# 14-LOT MAJOR SUBDIVISION - BRIARWOOD ESTATES

CRANSTON, RHODE ISLAND AP 18-3, LOTS 1023 & 1026

**ZONING DISTRICT: RESIDENTIAL A-8** 

# **APPROVALS:**

**KENT COUNTY WATER AUTHORITY (MAY 17, 2023)** RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT - RIPDES CONSTRUCTION GENERAL PERMIT (APRIL 21, 2023) CITY PLAN COMMISSION - MASTER PLAN APPROVAL (JUNE 7, 2022; RECORDED NOVEMBER 15, 2022) **CITY PLAN COMMISSION - PRE-APPLICATION (APRIL 5, 2022)** 

E. GREENWICH SURVEYORS, LLC

1050 MAIN STREET, SUITE 31 EAST GREENWICH, RI 02818

PHONE: 401-339-2681

# **FILINGS:**

CRANSTON, RI 02920

CRANSTON, RI 02920

(AP 18-3, LOT 1023) 1375 NEW LONDON AVENUE

LEONARD A REALI & CAROL REALI

CITY PLAN COMMISSION - PRELIMINARY PLAN AND TWO (2) WAIVERS REQUESTED

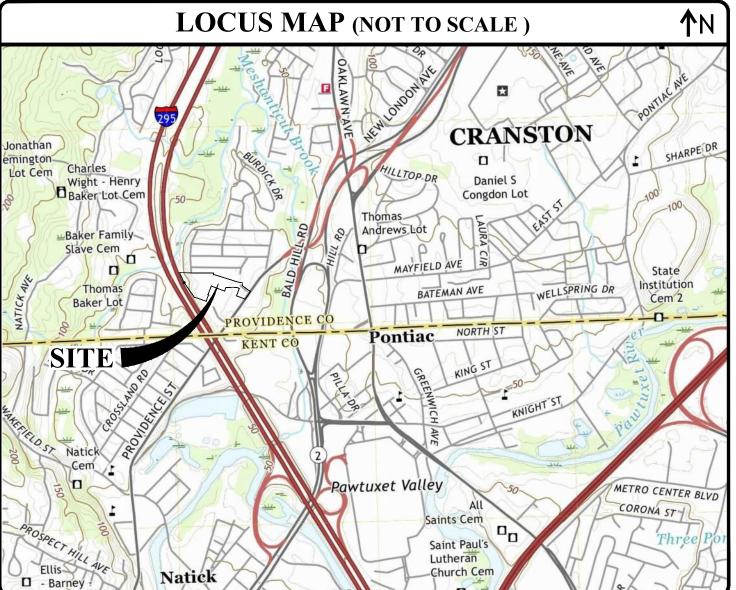
• WAIVER REQUESTED TO ALLOW A RIGHT-OF-WAY WIDTH OF 32-FEET AND WAIVER REQUESTED TO OMIT SIDEWALKS

CITY OF CRANSTON DEPARTMENT OF PUBLIC WORKS & VEOLIA WATER (RESPONSE TO REVIEW COMMENTS) RHODE ISLAND DEPARTMENT OF TRANSPORTATION - PHYSICAL ALTERATION PERMIT APPLICATION (PAPA) (RESPONSE TO REVIEW COMMENTS)

### **PROJECT TEAM** JOE CASALI ENGINEERING, INC. CIVIL UNIVERSAL REALTY, LLC ENGINEER: 300 POST ROAD 728 VALLEY STREET WARWICK, RI 02888 PROVIDENCE, RI 02908 PHONE: 401-944-1300 FAX: 401-944-1313 **EDWARD PELLI** 1365 NEW LONDON AVENUE (AP 18-3, LOT 1026)

**LAND** 

SURVEYOR:





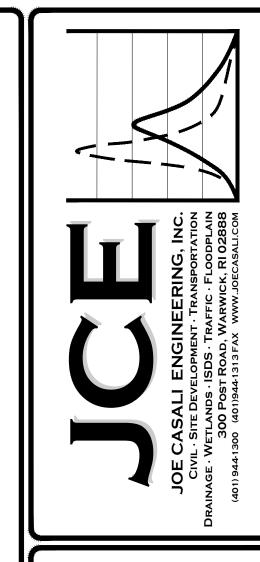
1	COVER SHEET
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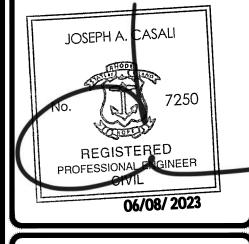
ADMINISTRATIVE SUBDIVISION PLAN PREPARED BY E.

GREENWICH SURVEYORS, LLC, DATED FEB. 2022

**INDEX OF DRAWINGS** 

SHEET NO. PLAN





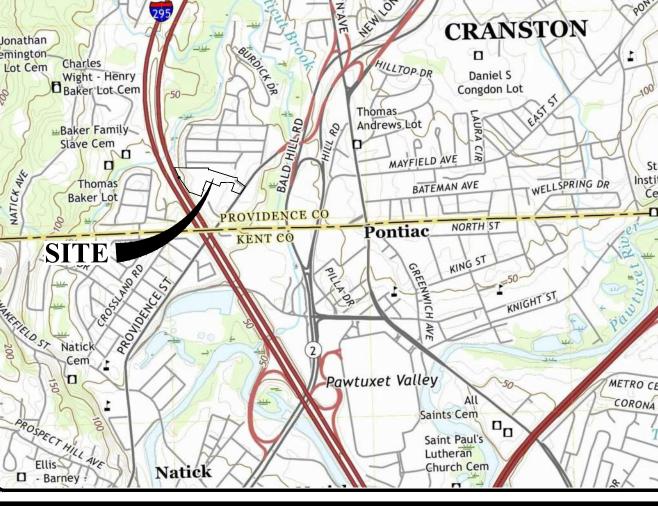
R6 6/8/2023 <u>RIDOT/SEWER RT</u>

PRELIMINARY, NOT FOR CONSTRUCTION

PROJECT NO: 21-71

**COVER SHEET** 

SHEET 1 OF 17



### **GENERAL NOTES:**

- THESE PLANS ARE BASED ON A CLASS I COMPREHENSIVE BOUNDARY SURVEY, PERFORMED BY E. GREENWICH SURVEYORS, LLC., EAST GREENWICH, RI IN FEBRUARY 2022.
- THE LOCATION AND DEPTH OF EXISTING UTILITIES ARE APPROXIMATE AND HAVE BEEN PLOTTED FROM THE LATEST AVAILABLE INFORMATION. THE UTILITY LOCATIONS ARE APPROXIMATE AND MAY NOT BE ALL INCLUSIVE. THE CONTRACTOR SHALL CHECK AND VERIFY THE LOCATIONS OF ALL EXISTING UTILITIES, BOTH OVERHEAD AND UNDERGROUND, AND "DIG-SAFE" MUST BE NOTIFIED PRIOR TO COMMENCING ANY CONSTRUCTION OPERATIONS. RESTORATION AND REPAIR OF DAMAGE TO EXISTING UTILITIES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR WITH NO ADDITIONAL COST THE OWNER. NO EXCAVATION SHALL COMMENCE UNTIL ALL INVOLVED UTILITY COMPANIES AND/OR CITY WHOSE FACILITIES MIGHT BE AFFECTED BY ANY WORK TO BE PERFORMED BY THE CONTRACTOR ARE NOTIFIED AT LEAST 72 HOURS IN ADVANCE.
- . THE SITE IS LOCATED ON THE FLOOD INSURANCE RATE MAP FOR THE CITY OF CRANSTON, RHODE ISLAND, MAP NUMBER 44007C0426H, EFFECTIVE DATE OCTOBER 2, 2015. BASED ON THIS FEMA FLOOD INSURANCE MAP, THE SUBJECT PROPERTY AND ALL ADJACENT PROPERTIES, ARE IDENTIFIED AS LYING WITHIN FEMA FLOOD ZONE X - AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL-CHANCE
- 4. SOILS EXISTING ON THE SITE CONSISTS OF HINCKLEY LOAMY SAND, 0 TO 3% SLOPES (HkA) AND HINCKLEY LOAMY SAND, 8-15% SLOPES (HkC). BOTH SOILS CLASSIFY AS HYDROLOGIC SOIL GROUP A.
- 5. THERE ARE NO WETLANDS ON OR ADJACENT TO THE SITE. THE SITE IS NOT LOCATED IN A NATURAL HERITAGE AREA.
- 6. THE PROPOSED DEVELOPMENT IS LOCATED WITHIN THE PAWTUXET RIVER MAINSTEM WATERSHED. THERE ARE NO EXTRAORDINARY OR UNUSUAL FEATURES OR ENVIRONMENTAL HAZARDS ON THE SUBJECT SITE.
- THERE IS AN EXISTING 25-FOOT-WIDE SEWER EASEMENT WITHIN THE SITE. THERE IS A 50-FOOT-WIDE RIGHT-OF-WAY WITHIN THE SITE.
- 8. THERE ARE NO CEMETERIES WITHIN OR ADJACENT TO THE SUBJECT PARCEL
- 9. ELECTRIC/COMMUNICATIONS, SEWER AND WATER ARE AVAILABLE FROM WITHIN NEW LONDON AVENUE (ROUTE 33).

- CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND LEGALLY DISPOSING (R&D) OF ALL MATERIALS INDICATED ON THE PLANS.
- ACCESSIBLE ROUTES, PARKING SPACES, RAMPS, SIDEWALKS, AND WALKWAYS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE FEDERAL AMERICAN WITH DISABILITIES ACT AND WITH ALL APPLICABLE STATE AND LOCAL LAWS AND REGULATIONS, WHICHEVER IS MORE STRINGENT.
- 3. STOCKPILES OF EARTH MATERIALS SHALL NOT BE LOCATED ADJACENT TO DRAINAGE STRUCTURES.
- 4. ALL DISTURBED AREAS OUTSIDE OF THE PAVED AREAS WILL RECEIVE A MINIMUM OF 6" OF LOAM AND SEED.
- . THE LAYOUT SHOWN REPRESENTS A GRAPHICAL DESIGN, AND PRIOR TO THE CONSTRUCTION, THE CONTRACTOR SHALL ENGAGE A PROFESSIONAL LAND SURVEYOR (PLS) REGISTERED IN THE STATE OF RHODE ISLAND TO SET AND VERIFY ALL LINES AND GRADES. ALL EXISTING UTILITY LOCATIONS AND ELEVATIONS ARE TO BE CONFIRMED BY THE CONTRACTOR PRIOR TO CONSTRUCTION. ANY ITEMS FOUND WHICH DO NOT MATCH THE PLANS MUST BE BROUGHT TO THE ENGINEERS ATTENTION PRIOR TO CONSTRUCTION FOR REVIEW. NO WORK SHALL PROCEED UNTIL AUTHORIZED BY THE ENGINEER.
- 5. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN SURVEY LAYOUT SERVICES FOR THE WORK AND SHALL SUBMIT "AS-BUILT" DRAWINGS OF ALL WORK, WHICH SHALL BE STAMPED AND CERTIFIED BY A RHODE ISLAND REGISTERED PROFESSIONAL LAND SURVEYOR. A HARD COPY AND ELECTRONIC COPY OF THE AS-BUILT DRAWINGS SHALL BE DELIVERED TO THE CITY OF CRANSTON'S DEPARTMENT OF PUBLIC WORKS.
- ANY ITEM OF WORK NOT SPECIFICALLY INDICATED ON THE PLANS BUT IS REQUIRED FOR THE COMPLETE CONSTRUCTION OF THE PROJECT WILL BE CONSIDERED INCIDENTAL TO THE CONTRACT AND INCLUDED IN THE CONTRACT BID PRICE. IT WILL BE THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL EXISTING SITE CONDITIONS.
- B. WHERE NECESSARY TO REMOVE CURBS, CATCH BASINS OR DRAINS TO COMPLETE WORK, THE CONTRACTOR SHALL REPLACE SUCH ITEMS TO THE SATISFACTION OF THE ENGINEER AND THE CITY AT NO ADDITIONAL COST TO THE OWNER.
- 9. ANY EXISTING PIPE OR UTILITY DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED IMMEDIATELY BY THE CONTRACTOR AT NO COST TO THE OWNER.
- 10. THE CONTRACTOR SHALL RESTORE TO ITS ORIGINAL CONDITION OR REPLACE TREES, SHRUBS, FENCES, SIGNS, GUARDRAILS, DRIVEWAYS, SIDEWALKS AND ANY OTHER OBJECT AFFECTED BY THIS OPERATION, UNLESS OTHERWISE NOTED ON THE SITE PLANS.
- 11. THE TOPS OF ALL VALVE BOXES AND CURB BOXES SHALL BE FLUSH WITH GROUND OR PAVEMENT SURFACE LEVEL AND PLUMB, UNLESS OTHERWISE DIRECTED.
- 12. ROADWAYS SHALL BE LEFT PASSABLE AT ALL TIMES. CLOSURE OF ROADWAY IS NOT PERMITTED.
- 13. WATER SERVICE SHALL BE MAINTAINED AT ALL TIMES
- 14. ALL CONSTRUCTION WORK SHALL BE PERFORMED IN THE DRY. THE CONTRACTOR SHALL PROVIDE, OPERATE AND MAINTAIN ALL PUMPS, DRAINS, WET POINTS, SCREENS, OR OTHER FACILITIES NECESSARY TO CONTROL, COLLECT AND DISPOSE OF ALL SURFACE AND SUBSURFACE WATER ENCOUNTERED IN THE PERFORMANCE OF THE WORK.
- 15. ALL SITE WORK, INCLUDING BUT NOT LIMITED TO, BITUMINOUS PAVEMENT, AGGREGATE MATERIALS, DRAINAGE STRUCTURES, CURBING, SIDEWALK, LANDSCAPING, SAW CUTTING, ETC. SHALL CONFORM TO THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADWAY AND BRIDGE CONSTRUCTION, 2004 EDITION (WITH LATEST ADDENDA), AND THE RIDOT STANDARD DETAILS, 1998 EDITION (WITH LATEST ADDENDA).
- 16. ALL EXCAVATED BOULDERS WHICH ARE TO BE USED AS COMMON BORROW ON SITE MUST BE CRUSHED/SPLIT TO LESS THAN 9" IN SIZE.
- 17. ALL STUMPS SHALL BE REMOVED AND DISPOSED OF OFFSITE.

# SOIL EROSION AND SEDIMENTATION CONTROL NOTES

- . THE SILT FENCE LINE ILLUSTRATED ON THESE PLANS SHALL SERVE AS THE STRICT LIMIT OF DISTURBANCE FOR THE PROJECT WITHIN OR ADJACENT TO REGULATED FRESHWATER WETLAND AREAS.
- . THE LIMITS OF CLEARING, GRADING, AND DISTURBANCE SHALL BE KEPT TO A MINIMUM WITHIN THE PROPOSED AREA OF CONSTRUCTION. ALL AREAS OUTSIDE OF THESE LIMITS, AS DEPICTED ON THE PLAN SHALL BE TOTALLY UNDISTURBED, TO REMAIN IN NATURAL CONDITION.
- . NO CONSTRUCTION ACTIVITY SHALL TAKE PLACE IN THE AREA OF THE STORMWATER MITIGATION AREAS ONCE THE SUBGRADE IS EXPOSED.
- 4. ALL DISTURBED SLOPES EITHER NEWLY CREATED OR CURRENTLY EXPOSED SHALL BE SEEDED, PROTECTED AND MAINTAINED BY THE CONTRACTOR. THE CONTRACTOR SHALL REGULARLY CHECK ALL SEEDED AREAS TO ENSURE THAT A GOOD STAND IS MAINTAINED.
- ALL SILT FENCE, TEMPORARY TREATMENT (HAY, STRAW, ETC.) AND TEMPORARY EROSION PROTECTION SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT CONSTRUCTION AND SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED.
- 6. STOCKPILES OF SOIL MATERIAL SHALL NOT BE LOCATED NEAR WATERWAYS AND STORMWATER BASINS. THEY SHALL HAVE SIDE SLOPES OF NO GREATER THAN 2:1 AND SHALL BE TEMPORARILY SEEDED AND/OR SURROUNDED WITH SILT SOCKS.
- THE SILT FENCE SHALL BE CHECKED BY THE CONTRACTOR ON A WEEKLY BASIS AND AFTER EACH STORM FOR UNDERMINING OR DETERIORATION. THE CONTRACTOR SHALL CLEAN THE ACCUMULATED SEDIMENT IF HALF OF THE ORIGINAL HEIGHT OF THE SILT FENCE BECOMES FILLED WITH SEDIMENTS.
- IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO MAINTAIN ALL SOIL EROSION AND SEDIMENT CONTROLS ON THE PROJECT SITE FOR THE ENTIRE DURATION OF THE CONSTRUCTION PERIOD. THE CONTRACTOR SHALL FOLLOW THE DIRECTION OF THE RESIDENT ENGINEER WITH REGARD TO INSTALLATION, MAINTENANCE, AND REPAIR OF ALL SOIL EROSION AND SEDIMENTATION CONTROLS ON THE PROJECT SITE. TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROLS SHALL BE MAINTAINED UNTIL ALL EXPOSED SOILS ARE SATISFACTORILY STABILIZED. THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING AND/OR RESEEDING ALL AREAS THAT DO NOT DEVELOP WITHIN ONE YEAR FROM THE COMPLETION OF CONSTRUCTION.
- 9. ALL REFERENCED SOIL EROSION AND SEDIMENTATION CONTROLS INCLUDING MATERIALS USED, APPLICATION RATES AND THE INSTALLATION PROCEDURES SHALL BE PERFORMED PER THE "RHODE ISLAND EROSION AND SEDIMENTATION HANDBOOK", DATED 1993, AMENDED 2016.

### **DRAINAGE SYSTEM NOTES:**

- THE PROPOSED DRAINAGE LINES SHALL BE ADS N-12 HDPE PIPE OR AN APPROVED EQUAL UNLESS OTHERWISE NOTED ON THE SITE PLANS.
- CONTRACTOR TO SET ALL STORMWATER STRUCTURE RIMS INITIALLY AT BINDER GRADE. ALL RIMS SHALL BE RESET TO FINAL GRADE BEFORE INSTALLATION OF THE PAVEMENT SURFACE COURSE.

### **BMP MAINTENANCE SCHEDULE:**

- 13. PRIOR TO THE START OF CONSTRUCTION, THE SITE CONTRACTOR SHALL STAKE OUT AND PROTECT ALL SURFICIAL STORMWATER INFILTRATION AREAS, INCLUDING THE SEDIMENT FOREBAY, INFILTRATION BASIN AND UNDERGROUND INFILTRATION CHAMBER SYSTEM. CONSTRUCTION TRAFFIC IS NOT ALLOWED WITHIN THE INFILTRATION AREAS. CONSTRUCTION FENCING SHALL BE USED TO PROTECT AREA FROM CONSTRUCTION TRAFFIC. STORMWATER INFILTRATION AREAS SHALL BE PROTECTED FROM RUNOFF DURING CONSTRUCTION AND MAY NOT BE USED AS TEMPORARY SEDIMENTATION AREAS DURING CONSTRUCTION. STRAW WATTLE SHALL BE USED TO PROTECT THESE AREAS FROM RUNOFF.
- ALL MAINTENANCE (INCLUDING CLEANING) REQUIRED DURING THE CONSTRUCTION PHASE OF THE PROJECT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR AND SHALL INCLUDE:
- A. MEASURES NEEDED TO ENSURE THE PROPER OPERATION OF THE STORMWATER RUNOFF (DRAINAGE) AND WATER QUALITY CONTROL SYSTEMS TO INCLUDE INSPECTION, CLEANING AND REPAIRS ALL PIPES, INTAKE AND DISCHARGE STRUCTURES, CATCH BASIN SUMPS, AND MANHOLES.
- B. INSPECTION OF ALL SLOPES, BERMS, AND OTHER CONTROL STRUCTURES FOR STRUCTURAL INTEGRITY/STABILITY AND EVIDENCE OF SOIL EROSION PROCESSES, AND MAINTENANCE OF THESE STRUCTURES IF NECESSARY. INSPECTIONS SHALL BE PERFORMED FOLLOWING ALL RAIN EVENTS OF 1/2 INCH RAINFALL OR MORE IN A 24-HOUR PERIOD, OR BI-MONTHLY IF NO RAINFALL EVENT OCCURS.
- 15. UPON COMPLETION OF THE PROJECT CONSTRUCTION, AND PRIOR TO VACATING THE SITE, THE CONTRACTOR SHALL CONDUCT A FINAL INSPECTION AND CLEANING OF THE DRAINAGE SYSTEM AND ALL ASSOCIATED STRUCTURES.
- ALL INSTALLATION, CLEANING, AND MAINTENANCE OF THE STORMWATER DRAINAGE SYSTEM SHALL FOLLOW AT LEAST THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION MINIMUM STANDARDS. SECTION 212 AND SECTION 708. WHERE APPROPRIATE, PROCEDURES REGARDING THE DRAINAGE INSTALLATION, CLEANING, INSPECTION, AND MAINTENANCE OF THE STORMWATER DRAINAGE SYSTEM SHALL BE FOLLOWED AS OUTLINED IN THE "RHODE ISLAND STORMWATER DESIGN AND INSTALLATION STANDARDS MANUAL" (RIDEM/RICRMC, 2010).
- 17. STORMWATER BMPS SHALL BE INSPECTED AND MAINTAINED BY THE OWNER AS FOLLOWS:

### PRE-TREATMENT SEDIMENT FOREBAYS

 AFTER CONSTRUCTION, THE SEDIMENT FOREBAY SHALL BE INSPECTED AND CLEANED WHEN SEDIMENT BUILD UP IS IN EXCESS OF 6" OR 25% OF THE SEDIMENT STORAGE VOLUME.

- DURING THE SIX MONTHS IMMEDIATELY AFTER CONSTRUCTION, THE INFILTRATION BASIN SHALL BE INSPECTED AFTER THE FIRST TWO RAINFALL EVENTS OF AT LEAST 1.0 INCH TO ENSURE THE SYSTEM IS FUNCTIONING PROPERLY. THEREAFTER INSPECTIONS SHALL BE CONDUCTED ON AN ANNUAL BASIS AND AFTER STORM EVENTS OF GREATER THAN OR EQUAL TO 2 INCHES.
- SILT AND SEDIMENT SHALL BE REMOVED FROM THE SEDIMENT BASIN WHEN THE ACCUMULATION EXCEEDS SIX INCHES, OR WHEN WATER PONDS ON THE SURFACE OF THE THE DETENTION BASIN FOR MORE THAN 48 HOURS.
- SOIL EROSION GULLIES SHALL BE REPAIRED WHEN THEY OCCUR.
- THE OUTLET DEVICES SHALL BE CLEANED/REPAIRED WHEN NECESSARY.
- TRASH AND DEBRIS SHALL BE REMOVED WHEN NECESSARY.
- THE LOW FLOW ORIFICE GRATE SHALL BE INSPECTED AFTER MAJOR STORM EVENTS EXCEEDING 2 INCHES OF RAIN. ANY TRASH OR DEBRIS SHALL BE REMOVED IMMEDIATELY.
- THE OUTFLOW WEIR SHOULD BE INSPECTED ANNUALLY TO ENSURE THAT IT IS FUNCTIONING PROPERLY.

### STORMTECH INFILTRATION SYSTEM

- INFILTRATION PRACTICES SHALL BE INSPECTED ANNUALLY AND AFTER STORMS EQUAL TO OR GREATER THAN THE 1-YEAR, 24-HOUR TYPE III SOTRM
- IF SEDIMENT OR DEBRIS BUILD UP HAS LIMITED THE INFILTRATION CAPABILITIES OF THE SYSTEM, THE ISOLATOR ROWS SHALL BE CLEANED OUT WIHT
- A VACUUM TRUCK SILT AND SEDIMENT SHALL BE REMOVED FROM THE SEDIMENT BASIN WHEN THE ACCUMULATION EXCEEDS SIX INCHES, OR WHEN WATER PONDS ON THE SURFACE OF THE THE DETENTION BASIN FOR MORE THAN 48 HOURS.
- ALL REMOVED SEDIMENT IS TO BE TESTED TO DETERMINE POLLUTANT CONTENT. THE SEDIMENT IS TO BE PROPERLY DISPOSED OF BASED UPON THE TEST RESULTS AND LOCAL, STATE, AND FEDERAL REGULATIONS.

SEEDING ACTIVITIES SHALL BE PERFORMED IN ACCORDANCE WITH SECTION L.02 SEEDING OF THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADWAY AND BRIDGE CONSTRUCTION, 2010 EDITION (WITH LATEST ADDENDA), AND SHALL ALSO CONFORM TO THE FOLLOWING:

BELOW THE PROPOSED FINISHED GRADE. SCARIFY THE SUBGRADE TO A DEPTH OF 12" WITH THE TEETH OF A BACKHOE OR A POWER RAKE TO RESULT IN AN UNCOMPACTED SUBSOIL. 6" OF GOOD OUALITY TOPSOIL IS TO BE APPLIED AND RAKED TO FINISHED GRADE. THE TOPSOIL IS TO BE GOOD QUALITY LOAM, FERTILE AND FREE OF WEEDS, STICKS AND STONES OVER 3/4" IN SIZE AND OTHERWISE COMPLYING WITH

AFTER ROUGH GRADING IS COMPLETED, ALL DISTURBED AREAS AND AREAS LABELED AS 'LOAM AND SEED' ARE TO BE BROUGHT TO AN ELEVATION OF 6

- SECTION M.18.01 OF THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROADWAY AND BRIDGE CONSTRUCTION, 2010 EDITION (WITH LATEST ADDENDA),
- PRIOR TO SEEDING OR SODDING, FERTILIZE WITH 10-10-10 OR EQUIVALENT ANALYSIS. AT LEAST 40% OF THE FERTILIZER NITROGEN SHALL BE IN SLOW RELEASE FORM. INCORPORATE THE FERTILIZER INTO THE TOP 1-2" OF THE PLANTING SOIL. APPLY AT A RATE OF 8 LBS. PER 1000 SQUARE FEET.
- 4. APPLY LIME AT A RATE OF ONE TON PER ACRE AND UNIFORMLY INCORPORATE INTO THE TOP 1-2" OF TOPSOIL.
- - AFTER THE SEED BED IS PREPARED, SEED IS TO BE BROADCAST EVENLY OVER THE SURFACE AND WORKED INTO THE TOP 1" OF SOIL. SEED SHALL BE APPROVED URI #2 OR APPROVED EQUAL. APPLY AT A RATE OF 4-5 LBS. PER 1000 SQUARE FEET OR AS OTHERWISE DIRECTED BY THE MANUFACTURER.
- URI #2 IMPROVED SEED MIX, % BY WEIGHT:

# 40% CREEPING RED FESCUE

20% IMPROVED PERENNIAL RYEGRASS

20% IMPROVED KENTUCKY BLUEGRASS 20% KENTUCKY BLUEGRASS

RECOMMENDED SEEDING DATES ARE MARCH 15 TO JUNE 15 AND SEPTEMBER 15 TO NOVEMBER 15. AT THE CONTRACTORS DISCRETION, SEED MAY BE APPLIED BY HYDROSEEDING RATHER THAN THE METHOD DESCRIBED ABOVE.

# MAINTENANCE AND PROTECTION OF TRAFFIC NOTES:

- THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE AND PROTECTION OF PEDESTRIAN AND VEHICULAR 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 (MUTCD), 2009 EDITION.
- 2. 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 SHALL NOT BE PARKED IN THE STATE OR TOWN RIGHT-OF-WAY.
- 4. ALL MAINTENANCE AND PROTECTION OF TRAFFIC CONTROL SETUPS, SIGNS CHANNELING DEVICES, ETC, SHALL BE IN ACCORDANCE WITH THE LATEST REVISIONS OF THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES, 2009 EDITION.
- SIGN MOUNTINGS SHALL BE IN ACCORDANCE WITH THE RIDOT SPECIFICATIONS FOR TEMPORARY CONSTRUCTION SIGNS.

### MISCELLANEOUS UTILITY NOTES:

CITY OF CRANSTON.

PUBLIC FROM THEIR OPERATIONS.

