



**GENERAL NOTES:**

- EXISTING CONDITIONS WERE OBTAINED FROM A PLAN ENTITLED "CUMBERLAND, RI; PLAN OF LAND, PREPARED FOR VIKON PROPERTIES; SURVEY OF AP 35 LOT 188; MEADOWBROOK DRIVE; ZONE R-3" DATED MAY 17, 2018, PREPARED BY MARSH AND LONG SURVEYING, SMITHFIELD, RI.
- THE LOCATION OF EXISTING UTILITIES IS APPROXIMATE, THE CONTRACTOR SHALL VERIFY THE LOCATION OF ALL UTILITIES IN THE FIELD PRIOR TO THE START OF CONSTRUCTION. NOTIFY "DIG-SAFE" AT 1-888-344-7233 AT LEAST 72 HOURS PRIOR TO ANY SITE DEMOLITION OR EXCAVATION.
- SUBSURFACE UTILITY INFORMATION AND EDGE OF PAVEMENT FOR MENDON ROAD, OLD MENDON ROAD, AND MARSH AVENUE IS ASSUMED TO BE APPROXIMATE AND IS TO BE FIELD VERIFIED PRIOR TO CONSTRUCTION. UTILITY INFORMATION WAS TAKEN FROM A PLAN ENTITLED "CUMBERLAND DEPARTMENT OF PUBLIC WORKS, CUMBERLAND, RHODE ISLAND; MENDON ROAD SANITARY SEWER PLAN AND PROFILE - STA 237+96 TO STA 39+75; DRAWING NUMBER S-1" DATED MARCH 1, 1993, PREPARED BY WATERWORKS ENGINEERING AND ASSOCIATES, INC, APPROVED BY J. MORRA.
- PLAN INTENT IS A LAYOUT ASSOCIATED WITH A 114 UNIT DEVELOPMENT.
- THERE ARE NO RESERVOIRS, TRIBUTARIES, WATER BODIES, WATERCOURSES, OR WETLANDS LOCATED WITHIN THE AREA OF THE PROPOSED SITE DISTURBANCE. RIDEM JURISDICTIONAL AREA IS LOCATED AS SHOWN WITHIN THE AREA OF THE PROPOSED SITE DISTURBANCE. NO DISTURBANCE IS PROPOSED WITHIN THE JURISDICTIONAL AREA AS DETAILED.
- ALL DISTURBED AREAS NOT RECEIVING IMPROVEMENTS SHALL BE LOAMED AND SEED. ALL FINAL GRADED AREAS WITH SLOPES 3 : 1 OR GREATER SHALL BE HYDROSEED.
- ALL CONSTRUCTION AND CONSTRUCTION ACTIVITIES SHALL CONFORM TO STATE AND LOCAL REQUIREMENTS INCLUDING BUT NOT LIMITED TO THE TOWN OF CUMBERLAND, THE STATE OF RHODE ISLAND AND ANY OTHER AGENCIES HAVING JURISDICTION.
- ALL WORK PROPOSED WITHIN THE STATE RIGHT-OF-WAY SHALL CONFORM TO ALL STATE STANDARDS AND SPECIFICATIONS, INCLUDING ALL ADDENDUMS, AS ARE CURRENT AT THE TIME OF CONSTRUCTION.

**PROPERTY LINE AND EXISTING CONDITIONS SURVEY NOTES:**

**1. REFERENCE PLANS:**

PLAN ENTITLED "SUBDIVISION PLAN OF LAND, CHIMNEY HILL ASSOCIATES, ASSESSOR'S PLAT 35, LOT 161, SITUATED IN CUMBERLAND, RHODE ISLAND, DATED AUGUST 7, 2001 BY HARRY R. FELDMAN, INC.", FOUND ON PLAT CARD 1249

PLAN ENTITLED "MENDON MANOR, PLAT NO.3, CUMBERLAND, RHODE ISLAND, SURVEYED & PLATTED BY EDWARD J. HAYDEN". MENDON MANOR PLAT NO. 5 BELONGING TO MURPHY REALTY INC. CUMBERLAND RHODE ISLAND SCALE - 1" = 40' SURVEYED AND PLATTED BY EDWARD J HAYDEN ENG.

RHODE ISLAND DEPARTMENT OF TRANSPORTATION DIVISION OF PUBLIC WORKS RECONSTRUCTION OF ROUTE 122 MENDON ROAD NORTH OF I-295 INTERCHANGE TO CADORET DRIVE CUMBERLAND RHODE ISLAND DRAINAGE & UTILITY PLAN NO. 4 SCALE 1" = 20'

RHODE ISLAND HIGHWAY PLAT # 180.

2. PORTIONS OF THIS PARCEL LIE WITHIN ZONE 'X' AS SHOWN ON THE FOLLOWING FLOOD INSURANCE RATE MAPS FOR PROVIDENCE COUNTY, RHODE ISLAND: MAP NUMBER 44007C0179G; AND MAP NUMBER 44007C0183G ZONE 'X' = AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN. REVISED: MARCH 2, 2009

3. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE CONTRACTOR SHALL NOTIFY "DIG-SAFE" PRIOR TO EXCAVATION AND SHALL NOTIFY LOCAL UTILITY COMPANIES BEFORE COMMENCEMENT OF WORK TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION OF ALL EXISTING UTILITIES AND RELOCATE UTILITIES SHOWN ON THE PLANS.

3. HORIZONTAL & VERTICAL DATA ON THIS PLAN WERE OBTAINED BY FIELD SURVEY.

4. DATUM REFERENCED NAVD88.

**GRADING AND UTILITY NOTES:**

- ALL WORK PERFORMED HEREIN SHALL BE COMPLIANT WITH THE RHODE ISLAND DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION. THE WORK PERFORMED ON THE INTERNAL PROJECT SITE SHALL BE IN ACCORDANCE WITH THE RIDOT STANDARD SPECIFICATION FOR ROAD AND BRIDGE CONSTRUCTION AND WITH CUMBERLAND DPW STANDARDS, WHICH WILL TAKE PRECEDENCE OVER RIDOT STANDARD SPECIFICATIONS WITHIN THE PROJECT SITE ONLY.
- ALL PROPOSED UTILITIES (SEWER, WATER, DRAINAGE, ELECTRIC, GAS, COMMUNICATIONS) SERVING THE SITE AND PROPOSED BUILDING SHALL BE COORDINATE WITH THE APPLICANT, ARCHITECT, CUMBERLAND, AND ENGINEER PRIOR TO INSTALLATION.
- ALL COMPONENTS OF THE SEWER, WATER, AND DRAINAGE SYSTEMS MUST BE AS-BUILT PRIOR TO BACKFILLING. CUMBERLAND ENGINEERING AND DESIGN ENGINEER WILL NOT ACCEPT CONTRACTOR FIELD MEASUREMENT FOR AS-BUILT DOCUMENTATION.
- UTILITY LOCATIONS, RIMS, AND INVERTS FOR ALL UTILITIES HAVE BEEN FIELD SURVEYED. PRIOR TO CONSTRUCTION THE CONTRACTOR SHALL FIELD VERIFY ALL UTILITY LOCATIONS, RIMS, AND INVERTS AND NOTIFY THE DESIGN ENGINEER OF ANY DISCREPANCIES.
- THE CONTRACTOR SHALL COORDINATE WITH ALL UTILITY COMPANIES FOR AGREEMENTS TO SERVICE THE PROPOSED BUILDING. THIS SHALL BE DONE PRIOR TO CONSTRUCTION. NO REPRESENTATIONS ARE MADE BY LEVEL DESIGN GROUP, LLC THAT UTILITY SERVICES WILL BE ALLOWED TO CONNECT AS SHOWN.
- ALL EXISTING ABANDONED ON-SITE UTILITIES WITHIN THE AREA OF CONSTRUCTION SHALL BE REMOVED AND LEGALLY DISPOSED OF.
- THE CONTRACTOR IS RESPONSIBLE FOR ALL ON-SITE SOIL EROSION AND SEDIMENT CONTROLS. THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER AND CUMBERLAND OFFICIALS AT LEAST 48 HOURS PRIOR TO THE START OF CONSTRUCTION.
- NO STOCKPILING OF MATERIAL SHALL BE LOCATED WITHIN 50' OF THE ON-SITE WETLANDS OR WITHIN THE RIGHT OF WAY. NO TRENCHES ARE TO BE LEFT OPEN OVER NIGHT.
- SOME OF THE SOILS AND SUBSURFACE CONDITIONS WITHIN THE SITE MAY VARY FROM ON-SITE SOIL TESTING. IF GROUNDWATER ELEVATIONS AND SOIL CONDITIONS ENCOUNTERED ARE DIFFERENT THAN ANTICIPATED BY THE DESIGN, THE DESIGN ENGINEER SHALL BE NOTIFIED. CHANGES IN THE GROUNDWATER ELEVATIONS AND SOIL CONDITIONS, ESPECIALLY IN THE AREAS OF INFILTRATION AND DETENTION BASINS MAY REQUIRE REDESIGN OF THE STORMWATER MANAGEMENT SYSTEM.
- THE CONTRACTOR IS RESPONSIBLE FOR ESTABLISHING FINAL FINISH GRADING AND DRAINAGE AROUND THE BUILDINGS TO ENSURE SURFACE WATER AND/OR GROUND WATER ARE DIRECTED AWAY FROM THE STRUCTURE OR TOWARDS A PROPOSED YARD DRAIN.
- ALL TRAFFIC CONTROLS SHALL CONFORM WITH THE MANUAL FOR UNIFORM TRAFFIC CONTROL DEVICES 2009, AND ANY REVISIONS THEREAFTER.
- ALL CUT AND FILL AREAS ARE TO BE DONE UNDER THE DIRECTION OF A GEOTECHNICAL ENGINEER WITH TESTING AND CERTIFICATION TO BE PROVIDED TO THE OWNER AT THE COMPLETION OF THE PROJECT. LEVEL DESIGN GROUP, LLC IS NOT PROVIDING FILL SPECIFICATIONS, GEOTECHNICAL ENGINEERING OR STRUCTURAL ENGINEER AS PART OF THESE PERMITTING PLANS.
- INSTALLATION OF 8" SEWER MAIN IN MEADOWBROOK DRIVE SHALL BE IN ACCORDANCE WITH CUMBERLAND DPW STANDARDS. 6" SEWER LATERALS FOR EACH EXISTING DWELLING ALONG MEADOWBROOK DRIVE SHALL BE INSTALLED AND STUBBED AT THE PROPERTY LINE AS SHOWN ON SHEET C-3.0.
- ELECTRIC AND GAS SERVICE SHALL BE ESTABLISHED IN ACCORDANCE WITH THE REQUIREMENTS OF THE SERVICE PROVIDER. SERVICE SHALL BE UNDERGROUND.

**MAINTENANCE: SHORT TERM / LONG TERM**

- THE STONE STABILIZATION PADS AT THE SITE ENTRANCE SHALL BE MAINTAINED BY THE CONTRACTOR. THE MAINTENANCE SHALL INCLUDE TOP DRESSING WITH ADDITIONAL STONE OR ADDITIONAL LENGTH AS CONDITIONS DEMAND OR AS DIRECTED BY THE DESIGN ENGINEER. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRACKED ON TO THE RIGHT-OF-WAY MUST BE REMOVED IMMEDIATELY BY THE CONTRACTOR.
- ALL HAYBALES/SILT FENCE, TEMPORARY TREATMENTS (HAY, STRAW, ETC.) AND TEMPORARY PROTECTION SHALL BE MAINTAINED BY THE CONTRACTOR THROUGHOUT CONSTRUCTION. HAYBALES/SILT FENCE SHALL BE INSPECTED BY THE CONTRACTOR WITHIN 24 HOURS AFTER EACH STORM EVENT OR EVERY 7 DAYS, WHICHEVER COMES FIRST, FOR UNDERMINING AND DETERIORATION. A STORM EVENT SHALL BE DEFINED AS 0.25 INCHES OF RAIN WITHIN A 24-HOUR PERIOD. THE HAYBALES/SILT FENCE SHALL BE REPAIRED OR REPLACED AS WARRANTED. THE CONTRACTOR SHALL CLEAN THE ACCUMULATED SEDIMENT IF HALF OF THE ORIGINAL HEIGHT OF THE HAYBALES/SILT FENCE BECOMES FILLED IN WITH SEDIMENT. THE HAYBALES/SILT FENCE SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED. FOLLOWING CONFIRMATION FROM THE PROJECT ENGINEER THAT AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER HAS BEEN ESTABLISHED THE HAYBALES/SILT FENCE SHALL BE REMOVED AND LEGALLY DISPOSED OF.
- THE CONTRACTOR SHALL MAINTAIN ALL TOPSOIL STOCKPILES AND SEDIMENT BARRIERS THROUGHOUT CONSTRUCTION. HAY BALES OR SILT FENCE SHALL BE STAKED AROUND ALL MATERIAL STOCK PILES. EXTREME CARE SHALL BE TAKEN TO ENSURE THAT SEDIMENT DOES NOT SPILL OVER THE SEDIMENT BARRIER.
- ALL DISTURBED SLOPES, EITHER NEWLY CREATED OR CURRENTLY EXPOSED SHALL BE SEED, PROTECTED, AND MAINTAINED BY THE CONTRACTOR FOLLOWING FINAL GRADING AND CONSTRUCTION. THE CONTRACTOR SHALL CHECK ALL SEEDING AREAS REGULARLY TO SEE THAT A GOOD STAND OF VEGETATION IS MAINTAINED. THE CONTRACTOR MUST REPAIR OR RESEED ANY AREAS THAT DO NOT DEVELOP WITHIN THE PERIOD OF ONE YEAR AND SHALL DO SO AT NOT ADDITIONAL EXPENSE TO THE OWNER.
- THE CONTRACTOR IS RESPONSIBLE FOR MAINTENANCE AND INSPECTION OF THE BASINS DURING AND UP TO ONE YEAR AFTER THE COMPLETION OF CONSTRUCTION AND ACCEPTANCE BY THE OWNER. THE OWNER IS RESPONSIBLE FOR INSPECTIONS AND MAINTENANCE THEREAFTER. THE CONTRACTOR'S MAINTENANCE/INSPECTION RESPONSIBILITIES SHALL INCLUDE RESEEDING ANY UNSTABILIZED AREAS WITHIN THE DRAINAGE BMPs AT NO ADDITIONAL EXPENSE TO THE OWNER, REMOVING ACCUMULATED SILT WHEN SEDIMENT IS PRESENT AND MAINTAINING THE GRASS TO A GROWING HEIGHT BETWEEN 2" - 10". THE CONTRACTOR SHALL INSPECT RIP-RAP PADS AFTER EACH STORM AND REPAIR AS NECESSARY. THE OWNER'S MAINTENANCE RESPONSIBILITIES SHALL INCLUDE INSPECTION OF THE BASINS AND RIP-RAP PADS SEMI-ANNUALLY AND AFTER MAJOR STORMS. IF REPAIRS ARE NEEDED, THEY SHALL BE CARRIED OUT IMMEDIATELY. THE OWNER SHALL MAINTAIN A GOOD VEGETATIVE COVER (GRASS BETWEEN 2"-10" OR VEGETATION AS SPECIFIED). THE BOTTOM OF THE BMPs SHALL BE INSPECTED MONTHLY AND ACCUMULATED SEDIMENTS SHALL BE REMOVED AS NEEDED OR EVERY 10 YEARS, WHICHEVER COMES FIRST.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR INSPECTION, MAINTENANCE AND REPAIR TO ALL DRAINAGE STRUCTURES AND RELATED APPURTENANCE ON SITE DURING CONSTRUCTION AND IMMEDIATELY FOLLOWING CONSTRUCTION FOR A MAXIMUM OF ONE YEAR, OR UNTIL ACCEPTANCE BY THE ENGINEER AND THE OWNER. THE OWNER IS RESPONSIBLE FOR INSPECTION AND MAINTENANCE THEREAFTER.
- THE CONTRACTOR SHALL MAINTAIN THE DRAINAGE NETWORK DURING CONSTRUCTION. THE ACCUMULATED SEDIMENTS IN THE CATCH BASINS SHALL BE REMOVED AND DRAINAGE PIPES FLUSHED BY THE CONTRACTOR THROUGHOUT CONSTRUCTION. DURING CONSTRUCTION, THE CATCH BASIN SUMP SHALL BE CHECKED WEEKLY AND ACCUMULATED SEDIMENT REMOVED WHEN A DEPTH OF 6" IS EXCEEDED.
- DURING THE FIRST SIX MONTHS OF OPERATIONS, INSPECTIONS SHALL BE ACCOMPLISHED IN EACH DRAINAGE BMP AFTER EVERY RAINFALL EVENT, TO CHECK FOR CLOGGING, OR CONVERSELY, AN EXCESSIVE STORMWATER RELEASE. FOLLOWING THE SIX MONTHS, INSPECTIONS SHALL BE CONDUCTED ON AN ANNUAL BASIS.
- IF STANDING WATER IS OBSERVED WITHIN THE DRAINAGE BMPs FOR MORE THAN 72 HOURS AFTER A RAINFALL EVENT, THEN FAILURE OF THE SYSTEM MAY HAVE OCCURRED AND SHALL BE ADDRESSED THROUGH REPAIR AND/OR REPLACEMENT.
- THE CONSTRUCTION SUPERINTENDENT SHALL HAVE OVERALL RESPONSIBILITY FOR THE MAINTENANCE PROGRAM DURING THE CONSTRUCTION PHASE AND FOR A PERIOD OF ONE YEAR AFTER CONSTRUCTION. THE SUPERINTENDENT SHALL SEE THAT THE APPROPRIATE WORKERS ARE AWARE OF THE PROVISIONS OF THE PLAN.
- AFTER ACCEPTANCE OF THE SITE BY THE OWNER, THE OWNER SHALL HAVE OVERALL RESPONSIBILITY FOR IMPLEMENTING THE MAINTENANCE PROGRAM FOR THE STORMWATER MANAGEMENT PLAN.
- THE RESPONSIBLE PARTY FOR THE STORMWATER MANAGEMENT PROGRAM IS ATLANTIC NE PROPERTY MANAGEMENT, LLC. THE FUNDING FOR THE STORMWATER MANAGEMENT PROGRAM IS WILL BE PROVIDED BY ATLANTIC NE PROPERTY MANAGEMENT, LLC UNTIL CONSTRUCTION IS COMPLETED AND THE MAINTENANCE OF THE SITE IS TURNED OVER TO AN ESTABLISHED CONDOMINIUM ASSOCIATION.
- A LEGALLY BINDING AND ENFORCEABLE MAINTENANCE AGREEMENT SHALL BE EXECUTED BETWEEN THE OWNER AND THE RESPONSIBLE AUTHORITY TO ENSURE THE FOLLOWING MAINTENANCE SCHEDULES AREA FOLLOWED.
  - CATCH BASINS**  
CATCH BASINS SHALL BE INSPECTED AND CLEANED FOUR TIMES PER YEAR OR WHEN THE SUMPS ARE 50% FULL.  
SPRING MAINTENANCE  
CATCH BASINS REQUIRE THE REMOVAL OF SEDIMENT EACH SPRING. THIS PROCEDURE IS COMPRISED OF REMOVING THE CATCH BASIN GRATE FOLLOWED BY REMOVAL OF SEDIMENT TRAPPED IN THE STRUCTURE WITH A CLAMHELL SHOVEL. THE OUTLET PIPE FROM THE CATCH BASIN SHALL BE INSPECTED AND ANY OBSTRUCTIONS ARE TO BE REMOVED. THE SEDIMENT AND DEBRIS REMOVED FROM THE CATCH BASIN SHALL BE LEGALLY DISPOSED OF.  
FALL MAINTENANCE  
CATCH BASIN GRATES SHALL BE CLEARED OF LEAVES AND DEBRIS SO THEY MAY FUNCTION PROPERLY.
  - CDS STORMWATER UNITS**  
UNIT CLEANOUT  
THE FREQUENCY OF CLEANING THE CDS UNIT WILL DEPEND UPON THE GENERATION OF TRASH AND DEBRIS AND SEDIMENTS IN YOUR APPLICATION. CLEANOUT AND PREVENTIVE MAINTENANCE SCHEDULES WILL BE DETERMINED BASED ON OPERATING EXPERIENCE UNLESS PRECISE POLLUTANT LOADINGS HAVE BEEN DETERMINED. THE UNIT SHALL BE PERIODICALLY INSPECTED TO DETERMINE THE AMOUNT OF ACCUMULATED POLLUTANTS AND TO ENSURE THAT THE CLEANOUT FREQUENCY IS ADEQUATE TO HANDLE THE PREDICTED POLLUTANT LOAD BEING PROCESSED BY THE CDS UNIT. THE RECOMMENDED CLEANOUT OF SOLIDS WITHIN THE CDS UNIT'S SUMP SHALL OCCUR AT 75% OF THE SUMP CAPACITY.  
AFTER INITIAL INSTALLATION, CHECK THE CONDITION OF THE UNIT AFTER EVERY RUNOFF EVENT FOR THE FIRST 30 DAYS. THE VISUAL INSPECTION SHALL ASCERTAIN THAT THE UNIT IS FUNCTIONING PROPERLY (NO CLOGGAGES OR OBSTRUCTIONS TO INLET AND/OR SEPARATION SCREEN), MEASURING THE AMOUNT OF SOLID MATERIALS THAT HAVE ACCUMULATED IN THE SUMP, THE AMOUNT OF FINE SEDIMENT ACCUMULATED BEHIND THE SCREEN, AND DETERMINING THE AMOUNT FLOATING TRASH AND DEBRIS IN THE SEPARATION CHAMBER.  
DURING THE RAINFALL SEASON, THE UNIT SHALL BE INSPECTED AT LEAST ONCE EVERY 30 DAYS. THE FLOATABLES SHALL BE REMOVED AND THE SUMP CLEANED WHEN THE SUMP IS 75% FULL. IF FLOATABLES ACCUMULATE MORE RAPIDLY THAN THE SETTLEABLE SOLIDS, THE FLOATABLES SHALL BE REMOVED USING A VACTOR TRUCK OR DIP NET BEFORE THE LAYER THICKNESS EXCEEDS ONE TO TWO FEET. THE CLEANING OF THE UNIT SHALL TAKE PLACE IN CONJUNCTION WITH ANNUAL CATCH BASIN CLEANING.  
THE CDS UNIT SHALL BE PUMPED DOWN AT LEAST ONCE A YEAR AND A THOROUGH INSPECTION OF THE SEPARATION CHAMBER (INLET/CYLINDER AND SEPARATION SCREEN) AND OIL BAFFLE PERFORMED. THE UNIT'S INTERNAL COMPONENTS SHOULD NOT SHOW ANY SIGNS OF DAMAGE OR ANY LOOSENING OF THE BOLTS USED TO FASTEN THE VARIOUS COMPONENTS TO THE MANHOLE STRUCTURE AND TO EACH OTHER. THE SCREEN SHALL BE POWER WASHED FOR THE INSPECTION.  
GRATES SHALL BE KEEP FREE AND CLEAR OF DEBRIS YEAR ROUND TO ENSURE PROPER FUNCTIONALITY OF THE INLET TREATMENT UNITS.
  - SUBSURFACE INFILTRATION BASINS**  
ONCE THE SYSTEM HAS GONE ONLINE, SUBSURFACE BASINS BE INSPECTED ANNUALLY AND AFTER STORMS EQUAL TO OR GREATER THAN THE 1-YEAR, 24-HOUR TYPE III STORM EVENT TO ENSURE PROPER STABILIZATION AND FUNCTION. ATTENTION SHALL BE PAID TO HOW LONG WATER REMAINS STANDING IN THE CHAMBERS AFTER A STORM. THEREAFTER, THE SYSTEM SHALL BE INSPECTED AT LEAST TWICE PER YEAR. OBSERVATIONS AND MEASUREMENTS SHALL BE MADE FROM THE 6" OBSERVATION PORTS LOCATED IN EACH ROW OF UNITS IN THE FIELD. IMPORTANT ITEMS TO CHECK FOR INCLUDE: DIFFERENTIAL SETTLEMENT, CRACKING, EROSION OR LEAKAGE. IF THE SYSTEM APPEARS TO BE CLOGGED OR NOT FUNCTIONING PROPERLY AT ANY TIME, THE SYSTEM IS TO BE FLUSHED IN ACCORDANCE WITH THE 10 YEAR MAINTENANCE PROCEDURE LISTED BELOW. SEDIMENT SHALL BE REMOVED FROM THE SYSTEM AS NECESSARY. REMOVAL PROCEDURES SHALL NOT TAKE PLACE UNTIL THE PIPES IN THE SYSTEM ARE THOROUGHLY DRY. A VACUUM TRUCK IS USUALLY THE MOST EFFECTIVE AND CONVENIENT METHOD. IF THE SEDIMENT HAS TRAVELED PAST THE REACH OF THE VACUUM TRUCK THE SYSTEM SHALL BE THOROUGHLY FLUSHED WITH WATER, A FIRE HOSE OR THE LIKE IS TYPICALLY THE MOST EFFECTIVE METHOD OF FLUSHING. THE MANHOLE DOWNSTREAM OF THIS PROCESS SHALL BE PLUGGED AND SEDIMENT COLLECTED AT THIS POINT.  
IF INSPECTION OF THE INFLOW POINT INDICATES SEDIMENTS ARE ACCUMULATING, REMOVAL OF SEDIMENT WITHIN THE BASIN MAY BE REQUIRED. REMOVE SEDIMENTS FROM THE CATCH BASIN DISCHARGE PIPES WHICH OUTLET INTO THE BASIN. SEDIMENT SHALL BE FLUSHED FROM THE BASIN AT LEAST ONCE EVERY 10 YEARS. SEDIMENTS SHALL BE FLUSHED AND CAPTURED ON THE OUTLET SIDE OF THE BASIN PRIOR TO DISCHARGE. IF THE SEDIMENT HAS TRAVELED PAST THE REACH OF A VACUUM TRUCK THE SYSTEM SHALL BE THOROUGHLY FLUSHED WITH WATER, A FIRE HOSE OR THE LIKE IS TYPICALLY THE MOST EFFECTIVE METHOD OF FLUSHING. THE MANHOLE DOWNSTREAM OF THIS PROCESS SHALL BE PLUGGED AND SEDIMENT COLLECTED AT THIS POINT. SEDIMENT WHICH IS REMOVED SHALL BE LEGALLY DISPOSED OF.

THE SYSTEM SHALL BE MONITORED AT SEVERAL INTERVALS DURING AND AFTER A SMALL AND LARGE RAINFALL EVENT TO ENSURE RUNOFF IS DETAINED FROM OBSERVATION WELLS SHALL BE INSTALLED IN EACH CHAMBER SYSTEM, CONSISTING OF AN ANCHORED 4- INCH DIAMETER PERFORATED PVC PIPE WITH A LOCKABLE CAP INSTALLED FLUSH WITH THE GROUND SURFACE. THE APPROVING AGENCY MAY REQUIRE MULTIPLE OBSERVATION WELLS FOR LARGE UNDERGROUND CHAMBER SYSTEMS. INLET AND OUTLET PIPES SHALL BE KEPT FREE OF OBSTRUCTIONS. ANY MATERIAL OBSTRUCTING THE PIPES SHALL BE REMOVED AND LEGALLY DISPOSED OF.

**-STORMWATER OUTFALLS / DISCHARGES**

SPRING MAINTENANCE  
THE STORMWATER OUTFALL REQUIRES FOUR ANNUAL INSPECTIONS FOR NECESSARY MAINTENANCE (ONE EACH SEASON OF THE YEAR). THIS CONSISTS OF VISUALLY INSPECTING THE STORMWATER OUTFALLS FOR THE ACCUMULATION OF SEDIMENT; OBSTRUCTIONS TO OUTLET PIPES; EROSION; AND CRACKING OR TREE GROWTH ON THE EMBANKMENT.

NO SEDIMENT SHOULD PASS THROUGH THE STORMWATER OUTFALL ON TO ADJACENT PROPERTIES. IF INSPECTION OF THE DISCHARGE POINT OF THE OUTFLOW PIPE INDICATES SEDIMENTS ARE ACCUMULATING, REMOVAL OF SEDIMENT WITHIN THE STORMWATER OUTFALLS IS REQUIRED. ONCE THE OUTFALL IS CLEANED ALL CATCH BASINS DISCHARGING TO THE OUTFALL SHALL BE CLEANED AND INSPECTED FOR THE CAUSE OF THE SEDIMENT ACCUMULATION AT THE STORMWATER OUTFALL.

THE STORMWATER OUTFALLS SHALL BE MONITORED AT SEVERAL INTERVALS DURING AND AFTER A SMALL AND LARGE RAINFALL EVENT TO ENSURE RUNOFF IS NOT CAUSING EROSION TO THE BANK OR INTO THE RESOURCE AREA. IF EROSION AT THE STORMWATER OUTFALL IS DETECTED, THE OUTLET RIP-RAP SHALL BE RECONSTRUCTED TO PROVIDE THE REQUIRED VELOCITY DISPERSION NEEDED TO PREVENT POINT SOURCE EROSION.



**DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
DIVISION OF WATER RESOURCES (DWR)  
SEWER LINE/WATER MAIN SEPARATION POLICY  
FOR DESIGN OF SANITARY SEWERS**

**A. LATERAL PLACEMENT OF SEWERS AND WATER MAINS**

SEWERS SHALL BE LAID AT LEAST 10 FEET HORIZONTALLY FROM ANY EXISTING OR PROPOSED WATER MAIN. THE DISTANCE SHALL BE MEASURED FROM THE CENTERLINE OF THE WATER MAIN TO THE CENTERLINE OF THE SEWER. THERE IS NO MINIMUM VERTICAL SEPARATION REQUIRED PROVIDED THE 10 FOOT HORIZONTAL SEPARATION IS MAINTAINED.

- THE SEWER AND WATER MAIN ARE LAID IN SEPARATE TRENCHES, OR
- THE SEWER AND WATER MAIN MAY BE INSTALLED IN THE SAME TRENCH WITH THE WATER MAIN PLACED ON A BENCH OF UNDISTURBED EARTH, AND
- IN EITHER CASE, THE CROWN OF THE SEWER SHALL BE AT LEAST 18 INCHES BELOW THE INVERT OF THE WATER MAIN.

IN SITUATIONS WHERE IT IS IMPOSSIBLE TO OBTAIN PROPER HORIZONTAL AND VERTICAL SEPARATION AS STIPULATED ABOVE, THE FOLLOWING PROTECTION SHALL BE PROVIDED:

- ENCASMENT OF THE SEWER PIPE IN CONCRETE (MIN. 6 INCH THICKNESS) OR A CARRIER PIPE FOR AT LEAST 10 FEET EITHER SIDE OF THE WATER MAIN.
- DESIGN AND CONSTRUCTION OF THE SEWER EQUAL TO WATER MAIN PIPE (CEMENT-LINED DUCTILE IRON OR OTHER AWWA-APPROVED MATERIAL FOR POTABLE WATER CONVEYANCE), AND PRESSURE TESTED IN ACCORDANCE WITH AWWA SPECIFICATIONS.

**B. SEWERS CROSSING WATER MAINS**

SEWERS CROSSING OVER WATER MAINS SHOULD BE AVOIDED, BUT IF CONDITIONS WARRANT THIS SITUATION, THEN ADEQUATE STRUCTURAL SUPPORT SHALL BE PROVIDED FOR THE SEWER TO MAINTAIN LINE AND GRADE. SEWERS CROSSING UNDER WATER MAINS SHALL BE LAID TO PROVIDE A MINIMUM VERTICAL SEPARATION OF 18 INCHES BETWEEN THE INVERT OF THE WATER MAIN AND THE CROWN OF THE SEWER. RELOCATION OF AN EXISTING WATER MAIN MAY BE NECESSARY TO ACHIEVE THIS VERTICAL SEPARATION. RELOCATED WATER MAIN SHALL BE CONSTRUCTED OF AN AWWA-APPROVED MATERIAL FOR POTABLE WATER CONVEYANCE AND DESIGNED FOR THE REQUIRED WATER SERVICE PRESSURE FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE CROSSING, MEASURED PERPENDICULAR TO THE SEWER. THE CROSSING SHALL BE ARRANGED SO THAT THE SEWER JOINTS WILL BE EQUIDISTANT AND AS FAR AS POSSIBLE FROM THE WATER MAIN JOINTS.

WHERE CONDITIONS PREVENT AN 18 INCH VERTICAL SEPARATION FROM BEING MAINTAINED, THE FOLLOWING METHODS SHALL BE SPECIFIED:

- THE SEWER SHALL BE DESIGNED AND CONSTRUCTED EQUAL TO WATER MAIN PIPE (CEMENT-LINED DUCTILE IRON PIPE, PVC OR OTHER AWWA-APPROVED MATERIAL FOR POTABLE WATER CONVEYANCE) FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE CROSSING, MEASURED PERPENDICULAR TO THE WATER MAIN AND PRESSURE TESTED IN ACCORDANCE WITH AWWA SPECIFICATIONS, OR
- EITHER THE WATER MAIN OR THE SEWER MAY BE ENCASED IN CONCRETE (MIN. 6 INCH THICKNESS) OR A CARRIER PIPE FOR A DISTANCE OF 10 FEET ON EACH SIDE OF THE CROSSING, MEASURED PERPENDICULAR TO THE WATER MAIN. THE CARRIER PIPE SHALL BE DESIGNED AND CONSTRUCTED OF MATERIALS WHICH ARE SATISFACTORY TO THE DIVISION, OR
- ANY OTHER METHODS, IF SUPPORTED BY DATA FROM THE DESIGN ENGINEER, WHICH ENSURE ADEQUATE WATERTIGHTNESS AND ARE SATISFACTORY TO THE DIVISION.

**OWNER / APPLICANT:**

ATLANTIC NE PROPERTY MANAGEMENT, LLC  
678 GEORGE WASHINGTON HIGHWAY  
LINCOLN, RHODE ISLAND 02865

**ASSESSORS MAP/PARCEL:**

ASSESSOR PLAT 35 - LOT 188

**ZONING DISTRICT:**

R-3: MULTI- HOUSEHOLD DWELLING

- MIN. AREA = 10,000 S.F.
- MIN. AREA PER DWELLING UNIT= 10,000 S.F.
- PLUS 5,000 SF. FOR ADDITIONAL UNITS
- MIN. LOT WIDTH = 40 FT.
- MIN. LOT FRONTAGE = 40 FT.
- MIN. FRONT YARD = 10 FT.
- MIN. SIDE YARD = 10 FT.
- MIN. REAR YARD = 15 FT.
- MAX. LOT COVERAGE = 40%
- MAX. BUILDING HEIGHT = 35 FT.
- (SEE REGULATIONS FOR ADDITIONAL INF..)

**PROJECT INFORMATION:**

TOTAL NUMBER OF TOWNHOUSE UNITS = 114  
LOT AREA REQUIRED = 10,000 SF. + (5,000 SF \* 115) = 585,000 SF.  
LOT AREA PROVIDED = 16,983± AC. OR 739,780 SF.

2 PARKING SPACES PROVIDED FOR EACH UNIT:  
(1 DRIVEWAY & 1 GARAGE) = 230 SPACES  
35 VISITOR PARKING SPACES PROVIDED THROUGHOUT DEVELOPMENT  
TOTAL PARKING PROVIDED = 265 SPACES

MASTER PLAN APPROVAL FROM CUMBERLAND PLANNING BOARD  
OBTAINED ON FEBRUARY 28, 2018, PRELIMINARY PLAN APPROVAL  
OBTAINED ON SEPTEMBER 28, 2018.

APPROVED  
FINAL PLAN REVIEW  
PLANNING BOARD  
DRAW NO.:  
SHEET NO.:  
PLAT/LOT

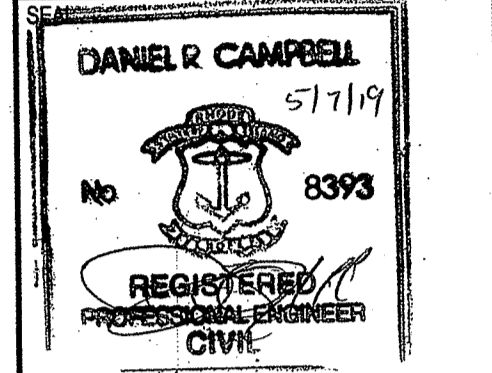
ADMINISTRATIVE OFFICER  
DATE:

**PROPERTY ADDRESS:**

0 MEADOWBROOK DR  
CUMBERLAND, RHODE ISLAND 02864

LEGEND	
EXISTING	PROPOSED
---100---	---100---
D	STORM DRAIN
W	WATER
⊙	ELECTRIC MANHOLE
E	ELECTRICAL
G	GAS
S	SANITARY SEWER
⊕	HYDRANT
⊙	SEWER MANHOLE
⊙	DRAIN MANHOLE
⊕	VALVE
□-D	CATCH BASIN
	CURB
429.5	SPOT GRADE
HP	RAMP
X	HAY BALES W/ SILTATION FENCE
⊙	LIGHT POLE
⊙	TREE
⊙	UTILITY POLE
⊕	POST INDICATOR VALVE
→	TRAFFIC DIRECTION

NO	DATE	REVISIONS
1	08/27/2018	PRELIMINARY PLAN SUBMISSION
2	09/28/2018	PRELIMINARY PLAN APPROVAL
3	02/20/2019	RIDEM COMMENTS
3	05/07/2019	RIDEM COMMENTS



DATE: MAY 17, 2019  
DRAWN: NFI/DRC  
SCALE: NTS

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED 07/20/19 FILE # 19-0070  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

**HUNTING HILL**  
 MAJOR LAND DEVELOPMENT PROJECT  
 FINAL PLAN SUBMISSION  
 AP 35, LOT 188  
 CUMBERLAND, RHODE ISLAND 02864

**LEVEL**  
DESIGN GROUP  
CIVIL ENGINEERING  
249 SOUTH STREET  
UNIT 1  
PLAINVILLE, MA 02762  
TEL: (508) 695-2221 FAX: (508) 695-2219

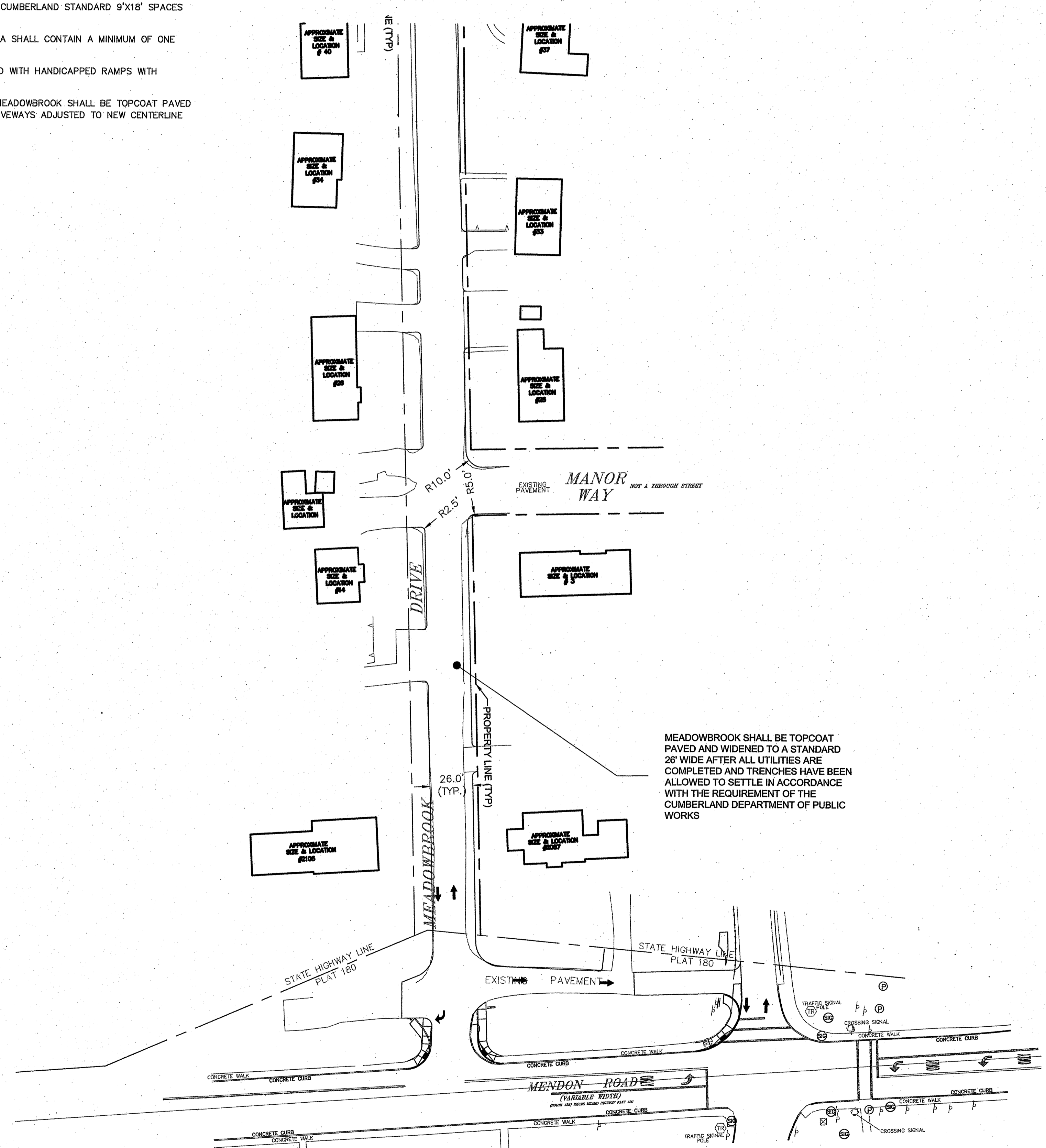
**PLAN NOTES**

**C-1.0**  
SHEET 2 OF 23

**1554.00**

**PLAN NOTES:**

- REFER TO PLANS PREPARED BY PARE ENGINEERING FOR ALL WORK WITHIN THE MENDON ROAD RIGHT-OF-WAY THE DETAIL SHOWN HERE IS ONLY GRAPHIC IN NATURE.
- ALL PARKING AND DRIVEWAYS SHALL CONTAIN BIT. CONC. ASPHALT CURBING OR UNLESS OTHERWISE SPECIFIED
- ALL WALLS SHALL HAVE A MINIMUM 4' TALL BLACK CHAIN LINK FENCE INSTALLED FOR FALL PROTECTION.
- WALLS ADJACENT TO ROADWAY OR PATH OF VEHICULAR TRAVEL SHALL CONTAIN A WOOD GUARDRAIL IF THE WALL RETAINS THE ROAD FROM SURROUNDING GRADE.
- THE MAIN ACCESS DRIVEWAY SHALL BE TRUCK STYLE BITUMINOUS ASPHALT PAVEMENT.
- THE REMAINDER OF THE SITE SHALL CONTAIN AUTOMOTIVE BITUMINOUS ASPHALT PAVEMENT.
- WALLS ARE PROPOSED TO RETAIN SLOPE, SHOULD THE SLOPE BE EXPOSED LEDGE FACE THE WALL CAN BE ELIMINATED IN THESE AREAS AT THE TIME OF CONSTRUCTION AND WITH THE APPROVAL OF THE SITE ENGINEER.
- ALL PARKING ON-SITE SHALL BE CUMBERLAND STANDARD 9'X18' SPACES UNLESS OTHERWISE DETAILED.
- EACH HANDICAPPED PARKING AREA SHALL CONTAIN A MINIMUM OF ONE VAN ACCESSIBLE MARKED SPACE.
- CROSS WALKS SHALL BE EQUIPPED WITH HANDICAPPED RAMPS WITH ASSOCIATED WARNING STRIPS.
- WHEN UTILITIES ARE COMPLETED MEADOWBROOK SHALL BE TOPCOAT PAVED TO 26' WIDTH PAVEMENT WITH DRIVEWAYS ADJUSTED TO NEW CENTERLINE AS DETAILED HEREIN.



WORK WITHIN MENDON ROW SHALL BE PER PARE ENGINEERING PLANS AND APPROVED DOT PERMIT. WORK SHOWN HEREIN IS FOR REFERENCE ONLY AND SHALL NOT BE USED FOR CONSTRUCTION PURPOSES

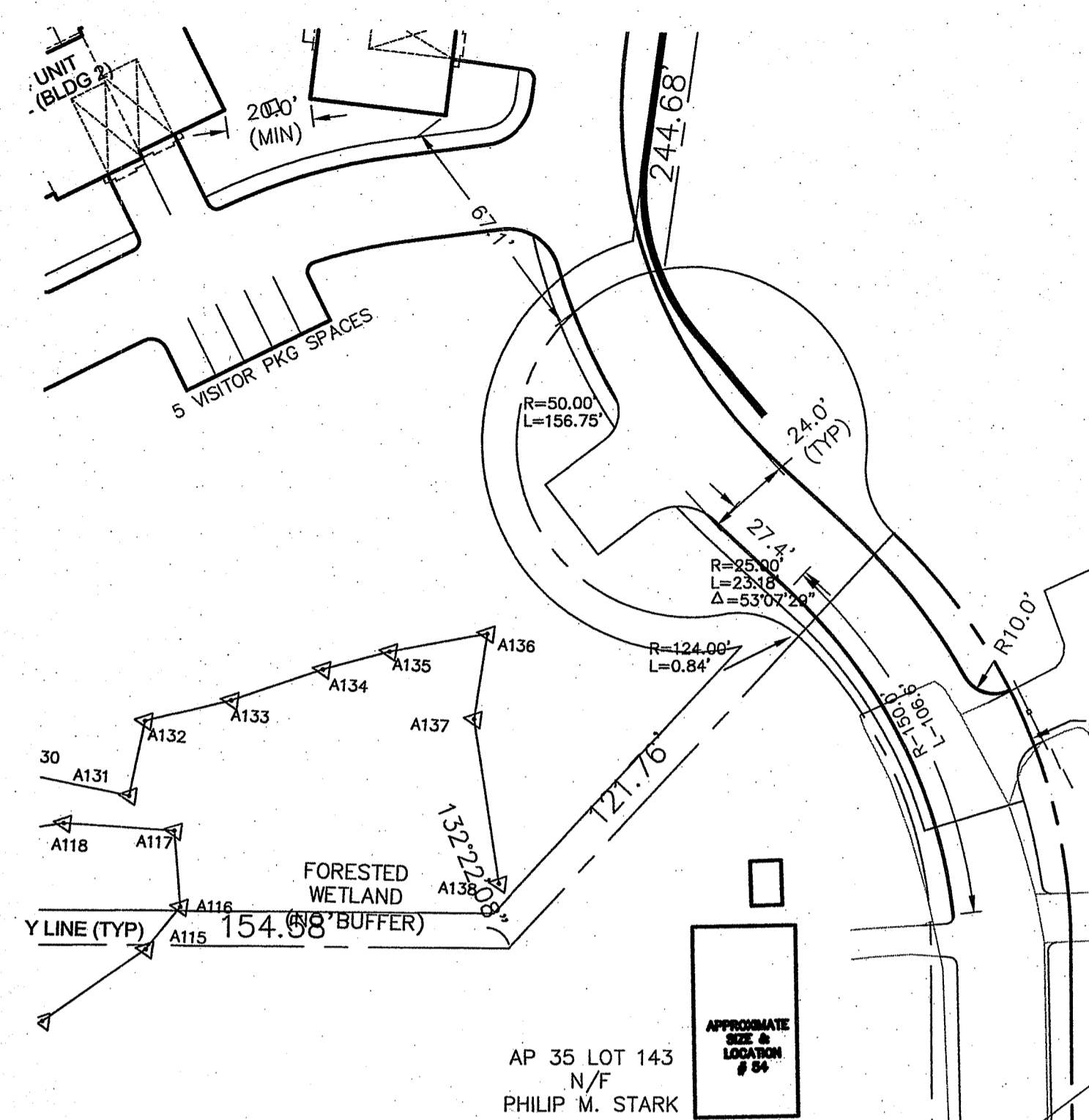
APPROVED  
FINAL PLAN REVIEW  
APPROVED IN ACCORDANCE WITH THE TOWN OF CUMBERLAND SUBDIVISION REGULATIONS.

ADMINISTRATIVE OFFICER  
DATE: \_\_\_\_\_

PLANNING BOARD  
DRAW NO.: \_\_\_\_\_  
SHEET NO.: \_\_\_\_\_  
PLAT/LOT: \_\_\_\_\_

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED APR 07 2019 FILE # 19-0070  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED FOR CONSTRUCTION SITE

*Signature*



MEADOWBROOK SHALL BE TOPCOAT PAVED AND WIDENED TO A STANDARD 26' WIDE AFTER ALL UTILITIES ARE COMPLETED AND TRENCHES HAVE BEEN ALLOWED TO SETTLE IN ACCORDANCE WITH THE REQUIREMENT OF THE CUMBERLAND DEPARTMENT OF PUBLIC WORKS

Environmental Management  
MAY 10 2019  
Office of Water Resources

NO	DATE	REVISIONS
1	06/27/2018	PRELIMINARY PLAN SUBMISSION
2	09/26/2018	PRELIMINARY FINAL APPROVAL
3	10/20/2019	REDEM COMMENTS
4	05/07/2019	REDEM COMMENTS

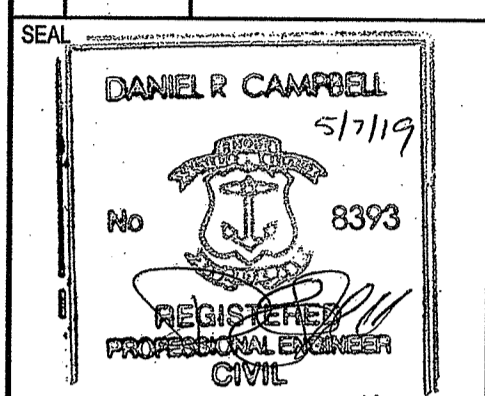
SEAL  
DANIEL R. CAMPBELL  
No. 8393  
REGISTERED PROFESSIONAL ENGINEER  
CIVIL  
DATE: MAY 17, 2019  
DRAWN: NF / DRC  
SCALE: 1" = 40'

**HUNTING HILL**  
MAJOR LAND DEVELOPMENT PROJECT  
FINAL PLAN SUBMISSION  
AP 35, LOT 188  
CUMBERLAND, RHODE ISLAND 02864

**LEVEL**  
DESIGN GROUP  
CIVIL ENGINEERING  
249 SOUTH STREET  
UNIT 1  
PLAINVILLE, MA 02762  
TEL. (508) 695-2221 FAX. (508) 695-2219

LAYOUT & MATERIALS  
**C-2.0**  
SHEET 3 OF 23  
0' 20' 40' 80'  
**1554.00**

NO.	DATE	REVISIONS
1	08/27/2018	PRELIMINARY PLAN SUBMISSION
2	09/28/2018	PRELIMINARY/FINAL APPROVAL
3	02/20/2019	RDEN COMMENTS
4	05/07/2019	RDEN COMMENTS



DATE: MAY 17, 2019  
 DRAWN: NF / DRC  
 SCALE: 1" = 40'

**HUNTING HILL**  
 MAJOR LAND DEVELOPMENT PROJECT  
 FINAL PLAN SUBMISSION  
 AP 35, LOT 188  
 CUMBERLAND, RHODE ISLAND 02864

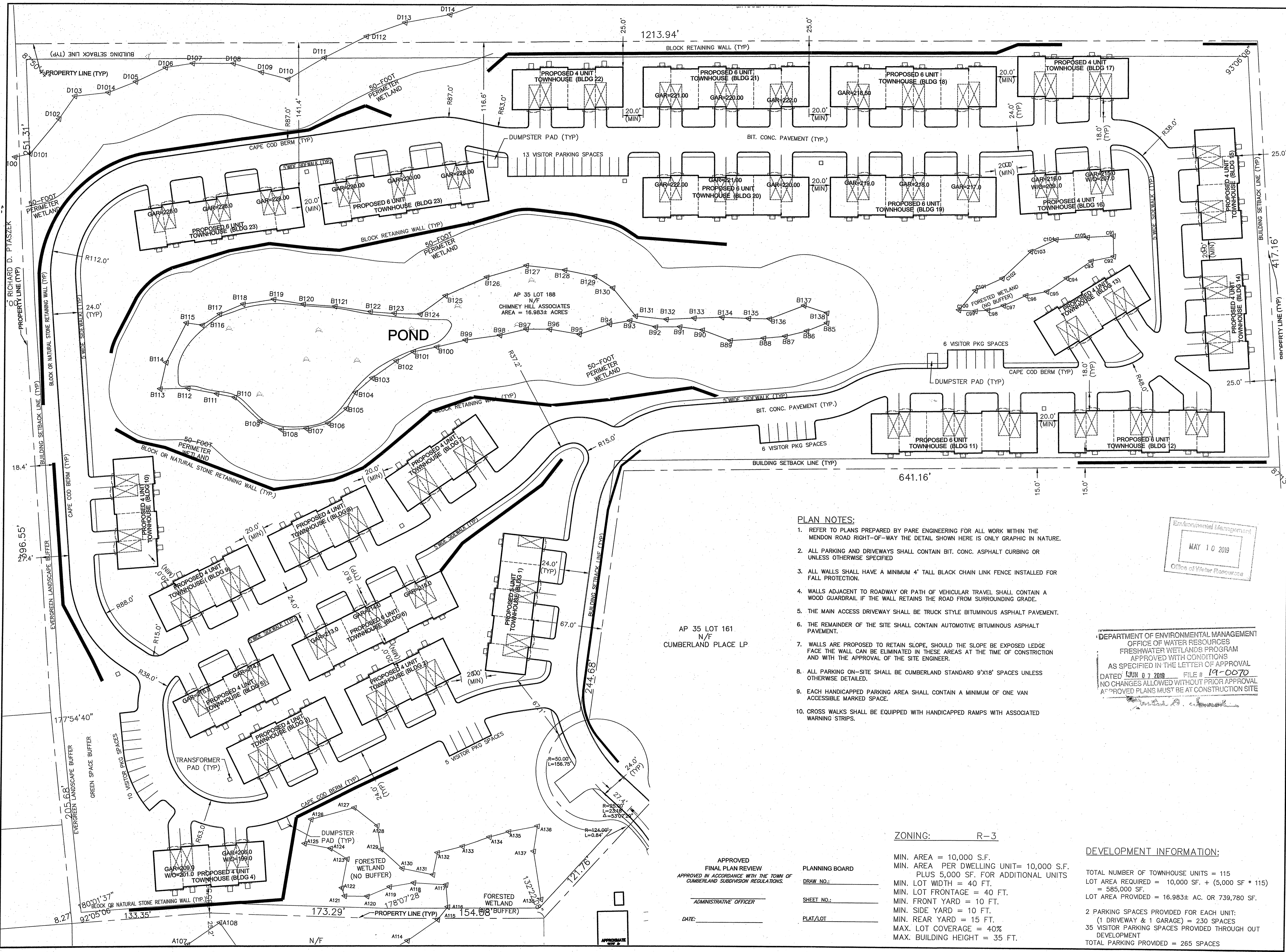
**LEVEL**  
 DESIGN GROUP  
 CIVIL ENGINEERING  
 249 SOUTH STREET  
 UNIT 1  
 PLAINVILLE, MA 02762  
 TEL. (508) 695-2221 FAX. (508) 695-2219

**LAYOUT & MATERIALS**

**C-2.1**  
 SHEET 4 OF 23

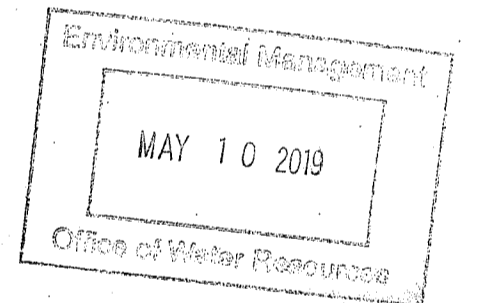
0' 20' 40' 80'

**1554.00**



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DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
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 DATED JUN 07 2019 FILE # 19-0070  
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AP 35 LOT 161  
 N/F  
 CUMBERLAND PLACE LP

APPROVED  
 FINAL PLAN REVIEW  
 APPROVED IN ACCORDANCE WITH THE TOWN OF  
 CUMBERLAND SUBDIVISION REGULATIONS.

ADMINISTRATIVE OFFICER  
 DATE: \_\_\_\_\_

PLANNING BOARD  
 DRAW NO.: \_\_\_\_\_  
 SHEET NO.: \_\_\_\_\_  
 PLAT/LOT \_\_\_\_\_

ZONING: R-3

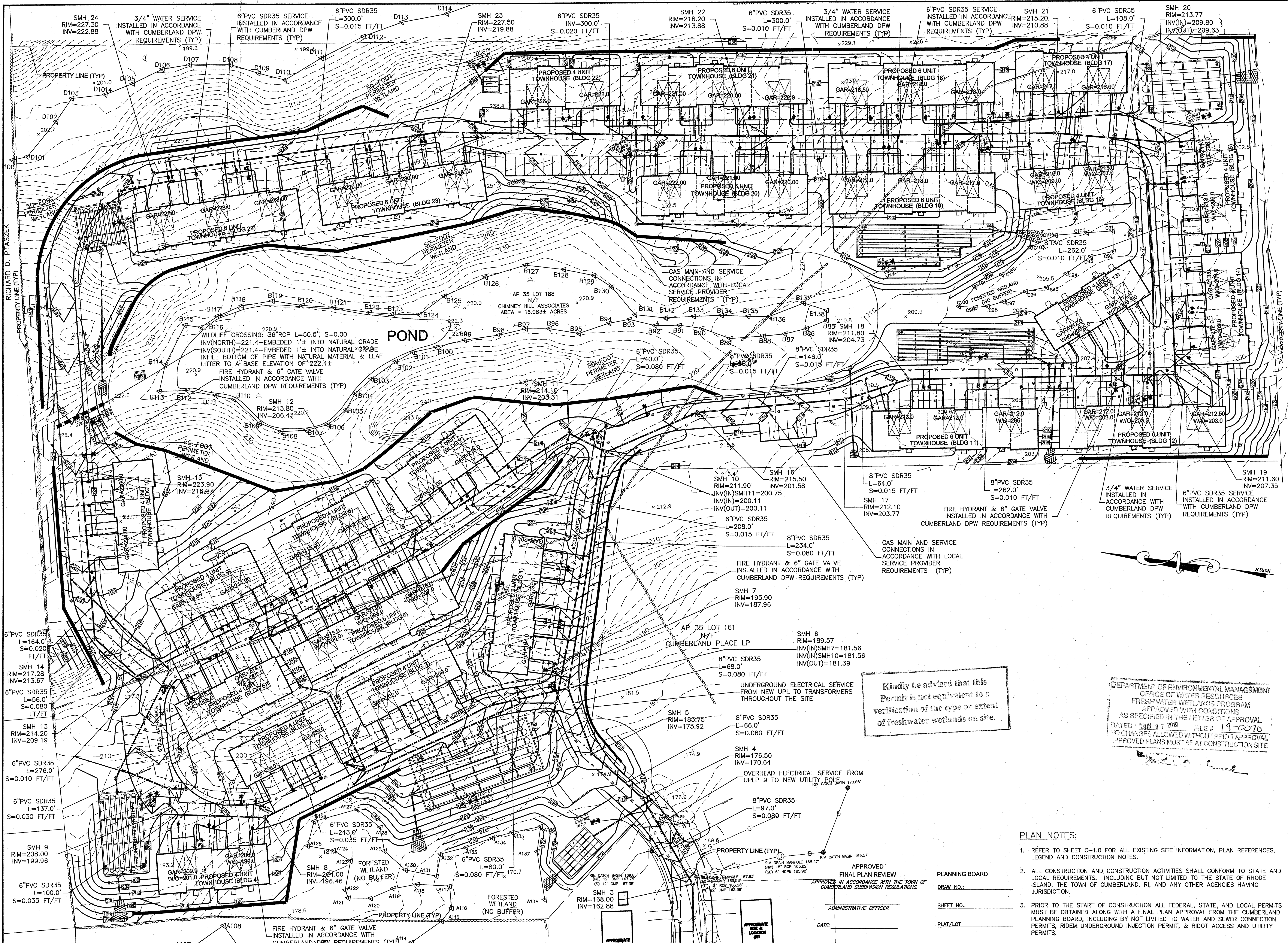
MIN. AREA = 10,000 S.F.  
 MIN. AREA PER DWELLING UNIT = 10,000 S.F.  
 PLUS 5,000 SF. FOR ADDITIONAL UNITS  
 MIN. LOT WIDTH = 40 FT.  
 MIN. LOT FRONTAGE = 40 FT.  
 MIN. FRONT YARD = 10 FT.  
 MIN. SIDE YARD = 10 FT.  
 MIN. REAR YARD = 15 FT.  
 MAX. LOT COVERAGE = 40%  
 MAX. BUILDING HEIGHT = 35 FT.

