TOWNSHIP of HOPEWELL
MERCER COUNTY

201 WASHINGTON CROSSING – PENNINGTON ROAD
TITUSVILLE, NEW JERSEY 08560-1410

PROJECT / APPLICATION

BLOCK: 93

LOT: 19, 20, 45.01, 46, p/o 60

ADDRESS: 61 NURSERY RD., SCOTCH RD., NURSERY RD., NURSERY RD., 137 NURSERY RD.

PROJECT NAME: MAJOR SUBDIVISION, PRELIMINARY/FINAL AND SITE PLAN, PRELIMINARY/FINAL (VENUE AT HOPEWELL)

SP DET PLAN 4.2.25

MERCER COUNTY SOIL CONSERVATION DISTRICT
SOIL EROSION AND SEDIMENT CONTROL NOTES

1. The Mercer County Soil Conservation District shall be notified 48 hours prior to starting land disturbance activity. Notice may be mailed, faxed or emailed to: MCSCD, 590 Hughes Drive, Hamilton Square, NJ 08690 Phone: 609-586-9603 Fax: 609-586-1117 Email: Pauls1mercer@aol.com

2. If applicable to this project, the owner should be aware of his or her obligation to file for a NJPDES Construction Activity Stormwater 5G3 Permit (NJG0088323) via the NJDEP online permitting system (www.nj.gov/dep/online) and to maintain the associated best management practices and Stormwater Pollution Prevention Plan self-inspection logbook onsite at all times. This permit must be filed prior to the start of soil disturbance. The online application process will require entry of an SCD certification code, which is provided by the Soil Conservation District upon certification of the Soil Erosion and Sediment Control Plan.

3. The Mercer County Soil Conservation District shall be notified of any changes in ownership.

4. Any changes to the Certified Soil Erosion and Sediment Control Plan, including an increase in the limit of disturbance, will require the submission of revised Soil Erosion and Sediment Control Plans to the District for recertification. The revised plans must meet all current State Soil Erosion & Sediment Control STANDARDS.

5. A copy of the certified Soil Erosion and Sediment Control plan shall be maintained on site at all times.

6. All Soil Erosion and Sediment Control practices shall be installed prior to any major soil disturbances, or in their proper sequence as outlined within the Sequence of Construction on the Certified Soil Erosion and Sediment Control Plan, and maintained until permanent protection is established.

7. All work shall be done in accordance with the current STANDARDS for Soil Erosion and Sediment Control in NJ. If language contained within any other permit for this project is more restrictive than (but not contradictory to) what is contained within these notes or on the Certified Soil Erosion and Sediment Control Plan, then the more restrictive permit requirements shall be followed.

8. The Standard for Stabilized Construction Access requires the installation of a 1½" to 2½" clean stone tracking pad at all construction driveways immediately after initial site disturbance, whether identified on the certified plan or not. The width shall span the full width of egress, and length shall be 50 ft. or more, depending on site conditions and as required by the STANDARD. This shall include individual lot access points within residential subdivisions. If the egress is to a County road, then a 20 ft. long paved transition shall be provided between the edge of pavement and the stone access pad.

9. A sub-base course will be applied immediately following rough grading and installation of improvements in order to stabilize streets, roads, driveways and parking areas. In areas where no utilities are present, the sub-base shall be installed within 15 days of preliminary grading, provided that all other requirements related to detention basins, swales and the Sequence of Construction have been met.

10. Any disturbed areas that will be left exposed more than 14 days and not subject to construction activity will immediately receive temporary stabilization. If the season prevents establishment of a temporary vegetative cover, or if the area is not topsoiled, then the disturbed areas will be mulched with straw, or equivalent material, at a rate of two (2) tons per acre, according to State STANDARDS. Sloped areas in excess of 3H:1V shall be provided with erosion control blankets. Critical areas subject to erosion (i.e. steep slopes, roadway embankments, environmentally sensitive areas) will receive temporary stabilization immediately after an initial disturbance or rough grading

11. Any steep slopes (i.e. slopes greater than 3:1) receiving pipeline or utility installation will be backfilled and stabilized daily, as the installation proceeds.

12. Permanent vegetation shall be seeded or sodded on all exposed areas within ten (10) days after final grading and topsoiling. All agronomic requirements contained within the STANDARDS and on the Certified Plan shall be employed. Mulch with a binder, in accordance with the STANDARDS, shall be used on all seeded areas. Save all tags and/or bags used for seed, lime, and fertilizer, and provide them to the District inspector to verify that mixtures and rates meet the STANDARDS.

13. At the time when the site preparation for permanent vegetative stabilization is going to be accomplished, any soil that will not provide a suitable environment to support adequate vegetative ground cover shall be removed or treated in such a way that will permanently adjust the soil conditions and render it suitable for vegetative ground cover. If the removal or treatment of the soil will not provide suitable conditions, then non-vegetative means of permanent ground stabilization will have to be employed.

14. During the course of construction, soil compaction may occur within haul routes, staging areas, and other project areas. In accordance with the Standard for Topsoiling, compacted surfaces should be scarified 6" to 12" immediately prior to topsoil application. This will help ensure a good bond between the topsoil and subsoil. This practice is permissible only where there is no danger to underground utilities (cables, irrigation systems, etc.).

15. Prior to seeding, topsoil shall be worked to prepare a proper seedbed. This shall include raking of the topsoil and removal of debris and stones, along with other requirements of the Standard for Permanent Vegetative Cover for Soil Stabilization.

16. In accordance with the STANDARD for Management of High Acid Producing Soils, any soil having a pH of 4 or less or containing iron sulfides shall be buried with limestone in accordance with the STANDARD and be covered with a minimum of 12" of soil having a pH of 5 or more prior to topsoil application and seedbed preparation. If the area is to receive tree or shrub plantings or is located on a slope, then the area shall be covered with a minimum of 24" of soil having a pH of 5 or more.

17. Mulching to the STANDARDS is required for obtaining a Conditional Report of Compliance. Conditional ROC's are only issued when the season prohibits seeding. Permanent stabilization must then be completed during the optimum seeding season immediately following the Conditional ROC or the completion of work in a given area.

18. Hydroseeding is a two-step process. The first step includes seed, fertilizer, lime, etc., along with minimal amounts of mulch to promote consistency, good seed-to-soil contact, and give a visual indication of coverage. Upon completion of the seeding operation, hydro-mulch should be applied at a minimum rate of 1500 lbs. per acre in the second step. The use of hydro-mulch, as opposed to straw, is limited to optimum seeding dates as listed in the STANDARDS. The use of Hydromulch on sloped areas is discouraged.

19. The contractor is responsible for keeping all adjacent roads clean during the life of the construction project. All sediment washed, dropped, tracked or spilled onto paved surfaces shall be immediately removed.

20 The developer shall be responsible for remediating any erosion or sediment problems that arise as a result of ongoing construction, and for employing additional erosion and sediment control measures at the request of the Mercer County Soil Conservation District.

21. Conduit Outlet Protection must be installed at all required outfalls prior to the drainage system becoming operational.

22. All detention / retention basins must be fully constructed (inclusive of all structural components and liners) and permanently stabilized prior to paving or prior to the addition of any impervious surfaces. Permanent stabilization includes, but may not be limited to: topsoil, seed, straw mulch and binders or erosion control blankets on all seeding, all agronomic requirements as specified on the Certified Soil Erosion and Sediment Control Plan, installation of the outflow control structures and discharge storm drainage piping, low flow channels, conduit outlet protection, emergency spillways, and lap ring protection.

23. The riding surface of all utility trenches within paved areas shall be 3/4" clean stone or base pavement until such time as final pavement has been installed. Temporary soil riding surfaces are prohibited. All construction dewatering (trenches, excavations, etc.) must be done through an inlet or outlet filter in accordance with the Standard for Dewatering or as depicted on the Certified Soil Erosion and Sediment Control Plan. Discharge locations for the dewatering operation must contain perennial vegetation or a similar stable surface.

24. All construction dewatering (trenches, excavations, etc.) must be done through an inlet or outlet filter in accordance with the Standard for Dewatering or as depicted on the Certified Soil Erosion and Sediment Control Plan. Discharge locations for the dewatering operation must contain perennial vegetation or similar stable surface.

25. All swales or channels that will receive runoff from paved surfaces must be permanently stabilized prior to the installation of pavement. If the season prohibits the establishment of permanent stabilization, the swales or channels may be temporarily stabilized in accordance with the STANDARDS.

26. NJSA 4:24-39 et seq. requires that no Certificate of Occupancy or Temporary Certificate of Occupancy be issued by the Municipality before the provisions of the Certified Soil Erosion and Sediment Control Plan have been satisfied. Therefore, all site work for site plans and all work around individual lots in subdivisions must be completed before the District issues a Report of Compliance or Conditional Report of Compliance, which must be forwarded to the Municipality prior to the issuance of a Certificate of Occupancy or Temporary Certificate of Occupancy, respectively.

Mercer County Soil Conservation District
590 Hughes Dr., Hamilton Square, NJ 08690, Phone: (609) 586-9603, Fax: (609) 586-1117
Email: PaulS1Mercer@aol.com

TOPSOIL STOCKPILE PROTECTION

a) Apply ground limestone at a rate of 90 lbs/1000 S.F.
b) Apply fertilizer (10-20-10) at a rate of 11 lbs/1000 S.F.
c) Apply Perennial Rye grass seed at 1 lb/1000 S.F. and Annual Rye grass at 1lb/1000 S.F.
d) Mulch stockpile with straw or hay at a rate of 90 lbs/1000 S.F.
e) Apply a liquid mulch binder or tack to straw or hay mulch.
f) Properly entrench a silt fence at the bottom of the stockpile.