- 1. PRIOR TO CONSTRUCTION ALL POTENTIAL UTILITY/DRAINAGE CONFLICTS MUST BE IDENTIFIED BY THE CONTRACTOR. ANY MODIFICATIONS TO THE PROPOSED UTILITIES TO AVOID CONFLICTS MUST BE APPROVED BY THE ENGINEER PRIOR TO CONSTRUCTION.
- 2. OVERHEAD AND/OR UNDERGROUND ELECTRIC, GAS AND COMMUNICATIONS SERVICES ARE TO BE COORDINATED BY THE CONTRACTOR WITH THE APPROPRIATE UTILITY COMPANY.
- 3. THE CONTRACTOR SHALL AT ALL TIMES PROVIDE A SUFFICIENT NUMBER OF WORKMEN AND GUARDS AS MAY BE NECESSARY TO PROPERLY SAFEGUARD THE
- 4. THE CONTRACTOR SHALL TAKE PRECAUTIONS AGAINST DAMAGING OF PAVING, SIDEWALKS, UTILITIES, OR PRIVATE PROPERTIES AND SHALL PROMPTLY REPAIR AT HIS OWN EXPENSE ANY DAMAGE TO SUCH PAVING, SIDEWALKS, UTILITIES, OR PRIVATE PROPERTIES TO THE SATISFACTION OF THE OWNER AND/OR THE
- 5. EXISTING UTILITY FRAMES AND COVERS FOR SANITARY SEWER, WATER, GAS, STORM DRAINAGE AND OTHER UTILITIES SHALL BE ADJUSTED TO GRADE AS REQUIRED IN NEW PAVING AND PAVEMENT OVERLAY AREAS.
- 6. A BACKFLOW PREVENTION DEVICE MUST BE INSTALLED AT EACH SEWER SERVICE BUILDING CONNECTION THAT IS BELOW THE RIM ELEVATION OF THE NEAREST SEWER MANHOLE, AS REQUIRED BY THE INTERNATIONAL PLUMBING CODE.
- 7. APPLICANT IS REQUIRED TO PROVIDE TWO SETS OF FINAL AS-BUILT PLANS UPON COMPLETION OF CONSTRUCTION, PRIOR TO FINAL ACCEPTANCE. AS-BUILT PLANS SHALL INCLUDE FIELD MEASUREMENTS OF ALL INSTALLED PIPE AND APPURTENANCES, INCLUDING LENGTH, SLOPE, MANHOLE RIMS AND INVERTS, AS WELL AS SWING TIES/MEASUREMENTS TO ALL MANHOLES, SEWER STUBS, AND/OR LATERAL SERVICE CONNECTIONS.
- 8. APPLICANT IS RESPONSIBLE FOR SECURING ALL REQUIRED PERMITS FROM LOCAL, STATE, AND/OR FEDERAL AGENCIES WITH REGULATORY JURISDICTION OVER THE PROPOSED WORK. ALL SEWER CONSTRUCTION SHALL BE PERFORMED BY A DRAIN LAYER LICENSED IN THE STATE OF RHODE ISLAND AND THE CITY OF CRANSTON.
- 9. NO FLOW WILL BE ACCEPTED UNTIL A COMPLETION CERTIFICATE IS ISSUED.
- 10. THE CONTRACTOR SHALL CONFINE HIS CONSTRUCTION OPERATIONS AND ACTIVITIES TO WITHIN THE STREET LINES, EASEMENT AND/OR RIGHT-OF-WAY, AS SHOWN ON THE DRAWINGS.
- 11. ALL CONSTRUCTION MATERIALS, AS WELL AS ALL MATERIAL SHOP DRAWINGS AND MANUFACTURERS DATA SHEETS SHALL BE REVIEWED AND APPROVED BY THE DESIGN ENGINEER, OR HIS/HER REPRESENTATIVE PRIOR TO FABRICATION AND INSTALLATION.
- 12. CONTRACTOR TO SET ALL UTILITY STRUCTURE RIMS INITIALLY AT BINDER GRADE. ALL RIMS SHALL BE RESET TO FINAL GRADE BEFORE INSTALLATION OF THE PAVEMENT SURFACE COURSE.

JOSEPH A

REGISTERED

06/08/2023

PROFESSIONAL

REVISIONS: NO DATE DESCRIPTION R1 4/19/2022 REMOVED LOT: R2 5/24/2022 REDUCED ROW R3 4/6/2023 RIDEM RTC R4 4/26/2023 RIDOT RTC R5 5/15/2023 KCWA RTC

R6 6/8/2023 RIDOT/SEWER RT DESIGNED BY: WMLJR DRAWN BY: SEP/SD CHECKED BY: JAC MARCH 2022 PROJECT NO: 21-71

PRELIMINARY, NOT FOR CONSTRUCTION

> **GENERAL NOTES & LEGEND**

SHEET 2 OF 17

LEGEND:

- ABUTTING PROPERTY LINE — — BUILDING SETBACK LINE ——·— — WETLAND EDGE ---100--- Existing contour PROPOSED CONTOUR EXISTING CURB = PROPOSED CURB EXISTING METAL FENCE CHAIN LINK FENCE ——D——D—— EXISTING DRAIN LINE ——D——D——PROPOSED DRAIN LINE (III) ----- EXISTING DRAINAGE MANHOLE (IIII) ----- EXISTING CATCH BASIN # ----- PROPOSED CATCH BASIN --- EXISTING UTILITY POLE ----- PROPOSED UTILITY POLE — TEL — TEL — EXISTING TELECOM DUCTBANK

- PROPOSED DRAINAGE MANHOLE ——E——E——EXISTING ELECTRIC DUCTBANK — GAS — GAS — PROPOSED GAS LINE

EXISTING PROPERTY LINE

₩ ----- WATER VALVE

—s——s——PROPOSED SEWER LINE

—— LOD —— LOD —— LIMIT OF DISTURBANCE

----- TEST HOLE

O ----- BOLLARD

----- HYDRANT

C ----- LAMP POLE

----- EXISTING TREE

TREELINE

→ SILT FENCE

EXISTING SEWER LINE

(S) ----- EXISTING SEWER MANHOLE

(S)----- PROPOSED SEWER MANHOLE

N/F ----- NOW OR FORMERLY

FDC 🖂 ------ FIRE DEPTMENT CONTROL

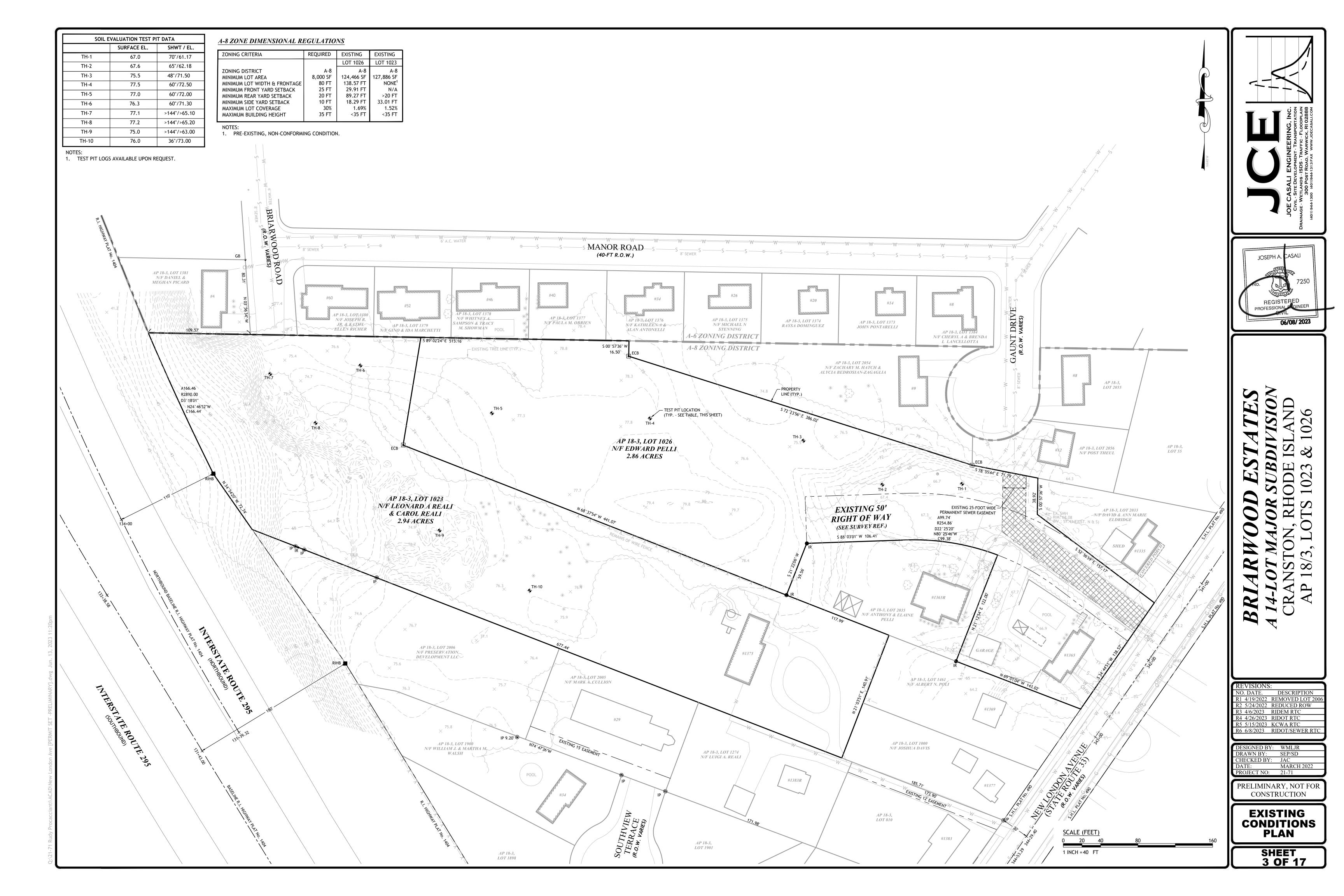
-- EXISTING HANDICAP

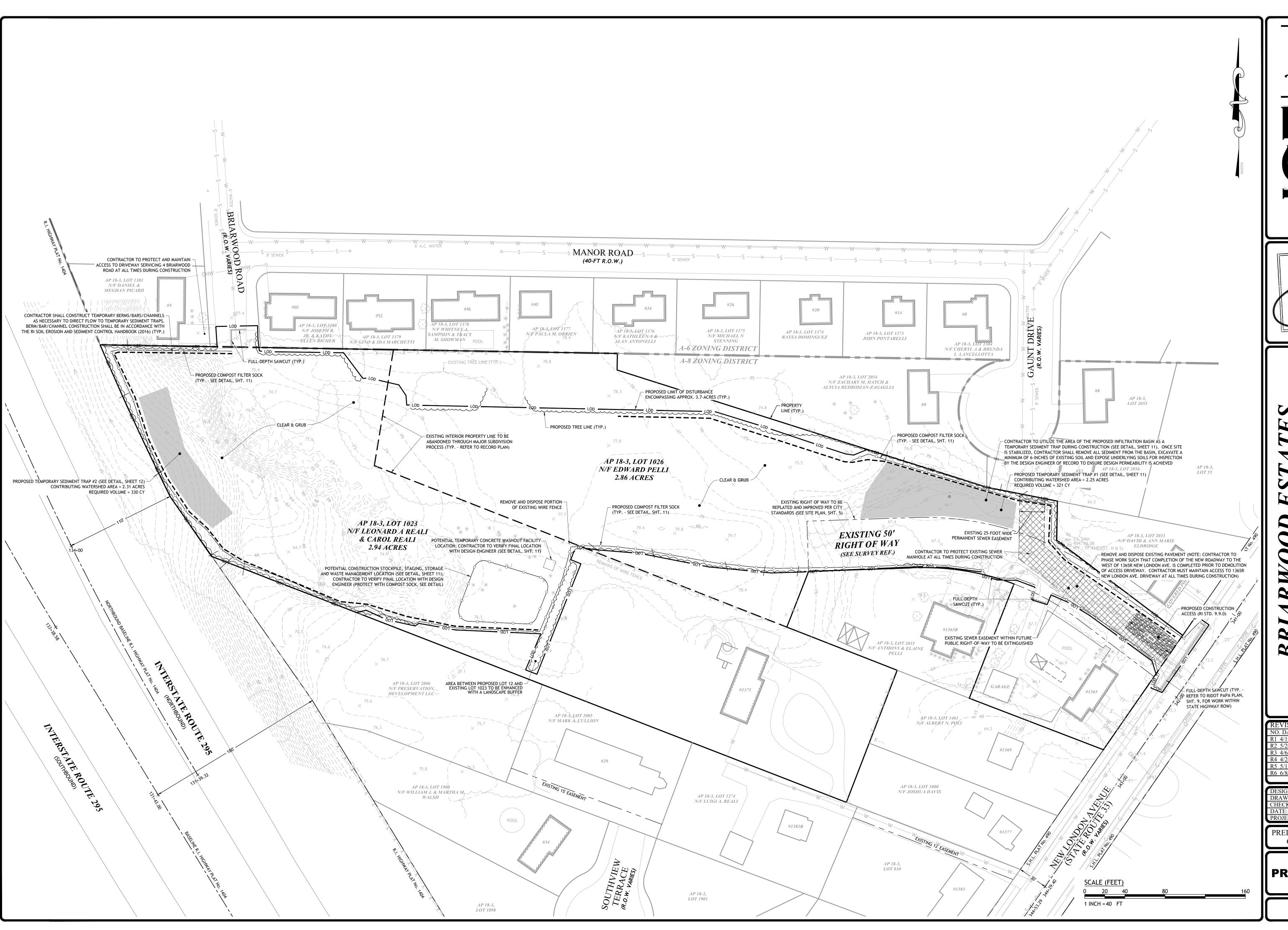
-- PROPOSED HANDICAP

WG O ----- WATER GATE

WORKING DAYS NOTICE

CATION OF EXISTING LITH ITIES SHOWN, ARE FROM GATE LOCATION AND XISTING DOCUMENTATION AND MAY NOT BE ACCURATE. EXACT LOCATION TO BE DONE BY THE APPROPRIATE UTILITY COMPANY OR MUNICIPALITY PRIOR ANY EXCAVATION CALL DIGSAFE AT: 1-888-DIG-SAFE 1-888-344-7233







REVISIONS	:
NO. DATE.	DESCRIPTION
R1 4/19/2022	REMOVED LOT 2006
R2 5/24/2022	REDUCED ROW
R3 4/6/2023	RIDEM RTC
R4 4/26/2023	RIDOT RTC
R5 5/15/2023	KCWA RTC
R6 6/8/2023	RIDOT/SEWER RTC

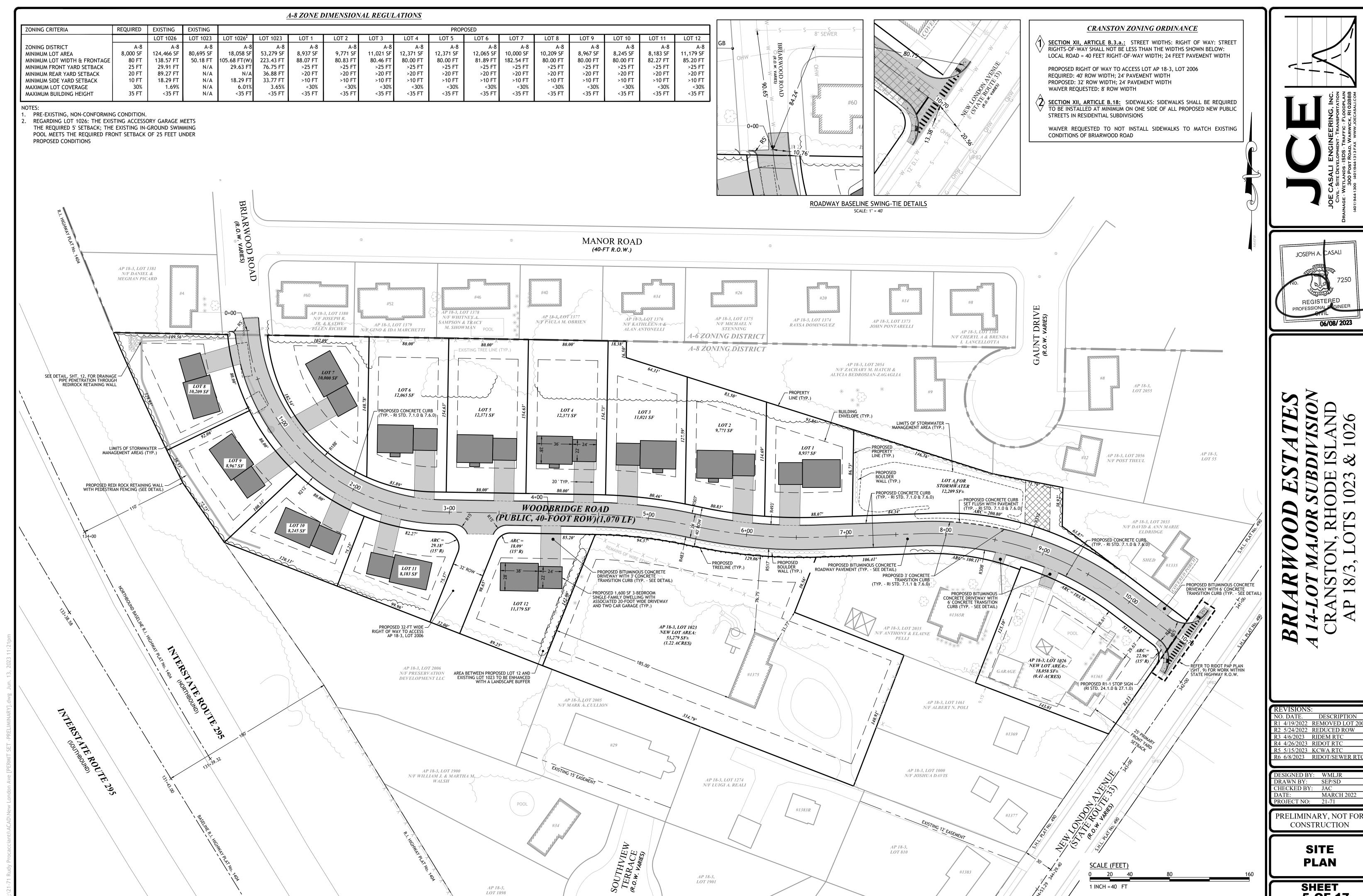
6/8/2023	RIDOT/SEWER RTC
ESIGNED BY	: WMLJR
RAWN BY:	SEP/SD
IECKED BY	: JAC
ATE:	MARCH 2022
OJECT NO:	21-71

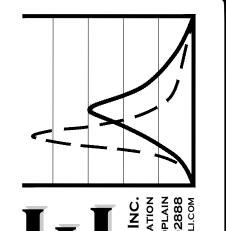
PROJECT NO: 21-71

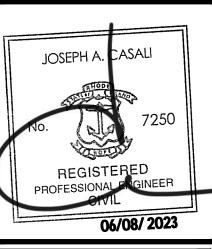
PRELIMINARY, NOT FOR CONSTRUCTION

SITE PREPARATION PLAN

> SHEET 4 OF 17



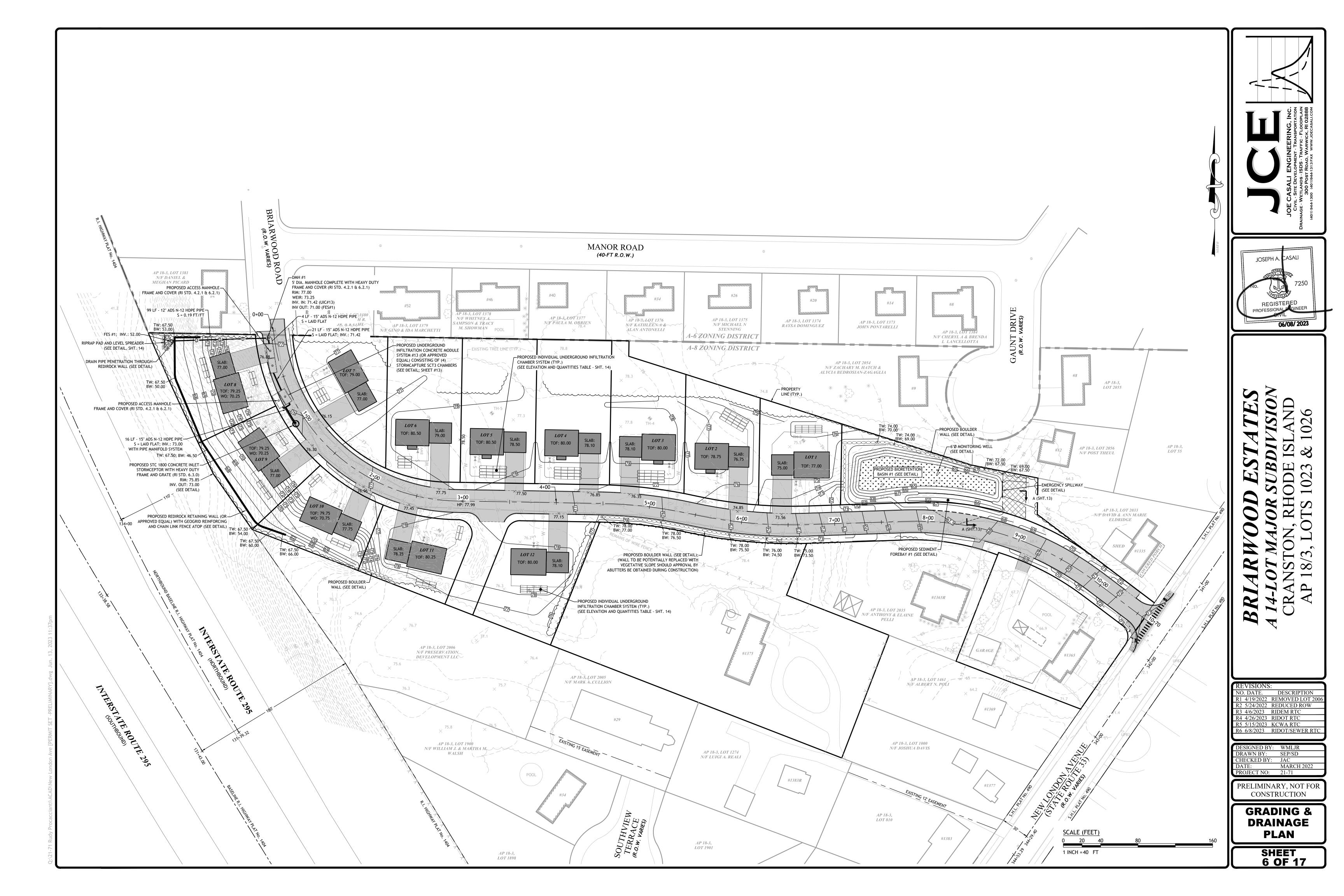




DESCRIPTION

MARCH 2022

5 OF 17



# SEWER MAIN CONSTRUCTION NOTES: FOR GENERAL SPECIFICATIONS REGARDING ALL CONSTRUCTION AS WELL AS THE SANITARY SEWERS THE CONTRACTOR SHALL REFERENCE THE CITY OF CRANSTON CITY CODE, CHAPTER 26, SEWERS, SPECIFICATIONS FOR HIGHWAYS COVERING RESIDENTIAL AND INDUSTRIAL PLAT DEVELOPMENTS, AND OTHER CITY OF CRANSTON DEPARTMENT OF PUBLIC WORKS GUIDELINES, RULES, REGULATIONS AND OTHER APPLICABLE LAWS, INCLUDING ANNEX A-DESIGN OF SEWERS (PROMULGATED 8/15/02), REGARDING SANITARY SEWER CONSTRUCTION. THE CONTRACTOR SHALL SPECIFICALLY REFERENCE. THE TECHNICAL RELEASE #16 GUIDE FOR THE DESIGN OF WASTEWATER TREATMENT WORKS (PUBLISHED BY THE N.E. INTERSTATE WATER POLLUTION CONTROL COMMISSION). PRIVATE SEWERS AND SEWER EXTENSION INTO ADJACENT COMMUNITIES WHICH CONNECT TO THE CITY SEWER SYSTEM SHALL BE INSTALLED IN CONFORMANCE WITH THE CITY SEWER USE ORDINANCE AND THESE REGULATIONS UNLESS OTHERWISE APPROVED BY THE CITY PUBLIC WORKS DIRECTOR. ALL SANITARY SEWER CONSTRUCTION SHALL BE INSPECTED BY THE VEOLIA WATER NORTH AMERICAL COLLECTIONS SYSTEM DEPARTMENT. (VEOLIA-CRANSTON WPCF). NO PERSON SHALL MAKE A CONNECTION OF ROOF DOWNSPOUTS, FLOOR DRAINS, SUMP PUMPS, EXTERIOR FOUNDATION DRAINS, AREA WAY DRAINS, OR OTHER SOURCES OF SURFACE RUNOFF OR GROUNDWATER TO ANY COMPONENT OF THE SANITARY SEWER SYSTEM. NO GRAVITY SEWER MAIN SHALL BE LESS THAN EIGHT (8) INCHES (20.3 cm) DIAMETER. GRAVITY SEWER PIPE SHALL BE ASTM RIGID SCHEDULE 35 PVC PIPE FOR SEWER USE CONFORMING TO ASTM SPECIFICATIONS D-3034. ALL PIPES SHALL HAVE COMPRESSION POINTS WITH AN ELASTOMETRIC GASKET TYPE CONFORMING TO ASTM D-3212: OR AS APPROVED BY THE CITY PUBLIC WORKS DIRECTOR. MAIN GRAVITY SEWER PIPE SHALL BE INSTALLED BY USING A LASER INVERT MACHINE THAT SETS UP IN AN INVERT IN THE DOWNSTREAM MANHOLE. A TARGET WILL BE PLACED AT THE END OF EACH PIPE THAT IS INSTALLED TO ENSURE PROPER ALIGNMENT AND SLOPE. AP 18-3, LOT 1381

INFILTRATION. FOLLOWING WHICH, A BITUMINOUS COATING SHALL BE INSTALLED ON THE ENTIRE EXTERIOR. INLET AND OUTLET PIPES SHALL BE JOINED TO THE MANHOLE WITH A GASKETED, FLEXIBLE WATERTIGHT CONNECTION OR WITH ANOTHER WATERTIGHT 8. ALL SANITARY SEWER CONNECTIONS SHALL BE MADE GAS TIGHT CONNECTION ARRANGEMENT THAT ALLOWS FOR DIFFERENTIAL SETTLEMENT OF THE PIPE AND THE MANHOLE. ALL INVERTS AND TABLES SHALL BE CONSTRUCTED WITH SMOOTH RED SEWER BRICKS. AT LEAST ONE ROW OF RED SEWER BRICKS SHALL BE INSTALLED BETWEEN 9. THE MINIMUM COVER SHALL BE FOUR (4) FEET OVER THE CROWN OF THE PIPE FOR ALL MAINS AND LATERALS EXCEPT THAT INSULATION THE MANHOLE STRUCTURE AND THE SEWER COVERS FRAME, BUT NOT TO EXCEED A (MAX. OF 12" HIGH); THE BRICKS SHALL BE WELL MAY BE PROVIDED FOR SEWERS THAT CANNOT BE PLACED AT A DEPTH SUFFICIENT TO PREVENT FREEZING UPON THE APPROVAL OF CEMENTED BUT NO CEMENT IS ALLOWED ON THE FACE OF THE BRICKS. THE PUBLIC WORKS DIRECTOR.

10. SEWER LATERALS SHALL BE 6" PVC SCHEDULE 35 AND BE INSTALLED AT THE MINIMUM SLOPE OF AT LEAST ONE-QUARTER INCH PER

11. WHERE PRACTICAL, SEWER LATERALS SHALL BE TIED INTO A MANHOLE. A BORING MACHINE SHALL BE USED TO MAKE A HOLE THROUGH

12. WHERE SEWER LATERALS CONNECT TO A SEWER MAIN A WYE SHALL BE INSTALLED IN THE MAIN TO MAKE THE CONNECTION. A 6"

14. MINIMUM BEDDING MATERIAL REQUIREMENTS FOR SEWER PIPE INSTALLATION SHALL BE CLASS "B" AS DESCRIBED IN ASTM C-12 WITH A

15. BEDDING MATERIAL SHALL BE COMPACTED EVENLY UNDER AND ON BOTH SIDES OF THE PIPE SO THAT THE PIPE REMAINS ALIGNED AND

LOT 1898

SDR-35 ANGLE, NOT GREATER THAN 45°, IS TO BE USED TO PROVIDE THE PROPER FLOW ALIGNMENT.

13. NO LATERAL MAY SERVICE MORE THAN ONE BUILDING OR PRIVATELY OWNED BUILDING UNITS.

ANY MANHOLE STRUCTURE. A FLEXIBLE WATERTIGHT GASKET SHALL BE USED TO CONNECT THE STRUCTURE TO THE PIPE OR AN

APPROVED WATERTIGHT FLEXIBLE SLEEVE. THE PIPE SHALL BE CEMENTED ON THE INSIDE OF THE MANHOLE TO MAKE THE INVERT CLEAN

FOOT. ALL PIPES SHALL HAVE COMPRESSION JOINTS.

MINIMUM DEPTH OF SIX (6) INCHES.

- 19. AN APPROVED SET OF PLANS AND ALL APPLICABLE PERMITS MUST BE AVAILABLE AT THE CONSTRUCTION SITE. DEVIATIONS OR CHANGES WILL NOT BE ALLOWED UNLESS APPROVED BY THE CITY PUBLIC WORKS DIRECTOR.
- 20. CONTRACTOR AGREES THAT HE SHALL ASSUME SOLE AND COMPLETE RESPONSIBILITY FOR JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY, THAT THIS REQUIREMENT SHALL APPLY CONTINUOUSLY AND NOT BE LIMITED TO NORMAL WORKING HOURS.

