
NOT TO SCALE**



RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS AS  
SPECIFIED IN THE LETTER OF APPROVAL  
DATED: MAR 16 2023 FILE #: 22-0347  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

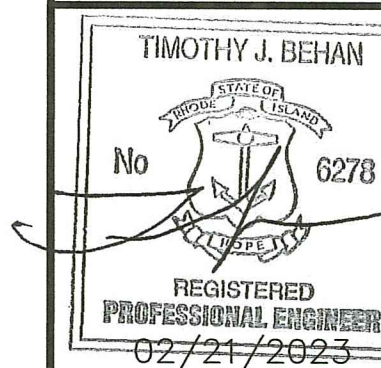
*Andy Chapman*

**DRAWING ISSUE:**

- CONCEPT
- CUSTOMER APPROVAL
- PERMITTING
- CONSTRUCTION
- AS-BUILT
- OTHER:

ONLY PLANS ISSUED FOR CONSTRUCTION SHALL BE USED FOR CONSTRUCTION

OWNER/APPLICANT:  
MD CAPITAL, LLC  
PO BOX 1205  
NORTON, MASSACHUSETTS 02766  
TELEPHONE: (508) 887-6805  
EMAIL: DELDONATO1@GMAIL.COM



**COMMONWEALTH ENGINEERS & CONSULTANTS, INC.**  
400 SMITH STREET  
PROVIDENCE, RHODE ISLAND 02908  
(401) 273-6600

**REVISIONS**

No.	DATE	DRWN	CHKD
1	10/03/22	SMA	TJB
2	01/25/23	SMA	TJB
3	01/31/23	SMA	TJB
4	02/21/23	SMA	TJB

**PERMIT AGENCY REVIEW PLAN**  
FOR  
**THE HILL CREST CONDOMINIUMS**  
ON  
A.P. 13, LOTS 658 AND 659  
COWSETT AVENUE  
WEST WARWICK, RHODE ISLAND  
**CONSTRUCTION DETAILS-6**

SCALE: AS SHOWN SHEET NO: 17 OF 18  
DRAWN BY: SMA DESIGN BY: SMA CHECKED BY: TJB  
DATE: JUNE 2022 PROJECT NO 22026.00

**DRAINAGE SYSTEM-INSPECTION, MAINTENANCE & REPAIR:**

- SUBJECT PROPERTY OWNER SHALL MAINTAIN THE PROPOSED DRAINAGE SYSTEM COMPONENTS. A LEGALLY BINDING AND ENFORCEABLE MAINTENANCE AGREEMENT SHALL BE EXECUTED BETWEEN THE OWNER AND A MAINTENANCE COMPANY TRAINED AND EXPERIENCED WITH THE MAINTENANCE REQUIREMENTS DETAILED IN THE 'RHODE ISLAND STORMWATER DESIGN AND INSTALLATION STANDARDS MANUAL', LATEST EDITION KNOWN AS THE 'MANUAL'.
- INSPECTIONS ARE ESSENTIAL FOR THE LONGEVITY OF THE DRAINAGE SYSTEMS. THE DRAINAGE SYSTEM SHOULD BE INSPECTED ACCORDANCE WITH THE 'MANUAL' BY THE MAINTENANCE COMPANY. RECORDS OF INSPECTIONS SHALL BE MAINTAINED BY THE OWNER AND MAINTENANCE COMPANY. IN NO CASE SHALL LESS THAN TWO INSPECTIONS OCCUR EACH CALENDAR YEAR, TYPIC SPRING AND FALL. THE ENTIRE SYSTEM SHALL ALSO BE INSPECTED AFTER STORM EVENTS GREATER THAN OR EQUAL TO THE 1-YEAR, 24-HOUR TYPE III PRECIPITATION EVENT (2.7 INCHES OF RAIN).
- INSPECTIONS SHALL BE IN ACCORDANCE WITH THE 'MANUAL'. A SUMMARY OF THE REQUIREMENTS ARE DESCRIBED BELOW THE MAJORITY OF WHICH IS TAKEN DIRECTLY FROM THE 'MANUAL'. THE INSPECTOR SHALL REFER TO THE 'MANUAL' FOR ADDITIONAL INSIGHT ON INSPECTION METHODS AND REQUIREMENTS. ALL CHECKLISTS IN THE MANUAL SHALL BE FILLED OUT BY THE INSP ALL DEFICIENCIES DISCOVERED SHALL BE BROUGHT TO THE OWNER'S ATTENTION IN WRITING.