**DEVELOPMENT INFORMATION:**

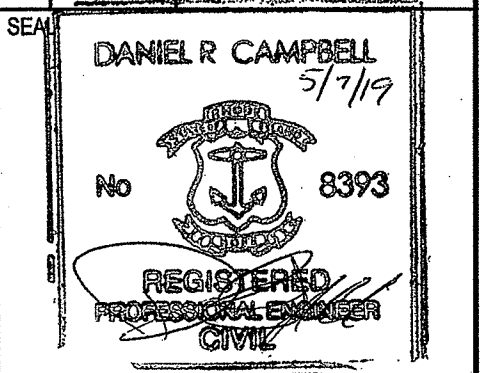
TOTAL NUMBER OF TOWNHOUSE UNITS = 115  
 LOT AREA REQUIRED = 10,000 SF. + (5,000 SF \* 115)  
 = 585,000 SF.  
 LOT AREA PROVIDED = 16,983± AC. OR 739,780 SF.

2 PARKING SPACES PROVIDED FOR EACH UNIT.  
 (1 DRIVEWAY & 1 GARAGE) = 230 SPACES  
 35 VISITOR PARKING SPACES PROVIDED THROUGH OUT  
 DEVELOPMENT  
 TOTAL PARKING PROVIDED = 265 SPACES

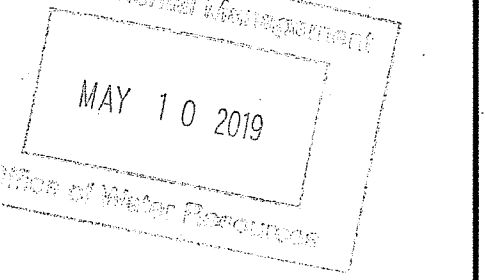




NO	DATE	REVISIONS
1	06/27/2018	PRELIMINARY PLAN SUBMISSION
2	09/28/2018	PRELIMINARY FINAL APPROVAL
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DATE: MAY 17, 2018  
 DRAWN: NF / DRC  
 SCALE: 1" = 40'



**HUNTING HILL**  
 MAJOR LAND DEVELOPMENT PROJECT  
 FINAL PLAN SUBMISSION  
 AP 35, LOT 188  
 CUMBERLAND, RHODE ISLAND 02864

**LEVEL**  
 DESIGN GROUP  
 CIVIL ENGINEERING  
 249 SOUTH STREET  
 UNIT 1  
 PLAINVILLE, MA 02762  
 TEL. (508) 686-2221 FAX. (508) 686-2219

**UTILITIES & GRADING**

**C-3.1**  
 SHEET 6 OF 23

1554.00

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

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
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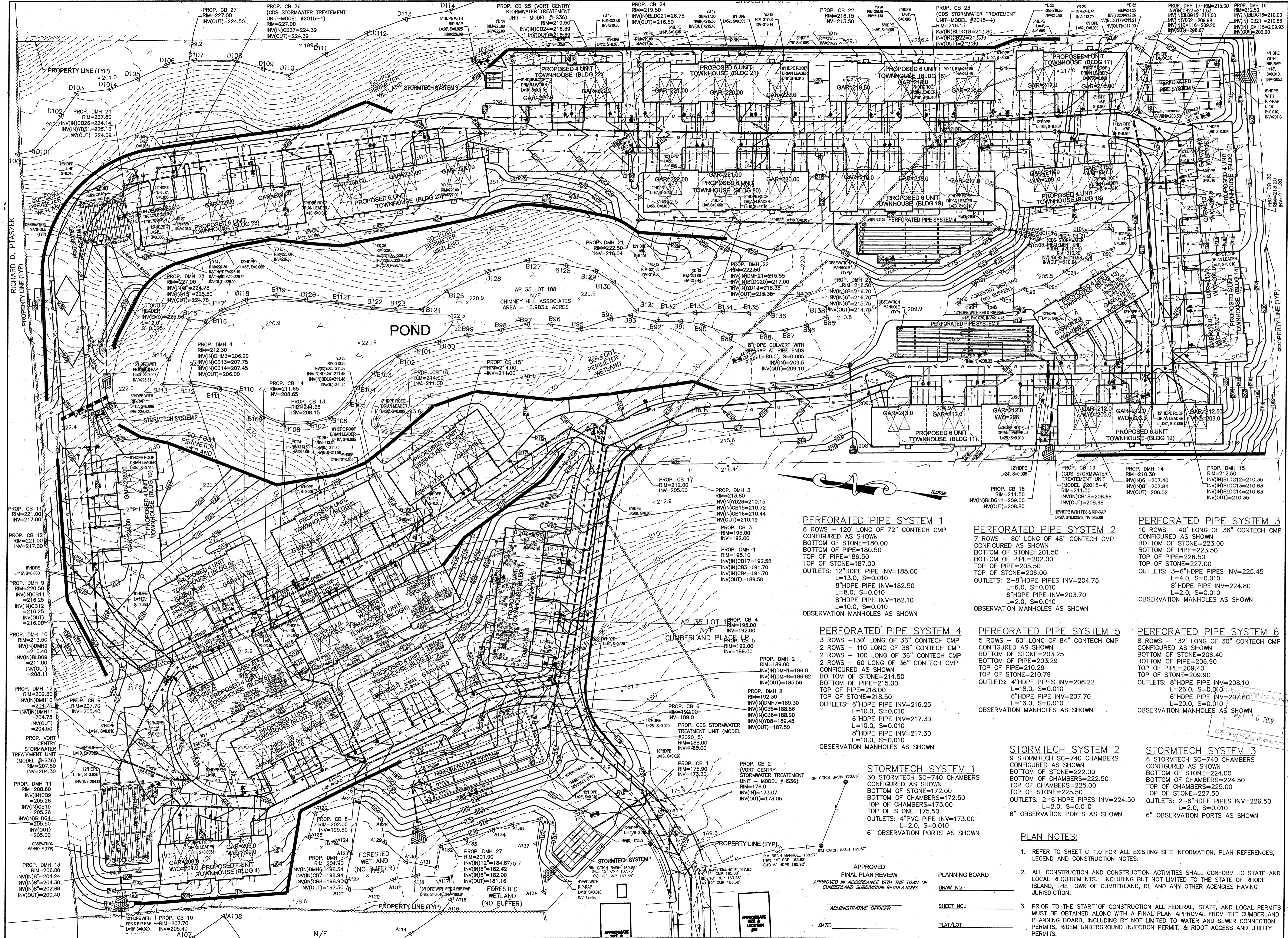
**PLAN NOTES:**

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APPROVED  
 FINAL PLAN REVIEW  
 APPROVED IN ACCORDANCE WITH THE TOWN OF CUMBERLAND SUBDIVISION REGULATIONS.

PLANNING BOARD  
 DRAW NO.:  
 SHEET NO.:  
 PLAT/LOT

ADMINISTRATIVE OFFICER  
 DATE:



NO	DATE	REVISIONS
1	06/27/2018	PRELIMINARY PLAN SUBMISSION
2	08/28/2018	PRELIMINARY FINAL APPROVAL
3	02/20/2019	RIDEM COMMENTS
4	05/07/2019	RIDEM COMMENTS

DATE: MAY 17, 2018  
 DRAWN: NF7 DRC  
 SCALE: 1" = 40'

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED JUN. 01, 2019 FILE # 17-COZO  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

# HUNTING HILL

## MAJOR LAND DEVELOPMENT PROJECT

### FINAL PLAN SUBMISSION

#### AP 35, LOT 188

#### CUMBERLAND, RHODE ISLAND 02864

**LEVEL**  
 DESIGN GROUP  
 CIVIL ENGINEERING  
 249 SOUTH STREET  
 UNIT 1  
 PLAINVILLE, MA 02762  
 TEL. (508) 685-2221 FAX. (508) 695-2919

**DRAINAGE & GRADING**

# C-4.0

SHEET 7 OF 23

0' 20' 40' 80'

# 1554.00

**PERFORATED PIPE SYSTEM 1**  
 6 ROWS - 120' LONG OF 72" CONTECH CMP  
 CONFIGURED AS SHOWN  
 BOTTOM OF STONE=180.00  
 TOP OF PIPE=180.50  
 TOP OF STONE=186.50  
 OUTLETS: 12" HDPE PIPE INV=185.00  
 L=13.0, S=0.010  
 8" HDPE PIPE INV=182.50  
 L=8.0, S=0.010  
 8" HDPE PIPE INV=182.10  
 L=10.0, S=0.010  
 OBSERVATION MANHOLES AS SHOWN

**PERFORATED PIPE SYSTEM 2**  
 7 ROWS - 80' LONG OF 48" CONTECH CMP  
 CONFIGURED AS SHOWN  
 BOTTOM OF STONE=201.50  
 TOP OF PIPE=202.00  
 TOP OF STONE=205.50  
 OUTLETS: 2-8" HDPE PIPES INV=204.75  
 L=6.0, S=0.010  
 8" HDPE PIPE INV=203.70  
 L=2.0, S=0.010  
 OBSERVATION MANHOLES AS SHOWN

**PERFORATED PIPE SYSTEM 3**  
 10 ROWS - 40' LONG OF 36" CONTECH CMP  
 CONFIGURED AS SHOWN  
 BOTTOM OF STONE=223.00  
 BOTTOM OF PIPE=223.50  
 TOP OF PIPE=227.00  
 TOP OF STONE=227.00  
 OUTLETS: 3-6" HDPE PIPES INV=225.45  
 L=4.0, S=0.010  
 8" HDPE PIPE INV=224.80  
 L=2.0, S=0.010  
 OBSERVATION MANHOLES AS SHOWN

**PERFORATED PIPE SYSTEM 4**  
 3 ROWS - 130' LONG OF 36" CONTECH CMP  
 2 ROWS - 110' LONG OF 36" CONTECH CMP  
 2 ROWS - 100' LONG OF 36" CONTECH CMP  
 2 ROWS - 60' LONG OF 36" CONTECH CMP  
 CONFIGURED AS SHOWN  
 BOTTOM OF STONE=214.50  
 BOTTOM OF PIPE=215.00  
 TOP OF PIPE=218.50  
 TOP OF STONE=218.50  
 OUTLETS: 6" HDPE PIPE INV=216.25  
 L=10.0, S=0.010  
 6" HDPE PIPE INV=217.30  
 L=10.0, S=0.010  
 8" HDPE PIPE INV=217.30  
 L=10.0, S=0.010  
 OBSERVATION MANHOLES AS SHOWN

**PERFORATED PIPE SYSTEM 5**  
 5 ROWS - 60' LONG OF 84" CONTECH CMP  
 CONFIGURED AS SHOWN  
 BOTTOM OF STONE=203.25  
 BOTTOM OF PIPE=203.25  
 TOP OF PIPE=210.29  
 TOP OF STONE=210.79  
 OUTLETS: 4" HDPE PIPES INV=206.22  
 L=18.0, S=0.010  
 6" HDPE PIPE INV=207.70  
 L=16.0, S=0.010  
 OBSERVATION MANHOLES AS SHOWN

**PERFORATED PIPE SYSTEM 6**  
 8 ROWS - 132' LONG OF 30" CONTECH CMP  
 CONFIGURED AS SHOWN  
 BOTTOM OF STONE=206.40  
 BOTTOM OF PIPE=206.90  
 TOP OF PIPE=209.40  
 TOP OF STONE=209.90  
 OUTLETS: 8" HDPE PIPES INV=208.10  
 L=26.0, S=0.010  
 6" HDPE PIPE INV=207.60  
 L=20.0, S=0.010  
 OBSERVATION MANHOLES AS SHOWN

**STORMTECH SYSTEM 1**  
 30 STORMTECH SC-740 CHAMBERS  
 CONFIGURED AS SHOWN  
 BOTTOM OF STONE=172.00  
 BOTTOM OF CHAMBERS=172.50  
 TOP OF CHAMBERS=175.00  
 TOP OF STONE=175.50  
 OUTLETS: 4" PVC PIPE INV=173.00  
 L=2.0, S=0.010  
 6" OBSERVATION PORTS AS SHOWN

**STORMTECH SYSTEM 2**  
 9 STORMTECH SC-740 CHAMBERS  
 CONFIGURED AS SHOWN  
 BOTTOM OF STONE=222.00  
 BOTTOM OF CHAMBERS=222.50  
 TOP OF CHAMBERS=225.00  
 TOP OF STONE=225.50  
 OUTLETS: 2-6" HDPE PIPES INV=224.50  
 L=2.0, S=0.010  
 6" OBSERVATION PORTS AS SHOWN

**STORMTECH SYSTEM 3**  
 6 STORMTECH SC-740 CHAMBERS  
 CONFIGURED AS SHOWN  
 BOTTOM OF STONE=224.00  
 BOTTOM OF CHAMBERS=224.50  
 TOP OF CHAMBERS=225.00  
 TOP OF STONE=225.50  
 OUTLETS: 2-6" HDPE PIPES INV=226.50  
 L=2.0, S=0.010  
 6" OBSERVATION PORTS AS SHOWN

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APPROVED  
 FINAL PLAN REVIEW  
 APPROVED IN ACCORDANCE WITH THE TOWN OF  
 CUMBERLAND SUBDIVISION REGULATIONS.

ADMINISTRATIVE OFFICER

DATE:

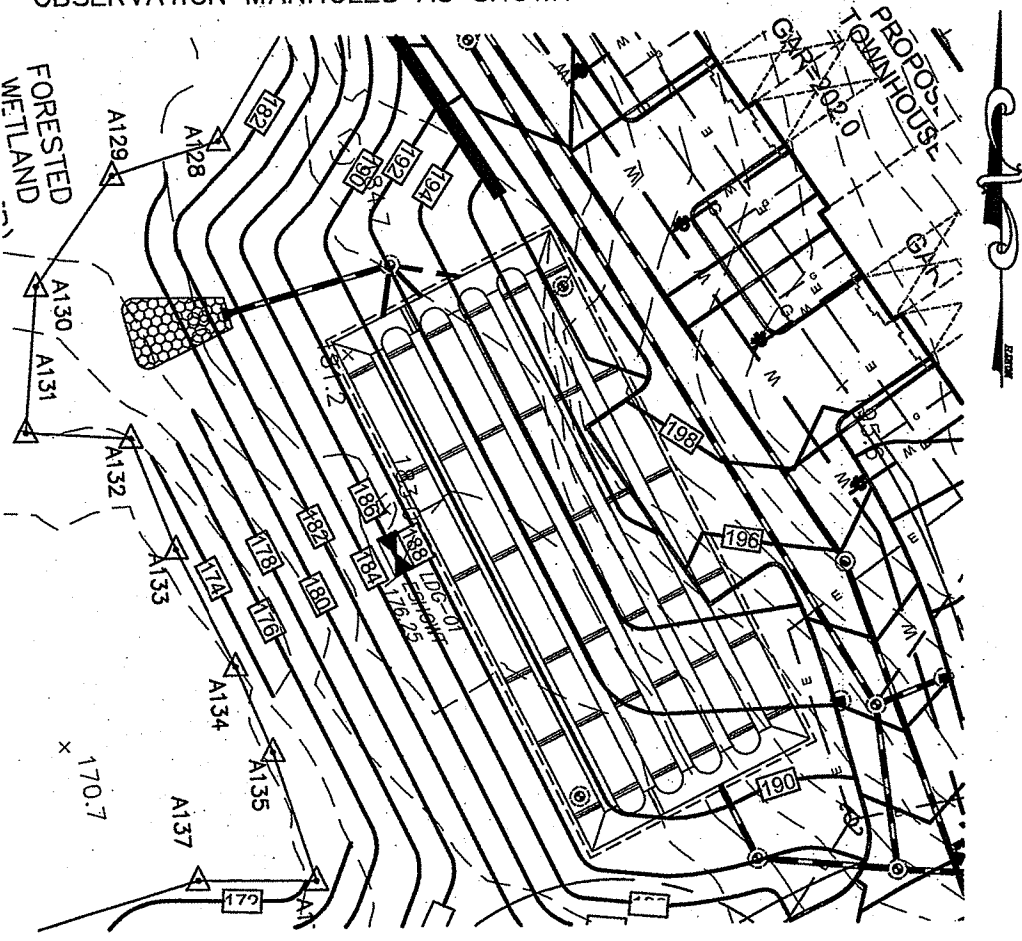
PLANNING BOARD  
 DRAW NO.:

SHEET NO.:

PLAT/LOT

**PERFORATED PIPE SYSTEM 1**

6 ROWS - 120' LONG OF 72" CONTECH CMP CONFIGURED AS SHOWN  
 BOTTOM OF STONE=180.00  
 BOTTOM OF PIPE=180.50  
 TOP OF PIPE=185.50  
 TOP OF STONE=187.00  
 OUTLETS: 12" HDPE PIPE INV=185.00  
 L=13.0, S=0.010  
 8" HDPE PIPE INV=182.50  
 L=8.0, S=0.010  
 8" HDPE PIPE INV=182.10  
 L=10.0, S=0.010  
 OBSERVATION MANHOLES AS SHOWN



PLAN  
SCALE: 1"=40'

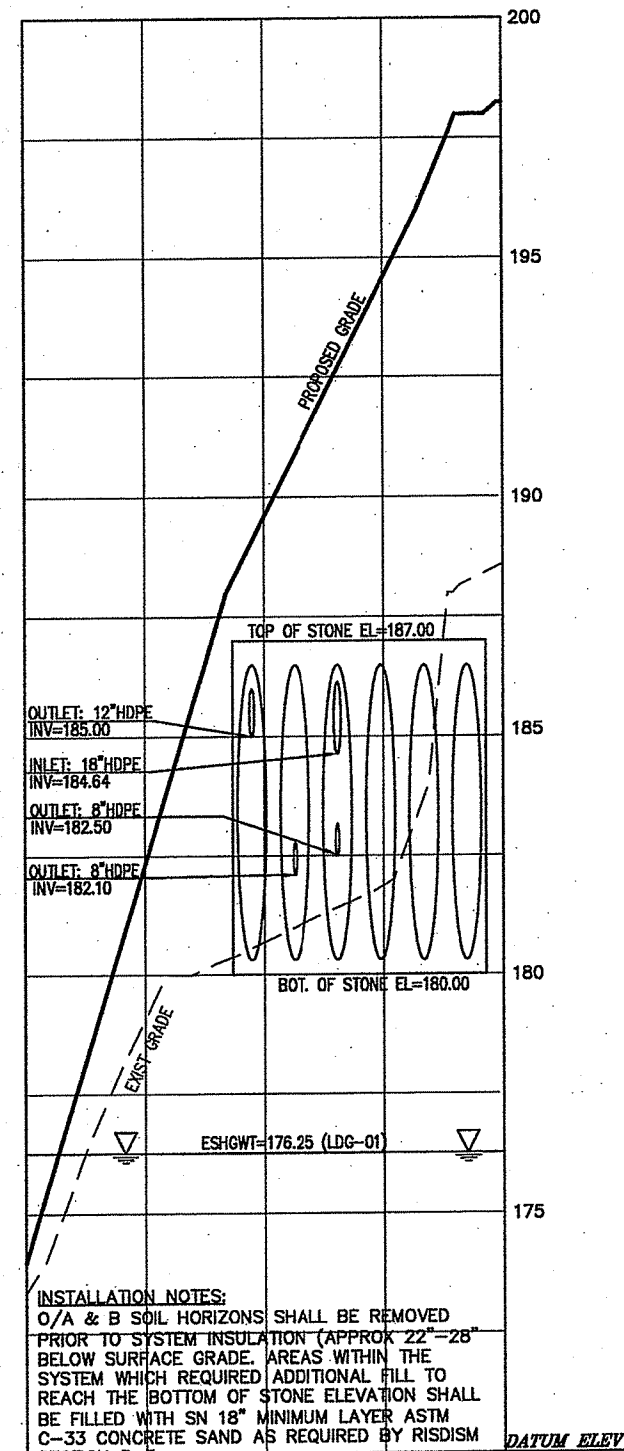
**CONTECH INFORMATION FOR PERFORATED PIPE SYSTEM 1**

**CALCULATION DETAILS**  
 • LENGTH PER BARREL = 120.0'  
 • LENGTH PER HEADER = NONE  
 • LOADING = H-20  
 • APPROX. CMP FOOTAGE = 720.0'

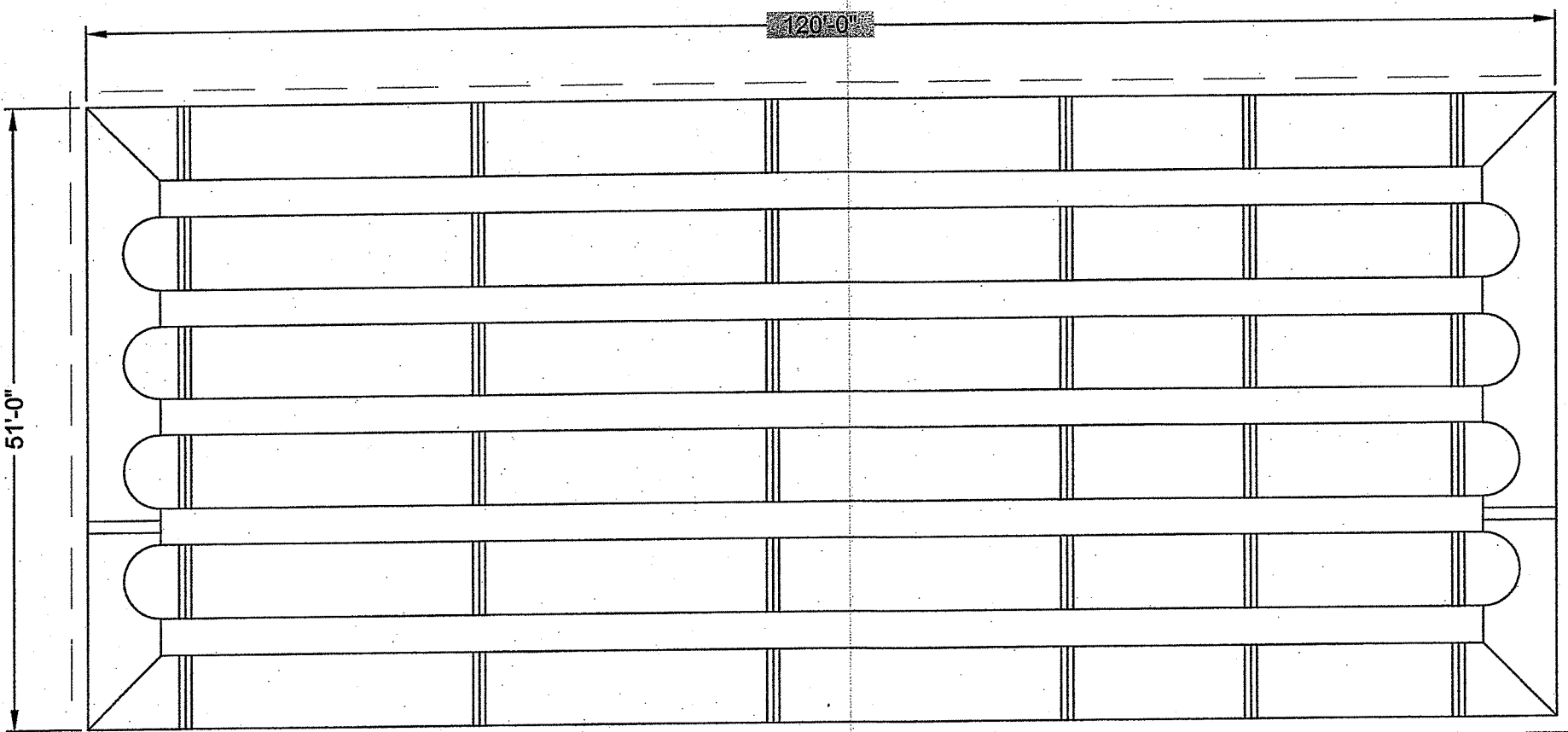
**PIPE DETAILS**  
 • DIAMETER = 72"  
 • CORRUGATION = YES  
 • BARREL SPACING = 36"

**BACKFILL DETAILS**  
 • WIDTH AT ENDS = 12"  
 • ABOVE PIPE = 6"  
 • WIDTH AT SIDES = 12"  
 • BELOW PIPE = 6"

**STORAGE SUMMARY**  
 • PIPE STORAGE = 20,357.5 FT<sup>3</sup>  
 • STRUCTURAL BACKFILL STORAGE = 9,951.8 FT<sup>3</sup>  
 • TOTAL STORAGE PROVIDED = 30,309.3 FT<sup>3</sup>



PROFILE  
SCALE: 1"=40' - H  
SCALE: 1"=4' - V



SYSTEM LAYOUT  
N.T.S.

**CONTECH NOTES:**

- THESE DRAWINGS ARE FOR CONCEPTUAL PURPOSES AND DO NOT REFLECT ANY LOCAL PREFERENCES OR REGULATIONS. PLEASE CONTACT YOUR LOCAL CONTECH REP FOR MODIFICATIONS.
- THE DESIGN AND INFORMATION SHOWN ON THIS DRAWING IS PROVIDED AS A SERVICE TO THE PROJECT OWNER, ENGINEER AND CONTRACTOR BY CONTECH ENGINEERED SOLUTIONS LLC ("CONTECH"). NEITHER THIS DRAWING, NOR ANY PART THEREOF, MAY BE USED, REPRODUCED OR MODIFIED IN ANY MANNER WITHOUT THE PRIOR WRITTEN CONSENT OF CONTECH. FAILURE TO COMPLY IS DONE AT THE USER'S OWN RISK AND CONTECH EXPRESSLY DISCLAIMS ANY LIABILITY OR RESPONSIBILITY FOR SUCH USE.
- IF DISCREPANCIES BETWEEN THE SUPPLIED INFORMATION UPON WHICH THE DRAWING IS BASED AND ACTUAL FIELD CONDITIONS ARE ENCOUNTERED AS SITE WORK PROGRESSES, THESE DISCREPANCIES MUST BE REPORTED TO CONTECH IMMEDIATELY FOR RE-EVALUATION OF THE DESIGN. CONTECH ACCEPTS NO LIABILITY FOR DESIGNS BASED ON MISSING, INCOMPLETE OR INACCURATE INFORMATION SUPPLIED BY OTHERS.
- SEE SHEET C-6.3 - TYPICAL DETAILS FOR ADDITIONAL SYSTEM CONSTRUCTION AND INSTALLATION NOTES TYPICAL FOR ALL CONTECH PERFORATED PIPE SYSTEMS.

**PERFORATED PIPE SYSTEM 1: NOTES, LAYOUT, DETAILS, PLAN AND PROFILE VIEWS**  
SCALE AS SHOWN

APPROVED  
FINAL PLAN REVIEW  
APPROVED IN ACCORDANCE WITH THE TOWN OF CUMBERLAND SUBDIVISION REGULATIONS.

ADMINISTRATIVE OFFICER \_\_\_\_\_

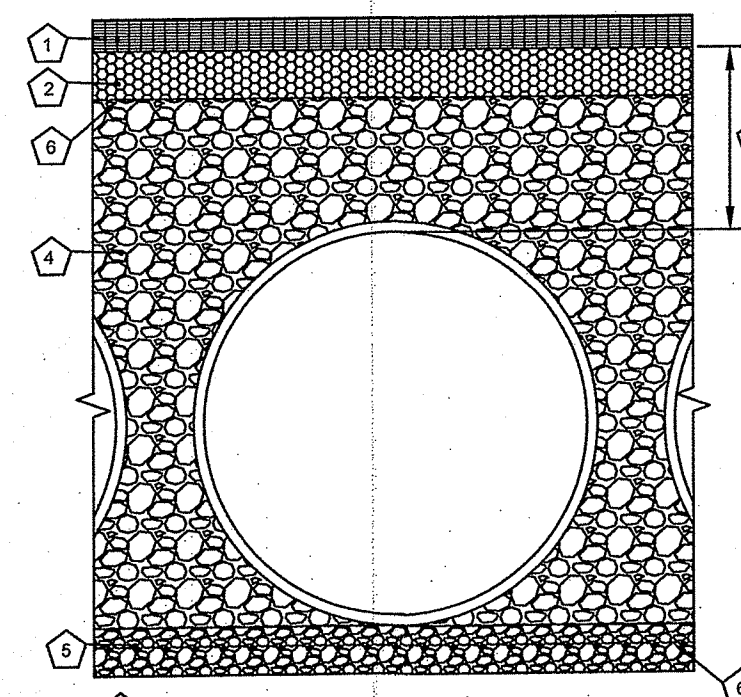
DATE: \_\_\_\_\_

PLANNING BOARD \_\_\_\_\_

DRAW NO.: \_\_\_\_\_

SHEET NO.: \_\_\_\_\_

PLAT/LOT \_\_\_\_\_



- KEY**
- RIGID OR FLEXIBLE PAVEMENT
  - GRANULAR ROAD BASE
  - 12" MIN. FOR DIAMETERS THROUGH 96" - 18" MIN. FOR DIAMETERS FROM 102" AND LARGER MEASURED TO TOP OF RIGID OR BOTTOM OF FLEXIBLE PAVEMENT.
  - FREE DRAINING ANGULAR WASHED STONE 3/4" - 2" MIN. PARTICLE SIZE.
  - GRANULAR BEDDING, ROUGHLY SHAPED TO FIT THE BOTTOM OF PIPE, 4" - 6" IN DEPTH.
  - CONTECH C-40 OR C-45 NON-WOVEN GEOTEXTILE REQUIRED, WRAPPING TRENCH ONLY.

**FOUNDATION/BEDDING PREPARATION**

PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND BROUGHT BACK TO THE GRADE WITH A FILL MATERIAL AS APPROVED BY THE ENGINEER. ONCE THE FOUNDATION PREPARATION IS COMPLETE, THE 4 INCHES OF A WELL-GRADED GRANULAR MATERIAL SHALL BE PLACED AS THE BEDDING.

**BACKFILL**

THE BACKFILL MATERIAL SHALL BE FREE-DRAINING ANGULAR WASHED STONE 3/4" - 2" PARTICLE SIZE. MATERIAL SHALL BE PLACED IN 8"-10" MAXIMUM LIFTS. MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL-SLICING, RODDING, AIR-TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS. COMPACTION IS CONSIDERED ADEQUATE WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE PROJECT ENGINEER OR HIS REPRESENTATIVE IS SATISFIED WITH THE LEVEL OF COMPACTION. INADEQUATE COMPACTION CAN LEAD TO EXCESSIVE DEFLECTIONS WITHIN THE SYSTEM AND SETTLEMENT OF THE SOILS OVER THE SYSTEM. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO-LIFT DIFFERENTIAL BETWEEN THE SIDES OF ANY PIPE IN THE SYSTEM AT ALL TIMES DURING THE BACKFILL PROCESS. BACKFILL SHALL BE ADVANCED ALONG THE LENGTH OF THE SYSTEM AT THE SAME RATE TO AVOID DIFFERENTIAL LOADING ON ANY PIPES IN THE SYSTEM.

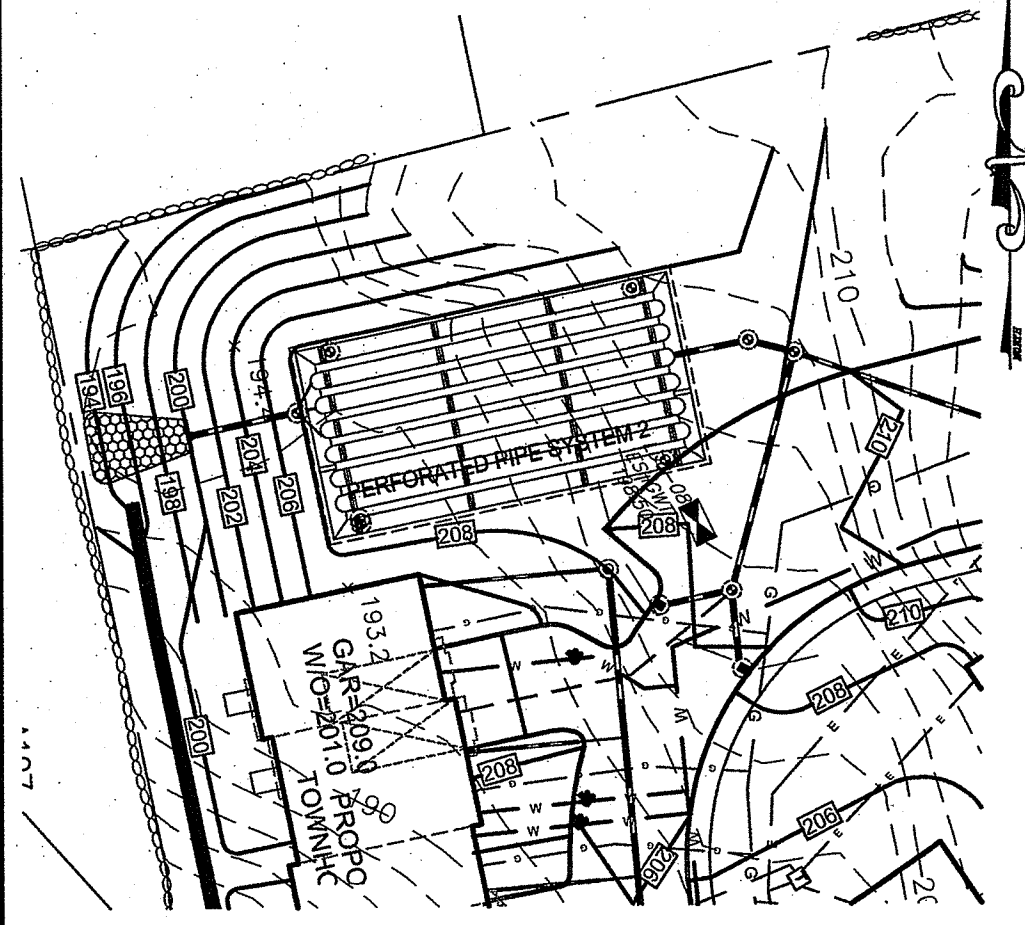
EQUIPMENT USED TO PLACE AND COMPACT THE BACKFILL SHALL BE OF A SIZE AND TYPE SO AS NOT TO DISTORT, DAMAGE, OR DISPLACE THE PIPE. ATTENTION MUST BE GIVEN TO PROVIDING ADEQUATE MINIMUM COVER FOR SUCH EQUIPMENT, AND MAINTAINING BALANCED LOADING ON ALL PIPES IN THE SYSTEM, DURING ALL SUCH OPERATIONS.

OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS. REFER TO TYPICAL BACKFILL DETAIL FOR MATERIAL REQUIRED.

**TYPICAL CONTECH PERFORATED PIPE SYSTEM BACKFILL DETAIL**  
SCALE: N.T.S.

**PERFORATED PIPE SYSTEM 2**

8 ROWS - 80' LONG OF 42" CONTECH CMP CONFIGURED AS SHOWN  
 BOTTOM OF STONE=201.50  
 BOTTOM OF PIPE=202.00  
 TOP OF PIPE=205.50  
 TOP OF STONE=206.00  
 OUTLETS: 2-8" HDPE PIPES INV=204.75  
 L=6.0, S=0.010  
 6" HDPE PIPE INV=203.70  
 L=2.0, S=0.010  
 OBSERVATION MANHOLES AS SHOWN



PLAN  
SCALE: 1"=40'

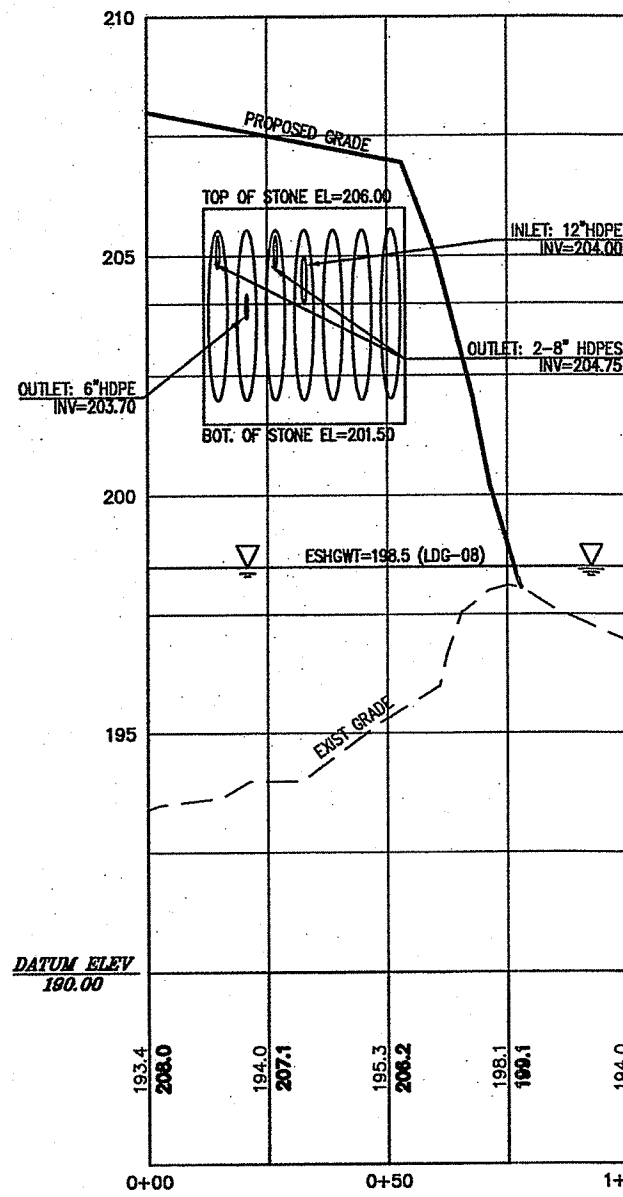
**CONTECH INFORMATION FOR PERFORATED PIPE SYSTEM 2**

**CALCULATION DETAILS**  
 • LENGTH PER BARREL = 80'  
 • LENGTH PER HEADER = NONE  
 • LOADING = H-20  
 • APPROX. CMP FOOTAGE = 560'

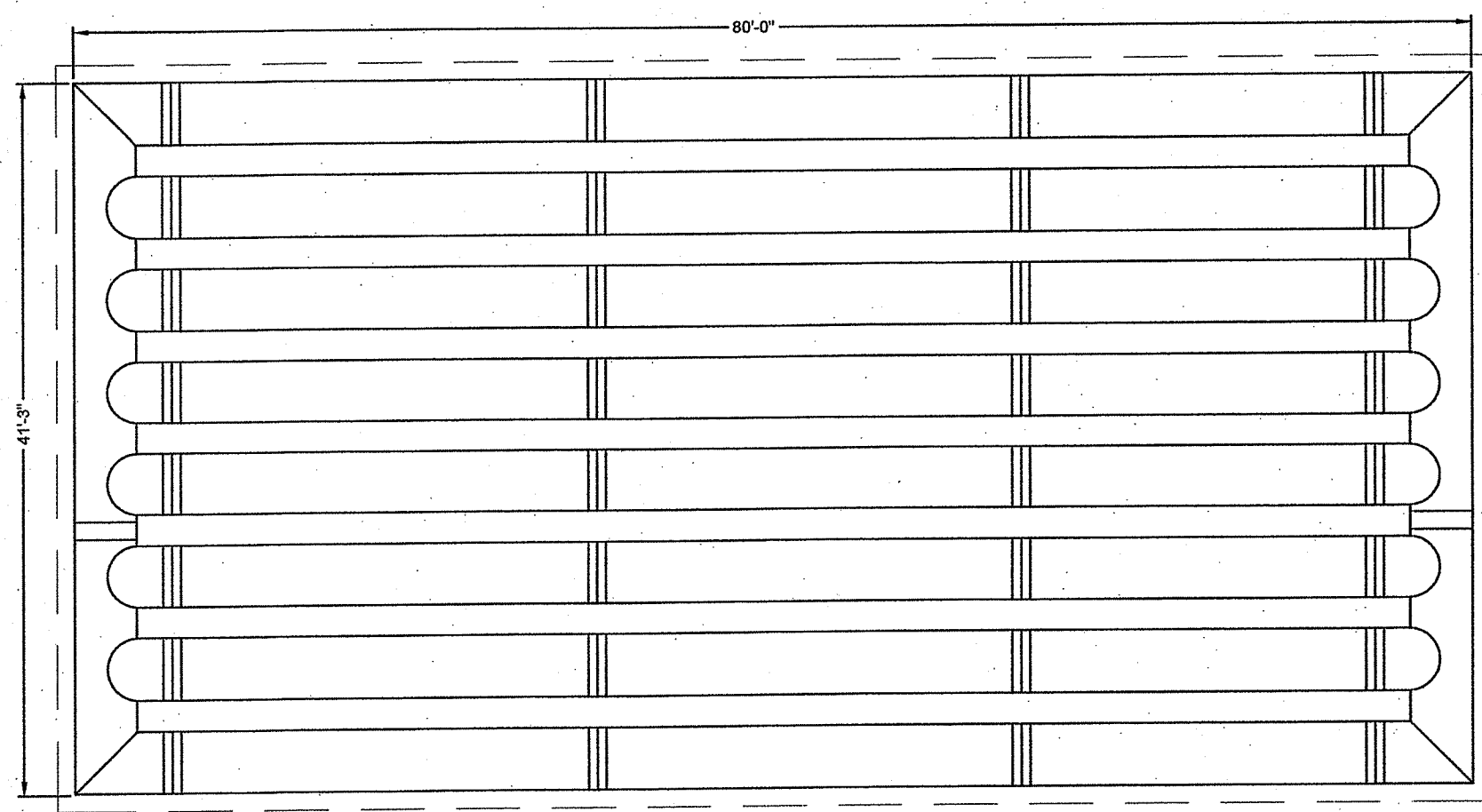
**PIPE DETAILS**  
 • DIAMETER = 42"  
 • BARREL SPACING = 21"

**BACKFILL DETAILS**  
 • WIDTH AT ENDS = 12"  
 • ABOVE PIPE = 6"  
 • WIDTH AT SIDES = 12"  
 • BELOW PIPE = 6"

**STORAGE SUMMARY**  
 • PIPE STORAGE = 7,037.2 FT<sup>3</sup>  
 • STRUCTURAL BACKFILL STORAGE = 4,073.1 FT<sup>3</sup>  
 • TOTAL STORAGE PROVIDED = 11,110.3 FT<sup>3</sup>



PROFILE  
SCALE: 1"=40' - H  
SCALE: 1"=4' - V



SYSTEM LAYOUT  
N.T.S.

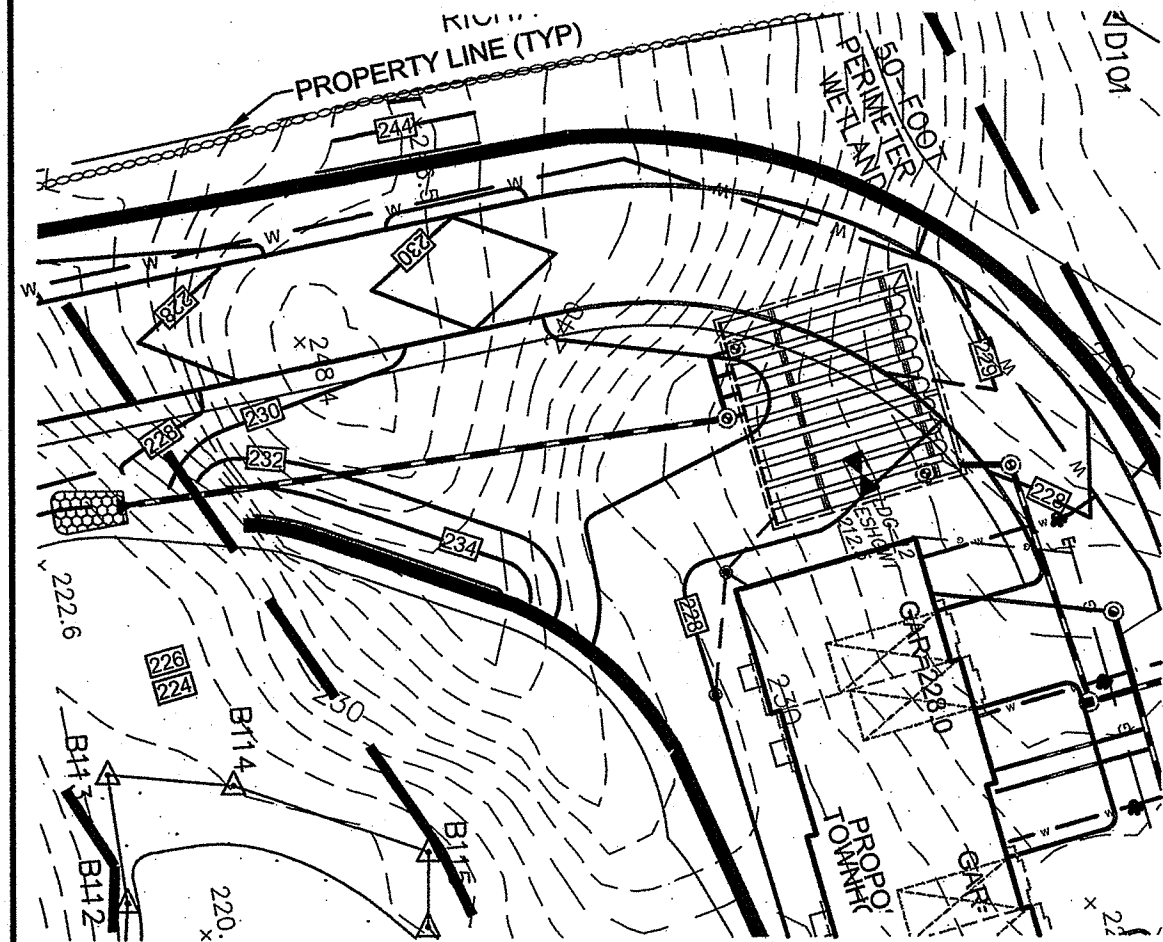
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- SEE SHEET C-6.3 - TYPICAL DETAILS FOR ADDITIONAL SYSTEM CONSTRUCTION AND INSTALLATION NOTES TYPICAL FOR ALL CONTECH PERFORATED PIPE SYSTEMS.

**PERFORATED PIPE SYSTEM 2: NOTES, LAYOUT, DETAILS, PLAN AND PROFILE VIEWS**  
SCALE AS SHOWN

**PERFORATED PIPE SYSTEM 3**

10 ROWS - 40' LONG OF 36" CONTECH CMP CONFIGURED AS SHOWN  
 BOTTOM OF STONE=223.00  
 BOTTOM OF PIPE=223.50  
 TOP OF PIPE=226.50  
 TOP OF STONE=227.00  
 OUTLETS: 3-6" HDPE PIPES INV=225.45  
 L=4.0, S=0.010  
 8" HDPE PIPE INV=224.80  
 L=4.0, S=0.010  
 OBSERVATION MANHOLES AS SHOWN



PLAN  
SCALE: 1"=40'

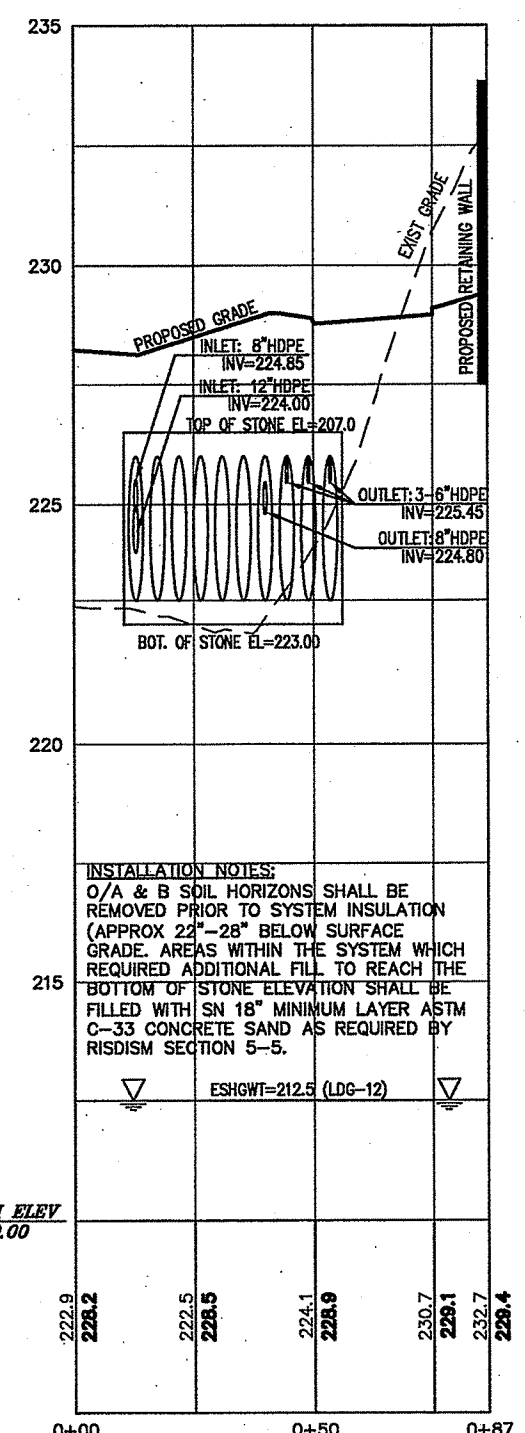
**CONTECH INFORMATION FOR PERFORATED PIPE SYSTEM 3**

**CALCULATION DETAILS**  
 • LENGTH PER BARREL = 40'  
 • LENGTH PER HEADER = NONE  
 • LOADING = H-20  
 • APPROX. CMP FOOTAGE = 400'

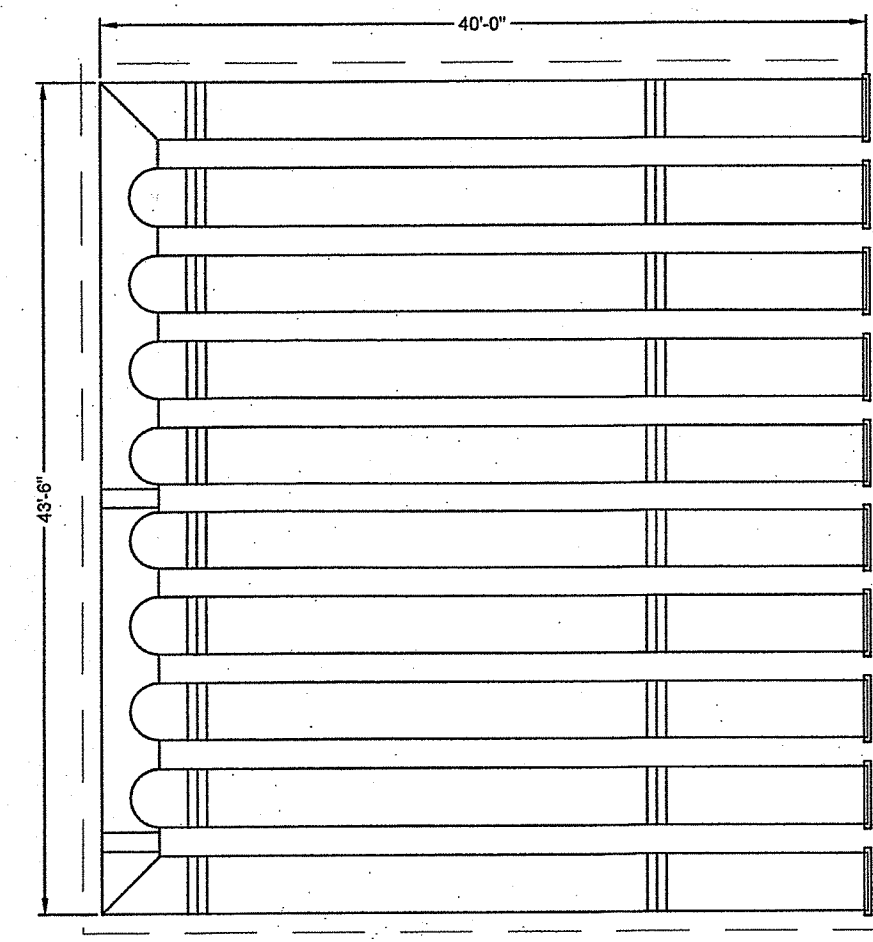
**PIPE DETAILS**  
 • DIAMETER = 36"  
 • BARREL SPACING = 18"

**BACKFILL DETAILS**  
 • WIDTH AT ENDS = 12"  
 • ABOVE PIPE = 6"  
 • WIDTH AT SIDES = 12"  
 • BELOW PIPE = 6"

**STORAGE SUMMARY**  
 • PIPE STORAGE = 2,827.4 FT<sup>3</sup>  
 • STRUCTURAL BACKFILL STORAGE = 1,826.6 FT<sup>3</sup>  
 • TOTAL STORAGE PROVIDED = 4,654.0 FT<sup>3</sup>



PROFILE  
SCALE: 1"=40' - H  
SCALE: 1"=4' - V



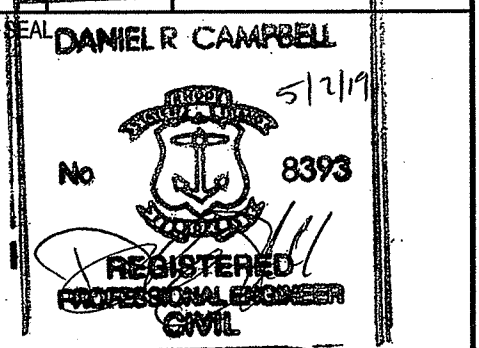
SYSTEM LAYOUT  
N.T.S.