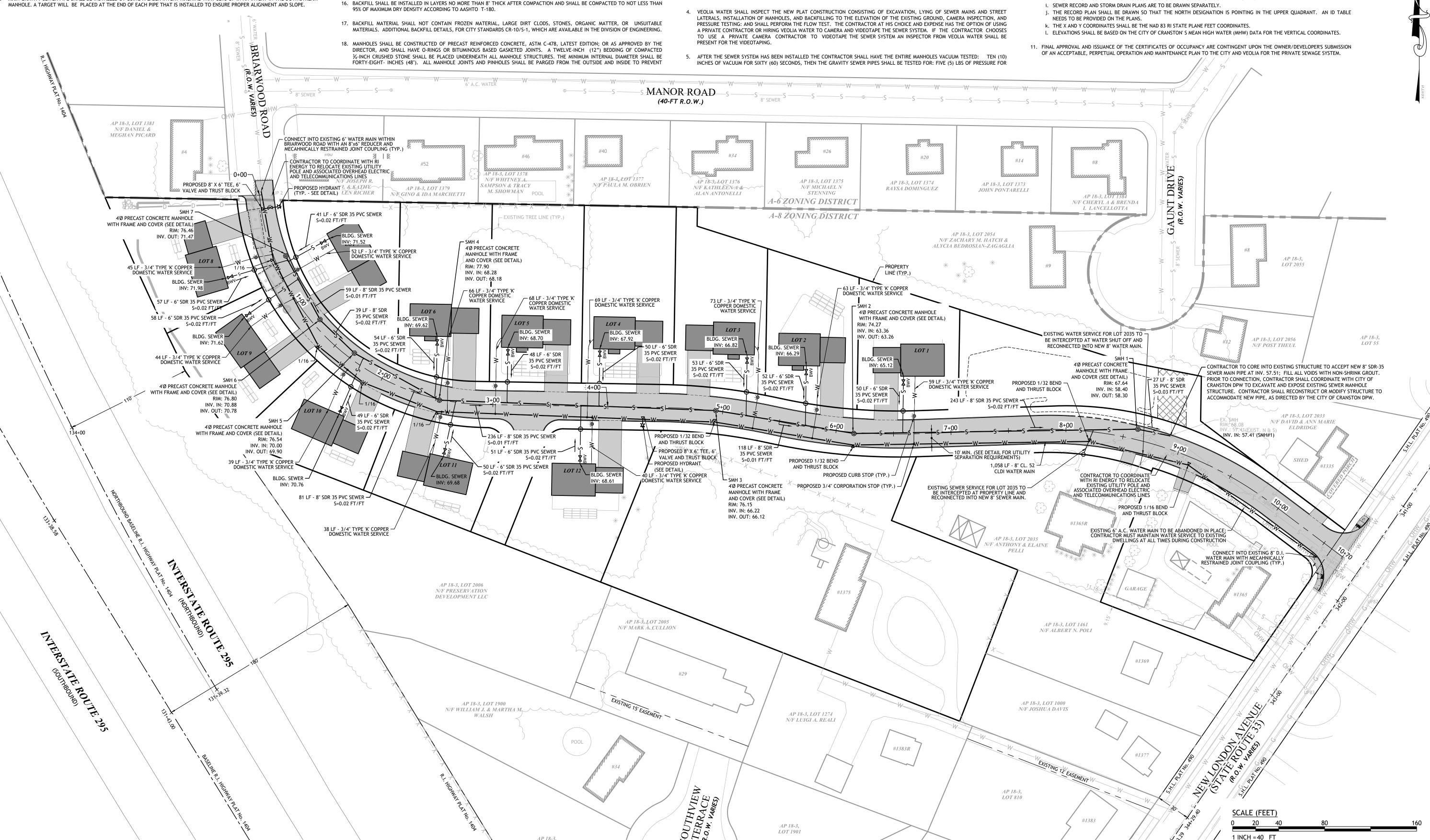
### **SEWER MAIN ORDER OF PROCEDURE:**

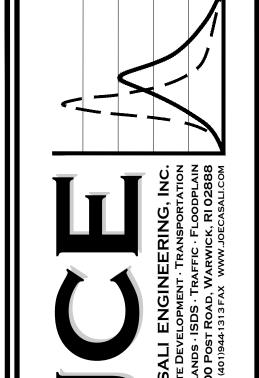
- 1. THE OWNER OR THE DEVELOPER SHALL SUBMIT TO THE CITY OF CRANSTON'S DIRECTOR OF PUBLIC WORKS THE NAME OF THE QUALIFIED SEWER CONTRACTOR THAT WILL BE RESPONSIBLE FOR THE INSTALLATION OF THE SANITARY SEWER SYSTEM, TOGETHER WITH A BREAKDOWN OF ITEMS, QUANTITIES AND UNIT PRICES FOR THE PROJECT.
- 2. NO WORK CAN COMMENCE ON ANY SEWER INSTALLATION WITHOUT THE DIRECTOR'S APPROVAL OF THE PLANS AND CONTRACTOR.
- THE CONTRACTOR THAT WAS APPROVED SHALL NOTIFY VEOLIA WATER OF NORTH AMERICA COLLECTIONS SYSTEM DEPARTMENT AND THE DIRECTOR OF PUBLIC WORKS FIVE (5) WORKING DAYS PRIOR TO COMMENCING ANY SEWER RELATED EXCAVATION. THE CONTRACTOR SHALL PROVIDE THE FOLLOWING INFORMATION: COMPANY NAME, PHONE NUMBER AND ADDRESS OF BOTH THE DEVELOPER AND CONTRACTOR ALONG WITH THE NAME AND PHONE NUMBER OF THE SEWER CONTRACTOR'S FOREMAN.

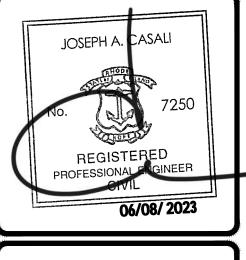
- TEN (10) MINUTES. VEOLIA'S INSPECTOR SHALL BE PRESENT FOR ALL TESTING OF MANHOLES AND PIPES.
- 6. AFTER THE TESTING OF THE MANHOLES AND PIPES THE CONTRACTOR SHALL HAVE THE ENTIRE SEWER SYSTEM FLUSHED AND CLEANED.
- 7. NEXT THE SYSTEM SHALL BE CAMERA INSPECTED AND VIDEOTAPED.
- 8. VEOLIA WATER SHALL REVIEW THE VIDEOTAPES AND WRITE A PUNCH LIST OF ALL OR ANY ITEMS THAT REQUIRE ATTENTION.
- 9. AS A CONDITION OF THE FINAL ACCEPTANCE OF THE SANITARY SEWER SYSTEM, THE CONTRACTOR SHALL FORMALLY REQUEST, THROUGH THE CITY ENGINEERING DIVISION, A FINAL INSPECTION BY VEOLIA.
- 10. BEFORE FINAL APPROVAL OF THE SEWER SYSTEM CAN BE GRANTED AND CERTIFICATES OF OCCUPANCY ARE ISSUED, THE CONTRACTOR SHALL SUBMIT TO VEOLIA TWO (2) SETS OF SEWER AS-BUILT PLANS WITH GIS COORDINATES FOR EACH MANHOLE. THE AS-BUILTS SHALL BE OF 'COPY-TUFF" MEDIA AND IN COMPUTER .dxf OR AUTOCAD R14 OR AUTOCAD LT 2002 VERSION FILE FORMAT AND MEET THE FOLLOWING CRITERIA:
- a. ALL RECORD PLANS ARE REQUIRED TO BE THE UNIFORM SIZE OF 20" x 40".
- b. SCALE FOR THE PLANS: HORIZONTAL 1" = 40' AND VERTICAL 1" = 10'.

f. LEDGE AND SELECT MATERIALS ARE TO BE SHOWN ON THE PROFILE.

- c. STATION FIGURES ARE TO BE SHOWN ON ALL MANHOLES.
- d. DISTANCES OF LATERALS ARE TO BE SHOWN WITH DEPTHS OF THE END OF THE PIPE AT THE STREET LINE. e. TIES TO THE "Y's", MANHOLES, AND ENDS OF LATERALS ARE TO BE SHOWN FROM PERMANENT STRUCTURES.
- g. SLOPE, SIZE, LENGTH, AND TYPE OF PIPE ARE TO BE SHOWN ON THE PROFILE. ALL UTILITIES ENCOUNTERED DURING CONSTRUCTION ARE TO BE SHOWN ON THE PROFILE.
- h. ALL UTILITIES ENOUNTERED DURING CONSTRUCTION ARE TO BE SHOWN ON THE PROFILE.







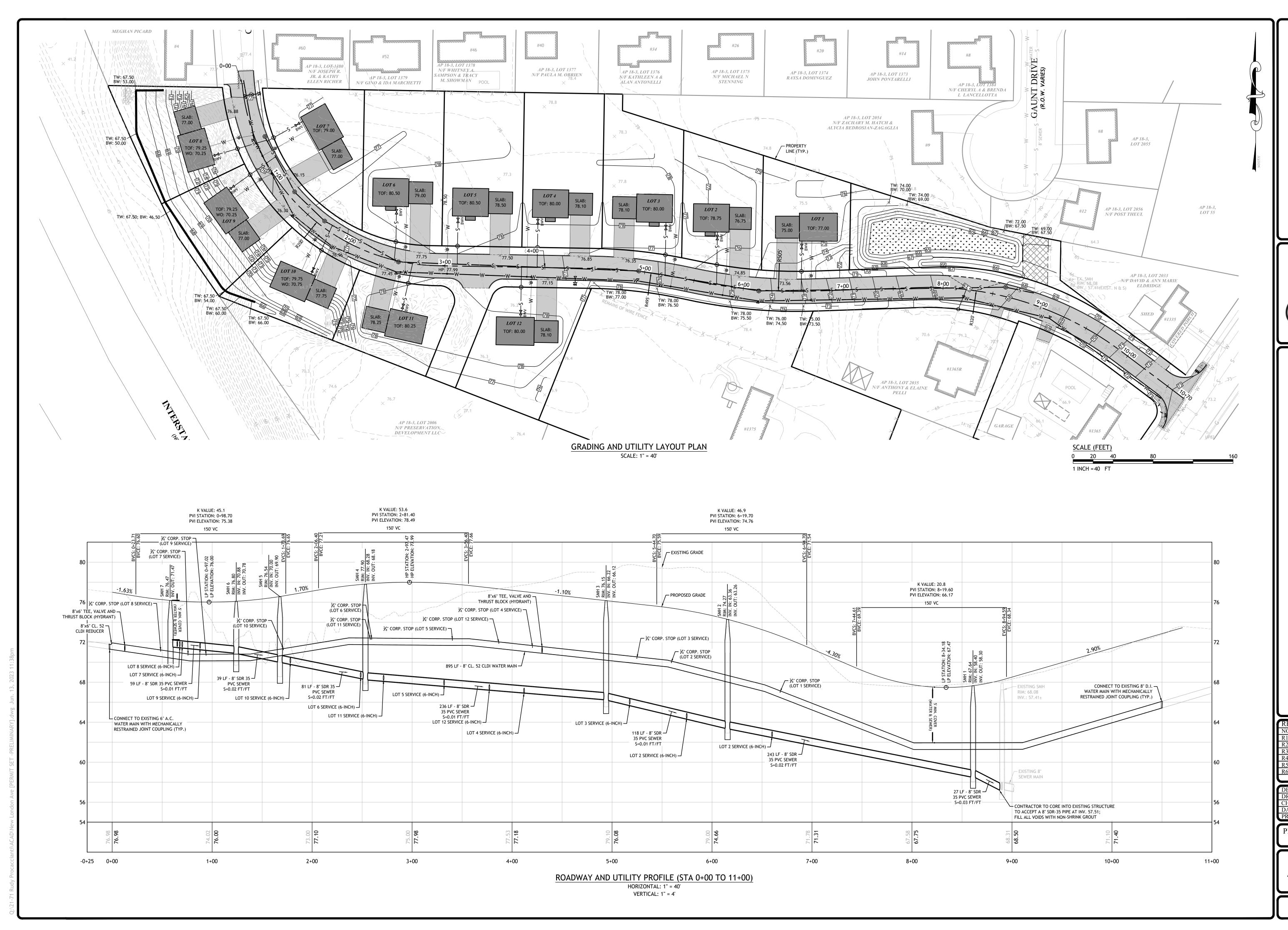
**REVISIONS:** DESCRIPTION R1 4/19/2022 REMOVED LOT R2 5/24/2022 REDUCED ROW R3 4/6/2023 RIDEM RT R4 4/26/2023 RIDOT RTC R5 5/15/2023 KCWA RTC R6 6/8/2023 RIDOT/SEWER RT DESIGNED BY: WMLJR

DRAWN BY: SEP/SD CHECKED BY: JAC MARCH 2022 PROJECT NO: 21-71

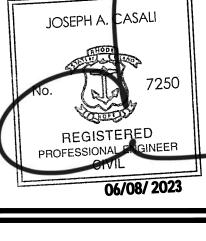
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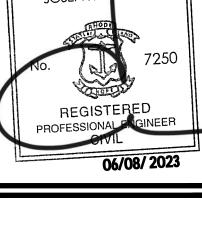
> UTILITY **PLAN**

SHEET 7 OF 17



JOSEPH A. CASALI





EVISIONS	<b>:</b>
O. DATE.	DESCRIPTION
1 4/19/2022	REMOVED LOT 2006
2 5/24/2022	REDUCED ROW
3 4/6/2023	RIDEM RTC
4 4/26/2023	RIDOT RTC
5 5/15/2023	KCWA RTC
6 6/8/2023	RIDOT/SEWER RTC

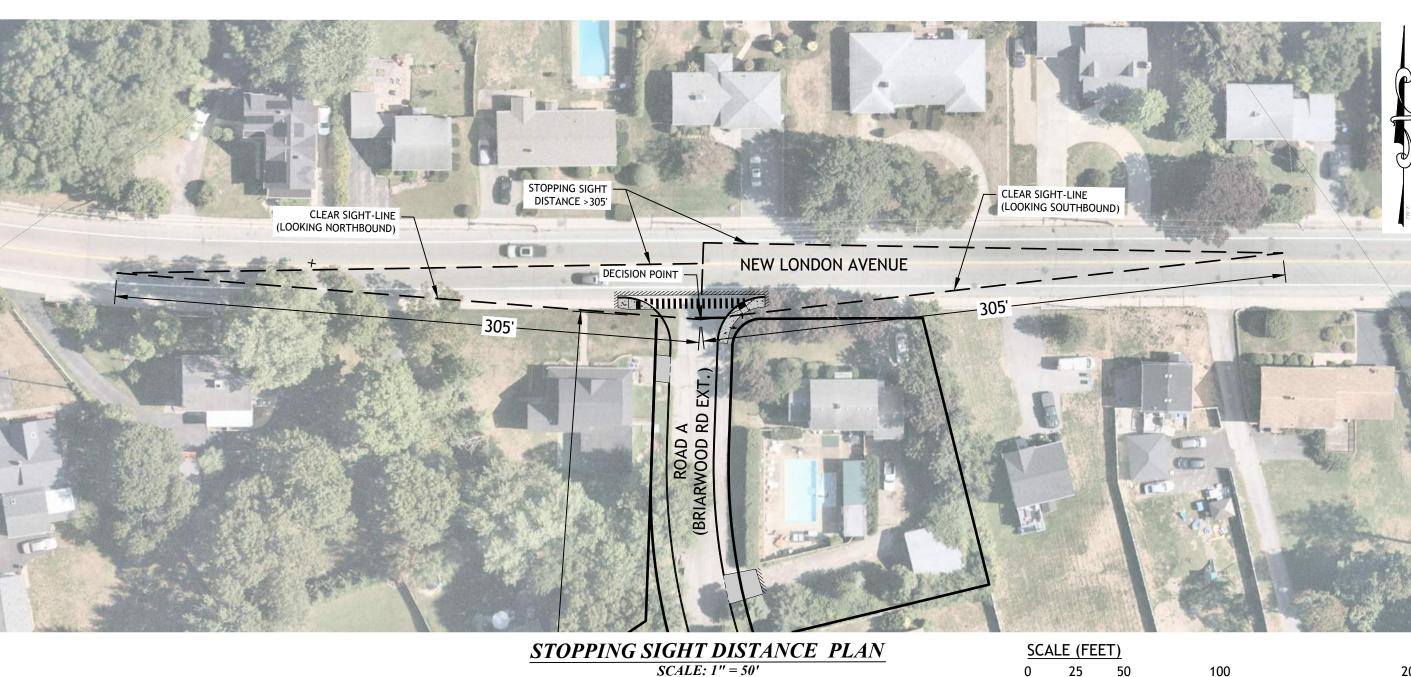
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SIGNED BY:	WMLJR
AWN BY:	SEP/SD
ECKED BY:	JAC
TE:	MARCH 2022
OJECT NO:	21-71
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PRELIMINARY, NOT FOR CONSTRUCTION

**ROADWAY AND UTILITY PROFILE** 

> SHEET 8 OF 17

1 INCH = 50 FT



POSTED SPEED LIMIT ON NEW LONDON AVENUE (ROUTE 33): 30 MPH OBSERVED SPEEDS ON NEW LONDON AVENUE (ROUTE 33): 40 MPH AASHTO STOPPING SIGHT DISTANCE (SSD) REQUIREMENTS:

DISTANCE

155 FT. 200 FT. <del>→</del> — POSTED 250 FT. 305 FT. <del>→</del> --- OBSERVED

425 FT.

THE SITE MEETS REQUIREMENTS FOR THE POSTED SPEED LIMIT ON NEW LONDON AVENUE. THE AVAILABLE SIGHT DISTANCES AT THE PROPOSED ROADWAY LOCATION ON NEW LONDON AVENUE ARE IN EXCESS OF 305 FEET TO THE NORTH AND SOUTH. THESE VALUES ARE GREATER THAN AASHTO'S RECOMMENDED MINIMUM SIGHT DISTANCE OF 200 FEET BASED ON THE POSTED SPEED LIMIT OF 30 MPH AND THE 305 FEET BASED ON THE OBSERVED SPEED OF 40 MPH RECORDED ALONG ROUTE 33.



(LS)

(R1-1)

**NOTES:** 

STOP SIGN

REMOVE AND DISPOSE FLEXIBLE PAVEMENT (9.9.0) CONSTRUCTION ACCESS LOAM AND SEED (20.3.0) PAVEMENT MARKINGS - CROSSWALKS AND STOP LINES

(24.1.0) SIGN POST INSTALLATION SQUARE POST PROTECT FIRE HYDRANT

(27.1.0) REGULATORY SIGN

(24.6.1) STREET SIGN (PSW) PROTECT SIDEWALK

(43.1.0) CEMENT CONCRETE SIDEWALK 12" EPOXY RESIN PAVEMENT MARKINGS - WHITE

(43.3.0) WHEELCHAIR RAMP (7.1.0)PRECAST CONCRETE CURB (43.3.1) WHEELCHAIR RAMP FOR LIMITED ROW AREAS 6'-0" PRECAST CONCRETE TRANSITION CURB

(7.6.0) (48.1.0) DETECTABLE WARNING PANEL PLACEMENT CURB SETTING DETAIL

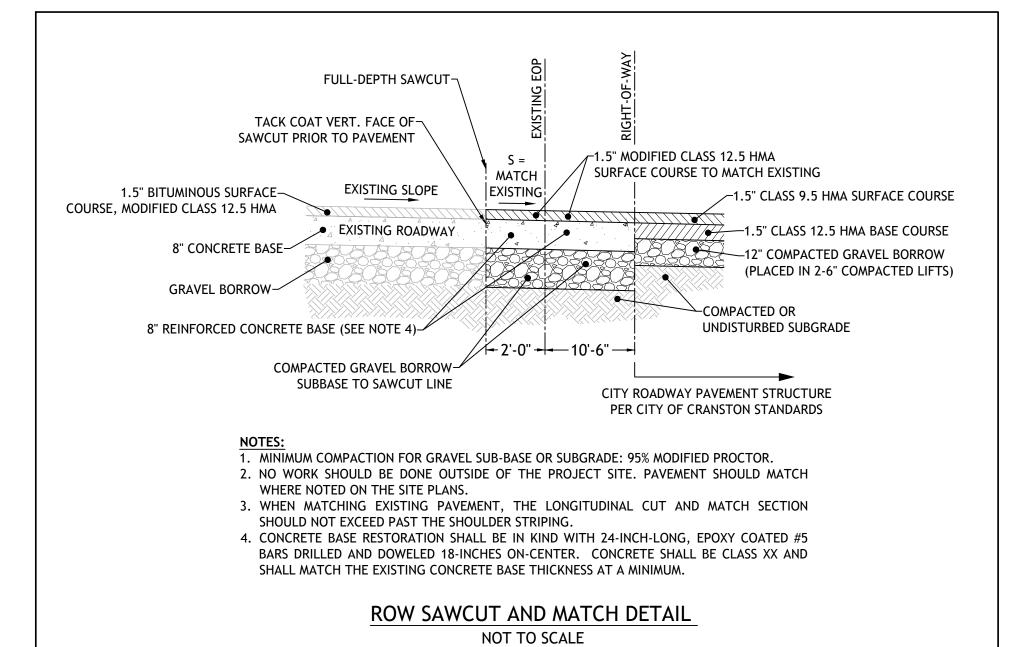
> (PVMT A) PROPOSED ROADWAY STRUCTURE (PER CITY STANDARDS): 1.5" CLASS 9.5 HOT MIX ASPHALT (HMA) 2.5" CLASS 12.5 HMA 8" GRAVEL BORROW SUBBASE COURSE (RIDOT M.01.09 TYPE I) PLACED AND COMPACTED IN 8-INCH THICK (MAX.) LOOSE LIFTS

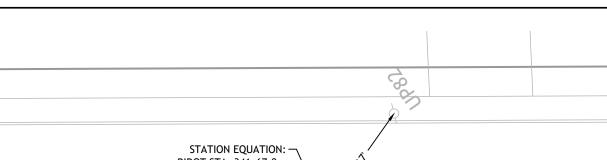
(PVMT B) EXISTING STATE ROADWAY PAVEMENT STRUCTURE PER CONTRACT NO. 20040CH-013: 1.5" BITUMINOUS CONCRETE SURFACE COURSE, MODIFIED CLASS 12.5 HMA 8" REINFORCED CONCRETE BASE (CLASS XX)

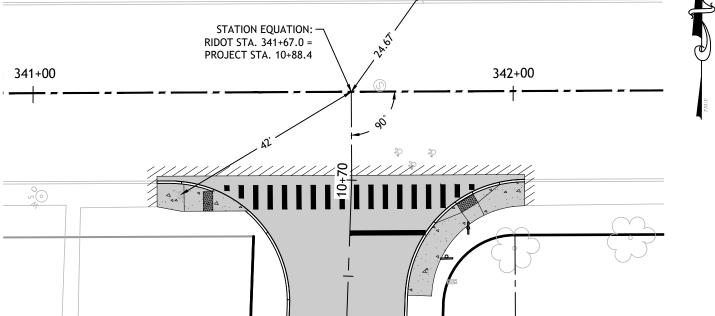
NOTE: REFER TO THE ROW SAWCUT AND MATCH DETAIL BELOW

# NOTE: REFER TO THE ROW SAWCUT AND MATCH DETAIL BELOW

- 1. ALL WORK TO BE DONE WITHIN THE STATE RIGHT-OF-WAY (ROW) SHALL CONFORM TO RIDOT STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, 2022 EDITION. STANDARD DETAILS FOR THIS WORK ARE RIDOT STANDARD DETAILS 1998 EDITION WITH ALL REVISIONS.
- 2. UTILITY WORK SHOWN FOR REFERENCE ONLY. ALL UTILITY WORK REQUIRES A PHYSICAL UTILITY PERMIT (PUP) WITH RIDOT'S DIVISION OF MAINTENANCE. APPROVAL OF THIS PAPA PLAN DOES NOT CONSTITUTE APPROVAL OF ANY UTILITY WORK, SHOWN OR UN-SHOWN, WITHIN THE STATE ROW.
- 3. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL MAINTENANCE AND PROTECTION OF PEDESTRIAN AND VEHICULAR TRAFFIC INCLUDING POLICE PROTECTION. ALL TEMPORARY AND VEHICULAR SIGNS, BARRICADES AND LANE CLOSURES SHALL BE IN CONFORMANCE WITH THE LATEST REVISIONS OF MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
- 4. CONTRACTOR TO PROVIDE TEMPORARY EROSION CONTROLS TO PROTECT THE STATE ROW DURING THE DEMOLITION OF EXISTING DRIVEWAY AND CONSTRUCTION OF NEW DRIVEWAY.

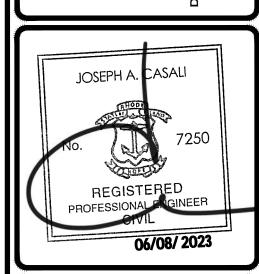






**CONTROL DIMENSIONS PLAN** 

SCALE: 1" = 20'



**REVISIONS:** R1 4/19/2022 REMOVED LOT R2 5/24/2022 REDUCED ROW R3 4/6/2023 RIDEM RTC R4 4/26/2023 RIDOT RTC R5 5/15/2023 KCWA RTC

DRAWN BY: SEP/SD CHECKED BY: JAC MARCH 2022 PROJECT NO: 21-71

R6 6/8/2023 RIDOT/SEWER RT

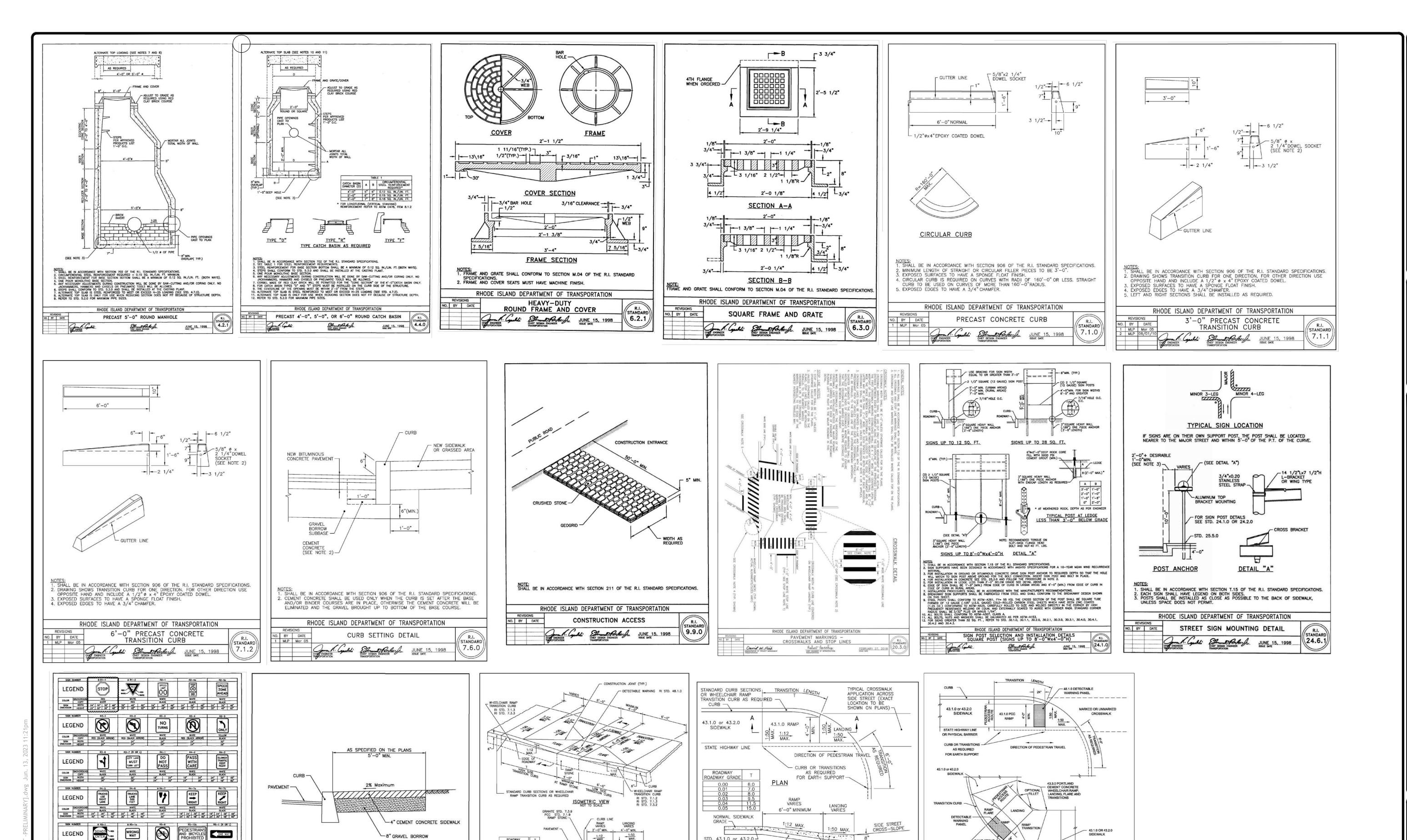
PRELIMINARY, NOT FOR CONSTRUCTION

> **RIDOT PAP PLAN**

> > SHEET 9 OF 17



CATION OF EXISTING UTILITIES SHOWN, ARE FROM GATE LOCATION AND XISTING DOCUMENTATION AND MAY NOT BE ACCURATE. EXACT LOCATION TO E DONE BY THE APPROPRIATE UTILITY COMPANY OR MUNICIPALITY PRIOR ANY EXCAVATION CALL DIGSAFE AT: 1-888-DIG-SAFE 1-888-344-7233



-1:12 MAX.

NOTES:

1. SHALL BE IN ACCORDANCE WITH SECTION 905 OF THE RI STANDARD SPECIFICATIONS.

2. WHEN ANY OBSTRUCTION LOCATED IN THE SIDEWALK FALLS WITHIN A CROSSWALK AREA, THE WHEELCHAIR RAMP SHALL BE PLACED SUCH THAT THE OBSTRUCTION FALLS OUTSIDE OF THE RAMP.

3. AT NOTIME IS ANY PART OF THE WHEELCHAIR RAMP TO BE LOCATED OUTSIDE OF THE CROSSWALK, AND IT IS TO BE CENTERED WHENEVER POSSIBLE.

4. DRAINAGE FALLITIES ARE TO BE LOCATED UP—GRADE OF ALL WHEELCHAIR RAMPS.

5. LOCATION OF WHEELCHAIR RAMPS IS AS SHOWN ON CONTRACT DRAWINGS.

6. IN NO INSTANCE SHALL THE SIDEWALK CROSS SLOPE EXCEED 1:50 EXCEPT WITHIN THE RAMP AREA.

7. AN UNDSTRUCTED PAITH OF TRAVEL WITH A WINIMUM WIDTH OF 4"—0" SHALL BE MAINTAINED.

8. THE WHEELCHAIR RAMP SLOPE AND SIDE SLOPES (TRANSITIONS), MUST NOT BE STEEPER THAN 1:12. HOWEVER, THESE SLOPES MAY BE FLATTER THAN 1:12 WHEN WARRANTED BY SURROUNDING CONDITIONS.

