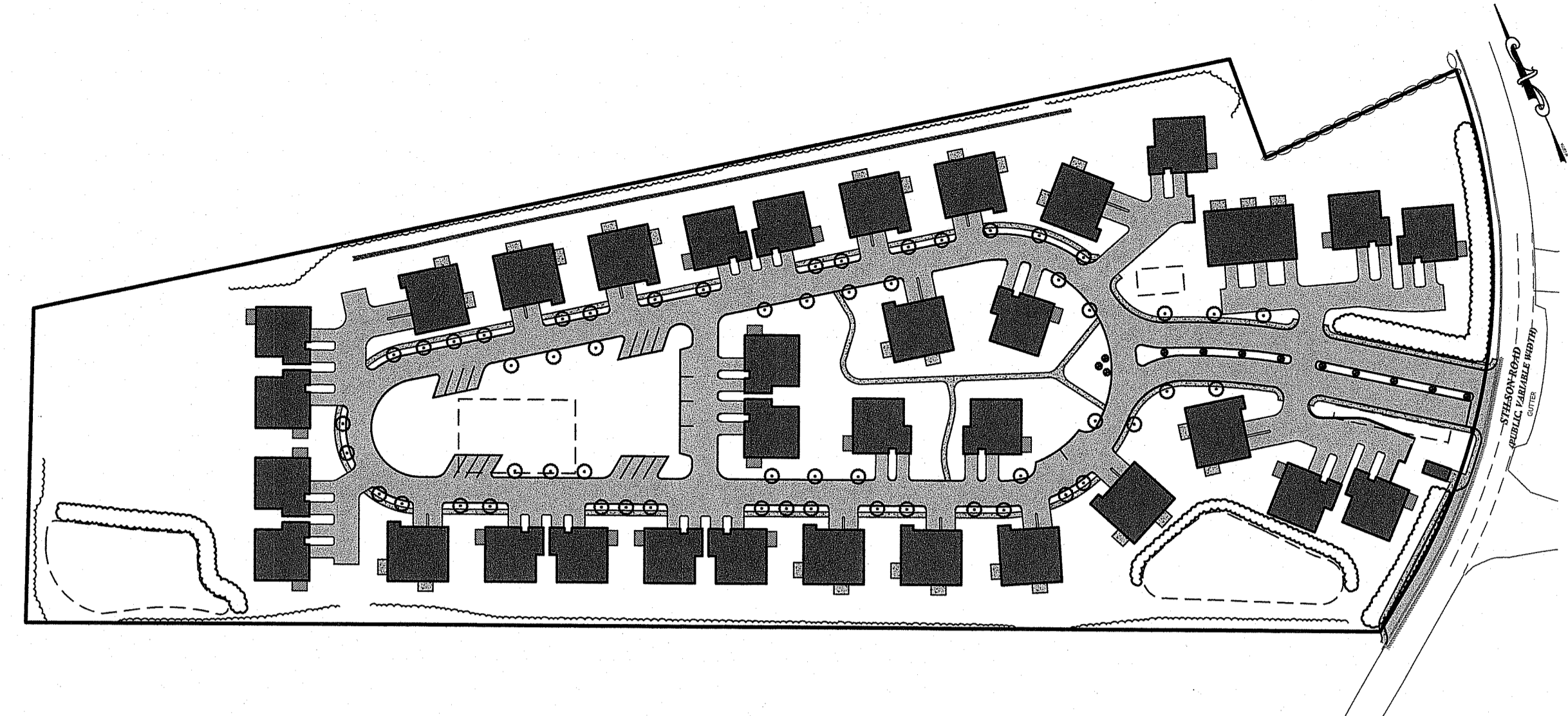


**PRELIMINARY PLAN SUBMISSION  
FOR A PROPOSED 69-UNIT RESIDENTIAL COMMUNITY  
(COMPREHENSIVE PERMIT WITH 26% LOW TO MODERATE INCOME HOUSING)**

**RICHMOND PLACE**

**RICHMOND, RHODE ISLAND  
AP 4B, LOTS 59, 59-2 & 59-3**

**ZONING DISTRICT: GENERAL BUSINESS (GB)**



OVERALL SITE PLAN (SCALE: 1 INCH = 100 FEET)

**APPROVALS:**

**RICHMOND PLANNING BOARD - MASTER PLAN APPROVAL WITH WAIVERS (DECEMBER 14, 2021; RECORDED JANUARY 5, 2022);**

- WAIVERS GRANTED TO ALLOW TWO- AND THREE-DWELLING UNIT BUILDINGS IN A GB ZONE WITH AQUIFER PROTECTION OVERLAY DISTRICT;
- RESIDENTIAL DENSITY OF 7 D.U. PER ACRE (4 D.U. PER ACRE PERMITTED);
- SANITARY WASTEWATER DISCHARGE OF 1,615 GALLONS PER ACRE PER DAY WHERE A MAXIMUM OF 350 GALLONS PER ACRE PER DAY IS PERMITTED; AND
- ALLOWANCE OF A PRIVATE STREET WITHIN A MAJOR LAND DEVELOPMENT APPLICATION

**FILINGS:**

**RICHMOND PLANNING BOARD - PRELIMINARY PLAN**

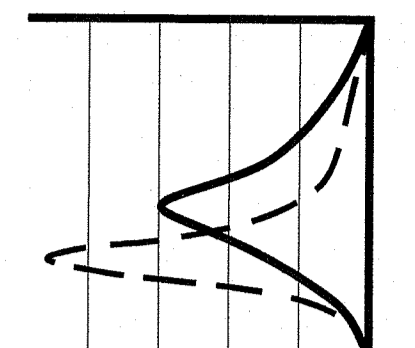
**TOWN OF RICHMOND FIRE DEPARTMENT**

**TOWN OF RICHMOND ENGINEERING DIVISION / DEPARTMENT OF PUBLIC WORKS REVIEW**

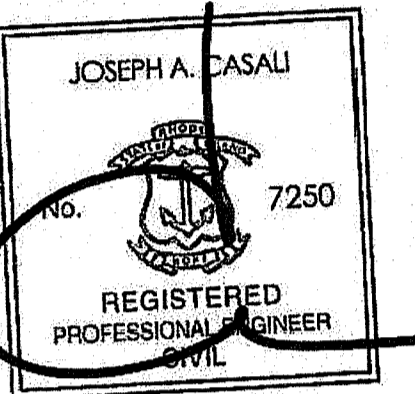
**RICHMOND WATER DEPARTMENT AND NORTHEAST WATER SOLUTIONS**

**RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT - PRELIMINARY DETERMINATION APPLICATION AND STORMWATER CONSTRUCTION PERMIT**

**RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT - OWTS**



**JOE CASALI ENGINEERING, INC.**  
CIVIL - SITE DEVELOPMENT - TRANSPORTATION  
DRAINAGE - WETLANDS - IBIDS - TRAFFIC - FLOODPLAIN  
(401) 944-1300 (401) 944-1313 FAX WWW.JCEONLINE.COM



03/01/2024

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

NOTE PER DEM:

Kindly be advised that this Permit is not equivalent to a verification of the type or extent of freshwater wetlands on site

**RICHMOND PLACE**  
**38 STILSON ROAD**  
**RICHMOND, RHODE ISLAND**  
**AP 4B, LOTS 59, 59-2, & 59-3**

**PROJECT TEAM**

**OWNER:**  
RICHMOND REALTY ASSOCIATES, LLC  
1536 SCITUATE AVENUE  
CRANSTON, RI 02920

**APPLICANT:**  
CHIDAMBARAM NARAYANAN  
CT PROPERTIES, LLC  
29 PINE STREET  
EAST PROVIDENCE, RI 02915

**ARCHITECT:**  
O'HEARNE ASSOCIATES ARCHITECTS  
5 DIVISION STREET  
EAST GREENWICH, RI 02818  
PHONE: 401-710-7788

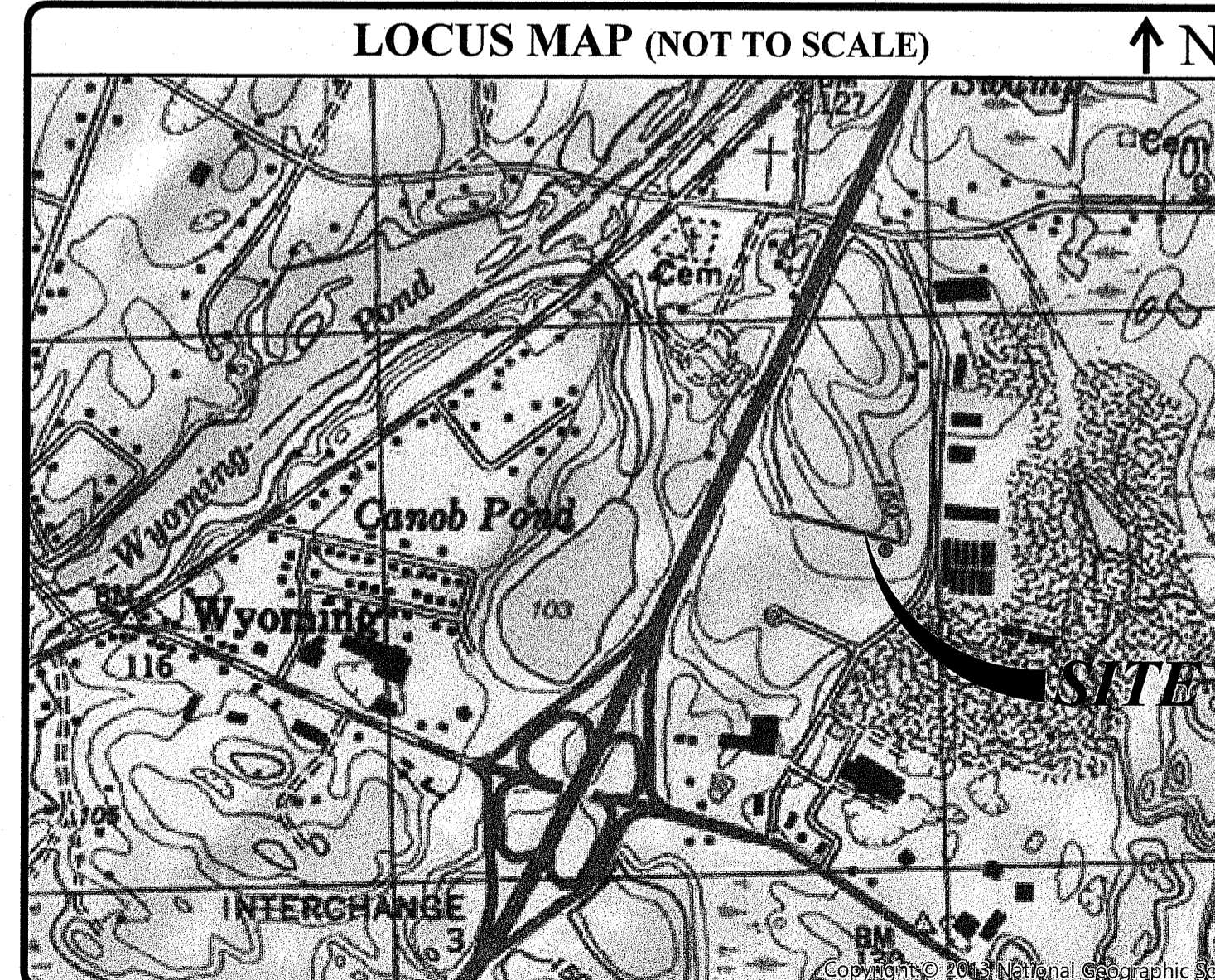
**CIVIL ENGINEER:**  
JOE CASALI ENGINEERING, INC.  
300 POST ROAD  
WARWICK, RI 02888  
PHONE: 401-944-1300  
FAX: 401-944-1313

**LANDSCAPE ARCHITECT:**  
DIANE C. SOULE & ASSOCIATES, ASLA  
422 FARNUM PIKE  
SMITHFIELD, RI 02917  
401-232-2620

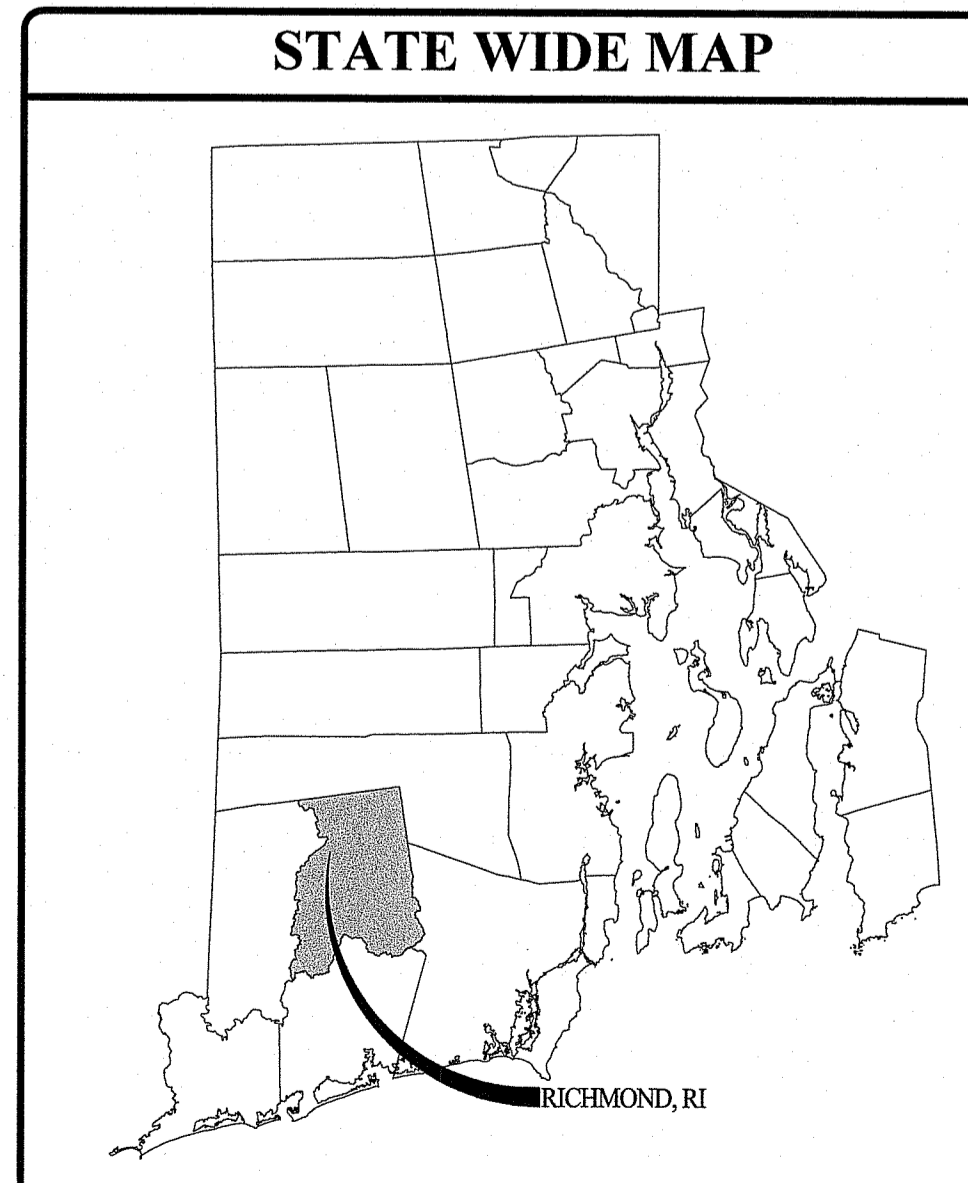
**SURVEYOR:**  
WATERMAN ENGINEERING CO.  
46 SUTTON AVENUE  
EAST PROVIDENCE, RI 02914  
PHONE: 401-438-5775

**BIOLOGIST:**  
NATURAL RESOURCE SERVICES  
86 HARRISVILLE MAIN ST.  
HARRISVILLE, RI 02830  
PHONE: 401-568-7390  
FAX: 401-568-7490

**LOCUS MAP (NOT TO SCALE)**



**STATE WIDE MAP**



**INDEX OF DRAWINGS**

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| 3         | EXISTING CONDITIONS PLAN   |
| 4         | SITE PREPARATION PLAN  |
| 5         | SITE PLAN  |
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| R1        | BOUNDARY & TOPOGRAPHIC SURVEY PLAN, PREPARED BY WATERMAN ENGINEERING CO. |
| R2        | ADMINISTRATIVE SUBDIVISION PLAN, PREPARED BY WATERMAN ENGINEERING CO.    |

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

APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED: **APR 19 2024** FILE #: **23-0164**

NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Andy Clouston*

RI Department of Environmental Management  
MAR 08 2024  
Office of Water Resources

OWNER:  
RICHMOND REALTY ASSOCIATES, LLC  
1536 SCITUATE AVENUE  
CRANSTON, RI 02920

APPLICANT:  
CHIDAMBARAM NARAYANAN  
CT PROPERTIES, LLC  
29 PINE STREET  
EAST PROVIDENCE, RI 02915

**REVISIONS:**

| NO. | DATE    | DESCRIPTION      |
|-----|---------|------------------|
| 1   | 11/2021 | TOWN COMMENTS    |
| 2   | 7/2023  | PRELIMINARY PLAN |
| 3   | 1/2024  | RIDEM RTC        |
| 4   | 2/2024  | PLANNING RTC     |
| 5   | 3/2024  | RIDEM RTC        |

DESIGNED BY: WMLJR  
DRAWN BY: SD/SEP  
CHECKED BY: JAC  
DATE: OCTOBER 2021  
PROJECT NO: 20-61a

PRELIMINARY, NOT FOR CONSTRUCTION

**COVER SHEET**

**SHEET 1 OF 20**

GENERAL NOTES:

- 1. CLASS I COMPREHENSIVE BOUNDARY SURVEY AND CLASS III TOPOGRAPHIC SURVEY PERFORMED BY WATERMAN ENGINEERING COMPANY OF 46 SUTTON AVENUE, EAST PROVIDENCE, RI IN FEBRUARY 2021.
2. THE LOCATION AND DEPTH OF EXISTING UTILITIES ARE APPROXIMATE AND HAVE BEEN PLOTTED FROM THE LATEST AVAILABLE INFORMATION.
3. THIS SITE LIES IN ZONE X (AREAS DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOOD), AS SHOWN ON THE FIRM MAPS FOR THE TOWN OF RICHMOND, COMMUNITY PANEL NUMBERS 4409C0064J AND 4409C0068J, MAPS EFFECTIVE APRIL 3, 2020.
4. SOILS EXISTING ON THE SITE CONSIST OF CANTON AND CHARLTON FINE SANDY LOAMS, 3 TO 15% SLOPES, EXTREMELY STONY (CKC), DEERFIELD LOAMY SAND, 8-15% SLOPES (DC) AND HINCKLEY LOAMY SAND, 8 TO 15% SLOPES (HC), CKC SOILS ARE NOT CLASSIFIED AS PRIME FARMLAND.
5. THE PROPOSED DEVELOPMENT IS LOCATED WITHIN THE UPPER WOOD RIVER WATERSHED.
6. THE PROPOSED DEVELOPMENT IS NOT LOCATED IN A WELLHEAD PROTECTION AREA, GROUNDWATER RESERVOIR OR PUBLIC DRINKING SUPPLY WATERSHED.
7. NATURAL RESOURCE SERVICES, INC. (NRS) FIELD DELINEATED A SMALL FORESTED WETLAND ALONG THE NORTHWESTERN EDGE OF THE PROPERTY IN JANUARY 2021.
8. WATER SERVICES ARE AVAILABLE WITHIN STILSON ROAD.
9. ELECTRIC SERVICES AND COMMUNICATION SERVICES ARE AVAILABLE VIA OVERHEAD LINES ALONG STILSON ROAD.

SITE NOTES:

- 1. CONTRACTOR SHALL BE RESPONSIBLE FOR REMOVING AND LEGALLY DISPOSING (R&D) OF ALL MATERIALS INDICATED ON THE PLANS.
2. 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 4" OF LOAM AND SEED.
5. 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.
6. 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.
7. 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.
8. 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 TOWN 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

- 1. 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.
2. 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.
3. 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.
5. 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.
7. 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.
8. 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:

- 1. THE PROPOSED DRAINAGE LINES SHALL BE ADS N-12 HDPE PIPE OR AN APPROVED EQUAL UNLESS OTHERWISE NOTED ON THE SITE PLANS.
2. 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:

- 1. PRIOR TO THE START OF CONSTRUCTION, THE CONTRACTOR SHALL STAKE OUT AND PROTECT ALL SURFICIAL STORMWATER INFILTRATION AREAS, INCLUDING THE SEDIMENT FORESBAY, 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.
2. 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.
3. 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.
4. 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/RICRM, 2010).
5. 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.

INFILTRATION BASINS

- 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 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.

STORMWATER INFILTRATION SYSTEM

- INFILTRATION PRACTICES SHALL BE INSPECTED ANNUALLY AND AFTER STORMS EQUAL TO OR GREATER THAN THE 1-YEAR, 24-HOUR TYPE III SOTRM EVENT
IF SEDIMENT OR DEBRIS BUILD UP HAS LIMITED THE INFILTRATION CAPABILITIES OF THE SYSTEM, THE ISOLATOR ROWS SHALL BE CLEANED OUT WITH 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 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.

LOAMING & SEEDING

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:

- AFTER ROUGH GRADING IS COMPLETED, ALL DISTURBED AREAS AND AREAS LABELED AS 'LOAM AND SEED' ARE TO BE BROUGHT TO AN ELEVATION OF 4" 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. 4" OF SITE LOAM IS TO BE APPLIED AND RAKED TO FINISHED GRADE.
THE TOPSOIL, CONSISTING OF SITE LOAM IS TO BE FERTILE AND FREE OF WEEDS, STICKS AND STONES OVER 3/4" IN SIZE AND OTHERWISE COMPLYING WITH 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.
APPLY LIME AT A RATE OF ONE TON PER ACRE AND UNIFORMLY INCORPORATE INTO THE TOP 1-2" OF TOPSOIL.
SEEDING
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.

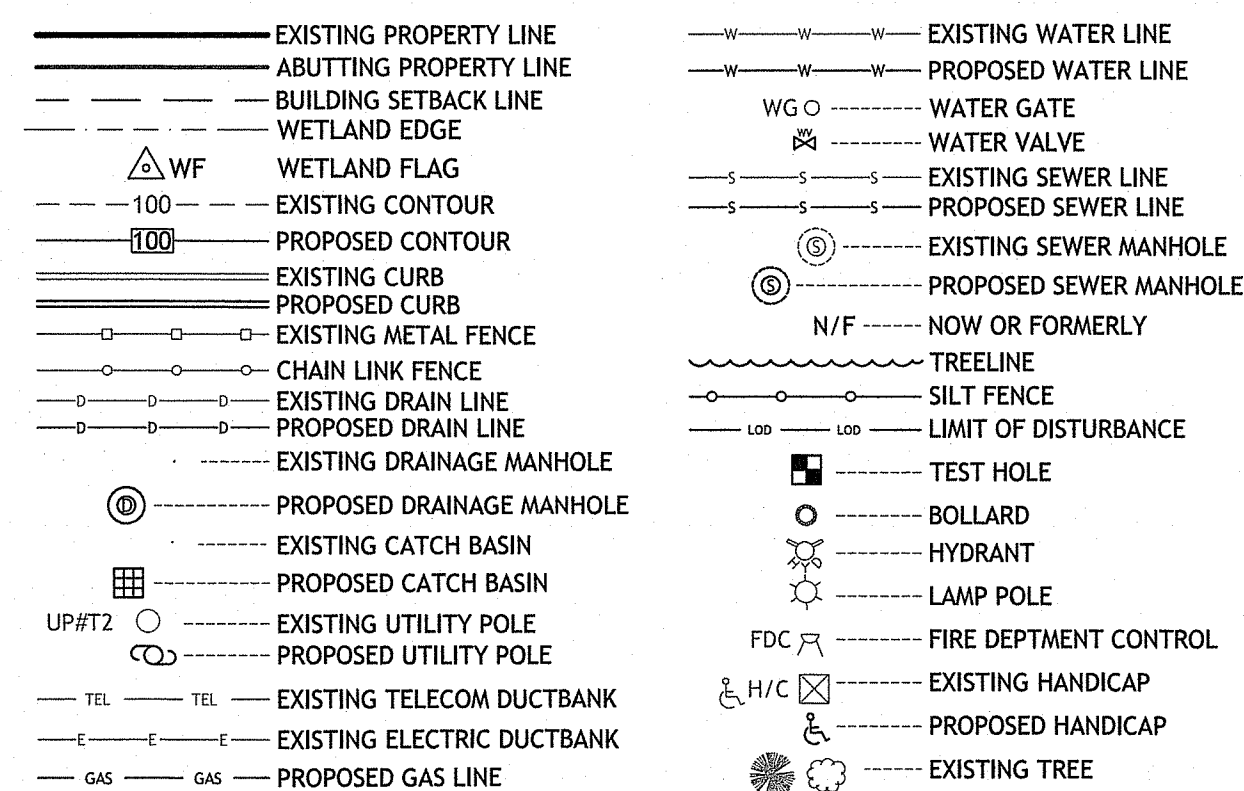
MAINTENANCE AND PROTECTION OF TRAFFIC NOTES:

- 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.
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.
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:

- 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.
OVERHEAD AND/OR UNDERGROUND ELECTRIC, GAS AND COMMUNICATIONS SERVICES ARE TO BE COORDINATED BY THE CONTRACTOR WITH THE APPROPRIATE UTILITY COMPANY.
THE CONTRACTOR SHALL AT ALL TIMES PROVIDE A SUFFICIENT NUMBER OF WORKMEN AND GUARDS AS MAY BE NECESSARY TO PROPERLY SAFEGUARD THE PUBLIC FROM THEIR OPERATIONS.
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, LAFRAMBOISE WATER SERVICE AND/OR THE TOWN OF RICHMOND.
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.
ALL NEW SEWER PIPES AND MANHOLES SHALL BE CLEANED AND TESTED PRIOR TO ACCEPTANCE. GRAVITY SEWER PIPES SHALL BE REQUIRED TO PASS BOTH LOW PRESSURE AIR AND DEFLECTION (IE., MANDREL) TESTING. LOW PRESSURE SEWER PIPING SHALL BE REQUIRED TO PASS A LOW PRESSURE (IE., HYDROSTATIC) TEST.
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.
CONTRACTOR 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.
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 TOWN OF RICHMOND.
NO FLOW WILL BE ACCEPTED UNTIL A COMPLETION CERTIFICATE IS ISSUED.
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.
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.
CONTRACTOR SHALL SET ALL CATCH BASIN RIMS INITIALLY AT BINDER GRADE. CATCH BASIN RIMS SHALL BE RESET TO FINAL GRADE BEFORE INSTALLATION OF THE PAVEMENT SURFACE COURSE. ALL OTHER UTILITY STRUCTURE RIMS SHALL BE SET TO FINISHED GRADE AND RAMPED UNTIL INSTALLATION OF THE PAVEMENT SURFACE COURSE.
ALL SEWER LINE CONSTRUCTION AND TESTING MUST BE IN ACCORDANCE WITH THE TOWN OF RICHMOND REGULATIONS AND STANDARDS.

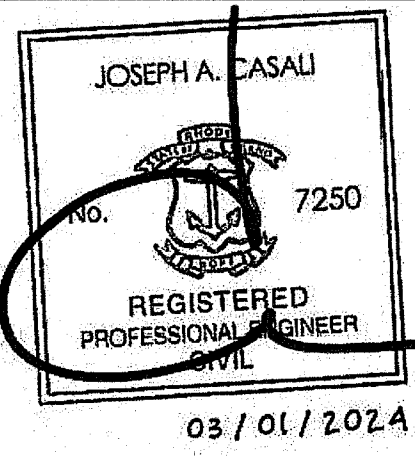
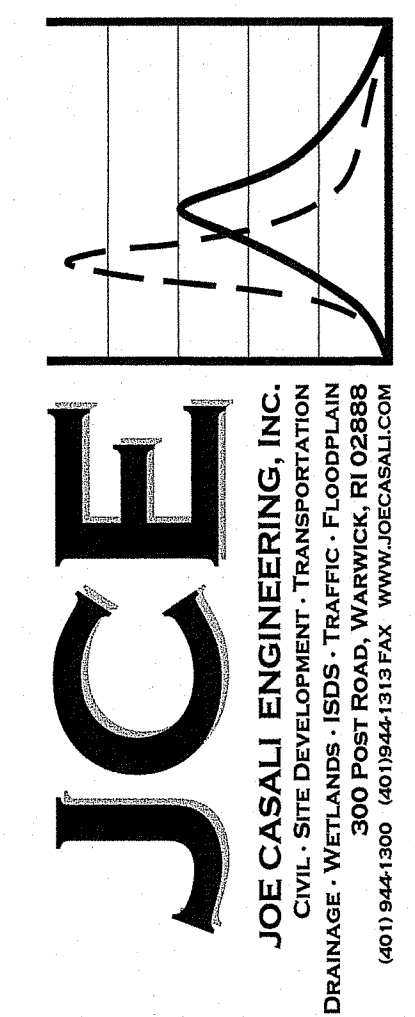
LEGEND:



RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF WATER RESOURCES
FRESHWATER WETLANDS PROGRAM
APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL
DATED: APR 19 2024 FILE #: 23-0164
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

Handwritten signature and date: Andy Cloutier

RI Environmental Management
MAR 03 2024
Office of Water Resources



RICHMOND PLACE
38 STILSON ROAD
RICHMOND, RHODE ISLAND
AP 4B, LOTS 59, 59-2, & 59-3

OWNER: RICHMOND REALTY ASSOCIATES, LLC
1536 SCITUATE AVENUE
CRANSTON, RI 02920
APPLICANT: CHIDAMBARAM NARAYANAN
CT PROPERTIES, LLC
29 PINE STREET
EAST PROVIDENCE, RI 02915

Table with 3 columns: NO., DATE, DESCRIPTION. Rows include 11/2021 TOWN COMMENTS, 2/7/2023 PRELIMINARY PLAN, 3/1/2024 RIDEM RTC, 4/2/2024 PLANNING RTC, 5/3/2024 RIDEM RTC.

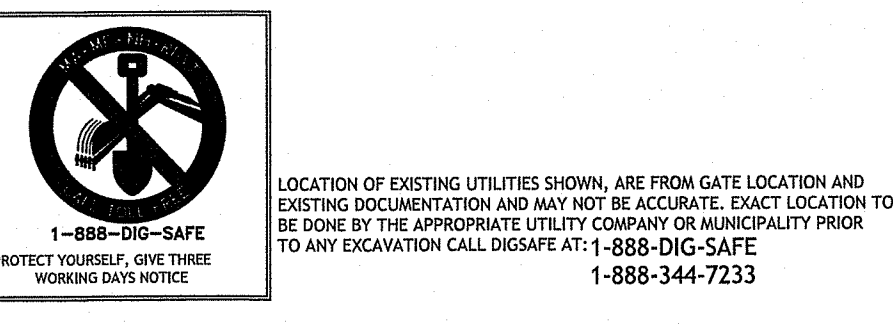
DESIGNED BY: WMLJR
DRAWN BY: SDSEPP
CHECKED BY: JAC
DATE: OCTOBER 2021
PROJECT NO: 20-61a

PRELIMINARY, NOT FOR CONSTRUCTION

GENERAL NOTES & LEGEND

SHEET 2 OF 20

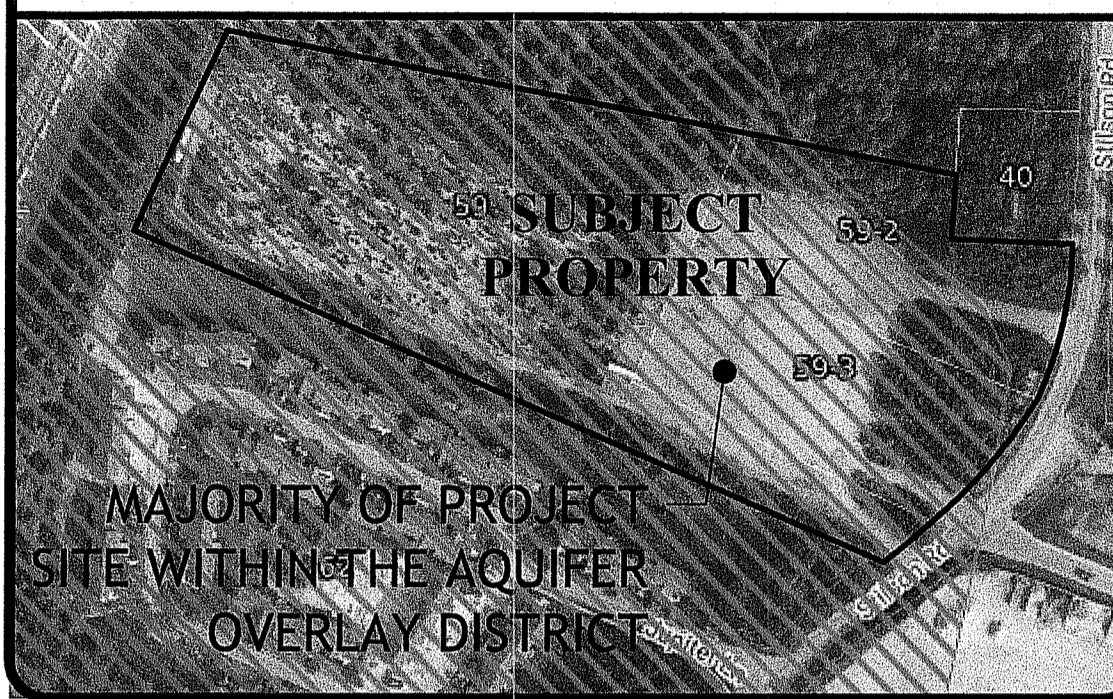
03/20/24 CT Narayanan20-61a Stilson Rd, Richmond/CAD/Stilson Rd, Wyoming - [DEM.RTC].dwg, Mar. 08, 2024 2:12pm



| ZONING CRITERIA            | REQUIRED GB | EXISTING GB LOT 59 | EXISTING GB LOT 59-2 | EXISTING GB LOT 59-3 |
|----------------------------|-------------|--------------------|----------------------|----------------------|
| MINIMUM LOT AREA           | 43,560 SF   | 250,081 SF         | 91,487 SF            | 86,980 SF            |
| MINIMUM LOT FRONTAGE       | 150 FT      | 58.04 FT           | 209.66 FT            | 209.66 FT            |
| MINIMUM FRONT YARD SETBACK | 20 FT       | N/A                | N/A                  | N/A                  |
| MINIMUM SIDE YARD SETBACK  | 35 FT       | N/A                | N/A                  | N/A                  |
| MINIMUM REAR YARD SETBACK  | 50 FT       | N/A                | N/A                  | N/A                  |
| MAXIMUM BUILDING COVERAGE  | 25%         | N/A                | N/A                  | N/A                  |

### AQUIFER OVERLAY DISTRICT

(SCALE = 1" = 250')



MAJORITY OF PROJECT SITE WITHIN THE AQUIFER OVERLAY DISTRICT

| SOIL EVALUATION TEST PIT DATA |             |              |               |
|-------------------------------|-------------|--------------|---------------|
|                               | SURFACE EL. | SHWT / EL.   | DEPTH / EL.   |
| SE-1901                       | 129.00      | 96' / 121.00 | 120' / 119.00 |
| SE-1902                       | 127.00      | 60' / 122.00 | 120' / 117.00 |
| SE-1903                       | 130.00      | 78' / 123.50 | 108' / 121.00 |
| SE-1904                       | 133.47      | 12' / 132.47 | 96' / 125.47  |
| SE-1905                       | 126.88      | 84' / 119.88 | 108' / 117.88 |
| SE-1906                       | 131.00      | 72' / 125.00 | 108' / 122.00 |

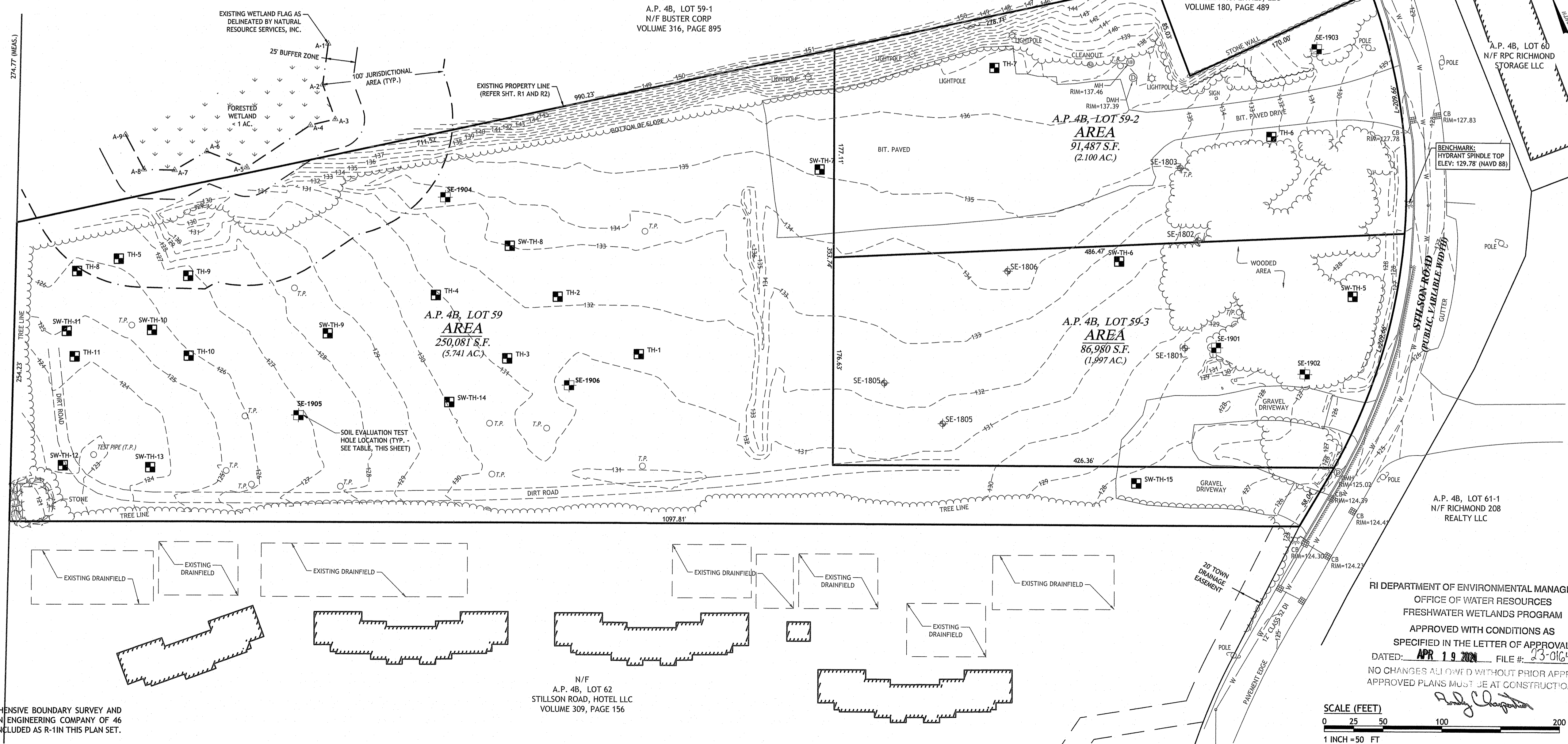
NOTES:  
1. TEST PIT EVALUATIONS WERE CONDUCTED BY KEVIN FETZER, LICENSE NUMBER D-4029 IN JANUARY 2019. SOIL EVALUATIONS ARE AVAILABLE TO THE CONTRACTOR UPON REQUEST.

| SOIL EVALUATION TEST PIT DATA |             |                |               |
|-------------------------------|-------------|----------------|---------------|
|                               | SURFACE EL. | SHWT / EL.     | DEPTH / EL.   |
| TH-1                          | 131.25      | NOT DETERMINED | 60' / 126.25  |
| TH-2                          | 132.25      | NOT DETERMINED | 60' / 127.25  |
| TH-3                          | 131.25      | NOT DETERMINED | 60' / 126.25  |
| TH-4                          | 130.90      | NOT DETERMINED | 60' / 125.90  |
| TH-5                          | 126.25      | NOT DETERMINED | 108' / 117.25 |
| TH-6                          | 132.10      | NOT DETERMINED | 108' / 123.10 |
| TH-7                          | 136.80      | NOT DETERMINED | 48' / 132.80  |
| TH-8                          | 125.80      | 44' / 122.13   | 144' / 113.80 |
| TH-9                          | 126.90      | 48' / 122.90   | 144' / 114.90 |
| TH-10                         | 125.90      | 60' / 120.90   | 144' / 113.90 |
| TH-11                         | 124.30      | 32' / 121.63   | 144' / 112.30 |

NOTES:  
1. TEST PIT EVALUATIONS WERE CONDUCTED BY AMBER K. HARDY, LICENSE NUMBER D-4098 IN MAY AND NOVEMBER 2022. SOIL EVALUATIONS ARE AVAILABLE TO THE CONTRACTOR UPON REQUEST.

| SOIL EVALUATION TEST PIT DATA |             |                |               |
|-------------------------------|-------------|----------------|---------------|
|                               | SURFACE EL. | SHWT / EL.     | DEPTH / EL.   |
| SW-TH-5                       | 128.25      | NOT DETERMINED | 56' / 123.58  |
| SW-TH-6                       | 132.60      | NOT DETERMINED | 54' / 128.10  |
| SW-TH-7                       | 135.20      | 60' / 130.20   | 64' / 129.86  |
| SW-TH-8                       | 133.00      | NOT DETERMINED | 56' / 128.33  |
| SW-TH-9                       | 128.40      | NOT DETERMINED | 76' / 122.06  |
| SW-TH-10                      | 125.60      | NOT DETERMINED | 86' / 118.43  |
| SW-TH-11                      | 124.95      | 72' / 118.95   | 96' / 116.95  |
| SW-TH-12                      | 123.15      | NOT DETERMINED | 108' / 114.15 |
| SW-TH-13                      | 123.75      | 48' / 119.75   | 108' / 114.75 |
| SW-TH-14                      | 130.05      | NOT DETERMINED | 72' / 124.05  |
| SW-TH-15                      | 127.80      | NOT DETERMINED | 108' / 118.80 |

NOTES:  
1. SOIL EVALUATIONS WERE CONDUCTED BY JOE CASALI ENGINEERING IN JUNE AND AUGUST 2022. SOIL EVALUATIONS ARE AVAILABLE TO THE CONTRACTOR UPON REQUEST.



**SURVEY NOTE:**  
1. EXISTING CONDITIONS ARE BASED ON THE CLASS I COMPREHENSIVE BOUNDARY SURVEY AND CLASS III TOPOGRAPHIC SURVEY PERFORMED BY WATERMAN ENGINEERING COMPANY OF 46 SUTTON AVENUE, EAST PROVIDENCE, RI IN FEBRUARY 2021; INCLUDED AS R-1 IN THIS PLAN SET.

**JOE CASALI ENGINEERING, INC.**  
CIVIL - SITE DEVELOPMENT - TRANSPORTATION  
DRAINAGE - WETLANDS - I&DS - TRAFFIC - FLOODPLAIN  
(601) 944-1300 (01944) 3131 FAX: WWW.JOECASALI.COM

JOSEPH A. CASALI  
No. 7250  
REGISTERED PROFESSIONAL ENGINEER  
03 / 01 / 2024

**RICHMOND PLACE**  
38 STILSON ROAD  
RICHMOND, RHODE ISLAND  
AP 4B, LOTS 59, 59-2, & 59-3

RI Environmental Management  
MAR 03 2024

OWNER:  
RICHMOND REALTY ASSOCIATES, LLC  
1536 SCITUATE AVENUE  
CRANSTON, RI 02920

APPLICANT:  
CHIDAMBARAM NARAYANAN  
CT PROPERTIES, LLC  
29 PINE STREET  
EAST PROVIDENCE, RI 02915

REVISIONS:

| NO. | DATE    | DESCRIPTION      |
|-----|---------|------------------|
| 1   | 11/2021 | TOWN COMMENTS    |
| 2   | 7/2023  | PRELIMINARY PLAN |
| 3   | 1/2024  | RIDEM RTC        |
| 4   | 2/2024  | PLANNING RTC     |
| 5   | 3/2024  | RIDEM RTC        |

DESIGNED BY: WMLJR  
DRAWN BY: SD/SEP  
CHECKED BY: JAC  
DATE: OCTOBER 2021  
PROJECT NO: 20-61a

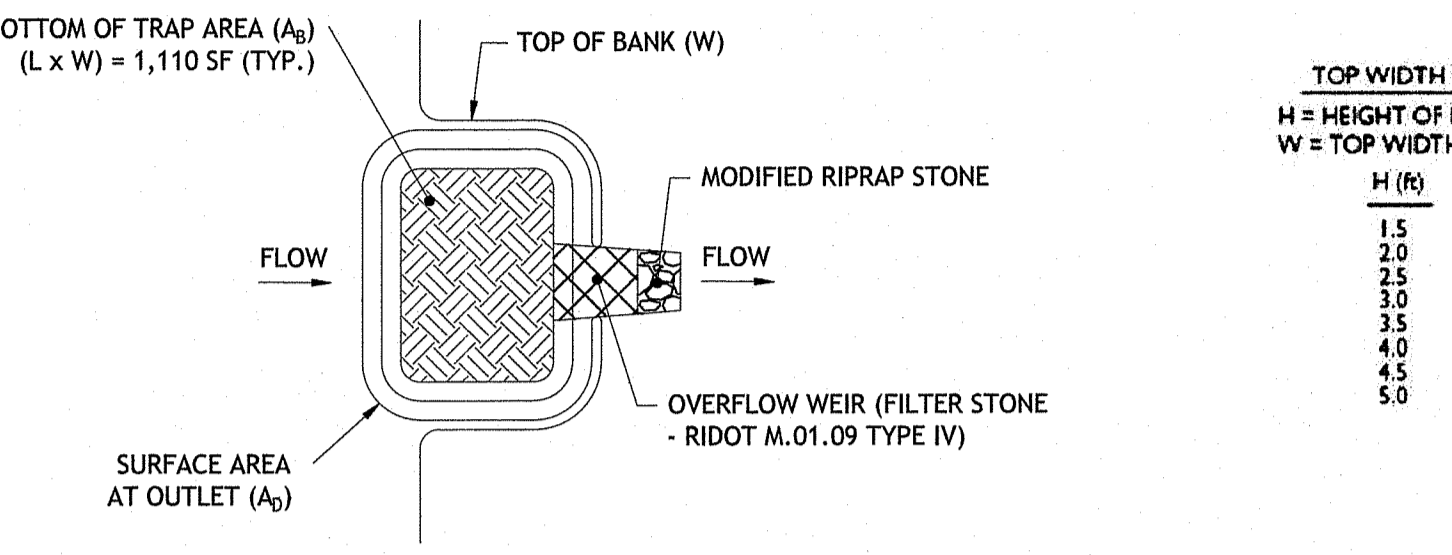
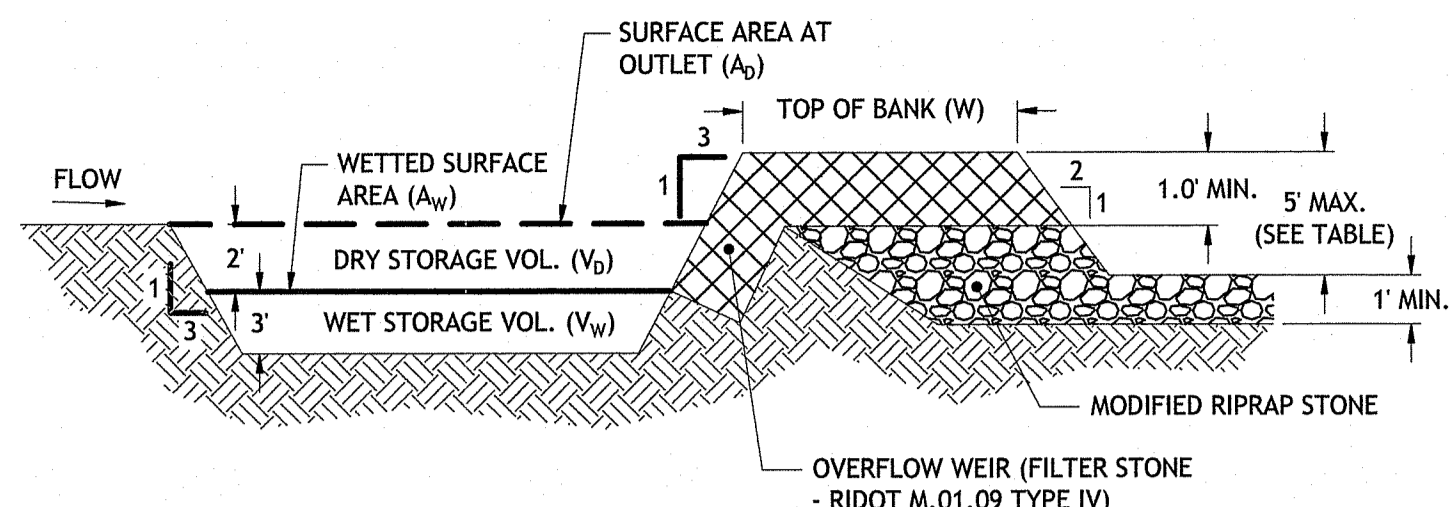
PRELIMINARY, NOT FOR CONSTRUCTION

**EXISTING CONDITIONS PLAN**

**SHEET 3 OF 20**

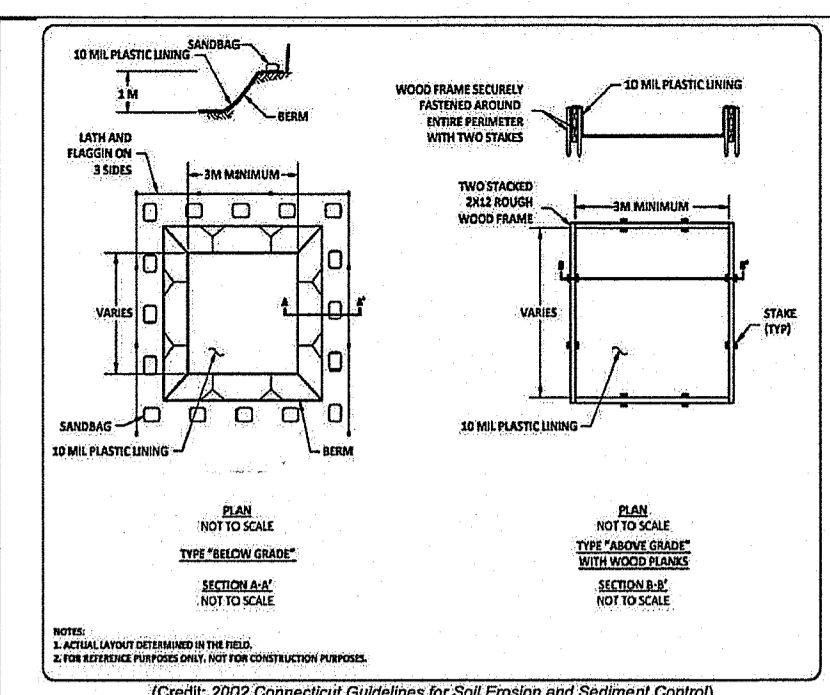
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0 25 50 100 200  
1 INCH = 50 FT

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED: APR 19 2024 FILE #: 23-0164  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

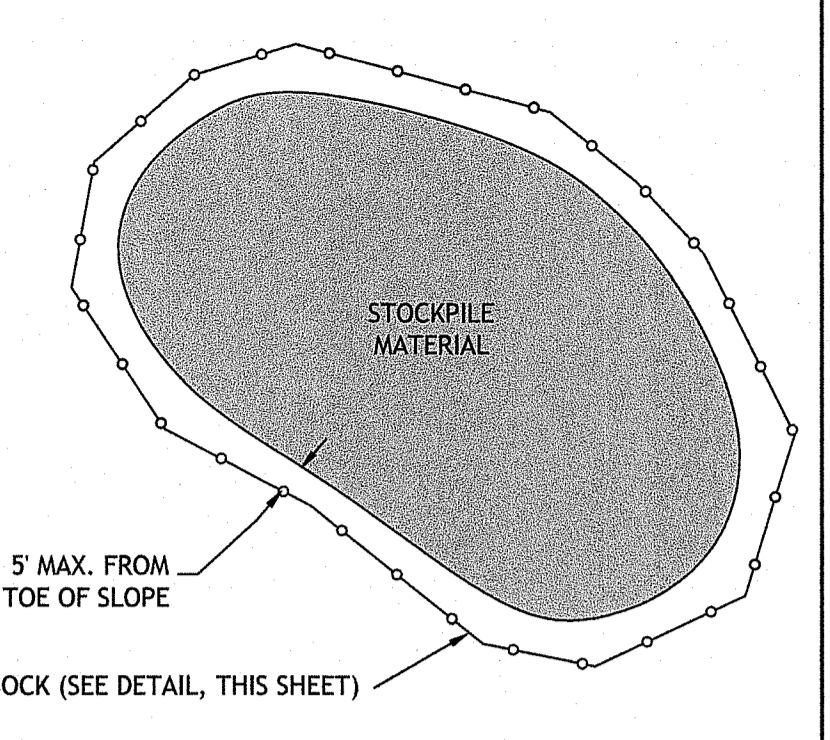


**TOP WIDTH VS. HEIGHT**  
 H = HEIGHT OF EMBANKMENT  
 W = TOP WIDTH OF EMBANKMENT

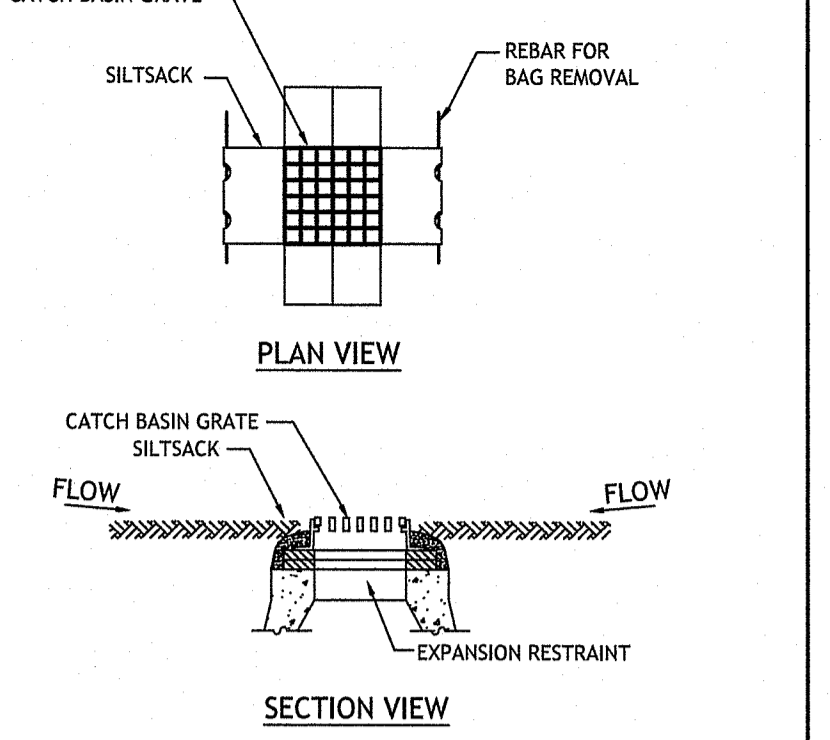
| H (ft) | W (ft) |
|--------|--------|
| 1.5    | 2.0    |
| 2.0    | 2.5    |
| 2.5    | 3.0    |
| 3.0    | 3.5    |
| 3.5    | 4.0    |
| 4.0    | 4.5    |
| 4.5    | 5.0    |
| 5.0    | 5.5    |



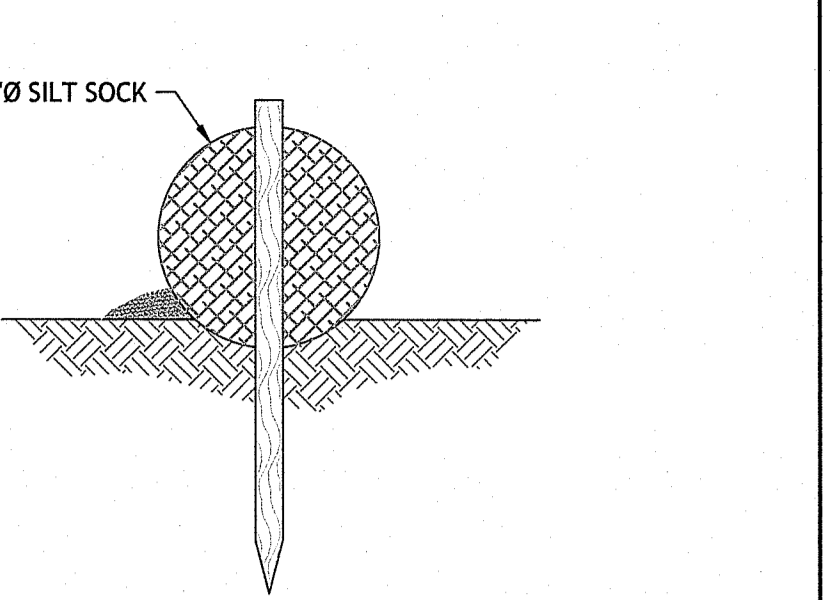
**2 TEMP. CONC. WASHOUT**  
 NOT TO SCALE



**3 STOCKPILE DETAIL**  
 NOT TO SCALE



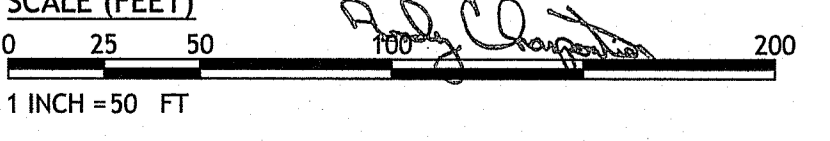
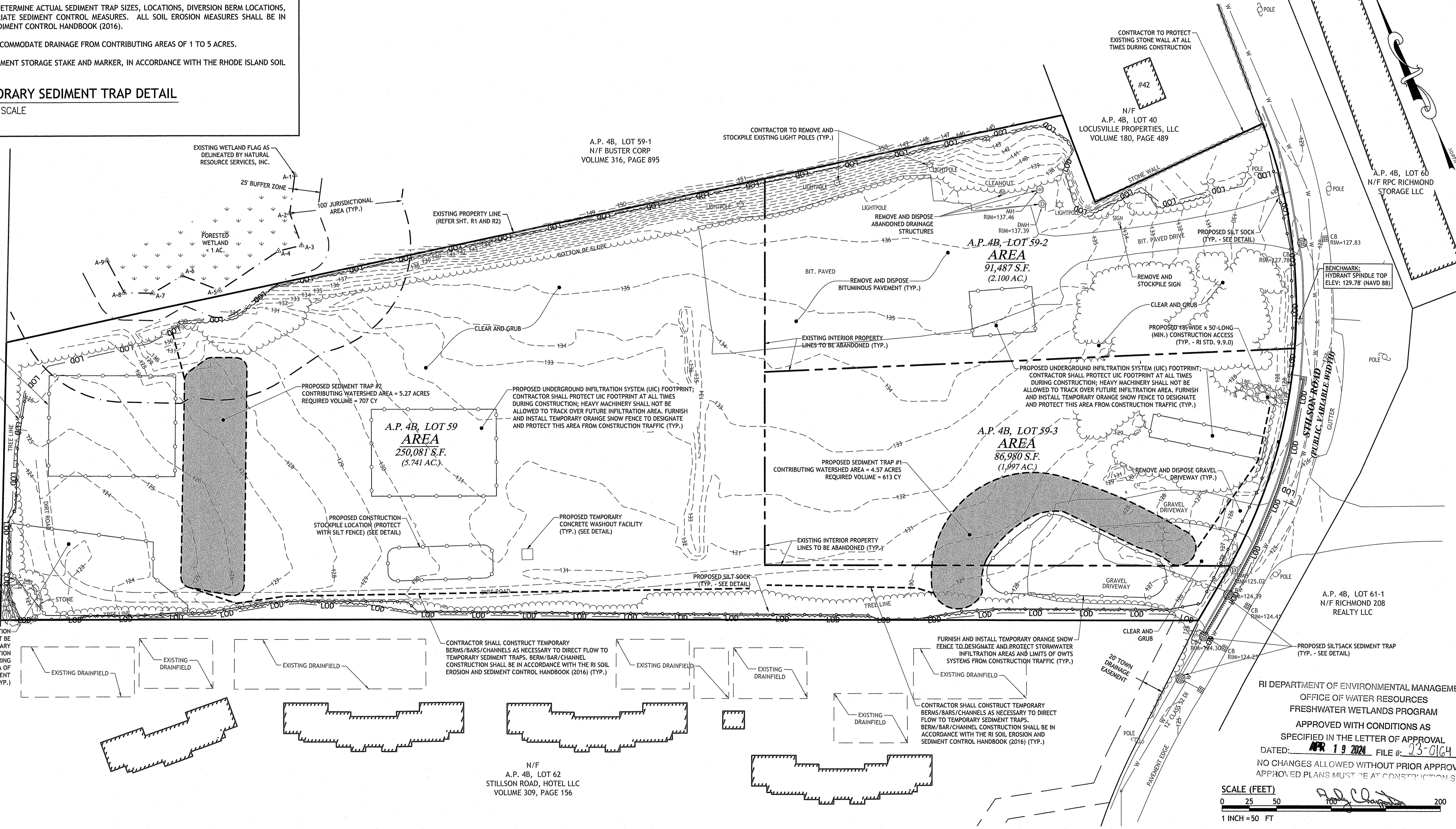
**4 SILTSACK SEDIMENT TRAP**  
 NOT TO SCALE



**5 SILT SOCK**  
 NOT TO SCALE

- NOTES:**
- 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.
  - 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).
  - PROPOSED SEDIMENT TRAP SHOWN SHALL BE DESIGNED TO ACCOMMODATE DRAINAGE FROM CONTRIBUTING AREAS OF 1 TO 5 ACRES.
  - 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).