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**PERFORATED PIPE SYSTEM 3: NOTES, LAYOUT, DETAILS, PLAN AND PROFILE VIEWS**  
SCALE AS SHOWN

NO	DATE	REVISIONS
1	06/27/2018	PRELIMINARY PLAN SUBMISSION
2	09/26/2018	PRELIMINARY/FINAL APPROVAL
3	02/20/2019	RIDEM COMMENTS
4	05/07/2019	RIDEM COMMENTS



DATE: MAY 17, 2018  
 DRAWN: NF / DRC  
 SCALE: 1"=40'

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH LETTER OF APPROVAL  
 AS SPECIFIED IN THE  
 DATED JUN 07 2019 FILE # 19-0070  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

**HUNTING HILL**  
 MAJOR LAND DEVELOPMENT PROJECT  
 FINAL PLAN SUBMISSION  
 AP 35, LOT 188  
 CUMBERLAND, RHODE ISLAND 02864

**LEVEL**  
 DESIGN GROUP  
 CIVIL ENGINEERING  
 249 SOUTH STREET  
 UNIT 1  
 PLAINVILLE, MA 02762  
 TEL: (508) 695-2221 FAX: (508) 695-2219

**DRAINAGE SYSTEM DETAILS**

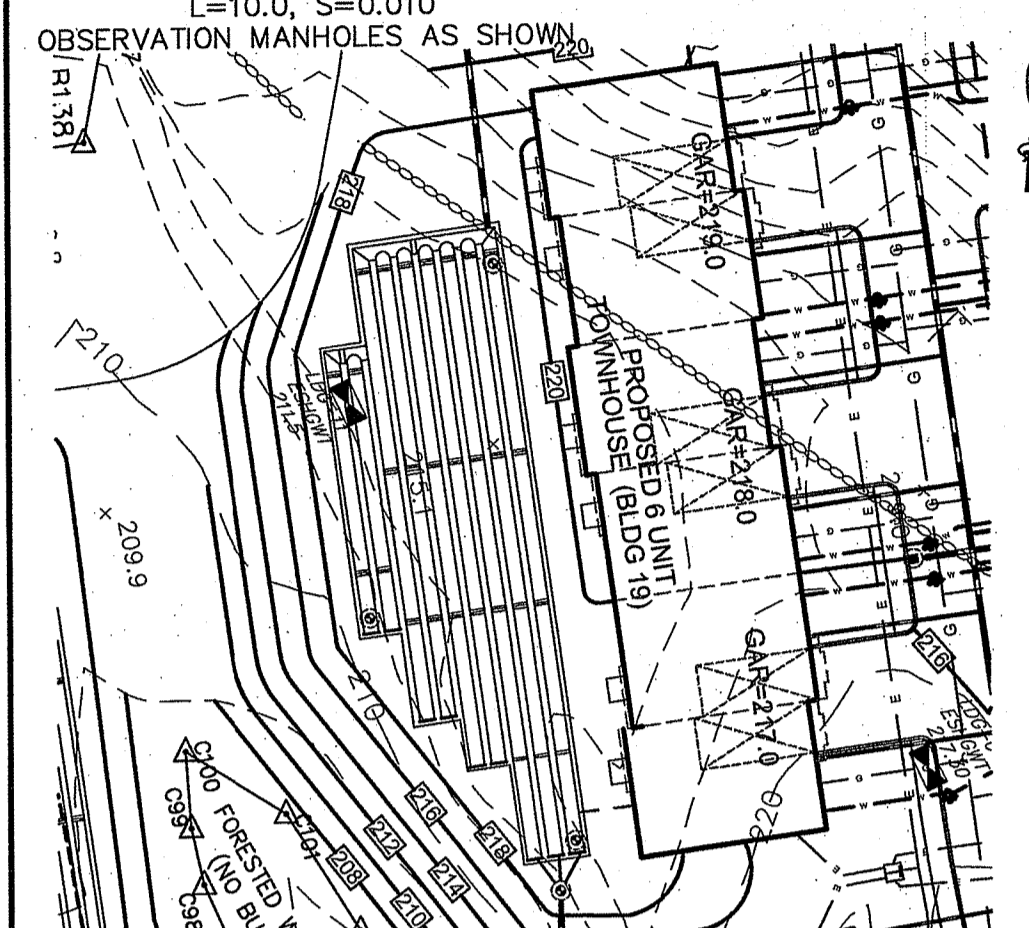
**C-4.1**  
 SHEET 8 OF 23

0' 20' 40' 80'

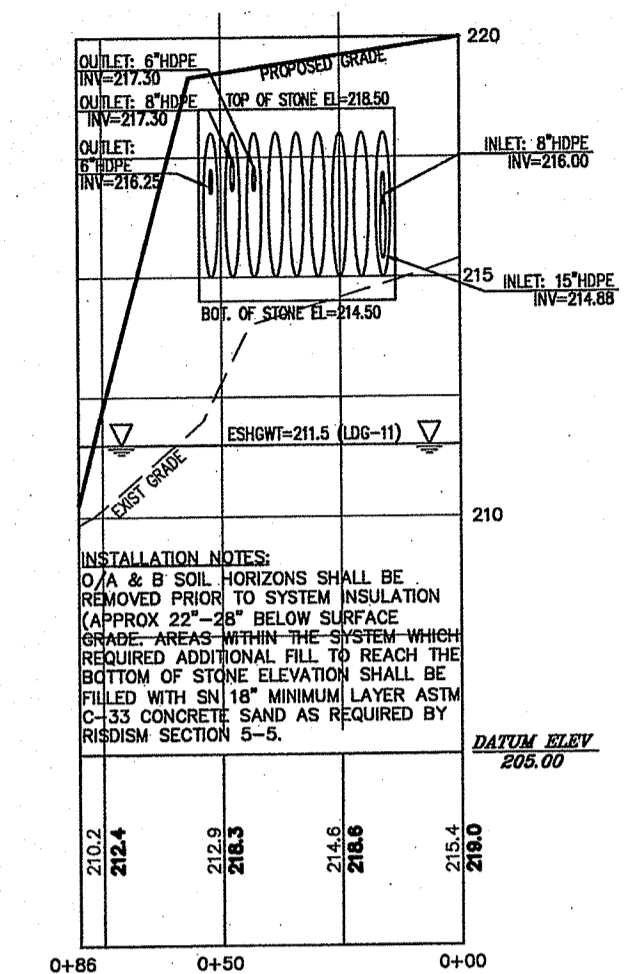
**1554.00**

**PERFORATED PIPE SYSTEM 4**

3 ROWS - 130' LONG OF 36" CONTECH CMP  
 2 ROWS - 110' LONG OF 36" CONTECH CMP  
 2 ROWS - 100' LONG OF 36" CONTECH CMP  
 2 ROWS - 60' LONG OF 36" CONTECH CMP  
 CONFIGURED AS SHOWN  
 BOTTOM OF STONE=214.50  
 BOTTOM OF PIPE=215.00  
 TOP OF PIPE=218.00  
 TOP OF STONE=218.50  
 OUTLETS: 6" HDPE PIPE INV=216.25  
 L=10.0, S=0.010  
 6" HDPE PIPE INV=217.30  
 L=10.0, S=0.010  
 8" HDPE PIPE INV=217.30  
 L=10.0, S=0.010  
 OBSERVATION MANHOLES AS SHOWN



**PLAN**  
SCALE: 1"=40'



**PROFILE**  
SCALE: 1"=40' - H  
SCALE: 1"=4' - V

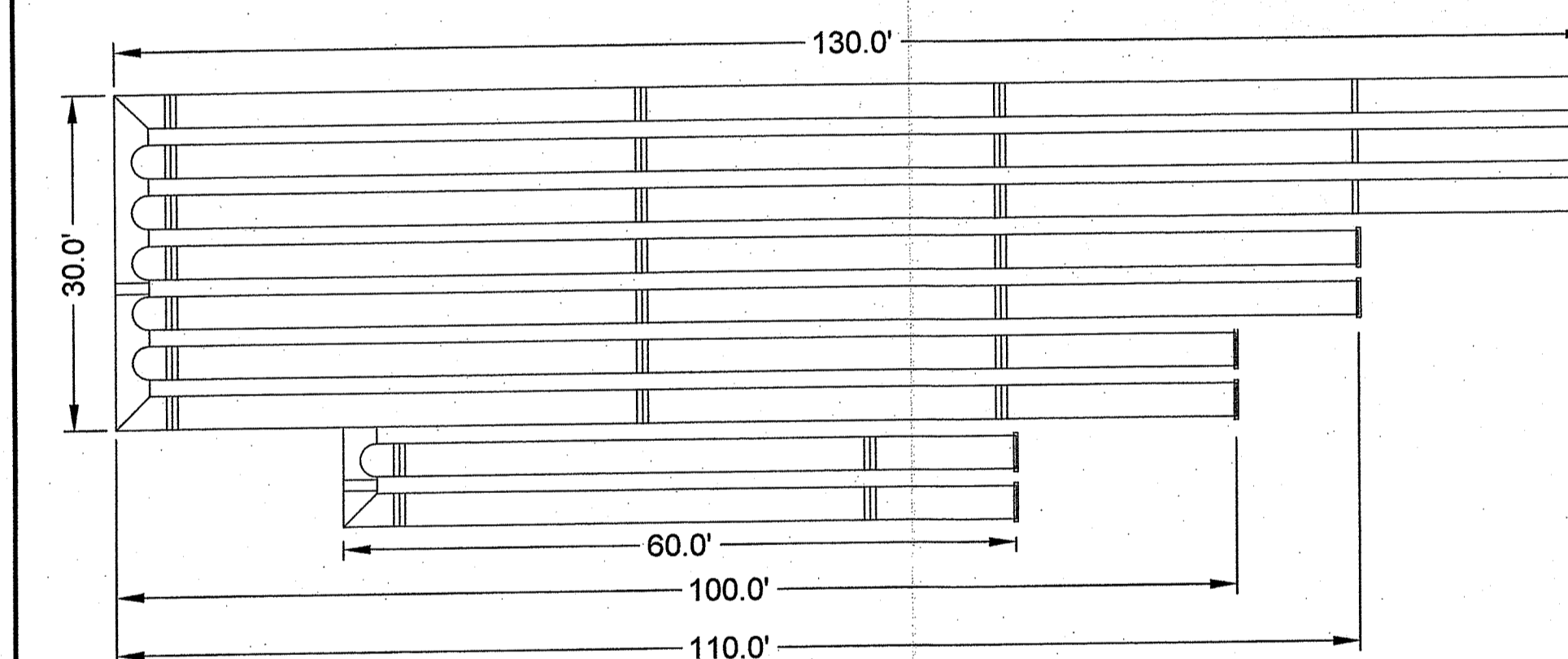
**CONTECH INFORMATION FOR PERFORATED PIPE SYSTEM 4**

**CALCULATION DETAILS**  
 • LENGTH PER BARREL = 130' / 110' / 100' / 60'  
 • LOADING = H-20  
 • APPROX. CMP FOOTAGE = 820'

**PIPE DETAILS**  
 • DIAMETER = 36"  
 • BARREL SPACING = 18"

**STORAGE SUMMARY**  
 • PIPE STORAGE = 5,888 FT<sup>3</sup>  
 • STRUCTURAL BACKFILL STORAGE = 3,949 FT<sup>3</sup>  
 • TOTAL STORAGE PROVIDED = 9,818 FT<sup>3</sup>

**BACKFILL DETAILS**  
 • WIDTH AT ENDS = 12"  
 • ABOVE PIPE = 6"  
 • WIDTH AT SIDES = 12"  
 • BELOW PIPE = 6"



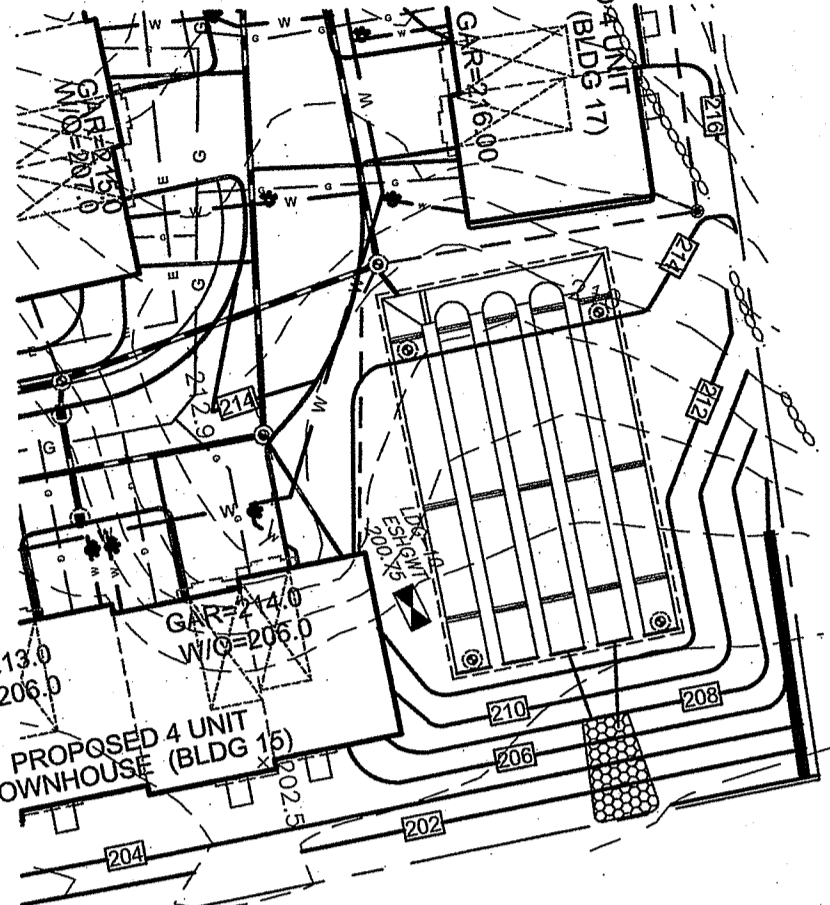
**SYSTEM LAYOUT**  
N.T.S.

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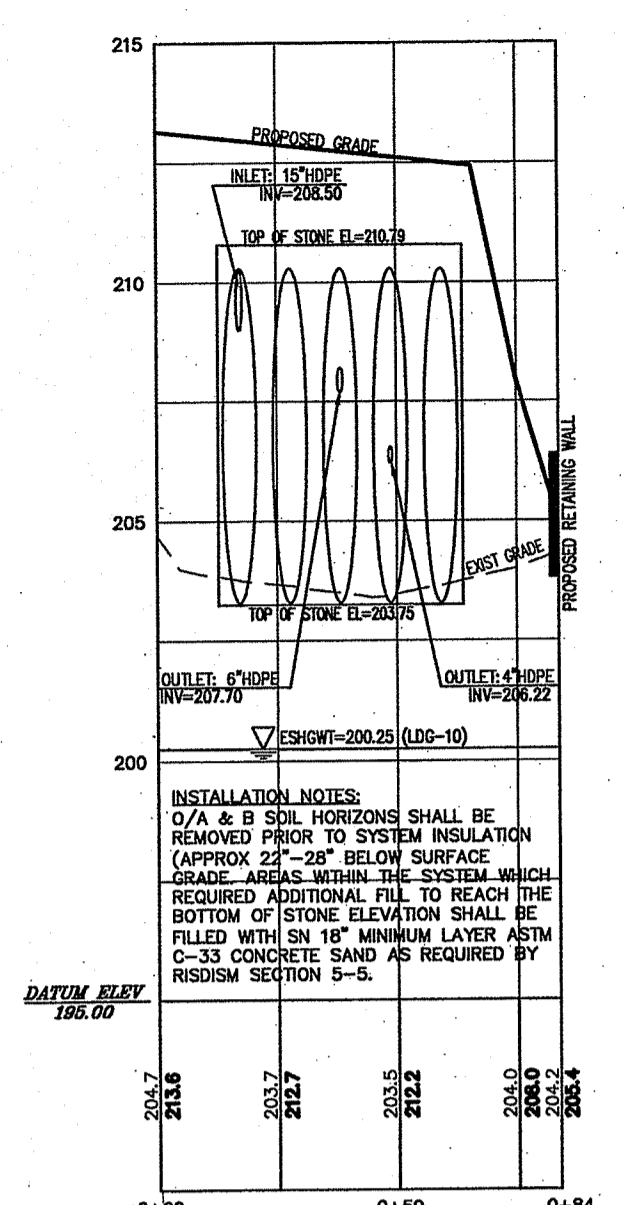
**PERFORATED PIPE SYSTEM 4: NOTES, LAYOUT, DETAILS, PLAN AND PROFILE VIEWS**  
SCALE AS SHOWN

**PERFORATED PIPE SYSTEM 5**

5 ROWS - 60' LONG OF 84" CONTECH CMP  
 CONFIGURED AS SHOWN  
 BOTTOM OF STONE=203.25  
 BOTTOM OF PIPE=203.29  
 TOP OF PIPE=210.29  
 TOP OF STONE=210.79  
 OUTLETS: 4" HDPE PIPES INV=206.22  
 L=18.0, S=0.010  
 6" HDPE PIPE INV=207.70  
 L=16.0, S=0.010  
 OBSERVATION MANHOLES AS SHOWN



**PLAN**  
SCALE: 1"=40'



**PROFILE**  
SCALE: 1"=40' - H  
SCALE: 1"=4' - V

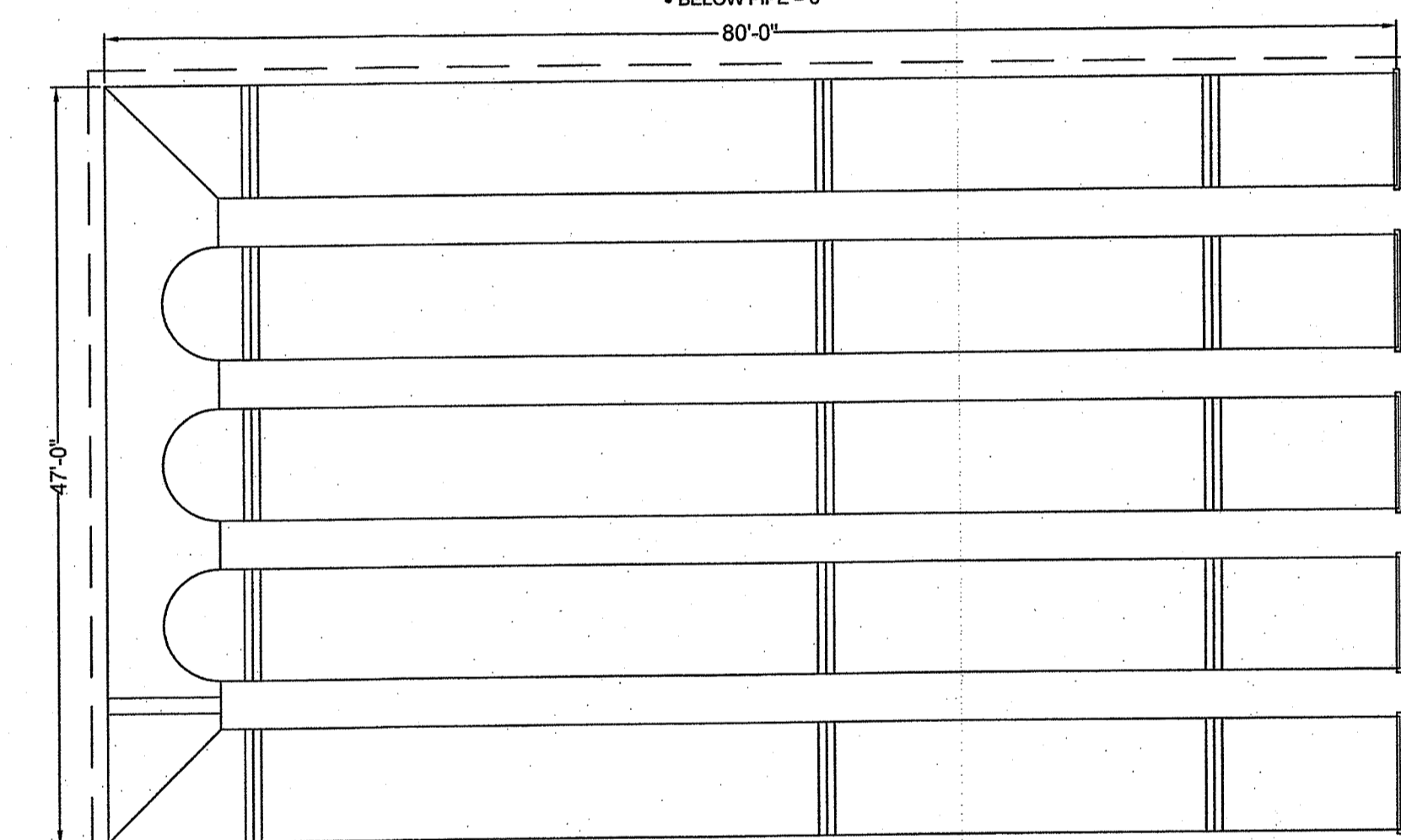
**CONTECH INFORMATION FOR PERFORATED PIPE SYSTEM 5**

**CALCULATION DETAILS**  
 • LENGTH PER BARREL = 80'  
 • LENGTH PER HEADER = NONE  
 • LOADING = H-20  
 • APPROX. CMP FOOTAGE = 400'

**PIPE DETAILS**  
 • DIAMETER = 84"  
 • BARREL SPACING = 38"

**STORAGE SUMMARY**  
 • PIPE STORAGE = 15,393.8 FT<sup>3</sup>  
 • STRUCTURAL BACKFILL STORAGE = 5,963.4 FT<sup>3</sup>  
 • TOTAL STORAGE PROVIDED = 21,357.2 FT<sup>3</sup>

**BACKFILL DETAILS**  
 • WIDTH AT ENDS = 12"  
 • ABOVE PIPE = 6"  
 • WIDTH AT SIDES = 12"  
 • BELOW PIPE = 6"



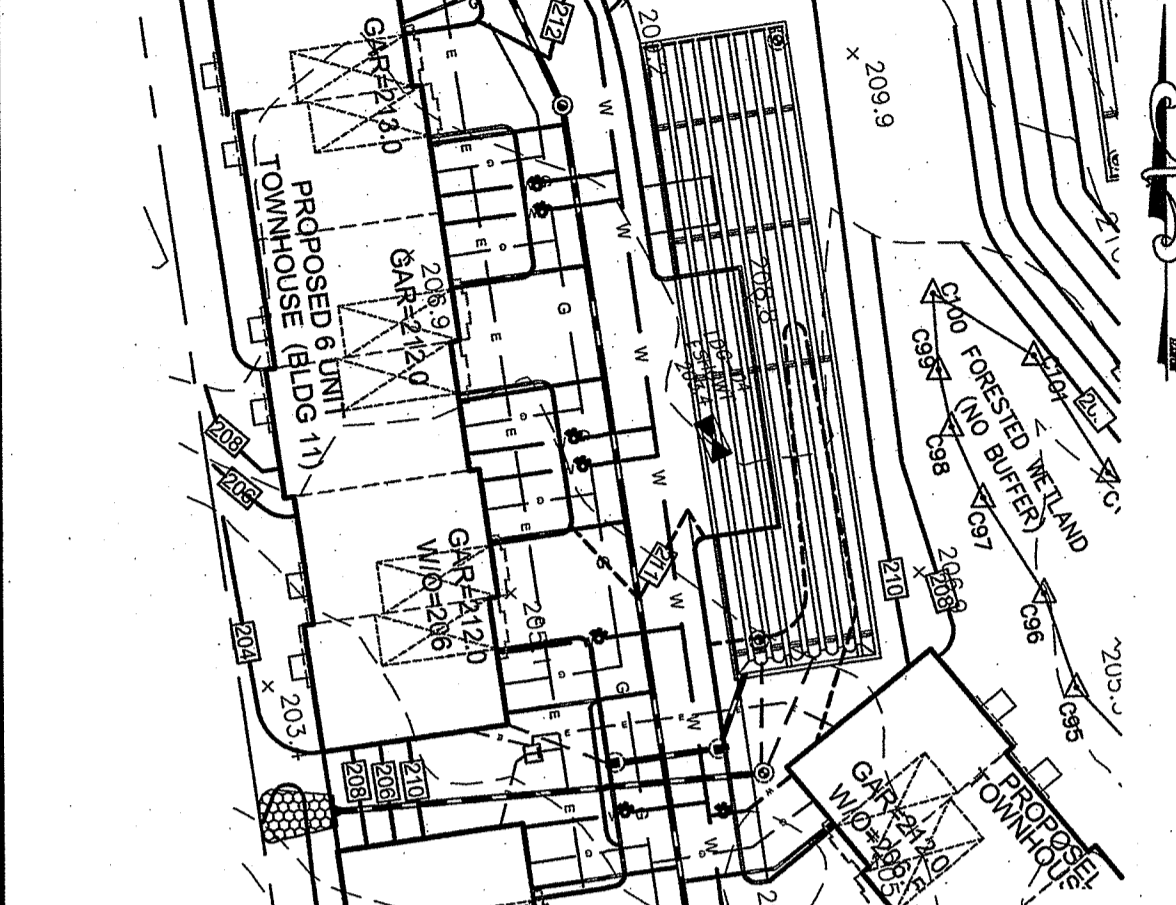
**SYSTEM LAYOUT**  
N.T.S.

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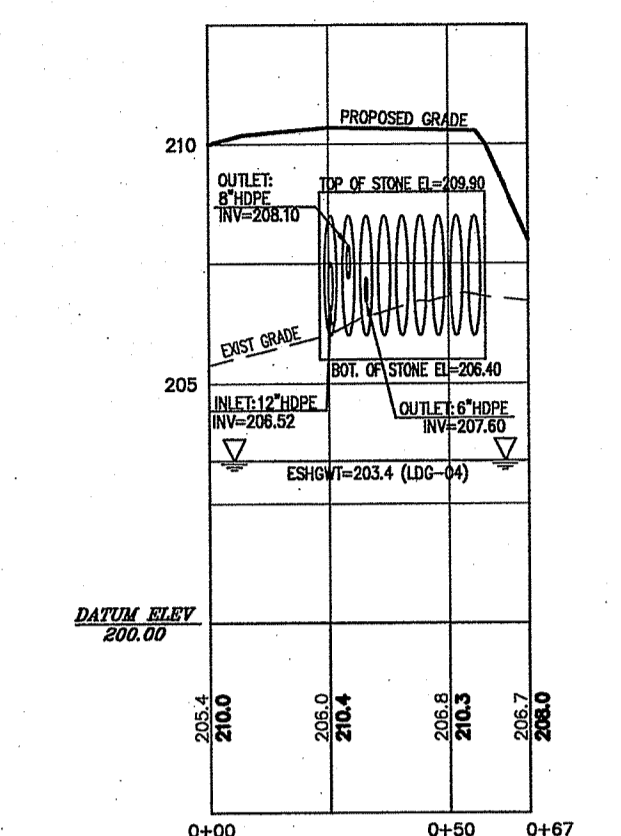
**PERFORATED PIPE SYSTEM 5: NOTES, LAYOUT, DETAILS, PLAN AND PROFILE VIEWS**  
SCALE AS SHOWN

**PERFORATED PIPE SYSTEM 6**

8 ROWS - 132' LONG OF 30" CONTECH CMP  
 CONFIGURED AS SHOWN  
 BOTTOM OF STONE=206.40  
 BOTTOM OF PIPE=206.90  
 TOP OF PIPE=209.40  
 TOP OF STONE=209.90  
 OUTLETS: 8" HDPE PIPE INV=208.10  
 L=26.0, S=0.010  
 6" HDPE PIPE INV=207.60  
 L=20.0, S=0.010  
 OBSERVATION MANHOLES AS SHOWN



**PLAN**  
SCALE: 1"=40'



**PROFILE**  
SCALE: 1"=40' - H  
SCALE: 1"=4' - V

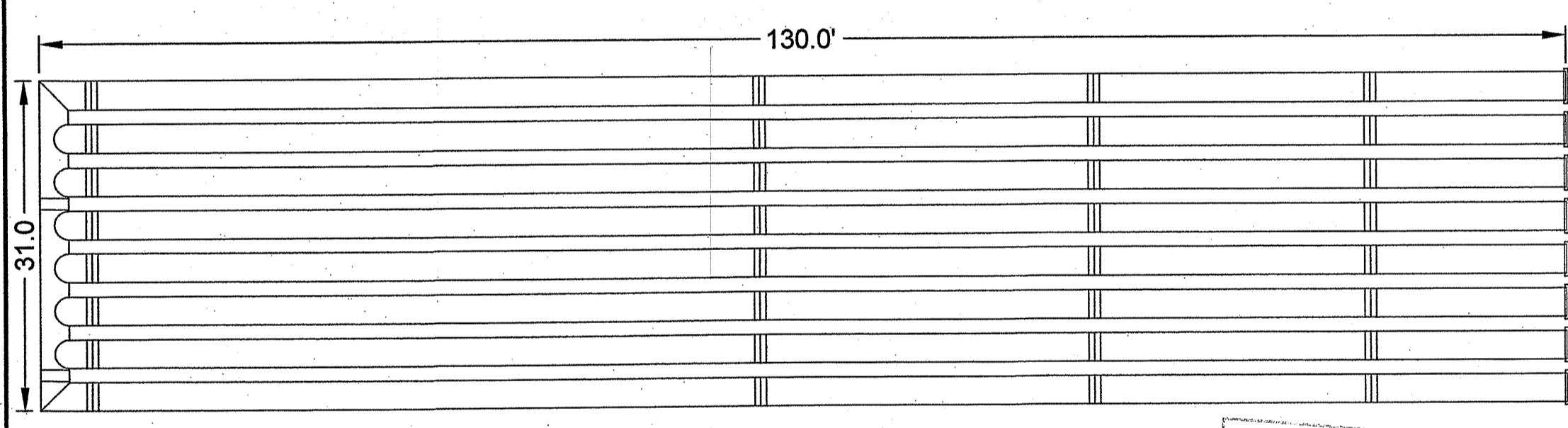
**CONTECH INFORMATION FOR PERFORATED PIPE SYSTEM 6**

**CALCULATION DETAILS**  
 • LENGTH PER BARREL = 132'  
 • LENGTH PER HEADER = NONE  
 • LOADING = H-20  
 • APPROX. CMP FOOTAGE = 1,080'

**PIPE DETAILS**  
 • DIAMETER = 30"  
 • BARREL SPACING = 15"

**STORAGE SUMMARY**  
 • PIPE STORAGE = 6,105.1 FT<sup>3</sup>  
 • STRUCTURAL BACKFILL STORAGE = 3,480.6 FT<sup>3</sup>  
 • TOTAL STORAGE PROVIDED = 9,585.7 FT<sup>3</sup>

**BACKFILL DETAILS**  
 • WIDTH AT ENDS = 12"  
 • ABOVE PIPE = 6"  
 • WIDTH AT SIDES = 12"  
 • BELOW PIPE = 6"



**SYSTEM LAYOUT**  
N.T.S.

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**PERFORATED PIPE SYSTEM 6: NOTES, LAYOUT, DETAILS, PLAN AND PROFILE VIEWS**  
SCALE AS SHOWN

APPROVED  
 FINAL PLAN REVIEW  
 APPROVED IN ACCORDANCE WITH THE TOWN OF CUMBERLAND SUBDIVISION REGULATIONS.

ADMINISTRATIVE OFFICER

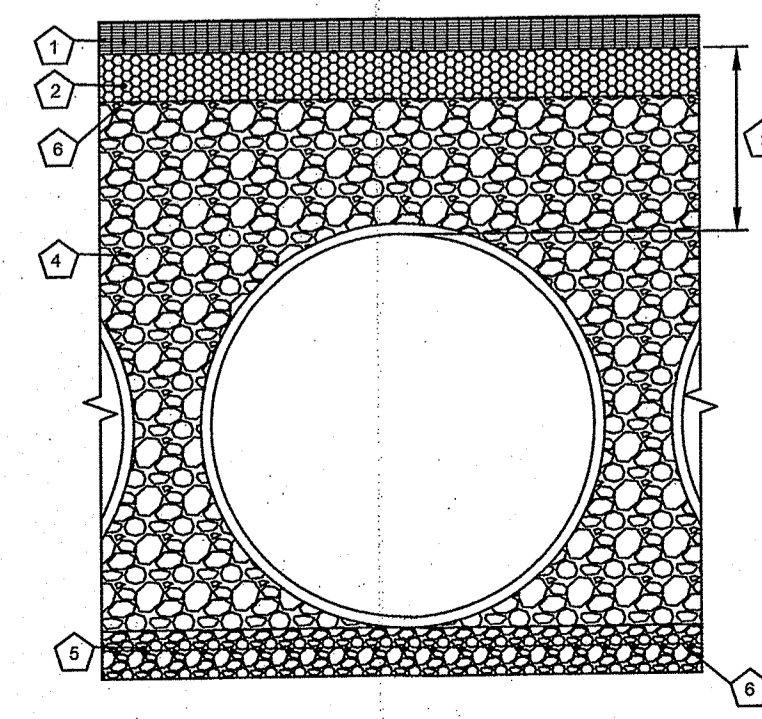
DATE: \_\_\_\_\_

PLANNING BOARD

DRAW NO.: \_\_\_\_\_

SHEET NO.: \_\_\_\_\_

PLAT/LOT \_\_\_\_\_



- KEY**
- RIGID OR FLEXIBLE PAVEMENT
  - GRANULAR ROAD BASE
  - 12" MIN. FOR DIAMETERS THROUGH 96" - 18" MIN. FOR DIAMETERS FROM 102" AND LARGER MEASURED TO TOP OF RIGID OR BOTTOM OF FLEXIBLE PAVEMENT.
  - FREE DRAINING ANGULAR WASHED STONE 3/4" - 2" MIN. PARTICLE SIZE
  - GRANULAR BEDDING, ROUGHLY SHAPED TO FIT THE BOTTOM OF PIPE, 4" - 6" IN DEPTH.
  - CONTECH C-40 OR C-45 NON-WOVEN GEOTEXTILE REQUIRED, WRAPPING TRENCH ONLY.

**FOUNDATION/BEDDING PREPARATION**

PRIOR TO PLACING THE BEDDING, THE FOUNDATION MUST BE CONSTRUCTED TO A UNIFORM AND STABLE GRADE. IN THE EVENT THAT UNSUITABLE FOUNDATION MATERIALS ARE ENCOUNTERED DURING EXCAVATION, THEY SHALL BE REMOVED AND BROUGHT BACK TO THE GRADE WITH A FILL MATERIAL AS APPROVED BY THE ENGINEER. ONCE THE FOUNDATION PREPARATION IS COMPLETE, THE 4 INCHES OF A WELL-GRADED GRANULAR MATERIAL SHALL BE PLACED AS THE BEDDING.

**BACKFILL**

THE BACKFILL MATERIAL SHALL BE FREE-DRAINING ANGULAR WASHED STONE 3/4" - 2" PARTICLE SIZE. MATERIAL SHALL BE PLACED IN 8"-10" MAXIMUM LIFTS. MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL-SLICING, RODDING, AIR-TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS. COMPACTION IS CONSIDERED ADEQUATE WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE PROJECT ENGINEER OR HIS REPRESENTATIVE IS SATISFIED WITH THE LEVEL OF COMPACTION. INADEQUATE COMPACTION CAN LEAD TO EXCESSIVE DEFLECTIONS WITHIN THE SYSTEM AND SETTLEMENT OF THE SOILS OVER THE SYSTEM. BACKFILL SHALL BE PLACED SUCH THAT THERE IS NO MORE THAN A TWO-LIFT DIFFERENTIAL BETWEEN THE SIDES OF ANY PIPE IN THE SYSTEM AT ALL TIMES DURING THE BACKFILL PROCESS. BACKFILL SHALL BE ADVANCED ALONG THE LENGTH OF THE SYSTEM AT THE SAME RATE TO AVOID DIFFERENTIAL LOADING ON ANY PIPES IN THE SYSTEM.

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OTHER ALTERNATE BACKFILL MATERIAL MAY BE ALLOWED DEPENDING ON SITE SPECIFIC CONDITIONS. REFER TO TYPICAL BACKFILL DETAIL FOR MATERIAL REQUIRED.

**TYPICAL CONTECH PERFORATED PIPE SYSTEM BACKFILL DETAIL**  
SCALE: N.T.S.

NO	DATE	REVISIONS
1	06/27/2018	PRELIMINARY PLAN SUBMISSION
2	09/26/2018	PRELIMINARY/FINAL APPROVAL
3	02/20/2019	RIDEM COMMENTS
4	05/07/2019	RIDEM COMMENTS

DANIEL R CAMPBELL  
 No 8393  
 REGISTERED PROFESSIONAL ENGINEER  
 CIVIL

DATE: MAY 17, 2018  
 DRAWN: NF / DRC  
 SCALE: 1" = 40'

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WATERSHEDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED JUN 07 2019 FILE # 19-0070  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

**HUNTING HILL**  
 MAJOR LAND DEVELOPMENT PROJECT  
 FINAL PLAN SUBMISSION  
 AP 35, LOT 188  
 CUMBERLAND, RHODE ISLAND 02864

**LEVEL**  
 DESIGN GROUP  
 CIVIL ENGINEERING  
 249 SOUTH STREET  
 UNIT 1  
 PLAINVILLE, MA 02762  
 TEL. (508) 695-2221 FAX. (508) 695-2219

**DRAINAGE SYSTEM DETAILS**

**C-4.2**

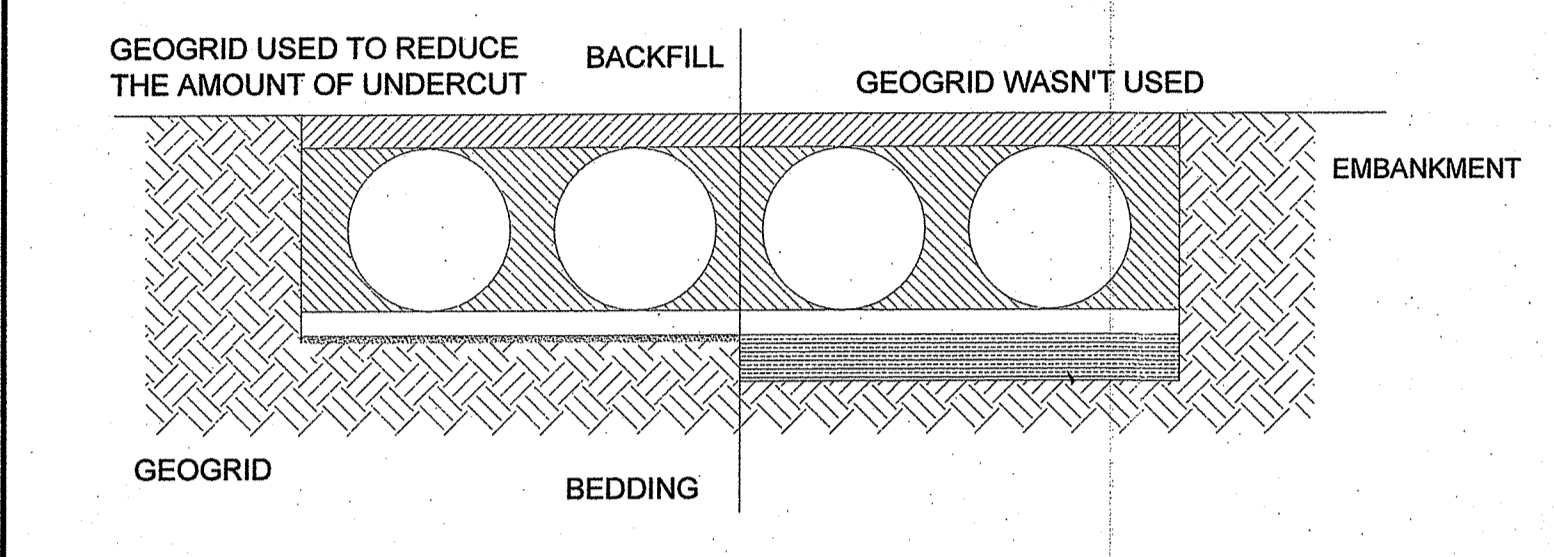
SHEET 9 OF 23

0' 20' 40' 80'

**1554.00**

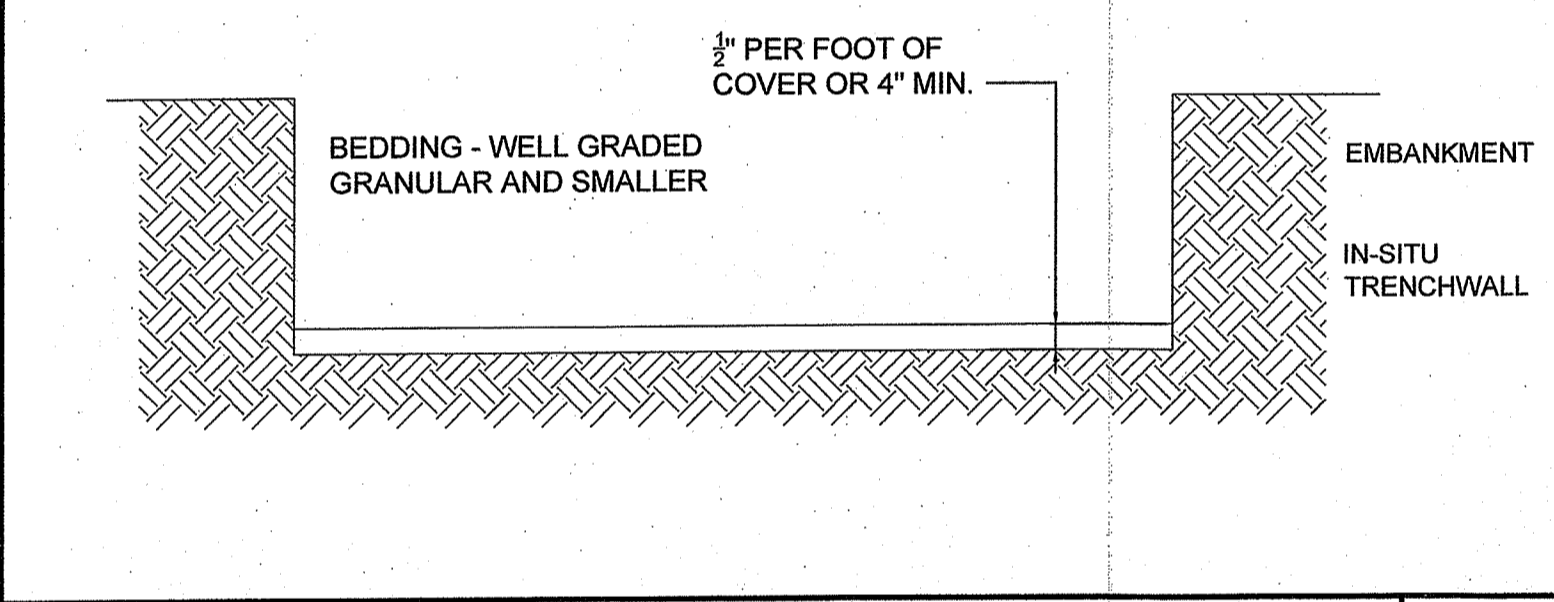
**CMP DETENTION INSTALLATION GUIDE**  
 PROPER INSTALLATION OF A FLEXIBLE UNDERGROUND DETENTION SYSTEM WILL ENSURE LONG-TERM PERFORMANCE. THE CONFIGURATION OF THESE SYSTEMS OFTEN REQUIRES SPECIAL CONSTRUCTION PRACTICES THAT DIFFER FROM CONVENTIONAL FLEXIBLE PIPE CONSTRUCTION. CONTECH ENGINEERED SOLUTIONS STRONGLY SUGGESTS SCHEDULING A PRE-CONSTRUCTION MEETING WITH YOUR LOCAL SALES ENGINEER TO DETERMINE IF ADDITIONAL MEASURES, NOT COVERED IN THIS GUIDE, ARE APPROPRIATE FOR YOUR SITE.

**FOUNDATION**  
 CONSTRUCT A FOUNDATION THAT CAN SUPPORT THE DESIGN LOADING APPLIED BY THE PIPE AND ADJACENT BACKFILL WEIGHT AS WELL AS MAINTAIN ITS INTEGRITY DURING CONSTRUCTION. IF SOFT OR UNSUITABLE SOILS ARE ENCOUNTERED, REMOVE THE POOR SOILS DOWN TO A SUITABLE DEPTH AND THEN BUILD UP TO THE APPROPRIATE ELEVATION WITH A COMPETENT BACKFILL MATERIAL. THE STRUCTURAL FILL MATERIAL GRADATION SHOULD NOT ALLOW THE MIGRATION OF FINES, WHICH CAN CAUSE SETTLEMENT OF THE DETENTION SYSTEM OR PAVEMENT ABOVE. IF THE STRUCTURAL FILL MATERIAL IS NOT COMPATIBLE WITH THE UNDERLYING SOILS AN ENGINEERING FABRIC SHOULD BE USED AS A SEPARATOR. IN SOME CASES, USING A STIFF REINFORCING GEOGRID REDUCES OVER EXCAVATION AND REPLACEMENT FILL QUANTITIES.



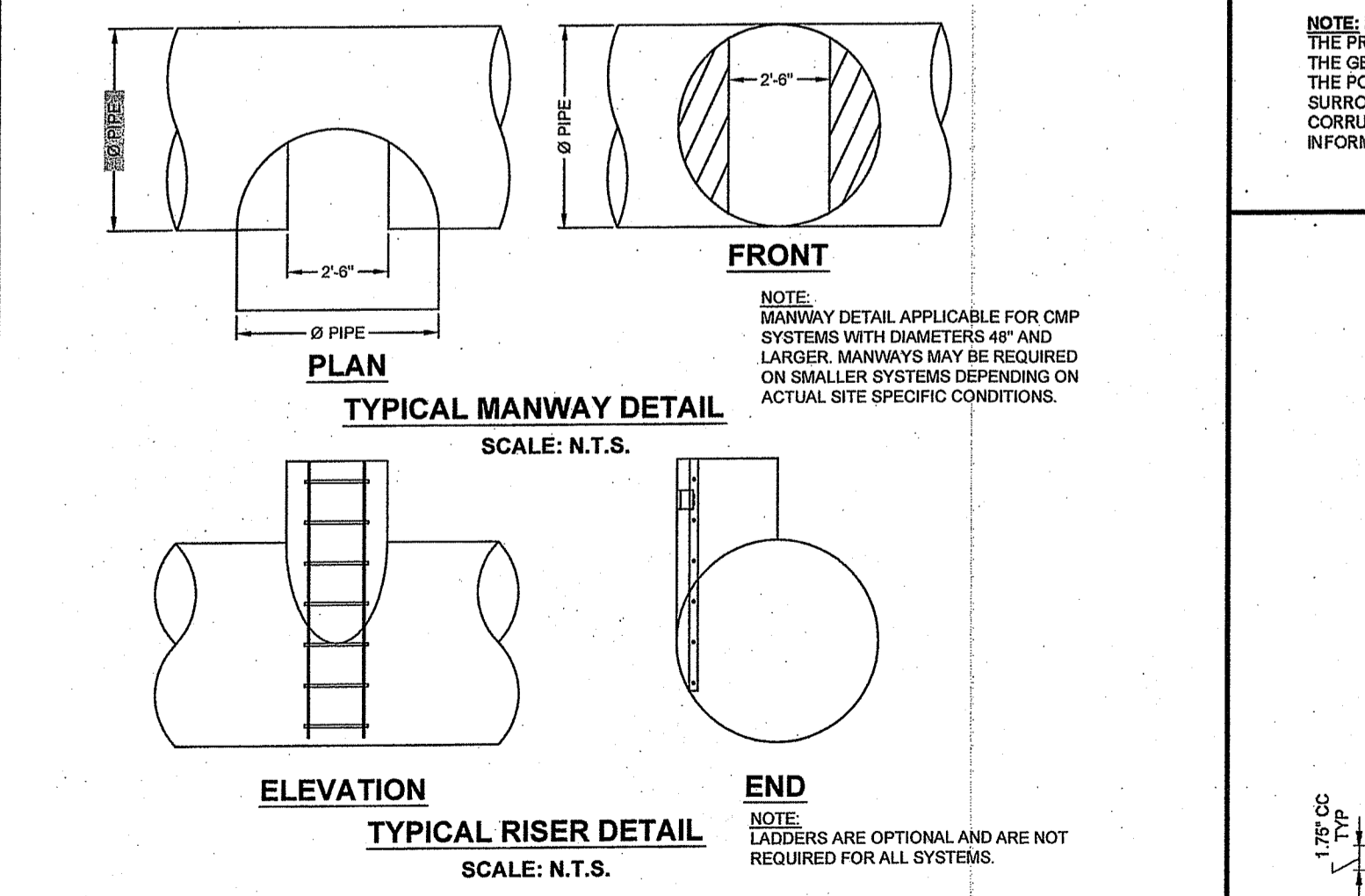
GRADE THE FOUNDATION SUBGRADE TO A UNIFORM OR SLIGHTLY SLOPING GRADE. IF THE SUBGRADE IS CLAY OR RELATIVELY NON-POROUS AND THE CONSTRUCTION SEQUENCE WILL LAST FOR AN EXTENDED PERIOD OF TIME, IT IS BEST TO SLOPE THE GRADE TO ONE END OF THE SYSTEM. THIS WILL ALLOW EXCESS WATER TO DRAIN QUICKLY, PREVENTING SATURATION OF THE SUBGRADE.

**BEDDING**  
 A 4 TO 6-INCH THICK, WELL-GRADED, GRANULAR MATERIAL IS THE PREFERRED PIPE BEDDING. IF CONSTRUCTION EQUIPMENT WILL OPERATE FOR AN EXTENDED PERIOD OF TIME ON THE BEDDING, USE EITHER AN ENGINEERING FABRIC OR A STIFF GEOGRID TO ENSURE THE BASE MATERIAL MAINTAINS ITS INTEGRITY. USING AN OPEN-GRADED BEDDING MATERIAL IS ACCEPTABLE; HOWEVER, AN ENGINEERING FABRIC SEPARATOR IS REQUIRED BETWEEN THE BASE AND THE SUBGRADE. GRADE THE BASE TO A SMOOTH, UNIFORM GRADE TO ALLOW FOR THE PROPER PLACEMENT OF THE PIPE.



**NOTES**

- ALL RISER AND STUB DIMENSIONS ARE TO CENTERLINE. ALL ELEVATIONS, DIMENSIONS, AND LOCATIONS OF RISERS AND INLETS, SHALL BE VERIFIED BY THE ENGINEER OF RECORD PRIOR TO RELEASING FOR FABRICATION.
- ALL FITTINGS AND REINFORCEMENT COMPLY WITH ASTM A998.
- ALL RISERS AND STUBS ARE 2 1/2" x 1/2" CORRUGATION AND 16 GAGE UNLESS OTHERWISE NOTED.
- RISERS TO BE FIELD TRIMMED TO GRADE.
- QUANTITY OF PIPE SHOWN DOES NOT PROVIDE EXTRA PIPE FOR CONNECTING THE SYSTEM TO EXISTING PIPE OR DRAINAGE STRUCTURES. OUR SYSTEM AS DETAILED PROVIDES NOMINAL INLET AND/OR OUTLET PIPE STUB FOR CONNECTION TO EXISTING DRAINAGE FACILITIES. IF ADDITIONAL PIPE IS NEEDED IT IS THE RESPONSIBILITY OF THE CONTRACTOR.
- BAND TYPE TO BE DETERMINED UPON FINAL DESIGN.
- THE PROJECT SUMMARY IS REFLECTIVE OF THE DYODS DESIGN, QUANTITIES ARE APPROX. AND SHOULD BE VERIFIED UPON FINAL DESIGN AND APPROVAL. FOR EXAMPLE, TOTAL EXCAVATION DOES NOT CONSIDER ALL VARIABLES SUCH AS SHORING AND ONLY ACCOUNTS FOR MATERIAL WITHIN THE ESTIMATED EXCAVATION FOOTPRINT.



APPROVED FINAL PLAN REVIEW  
 APPROVED IN ACCORDANCE WITH THE TOWN OF CUMBERLAND SUBDIVISION REGULATIONS.

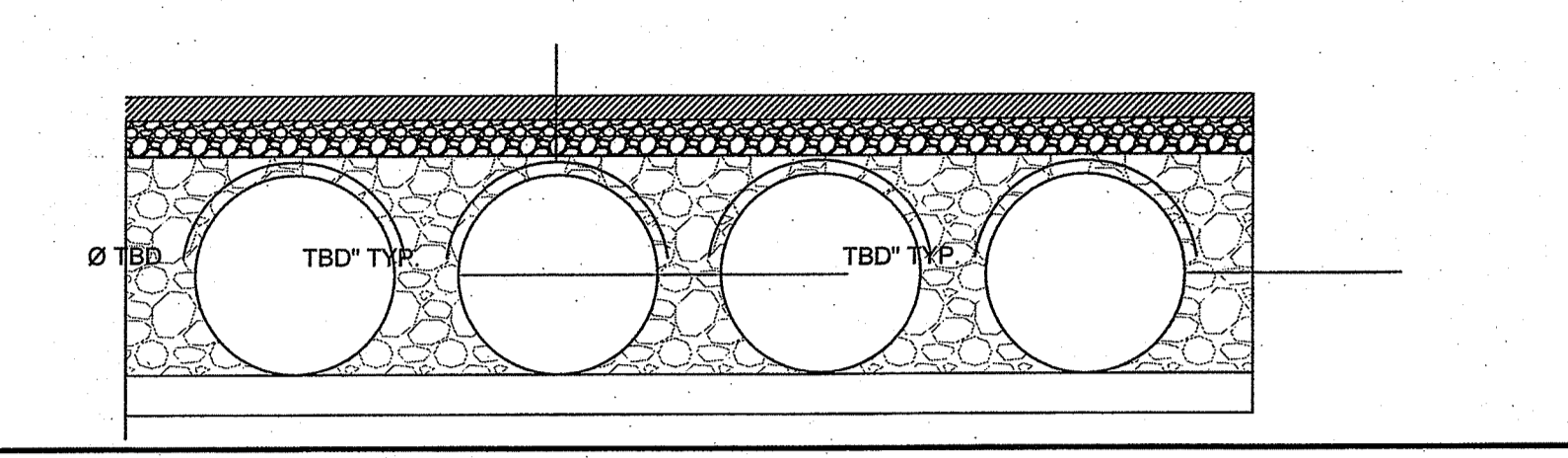
ADMINISTRATIVE OFFICER

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

PLANNING BOARD  
 DRAW NO.: \_\_\_\_\_  
 SHEET NO.: \_\_\_\_\_  
 PLAT/LOT: \_\_\_\_\_

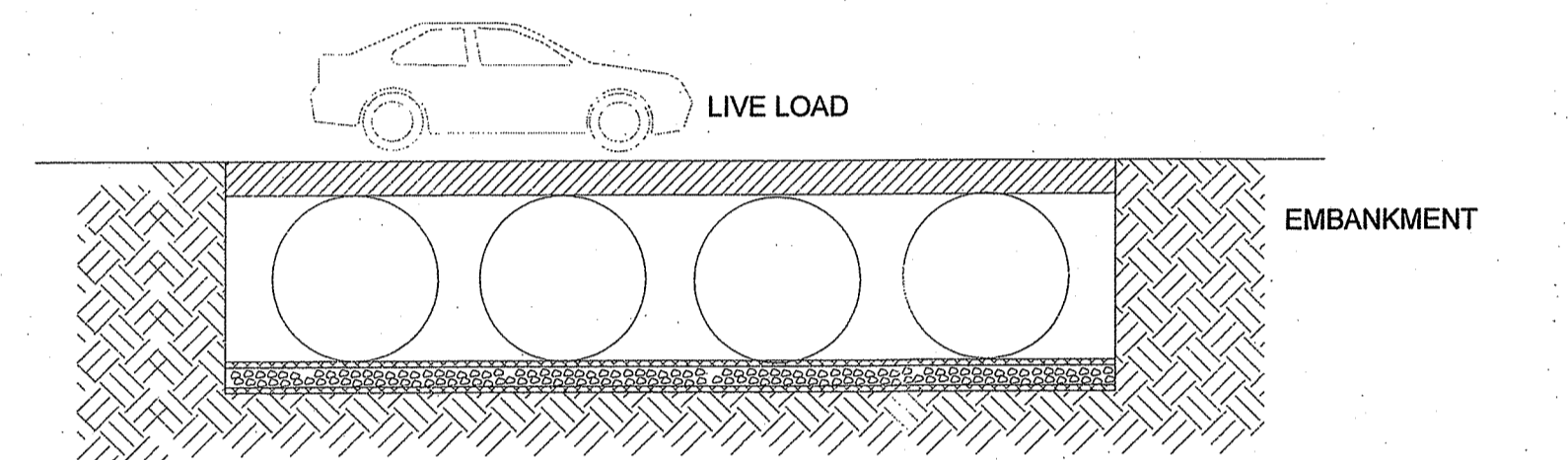
**GEOMEMBRANE BARRIER**  
 A SITE'S RESISTIVITY MAY CHANGE OVER TIME WHEN VARIOUS TYPES OF SALTING AGENTS ARE USED, SUCH AS ROAD SALTS FOR DEICING AGENTS. IF SALTING AGENTS ARE USED ON OR NEAR THE PROJECT SITE, A GEOMEMBRANE BARRIER IS RECOMMENDED WITH THE SYSTEM. THE GEOMEMBRANE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM THE USE OF SUCH AGENTS INCLUDING PREMATURE CORROSION AND REDUCED ACTUAL SERVICE LIFE.

THE PROJECT'S ENGINEER OF RECORD IS TO EVALUATE WHETHER SALTING AGENTS WILL BE USED ON OR NEAR THE PROJECT SITE, AND USE HIS/HER BEST JUDGEMENT TO DETERMINE IF ANY ADDITIONAL PROTECTIVE MEASURES ARE REQUIRED. BELOW IS A TYPICAL DETAIL SHOWING THE PLACEMENT OF A GEOMEMBRANE BARRIER FOR PROJECTS WHERE SALTING AGENTS ARE USED ON OR NEAR THE PROJECT SITE.



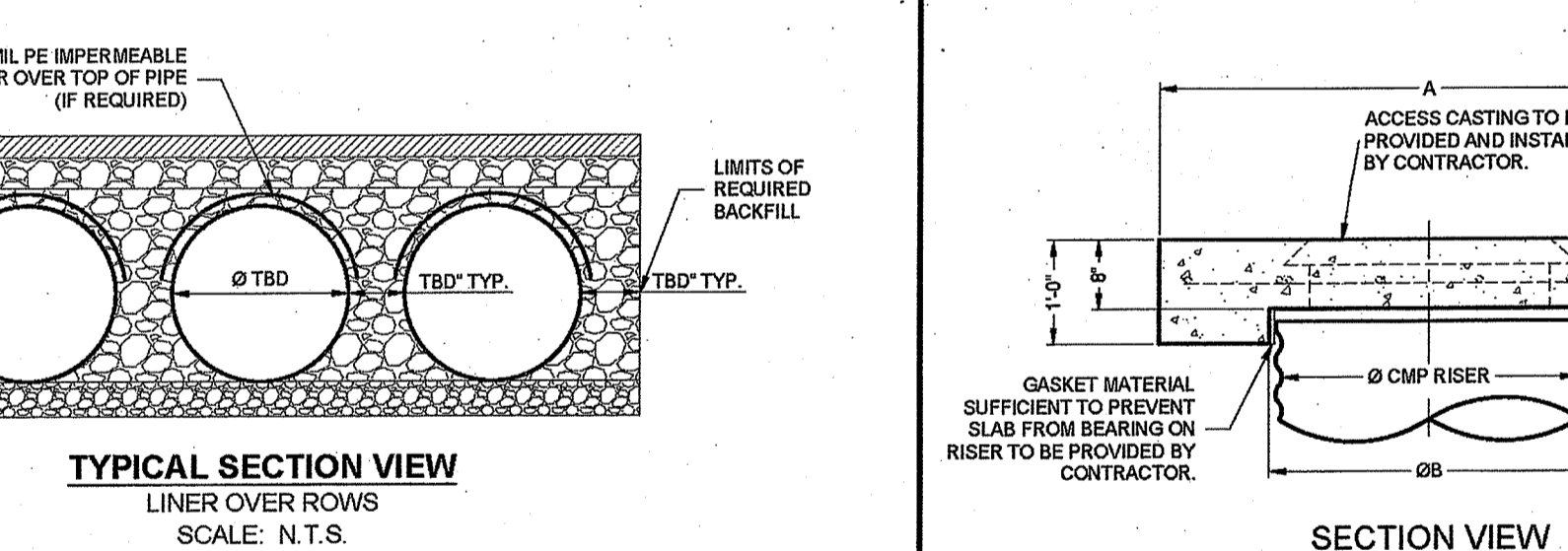
**IN-SITU TRENCH WALL**  
 IF EXCAVATION IS REQUIRED, THE TRENCH WALL NEEDS TO BE CAPABLE OF SUPPORTING THE LOAD THAT THE PIPE SHEDS AS THE SYSTEM IS LOADED. IF SOILS ARE NOT CAPABLE OF SUPPORTING THESE LOADS, THE PIPE CAN DEFLECT. PERFORM A SIMPLE SOIL PRESSURE CHECK USING THE APPLIED LOADS TO DETERMINE THE LIMITS OF EXCAVATION BEYOND THE SPRING LINE OF THE OUTER MOST PIPES. IN MOST CASES THE REQUIREMENTS FOR A SAFE WORK ENVIRONMENT AND PROPER BACKFILL PLACEMENT AND COMPACTION TAKE CARE OF THIS CONCERN.

**BACKFILL MATERIAL**  
 TYPICALLY, THE BEST BACKFILL MATERIAL IS AN ANGULAR, WELL-GRADED, GRANULAR FILL MEETING THE REQUIREMENTS OF AASHTO A-1, A-2 OR A-3. IN SOME CASES, IT MAY BE DESIRABLE TO USE A UNIFORMLY GRADED MATERIAL FOR THE FIRST 18- TO 24-INCHES. THIS TYPE OF MATERIAL IS EASIER TO PLACE UNDER THE HAUNCHES OF THE PIPE AND REQUIRES LITTLE COMPACTIVE EFFORT. DEPENDING ON THE BEDDING MATERIAL, A SEPARATION GEOTEXTILE MIGHT BE REQUIRED ABOVE AND BELOW THESE INITIAL LIFTS.

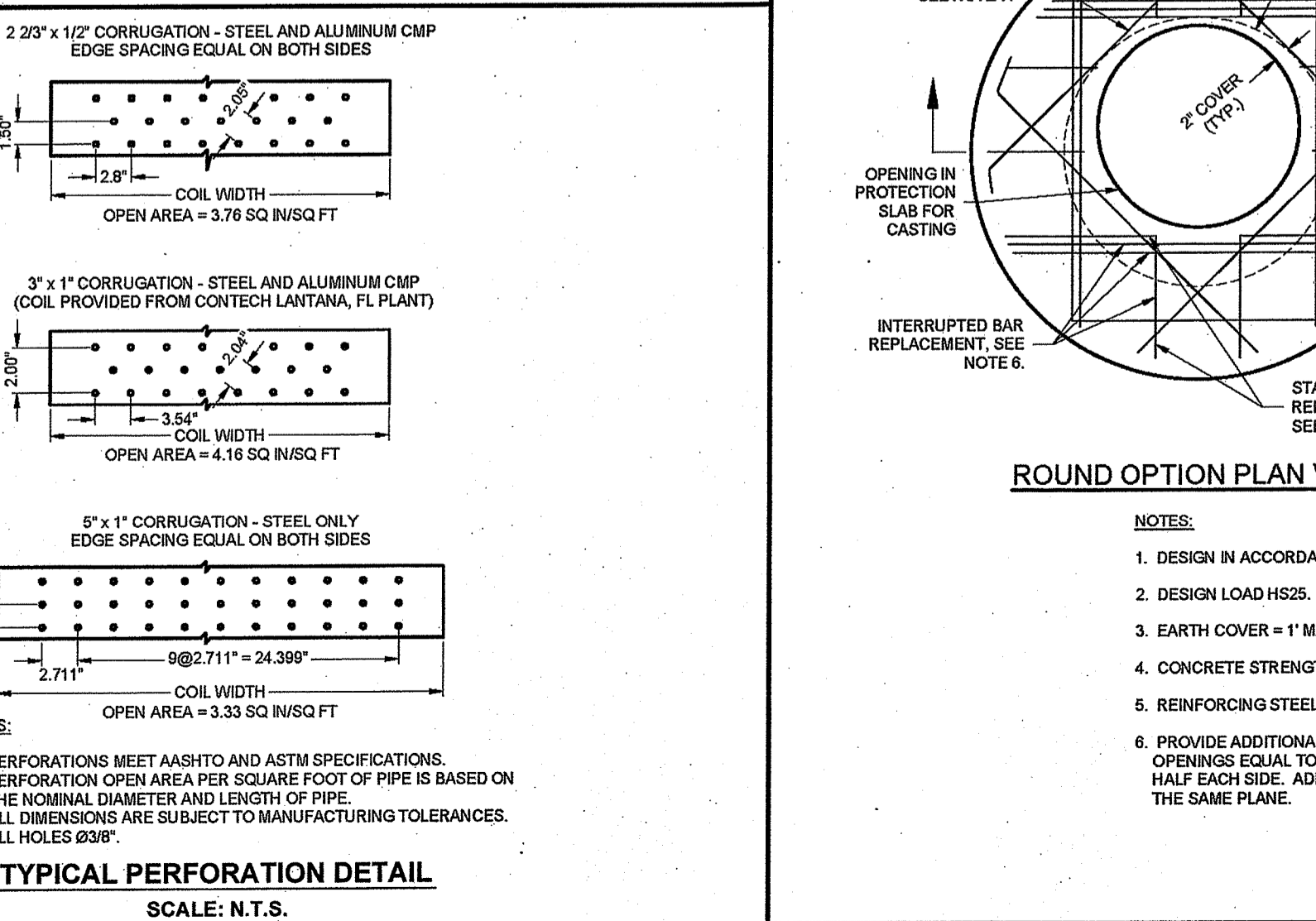


OPEN-GRADED FILL IS TYPICALLY NOT USED BEYOND THE INITIAL 18- TO 24-INCHES BECAUSE THIS TYPE OF FILL OFTEN DOES NOT PROVIDE ADEQUATE CONFINING RESTRAINT TO THE PIPES. IF A UNIFORMLY GRADED MATERIAL (PARTICLES ALL ONE SIZE) IS USED, INSTALL A GEOTEXTILE SEPARATION FABRIC TO PREVENT THE MIGRATION OF FINES INTO THE BACKFILL. BACKFILL USING CONTROLLED LOW-STRENGTH MATERIAL (CLSM OR "FLOWABLE FILL") WHEN THE SPACING BETWEEN THE PIPES WILL NOT ALLOW FOR PLACEMENT AND ADEQUATE COMPACTION OF THE BACKFILL. WORK CLOSELY WITH THE LOCAL CONTECH SALES ENGINEER REGARDING THE SPECIAL INSTALLATION TECHNIQUES REQUIRED WHEN USING CLSM.