ADDITIONAL NOTES

1. Contractor shall be responsible for maintaining all permanent soil erosion and sediment control measures during construction. The property owners shall assume this responsibility after construction is completed and certificates of occupancy are issued.

2. The soil erosion inspector may require additional soil erosion measures to be installed, as directed by the district inspector.

3. The contractor is responsible for keeping the roadways clean at all times. Any sediment spilled or tracked on the roadway will be cleaned up immediately, or at minimum, by the end of each work day.

ADDITIONAL NOTES

1. CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING ALL PERMANENT SOIL EROSION AND SEDIMENT CONTROL MEASURES DURING CONSTRUCTION. THE PROPERTY OWNERS SHALL ASSUME THIS RESPONSIBILITY AFTER CONSTRUCTION IS COMPLETED AND CERTIFICATES OF OCCUPANCY ARE ISSUED.

2. THE SOIL EROSION INSPECTOR MAY REQUIRE ADDITIONAL SOIL EROSION MEASURES TO BE INSTALLED, AS DIRECTED BY THE DISTRICT INSPECTOR.

3. THE CONTRACTOR IS RESPONSIBLE FOR KEEPING THE ROADWAYS CLEAN AT ALL TIMES. ANY SEDIMENT SPILLED OR TRACKED ON THE ROADWAY WILL BE CLEANED UP IMMEDIATELY, OR AT MINIMUM, BY THE END OF EACH WORK DAY.

4. ALL SOIL EROSION AND SEDIMENT CONTROL PRACTICES ON INDIVIDUAL SITES SHALL APPLY TO ANY SUBSEQUENT OWNERS.

5. STEEP SLOPES TO RECEIVE A TEMPORARY SEEDING IN COMBINATION WITH STRAW MULCH OR SUITABLE EQUAL. (SEE ANCHORING NOTES & NOTE NO. 6 OF SOIL EROSION & SEDIMENT CONTROL NOTES.)

6. BERMS ALONG THE ROAD SHALL BE BROUGHT TO GRADE AND STABILIZED AS SOON AS POSSIBLE.

7. THE CONTRACTOR SHALL PROVIDE ADDITIONAL ROWS OF SEDIMENT BARRIER (SILT FENCING, HAY BALES OR STONE BERM) AS NECESSARY DURING THE COURSE OF CONSTRUCTION SUCH THAT THE CONTRIBUTION DRAINAGE AREA IS LESS THAN 1 ACRE AND THE LENGTH OF SLOPE ABOVE THE BARRIER IS LESS THAN 150'.

8. THE BASIN SHALL NOT BE UTILIZED AS A SEDIMENT BARRIER DURING CONSTRUCTION. INLET PROTECTION SHALL BE MAINTAINED DURING CONSTRUCTION AND ANY DEWTERING OPERATIONS SHALL DISCHARGE INTO SEDIMENT CONTROL BAGS.

RIPRAP SPECIFICATIONS

RIPRAP GRADATION

HE RIPRAP SHALL BE COMPOSED OF WELL-GRADED MIXTURE SUCH THAT 50% OF THE MIXTURE BY WEIGHT SHALL BE LARGER THAN THE d50 SIZE AS DETERMINED FROM THE DESIGN PROCEDURE. A WELL-GRADED MIXTURE AS USED HEREIN IS DEFINED AS A MIXTURE COMPOSED PRIMARILY OF THE LARGER STONE SIZES BUT WITH A SUFFICIENT MIXTURE OF OTHER SIZES TO FILL THE PROGRESSIVELY SMALLER VOIDS BETWEEN THE STONES. THE DIAMETER OF THE LARGEST STONE SIZE IN SUCH A MIXTURE SHALL BE 1.5 TIMES THE d50 SIZE. THE d75 SHOULD BE 1.25 TIMES THE d50 AND THE d15 SHOULD BE 0.5 TIMES THE d50 SIZE.

THE DESIGNER AFTER DETERMINING THE RIPRAP SIZE THAT WILL BE STABLE UNDER THE FLOW CONDITION SHALL CONSIDER THAT SIZE TO BE A MINIMUM SIZE AND THEN, BASED ON RIPRAP GRADATIONS ACTUALLY AVAILABLE IN THE AREA SELECT THE SIZE OR SIZES THAT EQUAL OR EXCEED THE MINIMUM SIZE. THE POSSIBILITY OF VANDALISM SHALL BE CONSIDERED BY THE DESIGNER IN SELECTING A RIPRAP SIZE. IF THE d50 SIZE IS INCREASED, THE APRON THICKNESS SHALL BE INCREASED PROPORTIONATELY.

FILTER

SYNTHETIC FILTER FABRIC SHALL MEET THE U.S. ARMY CORPS OF ENGINEERS GUIDE SPECS, CWO2215, NOVEMBER 1977 FOR STRENGTH. RIPRAP THAT IS 12" AND LARGER SHALL NOT BE DUMPED DIRECTLY ONTO SYNTHETIC FILTER CLOTH UNLESS THE MANUFACTURER RECOMMENDS SUCH USE OF THE CLOTH. OTHERWISE, A 4" MINIMUM THICKNESS BLANKET OF GRAVEL SHALL BE PLACED DIRECTLY ON THE FILTER CLOTH BY HAND OR BY THE BUCKET OF THE EQUIPMENT.

QUALITY

STONE FOR RIPRAP SHALL CONSIST OF FIELD STONE OR QUARRY STONE OF APPROXIMATELY RECTANGULAR SHAPE. THE STONE SHALL BE HARD AND ANGULAR AND OF SUCH QUALITY THAT IT WILL NOT DISINTEGRATE ON EXPOSURE TO WATER OR WEATHERING. THE SPECIFIC GRAVITY ON THE INDIVIDUAL STONES SHALL BE AT LEAST 2.5.

RUBBLE CONCRETE MAY BE USED, PROVIDED IT HAS A DENSITY OF AT LEAST 150 POUNDS PER CUBIC FOOT, AND OTHERWISE MEETS THE REQUIREMENTS OF THIS STANDARD.

STANDARD FOR
PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION

Definition

Establishment of permanent vegetative cover on exposed soils where perennial vegetation is needed for long-term protection.

Purpose

To permanently stabilize the soil, ensuring conservation of soil and water, and to enhance the environment.

Water Quality Enhancement

Slows the over-land movement of stormwater runoff, increases infiltration and retains soil and nutrients on site, protecting streams or other stormwater conveyances.

Where Applicable

On exposed soils that have a potential for causing off-site environmental damage.

Methods and Materials

1. Site Preparation

A. Grade as needed and feasible to permit the use of conventional equipment for seedbed preparation, seeding, mulch application, and mulch anchoring. All grading should be done in accordance with Standard for Land Grading.

B. Immediately prior to seeding and topsoil application, the subsoil shall be evaluated for compaction in accordance with the Standard for Land Grading .

C. Topsoil should be handled only when it is dry enough to work without damaging the soil structure. A uniform application to a depth of 5 inches (unsettled) is required on all sites. Topsoil shall be amended with organic matter, as needed, in accordance with the Standard for Topsoiling.

D. Install needed erosion control practices or facilities such as diversions, grade-stabilization structures, channel stabilization measures, sediment basins, and waterways.

2. Seedbed Preparation

A. Uniformly apply ground limestone and fertilizer to topsoil which has been spread and firmed, according to soil test recommendations such as offered by Rutgers Co-operative Extension Soil sample mailers are available from the local Rutgers Cooperative Extension offices (http://njaes.rutgers.edu/county/). Fertilizer shall be applied at the rate of 500 pounds per acre or 11 pounds per 1,000 square feet of 10-10-10 or equivalent with 50% water insoluble nitrogen unless a soil test indicates otherwise and incorporated into the surface 4 inches. If fertilizer is not incorporated, apply one-half the rate described above during seedbed preparation and repeat another one-half rate application of the same fertilizer within 3 to 5 weeks after seeding.

B. Work lime and fertilizer into the topsoil as nearly as practical to a depth of 4 inches with a disc, spring-tooth harrow, or other suitable equipment. The final harrowing or disking operation should be on the general contour. Continue tillage until a reasonable uniform seedbed is prepared.

C. High acid producing soil. Soils having a pH of 4 or less or containing iron sulfide shall be covered with a minimum of 12 inches of soil having a pH of 5 or more before initiating seedbed reparation. See Standard for Management of High Acid-Producing Soils for specific requirements.

3. Seeding

A. Select a mixture from Table 4-3 or use a mixture recommended by Rutgers Cooperative Extension or Natural Resources Conservation Service which is approved by the Soil Conservation District. Seed germination shall have been tested within 12 months of the planting date. No seed shall be accepted with a germination test date more than 12 months old unless retested.

1. Seeding rates specified are required when a report of compliance is requested prior to actual establishment of permanent vegetation. Up to 50% reduction in rates may be used when permanent vegetation is established prior to a report of compliance inspection. These rates apply to all methods of seeding. Establishing permanent vegetation means 80% vegetative coverage with the specified seed mixture for the seeded area and mowed once.

2. Warm-season mixtures are grasses and legumes which maximize growth at high temperatures, generally 85o F and above. See Table 4-3 mixtures 1 to 7. Planting rates for warm-season grasses shall be the amount of Pure Live Seed (PLS) as determined by germination testing results.

3. Cool-season mixtures are grasses and legumes which maximize growth at temperatures below 85oF. Many grasses become active at 65oF. See Table 4-3, mixtures 8-20. Adjustment of planting rates to compensate for the amount of PLS is not required for cool season grasses.

B. Conventional Seeding is performed by applying seed uniformly by hand, cyclone (centrifugal) seeder, drop seeder, drill or cultipacker seeder. Except for drilled, hydroseeded or cultipacked seedings, seed shall be incorporated into the soil within 24 hours of seedbed preparation to a depth of 1/4 to 1/2 inch, by raking or dragging. Depth of seed placement may be 1/4 inch deeper on coarse-textured soil.

