

# PRELIMINARY PLANS

## FOR

# KEYES WAY DEVELOPMENT

### AT

## 40 KEYES WAY

## A.P. 30 LOT 51

# WEST WARWICK, RHODE ISLAND



LOCUS/LOCATION MAP  
SCALE: 1"=400'

### SHEET INDEX

1. TITLE SHEET
2. LEGEND, ABBREVIATIONS & NOTES
3. EXISTING CONDITIONS PLAN
4. SITE PREPARATION/SESC PLAN
5. SITE LAYOUT & GRADING PLAN
6. DRIVEWAY PROFILE VIEWS
7. STORMWATER PLAN
8. STORMWATER PROFILES
9. UTILITY PLAN & PROFILES
10. LANDSCAPE PLAN
- 11-17. CONSTRUCTION DETAILS 1-7

### WEST WARWICK ZONING DISTRICT: BUSINESS PARK

#### DIMENSIONAL REQUIREMENTS

LOT AREA - 40,000 S.F.  
LOT WIDTH - 150 FT  
LOT DEPTH - 200 FT  
LOT FRONTAGE - N/A  
SETBACKS:

	PRINCIPAL	ACCESSORY
FRONT	50 FT	50 FT
INTERIOR SIDE	20 FT	20 FT
CORNER SIDE	50 FT	50 FT
REAR YARD	50 FT	50 FT

STORIES - N/A  
MAXIMUM HEIGHT - 90 FT  
MAXIMUM BUILDING LOT COVERAGE - 50%

REFERENCES TO PROPERTY DEED AS RECORDED IN THE WEST WARWICK LAND EVIDENCE RECORDS  
BOOK 2487 PAGE 129  
BOOK 2467 PAGE 187

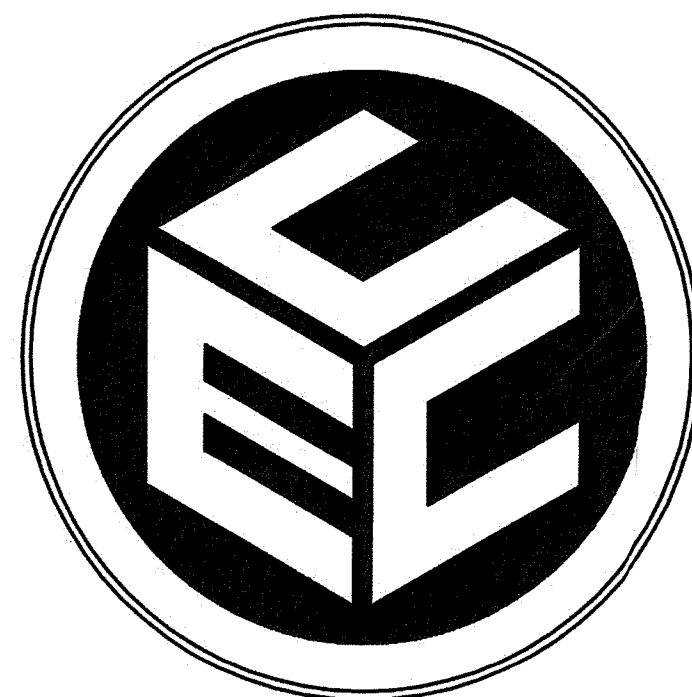
#### LOCAL/STATE/FEDERAL PERMITS REQUIRED:

1. RIDEM FRESHWATER WETLANDS PROGRAM APPROVAL
2. WEST WARWICK PLANNING BOARD APPROVAL
3. KCWA WATER SYSTEM CONNECTION APPROVAL
4. WEST WARWICK SEWER CONNECTION APPROVAL
5. WEST WARWICK FIRE DEPARTMENT APPROVAL

#### GENERAL NOTES:

1. THESE PLANS ARE ISSUED FOR PERMITTING REVIEW AND APPROVAL ONLY, AND ARE NOT ISSUED FOR CONSTRUCTION. PLANS MAY BE SUBJECT TO REVISIONS AND CONDITIONS OF LOCAL/STATE APPROVALS.
2. THE LOCATION AND ELEVATION FOR ALL EXISTING UTILITIES SHALL BE CONSIDERED APPROXIMATE, AND MUST BE VERIFIED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF ANY CROSSINGS OF PROPOSED UTILITIES AND EXISTING UTILITIES. ANY DISCREPANCIES IN THE LOCATION OF ANY UTILITY SHOWN OR ENCOUNTERED DURING CONSTRUCTION SHALL BE REPORTED TO COMMONWEALTH ENGINEERS & CONSULTANTS, INC. 400 SMITH STREET, PROVIDENCE, RHODE ISLAND 02908; (401) 273-6600.
3. THE CONTRACTOR SHALL BE RESPONSIBLE TO NOTIFY DIG-SAFE (1-800-344-7233) A MINIMUM OF 72 WORKING HOURS, EXCLUDING WEEKENDS AND HOLIDAYS, PRIOR TO THE START OF ANY EXCAVATION WORK. THE NAME OF THE COMPANY PERFORMING THE EXCAVATION MUST BE SUPPLIED TO DIG-SAFE, IF IT IS DIFFERENT FROM THE CALLER.
4. IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO MAINTAIN THE INTEGRITY OF ALL EXISTING UTILITIES, STRUCTURES, AND ADJUTING PROPERTIES. THE COST OF ANY REPAIR OR REPLACEMENT OF DAMAGED ITEMS SHALL BE BORNE BY THE CONTRACTOR.
5. UNLESS OTHERWISE NOTED OR AUTHORIZED, RHODE ISLAND DEPARTMENT OF TRANSPORTATION (RIDOT) APPROVED MATERIALS SHALL BE USED; REFER TO RIDOT'S APPROVED MATERIAL LIST.
6. CONSTRUCT ALL WORK IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS OF RIDOT, THE TOWN OF WEST WARWICK, THE KENT COUNTY WATER AUTHORITY, AND APPLICABLE MANUFACTURER'S RECOMMENDATIONS.

OWNER/APPLICANT:  
**QUALITY REALTY, LLC**  
25 BATH STREET  
PROVIDENCE, RI 02908



**COMMONWEALTH**  
ENGINEERS & CONSULTANTS, INC.

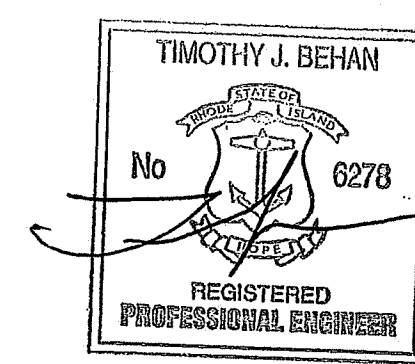
400 SMITH STREET  
PROVIDENCE, RHODE ISLAND 02908  
TELEPHONE: (401) 273-6600

DATE: JUNE 2022

REV 1: 8-18-22  
REV 2: 10-4-22

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS AS  
SPECIFIED IN THE LETTER OF APPROVAL  
DATED: NOV 09 2022 FILE #: 22-0300  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Timothy J. Behan*



THE ATTACHED DRAWING NUMBERS 1 TO 17 HAVE BEEN PREPARED BY ME, OR UNDER MY DIRECT SUPERVISION, AND HAVE BEEN THOROUGHLY CHECKED BY ME.

PLANNING BOARD CERTIFICATION

WEST WARWICK PLANNING BOARD

\_\_\_\_\_

\_\_\_\_\_

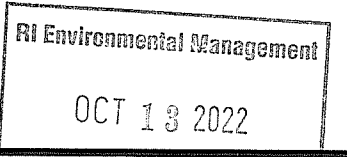
\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

DATE APPROVED: \_\_\_\_\_

DATE ENDORSED: \_\_\_\_\_

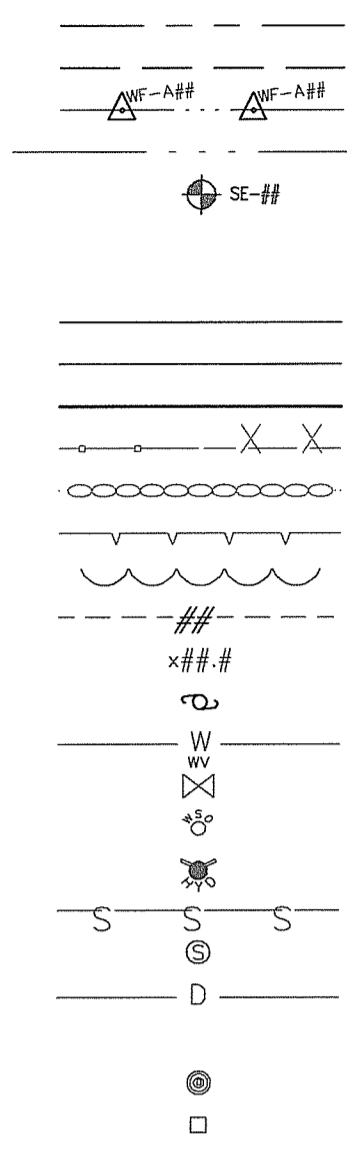


PROJECT NO. 22013.00

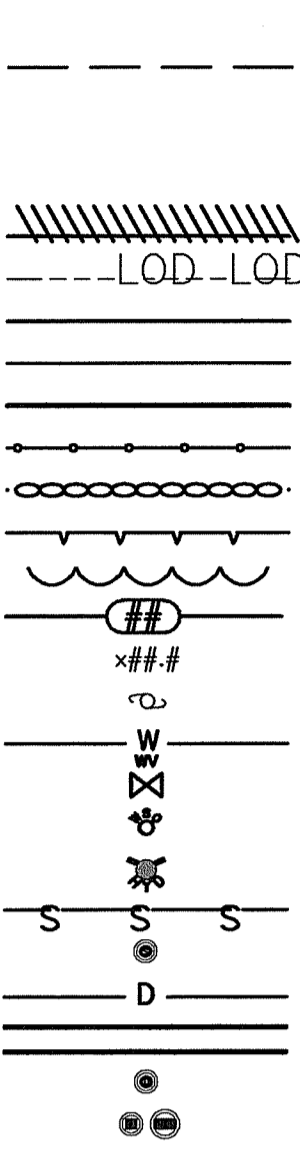
**LEGEND**

PROPERTY LINE  
 ABUTTER LINE  
 ZONING SETBACK LINE  
 FLAGGED WETLAND EDGE  
 100' RIVERBANK WETLAND  
 SOIL EVALUATION  
 SAWCUT LIMIT  
 LIMIT OF DISTURBANCE  
 EDGE OF PAVEMENT  
 BACK OF BERM  
 BUILDING  
 FENCELINE  
 STONE WALL  
 RETAINING WALL  
 TREELINE  
 CONTOUR LINE  
 SPOT GRADE  
 UTILITY POLE  
 WATER MAIN  
 WATER GATE VALVE  
 WATER CURB STOP  
 HYDRANT  
 SEWER MAIN  
 SEWER MANHOLE  
 DRAIN PIPE ( $\leq 18"$ )  
 DRAIN PIPE ( $> 18"$ )  
 DRAIN MANHOLE  
 DRAIN INLET (CATCH BASIN)

**EXISTING**



**PROPOSED**



**ABBREVIATIONS**

APPROX	APPROXIMATE
BIT	BITUMINOUS
BOT	BOTTOM
BOW	BOTTOM OF WALL REVEAL FINISH GRADE (ACTUAL BASE OF WALL WILL BE LOWER THAN SURFACE ELEVATION)
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
DWVY	DRIVEWAY
ELEV	ELEVATION
EX	EXISTING
ESHGWT	ESTIMATED SEASONAL HIGH GROUNDWATER TABLE
GWT	GROUNDWATER TABLE
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 (PIPES)
SDWK	SIDEWALK
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
TH	TEST HOLE
TOW	TOP OF WALL
VERT	VERTICAL
W	WIDTH
WF	WETLAND FLAG
WLKWY	WALKWAY
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, 2013 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 NAVD83 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 RIDOT & TOWN STANDARDS.
- THE LOCATION, SIZE AND SHAPE OF HOUSES/INDIVIDUAL DRIVEWAYS ARE DEPICTED TO DEMONSTRATE CONFORMANCE WITH VARIOUS STATE AND LOCAL SITE REQUIREMENTS FOR PERMITTING PURPOSES. THESE MAY ALL VARY ACCORDING TO BUYER PREFERENCES AND PERMITTING APPROVALS, EXCEPT THAT UNDER NO CIRCUMSTANCES SHALL ANY BUILDINGS BE ALLOWED BEYOND THE LIMITS OF DISTURBANCE OR THE BUILDING SETBACK LINES SHOWN ON THESE PLANS.
- PROPOSED GRADING ON THE HOUSE LOTS IS TO BE USED AS A GUIDE, SUCH THAT THE DEVELOPED AREA IS GRADED TO DRAIN ALL SURFACE RUNOFF. LOT GRADING SHALL BE PERFORMED IN ACCORDANCE WITH THE R.I. STATE BUILDING CODE FOR ONE AND TWO FAMILY DWELLINGS, LATEST EDITION.
- ALL BASEMENTS (LOWEST FLOOR) SHALL BE LOCATED AT LEAST 1 FOOT ABOVE THE ESTIMATED SEASONAL HIGH GROUNDWATER TABLE. FOUNDATION DRAINAGE SHALL BE IN ACCORDANCE WITH THE R.I. BUILDING CODE FOR ONE & TWO FAMILY DWELLINGS.
- COMMUNICATION LINES (ELECTRIC, TELEPHONE, AND CABLE TV) SHALL BE INSTALLED UNDERGROUND, UNLESS OVERHEAD SERVICE IS APPROVED 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. 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 ROADWAY DRAINAGE SHALL REMAIN ON THE ROADWAY, AND SHALL NOT BE DIRECTED DOWN ANY OF THE INDIVIDUAL DRIVEWAYS, WHERE APPLICABLE. A BITUMINOUS APRON SHALL BE CONSTRUCTED ALONG EACH DRIVEWAY CURB CUT TO KEEP DRAINAGE IN THE DRIVEWAY.
- 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 (MIRAF 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.
- AFTER SUBSTANTIAL COMPLETION OF THE ROAD AND DRAINAGE SYSTEMS, THE DEVELOPER SHALL INSTALL/CONSTRUCT MISCELLANEOUS WORK ITEMS SUCH AS GUARDRAILS, RIP RAP, SIGNAGE, OR ROAD MARKINGS NOT SHOWN ON THE PLANS BUT DETERMINED TO BE NECESSARY BY THE TOWN AND/OR DESIGN ENGINEER.

**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. ANY DAMAGE TO EXISTING UTILITIES SHALL BE THE CONTRACTOR'S RESPONSIBILITY.
- 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 OF 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 THERE TO, 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 UTILITIES, DRAINAGE, SEWERS, WATER PIPES, FENCES, GUARDRAILS, FENCES, GAS PIPES, OR OTHER STRUCTURES REQUIRING 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 REPAIR AND 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 REPLACED 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.
- ESTIMATED SEASONAL HIGH WATER TABLES ARE FOR CONSTRUCTION OF ON-SITE STORMWATER MANAGEMENT SYSTEMS ONLY, AND SHOULD NOT BE USED FOR ANY OTHER PURPOSE. ESTIMATED SEASONAL HIGH WATER TABLES MAY BE EXCEEDED PERIODICALLY.

**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. AS-BUILTS SHALL BE STAMPED BY A R.I. PROFESSIONAL LAND SURVEYOR AND R.I. PROFESSIONAL ENGINEER. PRIOR TO ACCEPTANCE OF INFRASTRUCTURE, A R.I. 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.

**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 PRACTICES CONTROL DEVICES (MUTCD), INCLUDING ALL SUBSEQUENT REVISIONS.
- EXISTING 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 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 2013 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.
- 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 SPECIALLY PREPARED AS DETAILED ON THESE PLANS.
- 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 SUBGRADE 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 NOTES:**

- 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 DIVERT 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 TOWN OF WEST WARWICK SHALL MAINTAIN ALL ELEMENTS OF THE PROPOSED DRAINAGE SYSTEM (CATCH BASINS, MANHOLES, PIPING) WITHIN THE PUBLIC ROADWAY. A HOMEOWNER'S ASSOCIATION (HOA) COMPRISED OF THE INDIVIDUAL LOT OWNERS SHALL BE FORMED, AND SHALL BE RESPONSIBLE FOR THE OFF-ROAD STORMWATER STRUCTURES (SAND FILTER, DETENTION BASIN, ASSOCIATED PIPING AND STRUCTURES).
- 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 O&M PLAN FOR THIS DEVELOPMENT, AS WELL AS THE 'RHODE ISLAND STORMWATER DESIGN AND INSTALLATION STANDARDS MANUAL', LATEST EDITION (KNOWN AS THE 'MANUAL').

PLANNING BOARD CERTIFICATION

WEST WARWICK PLANNING BOARD

DATE APPROVED: \_\_\_\_\_

DATE ENDORSED: \_\_\_\_\_

RI Environmental Permitting  
 OCT 18 2022  
 Office of Water Resources

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM

APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED: NOV 09 2022 FILE #: 22-0300  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Nancy J. Freeman*

TIMOTHY J. BEHAN  
 No. 6278  
 REGISTERED PROFESSIONAL ENGINEER

REVISIONS

No.	DATE	DRWN	CHKD
1	8-18-22	MCZ	TJB
2	10-4-22	MCZ	TJB

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

PRELIMINARY PLANS FOR  
 KEYES WAY DEVELOPMENT  
 AT  
 40 KEYES WAY  
 A.P. 30 LOT 51  
 WEST WARWICK, RHODE ISLAND  
 LEGEND, NOTES & ABBREVIATIONS

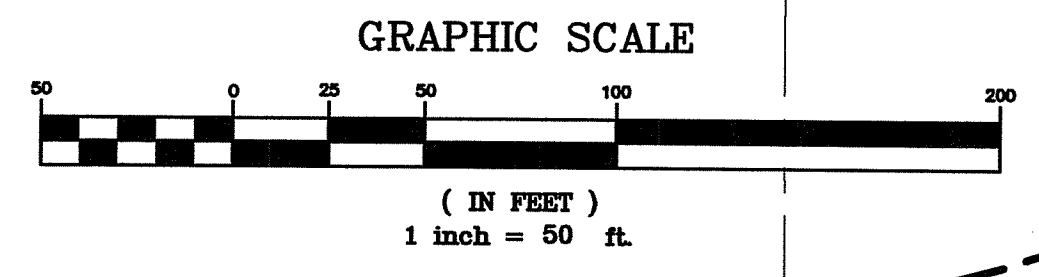
SCALE: NO SCALE	SHEET NO: 2 OF 17
DRAWN BY: MCZ	DESIGN BY: MCZ/TJB
CHECKED BY: TJB	
DATE: JUNE 2022	PROJECT NO.: 22013.00

OWNER/APPLICANT:  
**QUALITY REALTY, LLC**  
 25 BATH STREET  
 PROVIDENCE, RI 02908

James P. Murphy Highway

**A.P. 30  
Lot 51**  
Area = 15.353 Acres

- GENERAL NOTES:**
1. A PORTION OF SUBJECT PROPERTY IS SITUATED IN AN 'AE' FLOOD ZONE AS DEPICTED ON FEMA FIRM KENT COUNTY, RI, PANEL 117 OF 251, MAP NUMBER 44003C0117H, REVISED OCT. 2, 2015.
  2. PROPERTY LINES ARE APPROXIMATE AND TAKEN FROM TOWN ASSESSOR'S MAPS AND BEST AVAILABLE INFORMATION.
  3. SUBJECT PROPERTY TOPOGRAPHY AND EXISTING CONDITIONS/UTILITIES TAKEN FROM PLAN ENTITLED "PROPOSED CONDITIONS PLAN, DATED OCT. 17, 2016, SHEET 1 OF 3, PREPARED BY BOYER ASSOCIATES. OFF SITE TOPOGRAPHY TAKE FROM RIGIS LIDAR 2011 SERIES.
  4. WETLAND EDGE TAKEN FROM RIDEM VERIFIED WETLAND EDGE, REFER TO PERMIT #07-0267.
  5. SOIL TEST HOLES PERFORMED BY COMMONWEALTH ENGINEERS & CONSULTANTS, INC. SPRING 2017.



EXISTING OUTLET CONTROL STRUCTURE  
IN.VIN (VEE WEIR) = 236±  
IN.VIN (BROAD-CRESTED WEIR) = 238.5±  
IN.V.OUT (48" CULVERT) = 236±

**PLANNING BOARD CERTIFICATION**

WEST WARWICK PLANNING BOARD

DATE APPROVED: \_\_\_\_\_

DATE ENDORSED: \_\_\_\_\_

OWNER/APPLICANT:  
**QUALITY REALTY, LLC**  
25 BATH STREET  
PROVIDENCE, RI 02908

**TIMOTHY J. BEHAN**  
REGISTERED PROFESSIONAL ENGINEER  
No. 6278

**REVISIONS**

No.	DATE	DRWN	CHKD
1	8-18-22	MCZ	TJB
2	10-4-22	MCZ	TJB

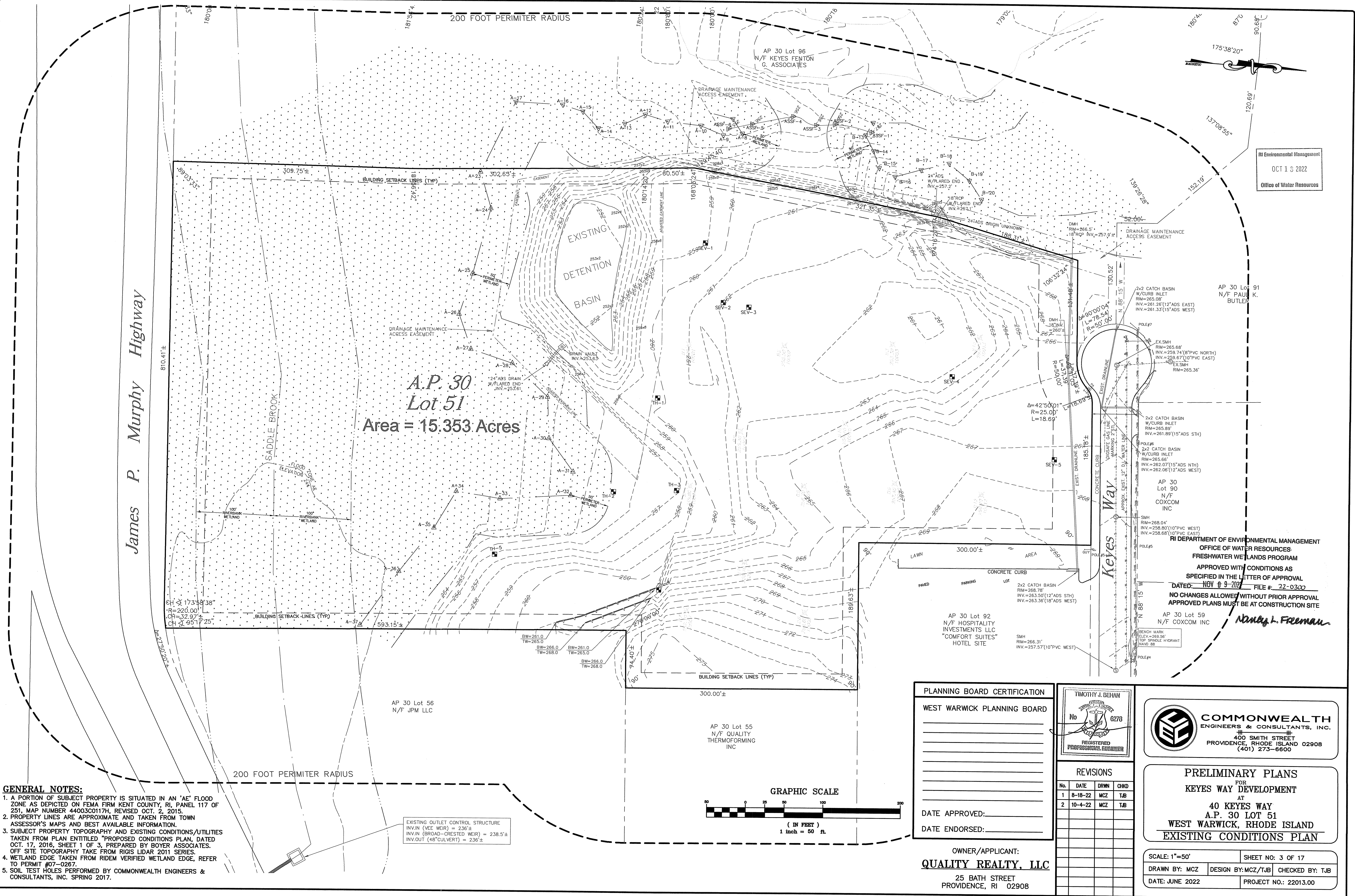
**COMMONWEALTH ENGINEERS & CONSULTANTS, INC.**  
400 SMITH STREET  
PROVIDENCE, RHODE ISLAND 02908  
(401) 275-6600

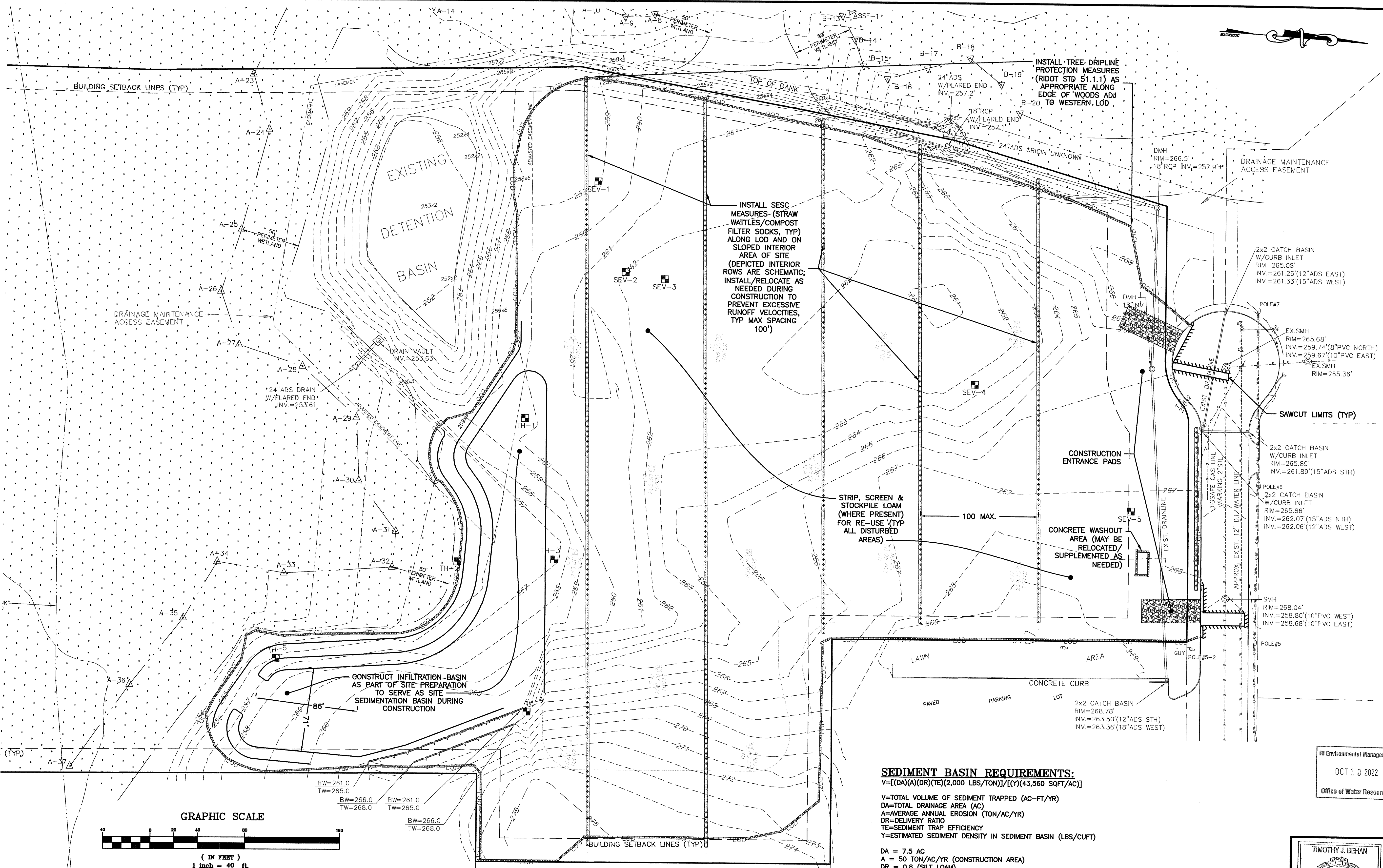
**PRELIMINARY PLANS**  
FOR  
**KEYES WAY DEVELOPMENT**  
AT  
**40 KEYES WAY**  
**A.P. 30 LOT 51**  
**WEST WARWICK, RHODE ISLAND**  
**EXISTING CONDITIONS PLAN**

SCALE: 1"=50' SHEET NO: 3 OF 17  
DRAWN BY: MCZ DESIGN BY: MCZ/TJB CHECKED BY: TJB  
DATE: JUNE 2022 PROJECT NO.: 22013.00

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED: **NOV 09 2022** FILE #: 22-0300  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE  
*Nancy L. Freeman*

RI Environmental Management  
OCT 13 2022  
Office of Water Resources





RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS AS  
 SPECIFIED IN THE LETTER OF APPROVAL  
 DATED: NOV 09 2022 FILE # 22-0300  
 NO CHANGES TO BE MADE WITHOUT PRIOR APPROVAL  
 APPROVED PROJECT MUST BE AT CONSTRUCTION SITE

*Nancy L. Freeman*

PLANNING BOARD CERTIFICATION

WEST WARWICK PLANNING BOARD

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

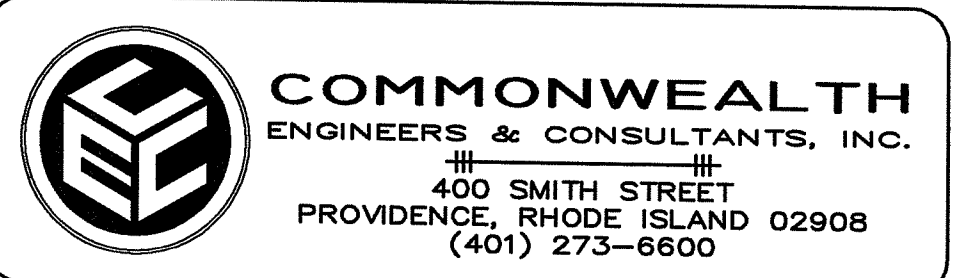
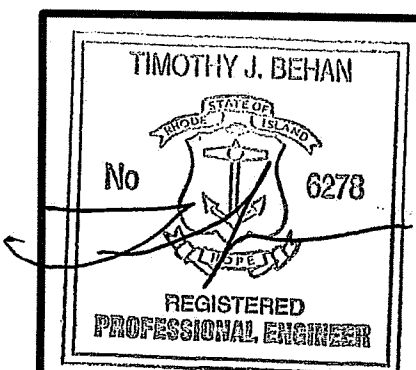
\_\_\_\_\_

DATE APPROVED: \_\_\_\_\_

DATE ENDORSED: \_\_\_\_\_

OWNER/APPLICANT:  
**QUALITY REALTY, LLC**  
 25 BATH STREET  
 PROVIDENCE, RI 02908

RI Environmental Management  
 OCT 13 2022  
 Office of Water Resources



REVISIONS

No.	DATE	DRWN	CHKD
1	8-18-22	MCZ	TJB
2	10-4-22	MCZ	TJB

PRELIMINARY PLANS  
 FOR  
 KEYES WAY DEVELOPMENT  
 AT  
 40 KEYES WAY  
 A.P. 30 LOT 51  
 WEST WARWICK, RHODE ISLAND  
 SITE PREPARATION/SESC PLAN

SCALE: 1"=40' SHEET NO: 4 OF 17  
 DRAWN BY: MCZ DESIGN BY: MCZ/TJB CHECKED BY: TJB  
 DATE: JUNE 2022 PROJECT NO.: 22013.00

**SEDIMENT BASIN REQUIREMENTS:**  
 $V = [(DA)(A)(DR)(TE)(2,000 \text{ LBS/TON})] / [(Y)(43,580 \text{ SQFT/AC})]$   
 V=TOTAL VOLUME OF SEDIMENT TRAPPED (AC-FT/YR)  
 DA=TOTAL DRAINAGE AREA (AC)  
 A=AVERAGE ANNUAL EROSION (TON/AC/YR)  
 DR=DELIVERY RATIO  
 TE=SEDIMENT TRAP EFFICIENCY  
 Y=ESTIMATED SEDIMENT DENSITY IN SEDIMENT BASIN (LBS/CUFT)

DA = 7.5 AC  
 A = 50 TON/AC/YR (CONSTRUCTION AREA)  
 DR = 0.8 (SILT LOAM)  
 TE = 0.8 (AS PER RISESC HAND BOOK)  
 Y = 95 LBS/CUFT (SAND SILT MIXTURE)

V = 0.116 AC-FT/YEAR = 5,100 CUFT  
 WET STORAGE VOLUME MUST BE TWICE THE SEDIMENT STORAGE VOLUME: WET STORAGE VOLUME = 10,200 CUFT  
 MINIMUM WIDTH (MEASURED AT ELEVATION OF SPILLWAY HEIGHT)

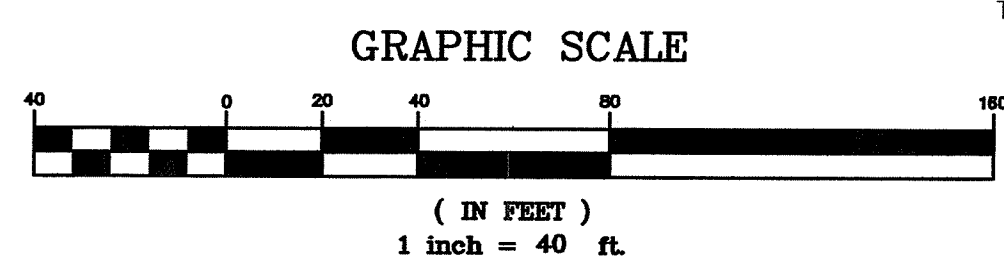
$W = 10\sqrt{Q}$   
 W = MINIMUM BASIN WIDTH  
 Q = PEAK DISCHARGE FROM 5-YR STORM (CFS)  
 Q = 12.96 CFS (AS CALCULATED FROM HYDROCAD)  
 W = 36 FT.