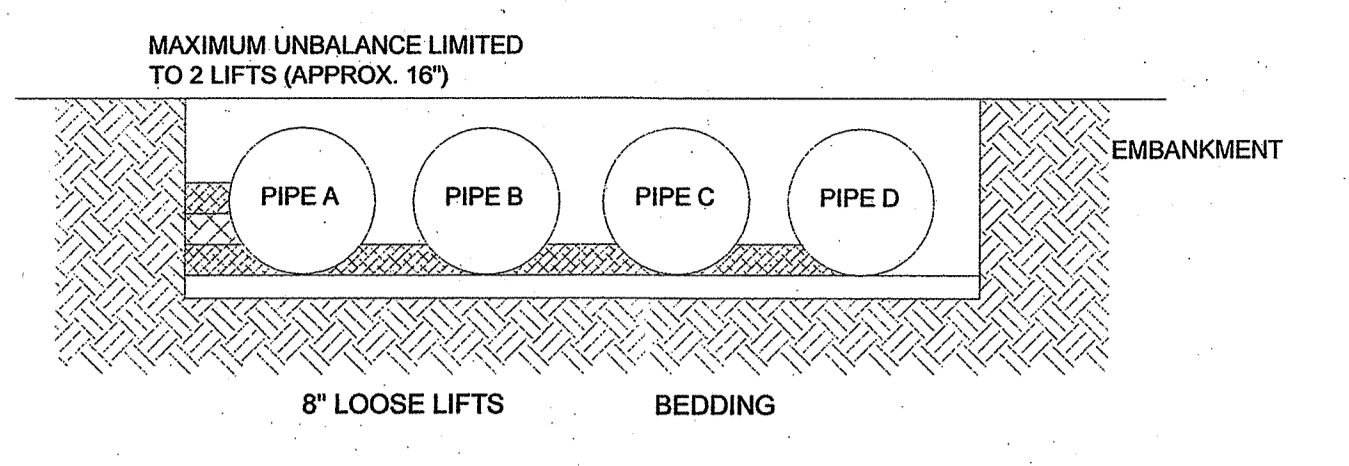
**CONSTRUCTION LOADING**  
 TYPICALLY, THE MINIMUM COVER SPECIFIED FOR A PROJECT ASSUMES H-20 LIVE LOAD. BECAUSE CONSTRUCTION LOADS OFTEN EXCEED DESIGN LIVE LOADS, INCREASED TEMPORARY MINIMUM COVER REQUIREMENTS ARE NECESSARY. SINCE CONSTRUCTION EQUIPMENT VARIES FROM JOB TO JOB, IT IS BEST TO ADDRESS EQUIPMENT SPECIFIC MINIMUM COVER REQUIREMENTS WITH YOUR LOCAL CONTECH SALES ENGINEER DURING YOUR PRE-CONSTRUCTION MEETING.



NOTE: IF SALTING AGENTS FOR SNOW AND ICE REMOVAL ARE USED ON OR NEAR THE PROJECT, A GEOMEMBRANE BARRIER IS RECOMMENDED WITH THE SYSTEM. THE GEOMEMBRANE LINER IS INTENDED TO HELP PROTECT THE SYSTEM FROM THE POTENTIAL ADVERSE EFFECTS THAT MAY RESULT FROM A CHANGE IN THE SURROUNDING ENVIRONMENT OVER A PERIOD OF TIME. PLEASE REFER TO THE CORRUGATED METAL PIPE DETENTION DESIGN GUIDE FOR ADDITIONAL INFORMATION.

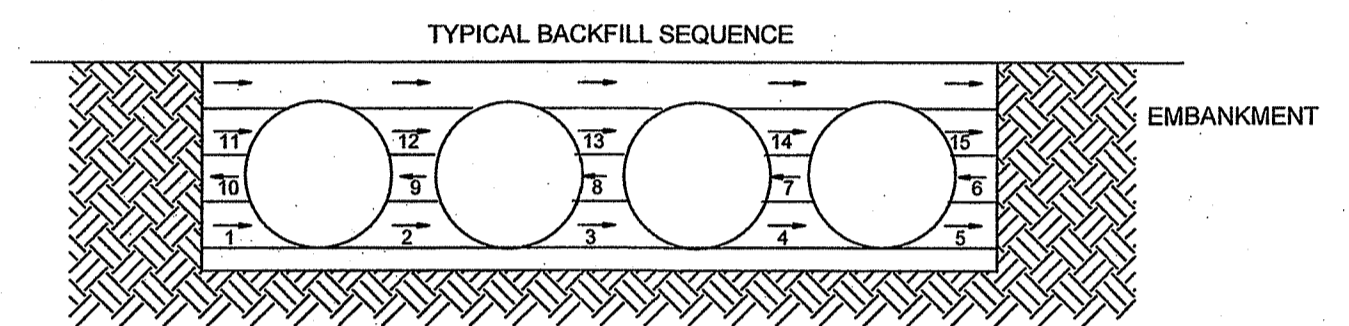


**BACKFILL PLACEMENT**  
 PLACE BACKFILL IN 8-INCH LOOSE LIFTS AND COMPACT TO 90% AASHTO T99 STANDARD PROCTOR DENSITY. MATERIAL SHALL BE WORKED INTO THE PIPE HAUNCHES BY MEANS OF SHOVEL-SLICING, RODDING, AIR TAMPER, VIBRATORY ROD, OR OTHER EFFECTIVE METHODS.

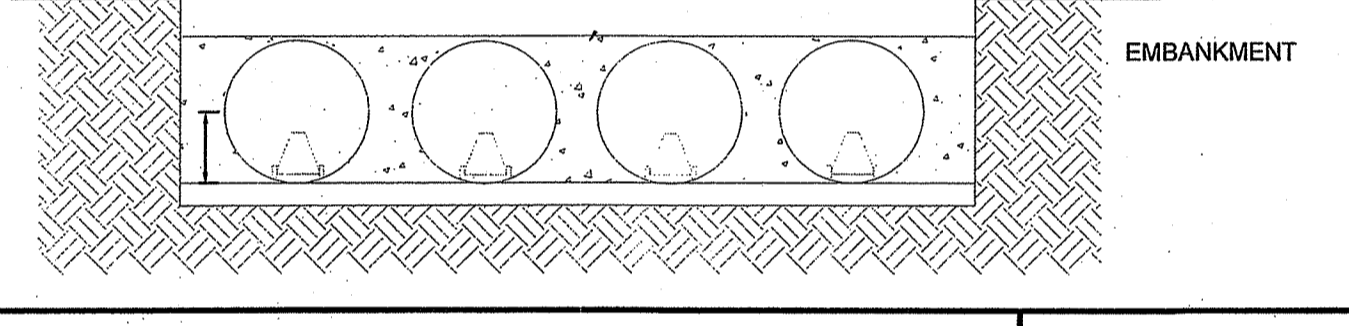


IF AASHTO T99 PROCEDURES ARE DETERMINED INFEASIBLE BY THE GEOTECHNICAL ENGINEER OF RECORD, COMPACTION IS CONSIDERED ADEQUATE WHEN NO FURTHER YIELDING OF THE MATERIAL IS OBSERVED UNDER THE COMPACTOR, OR UNDER FOOT, AND THE GEOTECHNICAL ENGINEER OF RECORD (OR REPRESENTATIVE THEREOF) IS SATISFIED WITH THE LEVEL OF COMPACTION.

FOR LARGE SYSTEMS, CONVEYOR SYSTEMS, BACKHOES WITH LONG REACHES OR DRAGLINES WITH STONE BUCKETS MAY BE USED TO PLACE BACKFILL. ONCE MINIMUM COVER FOR CONSTRUCTION LOADING ACROSS THE ENTIRE WIDTH OF THE SYSTEM IS REACHED, ADVANCE THE EQUIPMENT TO THE END OF THE RECENTLY PLACED FILL, AND BEGIN THE SEQUENCE AGAIN UNTIL THE SYSTEM IS COMPLETELY BACKFILLED. THIS TYPE OF CONSTRUCTION SEQUENCE PROVIDES ROOM FOR STOCKPILED BACKFILL DIRECTLY BEHIND THE BACKHOE, AS WELL AS THE MOVEMENT OF CONSTRUCTION TRAFFIC. MATERIAL STOCKPILES ON TOP OF THE BACKFILLED DETENTION SYSTEM SHOULD BE LIMITED TO 8- TO 10- FEET HIGH AND MUST PROVIDE BALANCED LOADING ACROSS ALL BARRELS. TO DETERMINE THE PROPER COVER OVER THE PIPES TO ALLOW THE MOVEMENT OF CONSTRUCTION EQUIPMENT SEE TABLE 1, OR CONTACT YOUR LOCAL CONTECH SALES ENGINEER.



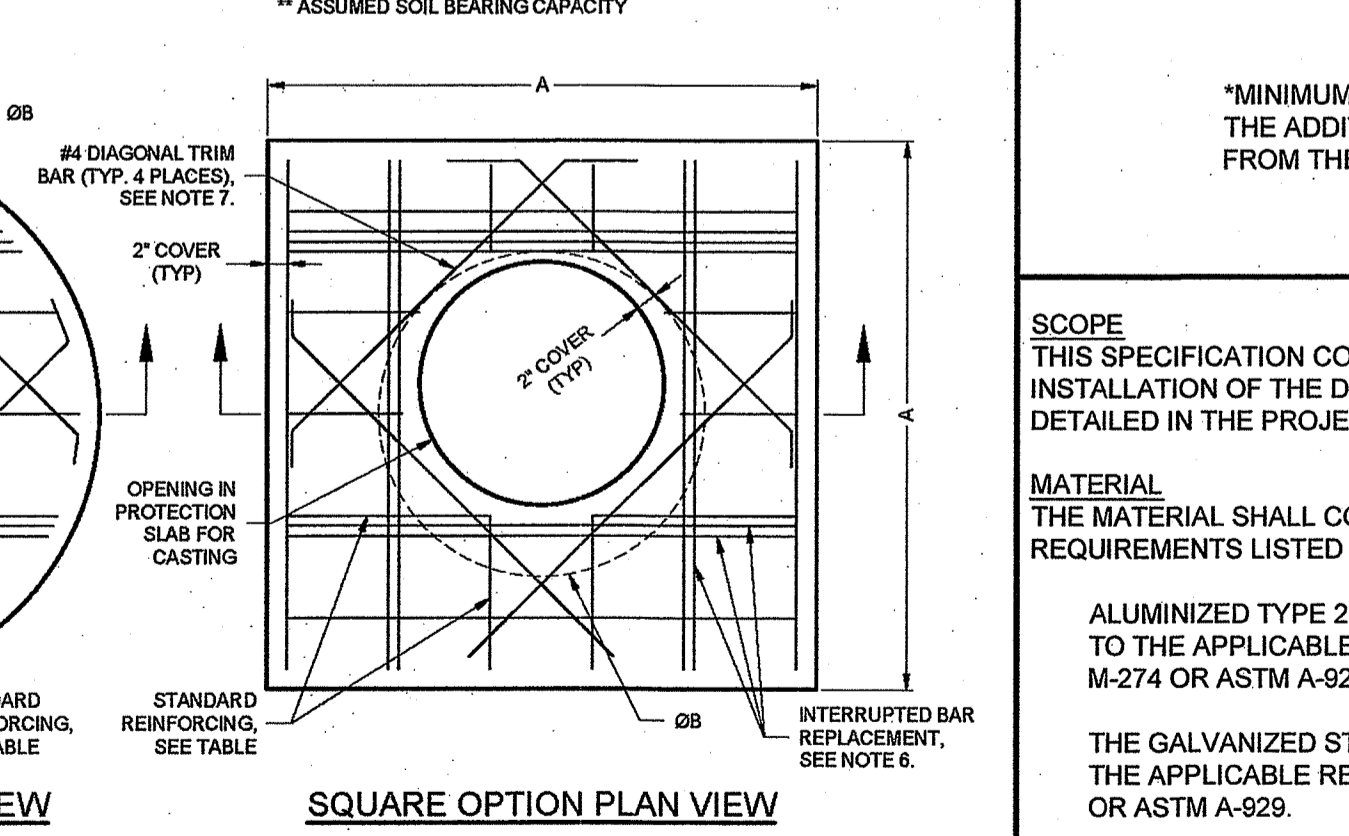
WHEN FLOWABLE FILL IS USED, YOU MUST PREVENT PIPE FLOATATION. TYPICALLY, SMALL LIFTS ARE PLACED BETWEEN THE PIPES AND THEN ALLOWED TO SET UP PRIOR TO THE PLACEMENT OF THE NEXT LIFT. THE ALLOWABLE THICKNESS OF THE CLSM LIFT IS A FUNCTION OF A PROPER BALANCE BETWEEN THE UPLIFT FORCE OF THE CLSM, THE OPPOSING WEIGHT OF THE PIPE, AND THE EFFECT OF OTHER RESTRAINING MEASURES. THE PIPE CAN CARRY LIMITED FLUID PRESSURE WITHOUT PIPE DISTORTION OR DISPLACEMENT, WHICH ALSO AFFECTS THE CLSM LIFT THICKNESS. YOUR LOCAL CONTECH SALES ENGINEER CAN HELP DETERMINE THE PROPER LIFT THICKNESS.



**CONSTRUCTION LOADS**  
 FOR TEMPORARY CONSTRUCTION VEHICLE LOADS, AN EXTRA AMOUNT OF COMPACTED COVER MAY BE REQUIRED OVER THE TOP OF THE PIPE. THE HEIGHT-OF-COVER SHALL MEET THE MINIMUM REQUIREMENTS SHOWN IN THE TABLE BELOW. THE USE OF HEAVY CONSTRUCTION EQUIPMENT NECESSITATES GREATER PROTECTION FOR THE PIPE THAN FINISHED GRADE COVER MINIMUMS FOR NORMAL HIGHWAY TRAFFIC.

Ø CMP RISER	A	Ø B	REINFORCING	**BEARING PRESSURE (PSF)
24"	Ø 4'	20"	#5 @ 12" OCEW #5 @ 12" OCEW	2,410 1,780
30"	Ø 4'-6"	32"	#5 @ 12" OCEW #5 @ 12" OCEW	2,120 1,530
36"	Ø 5'	36"	#5 @ 10" OCEW #5 @ 10" OCEW	1,890 1,350
42"	Ø 5'-6"	44"	#5 @ 10" OCEW #5 @ 9" OCEW	1,720 1,210
48"	Ø 6'	50"	#5 @ 9" OCEW #5 @ 9" OCEW	1,600 1,100

\*\* ASSUMED SOIL BEARING CAPACITY

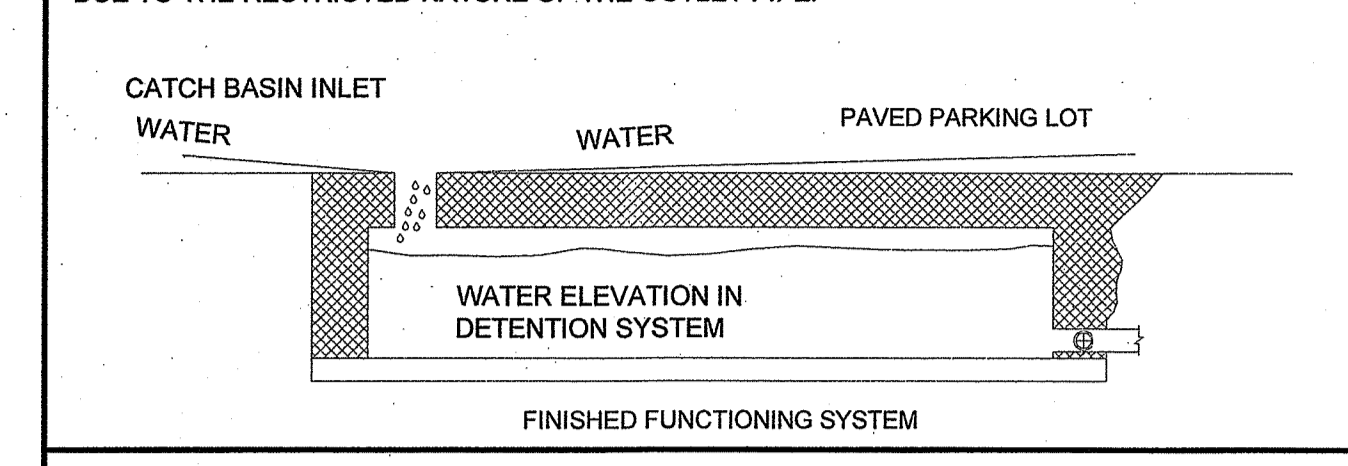


**MANHOLE CAP DETAIL**  
 SCALE: N.T.S.

NOTES:

- DESIGN IN ACCORDANCE WITH AASHTO, 17th EDITION.
- DESIGN LOAD HS25.
- EARTH COVER = 1' MAX.
- CONCRETE STRENGTH = 3,500 psi
- REINFORCING STEEL = ASTM A615, GRADE 60.
- PROVIDE ADDITIONAL REINFORCING AROUND OPENINGS EQUAL TO THE BARS INTERRUPTED, HALF EACH SIDE. ADDITIONAL BARS TO BE IN THE SAME PLANE.
- TRIM OPENING WITH DIAGONAL #4 BARS, EXTEND BARS A MINIMUM OF 12" BEYOND OPENING. BEND BARS AS REQUIRED TO MAINTAIN BAR COVER.
- PROTECTION SLAB AND ALL MATERIALS TO BE PROVIDED AND INSTALLED BY CONTRACTOR.
- DETAIL DESIGN BY DELTA ENGINEERING, BOWHAMTON, NY.

**ADDITIONAL CONSIDERATIONS**  
 BECAUSE MOST SYSTEMS ARE CONSTRUCTED BELOW-GRADE, RAINFALL CAN RAPIDLY FILL THE EXCAVATION; POTENTIALLY CAUSING FLOATION AND MOVEMENT OF THE PREVIOUSLY PLACED PIPES. TO HELP MITIGATE POTENTIAL PROBLEMS, IT IS BEST TO START THE INSTALLATION AT THE DOWNSTREAM END WITH THE OUTLET ALREADY CONSTRUCTED TO ALLOW A ROUTE FOR THE WATER TO ESCAPE. TEMPORARY DIVERSION MEASURES MAY BE REQUIRED FOR HIGH FLOWS DUE TO THE RESTRICTED NATURE OF THE OUTLET PIPE.



**CMP DETENTION SYSTEM INSPECTION AND MAINTENANCE**  
 UNDERGROUND STORMWATER DETENTION AND INFILTRATION SYSTEMS MUST BE INSPECTED AND MAINTAINED AT REGULAR INTERVALS FOR PURPOSES OF PERFORMANCE AND LONGEVITY.

**INSPECTION**  
 INSPECTION IS THE KEY TO EFFECTIVE MAINTENANCE OF CMP DETENTION SYSTEMS AND IS EASILY PERFORMED. CONTECH RECOMMENDS ONGOING, QUARTERLY INSPECTIONS. THE RATE AT WHICH THE SYSTEM COLLECTS POLLUTANTS WILL DEPEND MORE ON SITE SPECIFIC ACTIVITIES RATHER THAN THE SIZE OR CONFIGURATION OF THE SYSTEM.

INSPECTIONS SHOULD BE PERFORMED MORE OFTEN IN EQUIPMENT WASHDOWN AREAS, IN CLIMATES WHERE SANDING AND/OR SALTING OPERATIONS TAKE PLACE, AND IN OTHER VARIOUS INSTANCES IN WHICH ONE WOULD EXPECT HIGHER ACCUMULATIONS OF SEDIMENT OR ABRASIVE/CORROSIVE CONDITIONS. A RECORD OF EACH INSPECTION IS TO BE MAINTAINED FOR THE LIFE OF THE SYSTEM.

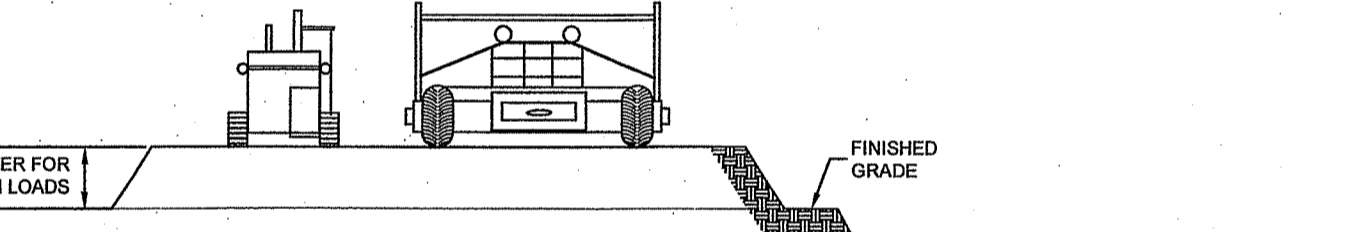
**MAINTENANCE**  
 CMP DETENTION SYSTEMS SHOULD BE CLEANED WHEN AN INSPECTION REVEALS ACCUMULATED SEDIMENT OR TRASH IS CLOGGING THE DISCHARGE ORIFICE.

ACCUMULATED SEDIMENT AND TRASH CAN TYPICALLY BE EVACUATED THROUGH THE MANHOLE OVER THE OUTLET ORIFICE. IF MAINTENANCE IS NOT PERFORMED AS RECOMMENDED, SEDIMENT AND TRASH MAY ACCUMULATE IN FRONT OF THE OUTLET ORIFICE. MANHOLE COVERS SHOULD BE SECURELY SEATED FOLLOWING CLEANING ACTIVITIES. CONTECH SUGGESTS THAT ALL SYSTEMS BE DESIGNED WITH AN ACCESS/INSPECTION MANHOLE SITUATED AT OR NEAR THE INLET AND THE OUTLET ORIFICE. SHOULD IT BE NECESSARY TO GET INSIDE THE SYSTEM TO PERFORM MAINTENANCE ACTIVITIES, ALL APPROPRIATE PRECAUTIONS REGARDING CONFINED SPACE ENTRY AND OSHA REGULATIONS SHOULD BE FOLLOWED.

DURING THE ANNUAL INSPECTION PROCESS IF EVIDENCE OF SALTING/DE-ICING AGENTS IS OBSERVED WITHIN THE SYSTEM, IT IS BEST PRACTICE FOR THE SYSTEM TO BE RINSED, INCLUDING ABOVE THE SPRING LINE SOON AFTER THE SPRING THAW AS PART OF THE MAINTENANCE PROGRAM FOR THE SYSTEM.

MAINTAINING AN UNDERGROUND DETENTION OR INFILTRATION SYSTEM IS EASIEST WHEN THERE IS NO FLOW ENTERING THE SYSTEM. FOR THIS REASON, IT IS A GOOD IDEA TO SCHEDULE THE CLEANOUT DURING DRY WEATHER.

THE FOREGOING INSPECTION AND MAINTENANCE EFFORTS HELP ENSURE UNDERGROUND PIPE SYSTEMS USED FOR STORMWATER STORAGE CONTINUE TO FUNCTION AS INTENDED BY IDENTIFYING RECOMMENDED REGULAR INSPECTION AND MAINTENANCE PRACTICES. INSPECTION AND MAINTENANCE RELATED TO THE STRUCTURAL INTEGRITY OF THE PIPE OR THE SOUNDNESS OF PIPE JOINT CONNECTIONS IS BEYOND THE SCOPE OF THIS GUIDE.



PIPE SPAN, INCHES	AXLE LOADS (kips)		
	18-50	50-75	75-110 / 110-150
	MINIMUM COVER (FT)		
12-42	2.0	2.5	3.0
48-72	3.0	3.0	3.0
78-120	3.0	3.5	4.0
126-144	3.5	4.0	4.5

\*MINIMUM COVER MAY VARY, DEPENDING ON LOCAL CONDITIONS. THE CONTRACTOR MUST PROVIDE THE ADDITIONAL COVER REQUIRED TO AVOID DAMAGE TO THE PIPE. MINIMUM COVER IS MEASURED FROM THE TOP OF THE PIPE TO THE TOP OF THE MAINTAINED CONSTRUCTION ROADWAY SURFACE.

**CONSTRUCTION LOADING DIAGRAM**  
 SCALE: N.T.S.

**SCOPE**  
 THIS SPECIFICATION COVERS THE MANUFACTURE AND INSTALLATION OF THE DESIGNED DETENTION SYSTEM DETAILED IN THE PROJECT PLANS.

**MATERIAL**  
 THE MATERIAL SHALL CONFORM TO THE APPLICABLE REQUIREMENTS LISTED BELOW.

ALUMINIZED TYPE 2 STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-274 OR ASTM A-92.

THE GALVANIZED STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-218 OR ASTM A-929.

THE POLYMER COATED STEEL COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-246 OR ASTM A-742.

THE ALUMINUM COILS SHALL CONFORM TO THE APPLICABLE REQUIREMENTS OF AASHTO M-196 OR ASTM B-745.

**PIPE**  
 THE PIPE SHALL BE MANUFACTURED IN ACCORDANCE TO THE APPLICABLE REQUIREMENTS LISTED BELOW.

ALUMINIZED TYPE 2: AASHTO M-36 OR ASTM A-760

GALVANIZED: AASHTO M-36 OR ASTM A-760

POLYMER COATED: AASHTO M-246 OR ASTM A-742

ALUMINUM: AASHTO M-196 OR ASTM B-745

**HANDLING AND ASSEMBLY**  
 SHALL BE IN ACCORDANCE WITH NCSPS (NATIONAL CORRUGATED STEEL PIPE ASSOCIATION) FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL. SHALL BE IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS FOR ALUMINUM PIPE.

**INSTALLATION**  
 SHALL BE IN ACCORDANCE WITH AASHTO STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES, SECTION 28, DIVISION II DIVISION II OR ASTM A-798 (FOR ALUMINIZED TYPE 2, GALVANIZED OR POLYMER COATED STEEL) OR ASTM B-788 (FOR ALUMINUM PIPE) AND IN CONFORMANCE WITH THE PROJECT PLANS AND SPECIFICATIONS. IF THERE ARE ANY INCONSISTENCIES OR CONFLICTS THE CONTRACTOR SHOULD DISCUSS AND RESOLVE WITH THE SITE ENGINEER.

IT IS ALWAYS THE RESPONSIBILITY OF THE CONTRACTOR TO FOLLOW OSHA GUIDELINES FOR SAFE PRACTICES.

SPECIFICATION FOR DESIGNED DETENTION SYSTEM:

NO	DATE	REVISIONS
1	02/27/2018	PRELIMINARY PLAN SUBMISSION
2	09/26/2018	PRELIMINARY FINAL APPROVAL
3	02/20/2019	RDEN COMMENTS
4	05/07/2019	RDEN COMMENTS

SEAL  
 DANIEL R CAMPBELL  
 5/1/19  
 No 8393  
 REGISTERED PROFESSIONAL ENGINEER CIVIL

DATE: MAY 17, 2018  
 DRAWN: NF / DRC  
 SCALE: NTS

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED: 05/17/2019 FILE # 19-06170  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

**HUNTING HILL**  
 MAJOR LAND DEVELOPMENT PROJECT  
 PERMIT MODIFICATION  
 AP 35, LOT 188  
 CUMBERLAND, RHODE ISLAND 02864

MAY 10 2019  
 Office of Water Resources

**LEVEL**  
 DESIGN GROUP  
 CIVIL ENGINEERING  
 249 SOUTH STREET  
 UNIT 1  
 PLAINVILLE, MA 02762  
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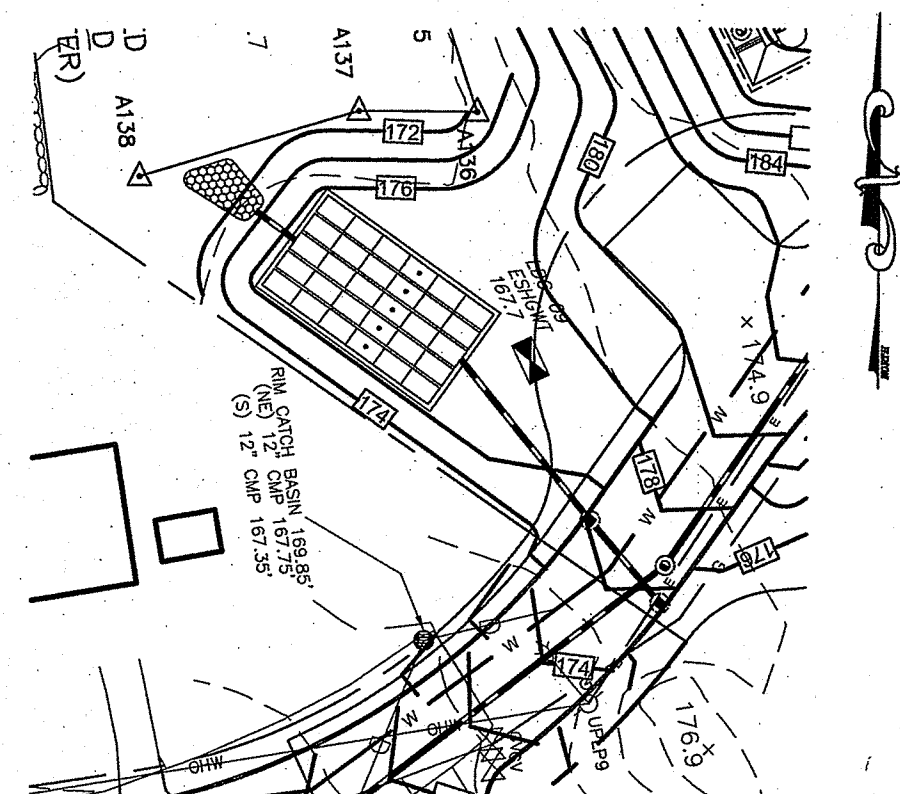
**CONTECH PIPE SYSTEM DETAILS**

**C-4.3**  
 SHEET 10 OF 23

**1554.00**

**STORMTECH SYSTEM 1**

30 STORMTECH SC-740 CHAMBERS CONFIGURED AS SHOWN  
 BOTTOM OF STONE=172.00  
 TOP OF CHAMBERS=175.50  
 TOP OF STONE=175.00  
 OUTLETS: 4" PVC PIPE INV=173.00  
 L=2.0, S=0.010  
 6" OBSERVATION PORTS AS SHOWN

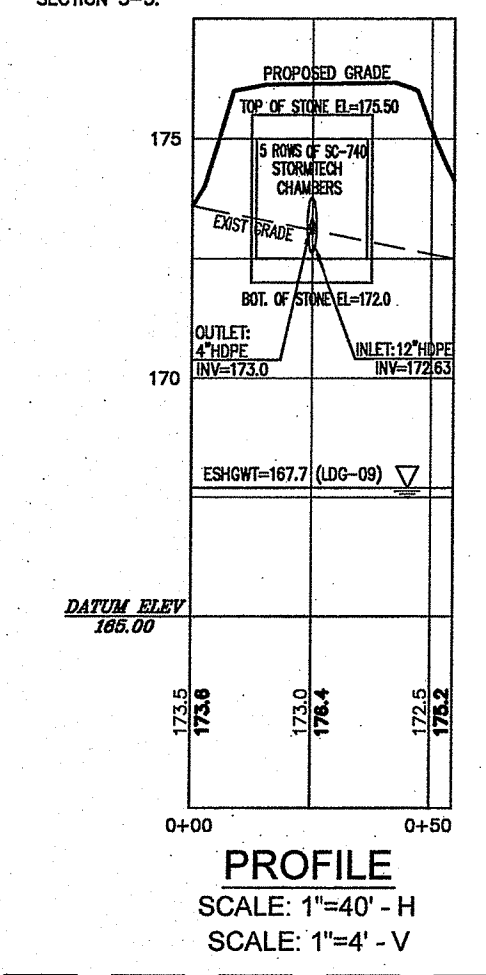


PLAN SCALE: 1"=40'

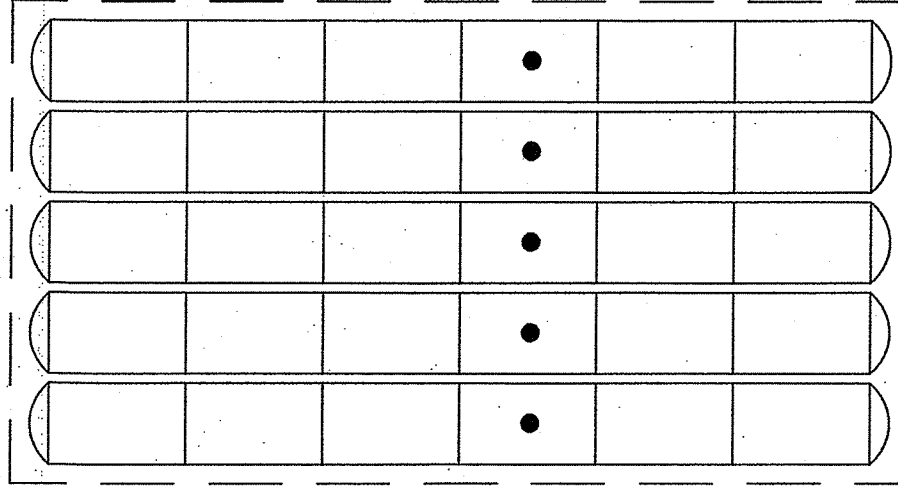
**SYSTEM SUMMARY**  
 • 30 SC-740 CHAMBERS WITH ENDCAPS (5 ROWS, 6 CHAMBERS PER ROW)  
 • TOTAL STORAGE PROVIDED = 2,423 CF  
 • CHAMBER STORAGE = 1,392 CF  
 • STRUCTURAL BACKFILL STORAGE = 1,039 CF  
**BACKFILL DETAILS**  
 • WIDTH SYSTEM END = 12"  
 • ABOVE SYSTEM = 6"  
 • WIDTH AT SYSTEM SIDES = 12"  
 • BELOW SYSTEM PIPE = 6"

SYSTEM LAYOUT & INFORMATION FOR STORMTECH SYSTEM 1  
 N.T.S.

**INSTALLATION NOTES:**  
 O/A & B SOIL HORIZONS SHALL BE REMOVED PRIOR TO SYSTEM INSULATION (APPROX 22"-28" BELOW SURFACE GRADE). AREAS WITHIN THE SYSTEM WHICH REQUIRE ADDITIONAL FILL TO REACH THE BOTTOM OF STONE ELEVATION SHALL BE FILLED WITH 5# 18" MINIMUM LAYER ASTM C-33 CONCRETE SAND AS REQUIRED BY RIDEM SECTION 5-5.

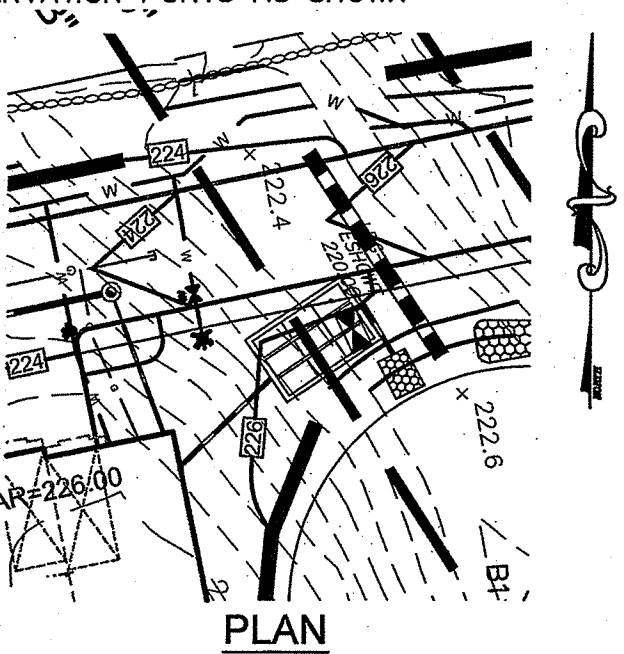


PROFILE SCALE: 1"=40' - H  
 SCALE: 1"=4' - V



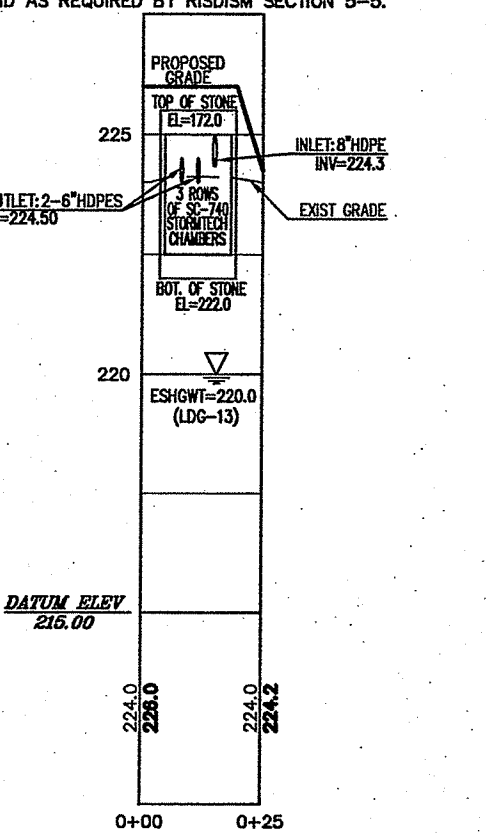
**STORMTECH SYSTEM 2**

9 STORMTECH SC-740 CHAMBERS CONFIGURED AS SHOWN  
 BOTTOM OF STONE=222.00  
 TOP OF CHAMBERS=225.50  
 OUTLETS: 2-6" HDPE PIPES INV=224.50  
 L=2.0, S=0.010  
 6" OBSERVATION PORTS AS SHOWN

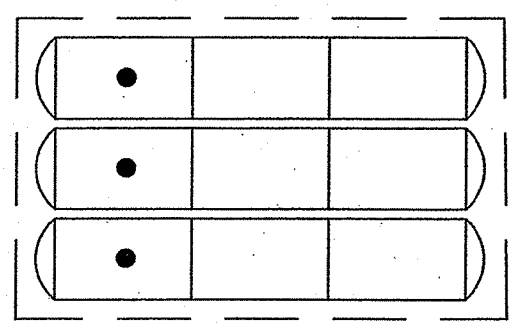


PLAN SCALE: 1"=40'

**INSTALLATION NOTES:**  
 O/A & B SOIL HORIZONS SHALL BE REMOVED PRIOR TO SYSTEM INSULATION (APPROX 22"-28" BELOW SURFACE GRADE). AREAS WITHIN THE SYSTEM WHICH REQUIRE ADDITIONAL FILL TO REACH THE BOTTOM OF STONE ELEVATION SHALL BE FILLED WITH 5# 18" MINIMUM LAYER ASTM C-33 CONCRETE SAND AS REQUIRED BY RIDEM SECTION 5-5.



PROFILE SCALE: 1"=40' - H  
 SCALE: 1"=4' - V



SYSTEM LAYOUT & INFORMATION FOR STORMTECH SYSTEM 2  
 N.T.S.

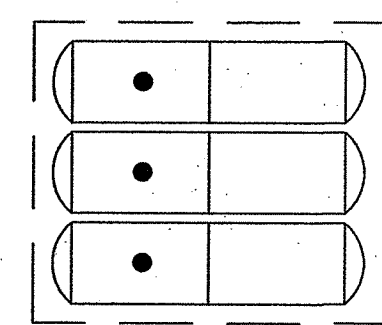
**SYSTEM SUMMARY**  
 • 9 SC-740 CHAMBERS WITH ENDCAPS (3 ROWS, 3 CHAMBERS PER ROW)  
 • TOTAL STORAGE PROVIDED = 778 CF  
 • CHAMBER STORAGE = 722 CF  
 • STRUCTURAL BACKFILL STORAGE = 356 CF  
**BACKFILL DETAILS**  
 • WIDTH SYSTEM END = 12"  
 • ABOVE SYSTEM = 6"  
 • WIDTH AT SYSTEM SIDES = 12"  
 • BELOW SYSTEM PIPE = 6"

**STORMTECH SYSTEM 3**

6 STORMTECH SC-740 CHAMBERS CONFIGURED AS SHOWN  
 BOTTOM OF STONE=224.00  
 TOP OF CHAMBERS=225.50  
 OUTLETS: 2-6" HDPE PIPES INV=226.50  
 L=2.0, S=0.010  
 6" OBSERVATION PORTS AS SHOWN

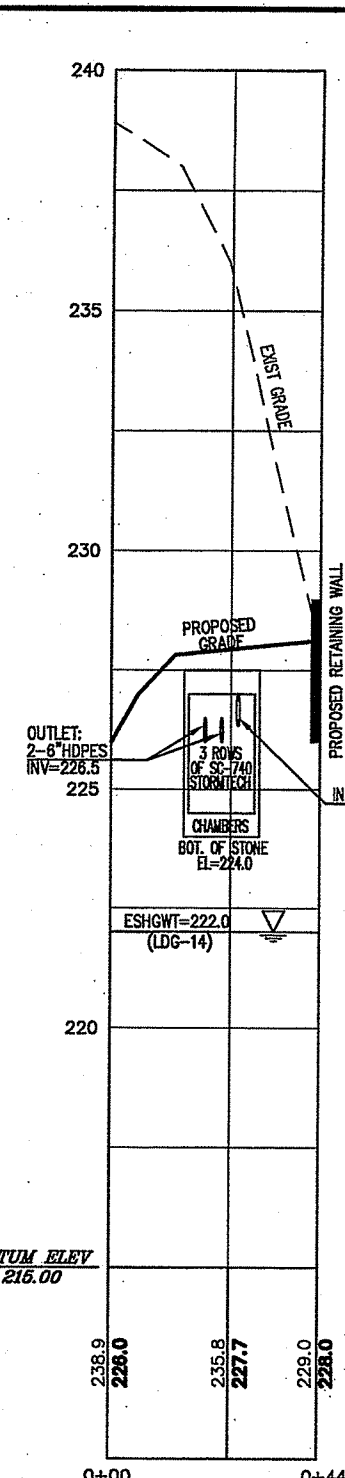


PLAN SCALE: 1"=40'



SYSTEM LAYOUT & INFORMATION FOR STORMTECH SYSTEM 3  
 N.T.S.

**SYSTEM SUMMARY**  
 • 6 SC-740 CHAMBERS WITH ENDCAPS (3 ROWS, 2 CHAMBERS PER ROW)  
 • TOTAL STORAGE PROVIDED = 538 CF  
 • CHAMBER STORAGE = 284 CF  
 • STRUCTURAL BACKFILL STORAGE = 254 CF  
**BACKFILL DETAILS**  
 • WIDTH SYSTEM END = 12"  
 • ABOVE SYSTEM = 6"  
 • WIDTH AT SYSTEM SIDES = 12"  
 • BELOW SYSTEM PIPE = 6"

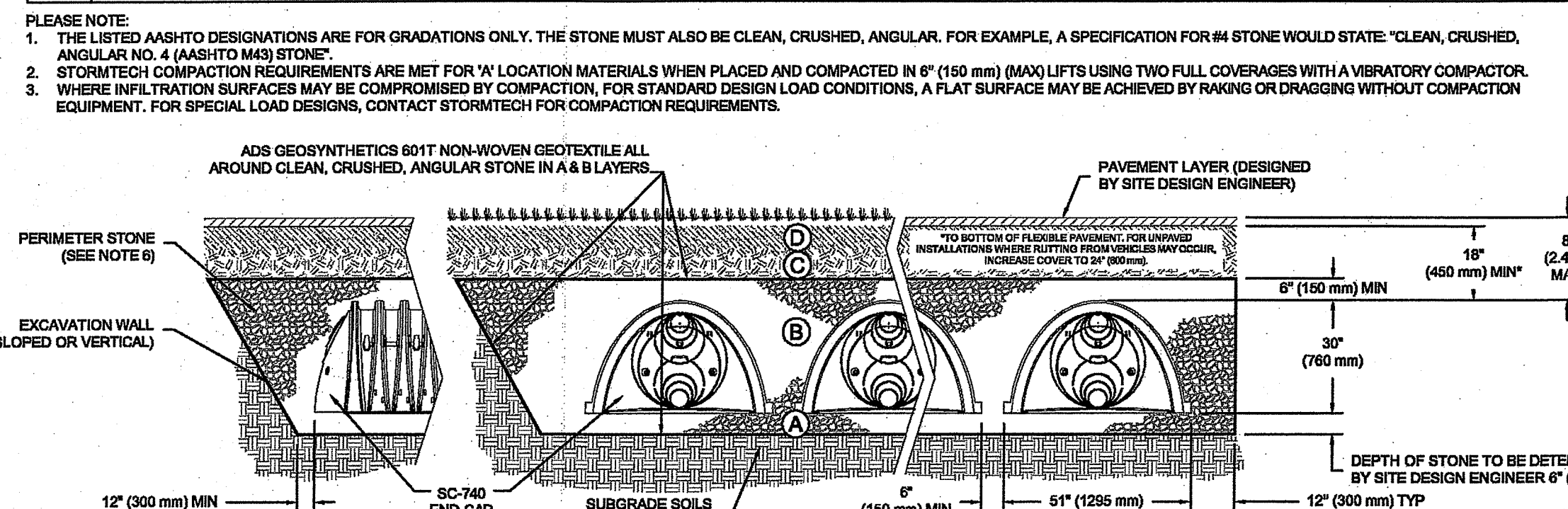


PROFILE SCALE: 1"=40' - H  
 SCALE: 1"=4' - V

**INSTALLATION NOTES:**  
 O/A & B SOIL HORIZONS SHALL BE REMOVED PRIOR TO SYSTEM INSULATION (APPROX 22"-28" BELOW SURFACE GRADE). AREAS WITHIN THE SYSTEM WHICH REQUIRE ADDITIONAL FILL TO REACH THE BOTTOM OF STONE ELEVATION SHALL BE FILLED WITH 5# 18" MINIMUM LAYER ASTM C-33 CONCRETE SAND AS REQUIRED BY RIDEM SECTION 5-5.

**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 STRICTER MATERIAL AND PREPARATION REQUIREMENTS.
C	INITIAL FILL: FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	AASHTO M1451 A-1, A-2, A-3 OR AASHTO M431 3, 367, 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. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 20,000 lbs (90 kN).
B	EMBEDMENT STONE: FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	AASHTO M431 3, 367, 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 M431 3, 367, 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 M43) 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.  
 3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTOR EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
- ADDS GEOSYNTHETICS 6017 NON-WOVEN GEOTEXTILE ALL AROUND CLEAN, CRUSHED, ANGULAR STONE IN A & B LAYERS.
- PAVEMENT LAYER (DESIGNED BY SITE DESIGN ENGINEER)
- INSTALLATION SHALL PROTECT FROM VEHICLES MAY OCCUR. INCREASE COVER TO 12" (300 mm).
- DEPTH OF STONE TO BE DETERMINED BY SITE DESIGN ENGINEER @ 150 mm MIN
- 12" (300 mm) MIN
- SC-740 END CAP
- SUBGRADE SOILS (SEE NOTE 4)
- 6" (150 mm) MIN
- 51" (1285 mm)
- 12" (300 mm) TYP

**NOTES:**  
 1. SC-740 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".  
 2. SC-740 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".  
 3. "ACCEPTABLE FILL MATERIALS" TABLE ABOVE PROVIDES MATERIAL LOCATIONS, DESCRIPTIONS, GRADATIONS, AND COMPACTION REQUIREMENTS FOR FOUNDATION, EMBEDMENT, AND FILL MATERIALS.  
 4. 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.  
 5. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.  
 6. 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.

FINAL PLAN REVIEW APPROVED IN ACCORDANCE WITH THE TOWN OF CUMBERLAND SUBDIVISION REGULATIONS.

ADMINISTRATIVE OFFICER \_\_\_\_\_ DATE: \_\_\_\_\_

PLANNING BOARD \_\_\_\_\_ DRAW NO.: \_\_\_\_\_ SHEET NO.: \_\_\_\_\_ PLAT/LOT \_\_\_\_\_

**STORMTECH CHAMBER SPECIFICATIONS**

- CHAMBERS SHALL BE STORMTECH SC-740 OR SC-310.
- 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 PRESENCES.
- 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.

**IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE SC-310/SC-740 SYSTEM**

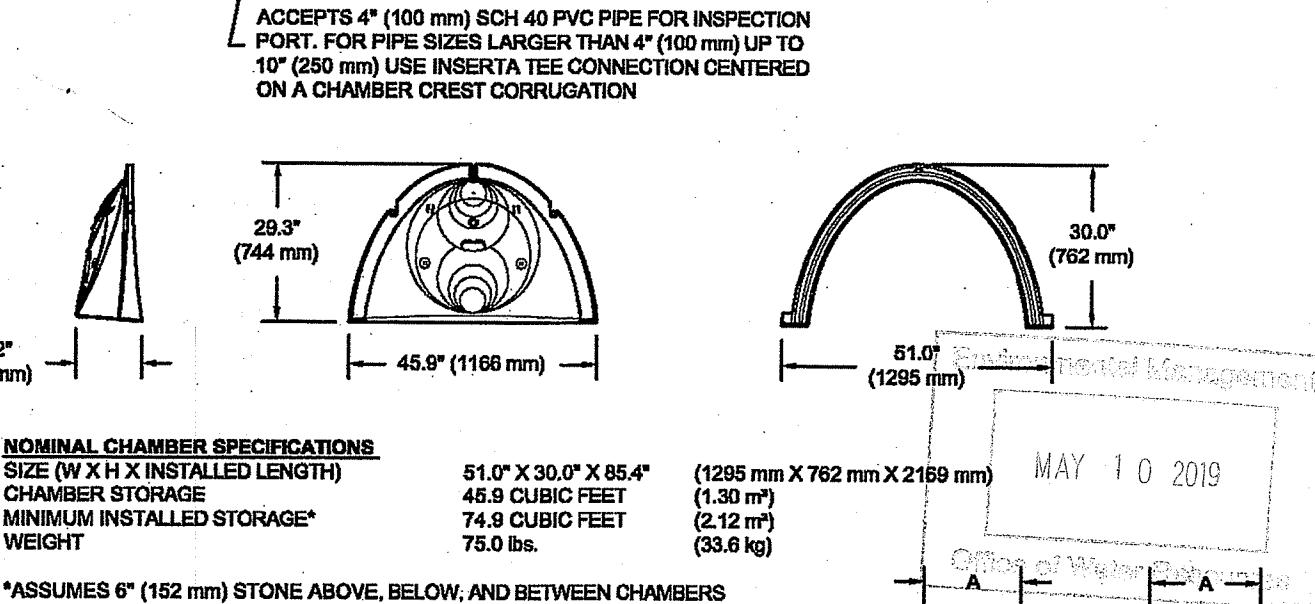
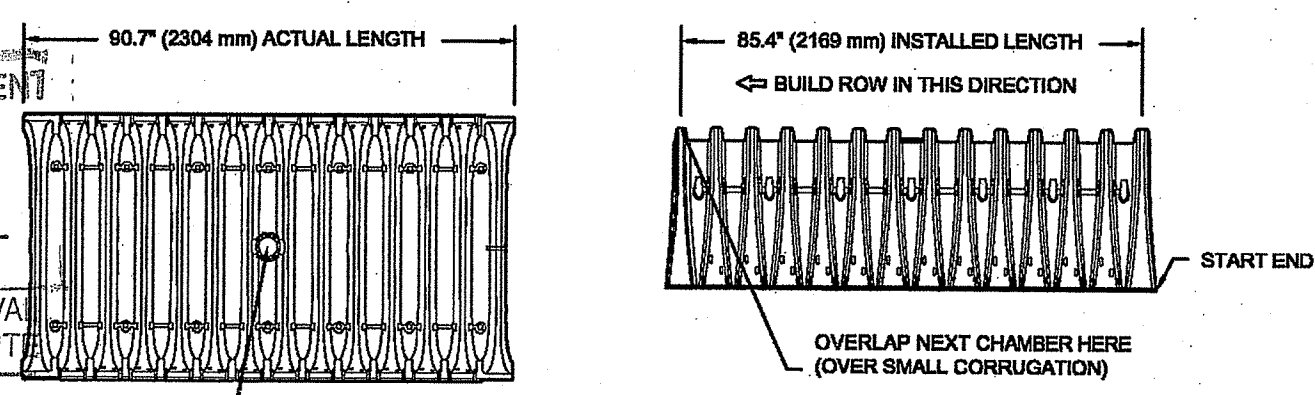
- STORMTECH SC-310 & SC-740 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
- STORMTECH SC-310 & SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740DC-780 CONSTRUCTION GUIDE".
- CHAMBERS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

**NOTES FOR CONSTRUCTION EQUIPMENT**

- STORMTECH SC-310 & SC-740 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740DC-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 UNLESS PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740DC-780 CONSTRUCTION GUIDE".
    - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740DC-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 1-888-892-2894 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

TYPICAL STORMTECH SC-740 CHAMBER DETAILS  
 SCALE: N.T.S.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED: MAY 10, 2019 FILE # 19-0070  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE



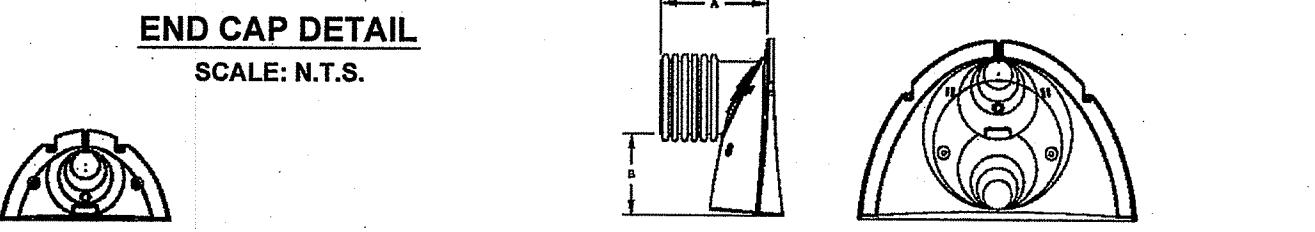
**STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B" STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"**

PART #	STUB	A	B	C
SC740EP08T / SC740EP08BPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	0.5" (13 mm)
SC740EP08B / SC740EP08TPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	0.5" (13 mm)
SC740EP10T / SC740EP10BPC	8" (200 mm)	12.2" (310 mm)	18.5" (470 mm)	0.6" (16 mm)
SC740EP10B / SC740EP10TPC	8" (200 mm)	12.2" (310 mm)	18.5" (470 mm)	0.6" (16 mm)
SC740EP12T / SC740EP12BPC	10" (250 mm)	13.4" (340 mm)	18.5" (470 mm)	0.7" (18 mm)
SC740EP12B / SC740EP12TPC	10" (250 mm)	13.4" (340 mm)	18.5" (470 mm)	0.7" (18 mm)
SC740EP15T / SC740EP15BPC	12" (300 mm)	14.7" (373 mm)	18.5" (470 mm)	1.2" (30 mm)
SC740EP15B / SC740EP15TPC	12" (300 mm)	14.7" (373 mm)	18.5" (470 mm)	1.2" (30 mm)
SC740EP18T / SC740EP18BPC	15" (375 mm)	18.4" (467 mm)	18.5" (470 mm)	1.3" (33 mm)
SC740EP18B / SC740EP18TPC	15" (375 mm)	18.4" (467 mm)	18.5" (470 mm)	1.3" (33 mm)
SC740EP24T / SC740EP24BPC	24" (600 mm)	18.5" (470 mm)	18.5" (470 mm)	0.1" (3 mm)
SC740EP24B / SC740EP24TPC	24" (600 mm)	18.5" (470 mm)	18.5" (470 mm)	0.1" (3 mm)

ALL STUBS, EXCEPT FOR THE SC740EP24B 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 1-888-892-2894.