**1 TEMPORARY SEDIMENT TRAP DETAIL**  
 NOT TO SCALE



**JCE**  
 JOE CASALI ENGINEERING, INC.  
 CIVIL - SITE DEVELOPMENT - TRANSPORTATION  
 DRAINAGE - WETLANDS - EROSION CONTROL - CONSTRUCTION  
 16019441360 16019441313 FAX WWW.JOECASALI.COM

JOSEPH A. CASALI  
 No. 7250  
 REGISTERED PROFESSIONAL ENGINEER  
 03/01/2024

**RICHMOND PLACE**  
**38 STILSON ROAD**  
**RICHMOND, RHODE ISLAND**  
**AP 4B, LOTS 59, 59-2, & 59-3**

Environmental Management  
 MAR 6 2024  
 Owner: RICHMOND REALTY ASSOCIATES, LLC  
 1536 SCITUATE AVENUE  
 CRANSTON, RI 02920  
 Applicant: CHIDAMBARAM NARAYANAN  
 CT PROPERTIES, LLC  
 29 PINE STREET  
 EAST PROVIDENCE, RI 02915

**REVISIONS:**

| NO. | DATE    | DESCRIPTION      |
|-----|---------|------------------|
| 1   | 11/2021 | TOWN COMMENTS    |
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| 3   | 1/2024  | RIDEM RTC        |
| 4   | 2/2024  | PLANNING RTC     |
| 5   | 3/2024  | RIDEM RTC        |

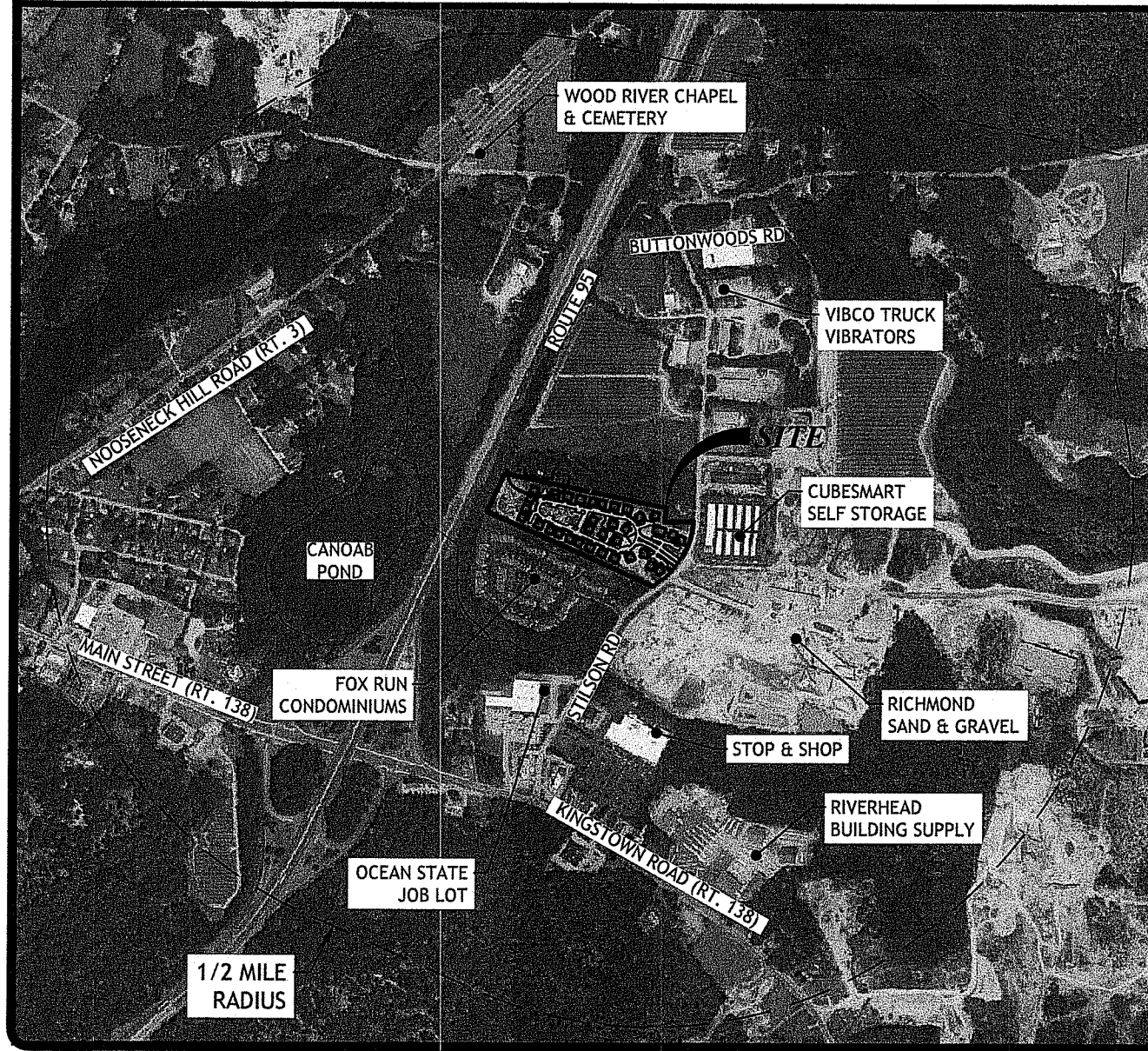
DESIGNED BY: WMLJR  
 DRAWN BY: SD/SEP  
 CHECKED BY: JAC  
 DATE: OCTOBER 2021  
 PROJECT NO: 20-61a

PRELIMINARY, NOT FOR CONSTRUCTION

**SITE PREPARATION PLAN**

**SHEET 4 OF 20**

**SITE CONTEXT PLAN**  
(SCALE = 1" = 1000')

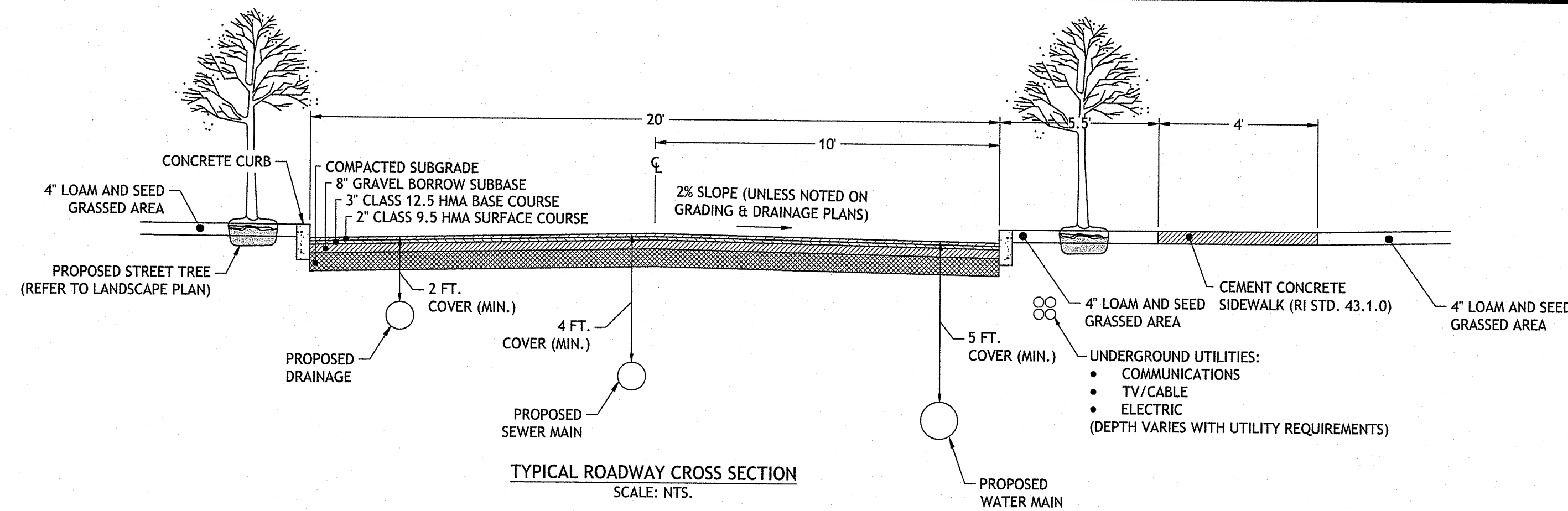


| ZONING CRITERIA             | REQUIRED GB | EXISTING GB | PROPOSED GB |
|-----------------------------|-------------|-------------|-------------|
| ZONING DISTRICT             |             | PARCEL A    | PARCEL A    |
| MINIMUM LOT AREA            | 43,560 SF   | 428,548 SF  | 428,548 SF  |
| MINIMUM LOT FRONTAGE        | 150 FT      | 209.66 FT   | 477.36 FT   |
| MINIMUM FRONT YARD SETBACK  | 20 FT       | N/A         | 28.78 FT    |
| MINIMUM SIDE YARD SETBACK   | 35 FT       | N/A         | 35 FT       |
| MINIMUM REAR YARD SETBACK   | 30 FT       | N/A         | 180.35 FT   |
| MAXIMUM BUILDING COVERAGE   | 25%         | N/A         | 17.2%       |
| MAXIMUM HEIGHT OF STRUCTURE | 40 FT       | N/A         | <40 FT      |

**DENSITY CALCULATION:**  
TOTAL LOT AREA: 9.838 ACRES  
PROPOSED NUMBER OF UNITS = 69 UNITS  
69 UNITS / 9.838 ACRES = 7.013 UNITS/ACRE  
\*DENSITY IN CONFORMANCE WITH THE ADJACENT PROJECT, "FOX RUN CONDOMINIUMS" OF 7.05 DWELLING UNITS PER ACRE

**PROJECT DATA:**  
PROPOSED NUMBER OF UNITS = 69 UNITS  
25% MIN. LOW TO MODERATE INCOME (LMI) HOUSING  
51 MARKET RATE UNITS  
18 LMI UNITS (26%)

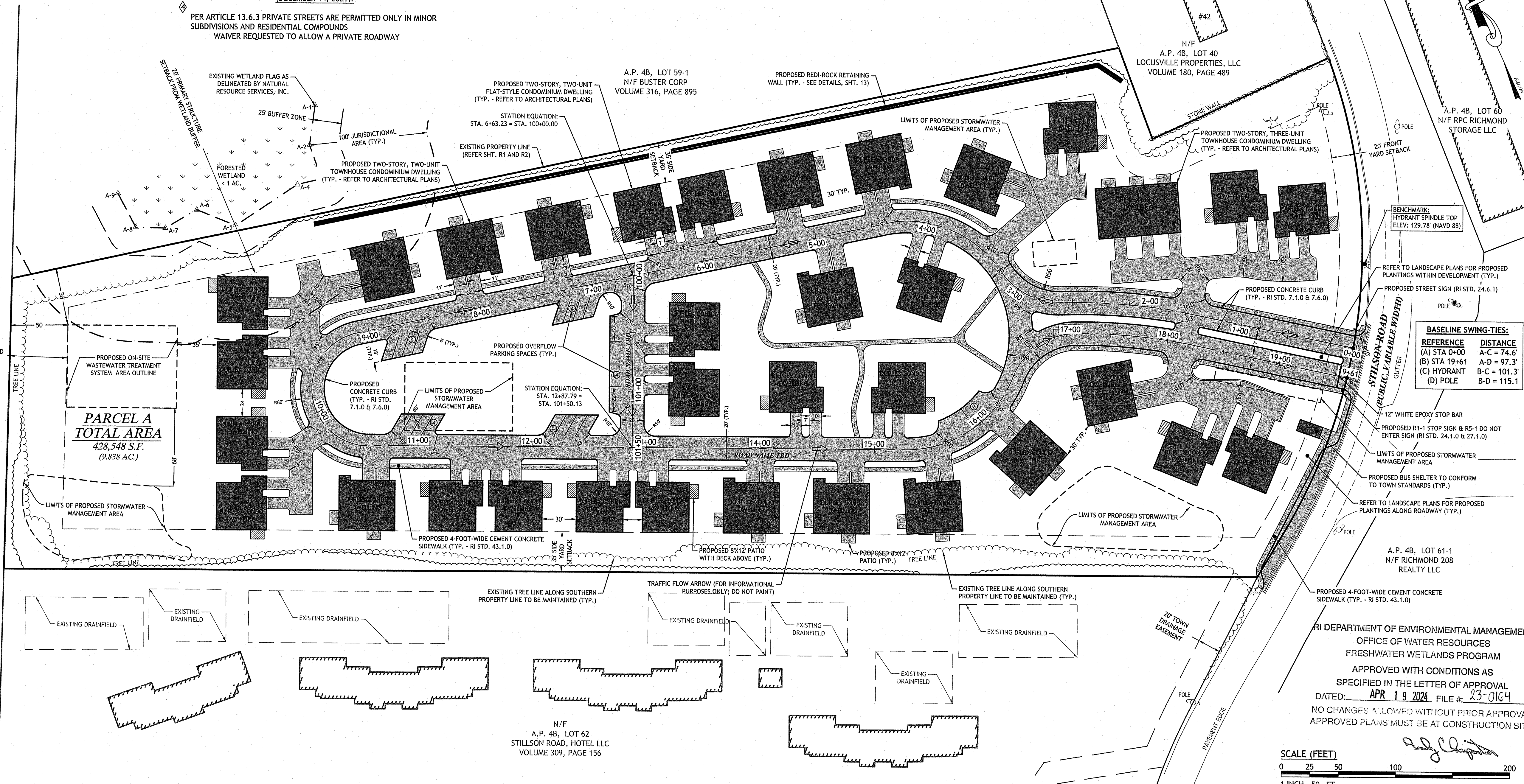
**PER SECTION 18.29.040 - NUMBER OF PARKING SPACES REQUIRED OF THE RICHMOND ZONING ORDINANCE:**  
USE: TWO-FAMILY DETACHED  
REQUIRED: 2 SPACES PER DWELLING UNIT (D.U.)  
69 DWELLING UNITS X 2 = 138 SPACES  
PARKING SPACES REQUIRED: 138 SPACES (2 PER D.U.)  
PARKING SPACES PROPOSED: 160 SPACES\* (2.32 PER D.U.)  
\* EACH UNIT CONTAINS ONE (1) GARAGE SPACE AND ONE (1) DRIVEWAY SPACE FOR A TOTAL OF 138 PARKING SPACES FOR RESIDENTS AND 22 PARKING SPACES DESIGNATED FOR VISITORS



**NOTES**  
1. REFER TO UTILITY PLAN FOR PIPE SIZE AND MATERIAL.  
2. UTILITY LOCATIONS SHOWN ARE APPROXIMATE. REFER TO UTILITY PLANS FOR EXACT LOCATION.

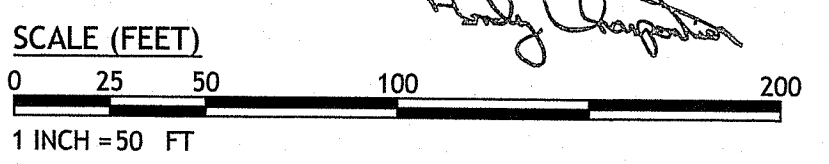
- VARIANCE REQUESTS APPROVED AT MASTER PLAN HEARING (DECEMBER 14, 2021):**
- PER CHAPTER 18.16.010 TABLE OF USES, USE CODE 102 TWO-DWELLING UNIT BUILDING  
REQUIREMENT: NOT PERMITTED IN GB ZONE  
PROPOSED: TWO-DWELLING UNIT BUILDINGS IN A GB ZONE  
RELIEF REQUESTED: RELIEF FROM ZONING REGULATION
  - PER CHAPTER 18.36.100 STANDARDS FOR DEVELOPMENTS WITH MULTI-FAMILY BUILDINGS (F)  
REQUIREMENT: RESIDENTIAL DENSITY SHALL BE NO MORE THAN 4 DWELLING UNITS PER ACRE  
PROPOSED: 7.013 UNITS / ACRE  
RELIEF REQUESTED: 3.013 UNITS / ACRE
  - PER CHAPTER 18.37.060(A) AQUIFER OVERLAY DISTRICT SANITARY WASTEWATER DISCHARGE INTO ON-SITE SEPTIC SYSTEM (ISDS) SHALL NOT AVERAGE MORE THAN 350 GALLONS PER ACRE PER DAY  
REQUIREMENT: LESS THAN 350 GALLONS PER ACRE PER DAY  
PROPOSED: 1,615 GALLONS PER ACRE PER DAY  
RELIEF REQUESTED: 1,265 GALLONS PER ACRE PER DAY
- WAIVER REQUEST APPROVED AT MASTER PLAN HEARING (DECEMBER 14, 2021):**
- PER ARTICLE 13.6.3 PRIVATE STREETS ARE PERMITTED ONLY IN MINOR SUBDIVISIONS AND RESIDENTIAL COMPOUNDS  
WAIVER REQUESTED TO ALLOW A PRIVATE ROADWAY

INTERSTATE ROUTE 95  
(RHODE ISLAND HIGHWAY PLAT #49)



**BASELINE SWING-TIES:**

| REFERENCE     | DISTANCE     |
|---------------|--------------|
| (A) STA 0+00  | A-C = 74.6'  |
| (B) STA 19+61 | A-D = 97.3'  |
| (C) HYDRANT   | B-C = 101.3' |
| (D) POLE      | B-D = 115.1' |



**JCE**  
JOE CASALI ENGINEERING, INC.  
CIVIL, SITE DEVELOPMENT, TRANSPORTATION  
DRAINAGE, WETLANDS, ISDS, TRAFFIC, FLOODPLAIN  
300 POST ROAD, WARWICK, RI 02888  
401.944.1300 401.944.1313 FAX WWW.JCEONLINE.COM

JOSEPH A. CASALI  
No. 7250  
REGISTERED PROFESSIONAL ENGINEER  
CIVIL  
03/01/2024

**RICHMOND PLACE**  
38 STILSON ROAD  
RICHMOND, RHODE ISLAND  
AP 4B, LOTS 59, 59-2, & 59-3

RI Environmental Division  
MAR 03 2024

OWNER: RICHMOND REALTY ASSOCIATES, LLC  
1536 SCITUATE AVENUE  
CRANSTON, RI 02920

APPLICANT: CHIDAMBARAM NARAYANAN  
CT PROPERTIES, LLC  
29 PINE STREET  
EAST PROVIDENCE, RI 02915

**REVISIONS:**

| NO. | DATE    | DESCRIPTION      |
|-----|---------|------------------|
| 1   | 11/2021 | TOWN COMMENTS    |
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| 3   | 1/2024  | RIDEM RTC        |
| 4   | 2/2024  | PLANNING RTC     |
| 5   | 3/2024  | RIDEM RTC        |

DESIGNED BY: WML/R  
DRAWN BY: SD/SEP  
CHECKED BY: JAC  
DATE: OCTOBER 2021  
PROJECT NO: 20-61a

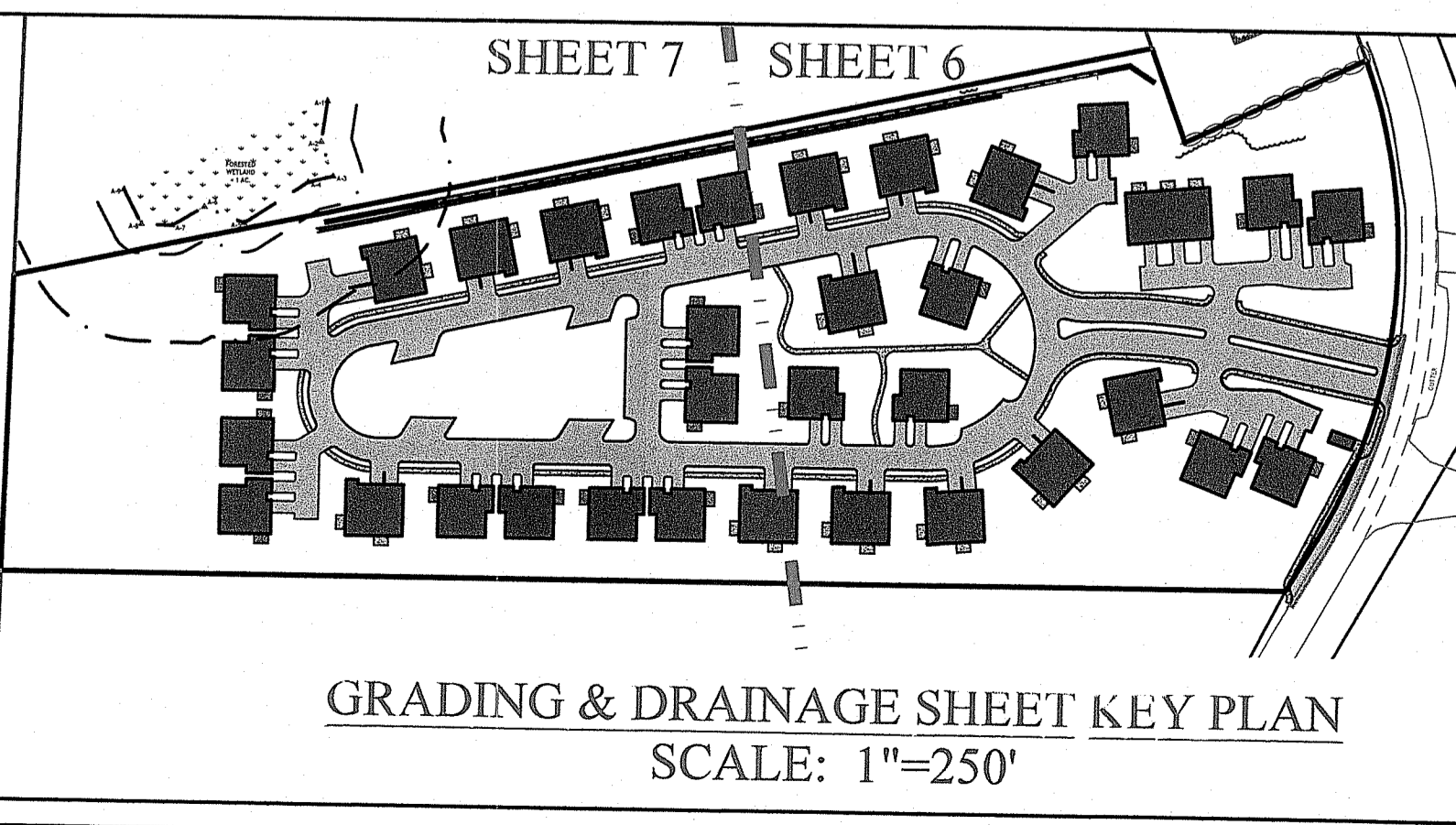
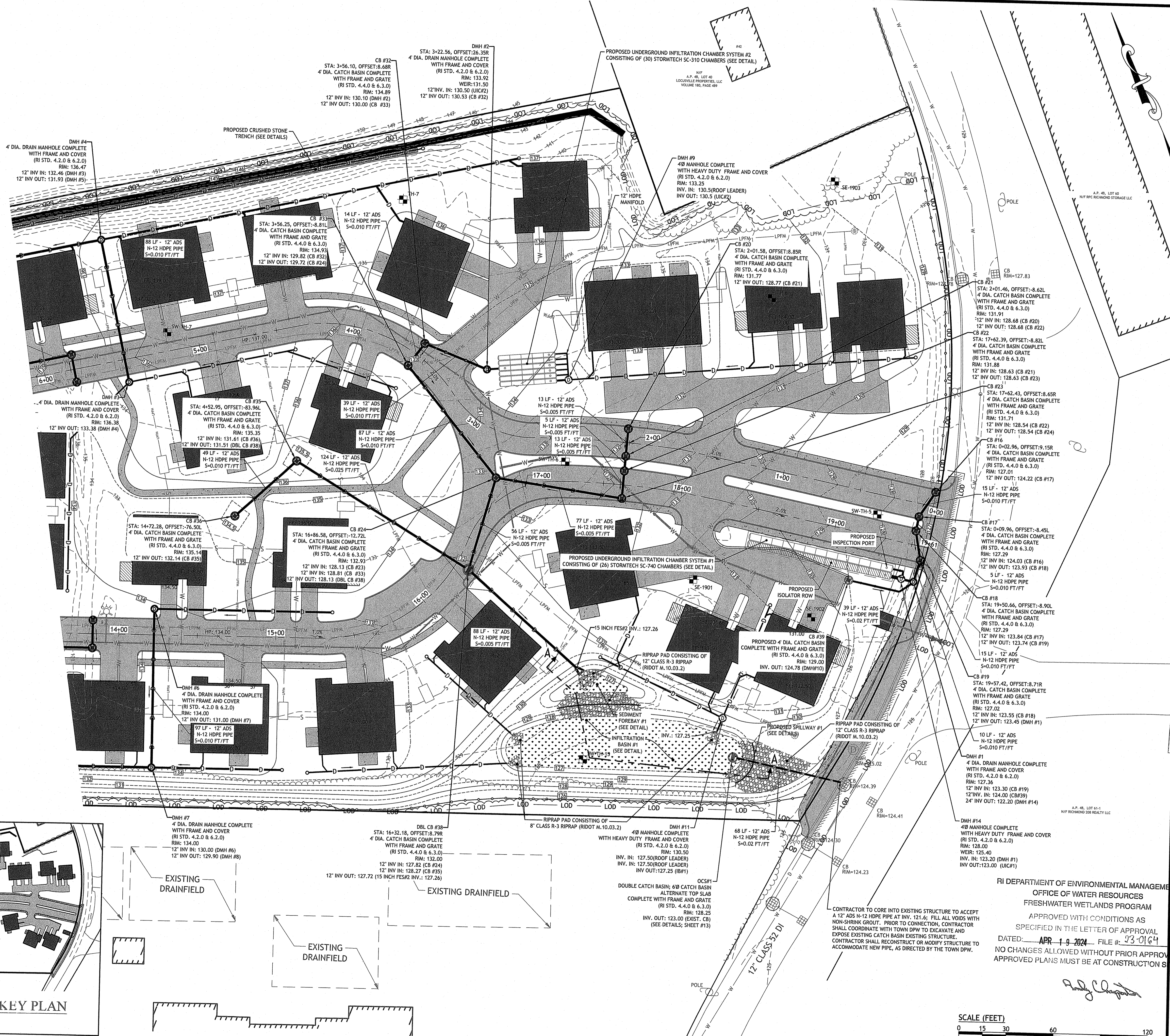
PRELIMINARY, NOT FOR CONSTRUCTION

**SITE PLAN**

**SHEET 5 OF 20**

Q:\20-61 CT Narayanam\20-61a Stilson Rd. Richmond\CAD\Stilson Rd. Wyoming - [DEW RTC].dwg Mar. 08, 2024 2:12:00pm

Q:\20-61 CT Narayanan\20-61a Stilson Rd. Richmond\ACD\Stilson Rd. Richmond\RTC.dwg Mar. 08, 2024 2:12pm



GRADING & DRAINAGE SHEET KEY PLAN  
SCALE: 1"=250'

SCALE (FEET)  
0 15 30 60 120  
1 INCH = 30 FT

**JCE**  
JOE CASALI ENGINEERING, INC.  
CIVIL, SITE DEVELOPMENT, TRANSPORTATION  
DRAINAGE, WATER RESOURCES, ENVIRONMENTAL  
4011 94th Street, Suite 100, Richmond, VA 23234  
(804) 261-1300

JOSEPH A. CASALI  
No. 7250  
REGISTERED PROFESSIONAL ENGINEER  
03/01/2024

**RICHMOND PLACE**  
**38 STILSON ROAD**  
**RICHMOND, RHODE ISLAND**  
**AP 4B, LOTS 59, 59-2, & 59-3**

Environmental Management  
MAR 09 2024

OWNER:  
RICHMOND REALTY ASSOCIATES, LLC  
1536 SITUATE AVENUE  
CRANSTON, RI 02920

APPLICANT:  
CHIDAMBARAM NARAYANAN  
CT PROPERTIES, LLC  
29 PINE STREET  
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REVISIONS:

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| 4   | 2/2024  | PLANNING RTC     |
| 5   | 3/2024  | RIDEM RTC        |

DESIGNED BY: WMLR  
DRAWN BY: SDBSP  
CHECKED BY: JAC  
DATE: OCTOBER 2021  
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PRELIMINARY, NOT FOR CONSTRUCTION

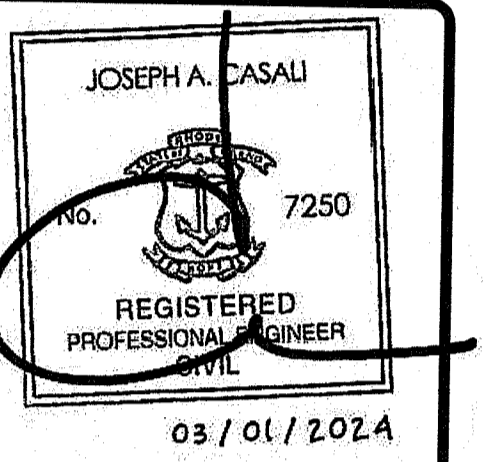
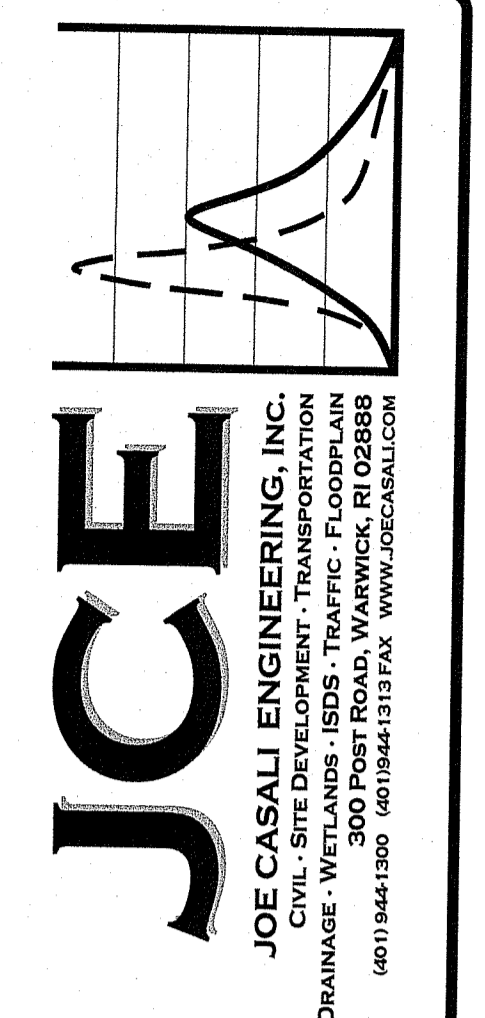
**GRADING & DRAINAGE PLAN I**

**SHEET 6 OF 20**

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

APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED: APR 19 2024 FILE #: 23-0164  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Andy Chapman*



**RICHMOND PLACE**  
**38 STILSON ROAD**  
**RICHMOND, RHODE ISLAND**  
**AP 4B, LOTS 59, 59-2, & 59-3**

RI Environmental Affairs (Seal)  
 MAR 09 2024  
 Office of Water Resources

OWNER:  
 RICHMOND REALTY ASSOCIATES, LLC  
 1536 SCITUATE AVENUE  
 CRANSTON, RI 02920

APPLICANT:  
 CHIDAMBARAN NARAYANAN  
 29 PINE STREET  
 EAST PROVIDENCE, RI 02915

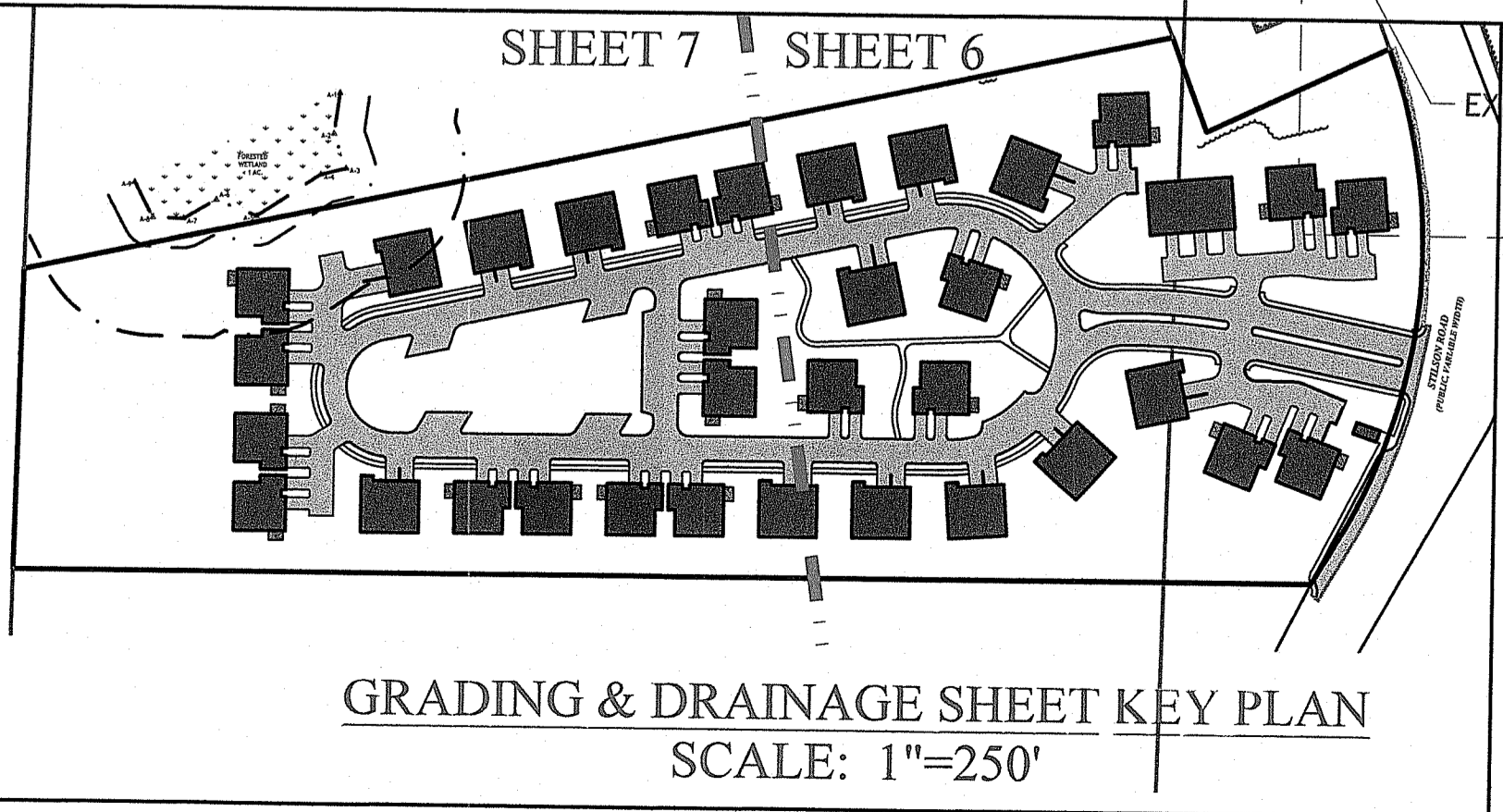
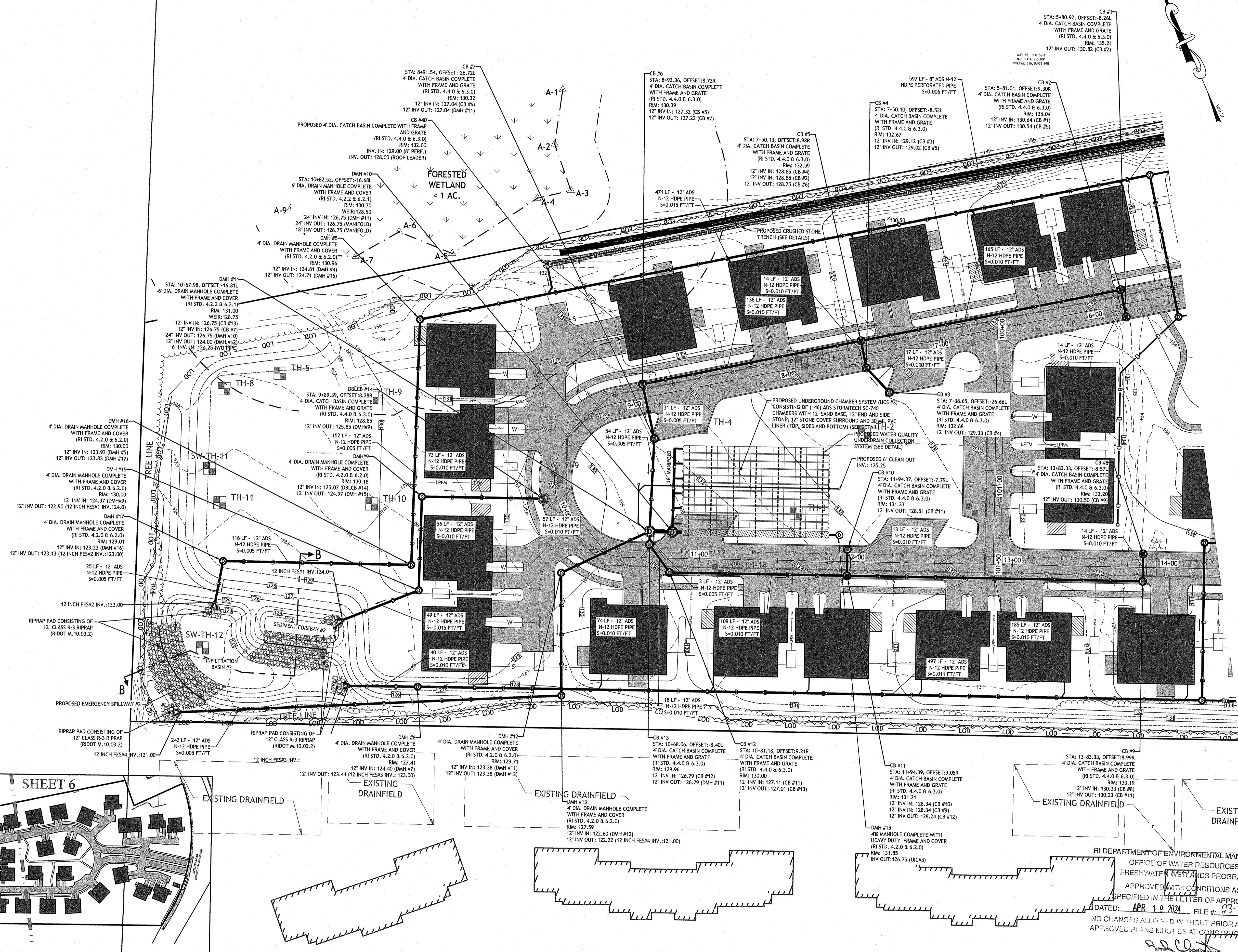
| NO. | DATE    | DESCRIPTION      |
|-----|---------|------------------|
| 1   | 11/2021 | TOWN COMMENTS    |
| 2   | 7/2023  | PRELIMINARY PLAN |
| 3   | 1/2024  | RIDEM RTC        |
| 4   | 2/2024  | PLANNING RTC     |
| 5   | 3/2024  | RIDEM RTC        |

DESIGNED BY: WMLR  
 DRAWN BY: SD/SEP  
 CHECKED BY: JAC  
 DATE: OCTOBER 2021  
 PROJECT NO: 20-01a

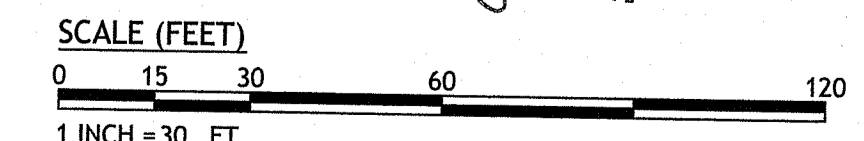
PRELIMINARY, NOT FOR CONSTRUCTION

**GRADING & DRAINAGE PLAN II**

**SHEET 7 OF 20**



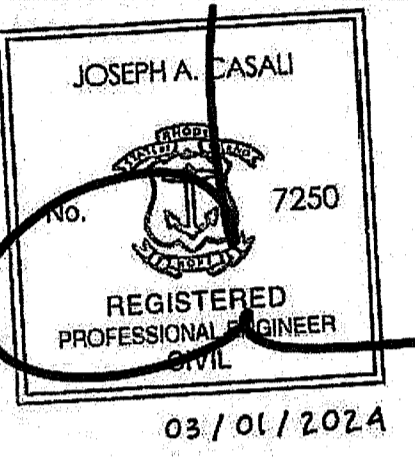
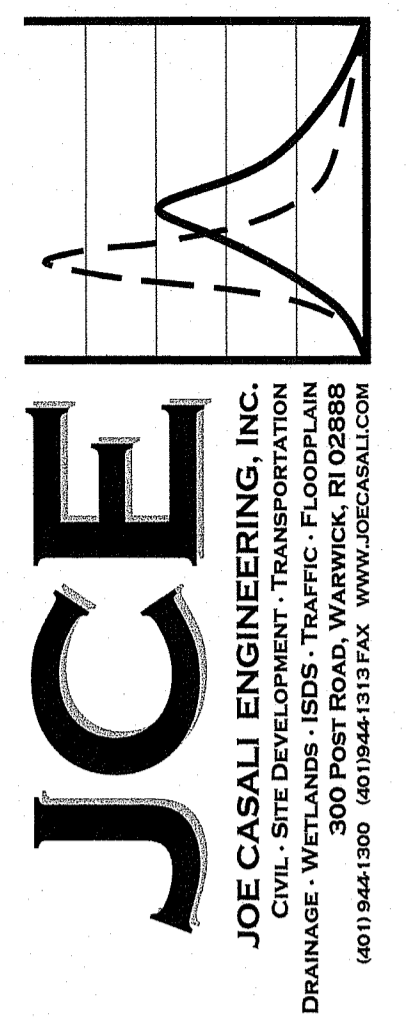
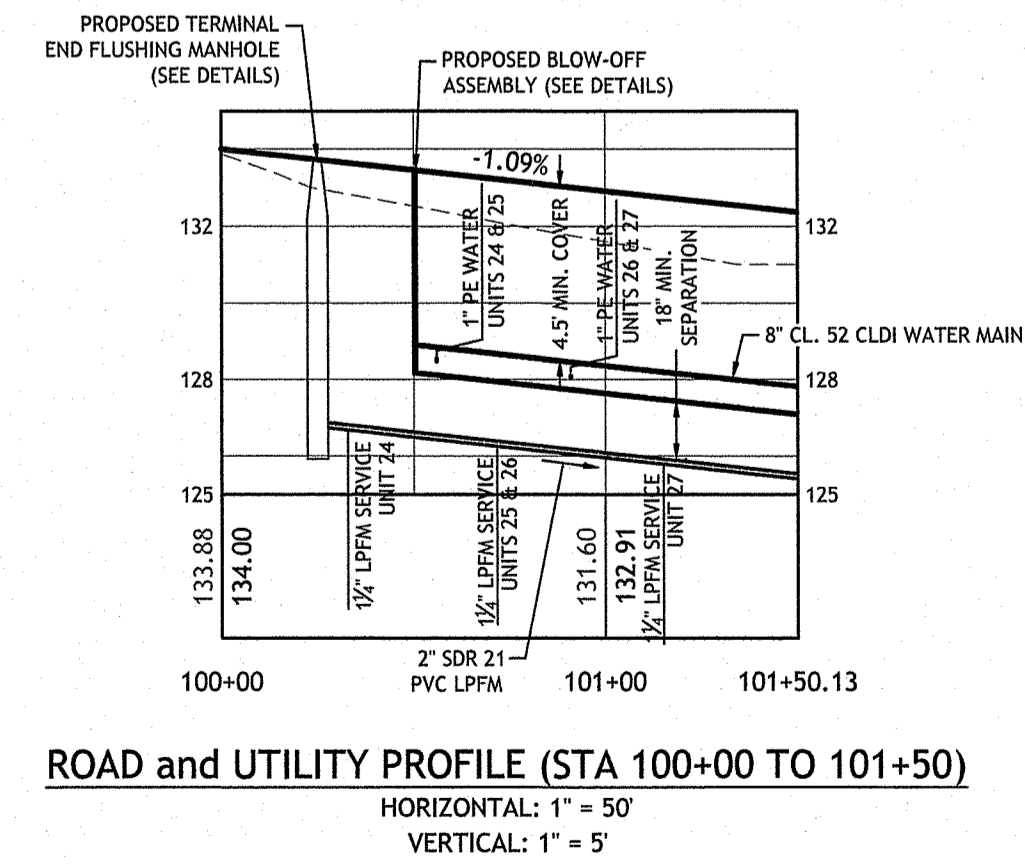
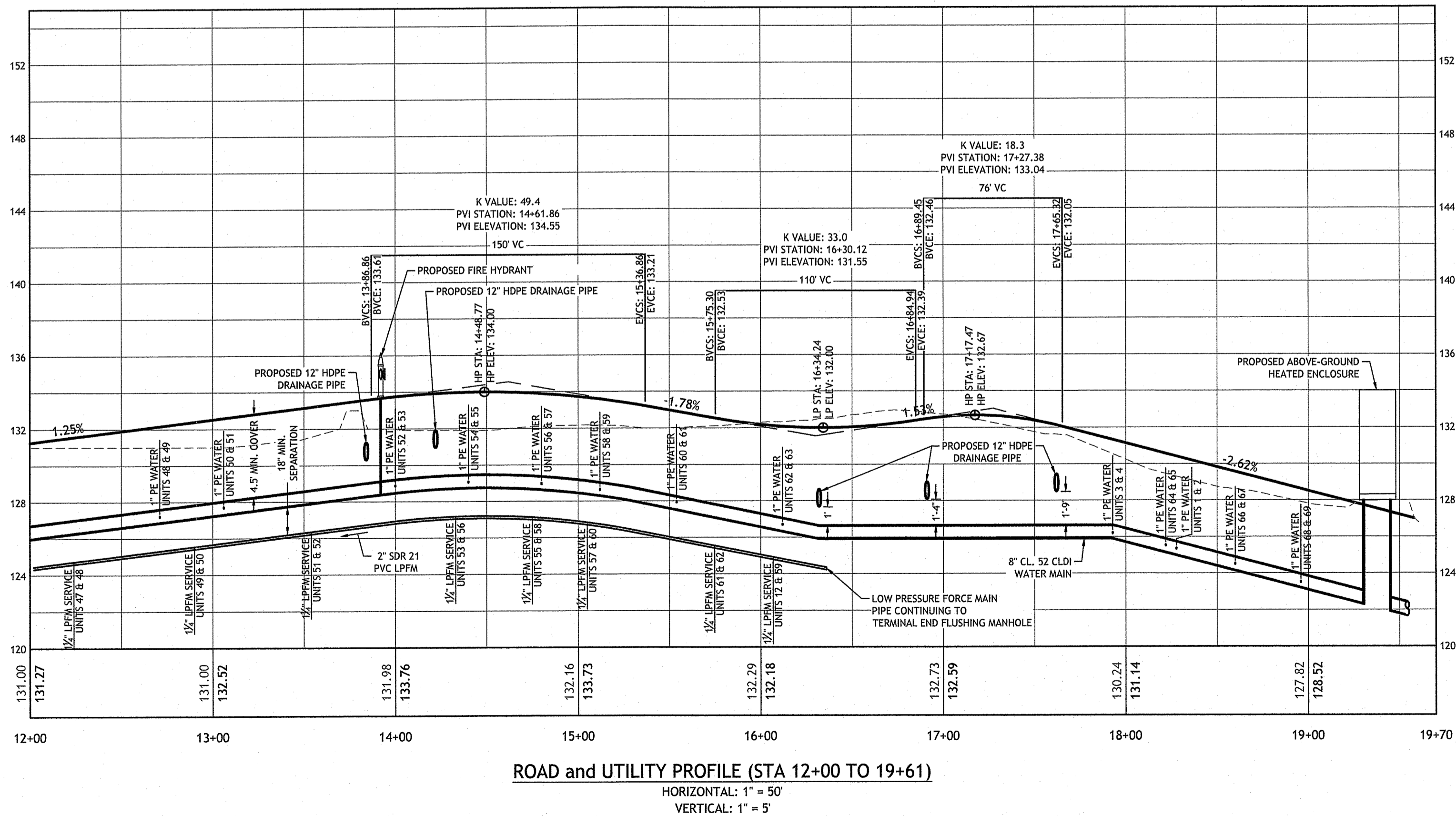
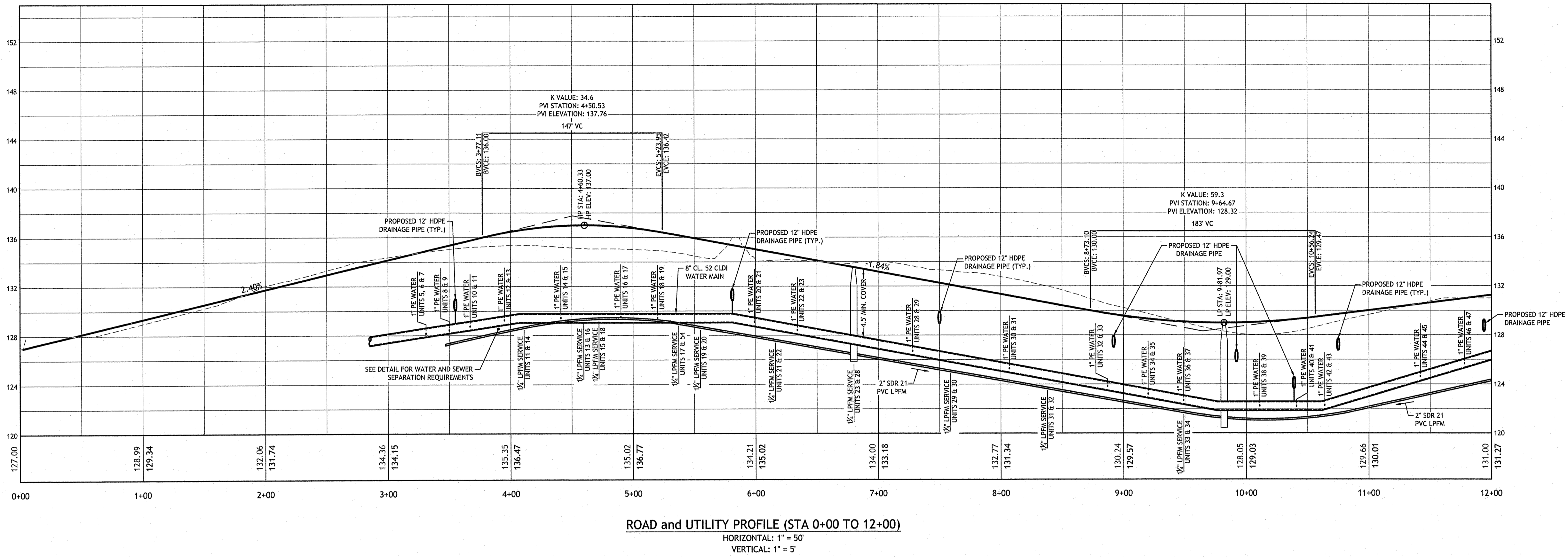
03/20/24, CT Narayanan20-01a Stilson Rd., Richmond/ACAD/Stilson Rd., Wyoming - [DEM RTC], dwg Mar. 08, 2024 2:13pm



RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL DATED: APR 19 2024 FILE # 23-0164  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL APPROVED PLANS MUST BE AT CONSTRUCTION SITE



Q:\20-61 CT Narayanam\20-61a Stilson Rd, Richmond\ACAD\Stilson Rd, Wyoming - [DEM, RTC].dwg Aut. 08, 2024, 2:13pm