- DRAIN MANHOLES & CATCH BASINS:**
- REMOVE TRASH AND LITTER.
  - REPAIR ALL STRUCTURAL DEFECTS IMMEDIATELY.
  - REMOVE ALL ACCUMULATED SEDIMENT AND DISPOSED OFF-SITE IN ACCORDANCE WITH STATE & FEDERAL REGULATIONS.
- PIPES:**
- ALL CLOGGED OR SEDIMENT FILLED PIPES WHICH ARE MORE THAN 10% SEDIMENT FILLED SHALL BE CLEANED OUT IMMEDIATELY. WHEN CLEANING OUT PIPES, ENSURE DOWNSTREAM AREAS ARE PROTECTED FROM SEDIMENT DISCHARGES. DISPOSE OFF-SITE IN ACCORDANCE WITH STATE & FEDERAL REGULATIONS.
  - REMOVE TRASH AND LITTER.

- INFILTRATION UNITS**
- THE FOLLOWING GUIDELINES SHALL BE ADHERED TO FOR THE OPERATION AND MAINTENANCE OF THE CULTC STORMWATER MANAGEMENT SYSTEM:
- THE OWNER SHALL KEEP A MAINTENANCE LOG WHICH SHALL INCLUDE DETAILS OF ANY EVENTS THAT HAVE AN EFFECT ON THE SYSTEM'S OPERATIONAL CAPACITY.
  - THE OPERATION AND MAINTENANCE PROCEDURE SHALL BE REVIEWED PERIODICALLY AND CHANGED TO MEET SITE CONDITIONS.
  - MAINTENANCE OF THE STORMWATER MANAGEMENT SYSTEM SHALL BE PERFORMED BY QUALIFIED WORKERS AND SHALL FOLLOW APPLICABLE OCCUPATIONAL HEALTH AND SAFETY REQUIREMENTS.
  - DEBRIS REMOVED FROM THE STORMWATER MANAGEMENT SYSTEM SHALL BE DISPOSED OF IN ACCORDANCE WITH APPLICABLE LAWS AND REGULATIONS.

- SUGGESTED MAINTENANCE SCHEDULES**
- MONTHLY IN FIRST YEAR: CHECK INLETS AND OUTLETS FOR CLOGGING AND REMOVE ANY DEBRIS, AS REQUIRED.
  - SPRING AND FALL: CHECK INLETS AND OUTLETS FOR CLOGGING AND REMOVE ANY DEBRIS, AS REQUIRED.
  - ONE YEAR AFTER COMMISSIONING AND EVERY THIRD YEAR FOLLOWING: CHECK INLETS AND OUTLETS FOR CLOGGING AND REMOVE ANY DEBRIS, AS REQUIRED.

**ISOLATOR INSPECTION & MAINTENANCE**

- STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT**
- INSPECTION PORTS (IF PRESENT)
    - REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
    - REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
    - USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
    - LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
    - IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
  - ALL ISOLATOR PLUS ROWS
    - REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
    - USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
      - MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
      - FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
    - IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS**
- A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED
  - APPLY MULTIPLE PASSES OF JETVAC UNTIL BACK FLUSH WATER IS CLEAN
  - VACUUM STRUCTURE SUMP AS REQUIRED
- STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.**
- STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.**

**NOTES**

- INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
- CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

**MAINTENANCE OVERVIEW OF A N-12 RETENTION/DETENTION SYSTEM**

MAINTAINING A CLEAN AND OBSTRUCTION-FREE RETENTION/DETENTION SYSTEM HELPS TO ENSURE THE SYSTEM PERFORMS THE INTENDED FUNCTION OF THE PRIMARY DESIGN. BUILD UP OF DEBRIS MAY OBSTRUCT FLOW THROUGH THE LATERALS IN A RETENTION SYSTEM OR BLOCK THE ENTRANCEWAY OF THE OUTLET PIPE IN A DETENTION SYSTEM. THIS MAY RESULT IN INEFFECTIVE OPERATION OR COMPLETE FAILURE OF THE SYSTEM. ADDITIONALLY, SURROUNDING AREAS MAY POTENTIALLY RUN THE RISK OF DAMAGE DUE TO FLOODING OR OTHER SIMILAR ISSUES.