9. WHERE THE ROAD PROFILE EXCEEDS 5% THE HIGH SIDE TRANSITION LENGTH (T) SHALL BE EIGHTEEN FEET (18"—0").

10. IN NO CASE, WHERE A STOP LINE IS WARRANTED, SHALL A RAMP BE PLACED BEHIND THE STOP LINE.

11. THE ENTRANCE OF THE WHEELCHAIR RAMP SHALL BE FLUSH WITH THE RODOWAY.

12. THE WHEELCHAIR RAMP SHALL BE CENTERED RADIALLY, OPPOSITE THE RADIUS POINT WHEN POSSIBLE.

13. MINIMUM LENGTH OF STRAIGHT OR CIRCULAR FILLER PIECES TO BE 3"—0" (GREATER LENGTHS PREFERRED).

14. ALL REQUIRED CUTTING OF CURB PIECES TO BE PAID FOR UNDER COST OF CURB.

15. DETECTABLE WARNINGS TO BE PAID FOR UNDER SECTION 942 OF THE RI STANDARD SPECIFICATIONS

16. B" CONCRETE DEPTH FOR RADIUS WHEELCHAIR RAMPS ONLY. USE 4" DEPTH FOR TANGENT (MID—BLOCK) LOCATIONS.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

WHEELCHAIR RAMP

1:50 MAX.

-GRAVEL BORROW

CONCRETE 4" AND 8" STD. 43.1.0

DETECTABLE WARNING RI STD. 48.1.0

JUNE 15, 1998

STD. 43.1.0 or 43.2.0 →

LENGTHS PREFERRED)

1 MLP Dec 2005 2 MLP Sep 2012

43.3.0

SHALL BE MAINTAINED.

GRAVEL BORROW-

SECTION A-A CONCRETE SIDEWALK AND LANDING

AS REQUIRED

JUNE 15, 1998

LANDING

RAMP

DETECTABLE WARNING PANEL SHALL BE IN ACCORDANCE WITH SECTION 942 OF THE RHODE ISLAND STANDARD SPECIFICATIONS; PANEL TO MATCH RAMP WIDTH.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

DETECTABLE WARNING PANEL PLACEMENT

TRANSITION CURB -

STANDARD

SHALL BE IN ACCORDANCE WITH SECTION 905 OF THE R.I. STANDARD SPECIFICATIONS.
 THIS DETAIL IS TO BE USED ONLY WHEN STATE RIGHT—OF—WAY IS LIMITED TO BACK OF

SIDEWALK, AND SIDEWALK IS NARROW WITH NO PEDESTRIAN TRAFFIC FROM SIDE STREET 3. WHEN ANY OBSTRUCTION LOCATED IN THE SIDEWALK FALLS WITHIN A CROSSWALK AREA,

4. AT NO TIME IS ANY PART OF THE WHEELCHAIR RAMP TO BE LOCATED OUTSIDE OF THE

CROSSWALK, AND IT IS TO BE CENTERED WHENEVER POSSIBLE.
DRAINAGE FACILITIES ARE TO BE LOCATED UP-GRADE OF ALL WHEELCHAIR RAMPS.

. WHERE THE ROAD PROFILE EXCEEDS 5% THE TRANSITION LENGTH (T) SHALL BE EIGHTEEN FEET (18'-0"). . THE ENTRANCE OF THE WHEELCHAIR RAMP SHALL BE FLUSH WITH THE ROADWAY.

. AN UNOBSTRUCTED PATH OF TRAVEL WITH A MINIMUM WIDTH OF 4'-0"

LOCATION OF WHEELCHAIR RAMPS IS AS SHOWN ON CONTRACT DRAWINGS.
ALL REQUIRED CUTTING OF CURB PIECES TO BE PAID FOR UNDER COST OF CURB.

. MINIMUM LENGTH OF STRAIGHT OR CIRCULAR FILLER PIECES TO BE 3'-0"(GREATER

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

WHEELCHAIR RAMP

FOR LIMITED RIGHT-OF-WAY AREAS

CHIEF DESIGN ENGINEER

THANSPORTATION

THANSPO

IF POSSIBLE, THE OBSTRUCTION SHALL BE PLACED SUCH THAT IT FALLS OUTSIDE OF TH

**LEGEND** 

**LEGEND** 

LEGEND

RED (BLACK BICYCLE)

ROAD CLOSED

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

REGULATORY SIGNS

EST STRANGE

NOTES:

1. SHALL BE IN ACCORDANCE WITH SECTION
1.15 OF THE R.I. STANDARD SPECIFICATIONS.
2. & DENOTES TYPE XI GRADE SHEETING.
3. RECULATIORY SARSH SHALL BE MOUNTED IN
ACCORDANCE WITH STD. 24.1.0, 24.2.0 OR
24.6.0.

JUNE 15, 1998 STANDARD 27.1.0

-8" GRAVEL BORROW

JUNE 15, 1998

STANDARD

1. SHALL BE IN ACCORDANCE WITH SECTION 905 OF THE R.I. STANDARD SPECIFICATIONS.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

CEMENT CONCRETE SIDEWALK

2. FOR CURB SETTING DETAIL REFERENCE STD. 7.6.0.

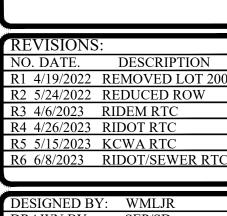


JOSEPH A. CASALI

REGISTERED

06/08/ 2023

PROFESSIONAL

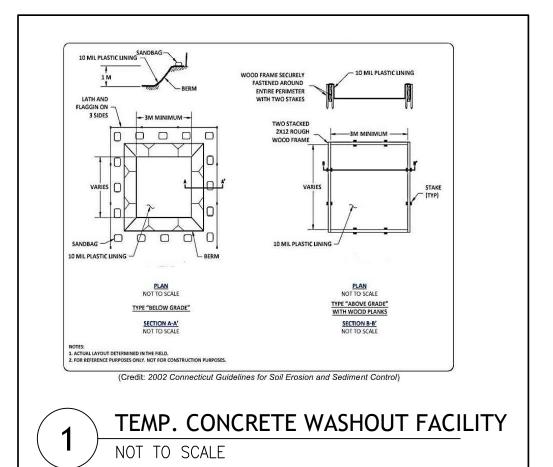


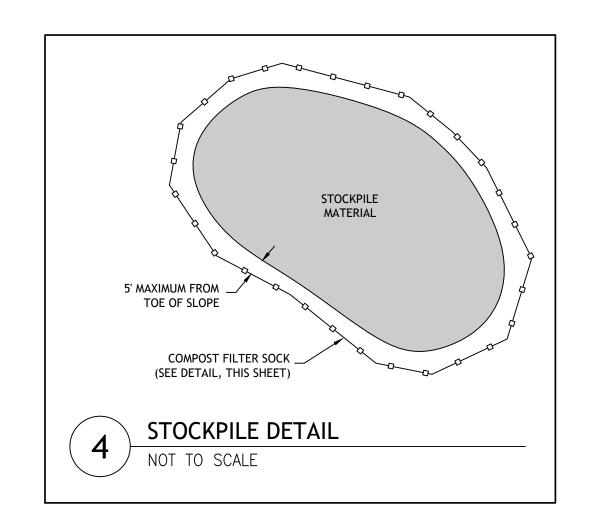
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R6 6/8/2023	RIDOT/SEWER RTC
711	
<b>DESIGNED BY</b>	: WMLJR
DRAWN BY:	SEP/SD
CHECKED BY	: JAC
DATE:	MARCH 2022
PROJECT NO:	21-71
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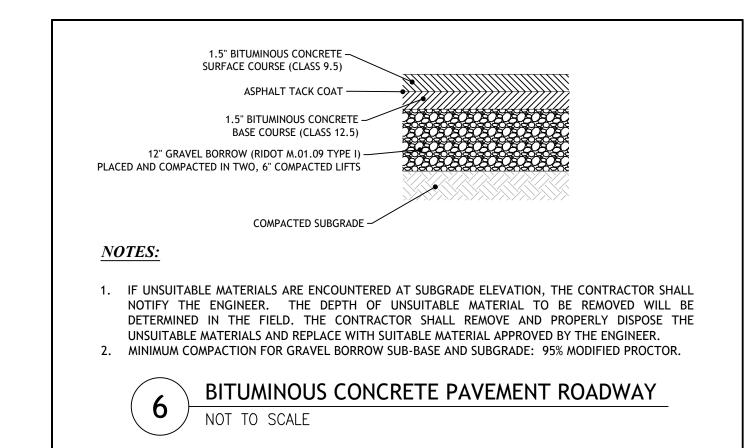
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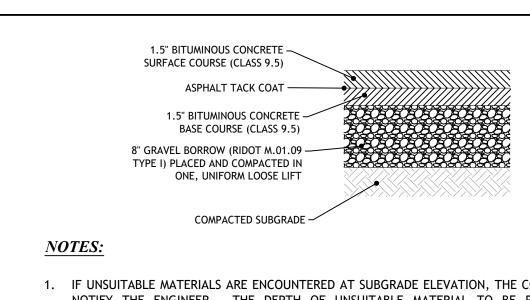
RHODE ISLAND **STANDARD DETAILS** 

SHEET 10 OF 17



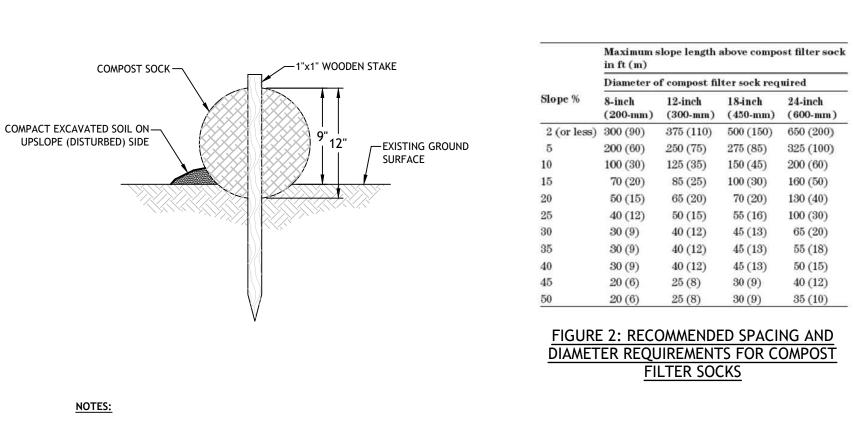






IF UNSUITABLE MATERIALS ARE ENCOUNTERED AT SUBGRADE ELEVATION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER. THE DEPTH OF UNSUITABLE MATERIAL TO BE REMOVED WILL BE DETERMINED IN THE FIELD. THE CONTRACTOR SHALL REMOVE AND PROPERLY DISPOSE THE UNSUITABLE MATERIALS AND REPLACE WITH SUITABLE MATERIAL APPROVED BY THE ENGINEER.
 MINIMUM COMPACTION FOR GRAVEL BORROW SUB-BASE AND SUBGRADE: 95% MODIFIED PROCTOR.

7 BITUMINOUS CONCRETE PAVEMENT DRIVEWAY

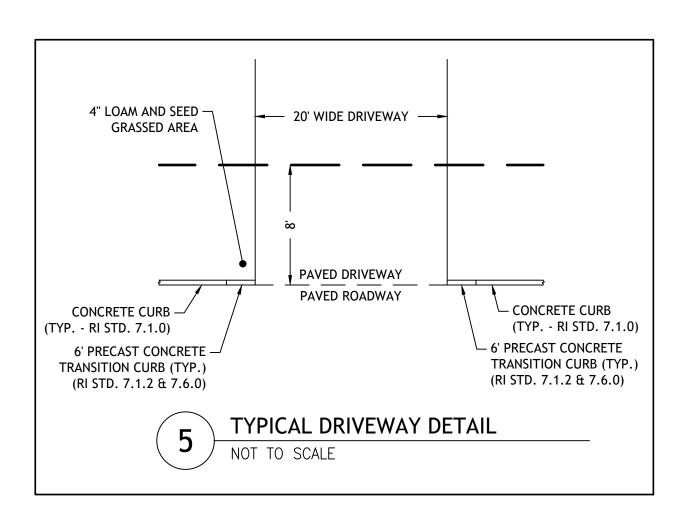


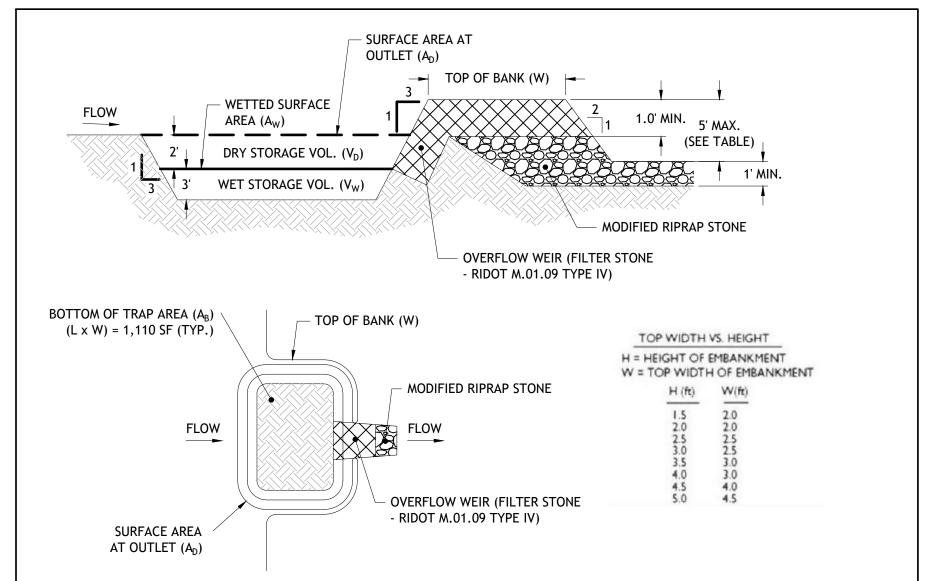
- 1. BEGIN SOCK INSTALLATION BY EXCAVATING A 2 TO 3-INCH-DEEP BY 9" WIDE TRENCH ALONG THE CONTOUR OF THE SLOPE OR ALONG THE
- EXISTING GROUND SURFACE. EXCAVATED SOIL SHOULD BE PLACED UP-SLOPE OR ON THE DISTURBED SIDE OF THE ANCHOR TRENCH.

  2. PLACE SOCK IN THE TRENCH SUCH THAT IT CONTOURS TO THE EXISTING SOIL SURFACE. COMPACT SOIL FROM THE EXCAVATED TRENCH AGAINST THE SOCK ON THE UP-SLOPE OR DISTURBED SIDE. ADJACENT SOCKS SHOULD TIGHTLY ABUT.
- 3. SECURE SOCK WITH 18 TO 24-INCH-LONG STAKES. INSTALL AN ADDITIONAL STAKE AT EACH END OF THE SOCK. STAKES SHOULD BE DRIVEN THROUGH THE MIDDLE OF THE SOCK LEAVING AT LEAST 2 TO 3 INCHES OF STAKE EXTENDING ABOVE. THE STAKES SHOULD BE DRIVEN
- PERPENDICULAR TO THE SLOPE FACE OR GROUND SURFACE.

  4. COMPOST FILTER SOCK SPACING BASED ON 12-INCH DIAMETER SOCK; SHOULD SMALLER OR LARGER DIAMETER SOCK BE USED, SPACING SHALL BE
- ADJUSTED BASED ON TABLE 2 (TO THE RIGHT).
- 5. COMPOST FILTER SOCK INSTALLATION AND MAINTENANCE SHALL BE IN ACCORDANCE WITH THE RI SOIL EROSION AND SEDIMENT CONTROL
- HANDBOOK, 2014.
  6. COMPOST FILTER SOCKS SHALL BE MAINTAINED UNTIL PERMANENT VEGETATIVE COVER IS ESTABLISHED.



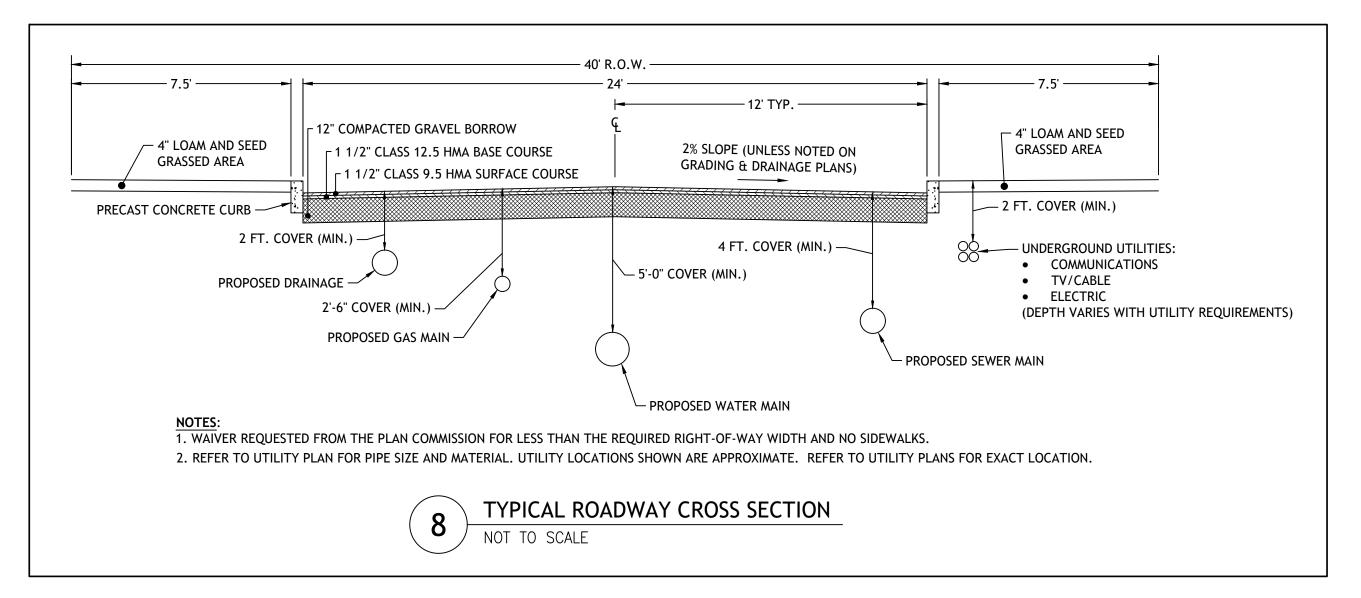


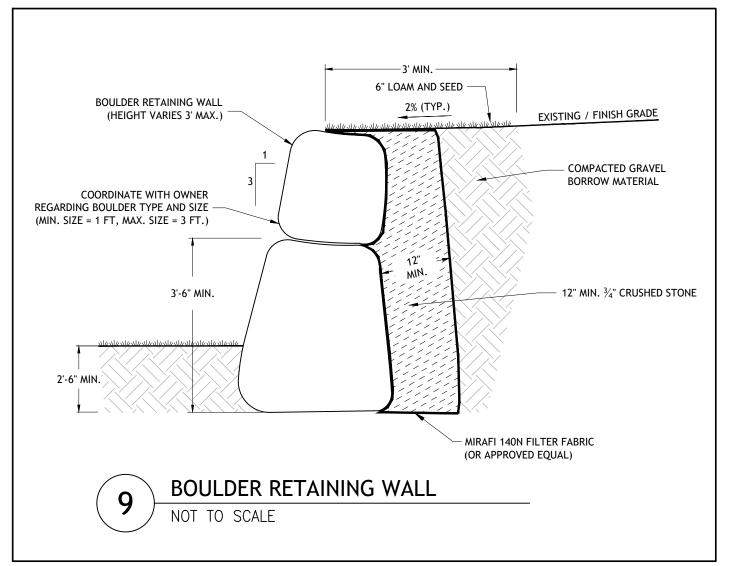


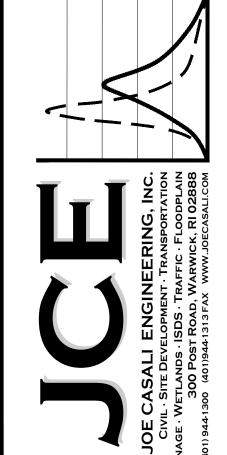
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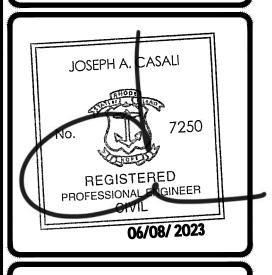
- 1. PHASING IS ANTICIPATED TO BE UTILIZED FOR THIS PROJECT IN ORDER TO COMPLETE DISTURBANCE ACTIVITIES WITHIN A SIX (6) MONTH WINDOW. A DETAILED PHASING PLAN WILL BE DEVELOPED UPON ENGAGEMENT OF A SITE CONTRACTOR AND SUBMITTED TO THE DESIGN ENGINEERING AND THE TOWN OF COVENTRY FOR REVIEW AND APPROVAL.
- 2. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD FIT AND DETERMINE ACTUAL SEDIMENT TRAP SIZES, LOCATIONS, DIVERSION BERM LOCATIONS, SWALES, SILT FENCE LOCATIONS AND ANY OTHER APPROPRIATE SEDIMENT CONTROL MEASURES. ALL SOIL EROSION MEASURES SHALL BE IN ACCORDANCE WITH THE RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK (2016).
- 3. PROPOSED SEDIMENT TRAP SHOWN SHALL BE DESIGNED TO ACCOMMODATE DRAINAGE FROM CONTRIBUTING AREAS OF 1 TO 5 ACRES.
- 4. EACH TEMPORARY SEDIMENT TRAP SHALL BE PROVIDED A SEDIMENT STORAGE STAKE AND MARKER, IN ACCORDANCE WITH THE RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK (2016).











A 14-LOT MAJOR SUBDIVISION CRANSTON, RHODE ISLAND AP 18/3, LOTS 1023 & 1026

REVISIONS:

NO. DATE. DESCRIPTION

R1 4/19/2022 REMOVED LOT 2006

R2 5/24/2022 REDUCED ROW

R3 4/6/2023 RIDEM RTC

R4 4/26/2023 RIDOT RTC

R5 5/15/2023 KCWA RTC

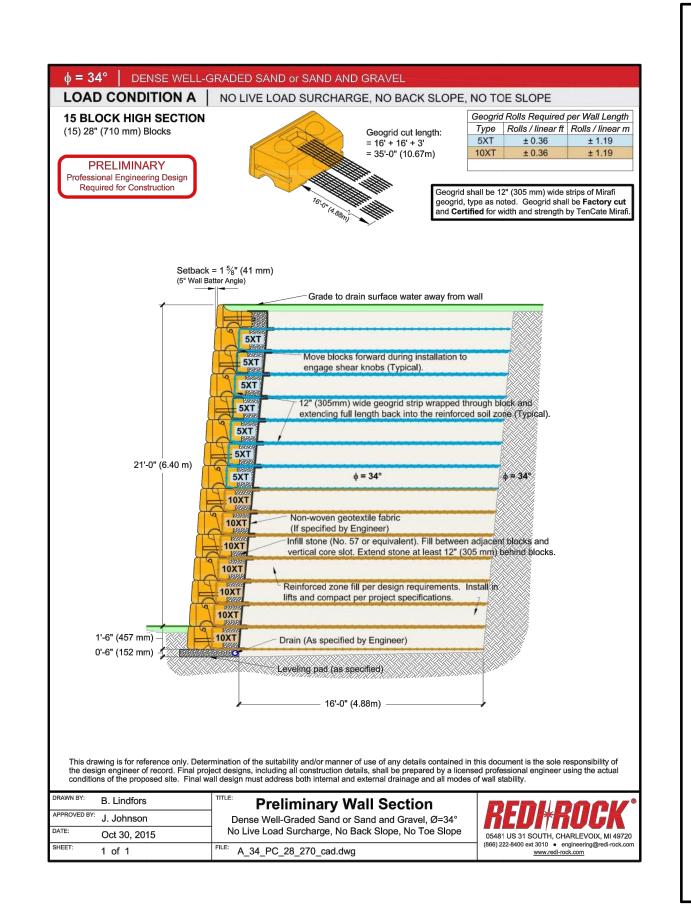
R6 6/8/2023 RIDOT/SEWER RTC

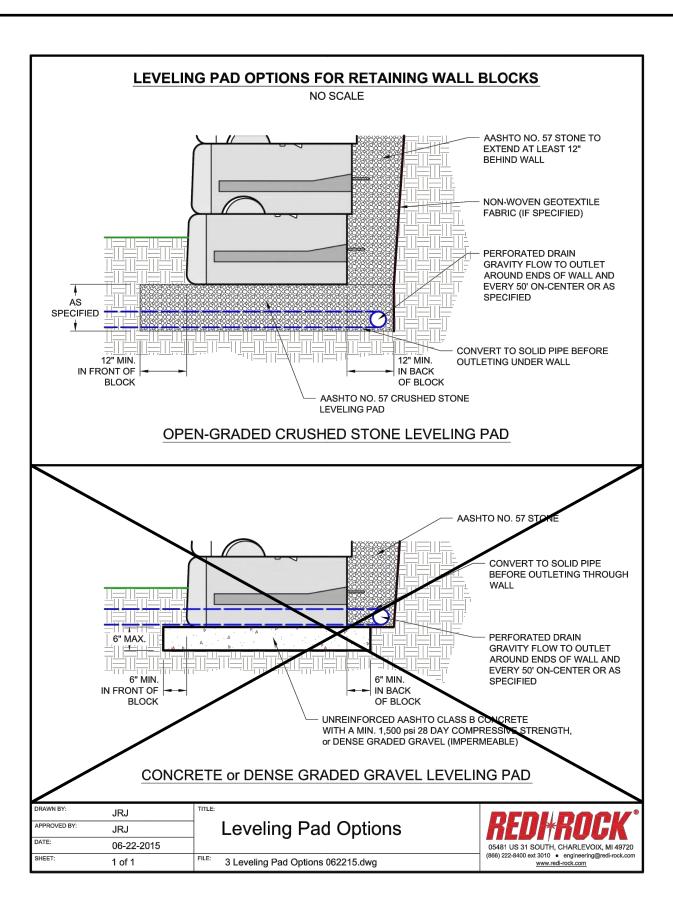
DESIGNED BY: WMLJR
DRAWN BY: SEP/SD
CHECKED BY: JAC
DATE: MARCH 2022
PROJECT NO: 21-71

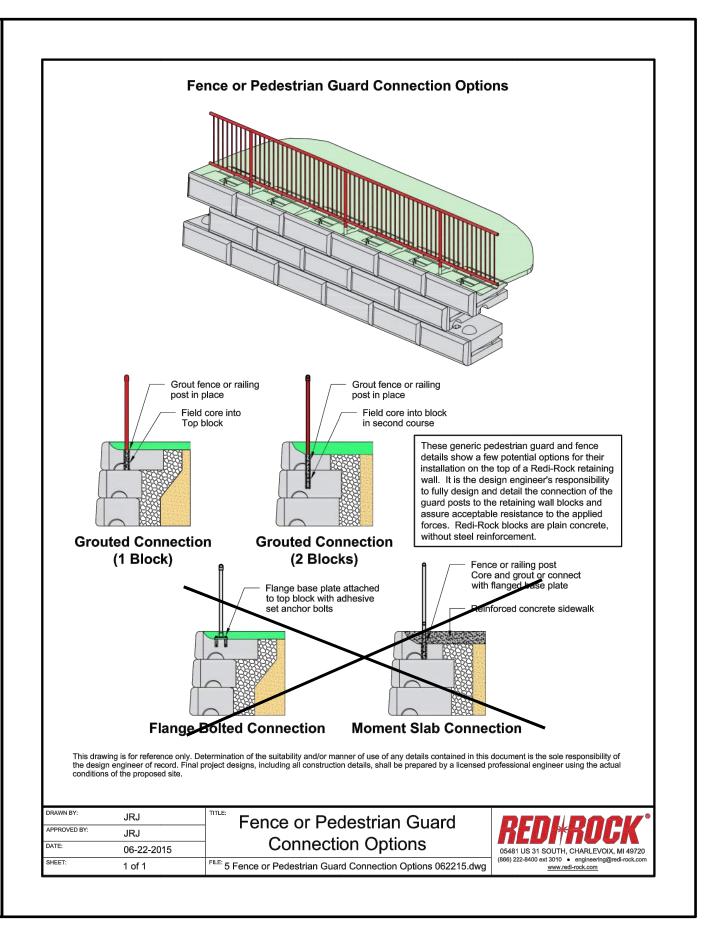
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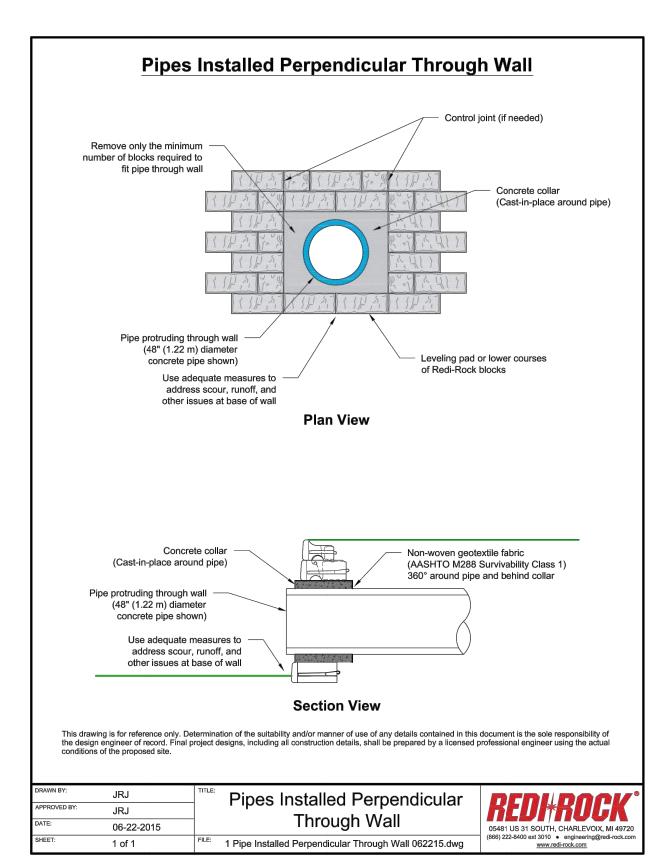
SITE DETAILS I