C. After seeding, firming the soil with a corrugated roller will assure good seed-to-soil contact, restore capillarity, and improve seedling emergence. This is the preferred method. When performed on the contour, sheet erosion will be minimized and water conservation on site will be maximized.

D. Hydroseeding is a broadcast seeding method usually involving a truck, or trailer-mounted tank, with an agitation system and hydraulic pump for mixing seed, water and fertilizer and spraying the mix onto the prepared seedbed. Mulch shall not be included in the tank with seed. Short-fibered mulch may be applied with a hydroseeder following seeding. (also see Section 4-Mulching below). Hydroseeding is not a preferred seeding method because seed and fertilizer are applied to the surface and not incorporated into the soil. When poor seed to soil contact occurs, there is a reduced seed germination and growth.

4. Mulching

Mulching is required on all seeding. Mulch will protect against erosion before grass is established and will promote faster and earlier establishment. The existence of vegetation sufficient to control soil erosion shall be deemed compliance with this mulching requirement.

A. Straw or Hay. Unrotted small grain straw, hay free of seeds, to be applied at the rate of 1-1/2 to 2 tons per acre (70 to 90 pounds per 1,000 square feet), except that where a crimper is used instead of a liquid mulch-binder (tackifying or adhesive agent), the rate of application is 3 tons per acre. Mulch chopper-blowers must not grind the mulch. Hay mulch is not recommended for establishing fine turf or lawns due to the presence of weed seed.

Application - Spread mulch uniformly by hand or mechanically so that at least 85% of the soil surface is covered. For uniform distribution of hand-spread mulch, divide area into approximately 1,000 square feet sections and distribute 70 to 90 pounds within each section.

Anchoring shall be accomplished immediately after placement to minimize loss by wind or water. This may be done by one of the following methods, depending upon the size of the area, steepness of slopes, and costs.

1. Peg and Twine. Drive 8 to 10 inch wooden pegs to within 2 to 3 inches of the soil surface every 4 feet in all directions. Stakes may be driven before or after applying mulch. Secure mulch to soil surface by stretching twine between pegs in a criss-cross and a square pattern. Secure twine around each peg with two or more round turns.

2. Mulch Nettings - Staple paper, jute, cotton, or plastic nettings to the soil surface. Use a degradable netting in areas to be mowed.

3. Crimper (mulch anchoring coulter tool) - A tractor-drawn implement, somewhat like a disc harrow, especially designed to push or cut some of the broadcast long fiber mulch 3 to 4 inches into the soil so as to anchor it and leave part standing upright. This technique is limited to areas traversable by a tractor, which must operate on the contour of slopes. Straw mulch rate must be 3 tons per acre. No tackifying or adhesive agent is required.

4. Liquid Mulch-Binders - May be used to anchor salt hay, hay or straw mulch.

a. Applications should be heavier at edges where wind may catch the mulch, in valleys, and at crests of banks. The remainder of the area should be uniform in appearance.

b. Use one of the following:

(1) Organic and Vegetable Based Binders - Naturally occurring, powder-based, hydrophilic materials when mixed with water formulates a gel and when applied to mulch under satisfactory curing conditions will form membraned networks of insoluble polymers. The vegetable gel shall be physiologically harmless and not result in a phytotoxic effect or impede growth of turf grass. Use at rates and weather conditions as recommended by the manufacturer to anchor mulch materials. Many new products are available, some of which may need further evaluation for use in this state.

(2) Synthetic Binders - High polymer synthetic emulsion, miscible with water when diluted and, following application of mulch, drying and curing, shall no longer be soluble or dispersible in water. Binder shall be applied at rates recommended by the manufacturer and remain tacky until germination of grass.

Note: All names given above are registered trade names. This does not constitute a recommendation of these products to the exclusion of other products.

B. Wood-fiber or paper-fiber mulch - shall be made from wood, plant fibers or paper containing no growth or germination inhibiting materials, used at the rate of 1,500 pounds per acre (or as recommended by the product manufacturer) and may be applied by a hydroseeder.

C. Pelletized mulch - compressed and extruded paper and/or wood fiber product, which may contain co-polymers, tackifiers, fertilizers, and coloring agents. The dry pellets, when applied to a seeded area and watered, form a mulch mat. Pelletized mulch shall be applied in accordance with the manufacturer's recommendations. Mulch may be applied by hand or mechanical spreader at the rate of 60-75 lbs/1,000 square feet and activated with 0.2 to 0.4 inches of water. This material has been found to be beneficial for use on small lawn or renovation areas, seeded areas where weed-seed free mulch is desired, or on sites where straw mulch and tackifier agent are not practical or desirable. Applying the full 0.2 to 0.4 inches of water after spreading pelletized mulch on the seed bed is extremely important for sufficient activation and expansion of the mulch to provide soil coverage.

5. Irrigation (where feasible)

If soil moisture is deficient supply new seeding with adequate water (a minimum of 1/4 inch applied up to twice a day until vegetation is well established). This is especially true when seedings are made in abnormally dry or hot weather or on droughty sites.

6. Topdressing

Since soil organic matter content and slow release nitrogen fertilizer (water insoluble) are prescribed in Section 2A - Seedbed Preparation in this Standard, no follow-up of topdressing is mandatory. An exception may be made where gross nitrogen deficiency exists in the soil to the extent that turf failure may develop. In that instance, topdress with 10-10-10 or equivalent at 300 pounds per acre or 7 pounds per 1,000 square feet every 3 to 5 weeks until the gross nitrogen deficiency in the turf is ameliorated.

7. Establishing Permanent Vegetative Stabilization

The quality of permanent vegetation rests with the contractor. The timing of seeding, preparing the seedbed, applying nutrients, mulch and other management are essential. The seed application rates in Table 4-3 are required when a Report of Compliance is requested prior to actual establishment of permanent vegetation. Up to 50% reduction in application rates may be used when permanent vegetation is established prior to requesting a Report of Compliance from the district. These rates apply to all methods of seeding. Establishing permanent vegetation means 80% vegetative cover (of the seeded species) and mowed once. Note this designation of mowed once does not guarantee the mulch shall not be mixed in the tank with seed. Use is limited to flatter slopes and during optimum seeding periods in spring and fall.

MITIGATION NOTES FOR ACIDIC SOIL

1. LIMIT THE EXCAVATION AREA AND EXPOSURE TIME WHEN HIGH ACID PRODUCING SOILS ARE ENCOUNTERED.

2. TOPSOIL STRIPPED FROM THE SITE SHALL BE STORED SEPARATELY FROM TEMPORARILY STOCKPILED HIGH ACID PRODUCING SOILS.

3. STOCKPILES OF HIGH ACID PRODUCING SOIL SHOULD BE LOCATED ON LEVEL LAND TO MINIMIZE ITS MOVEMENT, ESPECIALLY WHEN THIS MATERIAL HAS A HIGH CLAY CONTENT.

4. TEMPORARILY STOCKPILED HIGH ACID PRODUCING SOIL MATERIAL TO BE EXPOSED MORE THAN 30 DAYS SHOULD BE COVERED WITH PROPERLY ANCHORED, HEAVY GRADE SHEETS OF POLYETHYLENE WHERE POSSIBLE. IF NOT POSSIBLE, STOCKPILES SHALL BE COVERED WITH A MINIMUM OF 3 TO 6 INCHES OF WOOD CHIPS TO MINIMIZE EROSION OF THE STOCKPILE. SILT FENCE SHALL BE INSTALLED AT THE TOE OF SLOPE TO CONTAIN MOVEMENT OF THE STOCKPILED MATERIAL. TOPSOIL SHALL NOT BE APPLIED TO THE STOCKPILES TO PREVENT TOPSOIL CONTAMINATION WITH HIGH ACID PRODUCING SOIL.

5. HIGH ACID PRODUCING SOILS WITH A pH OF 4 OR LESS, OR CONTAINING IRON SULFIDE, (INCLUDING BORROW FROM CUTS) SHALL BE ULTIMATELY PLACED OR BURIED WITH LIMESTONE APPLIED AT A RATE OF 6 TONS PER ACRE (OR 275 POUNDS PER 1.000 SQUARE FEET OF SURFACE AREA) AND COVERED WITH A MINIMUM OF 12 INCHES OF SETTLED SOIL WITH A pH OF 5 OR MORE EXCEPT AS FOLLOWS:

A. AREAS WHERE TREES OR SHRUBS ARE TO BE PLANTED SHALL BE COVERED WITH A MINIMUM OF 24 INCHES OF SOIL WITH A pH OF 5 OR MORE.

B. DISPOSAL AREAS SHALL NOT BE LOCATED WITHIN 24 INCHES OF ANY SURFACE OF A SLOPE OR BANK, SUCH AS BERMS, STREAM BANKS, DITCHES AND OTHERS TO PREVENT POTENTIAL LATERAL LEACHING DAMAGES.

6. EQUIPMENT USED FOR MOVEMENT OF HIGH ACID PRODUCING SOILS SHOULD BE CLEANED AT THE END OF EACH DAY TO PREVENT SPREADING OF HIGH ACID SOIL MATERIALS TO OTHER PARTS OF THE SITE, INTO STREAMS OR STORMWATER CONVEYANCES AND TO PROTECT MACHINERY FROM ACCELERATED RUSTING.

7. NON VEGETATIVE EROSION CONTROL PRACTICES (STONE TRACKING PADS, STRATEGICALLY PLACED LIMESTONE CHECK DAM, SILT FENCE, WOOD CHIPS) SHOULD BE INSTALLED TO LIMIT THE MOVEMENT OF HIGH ACID PRODUCING SOILS FROM, AROUND OR OFF THE SITE.