**INSPECTION/MAINTENANCE FREQUENCY**

ALL RETENTION/DETENTION SYSTEMS MUST BE CLEANED AND MAINTAINED. UNDERGROUND SYSTEMS MAY BE MAINTAINED MORE COST EFFECTIVELY IF THESE SIMPLE GUIDELINES ARE FOLLOWED. INSPECTION SHOULD BE PERFORMED AT A MINIMUM OF ONCE PER YEAR. CLEANING SHOULD BE DONE AT THE DISCRETION OF INDIVIDUALS RESPONSIBLE TO MAINTAIN PROPER STORAGE AND FLOW.

WHILE MAINTENANCE CAN GENERALLY BE PERFORMED YEAR ROUND, IT SHOULD BE SCHEDULED DURING A RELATIVELY DRY SEASON.

**PRE-INSPECTION**

A POST-INSTALLATION INSPECTION SHOULD BE PERFORMED TO ALLOW THE OWNER TO MEASURE THE INVERT PRIOR TO ACCUMULATION OF SEDIMENT. THIS SURVEY WILL ALLOW THE MONITORING OF SEDIMENT BUILD-UP WITHOUT REQUIRING ACCESS TO THE RETENTION/DETENTION SYSTEM.

THE FOLLOWING IS THE RECOMMENDED PROCEDURE FOR PRE-INSPECTIONS:

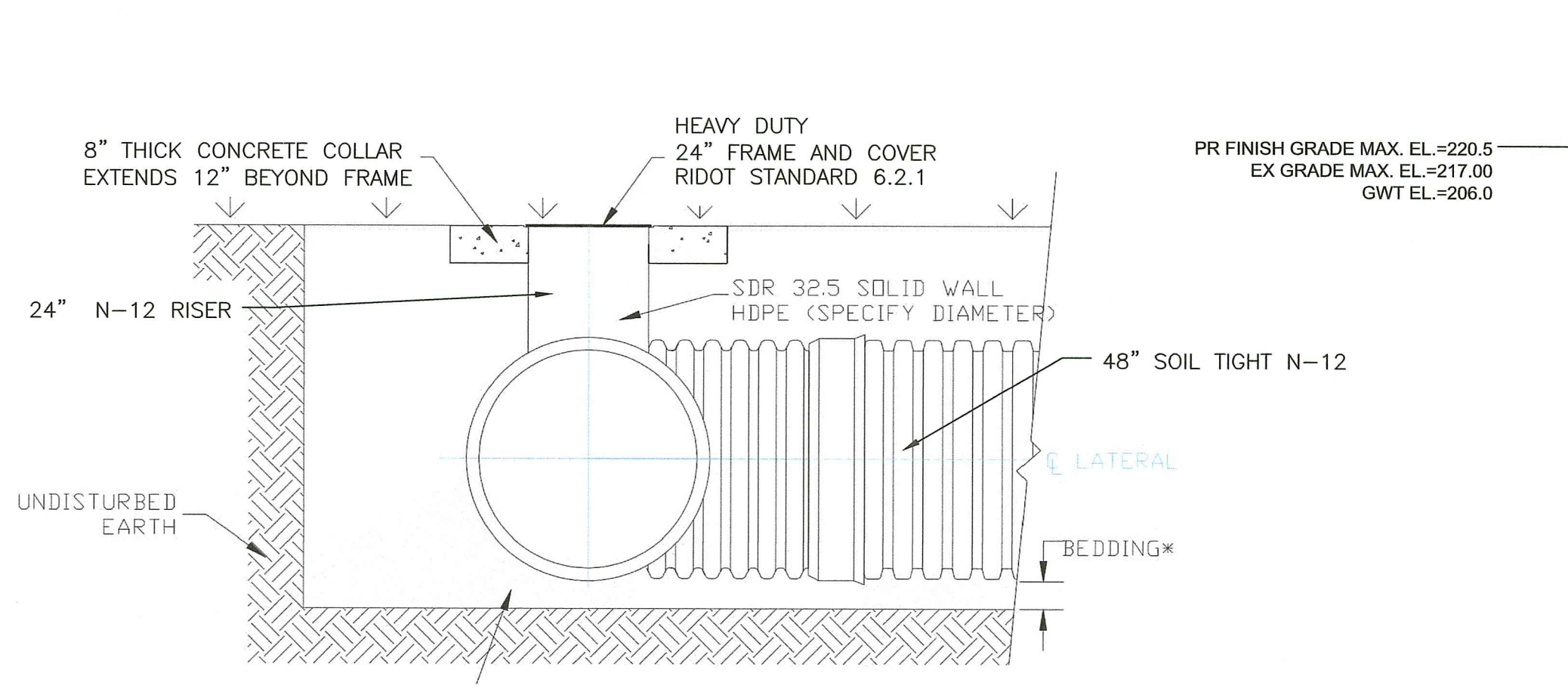
- LOCATE THE RISER SECTION OR CLEANOUTS OF THE RETENTION/DETENTION SYSTEM. THE RISER WILL TYPICALLY BE 24" IN DIAMETER OR LARGER AND THE CLEANOUTS ARE USUALLY 4", 6" OR 8" IN DIAMETER.
- REMOVE THE LID OF THE RISER OR CLEAN OUTS.
- INSERT A MEASURING DEVICE INTO THE OPENING AND MAKE NOTE TO A POINT OF REFERENCE ON THE STICK OR STRING. (THIS IS DONE SO THAT SEDIMENT BUILD UP CAN BE DETERMINED IN THE FUTURE WITHOUT HAVING TO ENTER THE SYSTEM.)