**RICHMOND PLACE**  
**38 STILSON ROAD**  
**RICHMOND, RHODE ISLAND**  
**AP 4B, LOTS 59, 59-2, & 59-3**

OWNER:  
 RICHMOND REALTY ASSOCIATES, LLC  
 1536 SCITUATE AVENUE  
 CRANSTON, RI 02920

APPLICANT:  
 CHIDAMBARAM NARAYANAN  
 CT PROPERTIES, LLC  
 29 PINE STREET  
 EAST PROVIDENCE, RI 02915

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS AS  
 SPECIFIED IN THE LETTER OF APPROVAL  
 DATED: **APR 19 2024** FILE #: **93-0164**  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

REVISIONS:

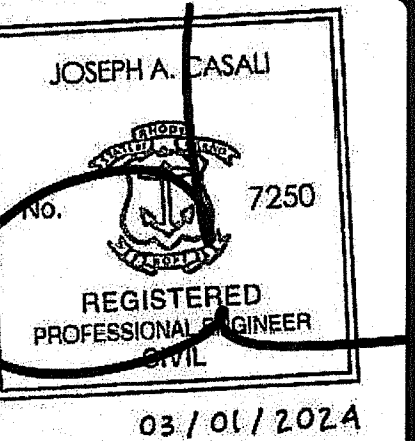
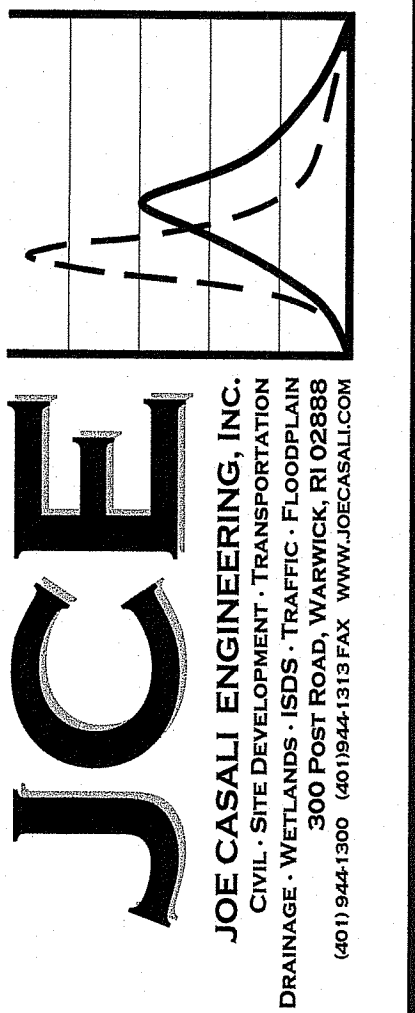
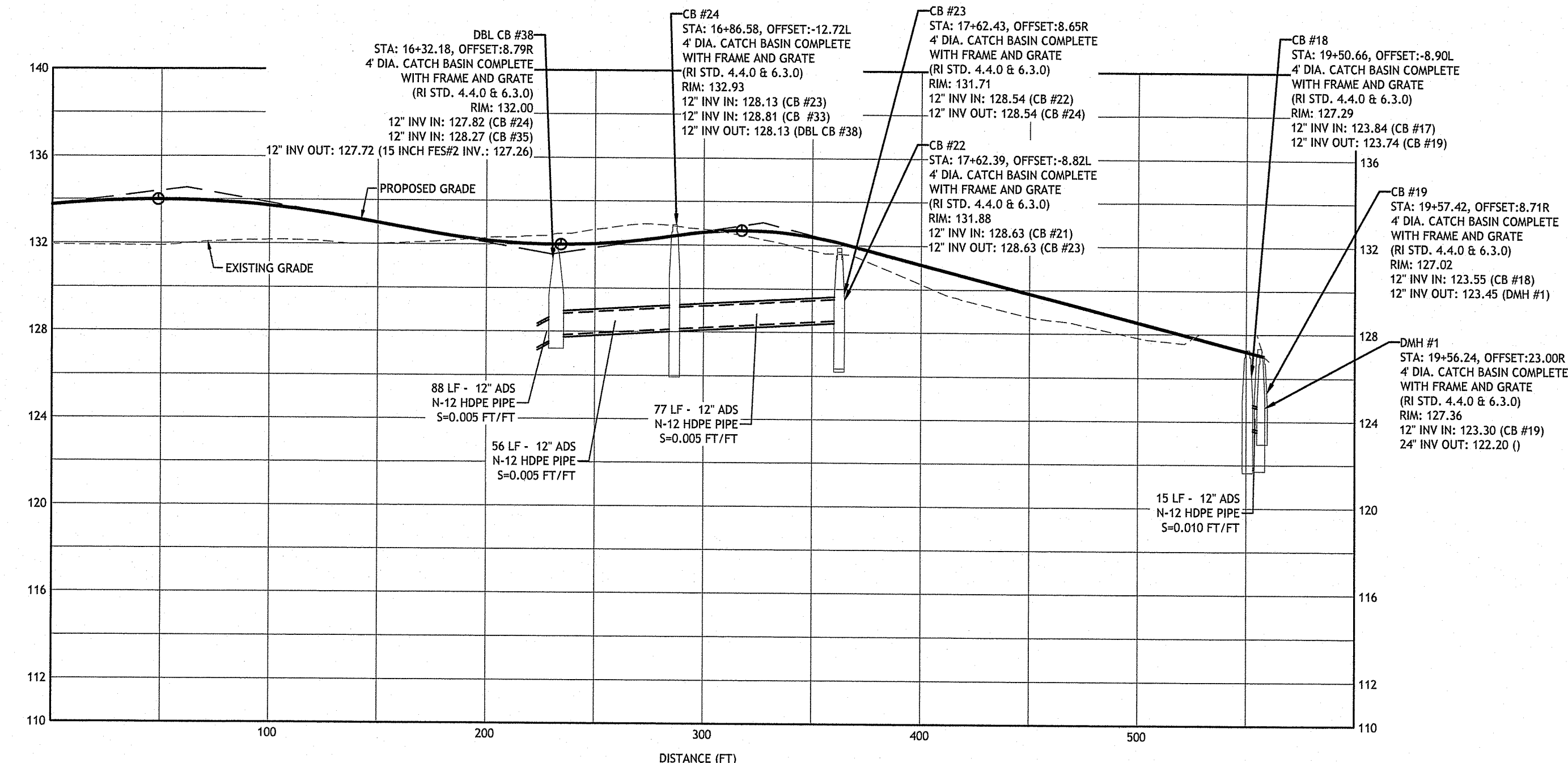
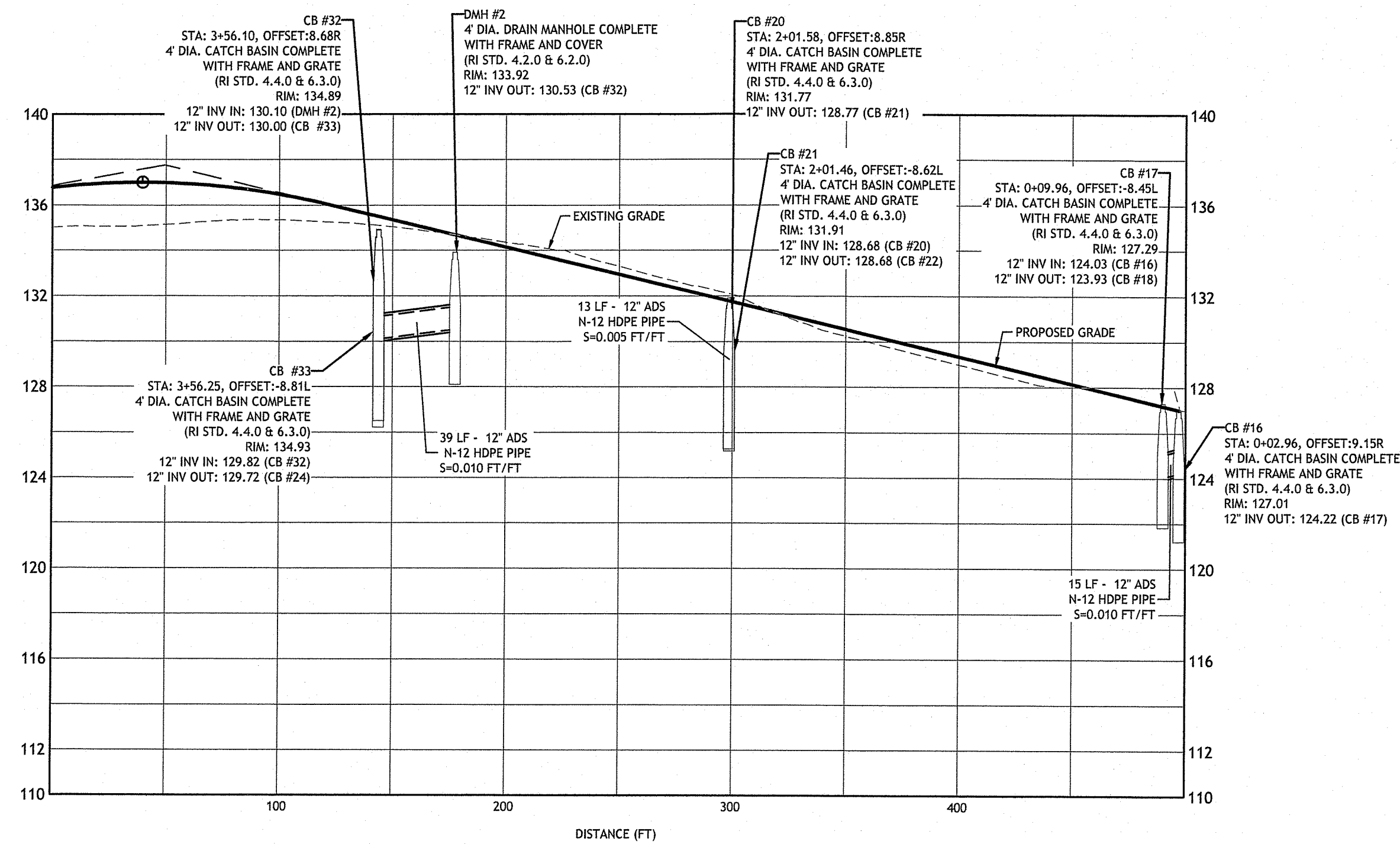
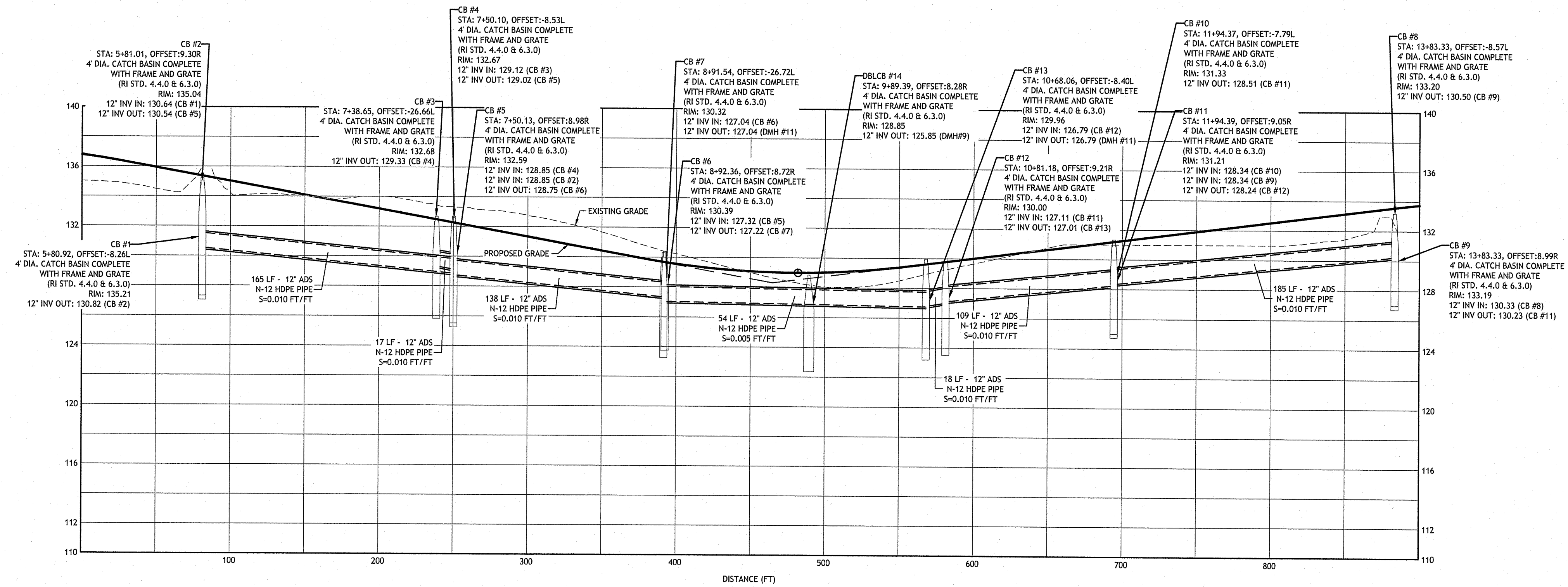
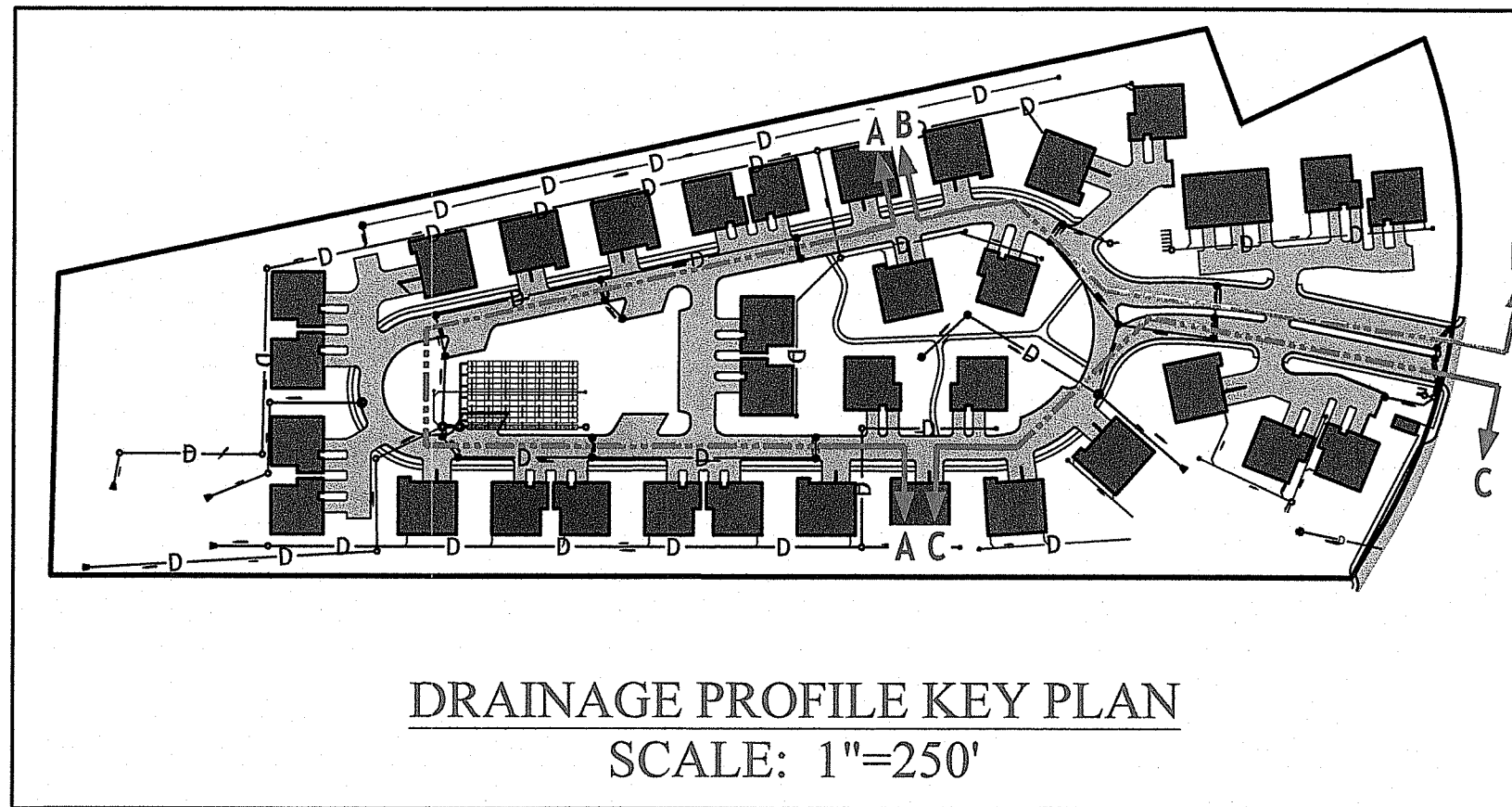
| NO. | DATE    | DESCRIPTION      |
|-----|---------|------------------|
| 1   | 11/2021 | TOWN COMMENTS    |
| 2   | 7/2023  | PRELIMINARY PLAN |
| 3   | 1/2024  | RIDEM RTC        |
| 4   | 2/2024  | PLANNING RTC     |
| 5   | 3/2024  | RIDEM RTC        |

DESIGNED BY: WMLJR  
 DRAWN BY: SD/SEP  
 CHECKED BY: JAC  
 DATE: OCTOBER 2021  
 PROJECT NO: 20-61a

PRELIMINARY, NOT FOR CONSTRUCTION

**ROADWAY AND UTILITY PROFILE**

**SHEET 9 OF 20**



**RICHMOND PLACE**  
38 STILSON ROAD  
RICHMOND, RHODE ISLAND  
AP 4B, LOTS 59, 59-2, & 59-3

Environmental Response  
MAR 09 2024  
Area of Water Response

OWNER:  
RICHMOND REALTY ASSOCIATES, LLC  
1536 SCIUTTA AVENUE  
CRANSTON, RI 02920

APPLICANT:  
CHIDAMBARAM NARAYANAN  
CT PROPERTIES, LLC  
29 PINE STREET  
EAST PROVIDENCE, RI 02915

| NO. | DATE    | DESCRIPTION      |
|-----|---------|------------------|
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RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS AS  
SPECIFIED IN THE LETTER OF APPROVAL  
DATED: APR 19 2024 FILE # 23-0164  
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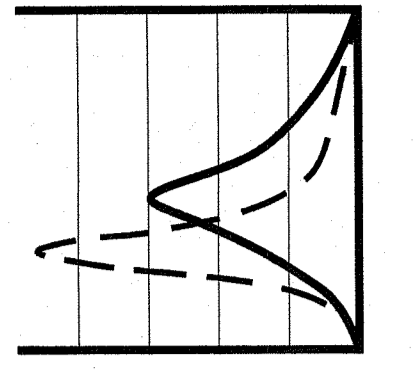
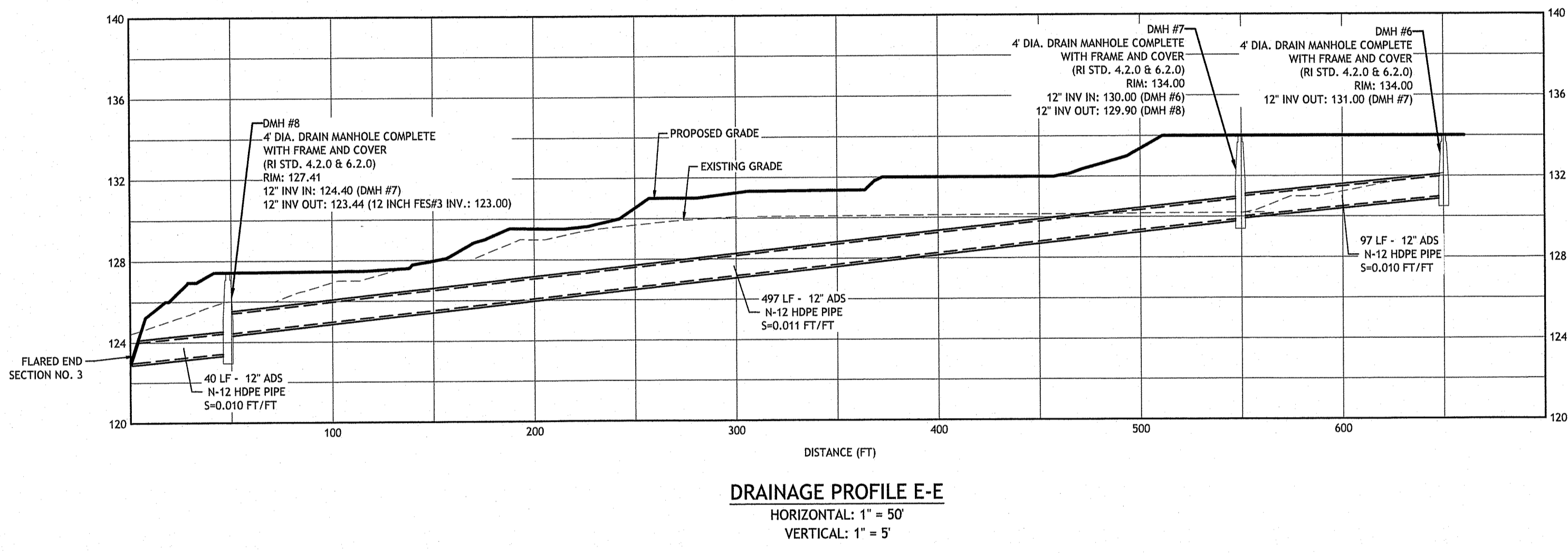
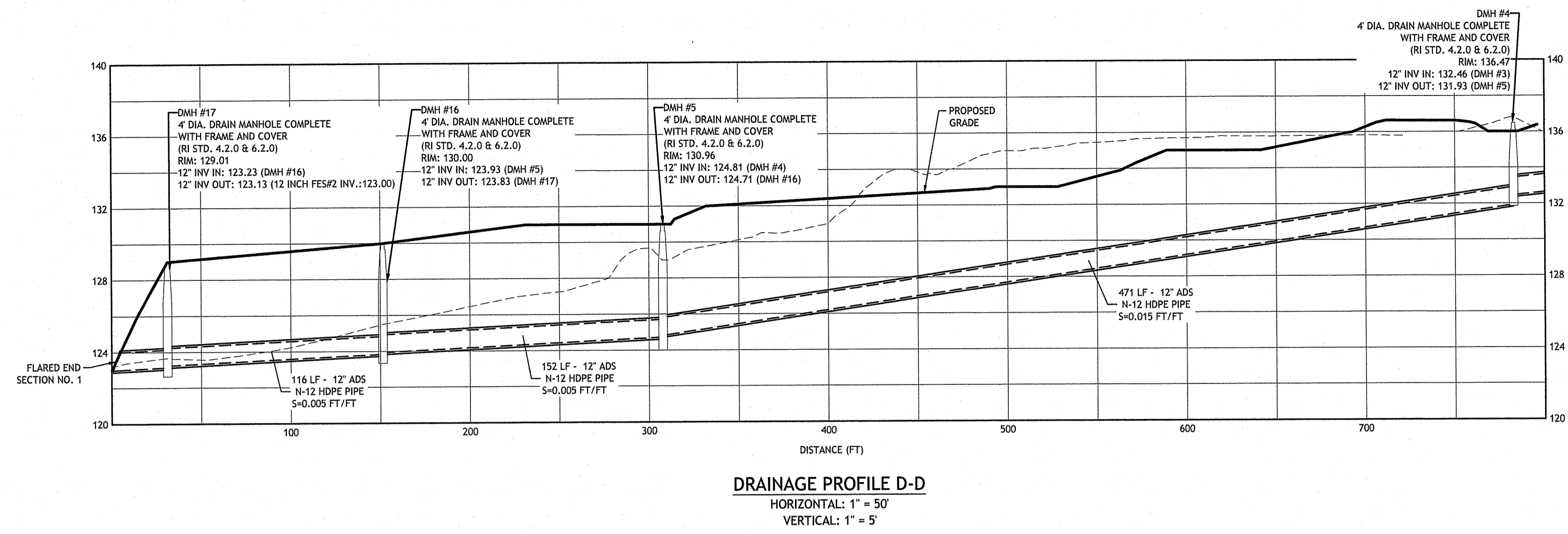
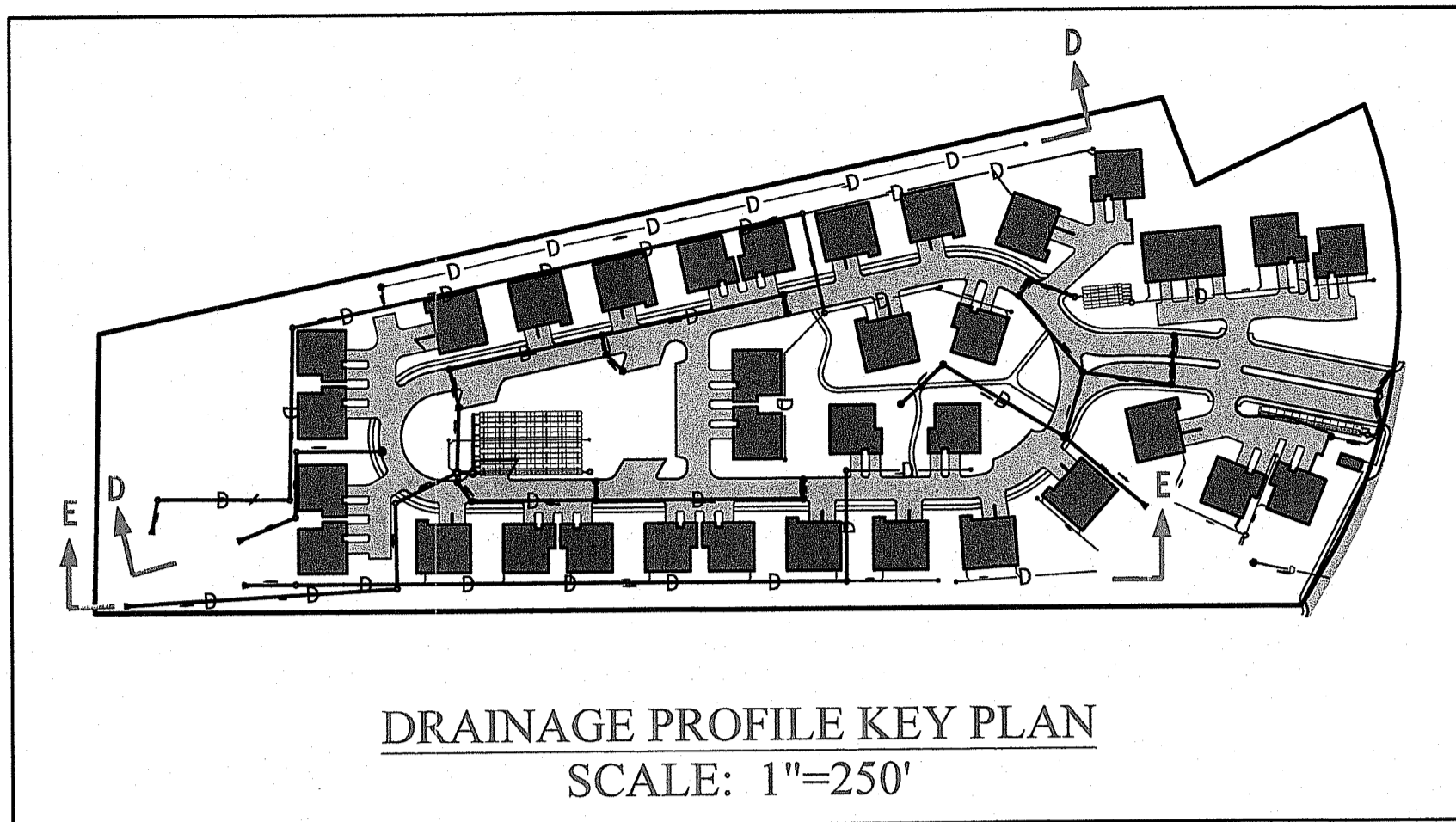
DESIGNED BY: WMLJR  
DRAWN BY: SD/SEP  
CHECKED BY: JAC  
DATE: OCTOBER 2021  
PROJECT NO: 20-61a

PRELIMINARY, NOT FOR CONSTRUCTION

**DRAINAGE PROFILES I**

**SHEET 10 OF 20**

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**JCE**  
JOE CASALI ENGINEERING, INC.  
CIVIL - SITE DEVELOPMENT - TRANSPORTATION  
DRAINAGE - WETLANDS - I&DS - TRAFFIC PLANS - P&ID  
(601) 944-1300 (601) 944-1313 FAX WWW.JCECASA.COM

JOSEPH A. CASALI  
No. 7250  
REGISTERED PROFESSIONAL ENGINEER  
CIVIL  
03/01/2024

**RICHMOND PLACE**  
**38 STILSON ROAD**  
**RICHMOND, RHODE ISLAND**  
**AP 4B, LOTS 59, 59-2, & 59-3**

OWNER:  
RICHMOND REALTY ASSOCIATES, LLC  
1536 SCITUATE AVENUE  
CRANSTON, RI 02920

APPLICANT:  
CHIDAMBARAM NARAYANAN  
CT PROPERTIES, LLC  
29 PINE STREET  
EAST PROVIDENCE, RI 02915

REVISIONS:

| NO. | DATE    | DESCRIPTION      |
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| 5   | 3/2024  | RIDEM RTC        |

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

APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED: APR 19 2024 FILE #: 23-0164

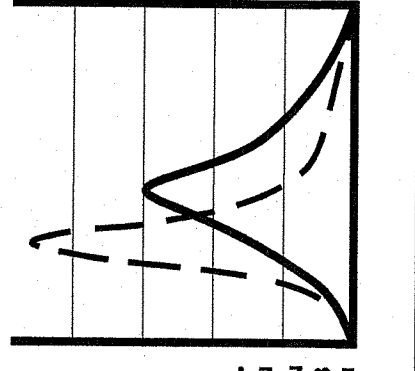
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

*Andy Chapman*

PRELIMINARY, NOT FOR CONSTRUCTION

**DRAINAGE PROFILES II**

**SHEET 11 OF 20**



**JCE**  
 JOSEPH A. CASALI ENGINEERING, INC.  
 REGISTRATION INFORMATION  
 DRAINAGE - WETLANDS - EROSION CONTROL - ETC.  
 300 POST ROAD, WARWICK, RI 02886  
 (401) 944-1000 (401) 944-1313 FAX WWW.JCEASALI.COM

JOSEPH A. CASALI  
 No. 7250  
 REGISTERED PROFESSIONAL ENGINEER  
 CIVIL  
 03/01/2024

**RICHMOND PLACE**  
**38 STILSON ROAD**  
**RICHMOND, RHODE ISLAND**  
**AP 4B, LOTS 59, 59-2, & 59-3**

OWNER:  
 RICHMOND REALTY ASSOCIATES, LLC  
 1536 SCITUATE AVENUE  
 CRANSTON, RI 02920

APPLICANT:  
 CHIDAMBARAM NARAYANAN  
 CT PROPERTIES, LLC  
 29 PINE STREET  
 EAST PROVIDENCE, RI 02915

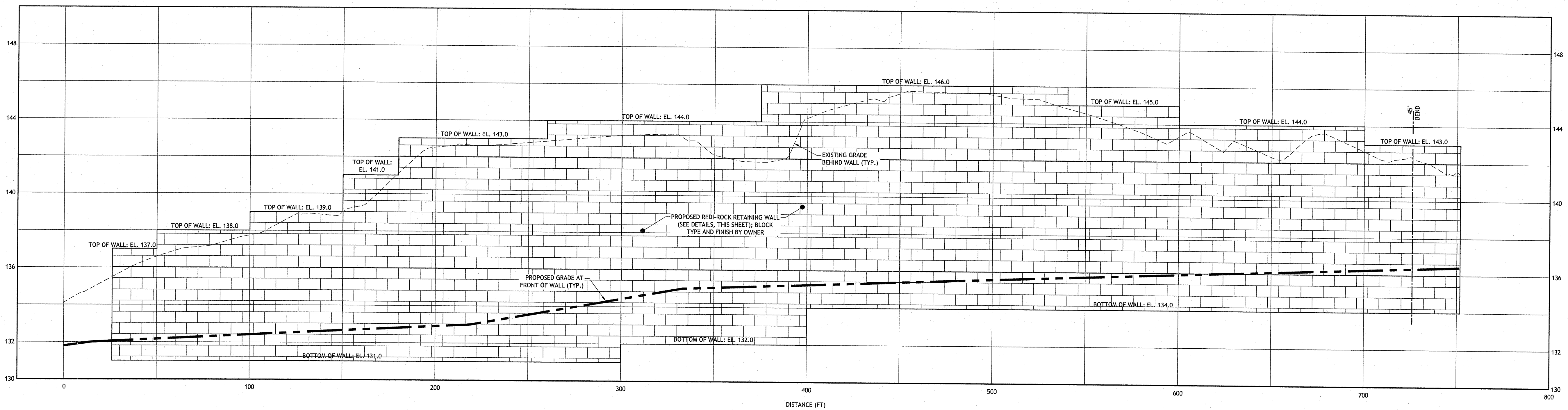
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| 3   | 1/2024  | RIDEM RTC        |
| 4   | 2/2024  | PLANNING RTC     |
| 5   | 3/2024  | RIDEM RTC        |

DESIGNED BY: WMLJR  
 DRAWN BY: SJS/SEP  
 CHECKED BY: JAC  
 DATE: OCTOBER 2021  
 PROJECT NO: 20-61a

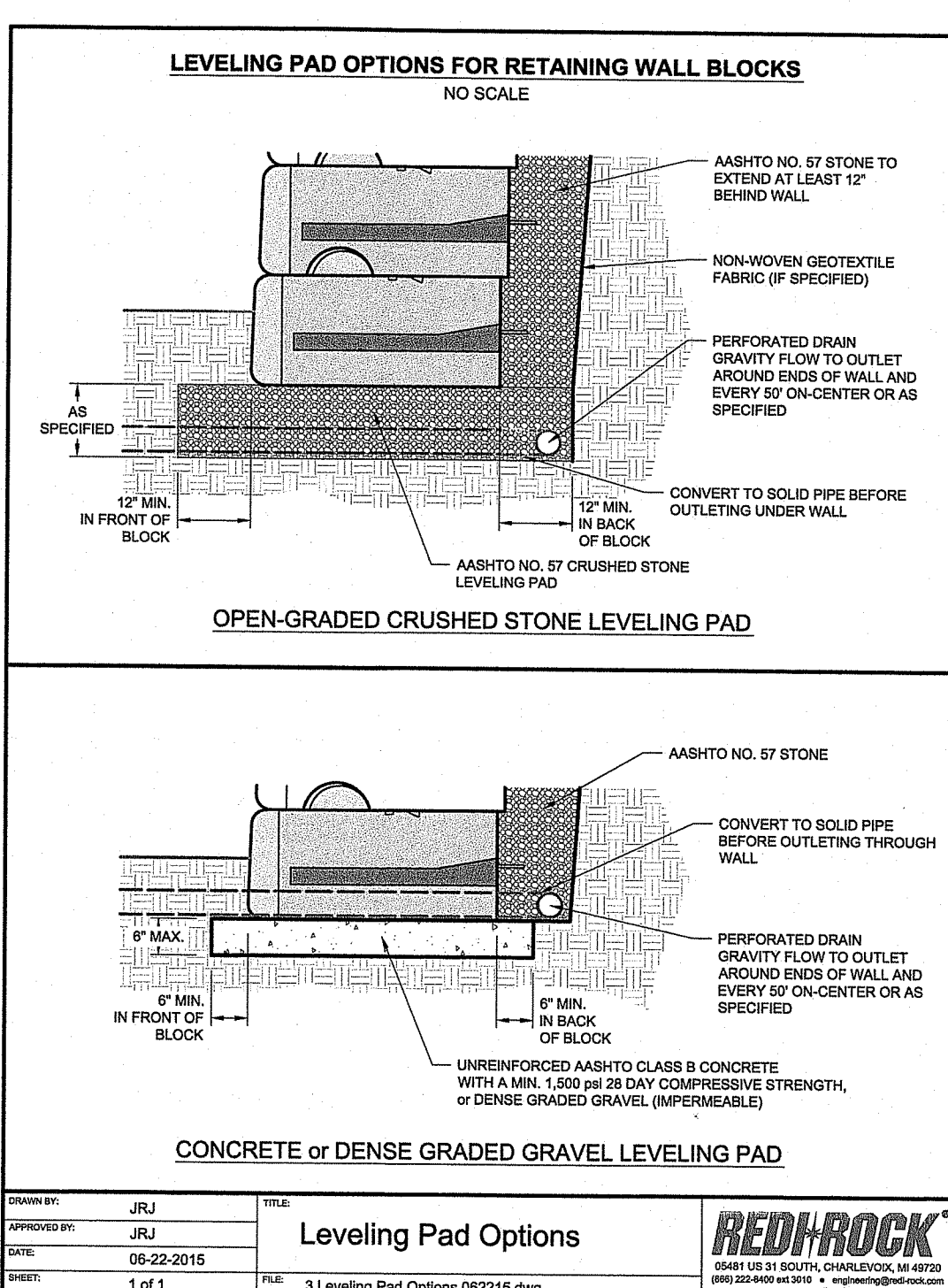
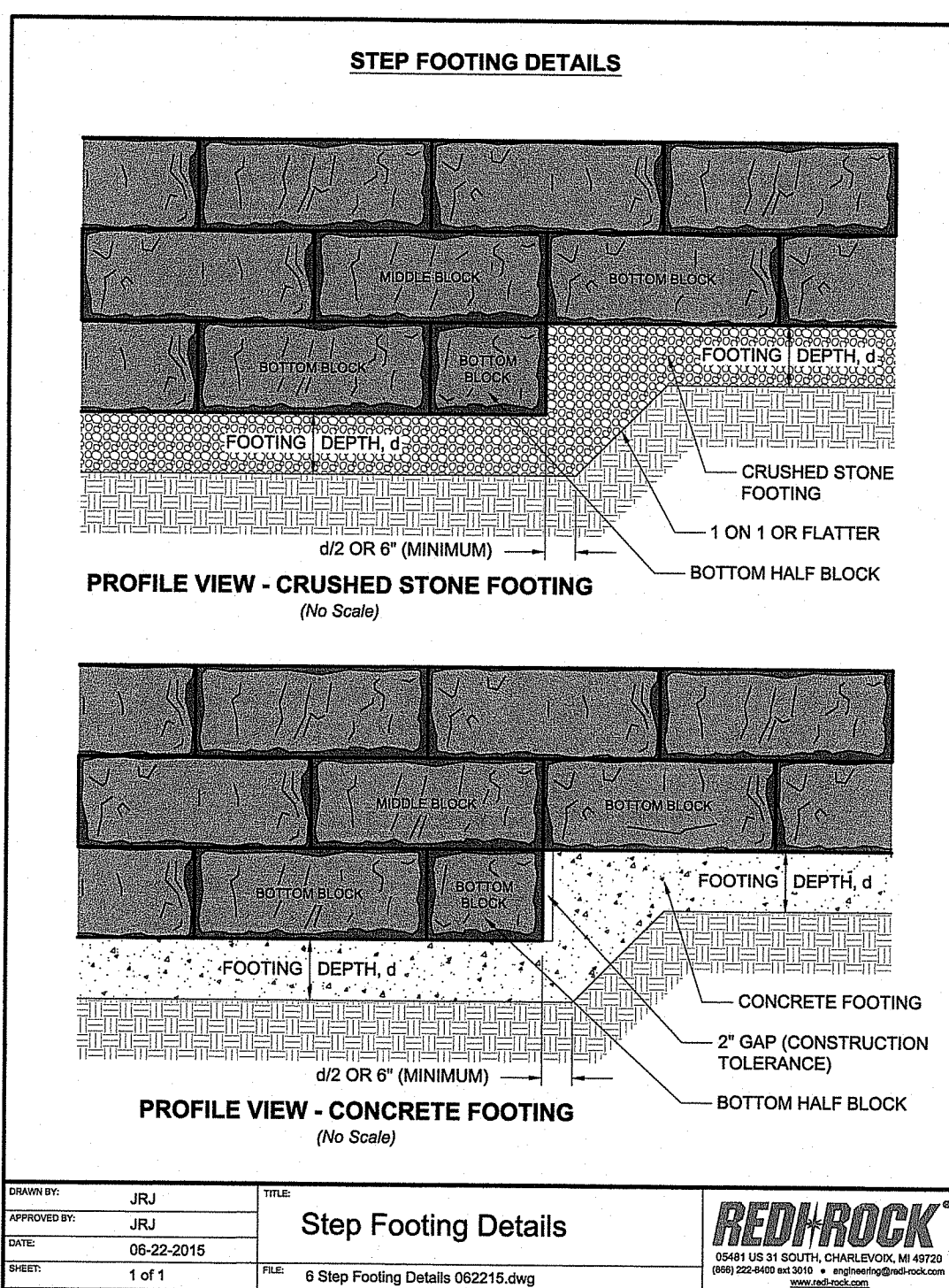
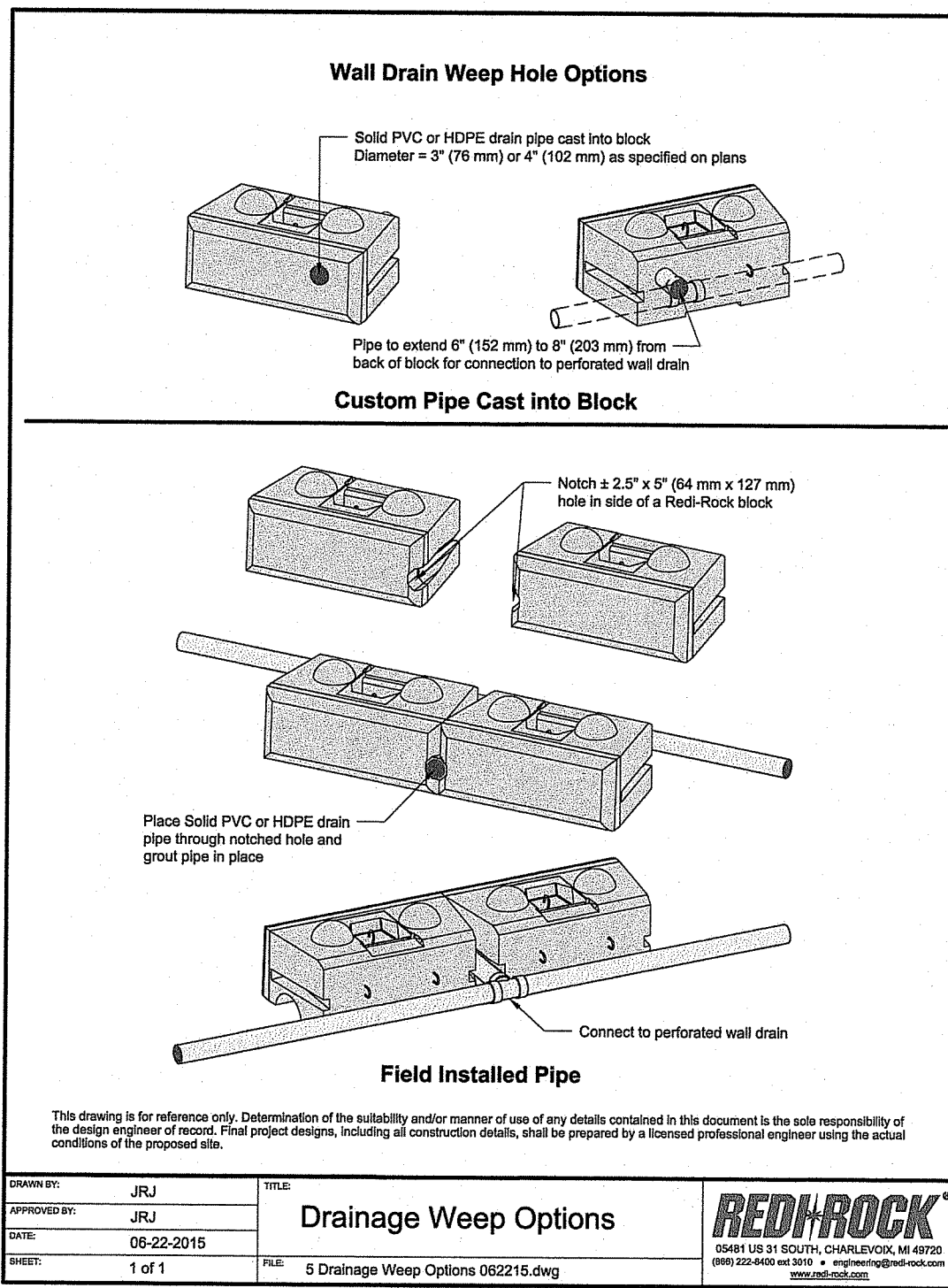
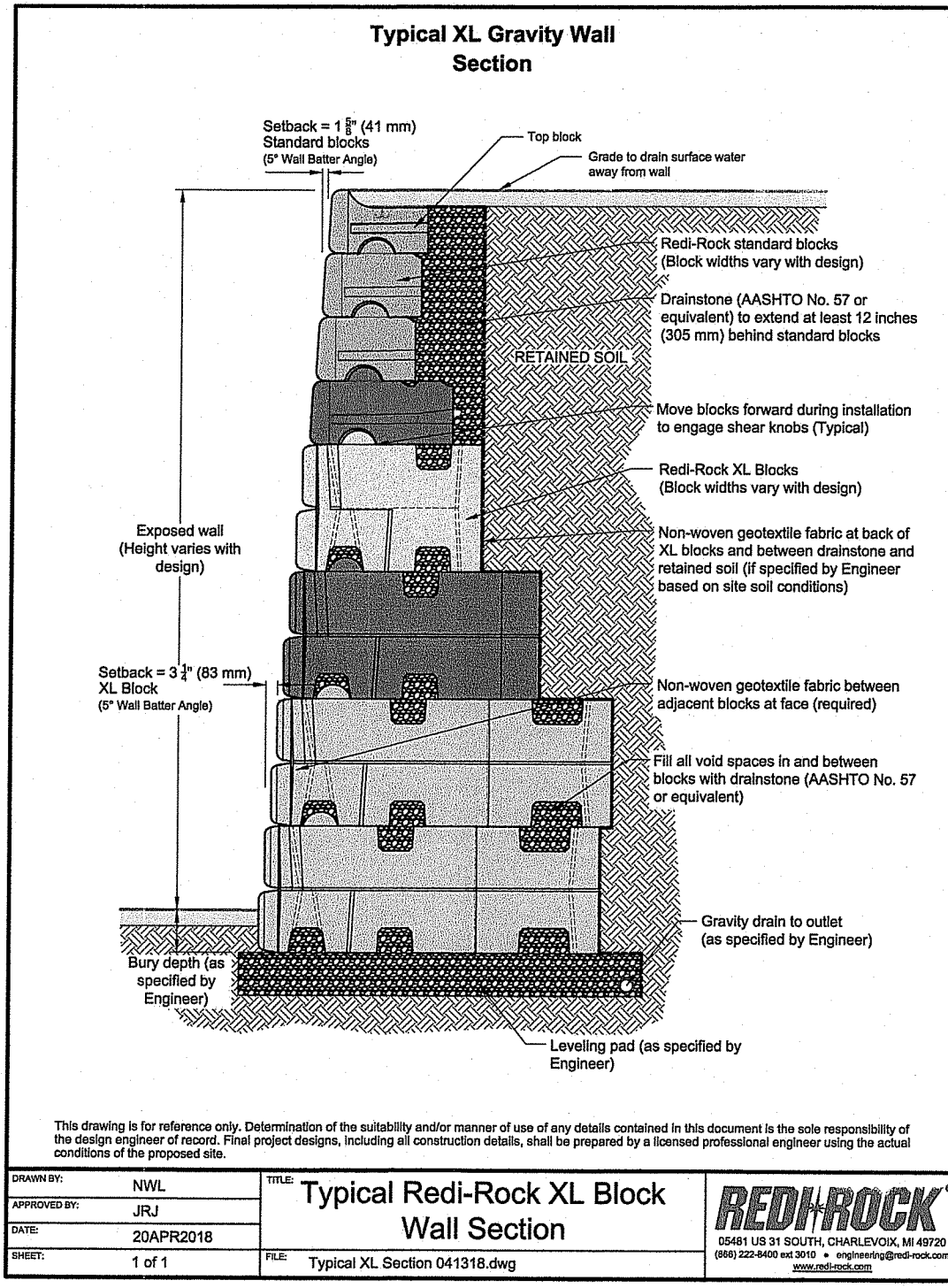
PRELIMINARY, NOT FOR CONSTRUCTION

**RETAINING WALL PROFILE**

**SHEET 12 OF 20**

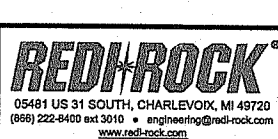


**RETAINING WALL PROFILE**  
 HORIZONTAL: 1" = 30'  
 VERTICAL: 1" = 3'



RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
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Q:\20-61 CT Narayanam\20-61a Stilson Rd, Wyoming - [DEA RTC].dwg Mar. 08, 2024 2:13pm

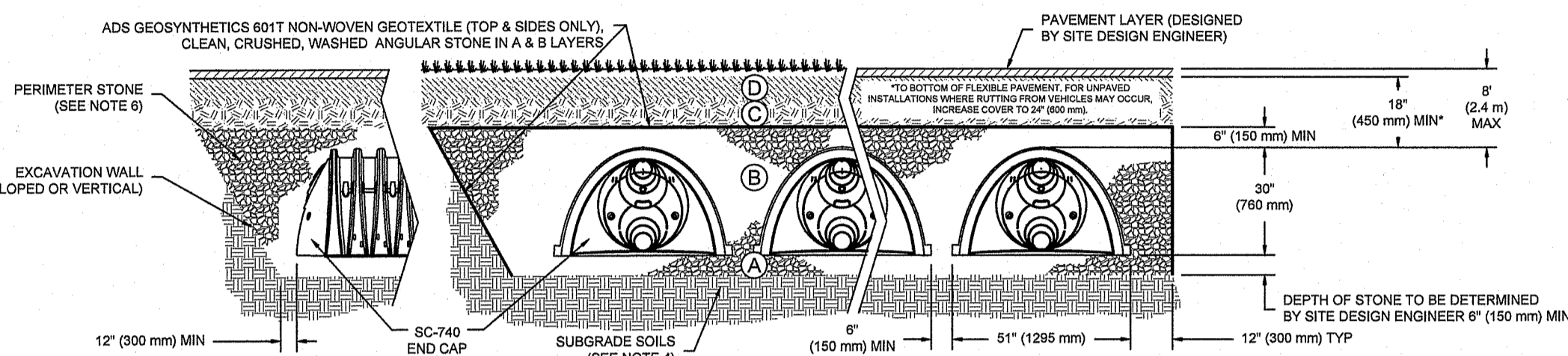




**ACCEPTABLE FILL MATERIALS: STORMTECH SC-740 CHAMBER SYSTEMS**

| MATERIAL LOCATION | DESCRIPTION   | AASHTO MATERIAL CLASSIFICATIONS  | COMPACTION / DENSITY REQUIREMENT   |
|-------------------|---|--|--|
| D                 | FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER. | N/A  | PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.  |
| C                 | INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE TO LAYERS TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'C' LAYER.     | AASHTO M145<br>A-1, A-2, A-3<br>OR<br>AASHTO M437<br>3, 357, 4, 467, 5, 56, 67, 6, 67, 68, 7, 78, 8, 89, 8, 10 | BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 90% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 80% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (55 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN). |
| B                 | EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.  | AASHTO M437<br>3, 357, 4, 467, 5, 56, 67   | NO COMPACTION REQUIRED.  |
| A                 | FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.   | AASHTO M437<br>3, 357, 4, 467, 5, 56, 67   | PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. **  |

- PLEASE NOTE:
- 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 M437) STONE".
  - STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) MAX LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
  - WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



- NOTES:**
- SC-740 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F3418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" OR ASTM F2822 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
  - SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
  - "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
  - THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
  - PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
  - ONCE LAYER 'C' IS PLACED, ANY SOLID MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

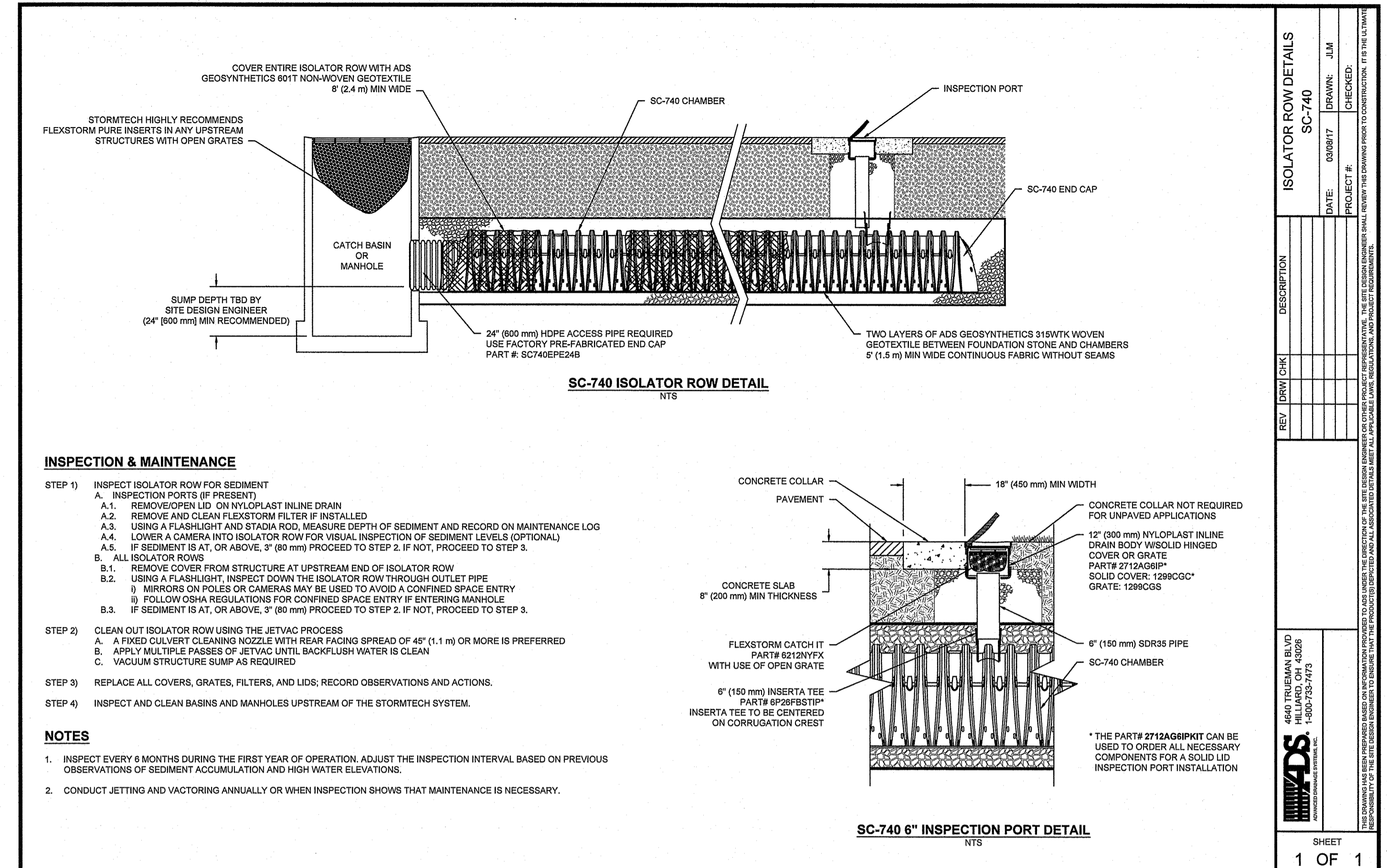
**13** STORMTECH SC-740 CROSS SECTION DETAIL  
NOT TO SCALE

| REVISION | DATE | BY | CHK | DESCRIPTION |
|----------|------|----|-----|-------------|
|          |      |    |     |             |