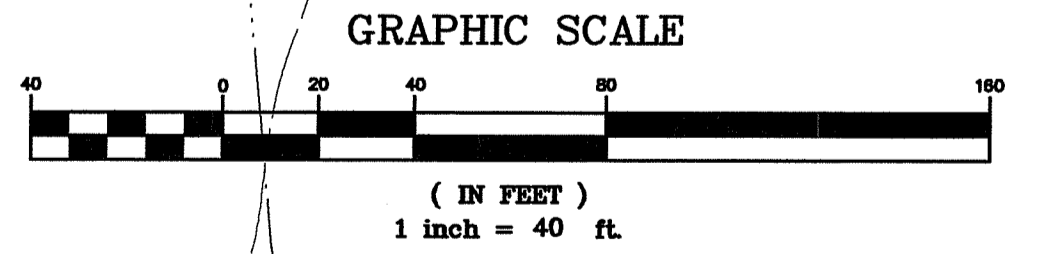
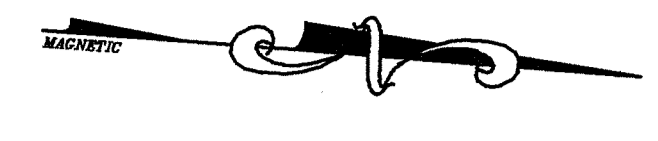
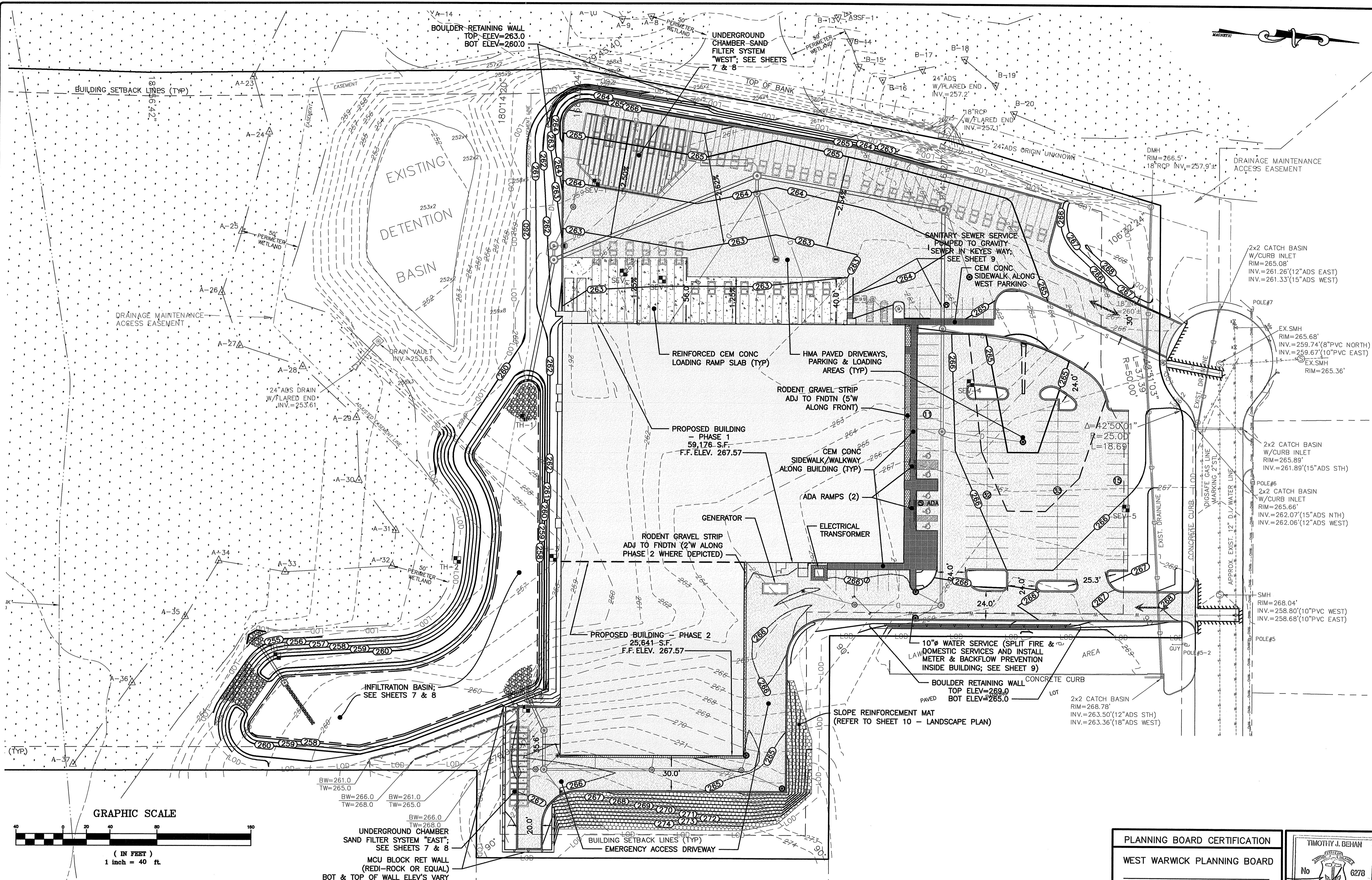
THE MINIMUM LENGTH MUST BE TWICE AS LONG AS THE MINIMUM WIDTH. THEREFORE, THE MINIMUM LENGTH IS 72 FT.

SEDIMENT BASIN DATA:	REQUIRED	PROVIDED
SEDIMENT STORAGE VOLUME	5,100 CU.FT.	>10,000 CU.FT.
WET STORAGE VOLUME	10,200 CU.FT.	>20,000 CU.FT.
WET STORAGE DEPTH	2.0 FT.	2.0 FT.
TOTAL DEPTH	4.0 FT.	5.0 FT.
MINIMUM WIDTH	36 FT.	71 FT.
LENGTH	72 FT.	86 FT.

**SOIL EROSION & SEDIMENTATION CONTROL NOTE:**

1. REFER TO SHEET 11 - CONSTRUCTION DETAILS 1 FOR DETAILS AND NOTES RELATED TO SOIL EROSION AND SEDIMENTATION CONTROL MEASURES AND IMPLEMENTATION.





**PARKING SUMMARY:**  
 PROPOSED: WHOLESALE FOOD PROCESSING FACILITY  
 PER TOWN OF WEST WARWICK ZONING ORDINANCE, §5.3 - TABLE OF USE REGULATIONS,  
 NON-RESIDENTIAL DISTRICTS: CLASSIFY AS CATEGORY H.3 - WHOLESALE TRADE OR  
 TRANSFER OF NON-DURABLE GOODS NOT CLASSIFIED ELSEWHERE.

USE CATEGORIES/AREAS	ON-SITE SPACES REQUIRED	PROPOSED SPACES PROVIDED
STORAGE/DOCK AREAS <sup>a</sup> - 44,635 S.F.	8 <sup>b</sup>	106 STANDARD SPACES 5 ADA SPACES 111 TOTAL SPACES
PRODUCTION/UTILITY AREAS <sup>b</sup> - 9,177 S.F.	3 <sup>b</sup>	
OFFICE SPACES - 19,536 S.F. (1/200 S.F.)	97	
ADA HANDICAP SPACES FOR COMMERCIAL USE	5 (101-150 STD)	
TOTAL SPACES REQ'D (SUBJECT TO TOWN APPROVAL):	108/5 ADA	

<sup>a</sup> USE NOT LISTED IN TOWN PARKING CALCULATION TABLE. USE "OTHER USES" PER §5.9.10.7 OF APPENDIX A IN THE TOWN OF WEST WARWICK ZONING ORDINANCE. THE MINIMUM REQUIREMENT OF "SPACE IN ACCORDANCE WITH THE PARKING NEEDS MAY BE REASONABLY DETERMINED BY THE TOWN ENGINEER, SUBJECT TO THE APPROVAL OF THE BUILDING INSPECTOR."  
<sup>b</sup> PER TABLE 208.2 OF THE "2010 ADA STANDARDS FOR ACCESSIBLE DESIGN"

- LAYOUT NOTES:**
- DRIVEWAYS SHALL BE HOT-MIX ASPHALT (HMA) BITUMINOUS CONCRETE; EDGE TREATMENT FOR DRIVEWAYS/PARKING AREAS SHALL BE BITUMINOUS BERM EXCEPT ALONG SIDEWALKS.
  - SIDEWALKS/WALKWAYS SHALL BE PORTLAND CEMENT CONCRETE; EDGE TREATMENT FOR SIDEWALKS SHALL BE PRECAST CONCRETE CURBING.
  - ALL PERVIOUS DISTURBED SURFACE AREAS (I.E. OUTSIDE OF BUILDING, PAVEMENTS, SIDEWALKS/WALKWAYS) SHALL BE LOAMED & SEEDED.

RI Environmental Management  
 OCT 13 2022  
 Office of Water Resources

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS AS  
 SPECIFIED IN THE LETTER OF APPROVAL  
 DATED: NOV 09 2022 FILE #: 22-0300  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

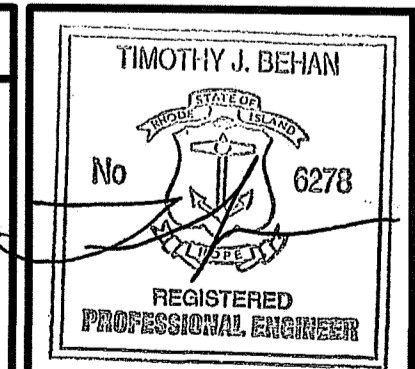
*Nancy L. Freeman*

PLANNING BOARD CERTIFICATION

WEST WARWICK PLANNING BOARD

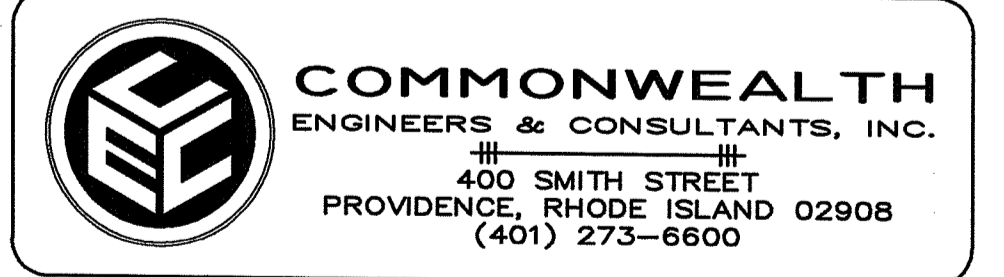
DATE APPROVED: \_\_\_\_\_

DATE ENDORSED: \_\_\_\_\_



REVISIONS

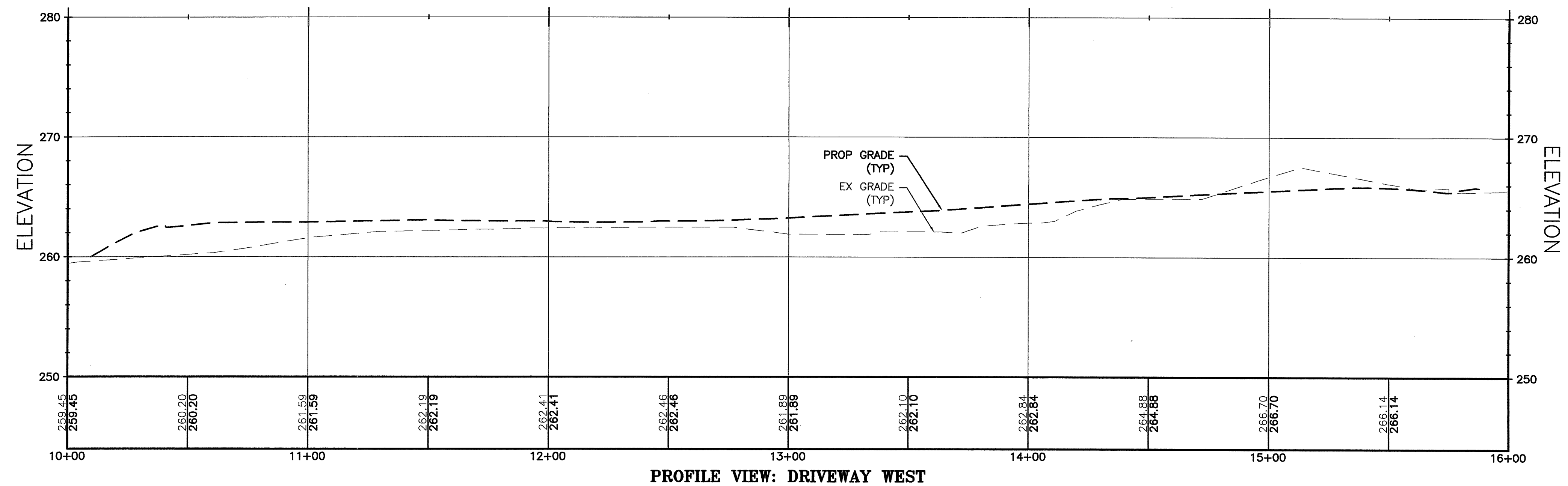
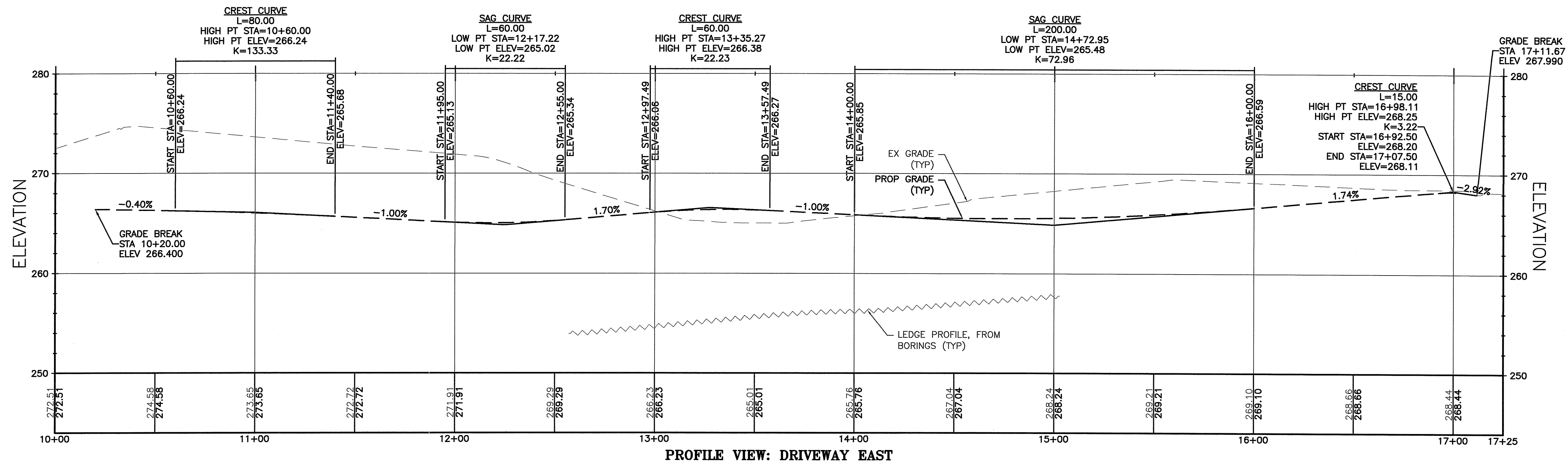
No.	DATE	DRWN	CHKD
1	8-18-22	MCZ	TJB
2	10-4-22	MCZ	TJB



PRELIMINARY PLANS  
 FOR  
 KEYES WAY DEVELOPMENT  
 AT  
 40 KEYES WAY  
 A.P. 30 LOT 51  
 WEST WARWICK, RHODE ISLAND  
 LAYOUT & GRADING PLAN

SCALE: 1"=40'	SHEET NO: 5 OF 17
DRAWN BY: MCZ	DESIGN BY: MCZ/TJB
CHECKED BY: TJB	
DATE: JUNE 2022	PROJECT NO.: 22013.00

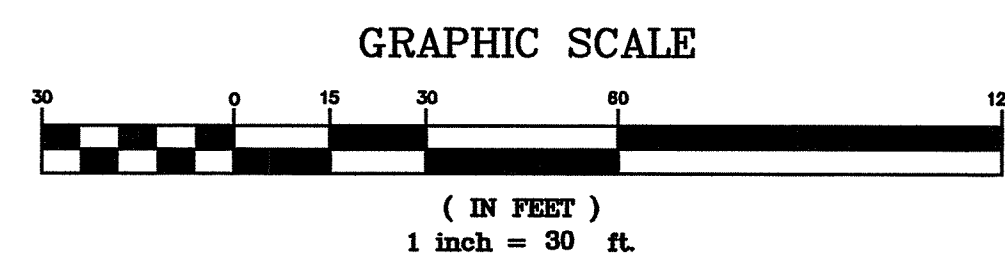
OWNER/APPLICANT:  
**QUALITY REALTY, LLC**  
 25 BATH STREET  
 PROVIDENCE, RI 02908



RI Environmental Management  
 OCT 13 2022  
 Office of Water Resources

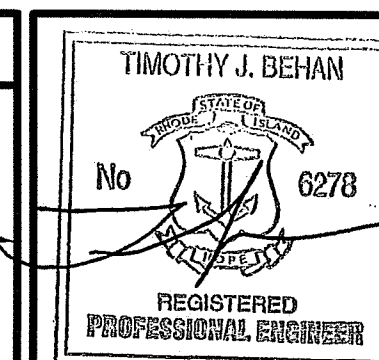
RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED: NOV 9 2022 FILE #: 22-0300  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Nancy L. Freeman*



PLANNING BOARD CERTIFICATION  
 WEST WARWICK PLANNING BOARD

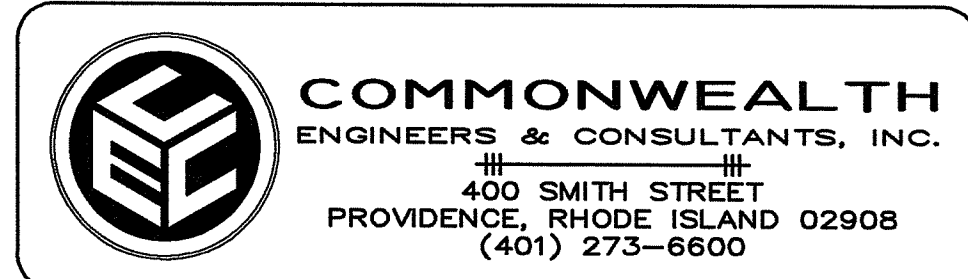
DATE APPROVED: \_\_\_\_\_  
 DATE ENDORSED: \_\_\_\_\_



REVISIONS

No.	DATE	DRWN	CHKD
1	8-18-22	MCZ	TJB
2	10-4-22	MCZ	TJB

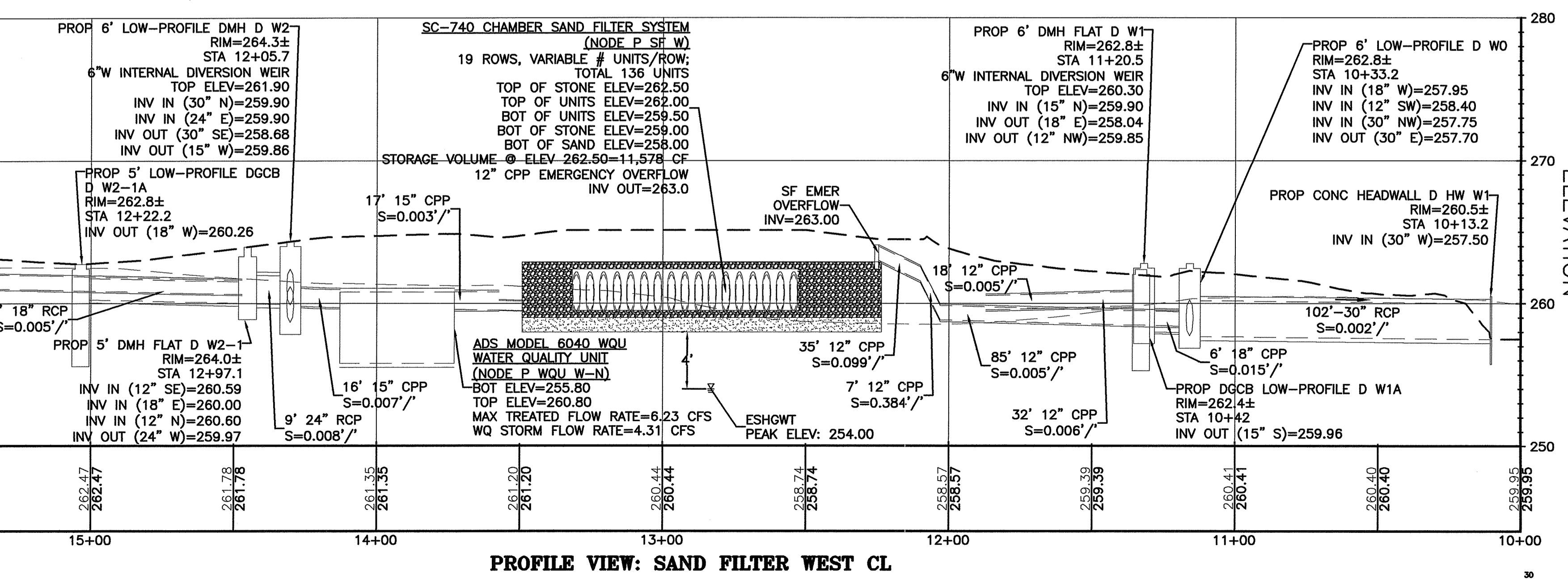
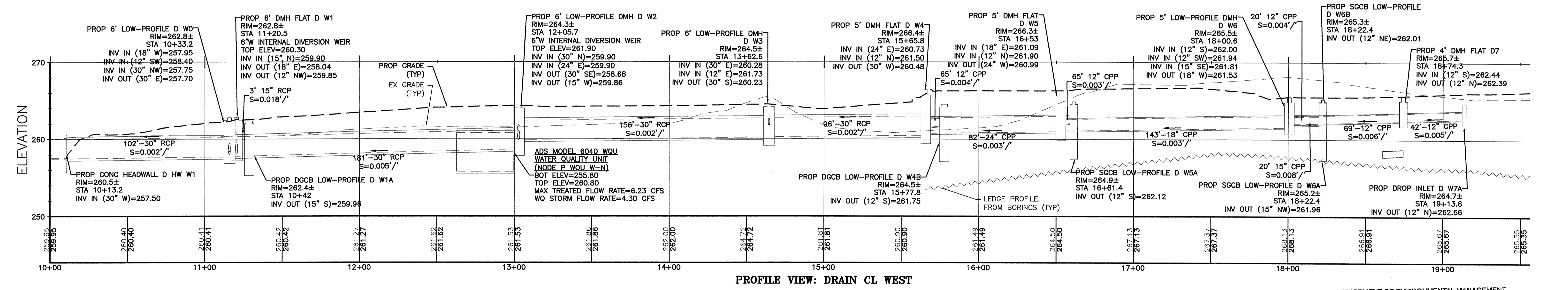
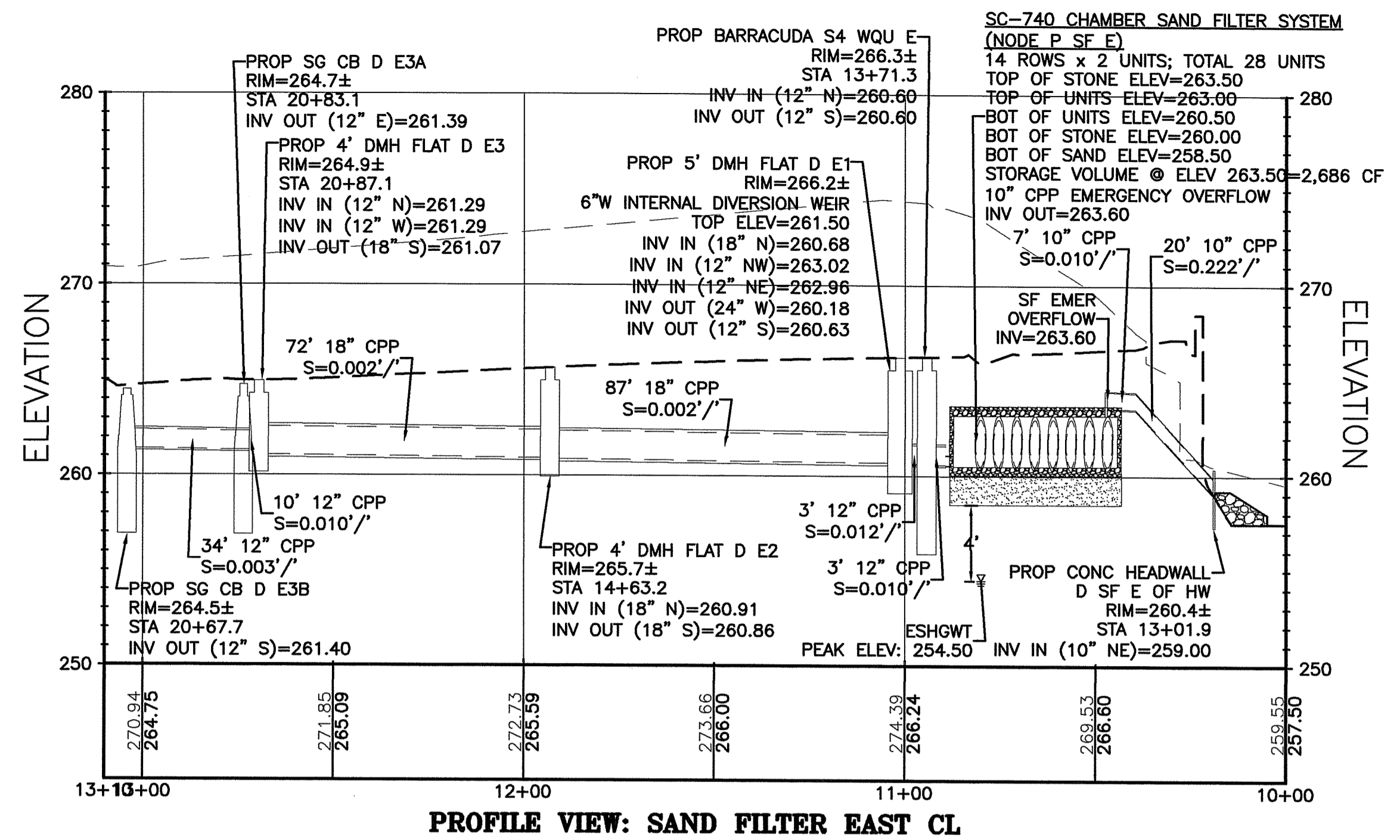
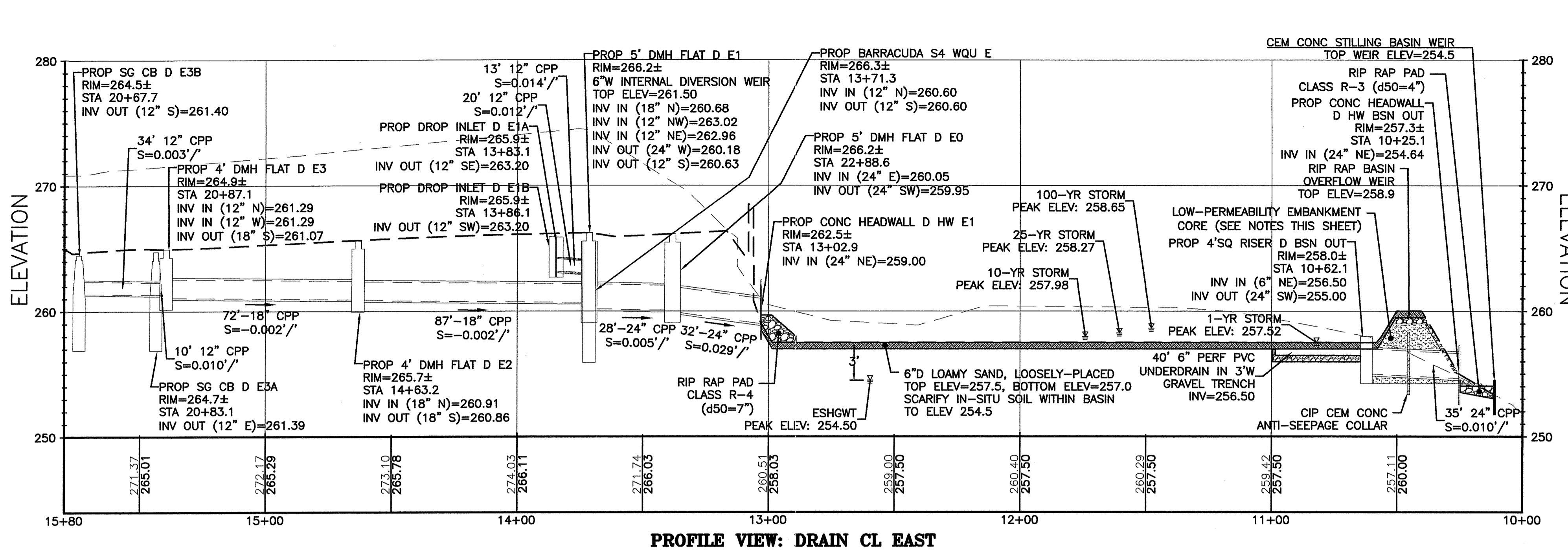
OWNER/APPLICANT:  
**QUALITY REALTY, LLC**  
 25 BATH STREET  
 PROVIDENCE, RI 02908



PRELIMINARY PLANS  
 FOR  
 KEYES WAY DEVELOPMENT  
 AT  
 40 KEYES WAY  
 A.P. 30 LOT 51  
 WEST WARWICK, RHODE ISLAND  
 DRIVEWAY PROFILES

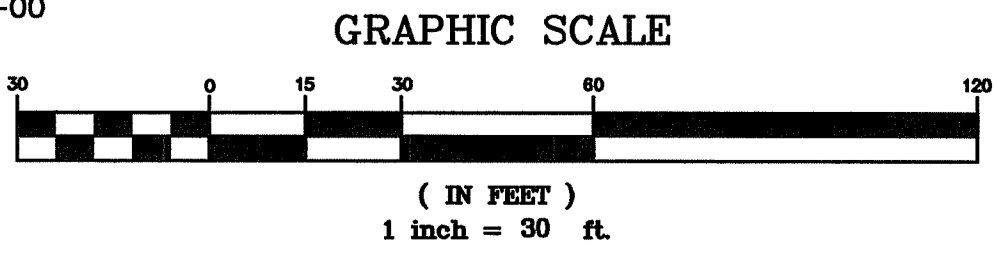
SCALE: 1"=30'H/6'V SHEET NO: 6 OF 17  
 DRAWN BY: MCZ DESIGN BY: MCZ/TJB CHECKED BY: TJB  
 DATE: JUNE 2022 PROJECT NO.: 22013.00





**LOW-PERMEABILITY MATERIAL NOTES:**

- LOW-PERMEABILITY MATERIAL FOR USE WITHIN THE BASIN EMBANKMENT SHALL MEET THE FOLLOWING PARAMETERS:
  - % PASSING #200 SIEVE > 15%
  - PERMEABILITY  $1 \times 10^{-5}$  CM/SEC OR SLOWER
- PRIOR TO INSTALLATION, CONTRACTOR SHALL PROVIDE A REPRESENTATIVE SAMPLE OF THE LOW-PERMEABILITY MATERIAL TO BE USED, AS WELL AS DOCUMENTATION OF THIRD-PARTY ANALYSES THAT DEMONSTRATE THAT THE MATERIAL MEETS THE GRADATION AND PERMEABILITY REQUIREMENTS HEREIN.
- NO LOW-PERMEABILITY MATERIAL SHALL BE USED WITHOUT THE APPROVAL OF THE ENGINEER.



RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
Office of Water Resources  
OCT 18 2022  
Office of Water Resources

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED: NOV 09 2022 FILE #: 22-0300  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE  
*Nancy L. Freeman*

PLANNING BOARD CERTIFICATION  
WEST WARWICK PLANNING BOARD  
DATE APPROVED: \_\_\_\_\_  
DATE ENDORSED: \_\_\_\_\_

TIMOTHY J. BEHAN  
No. 6273  
REGISTERED PROFESSIONAL ENGINEER

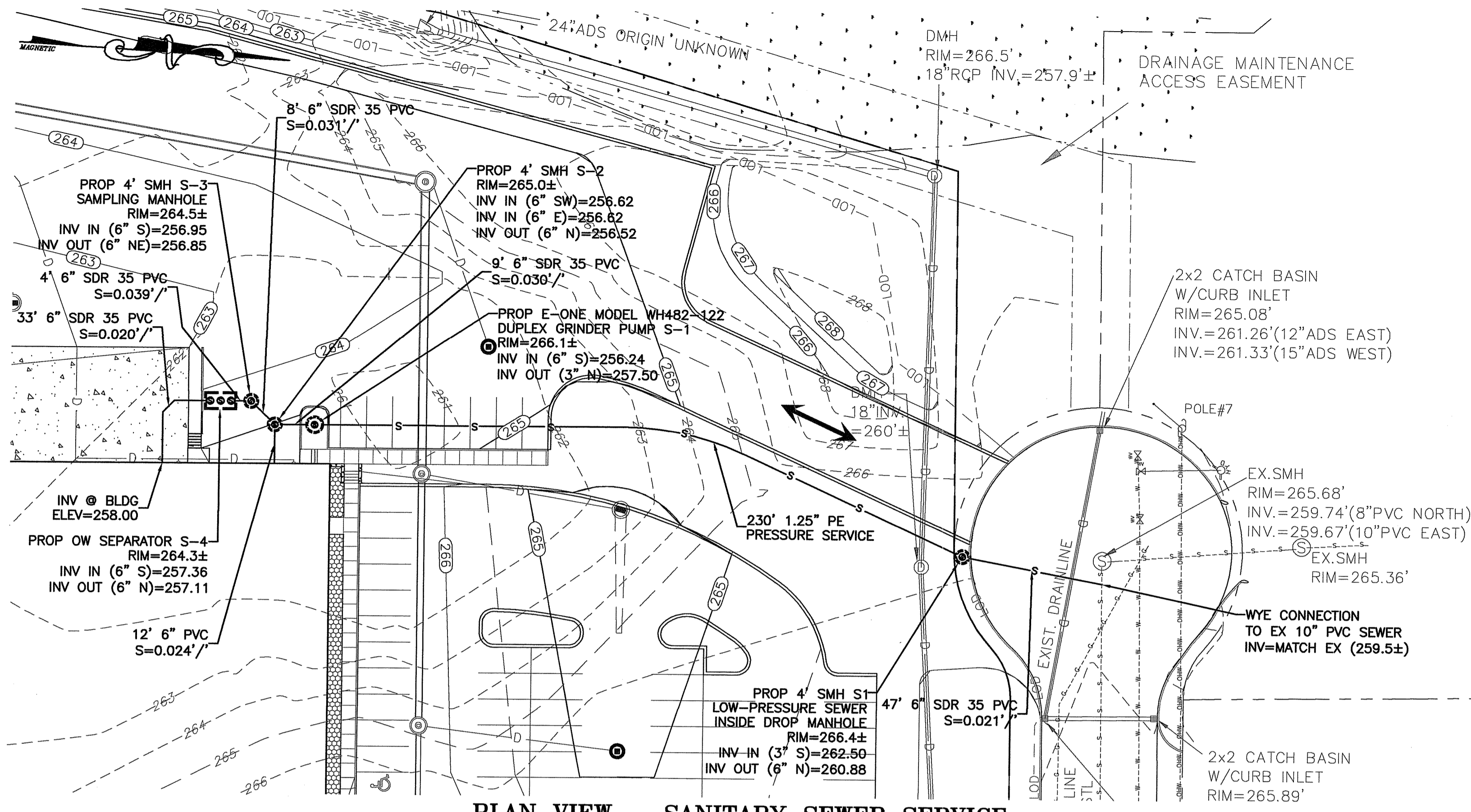
REVISIONS			
No.	DATE	DRWN	CHKD
1	8-18-22	MCZ	TJB
2	10-4-22	MCZ	TJB

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

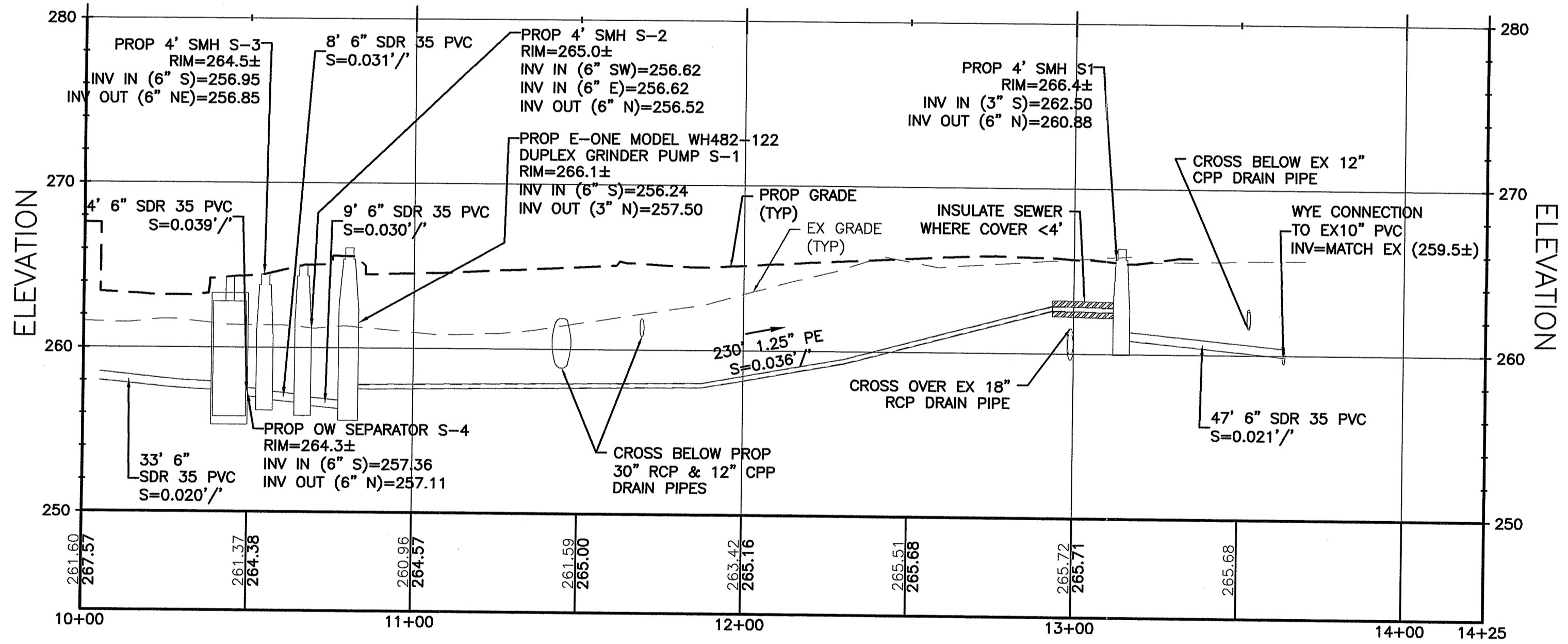
PRELIMINARY PLANS FOR  
KEYES WAY DEVELOPMENT  
AT  
40 KEYES WAY  
A.P. 30 LOT 51  
WEST WARWICK, RHODE ISLAND  
STORMWATER PROFILES

OWNER/APPLICANT:  
**QUALITY REALTY, LLC**  
25 BATH STREET  
PROVIDENCE, RI 02908

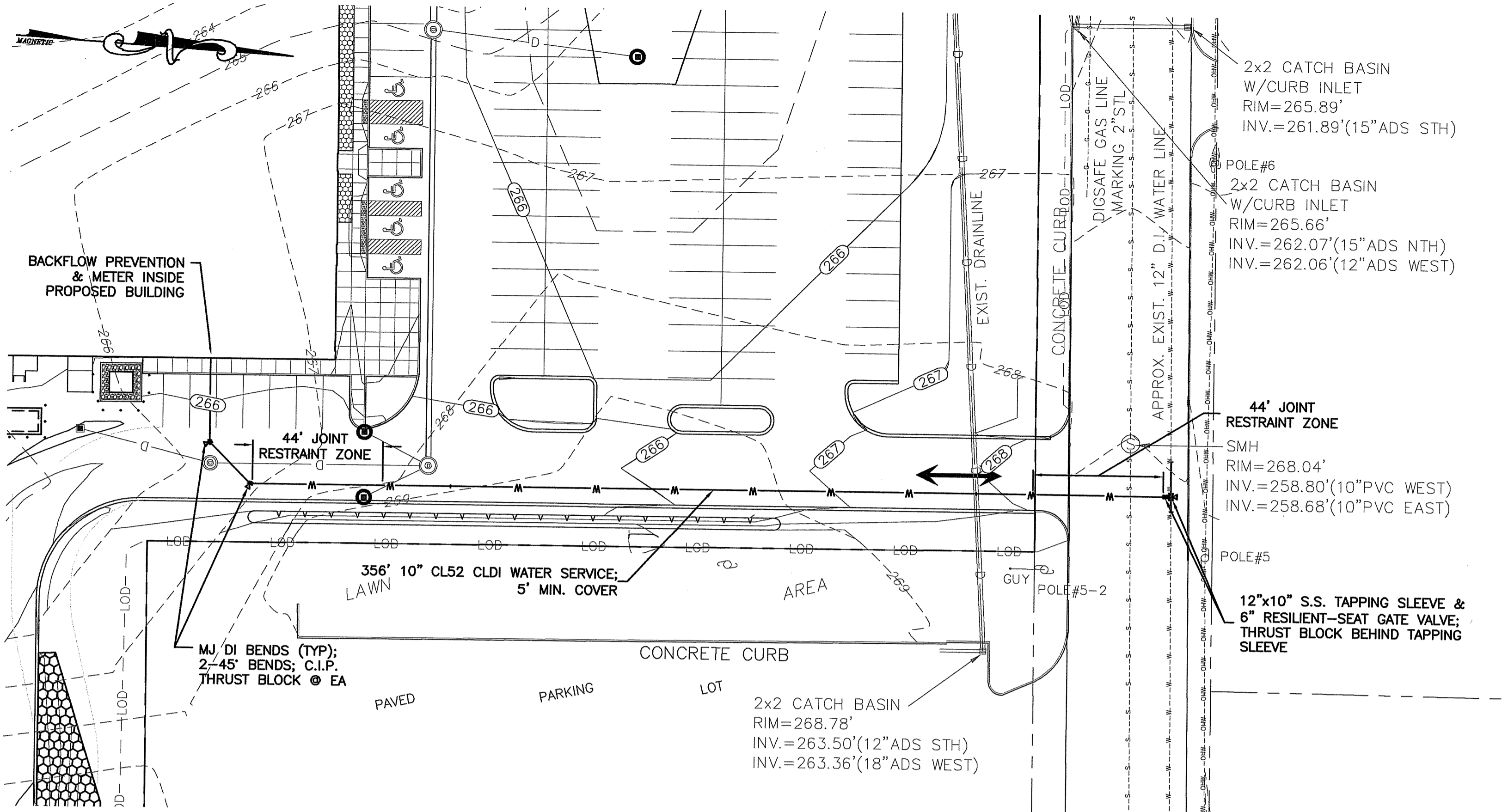
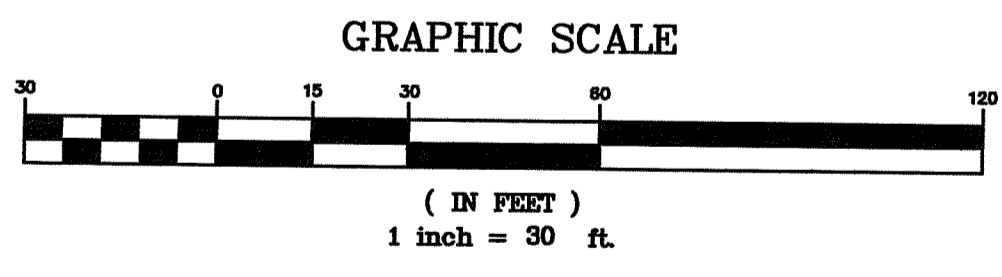
SCALE: 1"=30'H/6"V SHEET NO: 8 OF 17  
DRAWN BY: MCZ DESIGN BY: MCZ/TJB CHECKED BY: TJB  
DATE: JUNE 2022 PROJECT NO.: 22013.00



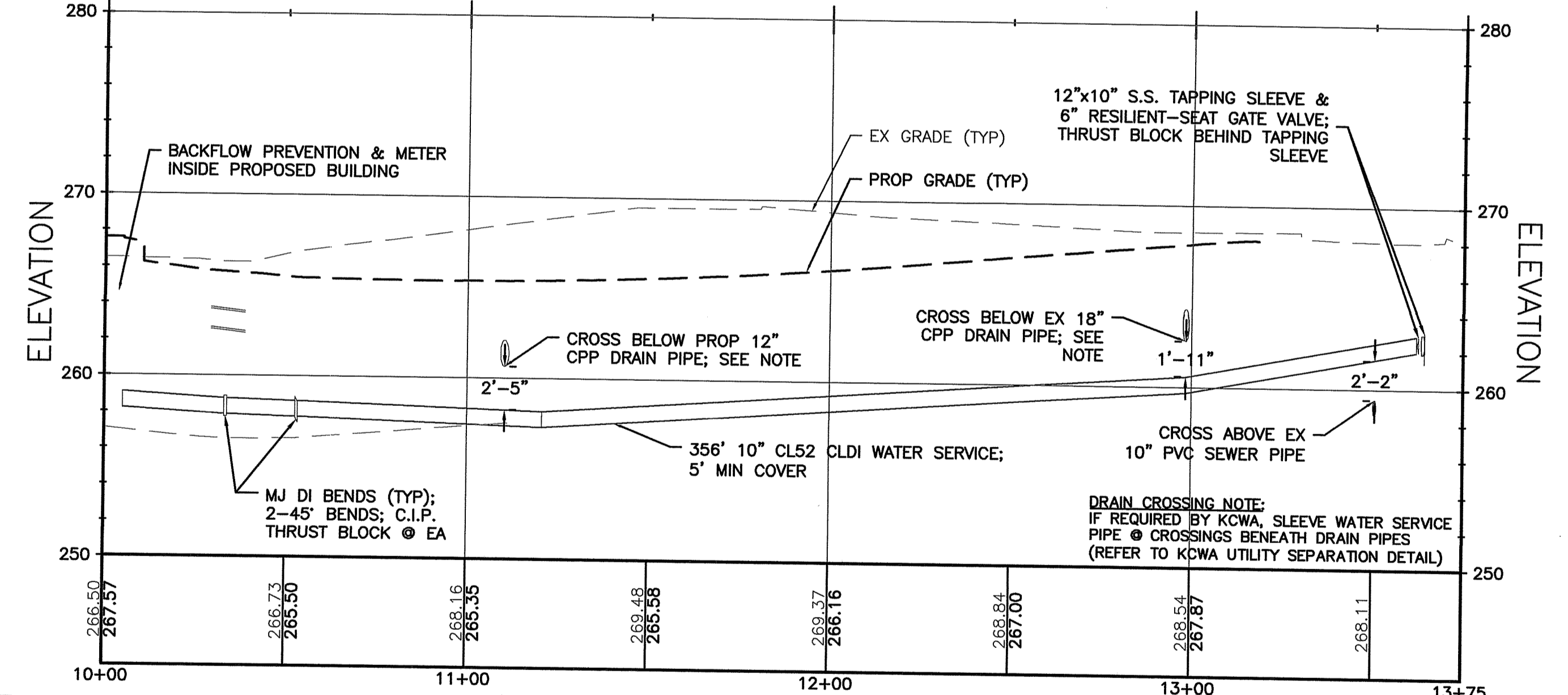
PLAN VIEW - SANITARY SEWER SERVICE



PROFILE VIEW - SANITARY SEWER SERVICE



PLAN VIEW - WATER SERVICE



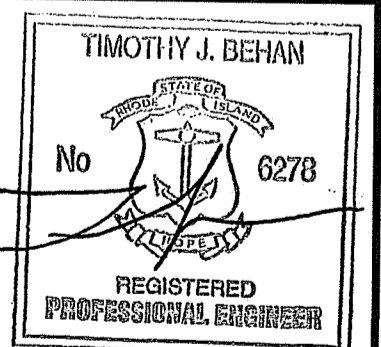
PROFILE VIEW - WATER SERVICE

RI Environmental Management  
OCT 13 2022  
Office of Water Resources

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS AS  
SPECIFIED IN THE LETTER OF APPROVAL  
DATED: NOV 09 2022 FILE #: 22-0300  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

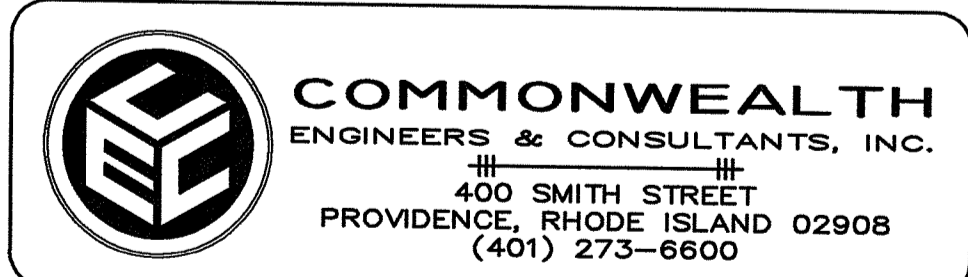
*Nancy L. Freeman*

PLANNING BOARD CERTIFICATION  
WEST WARWICK PLANNING BOARD  
DATE APPROVED: \_\_\_\_\_  
DATE ENDORSED: \_\_\_\_\_



REVISIONS

No.	DATE	DRWN	CHKD
1	8-18-22	MCZ	TJB
2	10-4-22	MCZ	TJB



PRELIMINARY PLANS  
FOR  
KEYES WAY DEVELOPMENT  
AT  
40 KEYES WAY  
A.P. 30 LOT 51  
WEST WARWICK, RHODE ISLAND  
UTILITY PLAN & PROFILES

OWNER/APPLICANT:  
**QUALITY REALTY, LLC**  
25 BATH STREET  
PROVIDENCE, RI 02908

SCALE: 1"=30'H/6'V SHEET NO: 9 OF 17  
DRAWN BY: MCZ DESIGN BY: MCZ/TJB CHECKED BY: TJB  
DATE: JUNE 2022 PROJECT NO.: 22013.00



**GENERAL SOIL EROSION/  
SEDIMENTATION CONTROL NOTES:**

- THE RHODE ISLAND SOIL EROSION & SEDIMENT CONTROL HANDBOOK, LATEST EDITION, SHALL BE APPLICABLE TO THIS PROJECT AS APPLICABLE, AND IS MADE A PART HEREOF AS FULLY AND COMPLETELY AS IF ATTACHED HERETO.
- ALL REQUIRED SITE IMPROVEMENTS SHALL BE INSPECTED BY THE DESIGNATED AUTHORITY (E.G. TOWN ENGINEER, PLANNING BOARD, OTHER DESIGNATED AGENT(S)) TO ENSURE SATISFACTORY COMPLETION. IN NO CASE SHALL THE CONSTRUCTION/INSTALLATION OF ANY IMPROVEMENTS BE STARTED UNTIL 48-HOUR PRIOR NOTIFICATION IS GIVEN TO THE DESIGNATED AUTHORITY.
- A FINAL INSPECTION OF ALL SITE IMPROVEMENTS, UTILITIES AND GRADING SHALL BE MADE TO DETERMINE WHETHER THE WORK IS SATISFACTORY AND IN SUBSTANTIAL CONFORMANCE WITH THE APPROVED FINAL CONSTRUCTION DRAWINGS AND THE APPLICABLE SPECIFICATIONS. LOCATIONS AND DEPTHS OF EXISTING UTILITIES ARE APPROXIMATE, AND HAVE BEEN DEPICTED BASED ON THE BEST AVAILABLE INFORMATION. THE CONTRACTOR SHALL CHECK AND VERIFY LOCATIONS OF ALL EXISTING UTILITIES, BOTH UNDERGROUND AND OVERHEAD. ANY DAMAGE TO EXISTING UTILITIES, WHETHER SHOWN OR NOT SHOWN ON THE PLANS, SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY, AND THE COSTS OF SUCH DAMAGE SHALL BE BORNE BY THE CONTRACTOR.
- IT SHALL BE THE CONTRACTOR'S SOLE RESPONSIBILITY TO OBTAIN ANY AND ALL PERMITS REQUIRED BY AGENCIES HAVING JURISDICTION OVER THE PROJECT, INCLUDING BUT NOT LIMITED TO FEDERAL, STATE AND LOCAL GOVERNMENTS, QUASI-GOVERNMENTAL ENTITIES, AND ALL INDIVIDUAL UTILITY COMPANIES, PRIOR TO COMMENCING ANY WORK. FURTHER, THE CONTRACTOR SHALL BE RESPONSIBLE FOR FULLY ADHERING TO ANY ABIDING BY ANY/all REQUIREMENTS OF SAID PERMITS.
- THE CONTRACTOR SHALL NOTIFY DIG-SAFE (1-800-723-3333) AS WELL AS ANY/all NON-PARTICIPATING UTILITY AGENCIES/OPERATORS A MINIMUM OF 72 WORKING HOURS (EXCLUDING WEEKENDS AND HOLIDAYS) PRIOR TO THE START OF ANY EXCAVATION AND/OR BLASTING WORK; NO EXCAVATION SHALL BE INITIATED PRIOR TO THE PASSAGE OF THE 72-HOUR NOTIFICATION PERIOD. THE NAME AND DIG-SAFE LICENSE NUMBER OF THE COMPANY PERFORMING THE EXCAVATION AND/OR BLASTING WORK MUST BE SUPPLIED TO DIG-SAFE, IF IT IS DIFFERENT FROM THE CALLER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ESTABLISHING AND MAINTAINING ALL TEMPORARY SOIL EROSION & SEDIMENTATION CONTROLS FOR THE DURATION OF THE WORK (SEE OTHER APPLICABLE NOTES).
- ALL MATERIAL FOR FILL SHALL BE CLEAN AND FREE OF MATERIAL THAT COULD POLLUTE ANY DOWNSTREAM WATERCOURSE OR RESERVOIR AREA.
- ALL 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).

**SOIL EROSION CONTROL &  
STABILIZATION PROGRAM:**

- SOIL EROSION CONTROL AND STABILIZATION SHALL BE IN ACCORDANCE WITH THE APPLICABLE STANDARDS AND PROCEDURES SET FORTH IN THE LOCAL SUBDIVISION/DEVELOPMENT REGULATIONS & ZONING ORDINANCES, THE RI SOIL EROSION & SEDIMENT CONTROL HANDBOOK, AND THE APPROVED SOIL EROSION & SEDIMENTATION CONTROL PLAN (SESCP) FOR THE PROJECT.
- DURING CONSTRUCTION, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTENANCE OF ALL EROSION CONTROL/SOIL STABILIZATION MEASURES, AND SHALL INSPECT/REPLACE THEM AS NEEDED.
- TREES TO BE RETAINED SHALL BE FENCED OR ROPED OFF TO PROTECT THEM FROM CONSTRUCTION EQUIPMENT.
- 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 SEEDED OR PROTECTED BY THAT DATE.
- ANY AREAS THAT DO NOT HAVE ADEQUATE VEGETATIVE STABILIZATION, AS DETERMINED BY THE DESIGNATED AUTHORITY, BY NOVEMBER 15 OF ANY CALENDAR YEAR, MUST BE STABILIZED THROUGH THE USE OF EROSION CONTROL MATTING OR HAY MULCH, AS DIRECTED BY THE DESIGNATED AUTHORITY.
- IF WORK CONTINUES WITHIN ANY DISTURBED 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.
- TEMPORARY STABILIZATION 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 DESIGNATED AUTHORITY.
- STRAW APPLICATIONS SHALL BE IN THE AMOUNT OF 3,000-4,000 LBS/ACRE.
- ALL TEMPORARY STABILIZATION SHALL REMAIN IN-PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED.
- STABILIZATION OF ONE FORM OR ANOTHER AS DESCRIBED ABOVE SHALL BE ACHIEVED WITHIN FIFTEEN (15) DAYS OF FINAL GRADING.
- ON BOTH STEEP AND LONG SLOPES, CONSIDERATION SHOULD BE GIVEN TO "CRIMPING" OR "TRACKING" TO TACK DOWN MULCH APPLICATIONS.
- TEMPORARY SEEDING MUST BE DONE WITHIN ONE (1) MONTH AFTER DISTURBANCE.
- SLOPES CONSTRUCTED AT OR STEEPER THAN 15% SHALL HAVE TEMPORARY EROSION CONTROL MATTING UTILIZED AS A SUPPLEMENTAL MEASURE IN ADDITION TO THE METHODS DESCRIBED ABOVE.
- DENUDED SLOPES SHALL NOT BE UNATTENDED OR EXPOSED FOR MORE THAN 2 WEEKS OF TIME OR FOR THE INACTIVE WINTER SEASON.
- PREPARE TEMPORARY SEEDING AREA, PROVIDE AND PLANT SEED IN ACCORDANCE WITH THE FOLLOWING AND ANY/all APPLICABLE STANDARDS:

TEMPORARY SEED MIX:  
ANNUAL RYE GRASS 1.5 LBS/1,000 SQ. FT.

- STOCKPILES OF TOPSOIL AND EARTH MATERIALS SHALL NOT BE LOCATED NEAR WATERWAYS. STOCKPILES SHALL HAVE NO SLOPE GREATER THAN 2:1 AND SHALL BE SURROUNDED BY STAKED HAY BALES, SILT FENCE, OR COMPOST FILTER SOCK. STOCKPILES EXPOSED FOR EXCESSIVE PERIODS OF TIME SHALL RECEIVE TEMPORARY TREATMENT CONSISTING OF PLANTING ANNUAL RYE GRASS OR PROTECTING WITH HAY, STRAW OR FIBER MATTING.
- THE CONTRACTOR SHALL INSPECT SOIL EROSION CONTROL/STABILIZATION MEASURES AFTER EVERY RAIN STORM EVENT GENERATING GREATER THAN 0.25" OF RAINFALL, OR EVERY 7 DAYS (WHICH EVER COMES FIRST). ANY SOIL MIGRATION PAST THE DEVICES SHALL BE REMOVED AND THE SOIL EROSION CONTROL MEASURES SHALL BE RE-ESTABLISHED TO PREVENT FURTHER SOIL EROSION.
- ANY WORK TO CORRECT PROBLEMS RESULTING FROM FAILURE TO COMPLY WITH THE PRECEDING PROVISIONS SHALL BE THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THERE WILL BE NO SEPARATE PAYMENT FOR THIS PROVISION. STABILIZATION OF ONE FORM OR ANOTHER AS DESCRIBED ABOVE SHALL BE ACHIEVED WITHIN 2 WEEKS OF FINAL GRADING.

**SEDIMENTATION CONTROL PROGRAM:**

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING EXISTING STORMWATER RUNOFF TO, THROUGH AND ACROSS THE SITE DURING CONSTRUCTION. EXTREME CARE SHALL BE EXERCISED TO PREVENT ERODIBLE MATERIALS (SEDIMENTS) WITHIN DISTURBED AREAS OF THE SITE FROM ENTERING STORMWATER DRAINAGE SYSTEMS AND/OR DOWNSTREAM WATERCOURSES/ RESOURCE AREAS DURING CONSTRUCTION.
- TO THAT PURPOSE, SEDIMENTATION CONTROLS SHALL BE INSTALLED AT/ON THE SITE PRIOR TO THE START OF CONSTRUCTION, INCLUDING BUT NOT LIMITED TO:
  - PERIMETER CONTROLS (STAKED STRAW WATTLES/CFS) IN ALL LOCATIONS SHOWN ON THE APPROVED SITE PLANS AND WHERE OTHERWISE NECESSARY TO PREVENT SEDIMENTS FROM ENTERING DOWNSTREAM WATERCOURSES AND STORMWATER DRAINAGE SYSTEMS;
  - ANY CATCH BASINS EITHER ON-SITE OR POTENTIALLY IMPACTED BY SITE RUNOFF SHALL BE PROTECTED AS INDICATED/DIRECTED THROUGHOUT THE CONSTRUCTION PERIOD UNTIL ALL DISTURBED AREAS ARE STABILIZED;
  - GROUND AT ALL DRAINAGE OUTFALLS IS TO BE PROTECTED BY STRAW WATTLE/CFS FILTERS OR APPROVED EQUAL UNTIL DISTURBED AREAS ARE PERMANENTLY STABILIZED WITH APPROVED GROUND COVER.
- SEDIMENTATION CONTROL DEVICES SHALL BE INSPECTED CLOSELY AND MAINTAINED PROPERLY AFTER EACH RAINFALL, AND ALL CONTROL MEASURES WILL BE MAINTAINED IN EFFECTIVE CONDITION THROUGHOUT THE CONSTRUCTION PERIOD.
- AT NO TIME DURING CONSTRUCTION SHALL THE ERODIBLE SUBGRADE OF THE SITE BE SUCH THAT SURFACE RUNOFF WILL BE PERMITTED TO DIRECTLY ENTER ANY DRAINAGE SYSTEM INLET. A TEMPORARY DEPRESSED AREA AROUND THE INLET SHALL BE CREATED AS A SEDIMENTATION TRAP; THE MOUTH OF THE TRAP SHALL BE LINED WITH STRAW WATTLES/CFS AROUND THE COMPLETE PERIMETER OF THE INLET. DURING ALL PRELIMINARY STAGES, THE TOP OF THE INLET STRUCTURE SHALL ALWAYS BE HIGHER THAN THE ADJACENT SUBGRADE SURFACE.
- CARE SHALL BE TAKEN SO AS NOT TO PLACE "REMOVED SEDIMENTS" WITHIN THE PATH OF EXISTING, NEWLY CREATED (EITHER TEMPORARY OR PERMANENT) OR PROPOSED WATERCOURSES/FLOW DIVERSIONS OR THOSE AREAS SUBJECTED TO STORMWATER FLOWAGE.
- CONTRACTOR SHALL INSPECT TEMPORARY WATERCOURSES/FLOW DIVERSIONS AND THEIR COMPONENTS ONCE A WEEK AND AFTER EVERY RAINFALL. DAMAGE CAUSED BY CONSTRUCTION TRAFFIC OR OTHER ACTIVITY SHALL BE REPAIRED BEFORE THE END OF EACH WORKING DAY.
- CHECK DAMS SHALL BE INSTALLED IN WATERCOURSES/FLOW DIVERSIONS EVERY 300 FEET FOR SLOPES OF 1% OR LESS, EVERY 200 FEET FOR SLOPES OF 2%, EVERY 150 FEET FOR SLOPES OF 3% TO 5%, AND EVERY 100 FEET FOR SLOPES OF 5% OR GREATER. SEDIMENTS SHALL BE REMOVED FROM THE CHECK DAMS WHEN THEY REACH ONE-HALF THE DAM HEIGHT.
- ADDITIONAL STRAW BALES, CFS OR SANDBAGS SHALL BE LOCATED AS CONDITIONS WARRANT OR AS DIRECTED BY THE ENGINEER.
- 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 HAY MULCH.
- UPON COMPLETION OF CONSTRUCTION OF SITE IMPROVEMENTS AND THE STORMWATER DRAINAGE SYSTEM (PARTICULARLY ADEQUATE STABILIZATION OF ALL UNPAVED AREAS), ALL STORM DRAIN PIPING AND STRUCTURES (DROP INLETS, DRAIN MANHOUSES) SHALL BE CLEANED OF ACCUMULATED SEDIMENTS, WHICH SHALL BE LEGALLY DISPOSED OF AT AN OFF-SITE LOCATION.