8. FOLLOWING BURIAL OR REMOVAL OF HIGH ACID PRODUCING SOIL, TOPSOILING AND SEEDING OF THE SITE, (SEE TEMPORARY VEGETATIVE COVER FOR SOIL STABILIZATION, PG. 7-1, PERMANENT VEGETATIVE COVER FOR SOIL STABILIZATION, PG. 4-1 AND STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW LATEST EDITION). MONITORING SHOULD CONTINUE FOR APPROXIMATELY 6 TO 12 MONTHS TO ASSURE THERE IS ADEQUATE STABILIZATION AND THAT NO HIGH ACID SOIL PROBLEMS EMERGE. IF PROBLEMS STILL EXIST THE AFFECTED AREA MUST BE TREATED AS INDICATED ABOVE TO CORRECT THE PROBLEM.

9. MONITORING OF AREAS WHERE HIGH ACID PRODUCING SOIL HAS BEEN PLACED OR BURIED SHOULD BE PERFORMED FOR AT LEAST 2 YEARS OR LONGER IF PROBLEMS OCCUR, TO ASSURE THERE IS NO MIGRATION OF POTENTIAL ACIDE LEACHATE.

STANDARD FOR STORM SEWER INLET PROTECTION

DEFINITION

A TEMPORARY BARRIER AND SETTLING FACILITY INSTALLED AT A STORM SEWER INLET.

PURPOSE

THE PURPOSE OF STORM SEWER INLET PROTECTION IS TO INTERCEPT AND RETAIN SEDIMENT WHILE PREVENTING THE ENTRANCE OF SEDIMENT INTO THE STORM SEWER SYSTEM.

CONDITIONS WHERE PRACTICE APPLIES

1. CONTRIBUTING DRAINAGE AREA IS 3 ACRES OR LESS.
2. A STORM SEWER OR THE OUTLET CHANNEL OF A STORM SEWER NEEDS PROTECTION FROM SEDIMENT.
3. TRAFFIC WILL NOT DESTROY OR CAUSE CONSTANT MAINTENANCE OF THE STORM SEWER INLET PROTECTION.
4. A TRAFFIC HAZARD WILL NOT BE CREATED.
5. A FLOODING PROBLEM WILL NOT BE CREATED.

WATER QUALITY ENHANCEMENT

THE PRIMARY BENEFIT TO WATER QUALITY IS REMOVAL OF SEDIMENT FROM STORMWATER RUNOFF PRIOR TO ENTERING THE STORM SEWER SYSTEM. AS AN ADDED BENEFIT, OTHER FLOATABLE DEBRIS, SUCH AS VEGETATIVE MATTER AND LITTER MAY ALSO BE FILTERED OUT OF THE RUNOFF.

THE FOLLOWING APPLIES TO ALL METHODS OF STORM SEWER INLET PROTECTION: MUST SLOW THE STORM WATER, PROVIDE THE COARSE SEDIMENT

1. PARTICLES A CHANCE TO SETTLE, AND PROVIDE AN AREA TO RETAIN THE PARTICLES THAT HAVE SETTLED. IN ALL CASES, THE INLET PROTECTION SHOULD NOT COMPLETELY
2. CLOSE OFF THE INLET. THE PROTECTION DEVICE WILL BE DESIGNED TO CAPTURE OR
3. FILTER RUNOFF FROM THE 1 YEAR, 24 HOUR STORM EVENT AND SHALL SAFELY CONVEY HIGHER FLOWS DIRECTLY INTO THE STORM SEWER SYSTEM.

OTHER METHODS THAT ACCOMPLISH THE PURPOSE OF STORM SEWER INLET PROTECTION MAY BE USED IF APPROVED BY THE SOIL CONSERVATION DISTRICT.

INSPECTIONS SHALL BE FREQUENT. MAINTENANCE, REPAIR, AND REPLACEMENT SHALL BE MADE PROMPTLY, AS NEEDED. THE BARRIER SHALL BE REMOVED WHEN THE AREA DRAINING TOWARD THE INLET HAS BEEN STABILIZED.

TEMPORARY VEGETATIVE COVER FOR SOIL STABILIZATION

Definition

Establishment of temporary vegetative cover on soils exposed for periods of two to 6 months which are not being graded, not under active construction or not scheduled for permanent seeding within 60 days.

Purpose

To temporarily stabilize the soil and reduce damage from wind and water erosion until permanent stabilization is accomplished.

Water Quality Enhancement

Provides temporary protection against the impacts of wind and rain, slows the over land movement of stormwater runoff, increases infiltration and retains soil and nutrients on site, protecting streams or other stormwater conveyances.

Where Applicable

On exposed soils that have the potential for causing off-site environmental damage.

Methods and Materials

1. Site Preparation
   A. Grade as needed and feasible to permit the use of conventional equipment for seedbed preparation, seeding, mulch application, and mulch anchoring. All grading should be done in accordance with Standards for Land Grading, pg. 19-1.
   B. Install needed erosion control practices or facilities such as diversions, grade stabilization structures, channel stabilization measures, sediment basins, and waterways. See Standards 11 through 42.
   C. Immediately prior to seeding, the surface should be scarified 6" to 12" where there has been soil compaction. This practice is permissible only where there is no danger to underground utilities (cables, irrigation systems, etc.).

2. Seedbed Preparation
   A. Apply ground limestone and fertilizer according to soil test recommendations such as offered by Rutgers Co-operative Extension. Soil sample mailers are available from the local Rutgers Cooperative Extension offices. Fertilizer shall be applied at the rate of 500 pounds per acre or 11 pounds per 1,000 square feet of 10-20-10 or equivalent with 50% water insoluble nitrogen unless a soil test indicates otherwise. Apply limestone at the rate of 2 tons/acre unless soil testing indicates otherwise. Calcium carbonate is the equivalent and standard for measuring the ability of liming materials to neutralize soil acidity and supply calcium and magnesium to grasses and legumes.
   B. Work lime and fertilizer into the soil as nearly as practical to a depth of 4 inches with a disc, springtooth harrow, or other suitable equipment. The final harrowing or disking operation should be on the general contour. Continue tillage until a reasonable uniform seedbed is prepared.
   C. Inspect seedbed just before seeding. If traffic has left the soil compacted, the area must be retilled in accordance with the above.
   D. Soils high in sulfides or having a pH of 4 or less refer to Standard for Management of High Acid Producing Soils, pg. 1-1.

3. Seeding
   A. Select seed from recommendations in Table 7-2.
   B. Conventional Seeding. Apply seed uniformly by hand, cyclone (centrifugal) seeder, drop seeder, drill or cultipacker seeder. Except for drilled, hydroseeded or cultipacked seedings, seed shall be incorporated into the soil, to a depth of 1/4 to 1/2 inch, by raking or dragging. Depth of seed placement may be 1/4 inch deeper on coarse textured soil.
   C. Hydroseeding is a broadcast seeding method usually involving a truck or trailer mounted tank, with an agitation system and hydraulic pump for mixing seed, water and fertilizer and spraying the mix onto the prepared seedbed. Mulch shall not be included in the tank with seed. Short fibered mulch may be applied with a hydroseeder following seeding. (also see Section IV Mulching) Hydroseeding is not a preferred seeding method because seed and fertilizer are applied to the surface and not incorporated into the soil. Poor seed to soil contact occurs reducing seed germination and growth. Hydroseeding may be used for areas too steep for conventional equipment to traverse or too obstructed with rocks, stumps, etc.
   D. After seeding, firming the soil with a corrugated roller will assure good seed-to-soil contact, restore capillarity, and improve seedling emergence. This is the preferred method. When performed on the contour, sheet erosion will be minimized and water conservation on site will be maximized.

4. Mulching

Mulching is required on all seeding. Mulch will insure against erosion before grass is established and will promote faster and earlier establishment. The existence of vegetation sufficient to control soil erosion shall be deemed compliance with this mulching requirement.

A. Straw or Hay. Unrotted small grain straw, hay free of seeds, applied at the rate of 1-1/2 to 2 tons per acre (70 to 90 pounds per 1,000 square feet), except that where a crimper is used instead of a liquid mulch-binder (tackifying or adhesive agent), the rate of application is 3 tons per acre. Mulch chopper-blowers must not grind the mulch. Hay mulch is not recommended for establishing fine turf or lawns due to the presence of weed seed.

Application. Spread mulch uniformly by hand or mechanically so that approximately 95% of the soil surface will be covered. For uniform distribution of hand-spread mulch, divide area into approximately 1,000 square feet sections and distribute 70 to 90 pounds within each section.

Anchoring shall be accomplished immediately after placement to minimize loss by wind or water. This may be done by one of the following methods, depending upon the size of the area, steepness of slopes, and costs.

1. Peg and Twine. Drive 8 to 10 inch wooden pegs to within 2 to 3 inches of the soil surface every 4 feet in all directions. Stakes may be driven before or after applying mulch. Secure mulch to soil surface by stretching twine between pegs in a criss-cross and a square pattern. Secure twine around each peg with two or more round turns.

2. Mulch Nettings. Staple paper, jute, cotton, or plastic nettings to the soil surface. Use a degradable netting in areas to be mowed.

3. Crimper (mulch anchoring tool). A tractor-drawn implement, somewhat like a disc harrow, especially designed to push or cut some of the broadcast long fiber mulch 3 to 4 inches into the soil so as to anchor it and leave part standing upright. This technique is limited to areas traversable by a tractor, which must operate on the contour of slopes. Straw mulch rate must be 3 tons per acre. No tackifying or adhesive agent is required.