\* FOR THE SC740EP24B THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.70" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

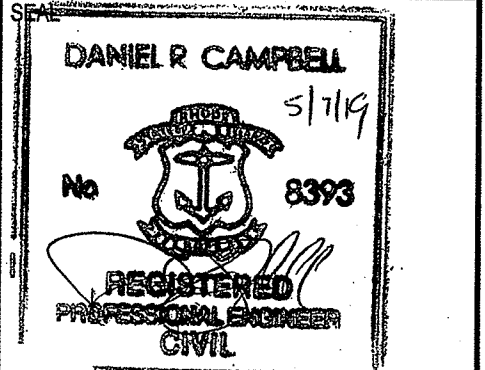
NOTE: ALL DIMENSIONS ARE NOMINAL



**END CAP DETAIL SCALE: N.T.S.**

PART #	CHAMBER	PIPE SIZE	A	B
SC310EP08T	SC-310	8" (200 mm)	5.80 in (147 mm)	5.80 in (147 mm)
SC310EP08B	SC-310	8" (200 mm)	5.80 in (147 mm)	5.80 in (147 mm)
SC310EP10T	SC-310	10" (250 mm)	12.20 in (310 mm)	12.20 in (310 mm)
SC310EP10B	SC-310	10" (250 mm)	12.20 in (310 mm)	12.20 in (310 mm)
SC310EP12T	SC-310	12" (300 mm)	13.40 in (340 mm)	13.40 in (340 mm)
SC310EP12B	SC-310	12" (300 mm)	13.40 in (340 mm)	13.40 in (340 mm)
SC310EP15T	SC-310	15" (375 mm)	18.40 in (467 mm)	18.40 in (467 mm)
SC310EP15B	SC-310	15" (375 mm)	18.40 in (467 mm)	18.40 in (467 mm)
SC310EP18T	SC-310	18" (450 mm)	18.50 in (470 mm)	18.50 in (470 mm)
SC310EP18B	SC-310	18" (450 mm)	18.50 in (470 mm)	18.50 in (470 mm)

NO	DATE	REVISIONS
1	08/27/2018	PRELIMINARY PLAN SUBMISSION
2	09/26/2018	PRELIMINARY/FINAL APPROVAL
3	02/20/2019	RIDEM COMMENTS
4	05/07/2019	RIDEM COMMENTS



DATE: MAY 17, 2018  
 DRAWN: NF / DRC  
 SCALE: 1"=40'

**HUNTING HILL**  
 MAJOR LAND DEVELOPMENT PROJECT  
 FINAL PLAN SUBMISSION  
 AP 35, LOT 188  
 CUMBERLAND, RHODE ISLAND 02864

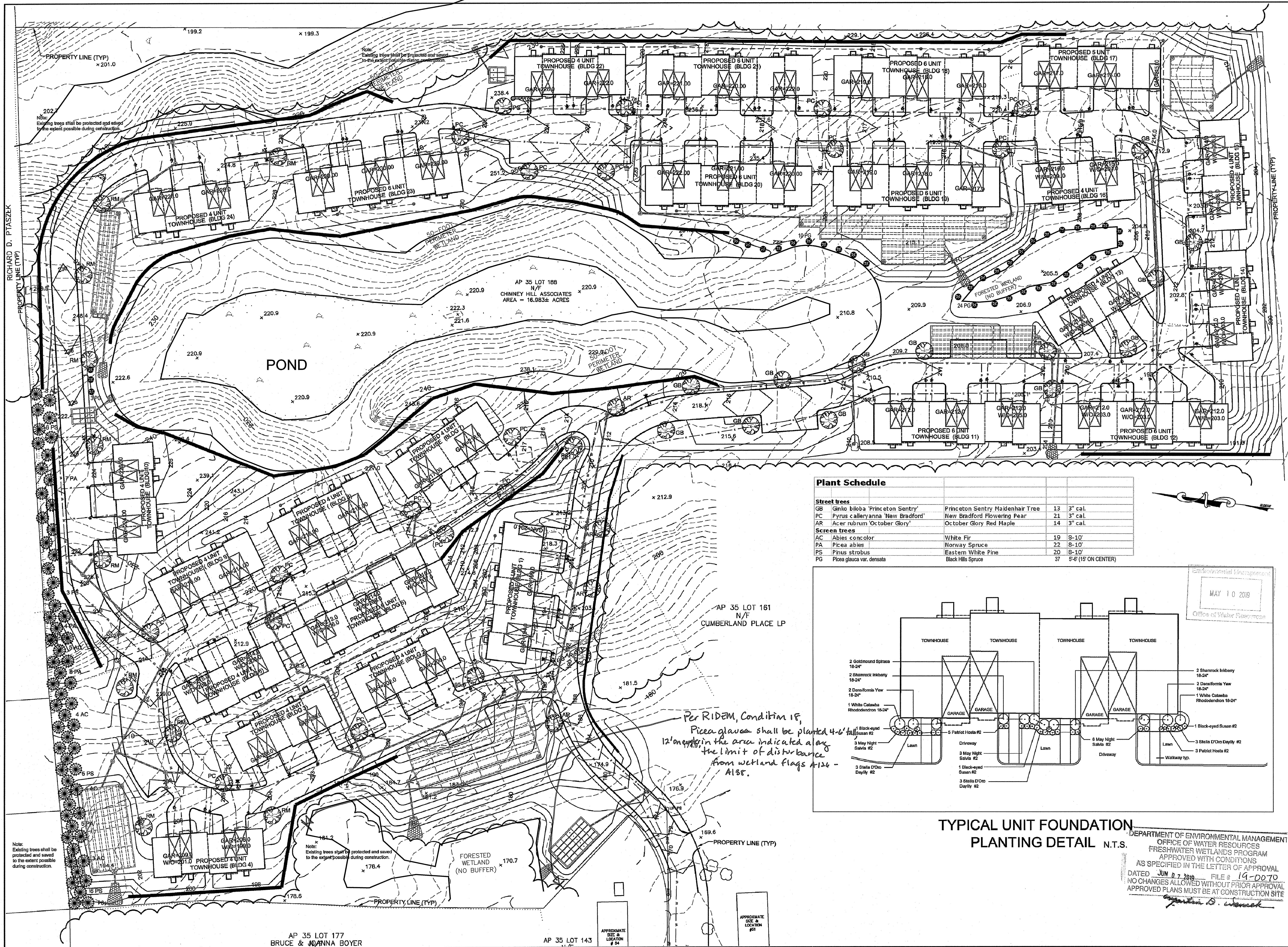


**STORMTECH SYSTEM DETAILS**

**C-4.4**  
 SHEET 11 OF 23  
 1554.00

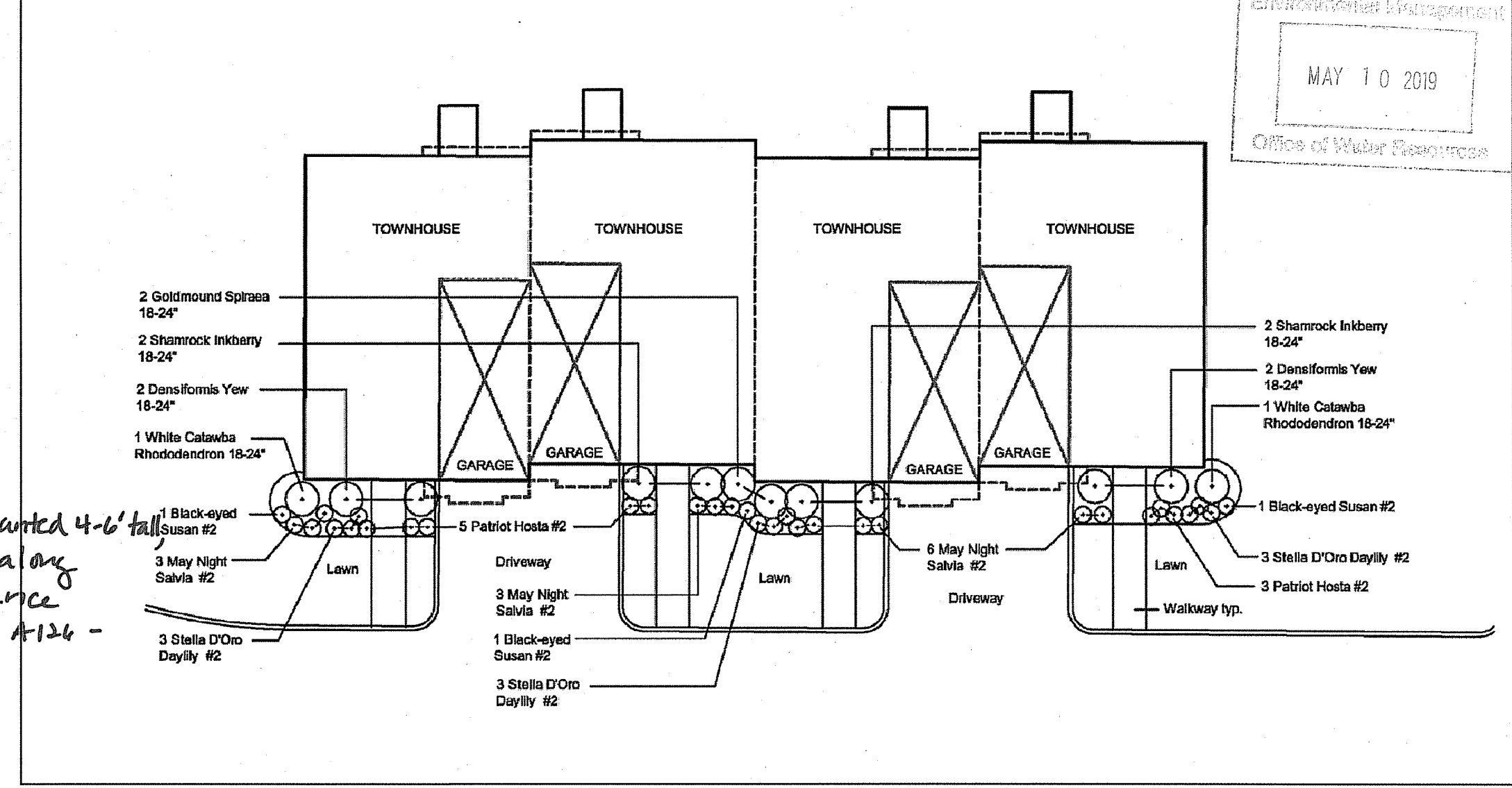
NO	DATE	REVISIONS
1	07/30/2018	REQUESTS PER TOWN
2	09/26/2018	PLANNER
3	02/20/2019	PRELIMINARY FINAL APPROVAL
4	05/07/2019	RIDEM COMMENTS

DATE: July 23, 2018  
 DRAWN: [Signature]  
 SCALE: 1" = 40'



**Plant Schedule**

Street trees			
GB	Ginkgo biloba 'Princeton Sentry'	Princeton Sentry Maidenhair Tree	13 3" cal.
PC	Pyrus calleryana 'New Bradford'	New Bradford Flowering Pear	21 3" cal.
AR	Acer rubrum 'October Glory'	October Glory Red Maple	14 3" cal.
Screen trees			
AC	Abies concolor	White Fir	19 8-10'
PA	Picea abies	Norway Spruce	22 8-10'
PS	Pinus strobus	Eastern White Pine	20 8-10'
PG	Picea glauca var. densata	Black Hills Spruce	37 5'-6" (15' ON CENTER)



**TYPICAL UNIT FOUNDATION  
 PLANTING DETAIL N.T.S.**

Per RIDEM, Condition 15,  
 Picea glauca shall be planted 4'-6' tall,  
 12' on center in the area indicated along  
 the limit of disturbance  
 from wetland flags A124 -  
 A135.

**HUNTING HILL**  
 MAJOR LAND DEVELOPMENT PROJECT  
 PERMIT MODIFICATION  
 AP 35, LOT 188  
 CUMBERLAND, RHODE ISLAND 02864

**LEVEL**  
 DESIGN GROUP  
 CIVIL ENGINEERING / LAND SURVEYING  
 249 SOUTH STREET  
 UNIT 1  
 PLAINVILLE, MA 02762  
 TEL. (508) 695-2221 FAX. (508) 695-2219

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
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 DATED JUN 07 2018 FILE # 19-0070  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

**LANDSCAPE PLAN**

**C-5.0**  
 SHEET 12 OF 23

0' 20' 40' 80'

**1554.00**

RICHARD D. PIASZEK  
 PROPERTY LINE (TYP)

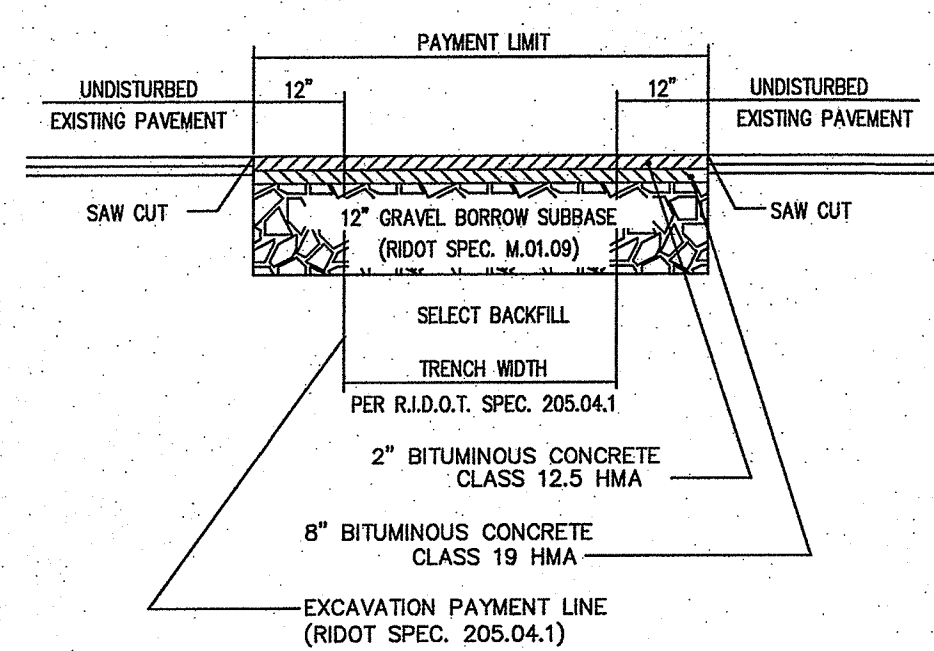
Note: Existing trees shall be protected and saved to the extent possible during construction.

Note: Existing trees shall be protected and saved to the extent possible during construction.

AP 35 LOT 177  
 BRUCE & ANNA BOYER

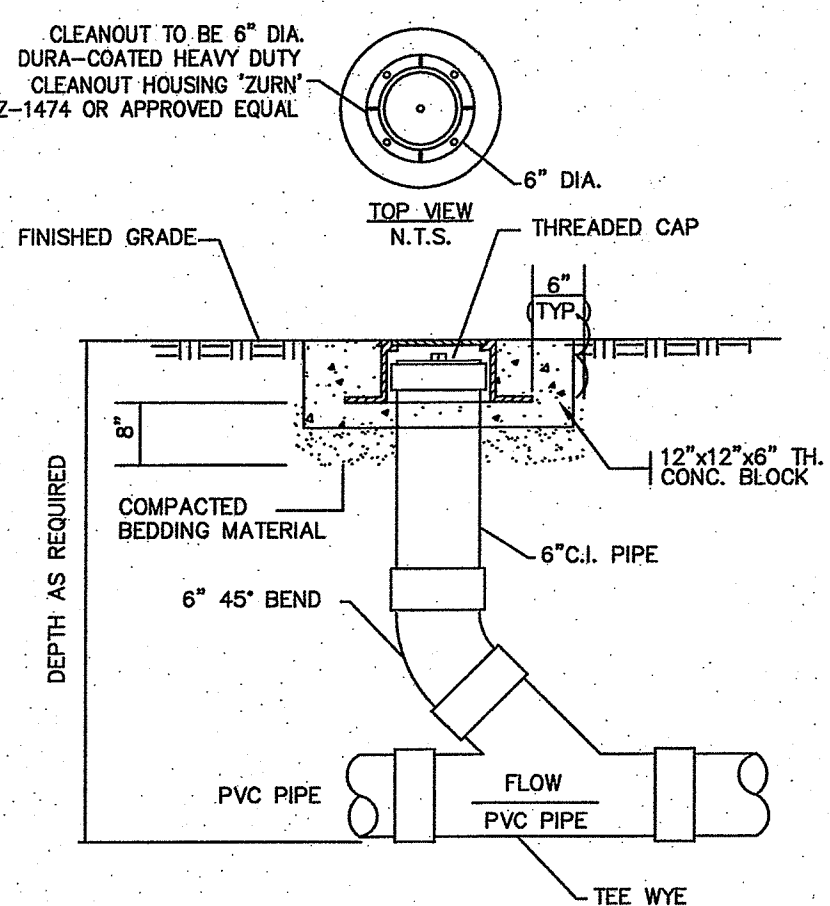
AP 35 LOT 143

APPROXIMATE  
 SIZE &  
 LOCATION  
 # 54

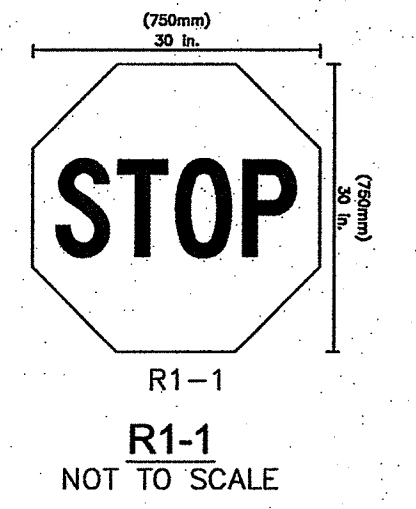


**BITUMINOUS CONCRETE PAVEMENT UTILITY PATCH**  
NOT TO SCALE

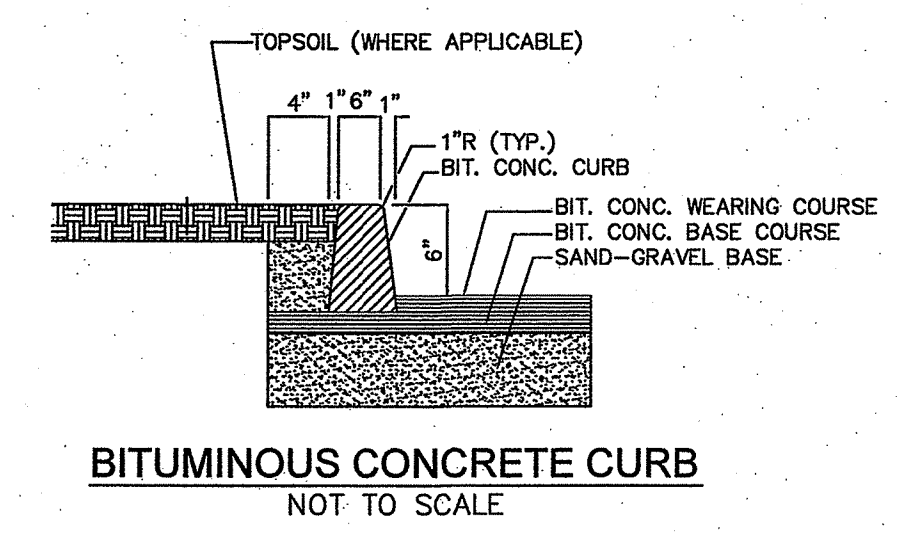
NOTE: 12\"/>



**CLEANOUT AT GRADE**  
NOT TO SCALE



**R1-1**  
NOT TO SCALE



**BITUMINOUS CONCRETE CURB**  
NOT TO SCALE

APPROVED  
FINAL PLAN REVIEW  
APPROVED IN ACCORDANCE WITH THE TOWN OF CUMBERLAND SUBDIVISION REGULATIONS.

ADMINISTRATIVE OFFICER

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

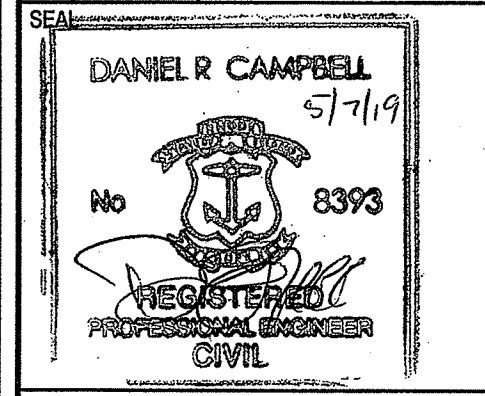
PLANNING BOARD

DRAW NO.: \_\_\_\_\_

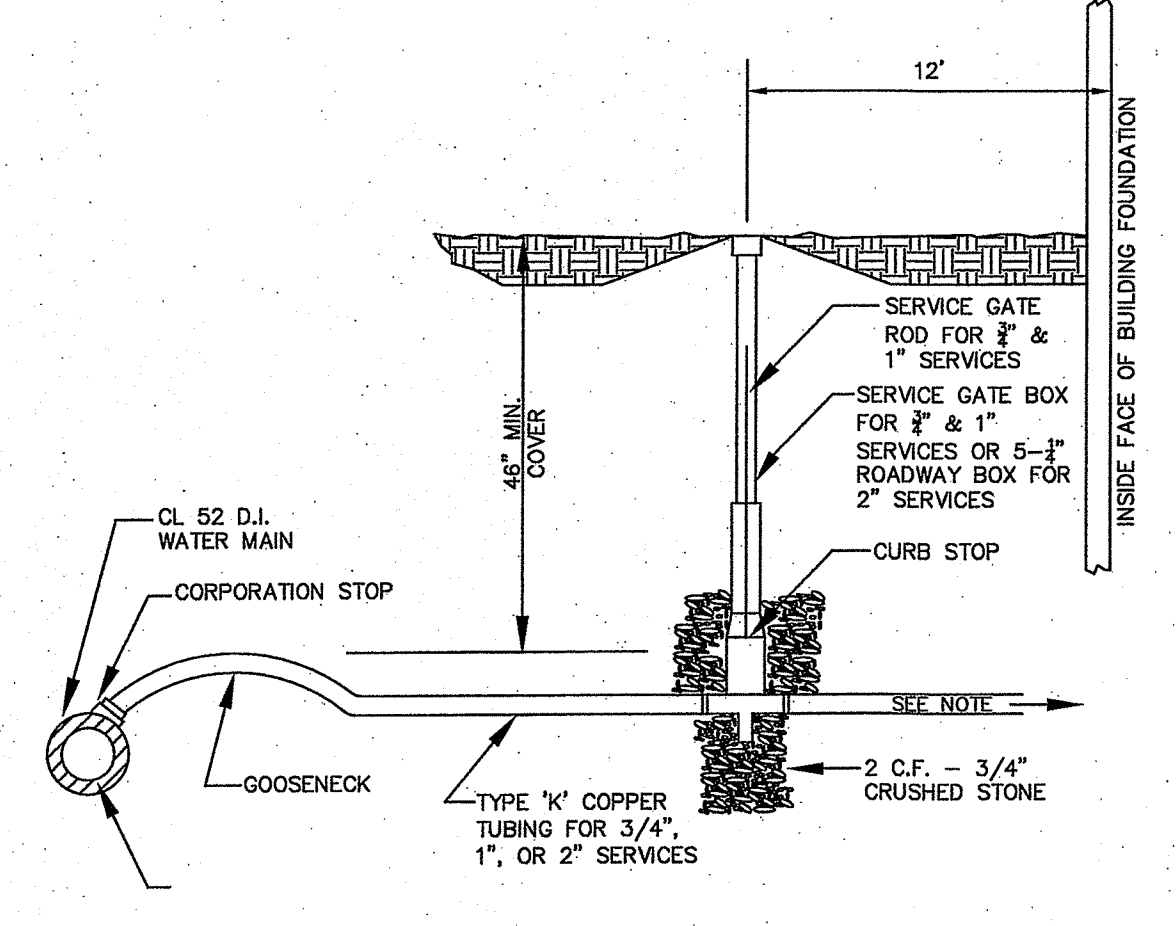
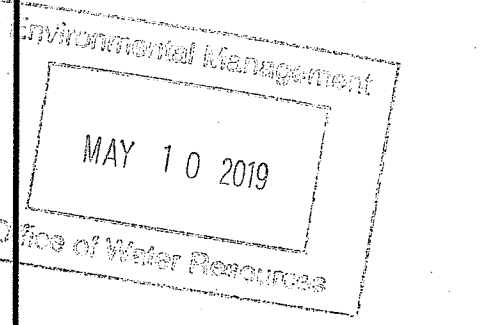
SHEET NO.: \_\_\_\_\_

PLAT/LOT \_\_\_\_\_

NO	DATE	REVISIONS
1	06/27/2018	PRELIMINARY PLAN SUBMISSION
2	09/28/2018	PRELIMINARY FINAL APPROVAL
3	02/20/2019	RIDEM COMMENTS
4	05/07/2019	RIDEM COMMENTS

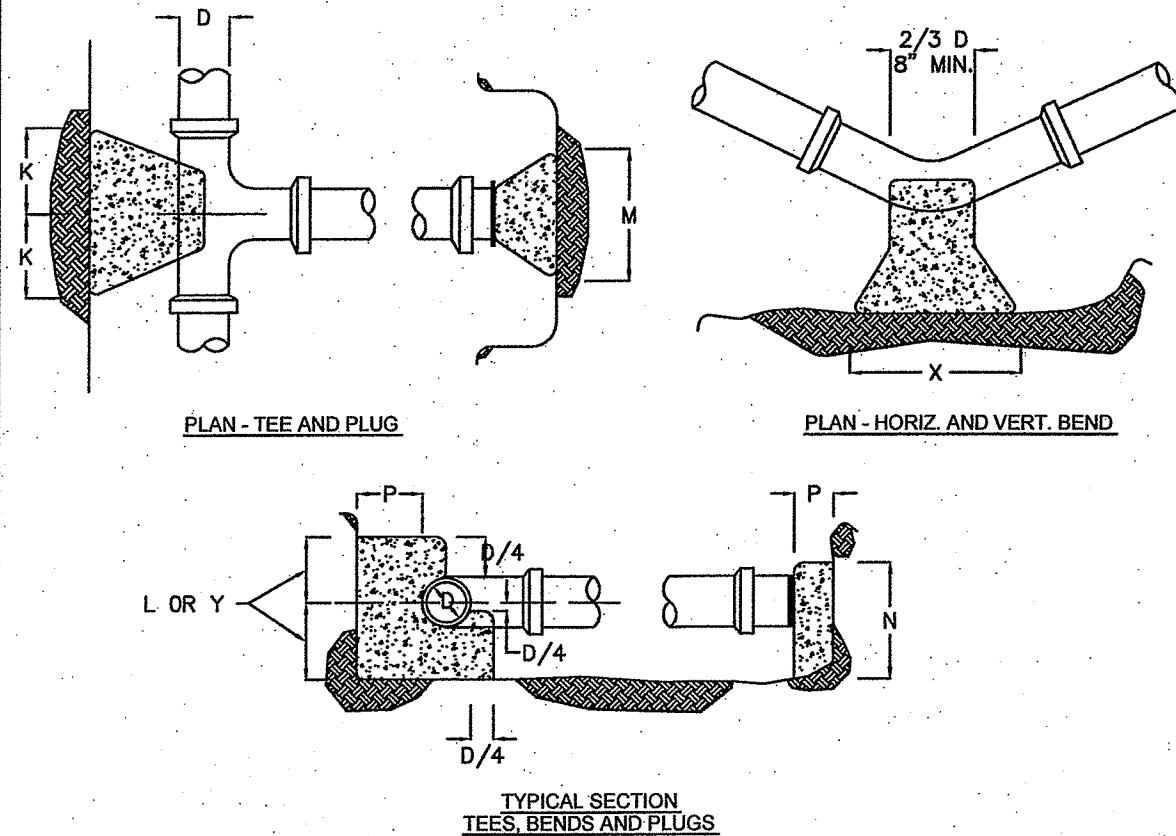


DATE: MAY 17, 2018  
DRAWN: NF / DRC  
SCALE: NTS



**WATER SERVICE**  
NOT TO SCALE

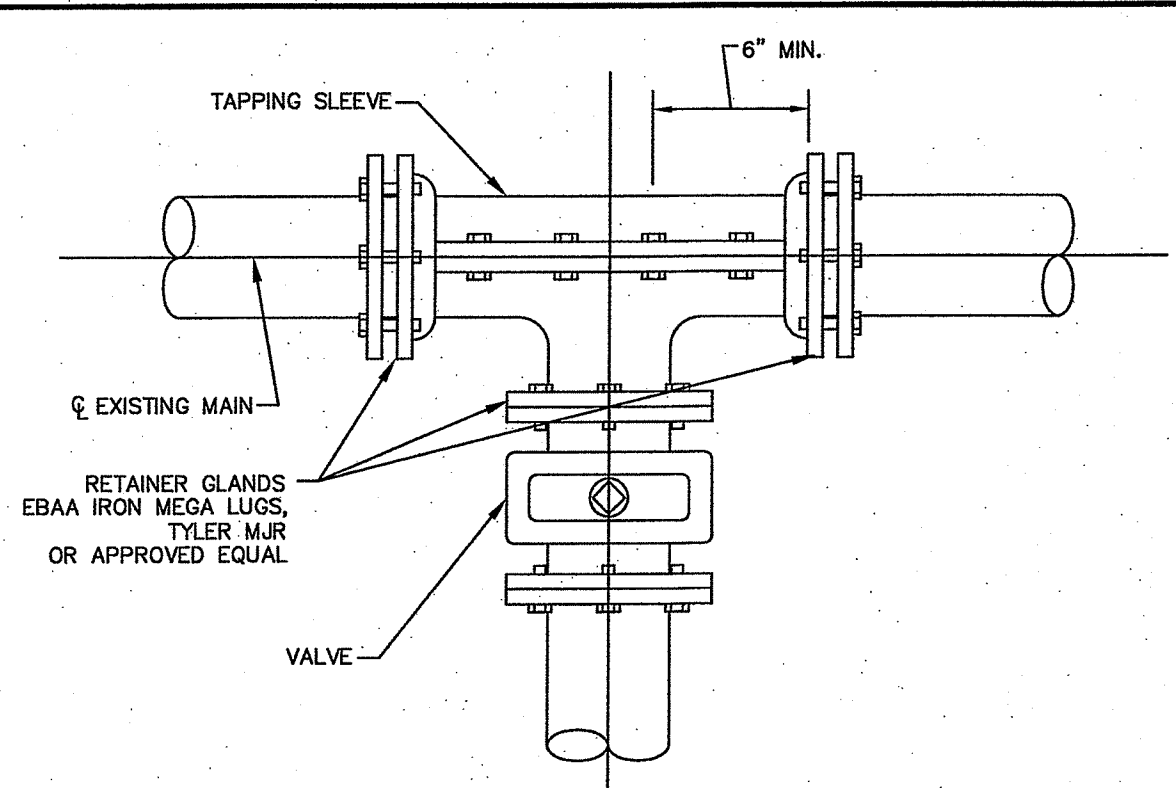
NOTE: MATERIAL FOR HOMEOWNERS' SERVICE LINE MAY EITHER BE TYPE K COPPER OR COPPER PIPE SIZE POLYETHYLENE TUBING TYPE 3408, 200 PSI MEETING ASTM SPECIFICATIONS FOR D3350.



SIZE OF BRANCH	J	K	L	M	N	O
4" TO 8"	10"	10"	1'-0"	2'-0"	1'-6"	10"
10" TO 16"	1'-0"	1'-6"	1'-8"	3'-10"	2'-10"	1'-6"
24"	1'-4"	2'-0"	2'-6"	5'-0"	3'-6"	1'-8"

90° & 45° BENDS		22 1/2° & 11 1/4° BENDS	
D	4" TO 8"	10" TO 16"	24"
X	1'-8"	3'-4"	3'-6"
Y	1'-2"	1'-8"	2'-4"

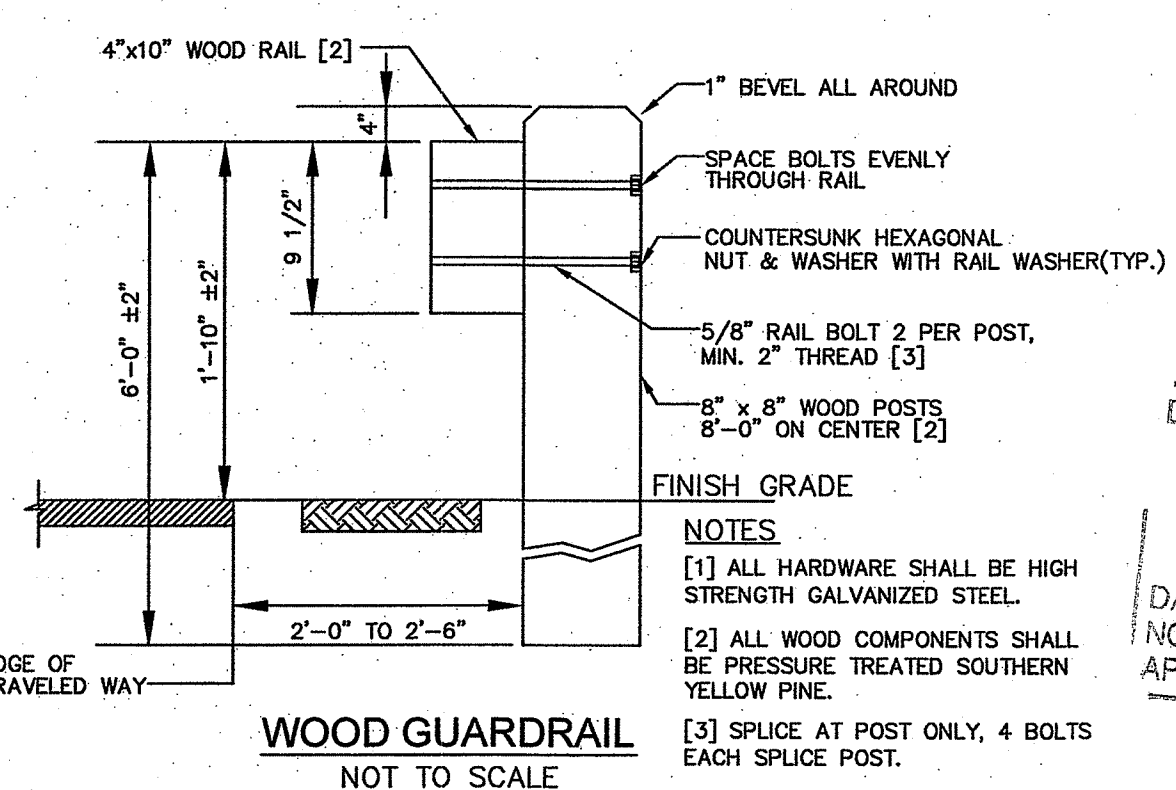
**THRUST BLOCK**  
NOT TO SCALE



PIPE SIZE	RESTRAINED JOINT SCHEDULE		
	90° D. I.	45° D. I.	22 1/2° & 11 1/4° D. I.
12"	92'	38'	18'
10"	78'	32'	16'
8"	66'	27'	13'
6"	51'	21'	10'
4"	38'	16'	8'

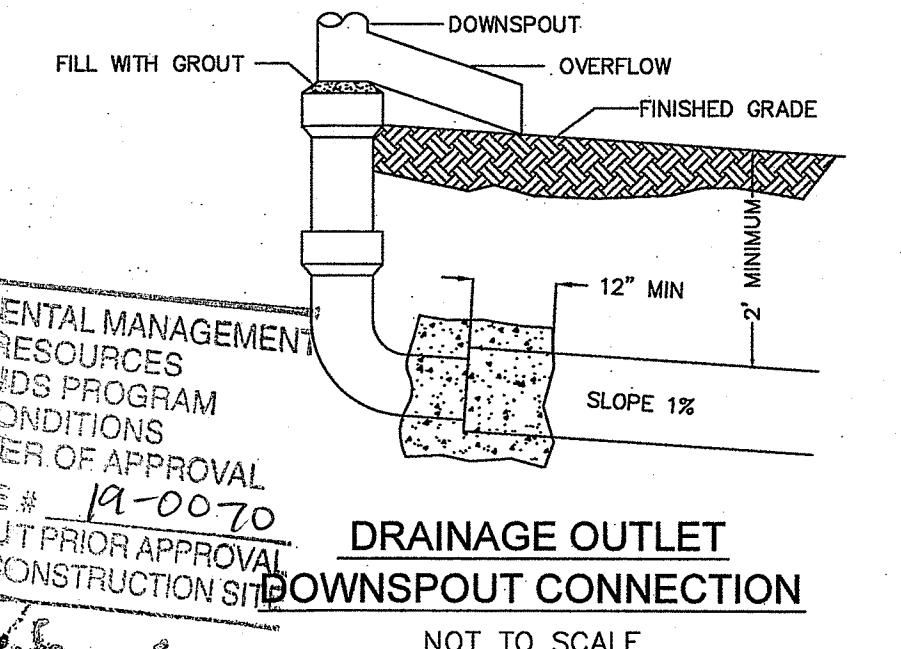
- NOTES:
- RESTRAINED LENGTH FOR TEES, CROSSES, VALVES AND PLUGS SHALL EQUAL RESTRAINED LENGTH FOR 90° BENDS.
  - SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION REGARDING RESTRAINED JOINTS. THE SCHEDULE SHOWN IS FOR THE FOLLOWING SERVICE CONDITIONS: 150 psig INTERNAL PRESSURE; SOIL TYPE: SAND-SILT; 36 INCHES OF COVER AND TYPE 2 LAYING CONDITIONS.
  - RESTRAINED LENGTHS SHOWN IN TABLE ARE MINIMUM LENGTHS (IN FEET) AND ARE REQUIRED IN EACH DIRECTION FROM FITTINGS OR VALVES.
  - THRUST BLOCKS TO BE INSTALLED AS REQUIRED.

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

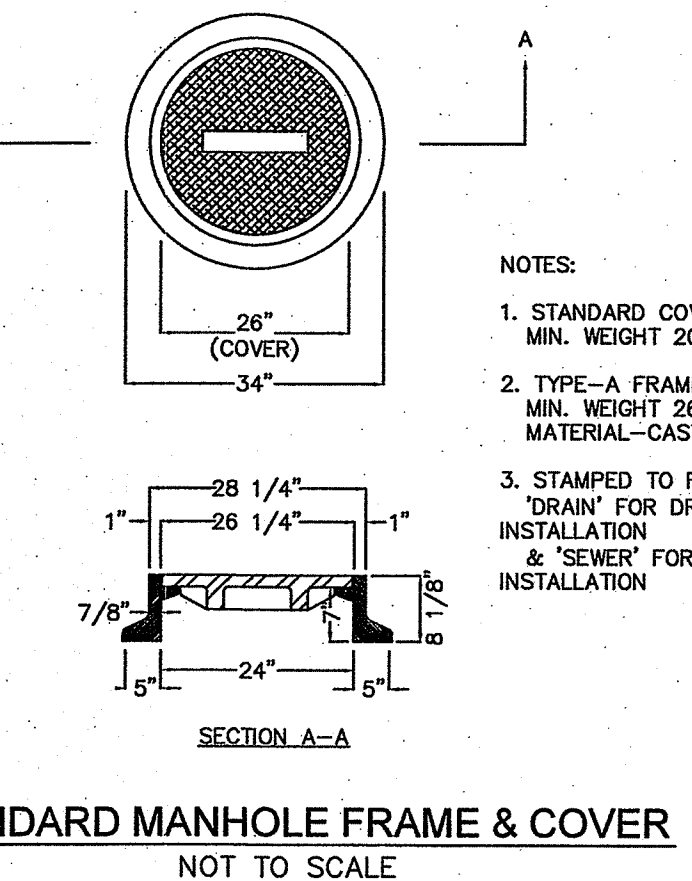


**WOOD GUARDRAIL**  
NOT TO SCALE

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED 05/07/2019 FILE # 19-0070  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

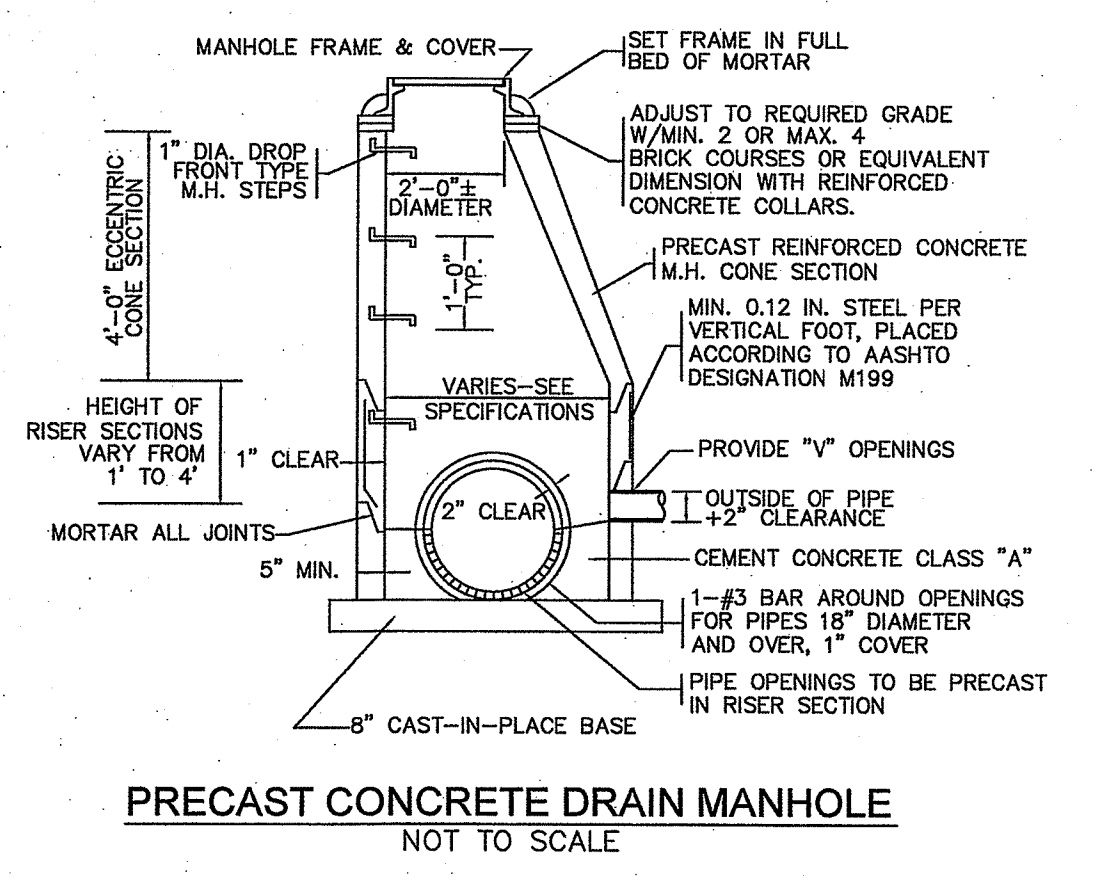


**DRAINAGE OUTLET DOWNSPOUT CONNECTION**  
NOT TO SCALE

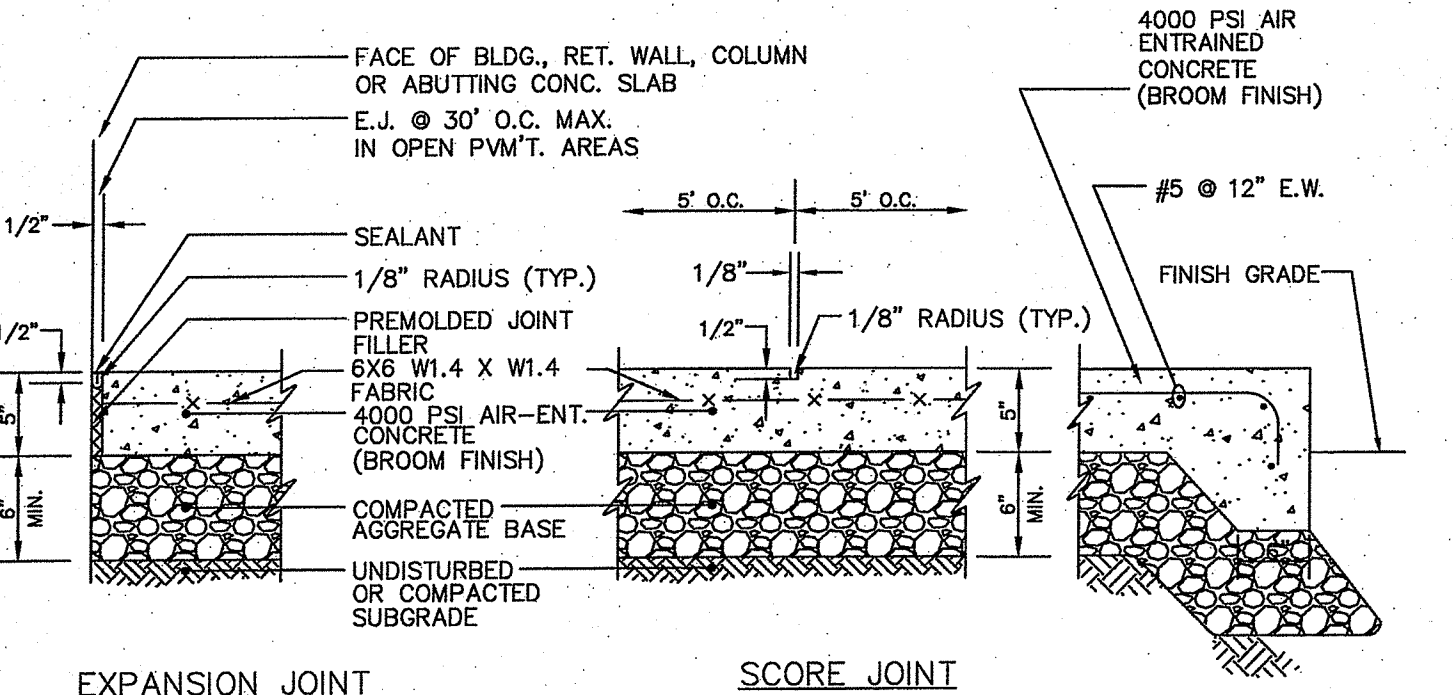


**STANDARD MANHOLE FRAME & COVER**  
NOT TO SCALE

- NOTES:
- STANDARD COVER MIN. WEIGHT 200 LBS.
  - TYPE-A FRAME MIN. WEIGHT 285 LBS. MATERIAL-CAST IRON
  - STAMPED TO READ "DRAIN" FOR DRAIN MANHOLE INSTALLATION & "SEWER" FOR SEWER MANHOLE INSTALLATION



**PRECAST CONCRETE DRAIN MANHOLE**  
NOT TO SCALE

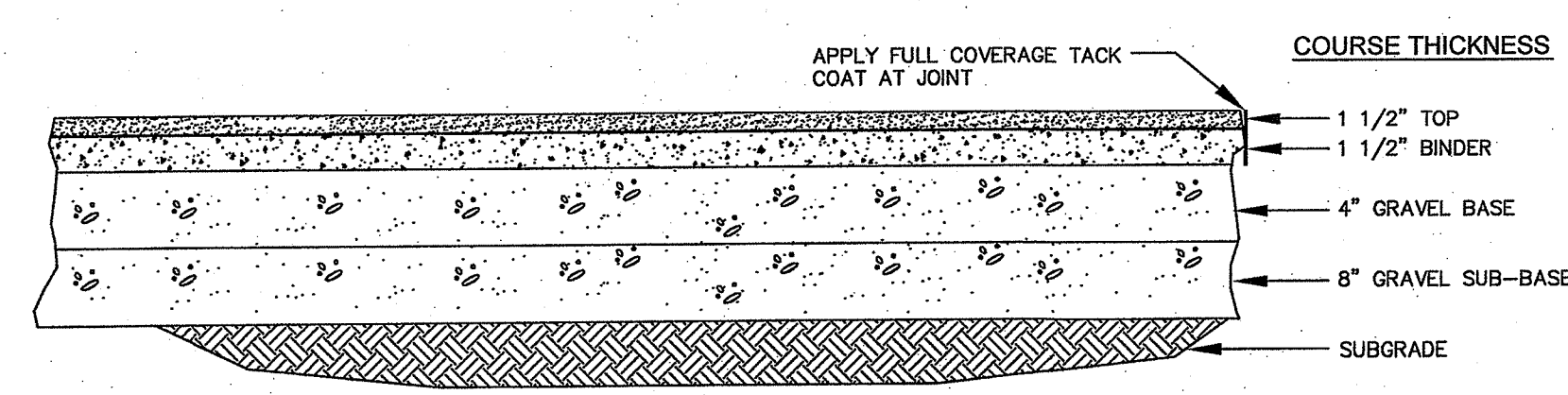


**EXPANSION JOINT**

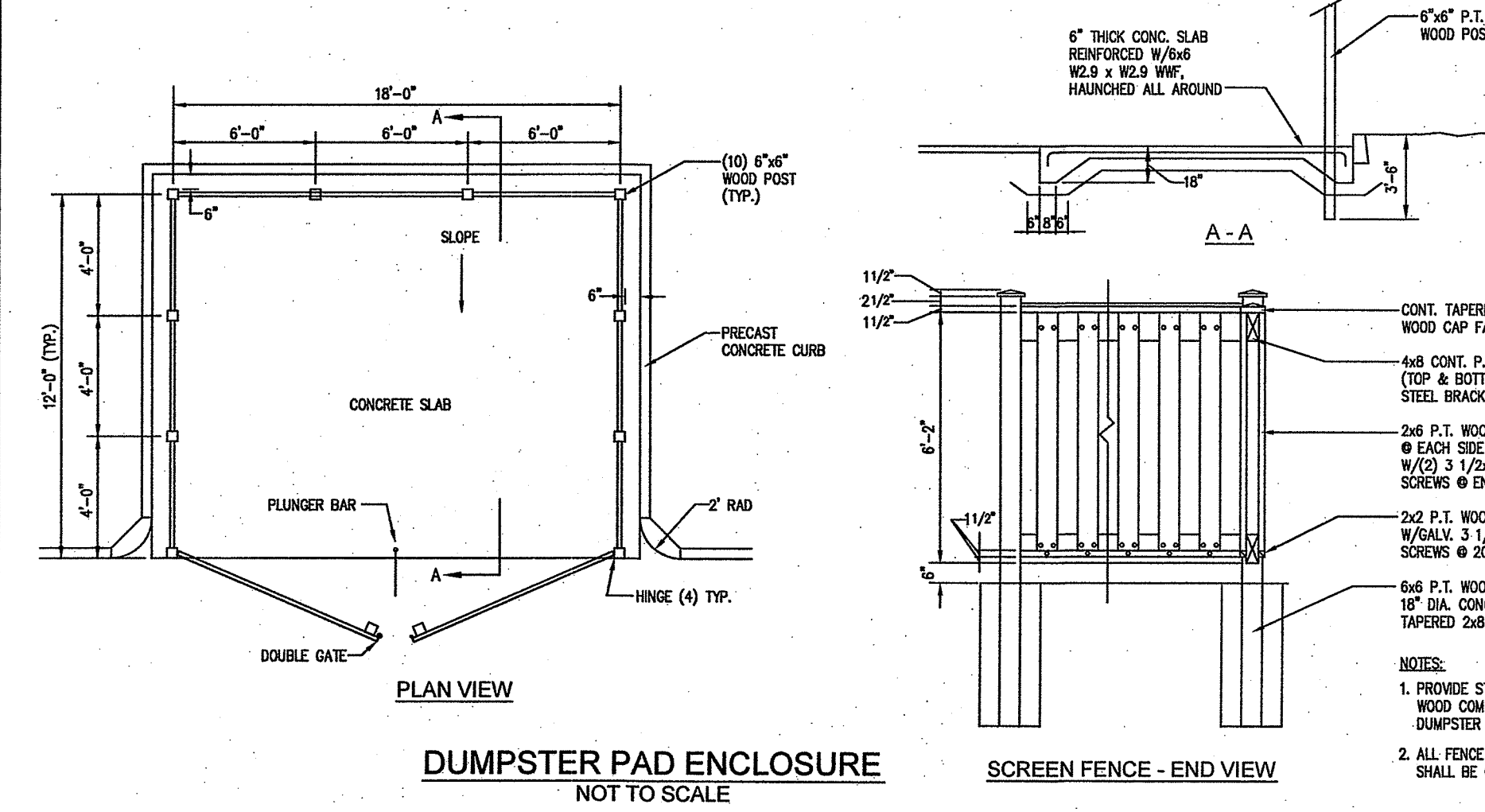
**SCORE JOINT**

- MAXIMUM CROSS SLOPE = 2%
- MAXIMUM GRADIENT = 5%
- PROVIDE EXPANSION JOINT AT FACE OF ABUTTING SLABS AND STRUCTURES.
- PROVIDE VERTICAL GRANITE OR PRECAST CONCRETE CURBING PER SHEET C3.

**CONCRETE SIDEWALK**  
NOT TO SCALE

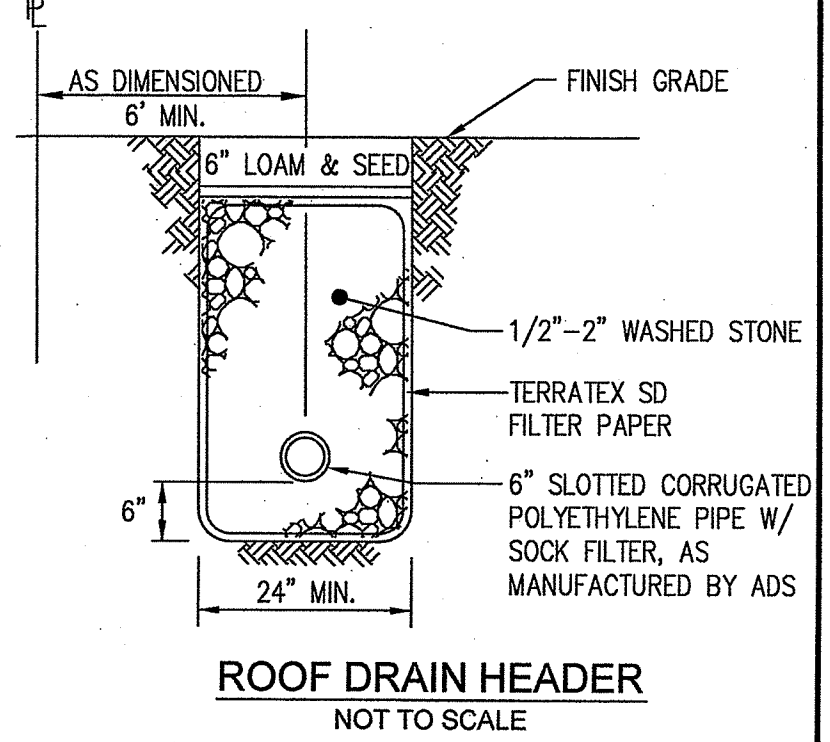


**AUTOMOTIVE AREAS - BITUMINOUS CONCRETE PAVEMENT**  
NOT TO SCALE



**DUMPSTER PAD ENCLOSURE**  
NOT TO SCALE

**SCREEN FENCE - END VIEW**



**ROOF DRAIN HEADER**  
NOT TO SCALE

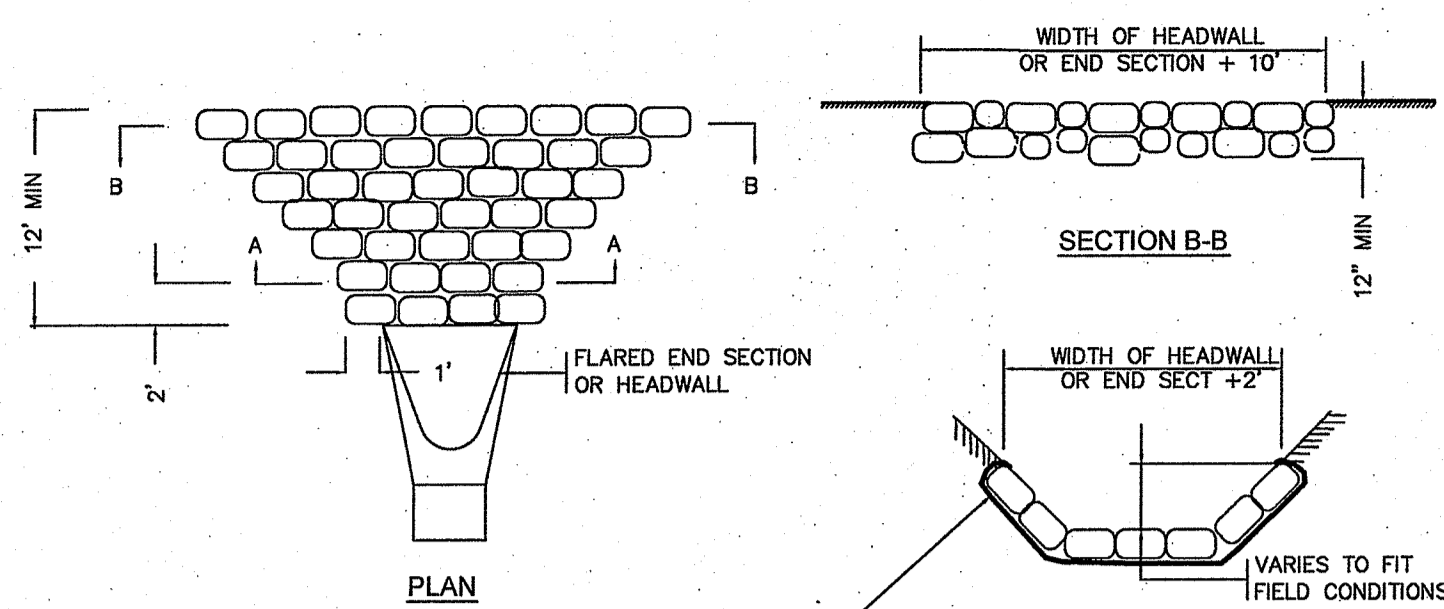
- NOTES:
- PROVIDE STAIN FINISH ON ALL WOOD COMPONENTS OF DUMPSTER ENCLOSURE
  - ALL FENCE AND GATE HARDWARE SHALL BE GALVANIZED

**HUNTING HILL**  
MAJOR LAND DEVELOPMENT PROJECT  
PERMIT MODIFICATION  
AP 35, LOT 188  
CUMBERLAND, RHODE ISLAND 02864

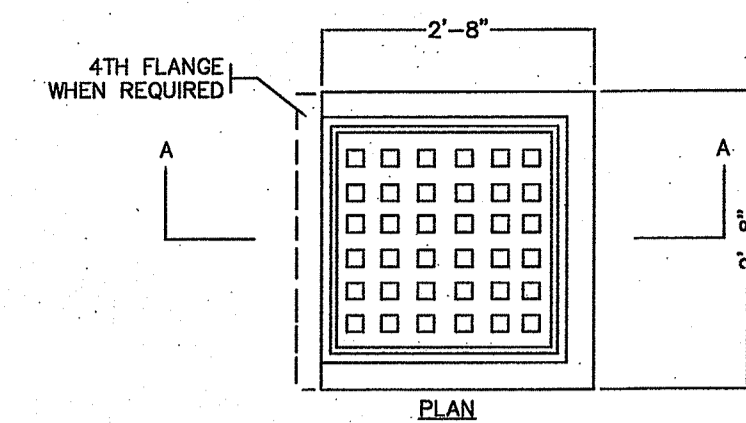
**LEVEL**  
DESIGN GROUP  
CIVIL ENGINEERING  
249 SOUTH STREET  
PLAINVILLE, MA 02762  
TEL. (508) 695-2221 FAX. (508) 695-2219

**TYPICAL DETAILS**  
**C-6.0**  
SHEET 13 OF 23

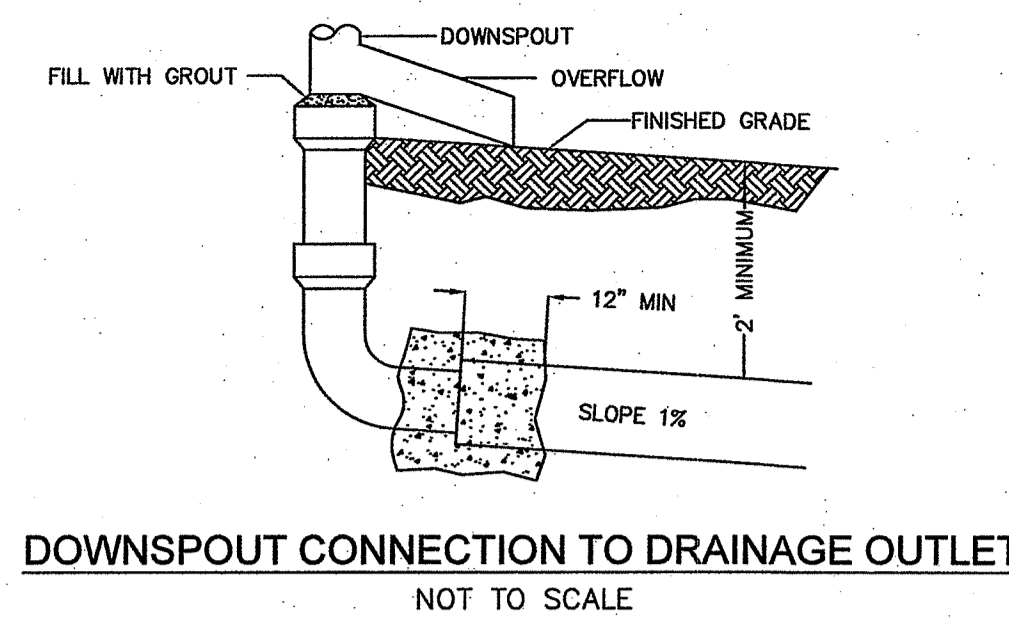
**1554.00**



**RIP RAP APRON AT PIPE ENDS**  
NOT TO SCALE



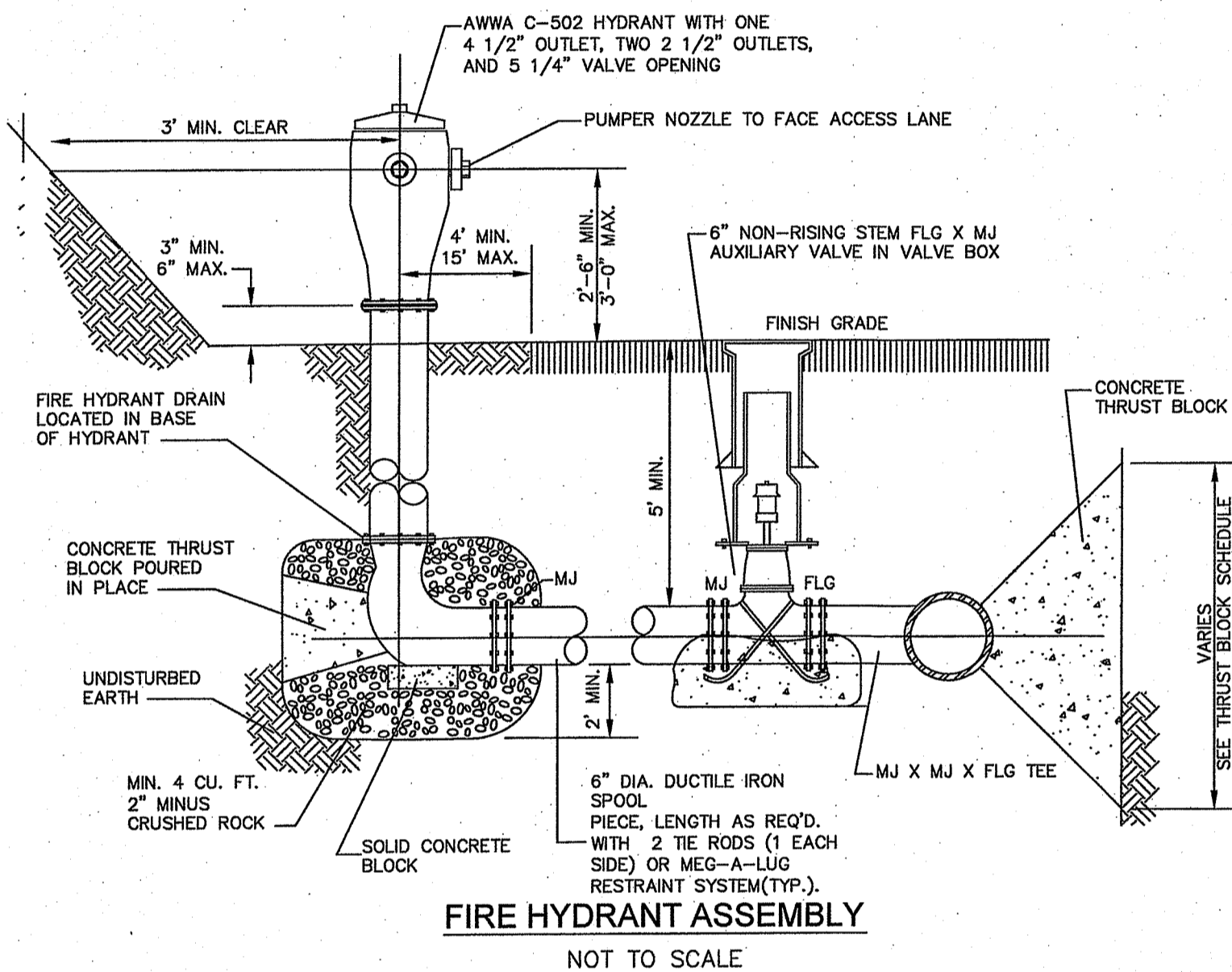
**STANDARD CATCH BASIN FRAME & GRATE**  
NOT TO SCALE