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

- PRIOR TO THE INITIATION OF ANY SITE DISTURBANCE, NOTIFY RIDEM OF THE START OF CONSTRUCTION FOLLOWING CURRENT RIDEM NOTIFICATION PROCEDURE.
- SURVEY AND STAKE LIMITS OF DISTURBANCE (LOD) FOR PLACEMENT OF SEDIMENTATION CONTROL DEVICES.
- INSTALL CONSTRUCTION ENTRANCE RIP-RAP STABILIZATION PAD(S).
- PLACE PERIMETER SEDIMENTATION CONTROL DEVICES (STRAW WATTLES OR COMPOST FILTER SOCKS (CFS)) ALONG LOD. IN NO CASE SHALL WORK BE PERFORMED BEYOND THE ESTABLISHED SEDIMENTATION CONTROL DEVICES/LOD WITHOUT PRIOR AUTHORIZATION FROM THE DESIGNATED AGENT.
- INSTALL VEGETATION/TREE PROTECTION AS APPLICABLE FOR VEGETATED AREAS/TREES TO BE PRESERVED.
- SELECTIVELY CLEAR/CLEAR AND GRUB DESIGNATED AREAS OF SITE.
- BEGIN CONSTRUCTION OF DEVELOPMENT SITE FEATURES (EXCAVATING AND GRADING, ETC.). TOPSOIL AND SUBSOIL TO BE STRIPPED AND STOCKPILED IN DESIGNATED APPROVED AREAS FOR LATER REUSE; MATERIAL STOCKPILES TO BE PROTECTED AS DEPICTED IN APPLICABLE DETAIL.
- ROUGH GRADE SWALES/WATERWAYS; INSTALL STRAW WATTLE/CFS CHECK DAM DEVICES TO TRAP SEDIMENT IN ANY ROUGHED-IN CHANNEL(S) THAT WILL TEMPORARILY CONVEY RUNOFF DURING CONSTRUCTION. REFER TO APPLICABLE NOTES THIS SHEET FOR CHECK DAM SPACING.
- CONSTRUCT NON-STORMWATER UTILITIES (SANITARY SEWER, WATER, GAS, ELECTRIC, ETC.) AND FINISH PROPOSED PAVED SURFACES TO BASE PAVEMENT COURSE.
- FINISH CONSTRUCTING DRAINAGE SYSTEMS WHEN PERIMETER AREAS ARE STABILIZED SO SEDIMENT CONTAMINATED FLOW WILL NOT FLOW INTO COMPLETED DRAINAGE DEVICES; PROTECT DRAINAGE SYSTEMS UNTIL ALL AREAS ARE STABILIZED.
- PERFORM BUILDING CONSTRUCTION.
- INSTALL ALL FINAL PAVING/HARDSCAPE SURFACES.
- LOAM & SEED ALL DISTURBED AREAS NOT TO BE PAVED/HARDSCAPED.
- REMOVE ALL ACCUMULATED SEDIMENTS IN DRAINAGE SYSTEMS, AND REMOVE TEMPORARY EROSION AND SEDIMENT CONTROL DEVICES AFTER A PERMANENT GROWTH OF VEGETATION IS ESTABLISHED.

**SEEDING/PLANTING:**

- ALL DISTURBED AREAS MUST BE SEEDED OR PLANTED (WHETHER TEMPORARILY OR PERMANENTLY) WITHIN THE CONSTRUCTION SEASON; THE TYPICAL ACCEPTABLE SEASONAL SEEDING DATES ARE APRIL 1ST THROUGH OCTOBER 15TH.
- TOPSOIL IN SEEDED AREAS SHALL HAVE A SANDY LOAM TEXTURE RELATIVELY FREE OF SUBSOIL MATERIAL, STONES, ROOTS, LUMPS OF SOIL, TREE LIMBS, TRASH OR CONSTRUCTION DEBRIS.
- 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 SEEDED 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 TREFEEL	15	
PERENNIAL RYEGRASS	10	

APPLICATION RATE 100 LBS/ACRE

LIMING AND FERTILIZING AS REQUIRED TO COMPLEMENT 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.
- 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 CONTRACTOR TO ENSURE SURVIVAL DURING THE FULL WARRANTY PERIOD. 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 CONTRACTOR SHALL BE SOLELY AND FULLY RESPONSIBLE FOR REPLACING AND MAINTAINING THE SAME PLANT SPECIES FOR ONE (1) ADDITIONAL GROWING SEASON.

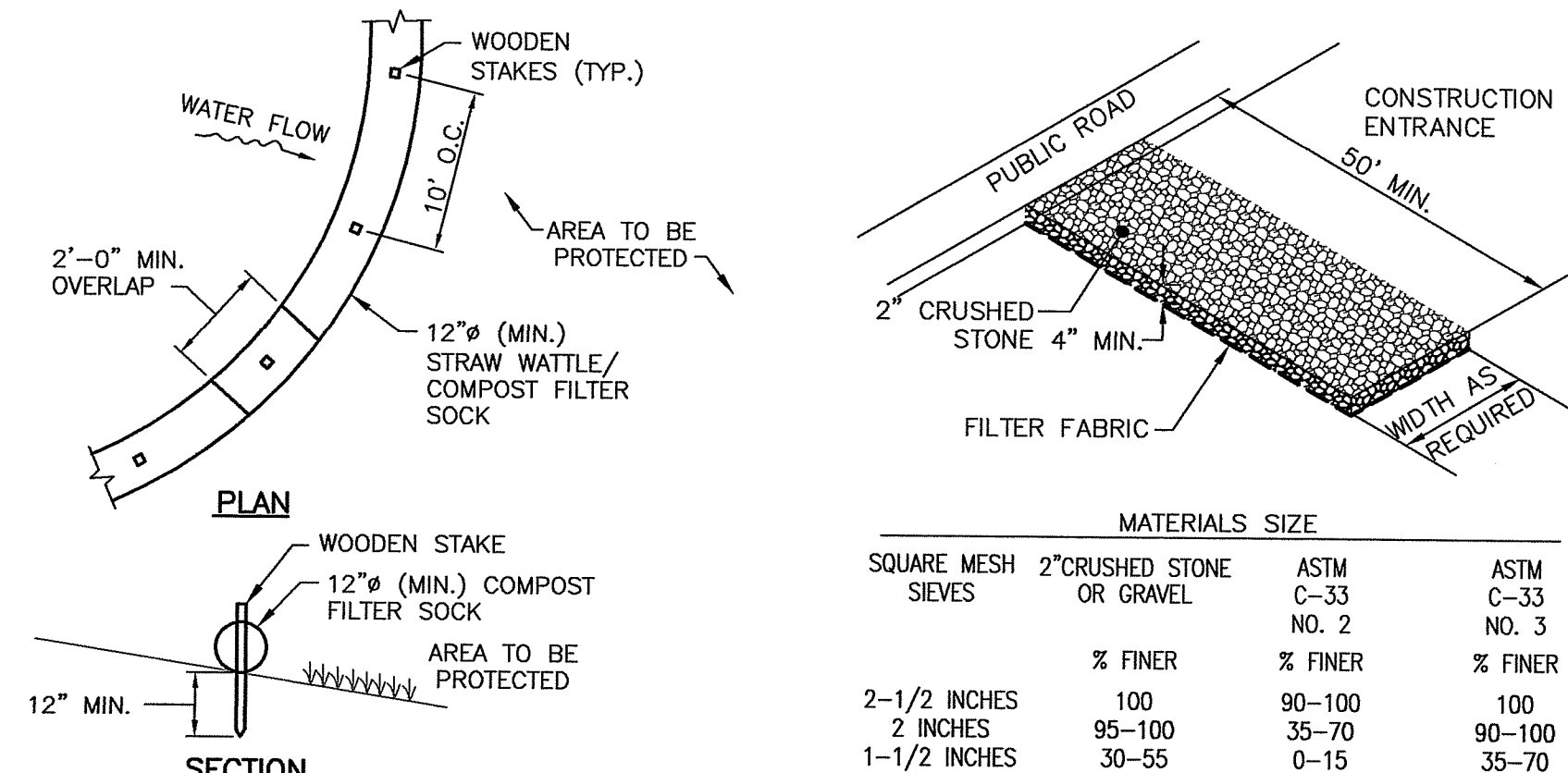
**STORMWATER INFILTRATION PRACTICES:**

- STORMWATER INFILTRATION MEASURES ARE HEAVILY RELIANT ON THE INFILTRATION CAPACITY OF THE UNDERLYING IN-SITU SOILS FOR THEIR PROPER FUNCTION AND LONGEVITY. OVER-COMPACTION OF UNDERLYING SOILS WILL COMPROMISE THE EFFECTIVENESS OF SUCH PRACTICES.
- THE CONTRACTOR SHALL TAKE ALL DUE CARE TO PREVENT OVER-COMPACTION OF UNDERLYING SOILS IN AREAS OF PROPOSED STORMWATER INFILTRATION MEASURES, BY MARKING OFF THE LOCATION BEFORE THE START OF CONSTRUCTION AND CONSTRUCTING THE INFILTRATION PRACTICE LAST, CONNECTING UPSTREAM DRAINAGE AREAS ONLY AFTER CONSTRUCTION IS COMPLETE AND THE CONTRIBUTING AREA IS STABILIZED.
- INFILTRATION PRACTICES SHALL NEVER SERVE AS SEDIMENT CONTROL DEVICES DURING THE SITE CONSTRUCTION PHASE. THE CONTRACTOR SHALL SUBMIT A PLAN TO THE DESIGNATED AUTHORITY (FOR APPROVAL) INDICATING HOW SEDIMENT WILL BE PREVENTED FROM ENTERING THE AREA OF AN INFILTRATION FACILITY.
- ANY ACCUMULATED SEDIMENT SHALL BE REMOVED DOWN TO NATIVE UNDISTURBED MATERIAL PRIOR TO CONSTRUCTING THE FINAL INFILTRATION PRACTICES.
- IF NECESSARY OR DIRECTED, THE CONTRACTOR SHALL RESTORE THE INFILTRATION CAPACITY OF ALL COMPACTED IN-SITU SOILS BENEATH INFILTRATION MEASURES BY TILLING OR SCARIFYING COMPACTED SOILS TO A MINIMUM DEPTH OF 18" BENEATH THE BOTTOM OF THE PROPOSED INFILTRATION MEASURE.
- THE DESIGNATED AUTHORITY MAY REQUIRE THE CONTRACTOR TO PERFORM, AT ITS SOLE EXPENSE, INFILTRATION TESTING OF THE IN-SITU SUBGRADE SOILS PRIOR TO INSTALLATION OF THE INFILTRATION PRACTICE TO DEMONSTRATE THAT THE NECESSARY SOIL INFILTRATION CAPACITY WILL BE PROVIDED BY THE UNDERLYING SOILS.

**LONG-TERM POLLUTION PREVENTION NOTES:**

SITE OWNER/OPERATOR SHALL REFER TO AND FOLLOW THE APPROVED OPERATION & MAINTENANCE (O&M) PLAN PREPARED FOR THIS PROJECT. A BRIEF SUMMARY OF LONG-TERM POLLUTION PREVENTION TECHNIQUES THAT MAY BE APPLIED TO THE PROJECT (AS APPROPRIATE) IS PROVIDED BELOW:

- SOLID WASTE CONTAINMENT:**
  - OWNER TO PROVIDE TRASH CONTAINER. CONTAINER TO HAVE A COVER TO PREVENT TRASH FROM BLOWING OUT.
  - SWEEP COMMON DRIVEWAY ANNUALLY.
- HAZARDOUS MATERIALS CONTAINMENT:**
  - STORE ALL HAZARDOUS MATERIALS INSIDE STORAGE LOCKERS OR OTHER APPROVED METHODS WHICH HAVE SECONDARY CONTAINMENT SYSTEMS.
  - SECONDARY CONTAINMENT MUST BE INCLUDED WHEREVER SPILLS MIGHT OCCUR (E.G. FUELING AND HAZARDOUS MATERIAL TRANSFER AND LOADING AREAS).
- ROADS AND PARKING AREA MANAGEMENT:**
  - SWEEP COMMON DRIVEWAY AREA ANNUALLY.
  - USE DEICING CHEMICALS AND SAND JUDICIOUSLY, AS THEY HAVE THE POTENTIAL TO CAUSE WATER QUALITY PROBLEMS. PROVIDE AND SPREAD IN ACCORDANCE WITH O&M RECOMMENDATIONS.
    - FLOW SNOW AND STORE ACCUMULATED SNOW PILES AWAY FROM INFILTRATION PRACTICES. KEEP SNOW PILES 50 FEET FROM WETLAND EDGE AND AREA SUBJECT TO STORM FLOW.
    - DEBRIS SHOULD BE CLEANED FROM THE SITE PRIOR USING THE SITE FOR SNOW DISPOSAL.
    - DEBRIS SHOULD BE CLEARED FROM THE SITE AND PROPERLY DISPOSED OF AT THE END OF THE SNOW SEASON.
  - ONLY USE ASPHALT BASED SEALANTS WHEN SEALING THE PAVEMENTS. DO NOT USE COAL-TAR BASED SEALANTS, AS THESE ARE MORE TOXIC.
- LAWN, GARDEN, AND LANDSCAPE MANAGEMENT:**
  - LAWN CONVERSION** - REDUCE THE AMOUNT OF LAWN BY REPLANTING LAWN WITH GARDEN BEDS CONTAINING FLOWERS/SHRUBS. LAWNS REQUIRE MORE MAINTENANCE THAN FLOWER BEDS.
  - SOIL BUILDING** - MAINTAIN A HEALTHY LAWN BY TESTING SOIL FOR PH, FERTILITY, COMPACTION, TEXTURE, AND EARTHWORM CONTENT.
  - GRASS SELECTION** - SELECT DROUGHT TOLERANT GRASS SPECIES.
  - MOWING AND THATCH MANAGEMENT** - MAINTAIN GRASS AT MINIMUM 3 TO 4 INCHES IN HEIGHT. THIS WILL REDUCE WEED GROWTH.
  - FERTILIZATION** - MINIMIZE FERTILIZATION. FERTILIZE NO MORE THAN TWICE A YEAR. APPLY CAREFULLY SO FERTILIZER DOES NOT SPREAD ONTO IMPERVIOUS SURFACES.
  - WEED MANAGEMENT** - NEVER USE CHEMICAL HERBICIDES TO ELIMINATE OR CONTROL WEEDS. OWNER SHALL REMOVE WEEDS BY PULLING OR DIGGING OUT.
  - PEST MANAGEMENT** - LIMIT PESTICIDE USE. CHOOSE PESTICIDES THAT POSE THE LEAST RISK TO HUMAN HEALTH AND THE ENVIRONMENT.
  - SENSIBLE IRRIGATION** - WATER NO MORE THAN 1" PER WEEK. USE DROUGHT-RESISTANT GRASSES. CUT GRASS AT 3-4 INCHES.



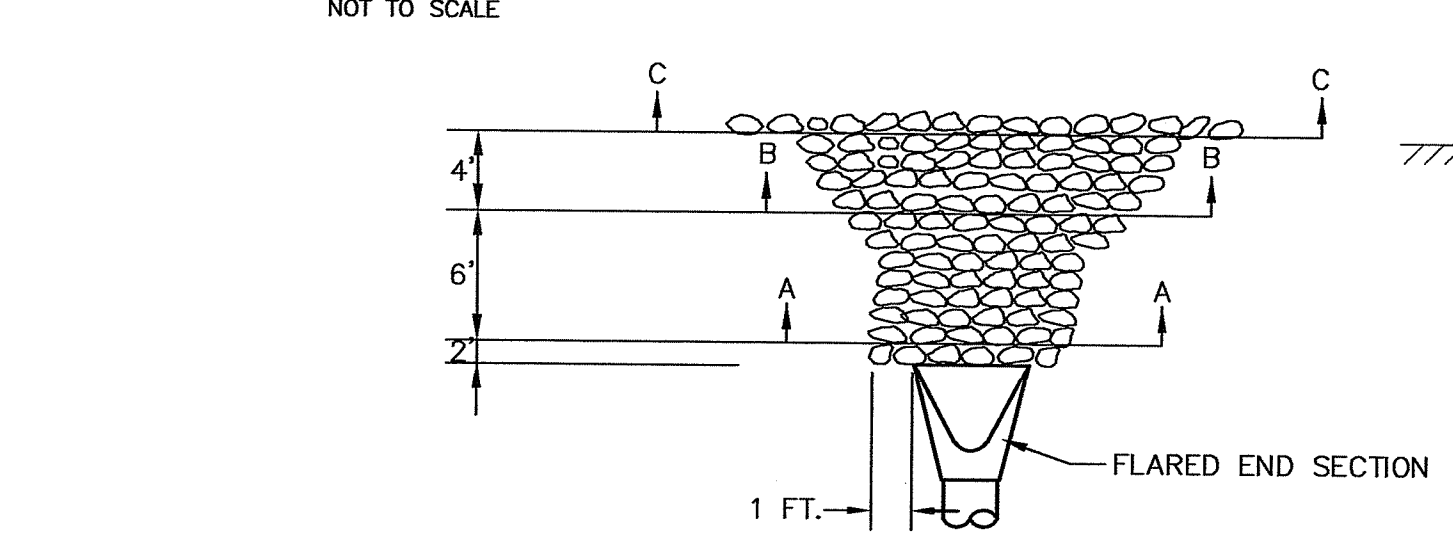
MATERIALS SIZE			
SQUARE MESH SIEVES	2" CRUSHED STONE OR GRAVEL	ASTM C-33 NO. 2	ASTM C-33 NO. 3
2-1/2 INCHES	100	90-100	100
2 INCHES	95-100	35-70	90-100
1-1/2 INCHES	30-55	0-15	35-70
1-1/4 INCHES	0-25	-	-
1 INCH	0-5	-	0-15
3/4 INCH	-	0-5	-
1/2 INCH	-	-	0-5
3/8 INCH	-	-	-
	% FINER	% FINER	% FINER

- NOTES:
- ALL MATERIAL TO MEET REQUIREMENTS OF SECTION 206 OF RI STANDARD SPECIFICATIONS.
  - SUBMIT SHOP DRAWING OF COMPOST MATERIAL FOR REVIEW AND APPROVAL PRIOR TO PLACEMENT.
  - 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'	50'
40%	20'	25'	30'	35'
50%	20'	25'	30'	35'

**STRAW WATTLE/COMPOST FILTER SOCK**

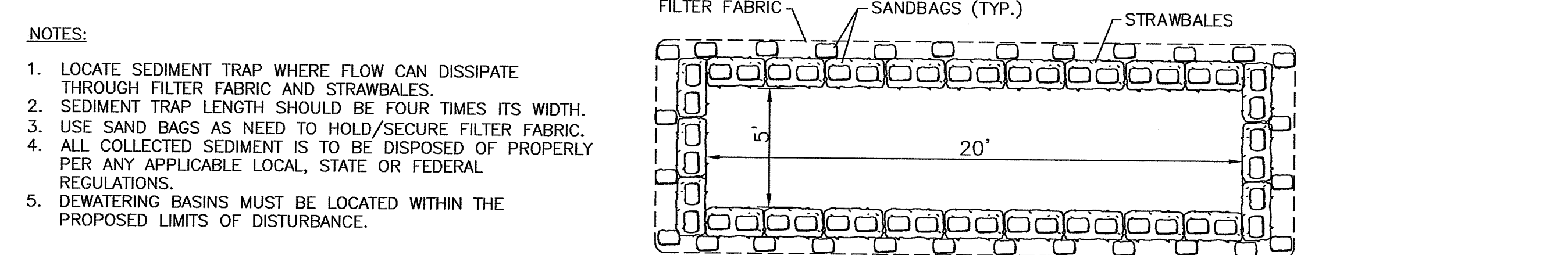
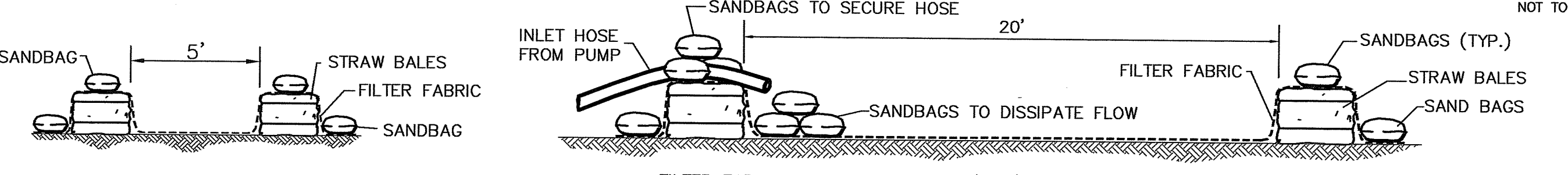


- NOTES:
- CLASS OF RIP-RAP AND BEDDING TO BE SPECIFIED IN CONTRACT DOCUMENTS.
  - DIMENSIONS MAY BE MODIFIED BY ENGINEER TO MEET FIELD CONDITIONS.
  - UNLESS OTHERWISE SPECIFIED, DUMPED RIP-RAP SHALL BE USED.

RIP-RAP TABLE	
STONE / DEPTH	BEDDING SIZE / DEPTH
MO2.02.4 / 12"	1" STONE / 4"
MO2.02.4 = 8" - 95 / 100%	4" - 0 / 25%
	2 1/2" - 0 / 5%

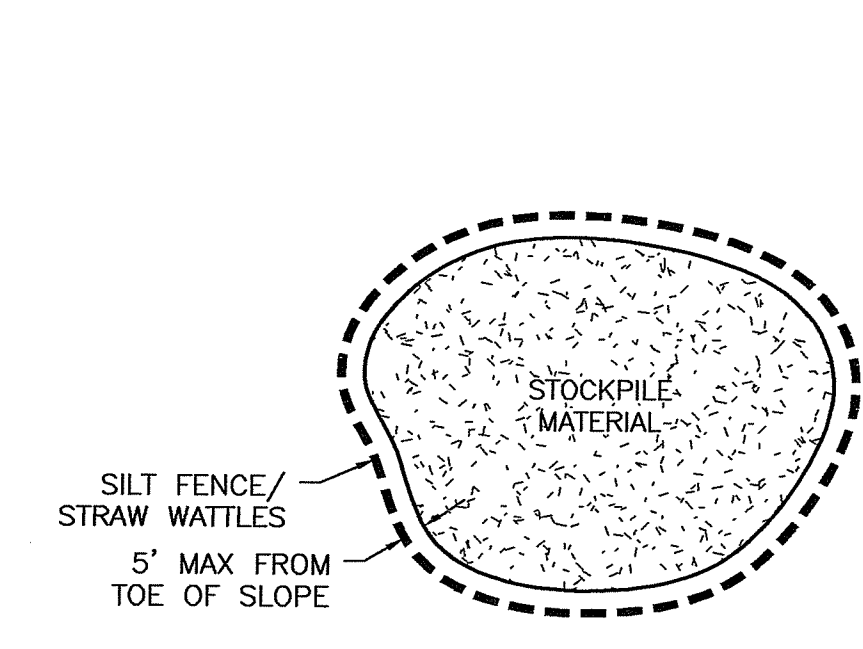
**ROCK FILL RIP-RAP @ FLARED END SECTIONS**

NOT TO SCALE



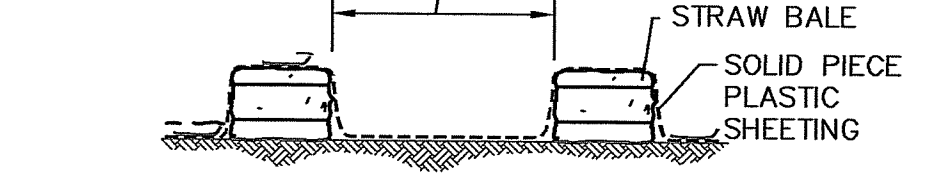
**DEWATERING BASIN & SEDIMENT TRAP**

NOT TO SCALE



**MATERIAL STOCKPILE DETAIL**

NOT TO SCALE



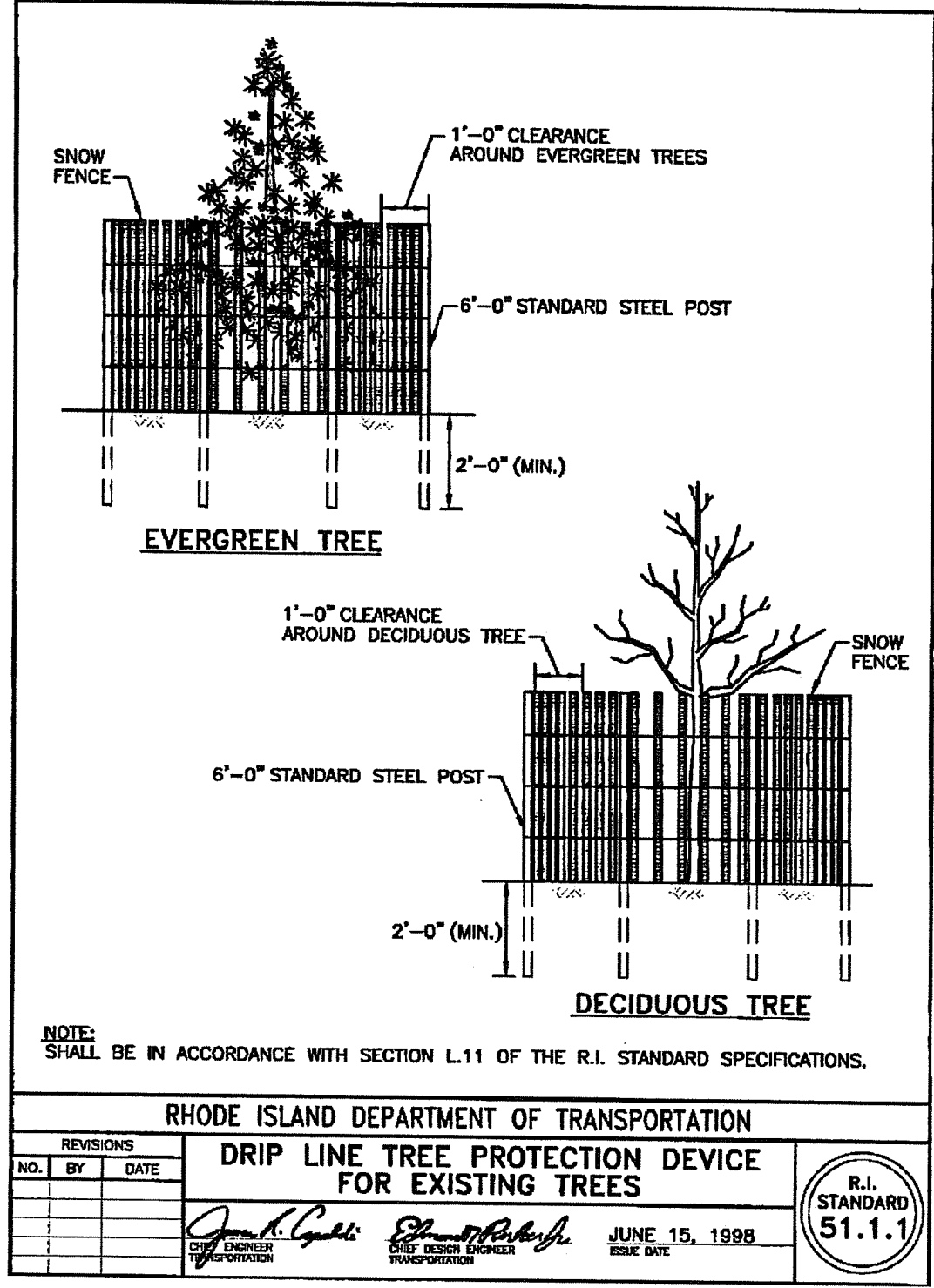
**CONCRETE WASHOUT**

NOT TO SCALE

**PLANNING BOARD CERTIFICATION**

WEST WARWICK PLANNING BOARD

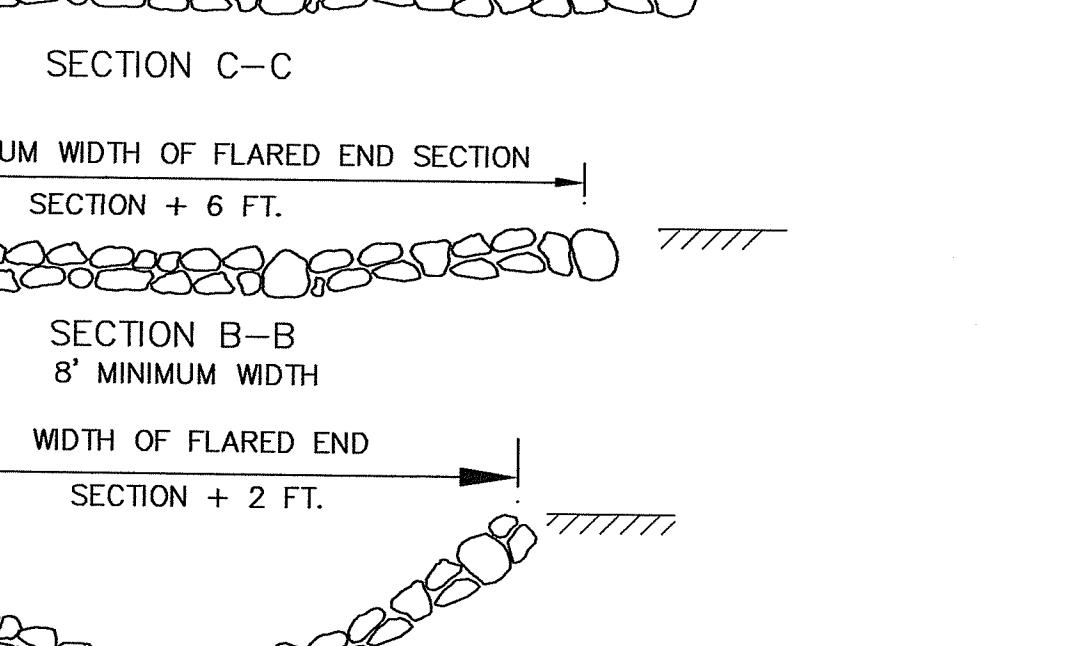
DATE APPROVED: \_\_\_\_\_  
DATE ENDORSED: \_\_\_\_\_



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

**RIP-RAP STABILIZATION PAD @ CONSTRUCTION ENTRANCE**

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: NOV 09 2022 FILE # 22-0300  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE  
*Nancy L. Freeman*