STANDARD CROSS SECTION  
DATE: 11/18/24  
DRAWN: JLM  
CHECKED: JLM  
PROJECT #: 111894

4640 TRUBMAN BLVD  
HILLAND, OH 43026  
614-233-4743  
ADS  
DESIGN SERVICES

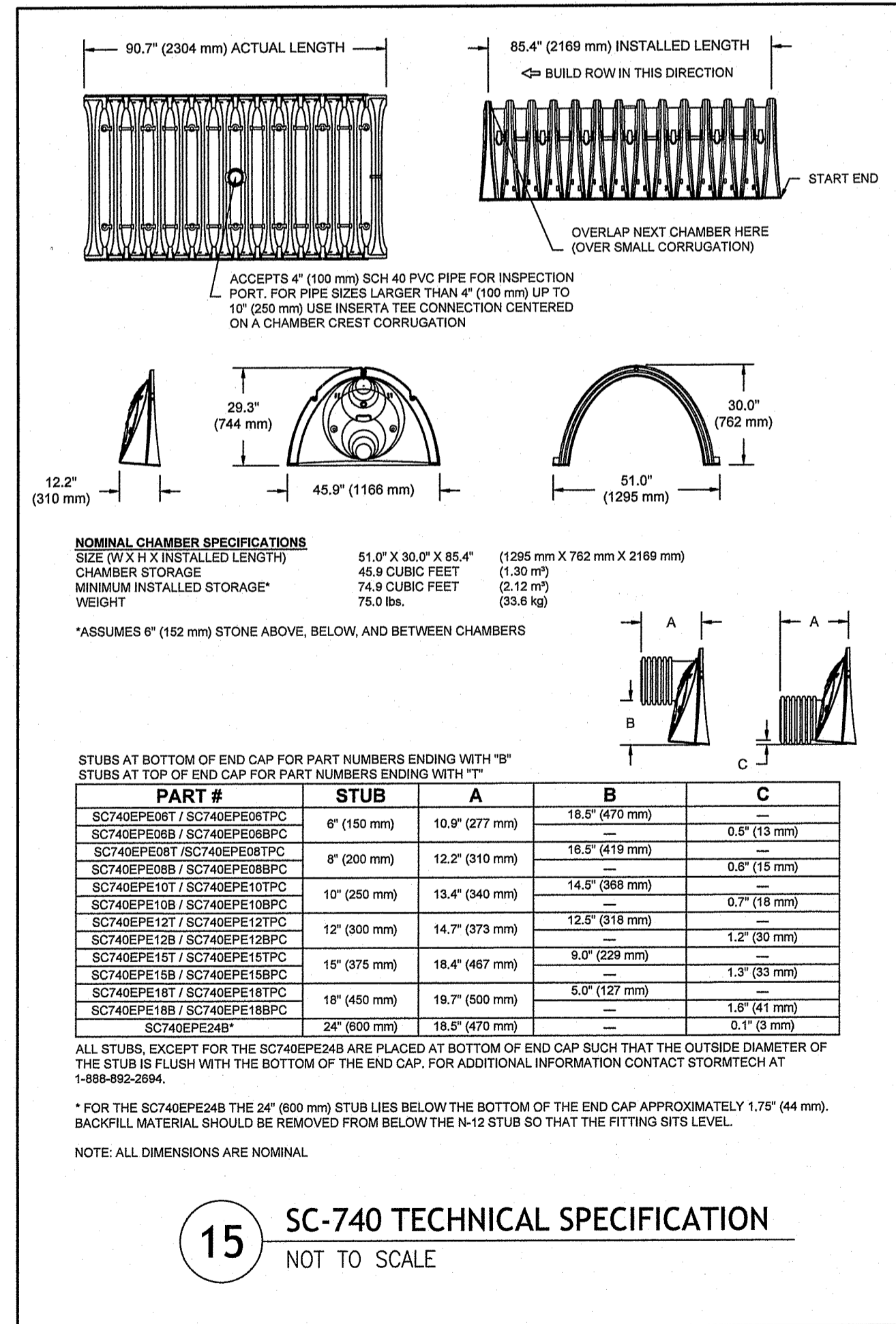
SHEET  
1 OF 1



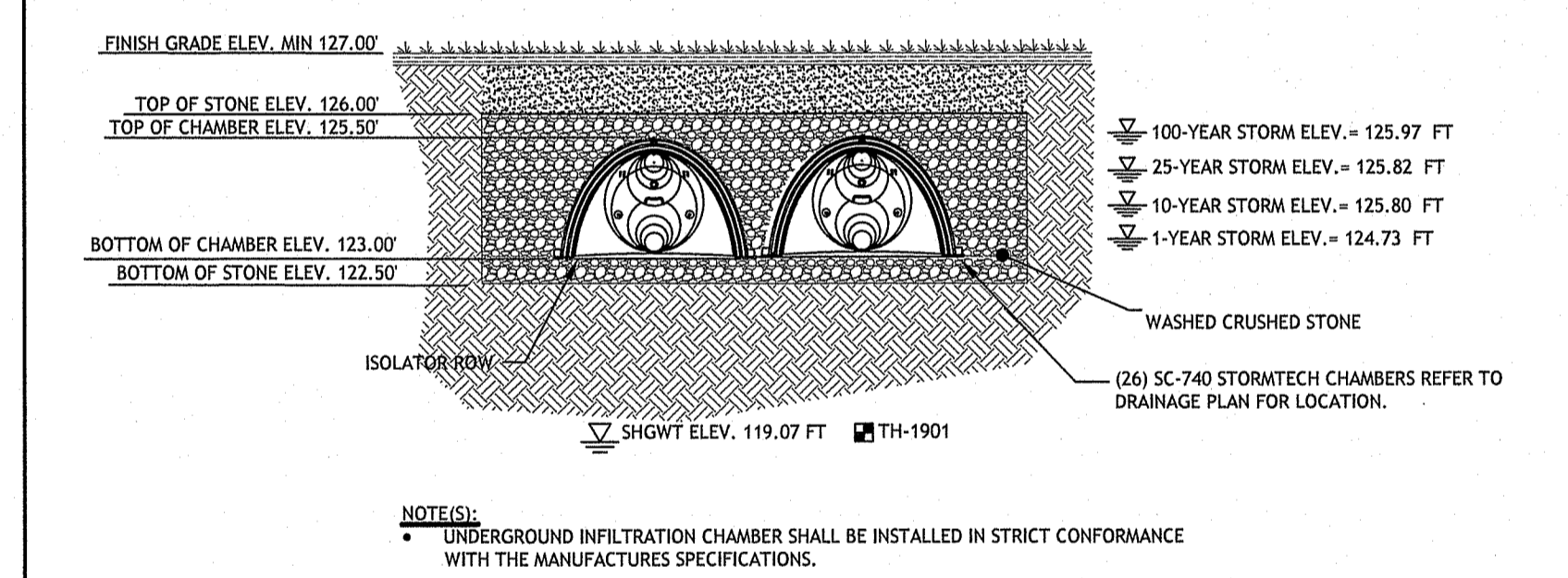
- INSPECTION & MAINTENANCE**
- STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT
- INSPECTION PORTS (IF PRESENT)
    - REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
    - REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
    - USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG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

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

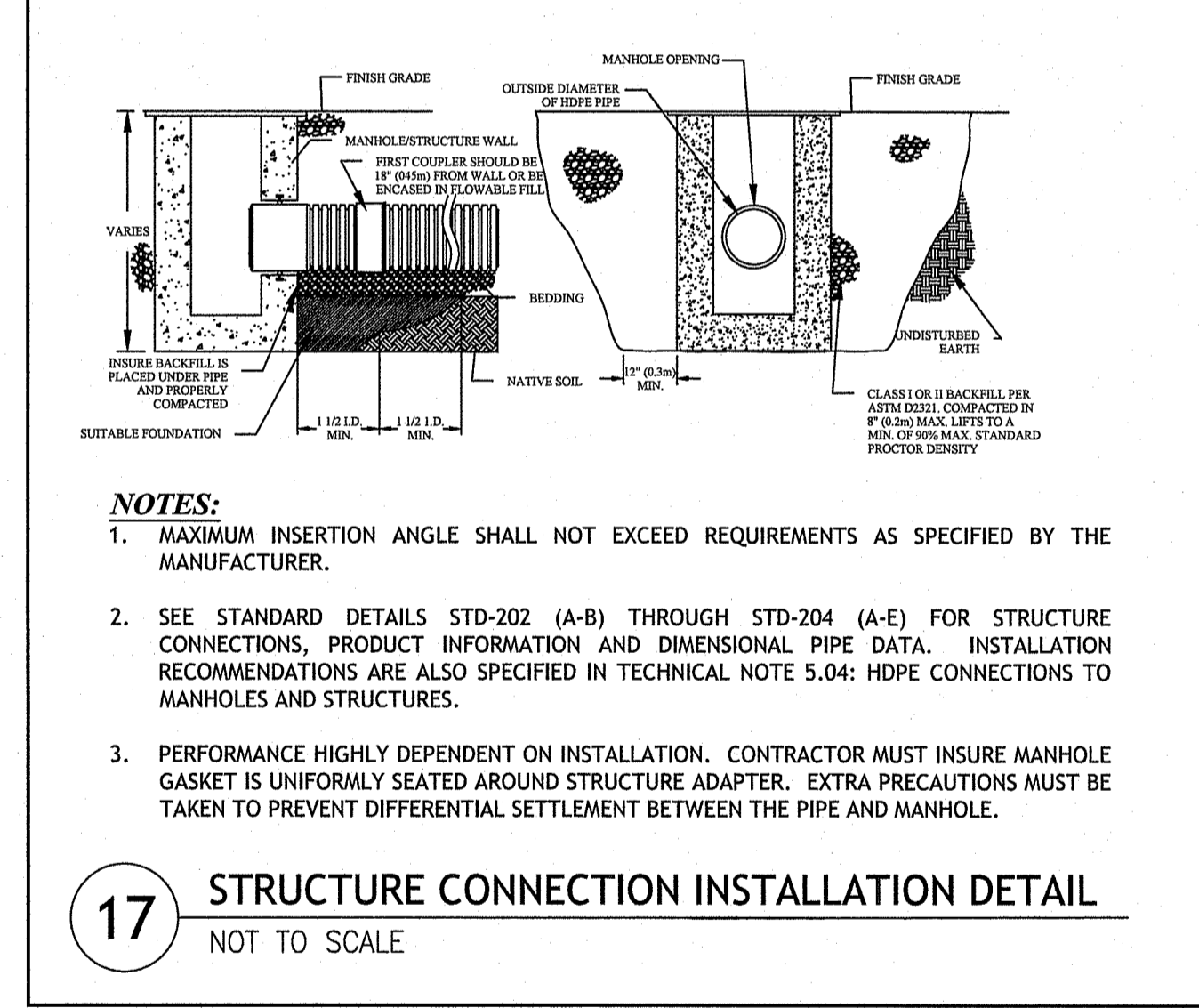
**14** STORMTECH SC-740 ISOLATOR ROW DETAIL  
NOT TO SCALE



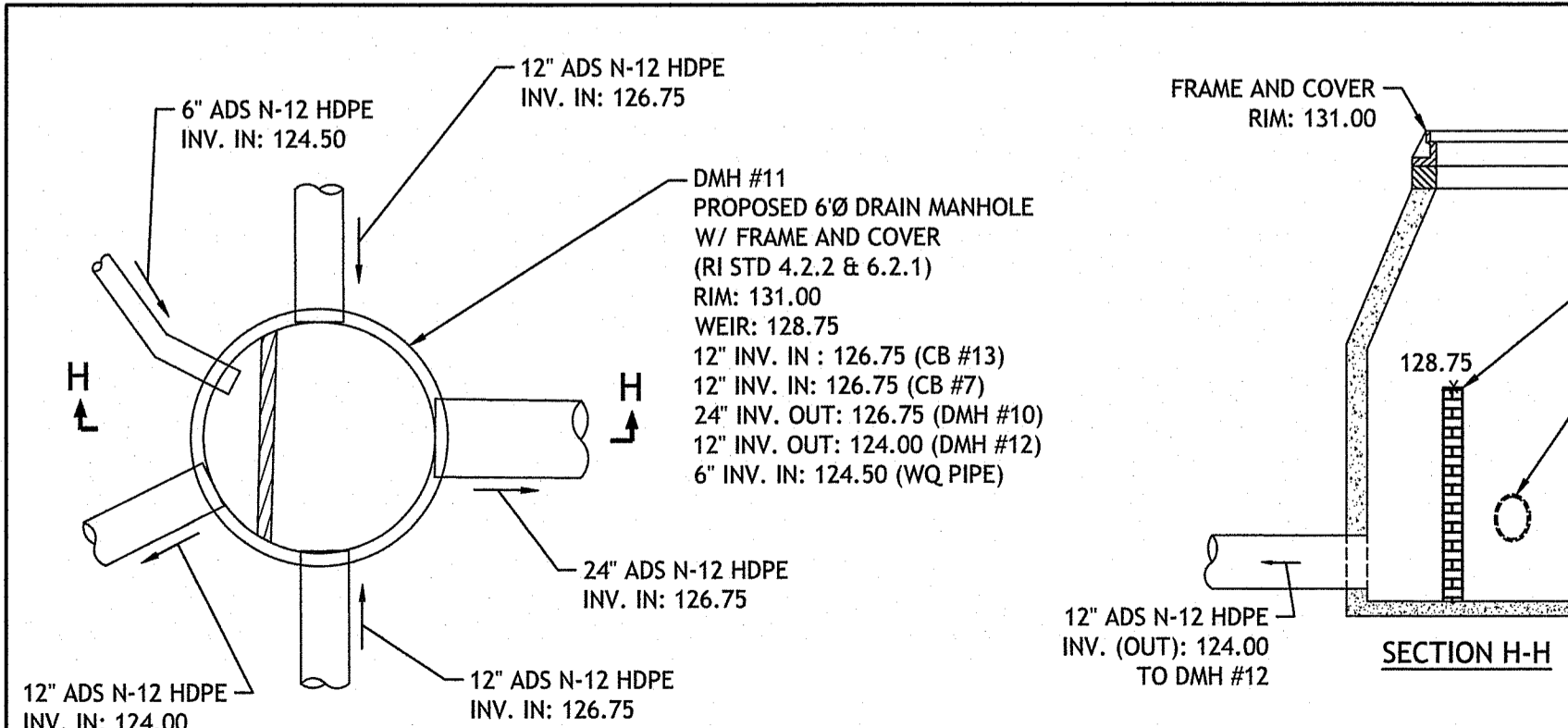
**15** SC-740 TECHNICAL SPECIFICATION  
NOT TO SCALE



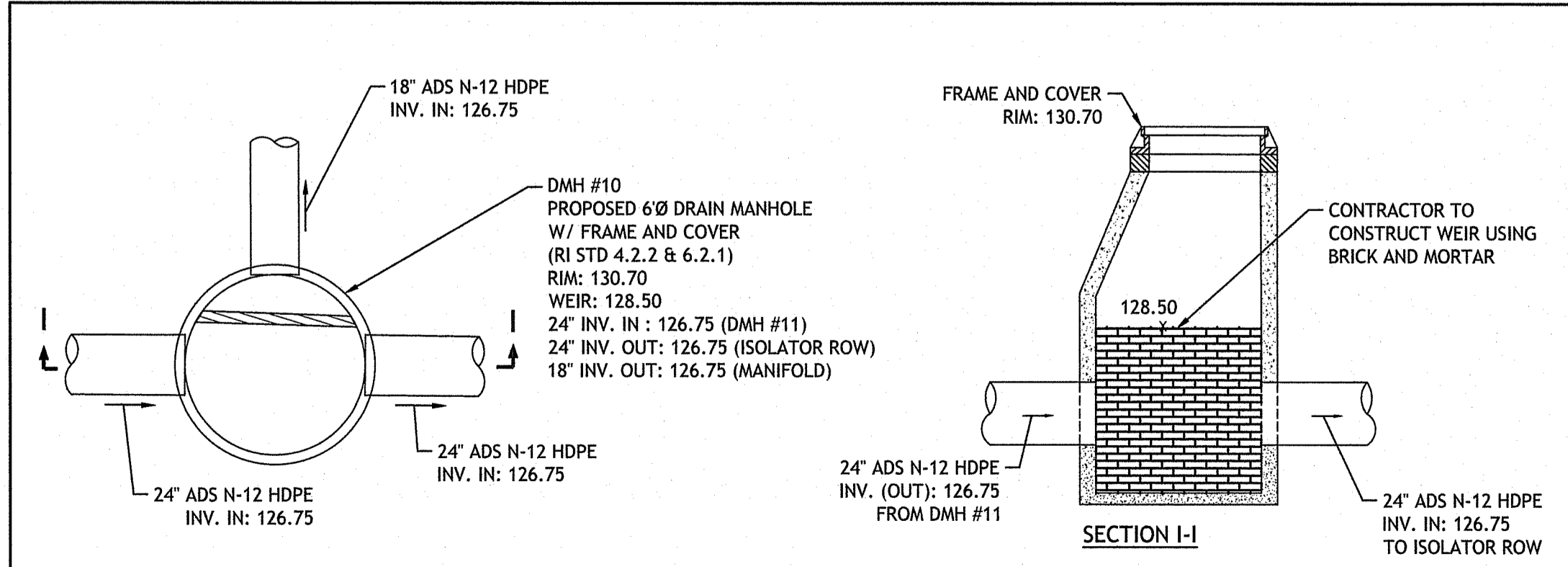
**16** UIC #1 INSTALLATION ELEVATION DETAIL  
NOT TO SCALE



**17** STRUCTURE CONNECTION INSTALLATION DETAIL  
NOT TO SCALE



**18** DMH #11 - DIVERSION MANHOLE  
NOT TO SCALE



**19** DMH #10 - DIVERSION MANHOLE  
NOT TO SCALE

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED: APR 19 2024 FILE # 23-0164  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

**JOE CASALI ENGINEERING, INC.**  
CIVIL - SITE DEVELOPMENT - TRANSPORTATION  
DRAINAGE - WETLANDS - ISDS - TRAFFIC - FLOODPLAIN  
300 POST ROAD, WARWICK, RI 02888  
(401) 944-1300 (401) 944-1313 FAX WWW.JOECA.SALI.COM

**JOSEPH A. CASALI**  
7250  
REGISTERED PROFESSIONAL ENGINEER  
03/01/2024

**RICHMOND PLACE**  
38 STILSON ROAD  
RICHMOND, RHODE ISLAND  
AP 4B, LOTS 59, 59-2, & 59-3

MAR 03 2024

OWNER: RICHMOND REALTY ASSOCIATES, LLC  
1536 SCITUATE AVENUE  
CRANSTON, RI 02920

APPLICANT: CHIDAMBARAM NARAYANAN  
CT PROPERTIES, LLC  
29 PINE STREET  
EAST PROVIDENCE, RI 02915

**REVISIONS:**

| NO. | DATE    | DESCRIPTION      |
|-----|---------|------------------|
| 1   | 11/2021 | TOWN COMMENTS    |
| 2   | 7/2023  | PRELIMINARY PLAN |
| 3   | 1/2024  | RIDEM RTC        |
| 4   | 2/2024  | PLANNING RTC     |
| 5   | 3/2024  | RIDEM RTC        |

DESIGNED BY: WMLJR  
DRAWN BY: SD/SEP  
CHECKED BY: JAC  
DATE: OCTOBER 2021  
PROJECT NO: 20-61a

PRELIMINARY, NOT FOR CONSTRUCTION

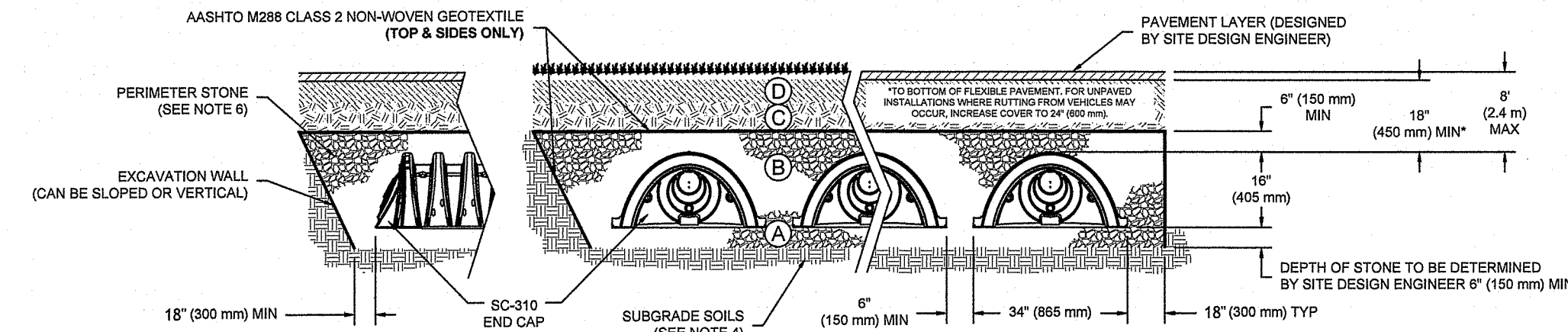
**CIVIL DETAILS II**

**SHEET 14 OF 20**

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

| MATERIAL LOCATION | DESCRIPTION   | AASHTO MATERIAL CLASSIFICATIONS  | COMPACTION / DENSITY REQUIREMENT  |
|-------------------|---|--|---|
| D                 | FINAL FILL: FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER. | N/A  | PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.   |
| C                 | INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('A' LAYER) TO THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.                    | AASHTO M145 <sup>1</sup><br>A-1, A-2, A-3<br>OR<br>AASHTO M3 <sup>2</sup><br>3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10 | BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 98% PROCTOR DENSITY FOR WELL-GRADED MATERIAL AND 90% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. 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: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.  | AASHTO M3 <sup>2</sup><br>3, 357, 4, 467, 5, 56, 57  | NO COMPACTION REQUIRED.   |
| A                 | FOUNDATION STONE: FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.   | AASHTO M3 <sup>2</sup><br>3, 357, 4, 467, 5, 56, 57  | PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.  |

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 M3) STONE."  
 2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 6" (150 mm) MAX LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.



**NOTES:**

- SC-310 CHAMBERS SHALL CONFORM TO THE REQUIREMENTS OF ASTM F2418 "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS", OR ASTM F2922 "STANDARD SPECIFICATION FOR POLYETHYLENE (PE) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- SC-310 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.
- THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
- PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
- ONCE LAYER 'C' IS PLACED, ANY SOIL MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

**20 STORMTECH SC-310 CROSS SECTION DETAIL**  
NOT TO SCALE

STANDARD CROSS SECTION  
 SC-310  
 DATE: 11/18/14  
 DRAWN: JLM  
 CHECKED: JLM  
 PROJECT #:  
 REVISIONS:  
 4510 TRUMBULL BLVD  
 HILLIARD, OH 43026  
 614-892-2694  
 WWW.STORMTECH.COM  
 SHEET 1 OF 1

**INSPECTION & MAINTENANCE**

STEP 1) INSPECT ISOLATOR ROW FOR SEDIMENT  
 A. INSPECTION PORTS (IF PRESENT)  
 A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN  
 A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED  
 A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG  
 A.4. LOWER A CAMERA INTO ISOLATOR ROW FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)  
 A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.  
 B. ALL ISOLATOR ROWS  
 B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW  
 B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW THROUGH OUTLET PIPE  
 B.3. MIRRORS OR POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY  
 B.4. FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE  
 B.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW USING THE JETVAC PROCESS  
 A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45° (1.1 m) OR MORE IS PREFERRED  
 B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKLUSH WATER IS CLEAN  
 C. VACUUM STRUCTURE SUMP AS REQUIRED

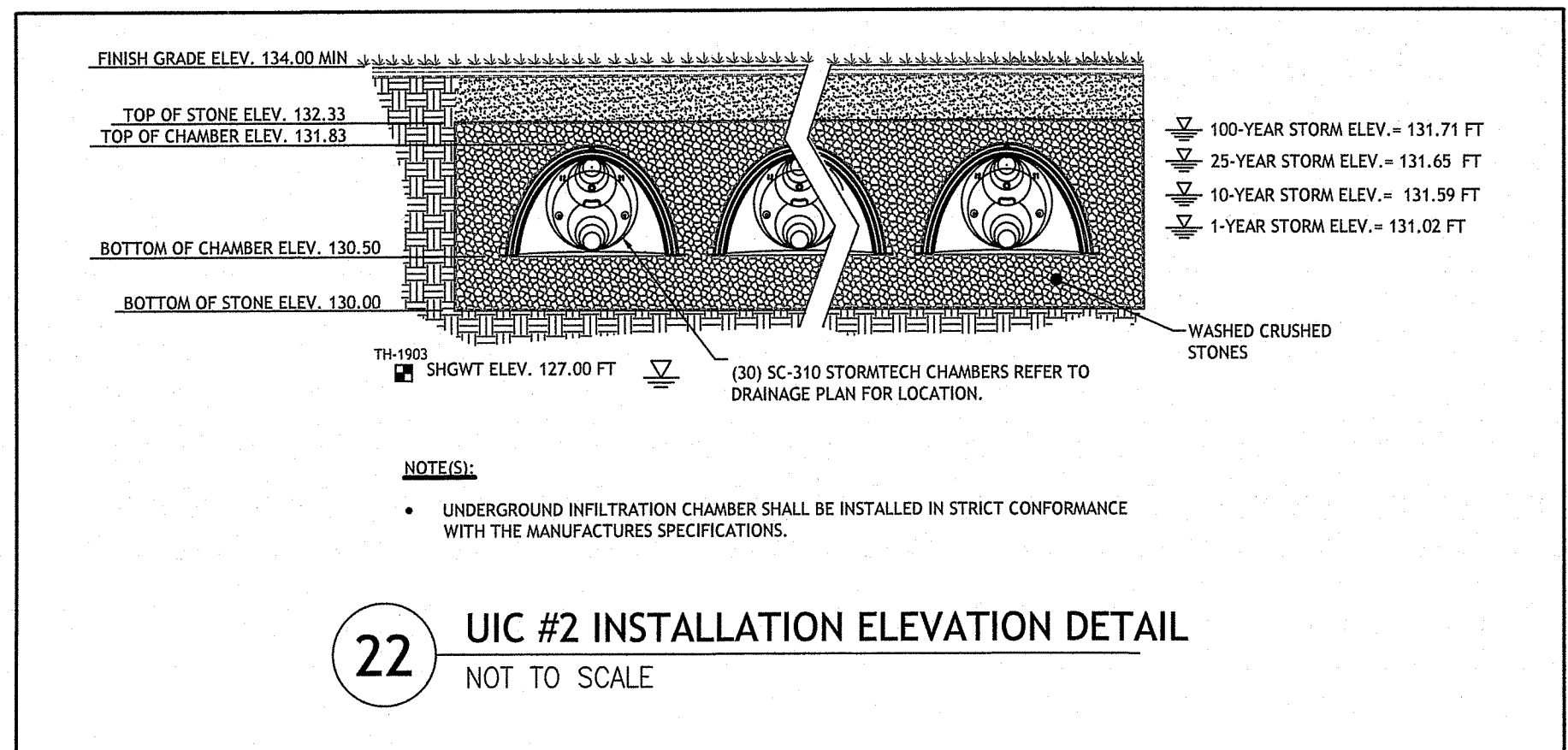
STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

**NOTES**

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

**21 STORMTECH SC-310 ISOLATOR ROW DETAIL**  
NOT TO SCALE



**22 UIC #2 INSTALLATION ELEVATION DETAIL**  
NOT TO SCALE

**NOMINAL CHAMBER SPECIFICATIONS**

SIZE (W X H X INSTALLED LENGTH) 34.0" X 16.0" X 85.4" (864 mm X 406 mm X 2189 mm)  
 CHAMBER STORAGE 14.7 CUBIC FEET (0.42 m<sup>3</sup>)  
 MINIMUM INSTALLED STORAGE\* 31.0 CUBIC FEET (0.88 m<sup>3</sup>)  
 WEIGHT 35.0 lbs. (16.8 kg)

\*ASSUMES 6" (152 mm) ABOVE, BELOW, AND BETWEEN CHAMBERS

STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"  
 STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"

| PART #                    | STUB         | A              | B             | C            |
|---------------------------|--------------|----------------|---------------|--------------|
| SC310EP06T / SC310EP06TPC | 6" (150 mm)  | 9.6" (244 mm)  | 5.6" (147 mm) | —            |
| SC310EP08B / SC310EP08BPC | 8" (200 mm)  | 11.9" (302 mm) | 3.5" (89 mm)  | 0.5" (13 mm) |
| SC310EP08T / SC310EP08TPC | 8" (200 mm)  | 11.9" (302 mm) | —             | 0.6" (15 mm) |
| SC310EP10T / SC310EP10TPC | 10" (250 mm) | 12.7" (323 mm) | 1.4" (36 mm)  | —            |
| SC310EP10B / SC310EP10BPC | 10" (250 mm) | 12.7" (323 mm) | —             | 0.7" (18 mm) |
| SC310EP12B                | 12" (300 mm) | 13.5" (343 mm) | —             | 0.9" (23 mm) |

ALL STUBS, EXCEPT FOR THE SC310EP12B ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

\* FOR THE SC310EP12B THE 12" (300 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 0.25" (6 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

NOTE: ALL DIMENSIONS ARE NOMINAL.

**23 SC-310 TECHNICAL SPECIFICATION**  
NOT TO SCALE

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED: APR 19 2024 FILE # 23-01C4  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

APPLICANT:  
 CHIDAMBARAM NARAYANAN  
 CT PROPERTIES, LLC  
 29 PINE STREET  
 EAST PROVIDENCE, RI 02915

REVISIONS:

| NO. | DATE    | DESCRIPTION      |
|-----|---------|------------------|
| 1   | 11/2021 | TOWN COMMENTS    |
| 2   | 7/2023  | PRELIMINARY PLAN |
| 3   | 1/2024  | RIDEM RTC        |
| 4   | 2/2024  | PLANNING RTC     |
| 5   | 3/2024  | RIDEM RTC        |

DESIGNED BY: WMLJR  
 DRAWN BY: SD/SEP  
 CHECKED BY: JAC  
 DATE: OCTOBER 2021  
 PROJECT NO: 20-61a

PRELIMINARY, NOT FOR CONSTRUCTION

CIVIL DETAILS III

SHEET 15 OF 20

**JOE**  
 JOE CASALI ENGINEERING, INC.  
 CIVIL / SITE DEVELOPMENT / TRANSPORTATION  
 DRAINAGE / WETLANDS / ISDS / TRAFFIC / FLOODPLAIN  
 300 POST ROAD, WARWICK, RI 02886  
 (401) 944-1300 / (401) 944-1317 FAX / WWW.JOEENGINEERING.COM

JOSEPH A. CASALI  
 7250  
 REGISTERED PROFESSIONAL ENGINEER  
 03/01/2024

**RICHMOND PLACE**  
 38 STILSON ROAD  
 RICHMOND, RHODE ISLAND  
 AP 4B, LOTS 59, 59-2, & 59-3

**STORMTECH GENERAL NOTES:**

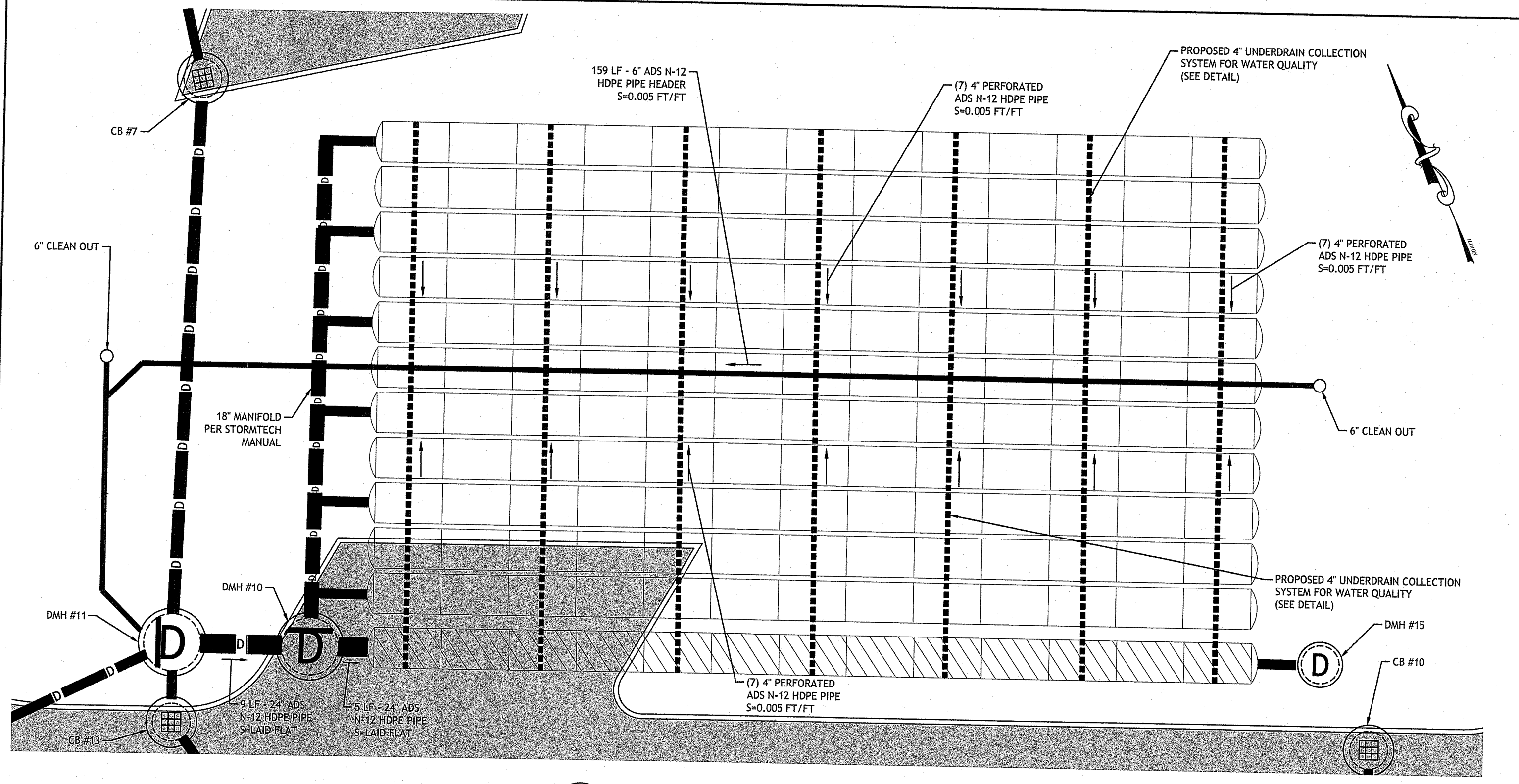
- STORMTECH LLC ("STORMTECH") REQUIRES INSTALLING CONTRACTORS TO USE AND UNDERSTAND STORMTECH'S LATEST INSTALLATION INSTRUCTIONS PRIOR TO BEGINNING SYSTEM INSTALLATION.
- OUR TECHNICAL SERVICES DEPARTMENT OFFERS INSTALLATION CONSULTATIONS TO INSTALLING CONTRACTORS. CONTACT OUR TECHNICAL SERVICES REPRESENTATIVE 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 SERVICE REPRESENTATIVE OR VISIT WWW.STORMTECH.COM TO RECEIVE A COPY OF OUR INSTALLATION INSTRUCTIONS.
- STORMTECH'S REQUIREMENTS FOR SYSTEMS WITH PAVEMENT DESIGN (ASPHALT, CONCRETE PAVERS, ETC.): MINIMUM COVER IS 18 INCHES NOT INCLUDING PAVEMENT; MAXIMUM COVER IS 96 INCHES INCLUDING PAVEMENT. FOR INSTALLATIONS THAT DO NOT INCLUDE PAVEMENT, WHERE RUTTING FROM VEHICLES MAY OCCUR, MINIMUM REQUIRED COVER IS 24 INCHES, MAXIMUM COVER IS 96 INCHES.
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE DESIGN ENGINEER.
- AASHTO M288 CLASS 2 NON-WOVEN GEOTEXTILE (FILTER FABRIC) MUST BE USED AS INDICATED IN THE PROJECT PLANS.
- STONE PLACEMENT BETWEEN CHAMBERS ROWS AND AROUND PERIMETER MUST FOLLOW INSTRUCTIONS AS INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.
- BACKFILLING OVER THE CHAMBERS MUST FOLLOW REQUIREMENTS AS INDICATED IN THE MOST CURRENT VERSION OF STORMTECH'S INSTALLATION INSTRUCTIONS.
- 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 UNAUTHORIZED VEHICLES FROM ENTERING SENSITIVE CONSTRUCTION AREAS.
- 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.

**STORMWATER CHAMBER SPECIFICATIONS**

- CHAMBERS SHALL BE STORMTECH SC-310 OR SC-740, AS SPECIFIED ON THESE PLANS.
- CHAMBERS SHALL BE MANUFACTURED FROM VIRGIN POLYPROPYLENE OR POLYETHYLENE RESINS.
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORT PANELS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
- THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESTANCES.
- CHAMBERS SHALL MEET ASTM F2922 (POLYETHYLENE) OR ASTM F2418-16 (POLYPROPYLENE), "STANDARD SPECIFICATION FOR THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- CHAMBERS SHALL BE DESIGNED AND ALLOWABLE LOADS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. THE CHAMBER MANUFACTURER SHALL SUBMIT THE FOLLOWING UPON REQUEST TO THE SITE DESIGN ENGINEER FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE:
  - A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY AASHTO FOR THERMOPLASTIC PIPE.
  - A STRUCTURAL EVALUATION SEALED BY A REGISTERED PROFESSIONAL ENGINEER THAT DEMONSTRATES THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET. THE 50 YEAR CREEP MODULUS DATA SPECIFIED IN ASTM F2418 OR ASTM F2922 MUST BE USED AS PART OF THE AASHTO STRUCTURAL EVALUATION TO VERIFY LONG-TERM PERFORMANCE.
  - STRUCTURAL CROSS SECTION DETAIL ON WHICH THE STRUCTURAL EVALUATION IS BASED.
- CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

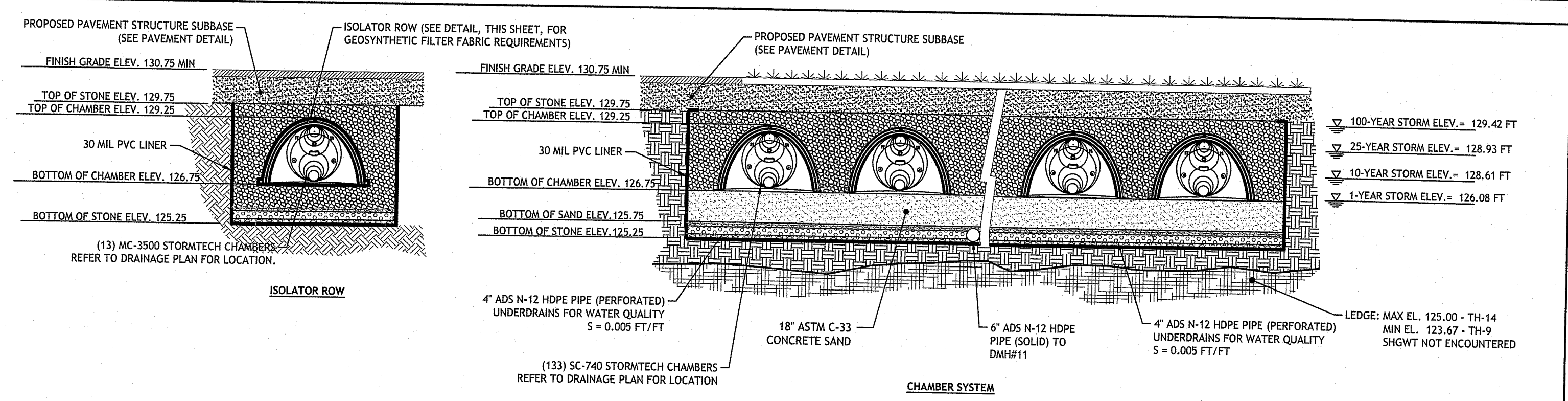
**NOTES FOR THE INSTALLATION OF THE SC-740 SYSTEM**

- STORMTECH SC-310 & SC-740 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
  - STORMTECH SC-310 & SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
  - CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS.
    - STONESHOOTER LOCATED OFF THE CHAMBER BED.
    - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
    - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
  - THE FOUNDATION STONE SHALL BE LEVELLED AND COMPACTED PRIOR TO PLACING CHAMBERS.
  - JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
  - MAINTAIN MINIMUM - 6" SPACING BETWEEN THE CHAMBER ROWS.
  - EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4" - 2".
  - THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
  - ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.
- NOTES FOR CONSTRUCTION EQUIPMENT**
- STORMTECH SC-310 & SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
  - THE USE OF CONSTRUCTION EQUIPMENT OVER SC-310 & SC-740 CHAMBERS IS LIMITED:
    - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
    - NO RUBBER Tired LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
    - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
  - FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.
  - USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.
- CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

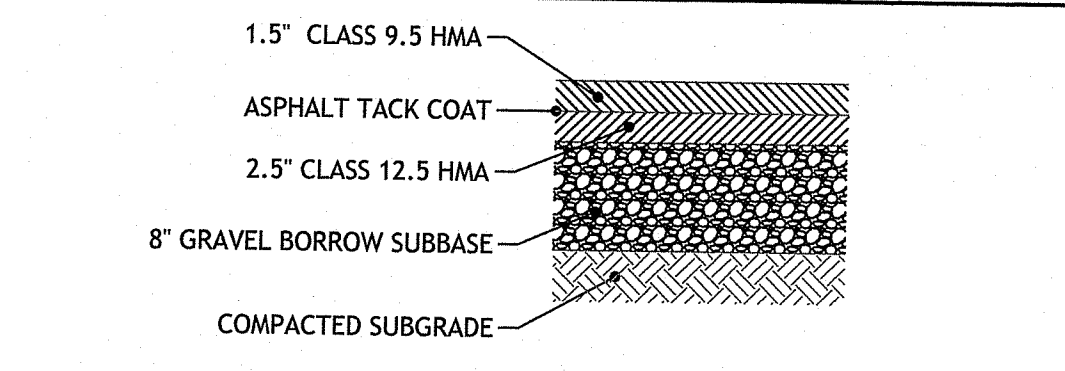


**25 UCS #3 PLAN VIEW**  
1 INCH = 10 FEET

SCALE (FEET)  
0 5 10 20 40  
1 INCH = 10 FT

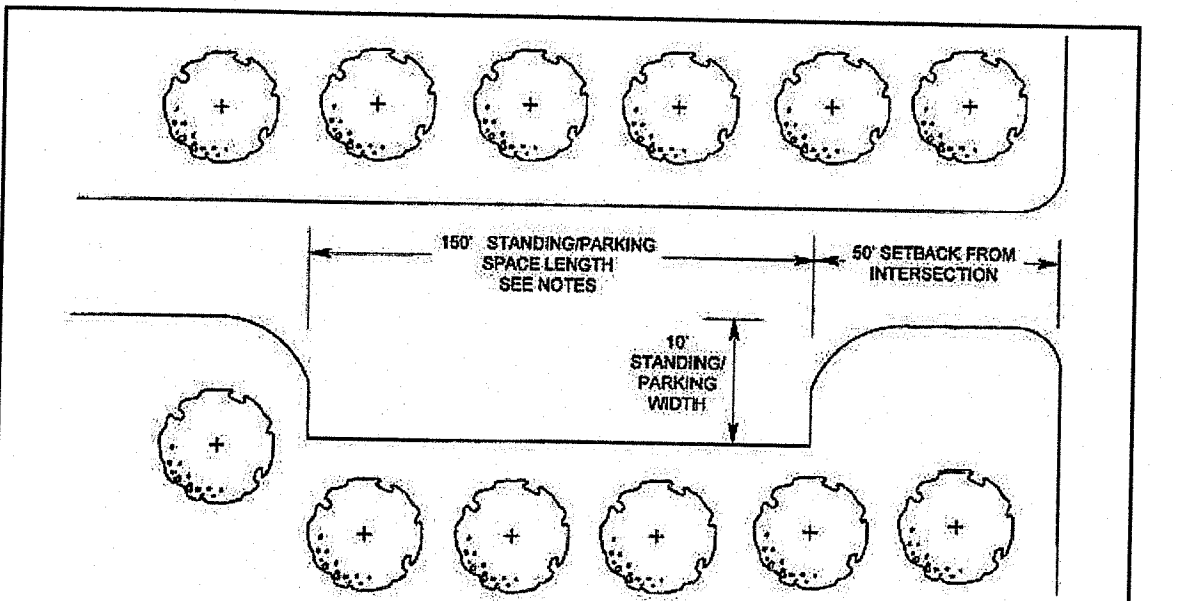


**28 UNDERGROUND CHAMBER SYSTEM #3- ELEVATION DETAIL**  
NOT TO SCALE



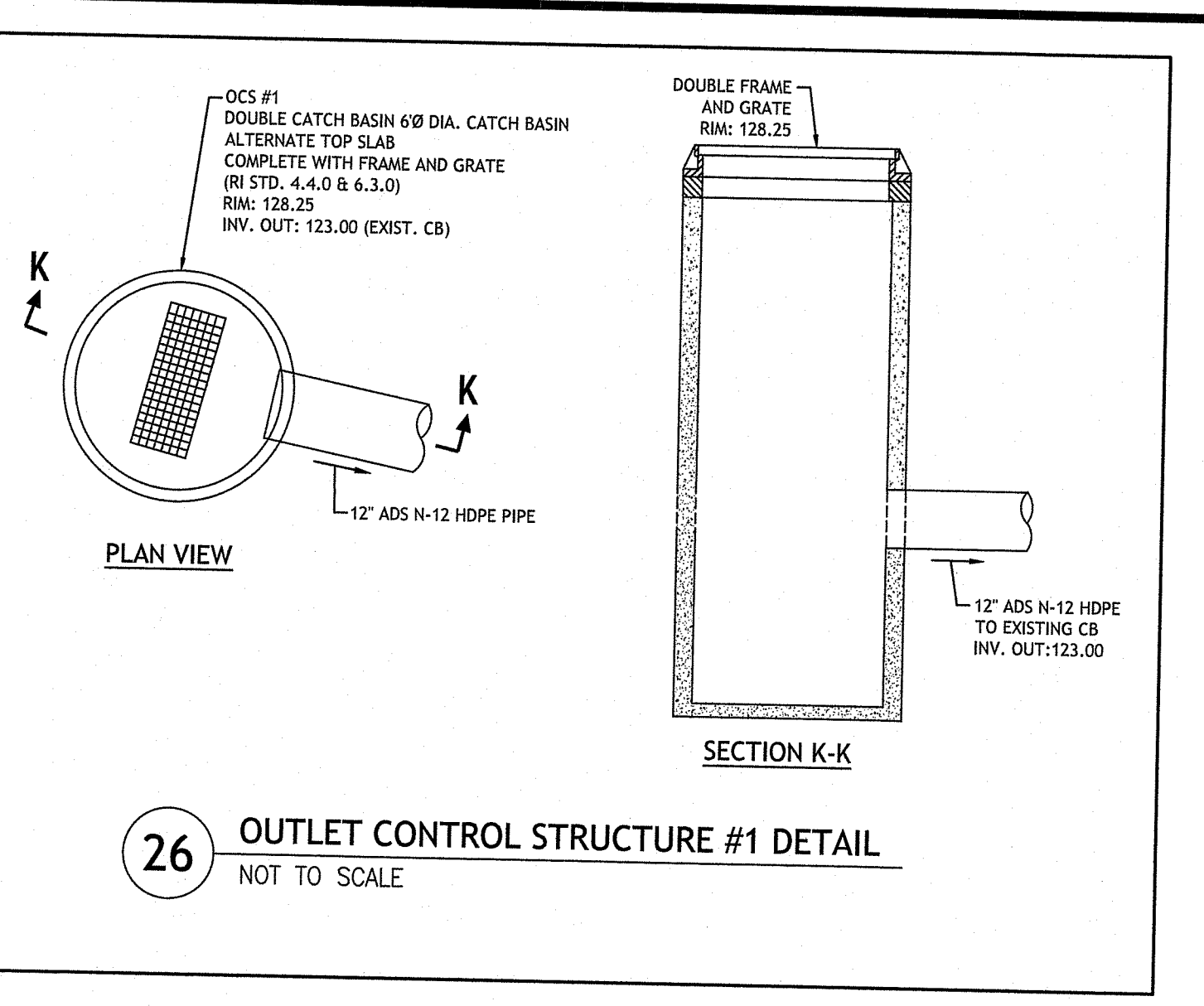
- NOTES:**
- IN AREAS OF CUT FOR BITUMINOUS CONCRETE PAVEMENT, THE CONTRACTOR SHALL REMOVE 12 INCHES OF EXISTING MATERIAL. IN AREAS OF FILL FOR BITUMINOUS CONCRETE PAVEMENT, THE CONTRACTOR SHALL STRIP ALL TOPSOIL. IF UNSUITABLE MATERIALS ARE ENCOUNTERED AT SUBGRADE, THE CONTRACTOR SHALL NOTIFY THE ENGINEER. 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.
  - GRAVEL BORROW (RIDOT M.01.09 TYPE 1A) TO BE PLACED AND COMPACTED IN ONE LOOSE LIFT TO 95% MAXIMUM DRY DENSITY (MODIFIED PROCTOR; ASTM D1557). HOT MIX ASPHALT TO BE PLACED IN LIFTS AS SPECIFIED ABOVE AND COMPACTED TO A MINIMUM OF 95% PLANT THEORETICAL MAXIMUM SPECIFIC GRAVITY ( $G_{mm}$ ).

**30 BIT. CONCRETE PAVEMENT**  
NOT TO SCALE

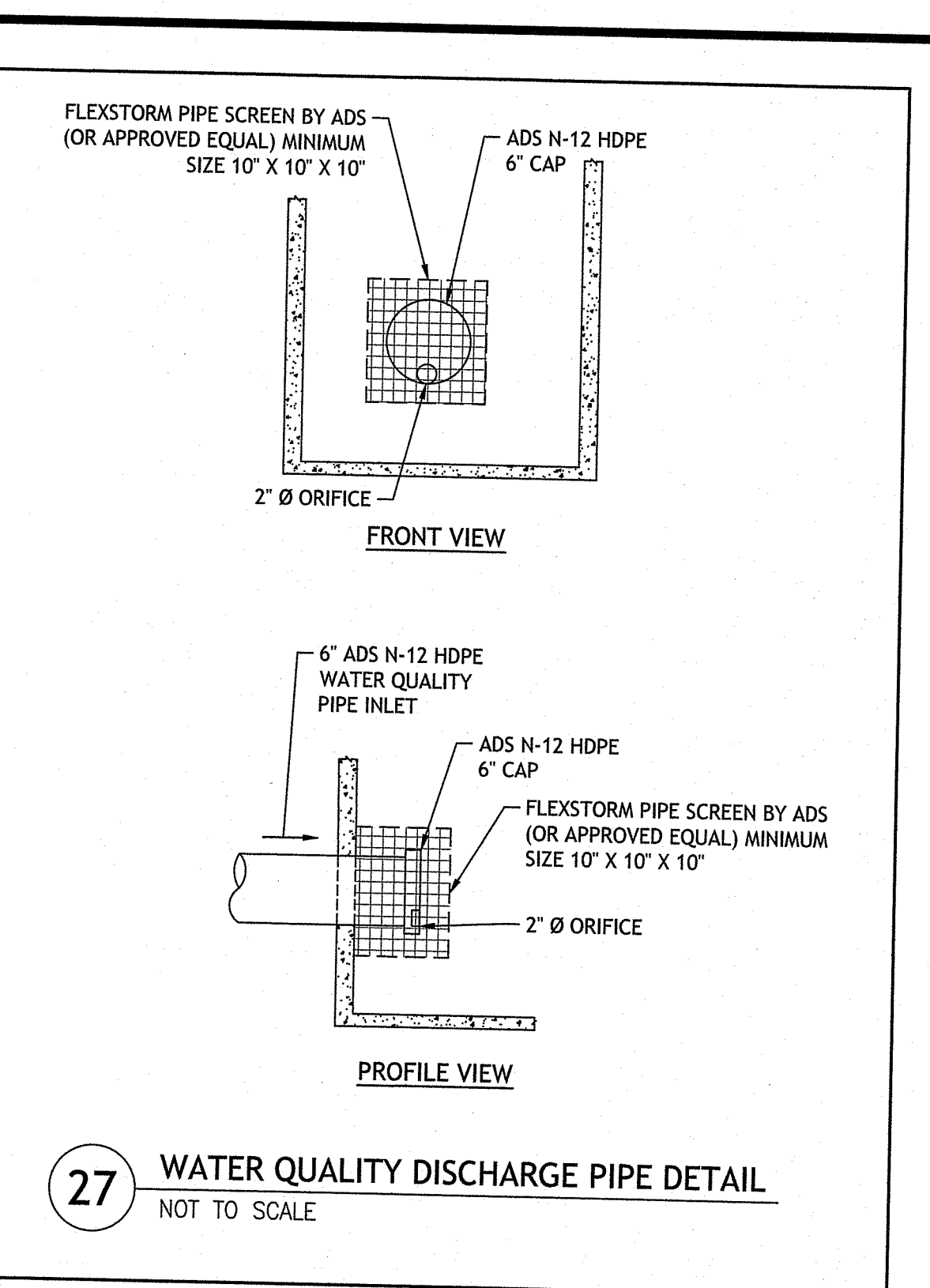


- NOTES:**
- STANDING/PARKING SCHOOL BUS BUMP OUT WILL ACCOMMODATE PEDESTRIANS AND AVERAGE OF 5 CARS
  - MUST BE SETBACK 50 FEET FROM INTERSECTION OF STREET
  - ROAD WIDTHS WILL VARY
  - MODIFIED STANDING/PARKING SPACE LENGTH TO 120 FEET TO MEET THE 50' SETBACK FROM INTERSECTION REQUIREMENT AND TO AVOID EXISTING FIRE HYDRANT WITHIN STILSON ROAD RIGHT-OF-WAY. 120 FEET MEETS THE MINIMUM RI BUS STOP DESIGN GUIDE STANDARDS OF RIPTA AND DOT. AT 120 FEET, EACH VEHICLE WOULD HAVE 24 FEET TO PARK AND MANEUVER.