**INSPECTION/MAINTENANCE**

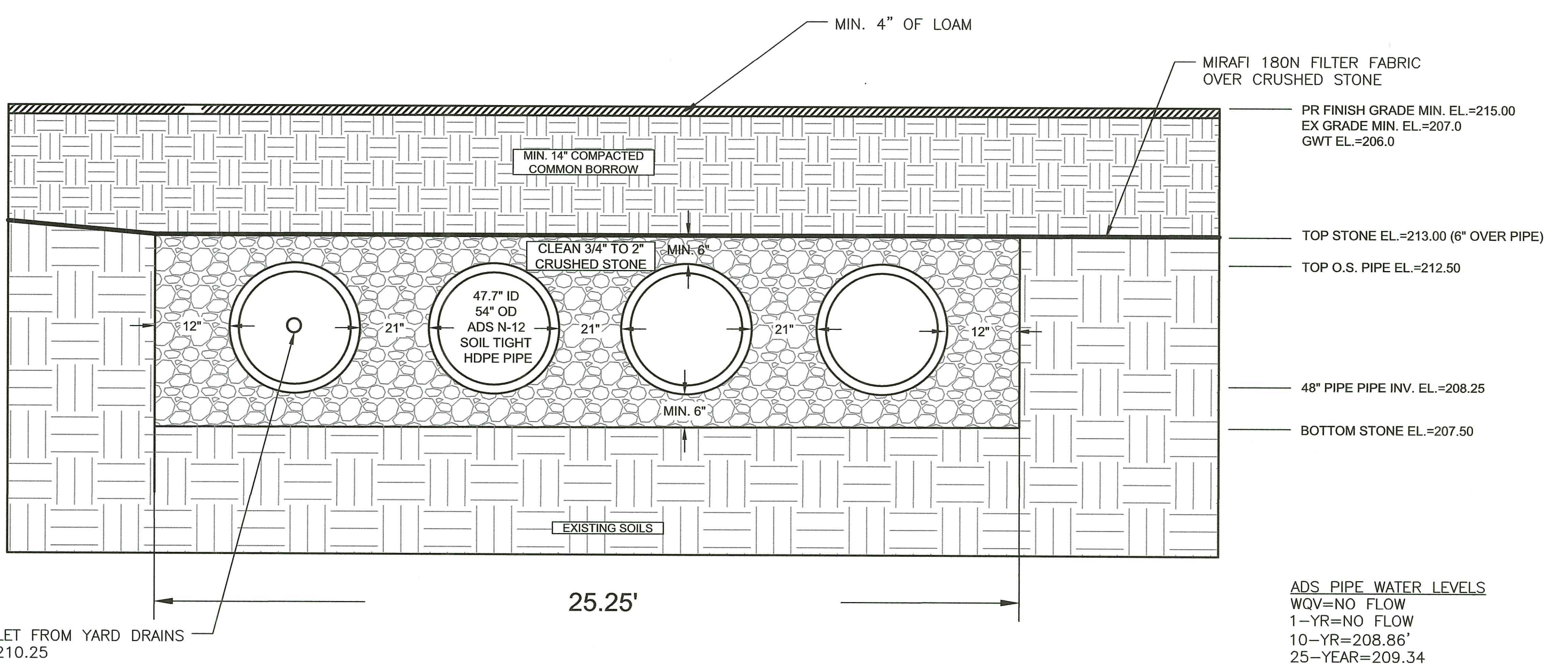
A RETENTION/DETENTION SYSTEM SHOULD BE INSPECTED AT A MINIMUM OF ONE TIME A YEAR OR AFTER MAJOR RAIN EVENTS IF NECESSARY.