**PLANNING BOARD CERTIFICATION**

WEST WARWICK PLANNING BOARD

DATE APPROVED: \_\_\_\_\_  
DATE ENDORSED: \_\_\_\_\_

TIMOTHY J. BEHAN  
No. 6278  
REGISTERED PROFESSIONAL ENGINEER

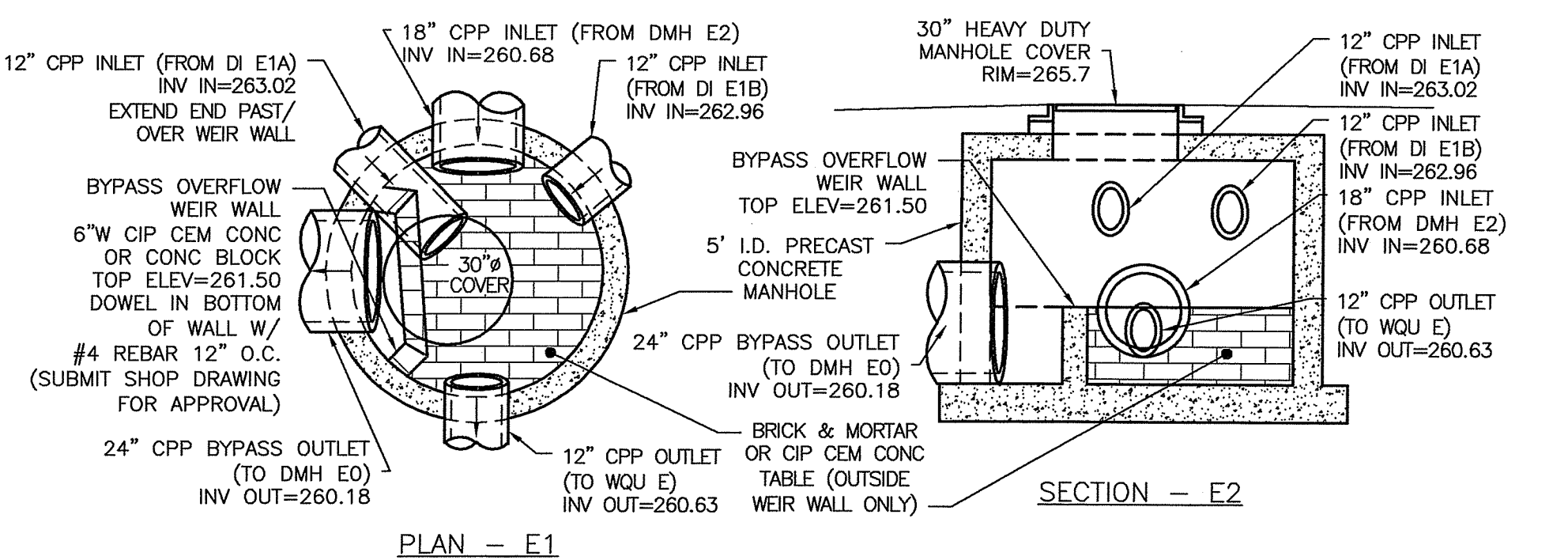
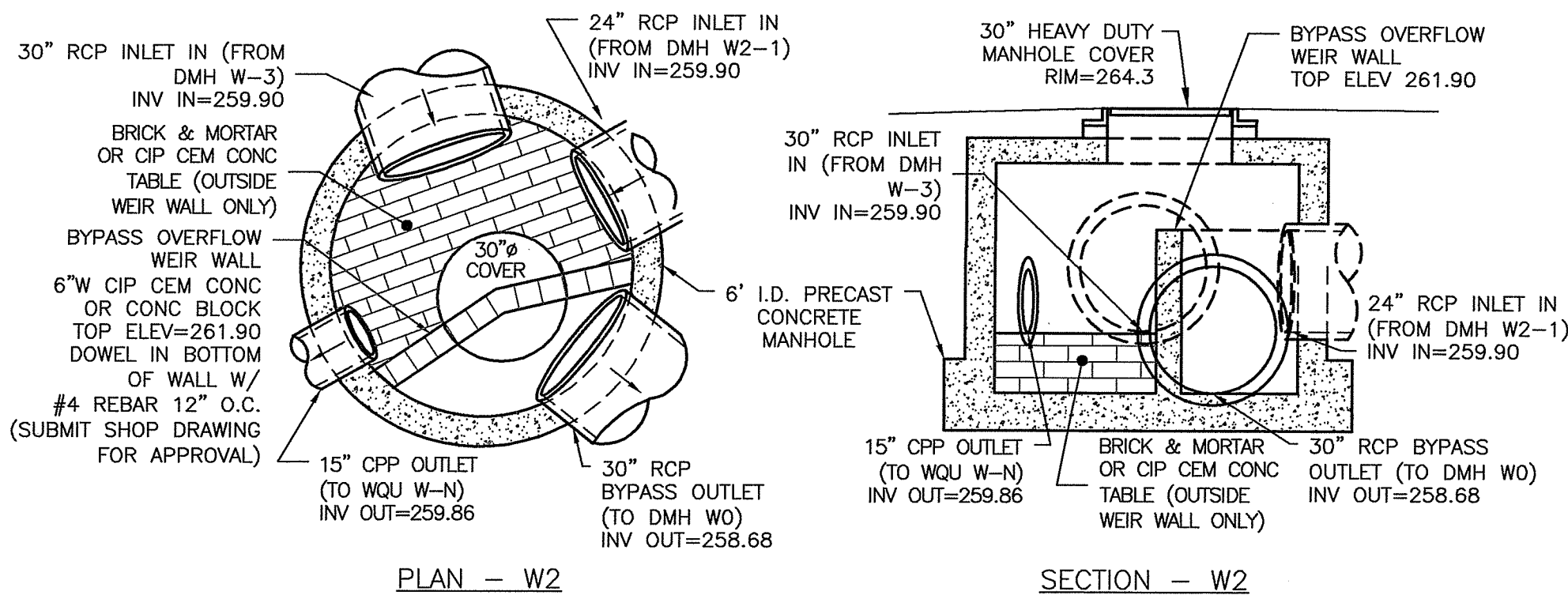
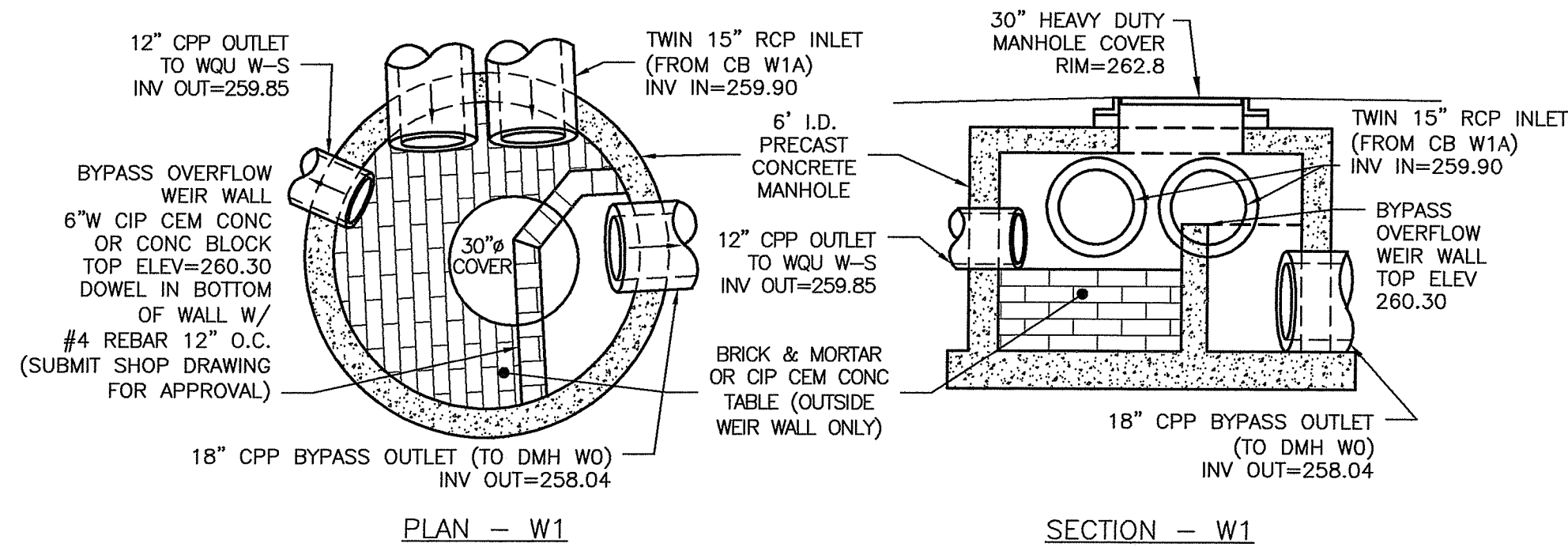
**COMMONWEALTH ENGINEERS & CONSULTANTS, INC.**  
400 SMITH STREET  
PROVIDENCE, RHODE ISLAND 02908  
(401) 273-8600

**PRELIMINARY PLANS FOR KEYES WAY DEVELOPMENT**  
AT  
40 KEYES WAY  
A.P. 30 LOT 51  
WEST WARWICK, RHODE ISLAND  
**CONSTRUCTION DETAILS 1**

NO.	DATE	DRWN	CHKD
1	8-18-22	MCZ	TJB
2	10-4-22	MCZ	TJB

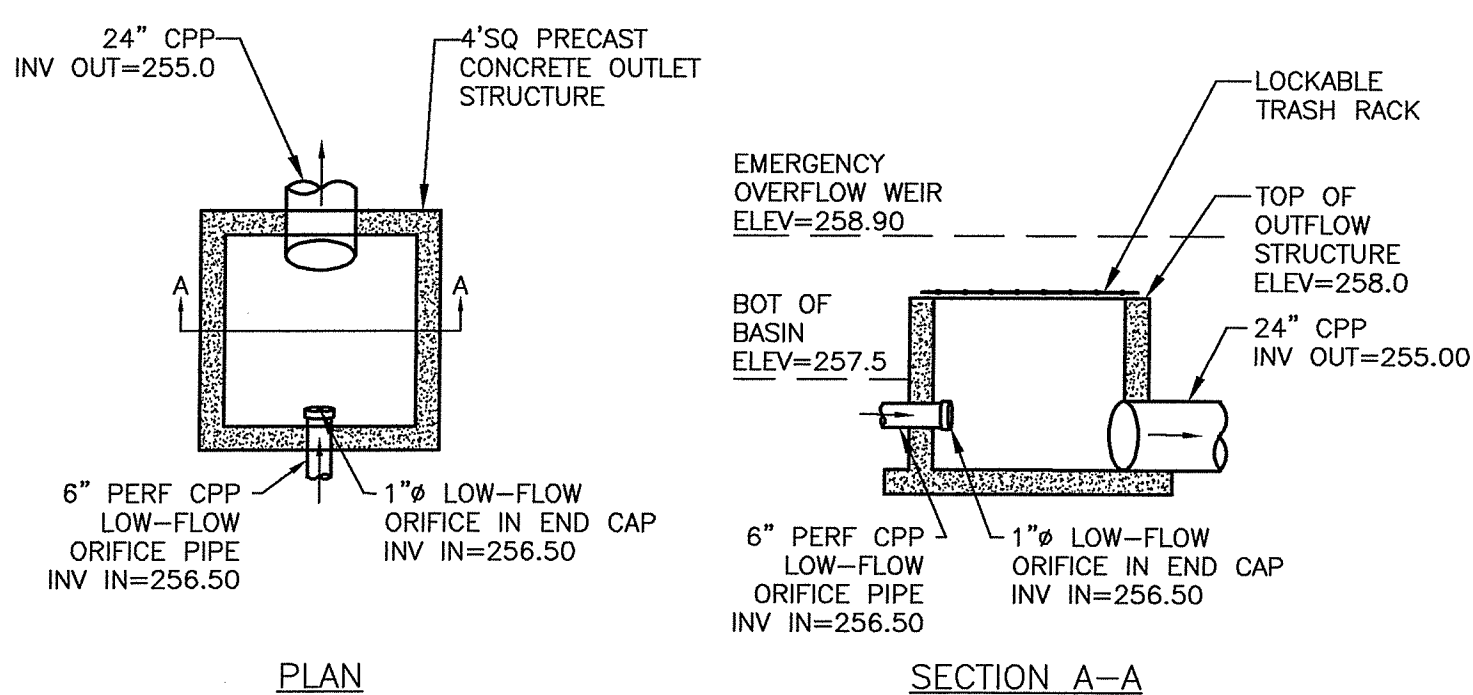
SCALE: AS NOTED SHEET NO: 11 OF 17  
DRAWN BY: MCZ DESIGN BY: MCZ/TJB CHECKED BY: TJB  
DATE: JUNE 2022 PROJECT NO.: 22013.00





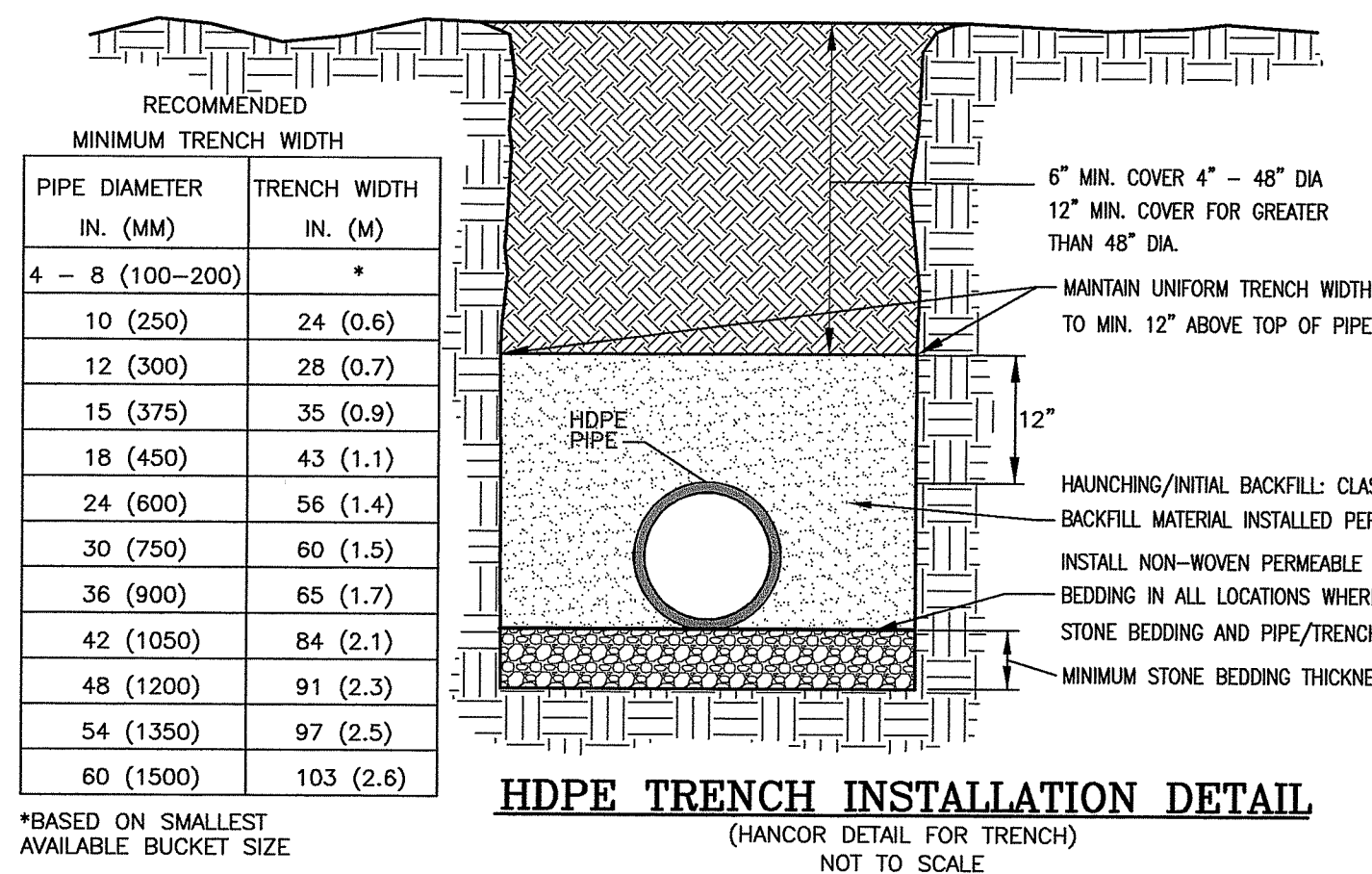
NOTES:  
 1. PRECAST CONCRETE MANHOLE MANUFACTURER SHALL SUBMIT SHOP DRAWING OF EACH STRUCTURE FOR REVIEW AND APPROVAL.  
 2. LOCATE WEIR WALL AND MANHOLE OPENINGS TO PROVIDE ACCESS TO ALL PIPE PENETRATIONS FOR MAINTENANCE AND ABILITY FOR CLEAN-OUT.

**STORMWATER DIVERSION MANHOLES (DMH'S W1, W2 & E1)**  
 NOT TO SCALE



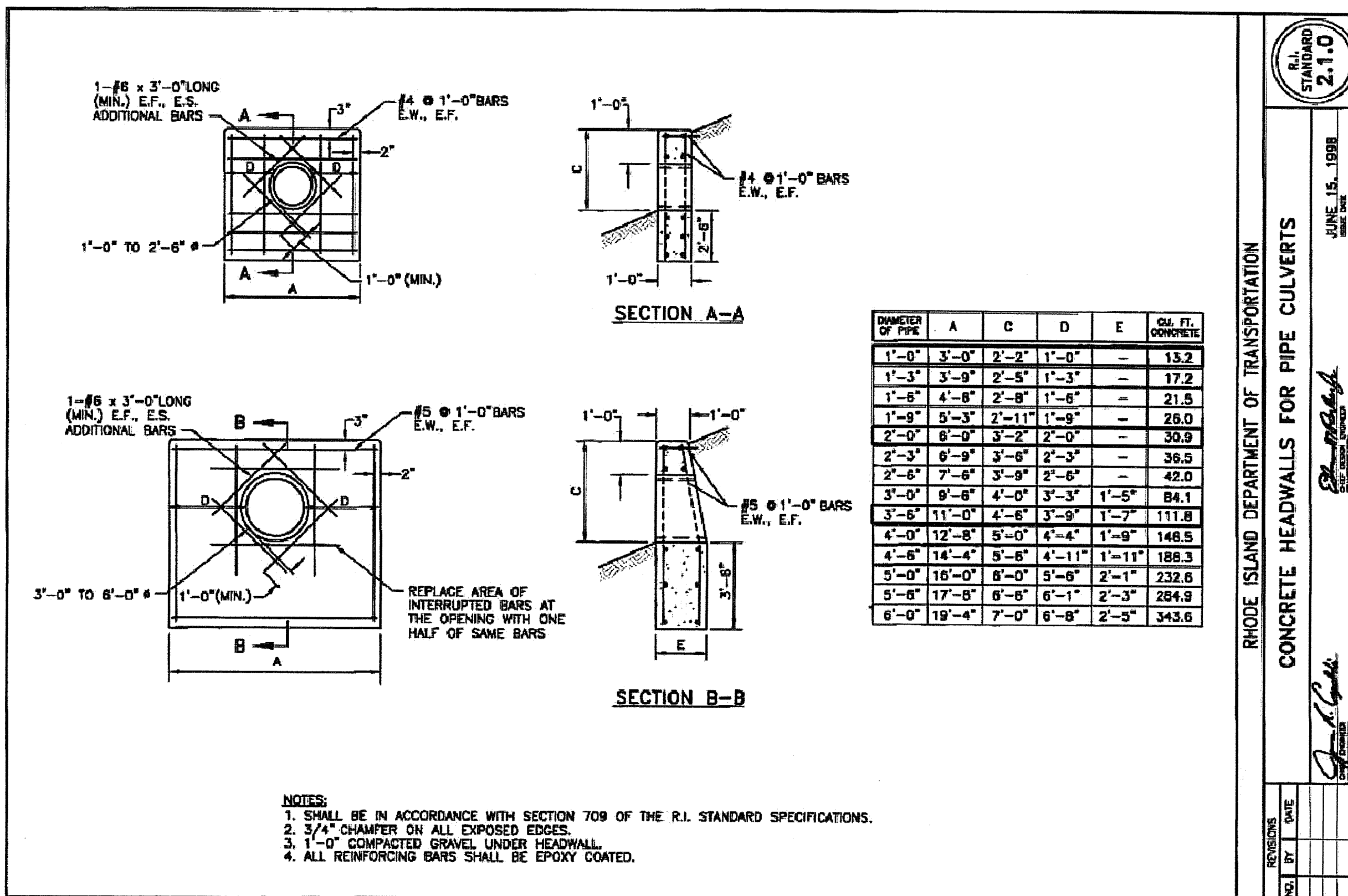
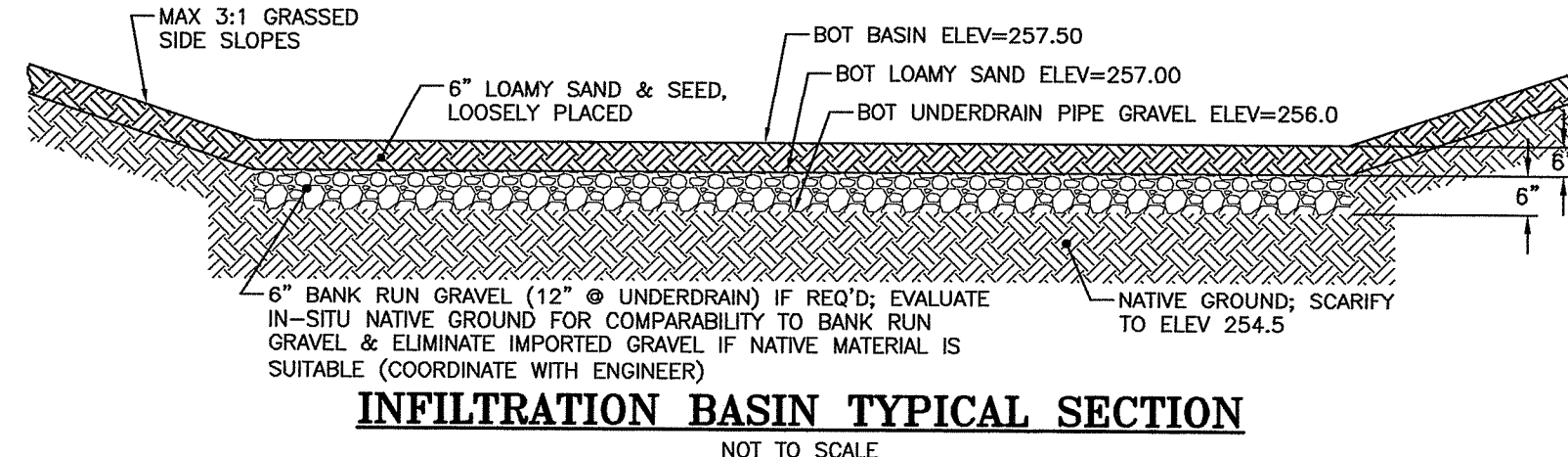
NOTES:  
 1. PRECAST CONCRETE STRUCTURE MANUFACTURER SHALL SUBMIT SHOP DRAWING OF STRUCTURE FOR REVIEW AND APPROVAL.

**INFILTRATION BASIN OUTFLOW STRUCTURE**  
 NOT TO SCALE



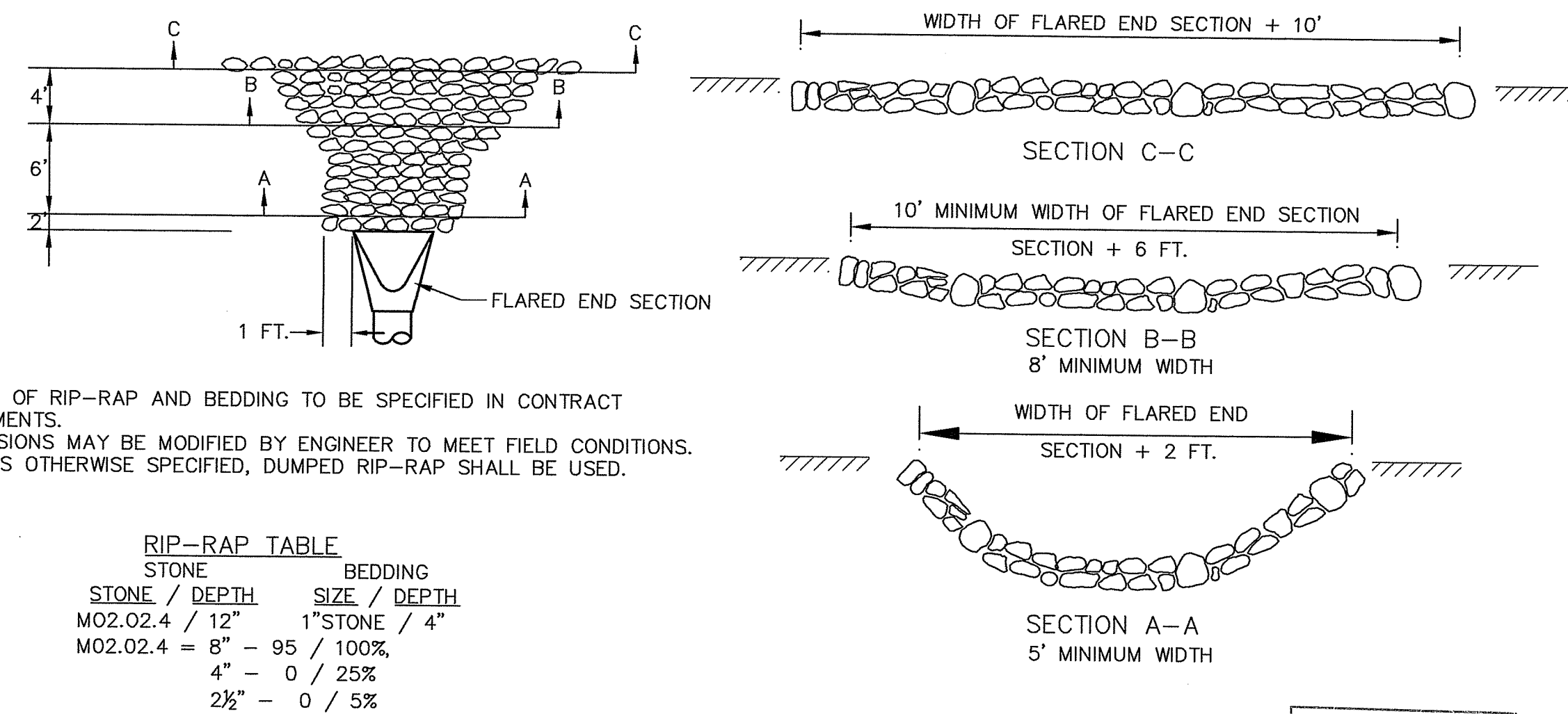
PIPE DIAMETER IN. (MM)	TRENCH WIDTH IN. (M)
4 - 8 (100-200)	*
10 (250)	24 (0.6)
12 (300)	28 (0.7)
15 (375)	35 (0.9)
18 (450)	43 (1.1)
24 (600)	56 (1.4)
30 (750)	60 (1.5)
36 (900)	65 (1.7)
42 (1050)	84 (2.1)
48 (1200)	91 (2.3)
54 (1350)	97 (2.5)
60 (1500)	103 (2.6)

\*BASED ON SMALLEST AVAILABLE BUCKET SIZE



DIAMETER OF PIPE	A	C	D	E	CU. FT. CONCRETE
1'-0"	3'-0"	2'-2"	1'-0"	-	13.2
1'-3"	3'-9"	2'-5"	1'-3"	-	17.2
1'-6"	4'-6"	2'-8"	1'-6"	-	21.5
1'-9"	5'-3"	2'-11"	1'-9"	-	26.0
2'-0"	6'-0"	3'-2"	2'-0"	-	30.9
2'-3"	6'-9"	3'-6"	2'-3"	-	36.5
2'-6"	7'-6"	3'-9"	2'-6"	-	42.0
3'-0"	8'-6"	4'-0"	3'-0"	1'-5"	84.1
3'-6"	11'-0"	4'-6"	3'-6"	1'-7"	111.8
4'-0"	12'-8"	5'-0"	4'-0"	1'-9"	148.5
4'-6"	14'-4"	5'-6"	4'-6"	1'-11"	188.3
5'-0"	16'-0"	6'-0"	5'-0"	2'-1"	232.6
5'-6"	17'-8"	6'-6"	5'-6"	2'-3"	284.9
6'-0"	19'-4"	7'-0"	6'-0"	2'-5"	343.6

NOTES:  
 1. SHALL BE IN ACCORDANCE WITH SECTION 709 OF THE R.I. STANDARD SPECIFICATIONS.  
 2. 3/4" DIAMETER ON ALL EXPOSED EDGES.  
 3. 1'-0" COMPACTED GRAVEL UNDER HEADWALL.  
 4. ALL REINFORCING BARS SHALL BE EPOXY COATED.



NOTES:  
 1. CLASS OF RIP-RAP AND BEDDING TO BE SPECIFIED IN CONTRACT DOCUMENTS.  
 2. DIMENSIONS MAY BE MODIFIED BY ENGINEER TO MEET FIELD CONDITIONS.  
 3. UNLESS OTHERWISE SPECIFIED, DUMPED RIP-RAP SHALL BE USED.

**RIP-RAP TABLE**

STONE / DEPTH	BEDDING SIZE / DEPTH
M02.02.4 / 12"	1" STONE / 4"
M02.02.4 = 8" - 95 / 100%	
4" - 0 / 25%	
2 1/2" - 0 / 5%	

**ROCK FILL RIP-RAP @ FLARED END SECTIONS**  
 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: NOV 9 2022 FILE #: 22-0300  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE  
*Timothy J. Behan*