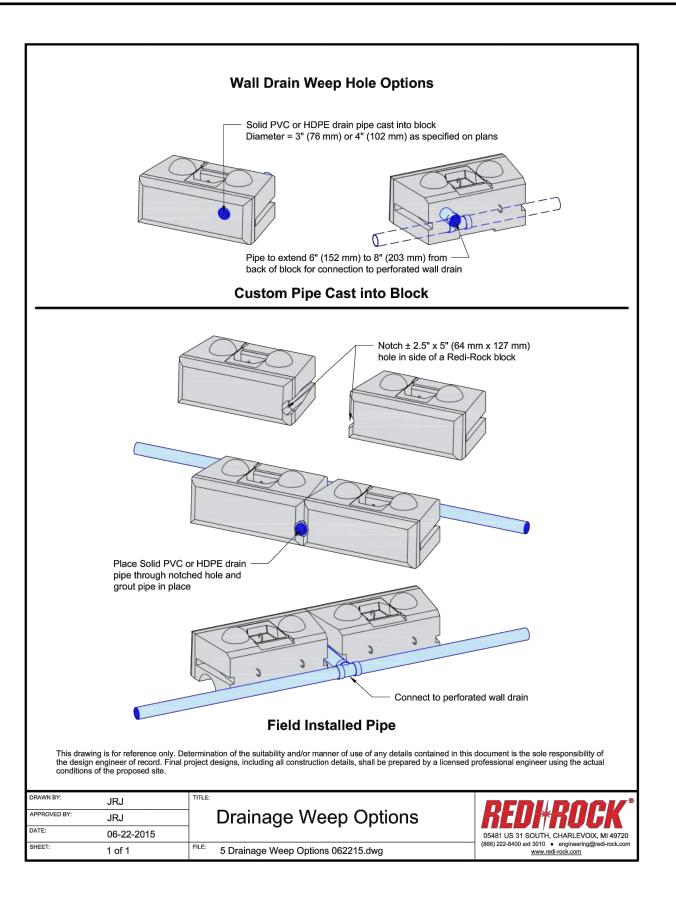
SHEET 11 OF 17

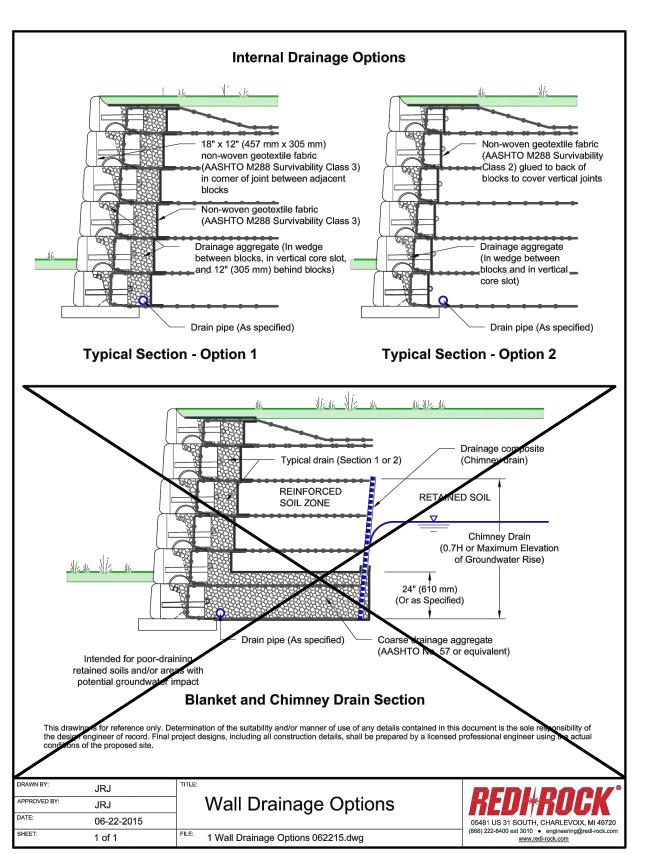














JOSEPH A. CASALI

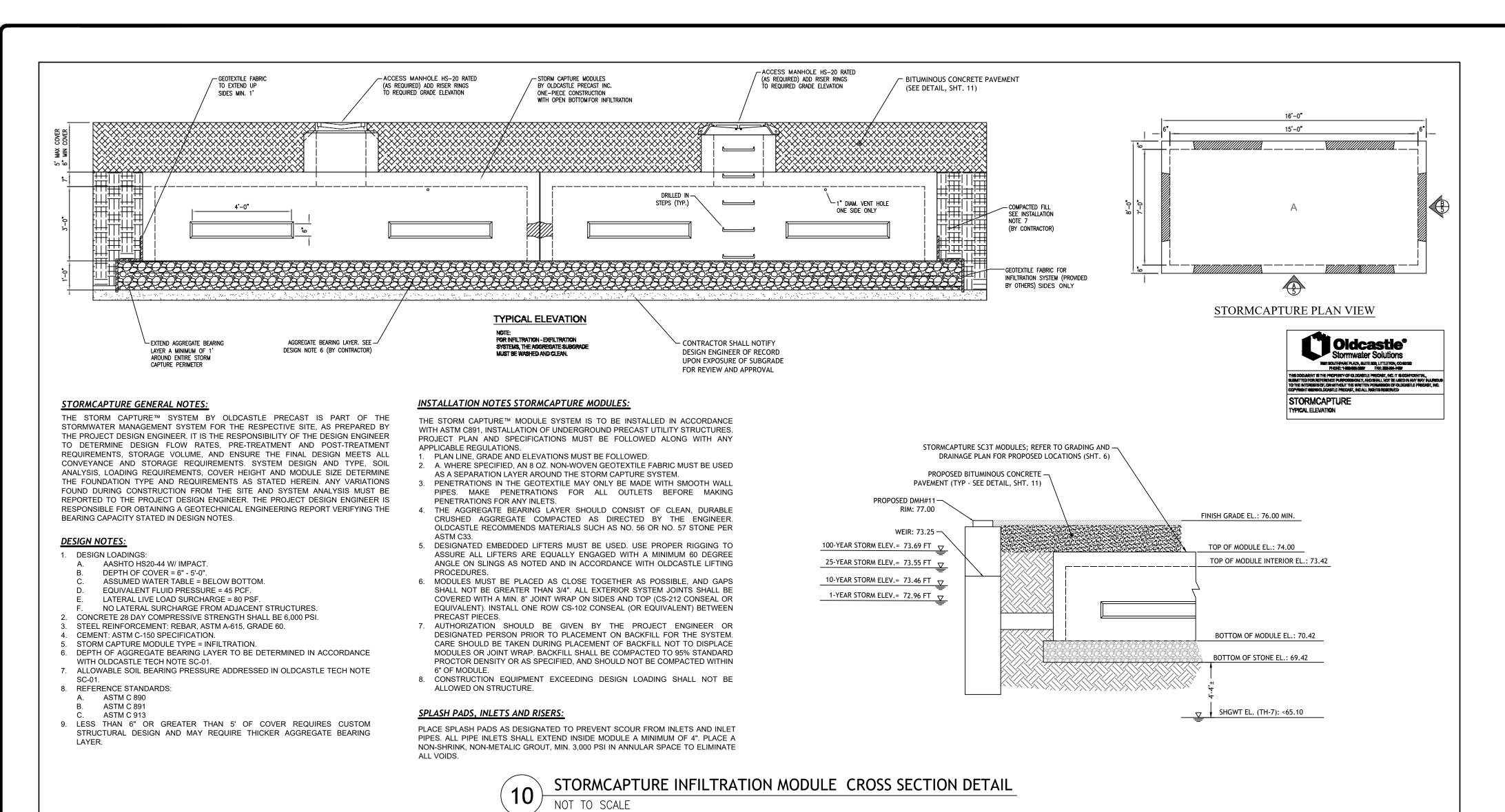
REVISIONS	<b>:</b>
NO. DATE.	DESCRIPTION
R1 4/19/2022	REMOVED LOT 2006
R2 5/24/2022	REDUCED ROW
R3 4/6/2023	RIDEM RTC
R4 4/26/2023	RIDOT RTC
R5 5/15/2023	KCWA RTC
R6 6/8/2023	RIDOT/SEWER RTC

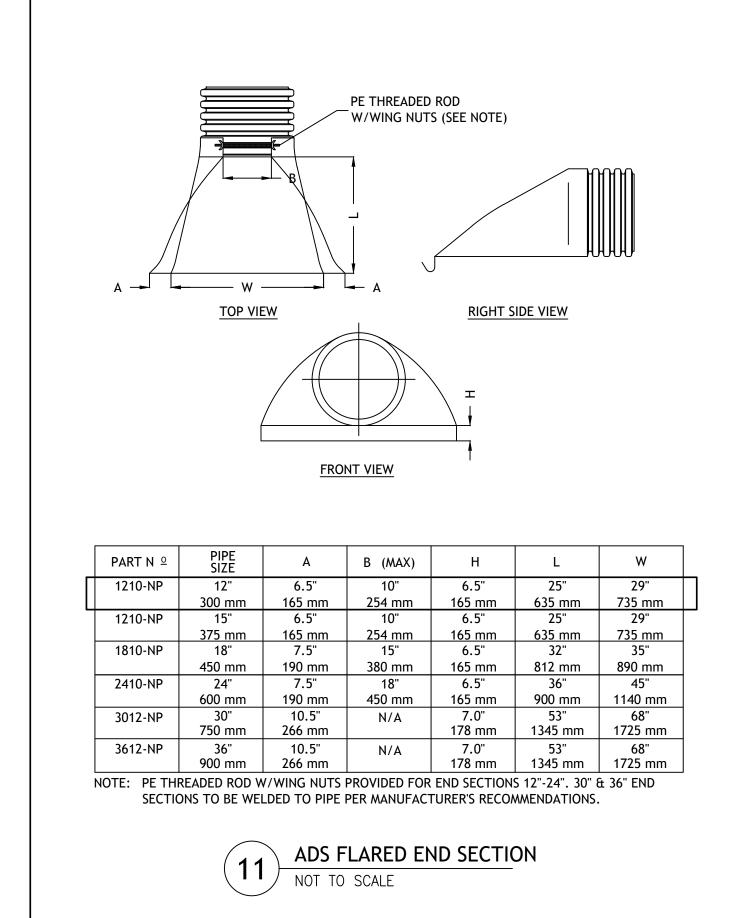
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ORAWN BY:	SEP/SD
CHECKED BY:	JAC
DATE:	MARCH 2022
PROJECT NO:	21-71
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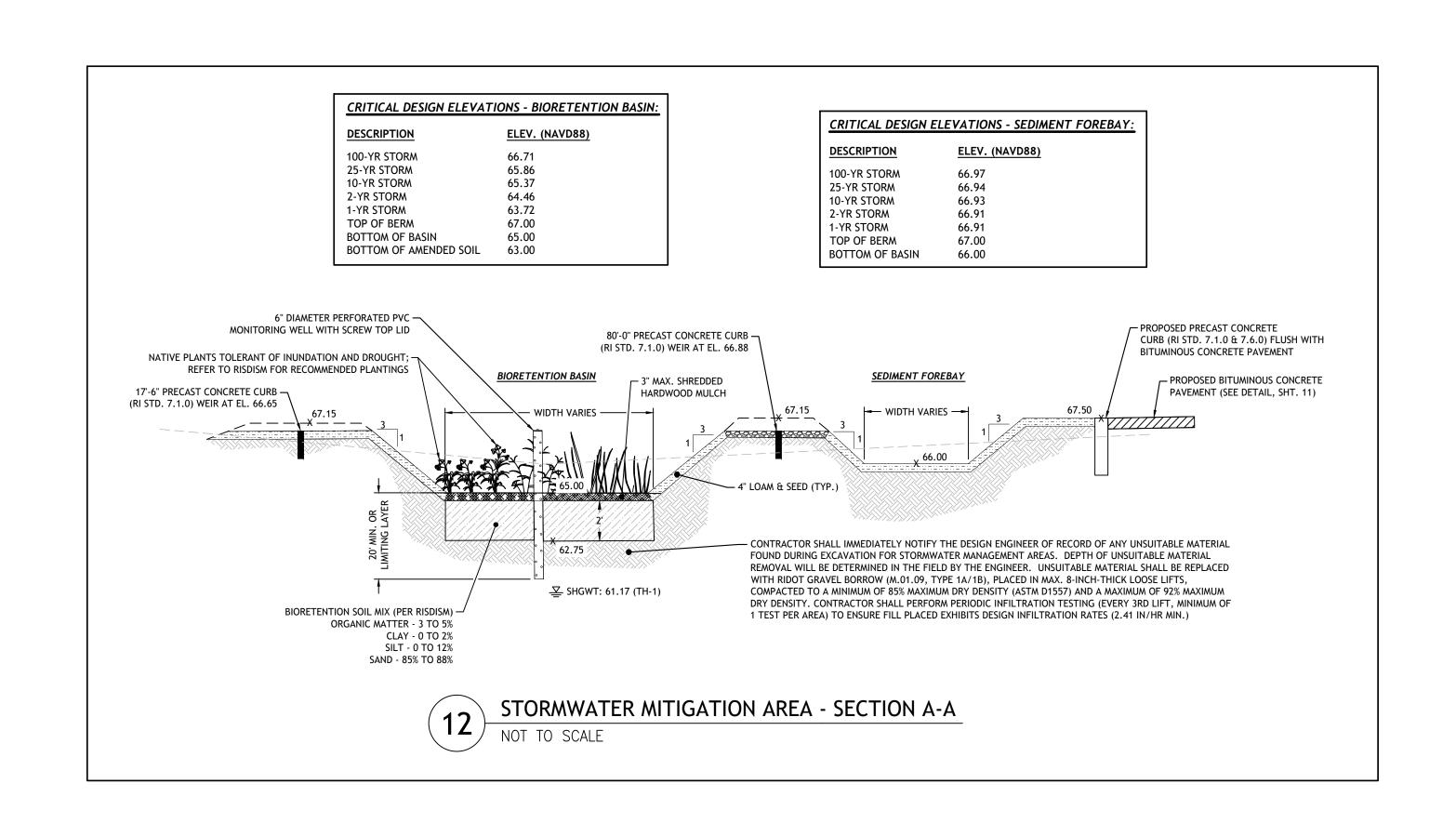
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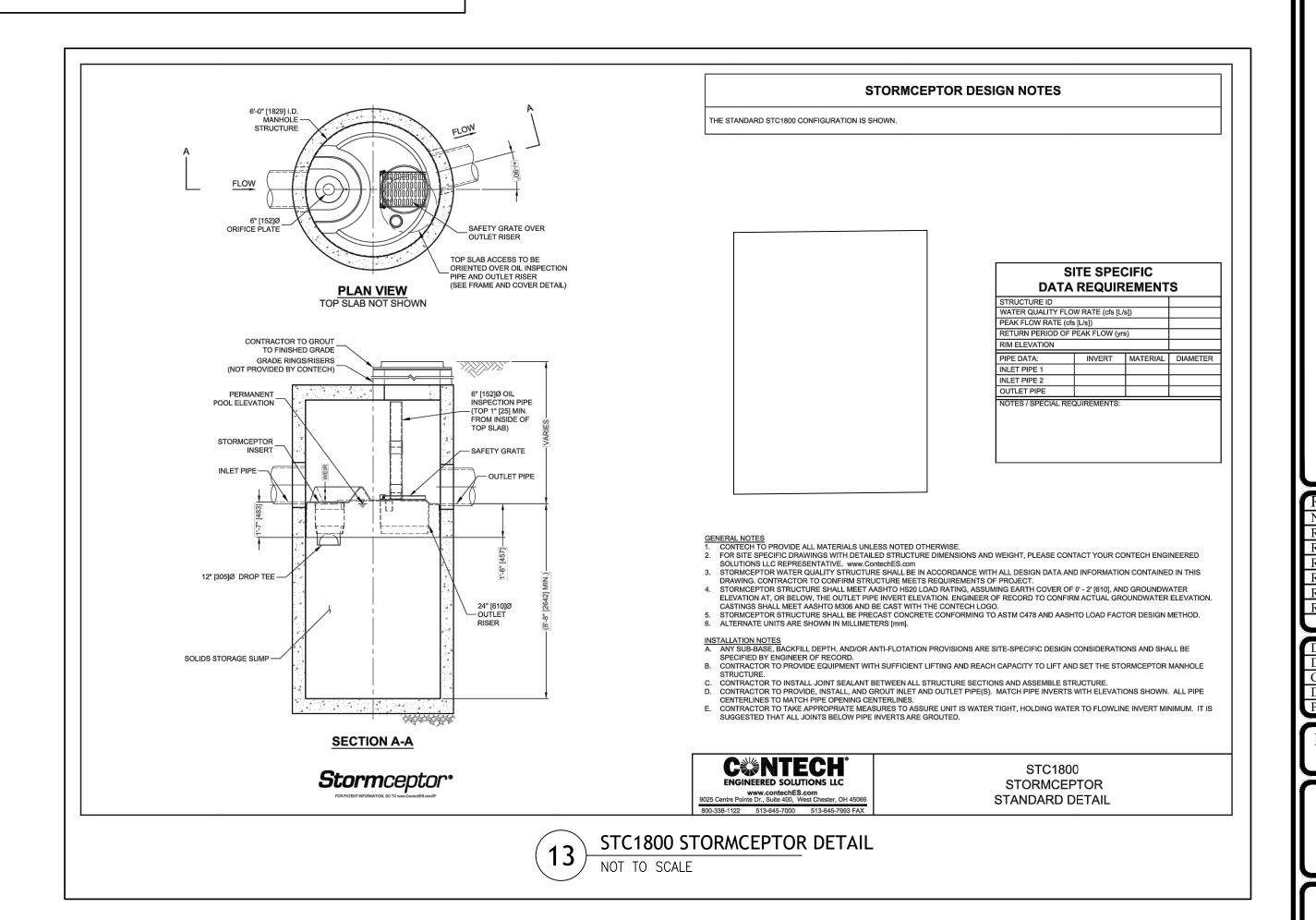
SITE DETAILS II

SHEET 12 OF 17











BRIARWOOD ESTATES
A 14-LOT MAJOR SUBDIVISION
CRANSTON, RHODE ISLAND
AP 18/3 LOTS 1023 & 1026

 REVISIONS:

 NO. DATE.
 DESCRIPTION

 R1 4/19/2022
 REMOVED LOT 2006

 R2 5/24/2022
 REDUCED ROW

 R3 4/6/2023
 RIDEM RTC

 R4 4/26/2023
 RIDOT RTC

 R5 5/15/2023
 KCWA RTC

 R6 6/8/2023
 RIDOT/SEWER RTC

DESIGNED BY: WMLJR
DRAWN BY: SEP/SD
CHECKED BY: JAC
DATE: MARCH 2022
PROJECT NO: 21-71

PRELIMINARY, NOT FOR CONSTRUCTION

DRAINAGE DETAILS I

SHEET 13 OF 17

### ACCEPTABLE FILL MATERIALS: STORMTECH SC-160LP AND SC-310 CHAMBER SYSTEMS:

MATERIAL LOCATION		DESCRIPTION		COMPACTION/DENSITY REQUIREMENT	
(D)	FILL MATERIAL FOR LAYER D STARTS FROM THE TOP OF THE C LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISH GRADE ABOVE. NOTE THAT PAVEMENT SUB-BASE MAY BE PART OF THIS LAYER.	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.	
©	FILL MATERIAL FOR LAYER C STARTS FROM THE TOP OF THE EMBEDMENT STONE (B LAYER) TO 18" (457 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUB-BASE MAY BE A PART OF THIS LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, < 35% FINES. MOST PAVEMENT SUB- BASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTION AFTER 12" (305 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (152 mm) LIFTS TO A MIN. 95% STANDARD PROCTOR DENSITY (2). ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).	
B	EMBEDMENT STONE SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE (A LAYER) TO THE C LAYER ABOVE.	CLEAN, DOUBLE WASHED, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4 - 2 INCH (19 - 51 mm)	3, 357, 4, 457, 5, 56, 57	NO COMPACTION REQUIRED.	
A	FOUNDATION STONE BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, DOUBLE WASHED, CRUSHED, ANGULAR STONE, NOMINAL SIZE DISTRIBUTION BETWEEN 3/4 - 2 INCH (19 - 51 mm)	3, 35, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A 95% STANDARD PROCTOR DENSITY (2).	

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4
STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".

2. AS AN ALTERNATE TO PROCTOR TESTING AND FIELD DENSITY MEASUREMENTS IN OPEN GRADED STONE, STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (229 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH AN APPROPRIATE COMPACTOR.

### STORMTECH GENERAL NOTES:

- STORMTECH REQUIRES INSTALLING CONTRACTORS TO USE AND UNDERSTAND STORMTECH'S LATEST INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING SYSTEM INSTALLATION.
- 2. OUR TECHNICAL SERVICES DEPARTMENT OFFERS INSTALLATION CONSULTATIONS TO INSTALLING CONTRACTORS. CONTACT OUR TECHNICAL SERVICES REPRESENTATIVE AT LEAST 30 DAYS PRIOR TO SYSTEM INSTALLATION TO ARRANGE A PRE-INSTALLATION CONSULTATION. OUR REPRESENTATIVES CAN THEN ANSWER QUESTIONS OR ADDRESS COMMENTS ON THE STORMTECH CHAMBER SYSTEM AND INFORM THE INSTALLING CONTRACTOR OF THE MINIMUM INSTALLATION REQUIREMENTS BEFORE BEGINNING THE SYSTEM'S CONSTRUCTION. CALL 1-888-892-2694 TO SPEAK TO A TECHNICAL SERVICES REPRESENTATIVE OR VISIT WWW. STORMTECH.COM TO RECEIVE A COPY OF OUR INSTALLATION INSTRUCTIONS.
- 3. STORMTECH'S REQUIREMENTS FOR SYSTEMS WITH PAVEMENT DESIGN (ASPHALT, CONCRETE PAVERS, ETC.):MINIMUM COVER IS 18" (457 mm) NOT INCLUDING PAVEMENT; MAXIMUM COVER IS 96" (2438 mm) INCLUDING PAVEMENT. FOR INSTALLATIONS THAT DO NOT INCLUDE PAVEMENT, WHERE RUTTING FROM VEHICLES MAY OCCUR, MINIMUM REQUIRED COVER IS 24" (610 mm), MAXIMUM COVER IS 96" (2438 mm).
- 4. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE DESIGN ENGINEER.
- 5. AASHTO M288 CLASS 2 NON-WOVEN GEOTEXTILE (FILTER FABRIC) MUST BE USED AS INDICATED IN THE PROJECT PLANS
- 6. STONE PLACEMENT BETWEEN CHAMBERS ROWS AND AROUND PERIMETER MUST FOLLOW INSTRUCTIONS AS

INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.

UNAUTHORIZED VEHICLES FROM ENTERING SENSITIVE CONSTRUCTION AREAS.

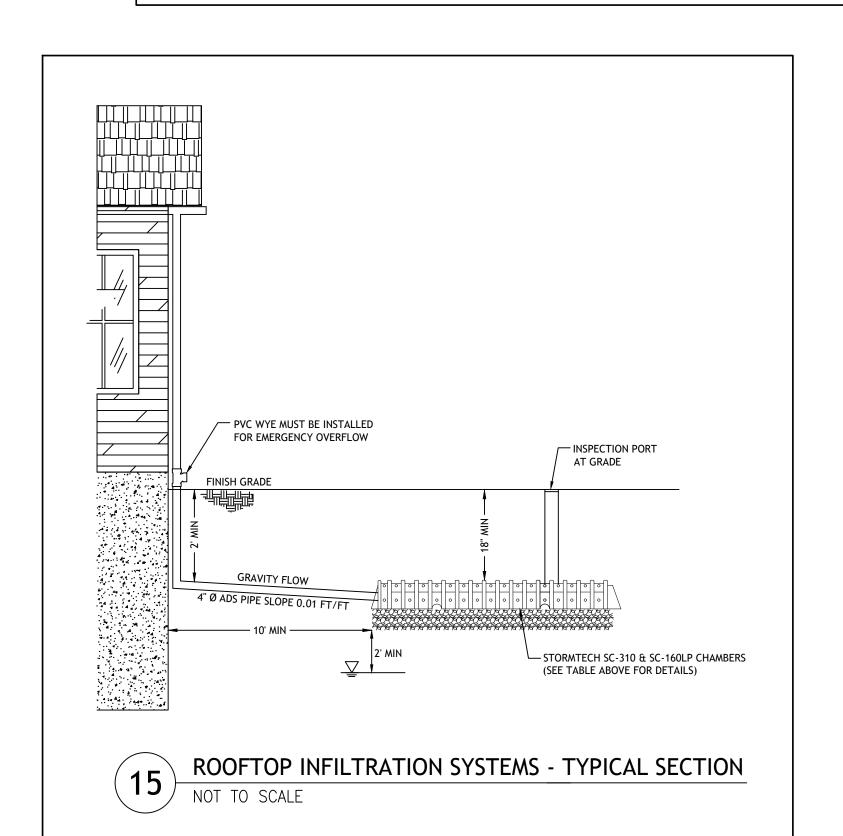
- 7. BACKFILLING OVER THE CHAMBERS MUST FOLLOW REQUIREMENTS AS INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.
- 8. THE CONTRACTOR MUST REFER TO STORMTECH'S INSTALLATION INSTRUCTIONS FOR A TABLE OF ACCEPTABLE VEHICLE LOADS AT VARIOUS DEPTHS OF COVER. THIS INFORMATION IS ALSO AVAILABLE AT STORMTECH'S WEBSITE: WWW.STORMTECH.COM. THE CONTRACTOR IS RESPONSIBLE FOR PREVENTING VEHICLES THAT EXCEED STORMTECH'S REQUIREMENTS FROM TRAVELING ACROSS OR PARKING OVER THE STORMWATER SYSTEM. TEMPORARY FENCING, WARNING TAPE AND APPROPRIATELY LOCATED SIGNS ARE COMMONLY USED TO PREVENT
- THE CONTRACTOR MUST APPLY EROSION AND SEDIMENT CONTROL MEASURES TO PROTECT THE STORMWATER SYSTEM DURING ALL PHASES OF SITE CONSTRUCTION PER LOCAL CODES AND DESIGN ENGINEER'S SPECIFICATIONS.
- STORMTECH PRODUCT WARRANTY IS LIMITED. SEE CURRENT PRODUCT WARRANTY FOR DETAILS. TO ACQUIRE A COPY CALL STORMTECH AT 1-888-892-2694 OR VISIT WWW.STORMTECH.COM

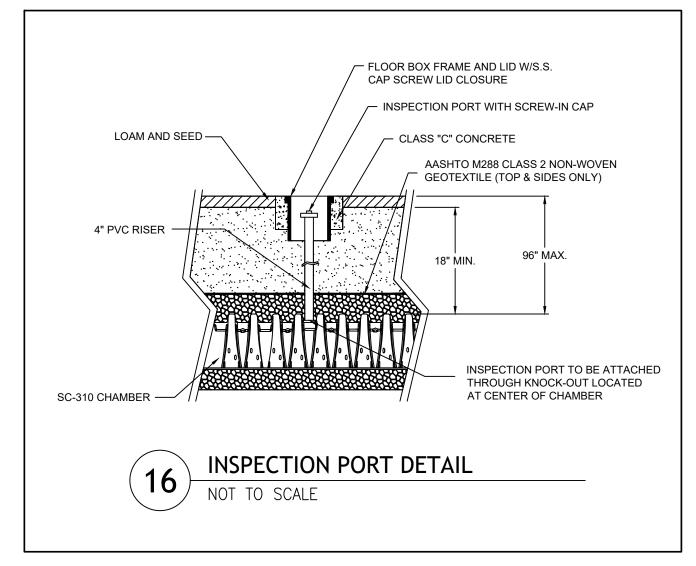
UNDERGROUND INFILTRATION SYSTEM ELEVATIONS																
	LOT 1	LOT 2	LOT 3	LOT 4	LOT 5	LOT 6	LOT 7	LOT 8F	LOT 8R	LOT 9F	LOT 9R	LOT 10F	LOT 10R	LOT 11F	LOT 11R	LOT 12
CHAMBER SYSTEM	SC-160LP	SC-310	SC-310	SC-310	SC-310	SC-310	SC-310	SC-310	SC-160LP							
# OF CHAMBERS	16	16	16	16	16	8	8	4	6	4	6	4	6	4	6	16
A (GROUND ELEVATION)	76.17	76.50	77.50	77.50	78.00	78.00	76.50	77.00	70.00	77.00	70.00	77.00	70.00	78.00	77.00	78.00
B (TOP OF STONE)	75.50	75.50	76.50	76.50	77.00	77.00	75.50	76.00	69.00	76.00	69.00	76.00	69.00	77.00	76.00	77.33
C (TOP OF CHAMBER)	75.00	75.00	76.00	76.00	76.50	76.50	75.00	75.50	68.50	75.50	68.50	75.50	68.50	76.50	75.50	76.83
D (BOTTOM OF CHAMBER)	74.00	73.67	74.67	74.67	75.17	75.17	73.67	74.17	67.17	74.17	67.17	74.17	67.17	75.17	74.17	75.83
E (BOTTOM OF STONE)	73.50	73.17	74.17	74.17	74.67	74.67	73.17	73.67	66.67	73.67	66.67	73.67	66.67	74.67	73.67	75.33
F (SHGWT)	71.50	71.00	72.00	72.00	72.00	68.00	69.00	65.10	43.00	58.00	43.00	51.00	53.00	63.00	65.00	73.00
DIST. E-F (SEP. TO SHGWT)	2.00	2.17	2.17	2.17	2.67	6.67	4.17	8.57	23.67	15.67	23.67	22.67	13.67	11.67	8.67	2.33
TEST HOLE REFERENCE	TH-3: 48"	TH-4: 60"	TH-4: 60"	TH-5: 60"	TH-5: 60"	TH-6: 60"	TH-6: 60"	TH-7:144"	TH-7: 144"	TH-8: 144"	TH-8: 144"	TH-9: 144"	TH-9: 144"	TH-9: 144"	TH-9: 144"	"TH-10: 36"