THE FOLLOWING IS THE RECOMMENDED PROCEDURE TO INSPECT SYSTEM IN SERVICE:

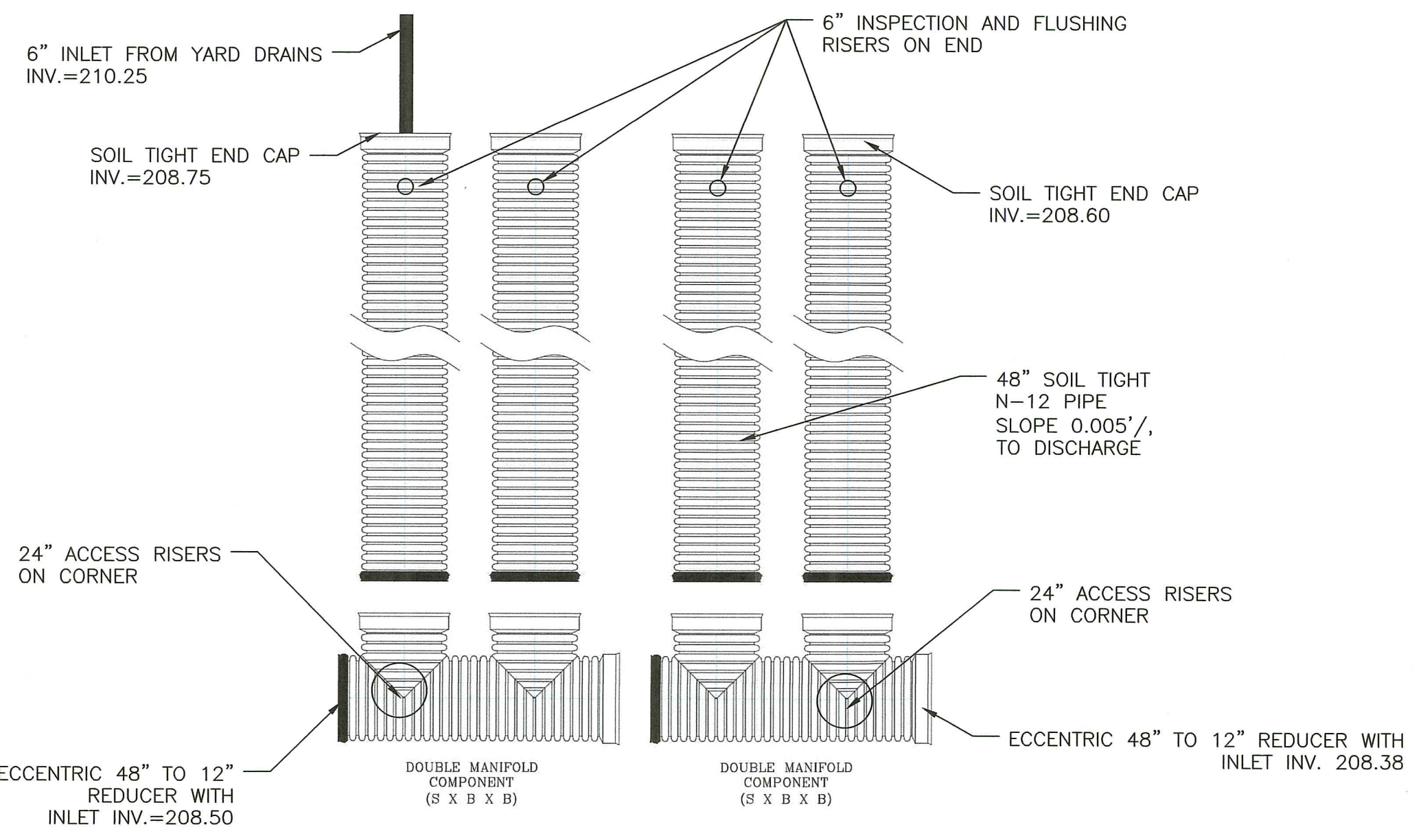
- LOCATE THE RISER SECTION OF THE RETENTION/DETENTION SYSTEM. THE RISER WILL TYPICALLY BE 24" IN DIAMETER OR LARGER.
- REMOVE THE LID FROM THE RISER.
- MEASURE THE SEDIMENT BUILDUP AT EACH RISER AND CLEANOUT LOCATION. ONLY CERTIFIED CONFINED SPACE ENTRY