**PLANNING BOARD CERTIFICATION**

WEST WARWICK PLANNING BOARD

DATE APPROVED: \_\_\_\_\_

DATE ENDORSED: \_\_\_\_\_

TIMOTHY J. BEHAN  
 No. 6278  
 REGISTERED PROFESSIONAL ENGINEER

**REVISIONS**

No.	DATE	DRWN	CHKD
1	8-18-22	MCZ	TJB
2	10-4-22	MCZ	TJB

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

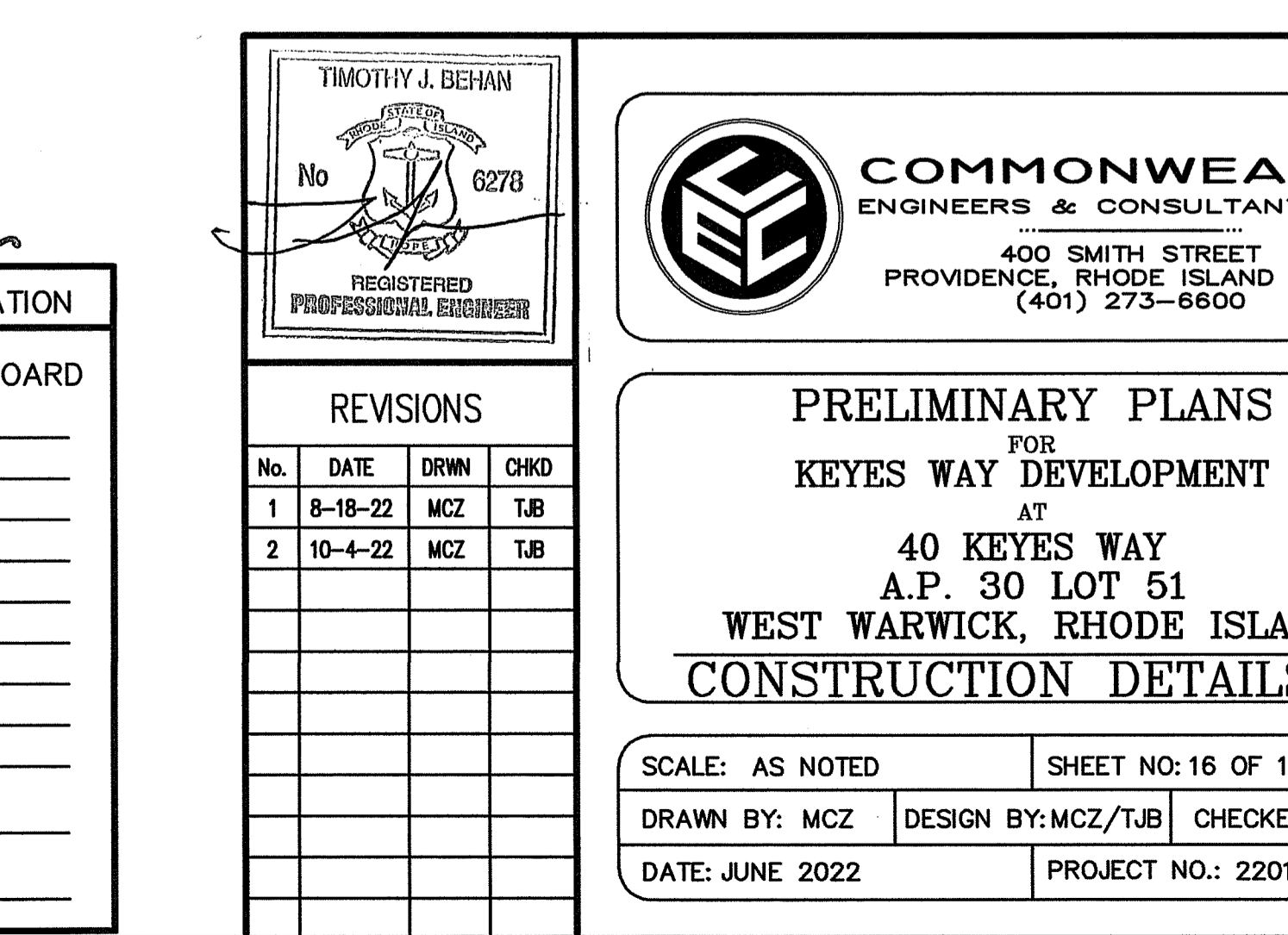
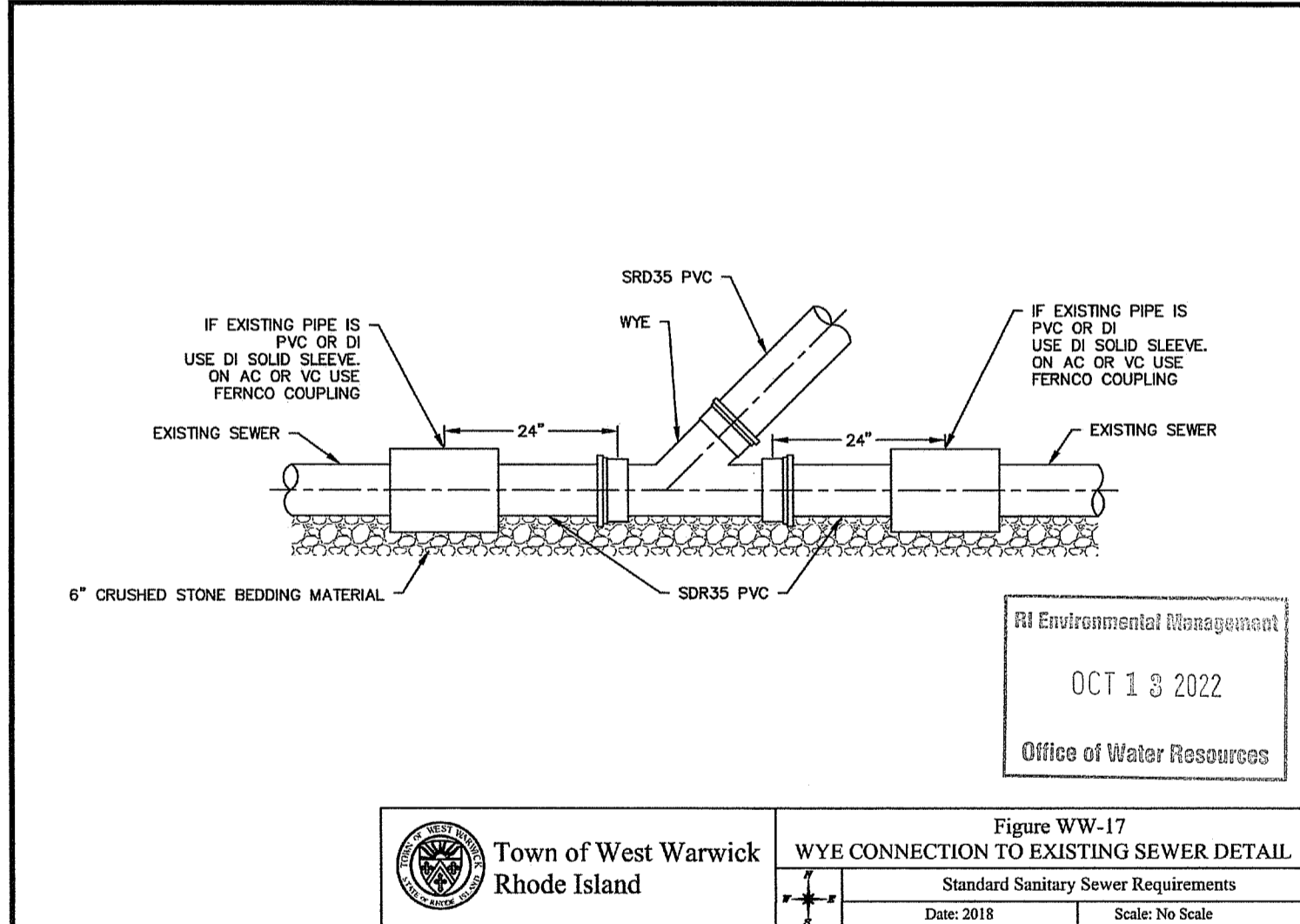
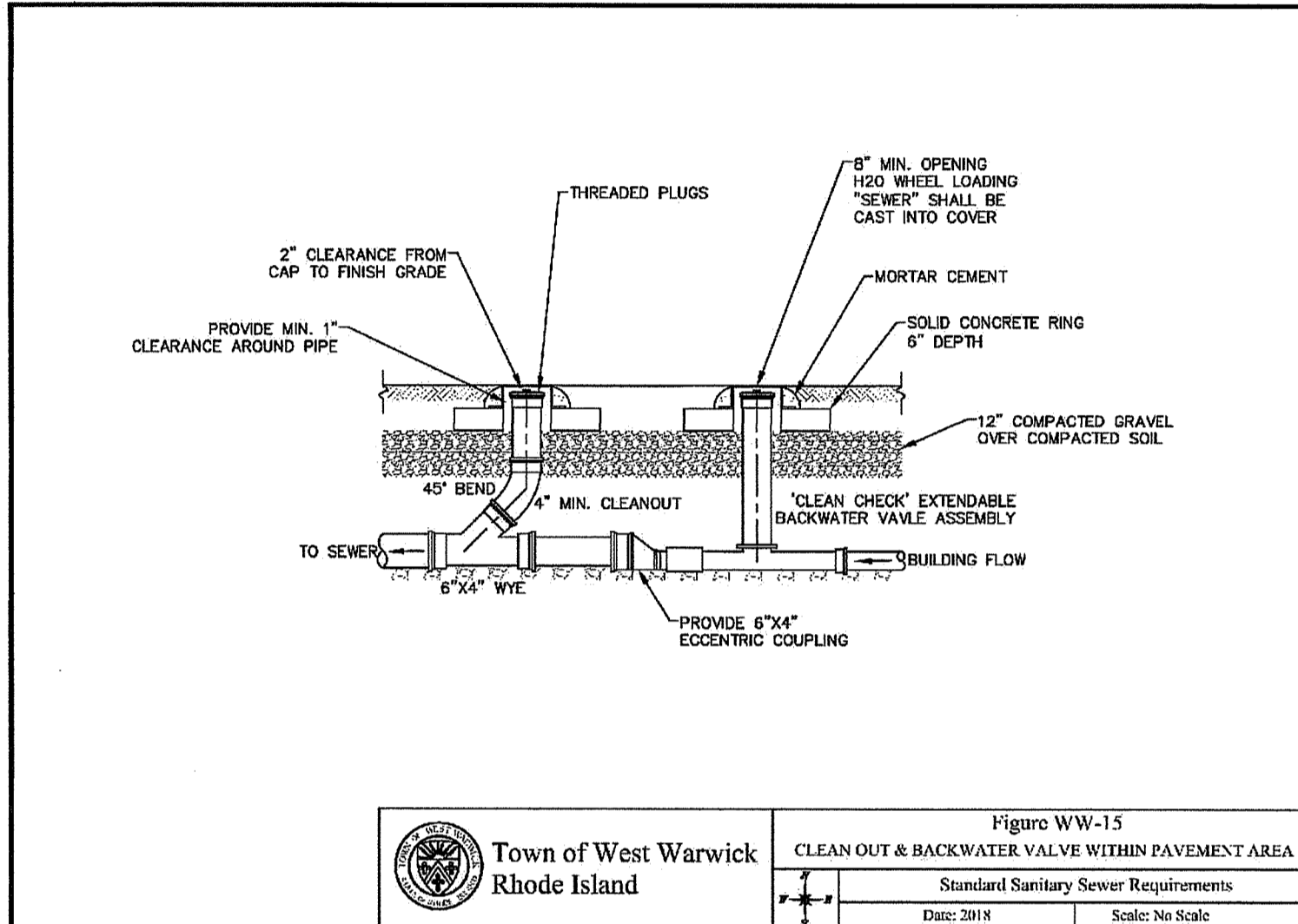
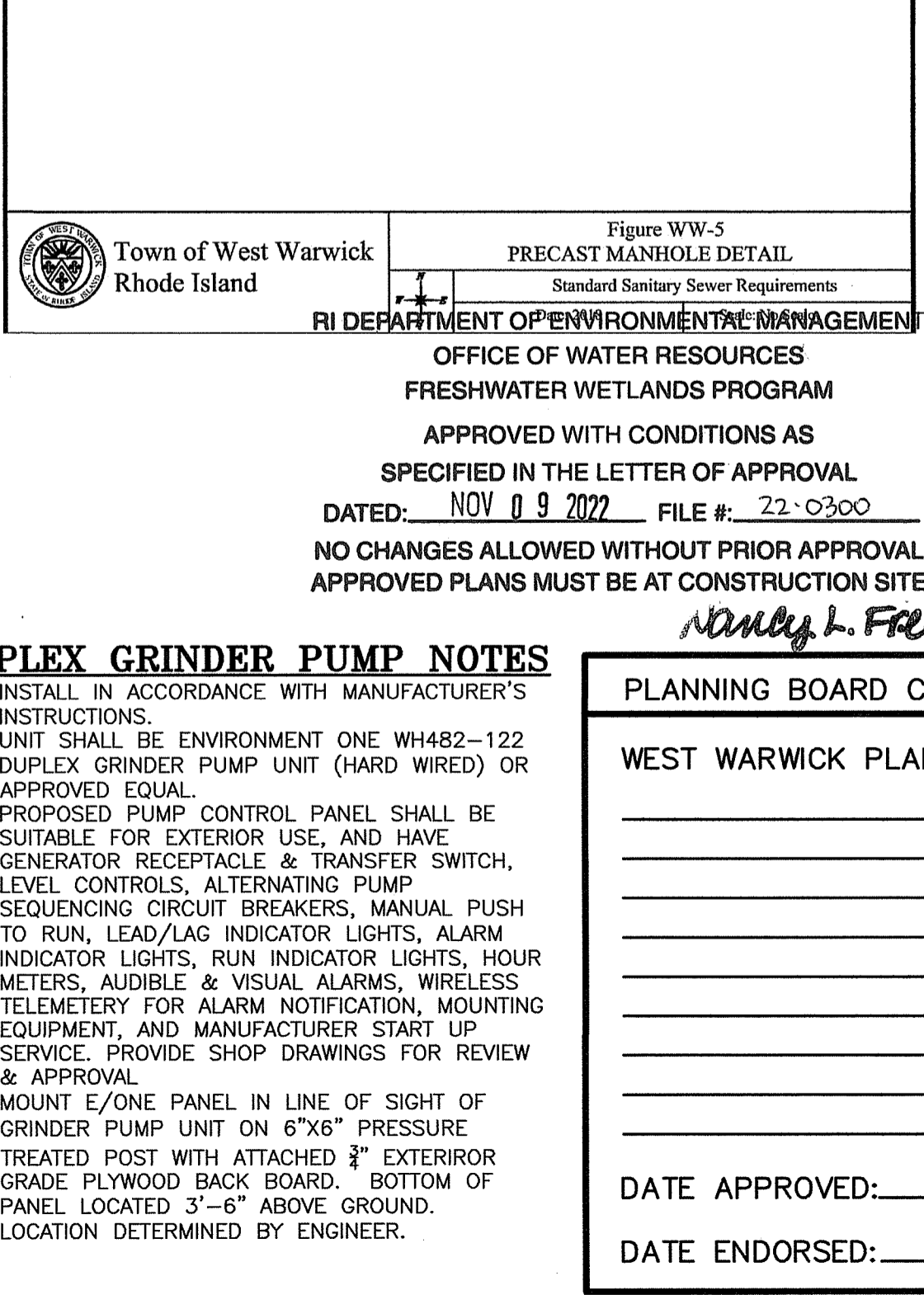
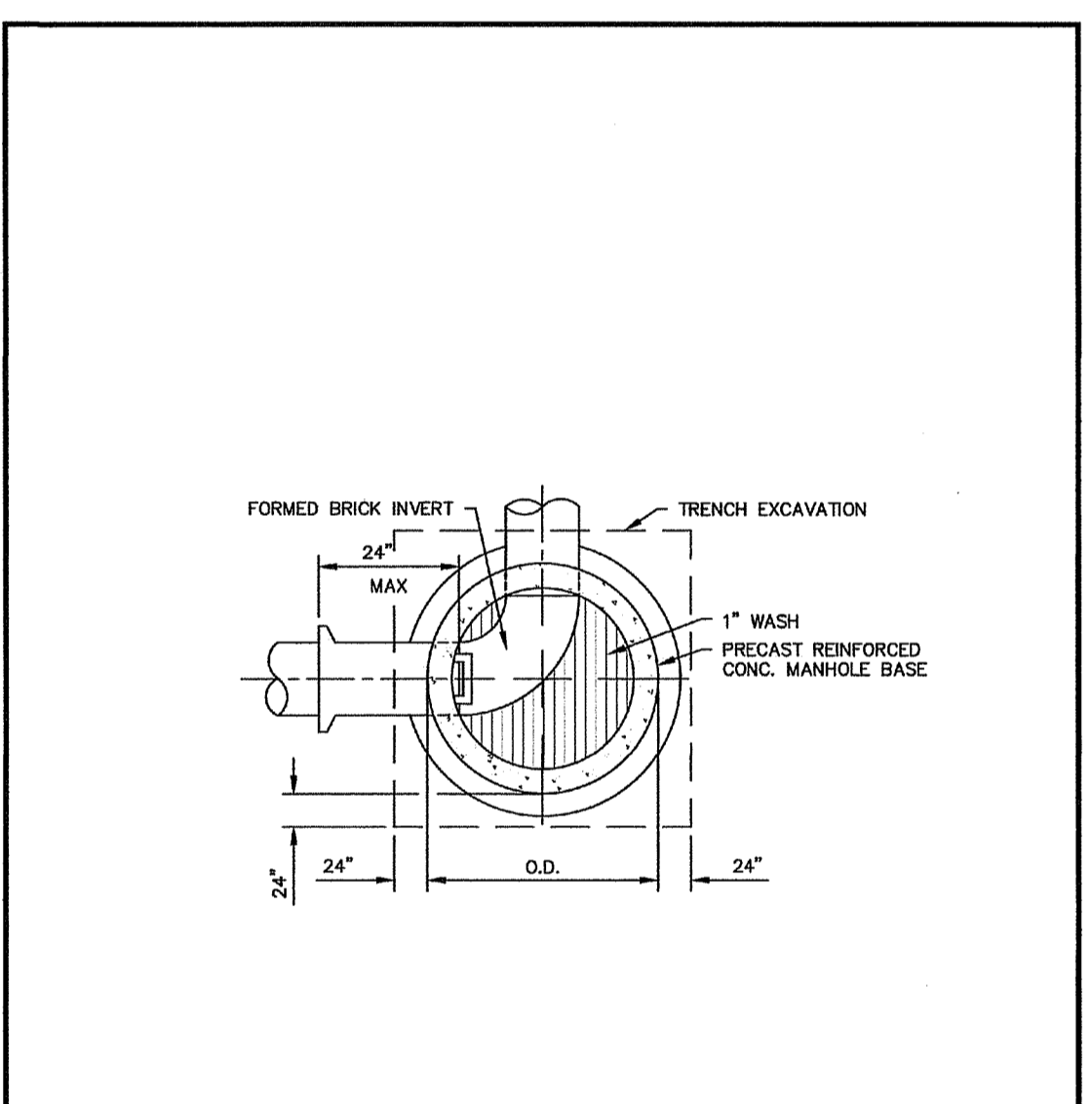
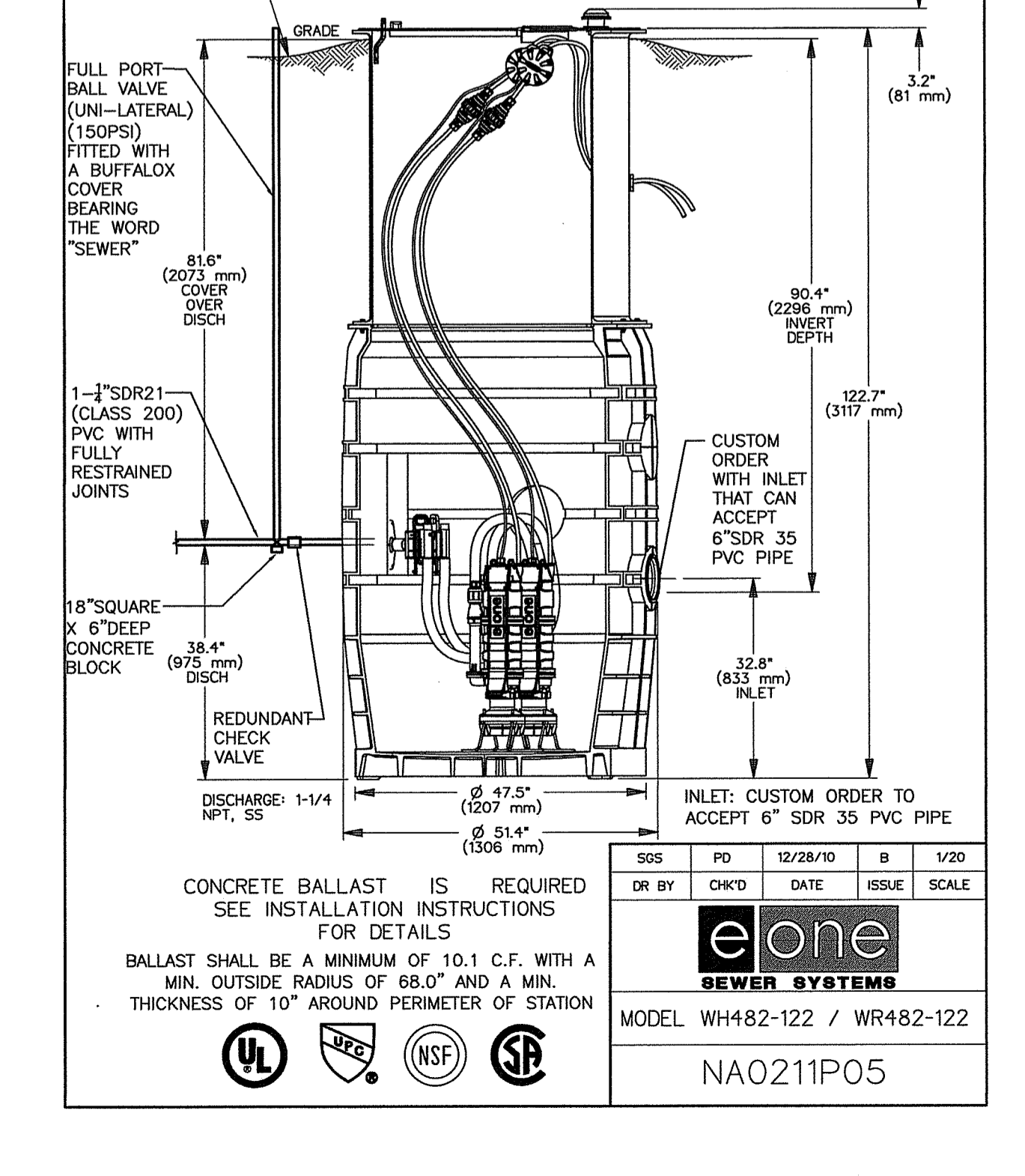
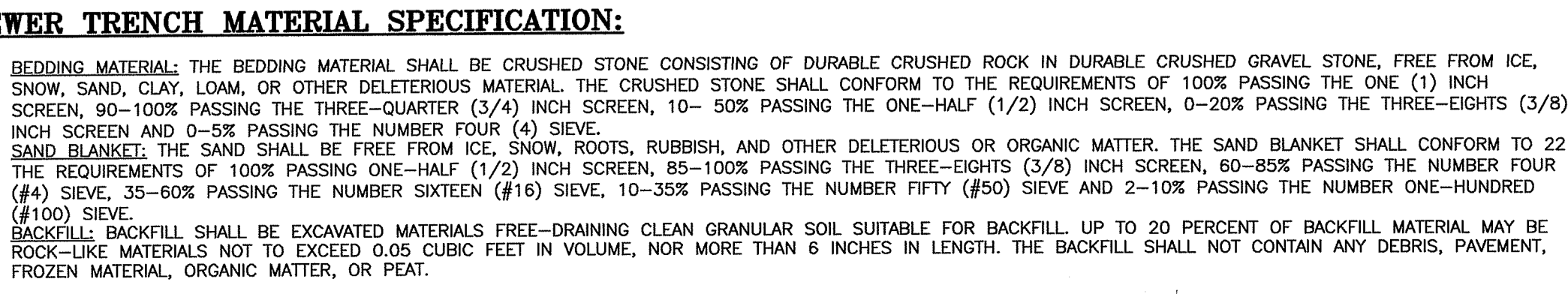
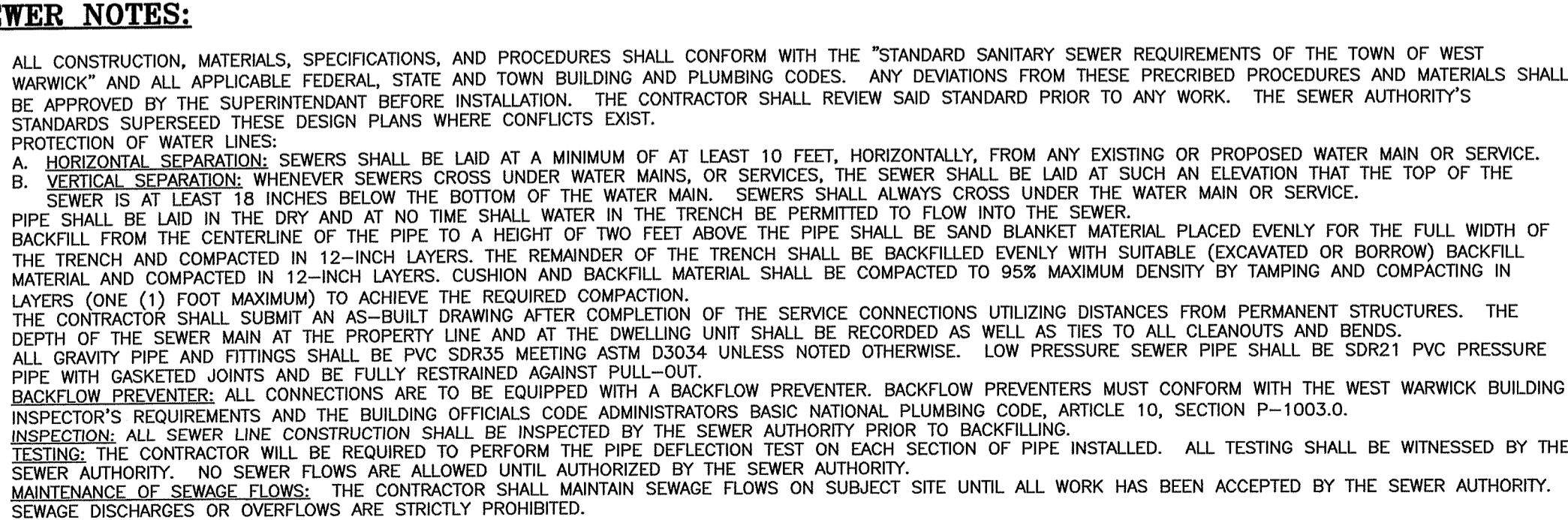
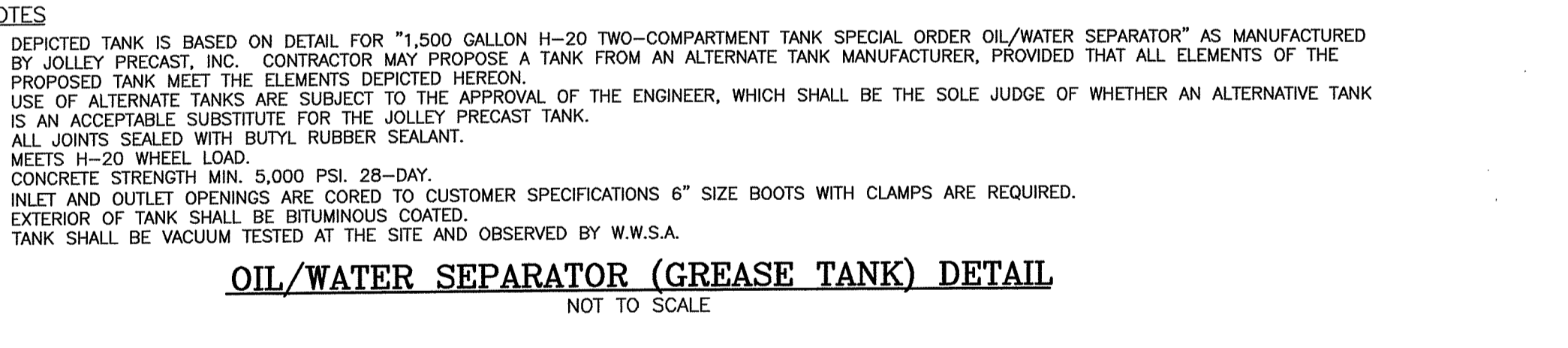
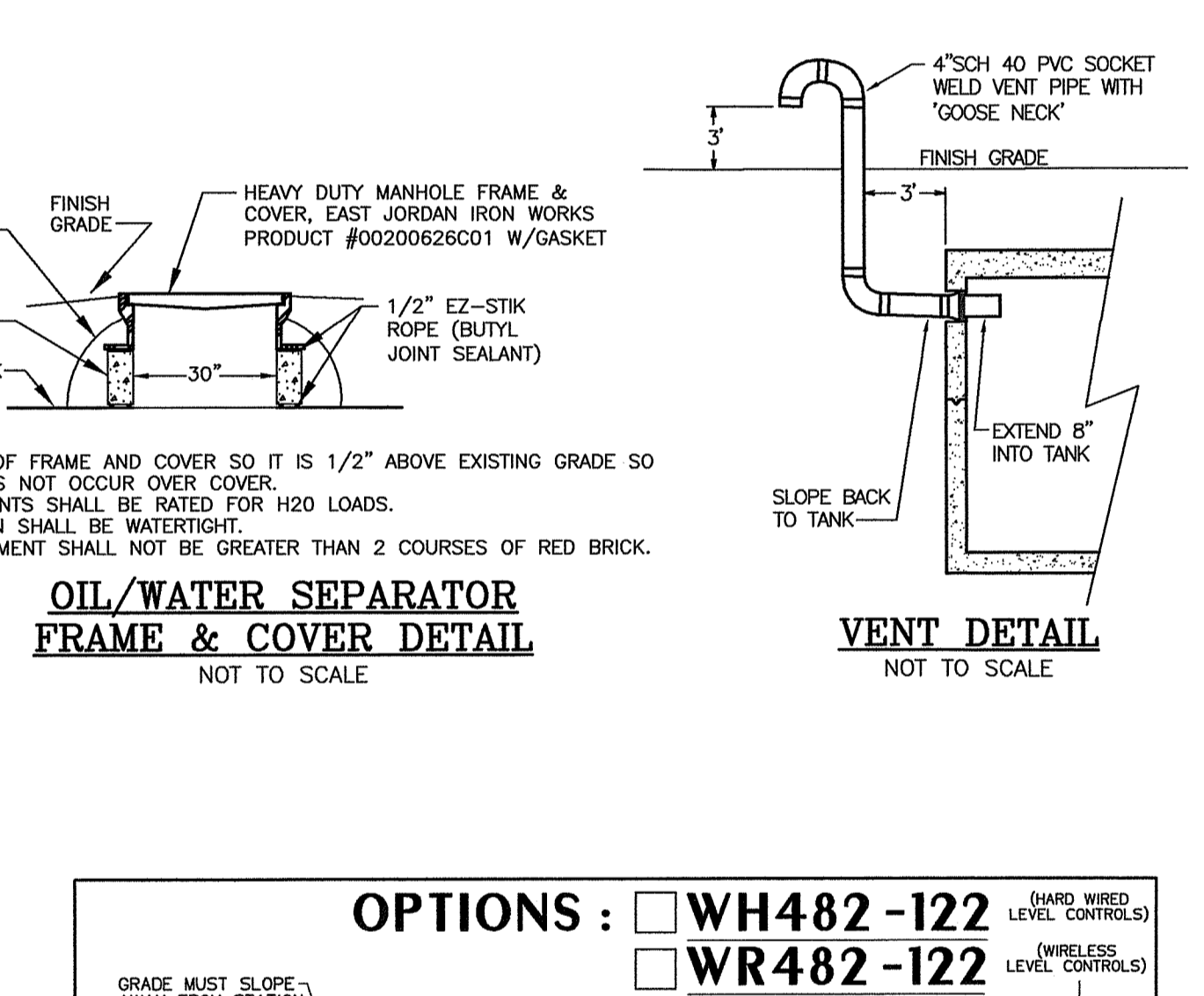
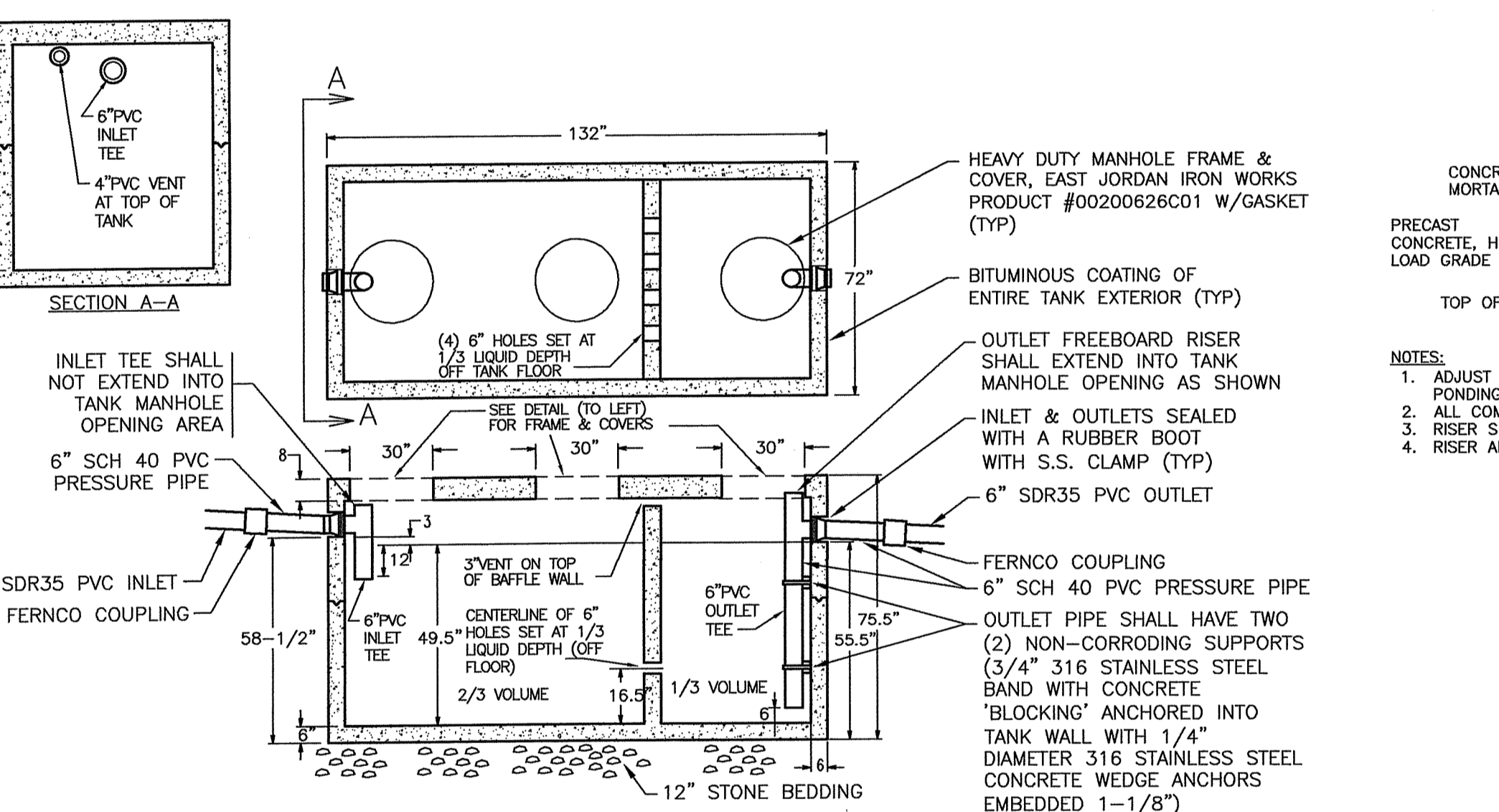
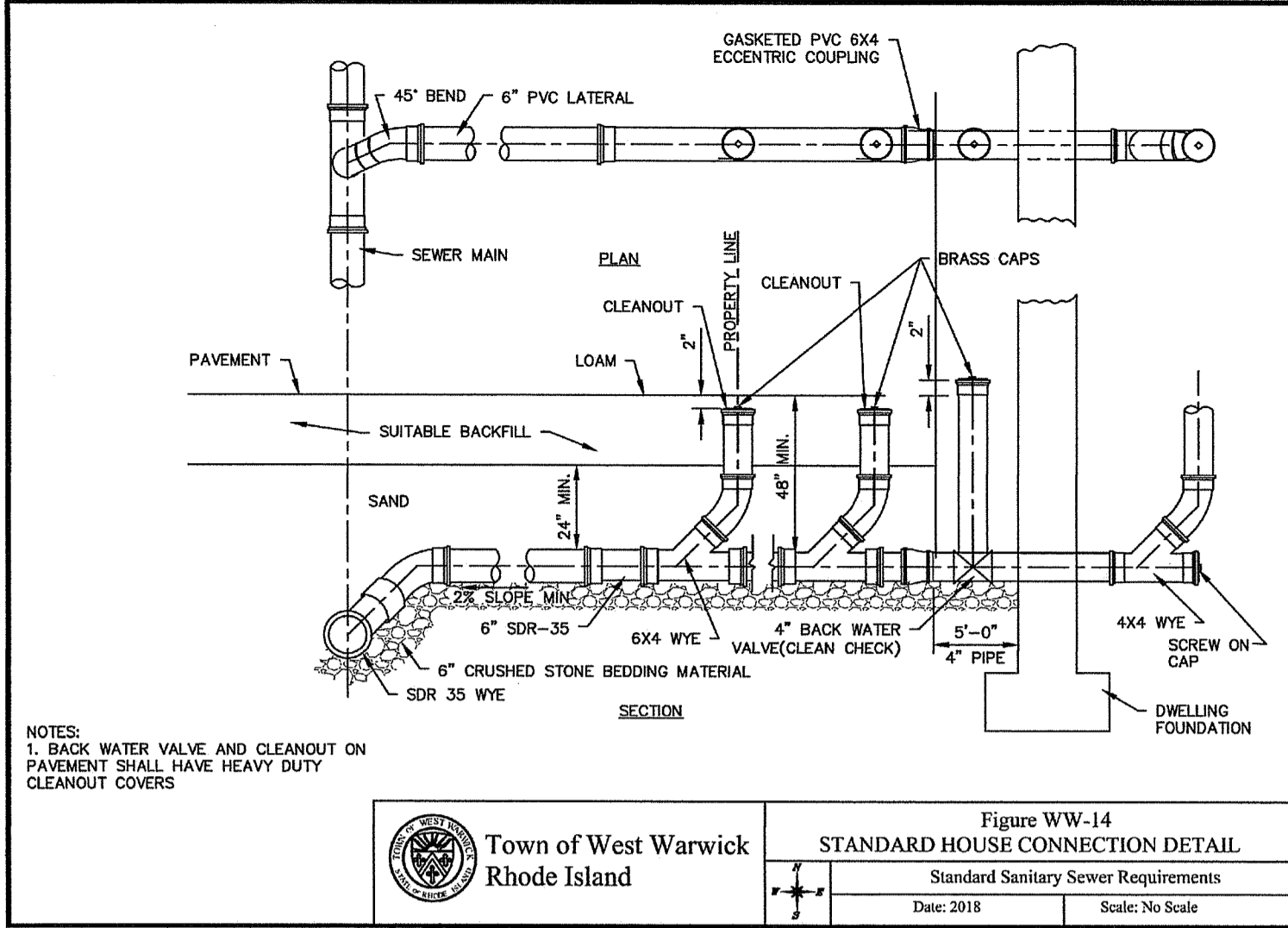
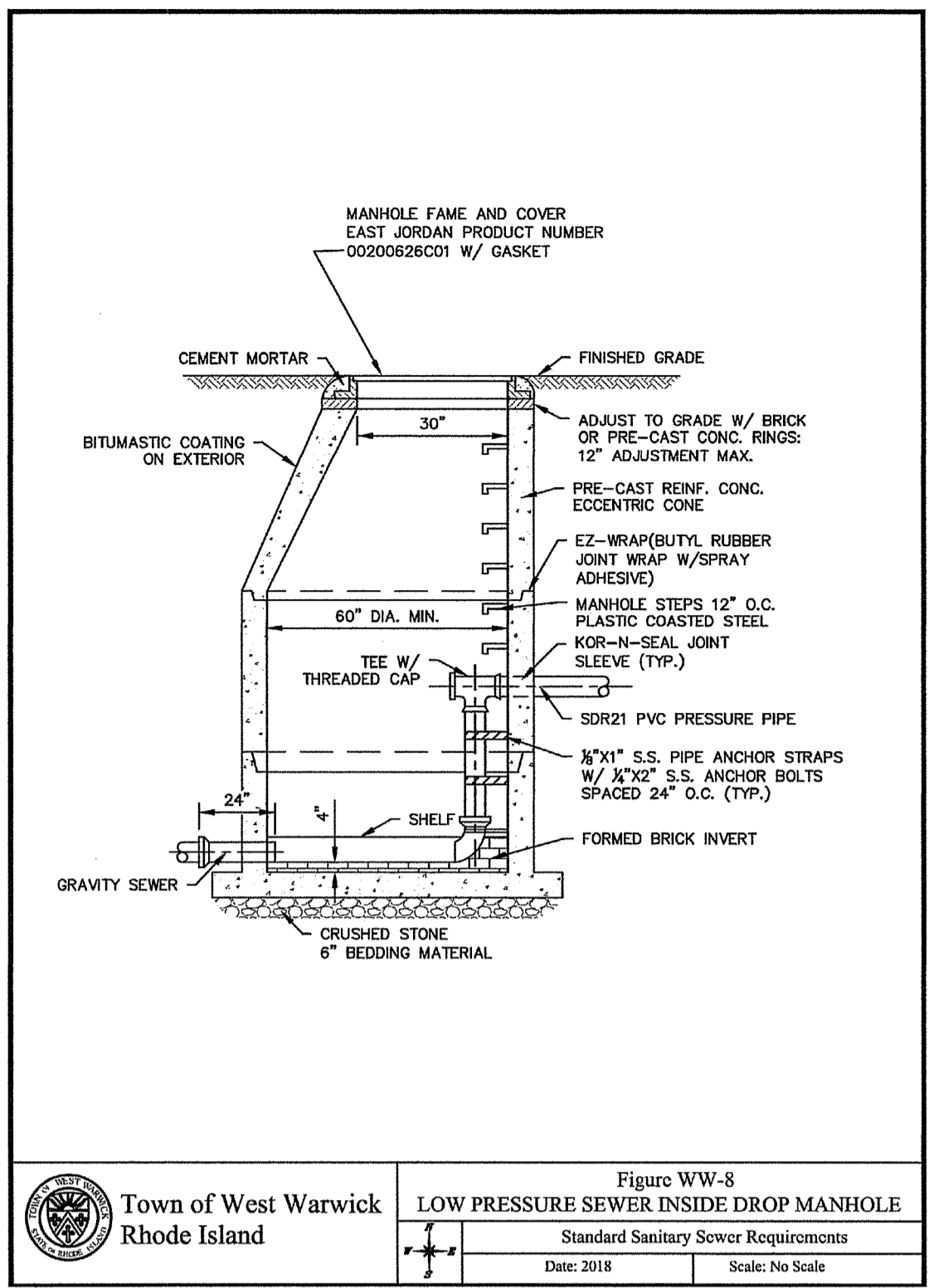
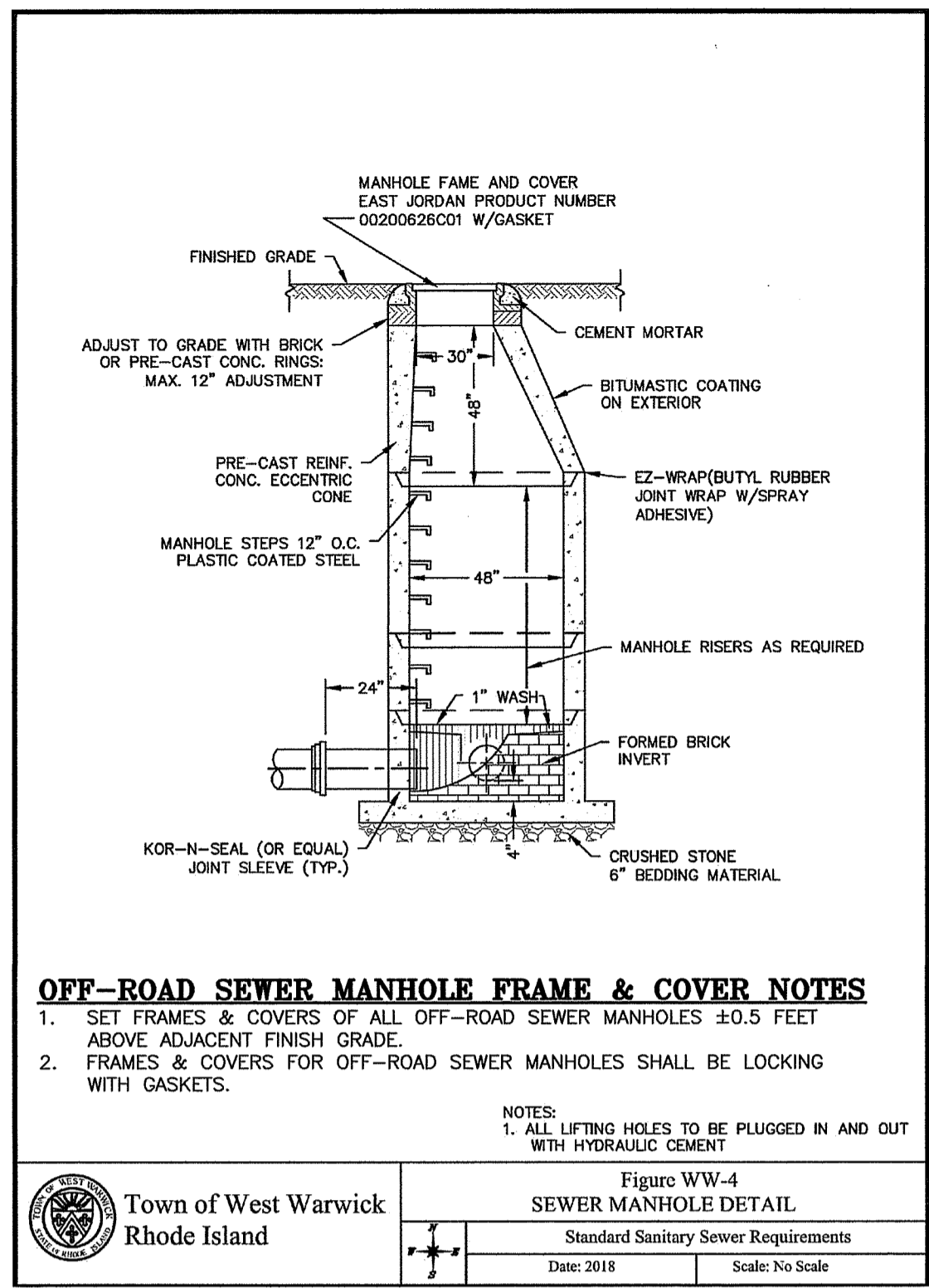
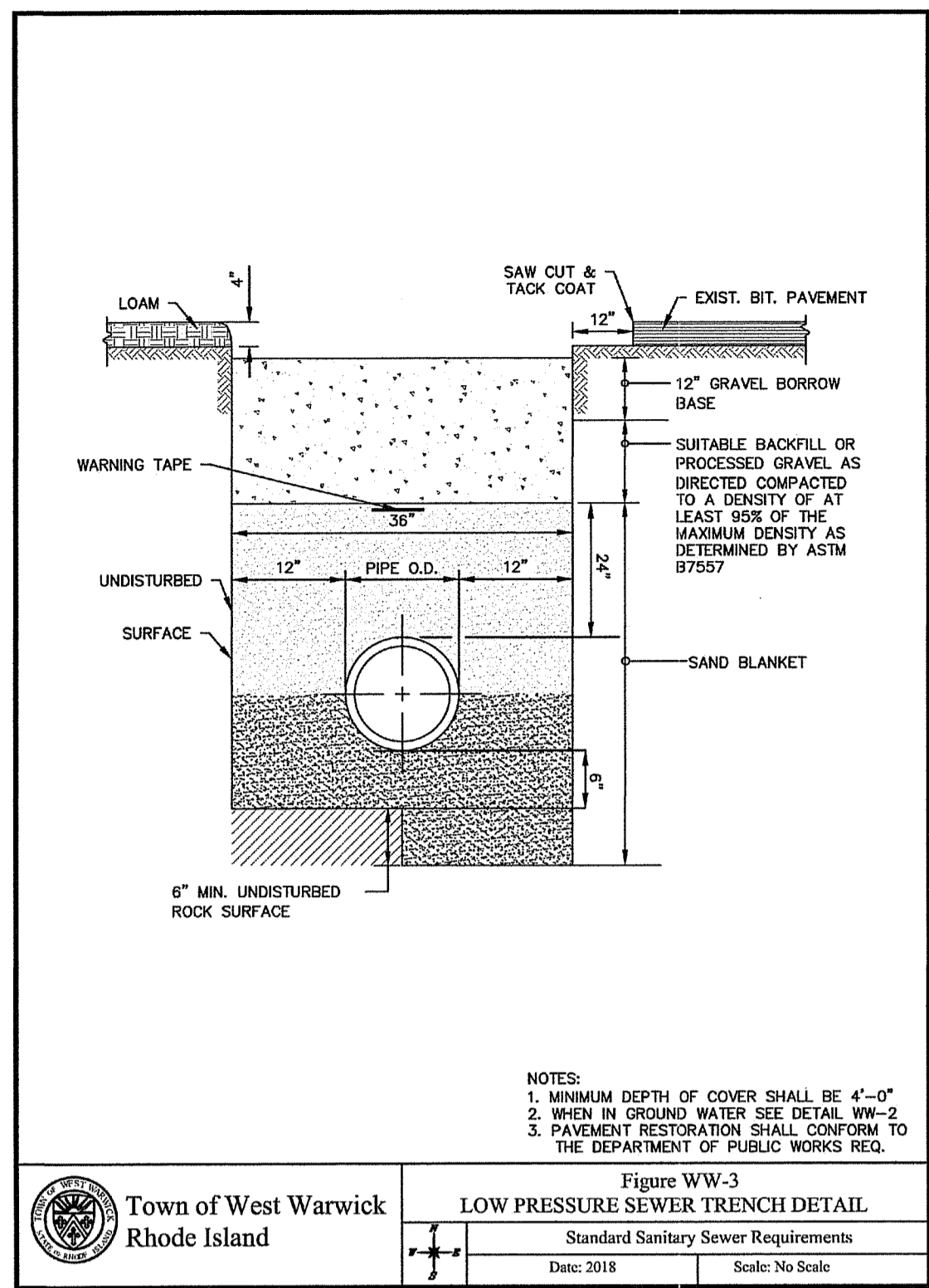
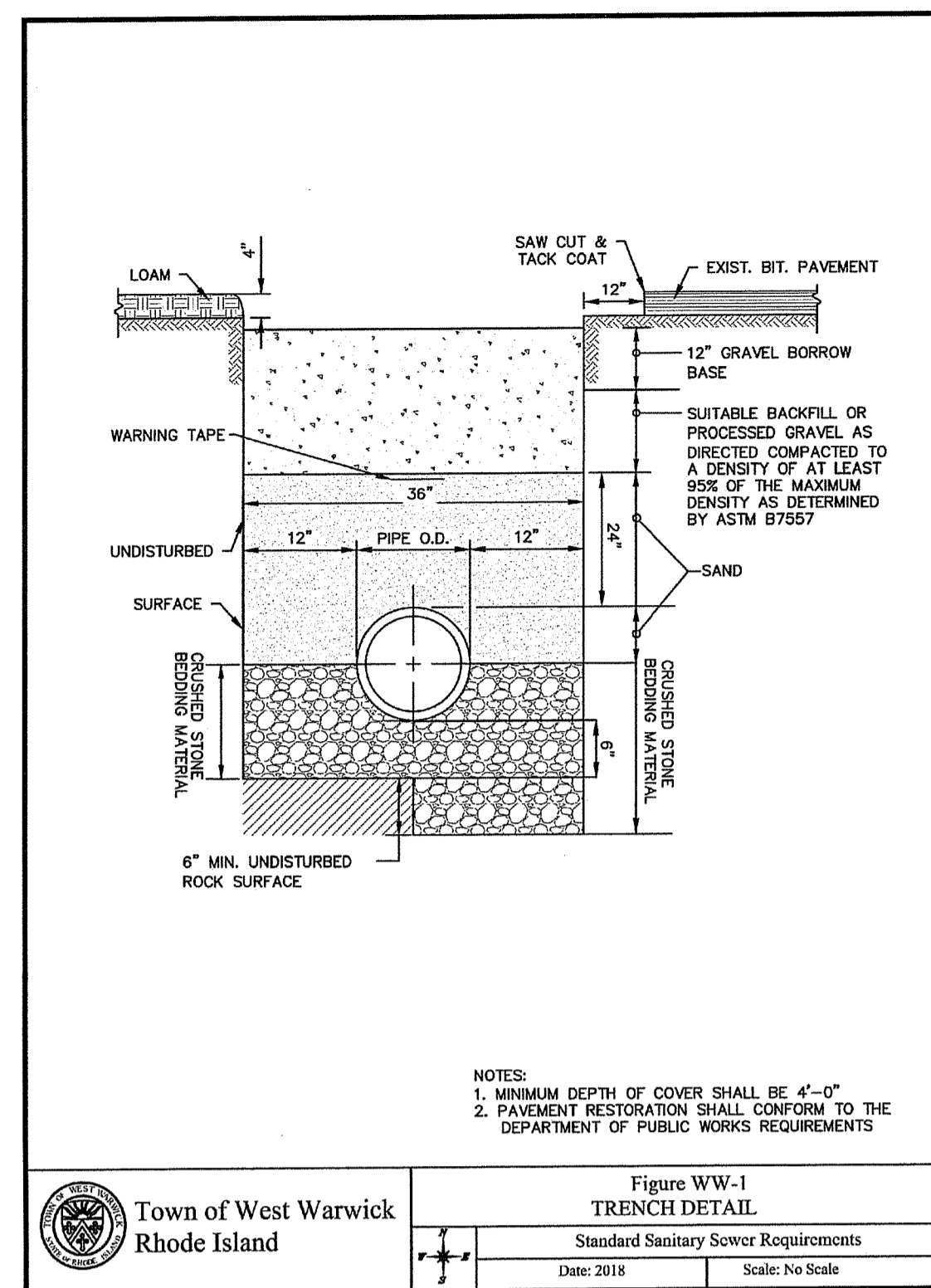
**PRELIMINARY PLANS**  
 FOR  
**KEYES WAY DEVELOPMENT**  
 AT  
 40 KEYES WAY  
 A.P. 30 LOT 51  
 WEST WARWICK, RHODE ISLAND  
**CONSTRUCTION DETAILS 3**