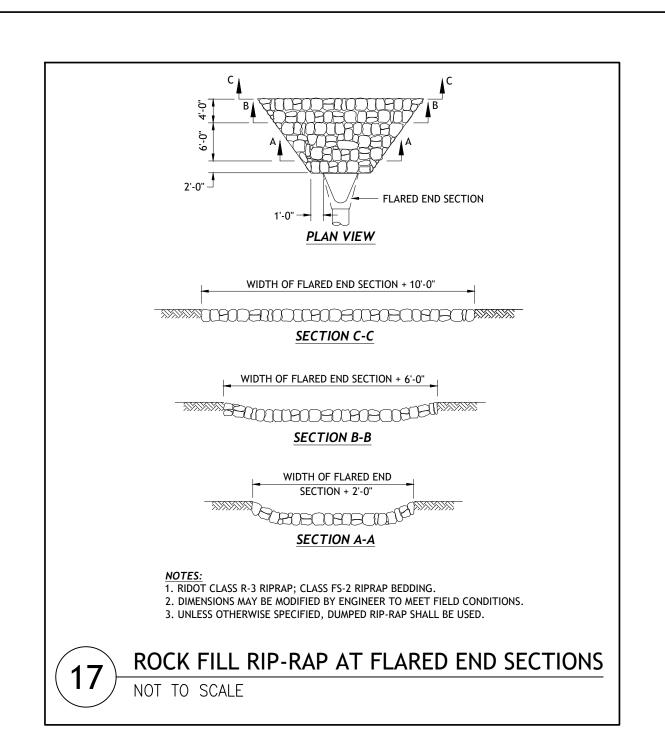


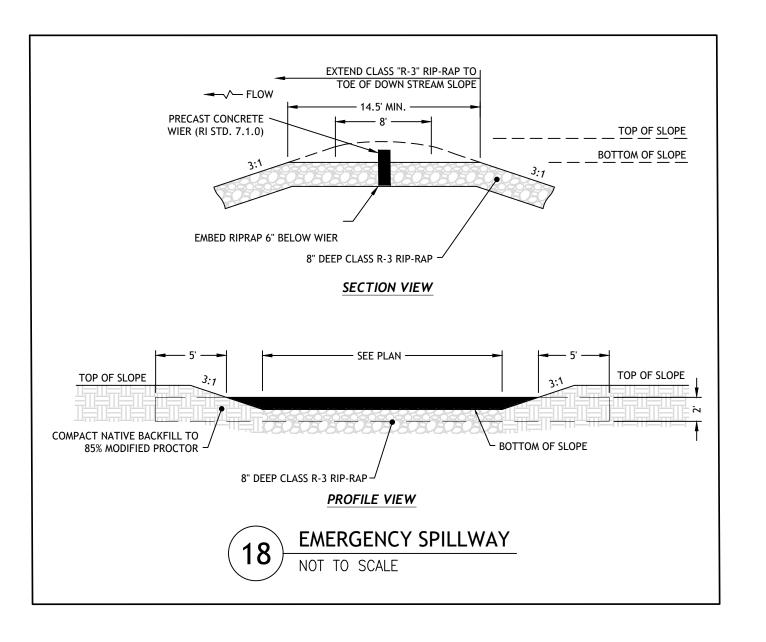
SC-310 & SC-160LP STANDARD DETAILS

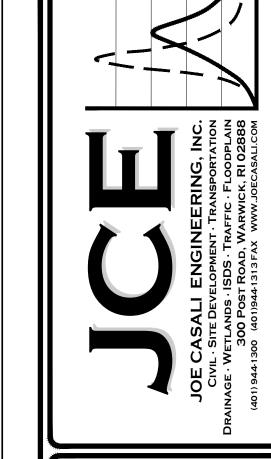
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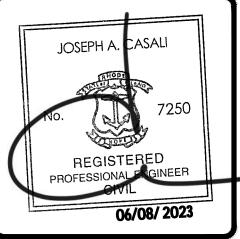












BRIARWOOD ESTATES
A 14-LOT MAJOR SUBDIVISION
CRANSTON, RHODE ISLAND
AP 18/3 LOTS 1023 & 1026

REVISIONS	
NO. DATE.	DESCRIPTION
R1 4/19/2022	REMOVED LOT 200
R2 5/24/2022	REDUCED ROW
R3 4/6/2023	RIDEM RTC
R4 4/26/2023	RIDOT RTC
R5 5/15/2023	KCWA RTC

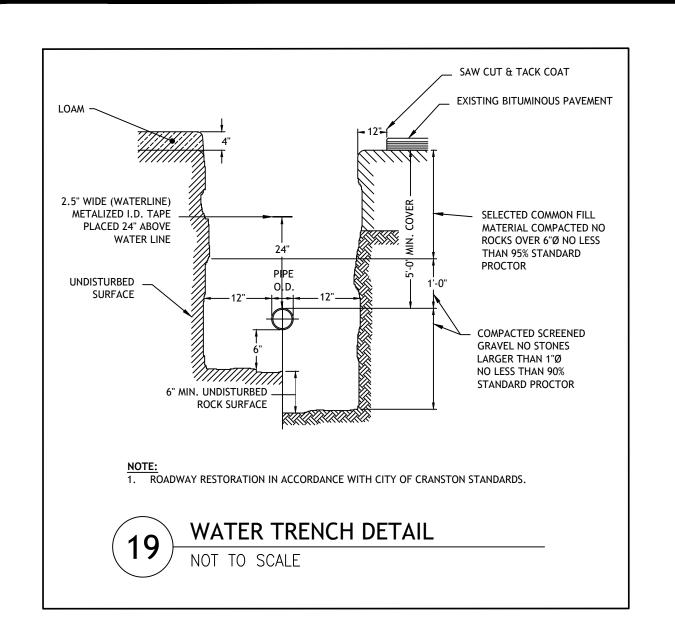
R0 0/8/2023 R1	DOT/SEWER RT
DESIGNED BY:	WMLJR
DRAWN BY:	SEP/SD
CHECKED BY:	JAC
DATE:	MARCH 2022

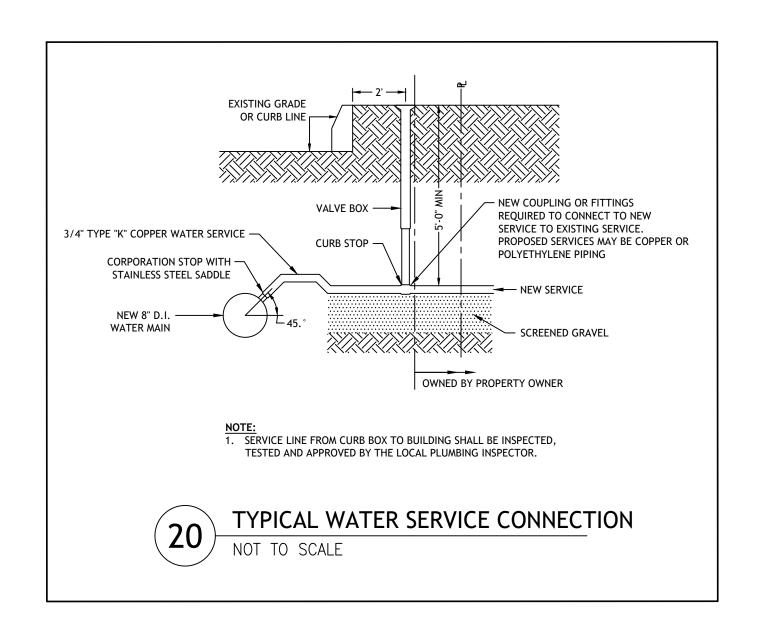
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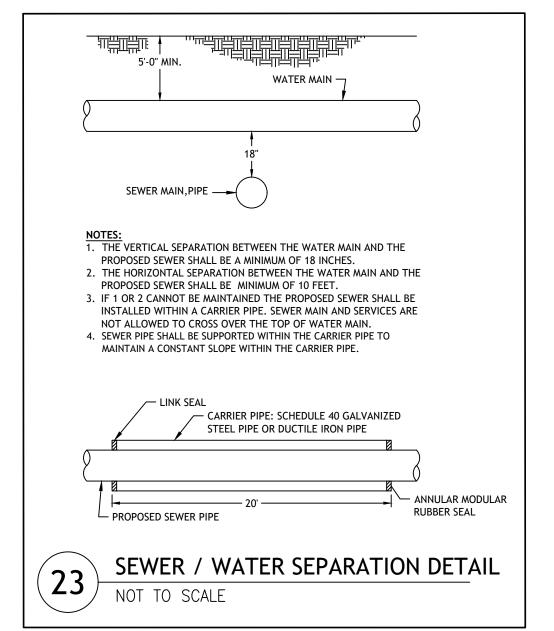
PROJECT NO: 21-71

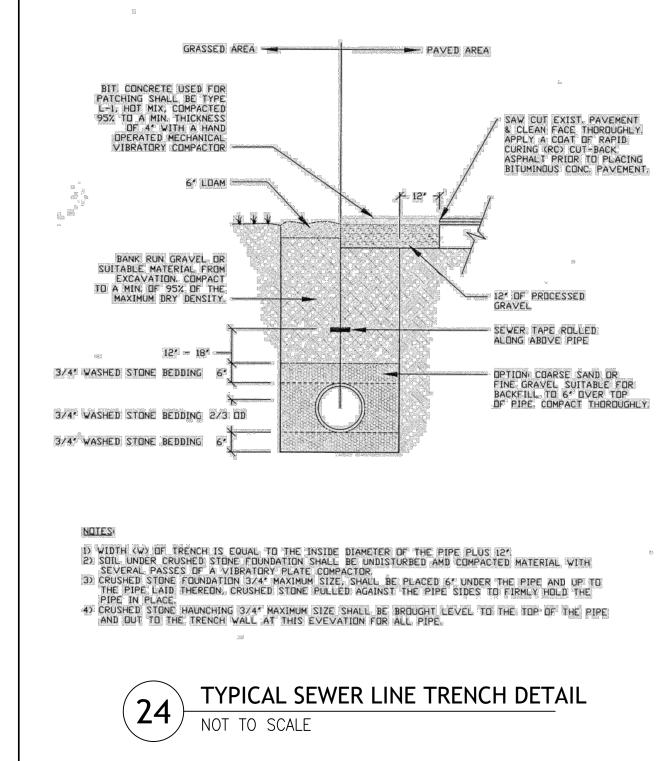
DRAINAGE DETAILS II

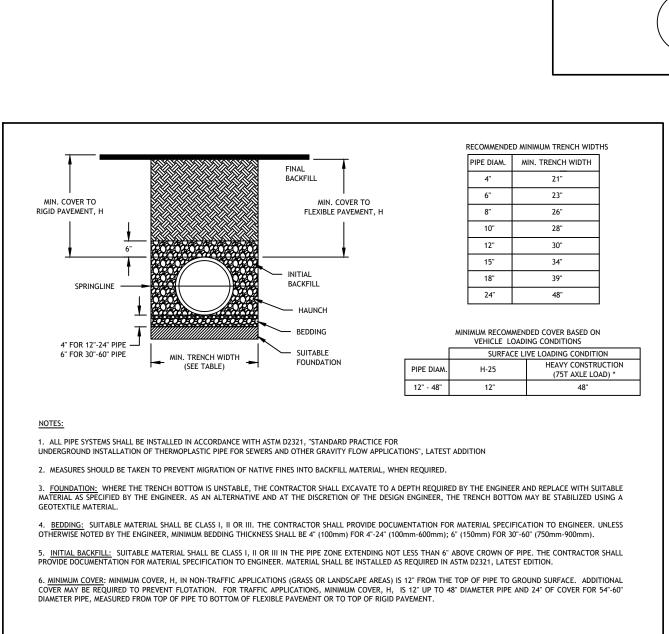
SHEET 14 OF 17





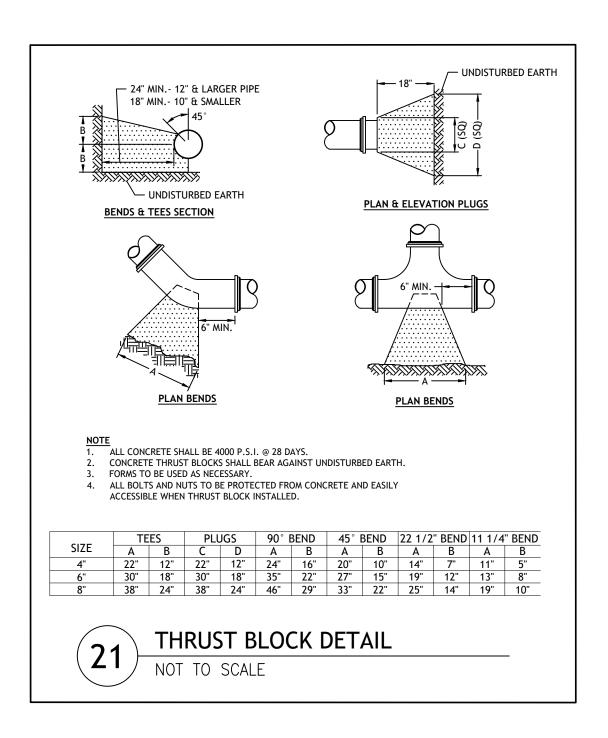


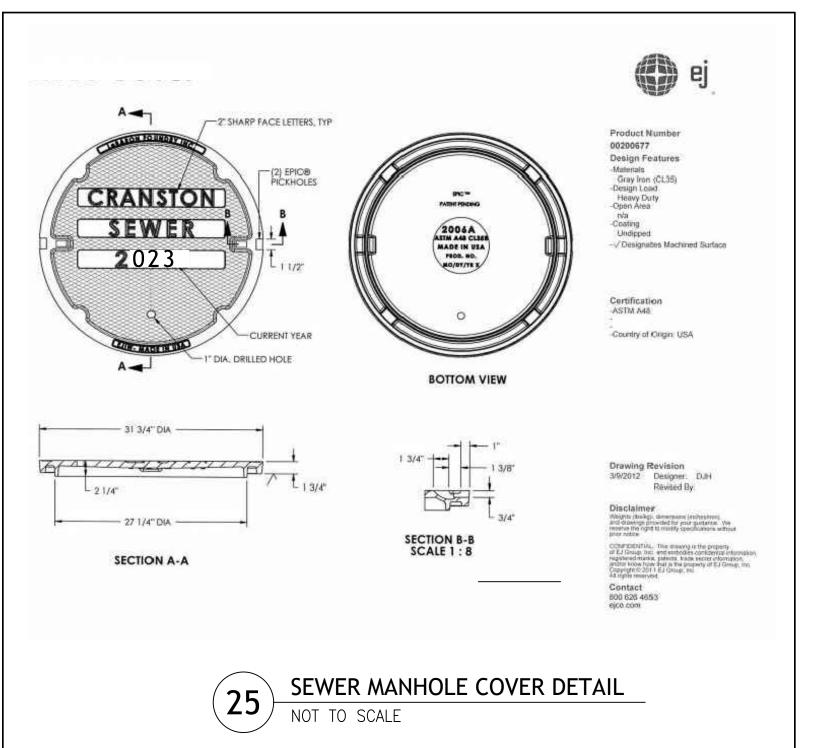


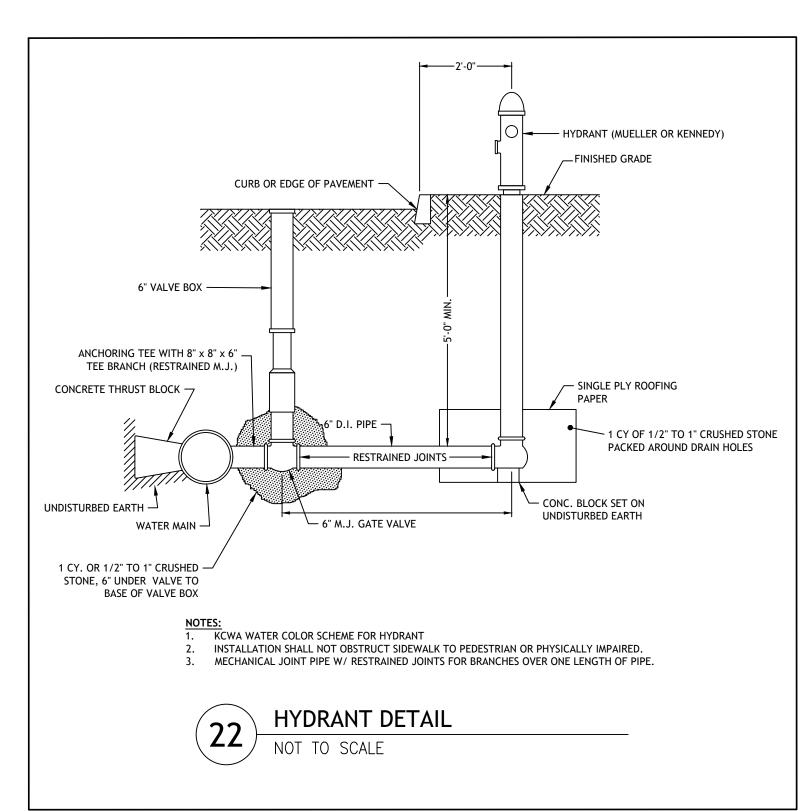


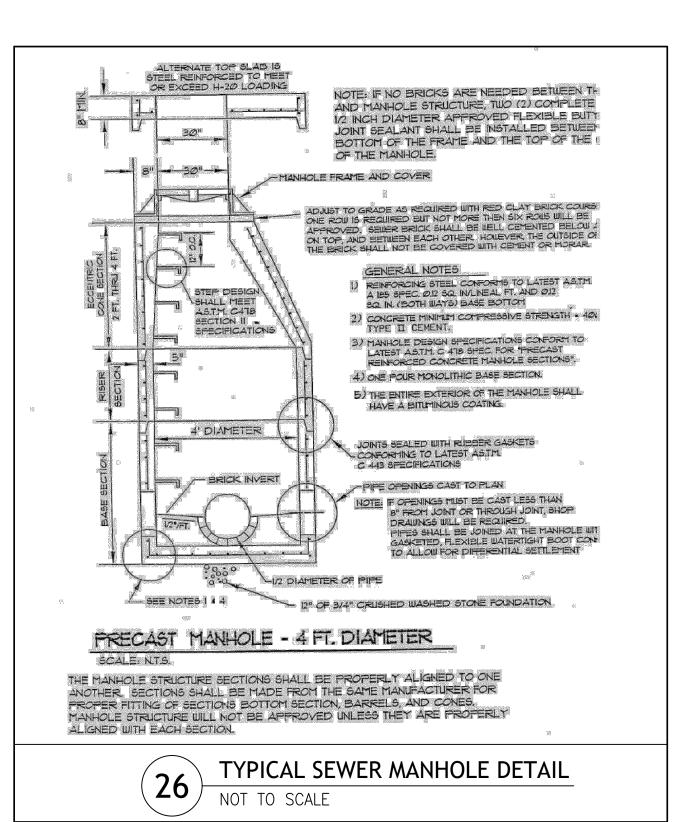
DRAIN PIPE TRENCH INSTALLATION DETAIL

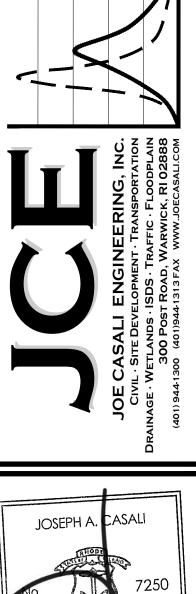
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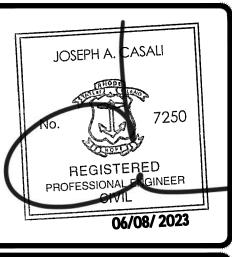












# BRIARWOOD ESTATES A 14-LOT MAJOR SUBDIVISION CRANSTON, RHODE ISLAND AP 18/3, LOTS 1023 & 1026

REVISIONS	<b>:</b>	
NO. DATE.	DESCRIPTION	
R1 4/19/2022	REMOVED LOT 2006	
R2 5/24/2022	REDUCED ROW	
R3 4/6/2023	RIDEM RTC	
R4 4/26/2023	RIDOT RTC	
R5 5/15/2023	KCWA RTC	
R6 6/8/2023	RIDOT/SEWER RTC	
DESIGNED BY: WMLJR		

DESIGNED BY: WMLJR
DRAWN BY: SEP/SD
CHECKED BY: JAC
DATE: MARCH 2022
PROJECT NO: 21-71

PRELIMINARY, NOT FOR CONSTRUCTION

UTILITY DETAILS

SHEET 15 OF 17 TWO (2) EQUAL COURSES TO 95% STANDARD PROCTOR

EACH LENGTH OF PIPE AND OR FITTING SHALL BE INSPECTED FOR CRACKS, DEFECTS IN COATING ON LINING, CLEANLINESS OR ANY OTHER EVIDENCE OF UNSUITABILITY. PIPING SHALL BE LAID STRAIGHT TRUE TO LINE. 3.21.5 AIR RELEASE MANHOLES SHALL BE INSTALLED AT ALL HIGH POINTS THROUGHOUT THE PROPOSED INSTALLATION AND SHALL BE EQUIPPED WITH AUTOMATIC AIR RELEASE VALVES. MANHOLES SHALL BE LOCATED AT ROADWAY CROWNS OR AREAS WHERE IT IS FREE DRAINING AWAY FROM MANHOLE COVERS. MANHOLES SHALL BE WATERTIGHT PRE-CAST CONCRETE CONSTRUCTED WITH WATERTIGHT CAST IRON MANHOLE FRAME (28" CLEAR OPENING) AND DIAMOND CHECK PATTERN COVER. OUTER COVER SHALL HAVE THE WORD "WATER" CAST UPON IT IN 4" CAPITAL LETTERS. THE INNER COVER SHALL BE GASKETED WITH ADJUSTABLE LOCKING BAR DESIGN. THE CHAMBER, FRAME, COVER, AND STRUCTURAL COMPONENTS SHALL BE DESIGNED TO WITHSTAND AN H-20 WHEEL LOADING. MANHOLE STEPS SHALL BE OF SAFETY TYPE, 12" ON CENTER AND SHALL BE CAST INTO THE UNITS DURING THE MANUFACTURING PROCESS. THE DISTANCE FROM THE RIM OF THE COVER FRAME TO THE TOP STEP SHALL BE NO GREATER THAN 12". THE MANHOLE CHAMBER SHALL BE FITTED WITH LEAK TIGHT MECHANICAL PIPE CONNECTIONS PROPERLY SIZED TO FIT THE PROPOSED WATER MAIN. MANHOLES SHALL BE VACUUM OR HYDROSTATICALLY TESTED FOR WATERTIGHT INTEGRITY OF THE MANHOLE INSTALLATION. 3.21.9 HORIZONTAL JOINTS BETWEEN ALL BARRELS, TOP SLAB, BASES, AND ENTRANCES SLAB JOINTS SHALL BE SEALED USING A FLEXIBLE BUTYL RESIN SEALANT CONFORMING TO FEDERAL SPECIFICATIONS SS-S-210A AND AASHTO-M-198B OR EQUAL. THE EXTERIOR OF THE MANHOLE SHALL BE COMPLETELY COATED AND VOID FILLED WITH AN ASPHALTIC. WATERPROOFING COMPOUND. 3.21.10 LINE VALVÉS SHALL BE INSTALLED AT ALL INTERSECTIONS IN A CONFIGURATION THAT ALLOWS FOR ISOLATION IN ALL DIRECTIONS. ON LONG LENGTHS OF MAIN, VALVES SHALL BE INSTALLED AT A MINIMUM OF 800 FEET INTERVALS AND AT ALL DEAD END SECTIONS.

ALLOWABLE DEFLECTION PER PIPE LENGTH AS INDICATED IN THE FOLLOWING TABLES. IT IS REQUIRED THAT BENDS IN THE PIPE BE ACCOMPLISHED BY FITTINGS

3,21.11 PIPE MAY BE DEFLECTED IN ORDER TO MAKE MINOR ADJUSTMENTS IN THE ALIGNMENT. ALL DEFLECTIONS SHALL BE A MAXIMUM OF 75% OF THE MANUFACTURER'S SAFE

BE DEPOSITED ACROSS THE FULL WIDTH AND LENGTH OF THE TRENCH IN LAYERS OF NOT MORE THAN 12" IN DEPTH BEFORE COMPACTION. EACH LAYER, TO WITHIN

2" OF SUB-GRADE OF THE PERMANENT PATCH, SHALL BE COMPACTED TO 95% STANDARD PROCTOR. THE FINAL 12" SHALL BE PROCESSED GRAVEL COMPACTED IN

LLOWABLE DEFLECITON FOR 18-FOOT LENGHTS OF PIPE  $\;\;\;\;$  ALLOWABLE DEFLECTION FOR 20-FOOT LENGHTS OF PIPE SIZE OF PIPE (IN) PUSH-ON JOINT (IN) MECH. JOINT (IN) SIZE OF PIPE (IN) PUSH-ON JOINT (IN) 14-16 14-16 18-20 18-20

3.21.12 WHENEVER PIPE REQUIRES CUTTING TO FIT THE LINE, THE WORK SHALL BE DONE ONLY BY EXPERIENCED (STATE OF RHODE ISLAND, LICENSED CONTRACTOR) OR PLUMBER, AND IN SUCH A MANNER AS TO LEAVE A SMOOTH END AT RIGHT ANGLES TO THE AXIS OF THE PIPE AND ON PIPE THAT IS CENTER ROUNDED DESIGNED SPECIFICALLY FOR FIELD CUTTING. THE CUT ENDS SHALL BE BEVELED TO CONFORM TO THE MANUFACTURED SPIGOT END. PARTICULAR CARE SHALL BE EXERCISED TO PREVENT DAMAGING THE LINING WHEN CUTTING CEMENT-LINED CAST OR DUCTILE IRON PIPE. JOINTING OF PIPE OR FITTINGS SHALL BE MADE ONLY BY PERSONS THOROUGHLY SKILLED IN THIS WORK. FOR PIPE DIAMETERS 16" AND LARGER, PIPE CUTTING SHALL BE DONE BY MACHINE. 3.21.13 BLOCKING UNDER THE PIPE SHALL NOT BE PERMITTED EXCEPT WHERE A CONCRETE CRADLE IS PROPOSED.