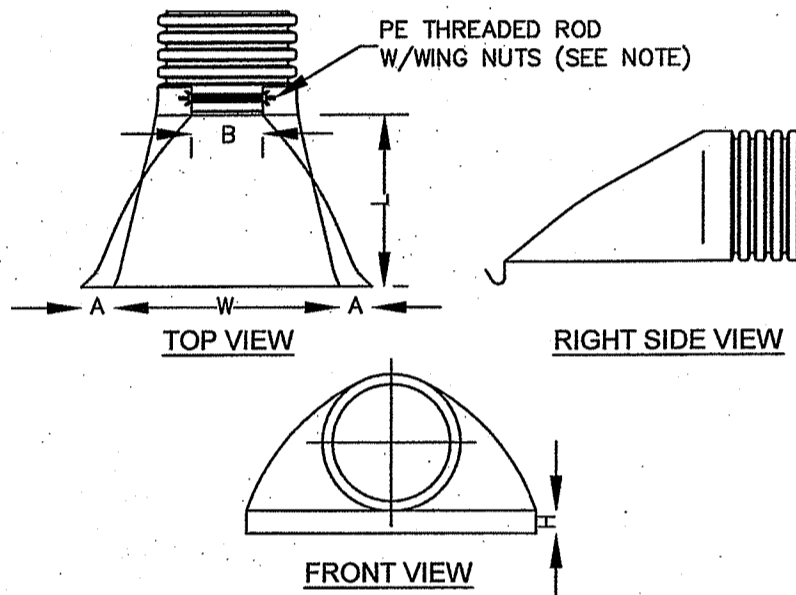
**DOWNSPOUT CONNECTION TO DRAINAGE OUTLET**  
NOT TO SCALE

APPROVED  
FINAL PLAN REVIEW  
APPROVED IN ACCORDANCE WITH THE TOWN OF CUMBERLAND SUBDIVISION REGULATIONS.  
ADMINISTRATIVE OFFICER  
DATE: \_\_\_\_\_

PLANNING BOARD  
DRAW NO.: \_\_\_\_\_  
SHEET NO.: \_\_\_\_\_  
PLAT/LOT \_\_\_\_\_



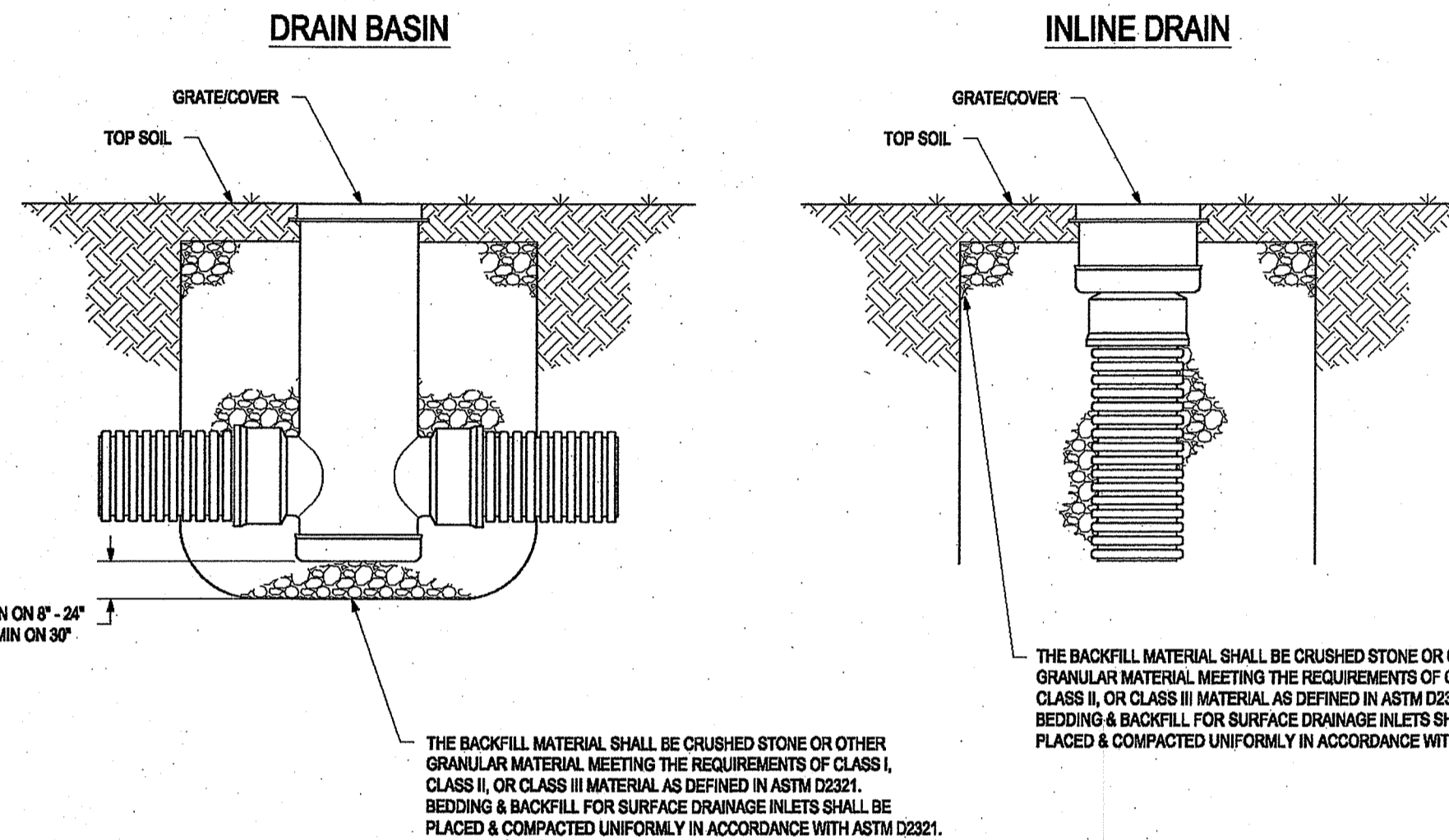
**FIRE HYDRANT ASSEMBLY**  
NOT TO SCALE



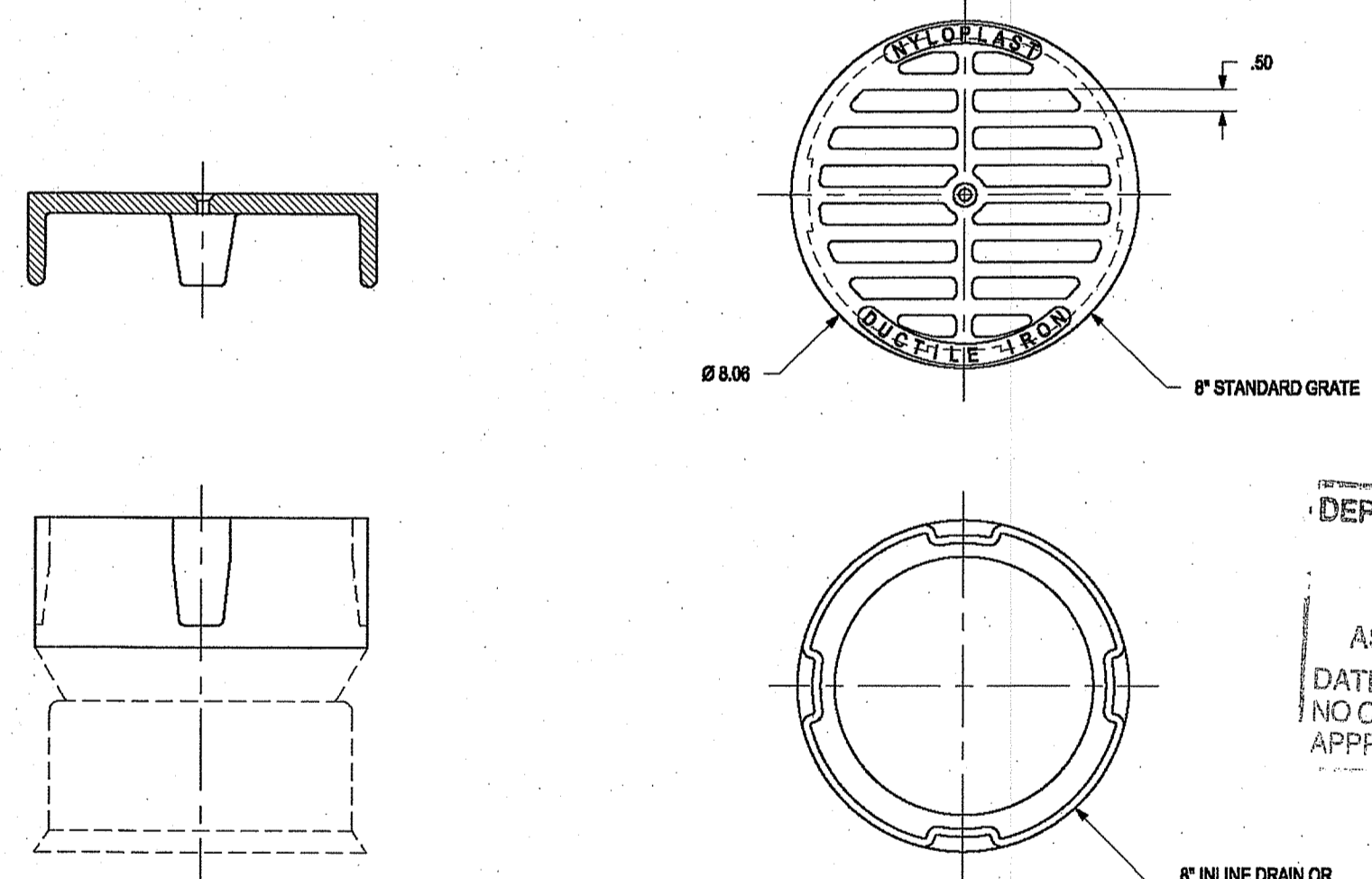
**HDPE FLARED END SECTION**  
NOT TO SCALE

PIPE SIZE	A	B (MAX)	H	L	W
12"	6.5"	10"	6.5"	25"	29"
15"	6.5"	10"	6.5"	25"	29"
18"	7.5"	15"	6.5"	32"	35"

NOTE: PE THREADED ROD W/WING NUTS PROVIDED FOR END SECTIONS 12"-24", 30" & 36" END SECTIONS TO BE WELDED TO PIPE PER MANUFACTURER'S RECOMMENDATIONS.



**NON TRAFFIC INSTALLATION**



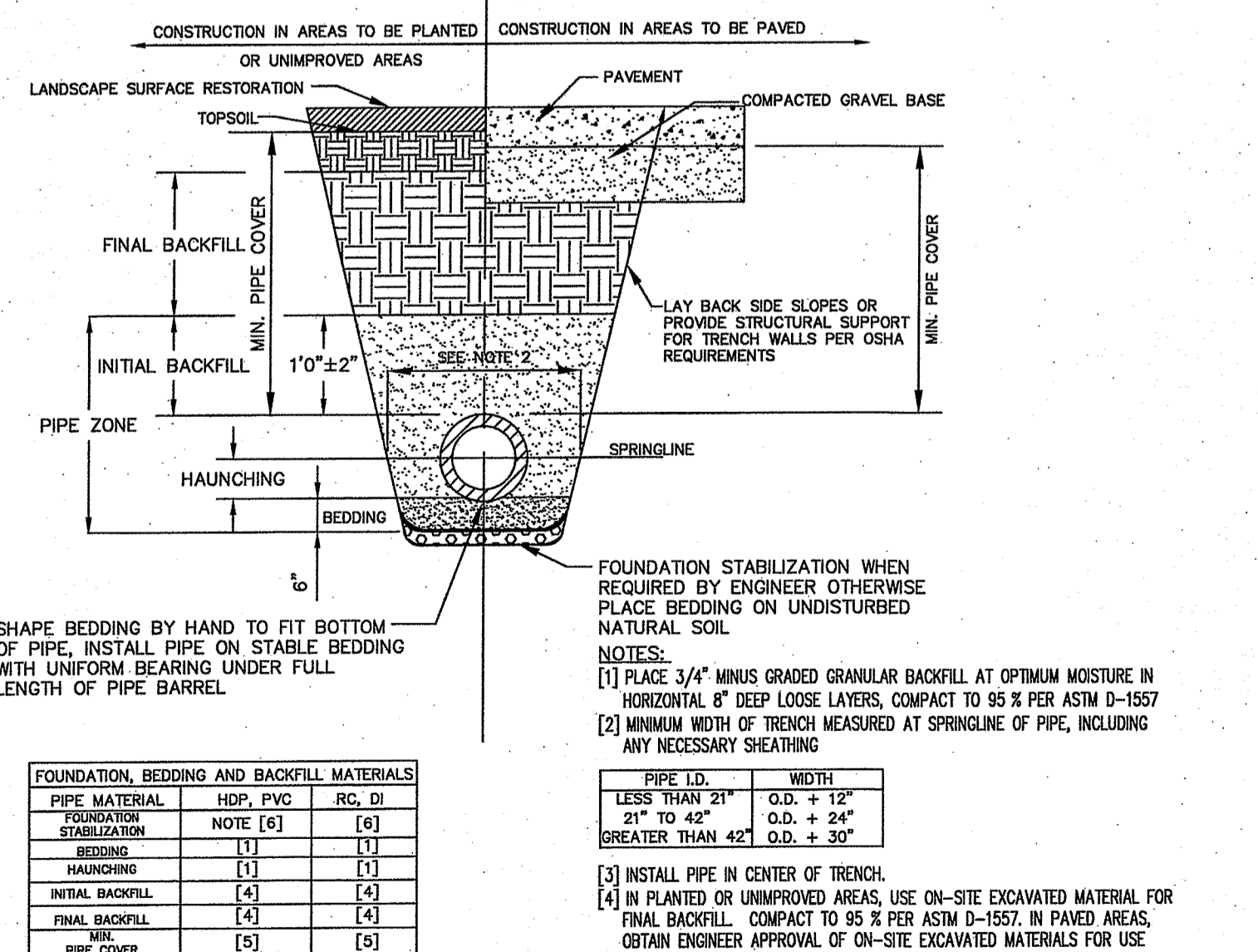
**NYLOPLAST 8" INLINE DRAIN DETAILS AND SPECIFICATIONS**  
NOT TO SCALE

**GENERAL**  
PVC surface drainage inlets shall include the drain basin type as indicated on the contract drawing and referenced within the contract specifications. The ductile iron grates for each of these fittings are to be considered an integral part of the surface drainage inlet and shall be furnished by the same manufacturer. The surface drainage inlets shall be as manufactured by Nyloplast a division of Advanced Drainage Systems, Inc., or prior approved equal.

**MATERIALS**  
The drain basins required for this contract shall be manufactured from PVC pipe stock, utilizing a thermoforming process to reform the pipe stock to the specified configuration. The drainage pipe connection stubs shall be manufactured from PVC pipe stock and formed to provide a watertight connection with the specified pipe system. This joint tightness shall conform to ASTM D3212 for joints for drain and sewer plastic pipe using flexible elastomeric seals. The flexible elastomeric seals shall conform to ASTM F477. The pipe ball spigot shall be joined to the main body of the drain basin or catch basin. The raw material used to manufacture the pipe stock that is used to manufacture the main body and pipe stubs of the surface drainage inlets shall conform to ASTM D1784 cell class 12454.

The grates and frames furnished for all surface drainage inlets shall be ductile iron for structure sizes 8", 10", 12", 15", 18", 24", 30" and 36" and shall be made specifically for each basin so as to provide a round bottom flange that closely matches the diameter of the surface drainage inlet. Grates for drain basins shall be capable of supporting various wheel loads as specified by Nyloplast. 12" and 15" square grates will be hinged to the frame using pins. Ductile iron used in the manufacture of the castings shall conform to ASTM A536 grade 70-50-05. Grates and covers shall be provided painted black.

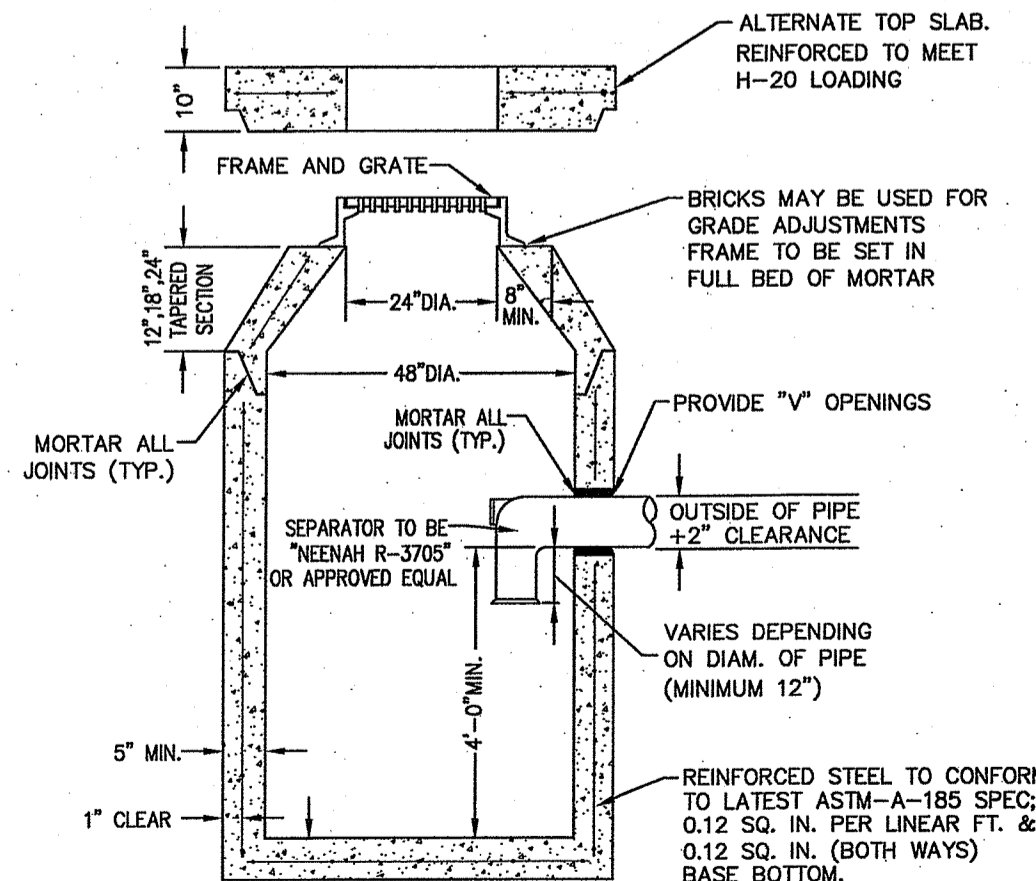
**INSTALLATION**  
The specified PVC surface drainage inlet shall be installed using conventional flexible pipe backfill materials and procedures. The backfill material shall be crushed stone or other granular material meeting the requirements of class 1, class 2, or class 3 material as defined in ASTM D2321. Bedding and backfill for surface drainage inlets shall be well placed and compacted uniformly in accordance with ASTM D2321. The drain basin body will be cut at the time of the final grade. No brick, stone or concrete block will be required to set the grate to the final grade height. For load rated installations, a concrete slab shall be poured under and around the grate and frame. The concrete slab must be designed taking into consideration local soil conditions, traffic loading, and other applicable design factors. For other installation considerations such as migration of fines, ground water, and soft foundations refer to ASTM D2321 guidelines.



**FOUNDATION, BEDDING AND BACKFILL MATERIALS**

PIPE MATERIAL	HDP, PVC	RC, DI
FOUNDATION STABILIZATION	[6]	[6]
BEDDING	[1]	[1]
HAUNCHING	[1]	[1]
INITIAL BACKFILL	[4]	[4]
FINAL BACKFILL	[4]	[4]
PIPE COVER	[5]	[5]

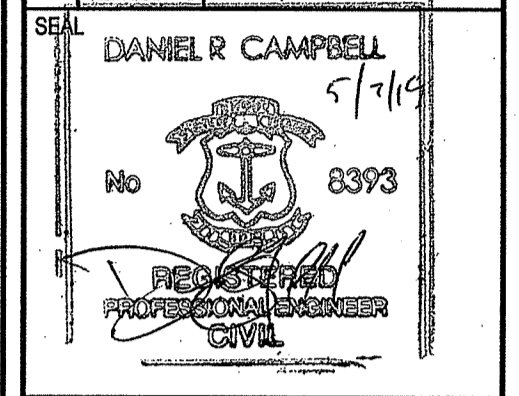
**UTILITY TRENCH**  
NOT TO SCALE



**PRECAST CONCRETE CATCH BASIN WITH GAS AND OIL SEPARATOR**  
NOT TO SCALE

- NOTES:
1. CONCRETE TO BE 4,000 PSI MIN. PER ASTM C-478(8.1).
  2. REINFORCING TO MEET OR EXCEED H-20 LOADING REQUIREMENTS.

NO	DATE	REVISIONS
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4	05/07/2019	RIDEM COMMENTS

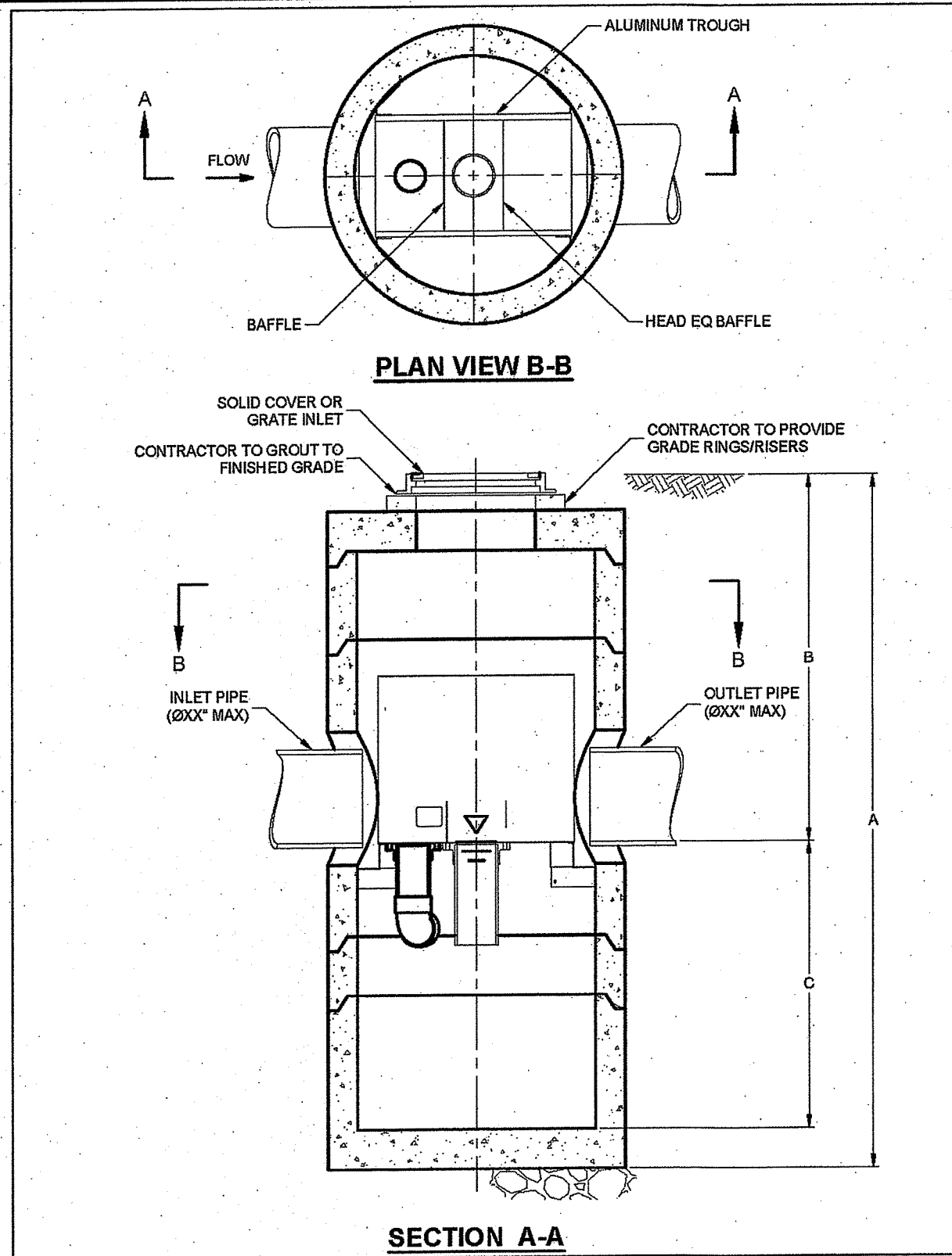


DATE: MAY 17, 2018  
DRAWN: NIF/DRC  
SCALE: NTS

**HUNTING HILL**  
MAJOR LAND DEVELOPMENT PROJECT  
PERMIT MODIFICATION  
AP 35, LOT 188  
CUMBERLAND, RHODE ISLAND 02864

**LEVEL**  
DESIGN GROUP  
CIVIL ENGINEERING  
249 SOUTH STREET  
UNIT 1  
PLAINVILLE, MA 02762  
TEL. (508) 695-2221 FAX. (508) 695-2219

**TYPICAL DETAILS**  
**C-6.1**  
SHEET 14 OF 23  
**1554.00**



**VORTSENTRY HS DESIGN NOTES**

THE STANDARD SOLID COVER CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW.

CONFIGURATION OPTION DESCRIPTION	
GRATE INLET (NO INLET PIPE)	
GRATE INLET WITH INLET PIPE	

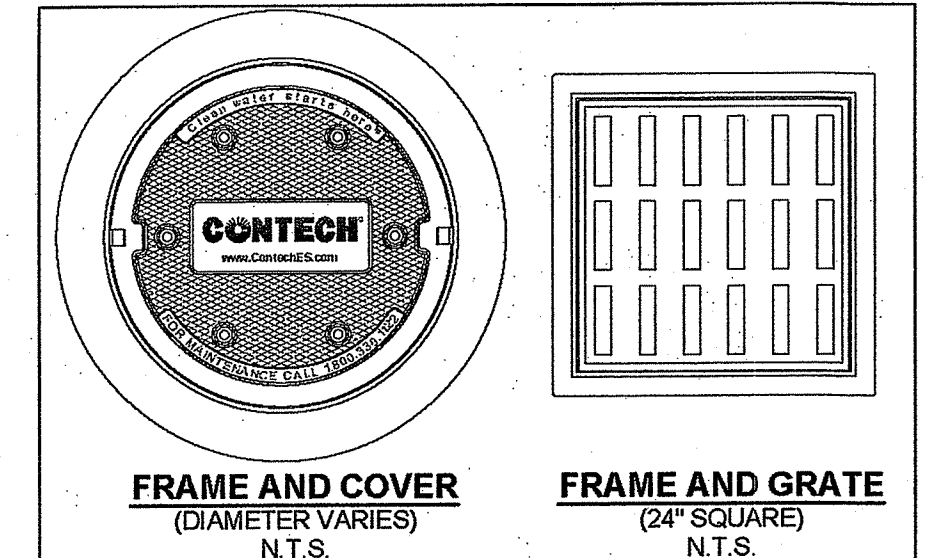
VORTSENTRY HS GENERAL INFORMATION												
Model	Manhole Diameter (ID)		Typical Total Distance Rim to Outside Bottom		Typical Distance Rim to Invert B		Typical Depth Below Invert (inside) C		Approximate Minimum Distance Rim to Invert		Maximum Pipe Diameter (ID)	
	FT	mm	FT	m	FT	m	FT	m	FT	m		
HS36	3	900	10.16	3.10	4.08	1.24	5.58	1.70	3.00	0.91	18	450
HS48	4	1200	13.25	4.04	6.00	1.83	6.75	2.07	4.00	1.22	24	600
HS60	5	1500	15.13	4.61	6.50	1.98	7.98	2.42	4.82	1.47	30	750
HS72	6	1800	16.58	5.05	6.75	2.06	8.15	2.78	5.59	1.70	36	900
HS84	7	2100	18.85	5.75	7.75	2.36	10.35	3.15	5.00	1.52	42	1050
HS96	8	2400	20.87	6.36	8.50	2.59	11.54	3.51	6.91	2.11	48	1200

**GENERAL NOTES**

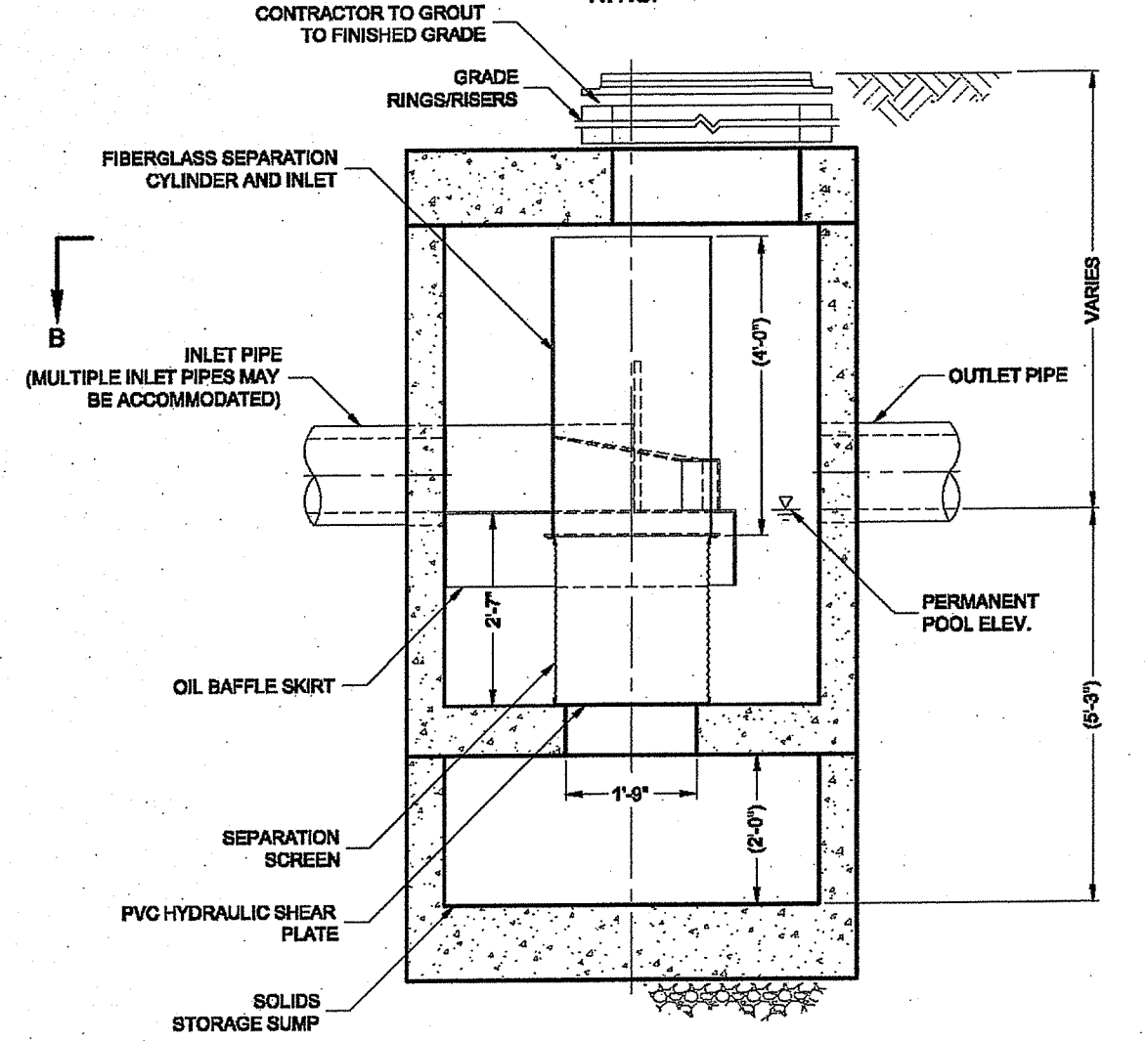
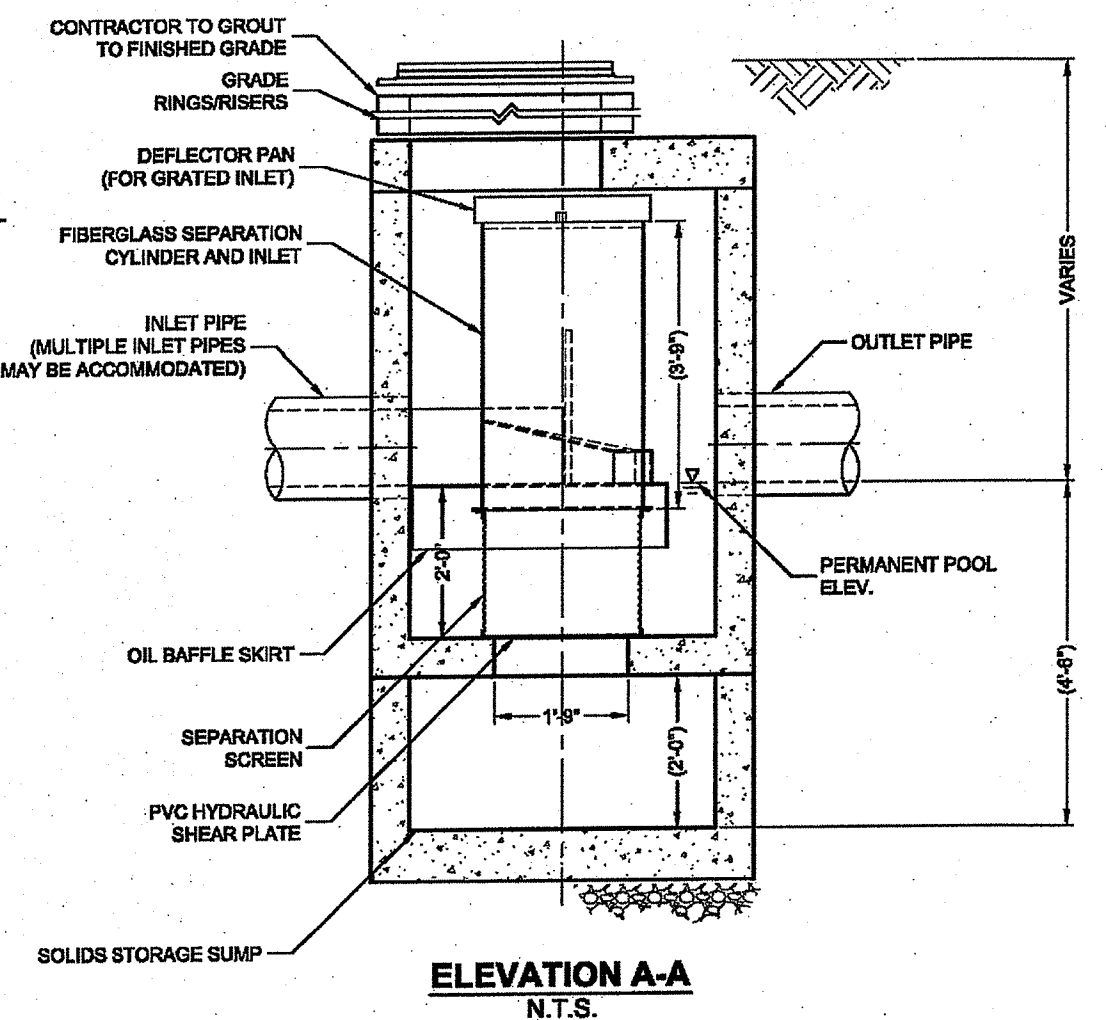
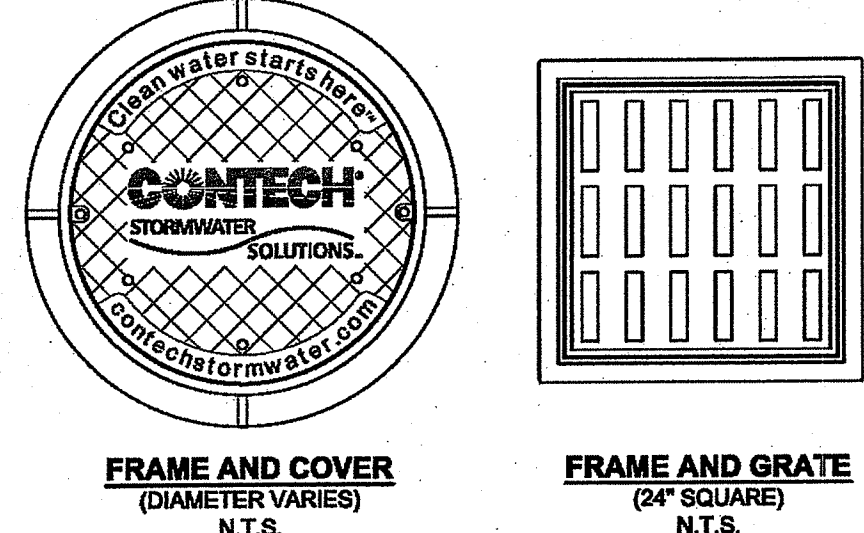
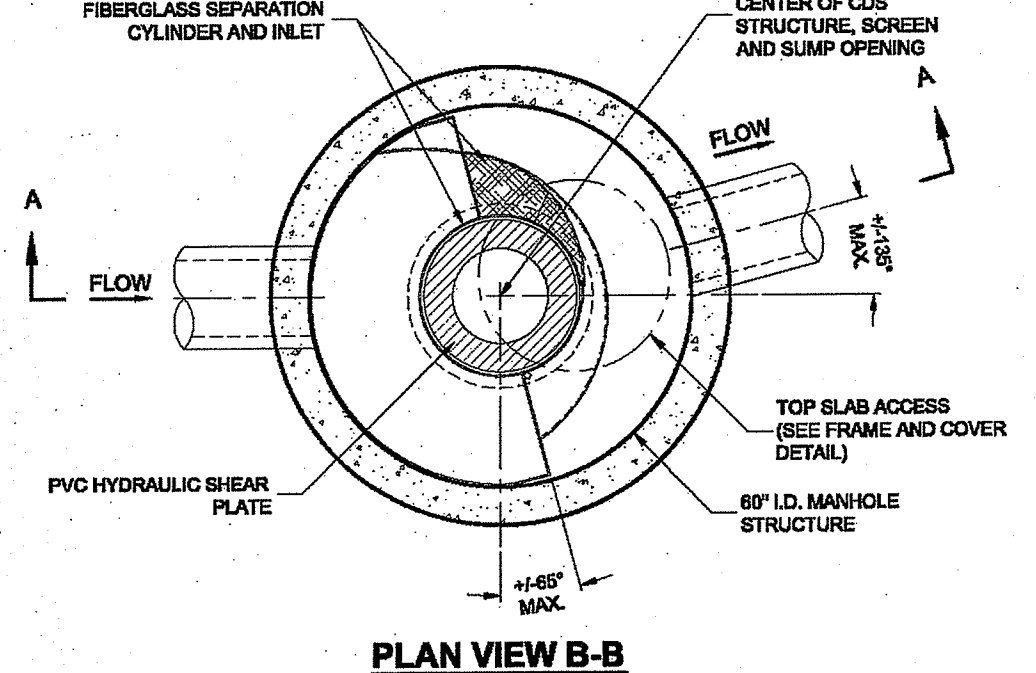
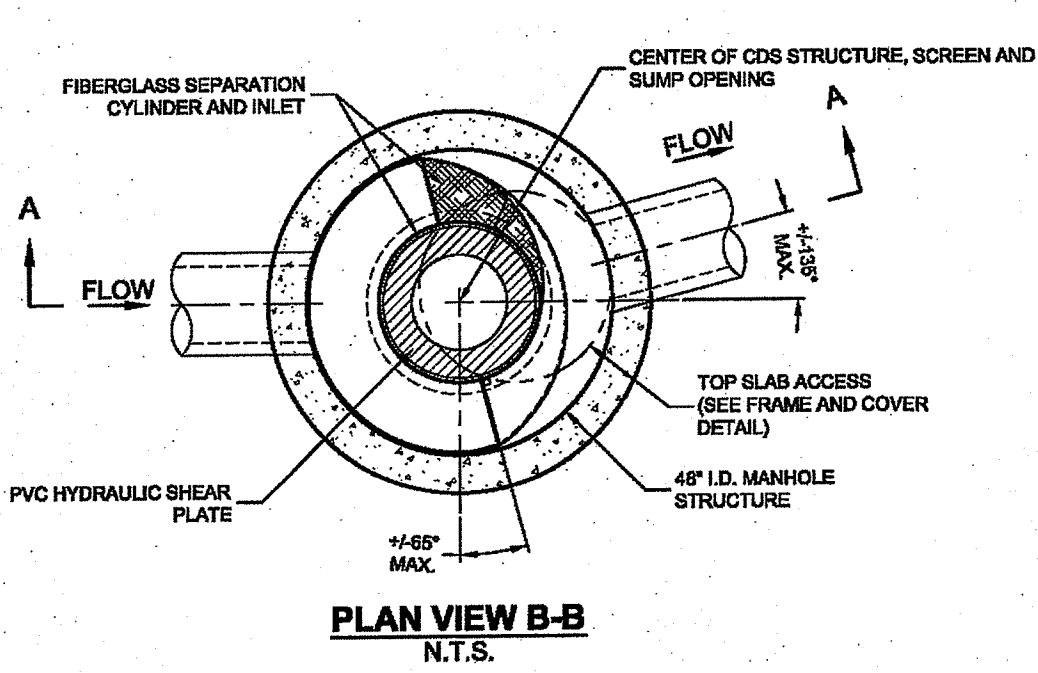
- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
- DIMENSIONS MARKED WITH ( ) ARE REFERENCE DIMENSIONS. ACTUAL DIMENSIONS MAY VARY.
- FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHT, PLEASE CONTACT YOUR CONTECH ENGINEERED SOLUTIONS LLC REPRESENTATIVE. [www.contech-es.com](http://www.contech-es.com)
- VORTSENTRY HS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
- STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET AASHTO M308 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.

**INSTALLATION NOTES**

- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE VORTSENTRY HS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
- CONTRACTOR TO INSTALL JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS AND ASSEMBLE STRUCTURE.
- CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.



**VORTSENTRY DETAILS AND SPECIFICATIONS**  
NOT TO SCALE



**GENERAL NOTES**

- CONTECH TO PROVIDE ALL MATERIALS UNLESS NOTED OTHERWISE.
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- FOR FABRICATION DRAWINGS WITH DETAILED STRUCTURE DIMENSIONS AND WEIGHTS, PLEASE CONTACT YOUR CONTECH CONSTRUCTION PRODUCTS REPRESENTATIVE. [www.contech-cp.com](http://www.contech-cp.com)
- CDS WATER QUALITY STRUCTURE SHALL BE IN ACCORDANCE WITH ALL DESIGN DATA AND INFORMATION CONTAINED IN THIS DRAWING.
- STRUCTURE SHALL MEET AASHTO HS20 AND CASTINGS SHALL MEET AASHTO M308 LOAD RATING, ASSUMING GROUNDWATER ELEVATION AT, OR BELOW, THE OUTLET PIPE INVERT ELEVATION. ENGINEER OF RECORD TO CONFIRM ACTUAL GROUNDWATER ELEVATION.
- PVC HYDRAULIC SHEAR PLATE IS PLACED ON SHELF AT BOTTOM OF SCREEN CYLINDER. REMOVE AND REPLACE AS NECESSARY DURING MAINTENANCE CLEANING.

**INSTALLATION NOTES**

- ANY SUB-BASE, BACKFILL DEPTH, AND/OR ANTI-FLOTATION PROVISIONS ARE SITE-SPECIFIC DESIGN CONSIDERATIONS AND SHALL BE SPECIFIED BY ENGINEER OF RECORD.
- CONTRACTOR TO PROVIDE EQUIPMENT WITH SUFFICIENT LIFTING AND REACH CAPACITY TO LIFT AND SET THE CDS MANHOLE STRUCTURE (LIFTING CLUTCHES PROVIDED).
- CONTRACTOR TO ADD JOINT SEALANT BETWEEN ALL STRUCTURE SECTIONS, AND ASSEMBLE STRUCTURE.
- CONTRACTOR TO PROVIDE, INSTALL, AND GROUT PIPES. MATCH PIPE INVERTS WITH ELEVATIONS SHOWN.
- CONTRACTOR TO TAKE APPROPRIATE MEASURES TO ASSURE UNIT IS WATER TIGHT, HOLDING WATER TO FLOWLINE INVERT MINIMUM. IT IS SUGGESTED THAT ALL JOINTS BELOW PIPE INVERTS ARE GROUTED.

**CDS 2015-4-G UNIT (INLET & STANDARD)**

**CDS 2020-5-G UNIT (STANDARD)**

**CDS2015-4G DESIGN NOTES**

CDS2015-4G RATED TREATMENT CAPACITY IS 1.4 CFS, OR PER LOCAL REGULATIONS.

THE STANDARD CDS2015-4G CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES

**CDS2020-5-C DESIGN NOTES**

CDS2020-5-C RATED TREATMENT CAPACITY IS 2.2 CFS, OR PER LOCAL REGULATIONS.

THE STANDARD CDS2020-5-C CONFIGURATION IS SHOWN. ALTERNATE CONFIGURATIONS ARE AVAILABLE AND ARE LISTED BELOW. SOME CONFIGURATIONS MAY BE COMBINED TO SUIT SITE REQUIREMENTS.

CONFIGURATION DESCRIPTION
GRATED INLET ONLY (NO INLET PIPE)
GRATED INLET WITH INLET PIPE OR PIPES
CURB INLET ONLY (NO INLET PIPE)
CURB INLET WITH INLET PIPE OR PIPES
SEPARATE OIL BAFFLE (SINGLE INLET PIPE REQUIRED FOR THIS CONFIGURATION)
SEDIMENT WEIR FOR NUDEP / NCAT CONFORMING UNITS

**CDS UNIT DETAILS AND SPECIFICATIONS**  
NOT TO SCALE

Environmental Management  
MAY 10 2019  
Office of Water Resources

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED JUN 07 2019 FILE # 19-0070  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

APPROVED  
FINAL PLAN REVIEW  
APPROVED IN ACCORDANCE WITH THE TOWN OF CUMBERLAND SUBDIVISION REGULATIONS.

ADMINISTRATIVE OFFICER \_\_\_\_\_

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

PLANNING BOARD \_\_\_\_\_

DRAW NO.: \_\_\_\_\_

SHEET NO.: \_\_\_\_\_

PLAT/LOT \_\_\_\_\_

NO	DATE	REVISIONS
1	06/27/2018	PRELIMINARY PLAN SUBMISSION
2	09/26/2018	PRELIMINARY/FINAL APPROVAL
3	02/20/2019	RIDEM COMMENTS
4	05/07/2019	RIDEM COMMENTS

DANIEL R. CAMPBELL  
5/1/19  
No. 8393  
REGISTERED PROFESSIONAL ENGINEER  
CIVIL

DATE: MAY 17, 2018  
DRAWN: NF / DRC  
SCALE: NTS

**HUNTING HILL**  
MAJOR LAND DEVELOPMENT PROJECT  
PERMIT MODIFICATION  
AP 35, LOT 188  
CUMBERLAND, RHODE ISLAND 02864

**LEVEL**  
DESIGN GROUP  
CIVIL ENGINEERING  
249 SOUTH STREET  
UNIT 1  
PLAINVILLE, MA 02762  
TEL. (508) 695-2221 FAX. (508) 695-2129

TYPICAL  
DETAILS

**C-6.2**  
SHEET 15 OF 23

**1554.00**

Symbol	Label	Qty	Catalog Number	Description	Lamp	Mfg. Hgt.	Lumens	LLF	Watts
A	35	MEZA THREE 60LED-3 5000K 120-277	PAPPI OUTDOOR POLE/MOUNT FULL CUT-OFF LUMINAIRE WITH INDIVIDUAL LED PMMA CLEAR OPTICS AND FLAT CLEAR POLYCARBONATE CLEAR LENS	LUXEON 3030 SERIES WHITE LEDS (5000K) LUMEN OUTPUT = 6,487	14'	Absolute	1,00	62	

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
ROADWAY	+	0.8 fc	10.4 fc	0.0 fc	N/A	N/A
SPILL	+	0.0 fc	1.3 fc	0.0 fc	N/A	N/A

**Housing**  
Rugged Die cast aluminum with integrated heat sink high-flow design with separated driver compartment. Available in two standard mounting arrangements. Fully adjustable knuckle Mount designed to fit 2-3/8" outside diameter davit arm. Tenon and Standard Bolt to pole rugged cast aluminum arm mount.

**Electrical**  
Constant current electronic drivers multi voltage meets UL 1310 / UL48 Class 2 with a built-in over-temperature protection. Input voltage from 100-277, 347 and 480 volt is available (VAC 50-60Hz) Certified and tested to the North American UL 8750 Standard for wet location.

**Lamping**  
Philips Luxeon 3030 light emitting diodes (LED) mounted on heavy weight metal modular boards individually sealed and carrying an IP65 Rating. Optical Quality Polymethyl Methacrylate (PMMA) Optics provide wide coverage uniform lighting distributions available inIES distributions : type 2, 3, 5

**Finish**  
Rugged, long life, oven baked polyester powder coatings with multi-stage pre-treatment for outstanding adhesion. Optional hard color anodizing provides superior protection in harsh and corrosive applications. Standard colors are White, Black, Bronze.

**Warranty**  
LED Luminaires are warranted against defects in material and/or workmanship for three years. LED modules and drivers are warranted for a period of (5) five years. (see Detailed Limited Warranty for more information)



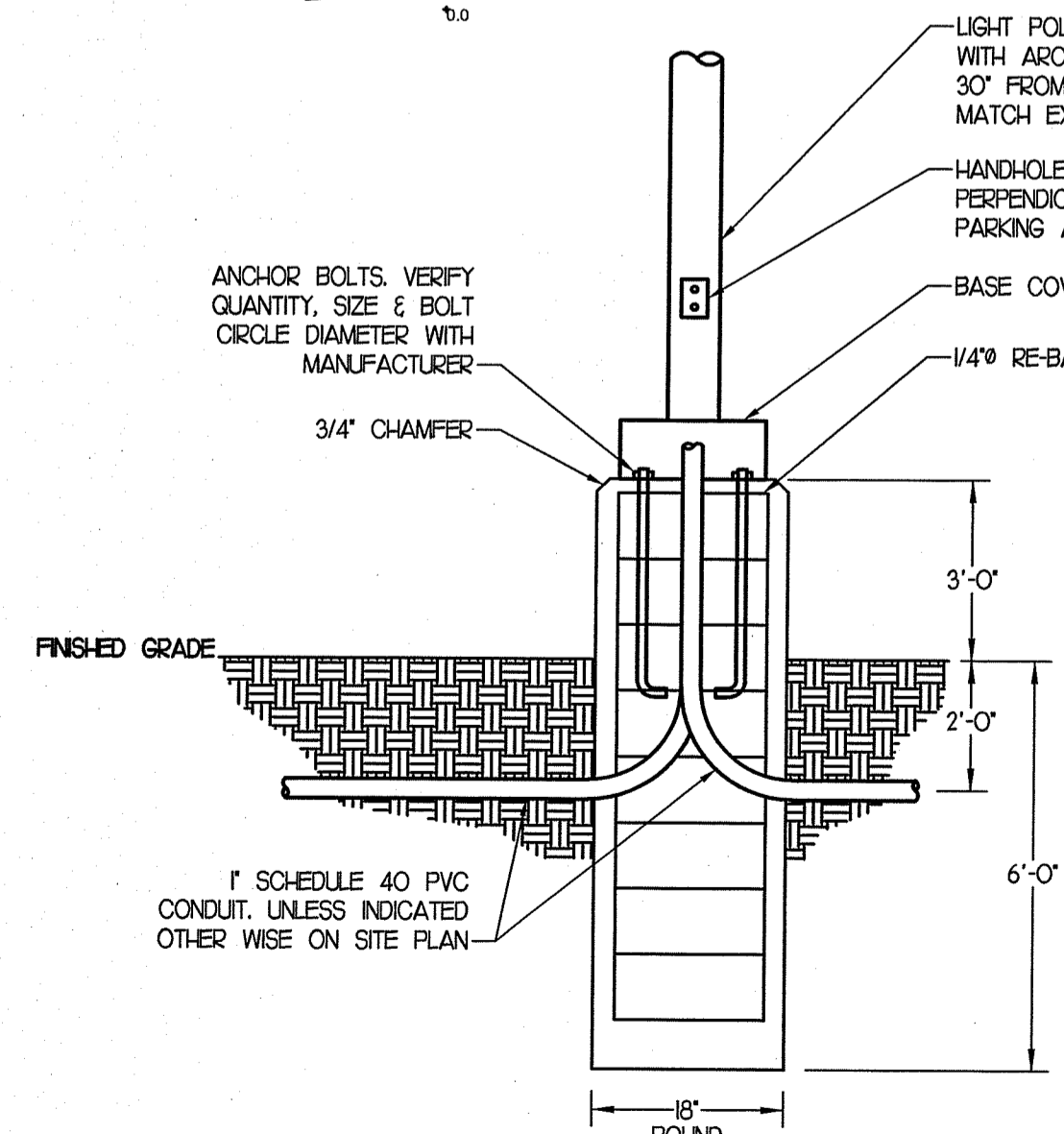
Lamp	Wattage	Distribution	LED Color	Voltage	Mounting	Options	Exterior Color / Finish
60 watt LED Type 2	60LED (2)	7,500 Lms	4000K	MT	Photo Control (PC)	White (WHT)	Black (MBK)
60 watt LED Type 3	60LED (3)	7,500 Lms	4000K	MT	Photo Control (PC)	White (WHT)	Black (MBK)
60 watt LED Type 5	60LED (5)	7,500 Lms	4000K	MT	Photo Control (PC)	White (WHT)	Black (MBK)
100 watt LED Type 2	100LED (2)	12,000 Lms	4000K	MT	Photo Control (PC)	White (WHT)	Black (MBK)
100 watt LED Type 3	100LED (3)	12,000 Lms	4000K	MT	Photo Control (PC)	White (WHT)	Black (MBK)
100 watt LED Type 5	100LED (5)	12,000 Lms	4000K	MT	Photo Control (PC)	White (WHT)	Black (MBK)
150 watt LED Type 2	150LED (2)	18,400 Lms	4000K	MT	Photo Control (PC)	White (WHT)	Black (MBK)
150 watt LED Type 3	150LED (3)	18,400 Lms	4000K	MT	Photo Control (PC)	White (WHT)	Black (MBK)
150 watt LED Type 5	150LED (5)	18,400 Lms	4000K	MT	Photo Control (PC)	White (WHT)	Black (MBK)
200 watt LED Type 2	200LED (2)	24,100 Lms	4000K	MT	Photo Control (PC)	White (WHT)	Black (MBK)
200 watt LED Type 3	200LED (3)	24,100 Lms	4000K	MT	Photo Control (PC)	White (WHT)	Black (MBK)
200 watt LED Type 5	200LED (5)	24,100 Lms	4000K	MT	Photo Control (PC)	White (WHT)	Black (MBK)

**Pappi Lighting**  
5339 Wallace St.  
Mississauga, ON  
Canada L4Z 1Z8  
tel: (905) 625-1139  
tel: (888) 453-1139  
fax: (905) 720-3015  
www.pappilighting.com

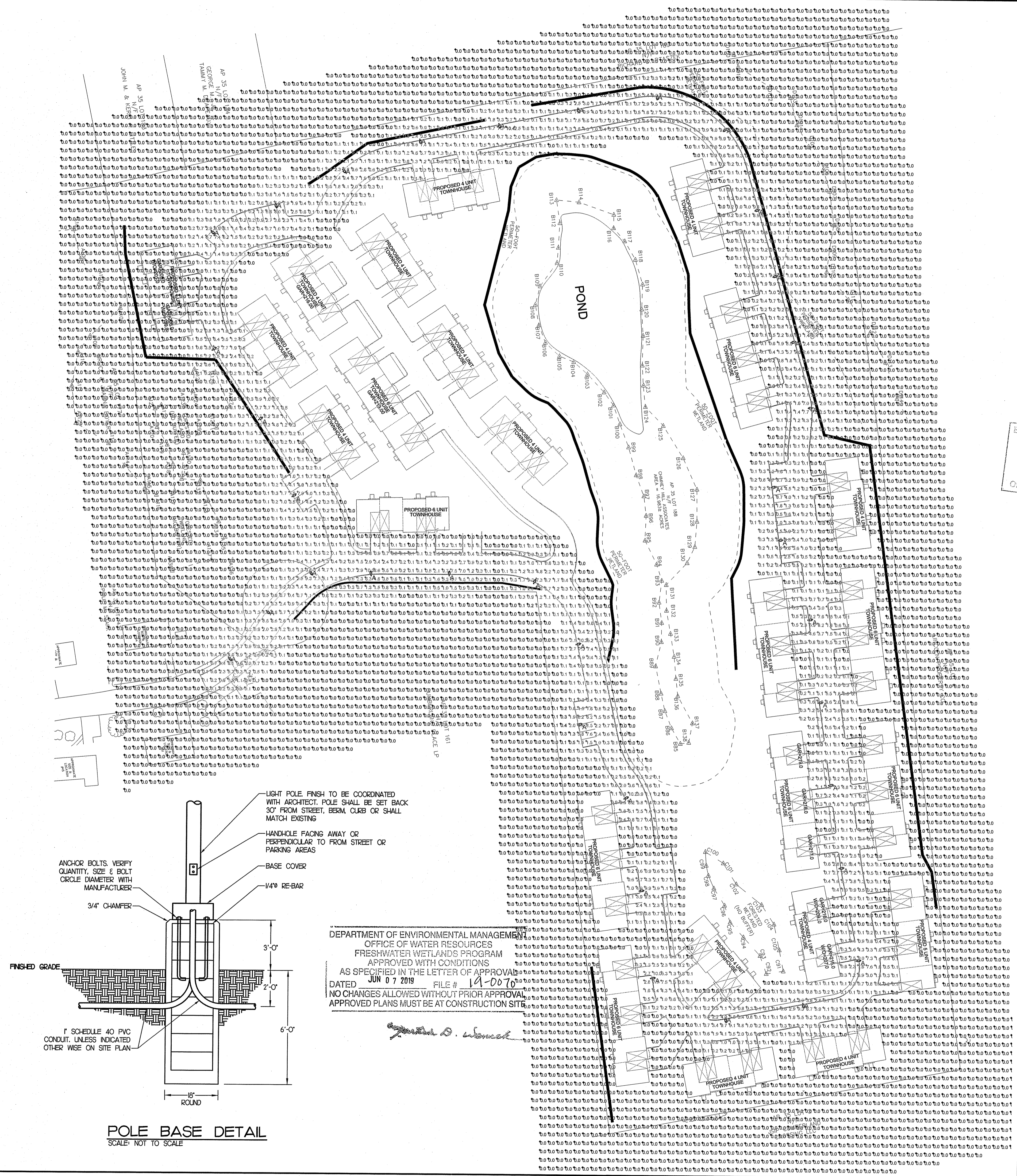
IP65  
ROHS  
EPA measured to 9ft and includes a cast mounting arm.