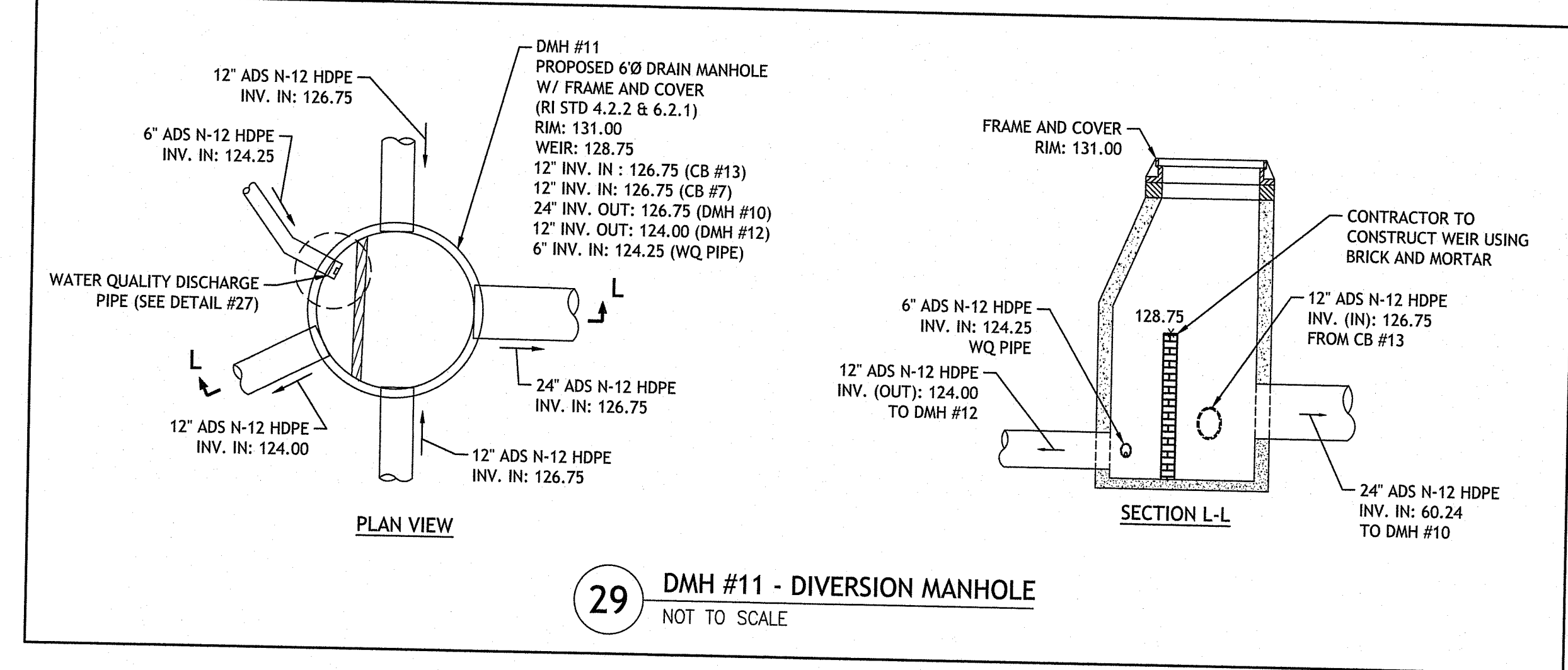
**31 TOWN OF RICHMOND, RI SCHOOL BUS WAITING ZONE PARKING BUMP OUT**  
NOT TO SCALE



**26 OUTLET CONTROL STRUCTURE #1 DETAIL**  
NOT TO SCALE



**27 WATER QUALITY DISCHARGE PIPE DETAIL**  
NOT TO SCALE



**29 DMH #11 - DIVERSION MANHOLE**  
NOT TO SCALE

**JCE**  
JOE CASALI ENGINEERING, INC.  
CIVIL, SITE DEVELOPMENT, TRANSPORTATION  
DRAINAGE, TRAFFIC, FLOODPLAIN  
300 POBKT  
900 POBKT  
401.944.1100 401.944.1313 FAX WWW.JCEASALLOON.COM

JOSEPH A. CASALI  
No. 7250  
REGISTERED PROFESSIONAL ENGINEER  
CIVIL  
03 / 01 / 2024

**RICHMOND PLACE**  
38 STILSON ROAD  
RICHMOND, RHODE ISLAND  
AP 4B, LOTS 59, 59-2, & 59-3

MAR 09 2024  
Office of Water Resources

OWNER:  
RICHMOND REALTY ASSOCIATES, LLC  
1536 SCITUATE AVENUE  
CRANSTON, RI 02920

APPLICANT:  
CHIDAMBARAM NARAYANAN  
CT PROPERTIES, LLC  
29 PINE STREET  
EAST PROVIDENCE, RI 02915

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS AS  
SPECIFIED IN THE LETTER OF APPROVAL  
DATED: APR 19 2024 FILE #: 23-0164  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

**REVISIONS:**

| NO. | DATE   | DESCRIPTION      |
|-----|--------|------------------|
| 1   | 1/2021 | TOWN COMMENTS    |
| 2   | 7/2023 | PRELIMINARY PLAN |
| 3   | 1/2024 | RIDEM RTC        |
| 4   | 2/2024 | PLANNING RTC     |
| 5   | 3/2024 | RIDEM RTC        |

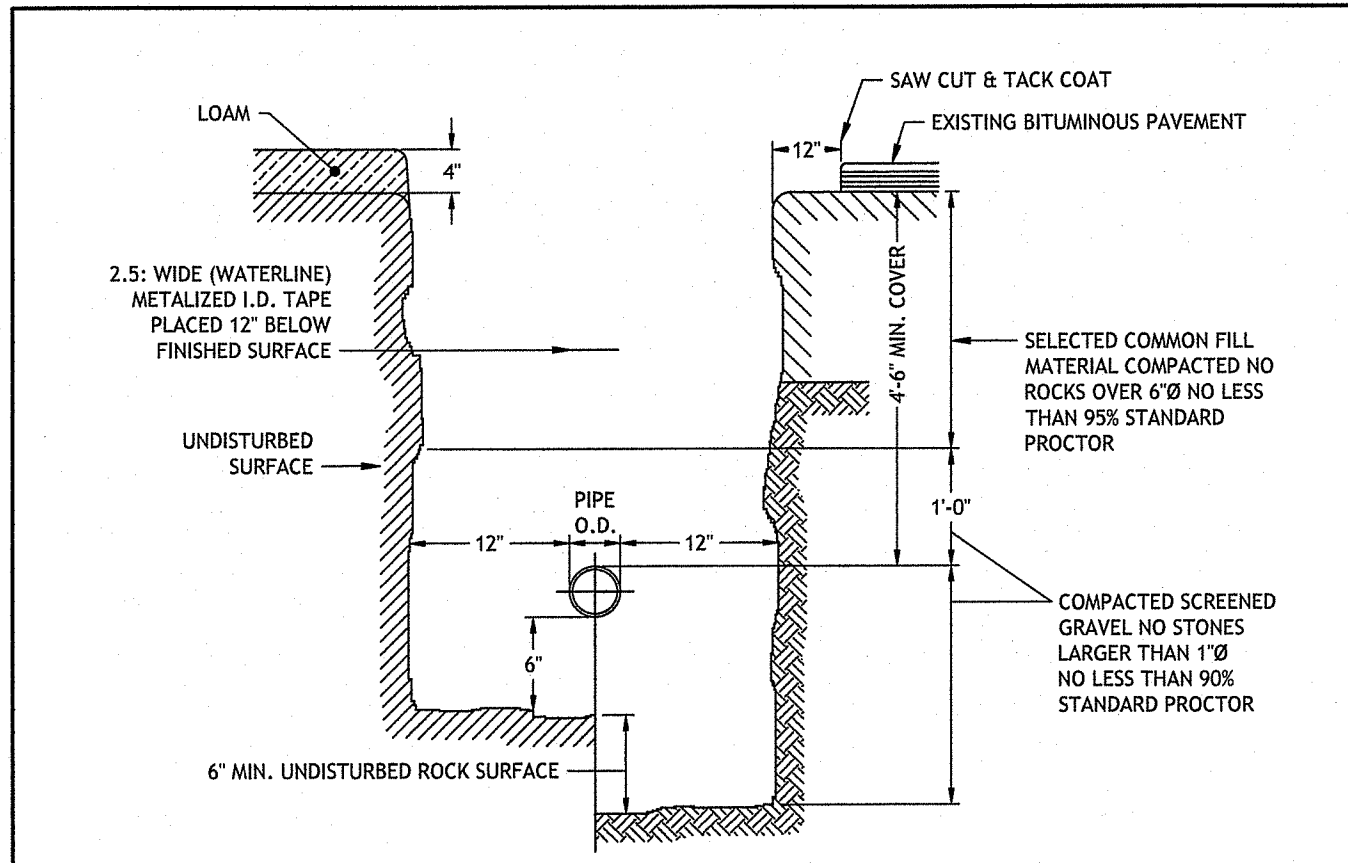
DESIGNED BY: WML JR  
DRAWN BY: SD/SEP  
CHECKED BY: JAC  
DATE: OCTOBER 2021  
PROJECT NO: 20-61a

PRELIMINARY, NOT FOR CONSTRUCTION

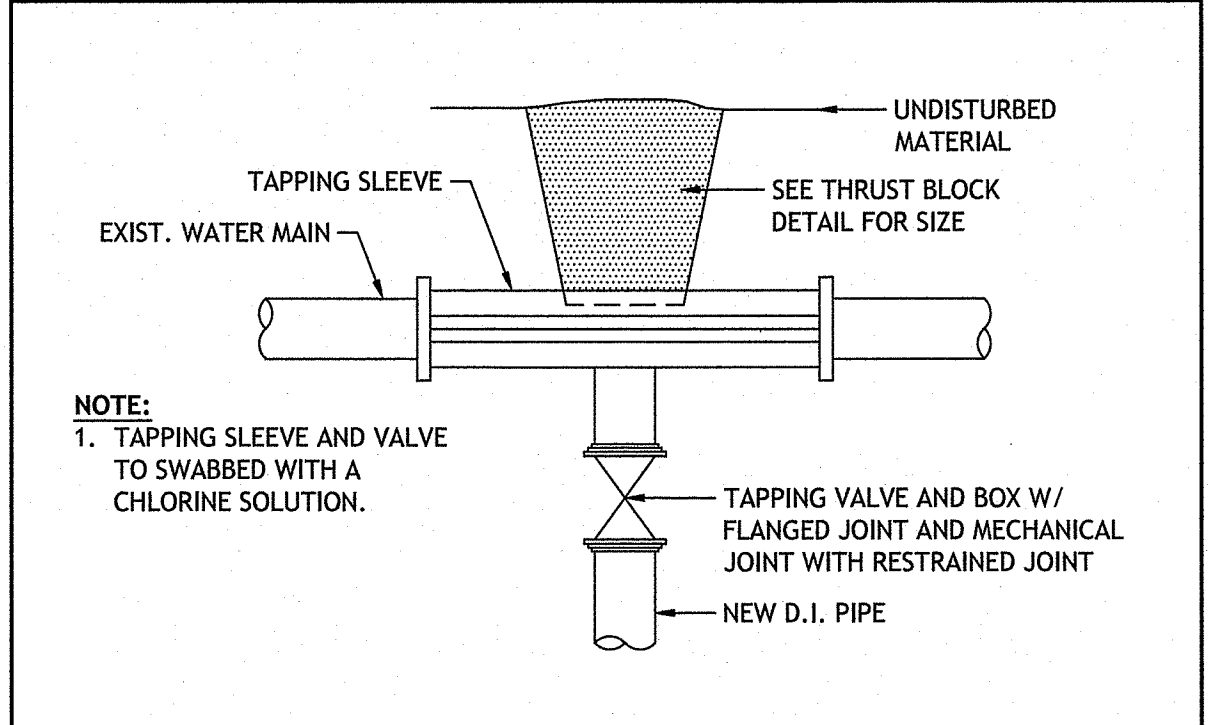
**CIVIL DETAILS IV**

**SHEET 16 OF 20**

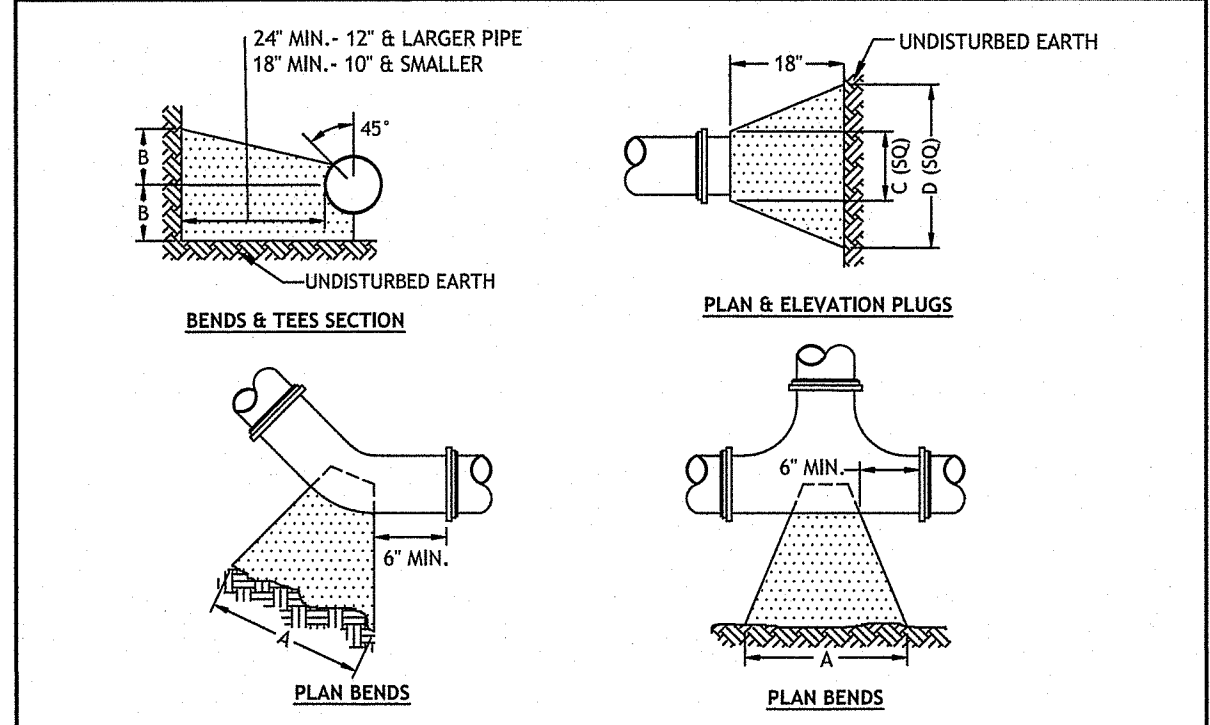
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**32 WATER TRENCH DETAIL**  
NOT TO SCALE



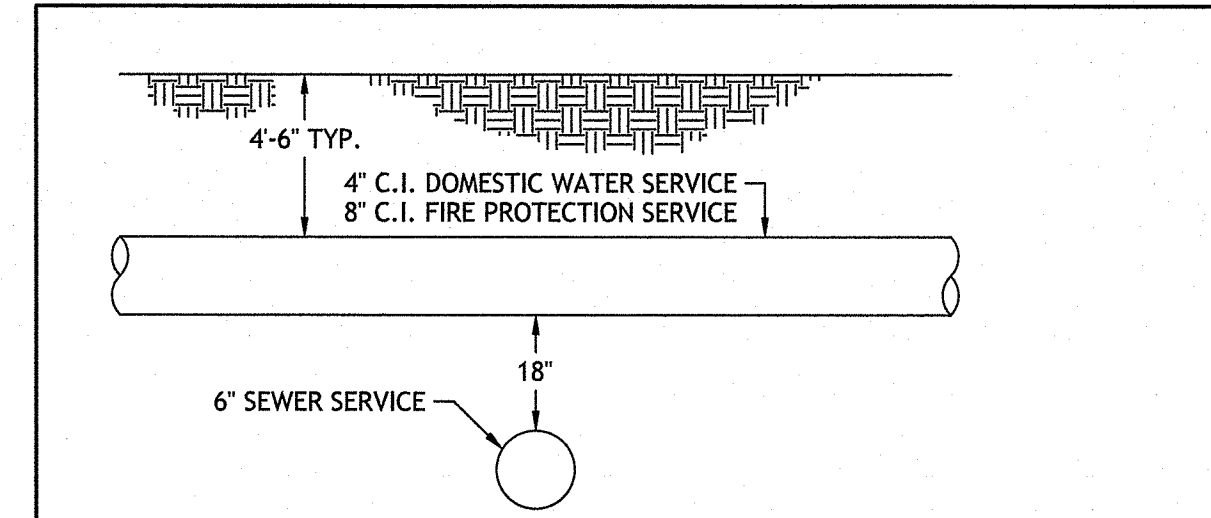
**33 TAPPING SLEEVE AND VALVE**  
NOT TO SCALE



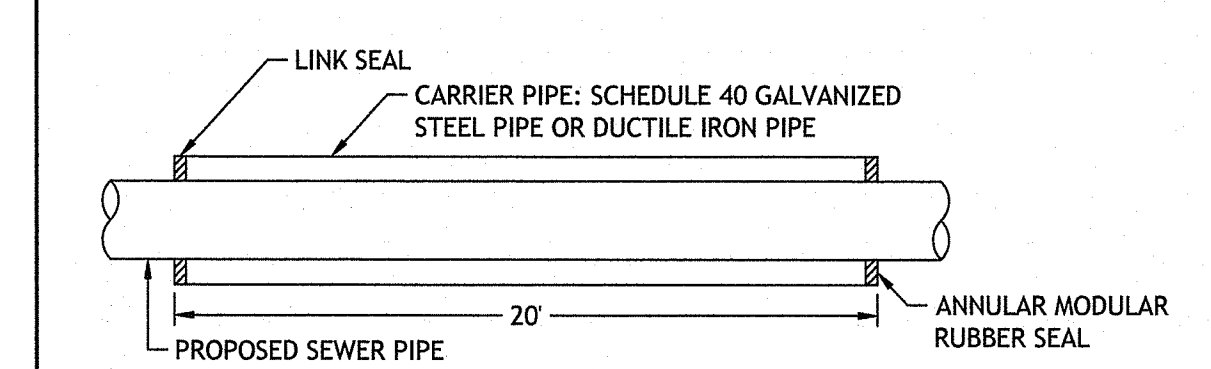
NOTE:  
1. ALL CONCRETE SHALL BE 4000 P.S.I. @ 28 DAYS.  
2. CONCRETE THRUST BLOCKS SHALL BEAR AGAINST UNDISTURBED EARTH.  
3. FORMS TO BE USED AS NECESSARY.  
4. ALL BOLTS AND NUTS TO BE PROTECTED FROM CONCRETE AND EASILY ACCESSIBLE WHEN THRUST BLOCK INSTALLED.

| SIZE | TEES |     | PLUGS |     | 90° BEND |     | 45° BEND |     | 22 1/2° BEND |     | 11 1/4° BEND |     |
|------|------|-----|-------|-----|----------|-----|----------|-----|--------------|-----|--------------|-----|
|      | A    | B   | C     | D   | A        | B   | A        | B   | A            | B   | A            | B   |
| 4"   | 22"  | 12" | 22"   | 12" | 24"      | 16" | 20"      | 10" | 14"          | 7"  | 11"          | 5"  |
| 6"   | 30"  | 18" | 30"   | 18" | 35"      | 22" | 27"      | 15" | 19"          | 12" | 13"          | 8"  |
| 8"   | 38"  | 24" | 38"   | 24" | 46"      | 29" | 33"      | 22" | 25"          | 14" | 19"          | 10" |
| 10"  | 41"  | 28" | 41"   | 28" | 48"      | 34" | 36"      | 24" | 27"          | 17" | 21"          | 11" |

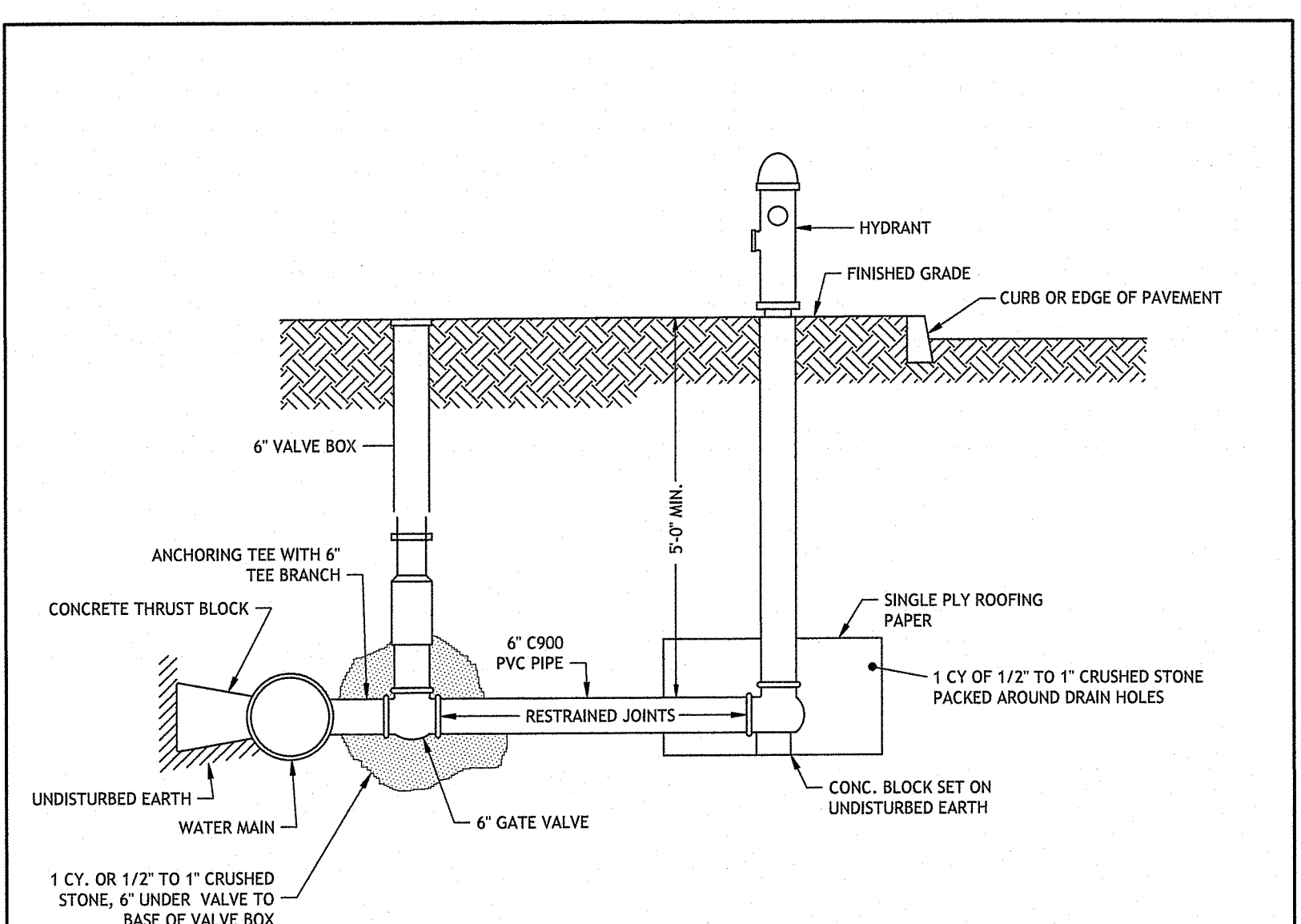
**34 THRUST BLOCK DETAIL**  
NOT TO SCALE



NOTES:  
1. THE VERTICAL SEPARATION BETWEEN THE WATER MAIN AND THE PROPOSED SEWER SHALL BE A MINIMUM OF 18 INCHES.  
2. THE HORIZONTAL SEPARATION BETWEEN THE WATER MAIN AND THE PROPOSED SEWER SHALL BE MINIMUM OF 10 FEET.  
3. IF 1 OR 2 CANNOT BE MAINTAINED THE PROPOSED SEWER SHALL BE INSTALLED WITHIN A CARRIER PIPE. SEWER MAIN AND SERVICES ARE NOT ALLOWED TO CROSS OVER THE TOP OF WATER MAIN.  
4. SEWER PIPE SHALL BE SUPPORTED WITHIN THE CARRIER PIPE TO MAINTAIN A CONSTANT SLOPE WITHIN THE CARRIER PIPE.

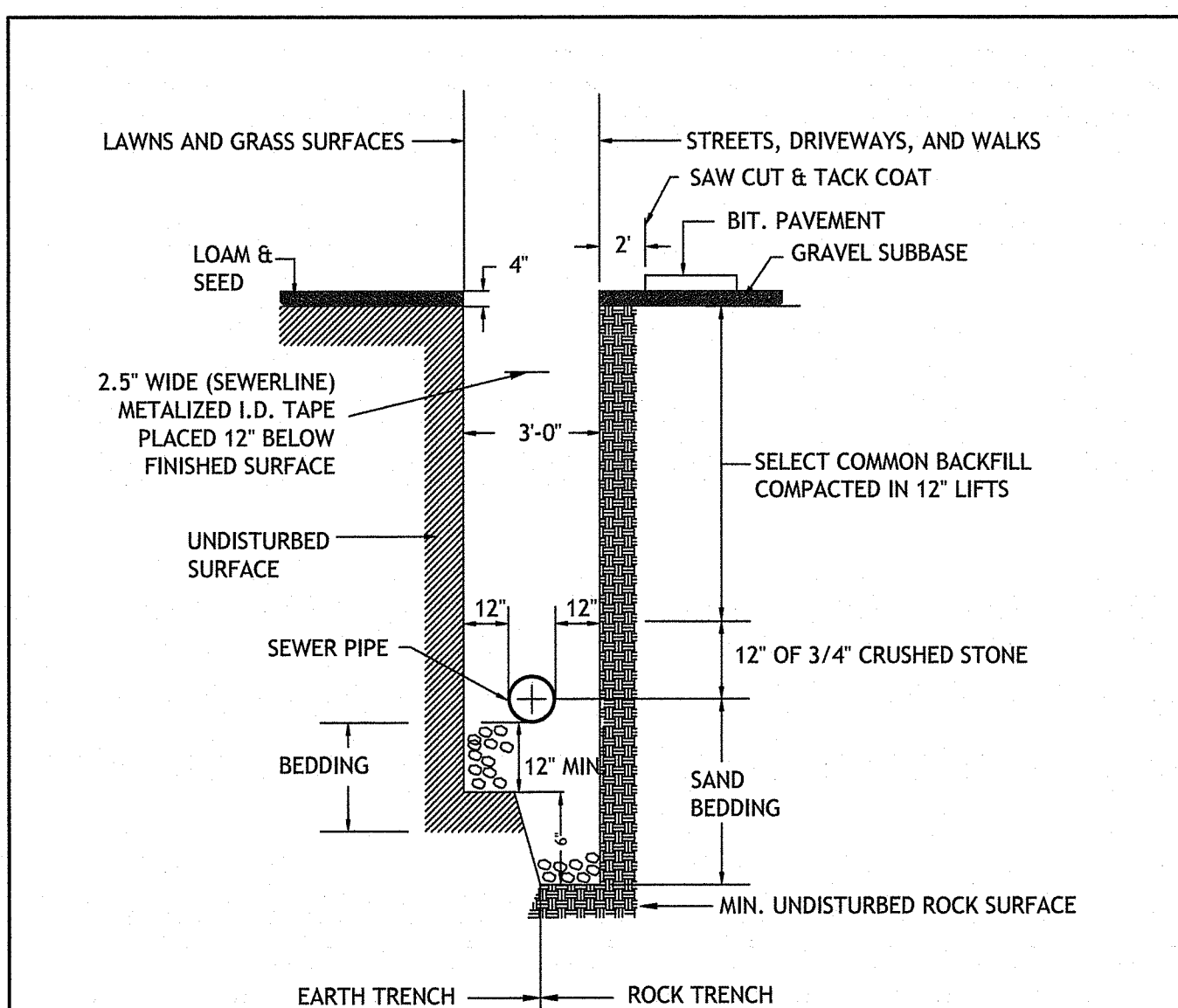


**35 SEWER/WATER SEPARATION DETAIL**  
NOT TO SCALE

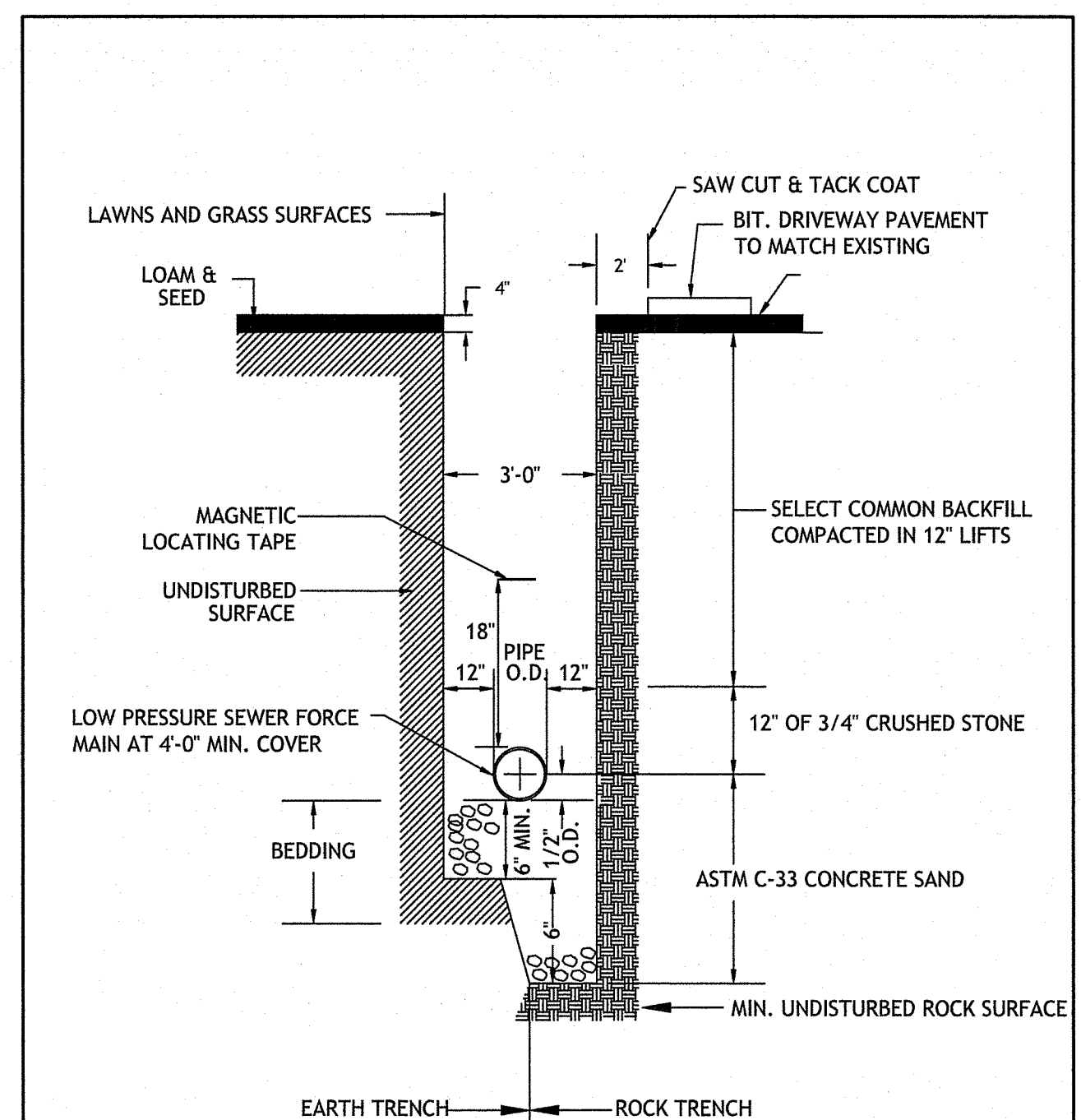


NOTES:  
1. YELLOW COLOR SCHEME FOR HYDRANT  
2. INSTALLATION SHALL NOT OBSTRUCT SIDEWALK TO PEDESTRIAN OR PHYSICALLY IMPAIRED.  
3. REMOVAL OF EXISTING HYDRANT MAY REQUIRE ADDITIONAL RESTRAINT DESIGNED BY A PROFESSIONAL ENGINEER.  
4. MECHANICAL JOINT PIPE W/ RESTRAINED JOINTS FOR BRANCHES OVER ONE LENGTH OF PIPE.

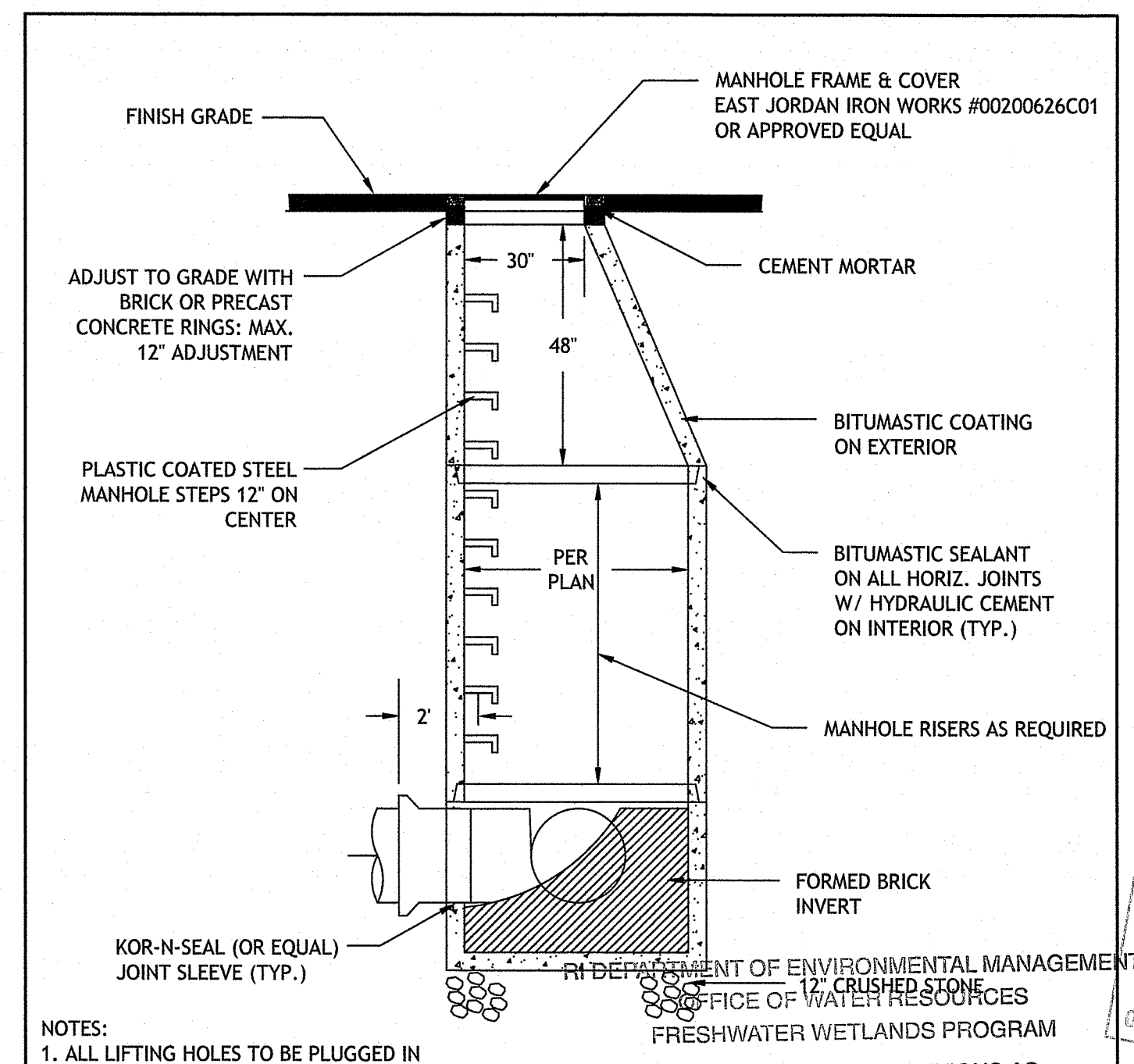
**36 HYDRANT**  
NOT TO SCALE



**37 TYPICAL SEWER LINE TRENCH DETAIL**  
NOT TO SCALE



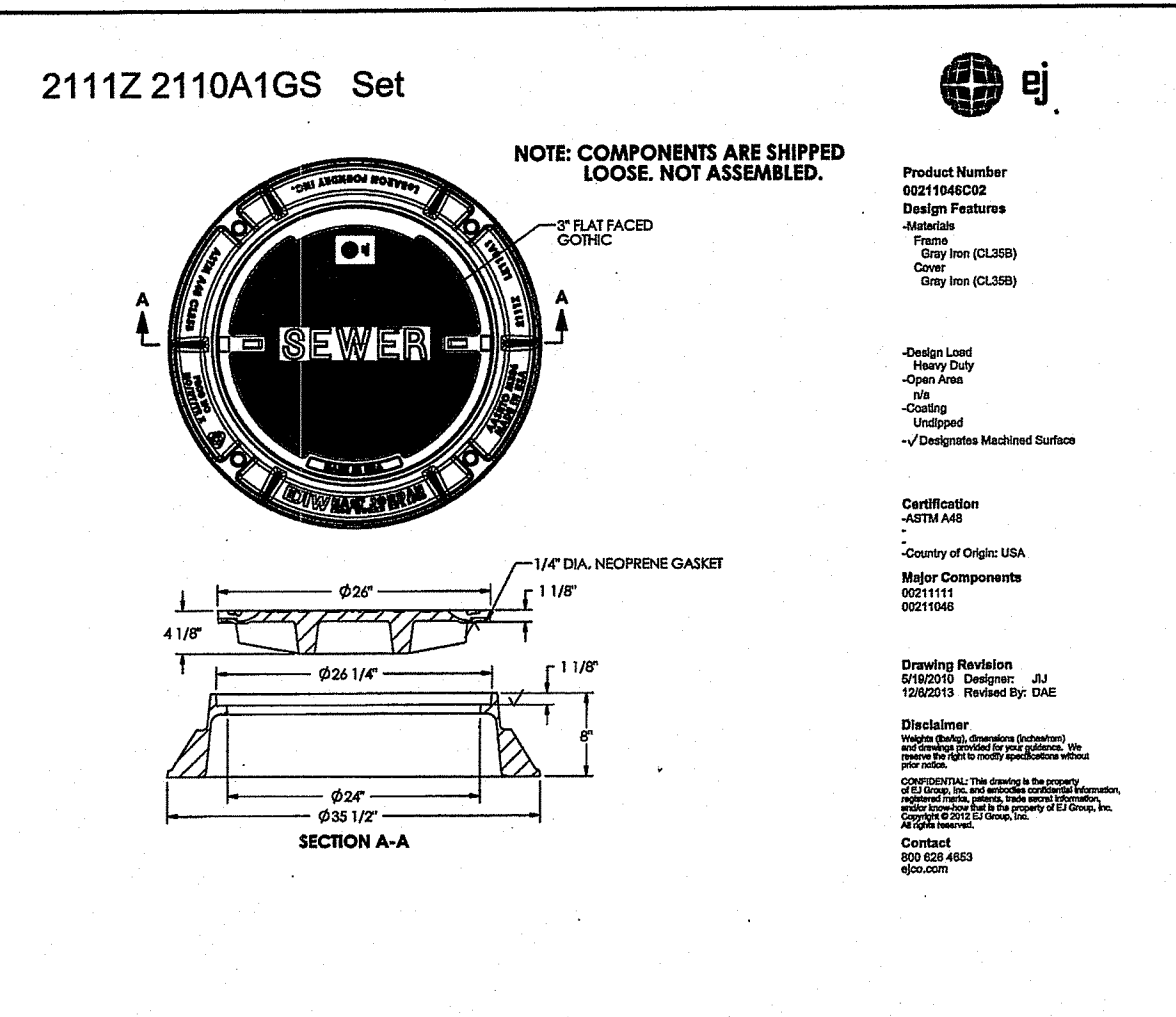
**38 LOW PRESSURE SEWER TRENCH**  
NOT TO SCALE



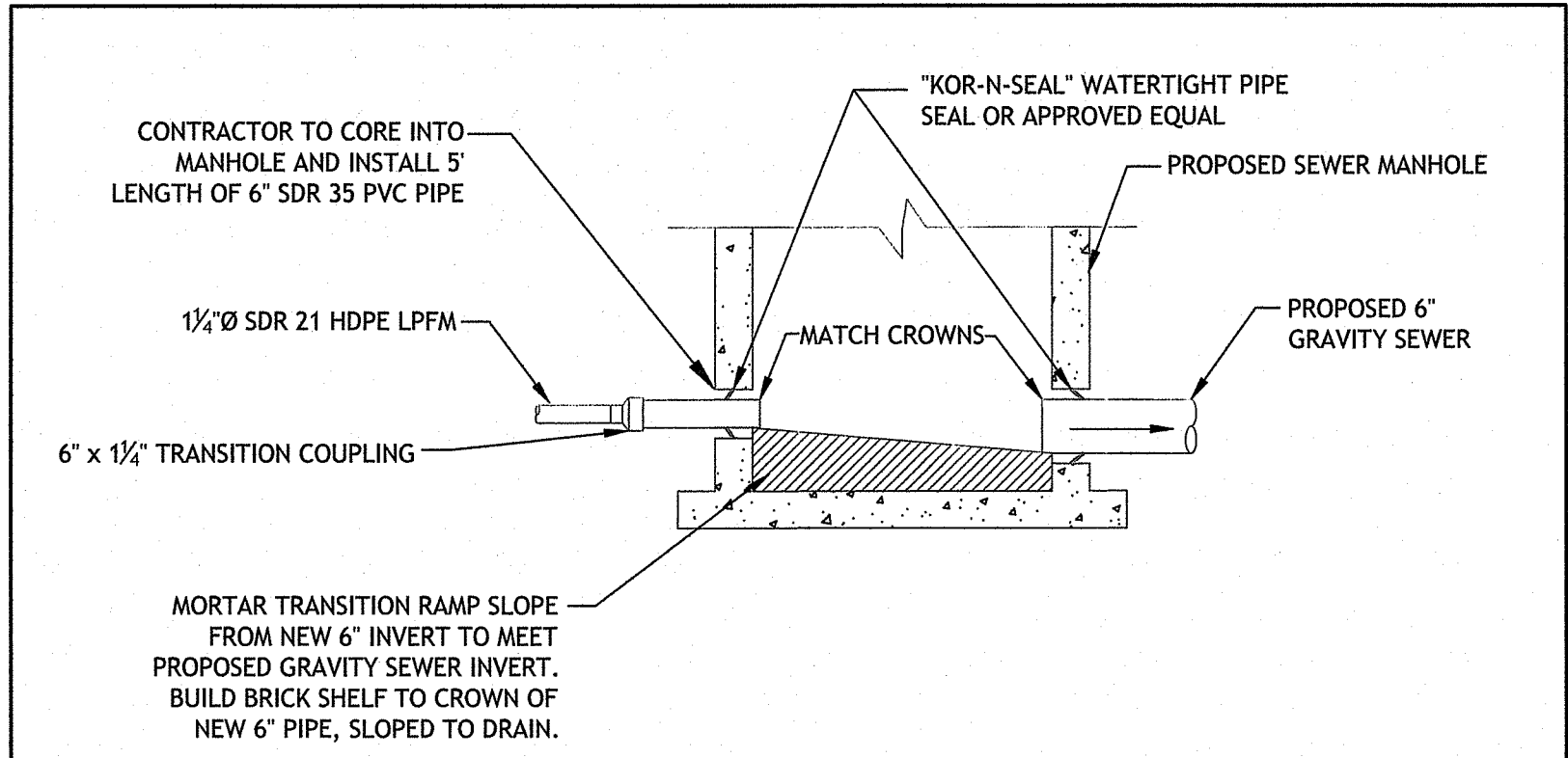
NOTES:  
1. ALL LIFTING HOLES TO BE PLUGGED IN AND OUT WITH HYDRAULIC CEMENT.  
2. ALL JOINTS TO BE HYDRAULICALLY CEMENTED.

APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL DATED: APR 19 2024 FILE # 23-0164

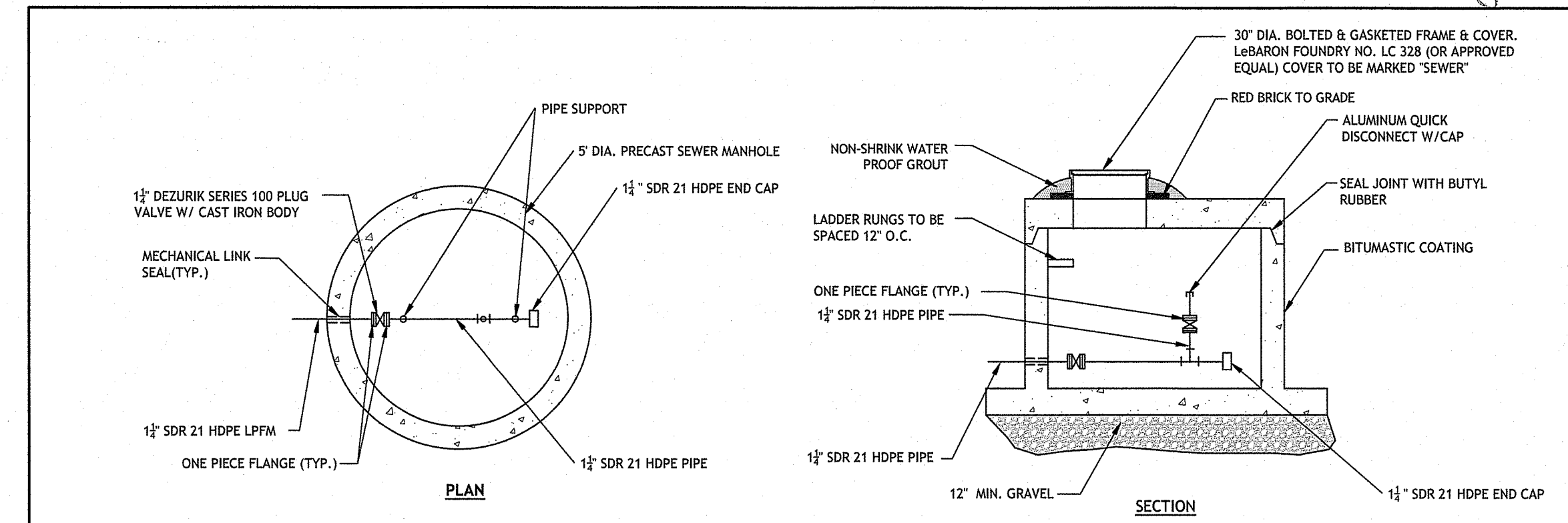
**39 SANITARY SEWER MANHOLE (SMH) DETAIL**  
NOT TO SCALE



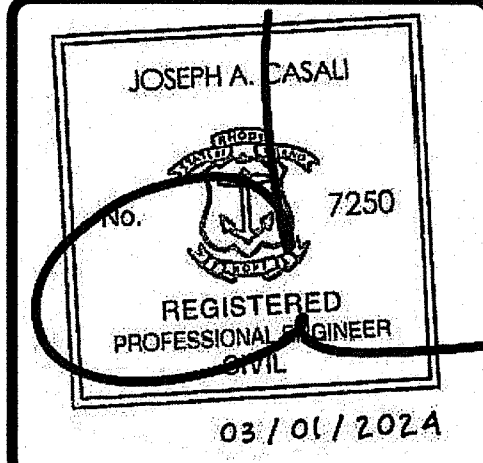
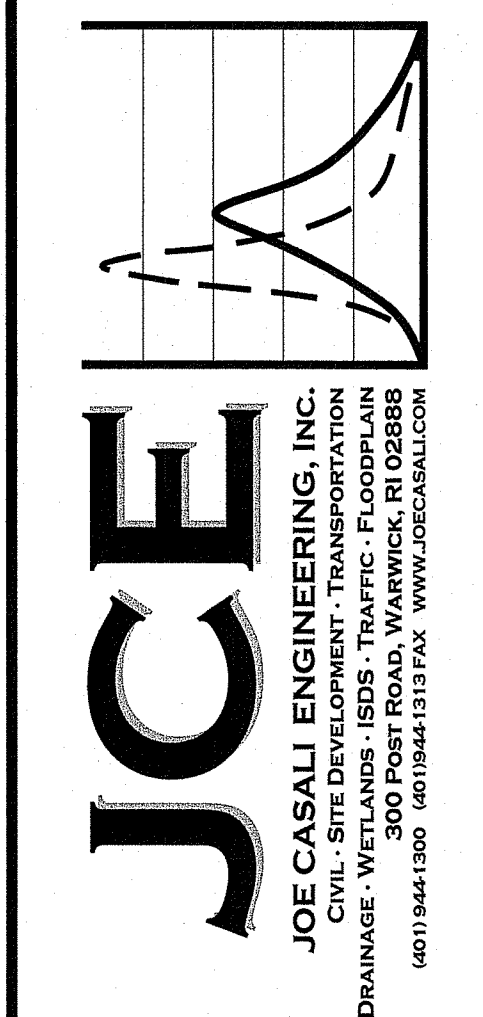
**40 SEWER MANHOLE FRAME & COVER DETAIL**  
NOT TO SCALE



**41 LPFM TO GRAVITY SEWER MANHOLE CONNECTION**  
NOT TO SCALE



**42 LPFM TERMINAL END FLUSHING CONNECTION DETAIL**  
NOT TO SCALE



**RICHMOND PLACE**  
38 STILSON ROAD  
RICHMOND, RHODE ISLAND  
AP 4B, LOTS 59, 59-2, & 59-3

APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL DATED: APR 19 2024 FILE # 23-0164

APPLICANT: CHIDAMBARAM NARAYANAN CT PROPERTIES, LLC 29 PINE STREET EAST PROVIDENCE, RI 02915

REVISIONS:

| NO. | DATE    | DESCRIPTION      |
|-----|---------|------------------|
| 1   | 11/2021 | TOWN COMMENTS    |
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| 5   | 3/2024  | RIDEM RTC        |

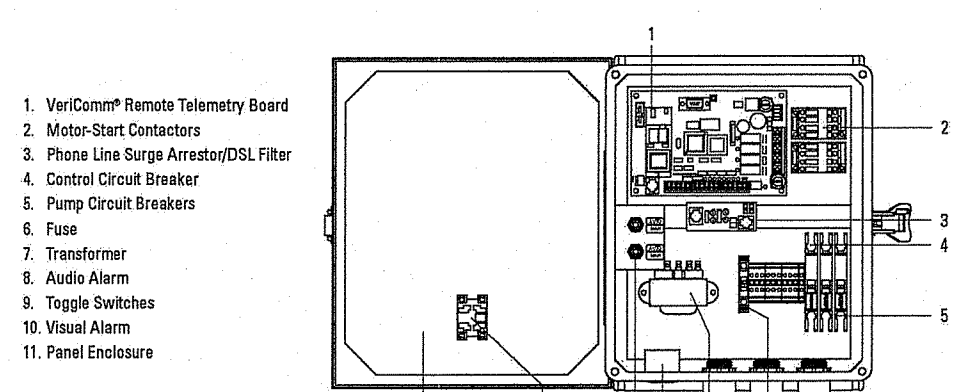
DESIGNED BY: WMLJR  
DRAWN BY: SD/SEP  
CHECKED BY: JAC  
DATE: OCTOBER 2021  
PROJECT NO: 20-61a

PRELIMINARY, NOT FOR CONSTRUCTION

**CIVIL DETAILS V**

**SHEET 17 OF 20**

**VeriComm® DAX RO Control Panels**  
Technical Data Sheet



**Standard Components**

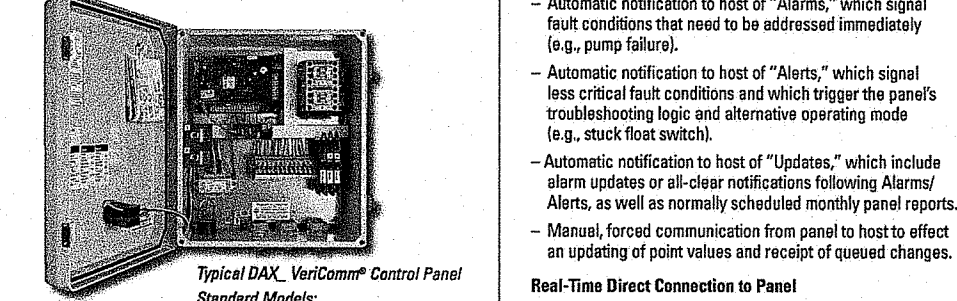
| Feature                                 | Specifications   |
|---|--|
| 1. Motor-Start Contactors               | 100 VAC, 18 FLA, 1 hp, 80 Hz; 2.0 million cycles at 100 million at 50% of FLA  |
| 2. VeriComm Remote Telemetry Unit*      | 240 VAC, 18 FLA, 1 hp, 80 Hz; 2.0 million cycles at 100 million at 50% of FLA  |
| 3. Phase Line Surge Arrestor/DSL Filter | ATRU-100, 240 VAC, 18 FLA, 1 hp, 80 Hz; 2.0 million cycles at 100 million at 50% of FLA  |
| 4. Control Circuit Breaker              | 10 A, OFF/ON switch, Single-pole 120 VAC, double-pole 240 VAC, DIN rail mounting with thermal magnetic tripping characteristics  |
| 5. Pump Circuit Breakers                | 20 A, OFF/ON switch, Single-pole 120 VAC, double-pole 240 VAC, DIN rail mounting with thermal magnetic tripping characteristics  |
| 6. Fuse                                 | 250 VAC, 1 A   |
| 7. Transformer                          | 120 VAC Primary, 58 VCT @ 85 A Secondary   |
| 8. Audio Alarm                          | 85 dB at 24 in. (100 mm), warble tone sound  |
| 9. Toggle Switches                      | Single-pole switches, adjustable On, with spring-loaded, momentary, manual On/Off A, 1 hp  |
| 10. Visual Alarm                        | 7/8 in. (20 mm) diameter red lens, "Push-to-Release", NEMA 4, LED, 120 VAC   |
| 11. Panel Enclosure                     | Measures 15.50 in. high x 13.50 in. wide x 6.75 in. deep (394 mm x 338 mm x 170 mm) NEMA 4 rated. Composed of 0.075 inch (2 mm) thick stainless steel. Consult couplings provided. |

**Optional Components**

| Feature                 | Specifications   | Product Code/Order |
|-------------------------|--|--------------------|
| Pump Run Lights         | 7/8 in. (20 mm) diameter green lens, NEMA 4, LED, 120 VAC        | PRL                |
| Anticondensation Heater | Self-adjusting, radiates additional wattage as temperature drops | HT                 |

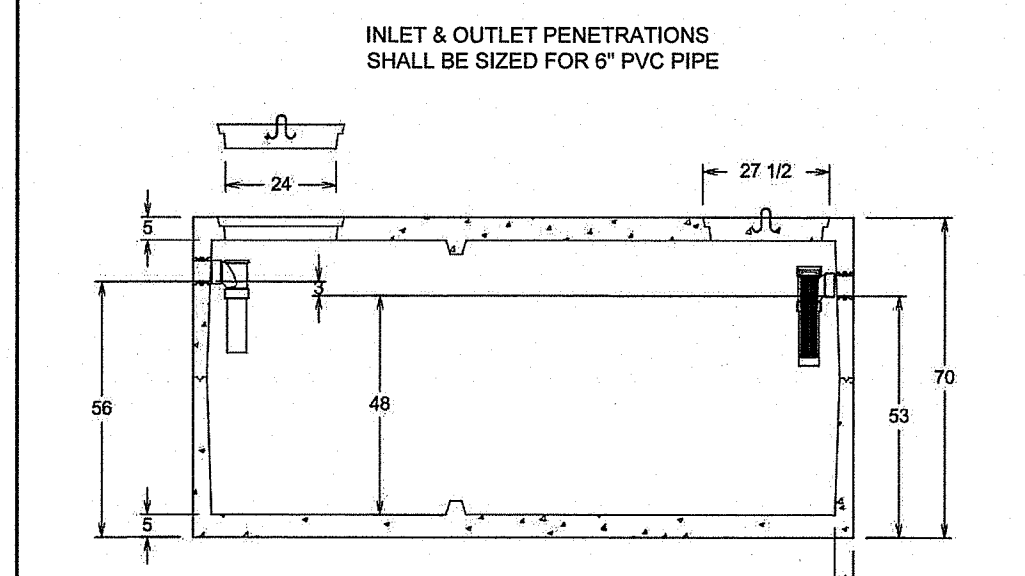
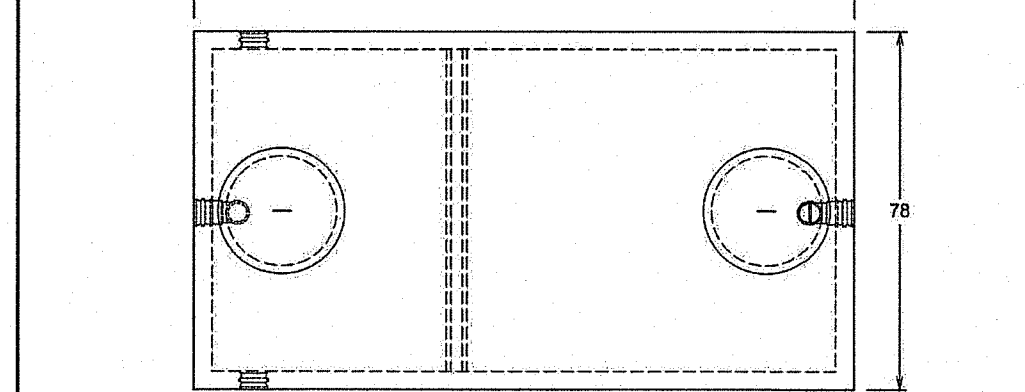
**VeriComm® DAX RO Control Panels**  
Technical Data Sheet

**For On-Demand Applications**  
**Applications**  
VeriComm DAX100 and DAX200 remote telemetry control panels are used with on-demand duplex alternating pumping operations. Coupled with the VeriComm Web-based Monitoring System, these affordable control panels give water/wastewater system operators and maintenance organizations the ability to monitor and control each individual system's performance remotely, with real-time efficiency, while remaining invisible to the homeowner.



**To Specify...**  
To specify this panel for your installation, require the following:  
**Basic Control Logic: Two Operating Modes**  
• A "Normal Mode" that manages day-to-day functions.  
• A "Test Mode" that suspends data collection and alarm reporting during installation and service.  
**Data Collection and Utilization**  
• Data logs of system conditions and events, such as pump run times, pump cycles, and alarm conditions.  
**Troubleshooting and Diagnostic Logic**  
• Troubleshooting capabilities that can report suspected failed components, which then trigger alarms.  
**Advanced Control Logic**  
• Advanced control logic that activates during float malfunctions to diagnose the situation and keep the system operating normally until servicing.