3.21.14 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 MAINS. SET TO A DEPTH FROM FINISHED GRADE OF NO MORE THAN 1' - 0". 3.21.15 A TEMPORARY PATCH SHALL BE INSTALLED OVER THE FRESHLY BACKFILLED TRING IT AN EXISTING STREET OR SIDEWALK USING HOT BITUMINOUS CONCRETE. IT

4.9 VALVES:
4.9.1 SHALL BE AT LEAST 3" THICK CONSISTING OF EQUAL THICKNESS LAYERS OF MODIFIED BINDER AND TYPE I-1 WEARING COURSE. AFTER 60 DAYS, THE TEMPORARY PATCH SHALL BE REMOVED AND REPLACED WITH A PERMANENT PATCH. 3.21.16 AT ALL TEMPORARY CUL-DE-SACS AND FUTURE STREETS, THE MAIN SHALL END WITH A FULL SIZE LINE VALVE FOLLOWED BY A FULL LENGTH OF PIPE WITH AN

ADDITIONAL 3-FOOT SECTION OF PIPE AND END WITH A (MJ) CAP, THRUST BLOCK AND 2-INCH STYLE BLOW OFF ASSEMBLY. 3.21.17 WATER DISTRIBUTION MAINS SHALL BE DESIGNED IN A GRID OR LOOP TYPE SYSTEM TO PREVENT THE OCCURRENCE OF DEAD END LINES. WHEN THE POTENTIAL FOR DEAD END LINES EXIST, THE CONTRACTOR SHALL MAKE EVERY EFFORT TO PASS THE MAIN THROUGH THE DEVELOPMENT TO THE NEXT EXISTING DISTRIBUTION LINE. 3.21.17.1 IN ALL CASES WHERE A DEAD END MAIN IS TO BE INSTALLED ON A DEAD END STREET OR CUL-DE-SAC THE KENT COUNTY WATER AUTHORITY RESERVES THE RIGHT

TO HAVE THE MAIN EXTENDED TO ANOTHER EXISTING MAIN OR LOOPED BACK TO THE FEEDER MAIN WITH PROPER VALVING TO PREVENT A DEAD END MAIN CONDITION. 3.21.18 WATER MAINS SHALL BE LAID WITH A MINIMUM OF TEN-FOOT HORIZONTAL CLEARANCE FROM ANY EXISTING SEWER FACILITIES. THE DISTANCE SHALL BE MEASURED EDGE TO EDGE. WATER MAINS CROSSING UNDER SEWERS SHALL BE FORBIDDEN. WATER MAINS CROSSING OVER SEWERS SHALL BE LAID TO PROVIDE A MINIMUM

VERTICAL SEPARATION OF FIGHTEEN-INCHES RETWEEN THE INVERT OF THE WATER MAIN AND THE CROWN OF THE SEWER RE-ALIGNMENT OF AN EXISTING WATER MAIN OR RELOCATION OF THE SEWER MAY BE NECESSARY TO ACHIEVE THIS VERTICAL SEPARATION. THE GENERAL MANAGER/CHIEF ENGINEER MUST APPROVE ANY DEVIATION FROM THESE REQUIREMENTS. CONCRETE ENCASEMENT SHALL NOT BE ALLOWED IN THE DESIGN FOR SEWER AND WATER MAIN CROSSINGS. AT ALL TIMES, DURING CONSTRUCTION, ALL PIPING AND FITTINGS SHALL BE KEPT FROM BECOMING CONTAMINATED FROM CONSTRUCTION MATERIALS, DIRT, NON POTABLE WATER, YARD WASTE OR SUBSTANCES PRODUCED AS A RESULT OF ANIMALS, RODENTS, AND INSECTS. WITHOUT EXCEPTION, ALL STORED PIPING SHALL BE TIMBER CRIBBED ABOVE GRADE, AND SHALL BE FITTED WITH WATERTIGHT PLUGS OR PLASTIC SHEET SECURELY FASTENED TO THE PIPE. ALL VALVES, FITTINGS, AND APPURTENANCES SHALL BE FITTED WITH CAPS, PLUGS OR PLASTIC SHEET SECURELY FASTENED TO THE FITTING. THE IMPLEMENTATION OF THESE PROTECTIVE MEASURES IS REQUIRED TO REDUCE THE SIGNIFICANT LOSS OF WATER AND LABOR HOURS EXPENDED DURING MULTIPLE ATTEMPTS TO SUFFICIENTLY CLEAN THE NEW

3.21.20 ADEQUATE, TEMPORARY PROVISIONS SHALL BE MADE TO CARE FOR THE FLOW FROM SEWERS OR DRAINS INTERFERED WITH BY THE WORK. ALL NECESSARY MEASURES SHALL BE TAKEN TO PREVENT SEWAGE OR OTHER CONTAMINATING MATTER FROM ENTERING THE WATER MAIN. ANY BROKEN OR DAMAGED UTILITY CONNECTION OR SERVICES (WATER, SEWER, GAS, TELEPHONE, ELECTRIC, ETC.) SHALL BE FULLY REPAIRED AT THE EXPENSE OF THE PARTY RESPONSIBLE FOR THE DAMAGE. UNDERGROUND STRUCTURES SHALL BE THOROUGHLY SUPPORTED OR OTHERWISE PROTECTED TO MAINTAIN UNINTERRUPTED SERVICE.

MAINS TO MEET THE WATER QUALITY STANDARD SET BY THE US EPA PRIMARY DRINKING WATER REGULATIONS.

BE REQUIRED TO PROVIDE THE REQUIRED VELOCITIES WITHIN THE NEW MAIN.

3.21.21 PIPE THAT IS REMOVED SHALL REMAIN THE PROPERTY OF THE PARTY WHOSE RESPONSIBILITY IT SHALL BE TO PROPERLY DISPOSE OF IT. FOR EXAMPLE, IF A PRIVATE CONTRACTOR IS AUTHORIZED TO DO THIS WORK, THE CONTRACTOR IS THE RESPONSIBLE PARTY AND MUST DISPOSE OF THE PIPE. 3.21.22 NO PERSON, EXCEPT AN AUTHORIZED REPRESENTATIVE OF THE KENT COUNTY WATER AUTHORITY OR UNDER THEIR OBSERVATION, WILL BE ALLOWED UNDER ANY

CIRCUMSTANCES TO TAP THE MAINS OR DISTRIBUTION PIPES, INSERT CORPORATION STOPS THEREIN, SET OR REMOVE METERS ON SERVICE PIPES, OR INTERFERE WITH 3.21.23 NO NEW PIPING SYSTEM SHALL BE PERMANENTLY CONNECTED TO AN EXISTING KENT COUNTY WATER AUTHORITY MAIN UNTIL AFTER OBTAINING SUCCESSFUL RESULTS FROM WATER QUALITY TESTS FROM A STATE OF RHODE ISLAND CERTIFIED LABORATORY MEETING THE STANDARDS SET BY RI DEPARTMENT OF HEALTH, AND WATER

QUALITY TEST INDICATE THAT THE SAMPLES ARE CONSISTENT WITH THE QUALITY OF WATER IN THE KENT COUNTY WATER AUTHORITY SYSTEM, INCLUDING HETEROTROPHIC PLATE COUNT RESULTS. 3.21.24 TEMPORARY FITTINGS FOR FLUSHING, PRESSURE TESTING AND CHLORINATION ARE REQUIRED FOR ALL NEWLY INSTALLED MAINS. NEW MAINS SHALL BE CAPPED AT EACH END. EACH END SHALL BE FITTED WITH A TEMPORARY RISER OF SUFFICIENT LENGTH TO REACH FINISHED GRADE AND AN ISOLATION VALVE. THE LIVE MAIN TAP SHALL BE FITTED WITH AN ISOLATION VALVE, TWO FEET OF MAIN THAT IS RESTRAINED, RESTRAINED CAP AND TEMPORARY RISER OF SUFFICIENT LENGTH TO REACH FINISHED GRADE AND AN ISOLATION VALVE. RISERS AND ISOLATION VALVES SHALL BE SIZED TO PROVIDE A FLUSHING WATER VELOCITY OF AT LEAST 2.5 FEET

PER SECOND BASED ON THE INSTALLED MAIN SIZE. A METER AND TESTABLE BACKFLOW PREVENTER IS REQUIRED TO BE PLACED IN THE JUMPER LINE BETWEEN THE

EXISTING AND NEW MAIN PRIOR TO OBTAINING WATER FOR ANY PROCESS. DEPENDING ON THE SIZE OF THE MAIN, MULTIPLE TAPS AND BACKFLOW PREVENTERS MAY

3.22 PRESSURE TEST:
3.22.1 ALL SERVICES, WATER MAINS, BYPASS PIPING AND APPURTENANCES MUST BE INSTALLED PRIOR TO COMMENCEMENT OF ANY TEST. A PRESSURE TEST SHALL BE CONDUCTED ON ALL COMPLETED WATER LINES PRIOR TO ACCEPTANCE. THE PROPOSER, AT NO COST TO THE KENT COUNTY WATER AUTHORITY, SHALL ACCOMPLISH THE PRESSURE TEST. AN AUTHORIZED REPRESENTATIVE OF THE KENT COUNTY WATER AÚTHORITY SHALL WITNESS THE TEST. EACH VALVE SECTION OF THE MAIN SHALL BE FILLED SLOWLY WITH WATER AT A RATE NO GREATER THAN ONE FOOT OF PIPE SECTION PER SECOND. ALL AIR SHALL BE RELEASED VIA CORPORATION STOPS, HYDRANTS, AND INSTALLED AUTOMATIC AIR RELEASE FITTINGS. ALL AIR MUST BE REMOVED AND THE FULL PIPE SHALL SIT IDLE FOR A PERIOD OF 24 HOURS PRIOR TO COMMENCEMENT OF THE PRESSURE TEST. PIPING INSTALLATIONS GREATER THAN 1,000 FEET SHALL BE ACCOMPLISHED IN

SECTIONS NO GREATER THAN L.000 FEET THE TEST PRESSURE SHALL BE BROUGHT UP TO AT LEAST 50% HIGHER THAN THE NORMAL ANTICIPATED WORKING PRESSURE, OR 150 PSI, WHICHEVER IS GREATER, AND MAINTAINED FOR A CONTINUOUS TWO (2) HOUR PERIOD. AN AUTHORIZED REPRESENTATIVE OF THE KENT COUNTY WATER AUTHORITY SHALL WITNESS THE TEST. ANY LOSS OF PRESSURE INDICATES A LEAK, AND NO PIPE INSTALLATION WILL BE ACCEPTED WITH ANY LEAKAGE. PROPER THRUSTING OF ALL PIPEFITTING, CAPS, HYDRANTS, AND APPURTENANCES SHALL BE PROVIDED TO RESIST THE IMPOSED TEST PRESSURE.

ALL NEW OR REPAIRED POTABLE WATER SYSTEM DISTRIBUTION MAINS, SERVICE PIPE AND THE NECESSARY CONNECTING PIPES, FITTINGS, CONTROL VALVES, AND ALL APPURTENANCES IN OR ADJACENT TO ANY RESIDENCE, BUILDING OR PREMISES SHALL BE PURGED OF DELETERIOUS MATTER AND SHALL BE DISINFECTED PRIOR TO UTILIZATION OR PERMANENT CONNECTION TO THE KENT COUNTY WATER AUTHORITY SYSTEM. THAT PORTION OF THE CUSTOMER'S SERVICE PIPE AFTER THE CURB STOP SHALL BE DISINFECTED UNDER THE SUPERVISION OF THE LOCAL PLUMBING OFFICIAL. THE OWNER MUST PROVIDE WRITTEN LABORATORY CERTIFIED DOCUMENTATION OF THE DISINFECTION TEST RESULTS TO THE KENT COUNTY WATER AUTHORITY BEFORE MAKING ANY PERMANENT CONNECTION TO THE KENT COUNTY WATER AUTHORITY SYSTEM OR BEFORE REACTIVATION OF ANY EXISTING WATER SERVICE CAN BE AUTHORIZED. PLEASE REFER TO APPENDICES FOR PROGRAM REQUIREMENTS OF THE CUSTOMER WATER SERVICE DISINFECTION POLICY.

THE PROPOSER OR THE CONTRACTOR FOR THE PROPOSER, IN ACCORDANCE WITH CHAPTER 5, DISTRIBUTION SYSTEM CHLORINATION, AMERICAN WATER WORKS ASSOCIATION MANUAL #20, SHALL PERFORM CHLORINATION. TABLET CHLORINATION SHALL NOT BE ALLOWED.

THE OWNER OR CUSTOMER IS RESPONSIBLE FOR ALL COSTS ASSOCIATED WITH THE DISINFECTION PROCESS OR PROCEDURE THE DISINFECTION MUST RESULT IN ELIMINATING FROM THE VARIOUS PARTS OF THE NEW PIPE LINE ANY EVIDENCE OF THE EXISTENCE, THEREIN, OF BACTERIA INDICATIVE OF ANY CONTAMINATION, AS DETERMINED BY TESTS OF THE BACTERIAL CONTENT OF SAMPLES OF WATER TAKEN FROM THE NEW WATER MAIN. THE DISINFECTION MAY BE ACCOMPLISHED BY INTRODUCING INTO ALL THE VARIOUS PARTS OF THE NEW WATER MAINS, A LIQUID SOLUTION CONTAINING L% AVAILABLE CHLORINE IN SUCH VOLUME THAT THE RATE OF DOSAGE TO THE WATER MAINS SHALL BE AT LEAST 50 PARTS PER MILLION OF AVAILABLE CHLORINE. TABLET CHLORINATION IS NOT ALLOWED. THE CONTACT PERIOD FOR THIS DISINFECTION SHALL BE AT LEAST 24 HOURS, AND A LONGER PERIOD WILL BE REQUIRED IF TESTS OF RESIDUAL CHLORINE SHOW IT TO BE NECESSARY FOR PROPER DISINFECTION. THE NEW WATER SYSTEM SHALL BE FLUSHED OUT AFTER DISINFECTION AND REFILLED WITH FRESH WATER. ALL CHLORINATED WATER USED IN THE DISINFECTION

PROCESS SHALL BE DE-CHLORINATED PRIOR TO DISCHARGE TO THE SURROUNDING AREA. WATER MUST SIT IN THE MAIN FOR AT LEAST 24 HOURS PRIOR TO TAKING A TEST SAMPLE. WATER UTILIZED FOR THIS PURPOSE, FLUSHING OR PRESSURE TESTING. WHICH IS OBTAINED DIRECTLY FROM THE KENT COUNTY WATER AUTHORITY SYSTEM, MUST FLOW THROUGH AN ISOLATED CONNECTION TO THE KENT COUNTY WATER AUTHORITY SYSTEM VIA AN APPROVED METER. TESTABLE BACKFLOW PREVENTION DEVICE AND JUMPER LINE. THE CONTRACTOR SHALL MAKE ALL NECESSARY ARRANGEMENTS FOR SECURING THE WATER FOR TEST PURPOSES AND SHALL BEAR THE EXPENSE OF THESE ARRANGEMENTS. THE INSTALLER SHALL FURNISH AND INSTALL SUITABLE TEMPORARY TESTING PLUGS, CAPS, PUMPS, PIPE CONNECTIONS AND OTHER APPURTENANCES, AS NECESSARY, TO OBTAIN SAMPLES AT POINTS NO

FURTHER THAN 1.000 FEET APART AFTER FINAL FLUSHING AND BEFORE THE NEW WATER MAIN IS CONNECTED TO THE DISTRIBUTION SYSTEM, TWO CONSECUTIVE SETS OF ACCEPTABLE SAMPLES FOR COLIFORM BACTERIA AND HETEROTROPHIC PLATE COUNT (HPC), TAKEN 24 HOURS APART, SHALL BE COLLECTED FROM THE TERMINATION OF THE NEW MAIN. AT LEAST ONE SAMPLE SHALL BE COLLECTED EVERY 1000 FT. OF NÉW MAIN, PLUS ONE SET OF TWO SAMPLES FROM THE END OF THE LINE. AT LEAST ONE SET OF TWO SAMPLES SHALL BE TAKEN FROM EACH BRANCH. SAMPLES SHALL BE COLLECTED BY KENT COUNTY WATER AUTHORITY EMPLOYEES, GIVEN A TWO-DAY NOTICE, AND TESTED BY A LABORATORY APPROVED BY KENT COUNTY WATER AUTHORITY. A FEE SHALL BE IMPOSED FOR THE SAMPLING TESTING FOR EACH TEST. THE FEE SHALL BE AT THE CURRENT RATE SCHEDULE IN EFFECT AT THE TIME OF TESTING. PAYMENT SHALL BE PRIOR TO SAMPLE COLLECTION BY THE KENT COUNTY WATER AUTHORITY. THE WATER SAMPLE TEST RESULTS MUST INDICATE THAT THE WATER QUALITY IN THE NEW MAIN IS CONSISTENT IN QUALITY WITH THE KENT COUNTY WATER AUTHORITY SYSTEM WATER.

INFRASTRUCTURE COMPATIBILITY. ALL MATERIALS USED WITHIN THE KENT COUNTY WATER AUTHORITY SHALL BE MADE IN UNITED STATES OF AMERICA OR SPECIFICALLY

CONFIGURATION MANAGEMENT FOR THE SYSTEM WIDE STANDARDIZATION OF REPAIR PARTS, APPURTENANCES, AND CONSTRUCTION MATERIALS ARE NECESSARY TO MAINTAIN REASONABLE SPARE PARTS INVENTORIES FOR EMERGENCY REPAIRS AND CONTROL THE RELATED COST TO THE BENEFIT OF THE CUSTOMER. FOR THESE REASONS, THE KENT COUNTY WATER AUTHORITY HAS SELECTED MATERIAL STANDARDS THAT PROVIDE THE GREATEST SERVICE LIFE, RELIABILITY AND ARE CONSISTENT WITH OVERALL

APPROVED OTHERWISE AND CONFORM TO THE STANDARD REQUIREMENTS CONTAINED IN THIS SECTION.

SERVICE PIPE SIZES ¾ TO 2 INCH SHALL BE EITHER COPPER OR H.D.P.E. PIPE. COLOR MUST BE BLUE WITH A VIRGIN CLEAR NATURAL CENTER. CONTINUOUS IDENTIFICATION MARKINGS OVER THE ENTIRE LENGTH OF THE PIPE WITH SEALED ENDS AND COILED IN ROLLS FROM 100 FT. MINIMUM. WHEN H.D.P.E. SERVICE PIPE IS CHOSEN. A SOLID STAINLESS STEEL INSERT SHALL BE INSTALLED AT EACH CONNECTION AND A 12-FOOT TYPE "K" COPPER WHIP SHALL BE INSTALLED AT THE POINT OF ENTRY INTO ANY BUILDING OR STRUCTURE, AND ON THE INLET AND OUTLET OF A METER PIT. 4.2.1.1 H.D.P.E. SHALL CONFORM TO ASTM D1248 TYPE III, GRADE P34, CLASS A, CATEGORY 5, COLOR BLUE WITH VIRGIN CLEAR NATURAL CENTER. AWWA C901, 200

4.2.1.2 COPPER PIPE SHALL BE TYPE "K" COPPER TUBING DESIGNED FOR POTABLE WATER SERVICE ANSI/ASTM B88. 4.2.2 SERVICES 3 INCH AND ABOVE SHALL BE DUCTILE IRON AND CONFORM TO THE REQUIREMENTS FOR MAIN MATERIALS AND INSTALLATION.

ALL METERS SHALL BE COMPATIBLE WITH THE SYSTEM UTILIZED BY THE KENT COUNTY WATER AUTHORITY. THE NEPTUNE E-CODER R-900: SYSTEM IS STANDARDIZED ALL METERS ARE TO READ IN CUBIC FEET. MUST BE CAPABLE OF BEING READ THE RADIO FREQUENCY SYSTEM IN PLACE AT THE KENT COUNTY WATER AUTHORITY. REGISTER SHALL CONTAIN A 9-DIGIT LOCAL REGISTRATION AND 4-8 DIGITS CAN BE COMMUNICATED FOR BILLING PURPOSES. ANY METER LOCATED IN A METER PIT OR CHAMBER SHALL BE EQUIPPED WITH REGISTERS DESIGNED SPECIFICALLY FOR MOISTURE PROTECTION AND "PIT" STYLE ALL FIRE SERVICE METERS SHALL BE IN ACCORDANCE WITH THE KENT COUNTY WATER AUTHORITY AND NFPA STANDARDS WITH UL/FM APPROVED STRAINER DESIGNED

FOR FIRE SERVICE.

PSI (CTS).

4.5 AIR RELEASE MANHOLE:

AIR RELEASE MANHOLES SHALL BE WATERTIGHT PRE-CAST CONCRETE CONSTRUCTED WITH WATERTIGHT CAST IRON MANHOLE FRAME AND DIAMOND CHECK PATTERN COVER. COVER SHALL HAVE THE WORD "WATER" CAST UPON IT IN 4 INCH CAPITAL LETTERS. THE CHAMBER, FRAME, COVER, AND STRUCTURAL COMPONENTS SHALL BE DESIGNED TO WITHSTAND A H-20 WHEEL LOADING. THE FRAME AND WATERTIGHT COVER ASSEMBLY MUST CONFORM TO THE REQUIREMENTS OF THE KENT COUNTY WATER AUTHORITY FOR SIZE AND DIMENSION. MANHOLE SHALL BE OUTFITTED WITH CORROSION RESISTANT, NON-SLIP STEPS.

RESTRAINING DEVICES SHALL BE UTILIZED ON ALL MAINS. THRUST BLOCKS SHALL BE CONSTRUCTED FROM CONCRETE 3000 PSI AT 28 DAYS, SIZED ACCORDING TO THE SIZE OF PIPELINE, TYPE OF FITTING, WATER PRESSURE AND THE CHARACTERISTICS OF THE SOIL. THE CONCRETE SHALL BE PROPERLY FORMED AS TO SLOPE FOR THE GIVEN APPLICATION AND BEARING WIDTH. THE CONCRETE SHALL BE IN CONTACT ONLY WITH THE FITTING, NOT WITH THE PIPE ITSELF, FASTENERS OR THE JOINT CONCRETE CURING TIME SHALL BE A MINIMUM OF 7 DAYS. THRUST RESTRAINT MAY BE VIA RESTRAINED JOINT, DUCTILE IRON PIPE MEETING ANSI/AWWA C151/A21.51 AND ANSI/AWWA C11/A21. RESTRAINED JOINT PIPE LENGTHS (RESTRAINED LENGTH) SHALL BE SUFFICIENT TO RESTRAIN THRUST IMPARTED BY 1-1/2 TIMES THE ANTICIPATED WORKING PRESSURE BUT NOT LESS THAN

GLAND AND RESTRAINT COMPONENTS MADE FROM DUCTILE IRON AND SHALL HAVE A BITUMINOUS OUTSIDE COATING IN ACCORDANCE WITH ANSI/AWWA C151/A21.51 AND ANSI/AWWA C153/A21.53 RESPECTIVELY. CAPABLE OF BEING USED WITH STANDARDIZED MECHANICAL JOINT BELL CONFORMING TO AWWA C111 AND C153. MULTIPLE WEDGE STYLE RESTRAINT MECHANISM WITH POWDER COATED HEAT-TREATED DUCTILE IRON WEDGES. PROPER ACTUATION ENSURED BY TOROUE LIMITING TWIST OFF NUTS. MINIMUM SAFETY FACTOR 2 TO 1. RESTRAINED JOINTS SHALL BE SUITABLE FOR 150 PSL WORKING PRESSURE AND FABRICATED OF HEAVY SECTION DUCTILE IRON CASTING. GASKETS SHALL MEET THE MATERIAL REQUIREMENTS OF ANSI/AWWA C111 FOR MECHANICAL JOINT GASKETS. BOLTS AND NUTS AS REQUIRED SHOULD BE LOW CARBON STEEL CONFORMING TO ASTM A307, GRADE B.

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 ANSI/AWWA C151/A21.51, ANSI/AWWA C150/A21.50 CLASS 52 DOUBLE CEMENT MORTAR LINED. GASKETS SHALL CONFORM TO ANSI/AWWA C111/A21.1. ALL PIPES SHALL HAVE A BITUMINOUS OUTSIDE COATING IN ACCORDANCE WITH ANSI/AWWA C151/A21.51 AND ANSI/AWWA C153/A21.53 RESPECTIVELY. ALL PIPES SHALL BE CEMENT-MORTAR LINED AND SEAL COATED IN ACCORDANCE WITH ANSI/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 ANSI/AWWA C111. ALL MECHANICAL JOINT PIPES SHALL BE SUPPLIED WITH ACCESSORIES. RESTRAINED JOINTS SHALL BE SUÍTABLE FOR 150 PSI WORKING PRESSURE AND FABRICATED OF HEAVY SECTION DUCTILE IRON CASTING. GASKETS SHALL MEET THE MATERIAL REQUIREMENTS OF ANSI/AWWA AND MADE IN THE USA.

DUCTILE IRON MEETING ANSI/AWWA C151/A21.51 ANSI/AWWA C150/A21.50.

CLASS: SPECIAL THICKNESS CLASS 52. DOUBLE CEMENT MORTAR MEETING ANSI/AWWA C151/A21.5 END JOINTS: PUSH ON - TYTON STYLE ONLY - MEETING ANSI/AWWA C111/A21.51.

MECHANICAL JOINT - MEETING ANSI/AWWA C111/A21.11. COATING: EXTERIOR: ANSI/AWWA C104/A21.4. INTERIOR: ALL REQUIREMENTS OF EPA FOR POTABLE WATER.

RUBBER MEETING ANSI/AWWA C111/A21.11. NITRILE (IN CONTAMINATED SOIL)

NITRILE (IN CONTAMINATED SOIL)

DUCTILE IRON FITTINGS SHALL CONFORM TO ANSI/AWWA C153/A21.53. FOREIGN FITTINGS, GASKET GLANDS AND ACCESSORIES ARE STRICTLY FORBIDDEN. ALL FITTINGS SHALL HAVE A BITUMINOUS OUTSIDE COATING IN ACCORDANCE WITH ANSI/AWWA C151/A21.51 AND ANSI/AWWA C153/A21.53 RESPECTIVELY. ALL FITTINGS SHALL BE CEMENT-MORTAR LINED AND SEAL COATED IN ACCORDANCE WITH ANSI/AWWA C104/A21.14 EXCEPT THE LINING THICKNESS SHALL BE TWICE THAT SPECIFIED. JOINTS FOR FITTINGS SHALL BE MECHANICAL JOINT CONFORMING TO ANSI/AWWA C111. ALL MECHANICAL JOINT FITTINGS SHALL BE SUPPLIED WITH GLANDS AND ACCESSORIES.

4 INCH TO 12 INCH DUCTILE IRON COMPACT MEETING ANSI/AWWA C153/A21.53. 16 INCH AND LARGER DUCTILE IRON MEETING ANSI/AWWA C153/A21.53 OR ANSI/AWWA C110/A21.10. PRESSURE CLASS: PIPE FITTINGS SHALL HAVE A PRESSURE RATING OF 350 FOR 24-INCH AND SMALLER AND 250 PSI FOR 30-INCH AND LARGER. FITTINGS SHALL AT A MINIMUM HAVE THE SAME PRESSURE RATING AS THE CONNECTING PIPE. GASKETS: RUBBER MEETING ANSI/AWWA C111/A21.11.

WEDGES

VALVES SHALL BE CAST IRON OR DUCTILE IRON 250-PSI WORKING PRESSURE. OPERATING STEM SHALL BE PROVIDED WITH A MINIMUM OF TWO (2) O-RING STEM SEALS. BONNET AND GLAND BOLTS/WASHERS SHALL BE STAINLESS STEEL. WEDGES SHALL BE FULLY ENCAPSULATED. THE INTERIOR AND EXTERIOR SURFACES OF ALL CAST IRON OR DUCTILE IRON COMPONENTS SHALL BE FUSION BOND EPOXY COATED, 8 MILS MINIMUM THICKNESS. EPOXY COATING MUST BE UNDAMAGED WITH NO CHIPS OR ABRASIONS. FIELD TOUCH-UP OF INTERIOR COATING IS NOT ALLOWED. FIELD TOUCH-UP OF EXTERIOR SURFACES SHALL BE IN ACCORDANCE WITH MANUFACTURES RECOATING SPECIFICATIONS ONLY. CONTRACTORS SHALL USE SPECIAL HANDLING AND INSTALLATION PRECAUTIONS WITH THE USE OF EPOXY COATED VALVES AS NECESSARY TO ENSURE THAT NO COATING SYSTEM DAMAGE OCCURS. AT A MINIMUM FIBER SLINGS OR BELTS SHALL BE USED FOR ALL HANDLING. ALL EPOXY-COATED VALVES SHALL BE PALLETIZED AND PROPERLY SHRINK-WRAPPED UPON DELIVERY TO ASSURE COATING SYSTEM INTEGRITY IS NOT COMPROMISED. ALL EPOXY VALVES FOUND MISHANDLED AT DELIVERY OR DURING INSTALLATION SHALL BE REJECTED AND REMOVED FROM THE JOB SITE. ALL VALVES SHALL BE MANUFACTURED TO MEET OR EXCEED AWWA C509 AND ISO 9000 ALONG WITH THE DESIGN AND OPERATING CHARACTERISTICS OF THE FOLLOWING DEVICES

4.9.1.1 RESILIENT SEAT GATE 4 INCH TO 12 INCH: BURIED SERVICE NON-RISING STEM. ABOVE GRADE SERVICE OR PITS OS & Y WITH HAND WHEEL OR NON-RISING STEM WITH HAND WHEEL. WORKING PRESSURE: 250 PSI.

LEFT OR RIGHT DEPENDING ON SYSTEM LOCATION. 420 STAINLESS STEEL OR EQUAL WITH MINIMUM 60,000 PSI YIELD STRENGTH.

STAINLESS STEEL TYPE 304 FOR ALL OF THE VALVE INTERNAL & EXTÉRIOR TO BE COATED WITH FUSE BONDED HOLIDAY FREE EPOXY COATING MINIMUM 8 MILS NOMINAL THICKNESS MEETING OR COATINGS:

EXCEEDING AWWA C550 FULLY RUBBER ENCAPSULATED CAST IRON, DUCTILE IRON OR BRONZE GATE MEETING AWWA C509.

OPERATING NUT: 2 INCH SQUARE OPERATING NUT WITH HEXAGON STAINLESS STEEL BOLT FASTENER. STEM SEAL: MINIMUM TWO O-RING SEALS. CONNECTION: MECHANICAL JOINT.

**4.9.1.2** BUTTERFLY 16" AND LARGER: RUBBER SEATED TIGHT CLOSING OR EXCEEDING AWWA C504 UNDERGROUND SERVICE. CLASS 150 OR 250 DEPENDING UPON SERVICE APPLICATION

GRADE 18-8 TYPE 304 STAINLESS STEEL VALVE VANE/DISC: DUCTILE IRON OR HIGH STRENGTH CAST IRON WITH EITHER MECHANICALLY FASTENED BUNA RUBBER SEAL OR TYPE 316 STAINLESS STEEL SEAL STAINLESS STEEL OR BUNA N RUBBER. RUBBER SEAT CAN BE EITHER BONDED OR MECHANICALLY FASTENED AND SHALL NOT INTERRUPT FLOW. DUAL LINK CONSTRUCTION WITHIN A SEALED HOUSING FOR UNDERGROUND USE DESIGNED FOR SUBMERGENCE IN WATER TO 25 FEET OF HEAD

AND MEETING AWWA C504. VALVE NUT SHALL BE MINIMUM OF TWO-INCH SQUARE MADE OF DUCTILE IRON AND FASTENED TO STEM. OPERATOR TO BE TRAVELING NUT TYPE CAPABLE OF WITHSTANDING AN OVERLOAD INPUT TORQUE OF 450 FOOT-POUNDS WITHOUT DAMAGE TO THE VALVE OR OPERATOR LEFT OR RIGHT DEPENDING ON SYSTEM LOCATION. GRADE 18-8 STAINLESS STEEL, TYPE 304 FOR ALL FASTENERS OF THE VALVE.