**ADS ACCESS RISER WITH 24" H-20 FRAME AND COVER**  
NOT SCALE



**ADS SOIL TIGHT PIPE RETENTION DETAIL**  
NOT TO SCALE



**ADS N-12 SOIL TIGHT PIPE SCHEMATIC LAYOUT**  
NOT TO SCALE

PERSONNEL HAVING APPROPRIATE EQUIPMENT SHOULD BE PERMITTED TO ENTER THE RETENTION/DETENTION SYSTEM.

- INSPECT EACH MANHOLE, ALL LATERALS, AND OUTLET PIPES FOR SEDIMENT BUILD UP, OBSTRUCTIONS, OR OTHER PROBLEMS. OBSTRUCTIONS SHOULD BE REMOVED AT THIS TIME.
- IF MEASURED SEDIMENT BUILD UP IS BETWEEN 5% - 20% OF THE PIPE DIAMETER, CLEANING SHOULD BE CONSIDERED; IF SEDIMENT BUILD UP EXCEEDS 20%, CLEANING SHOULD BE PERFORMED AT THE EARLIEST OPPORTUNITY. A THOROUGH CLEANING OF THE SYSTEM (MANIFOLDS AND LATERALS) SHALL BE PERFORMED BY EITHER MANUAL METHODS OR BY A VACUUM TRUCK.

**DETENTION BASIN:**

**MAINTENANCE:**

A LEGALLY BINDING AND ENFORCEABLE MAINTENANCE AGREEMENT SHALL BE EXECUTED BETWEEN THE FACILITY OWNER AND THE RESPONSIBLE AUTHORITY TO ENSURE THE FOLLOWING:

DETENTION BASIN SHALL NEVER SERVE AS A SEDIMENT CONTROL DEVICE DURING SITE CONSTRUCTION PHASE. CONNECT UPSTREAM DRAINAGE AREAS ONLY AFTER CONSTRUCTION IS COMPLETE, AND THE CONTRIBUTING AREA IS STABILIZED.

**INSPECTIONS:**

DETENTION BASIN SHOULD BE INSPECTED A MINIMUM OF ONE (1) TIME PER YEAR, PREFERABLY IN THE SPRING. IN ADDITION, BASIN SHALL BE INSPECTED AFTER ANY STORM GREATER THAN OR EQUAL TO THE 1-YEAR, 24-HOUR, TYPE III STORM EVENT.