4. Liquid Mulch-Binders. - May be used to anchor hay or straw mulch.

a. Applications should be heavier at edges where wind may catch the mulch, in valleys, and at crests of banks. The remainder of the area should be uniform in appearance.

b. Use one of the following:

(1) Organic and Vegetable Based Binders - Naturally occurring, powder based, hydrophilic materials when mixed with water formulates a gel and when applied to mulch under satisfactory curing conditions will form membraned networks of insoluble polymers. The vegetable gel shall be physiologically harmless and not result in a phytotoxic effect or impede growth of turfgrass. Use at rates and weather conditions as recommended by the manufacturer to anchor mulch materials. Many new products are available, some of which may need further evaluation for use in this state.

(2) Synthetic Binders - High polymer synthetic emulsion, miscible with water when diluted and following application to mulch, drying and curing shall no longer be soluble or dispersible in water. It shall be applied at rates recommended by the manufacturer and remain tacky until germination of grass.

Note: All names give above are registered trade names. This does not constitute a commendation of these products to the exclusion of other products.

B. Wood-fiber or paper-fiber mulch. Shall be made from wood, plant fibers or paper containing no growth or germination inhibiting materials, used at the rate of 1,500 ponds per acre (or as recommended by the project manufacturer) and may be applied by a hydroseeder. This mulch shall not be mixed in the tank with seed. Use is limited to flatter slopes and during optimum seeding periods in spring and fall.

C. Pelletized mulch. Compressed and extruded paper and/or wood fiber product, which may contain co-polymers, tackifiers, fertilizers and coloring agents. The dry pellets, when applied to a seeded area and watered, forma mulch mat. Pelletized mulch shall be applies in accordance with the manufacturers recommendations. Mulch may be applied by hand or mechanical spreader at the rate of 60-75 lbs./1,000 square feet and activated with 0.2 to 0.4 inches of water. This material has been found to be beneficial for use on small lawn or renovation areas, seeded areas where weed-seed free mulch is desired or on sites where straw mulch and tackifier agent are not practical or desirable.

Applying the full 0.2 to 0.4 inches of water after spreading pelletized mulch on the seed bed is extremely important for sufficient activation and expansion of the mulch to provide soil coverage.

SPPP REQUIRED INSPECTIONS AND REPORTS

1. ROUTINE INSPECTIONS

A. THE PERMITTEE SHALL CONDUCT AND DOCUMENT ROUTINE INSPECTIONS OF THE FACILITY TO A. IDENTIFY AREAS CONTRIBUTING TO THE STORMWATER DISCHARGE AUTHORIZED BY THIS PERMIT AND EVALUATE WHETHER THE STORMWATER POLLUTION PREVENTION PLAN (SPPP) IDENTIFIED UNDER e.1 OF THE 5G3-CONSTRUCTION ACTIVITY STORMWATER (GP) PART 1 NARRATIVE REQUIREMENTS, INCLUDING THIS SOIL EROSION AND SEDIMENT CONTROL PLAN IS BEING PROPERLY IMPLEMENTED AND MAINTAINED, OR WHETHER ADDITIONAL MEASURES ARE NEEDED TO IMPLEMENT THE SPPP. (ROUTINE INSPECTIONS MINIMUM WEEKLY).

HIGH ACID PRODUCING SOILS WITH A pH OF 4 OR LESS, OR CONTAINING IRON SULFIDE, (INCLUDING BORROW FROM CUTS) SHALL BE ULTIMATELY PLACED OR BURIED WITH LIMESTONE APPLIED AT A RATE OF 6 TONS PER ACRE (OR 275 POUNDS PER 1.000 SQUARE FEET OF SURFACE AREA) AND COVERED WITH A MINIMUM OF 12 INCHES OF SETTLED SOIL WITH A pH OF 5 OR MORE EXCEPT AS FOLLOWS:

HIGH ACID PRODUCING SOILS WITH A pH OF 4 OR LESS, OR CONTAINING IRON SULFIDE, (INCLUDING BORROW FROM CUTS) SHALL BE ULTIMATELY PLACED OR BURIED WITH LIMESTONE APPLIED AT A RATE OF 6 TONS PER ACRE (OR 275 POUNDS PER 1.000 SQUARE FEET OF SURFACE AREA) AND COVERED WITH A MINIMUM OF 12 INCHES OF SETTLED SOIL WITH A pH OF 5 OR MORE EXCEPT AS FOLLOWS:

OTHER RECORD-KEEPING REQUIREMENTS

THE CONTRACTOR SHALL KEEP THE FOLLOWING RECORDS RELATED TO CONSTRUCTION ACTIVITIES AT THE SITE:

- DATES WHEN MAJOR GRADING ACTIVITIES OCCUR AND THE AREAS WHICH WERE GRADED
- DATES AND DETAILS CONCERNING THE INSTALLATION OF STRUCTURAL CONTROLS
- DATES WHEN CONSTRUCTION ACTIVITIES CEASE IN AN AREA
- DATES WHEN AN AREA IS STABILIZED, EITHER TEMPORARILY OR PERMANENTLY
- DATES OF RAINFALL AND THE AMOUNT OF RAINFALL
- DATES AND DESCRIPTIONS OF THE CHARACTER AND AMOUNT OF ANY SPILLS OF HAZARDOUS MATERIALS
- RECORDS OF REPORTS FILED WITH REGULATORY AGENCIES IF REPORTABLE QUANTITIES OF HAZARDOUS MATERIALS SPILLED
- A VISIBLE SIGN SHALL BE POSTED ON THE SITE TO IDENTIFY THE LOCATION OF SPPP

3. REPORTS OF NONCOMPLIANCE

A. ALL INSTANCES OF NONCOMPLIANCE NOT REPORTED UNDER N.J.A.C. 7:140A-6.10 SHALL BE REPORTED TO THE DEPARTMENT ANNUALLY.

4. NOTIFICATION OF COMPLETION

A. THE SOIL CONSERVATION DISTRICT WILL PROVIDE THE DEPARTMENT A COPY OF THE REPORT OF COMPLIANCE ISSUED UNDER N.J.A.C. 2:90-1 FOR COMPLETED CONSTRUCTION ACTIVITIES, EXCEPT SINGLE FAMILY HOME CONSTRUCTION UNDER B. BELOW. THE REPORT OF COMPLIANCE SHALL SERVE AS THE NOTIFICATION OF COMPLETION.

B. THE BUILDER OF A SINGLE FAMILY HOME THAT IS AUTHORIZED UNDER THIS PERMIT, BUT NOT WITHIN THE DEFINITION OF "PROJECT" AT N.J.S.A. 4:24-41G, SHALL SEND A COPY OF THE FINAL CERTIFICATE OF OCCUPANCY TO THE SOIL CONSERVATION DISTRICT. THE SOIL CONSERVATION DISTRICT WILL PROVIDE A COPY OF THE FINAL CERTIFICATION OF OCCUPANCY TO THE DEPARTMENT, WHICH WILL SERVE AS NOTIFICATION OF COMPLETION.

C. THE DOT SHALL PROVIDE WRITTEN NOTIFICATION TO THE DEPARTMENT WHEN DOT CERTIFIED PROJECTS ARE COMPLETED.

STANDARD FOR DUST CONTROL

DEFINITION-The control of dust on construction sites and roads.

PURPOSE- To prevent blowing and movement of dust from exposed soil surfaces, reduce on and off-site damage and health hazards, and improve traffic safety.

CONDITION WHERE PRACTICE APPLIES- This practice is applicable to areas subject to dust blowing and movement where on- and off-site damage is likely without treatment. Consult with local municipal ordinances on any restrictions.

WATER QUALITY ENHANCEMENT- Sediments deposited as "dust" are often fine colloidal material which is extremely difficult to remove from water once it becomes suspended. Use of this standard will help to control the generation of dust from construction sites and subsequent blowing and deposition into local surface water resources.

PLANNING CRITERIA- The following methods should be considered for controlling dust:

Mulches-See Standards for Stabilization with mulches Only (p. 5-1)

Vegetative Cover-See Standards for Temporary Vegetative Cover (p. 7-1), Permanent Vegetative Cover for Soil Stabilization (p. 4-1) and Permanent Stabilization with Sod (p. 6-1)

Spray-on Adhesives-On mineral soils (not effective on muck soils). Keep traffic off these areas.

Table 16-1: Dust Control Materials:

	Water Dilution	Type of Nozzle	Gal./Acre
Anionic asphalt emulsion	7:1	Coarse Spray	1,200
Latex Emulsion	12.5:1	Fine Spray	235
Resin in Water	4:1	Fine Spray	300
Polyacrylamide (PAM) - spray on Polyacrylamide (PAM) - dry spray	Apply according to manufacturer's instructions. May also be used as an additive to sediment basins to flocculate and precipitate suspended colloids. See Sediment Basin standard (pg 26-1).		
Acidulated Soy Bean Soap Stick	None	Coarse Spray	1,200

Tillage: To roughen surface and bring clods to the surface. This is a temporary emergency measure which should be used before soil blowing starts. Begin plowing on windward side of site. Chisel-type plows spaced about 12 inches apart, and spring-toothed harrows are examples of equipment which may produce the desired effect.

Sprinkling: Site is sprinkled until the surface is wet.

Barriers: Solid board fences, snow fences, burlap fences, crate walls, bales of hay, and similar material can be used to control air currents and soil blowing.

Calcium Chloride: Shall be in the form of loose, dry granules of flakes fine enough to feed through commonly used spreaders at a rate that will keep surface moist but not cause pollution or plant damage. If used on steeper slopes, then use other practices to prevent washing into streams or accumulation around plants.

Stone: Cover surface with crushed stone or coarse gravel.