1 Fixture: 0.6  
2 Fixture: 1.2  
3 Fixture: 1.8  
4 Fixture: 2.0

Project: \_\_\_\_\_



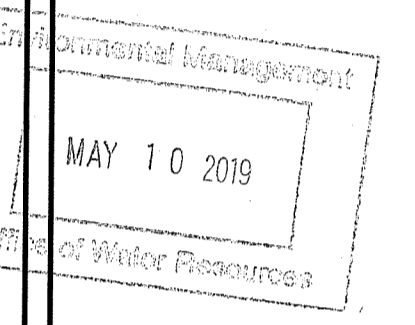
**POLE BASE DETAIL**  
SCALE: NOT TO SCALE



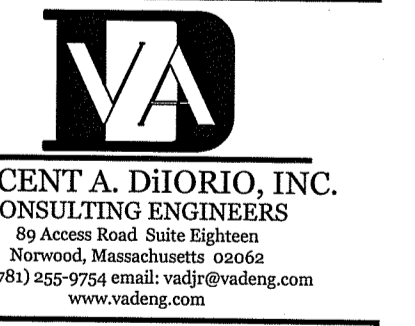
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED JUN 07 2019 FILE # 19-007  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

NO	DATE	REVISIONS
1	06/27/2018	PRELIMINARY PLAN SUB
2	06/28/2018	PRELIM / FINAL APPROVAL
3	02/22/2019	RIPEM COMMENTS
4	05/07/2019	RIPEM COMMENTS

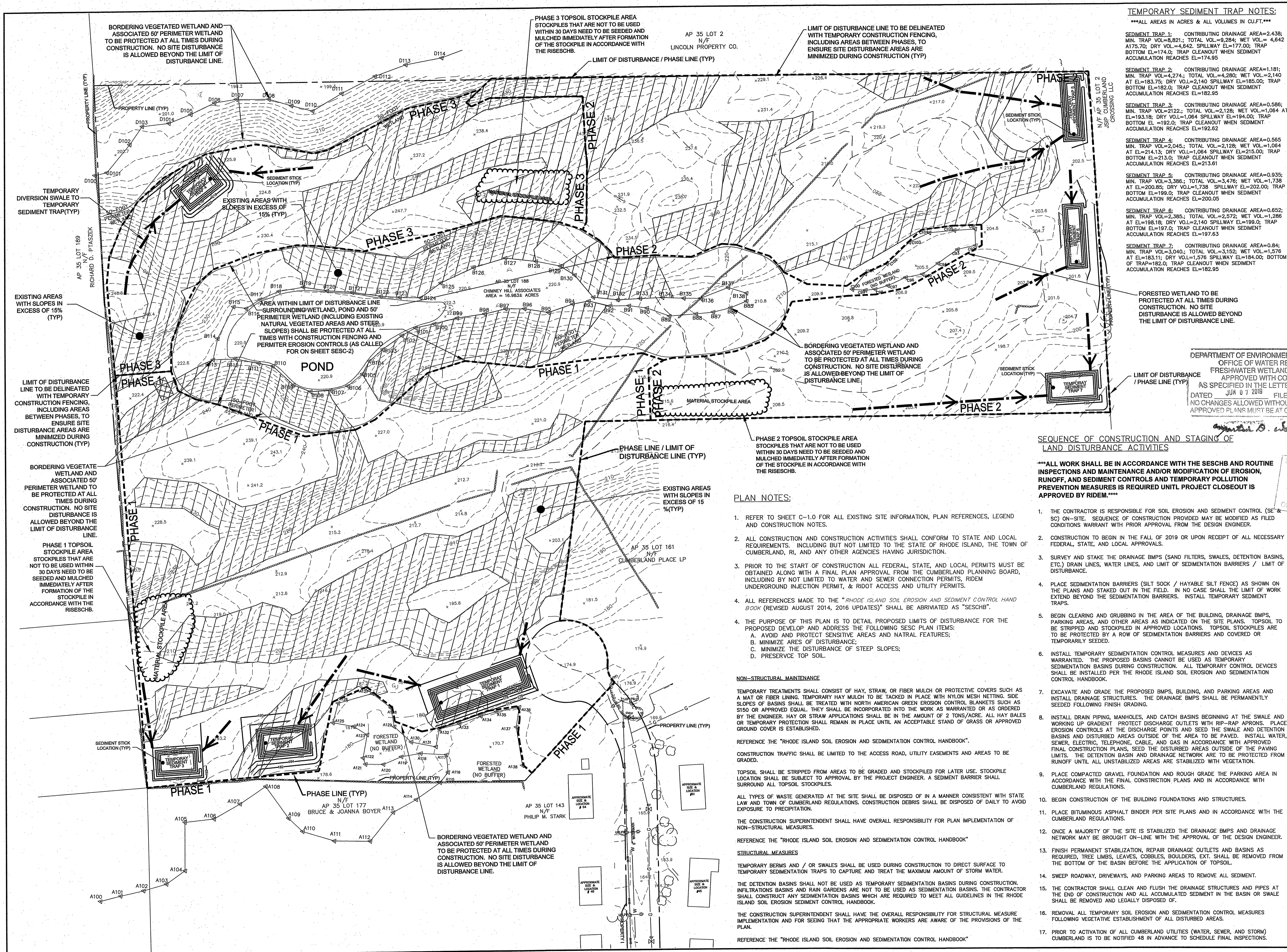
DATE: JUNE 28, 2018  
DRAWN: JMS  
SCALE: 1" = 60'-0"



**HUNTING HILL**  
MAJOR LAND DEVELOPMENT PROJECT  
PERMIT MODIFICATION  
AP 35, LOT 188  
CUMBERLAND, RHODE ISLAND 02864



**PHOTOMETRIC PLAN**  
PH-1  
SHEET 16 OF 23  
0' 30' 60' 120'  
1554.00

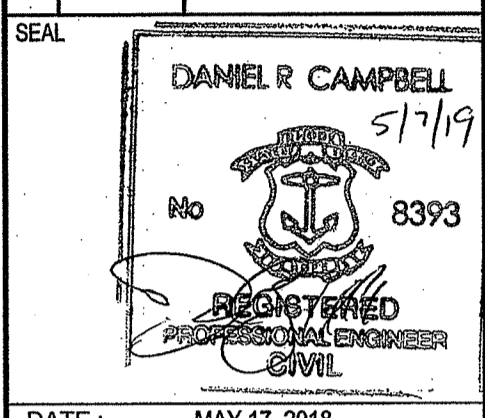


**TEMPORARY SEDIMENT TRAP NOTES:**  
 \*\*\*ALL AREAS IN ACRES & ALL VOLUMES IN CU.FT.\*\*\*

- SEDIMENT TRAP 1:** CONTRIBUTING DRAINAGE AREA=2.438; MIN. TRAP VOL.=8,821; TOTAL VOL.=9,284; WET VOL.= 4,642; A175.70; DRY VOL.=4,642; SPILLWAY EL.=177.00; TRAP BOTTOM EL.=174.0; TRAP CLEANOUT WHEN SEDIMENT ACCUMULATION REACHES EL.=174.95
- SEDIMENT TRAP 2:** CONTRIBUTING DRAINAGE AREA=1.181; MIN. TRAP VOL.=4,274; TOTAL VOL.=4,280; WET VOL.=2,140; AT EL.=183.75; DRY VOL.=2,140; SPILLWAY EL.=185.00; TRAP BOTTOM EL.=182.0; TRAP CLEANOUT WHEN SEDIMENT ACCUMULATION REACHES EL.=182.95
- SEDIMENT TRAP 3:** CONTRIBUTING DRAINAGE AREA=0.586; MIN. TRAP VOL.=212.2; TOTAL VOL.=2,128; WET VOL.=1,064; AT EL.=193.18; DRY VOL.=1,064; SPILLWAY EL.=194.00; TRAP BOTTOM EL.=192.0; TRAP CLEANOUT WHEN SEDIMENT ACCUMULATION REACHES EL.=192.62
- SEDIMENT TRAP 4:** CONTRIBUTING DRAINAGE AREA=0.565; MIN. TRAP VOL.=2,045; TOTAL VOL.=2,128; WET VOL.=1,064; AT EL.=214.13; DRY VOL.=1,064; SPILLWAY EL.=215.00; TRAP BOTTOM EL.=213.0; TRAP CLEANOUT WHEN SEDIMENT ACCUMULATION REACHES EL.=213.61
- SEDIMENT TRAP 5:** CONTRIBUTING DRAINAGE AREA=0.935; MIN. TRAP VOL.=3,386; TOTAL VOL.=3,476; WET VOL.=1,738; AT EL.=200.85; DRY VOL.=1,738; SPILLWAY EL.=202.00; TRAP BOTTOM EL.=199.0; TRAP CLEANOUT WHEN SEDIMENT ACCUMULATION REACHES EL.=200.05
- SEDIMENT TRAP 6:** CONTRIBUTING DRAINAGE AREA=0.652; MIN. TRAP VOL.=2,385; TOTAL VOL.=2,572; WET VOL.=1,286; AT EL.=198.18; DRY VOL.=2,140; SPILLWAY EL.=199.0; TRAP BOTTOM EL.=197.0; TRAP CLEANOUT WHEN SEDIMENT ACCUMULATION REACHES EL.=197.63
- SEDIMENT TRAP 7:** CONTRIBUTING DRAINAGE AREA=0.84; MIN. TRAP VOL.=3,040; TOTAL VOL.=3,152; WET VOL.=1,576; AT EL.=183.11; DRY VOL.=1,576; SPILLWAY EL.=184.00; BOTTOM OF TRAP=182.0; TRAP CLEANOUT WHEN SEDIMENT ACCUMULATION REACHES EL.=182.95

NO	DATE	REVISIONS
1	03/26/2019	SESC PLAN
2	05/07/2019	RIDEM COMMENTS

DATE: MAY 17, 2018  
 DRAWN: NF / DRC  
 SCALE: 1" = 40'



DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED JUN 07 2018 FILE # 19-0070  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

**SEQUENCE OF CONSTRUCTION AND STAGING OF LAND DISTURBANCE ACTIVITIES**

\*\*\*ALL WORK SHALL BE IN ACCORDANCE WITH THE SESCHB AND ROUTINE INSPECTIONS AND MAINTENANCE AND/OR MODIFICATION OF EROSION, RUNOFF, AND SEDIMENT CONTROLS AND TEMPORARY POLLUTION PREVENTION MEASURES IS REQUIRED UNTIL PROJECT CLOSEOUT IS APPROVED BY RIDEM.\*\*\*

- THE CONTRACTOR IS RESPONSIBLE FOR SOIL EROSION AND SEDIMENT CONTROL (SE & SC) ON-SITE. SEQUENCE OF CONSTRUCTION PROVIDED MAY BE MODIFIED AS FILED CONDITIONS WARRANT WITH PRIOR APPROVAL FROM THE DESIGN ENGINEER.
- CONSTRUCTION TO BEGIN IN THE FALL OF 2019 OR UPON RECEIPT OF ALL NECESSARY FEDERAL, STATE, AND LOCAL APPROVALS.
- SURVEY AND STAKE THE DRAINAGE BMPs (SAND FILTERS, SWALES, DETENTION BASINS, ETC.) DRAIN LINES, WATER LINES, AND LIMIT OF SEDIMENTATION BARRIERS / LIMIT OF DISTURBANCE.
- PLACE SEDIMENTATION BARRIERS (SLIT SOCK / HAYBALE SLIT FENCE) AS SHOWN ON THE PLANS AND STAKED OUT IN THE FIELD. IN NO CASE SHALL THE LIMIT OF WORK EXTEND BEYOND THE SEDIMENTATION BARRIERS. INSTALL TEMPORARY SEDIMENT TRAPS.
- BEGIN CLEARING AND GRUBBING IN THE AREA OF THE BUILDING, DRAINAGE BMPs, PARKING AREAS, AND OTHER AREAS AS INDICATED ON THE SITE PLANS. TOPSOIL TO BE STRIPPED AND STOCKPILED IN APPROVED LOCATIONS. TOPSOIL STOCKPILES ARE TO BE PROTECTED BY A ROW OF SEDIMENTATION BARRIERS AND COVERED OR TEMPORARILY SEEDED.
- INSTALL TEMPORARY SEDIMENTATION CONTROL MEASURES AND DEVICES AS WARRANTED. THE PROPOSED BASINS CANNOT BE USED AS TEMPORARY SEDIMENTATION BASINS DURING CONSTRUCTION. ALL TEMPORARY CONTROL DEVICES SHALL BE INSTALLED PER THE RHODE ISLAND SOIL EROSION AND SEDIMENTATION CONTROL HANDBOOK.
- EXCAVATE AND GRADE THE PROPOSED BMPs, BUILDING, AND PARKING AREAS AND INSTALL DRAINAGE STRUCTURES. THE DRAINAGE BMPs SHALL BE PERMANENTLY SEEDED FOLLOWING FINISH GRADING.
- INSTALL DRAIN PIPING, MANHOLES, AND CATCH BASINS BEGINNING AT THE SWALE AND WORKING UP GRADIENT. PROTECT DISCHARGE OUTLETS WITH RIP-RAP APRONS. PLACE EROSION CONTROLS AT THE DISCHARGE POINTS AND SEED THE SWALE AND DETENTION BASINS AND DISTURBED AREAS OUTSIDE OF THE AREA TO BE PAVED. INSTALL WATER, SEWER, ELECTRIC, TELEPHONE, CABLE, AND GAS IN ACCORDANCE WITH APPROVED FINAL CONSTRUCTION PLANS. SEED THE DISTURBED AREAS OUTSIDE OF THE PAVING LIMITS. THE DETENTION BASIN AND DRAINAGE NETWORK ARE TO BE PROTECTED FROM RUNOFF UNTIL ALL UNSTABILIZED AREAS ARE STABILIZED WITH VEGETATION.
- PLACE COMPACTED GRAVEL FOUNDATION AND ROUGH GRADE THE PARKING AREA IN ACCORDANCE WITH THE FINAL CONSTRUCTION PLANS AND IN ACCORDANCE WITH CUMBERLAND REGULATIONS.
- BEGIN CONSTRUCTION OF THE BUILDING FOUNDATIONS AND STRUCTURES.
- PLACE BITUMINOUS ASPHALT BINDER PER SITE PLANS AND IN ACCORDANCE WITH THE CUMBERLAND REGULATIONS.
- ONCE A MAJORITY OF THE SITE IS STABILIZED THE DRAINAGE BMPs AND DRAINAGE NETWORK MAY BE BROUGHT ON-LINE WITH THE APPROVAL OF THE DESIGN ENGINEER.
- FINISH PERMANENT STABILIZATION, REPAIR DRAINAGE OUTLETS AND BASINS AS REQUIRED. TREE LIMBS, LEAVES, COBBLES, BOULDERS, ETC. SHALL BE REMOVED FROM THE BOTTOM OF THE BASIN BEFORE THE APPLICATION OF TOPSOIL.
- SWEEP ROADWAY, DRIVEWAYS, AND PARKING AREAS TO REMOVE ALL SEDIMENT.
- THE CONTRACTOR SHALL CLEAN AND FLUSH THE DRAINAGE STRUCTURES AND PIPES AT THE END OF CONSTRUCTION AND ALL ACCUMULATED SEDIMENT IN THE BASIN OR SWALE SHALL BE REMOVED AND LEGALLY DISPOSED OF.
- REMOVAL ALL TEMPORARY SOIL EROSION AND SEDIMENTATION CONTROL MEASURES FOLLOWING VEGETATIVE ESTABLISHMENT OF ALL DISTURBED AREAS.
- PRIOR TO ACTIVATION OF ALL CUMBERLAND UTILITIES (WATER, SEWER, AND STORM) CUMBERLAND IS TO BE NOTIFIED 48 IN ADVANCE TO SCHEDULE FINAL INSPECTIONS.

**PLAN NOTES:**

- REFER TO SHEET C-1.0 FOR ALL EXISTING SITE INFORMATION, PLAN REFERENCES, LEGEND AND CONSTRUCTION NOTES.
- ALL CONSTRUCTION AND CONSTRUCTION ACTIVITIES SHALL CONFORM TO STATE AND LOCAL REQUIREMENTS INCLUDING BUT NOT LIMITED TO THE STATE OF RHODE ISLAND, THE TOWN OF CUMBERLAND, RI, AND ANY OTHER AGENCIES HAVING JURISDICTION.
- PRIOR TO THE START OF CONSTRUCTION ALL FEDERAL, STATE, AND LOCAL PERMITS MUST BE OBTAINED ALONG WITH A FINAL PLAN APPROVAL FROM THE CUMBERLAND PLANNING BOARD, INCLUDING BY NOT LIMITED TO WATER AND SEWER CONNECTION PERMITS, RIDEM UNDERGROUND INJECTION PERMIT, & RIDOT ACCESS AND UTILITY PERMITS.
- ALL REFERENCES MADE TO THE "RHODE ISLAND SOIL EROSION AND SEDIMENT CONTROL HANDBOOK (REVISED AUGUST 2014, 2016 UPDATES)" SHALL BE ABRVIATED AS "SESCHB".
- THE PURPOSE OF THIS PLAN IS TO DETAIL PROPOSED LIMITS OF DISTURBANCE FOR THE PROPOSED DEVELOP AND ADDRESS THE FOLLOWING SESC PLAN ITEMS:
  - AVOID AND PROTECT SENSITIVE AREAS AND NATRAL FEATURES;
  - MINIMIZE AREAS OF DISTURBANCE;
  - MINIMIZE THE DISTURBANCE OF STEEP SLOPES;
  - PRESERVEVE TOP SOIL.

**NON-STRUCTURAL MAINTENANCE**

TEMPORARY TREATMENTS SHALL CONSIST OF HAY, STRAW, OR FIBER MULCH OR PROTECTIVE COVERS SUCH AS MAT OR FIBER LINING. TEMPORARY HAY MULCH TO BE TACKED IN PLACE WITH NYLON MESH NETTING. SIDE SLOPES OF BASINS SHALL BE TREATED WITH NORTH AMERICAN GREEN EROSION CONTROL BLANKETS SUCH AS S150 OR APPROVED EQUAL. THEY SHALL BE INCORPORATED INTO THE WORK AS WARRANTED OR AS ORDERED BY THE ENGINEER. HAY OR STRAW APPLICATIONS SHALL BE IN THE AMOUNT OF 2 TONS/ACRE. ALL HAY BALES OR TEMPORARY PROTECTION SHALL REMAIN IN PLACE UNTIL AN ACCEPTABLE STAND OF GRASS OR APPROVED GROUND COVER IS ESTABLISHED.

REFERENCE THE "RHODE ISLAND SOIL EROSION AND SEDIMENTATION CONTROL HANDBOOK".

CONSTRUCTION TRAFFIC SHALL BE LIMITED TO THE ACCESS ROAD, UTILITY EASEMENTS AND AREAS TO BE GRADED.

TOPSOIL SHALL BE STRIPPED FROM AREAS TO BE GRADED AND STOCKPILED FOR LATER USE. STOCKPILE LOCATION SHALL BE SUBJECT TO APPROVAL BY THE PROJECT ENGINEER. A SEDIMENT BARRIER SHALL SURROUND ALL TOPSOIL STOCKPILES.

ALL TYPES OF WASTE GENERATED AT THE SITE SHALL BE DISPOSED OF IN A MANNER CONSISTENT WITH STATE LAW AND TOWN OF CUMBERLAND REGULATIONS. CONSTRUCTION DEBRIS SHALL BE DISPOSED OF DAILY TO AVOID EXPOSURE TO PRECIPITATION.

THE CONSTRUCTION SUPERINTENDENT SHALL HAVE OVERALL RESPONSIBILITY FOR PLAN IMPLEMENTATION OF NON-STRUCTURAL MEASURES.

REFERENCE THE "RHODE ISLAND SOIL EROSION AND SEDIMENTATION CONTROL HANDBOOK"

**STRUCTURAL MEASURES**

TEMPORARY BERMS AND / OR SWALES SHALL BE USED DURING CONSTRUCTION TO DIRECT SURFACE TO TEMPORARY SEDIMENTATION TRAPS TO CAPTURE AND TREAT THE MAXIMUM AMOUNT OF STORM WATER.

THE DETENTION BASINS SHALL NOT BE USED AS TEMPORARY SEDIMENTATION BASINS DURING CONSTRUCTION. INFILTRATIONS BASINS AND RAIN GARDENS ARE NOT TO BE USED AS SEDIMENTATION BASINS. THE CONTRACTOR SHALL CONSTRUCT ANY SEDIMENTATION BASINS WHICH ARE REQUIRED TO MEET ALL GUIDELINES IN THE RHODE ISLAND SOIL EROSION SEDIMENT CONTROL HANDBOOK.

THE CONSTRUCTION SUPERINTENDENT SHALL HAVE THE OVERALL RESPONSIBILITY FOR STRUCTURAL MEASURE IMPLEMENTATION AND FOR SEEING THAT THE APPROPRIATE WORKERS ARE AWARE OF THE PROVISIONS OF THE PLAN.

REFERENCE THE "RHODE ISLAND SOIL EROSION AND SEDIMENTATION CONTROL HANDBOOK"

HUNTING HILL  
 MAJOR LAND DEVELOPMENT PROJECT  
 FINAL PLAN SUBMISSION  
 AP 35, LOT 188  
 CUMBERLAND, RHODE ISLAND 02864



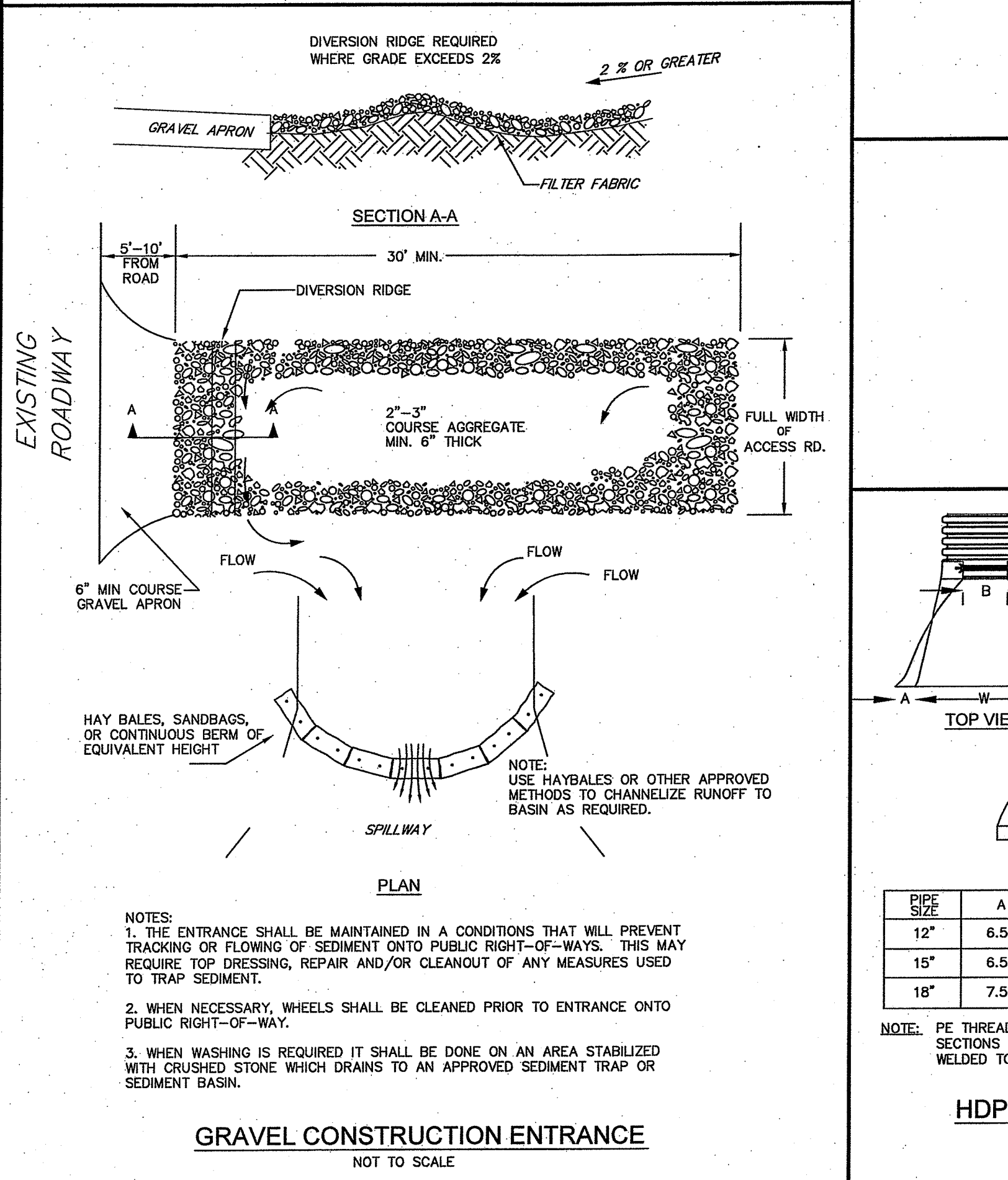
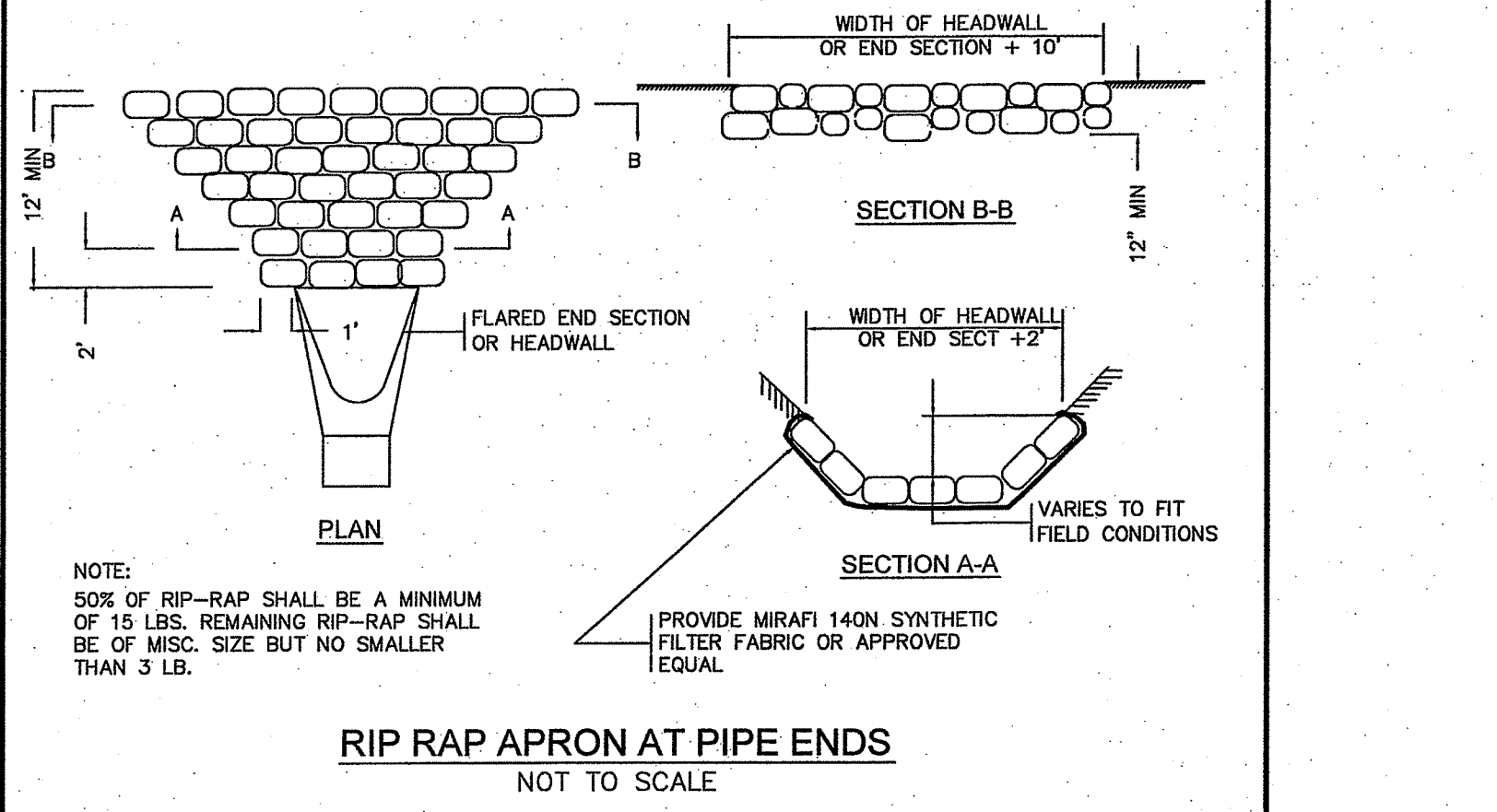
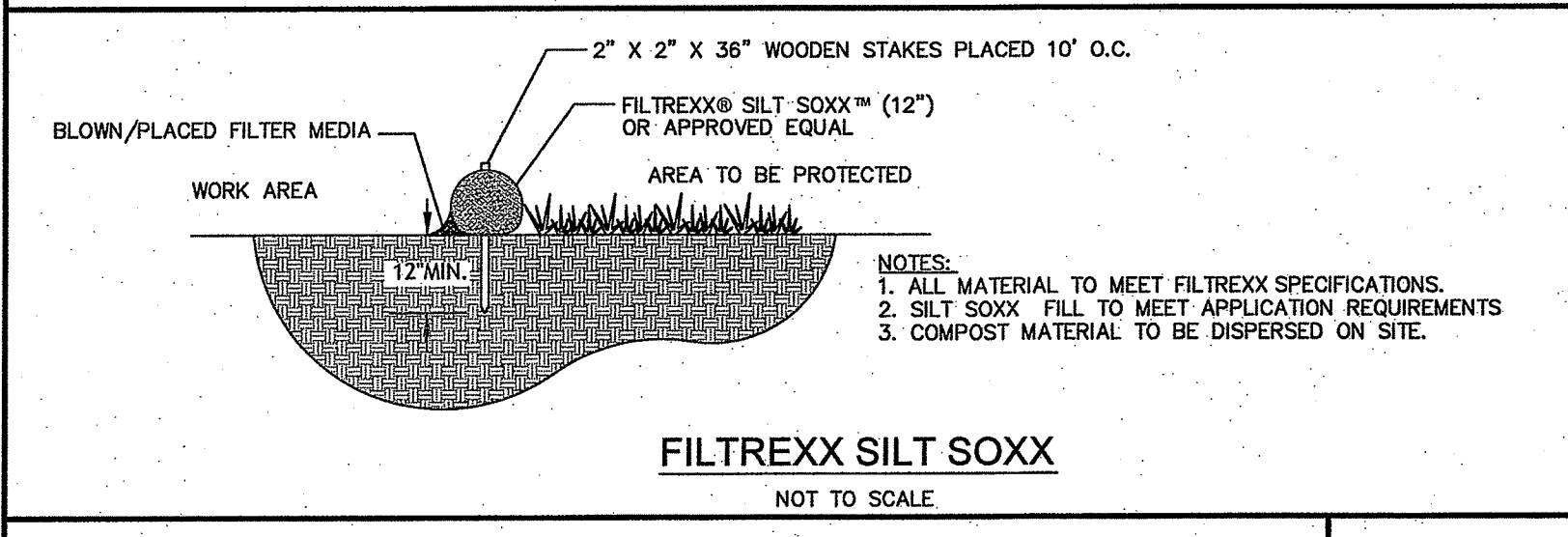
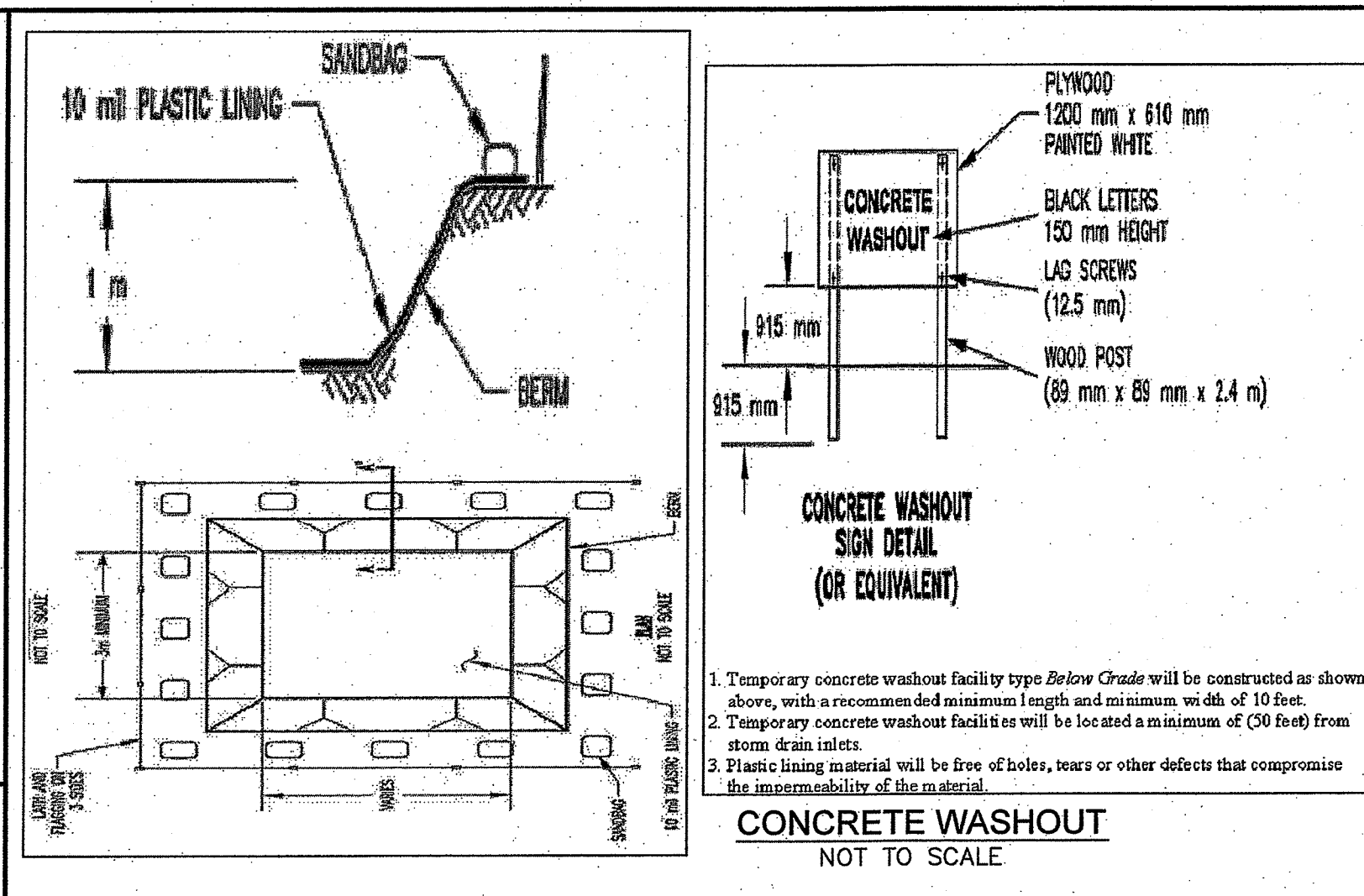
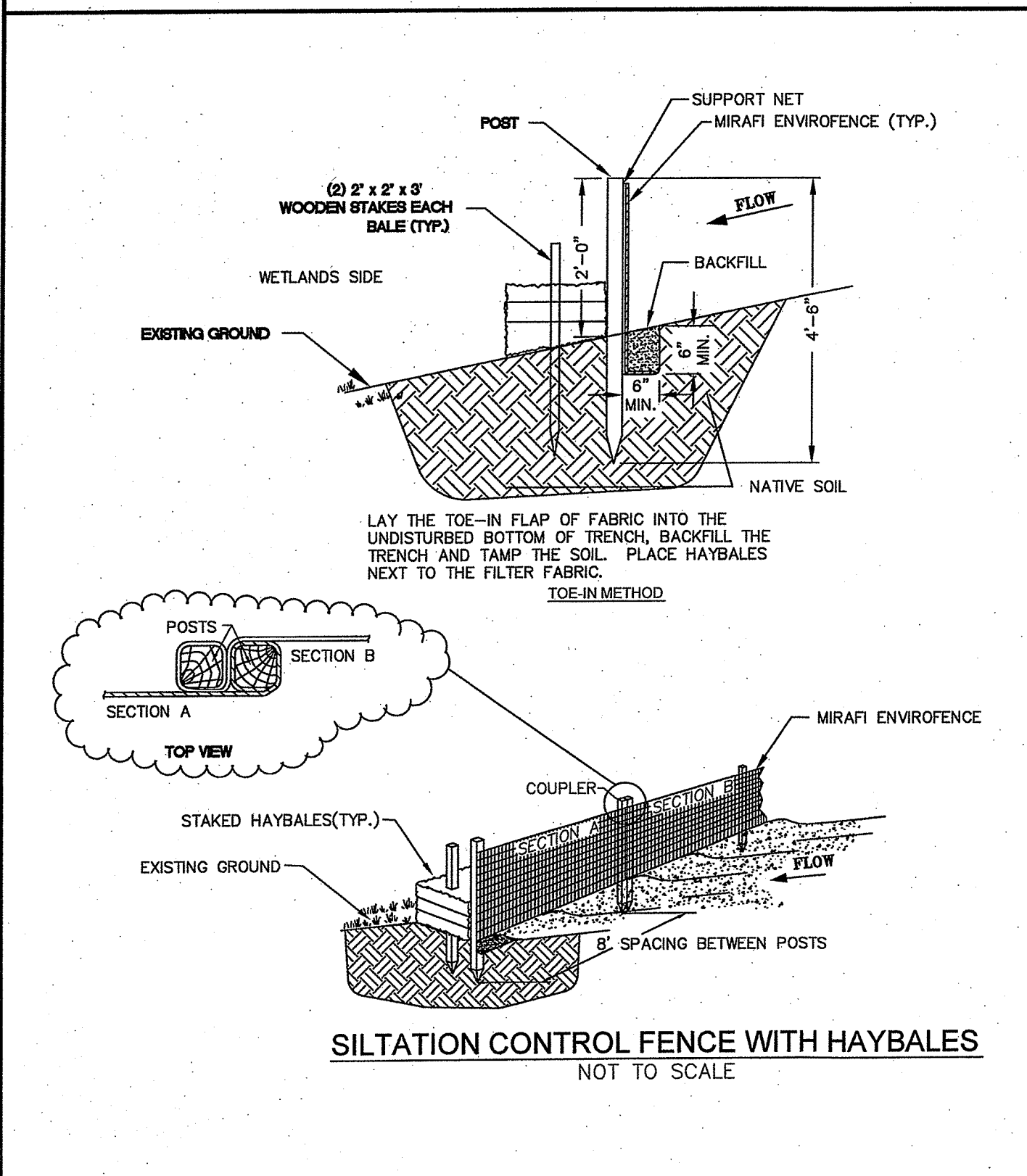
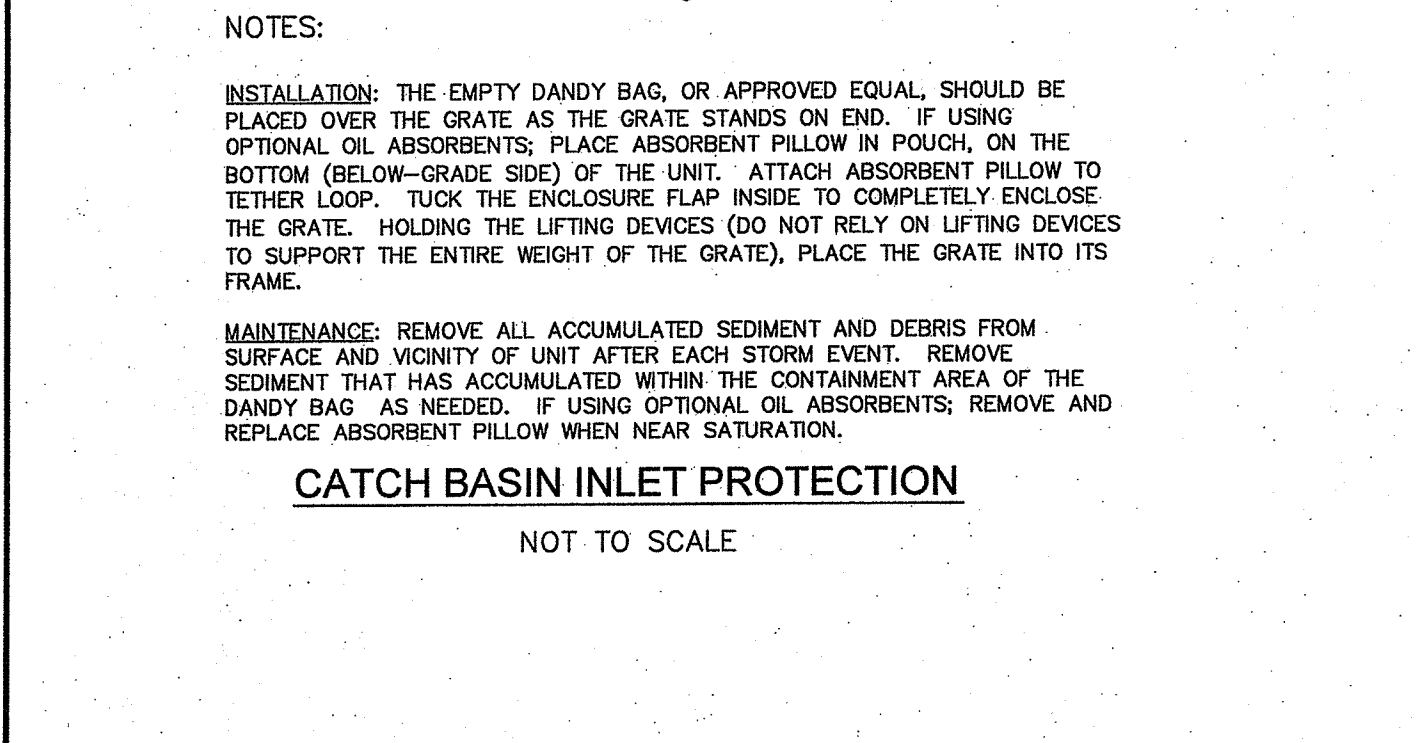
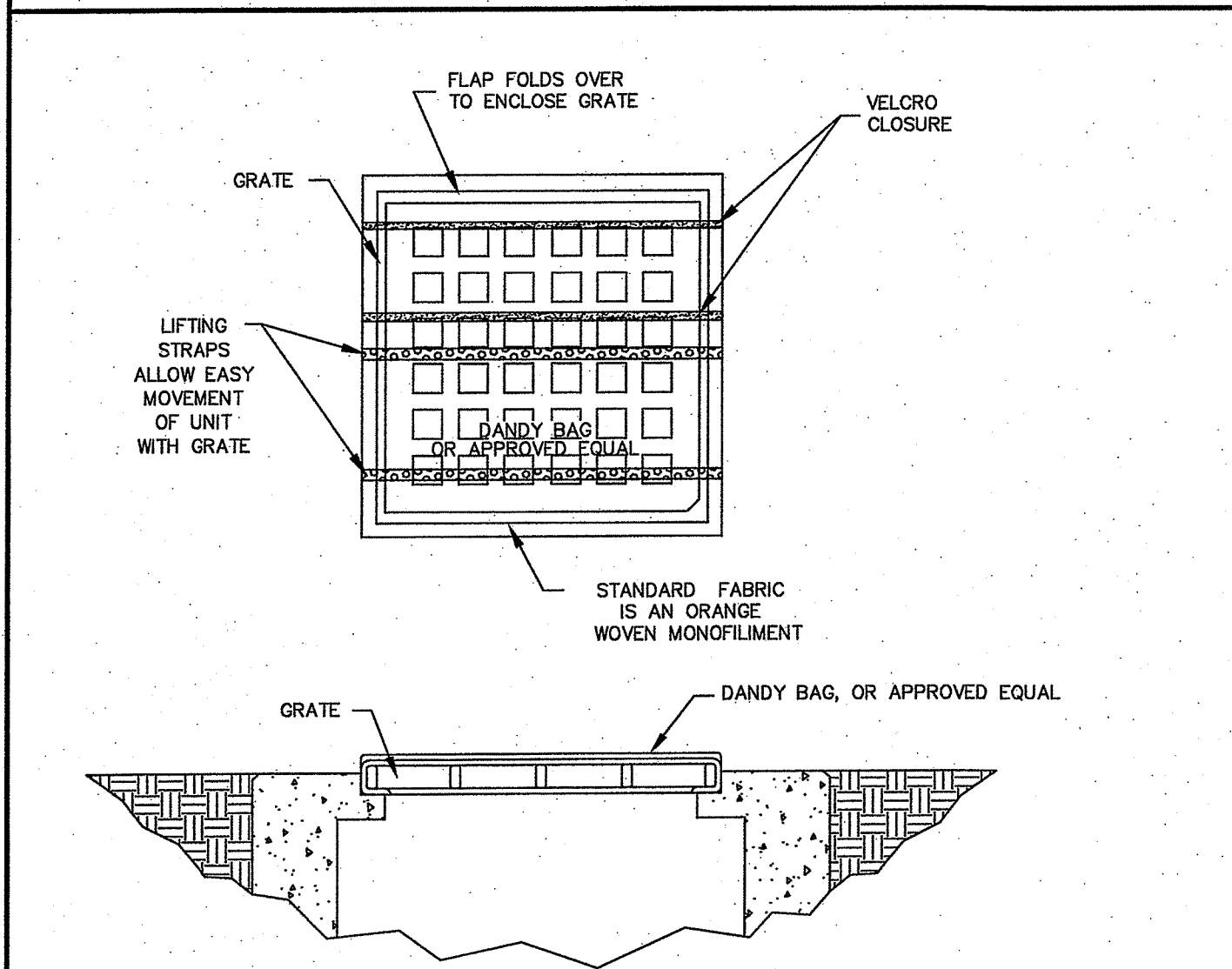
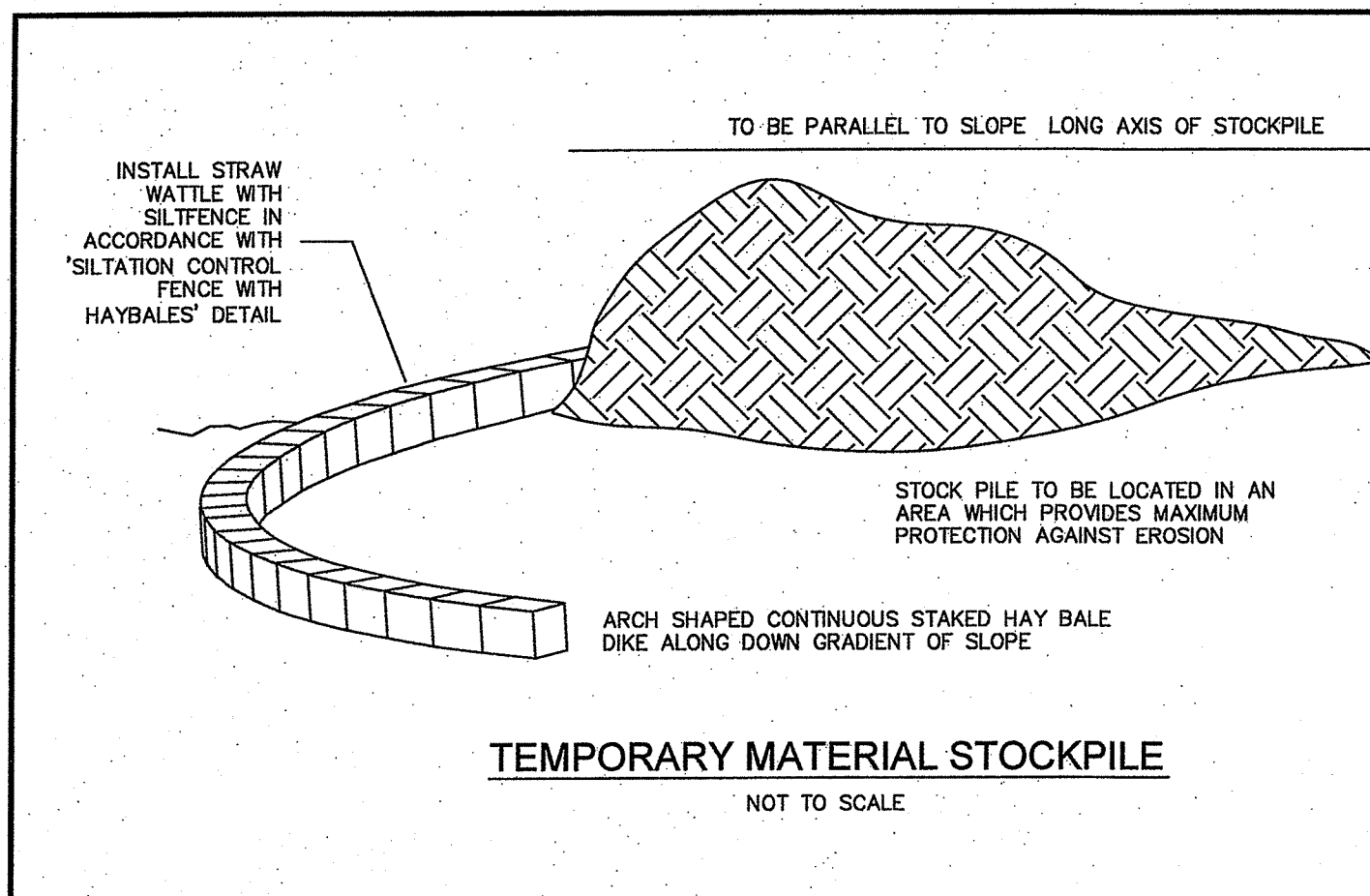
SOIL EROSION & SEDIMENT CONTROL

SESC-1

SHEET 17 OF 23

1554.00





# DIRTBAG®

Retains the silt, sand and fines while allowing the filtered water to drain out into the drainage system.

Protect the environment effectively and economically with Dirtbag®! Collect sand, silt and fines. Avoid silting streams, surrounding property and storm sewers. As more and more emphasis is put on saving our wetlands, regulations are becoming more stringent regarding the pumping of dirty water from holes around construction sites such as foundations, pipe line construction, repairing municipal water/sewer lines, marine construction, utility, highway and site development areas. ACF can make custom Dirtbags® to suit your needs. We can produce the size, dimension, or use the fabric weight you request.

Use Recommendations

ACF Environmental manufactures Dirtbag® using a variety of woven and nonwoven geotextile fabrics. The fabric properties on the Specifications page affirm the strength of Dirtbag®, and are a result of tests conducted at on-site laboratories at the geotextile factory. All test methods are ASTM or industry standards.

Each standard Dirtbag® has a fill spout large enough to accommodate a 4" discharge hose. Straps are attached to secure the hose and prevent pumped water from escaping without being filtered.

Strap the neck of Dirtbag® tightly to the discharge hose. To increase the efficiency of filtration, place the bag on an aggregate or haybale bed to maximize water flow through the surface area of the bag.

Dirtbag® is full when it no longer can efficiently filter sediment or pass water at a reasonable rate. Flow rates will vary depending on the size of Dirtbag®, the type and amount of sediment discharged into Dirtbag®, the type of ground, rock or other substance under the bag. Under most circumstances Dirtbag® will accommodate flow rates of 750 gallons per minute. Use of excessive flow rates or overflowing Dirtbag® with sediment will cause ruptures of the bags or failure of the hose attachment straps. **Dirtbag must be monitored during use.**

## 1.0 Description

1.1 This work shall consist of furnishing, placing and removing Dirtbag® pumped sediment control device as directed by the design engineer or as shown on the contract drawings. Dirtbag® pumped sediment control system is manufactured by:

ACF Environmental, Inc.  
2891 Cardinal Road  
Richmond, Virginia 23224  
Phone: 800-448-3036 • Fax: 804-743-7779  
www.acfenvironment.com

## 2.0 Materials

2.1 Dirtbag®

2.1.1 Dirtbag® shall be manufactured using a polypropylene nonwoven geotextile woven into a bag with a double needle machine using a high strength thread.

2.1.2 Each standard Dirtbag® has a fill spout large enough to accommodate a 4" discharge hose. Straps are attached to secure the hose and prevent pumped water from escaping without being filtered.

2.1.3 Dirtbag® seams shall have an average wide width strength per ASTM D-884 as follows:

Dirtbag® Style	Test Method	Test Results
Dirtbag® 55	ASTM D-884	100 lbs./in.

Property Test Method Units Test Results  
Weight ASTM D-3776 lbs./sq. yd. 250  
Grab Tensile ASTM D-4832 lbs. 250  
Puncture ASTM D-4833 lbs. 110  
Flow Rate ASTM D-4491 gal./min/ft. 150  
Permeability ASTM D-4491 sec. 1.5  
Mullen Burst ASTM D-3786 lbs./sq. yd. 350  
UV resistant ASTM D-2885 20  
Color by treatment ASTM D-2721 US Slave 80

All properties are Minimum Average Test Value (MAAV) across the weight of the fabric which is given for information only. Depending on soil conditions and filtration requirements, additional geotextile options are available. Please call our engineering staff for solutions.

## 3.0 Construction Sequence

3.1.1 To install Dirtbag® on a slope, incoming water flows downhill through Dirtbag® without creating more erosion. Strap the neck of Dirtbag® tightly to the discharge hose. To increase the efficiency of filtration, place the bag on an aggregate or haybale bed to maximize water flow through the surface area of the bag.

3.1.2 Dirtbag® is full when it no longer can efficiently filter sediment or allow water to pass at a reasonable rate. Flow rates will vary depending on the size of Dirtbag®, the type and amount of sediment discharged into Dirtbag®, the type of ground, rock or other substance under the bag and the degree of the slope on which the bag lies. Under most circumstances Dirtbag® will accommodate flow rates of 750 gallons per minute. Use of excessive flow rates or overflowing Dirtbag® with sediment will cause ruptures of the bags or failure of the hose attachment straps.