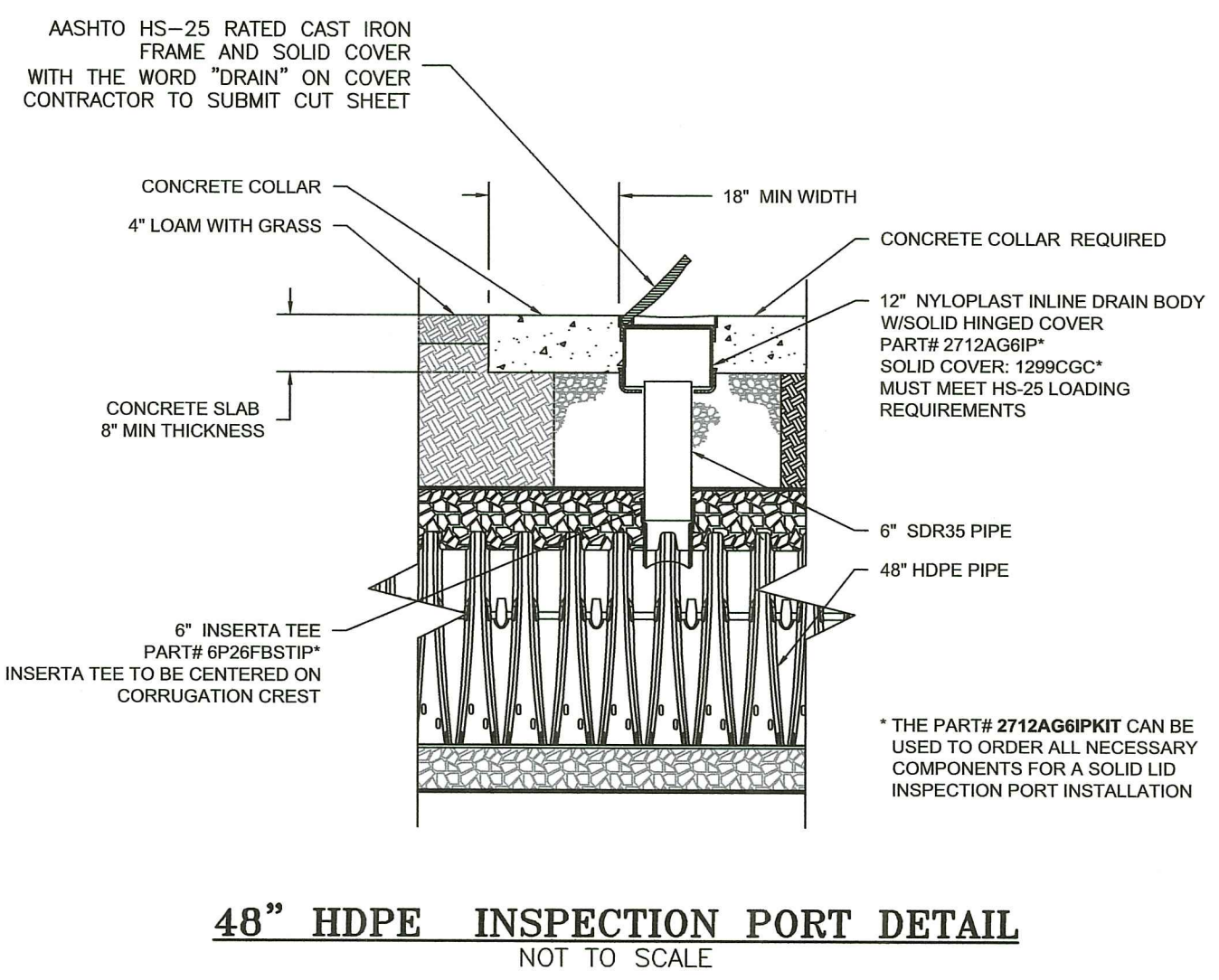
- SCHEDULED MAINTENANCE:**
- SEDIMENT, TRASH OR OTHER DEBRIS IN INFILTRATION BASIN SHALL BE CLEANED A MINIMUM OF ONE (1) TIME PER YEAR (PREFERABLY IN THE SPRING), REGARDLESS OF THE DEPTH OF ACCUMULATED MATERIAL IN THE BASIN AT THE TIME OF THE CLEANING.
  - MOW ALL VEGETATED BASIN SLOPES AT LEAST FOUR (4) TIMES ANNUALLY DURING THE GROWING SEASON (TYPICALLY APRIL-NOVEMBER); MAINTAIN GRASS AT A HEIGHT OF 4-6 INCHES. REMOVE AND DISPOSE OF ANY AND ALL OTHER VEGETATION (BUSHES, SHRUBS, TREES) THAT MAY BEGIN TO GROW WITHIN THE BASIN BEFORE IT BECOMES ESTABLISHED.
  - ALL RIP RAP PADS SHALL BE REFRESHED AS REQUIRED TO MAINTAIN VOID SPACE AND FLOW DIFFUSION EFFECTIVENESS. THIS SHALL CONSIST OF THE REMOVAL OF ACCUMULATED SEDIMENTS WITHIN THE RIP RAP VOIDS AND RESTORATION OF THE RIP RAP STONE TO ORIGINAL LIMITS AND GRADES.