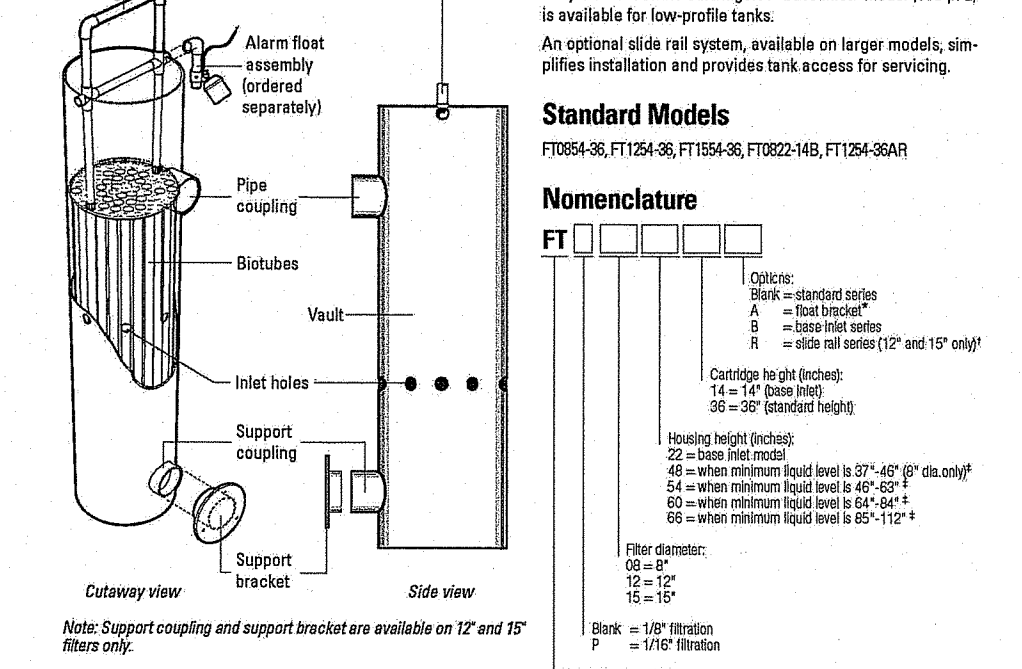
**2000 GALLON SINGLE COMPARTMENT TANK**



**DESIGN NOTES**  
1) ALL JOINTS SEALED WITH BUTYL RUBBER SEALANT.  
2) ALL INLET AND OUTLET HAVE STAINLESS-STEEL APPROVED SEALS.  
3) AVAILABLE OUTLET FILTER SHOWN.  
4) MEETS ASTM C 1207-07A.  
5) CONCRETE STRENGTH 5000 PSI MIN. 28 DAYS.  
JOLLEY PRECAST, INC.  
860-774-9066

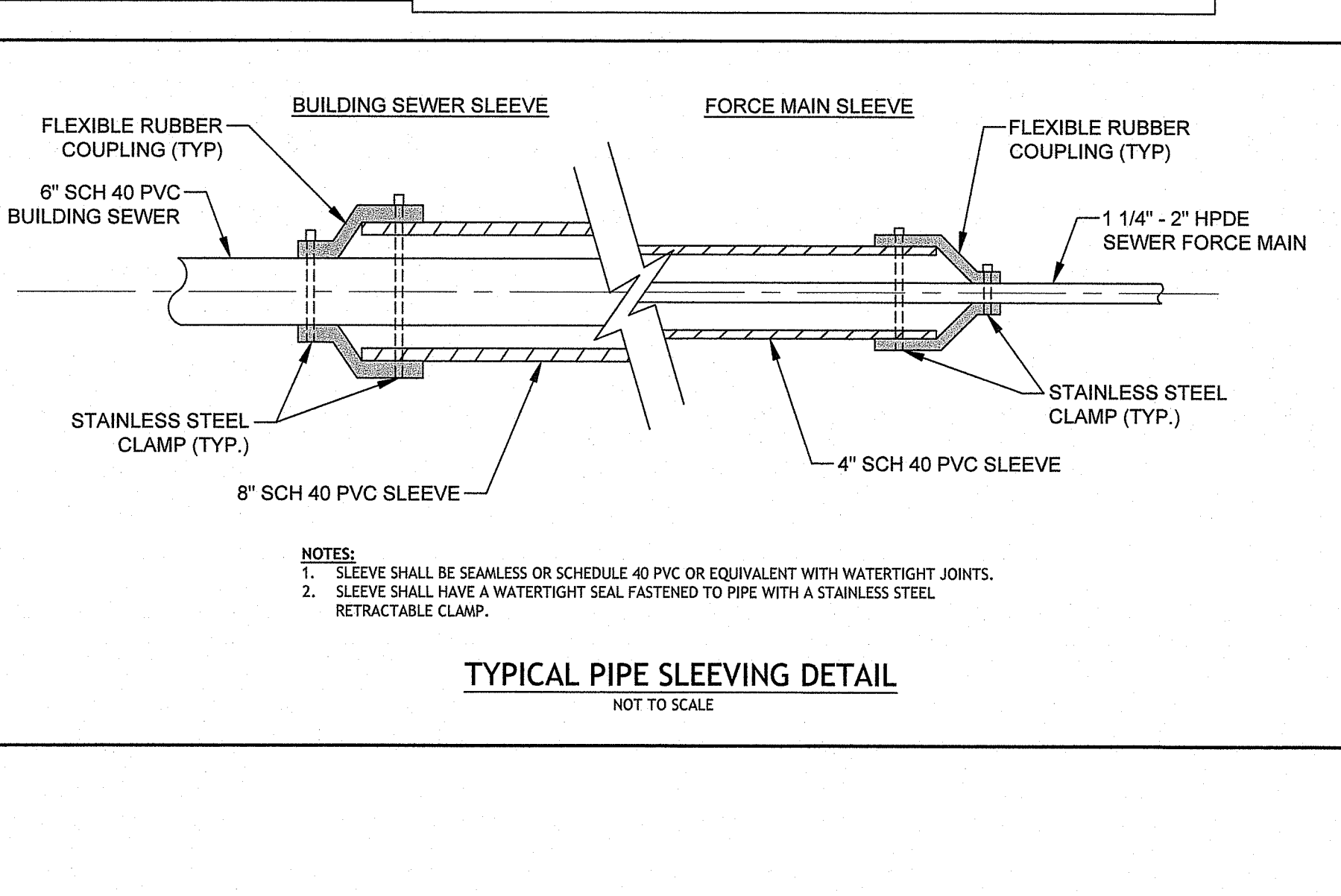
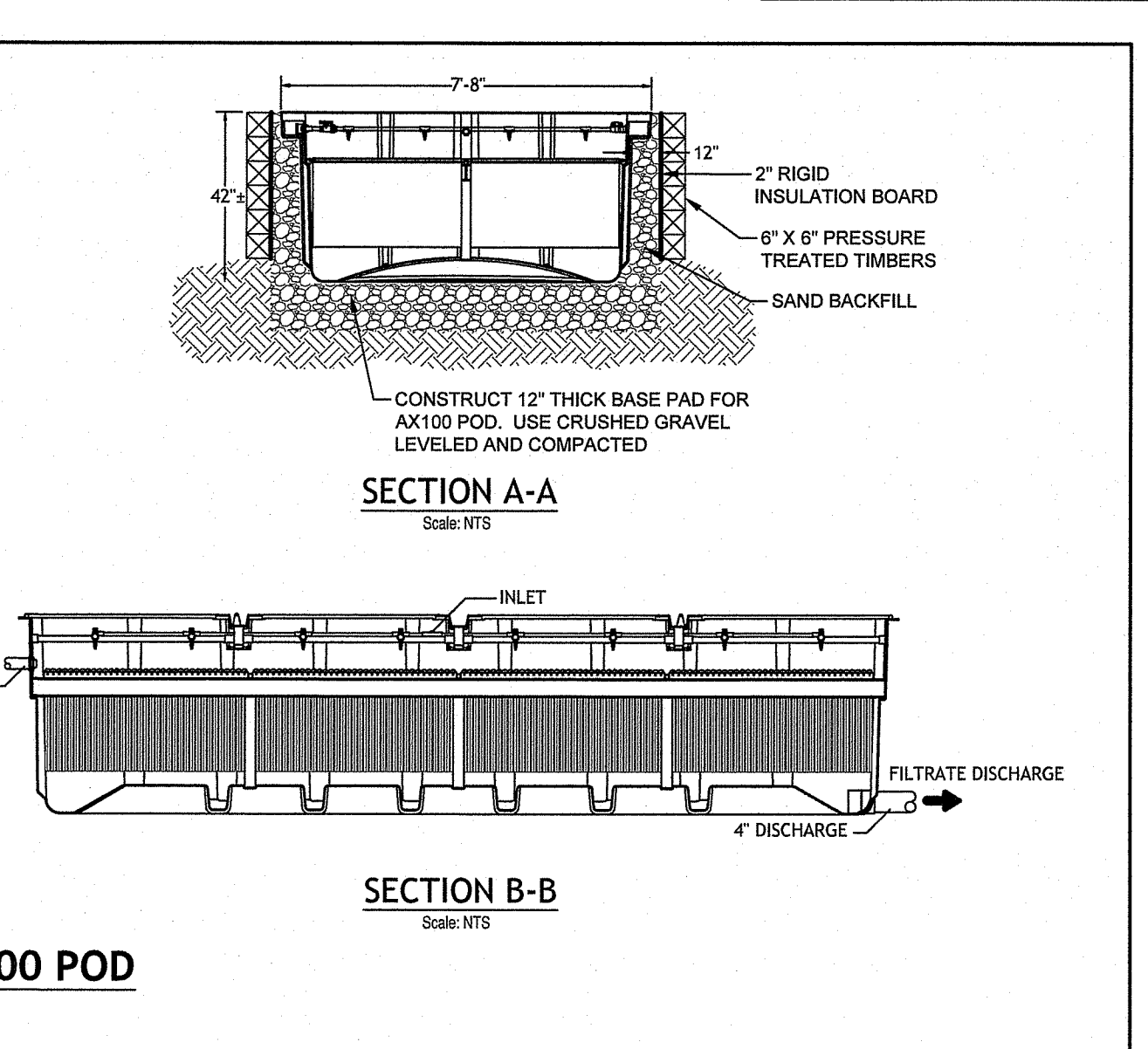
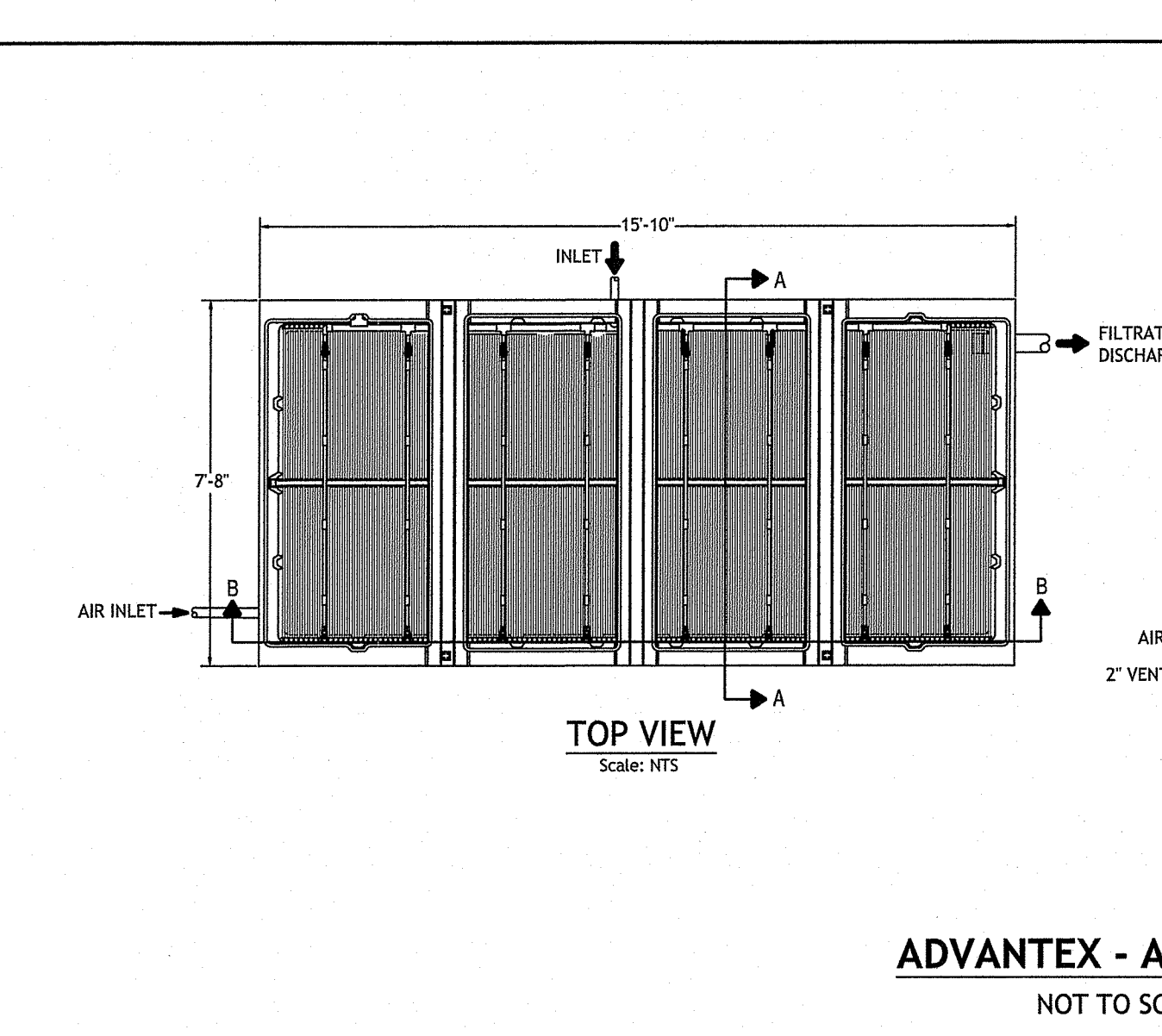
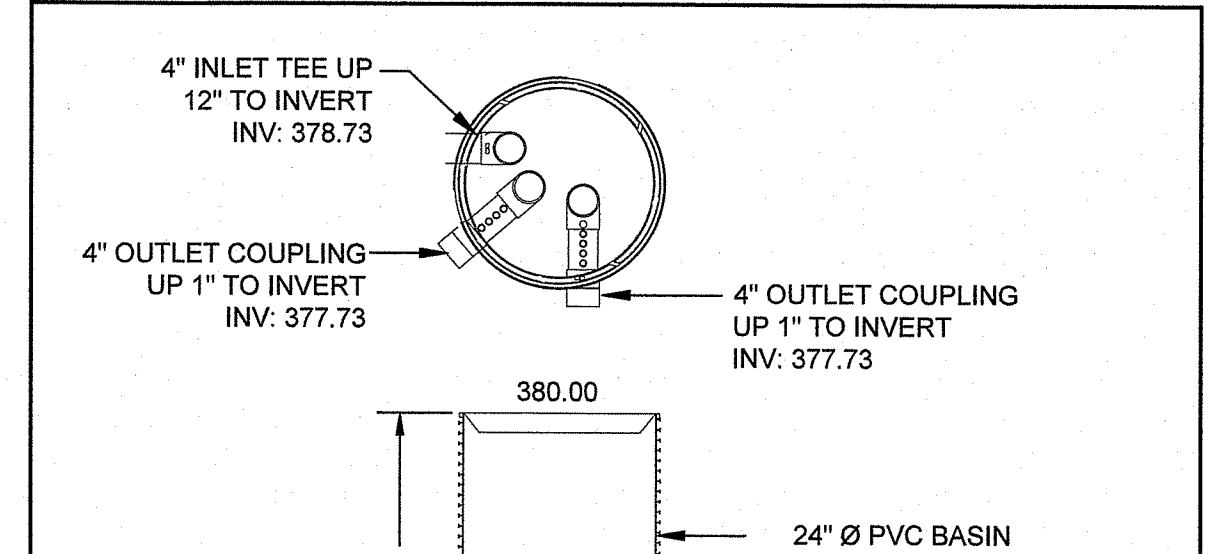
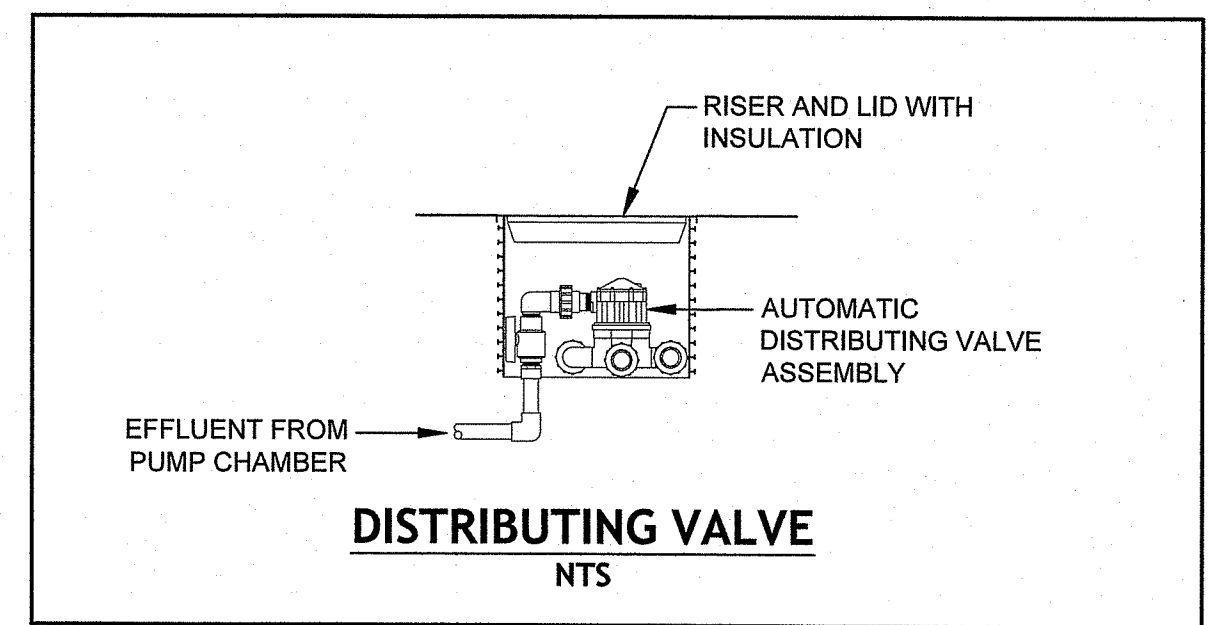
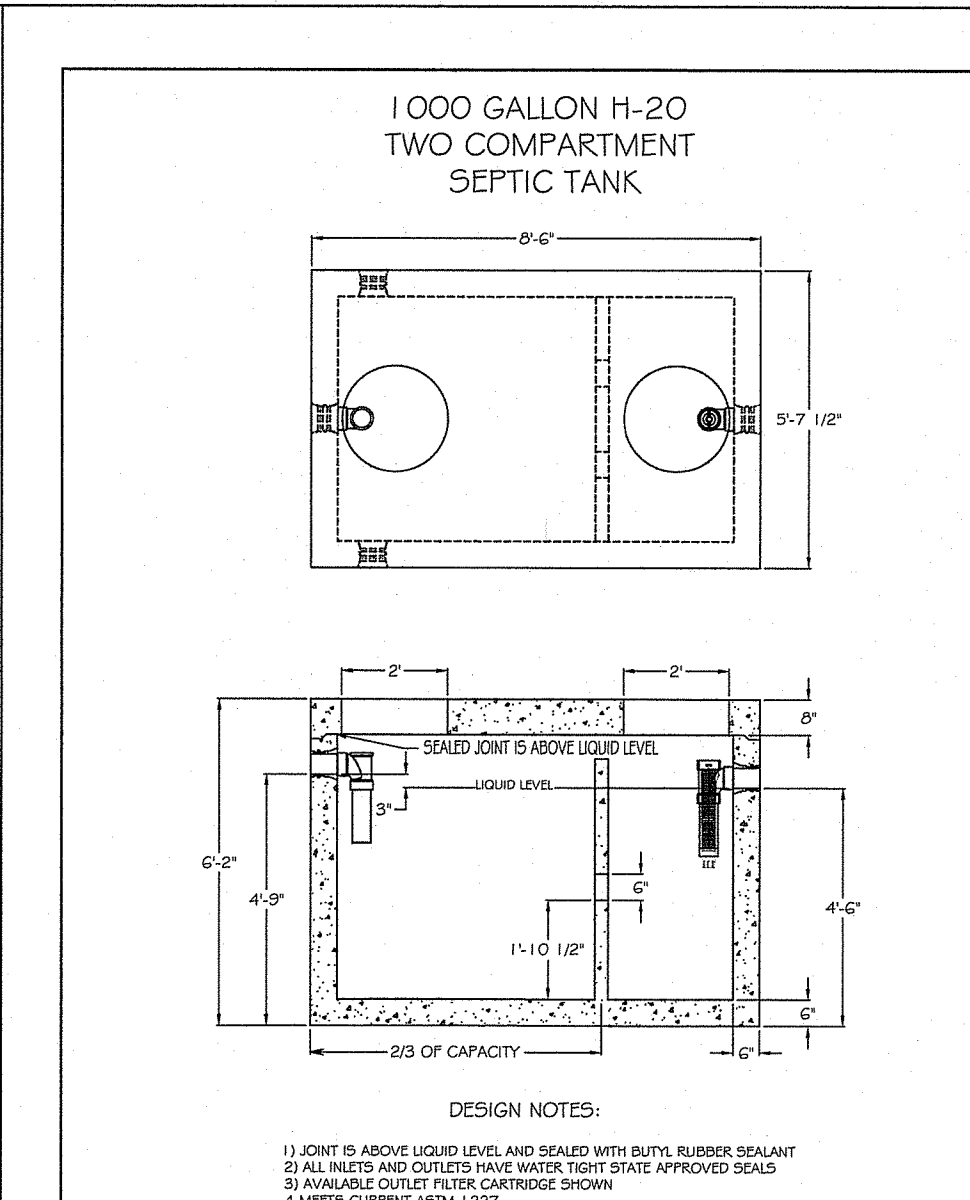
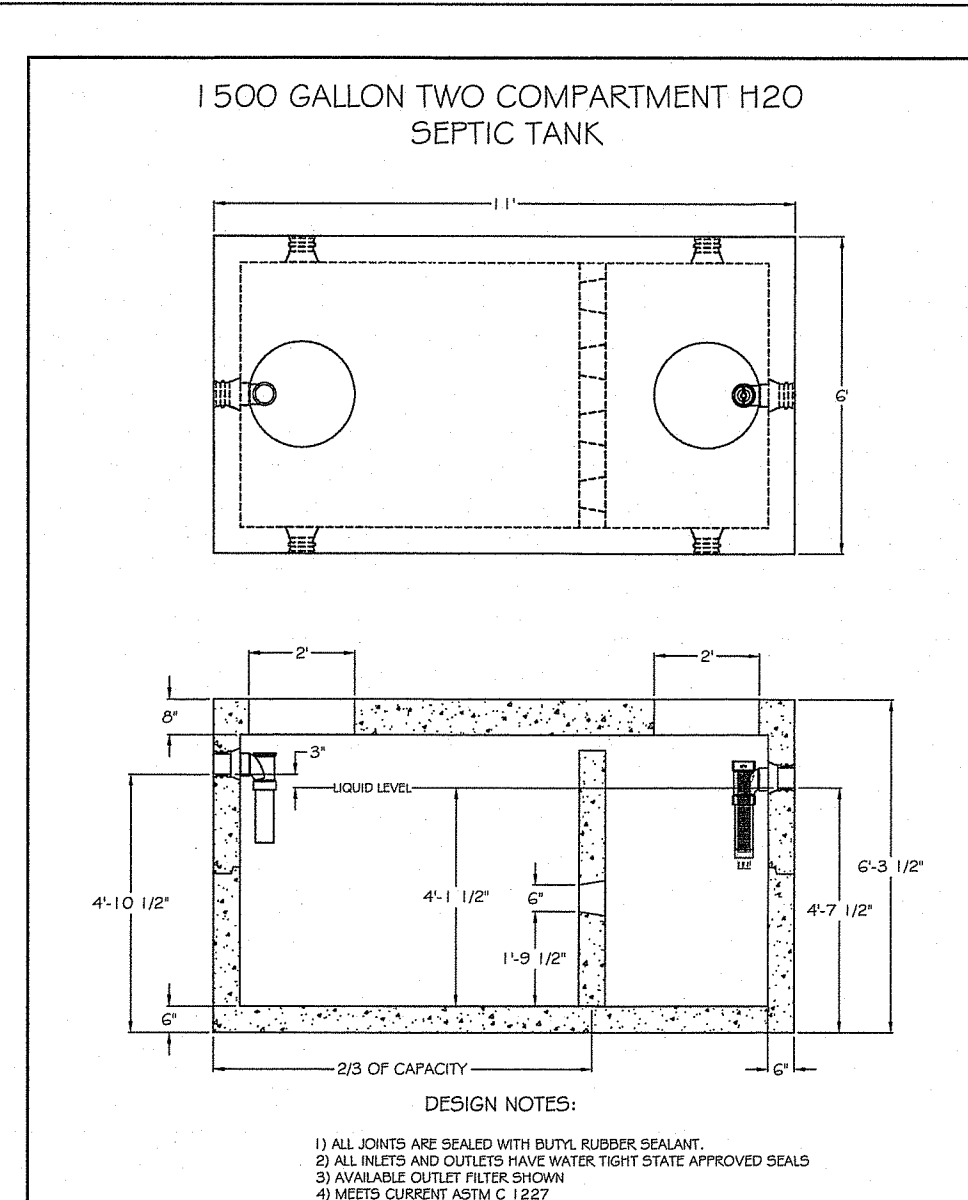
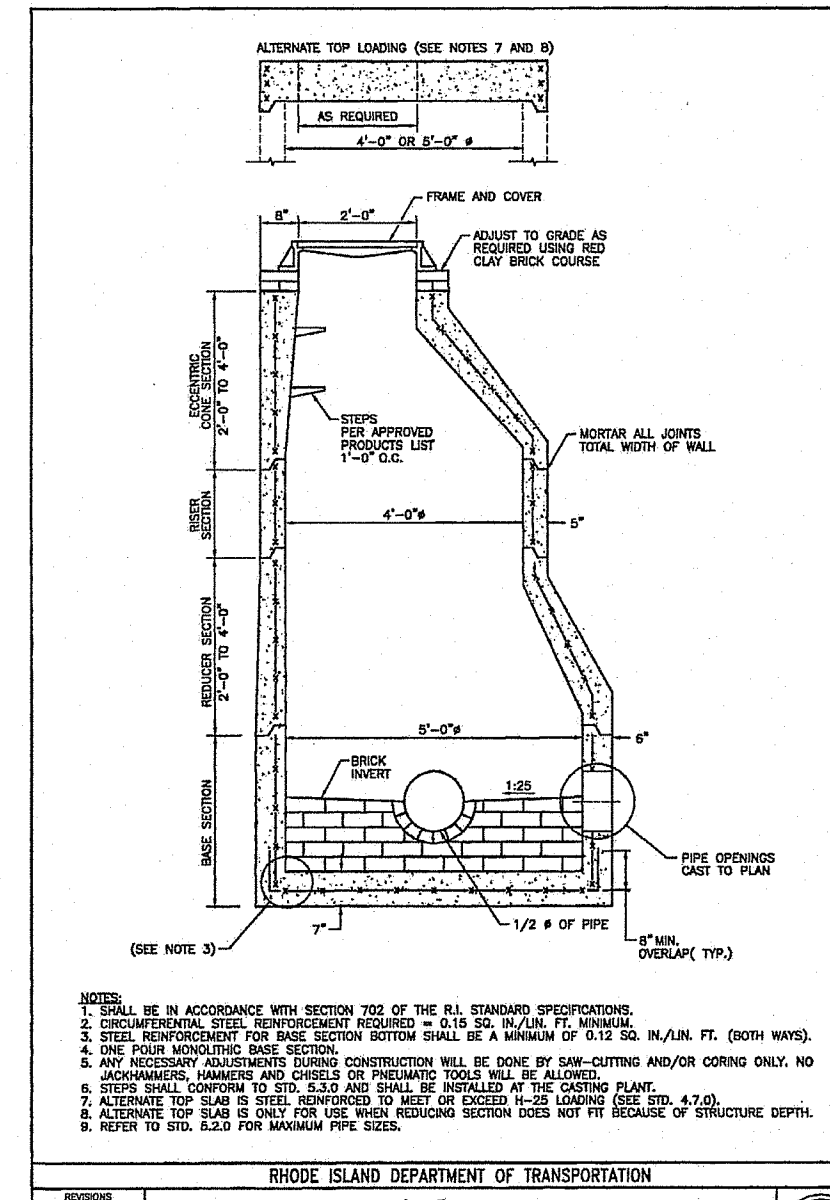
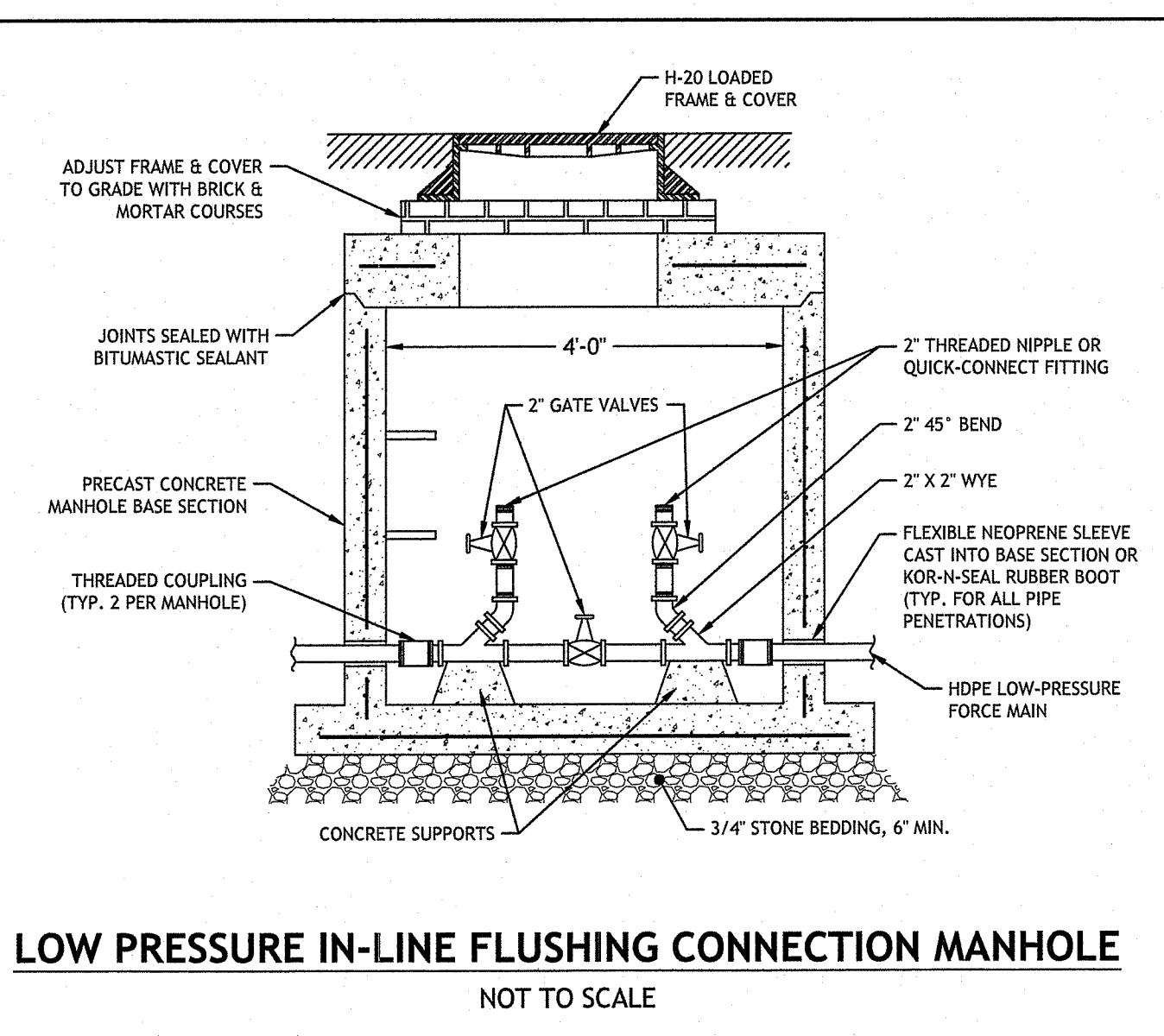
**8"-15" Dia. Biotube® Effluent Filters**  
Technical Data Sheet

**Applications**  
Greco® 8"-15" Biotube® Effluent Filters are designed to remove solids from effluent entering commercial septic tanks. They can be used in new and existing tanks.



**Specifications**

| Model                                | FT1554-36 | FT1554-48 | FT1554-60 | FT1554-72 | FT1554-84 | FT1554-96 | FT1554-108 | FT1554-120 |
|--------------------------------------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|
| A - Cartridge height, in.            | 36        | 48        | 60        | 72        | 84        | 96        | 108        | 120        |
| B - Nominal diameter, in.            | 8         | 10        | 12        | 14        | 15        | 15        | 15         | 15         |
| C - Inlet hole height, in.           | 22        | 18        | 22        | 22        | 22        | 22        | 22         | 22         |
| D - Vault base to invert height, in. | 38        | 15        | 38        | 38        | 38        | 38        | 38         | 38         |
| E - Vault height, in.                | 34        | 22        | 34        | 34        | 34        | 34        | 34         | 34         |
| F - Inlet hole diameter, in.         | 8         | n/a       | 8         | 8         | 8         | 8         | 8          | 8          |
| G - Inlet hole diameter, in.         | 1.375     | n/a       | 1.375     | 1.375     | 1.375     | 1.375     | 1.375      | 1.375      |
| H - Number of discharge outlets      | 2         | 1         | 1         | 1         | 1         | 1         | 1          | 1          |
| I - Discharge orifice diameter, in.  | 1.125     | 1.125     | 2         | 2         | 2         | 2         | 2          | 2          |
| J - Pipe coupling diameter, in.      | 4         | 4         | 4         | 4         | 4         | 4         | 4          | 4          |
| K - Number of air vents              | 1         | 1         | 1         | 1         | 1         | 1         | 1          | 1          |
| L - Air vent diameter, in.           | 0.25      | 1.250     | 0.25      | 0.25      | 0.25      | 0.25      | 0.25       | 0.25       |
| M - Filter surface area, sq. ft.     | 14.6      | 6.0       | 30.0      | 30.0      | 30.0      | 30.0      | 30.0       | 30.0       |
| N - Flow area, sq. ft.               | 4.4       | 1.8       | 8.0       | 8.0       | 8.0       | 8.0       | 8.0        | 8.0        |



RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
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**JOLLEY**  
JOE CASALI ENGINEERING, INC.  
250 WEST 10TH STREET, SUITE 200  
DENVER, CO 80202  
DRAINAGE - WATER - SEWER - PIPING - EROSION CONTROL  
401.944.1300 401.944.1313 FAX WWW.JOLLEYBALL.COM

NO. 7250  
REGISTERED PROFESSIONAL ENGINEER  
05/01/2024

**RICHMOND PLACE**  
38 STILSON ROAD  
RICHMOND, RHODE ISLAND  
AP 4B, LOTS 59, 59-2, & 59-3

OWNER: RICHMOND REALTY ASSOCIATES, LLC  
1536 SCITUATE AVENUE  
CRANSTON, RI 02920

APPLICANT: CHIDAMBARAM NARAYANAN  
CT PROPERTIES, LLC  
29 PINE STREET  
EAST PROVIDENCE, RI 02915

REVISIONS:  
NO. DATE DESCRIPTION  
1 11/2021 TOWN COMMENTS  
2 7/2023 PRELIMINARY PLAN  
3 1/2024 RIDEM RTC  
4 2/2024 PLANNING RTC  
5 3/2024 RIDEM RTC

DESIGNED BY: WMLJR  
DRAWN BY: SDSEP  
CHECKED BY: JAC  
DATE: OCTOBER 2021  
PROJECT NO: 20-61a

PRELIMINARY, NOT FOR CONSTRUCTION

**CIVIL DETAILS VI**

**SHEET 18 OF 20**

**GENERAL OWTS NOTES:**

- THIS DESIGN IS SUBMITTED TO RIDEM TO BE REVIEWED IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS. CONSTRUCTION OF THIS SYSTEM WILL REQUIRE THE DESIGNER'S CERTIFICATE OF CONSTRUCTION FOR OWTS.
- UNLESS OTHERWISE SPECIFIED, THE SYSTEM HAS NOT BEEN DESIGNED WITH THE PROVISIONS FOR GARBAGE GRINDERS.
- THERE ARE NO KNOWN PUBLIC WELLS, EXISTING OR PROPOSED, WITHIN 500 FEET OF THE DESIGNED SYSTEM UNLESS SHOWN.
- LEACHFIELD SHALL NOT BE WITHIN 25 FEET OF ANY UPGRADIENT SUBSURFACE DRAIN OR WITHIN 50 FEET OF ANY DOWNGRADIENT SUBSURFACE DRAIN, INCLUDING FOUNDATION DRAINS. THERE ARE NO KNOWN SUBSURFACE DRAINS 25 FEET UPGRADIENT OR 50 FEET DOWNGRADIENT OF THE PROPOSED LEACHFIELD.
- NO DRIVING, PARKING OR PAVING WITHIN 10' OF BSF.
- THIS SEWERAGE DISPOSAL SYSTEM SHALL CONFORM TO ALL THE REGULATIONS UNDER SECTIONS 42-17.1-2(1), (M) (R) AND (S) AND SECTION 23-19.5-4 AND CHAPTER 42-35 OF THE GENERAL LAWS OF RHODE ISLAND.
- ALL PIPES EXCEPT IN THE LEACHING FIELD SHALL BE SOLID 4 INCH DIAMETER SDR 35 WITH WATER TIGHT JOINTS OR EQUIVALENT UNLESS OTHERWISE SPECIFIED.
- ALL GRAVITY PIPES UNLESS OTHERWISE SPECIFIED SHALL HAVE A SLOPE NOT LESS THAN 1/8 INCH PER FOOT BUT NO GREATER THAN 3%.
- SEPTIC TANK AND DOSING TANK SHALL BE SET ON A LEVEL STABLE BASE THAT WILL NOT SETTLE.
- INSPECTIONS OR AS-BUILT PLANS ARE REQUIRED. DESIGNER MUST BE NOTIFIED 48 HOURS IN ADVANCE AND COMPONENTS OF SYSTEM MUST BE LEFT EXPOSED.

**BOTTOMLESS SAND FILTER NOTES:**

- THE BOTTOMLESS SAND FILTER (BSF) IS INCORPORATED AS THE DISPOSAL BED IN THIS DESIGN TO MAXIMIZE THE REMOVAL OF PATHOGENIC ORGANISMS (PAGE 6 RIDEM TRC GUIDELINES).
- PER RIDEM NOTICE 4/30/04, TOTAL PEA STONE DEPTH IS INCREASED TO 9" TO REDUCE WINTER FREEZE POTENTIAL.
- THE BSF AREA IS TO BE LOCATED AND STAKED IN THE FIELD BY THE INSTALLER PRIOR TO CONSTRUCTION. PROTECTION AGAINST HEAVY VEHICLE TRAFFIC MUST BE ESTABLISHED IN THE BSF AREA PRIOR TO INITIATING ANY CONSTRUCTION OPERATIONS ON THE SITE. DEGRADATION OF THE PROPOSED SITE AREA WILL REQUIRE A RE-DESIGN.
- SYSTEM COMPONENTS WITHIN THIS DESIGN ARE AVAILABLE FROM ORENCO SYSTEMS INC., 814 AIRWAY AVENUE, SUTHERLIN, OR. 97479. LOCAL DEALER INFORMATION IS AVAILABLE AT 1-800-348-9843 OR WWW.ORENCO.COM.
- A MINIMUM TEN (10) FEET MUST BE MAINTAINED BETWEEN THE BSF AND ADJACENT TREES AND SHRUBS.
- INTERMITTENT PRESSURE DOSED EFFLUENT WILL PROVIDE A UNIFORM DISTRIBUTION OF WASTE WATER OVER THE BSF AREA, MINIMIZING LOCALIZED SATURATION. LATERAL GATE VALVES ARE DESIGNED FOR PLACEMENT OFF THE HEADER LINE SO AS TO EQUALIZE HYDRAULIC PRESSURE IN THE DISPERSAL.
- THE PRESSURE LINE IS TO BE SLOPED BACK TOWARDS THE PUMP CHAMBER FROM THE BSF FIELD TO ELIMINATE FREEZING.
- THE BSF SAND MEDIA MUST CONFORM TO ASTM C-33 SPECIFICATIONS, EFFECTIVE SIZE (D10) OF 0.3 mm AND A UNIFORMITY COEFFICIENT (D60/D10) OF 3.0 TO 4.0. MAXIMUM MATERIAL PASSING THE NUMBER 200 SIEVE SHALL BE 1%. THE INSTALLER SHALL PRODUCE GRADATION ANALYSIS RESULTS FOR THE MATERIAL PROVIDED FROM THE SUPPLIER.
- PERIMETER STRIPPING OF THE SOIL MATERIAL BELOW THE BSF IS PROHIBITED, UNLESS FILL MATERIAL IS PRESENT.
- THE WALLS OF THE BSF ENCLOSURE MUST BE LINED WITH A 30 MIL PVC LINER WITH ALL BOOTS, PATCHES, REPAIRS, AND SEAMS HAVING THE SAME PROPERTIES AS THE LINER.
- ANY PENETRATION THROUGH THE PVC LINER WALL SHALL BE DONE WITH A PVC BOOT ATTACHMENT GLUED TO THE LINER WITH APPROPRIATE RESILIENT SEALER.
- EXCAVATOR/BACKHOE BUCKET USED TO PLACE MEDIA SHALL BE WASHED THOROUGHLY BEFORE LOADING PROCESS.
- SAND MEDIA SHALL BE PLACED IN 6 INCH LIFTS AND WETTED TO PROVIDE EVEN SETTLING. AFTER PLACEMENT OF EACH LIFT EDGES OF OF THE FILTER SHALL BE WALKED DOWN, CLEAN SHOES ARE REQUIRED FOR THIS PROCESS.
- AFTER SAND MEDIA HAS SETTLED, 3 INCHES OF 3/8 INCH WASHED PEA STONE SHALL BE PLACED OVER SAND MEDIA. AFTER INSTALLATION OF DISTRIBUTION LATERALS ADD 6 INCHES OF WASHED PEA STONE TO COVER THE SYSTEM. NO FILTER FABRIC OF ANY KIND IS TO BE USED BETWEEN THE SAND AND OVERLYING PEA STONE LAYERS.
- THE ELEVATION OF THE BSF INVERT SHALL EXTEND 5 FEET BEYOND THE WALL PERIMETER.
- WHILE NOT NORMALLY EXPERIENCED, THERE HAVE BEEN REPORTED INSTANCES WHERE SAND FILTER SYSTEMS HAVE BEEN KNOWN TO EXPERIENCE PROBLEMS WITH FREEZING OF PIPES UNDER EXTREME COLD CONDITIONS. WHILE MOST SAND FILTER INSTALLATIONS OPERATE PROPERLY AND WITHOUT FREEZING PROBLEMS, THE POSSIBILITY OF FREEZING MAY EXIST UNDER CERTAIN CIRCUMSTANCES. SHOULD THE OWNER WISH TO MAXIMIZE THE AVOIDANCE OF THIS POSSIBILITY, THE OWNER MAY ELECT THE OPTION OF INSTALLING AN ELECTRIC HEAT TRACING SYSTEM ON THE PIPELINES. OWNER SHOULD CONTACT MANUFACTURERS/SUPPLIERS OF SUCH EQUIPMENT FOR FURTHER INFORMATION.
- SUPPORT WALLS ARE NEEDED TO PREVENT CAVING OF FILTER WALLS DURING CONSTRUCTION. THESE WALLS SHALL BE RIGID AND MADE OF PLYWOOD (OR EQUIVALENT) AND 2" x 4" SUPPORT BOARDS.
- A PERMANENT TOP FRAME STRUCTURE MUST BE PROVIDED ON ANY PORTION OF THE BSF THAT IS INSTALLED ABOVE GRADE (MAX OF 24" ABOVE GRADE). THE PERIMETER OF THE BSF, BELOW THE REQUIRED PERIMETER OF TIMBERS, MAY BE BERMED WITH NATIVE SOIL OR OTHER MATERIAL SUCH AS LANDSCAPE STONE OR OTHER NON-DEGRADING MATERIAL. BELOW GRADE USE OF TIMBERS IS PROHIBITED.

**LAYOUT NOTE:**

- 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.

**OPERATIONAL AND MAINTENANCE NOTES:**

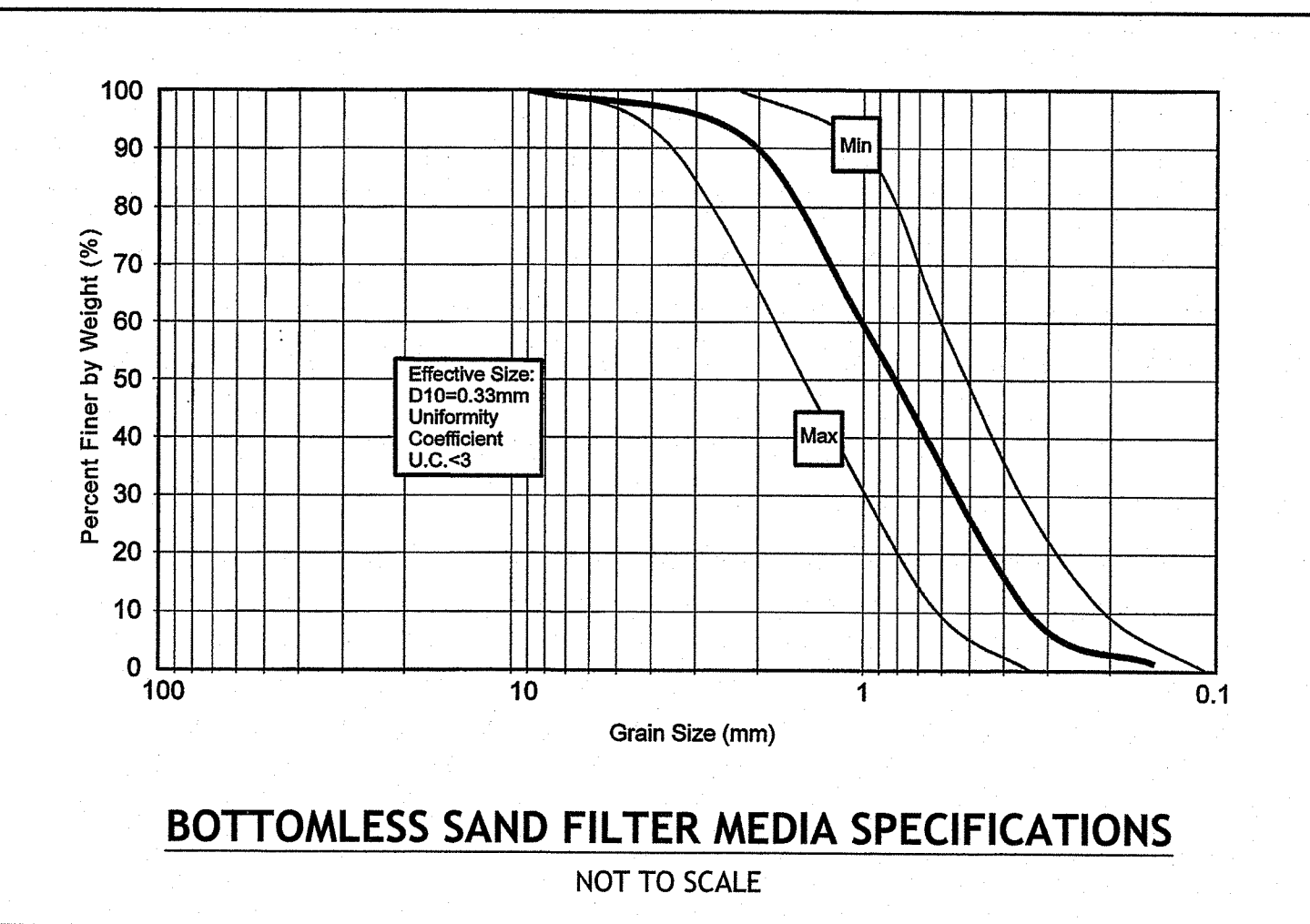
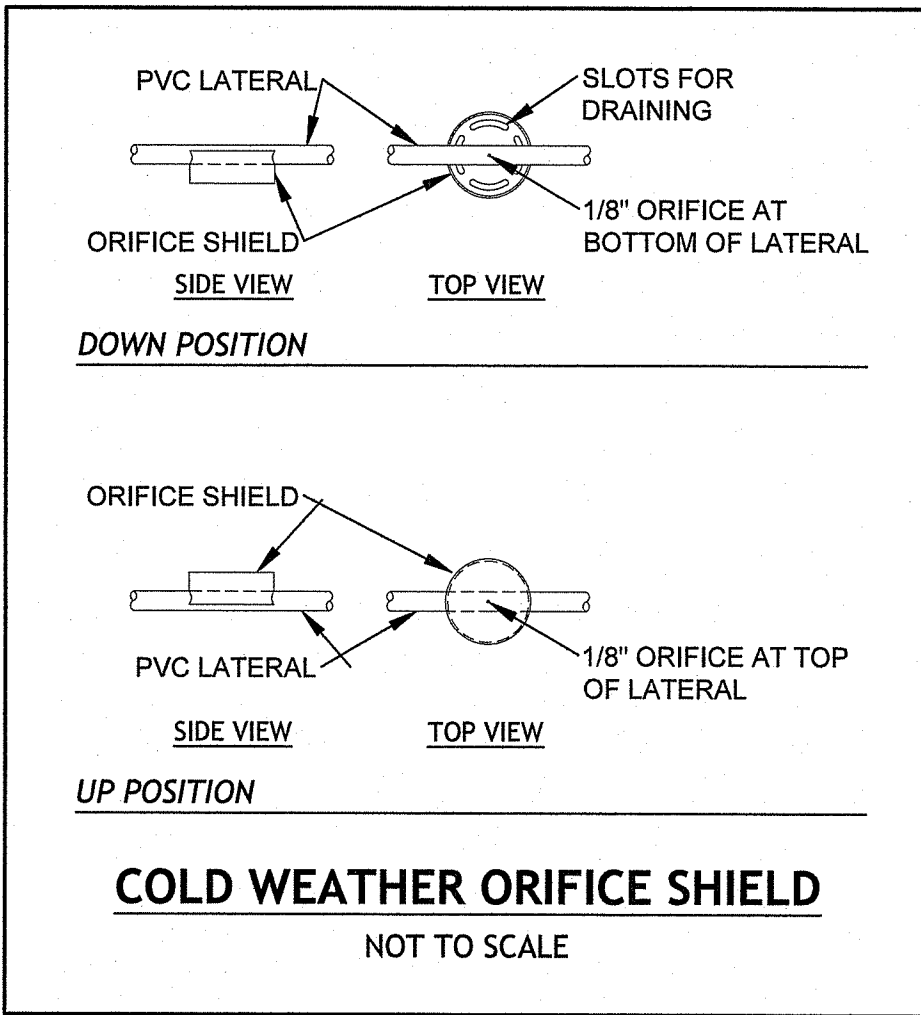
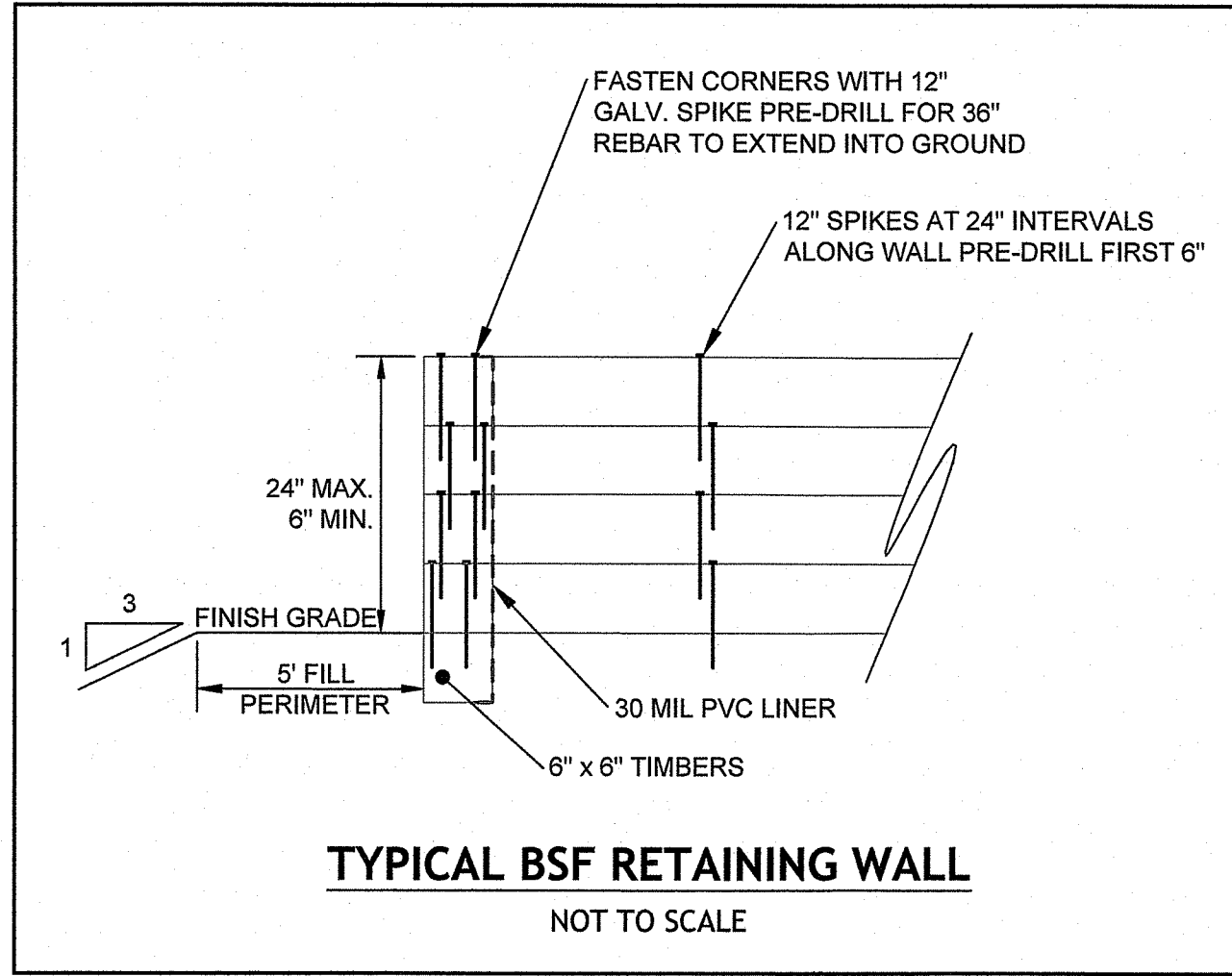
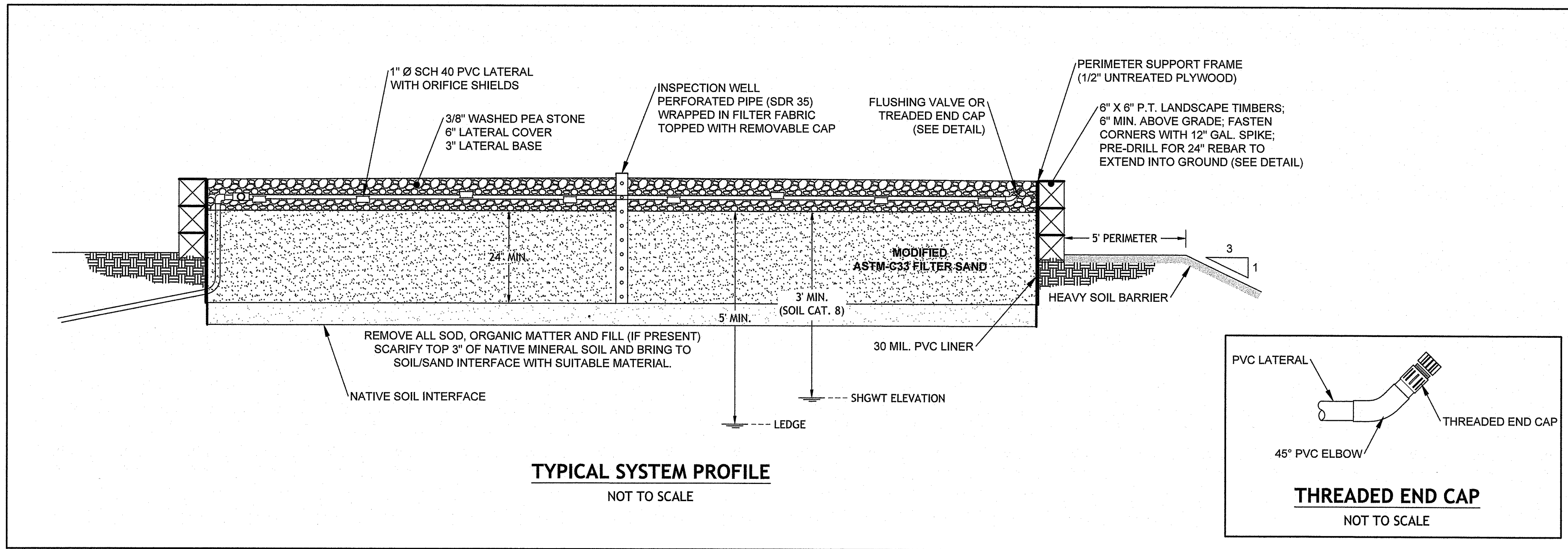
- THIS SYSTEM SHALL PROVIDE FOR AN AUDIBLE ALARM FOR HIGH WATER IN THE PUMP CHAMBERS WHICH MAY BE SILENCED BY PUSHING A BUTTON ON THE CONTROL PANEL. THIS SITUATION MAY DEVELOP WITH UNUSUALLY HIGH WATER USAGE AND WILL NOT INDICATE AN ONGOING PROBLEM. REPEATED ALARMS, OR ALARMS WITH NO UNUSUAL WATER USAGE SHOULD BE REPORTED TO YOUR MAINTENANCE PROVIDER.
- THE PROPERTY OWNER SHALL ENTER INTO MAINTENANCE CONTRACTS FOR BOTH THE ADVANTEX AX SYSTEM AND THE BSF DISPOSAL FIELD. EACH UNIT SHOULD HAVE A MINIMUM OF 2 INSPECTIONS ANNUALLY.
- THE MAINTENANCE PROVIDER SHALL AFFIX THEIR NAME AND 24-HOUR CONTACT PHONE INSIDE THE CONTROL BOX LOCATED ON THE EXTERIOR OF THE HOUSE.
- THE BSF INSPECTION SHALL INCLUDE A SAMPLING OF THE BSF INFLUENT TO CHECK FOR CLARITY.
- BSF LATERALS SHALL BE CLEANED ANNUALLY BY OPENING THE LATERAL THREADED END CAP AND CLEANING THE ENTIRE LENGTH OF THE LATERAL WITH A BOTTLE BRUSH. THE ACCUMULATED CLEANED MATERIAL MAY BE DEPOSITED IN THE INLET OF THE SEPTIC TANK. EACH LATERAL IS TO BE FLUSHED AS REQUIRED.
- THE TOP OF THE BSF FIELD IS TO BE KEPT CLEAN OF DEBRIS AND UNWANTED VEGETATION (WEEDS, LEAVES, BRUSH, ETC.). LANDSCAPE TIMBERS AS DESIGNED SHALL BE MAINTAINED TO PREVENT CRUSHING OF THE SYSTEM BY UNWANTED LOADS, AND SURFACE WATER INDICATION OF THE SYSTEM.
- ELECTRONIC COMPONENTS OF THE ADVANTEX AND THE BSF SYSTEMS SHALL BE CHECKED ANNUALLY FOR OPERATION.
- ALL FLOATS IN THE PUMP CHAMBERS SHALL BE HOSED DOWN AND CLEANED FROM BUILD-UP.
- THE INLET OF THE SEPTIC TANK AND THE DOSING TANK SHALL BE INSPECTED FOR SLUDGE AND SCUM ACCUMULATION. WHEN THESE MATERIALS BUILD UP TO 33% OF THE SEPTIC TANK HEIGHT, THE TANK SHOULD BE PUMPED AND THE ACCUMULATIONS APPROPRIATELY REMOVED.
- THE FILTER IN THE PUMP CHAMBERS SHALL BE CLEANED ANNUALLY.
- SHOULD THE PUMP ASSEMBLY BE REMOVED, THE VAULT SHALL BE CLEANED AND FILLED WITH CLEAN WATER TO PREVENT THE SCREEN FROM BEING FOULED WITH SOLIDS.
- TIMER SETTINGS SHALL BE CHECKED AT EVERY ESTABLISHED MAINTENANCE AND INSPECTION VISIT AND ADJUSTED AS NEEDED BY THE SERVICE PROVIDER.
- ALL TANKS AND BASINS SHALL BE VISUALLY INSPECTED FOR WATER TIGHTNESS.
- PROPERTY OWNER TO REDUCE ANY SHADING IN THE AREA OF THE BOTTOMLESS SAND FILTER TO REDUCE FREEZE POTENTIAL. ANY ACTIVITY TO REDUCE SHADING MUST BE IN ACCORDANCE WITH THE RIDEM WETLANDS APPROVALS.