CONSTRUCTION SITE WASTE CONTROL COMPONENT OF THE STORMWATER POLLUTION PREVENTION PLAN (SPPP)

1. THE CONSTRUCTION SITE WASTE CONTROL COMPONENT OF THE SPPP CONSISTS OF THE REQUIREMENT IN 2., 3., AND 4. BELOW. THESE REQUIREMENTS BECOME OPERATIVE ON MARCH 3, 2004 AND APPLY TO CONSTRUCTION ACTIVITIES THAT COMMENCE ON OR AFTER MARCH 3, 2004. ANY NEW CONSTRUCTION ACTIVITY FOR WHICH AN RFA IS SUBMITTED ON OR AFTER MARCH 3, 2004 OR WHICH WILL RECEIVE AUTOMATIC RENEWAL OR AUTHORIZATION UNDER THIS PERMIT AFTER MARCH 3, 2004 ALSO SHALL COMPLY WITH THESE REQUIREMENTS.

2. MATERIAL MANAGEMENT TO PREVENT OR REDUCE WASTE - ANY PESTICIDES, FERTILIZERS, FUELS, LUBRICANTS, PETROLEUM PRODUCTS, ANTI-FREEZE, PAINTS AND PAINT THINNERS, CLEANING SOLVENTS AND ACIDS, DETERGENTS, CHEMICAL ADDITIVES, AND CONCRETE CURING COMPOUNDS SHALL BE STORED IN CONTAINERS IN A DRY COVERED AREA. MANUFACTURERS' RECOMMENDED APPLICATION RATES, USES, AND METHODS SHALL BE STRICTLY FOLLOWED TO THE EXTENT NECESSARY TO PREVENT OR MINIMIZE THE PRESENCE OF WASTE FROM SUCH MATERIALS IN THE STORMWATER DISCHARGE AUTHORIZED BY THIS PERMIT (THE PRECEDING SENTENCE DOES NOT APPLY TO ANY MANUFACTURERS' RECOMMENDATIONS ABOUT FERTILIZER OR OTHER MATERIAL THAT CONFLICT WITH THE EROSION AND SEDIMENT CONTROL COMPONENT OF THE FACILITY'S SPPP.)

3. WASTE HANDLING - THE FOLLOWING REQUIREMENTS APPLY ONLY TO CONSTRUCTION SITE WASTE THAT HAS THE POTENTIAL TO BE TRANSPORTED BY THE STORMWATER DISCHARGE AUTHORIZED BY THIS PERMIT. THE HANDLING AT THE CONSTRUCTION SITE OF WASTE BUILDING MATERIAL AND RUBBLE AND OTHER CONSTRUCTION SITE WASTES, INCLUDING LITTER AND HAZARDOUS AND SANITARY WASTES, SHALL CONFORM WITH THE STATE SOLID WASTE MANAGEMENT ACT, N.J.S.A. 13:1E- ET SEQ., AND ITS IMPLEMENTING RULES AT N.J.A.C. 7:26, 7:26A, AND 7:26G, THE NEW JERSEY PESTICIDE CONTROL CODE AT N.J.A.C. 7:30, THE STATE LITTER STATUTE N.J.S.A. 13:1e-99.3); AND OSHA REQUIREMENTS FOR SANITATION AT 29 C.F.R., 1926 (EXCEPT WHERE SUCH CONFORMANCE IS NOT RELEVANT TO THE STORMWATER DISCHARGE AUTHORIZED BY THIS PERMIT). CONSTRUCTION SITES SHALL HAVE ONE OR MORE DESIGNATED WASTE COLLECTION AREAS ONSITE OR ADJACENT TO THE SITE, AND AN ADEQUATE NUMBER OF CONTAINERS FOR WASTE. WASTE SHALL BE COLLECTED FROM SUCH CONTAINERS BEFORE THEY OVERFLOW, AND SPILLS AT SUCH CONTAINERS SHALL BE CLEANED UP IMMEDIATELY.

A. CONSTRUCTION SITE WASTES INCLUDE BUT ARE NOT LIMITED TO:

I. "CONSTRUCTION AND DEMOLITION WASTE", AS DEFINED IN N.J.A.C. 7:7:26-1.4 AS FOLLOWS: "WASTE BUILDING MATERIAL AND RUBBLE RESULTING FROM CONSTRUCTION, REMODELING, REPAIR, AND DEMOLITION OPERATIONS ON HOUSES, COMMERCIAL BUILDINGS, PAVEMENTS AND OTHER STRUCTURES. THE FOLLOWING MATERIALS MAY BE FOUND IN CONSTRUCTION AND DEMOLITION WASTE: TREATED AND UNTREATED WOOD SCRAP; TREE PARTS, TREE STUMPS AND BRUSH; CONCRETE, ASPHALT, BRICKS, BLOCKS AND OTHER MASONRY; PLASTER AND WALLBOARD; ROOFING MATERIALS; CORRUGATED CARDBOARD AND MISCELLANEOUS PAPER; FERROUS AND NON-FERROUS METAL; NON-ASBESTOS BUILDING INSULATION; PLASTIC SCRAP; DIRT; CARPETS AND PADDING, GLASS (WINDOW AND DOOR); AND OTHER MISCELLANEOUS MATERIALS; BUT SHALL NOT INCLUDE OTHER SOLID WASTE TYPES."

II. ANY WASTE BUILDING MATERIAL AND RUBBLE RESULTING FROM SUCH OPERATIONS THAT IS HAZARDOUS FOR PURPOSES OF N.J.A.C 7:26G (THE HAZARDOUS WASTE RULES).

III. DISCARDED (INCLUDING SPILLED) PESTICIDES, FERTILIZERS, FUELS, LUBRICANTS, PETROLEUM PRODUCTS, ANTI-FREEZE, PAINTS AND PAINT THINNERS, PAINT CHIPS AND SANDBLASTING GRITS, CLEANING SOLVENTS, ACIDS FOR CLEANING MASONRY SURFACES, DETERGENTS, CHEMICAL ADDITIVES USED FOR SOIL STABILIZATION (E.G. CALCIUM CHLORIDE), AND CONCRETE CURING COMPOUNDS.

IV. OTHER "LITTER" AS DEFINED AT N.J.S.A. 13:1E-215.D AS FOLLOWS: "ANY USED OR UNCONSUMED SUBSTANCE OR WASTE MATERIAL WHICH HAS BEEN DISCARDED WHETHER MADE OF ALUMINUM, GLASS, PLASTIC, RUBBER, PAPER, OR OTHER NATURAL OR SYNTHETIC MATERIAL, OR ANY COMBINATION THEREOF, INCLUDING, BUT NOT LIMITED TO, ANY BOTTLE, JAR OR CAN, OR ANY TOP, CAP OR DETACHABLE TAB OF ANY BOTTLE, JAR OR CAN, ANY UNLIGHTED CIGARETTE, CIGAR, MATCH OR ANY FLAMING OR GLOWING MATERIAL OR ANY GARBAGE, TRASH, REFUSE, DEBRIS, RUBBISH, GRASS CLIPPINGS OR OTHER LAWN OR GARDEN WASTE, NEWSPAPERS, MAGAZINES, CLASS, METAL, PLASTIC OR PAPER CONTAINERS OR OTHER PACKAGING OR CONSTRUCTION MATERIAL, BUT DOES NOT INCLUDE THE WASTE OF THE PRIMARY PROCESSES OF MINOR OR OTHER EXTRACTION PROCESSES, LOGGING, SAWMILLING, FARMING OR MANUFACTURING."

V. SANITARY SEWAGE AND SEPTAGE.

VI. CONTAMINATED SOILS ENCOUNTERED OR DISCOVERED DURING EARTHMOVING ACTIVITIES OR DURING THE CLEANUP OF A LEAK OR DISCHARGE OF A HAZARDOUS SUBSTANCE.

B. CONCRETE TRUCK WASHOUT - CONCRETE TRUCK WASHOUT ONSITE IS PROHIBITED OUTSIDE DESIGNATED AREAS. DESIGNATED WASHOUT AREAS SHALL BE LINED AND BERMED TO PREVENT DISCHARGES TO SURFACE AND GROUND WATER. HARDENED CONCRETE FROM CONCRETE TRUCK WASHOUT SHALL BE REMOVED AND PROPERLY DISPOSED OF.

C. SANITARY SEWAGE/SEPTAGE DISPOSAL - DISCHARGES OF RAW SANITARY SEWAGE OR SEPTAGE ONSITE ARE STRICTLY PROHIBITED. ADEQUATE FACILITIES WITH PROPER DISPOSAL SHALL BE PROVIDED AND MAINTAINED ONSITE OR ADJACENT TO THE SITE FOR ALL WORKERS AND OTHER SANITARY NEEDS.

4. SPILLS: DISCHARGE OF HAZARDOUS SUBSTANCES,

A. SPILL KITS SHALL BE AVAILABLE ONSITE OR ADJACENT TO THE SITE FOR ANY MATERIALS THAT ARE LISTED IN 2 ABOVE AND USED OR APPLIED ONSITE. ALL SPILLS OF SUCH MATERIAL SHALL BE CONTAINED AND CLEANED UP IMMEDIATELY. CLEANED UP MATERIALS SHALL BE PROPERLY DISPOSED OF.