SCALE: AS NOTED SHEET NO: 13 OF 17  
 DRAWN BY: MCZ DESIGN BY: MCZ/TJB CHECKED BY: TJB  
 DATE: JUNE 2022 PROJECT NO.: 22013.00

RI STANDARD 2.1.0  
 R.I. DEPARTMENT OF TRANSPORTATION  
 CONCRETE HEADWALLS FOR PIPE CULVERTS  
 JUNE 15, 1998  
 RI Environmental Management  
 OCT 13 2022  
 Office of Water Resources







**SEWER NOTES:**

- ALL CONSTRUCTION, MATERIALS, SPECIFICATIONS, AND PROCEDURES SHALL CONFORM WITH 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 SUPERINTENDANT 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.
- 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 AN AS-BUILT DRAWING 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. LOW PRESSURE SEWER PIPE SHALL BE SDR21 PVC PRESSURE PIPE WITH GASKETED JOINTS AND BE FULLY RESTRAINED AGAINST PULL-OUT.
- BACKFLOW PREVENTER: ALL CONNECTIONS ARE TO BE EQUIPPED WITH A BACKFLOW PREVENTER. BACKFLOW PREVENTERS MUST CONFORM WITH THE 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 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 SEWER AUTHORITY. NO SEWER FLOWS ARE ALLOWED UNTIL AUTHORIZED BY THE 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 SHALL BE CRUSHED STONE CONSISTING OF 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-EIGHTS (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-EIGHTS (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.

**SEWER TRENCH MATERIAL SPECIFICATION:**

- BEDDING MATERIAL:** THE BEDDING SHALL BE CRUSHED STONE CONSISTING OF 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-EIGHTS (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-EIGHTS (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.

**DUPLEX GRINDER PUMP NOTES**

- INSTALL IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.
- UNIT SHALL BE ENVIRONMENT ONE WH482-122 DUPLEX GRINDER PUMP UNIT (HARD WIRED) OR APPROVED EQUAL.
- PROPOSED PUMP CONTROL PANEL SHALL BE SUITABLE FOR EXTERIOR USE, AND HAVE GENERATOR RECEPTACLE & TRANSFER SWITCH, LEVEL CONTROLS, ALTERNATING PUMP SEQUENCING CIRCUIT BREAKERS, MANUAL PUSH TO RUN, LEAD/LAG INDICATOR LIGHTS, ALARM INDICATOR LIGHTS, RUN INDICATOR LIGHTS, HOUR METERS, AUDIBLE & VISUAL ALARMS, WIRELESS TELEMETRY FOR ALARM NOTIFICATION, MOUNTING EQUIPMENT, AND MANUFACTURER'S START UP SERVICE. PROVIDE SHOP DRAWINGS FOR REVIEW & APPROVAL.
- MOUNT E/ONE PANEL IN LINE OF SIGHT OF GRINDER PUMP UNIT ON 6"x6" PRESSURE TREATED POST WITH ATTACHED 3" EXTERIOR GRADE PLYWOOD BACK BOARD. BOTTOM OF PANEL LOCATED 3'-6" ABOVE GROUND. LOCATION DETERMINED BY ENGINEER.

**PLANNING BOARD CERTIFICATION**

WEST WARWICK PLANNING BOARD

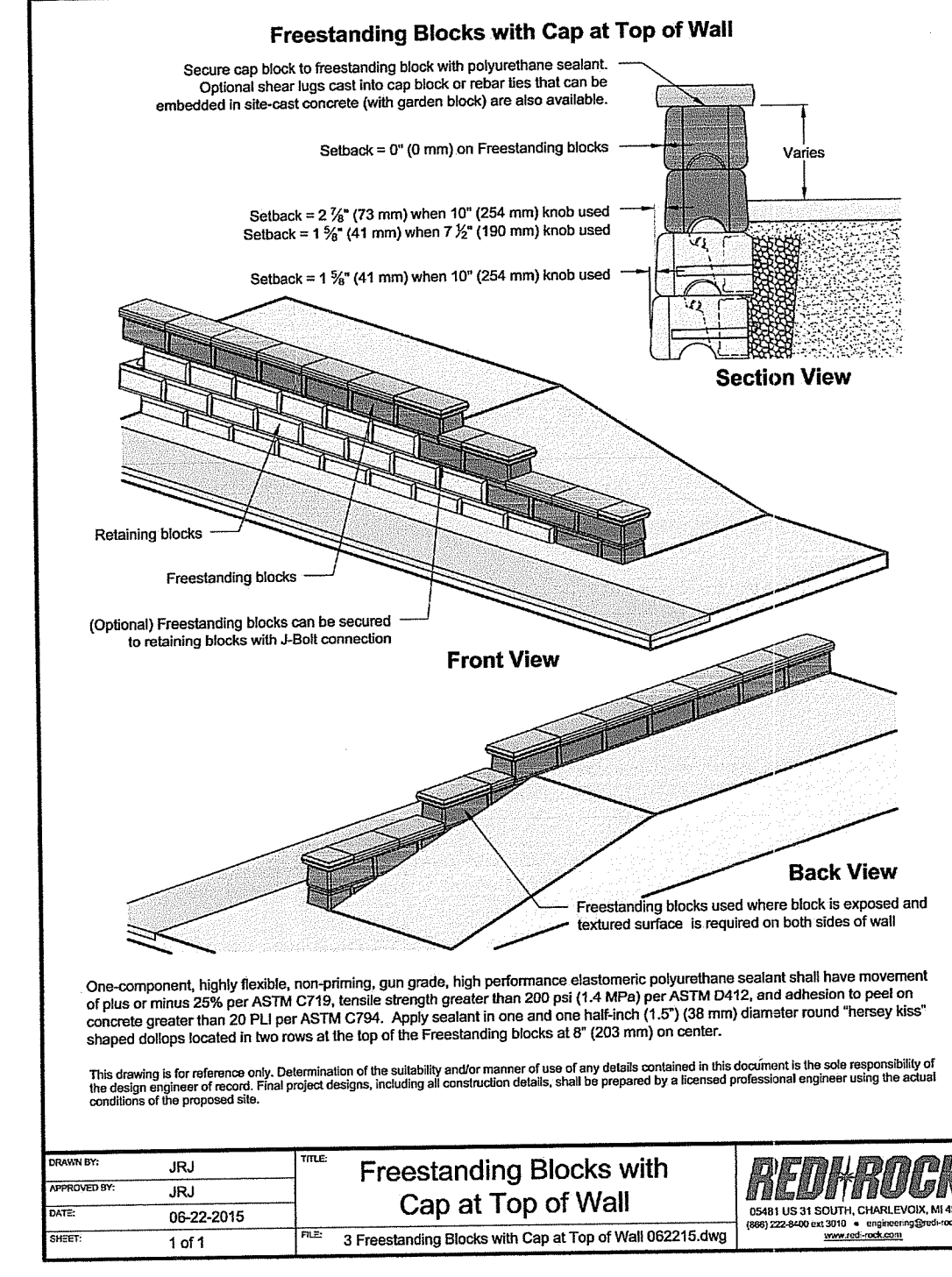
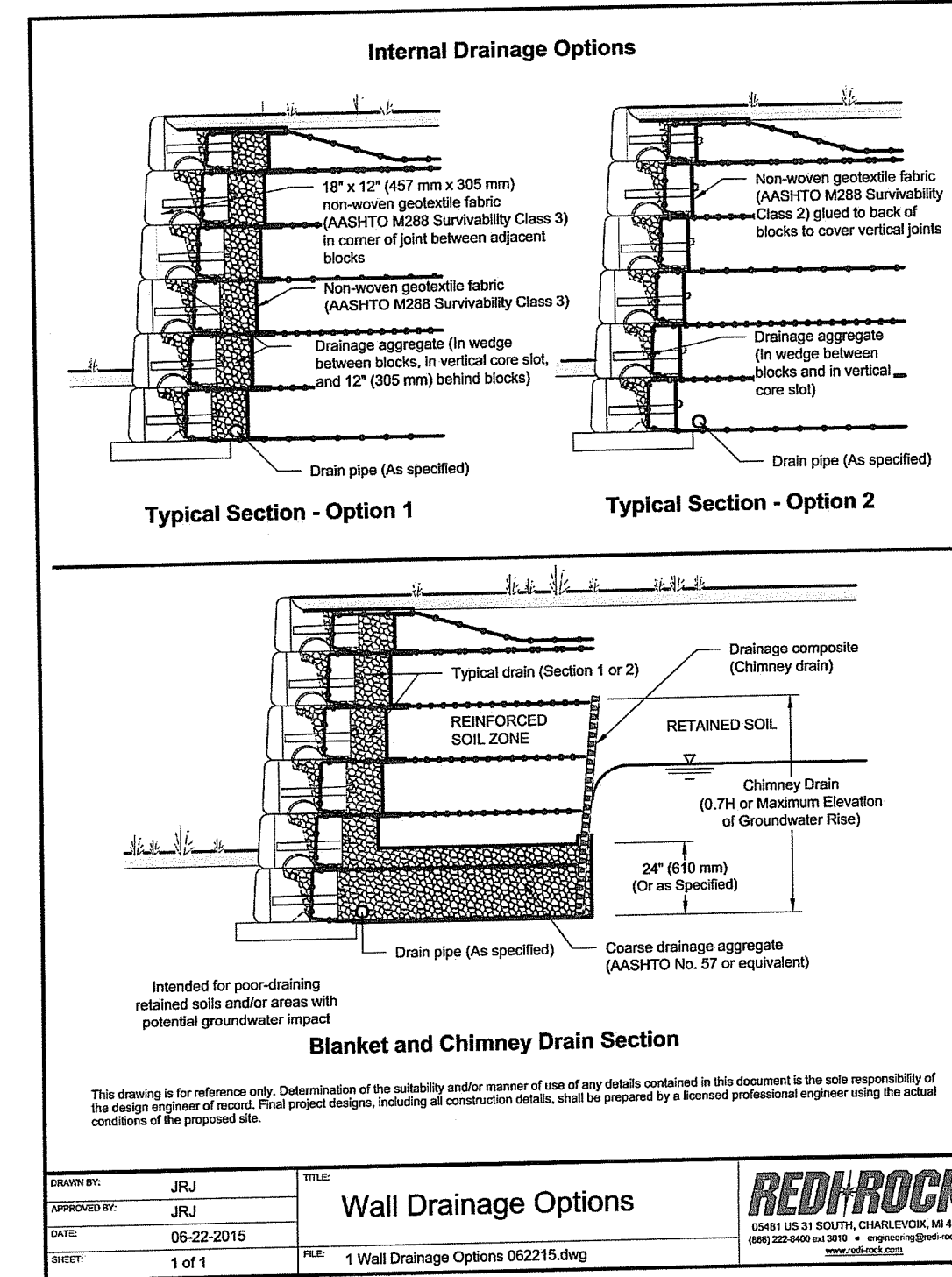
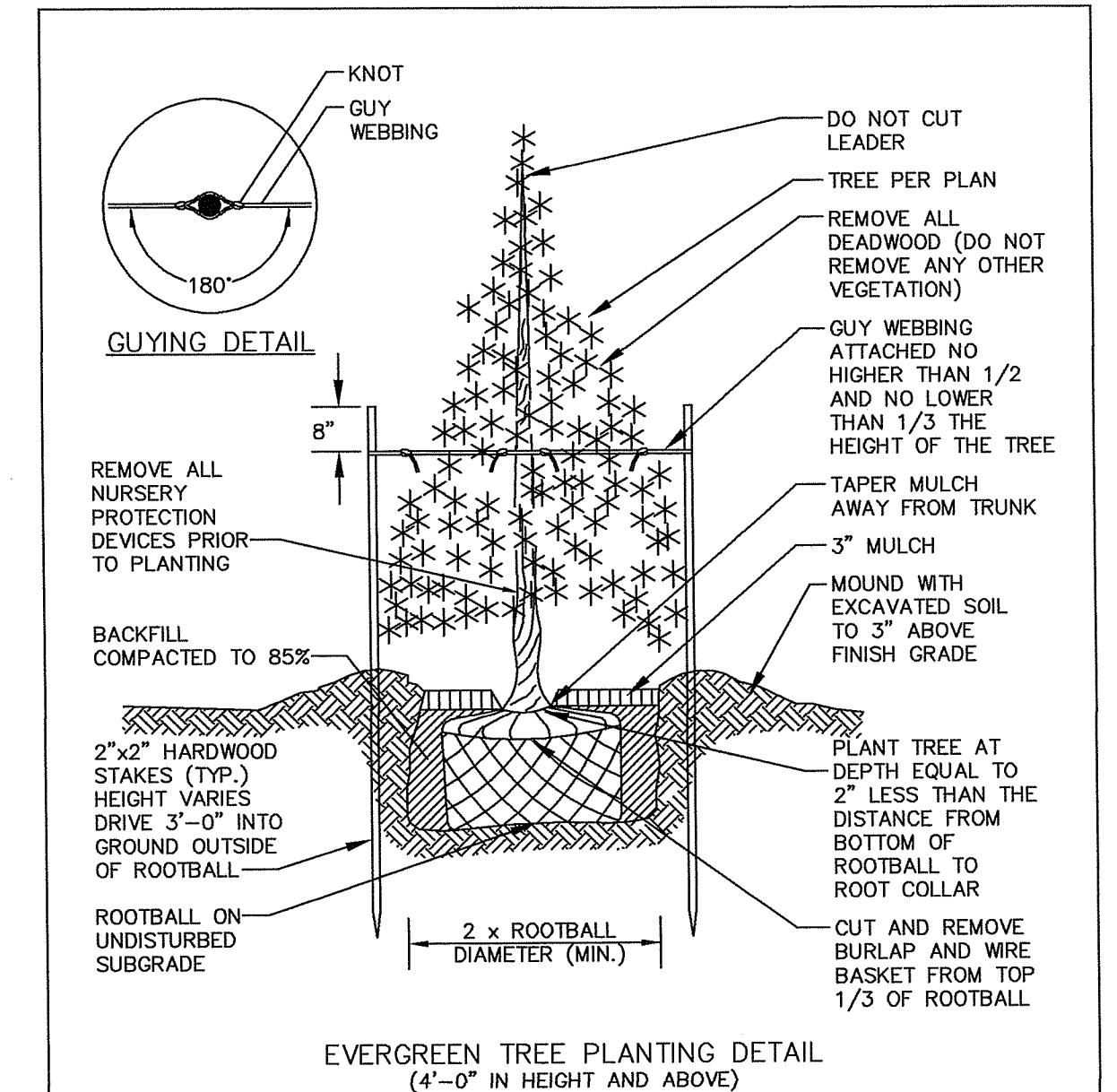
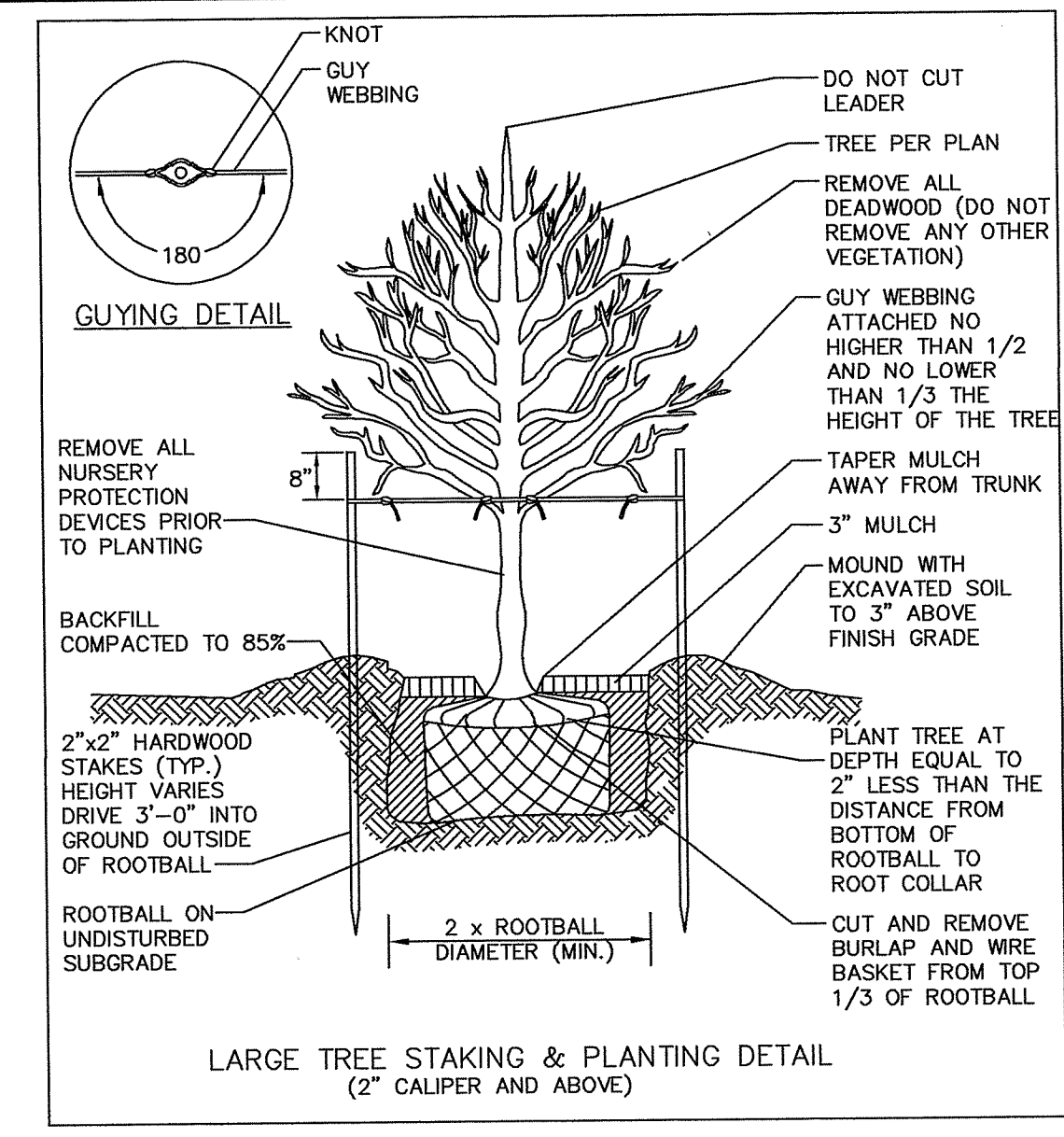
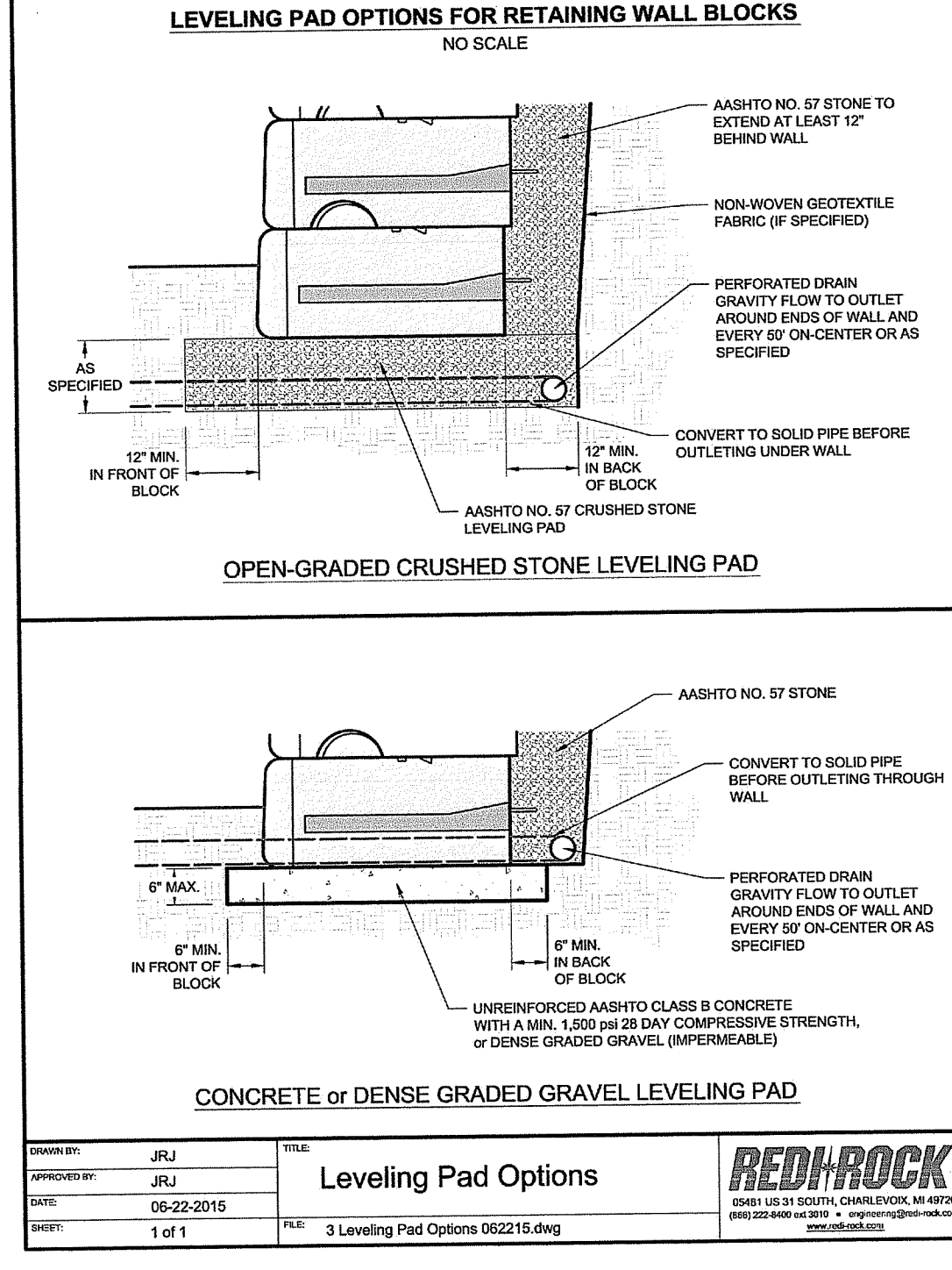
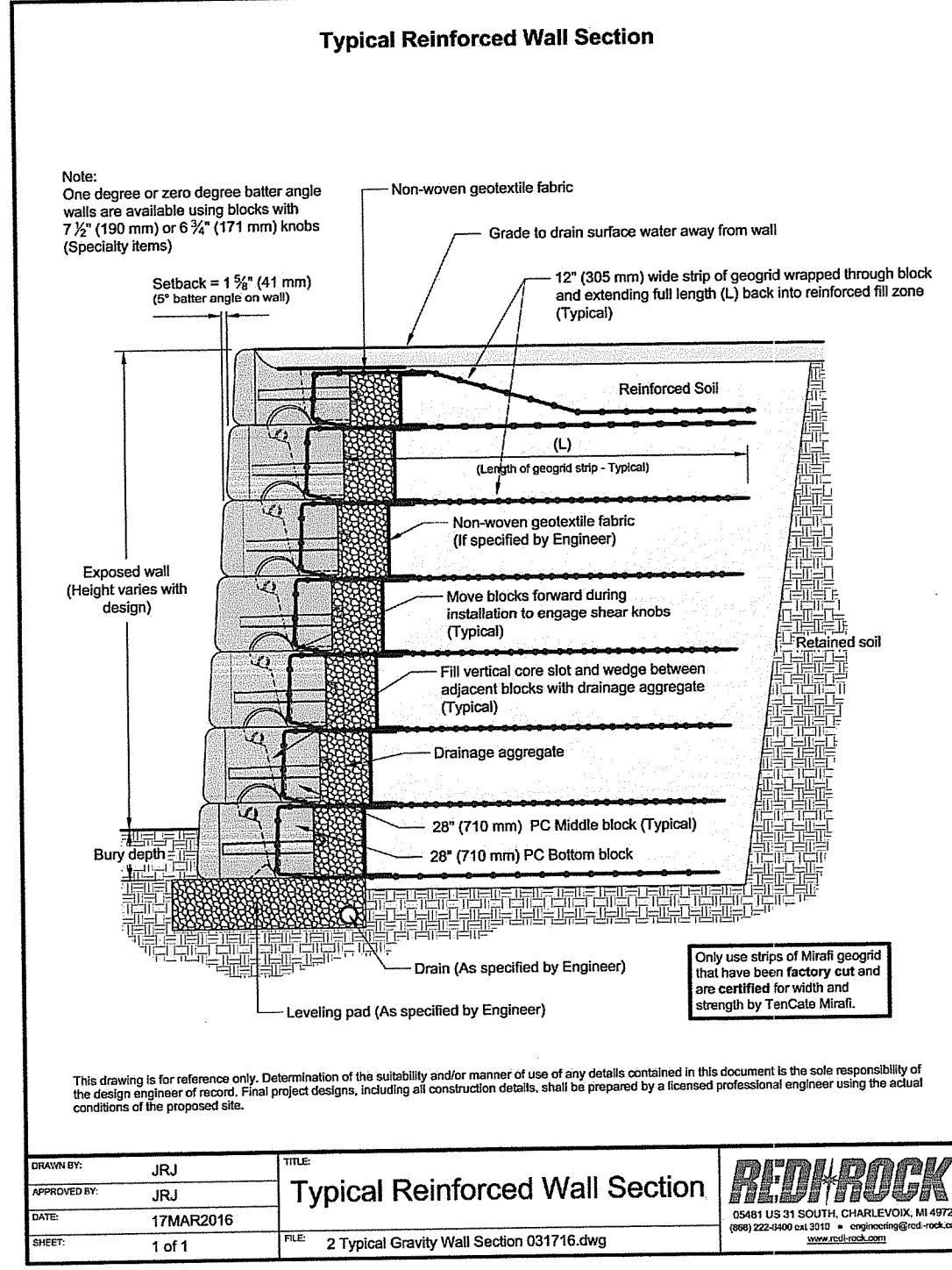
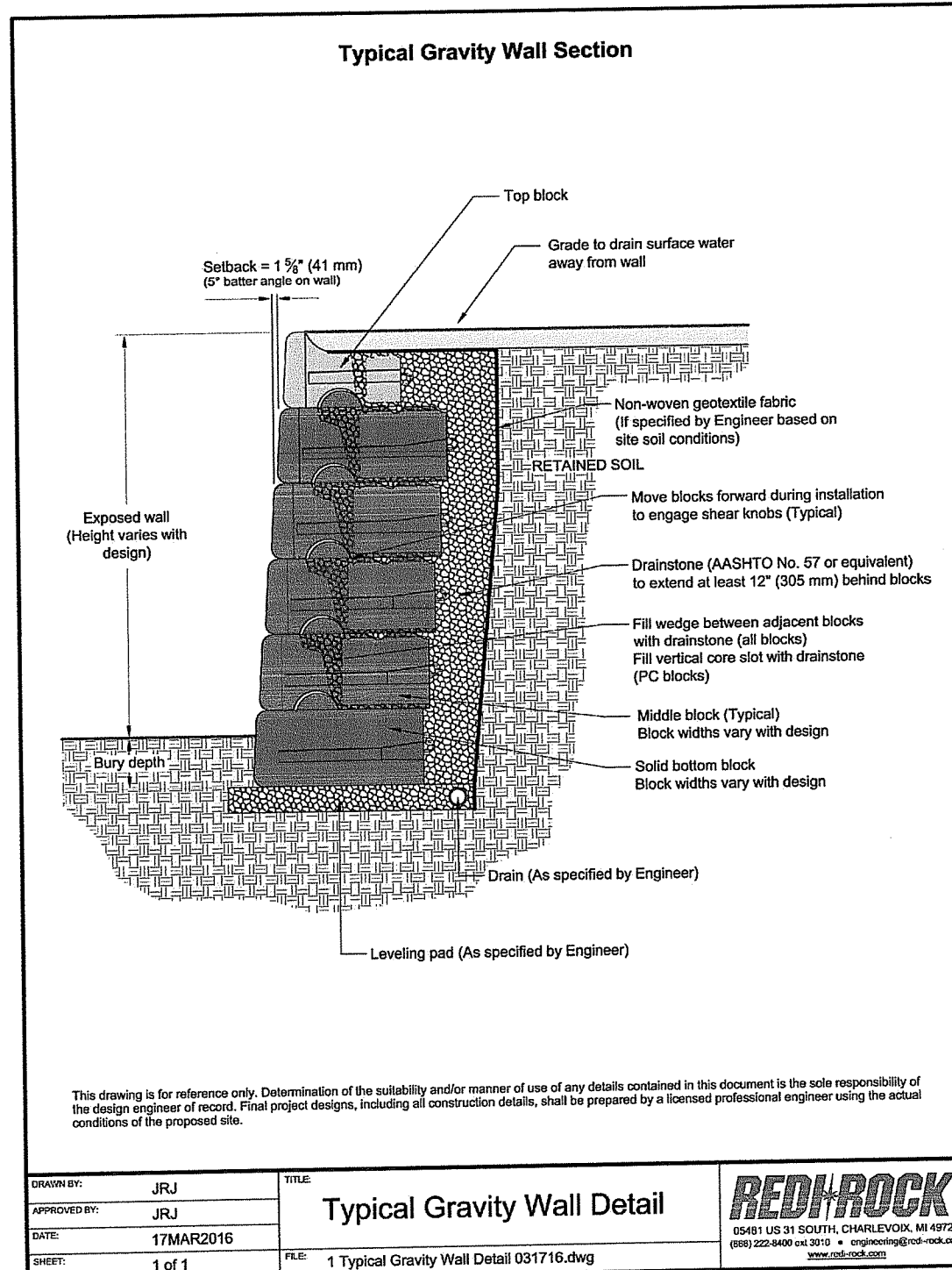
DATE APPROVED: \_\_\_\_\_