**SOIL EROSION AND SEDIMENTATION CONTROL NOTES:**

- THE HAYBALE AND 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 CONSTRUCTION AREA. ALL AREAS OUTSIDE OF THESE LIMITS, AS DEPICTED ON THE PLAN SHALL BE TOTALLY UNDISTURBED, TO REMAIN IN NATURAL CONDITION.
- 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 HAYBALES, 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.
- STOCKPILES OF TOPSOIL SHALL NOT BE LOCATED NEAR WATERWAYS. THEY SHALL HAVE SIDE SLOPES OF NO GREATER THAN 2:1 AND SHALL BE TEMPORARILY SEEDED AND/OR STABILIZED PER CONTRACT SPECIFICATIONS.
- THE HAYBALES SHALL BE CHECKED BY THE CONTRACTOR ON A WEEKLY BASIS AND AFTER EACH STORM FOR UNDERMINING OR DETERIORATION. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY HAYBALES AS NEEDED. THE CONTRACTOR SHALL CLEAN THE ACCUMULATED SEDIMENT IF HALF OF THE ORIGINAL HEIGHT OF THE HAY-BALES 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 (HAYBALES, SILT FENCE, ETC.) 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.
- 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.

**MISCELLANEOUS UTILITY NOTES:**

- 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. NO EXTRA PAYMENT TO THE CONTRACTOR DUE TO RELOCATIONS WILL BE AUTHORIZED.
- IF REQUIRED, OVERHEAD ELECTRIC AND TELEPHONE SERVICES ARE TO BE REMOVED BY THE APPROPRIATE UTILITY COMPANY AND COORDINATED BY THE CONTRACTOR.
- THE CONTRACTOR SHALL AT ALL TIMES PROVIDE A SUFFICIENT NUMBER OF WORKMEN AND GUARDS AS MAY BE NECESSARY TO PROPERLY SAFEGUARD THE PUBLIC FROM THESE OPERATIONS.
- 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 OR TOWN.



Q:\20-61 CT Narayanan\20-61a Stilson Rd., Richmond\ACAD\Stilson Rd., Wyoming - [DEM RTC].dwg Mar. 08, 2024 2:44pm

**JCE**  
 JOE CASALI ENGINEERING, INC.  
 CIVIL - SITE DEVELOPMENT - TRANSPORTATION  
 1505 - 1805 - TRAFFIC ENGINEERING  
 DRAINAGE - WATER CONTROL  
 (401) 944-1300 (401) 944-1313 FAX WWW.JOECASALI.COM

JOSEPH A. CASALI  
 No. 7250  
 REGISTERED PROFESSIONAL ENGINEER  
 CIVIL  
 03 / 01 / 2024

**RICHMOND PLACE**  
 38 STILSON ROAD  
 RICHMOND, RHODE ISLAND  
 AP 4B, LOTS 59, 59-2, & 59-3

MAR 08 2024  
 Office of Water Resources

OWNER:  
 RICHMOND REALTY ASSOCIATES, LLC  
 1536 SCITUATE AVENUE  
 CRANSTON, RI 02920

APPLICANT:  
 CHIDAMBARAM NARAYANAN  
 CT PROPERTIES, LLC  
 29 PINE STREET  
 EAST PROVIDENCE, RI 02915

**REVISIONS:**

| NO. | DATE    | DESCRIPTION      |
|-----|---------|------------------|
| 1   | 11/2021 | TOWN COMMENTS    |
| 2   | 7/2023  | PRELIMINARY PLAN |
| 3   | 1/2024  | RIDEM RTC        |
| 4   | 2/2024  | PLANNING RTC     |
| 5   | 3/2024  | RIDEM RTC        |

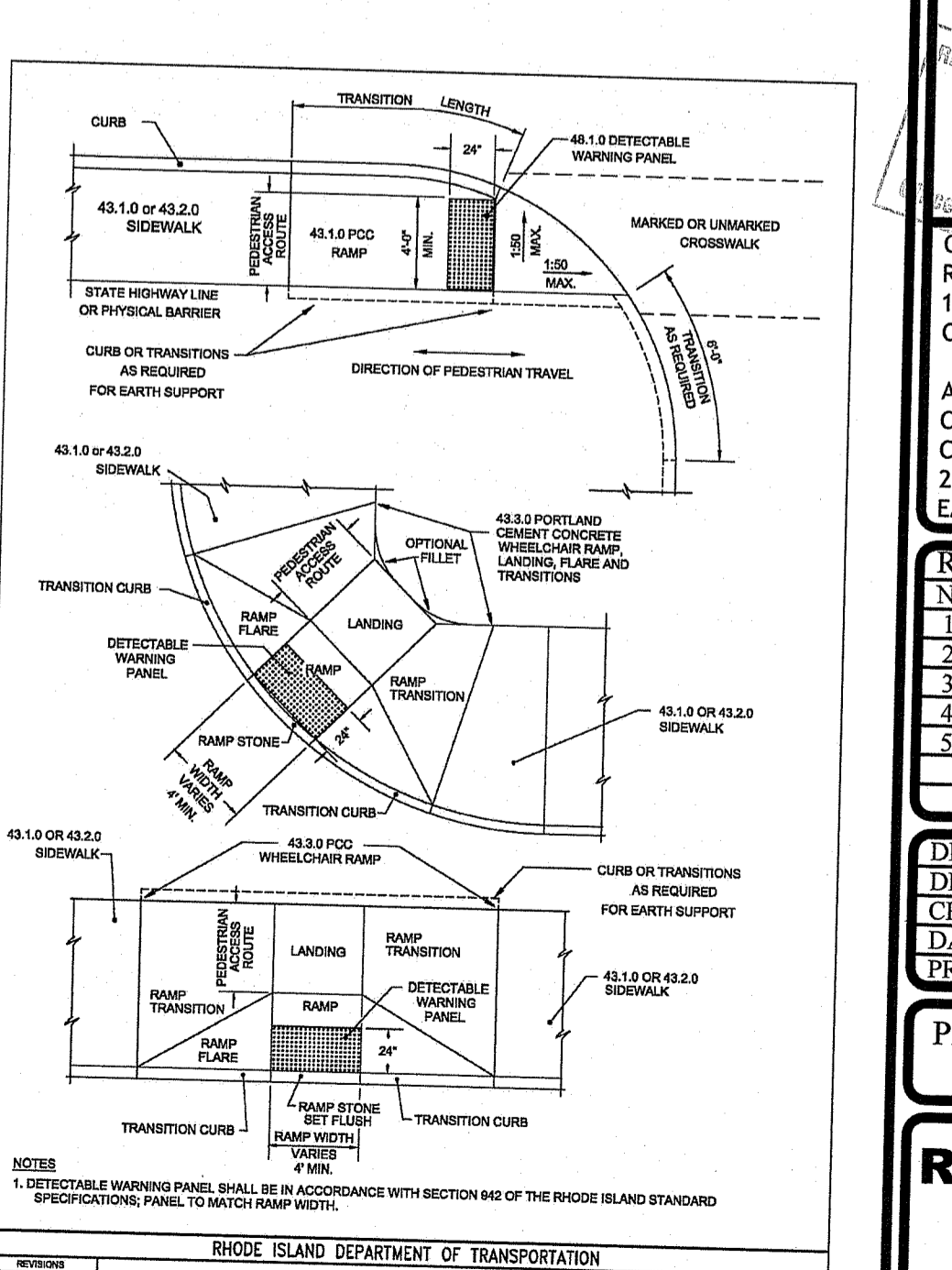
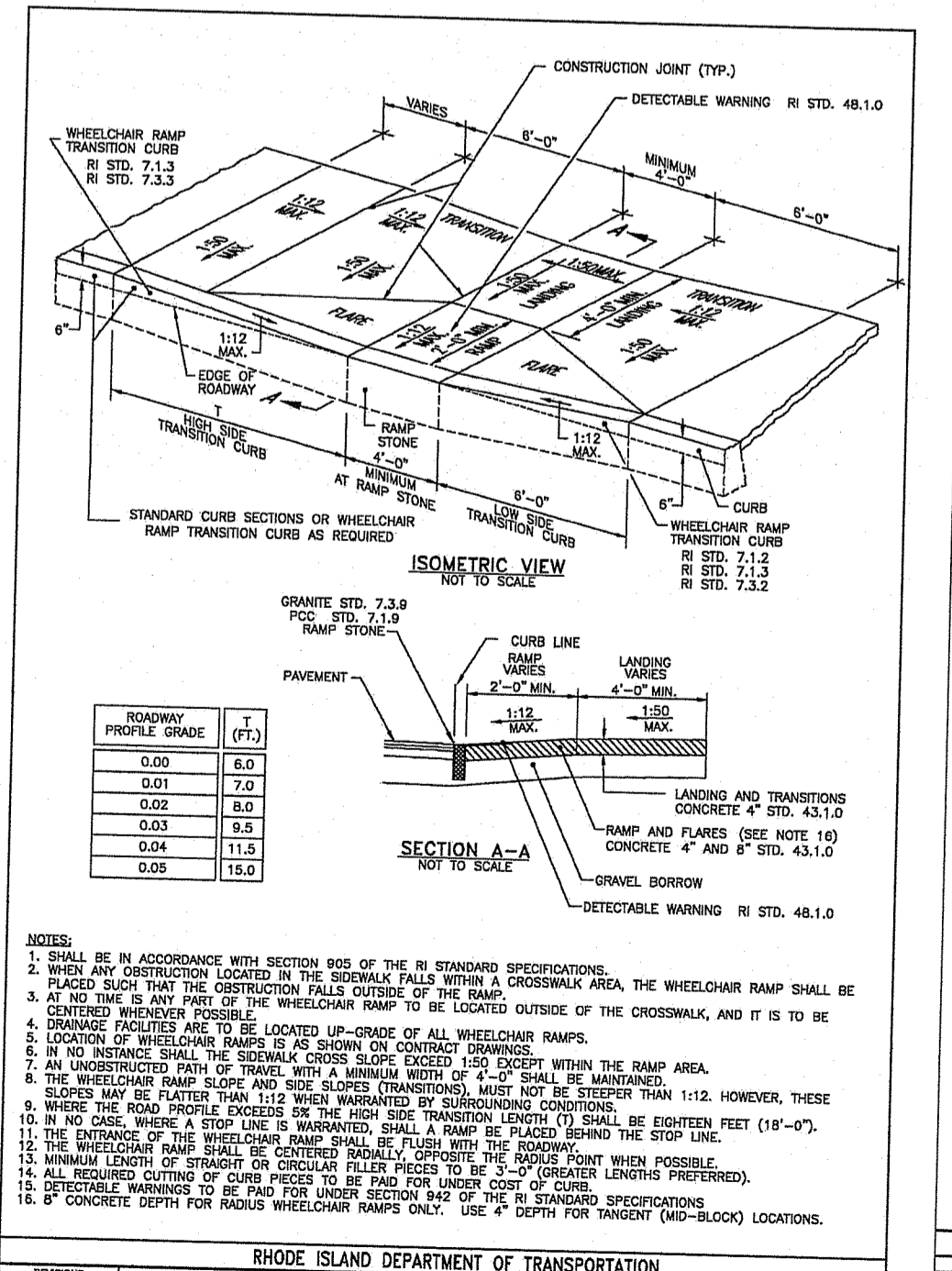
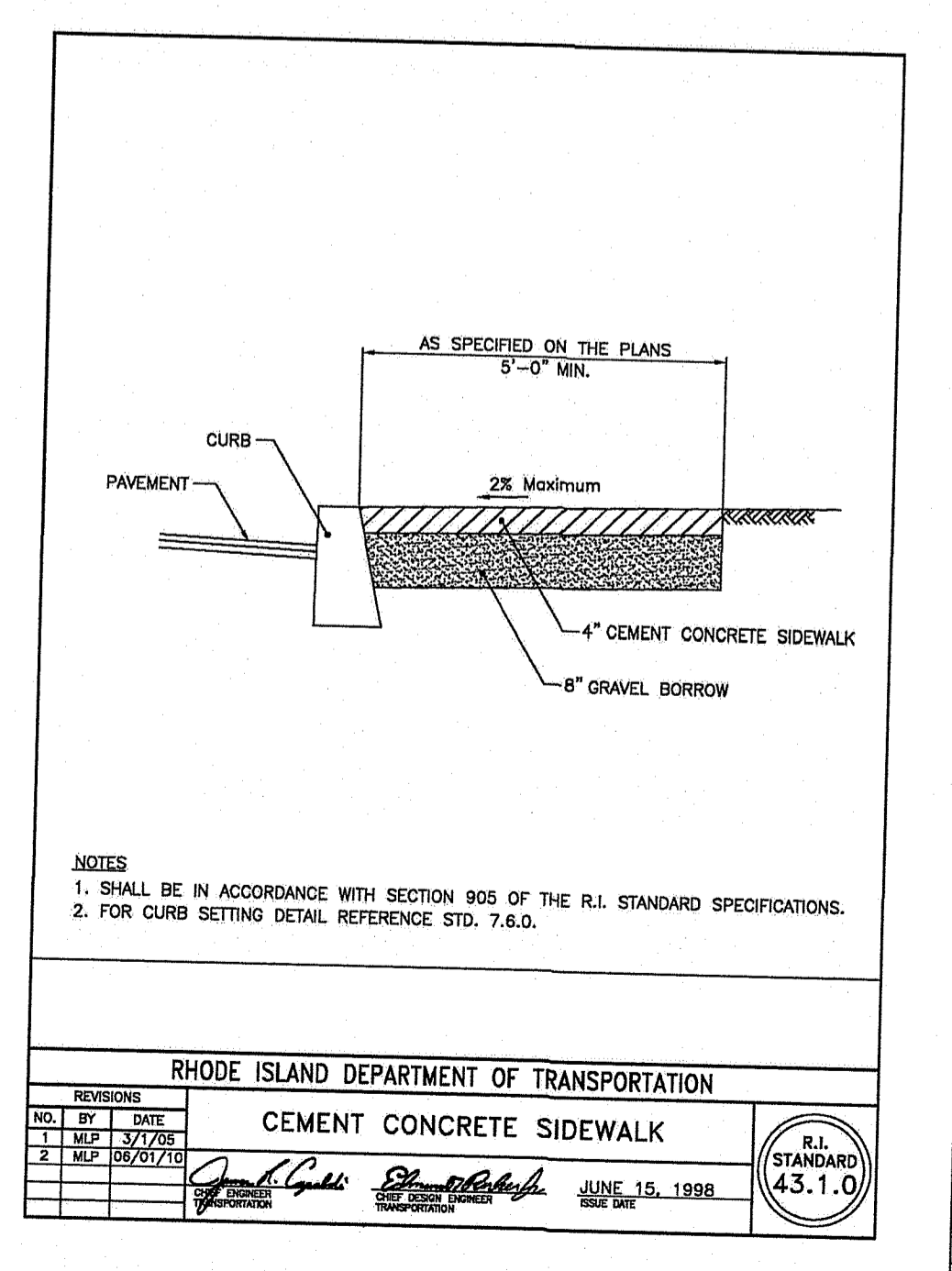
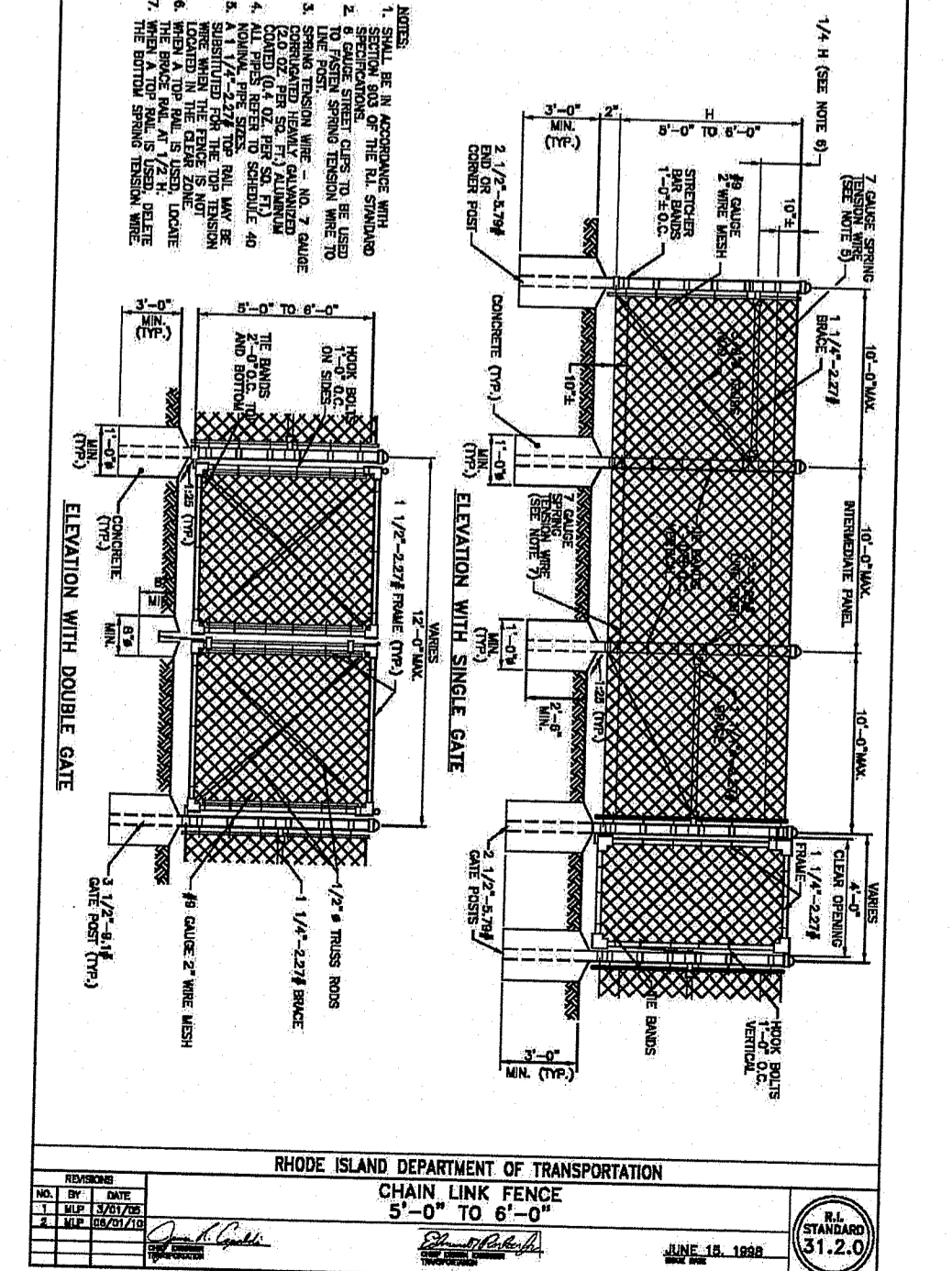
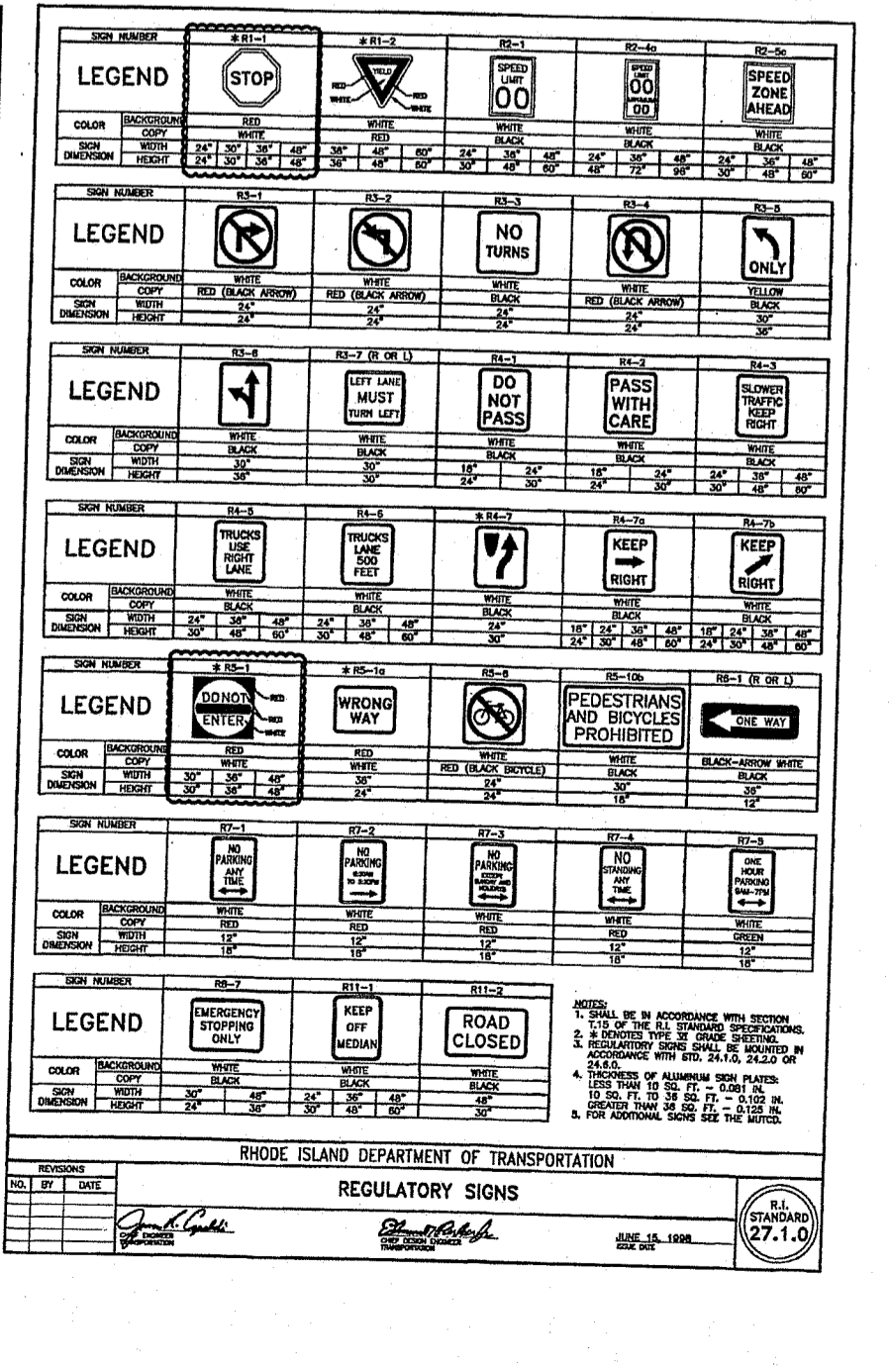
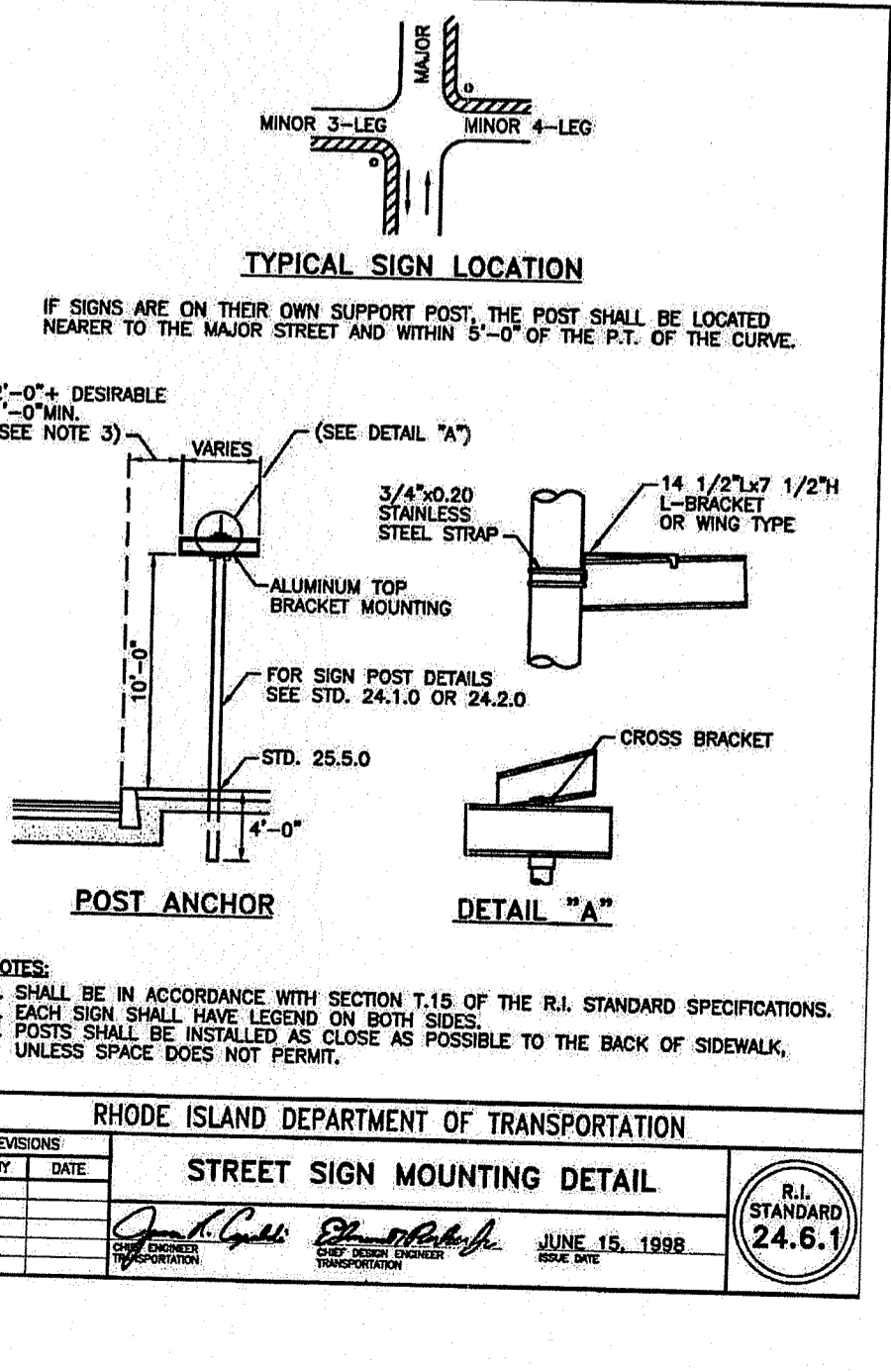
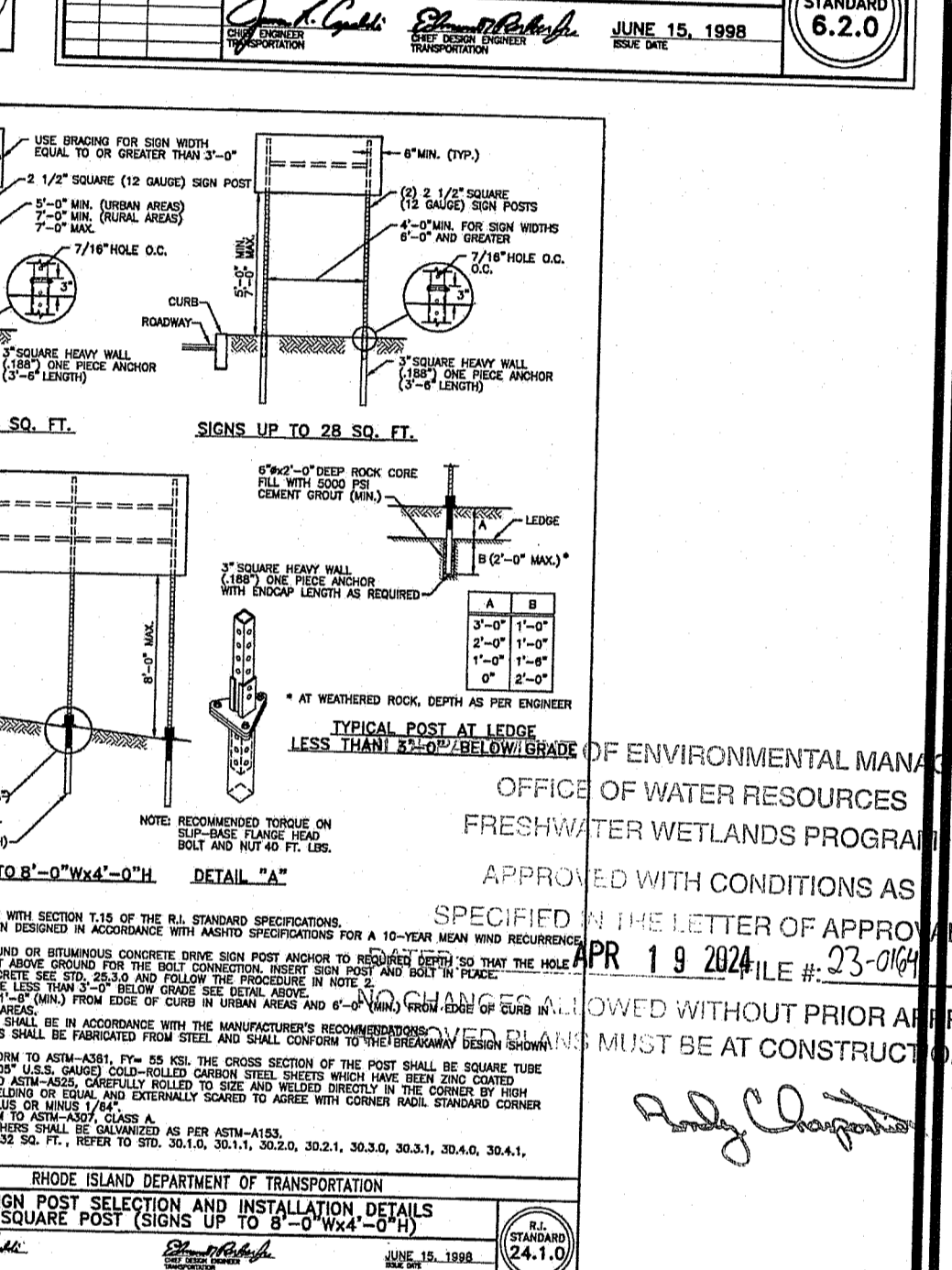
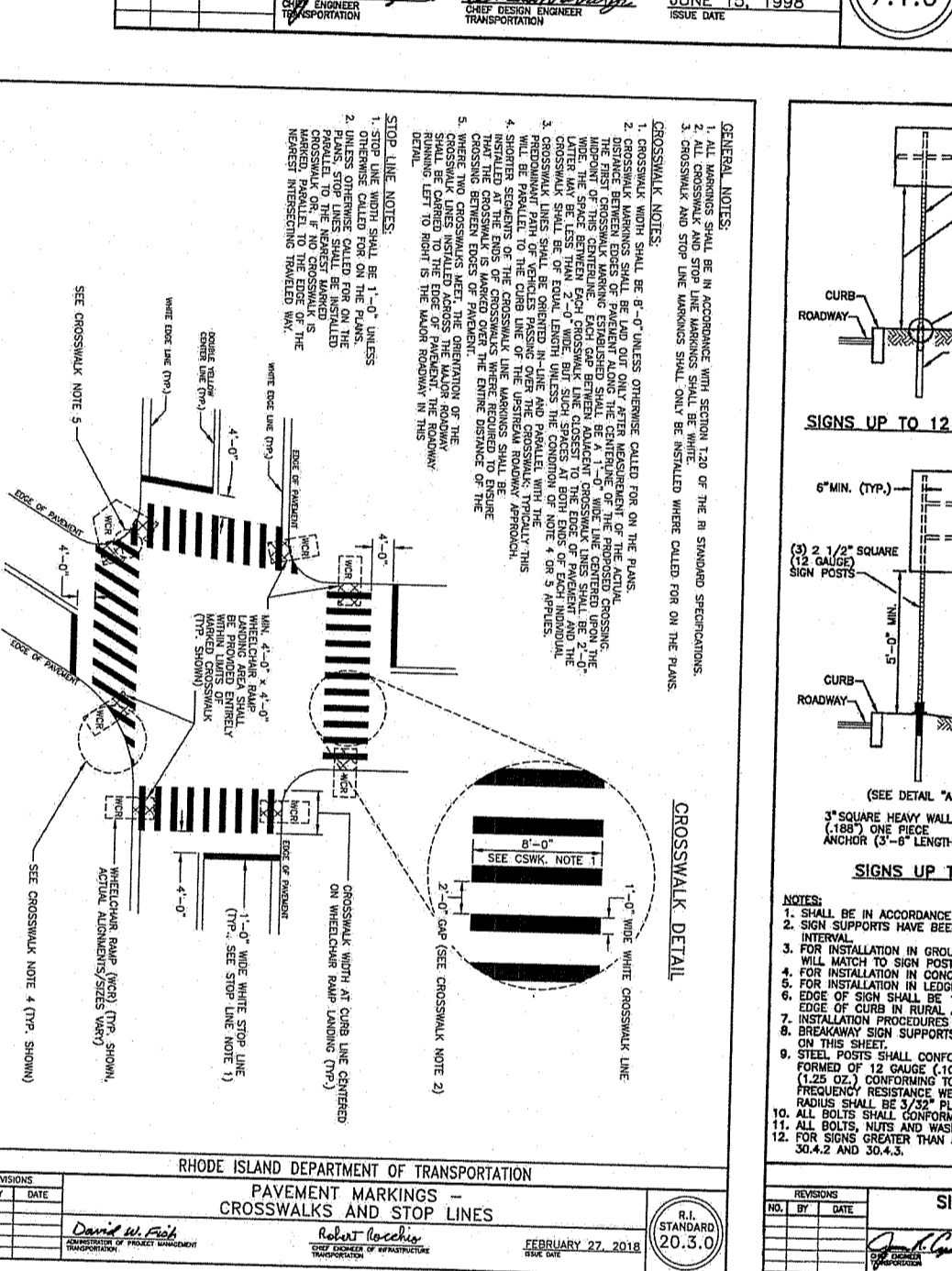
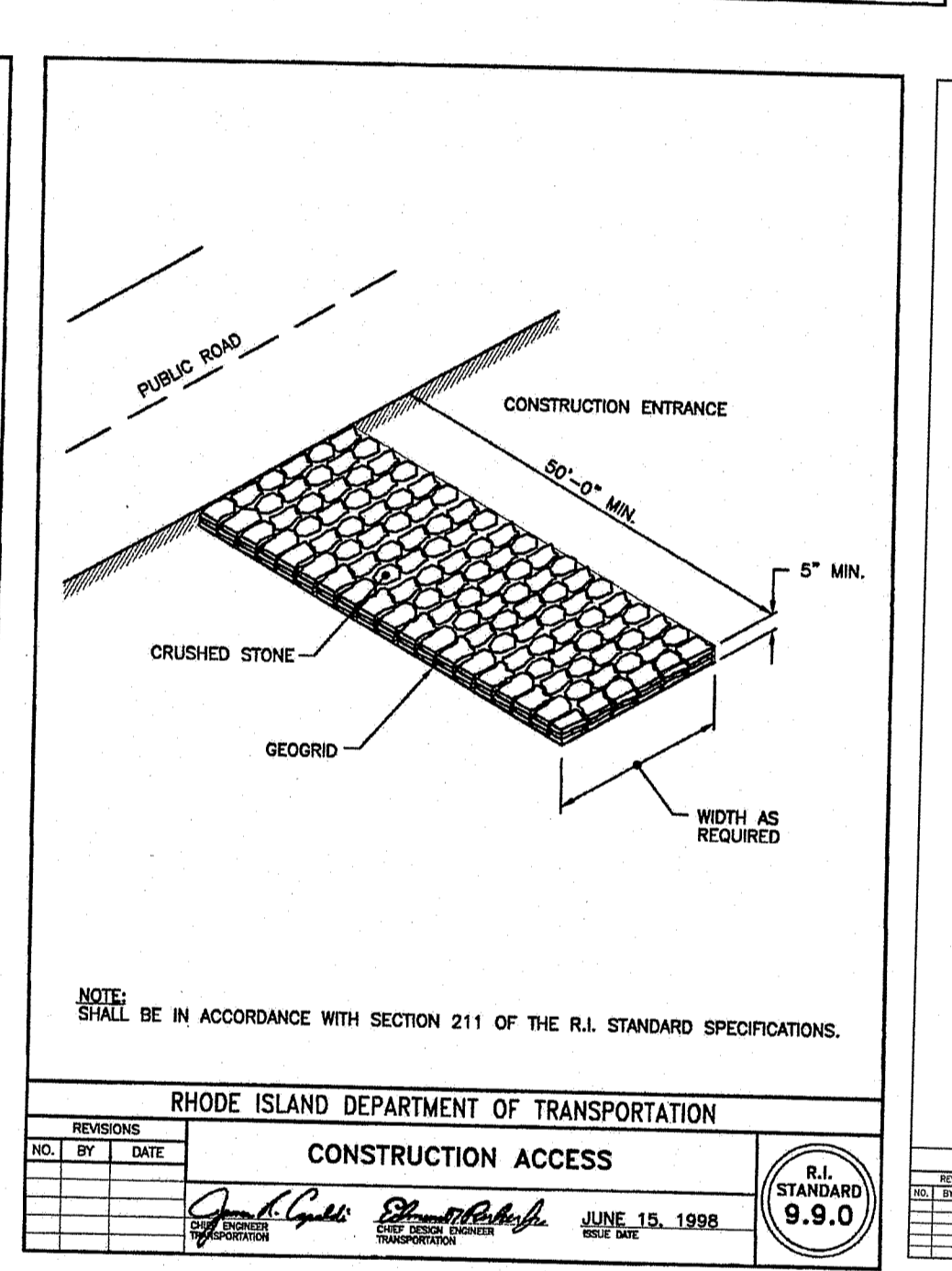
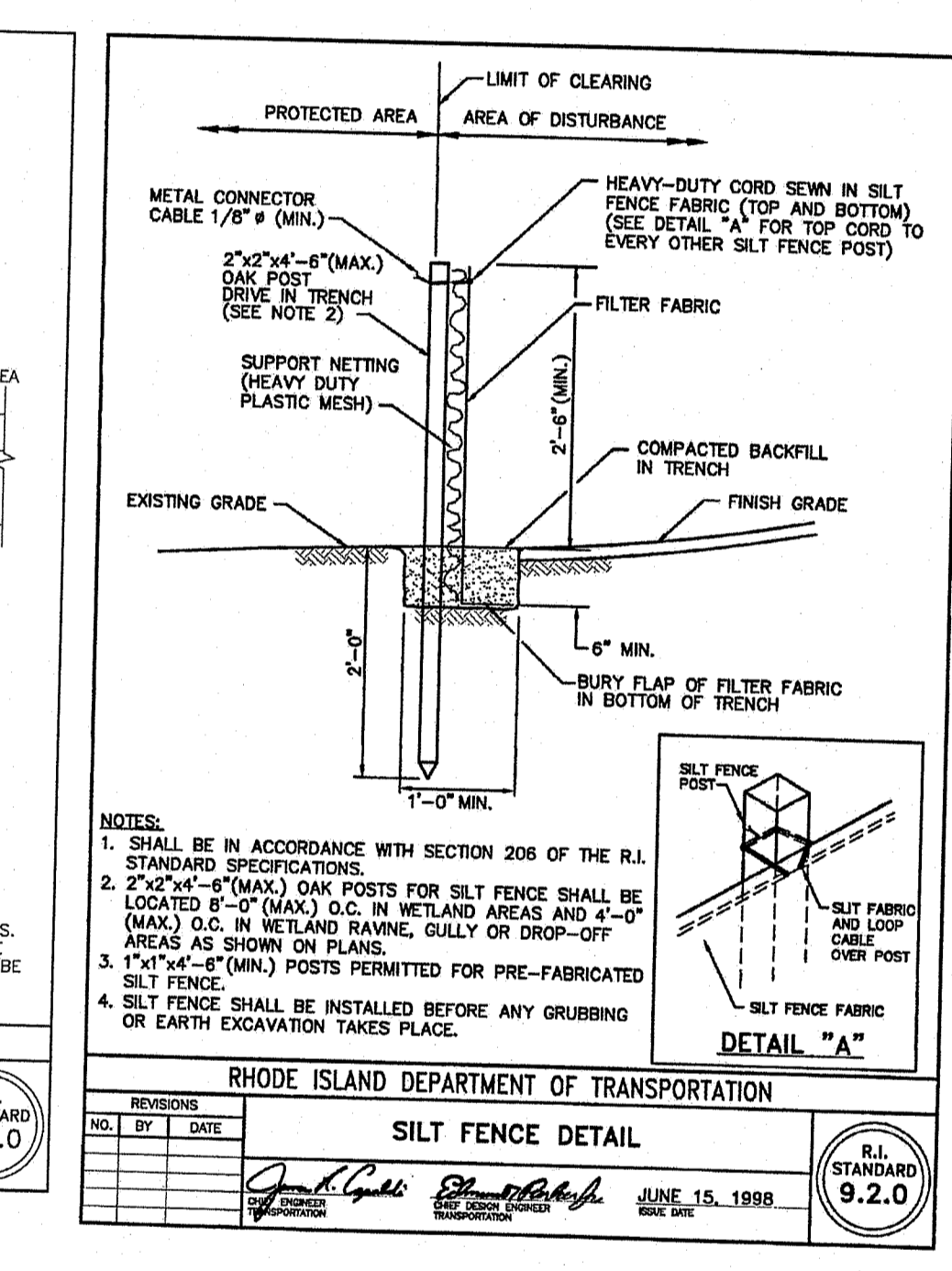
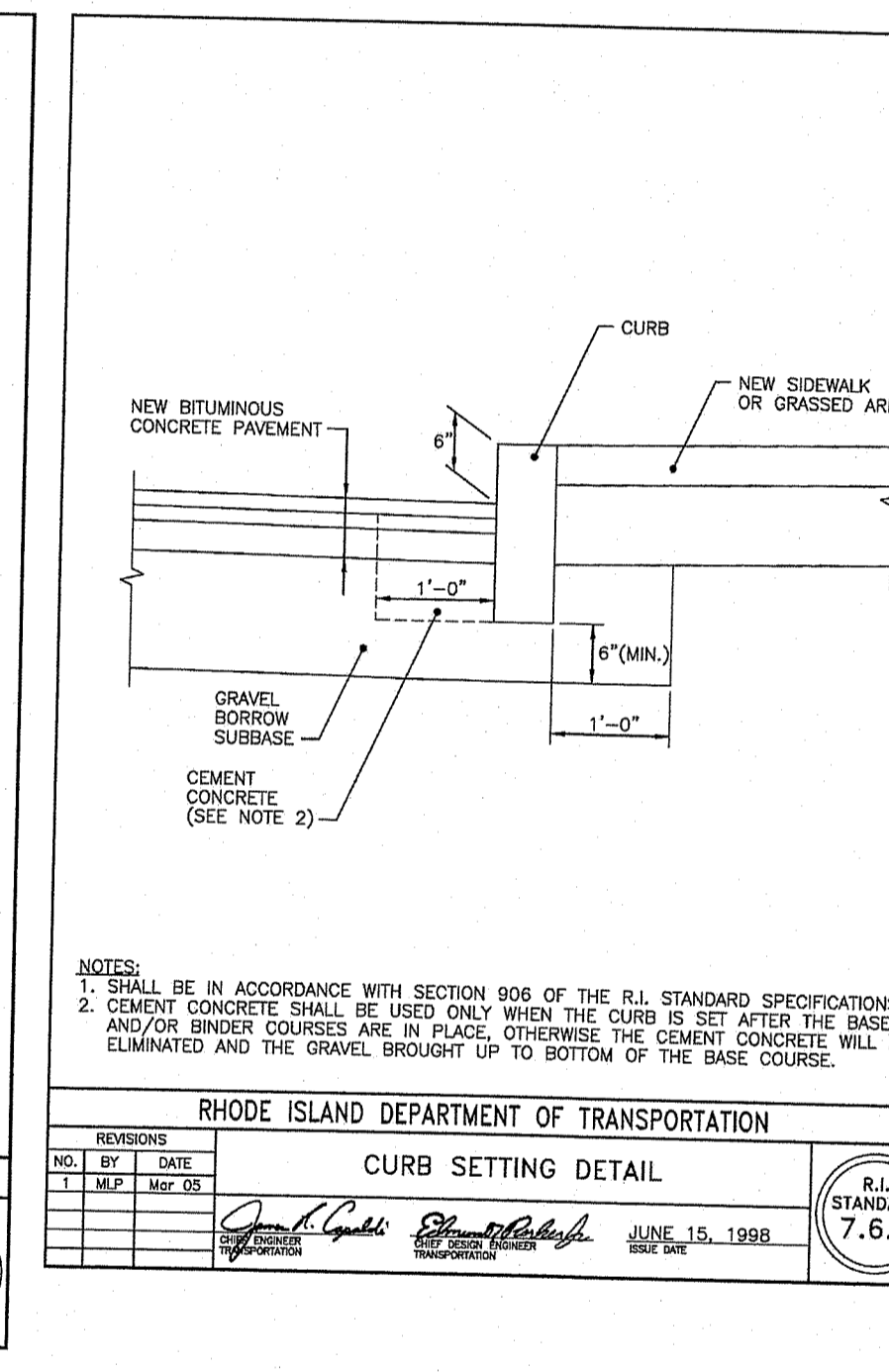
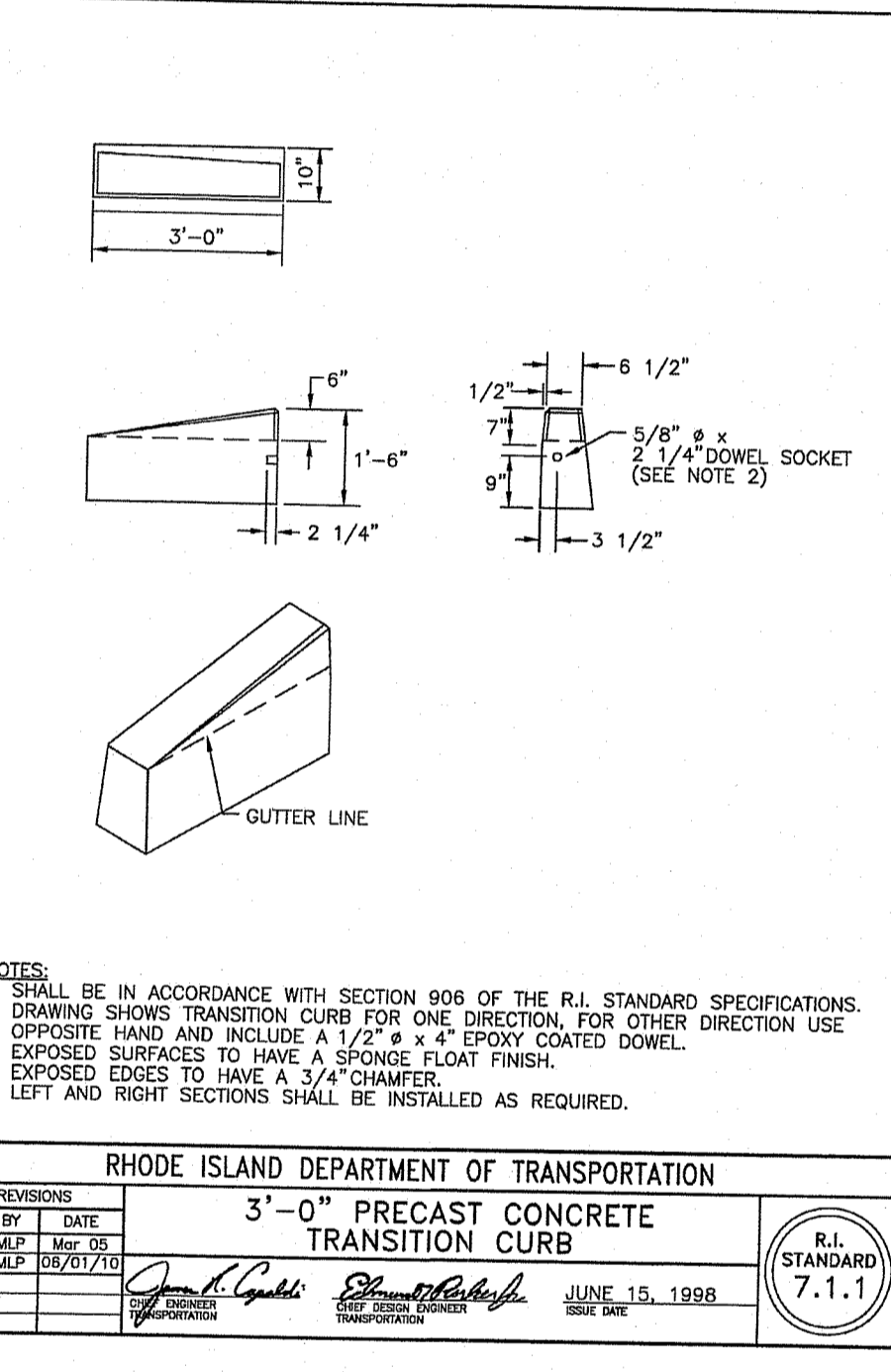
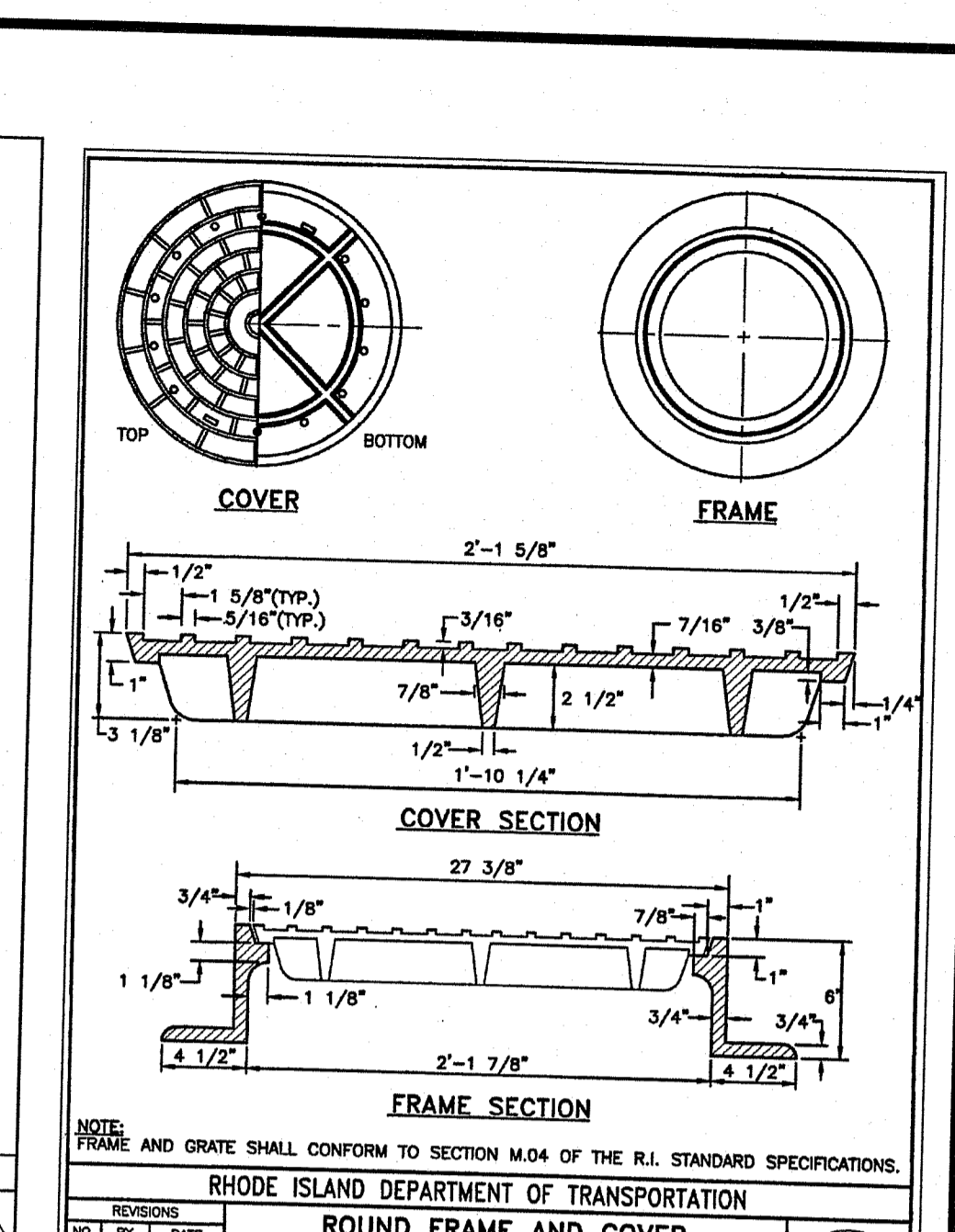
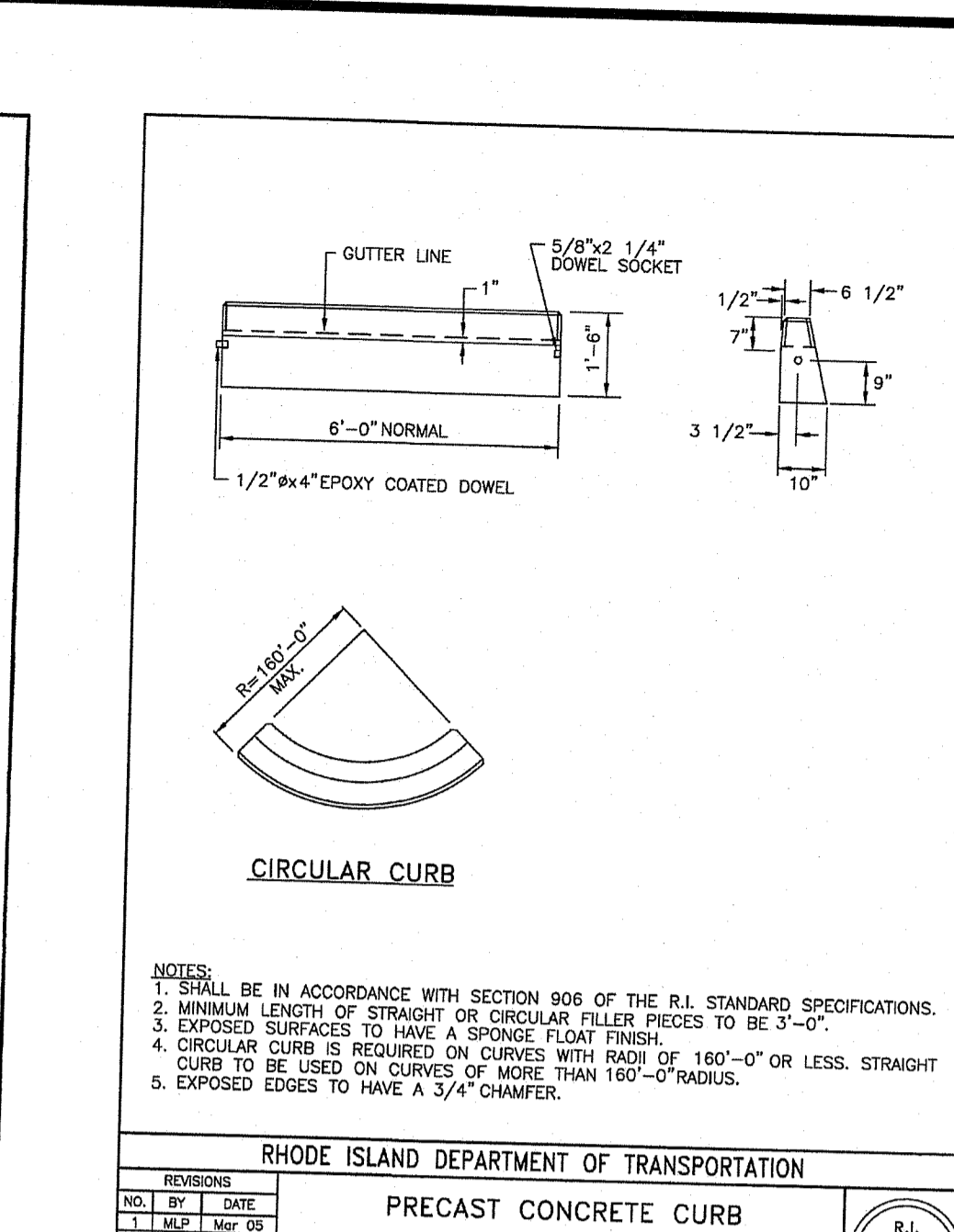
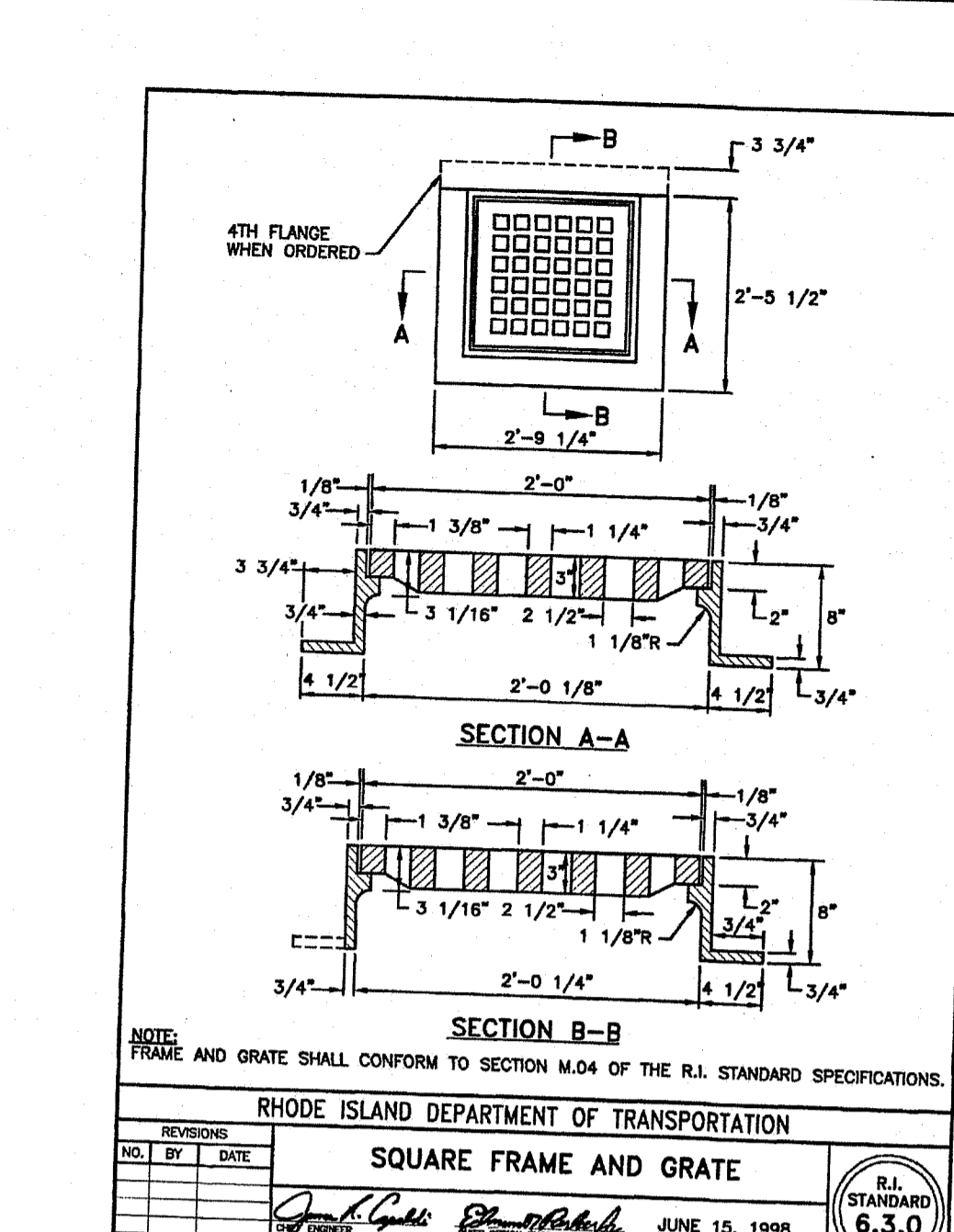
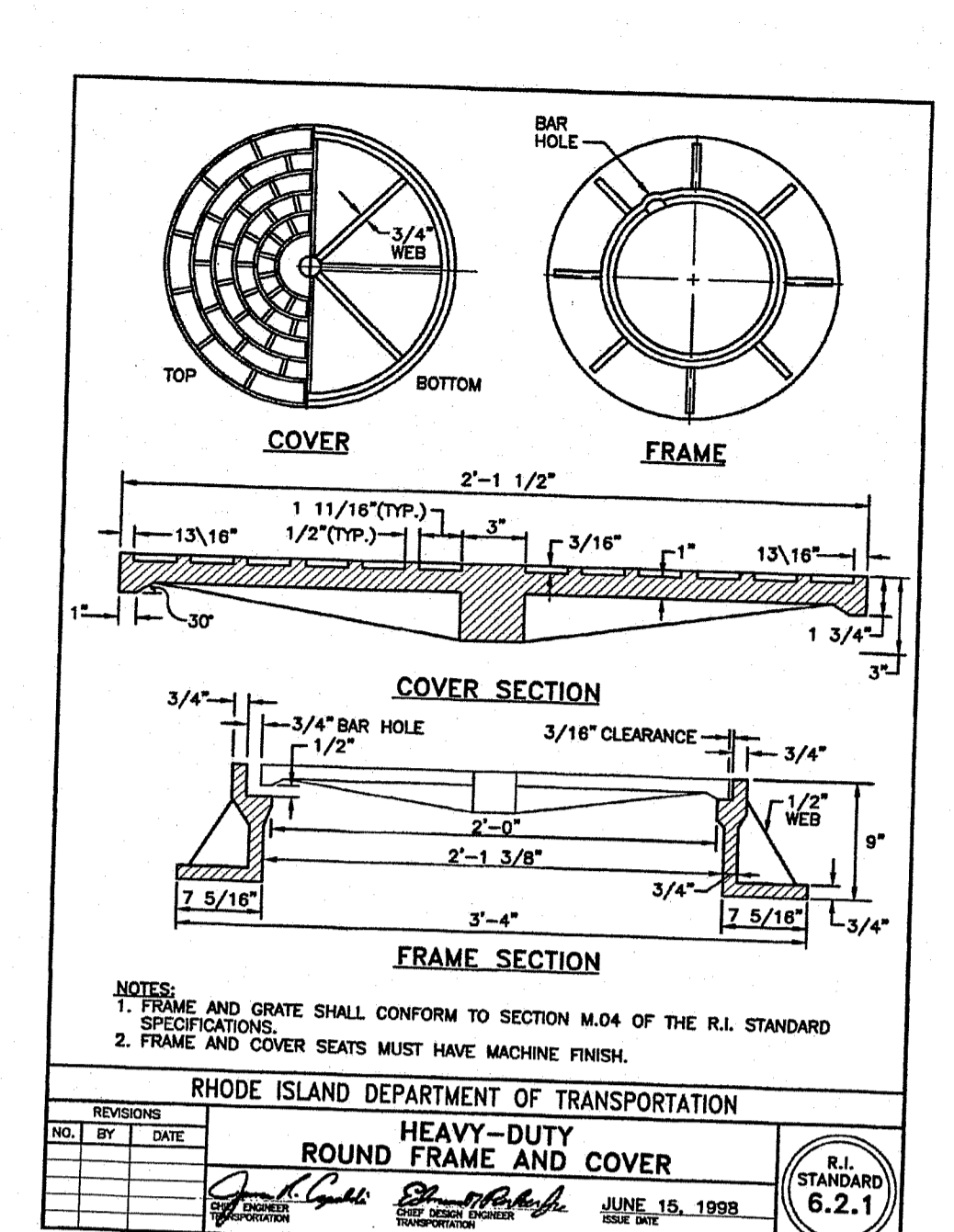
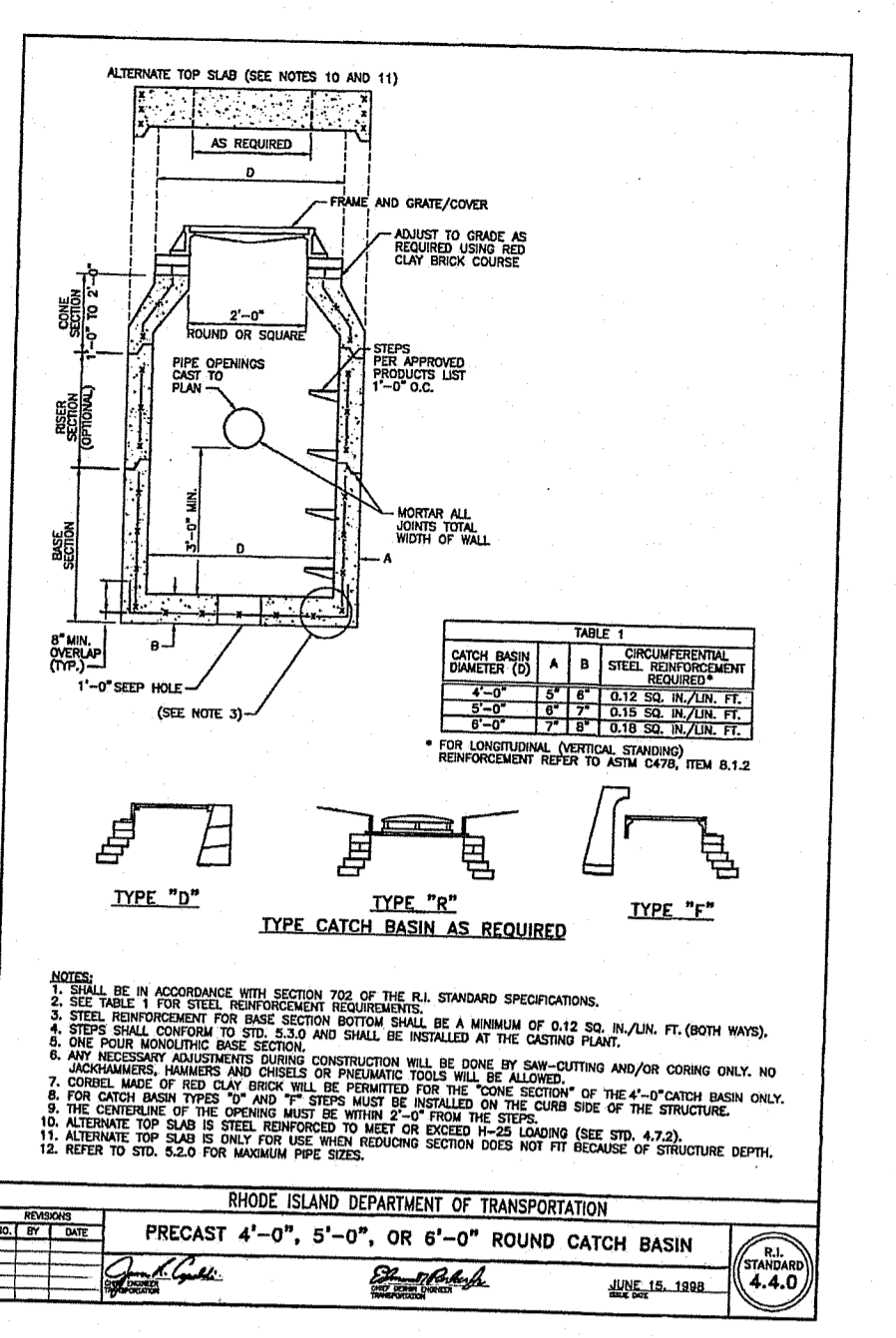
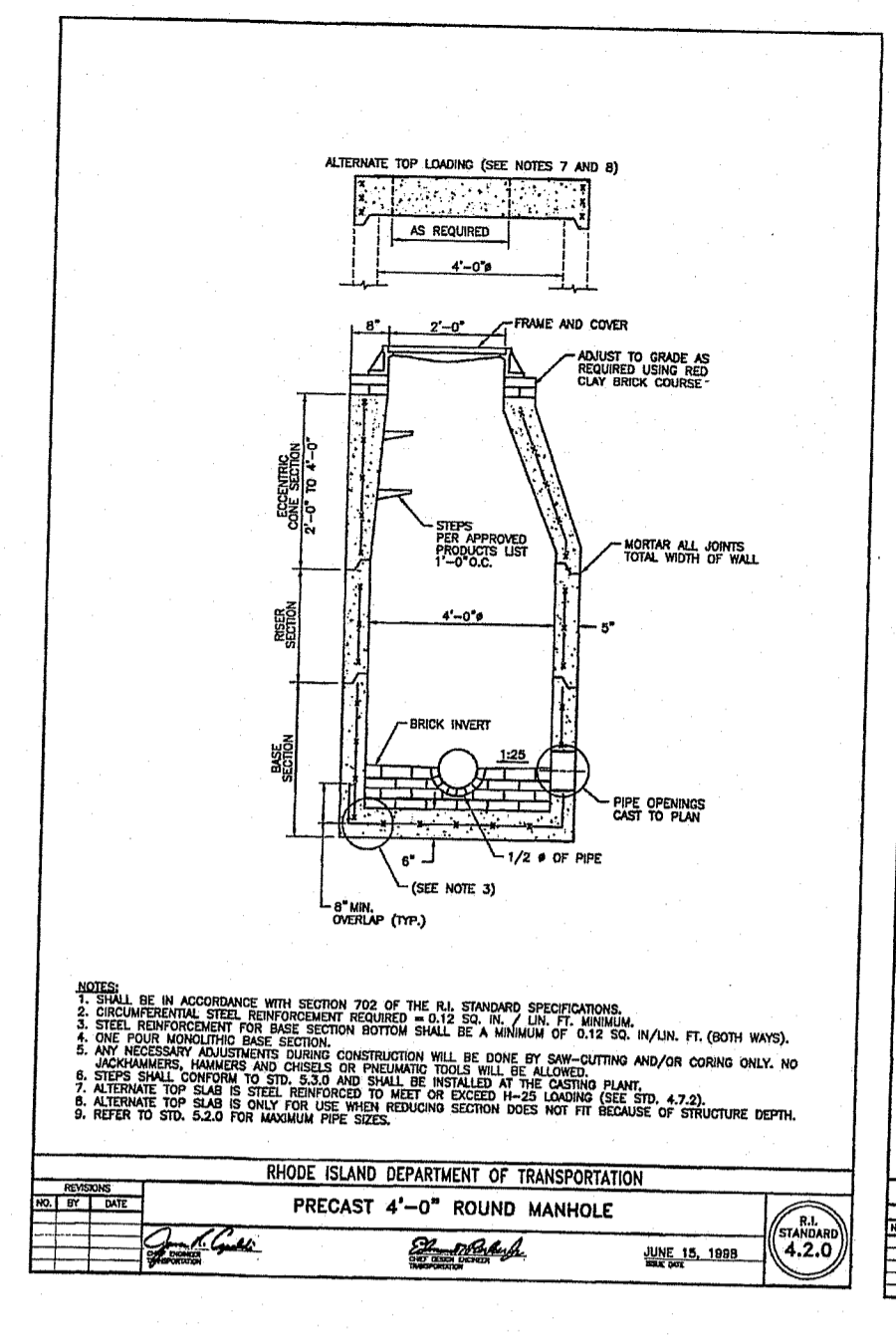
DESIGNED BY: WMLJR  
 DRAWN BY: SD/SEP  
 CHECKED BY: JAC  
 DATE: OCTOBER 2021  
 PROJECT NO: 20-61a