B. DISCHARGES OF HAZARDOUS SUBSTANCES (AS DEFINED IN N.J.A..C. 7:1E-1.6) IN CONSTRUCTION SITE WASTES ARE SUBJECT TO THE PROVISIONS OF THE SPILL COMPENSATION AND CONTROL ACT, NJAC 58:10-23.11 ET SEQ., AND OF DEPARTMENT RULES FOR DISCHARGE OF PETROLEUM AND OTHER HAZARDOUS SUBSTANCES AT NJAC 7:1E. NO DISCHARGE OF HAZARDOUS SUBSTANCES RESULTING FROM AN ONSITE SPILL SHALL BE DEEMED TO BE "PURSUANT TO AND IN COMPLIANCE WITH (THIS) PERMIT" WITHIN THE MEANS OF THE SPILL COMPENSATION AND CONTROL ACT AT NJSA 58;10-2311C. C. RELEASES IN EXCESS OF REPORTABLE QUANTITIES (RQ) ESTABLISHED UNDER 40 C.F.R. 110, 117 AND 302 THAT OCCUR WITHIN A 24-HOUR PERIOD MUST BE REPORTED TO THE NATIONAL RESPONSE CENTER (800-424-8802)

	REVISION	DATE	CHKD
12			
11			
10			
9			
8			
7			

	REVISION	DATE	CHKD
6			
5			
4			
3			
2	REVISED PER TOWNSHIP COMMENTS	12/18/24	SAD
1	REVISED PER PB COMPLETENESS REVIEW	09/10/24	SAD

PROJ.: 081391-01-001
DATE: 06/25/2024
CHKD: SAD

Bowman

Bowman Consulting Group Ltd
303 W. Main Street
Freehold, New Jersey 07728
bowman.com
E-mail: NJ@Bowman.com
Phone: 732-665-5500
FAX: 732-665-5501
NJ Certificate of Authorization No. 24GA28222600

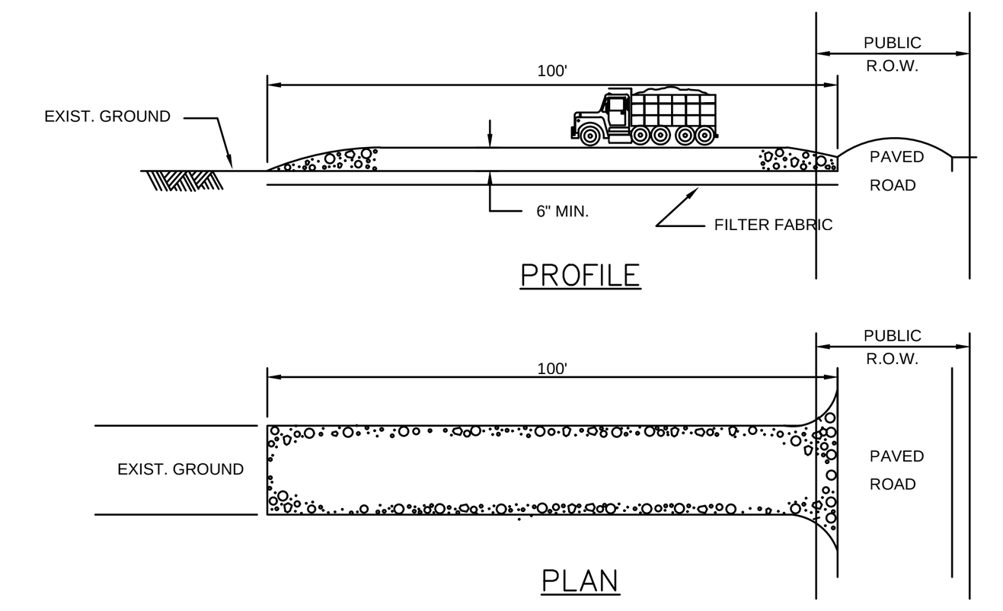
SEAN A. DELANY, N.J. Professional Engineer, Lic. 24GE04447100

PRELIMINARY AND FINAL MAJOR SUBDIVISION &
PRELIMINARY AND FINAL SITE PLAN FOR
VENUE AT HOPEWELL
SOIL EROSION AND SEDIMENT
CONTROL DETAILS
BLOCK 93, LOTS 19, 20, 45.01, 46 & 60
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY

SHEET No.
17A
OF

CONSTRUCTION SEQUENCE

SITE PREPARATION	DURATION
1. INSTALL SEDIMENT FILTER FENCE, TREE PROTECTION FENCE, AND FENCING ALONG LIMITS OF DISTURBANCE.	4 WEEKS
2. INSTALL STABILIZED CONSTRUCTION ACCESS.	2 DAYS
3. CLEAR TREES AND REMOVE TREE STUMPS	4 WEEKS
4. REMOVE EXISTING BUILDINGS, PAVED AND GRAVEL DRIVES.	2 WEEKS
5. STRIP AND STOCKPILE TOPSOIL	1 WEEK
6. ROUGH GRADE SITE AND STORMWATER MANAGEMENT BASINS	8 WEEKS
7. PLACE CONSTRUCTION TRAILER AND CONSTRUCT STAGING AND LAYDOWN AREA. INSTALL STONE BEDDING OVER AREA FOR STABILIZATION DURING CONSTRUCTION OF SITE.	2 WEEKS
8. FINALIZE INTERIM CONSTRUCTION OF STORMWATER MANAGEMENT BASINS AND PROVIDE PERMANENT STABILIZATION PRIOR TO INSTALLATION OF STORM DRAINS. K3 SOIL AND SAND LAYERS IN BOTTOM OF BASINS NOT TO BE INSTALLED IN INTERIM CONDITION. BASIN BOTTOMS TO BE COVERED WITH ANCHORED DOWN FILTER FABRIC.	2 WEEKS 12 WEEKS
9. CONSTRUCT STORMWATER STRUCTURES AND PIPING, AND OUTFALLS AND SOIL EROSION AND SEDIMENT CONTROL MEASURES. STABILIZE BASINS UPON COMPLETION	8 WEEKS
10. ROUGH GRADE PROPOSED ROADWAYS ONSITE AND INSTALL CURB AND ROADWAY SUBBASE.	12 WEEKS
11. INSTALL ONSITE SANITARY SEWER AND WATER MAINS WITHIN ROADS. INSTALL WATER SERVICE AND SANITARY SEWER LATERALS FROM MAINS WITHIN PROPOSED ROADWAYS BEHIND CURB LINE LOCATION.	2 WEEKS
12. CONSTRUCT ROADWAY WIDENING ALONG WASHINGTON CROSSING - PENNINGTON ROAD: INSTALL CURB, SAWCUT PAVEMENT, ROUGH GRADE WIDENING AREA TO SUBGRADE ELEVATIONS.	2 WEEKS
13. FINE GRADE WASHINGTON CROSSING - PENNINGTON ROAD ROADWAY WIDENING: CONSTRUCT ROADWAY SUBBASE, BASE COURSE.	4 WEEKS
14. FINE GRADE ONSITE ROADWAYS AND PARKING AREAS: CONSTRUCT ROADWAY BASE COURSE PAVEMENT.	4 WEEKS
15. CONSTRUCT SIDEWALKS.	8 WEEKS
16. INSTALL ELECTRIC, TELEPHONE, CABLE, GAS UTILITIES.	6 WEEKS
17. FINE GRADE LANDSCAPE AREAS AND OPEN SPACE LOTS.	12 WEEKS
18. INSTALL BUFFER LANDSCAPING AND STREET TREES ALONG ROADWAYS. INSTALL LIGHTING FIXTURES AND STREET LIGHTS.	2 WEEKS
19. SOIL RESTORATION AND TESTING FOR SITE PRIOR TO INSTALLATION OF TOPSOIL	4 WEEKS
20. TOP SOIL AND SEED ALL DISTURBED LANDSCAPED AREAS IN ACCORDANCE WITH PERMANENT SEEDING SPECIFICATIONS.	8 WEEKS
21. INSTALL TRAFFIC SIGNS AND TEMPORARY STRIPING.	ONGOING
22. CONSTRUCT DWELLING UNITS AND AFFORDABLE HOUSING BUILDINGS.	8 WEEKS
23. UPON COMPLETION OF ALL RESIDENTIAL BUILDINGS ALONG A ROADWAY, CONSTRUCT FINAL PAVEMENT SURFACE COURSE AND INSTALL FINAL PAVEMENT STRIPING.	
TYPICAL BUILDING CONSTRUCTION	1 WEEK
1. INSTALL SEDIMENT FILTER FENCE AROUND LOT PERIMETER INSTALL STABILIZED CONSTRUTION ENTRANCE FOR EACH LOT AT A DRIVEWAY LOCATION.	2 WEEKS
2. INSTALL BUILDING FOUNDATION	1 WEEK
3. INSTALL UTILITY CONNECTIONS TO BUILDING.	8-12 WEEKS
4. CONSTRUCT BUILDING	1 WEEK
5. FINE GRADE LOT WITHIN LIMITS OF CLEARING/DISTURBANCE	1 WEEK
6. REMOVE STABILIZED CONSTRUCTION ACCESS AND CONSTRUCT DRIVEWAY, SIDEWALK AND PATIO.	1 WEEK
7. INSTALL PROPOSED LANDSCAPING ON LOT AND TOPSOIL, FERTILIZE AND SEED ALL DISTURBED AREAS IN ACCORDANCE WITH PERMANENT SEEDING SPECIFICATIONS.	1 DAY
8. REMOVE ACCUMULATED SEDIMENT AND FILTER FABRIC FENCE ON INDIVIDUAL LOT ONLY. (REPEAT TYPICAL LOT CONSTRUCTION FOR EACH LOT AT TIME OF DEVELOPMENT)	
FINAL MEASURES AFTER FULL BUILD OUT OF DEVELOPMENT	2 WEEKS
1. REMOVE ALL ACCUMLATED SEDIMENT FROM ROADWAYS, AND STORMWATER BASINS, STORM PIPING AND AT BASIN OUTFALLS. REMOVE ANCHORED FILTER FABRIC FROM STORMWATER BASINS. K3 SOIL AND SAND LAYERS TO BE INSTALLED WITHIN BASINS.	1 WEEK
2. REMOVE ALL PERIMETER FILTER FABRIC FENCING AND TREE PROTECTION FENCING, AND ALL REMAINING INLET FILTER PROTECTION.	



NOTES

STONE SIZE 1 1/2" - 2 1/2" CRUSHED STONE

WIDTH NOT LESS THAN FULL WIDTH AT POINTS OF EGRESS AND INGRESS.