DATE ENDORSED: \_\_\_\_\_

SCALE: AS NOTED SHEET NO: 16 OF 17

DRAWN BY: MCZ DESIGN BY: MCZ/TJB CHECKED BY: TJB

DATE: JUNE 2022 PROJECT NO.: 22013.00

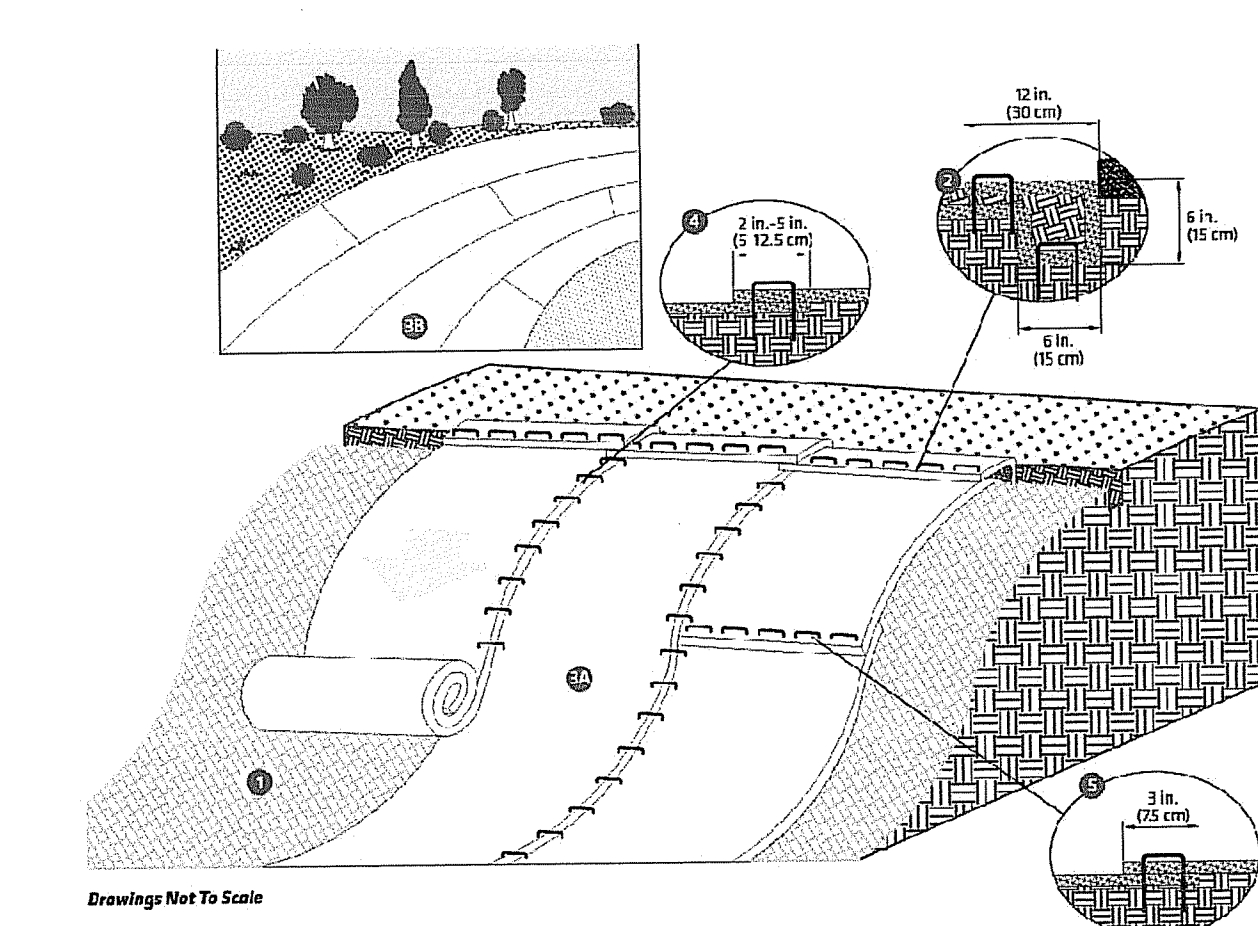


**MODULAR CONCRETE UNIT (MCU) WALL NOTES**

- 1) MCU WALLS SHALL BE REDI-ROCK OR OWNER-APPROVED EQUAL WALL SYSTEM(S).
- 2) SELECTED WALL SYSTEM(S) SHALL BE CAPABLE OF SUPPORTING THE ANTICIPATED LOADING CONDITIONS BASED ON THE PROPOSED SITE DEVELOPMENT LAYOUT, GRADING AND UTILITY PLANS.
- 3) THE REDI-ROCK DETAILS PROVIDED HEREON ARE INTENDED FOR REFERENCE ONLY DURING THE PERMITTING REVIEW PROCESS, AND SHALL NOT BE CONSTRUED AS FINAL ENGINEERED WALL DESIGNS.
- 4) CONTRACTOR SHALL RETAIN A RHODE ISLAND LICENSED PROFESSIONAL STRUCTURAL ENGINEER TO PERFORM THE FINAL DESIGN CALCULATIONS FOR THE MCU WALL SYSTEM(S) SELECTED, AND SHALL PROVIDE STAMPED AND SIGNED PLANS & DETAILS FOR ALL WALLS TO THE LOCAL BUILDING OFFICIAL FOR APPROVAL PRIOR TO THE START OF CONSTRUCTION OF SAID WALLS.

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL  
NOV 09 2022 FILE # 22-0300  
DATED: NOV 09 2022  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE  
*Nancy L. Freeman*

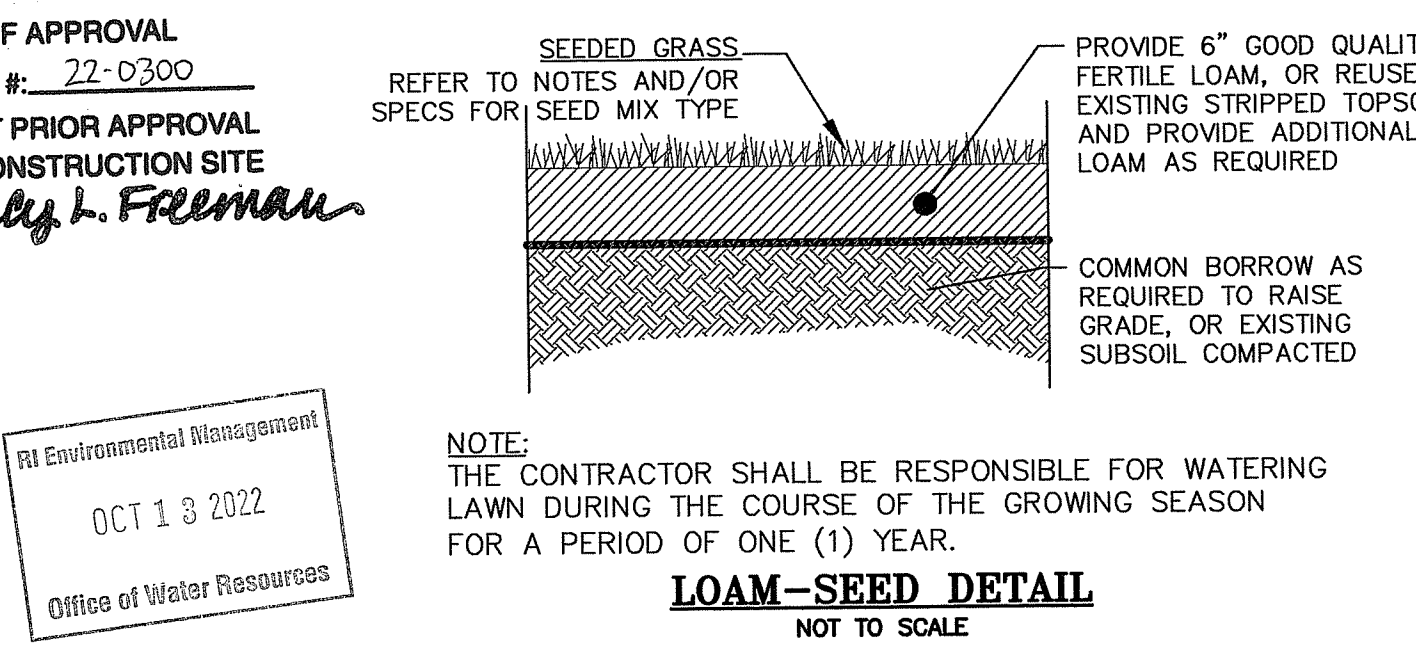
The following slope guide outlines general recommendations for installing the Rol Max System temporary and/or permanent RECPs on slope applications. Consult the staple pattern guide (Figure 1) for faster or spacing recommendations based on the slope severity.



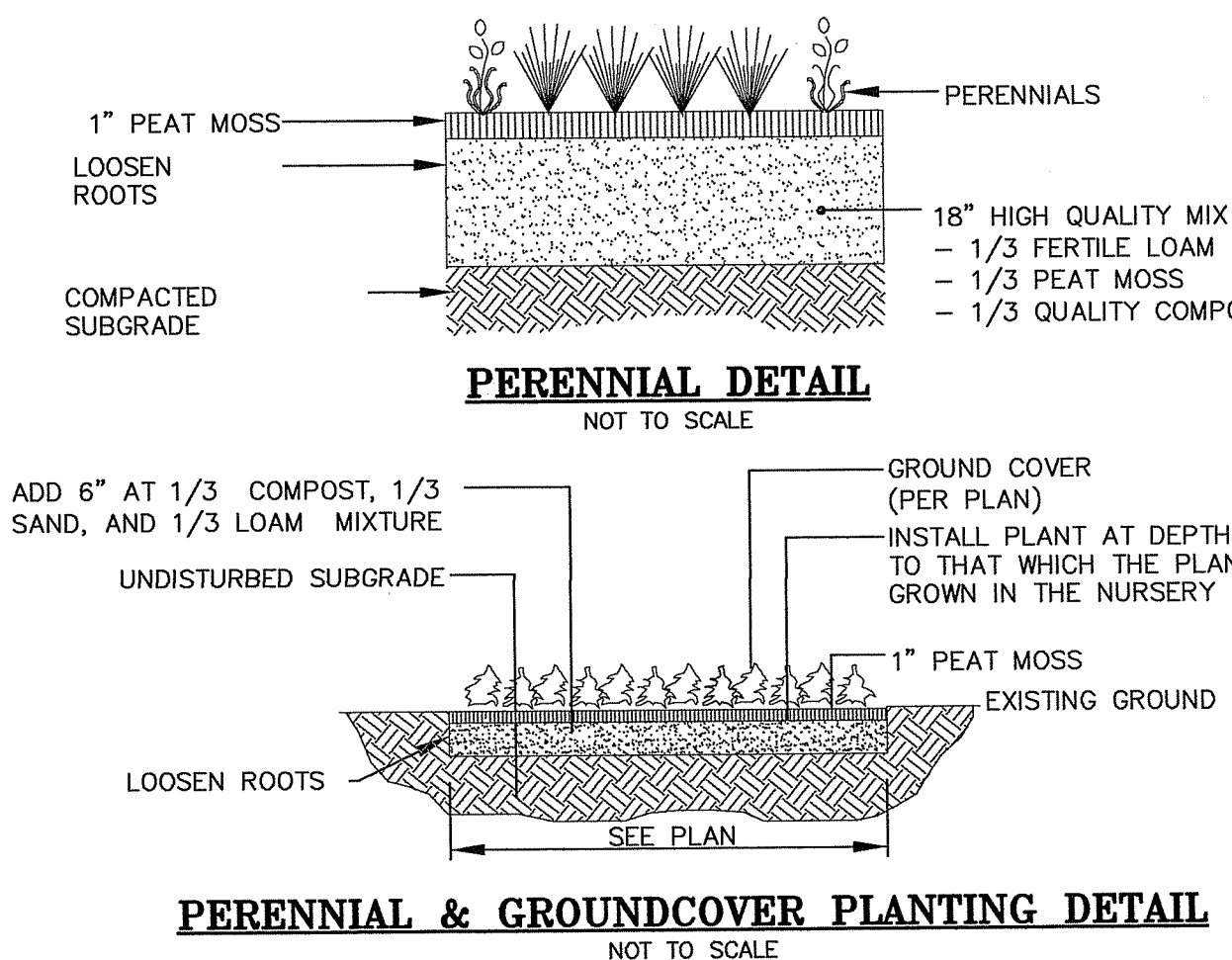
**SLOPE INSTALLATION STEPS**

1. Prepare soil before installing RECPs, including any necessary application of lime, fertilizer and seed.
2. Begin at the top of the slope by anchoring the RECPs in a 6 in. (15 cm) deep x 6 in. (15 cm) wide trench with approximately 12 in. (30 cm) of RECPs extended beyond the upslope portion of the trench. Anchor the RECPs with a row of staples/stakes approximately 12 in. (30 cm) apart in the bottom of the trench. Backfill and compact the trench after stapling. Apply seed to the compacted soil and fold the remaining 12 in. (30 cm) of RECPs extended beyond the upslope portion of the trench. Anchor the RECPs with a row of staples/stakes approximately 12 in. (30 cm) apart across the width of the RECPs.
3. Roll the RECPs (3A) down or (3B) horizontally across the slope. RECPs will unroll with appropriate side against the soil surface. All RECPs must be securely fastened to soil surface by placing staples/stakes in appropriate locations as shown in the staple pattern guide.
4. The edges of parallel RECPs must be stapled with an approximately 2 in.-5 in. (51.5-12.5 cm) overlap, depending on the RECP type.
5. Successive RECPs staked down the slope must be end-over-end (bangle style) with an approximate 4 in. (7.5 cm) overlap. Staple through overlapped areas, approximately 12 in. (30 cm) apart across entire RECPs width.

**NOTE:** In adverse soil conditions longer staples/stakes or earth anchors may be necessary to properly secure the RECPs.



**NOTE:** THE CONTRACTOR SHALL BE RESPONSIBLE FOR WATERING LAWN DURING THE COURSE OF THE GROWING SEASON FOR A PERIOD OF ONE (1) YEAR.

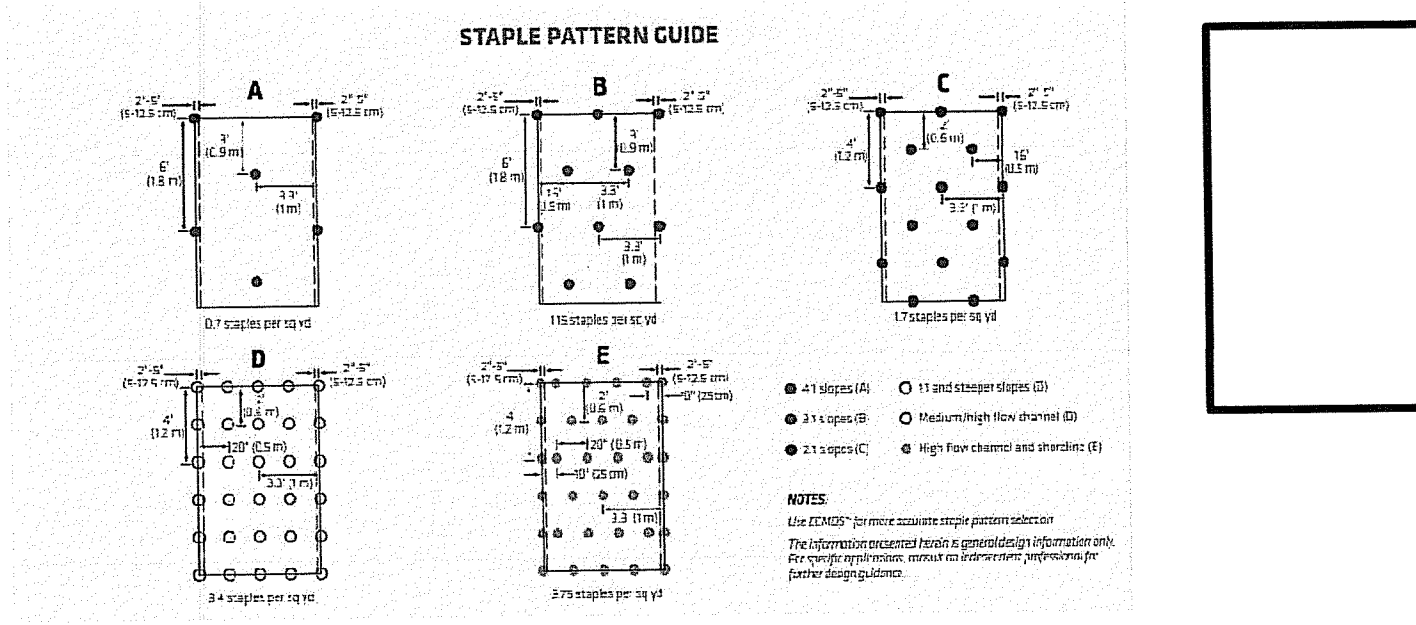
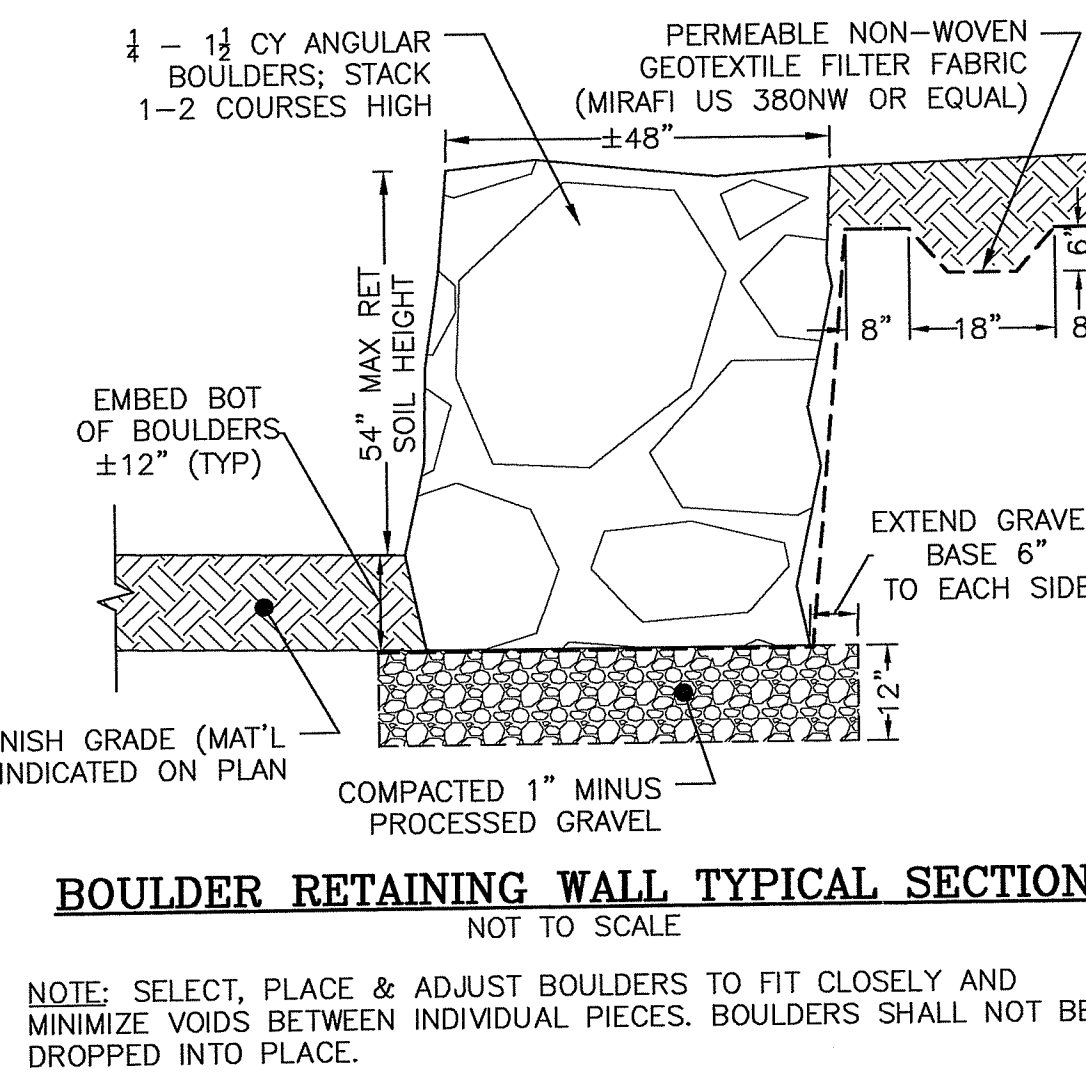


**PLANNING BOARD CERTIFICATION**

WEST WARWICK PLANNING BOARD

DATE APPROVED: \_\_\_\_\_

DATE ENDORSED: \_\_\_\_\_



**SLOPE REINFORCEMENT MAT NOTES**

1. SLOPE REINFORCEMENT MATS SHALL BE INSTALLED ON ALL GRASSED SLOPES 25" HIGH WITH STEEPER THAN 3:1 SLOPES, TO A MAXIMUM SLOPE OF 1:1.
2. SLOPE REINFORCEMENT MATS SHALL BE NORTH AMERICAN GREEN (NAG) ROLLMAX VMAX S200, OR AN OWNER-APPROVED EQUAL PRODUCT.
3. PROPOSED EQUAL PRODUCT SHALL BE PERMANENT SLOPE REINFORCEMENT MATS CAPABLE OF RESISTING THE ANTICIPATED EROSION FORCES IN THE INSTALLATION LOCATIONS, BASED ON THE PROPOSED SITE DEVELOPMENT LAYOUT AND GRADING.
4. THE SLOPE REINFORCEMENT DETAILS PROVIDED HEREON ARE INTENDED FOR REFERENCE ONLY DURING THE PERMITTING REVIEW PROCESS, AND ARE ONLY APPLICABLE TO NAG ROLLMAX PRODUCTS.

TIMOTHY J. BEHAN  
No. 6278  
REGISTERED PROFESSIONAL ENGINEER

**REVISIONS**

No.	DATE	DRWN	CHKD
1	8-18-22	MCZ	TJB
2	10-4-22	MCZ	TJB

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

**PRELIMINARY PLANS FOR KEYES WAY DEVELOPMENT AT 40 KEYES WAY A.P. 30 LOT 51 WEST WARWICK, RHODE ISLAND CONSTRUCTION DETAILS 7**

SCALE: AS NOTED SHEET NO: 17 OF 17  
DRAWN BY: MCZ DESIGN BY: MCZ/TJB CHECKED BY: TJB  
DATE: JUNE 2022 PROJECT NO.: 22013.00