**CORRECTIVE MAINTENANCE:**

IF EROSION OR GULLYING OF THE BASIN SLOPES IS OBSERVED, THE AFFECTED SLOPES SHALL BE PROMPTLY FILLED WITH THE ORIGINAL MATERIAL (OR SUITABLE REPLACEMENT MATERIAL), RE-LOADED TO ORIGINAL GRADE, RE-SEEDED AND MAINTAINED UNTIL SUCH TIME AS THE AFFECTED AREA HAS SUFFICIENTLY STABILIZED. SUPPLEMENTAL SLOPE STABILIZATION (RIP RAP OR GEOTEXTILE SLOPE REINFORCEMENT) SHALL BE INSTALLED IN LOCATIONS DEMONSTRATING REPETITIVE EROSION OR GULLYING, AND IN SEVERE CASES FLOW REDIRECTION AWAY FROM THE AFFECTED AREA SHALL BE IMPLEMENTED IF NECESSARY.

ANY BLOCKAGES OF OUTLET DEVICES/STRUCTURES SHALL BE PROMPTLY REMOVED AND THE DEVICE/STRUCTURE CAPACITY RESTORED.

DEFICIENCIES IN ANY STRUCTURAL COMPONENTS OF THE BASIN (INLET & OUTLET STRUCTURES, WEIRS & ORIFICES, WALLS, SPILLWAYS, ETC.) SHALL BE PROMPTLY REPAIRED TO ORIGINAL CONDITION OR REPLACED IN-KIND.



**48" HDPE INSPECTION PORT DETAIL**  
NOT TO SCALE

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED: MAR 16 2023 FILE # 22-0367  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Environmental Management  
FEB 22 2023  
Office of Water Resources

**DRAWING ISSUE:**

- CONCEPT
  - CUSTOMER APPROVAL
  - PERMITTING
  - CONSTRUCTION
  - AS-BUILT
  - OTHER:
- ONLY PLANS ISSUED FOR CONSTRUCTION SHALL BE USED FOR CONSTRUCTION

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(401) 273-6600

**REVISIONS**

No.	DATE	DRWN	CHKD
1	10/03/22	SMA	TJB
2	01/25/23	SMA	TJB
3	01/31/23	SMA	TJB
4	02/21/23	SMA	TJB

**PERMIT AGENCY REVIEW PLAN**  
FOR  
**THE HILL CREST CONDOMINIUMS**  
ON  
A.P. 13, LOTS 658 AND 659  
COWESETT AVENUE  
WEST WARWICK, RHODE ISLAND  
**CONSTRUCTION DETAILS-7**

SCALE: AS SHOWN SHEET NO: 18 OF 18  
DRAWN BY: SMA DESIGN BY: SMA CHECKED BY: TJB  
DATE: JUNE 2022 PROJECT NO 22026.00