**FASTENERS:** COATINGS: INTERIOR & EXTERIOR TO BE COATED WITH FUSE BONDED HOLIDAY FREE EPOXY MINIMUM THICKNESS 8 MILS NOMINAL MEETING OR EXCEEDING AWWA C-550 CONNECTION: MECHANICAL JOINT OR FLANGED.

4.9.1.3 TAPPING SLEEVES AND VALVES: VALVES SHALL BE FULL BODY AND FULL PORT TAPPING TYPE MEETING THE REQUIREMENTS PARAGRAPH 4.9.1.1 ABOVE. SLEEVES SHALL BE FULL PORT DUCTILE IRON OR GRADE 18-8 TYPE 304 STAINLESS STEEL. DUCTILE IRON SLEEVES SHALL BE OF THE SAME MANUFACTURER AS OF THE VALVE AND BITUMINOUS COATED. ALL SLEEVES SHALL BE MANUFACTURED TO MEET OR EXCEED THE DESIGN AND OPERATING CHARACTERISTICS OF ONE OF THE FOLLOWING DEVICES: RESILIENT SEAT GATE VALVES DESIGNED SPECIFICALLY FOR TAPPING.

STAINLESS STEEL SLEEVES SHALL USE GRID PATTERN VIRGIN RUBBER ASTM 2000, FULL 360-DEGREE PIPE COVERAGE. DUCTILE IRON SLEEVES SHALL USE MECHANICAL JOINT WITH RUBBER SEALS. MAXIMUM WORKING PRESSURE: 4 INCH-12 INCH 250 PSE, 16 INCH-24 INCH 200 PSI. FASTENER: GRADE 18-8 TYPE 304 STAINLESS STEEL. **4.9.1.4** SWING-CHECK:

4.9.1.4.1 SWING CHECK VALVES SHALL UTILIZE IRON-BODY BRONZE-MOUNTED DESIGN. THEY MAY EMPLOY METAL TO METAL OR COMPOSITION TO METAL SEAT CONSTRUCTION. 4.9.1.4.2 WORKING PRESSURE SHALL BE A MINIMUM OF 175 PSI FOR VALVES UP TO 12 INCH AND 150 PSI FROM 16 INCH TO 24 INCH.

4.9.1.4.3 SWING CHECK VALVES SHALL BE MOUNTED IN A HORIZONTAL POSITION. DIRECT ACCESS TO THE VALVE SHALL BE ACCOMPLISHED BY USING A PRE-CAST CONCRETE MANHOLE WITH HEAVY-DUTY CAST IRON MANHOLE FRAME AND SOLID COVER. CONCRETE STRUCTURE AND COVER SHALL BE CAPABLE OF WITHSTANDING AN ASHTO H-20 LOAD. THE COVER SHALL HAVE A DIAMOND CHECK PATTERN WITH THE WORD "WATER" (IN UPPER CASE LETTERS) CAST UPON IT. THE MANHOLE SHALL BE OUTFITTED WITH CORROSION RESISTANT, NON-SLIP, STEPS.

4.9.2.1 ALL VALVES (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 SOLID RING SEAT WITH THE WORD "WATER" (IN

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 OF 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.

TO MAINTAIN SYSTEM WIDE STANDARDIZATION, HYDRANTS SHALL BE DRY BARREL TYPE WITH 5¼ INCH VALVE. HYDRANTS SHALL CONFORM TO THE "STANDARD SPECIFICATIONS FOR FIRE HYDRANTS FOR ORDINARY WATER WORKS SERVICE," AWWA C-502, AND SHALL IN ADDITION MEET THE SPECIFIC REQUIREMENTS OF THE KENT COUNTY WATER AUTHORITY AS LISTED. HYDRANTS SHALL BE UL RATED FOR 250-PSI WORKING PRESSURE AND SERVICE INSTALLATION IN A TRENCH THAT WILL PROVIDE VARIOUS MINIMUM COVER. HYDRANTS SHALL BE ACCORDING TO MANUFACTURER'S STANDARD PATTERN UNLESS NOTED OTHERWISE AND OF STANDARD SIZE. AND SHALL BE EOUIPPED WITH 6 INCH MECHANICAL JOINT CONNECTION FOR 6" DUCTILE IRON PIPE, ONE 4 ½ INCH STEAMER NOZZLE AND TWO 2 ½ INCH HOSE NOZZLES, BRASS OR BRASS SLEEVED DRAINS, NATIONAL STANDARD THREAD, HYDRANT INLET CONNECTIONS. HYDRANTS SHALL BE OF THE FULL COMPRESSION DESIGN, OPENING AGAINST AND CLOSING WITH THE WATER PRESSURE. THE HYDRANTS SHALL BE DESIGNED TO PERMIT ROTARY MOVEMENT OF THE UPPER BARREL ANY NUMBER OF DEGREES REQUIRED TO EFFECT PROPER ALIGNMENT WITHOUT SHUTTING DOWN SERVICE OR REMOVING FLANGE BOLTS AND NUTS. HYDRANT MUST OPEN TURNING OPERATING NUT TO LEFT (COUNTERCLOCKWISE) AND MUST BE MARKED WITH AN ARROW AND WORD "OPEN" TO INDICATE THE DIRECTION TO TURN STEM TO OPEN. ALL FASTENERS USED SHALL BE STAINLESS STEEL BOOT COATINGS TO BE FUSE BONDED EPOXY OR THERMAL SET EPOXY FOR INTERIOR AND EXTERIOR-HOLIDAY FREE WITH MINIMUM THICKNESS 8 MILS MEETING OR EXCEEDING AWWA C550. EPOXY COATING MUST BE UNDAMAGED WITH NO CHIPS OR ABRASIONS. LOWER BARREL SHALL BE BITUMINOUS COATED OR EPOXY COATED. FIELD FOUCH-UP OF EPOXY INTERIOR COATING IS NOT ALLOWED. FIELD TOUCH-UP OF EXTERIOR SURFACES SHALL BE IN ACCORDANCE WITH MANUFACTURES RECOATING SPECIFICATIONS ONLY. CONTRACTORS SHALL USE SPECIAL HANDLING AND INSTALLATION PRECAUTIONS WITH THE USE OF EPOXY COATED APPURTENANCES AS NECESSARY TO ENSURE THAT NO COATING SYSTEM DAMAGE OCCURS. ALL EPOXY APPURTENANCES FOUND MISHANDLED AT DELIVERY OR DURING INSTALLATION SHALL BE REJECTED AND REMOVED FROM THE JOB SITE. ABOVE GRADE EXPOSED HYDRANT COMPONENTS SHALL BE COATED WITH ONE COAT ZINC RICH URETHANE PRIMER @ 2.5-3.5 MILLS DRY FILM THICKNESS. HYDRANT BARREL, BREAKAWAY FLANGE, SHALL BE COATED WITH PHEROLIC URETHANE ENAMEL GLOSS SILVER, TWO COATS @ 4.0 MILS DRY FILM THICKNESS EACH COAT. TOPCOAT SHALL PRODUCE A CONSISTENT AND HOLIDAY FREE COLOR COATING. CAPS AND BONNET SHALL RECEIVE TWO COATS OF GLOSS SAFETY RED. PHENOLIC URETHANE ENAMEL 4.0 MILS DRY FILM THICKNESS EACH COAT. COLOR COATS SHALL PRODUCE A CONSISTENT AND HOLIDAY FREE COLOR COATING. SURFACE SHALL BE SAND BLASTED TO SSPC/SP-6 PRIOR TO COATINGS. ALL HYDRANTS SHALL BE SHIPPED WITHOUT CHAINS. MANUFACTURE SHALL PROVIDE A TEN-YEAR WARRANTY ON ALL PARTS AND WORKMANSHIP. HYDRANT REPAIR KITS SHALL BE ORIGINAL MANUFACTURE SPECIFICALLY DESIGNED FOR THE HYDRANT. ALL HYDRANTS SHALL ALSO BE MANUFACTURED TO

MEET OR EXCEED ADDITIONAL DESIGN AND OPERATING CHARACTERISTICS LISTED BELOW: 5 1/4 INCH VALVE OPENING/3 PORT STYLE, DRY BARREL.

OPENING: OPEN LEFT. DEPTH OF BURY: 5'-0" MINIMUM FROM BURY LINE TO TOP FLANGE OF HYDRANT BOOT. TWO 2 ½ INCH BRONZE HOSE PORTS 180° APART NST THREAD. ONE 4 ½ INCH BRONZE PUMPER/STEAMER 90° FROM EACH HOSE PORT, NST

ALL HYDRANTS TO HAVE TRAFFIC BREAKAWAY FLANGE. BREAKAWAY SLIDING DRAIN SEAL TYPE. DRAIN CHANNEL SHALL BE 360 DEGREES AND CONTAIN A MINIMUM OF TWO BRONZE OR BRASS SLEEVED OUTLET DRAIN WAYS: COATINGS: PRIOR TO PRIMING, SAND BLAST HYDRANT TO SSPC/SP-6 PRIMED WITH ZINC RICH URETHANE COMPATIBLE COATING. TOP COAT WITH TWO

FUSE BONDED EPOXY OR THERMAL SET EPOXY FOR INTERIOR AND EXTERÍOR - HOLIDAY FREE WITH MINIMUM THICKNESS 8 MILS MEETING OR EXCEEDING AWWA C550 **EXTERIOR** LOWER BARREL TO BE BITUMINOUS COATED OR EPOXY COATED.

COATS EACH RED AND SILVER CONFORMING TO KCWA STANDARD COLOR, SILVER BARREL AND RED CAP AND BONNET. BOOT COATINGS TO BE

STAINLESS STEEL UPPER AND LOWER STEM. ALL WETTED PARTS SUCH AS SPRINGS, PINS AND FASTENERS, SHALL BE STAINLESS STEEL OR OTHER COMPATIBLE LEAD FREE NON CORROSIVE MATERIALS. DUCTILE IRON OR CAST IRON CORE FULLY ENCAPSULATED IN RUBBER OR MULTIPLE PIECE. SEAT MAY BE EITHER BRONZE OR STAINLESS STEEL. MAIN VAI VE

WEATHER SHIELD AND CAP: DUCTILE IRON. CHAINS: NO CHAINS TO BE SUPPLIED.

CORPORATION STOPS SHALL BE BALL TYPE WITH EITHER STAINLESS STEEL, SYNTHETIC COATED BRASS BALL OR NICKEL COATED BRASS BALL DESIGNED FOR POTABLE WATER SERVICE UP TO 300 PSI. BODY SHALL BE HEAVY CAST LEAD FREE "ENVIROBRASSII" UNS ALLOY NUMBER C89520 ASTM B584-98A AND/OR AWWA C800/ASTM B-62 MEETING OR EXCEEDING THE LEAD LEACHING PERFORMANCE SPECIFICATIONS OF ANSI/NSF 61 STANDARD. ALL CORPORATION STOPS SHALL MEET OR EXCEED DESIGN STANDARDS OF AWWA C800 ALONG WITH THE DESIGN AND OPERATING CHARACTERISTICS OF THE FOLLOWING:

FORD OR EQUAL. SIZES: 34, 1 INCH, 1 ½ INCH, AND 2 INCH

OPENING OPEN LEFT. END CONNECTIONS: COMPRESSION WITH NON-CORROSIVE GRIP RING MEETING ASTM B-159-BUNA N RUBBER AND CONDUCTIVITY RING. THREADED END SHALL BE AWWA CC TAPER THREAD FOR DIRECT TAP. HEAVY CAST LEAD FREE "ENVIROBRASSII" UNS ALLOY NUMBER C89520 ASTM B584-98A AND/OR AWWA C800/ASTM B-62 MEETING OR EXCEEDING THE

4.12 CURB STOPS:

CURB STOPS SHALL BE BALL TYPE WITH EITHER STAINLESS STEEL, SYNTHETIC COATED BRASS OR NICKEL COATED BRASS BALL DESIGNED FOR WATER SERVICE UP TO 300 PSI. BODY SHALL BE HEAVY CAST LEAD FREE "ENVIROBRASSII" UNS ALLOY NUMBER C89520 ASTM B584-98A AND/OR MEET OR EXCEED THE LEAD LEACHING PERFORMANCE SPECIFICATIONS OF ANSI/NSF 61 STANDARD. ALL CURB STOPS TO MEET OR EXCEED THE DESIGN STANDARDS OF AWWA C800 ALONG WITH THE DESIGN AND OPERATING

34 INCH, 1 INCH, 1 ½ INCH, AND 2 INCH

OPENING: OPEN LEFT END CONNECTIONS: COMPRESSION WITH NON CORROSIVE GRIP RING MEETING ASTM B-159-BUNA N RUBBER AND CONDUCTIVITY RING. MATERIAL: HEAVY CAST LEAD FREE "ENVIROBRASSII" UNS ALLOY NUMBER C89520 ASTM B584-98A AND/OR AWWA C800/ASTM B-62 MEETING OR EXCEEDING THE

LEAD LEACHING PERFORMANCE SPECIFICATIONS OF ANSI/NSF 61 STANDARD.

OPENING: OPEN LEFT. DRAIN:

CHARACTERISTICS OF THE FOLLOWING:

4.13 SERVICE & GATE BOX:
4.13.1 CURB BOXES MAY BE MANUFACTURED IN NORTH AMERICA OR SELECTED FOREIGN MADE. SELECTED FOREIGN MADE BOXES MUST RECEIVE PRIOR APPROVAL BASED ON DESIGN AND STYLE SAMPLES TO BE PROVIDED FOR REVIEW. 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 SOLID RING. BOXES SHALL HAVE A BITUMINOUS INTERNAL AND EXTERNAL COATING IN ACCORDANCE WITH ANSI/AWWA C151/A21.5 AND ANSI/AWWA C153/A21.53 RESPECTIVELY. BOXES SHALL HAVE BARRELS OF NOT LESS THAN 2 ½ INCH 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. GATE VALVE BOXES MAY BE EITHER MANUFACTURED IN NORTH AMERICA OR SELECTED FOREIGN MADE. SELECTED FOREIGN MADE BOXES MUST RECEIVE PRIOR

APPROVAL BASES ON DESIGN AND STYLE SAMPLES TO BE PROVIDED FOR REVIEW. THEY SHALL BE HEAVY PATTERN CAST IRON. SLIP ADJUSTABLE TYPE AND PROVIDED WITH HEAVY CAST IRON COVER. COVER SHALL HAVE THE WORD "WATER" CAST UPON IN HEAVY PATTERN RAISED LETTERS 5 ¼ INCH DIAMETER. COVER SHALL BE DROP IN TYPE WITHOUT FINS SOLID RING. BOXES SHALL HAVE A BITUMINOUS INTERNAL AND EXTERNAL COATING IN ACCORDANCE WITH ANSI/AWWA C151/A21.5 AND ANSI/AWWA C153/A21.53 RESPECTIVELY. THE UPPER SECTION OF EACH BOX SHALL HAVE A BOTTOM FLANGE OF SUFFICIENT BEARING AREA TO PREVENT SETTLING. THE BOTTOM OF THE LOWER SECTION SHALL BE BELL SHAPED AND SIZED TO ENCLOSE THE STUFFING BOX AND OPERATING NUT OF THE VALVE. BOXES SHALL HAVE BARRELS OF NOT LESS THAN 5" IN DIAMETER. BOX SECTIONS SHALL BE OF SUFFICIENT LENGTH TO PROVIDE COMPLETE COVERAGE FOR THE DEPTH OF BURY. UPPER PORTION SHALL BE 26" LONG AND THE BOTTOM SECTION 48" (MIN) IN LENGTH.

4.14 SADDLES:

SERVICE SADDLES AND REPAIR SADDLES SHALL BE DUCTILE IRON OR TYPE 304 STAINLESS STEEL, WITH STAINLESS STEEL BOLTS, WASHERS, NUTS AND BANDS. DUCTILE IRON OR TYPE 304 STAINLESS STEEL, WITH STAINLESS STEEL BOLTS, WASHERS, NUTS AND BANDS. DUCTILE IRON OR TYPE 304 STAINLESS STEEL, WITH STAINLESS STEEL BOLTS, WASHERS, NUTS AND BANDS. DUCTILE IRON OR TYPE 304 STAINLESS STEEL, WITH STAINLESS STEEL BOLTS, WASHERS, NUTS AND BANDS. DUCTILE IRON OR TYPE 304 STAINLESS STEEL, WITH STAINLESS STEEL BOLTS, WASHERS, NUTS AND BANDS. DUCTILE IRON OR TYPE 304 STAINLESS STEEL, WITH STAINLESS STEEL BOLTS, WASHERS, NUTS AND BANDS. DUCTILE IRON OR TYPE 304 STAINLESS STEEL, WITH STAINLESS STEEL BOLTS, WASHERS, NUTS AND BANDS. DUCTILE IRON OR TYPE 304 STAINLESS STEEL, WITH STAINLESS STEEL BOLTS, WASHERS, NUTS AND BANDS. DUCTILE IRON OR TYPE 304 STAINLESS STEEL, WITH STAINLESS STEEL BOLTS, WASHERS, NUTS AND BANDS. DUCTILE IRON OR TYPE 304 STAINLESS ASSETTING OR SYCREPTING AWWA C550 OR NYI ON COATED. SADDLES SHALL BE COMPONENTS SHALL BE COATED WITH FUSION BONDED EPOXY MINIMUM 8 MILS THICKNESS MEETING OR EXCEEDING AWWA C550 OR NYLON COATED. SADDLES SHALL BE MANUFACTURED TO MEET OR EXCEED THE DESIGN AND OPERATING CHARACTERISTICS OF FOLLOWING:

**4.14.1** SERVICE: DUCTILE IRON OR GRADE 18-8 TYPE 304 STAINLESS STEEL.

LEAD LEACHING PERFORMANCES SPECIFICATIONS OF ANSI/NSF 61 STANDARD.

COATING: DUCTILE IRON COMPONENTS SHALL BE EPOXY COATED AWWA C 500 OR NYLON COATED. GRADE 18-8 TYPE 304 STAINLESS STEEL DOUBLE BAND. FASTENERS: 304 STAINLESS STEEL STUD, NUT & WASHERS.

VIRGIN RUBBER ASTM 2000 THREADED OUTLET TAPPED TO AWWA C 800 FOR THE APPROPRIATE SERVICE SIZE.

**4.14.2** REPAIR:

DUCTILE IRON OR GRADE 18-8 TYPE 304 STAINLESS STEEL COATING: DUCTILE IRON COMPONENTS SHALL BE EPOXY COATED AWWA C 500 OR NYLON COATED.

GRADE 18-8 TYPE 304 STAINLESS STEEL DOUBLE BAND. FASTENERS: 304 STAINLESS STEEL STUD, NUT & WASHERS.

VIRGIN RUBBER ASTM 2000. OUTLET: THREADED OUTLET TAPPED TO AWWA C 800 FOR THE APPROPRIATE SERVICE SIZE.

ILL COMPONENTS AND FASTENERS SHALL BE TYPE 304 STAINLESS STEEL. GASKET SHALL BE VIRGIN RUBBER FOR WATER SERVICE. ALL REPAIR CLAMPS SHALL BE MANUFACTURED TO BE EQUAL TO THE MATERIAL AND DESIGN REQUIREMENTS THE FOLLOWING:

FORD OR EQUAL GRADE 18-8 TYPE 304 STAINLESS STEEL.

FASTENERS: 304 STAINLESS STEEL STUD, NUT & WASHERS. GRID PATTERN VIRGIN RUBBER ASTM 2000, FULL 360 DEGREE COVERAGE.

4.16 DUCTILE IRON COUPLINGS:

STRAIGHT AND TRANSITION COUPLINGS SHALL BE DUCTILE IRON MANUFACTURED TO MEET AWWA C 219 AND FITTED WITH STAINLESS STEEL BOLTS WASHERS AND NUTS

AND THE TIME OF EXCEPTING AWAYA C 550 COURT INGS SHALL BE DUCTILE IRON COMPONENTS SHALL BE COATED WITH FUSION BONDED EPOXY MINIMUM 8 MILS THICKNESS MEETING OR EXCEEDING AWWA C550. COUPLINGS SHALL BE MANUFACTURED TO MEET OR EXCEED THE DESIGN AND OPERATING CHARACTERISTICS OF THE FOLLOWING:

**4.16.1** STRAIGHT: FORD OR EQUAL. TYPF: DUCTILE IRON.

COATING: DUCTILE IRON COMPONENTS SHALL BE EPOXY COATED AWWA C 500. FASTENERS: 304 STAINLESS STEEL STUD, NUT & WASHERS.

RUBBER ASTM 2000.

4.16.2 TRANSITIONAL: DUCTILE IRON

COATING: DUCTILE IRON COMPONENTS SHALL BE EPOXY COATED AWWA C 500. FASTENERS: 304 STAINLESS STEEL STUD, NUT & WASHERS.

RUBBER ASTM 2000.

ALL DEVICES MUST HAVE BEEN APPROVED BY THE UNIVERSITY OF SOUTHERN CALIFORNIA (FCCCHR, USC), AMERICAN WATER WORKS ASSOCIATION AND AMERICAN SOCIET OF SANITARY ENGINEERS. BACKFLOW DEVICE ASSEMBLIES TESTED WITH MANUFACTURES ISOLATION VALVES TO MEET FCCCHR, USC STANDARDS SHALL BE INSTALLED WITH THE MANUFACTURER VALVES AS AN ASSEMBLY. BRONZE OR BRASS COMPONENTS SHALL MEET OR EXCEED THE LEAD LEACHING PERFORMANCE SPECIFICATIONS OF ANSI/NSF 61 STANDARD OR BE MANUFACTURED WITH LEAD FREE "ENVIRO BRASS II" USN ALLOY NUMBER C89520, ASTM B584-98A.

4.17.1 TESTABLE DOUBLE CHECK: TYPE: WATTS OR FOUAL

CAST IRON, BRONZE OR STAINLESS STEEL DEPENDING ON SIZE.

COATING: IRON COMPONENTS SHALL BE EPOXY COATED AWWA C-500. SPRINGS: STAINLESS STEEL. PRESSURE: MAXIMUM 150 PSI MINIMUM 10 PSI.

4.17.2 TESTABLE REDUCED PRESSURE:

WATTS OR EQUAL CAST IRON, BRONZE OR STAINLESS STEEL DEPENDING ON SIZE.

COATING: IRON COMPONENTS SHALL BE EPOXY COATED AWWA C-500. STAINLESS STEEL

PRESSURE: MAXIMUM 175 PSI - MINIMUM 10 PSI.

WATTS OR EQUAL. BODY: CAST BRONZE. SPRINGS: STAINLESS STEEL

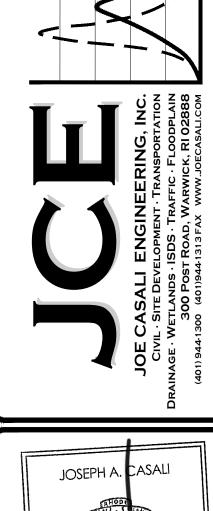
**4.17.3** HOUSEHOLD DUAL CHECK:

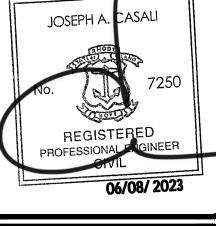
PRESSURE: MAXIMUM 150 PSI - MINIMUM 10 PSI.

4.18.1 PIPE BEDDING SHALL BE PROCESSED BORROW GRAVEL, GRANULAR IN NATURE, THE MAJOR PORTION OF WHICH MAY BE SAND OR GRAVEL. IT SHALL BE FREE FROM PEAT, VEGETABLE OR ORGANIC MATTER OR ANY OTHER DEBRIS AND READILY COMPACTABLE. RECYCLED ROAD SWEEPINGS AND CONTAMINATED MATERIAL ARE 4.18.2 SELECTED BACKFILL MAY BE FROM EXCAVATED MATERIALS THAT SHALL BE FREE DRAINING, CLEAN, GRANULAR SOIL SUITABLE FOR BACKFILL. IT SHALL BE FREE FROM PEAT, VEGETABLE OR ORGANIC MATTER OR ANY OTHER DEBRIS AND SHALL BE READILY COMPACTABLE TO THE REQUIREMENTS OF KENT COUNTY WATER AUTHORITY,

INCH IN LENGTH OR DIAMETER AND MUST BE EVENLY DISTRIBUTED WITHIN THE TOTAL VOLUME OF THE FILL.

TYPE 5 TRENCH. RECYCLED ROAD SWEEPINGS AND CONTAMINATED MATERIAL ARE FORBIDDEN. UP TO 20 PERCENT MAY BE ROCK LIKE MATERIAL, NOT TO EXCEED 3





REVISIONS: NO. DATE. DESCRIPTION R1 4/19/2022 REMOVED LOT R2 5/24/2022 REDUCED ROW R3 4/6/2023 RIDEM RT R4 4/26/2023 RIDOT RTC R5 5/15/2023 KCWARTC

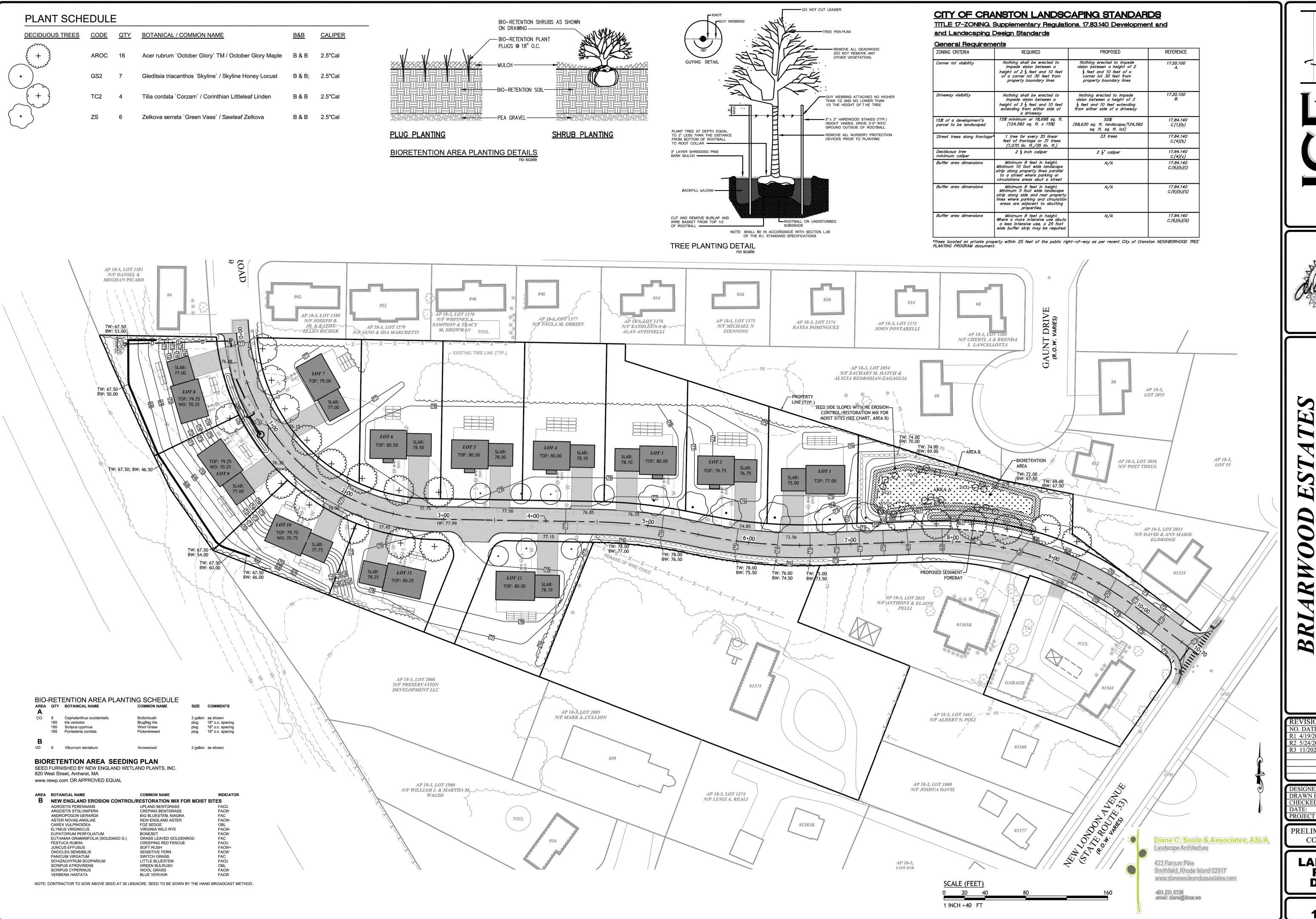
DESIGNED BY: WMLJR DRAWN BY: SEP/SD CHECKED BY: JAC MARCH 2022 PROJECT NO: 21-71

R6 6/8/2023 RIDOT/SEWER RT

PRELIMINARY, NOT FOR CONSTRUCTION

> **KCWA NOTES**

SHEET 16 OF 17







R1 4/19/2022 REMOVED LOT 2006 R2 5/24/2022 REDUCED ROW R3 11/2022 PRELIMINARY PL

SIGNED BY:	DCS
AWN BY:	DCS
IECKED BY:	DCS
ATE:	MARCH 2022
OJECT NO:	21-71

PRELIMINARY, NOT FOR CONSTRUCTION

**LANDSCAPE** PLAN & **DETAILS** 

> SHEET 17 OF 17