PRELIMINARY, NOT FOR CONSTRUCTION

**CIVIL DETAILS VII**

**SHEET 19 OF 20**

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED: APR 19 2024 FILE #:  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE



**JOE CASALI ENGINEERING, INC.**  
 CIVIL - SITE DEVELOPMENT - TRANSPORTATION  
 DRAINAGE - WETLANDS - ISDS - TRAFFIC - FLOODPLAIN  
 300 POST ROAD, WARWICK, RI 02886  
 (401) 844-1420 (401) 844-1313 FAX (WWW.JOECSALI.COM)

**JOSEPH A. CASALI**  
 No. 7250  
 REGISTERED PROFESSIONAL ENGINEER  
 03/01/2024

**RICHMOND PLACE**  
 38 STILSON ROAD  
 RICHMOND, RHODE ISLAND  
 AP 4B, LOTS 59, 59-2, & 59-3

OFFICE OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS AS SPECIFIED BY THE LETTER OF APPROVAL  
 DATE: APR 19 2024 FILE # 23-014  
 APPROVED WITHOUT PRIOR APPROVAL  
 MUST BE AT CONSTRUCTION SITE

MAR 09 2024

OWNER: RICHMOND REALTY ASSOCIATES, LLC  
 1536 SCITUATE AVENUE  
 CRANSTON, RI 02920

APPLICANT: CHIDAMBARAM NARAYANAN  
 CT PROPERTIES, LLC  
 20 PINE STREET  
 EAST PROVIDENCE, RI 02915

DESIGNED BY: WMLJR  
 DRAWN BY: SD/SEP  
 CHECKED BY: JAC  
 DATE: OCTOBER 2021  
 PROJECT NO: 20-618

REVISIONS:  
 NO. DATE DESCRIPTION  
 1 11/2021 TOWN COMMENTS  
 2 7/2023 PRELIMINARY PLAN  
 3 1/2024 RIDEM RTC  
 4 2/2024 PLANNING RTC  
 5 3/2024 RIDEM RTC

PRELIMINARY, NOT FOR CONSTRUCTION

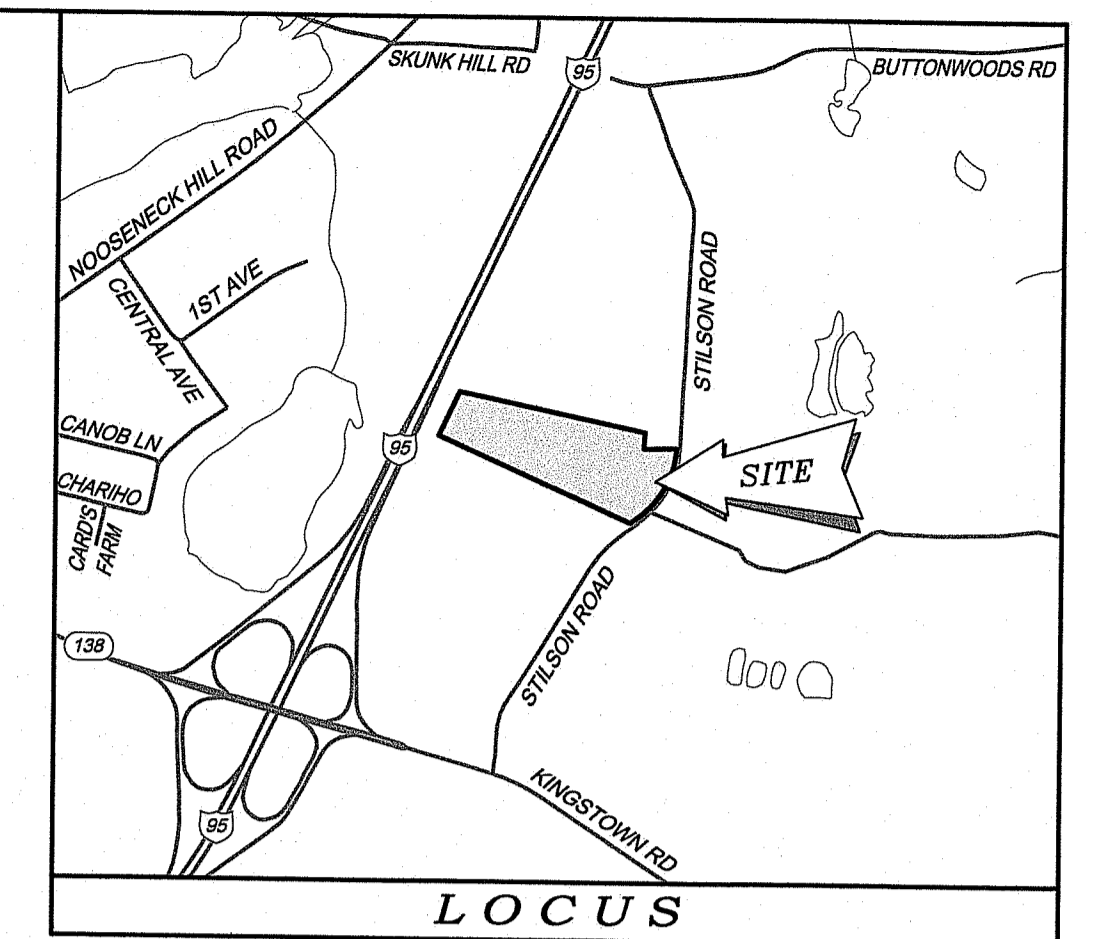
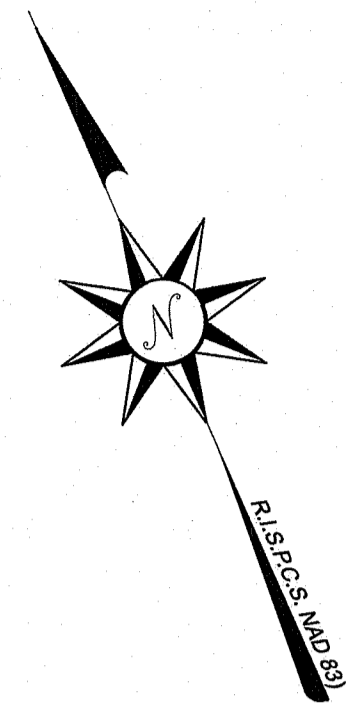
**RHODE ISLAND STANDARD DETAILS**

SHEET 20 OF 20

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**LEGEND & ABBREVIATIONS**

|         |                            |       |                          |
|---------|----------------------------|-------|--------------------------|
| NF      | - NOW OR FORMERLY          | ---   | - PROPERTY LINE          |
| A.P.    | - ASSESSORS PLAT           | - - - | - ZONING SETBACK LINE    |
| S.F.    | - SQUARE FEET              | - - - | - EXISTING CONTOUR       |
| AC.     | - ACRES                    | - - - | - NEW CONTOUR            |
| ±       | - PLUS OR MINUS            | - - - | - STONE WALL             |
| STY     | - STORY                    | X     | - FENCE                  |
| WF      | - WOOD FRAMED              | S     | - SEWER LINE             |
| SHIP    | - STATE HIGHWAY PLAT       | D     | - DRAIN LINE             |
| RET.    | - RETAINING WALL           | W     | - WATER LINE             |
| PED.    | - PEDESTRIAN               | G     | - GAS LINE               |
| (FND.)  | - FOUND                    | E     | - ELECTRIC LINE          |
| R/HB    | - RI HIGHWAY BOUND         | SM    | - SANITARY SEWER MANHOLE |
| PK NAIL | - MASONRY NAIL             | CB    | - CATCH BASIN            |
| FE.     | - FLARED END               | SDM   | - STORM DRAIN MANHOLE    |
| RCP     | - REINFORCED CONCRETE PIPE | WG    | - WATER GATE             |
| CLF     | - CHAIN LINK FENCE         | GV    | - GAS VALVE              |
| INV.    | - INVERT                   | EM    | - ELECTRIC MANHOLE       |
| x 10.80 | - EXISTING SPOT GRADE      | GB    | - GRANITE BOUND          |
| 10.80   | - NEW SPOT GRADE           | OH    | - DRILL HOLE             |
|         |                            | IP    | - IRON PIPE              |



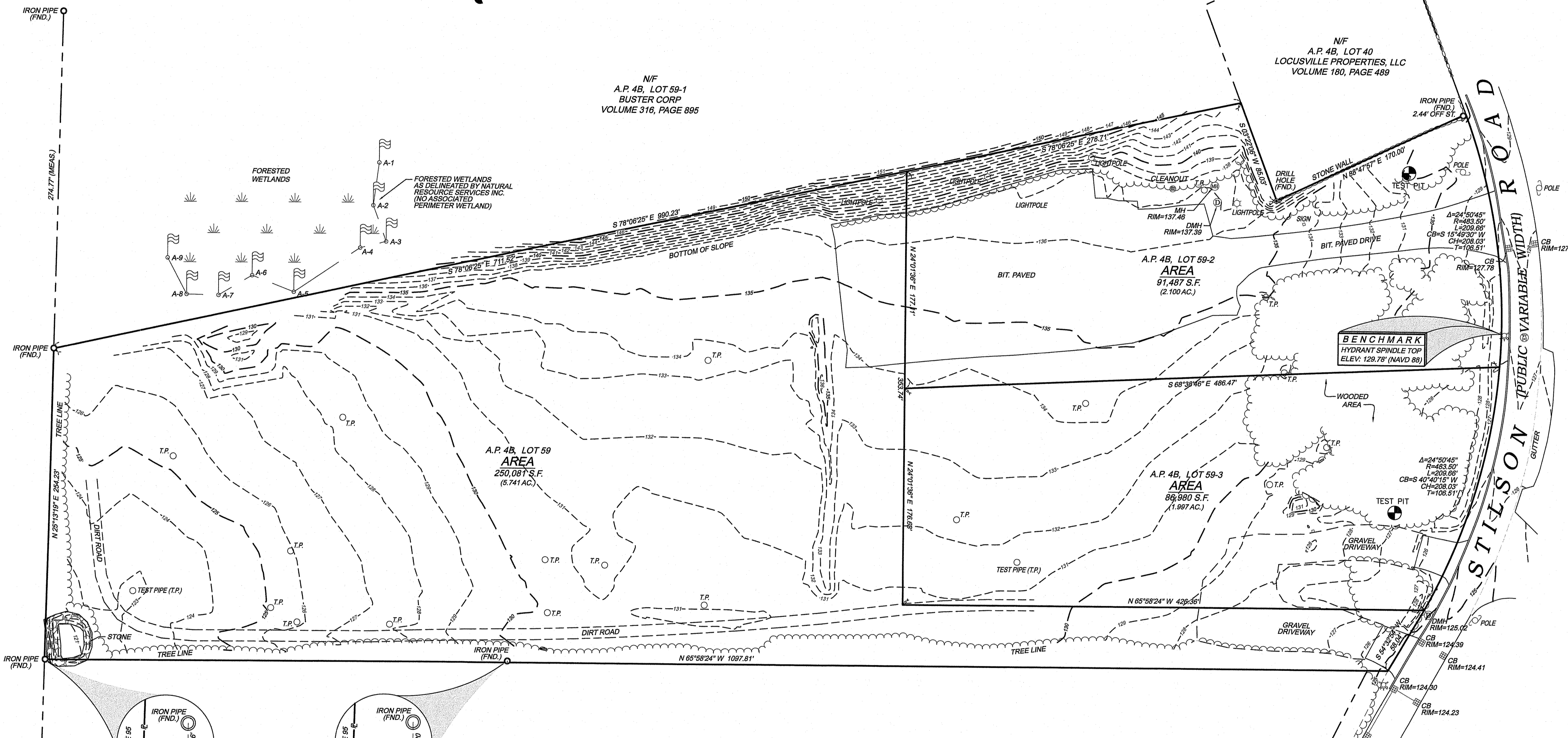
**NOTES / REFERENCES**

- REFERENCE IS MADE TO THE FOLLOWING MAPS AND PLANS OF RECORD:
  - PLAN ENTITLED "ADMINISTRATIVE SUBDIVISION, ASSESSOR'S MAP 4B, LOT 59, OWNER: A & M ASSOCIATES, STILLSON ROAD, TOWN OF RICHMOND, RHODE ISLAND, PREPARED FOR: RICHMOND REALTY ASSOCIATES, PREPARED BY: A.R.M. ENGINEERING, INC., SCALE: 1" = 80', DATED: 12/21/89."
  - PLAN ENTITLED "ADMINISTRATIVE SUBDIVISION, SHOWING MERGER OF LAND OF MTM DEVELOPMENT CORP. & STILLSON ROAD HOTEL, LLC, STILLSON ROAD & INTERSTATE ROUTE 95, RICHMOND, RHODE ISLAND, PREPARED BY: S.C.T. SURVEYS, INC., SCALE: 1" = 50', DATED: JUNE 24, 2010, LAST REVISION: DECEMBER 3, 2014."
  - PLAN ENTITLED "CONDOMINIUM PLAN FOX RUN CONDOMINIUMS, PREPARED FOR: STILLSON ROAD HOTEL, LLC, LOCATION: JUPITER LANE, A.P. 4B / LOT 62, RICHMOND, RI, PREPARED BY: E. GREENWICH SURVEYORS, LLC, SCALE: 1" = 50', DATED: 12-08-2016."
  - PLAN ENTITLED "FOX RUN CONDOMINIUMS, COMPREHENSIVE PERMIT DEVELOPMENT, A.P. 4B LOTS 62-1 TO 62-7, RICHMOND, RHODE ISLAND, PREPARED FOR: MTM DEVELOPMENT CORP., SITE PLAN, PREPARED BY: S.F.M. ENGINEERING ASSOCIATES, SCALE: 1" = 40', DATED: SEPT. 15, 2008."
- REFERENCE IS MADE TO THE FOLLOWING TOWN OF RICHMOND LAND EVIDENCE RECORDS REGARDING RECORDED TITLE TO THE PREMISES SURVEYED:
  - ASSESSORS PLAT 4B, LOT 59 - JOHN AIELLO, JR. & JULIAN M. MARCELLO - VOLUME 198, PAGE 722
  - ASSESSORS PLAT 4B, LOT 59-2 - JOHN AIELLO, JR. & JULIAN M. MARCELLO - VOLUME 198, PAGE 716
  - ASSESSORS PLAT 4B, LOT 59-2 - JOHN AIELLO, JR. & JULIAN M. MARCELLO - VOLUME 198, PAGE 719
- THESE PREMISES MAY BE SUBJECT TO THE FOLLOWING EASEMENTS, RIGHTS OF WAY OR AGREEMENTS OF RECORD:
  - NONE FOUND RECORDED.
- THESE PREMISES ARE SITUATED IN AN 'GB' ZONE (GENERAL BUSINESS DISTRICT)
 

|                                 |                      |
|---------------------------------|----------------------|
| <b>DIMENSIONAL REQUIREMENTS</b> |                      |
| MIN. LOT AREA                   | = 43,560 SQ. FT.     |
| MIN. FRONTAGE                   | = 150 FT.            |
| MIN. S/B FRONT YARD             | = 20 FT.             |
| MIN. S/B REAR YARD              | = 50 FT.             |
| MIN. S/B SIDE YARD              | = 35 FT.             |
| MAX. STRUCTURE HEIGHT           | = 40 FT. (2 STORIES) |
| MAX. LOT COVERAGE               | = 25%                |

NOTE - ZONING INFORMATION IS FROM CURRENT ZONING AND MAY NOT REFLECT THE CONDITIONS AT THE TIME OF CONSTRUCTION OR ANY VARIANCES GRANTED.
- THESE PREMISES ARE SITUATED IN A ZONE 'X' (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AS DESIGNATED ON THE "NATIONAL FLOOD INSURANCE PROGRAM, FIRM FLOOD INSURANCE RATE MAPS WASHINGTON COUNTY, RHODE ISLAND (ALL JURISDICTIONS) PANEL 64 & 65 OF 369 TOWN OF RICHMOND, MAP NUMBERS 4409C02064J & 4409C02065J, MAP REVISED DATES: APRIL 3, 2020, FEDERAL EMERGENCY MANAGEMENT AGENCY."
- ANY UTILITIES SHOWN ON THIS PLAN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING PLANS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UTILITIES SHOWN COMPRISE ALL SUCH OR ABANDONED. THE SURVEYOR DOES NOT WARRANT THAT THE UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM ALL AVAILABLE INFORMATION. (PLEASE CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION AT PHONE NO. 1-888-DIG-SAFE AND/OR ALL LOCAL UTILITY COMPANIES.)
- THE HORIZONTAL DATUM FOR THIS PROJECT IS R.I.S.P.C.S. (NAD 83) AND THE VERTICAL DATUM FOR THIS PROJECT IS NAVD 88. THE PROJECT DATUMS WERE ESTABLISHED FROM REFERENCE STATIONS AND GNSS CORRECTIONS RECEIVED FROM THE LEICA SMARTNET NORTH AMERICA RTK NETWORK VIA CARLSON BRX8 GNSS ANTENNAS / RECEIVERS.
- WETLAND FLAGS DELINEATED BY: NATURAL RESOURCE SERVICES, INC. P.O. BOX 311 - 180 TINKHAM LANE, HARRISVILLE, RHODE ISLAND 02830
- WETLAND FLAGS FIELD LOCATED BY WATERMAN ENGINEERING COMPANY.
- THE SUBJECT PROPERTY FALLS WITHIN A NATURAL HERITAGE AREA AS DELINEATED ON THE ONLINE RIDEM ENVIRONMENTAL RESOURCE MAP.

**INTERSTATE ROUTE 95**  
(RHODE ISLAND HIGHWAY PLAT 849)



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

APPROVED WITH CONDITIONS AS SHOWN

GRAPHIC SCALE  
1" = 50'

DATED: APR 19 2024 FILE #: 23-0164 (in feet)

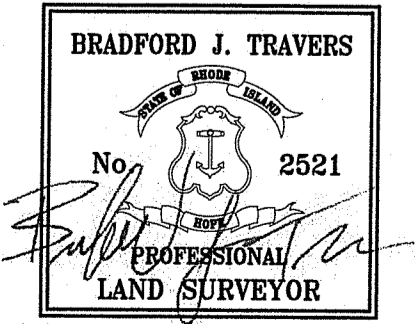
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

**CERTIFICATION**

THIS SURVEY HAS BEEN CONDUCTED AND THE PLAN HAS BEEN PREPARED PURSUANT TO 43B-RICR-04-19 OF THE RULES AND REGULATIONS ADOPTED BY THE RHODE ISLAND STATE BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS ON APRIL 28, 2018, AS FOLLOWS:

TYPE OF BOUNDARY SURVEY: COMPREHENSIVE BOUNDARY SURVEY  
MEASUREMENT / ACCURACY SPECIFICATION: DATA ACCUMULATION III TOPOGRAPHIC SURVEY T-1

THE PURPOSE FOR CONDUCTING THIS SURVEY AND FOR THE PREPARATION OF THE PLAN IS AS FOLLOWS:  
BOUNDARY & TOPOGRAPHIC SURVEY FOR THE FUTURE DEVELOPMENT OF THE PROPERTY.



BY: *Bradford J. Travers* 2521 02/17/2021  
BRADFORD J. TRAVERS, P.L.S. REG. NO. DATE  
WATERMAN ENGINEERING COMPANY (COA No. LS.004483)

N/F  
A.P. 4B, LOT 62  
STILLSON ROAD, HOTEL LLC  
VOLUME 309, PAGE 156

RI GL 34-13-1  
ABUTTING STREET INDEX  
1. STILLSON ROAD

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WATERMAN ENGINEERING CO.  
CIVIL ENGINEERS & SURVEYORS  
46 SUTTON AVENUE  
EAST PROVIDENCE, RI 02914-2096

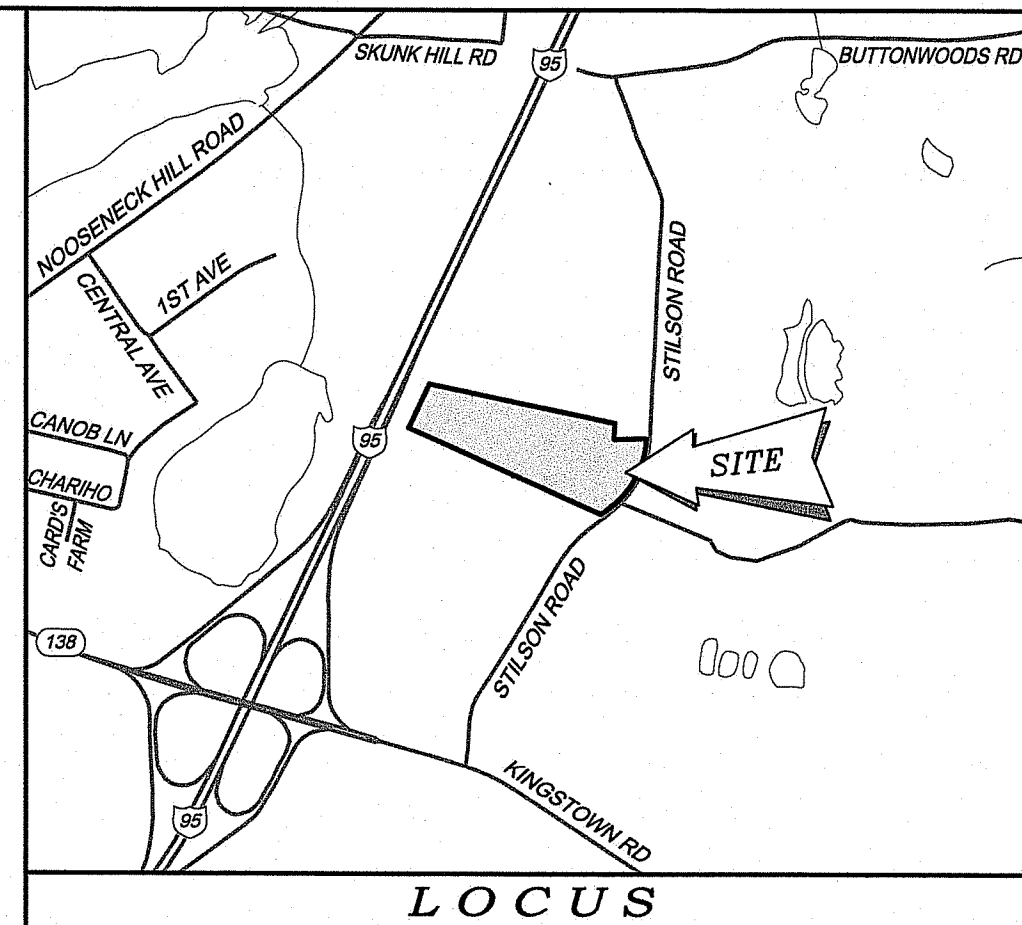
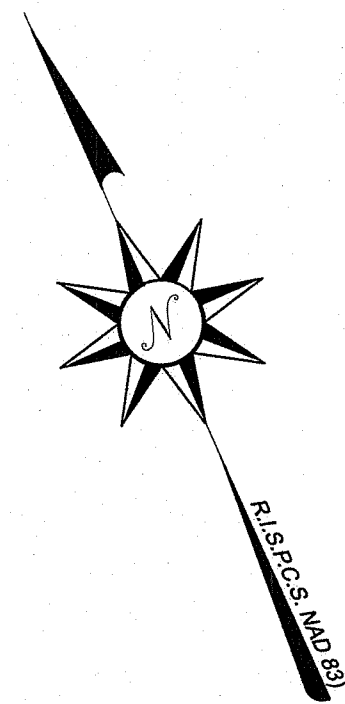
THESE DRAWINGS ARE THE PROPERTY OF THE ENGINEER/SURVEYOR AND HAVE BEEN PREPARED FOR THE OWNER FOR THIS PROJECT AT THIS SITE AND ARE NOT TO BE USED FOR ANY OTHER PURPOSE, LOCATION OR OWNER WITHOUT WRITTEN CONSENT OF THIS OWNER OR ONE OF ITS DIRECTORS.

| NO.   | DATE | REVISION | CHECKED BY  |
|---|------|----------|---|
|   |      |          |   |
| BOUNDARY & TOPOGRAPHIC SURVEY PLAN<br>ASSESSORS PLAT 4B, LOTS 59, 59-2, & 59-3<br>STILLSON ROAD<br>RICHMOND, RHODE ISLAND |      |          | PROJECT NO: 20-118<br>SCALE: 1" = 50'<br>DATE: 02/17/2021<br>DRAWN BY: EBP<br>CHECKED BY: EJT |
| JOE CASALI ENGINEERING, INC.<br>300 POST ROAD<br>WARWICK, RHODE ISLAND  |      |          | FILENAME: 20-118_SU1<br>1 of 1 SHEETS<br>DRAWING #: SU1                                       |

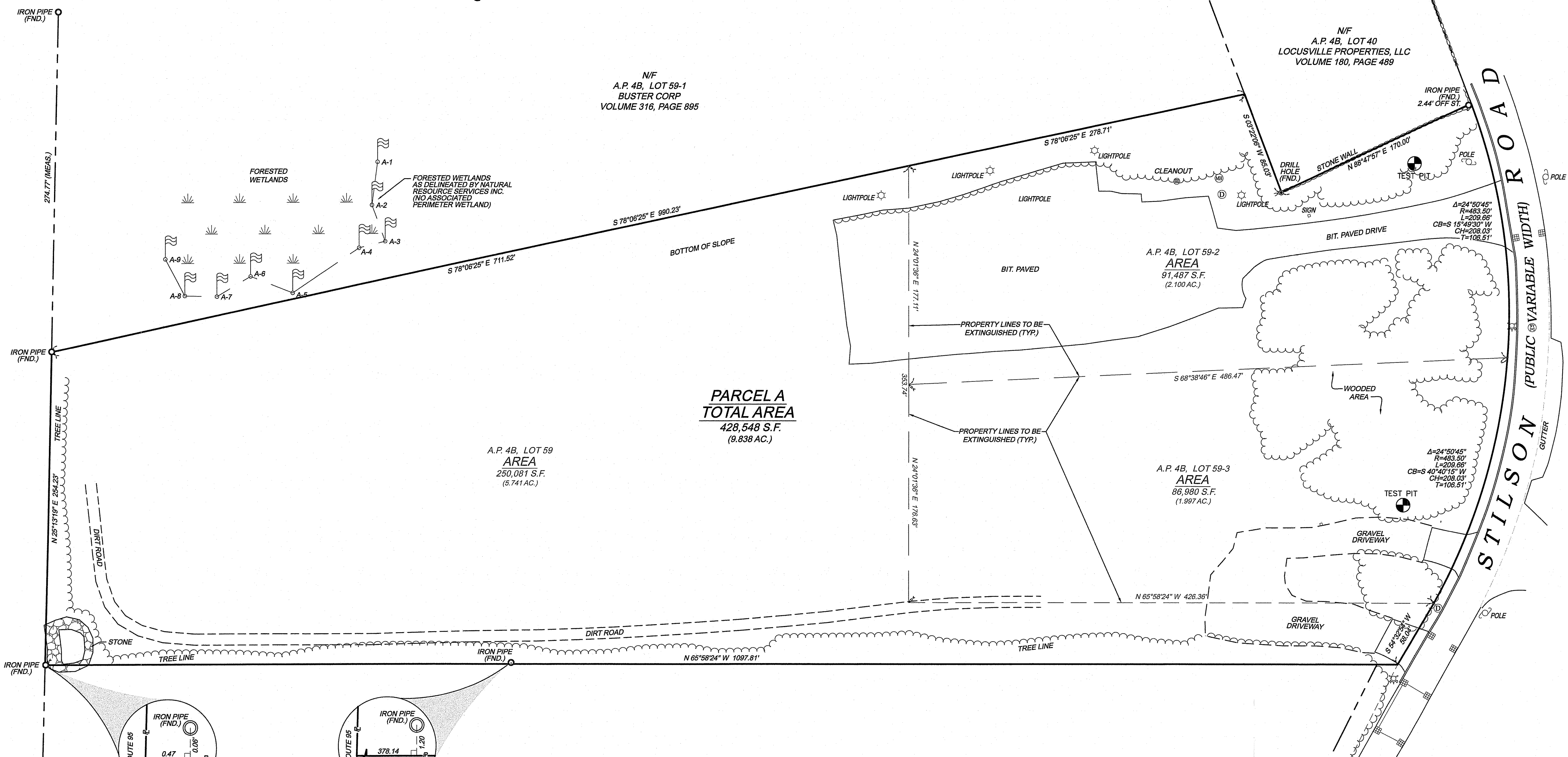


**LEGEND & ABBREVIATIONS**

|         |                            |     |                          |
|---------|----------------------------|-----|--------------------------|
| N/F     | - NOW OR FORMERLY          | --- | - PROPERTY LINE          |
| A.P.    | - ASSESSORS PLAT           | --- | - ZONING SETBACK LINE    |
| S.F.    | - SQUARE FEET              | --- | - EXISTING CONTOUR       |
| AC.     | - ACRES                    | --- | - NEW CONTOUR            |
| #       | - PLUS OR MINUS            | --- | - STONE WALL             |
| STY     | - STORY                    | --- | - FENCE                  |
| W/F     | - WOOD FRAMED              | --- | - SEWER LINE             |
| SHP     | - STATE HIGHWAY PLAT       | --- | - DRAIN LINE             |
| RET.    | - RETAINING WALL           | --- | - WATER LINE             |
| PED.    | - PEDESTRIAN               | --- | - GAS LINE               |
| (FND.)  | - FOUND                    | --- | - ELECTRIC LINE          |
| R/HB    | - RI HIGHWAY BOUND         | --- | - SANITARY SEWER MANHOLE |
| PK MAIL | - MASONRY MAIL             | --- | - CATCH BASIN            |
| FE      | - FLARED END               | --- | - STORM DRAIN MANHOLE    |
| RCP     | - REINFORCED CONCRETE PIPE | --- | - WATER GATE             |
| CLF     | - CHAIN LINK FENCE         | --- | - GAS VALVE              |
| INV.    | - INVERT                   | --- | - ELECTRIC MANHOLE       |
| x 10.80 | - EXISTING SPOT GRADE      | --- | - GRANITE BOUND          |
| x 10.80 | - NEW SPOT GRADE           | --- | - DRILL HOLE             |
|         |                            | --- | - IRON PIPE              |



**INTERSTATE ROUTE 95**  
(RHODE ISLAND HIGHWAY PLAT 849)



**NOTES / REFERENCES**

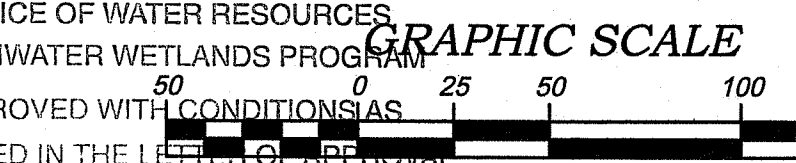
- REFERENCE IS MADE TO THE FOLLOWING MAPS AND PLANS OF RECORD:
  - A.) PLAN ENTITLED "ADMINISTRATIVE SUBDIVISION, ASSESSOR'S MAP 4B, LOT 59, OWNER: A & M ASSOCIATES, STILSON ROAD, TOWN OF RICHMOND, RHODE ISLAND, PREPARED FOR: RICHMOND REALTY ASSOCIATES, PREPARED BY: A.R.M. ENGINEERING, INC., SCALE: 1" = 80', DATED: 12/21/89."
  - B.) PLAN ENTITLED "ADMINISTRATIVE SUBDIVISION, SHOWING MERGER OF LAND OF MTM DEVELOPMENT CORP. & STILSON ROAD HOTEL, LLC, STILSON ROAD & INTERSTATE ROUTE 95, RICHMOND, RHODE ISLAND, PREPARED BY: SCITUATE SURVEYS, INC., SCALE: 1" = 80', DATED: JUNE 24, 2010, LAST REVISION: DECEMBER 3, 2014."
  - C.) PLAN ENTITLED "CONDOMINIUM PLAN FOX RUN CONDOMINIUMS, PREPARED FOR: STILSON ROAD HOTEL, LLC, LOCATED: LUPTER LANE, A.P. 4B LOT 62, RICHMOND, RI, PREPARED BY: E. GREENWICH SURVEYS, LLC, SCALE: 1" = 50', DATED: 12-08-2016."
  - D.) PLAN ENTITLED "FOX RUN CONDOMINIUMS, COMPREHENSIVE PERMIT DEVELOPMENT, A.P. 4B LOTS 62-1 TO 62-7, RICHMOND, RHODE ISLAND, PREPARED FOR: MTM DEVELOPMENT CORP., SITE PLAN, PREPARED BY: S.F.M. ENGINEERING ASSOCIATES, SCALE: 1" = 40', DATED: SEPT. 15, 2008."
- REFERENCE IS MADE TO THE FOLLOWING TOWN OF RICHMOND LAND EVIDENCE RECORDS REGARDING RECORDED TITLE TO THE PREMISES SURVEYED:
  - A.) ASSESSORS PLAT 4B, LOT 59 - JOHN AIELLO, JR. & JULIAN M. MARCELLO - VOLUME 198, PAGE 722
  - B.) ASSESSORS PLAT 4B, LOT 59-2 - JOHN AIELLO, JR. & JULIAN M. MARCELLO - VOLUME 198, PAGE 716
  - C.) ASSESSORS PLAT 4B, LOT 59-2 - JOHN AIELLO, JR. & JULIAN M. MARCELLO - VOLUME 198, PAGE 719
- THESE PREMISES MAY BE SUBJECT TO THE FOLLOWING EASEMENTS, RIGHTS OF WAY OR AGREEMENTS OF RECORD:
  - A.) NONE FOUND RECORDED.
- THESE PREMISES ARE SITUATED IN AN 'G8' ZONE (GENERAL BUSINESS DISTRICT)
 

**DIMENSIONAL REQUIREMENTS**

  - MIN. LOT AREA = 43,880 SQ. FT.
  - MIN. FRONTAGE = 150 FT.
  - MIN. S/B FRONT YARD = 20 FT.
  - MIN. S/B REAR YARD = 50 FT.
  - MIN. S/B SIDE YARD = 35 FT.
  - MAX. STRUCTURE HEIGHT = 40 FT. (2 STORIES)
  - MAX. LOT COVERAGE = 25%

NOTE - ZONING INFORMATION IS FROM CURRENT ZONING AND MAY NOT REFLECT THE CONDITIONS AT THE TIME OF CONSTRUCTION OR ANY VARIANCES GRANTED.
- THESE PREMISES ARE SITUATED IN A ZONE 'N' (AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN) AS DESIGNATED ON THE "NATIONAL FLOOD INSURANCE PROGRAM FIRM FLOOD INSURANCE RATE MAPS WASHINGTON COUNTY, RHODE ISLAND (ALL JURISDICTIONS) PANEL 64 & 68 OF 368 TOWN OF RICHMOND, MAP NUMBERS 44009C0084J & 44009C0088J, MAP REVISION DATES: APRIL 3, 2020, FEDERAL EMERGENCY MANAGEMENT AGENCY."
- ANY UTILITIES SHOWN ON THIS PLAN HAVE BEEN LOCATED FROM FIELD SURVEY INFORMATION AND EXISTING PLANS. THE SURVEYOR MAKES NO GUARANTEE THAT THE UTILITIES SHOWN COMPRISE ALL SUCH OR ABANDONED. THE SURVEYOR DOES NOT WARRANT THAT THE UTILITIES SHOWN ARE IN THE EXACT LOCATION INDICATED ALTHOUGH THEY ARE LOCATED AS ACCURATELY AS POSSIBLE FROM ALL AVAILABLE INFORMATION. (PLEASE CONTACT DIG SAFE 72 HOURS PRIOR TO CONSTRUCTION AT PHONE NO. 1-888-DIG-SAFE AND/OR ALL LOCAL UTILITY COMPANIES.)
- THE HORIZONTAL DATUM FOR THIS PROJECT IS R.I.S.P.C.S. (NAD 83). THE PROJECT DATUM WAS ESTABLISHED FROM REFERENCE STATIONS AND GNSS CORRECTIONS RECEIVED FROM THE LEICA SMARTNET NORTH AMERICA RTK NETWORK VIA CARLSON BRX8 GNSS ANTENNAS / RECEIVERS.
- WETLAND FLAGS DELINEATED BY: NATURAL RESOURCE SERVICES, INC. P.O. BOX 311 - 180 TINKHAM LANE, HARRISVILLE, RHODE ISLAND 02830
- \*WETLAND FLAGS FIELD LOCATED BY WATERMAN ENGINEERING COMPANY.
- THE SUBJECT PROPERTY FALLS WITHIN A NATURAL HERITAGE AREA AS DELINEATED ON THE ONLINE RIEM ENVIRONMENTAL RESOURCE MAP.

RI DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED: APR 19 2024 FILE #: 23-0164 (in feet)  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE



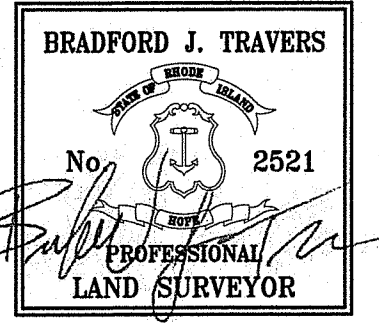
\*\* SIGNATURES MUST BE IN BLUE INK TO CONSTITUTE AN ORIGINAL PLAN

**CERTIFICATION**  
THIS SURVEY HAS BEEN CONDUCTED AND THE PLAN HAS BEEN PREPARED PURSUANT TO 435-RICR-00-00-19 OF THE RULES AND REGULATIONS ADOPTED BY THE RHODE ISLAND STATE BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS ON APRIL 28, 2018, AS FOLLOWS:

TYPE OF BOUNDARY SURVEY: COMPREHENSIVE BOUNDARY SURVEY  
MEASUREMENT / ACCURACY SPECIFICATION: I  
OTHER TYPE OF SURVEY: DATA ACCUMULATION III

THE PURPOSE FOR CONDUCTING THIS SURVEY AND FOR THE PREPARATION OF THE PLAN IS AS FOLLOWS:  
ADMINISTRATIVE SUBDIVISION TO MERGE THE PARCELS INTO ONE OVERALL LOT AS SHOWN.

BY: *Bradford J. Travers* 2521 02/17/2021  
BRADFORD J. TRAVERS, P.L.S. REG. NO. 2521 DATE  
WATERMAN ENGINEERING COMPANY (COA No. L0004483)



N/F  
A.P. 4B, LOT 62  
STILSON ROAD, HOTEL LLC  
VOLUME 309, PAGE 156

RIGL 34-13-1  
ABUTTING STREET INDEX  
1. STILSON ROAD

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WATERMAN ENGINEERING CO.  
CIVIL ENGINEERS & SURVEYORS  
46 SUTTON AVENUE  
EAST PROVIDENCE, RI 02914-2096

**Waterman ENGINEERING COMPANY**  
Engineers & Surveyors - Est. 1894  
46 Sutton Avenue  
East Providence, RI  
Phone: (401) - 438 - 5775  
Fax: (401) - 438 - 5772  
www.watermanengineering.net

| NO. | DATE | REVISION | CHECKED BY |
|-----|------|----------|------------|
|     |      |          |            |
|     |      |          |            |

PROJECT NO. 20-118  
SCALE: 1" = 50'  
DATE: 02/17/2021  
DRAWN BY: EBP  
CHECKED BY: BJT  
FILENAME: 20-118\_SU1  
1 of 1 SHTS  
DRAWING # SU1