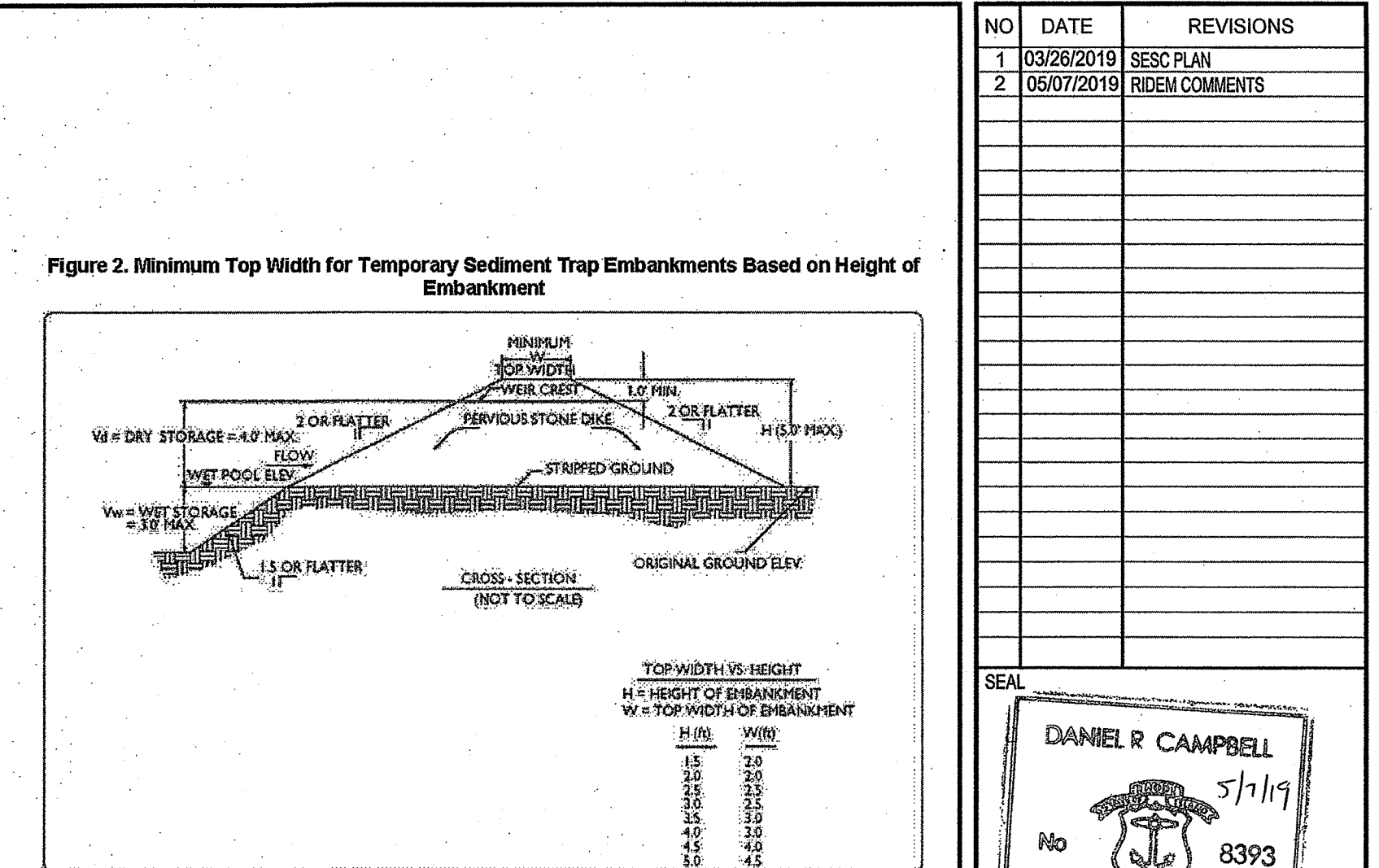
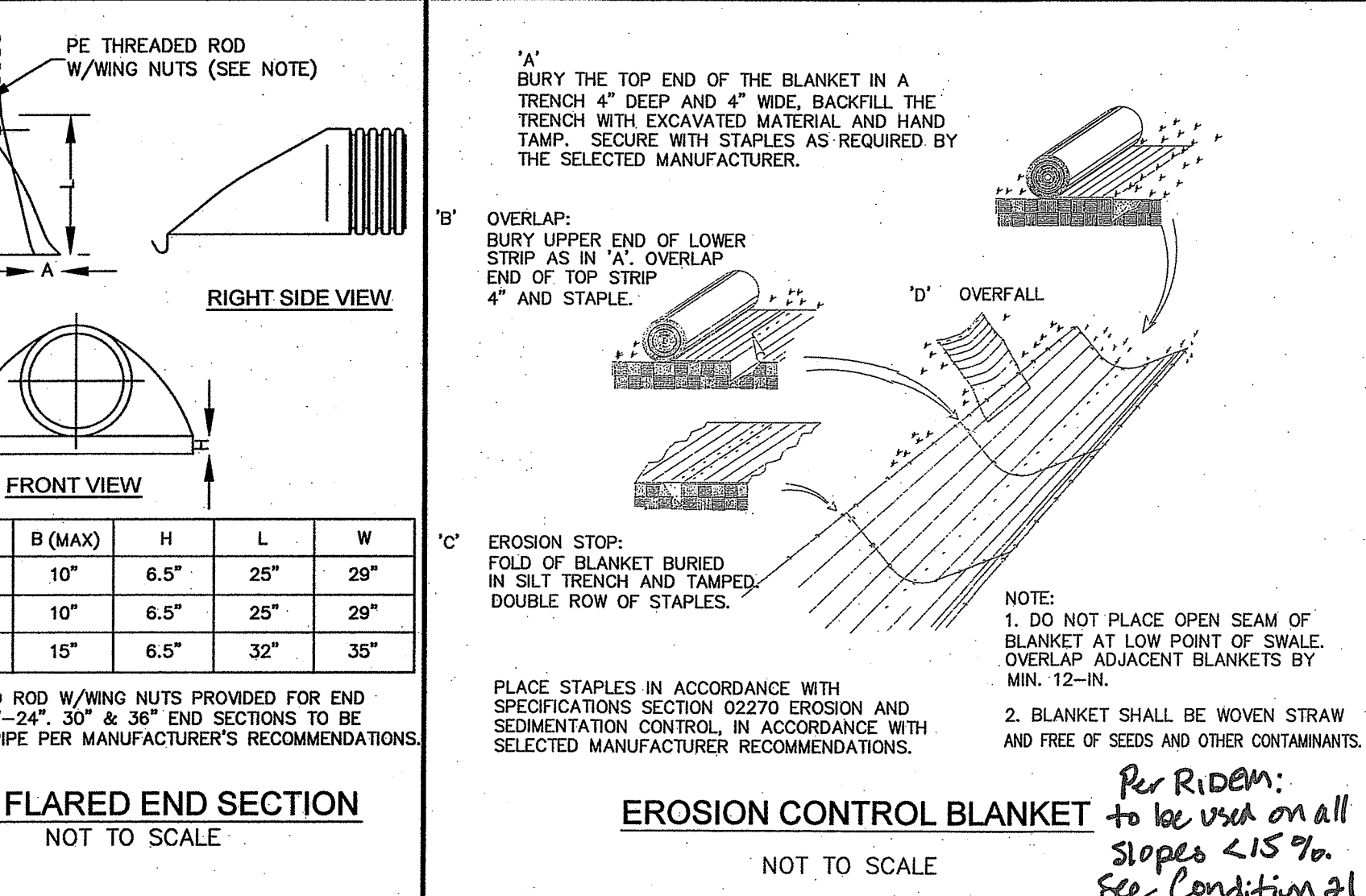
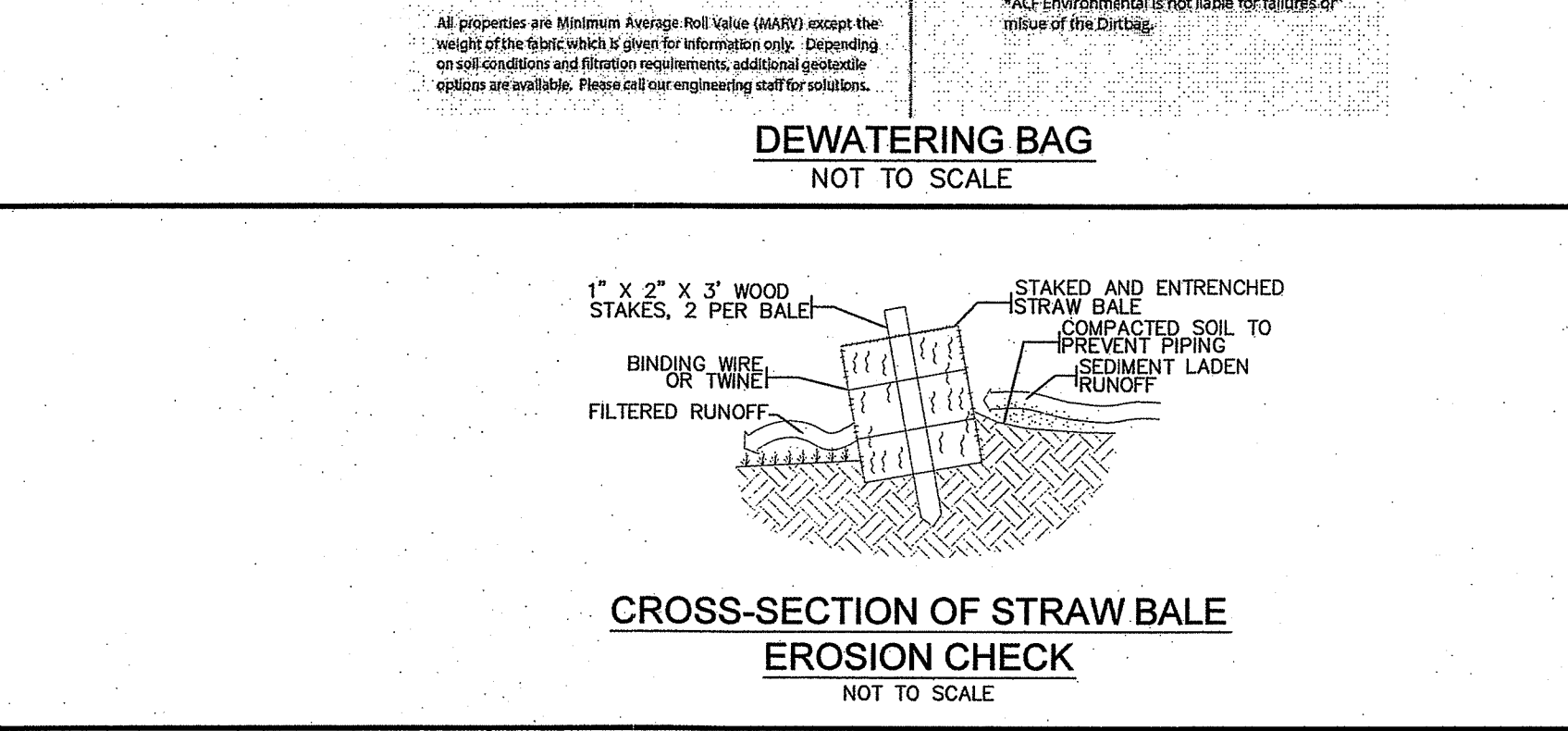
3.1.3 Dirtbag® must be monitored during use.

3.1.4 Dispose Dirtbag® as directed by the site engineer. If allowed, Dirtbag® may be recycled and the contents sealed after removing visible fabric. Dirtbag® is strong enough to be filled with option A) straps if it must be hauled away. Dirtbag® is possible may be recycled by placing Dirtbag® in the back of a dump truck or flatbed prior to use and allowing the water to drain from the bag while in place, thereby eliminating the need to fill Dirtbag®.

## 4.0 Basis of Payment

4.1 The payment for any Dirtbag® used during construction is to be included in the bid for overall erosion and sediment control plan unless a unit price is requested.

4.2 ACF Environmental is not liable for failures or omissions of the Dirtbag®.



## Slope Limitations

All cut and fill slopes shall be 2:1 or flatter except for the excavated wet storage area where slopes shall not exceed 1.5:1. The maximum depth of excavation within the wet storage area should not exceed three (3) feet to facilitate clean-out and for site safety considerations.

## Inlet/Outlet Configuration

The outlet shall be located at the most distant hydraulic point from the inlet. In cases where a long narrow site runs perpendicular to the direction of flow, baffles consisting of stone dikes or other structurally sufficient barriers should be added along the long axis of the trap to increase travel distance through the trap.

## Outlet

Plan the outlet in such a manner that the minimum required wet storage and dry storage volumes are created (see Trap Capacity section above) and one (1) foot of free board between the top of the outlet or weir crest and the crest of the embankment is established. The outlet consists of a pervious stone dike with a core of modified riprap and faced on the upstream side with stone which meets the requirements of RIDOT Standard Specifications for Road and Bridge Construction Subsection M.01.09 Table I, Column V for Filter Stone. Temporary sediment traps must outlet onto stabilized (preferably undisturbed) ground, into a watercourse, stabilized channel, or into a storm drain system. Figure 3 shows an example of an outlet for a temporary sediment trap.

## Sediment Storage Markers

Detail the location and installation requirements for sediment storage stakes or other means of showing the threshold elevation for sediment cleanout.

## Installation Requirements

Clear, grub and strip any vegetation and root mat from any proposed embankment and outlet area. Remove stones and rocks whose diameter is greater than three (3) inches and other debris. Excavate wet storage and construct the embankment and/or outlet as needed to attain the necessary storage requirements. Use only fill material for the embankment that is free from excessive organics, debris, large rocks (over six (6) inches) or other unsuitable materials. Compact the embankment in 9-inch layers by traversing with equipment while it is being constructed.

Stabilize the earthen embankment by any of the following measures, Seeding for Temporary Vegetated Cover; Seeding for Permanent Vegetative Cover; or Slope Protection, immediately after installation.

Carry out construction operations in such a manner that erosion and water pollution are minimized.

**Figure 3. Views of a Temporary Sediment Trap Outlet**

(Credit: 2002 Connecticut Guidelines for Soil Erosion and Sediment Control)

# HUNTING HILL

## MAJOR LAND DEVELOPMENT PROJECT

### FINAL PLAN SUBMISSION

AP 35, LOT 188

CUMBERLAND, RHODE ISLAND 02864

# LEVEL

DESIGN GROUP  
CIVIL ENGINEERING  
249 SOUTH STREET  
PLAINVILLE, MA 02762  
TEL. (508) 695-2221 FAX. (508) 695-2219

## SOIL EROSION & SEDIMENT CONTROL

# SESC-3

SHEET 19 OF 23

0' 20' 40' 80'

# 1554.00

NO	DATE	REVISIONS
1	03/26/2019	SESS PLAN
2	05/07/2019	RIDEM COMMENTS

SEAL

DANIEL R. CAMPBELL

5/1/19

No. 8393

REGISTERED PROFESSIONAL ENGINEER

CIVIL

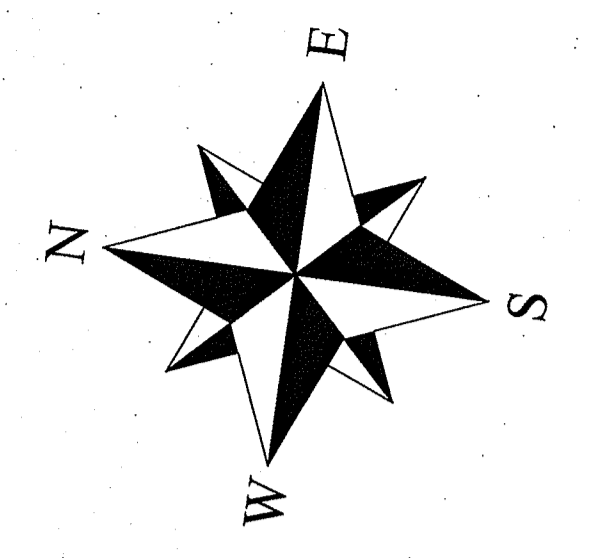
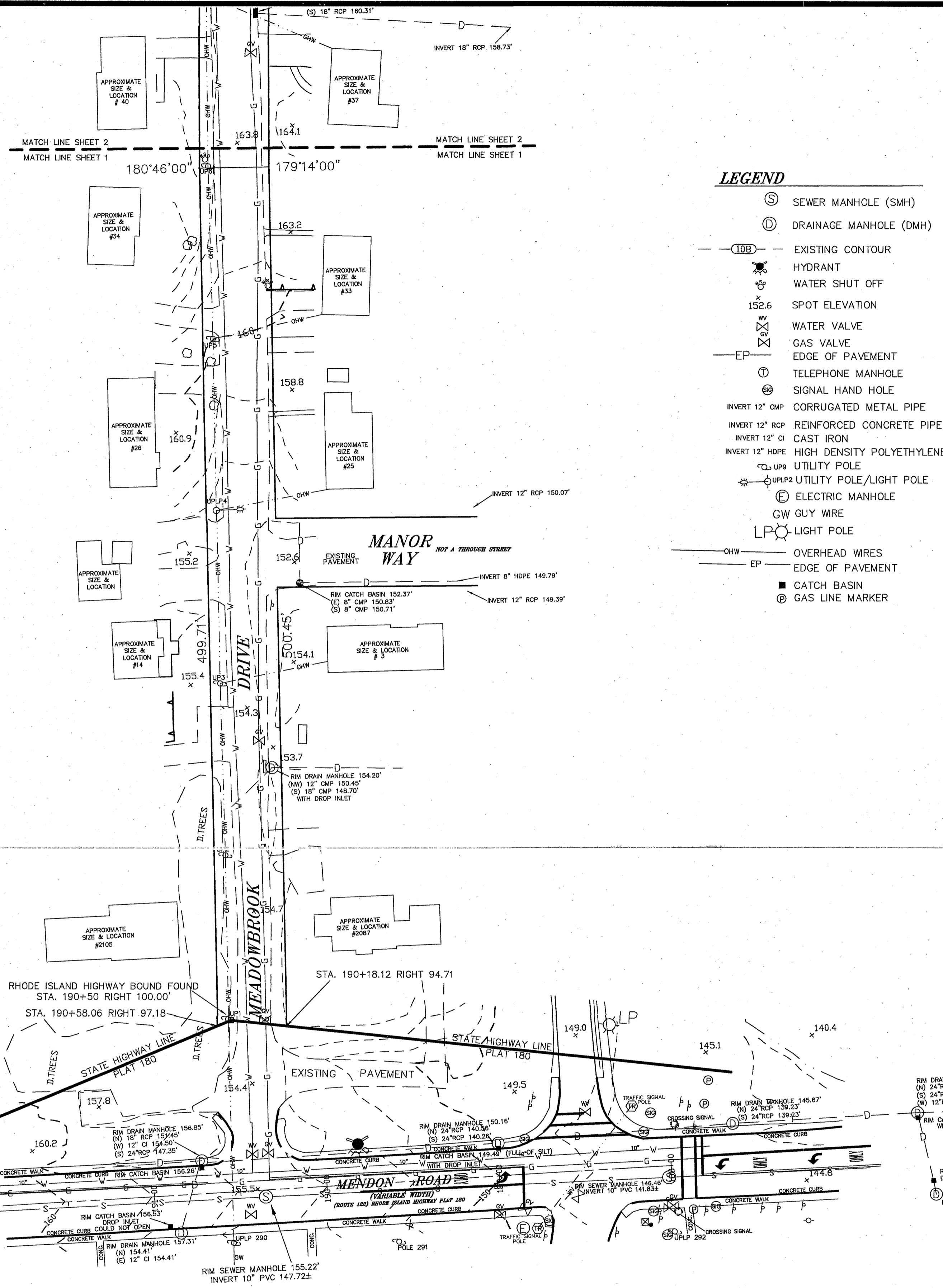
DATE: 04-17-2018

DRAWN: NFI/DC

SCALE: 1" = 40'

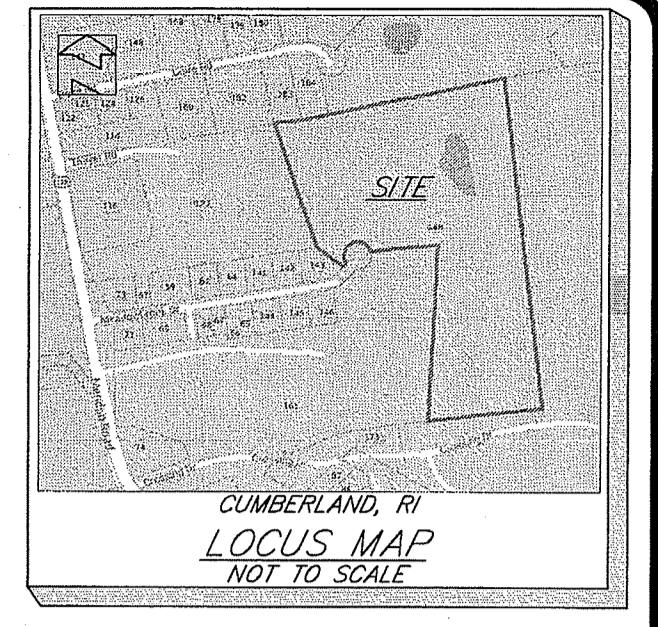
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESH WATER WETLANDS PROGRAM  
AS SPECIFIED IN THE CONDITIONS OF PERMIT  
DATED JUN 17 2018 FILE # 17-02070  
NO CHANGES ALLOWED WITHOUT PERMIT APPROVAL  
APPROVED PLANS MUST BE AT CONSTRUCTION SITE

17-02070



ZONING: R-3

MIN. AREA = 10,000 S.F.  
 MIN. LOT WIDTH = 40 FT.  
 MIN. LOT FRONTAGE = 40 FT.  
 MIN. FRONT YARD = 10 FT.  
 MIN. SIDE YARD = 10 FT.  
 MIN. REAR YARD = 15 FT.  
 MAX. LOT COVERAGE = 40%  
 MAX. BUILDING HEIGHT = 35 FT.  
 (SEE REGULATIONS FOR ADDITIONAL INF..)

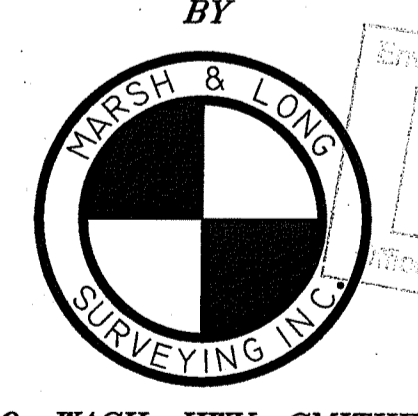


- LEGEND**
- ⊙ SEWER MANHOLE (SMH)
  - ⊕ DRAINAGE MANHOLE (DMH)
  - (100)— EXISTING CONTOUR
  - ⊙ HYDRANT
  - ⊕ WATER SHUT OFF
  - 152.6 SPOT ELEVATION
  - ⊕ WATER VALVE
  - ⊕ GAS VALVE
  - EP— EDGE OF PAVEMENT
  - ⊕ TELEPHONE MANHOLE
  - ⊕ SIGNAL HAND HOLE
  - INVERT 12" CMP CORRUGATED METAL PIPE
  - INVERT 12" RCP REINFORCED CONCRETE PIPE
  - INVERT 12" CI CAST IRON
  - INVERT 12" HDPE HIGH DENSITY POLYETHYLENE
  - ⊕ UP9 UTILITY POLE
  - ⊕ UP2 UTILITY POLE/LIGHT POLE
  - ⊕ ELECTRIC MANHOLE
  - ⊕ GW GUY WIRE
  - ⊕ LP LIGHT POLE
  - OHW— OVERHEAD WIRES
  - EP— EDGE OF PAVEMENT
  - CATCH BASIN
  - ⊕ GAS LINE MARKER

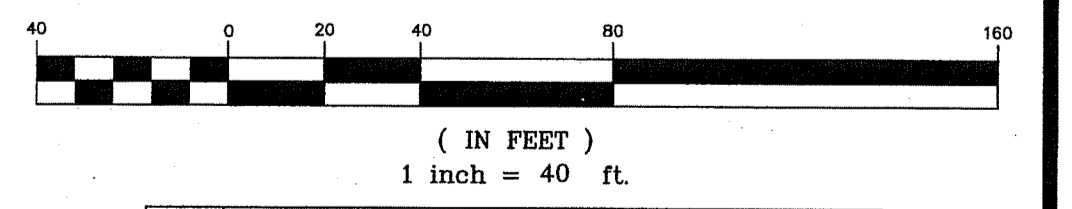
- REFERENCES:**
- PLAN ENTITLED "SUBDIVISION PLAN OF LAND, CHIMNEY HILL ASSOCIATES, ASSESSOR'S PLAT 35, LOT 161, SITUATED IN CUMBERLAND, RHODE ISLAND, DATED AUGUST 7, 2001 BY HARRY R. FELDMAN, INC.". FOUND ON PLAT CARD 1249
  - PLAN ENTITLED "MENDON MANOR, PLAT NO.3, CUMBERLAND, RHODE ISLAND, SURVEYED & PLATTED BY EDWARD J. HAYDEN".
  - MENDON MANOR PLAT NO. 5 BELONGING TO MURPHY REALTY INC. CUMBERLAND RHODE ISLAND SCALE - 1" = 40' SURVEYED AND PLATTED BY EDWARD J HAYDEN ENG.
  - RHODE ISLAND DEPARTMENT OF TRANSPORTATION DIVISION OF PUBLIC WORKS RECONSTRUCTION OF ROUTE 122 MENDON ROAD NORTH OF I-295 INTERCHANGE TO CADORET DRIVE CUMBERLAND RHODE ISLAND DRAINAGE & UTILITY PLAN NO. 4 SCALE 1" = 20'
  - RHODE ISLAND HIGHWAY PLAT # 180
- NOTES:**
- PORTIONS OF THIS PARCEL LIE WITHIN ZONE 'X' AS SHOWN ON THE FOLLOWING FLOOD INSURANCE RATE MAPS FOR PROVIDENCE COUNTY, RHODE ISLAND: MAP NUMBER 44007C0179G; AND MAP NUMBER 44007C0183G ZONE 'X' = AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN, REVISED: MARCH 2, 2009
  - THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE CONTRACTOR SHALL NOTIFY "DIG-SAFE" PRIOR TO EXCAVATION AND SHALL NOTIFY LOCAL UTILITY COMPANIES BEFORE COMMENCEMENT OF WORK TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION OF ALL EXISTING UTILITIES AND RELOCATE UTILITIES AS REQUESTED SHOULD THERE BE A CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
  - HORIZONTAL & VERTICAL DATA ON THIS PLAN WERE OBTAINED BY FIELD SURVEY.
  - DATUM REFERENCED NAVD83.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED 8/7/2018 FILE # 19-0070  
 NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
 APPROVED PLANS MUST BE AT CONSTRUCTION SITE

**CUMBERLAND, RI**  
**PLAN OF LAND**  
 PREPARED FOR  
**VIKON PROPERTIES**  
 SURVEY OF  
 AP 35 LOT 188  
 MEADOWBROOK DRIVE  
 ZONE R-3  
 MAY 17, 2018



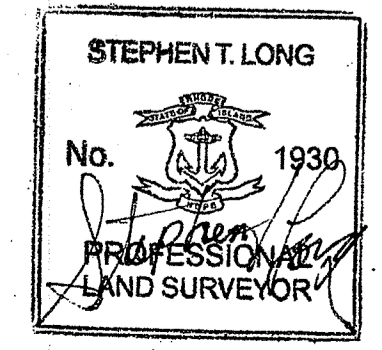
450 GEO. WASH. HWY. SMITHFIELD, RI  
 (401) 231-0900  
**SHEET 1**  
 GRAPHIC SCALE



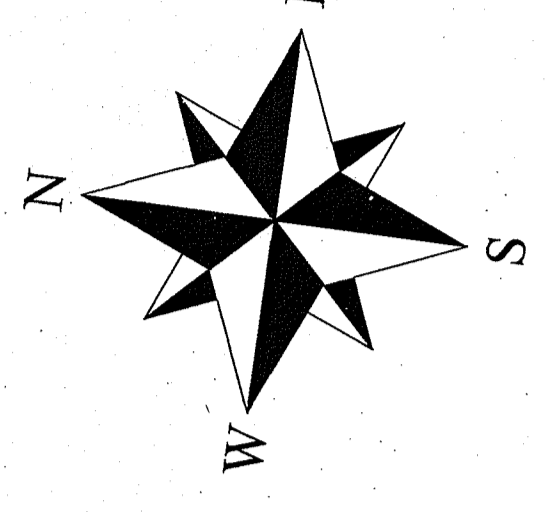
NO.	DATE	DESCRIPTION	BY

THIS PLAN TO BE INDEXED BY THE FOLLOWING:  
 MEADOWBROOK DRIVE  
 MENDON ROAD  
 MANOR WAY  
 SHEET 20 OF 23

THIS SURVEY HAS BEEN CONDUCTED AND THE PLAN HAS BEEN PREPARED PURSUANT TO SECTION 9 OF THE RULES AND REGULATIONS ADOPTED BY THE RHODE ISLAND STATE BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS, EFFECTIVE JANUARY 2016. THE PURPOSE OF THE CONDUCT OF THE SURVEY AND FOR THE PREPARATION OF THIS PLAN IS AS FOLLOWS:  
 PLAN OF LAND - EXISTING CONDITIONS  
 LIMITED CONTENT BOUNDARY SURVEY - MEASUREMENT SPECIFICATION - 1  
 TOPOGRAPHIC SURVEY ACCURACY 7-3  
 BY: *Stephen T. Long*  
 STEPHEN T. LONG NO. 1930  
 C.O.A. LS-A538

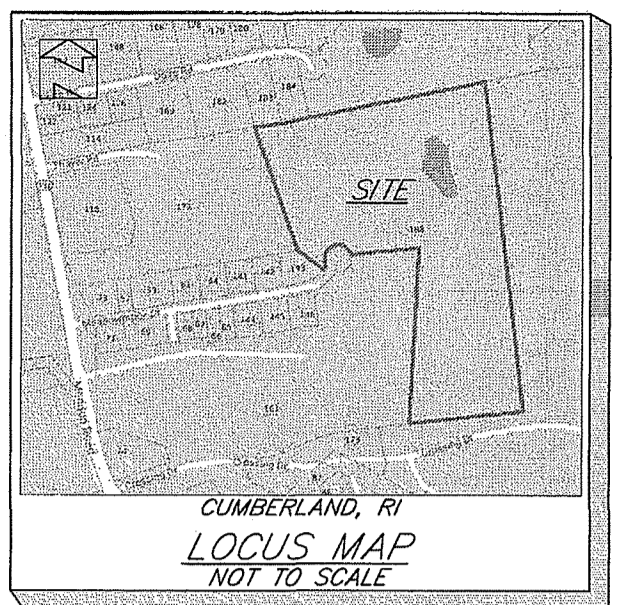


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**ZONING: R-3**

MIN. AREA = 10,000 S.F.  
 MIN. LOT WIDTH = 40 FT.  
 MIN. LOT FRONTAGE = 40 FT.  
 MIN. FRONT YARD = 10 FT.  
 MIN. SIDE YARD = 10 FT.  
 MIN. REAR YARD = 15 FT.  
 MAX. LOT COVERAGE = 40%  
 MAX. BUILDING HEIGHT = 35 FT.  
 (SEE REGULATIONS FOR ADDITIONAL INF..)



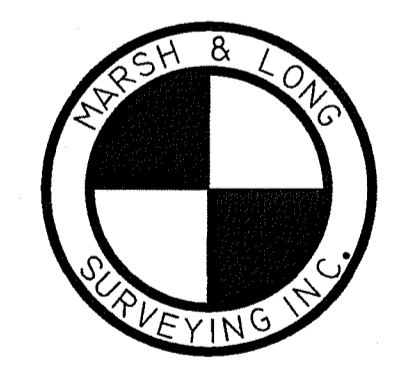
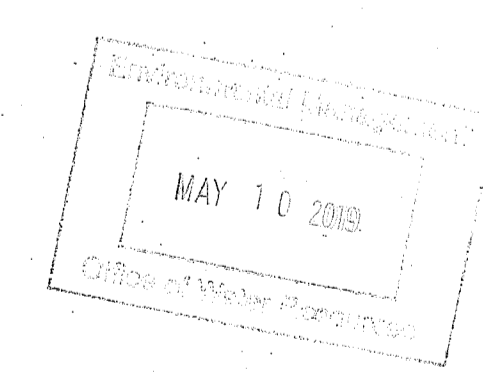
**REFERENCES:**

1. PLAN ENTITLED "SUBDIVISION PLAN OF LAND, CHIMNEY HILL ASSOCIATES, ASSESSOR'S PLAT 35, LOT 1 & 1, SITUATED IN CUMBERLAND, RHODE ISLAND, DATED AUGUST 7, 2001 BY HARRY R. FELDMAN, INC.". FOUND ON PLAT CARD 1249
2. PLAN ENTITLED "MENDON MANOR, PLAT NO. 3, CUMBERLAND, RHODE ISLAND, SURVEYED & PLATTED BY EDWARD J. HAYDEN".
3. MENDON MANOR PLAT NO. 5 BELONGING TO MURPHY REALTY INC. CUMBERLAND RHODE ISLAND SCALE - 1" = 40' SURVEYED AND PLATTED BY EDWARD J. HAYDEN ENG.
4. RHODE ISLAND DEPARTMENT OF TRANSPORTATION DIVISION OF PUBLIC WORKS RECONSTRUCTION OF ROUTE 122 MENDON ROAD NORTH OF I-295 INTERCHANGE TO CADORET DRIVE CUMBERLAND RHODE ISLAND DRAINAGE & UTILITY PLAN NO. 4 SCALE 1" = 20'
5. RHODE ISLAND HIGHWAY PLAT # 180

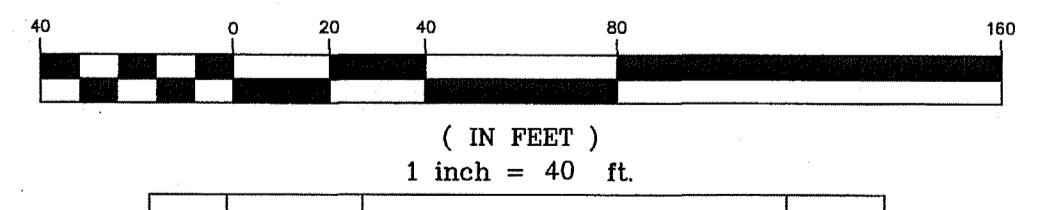
**NOTES:**

1. PORTIONS OF THIS PARCEL LIE WITHIN ZONE 'X' AS SHOWN ON THE FOLLOWING FLOOD INSURANCE RATE MAPS FOR PROVIDENCE COUNTY, RHODE ISLAND: MAP NUMBER 44007C0179G; AND MAP NUMBER 44007C0183G ZONE 'X' = AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN. REVISED: MARCH 2, 2009
2. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE MEASUREMENTS TAKEN IN THE FIELD. THE CONTRACTOR SHALL NOTIFY "DIG-SAFE" PRIOR TO EXCAVATION AND SHALL NOTIFY LOCAL UTILITY COMPANIES BEFORE COMMENCEMENT OF WORK TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION OF ALL EXISTING UTILITIES AND RELOCATE UTILITIES AS REQUESTED SHOULD THERE BE A CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
3. HORIZONTAL & VERTICAL DATA ON THIS PLAN WERE OBTAINED BY FIELD SURVEY.
4. DATUM REFERENCED NAVD83.

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
 OFFICE OF WATER RESOURCES  
 FRESHWATER WETLANDS PROGRAM  
 APPROVED WITH CONDITIONS  
 AS SPECIFIED IN THE LETTER OF APPROVAL  
 DATED JUN 07 2018 FILE # 19 CUMBERLAND, RI  
 PLAN OF LAND  
 PREPARED FOR  
**VIKON PROPERTIES**  
 SURVEY OF  
 AP 35 LOT 188  
 MEADOWBROOK DRIVE  
 ZONE R-3  
 MAY 17, 2018  
 BY

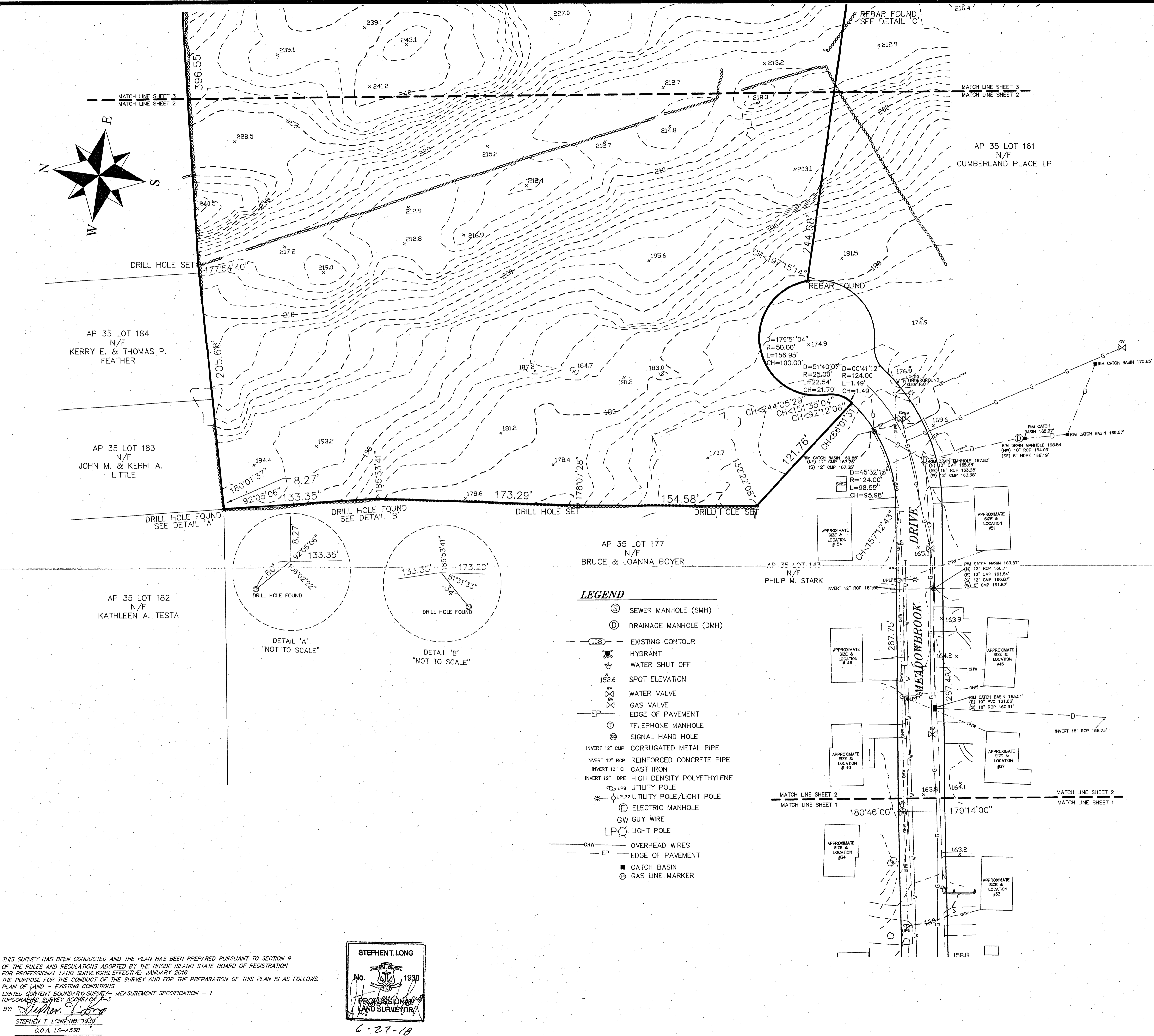


450 GEO. WASH. HWY. SMITHFIELD, RI  
 (401) 231-0900  
**SHEET 2**  
 GRAPHIC SCALE



NO.	DATE	DESCRIPTION	BY

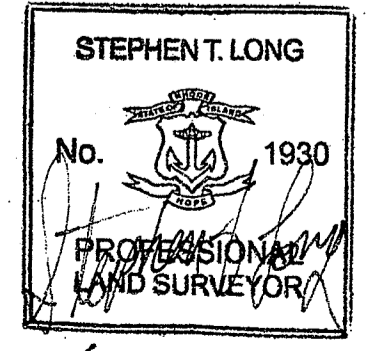
THIS PLAN TO BE INDEXED BY THE FOLLOWING:  
 MEADOWBROOK DRIVE  
 MENDON ROAD  
 MANOR WAY



**LEGEND**

- ⊙ SEWER MANHOLE (SMH)
- ⊕ DRAINAGE MANHOLE (DMH)
- (100)— EXISTING CONTOUR
- ⊕ HYDRANT
- ⊕ WATER SHUT OFF
- 152.6 SPOT ELEVATION
- ⊕ WATER VALVE
- ⊕ GAS VALVE
- EP— EDGE OF PAVEMENT
- ⊕ TELEPHONE MANHOLE
- ⊕ SIGNAL HAND HOLE
- INVERT 12" CMP CORRUGATED METAL PIPE
- INVERT 12" RCP REINFORCED CONCRETE PIPE
- INVERT 12" CI CAST IRON
- INVERT 12" HDPE HIGH DENSITY POLYETHYLENE
- ⊕ UPLP2 UTILITY POLE/LIGHT POLE
- ⊕ ELECTRIC MANHOLE
- ⊕ GW GUY WIRE
- ⊕ LP LIGHT POLE
- OHW— OVERHEAD WIRES
- EP— EDGE OF PAVEMENT
- CATCH BASIN
- ⊕ GAS LINE MARKER

THIS SURVEY HAS BEEN CONDUCTED AND THE PLAN HAS BEEN PREPARED PURSUANT TO SECTION 9 OF THE RULES AND REGULATIONS ADOPTED BY THE RHODE ISLAND STATE BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS EFFECTIVE, JANUARY 2016. THE PURPOSE FOR THE CONDUCT OF THE SURVEY AND FOR THE PREPARATION OF THIS PLAN IS AS FOLLOWS:  
 PLAN OF LAND - EXISTING CONDITIONS  
 LIMITED CONTENT BOUNDARY SURVEY - MEASUREMENT SPECIFICATION - 1  
 TOPOGRAPHIC SURVEY ACCURACY 1-3  
 BY: *Stephen T. Long*  
 STEPHEN T. LONG - NO. 1930  
 C.O.A. LS-A538  
 6-27-18



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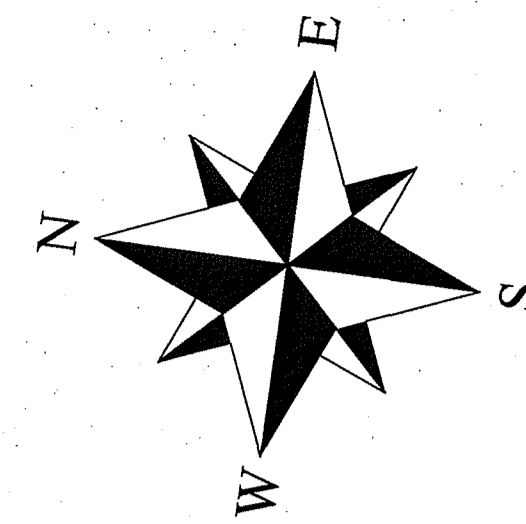
**REFERENCES:**

1. PLAN ENTITLED "SUBDIVISION PLAN OF LAND, CHIMNEY HILL ASSOCIATES, ASSESSOR'S PLAT 35, LOT 161, SITUATED IN CUMBERLAND, RHODE ISLAND, DATED AUGUST 7, 2001 BY HARRY R. FELDMAN, INC.". FOUND ON PLAT CARD 1249
2. PLAN ENTITLED "MENDON MANOR, PLAT NO. 3, CUMBERLAND, RHODE ISLAND, SURVEYED & PLATTED BY EDWARD J. HAYDEN"
3. MENDON MANOR PLAT NO. 5 BELONGING TO MURPHY REALTY INC. CUMBERLAND RHODE ISLAND SCALE - 1" = 40' SURVEYED AND PLATTED BY EDWARD J. HAYDEN ENG.
4. RHODE ISLAND DEPARTMENT OF TRANSPORTATION DIVISION OF PUBLIC WORKS RECONSTRUCTION OF ROUTE 122 MENDON ROAD NORTH OF I-295 INTERCHANGE TO CADORET DRIVE CUMBERLAND RHODE ISLAND DRAINAGE & UTILITY PLAN NO. 4 SCALE 1" = 20'
5. RHODE ISLAND HIGHWAY PLAT # 180

**NOTES:**

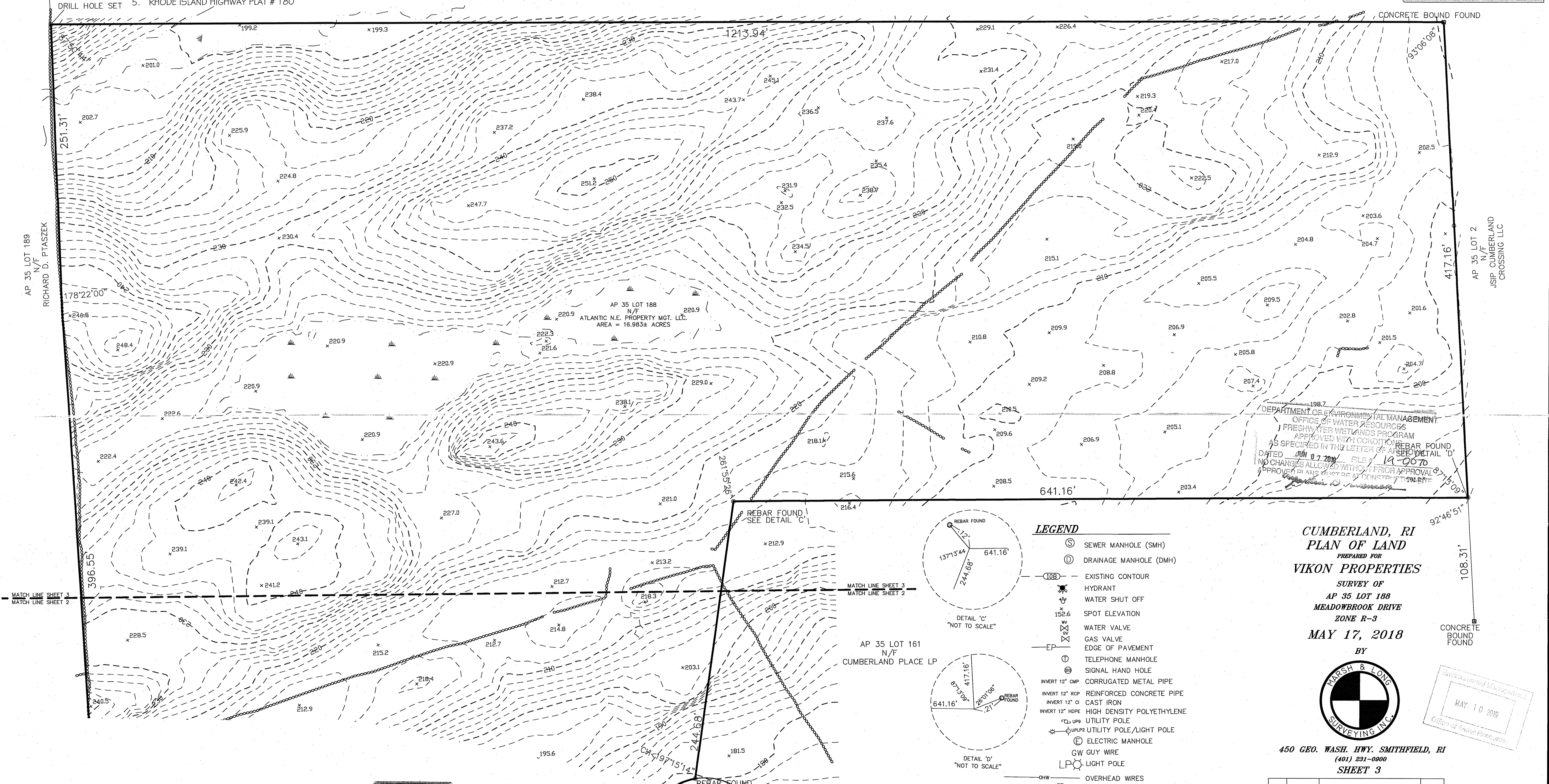
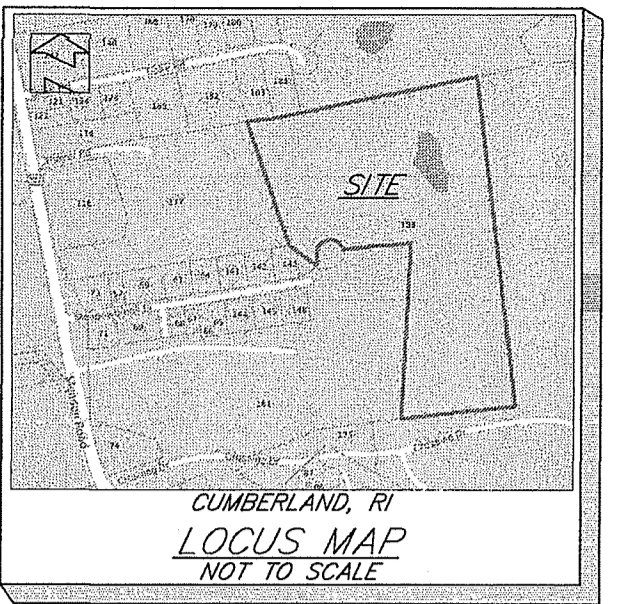
1. PORTIONS OF THIS PARCEL LIE WITHIN ZONE 'X' AS SHOWN ON THE FOLLOWING FLOOD INSURANCE RATE MAPS FOR PROVIDENCE COUNTY, RHODE ISLAND: MAP NUMBER 44007C0179G; AND MAP NUMBER 44007C0183G ZONE 'X' = AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN. REVISED: MARCH 2, 2009
2. THE CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE CONTRACTOR SHALL NOTIFY "DIG-SAFE" PRIOR TO EXCAVATION AND SHALL NOTIFY LOCAL UTILITY COMPANIES BEFORE COMMENCEMENT OF WORK TO REQUEST EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO VERIFY THE LOCATION OF ALL EXISTING UTILITIES AND RELOCATE UTILITIES AS REQUESTED SHOULD THERE BE A CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
3. HORIZONTAL & VERTICAL DATA ON THIS PLAN WERE OBTAINED BY FIELD SURVEY.
4. DATUM REFERENCED NAVD88.

AP 35 LOT 2  
N/F  
JSP CUMBERLAND  
CROSSING LLC



**ZONING:** R-3

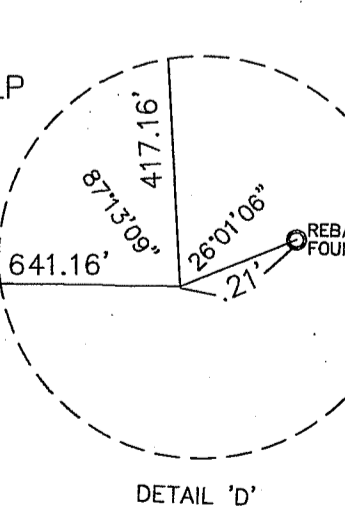
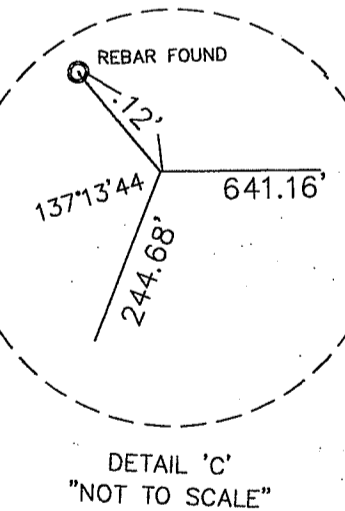
MIN. AREA = 10,000 S.F.  
MIN. LOT WIDTH = 40 FT.  
MIN. LOT FRONTAGE = 40 FT.  
MIN. FRONT YARD = 10 FT.  
MIN. SIDE YARD = 10 FT.  
MIN. REAR YARD = 15 FT.  
MAX. LOT COVERAGE = 40%  
MAX. BUILDING HEIGHT = 35 FT.  
(SEE REGULATIONS FOR ADDITIONAL INF..)



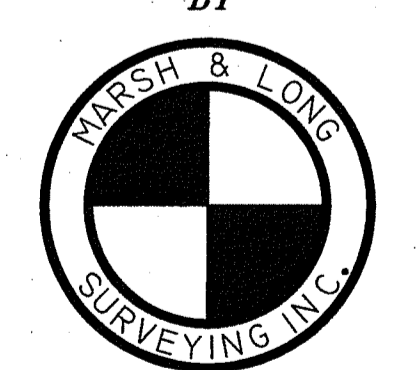
DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITION OF REBAR FOUND,  
AS SPECIFIED IN THE LETTER OF REBAR FOUND,  
DATED JUN 07 2018, FILE # 19-0670  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED BY: [Signature]

**LEGEND**

- ⊙ SEWER MANHOLE (SMH)
- ⊕ DRAINAGE MANHOLE (DMH)
- EXISTING CONTOUR
- ⊕ HYDRANT
- ⊕ WATER SHUT OFF
- 152.6 SPOT ELEVATION
- ⊕ WATER VALVE
- ⊕ GAS VALVE
- EP EDGE OF PAVEMENT
- ⊕ TELEPHONE MANHOLE
- ⊕ SIGNAL HAND HOLE
- INVERT 12" CMP CORRUGATED METAL PIPE
- INVERT 12" RCP REINFORCED CONCRETE PIPE
- INVERT 12" CI CAST IRON
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- ⊕ UTILITY POLE/LIGHT POLE
- ⊕ ELECTRIC MANHOLE
- GW GUY WIRE
- LP LIGHT POLE
- OHW OVERHEAD WIRES
- EP EDGE OF PAVEMENT
- CATCH BASIN
- ⊕ GAS LINE MARKER



**CUMBERLAND, RI  
PLAN OF LAND**  
PREPARED FOR  
**VIKON PROPERTIES**  
SURVEY OF  
AP 35 LOT 188  
MEADOWBROOK DRIVE  
ZONE R-3  
MAY 17, 2018



450 GEO. WASH. HWY. SMITHFIELD, RI  
(401) 231-0900  
**SHEET 3**

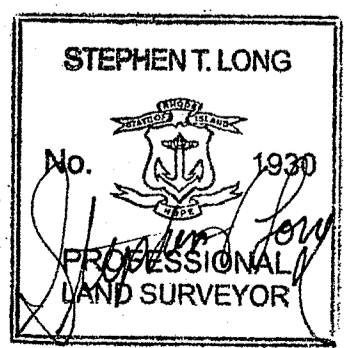
NO.	DATE	DESCRIPTION	BY



THIS PLAN TO BE INDEXED BY THE FOLLOWING:  
MEADOWBROOK DRIVE  
MENDON ROAD  
MANOR WAY

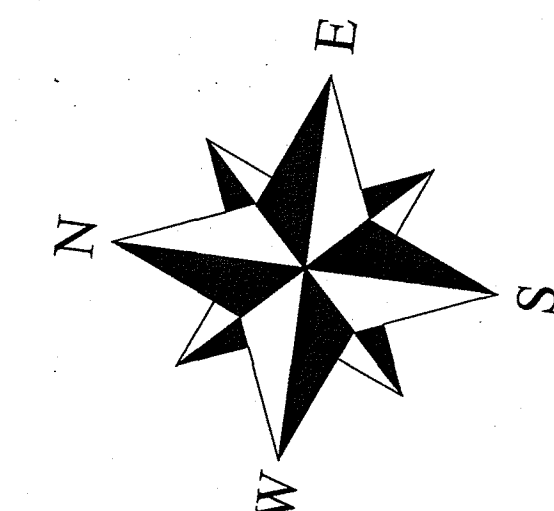
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THIS SURVEY HAS BEEN CONDUCTED AND THE PLAN HAS BEEN PREPARED PURSUANT TO SECTION 9 OF THE RULES AND REGULATIONS ADOPTED BY THE RHODE ISLAND STATE BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS, EFFECTIVE, JANUARY 2016  
THE PURPOSE FOR THE CONDUCT OF THE SURVEY AND FOR THE PREPARATION OF THIS PLAN IS AS FOLLOWS:  
PLAN OF LAND - EXISTING CONDITIONS  
LIMITED CONTENT BOUNDARY SURVEY - MEASUREMENT SPECIFICATION - 1  
TOPOGRAPHIC SURVEY ACCURACY T-3  
BY: [Signature]  
STEPHEN T. LONG NO. 1930  
C.O.A. LS-A536  
6-27-18



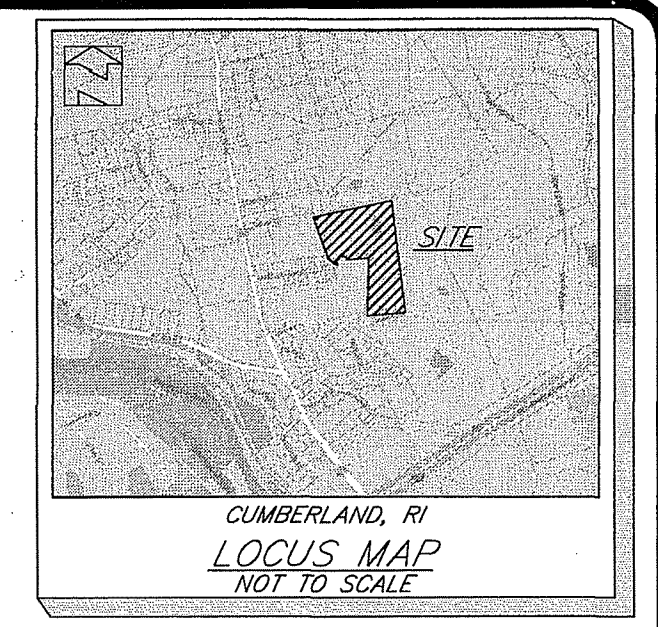
**LEGEND**

AP ASSESSOR'S PLAT  
N/F NOW OR FORMERLY



ZONING: R-3

MIN. AREA = 10,000 S.F.  
MIN. LOT WIDTH = 40 FT.  
MIN. LOT FRONTAGE = 40 FT.  
MIN. FRONT YARD = 10 FT.  
MIN. SIDE YARD = 10 FT.  
MIN. REAR YARD = 15 FT.  
MAX. LOT COVERAGE = 40%  
MAX. BUILDING HEIGHT = 35 FT.  
(SEE REGULATIONS FOR ADDITIONAL INF..)



AP 35, LOT 2  
N/F  
JSIP CUMBERLAND CROSSING LLC

AP 35, LOT 188  
N/F  
CHIMNEY HILL ASSOCIATES  
AREA = 16.983± ACRES

AP 35, LOT 189  
N/F  
RICHARD D. PTASZEK

AP 35, LOT 2  
N/F  
JSIP CUMBERLAND CROSSING LLC

**REFERENCES:**

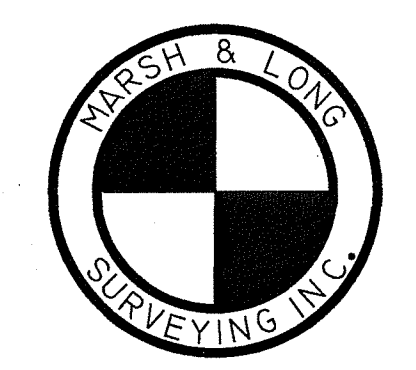
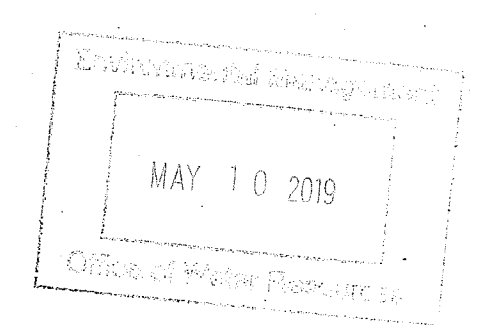
1. PLAN ENTITLED "SUBDIVISION PLAN OF LAND, CHIMNEY HILL ASSOCIATES, ASSESSOR'S PLAT 35, LOT 161, SITUATED IN CUMBERLAND, RHODE ISLAND, DATED AUGUST 2, 2001 BY HARRY R. FELDMAN, INC.". FOUND ON PLAT CARD 1249
2. PLAN ENTITLED "MENDON MANOR, PLAT NO.3, CUMBERLAND, RHODE ISLAND, SURVEYED & PLATTED BY EDWARD J. HAYDEN".

**NOTES:**

1. THIS PARCEL LIES WITHIN ZONE 'X' AS SHOWN ON THE FOLLOWING FLOOD INSURANCE RATE MAPS FOR PROVIDENCE COUNTY, RHODE ISLAND: PANEL 179 OF 451, MAP NUMBER 44007CD179G; PANEL 183 OF 451, MAP NUMBER 44007CD183G. ZONE 'X' = AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN. BOTH MAPS REVISED THROUGH: MARCH 2, 2009

DEPARTMENT OF ENVIRONMENTAL MANAGEMENT  
OFFICE OF WATER RESOURCES  
FRESHWATER WETLANDS PROGRAM  
APPROVED WITH CONDITIONS  
AS SPECIFIED IN THE LETTER OF APPROVAL  
DATED JUN 07 2019 FILE # 19-0070  
NO CHANGES ALLOWED WITHOUT PRIOR APPROVAL  
APPROVED BY AND MUST BE AS SHOWN

*Stephen T. Long*  
**CUMBERLAND, RI  
PLAN OF LAND**  
PREPARED FOR  
**VIKON PROPERTIES**  
SURVEY OF  
AP 35 LOT 188  
MEADOWBROOK DRIVE  
ZONE R-3  
AUGUST 28, 2017  
BY



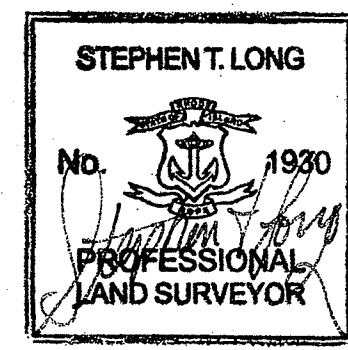
450 GEO. WASH. HWY. SMITHFIELD, RI  
(401) 231-0900

G:\CARLSON PROJECTS\2017\17048\meadowbrook\17048\meadowbrook.dwg, 08-2017.dwg, 9/1/2017 1:32:12 PM, Arch. D 24x36

THIS SURVEY HAS BEEN CONDUCTED AND THE PLAN HAS BEEN PREPARED PURSUANT TO SECTION 9 OF THE RULES AND REGULATIONS ADOPTED BY THE RHODE ISLAND STATE BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS. EFFECTIVE: JANUARY 2016

THIS PLAN IS SUBSTANTIALLY CORRECT IN ACCORDANCE WITH A CLASS IV STANDARD AS ADOPTED BY THE RHODE ISLAND BOARD OF REGISTRATION FOR PROFESSIONAL LAND SURVEYORS. THIS PLAN IS NOT TO BE CONSTRUED AS AN ACCURATE BOUNDARY SURVEY AND IS SUBJECT TO SUCH CHANGES AS AN ACCURATE BOUNDARY SURVEY MAY DISCLOSE.

BY: *Stephen T. Long*  
STEPHEN T. LONG - NO. 1930  
C.O.A. LS-A538



9-1-17

R=50.00'  
L=156.75'  
Δ=179°37'20"

R=25.00'  
L=23.18'  
Δ=53°07'29"

R=124.00'  
L=0.84'  
Δ=0°23'17"

MEADOWBROOK DRIVE  
(PUBL. TO 40' WIDTH)  
TO MENDON RD.

**GRAPHIC SCALE**



( IN FEET )  
1 inch = 60 ft.

NO.	DATE	DESCRIPTION	BY

THIS PLAN TO BE INDEXED BY THE FOLLOWING:  
MEADOWBROOK DRIVE