WASHING: WHEN NECESSARY, WHEELS SHALL BE CLEANED TO REMOVE SEDIMENT PRIOR TO ENTRANCE ONTO PUBLIC R.O.W.. WHEN WASHING IS REQUIRED, IT SHALL BE DONE ON AN AREA STABILIZED WITH CRUSHED STONE WHICH DRAINS INTO AN APPROVED SEDIMENT BASIN.

MAINTENANCE - THE ENTRANCE SHALL BE MAINTAINED IN A CONDITION WHICH WILL PREVENT TRACKING OR FLOWING OF SEDIMENT ONTO PUBLIC R.O.W.. THIS MAY REQUIRE PERIODIC TOP DRESSING WITH ADDITIONAL STONE AS CONDITIONS DEMAND AND REPAIR AND/OR CLEANOUT OF ANY MEASURES USED TO TRAP SEDIMENT. ALL SEDIMENT SPILLED, DROPPED, WASHED, OR TRAPPED ONTO PUBLIC R.O.W. MUST BE REMOVED IMMEDIATELY.

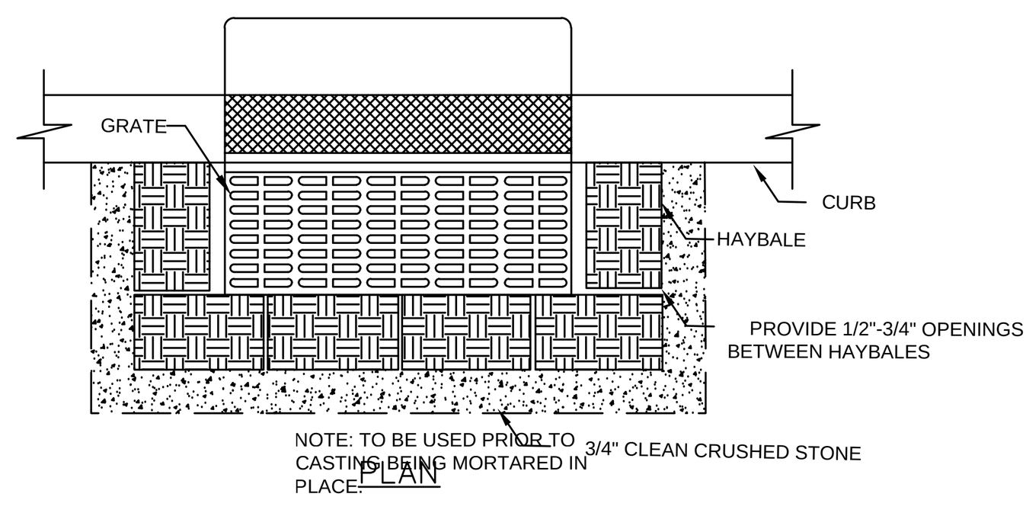
WHEN THE CONSTRUCTION ACCESS EXITS ONTO A MAJOR ROADWAY, A PAVED TRANSITION AREA MAY BE INSTALLED BETWEEN THE MAJOR ROADWAY AND THE STONED ENTRANCE TO PREVENT LOOSE STONES FROM BEING TRANSPORTED OUT ONTO THE ROADWAY BY HEAVY EQUIPMENT ENTERING OR LEAVING THE SITE.

PERCENT SLOPE OF ROADWAY	LENGTH OF STONE REQUIRED	
	COARSE GRAINED SOILS	FINE GRAINED SOILS
0 TO 2%	50 ft.	100ft.
2 TO 5%	100ft.	200ft.
>5%	ENTIRE SURFACE STABILIZED WITH FABC BASE COURSE 1	

1. AS PRESCRIBED BY LOCAL ORDINANCE OR OTHER GOVERNING AUTHORITY

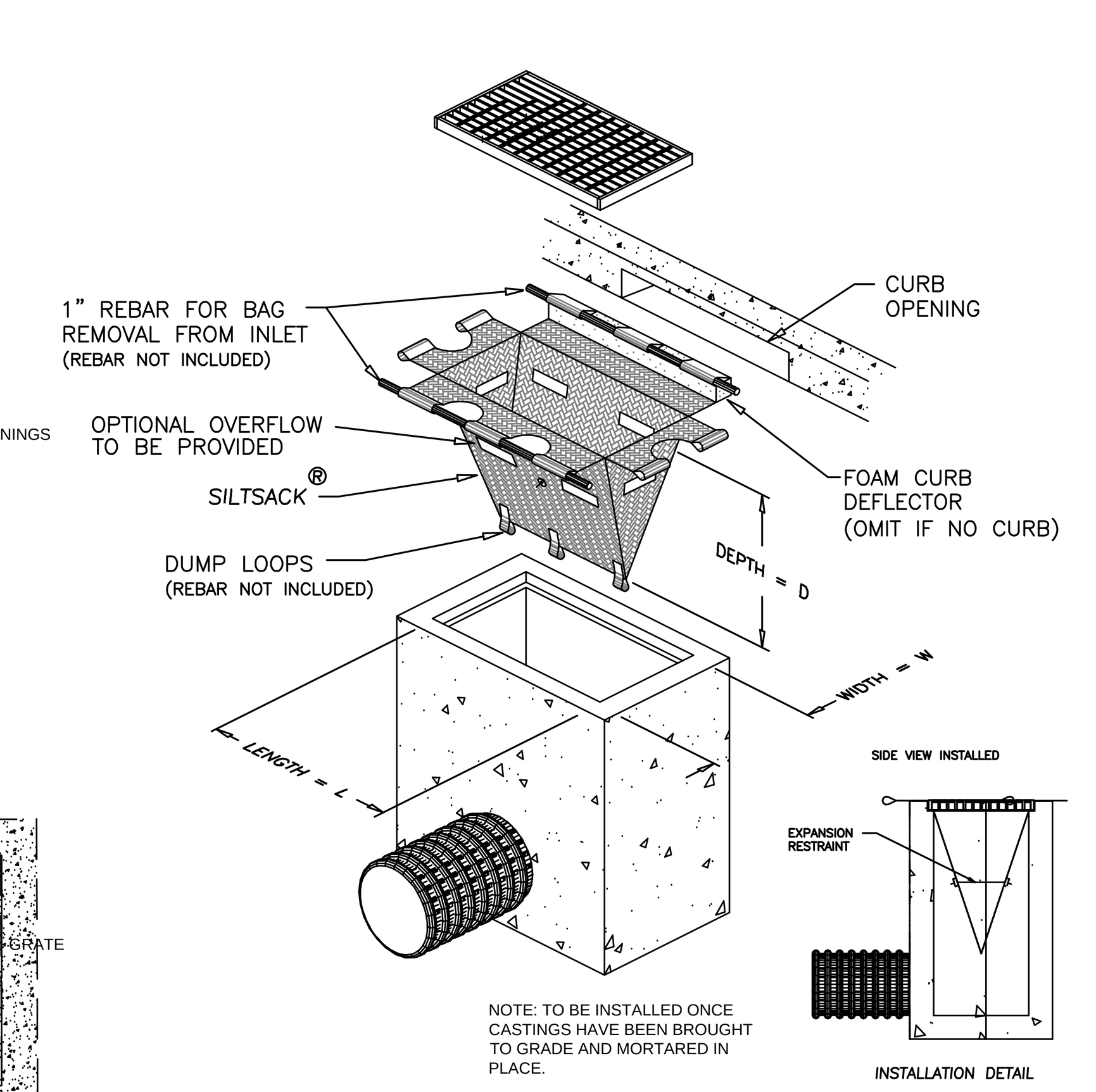
STABILIZED CONSTRUCTION ENTRANCE

NOT TO SCALE



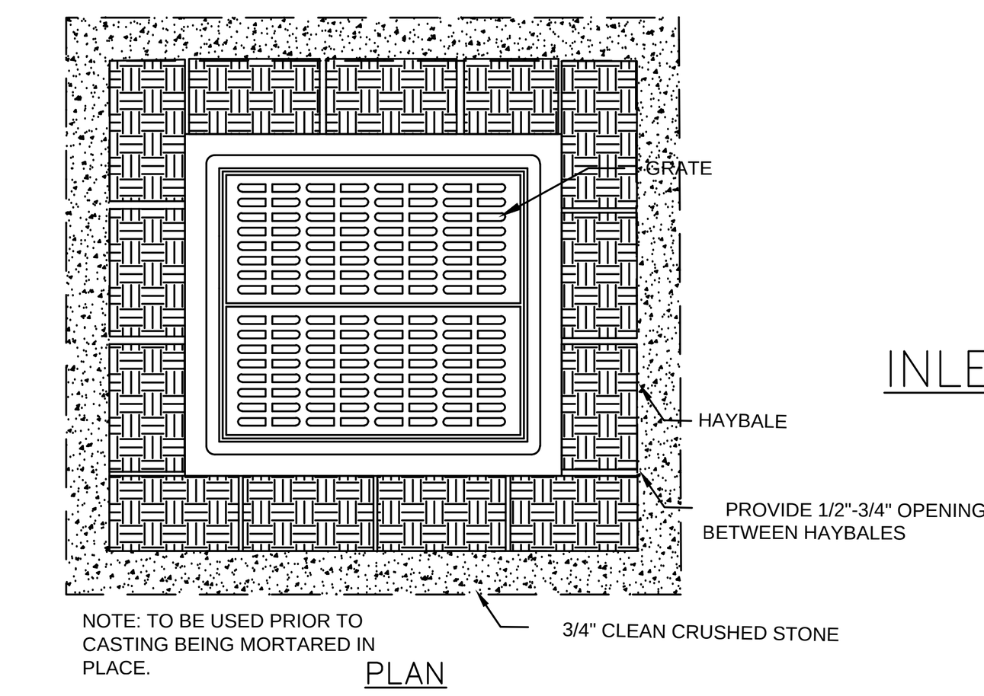
INLET PROTECTION TYPE "B"

N.T.S.



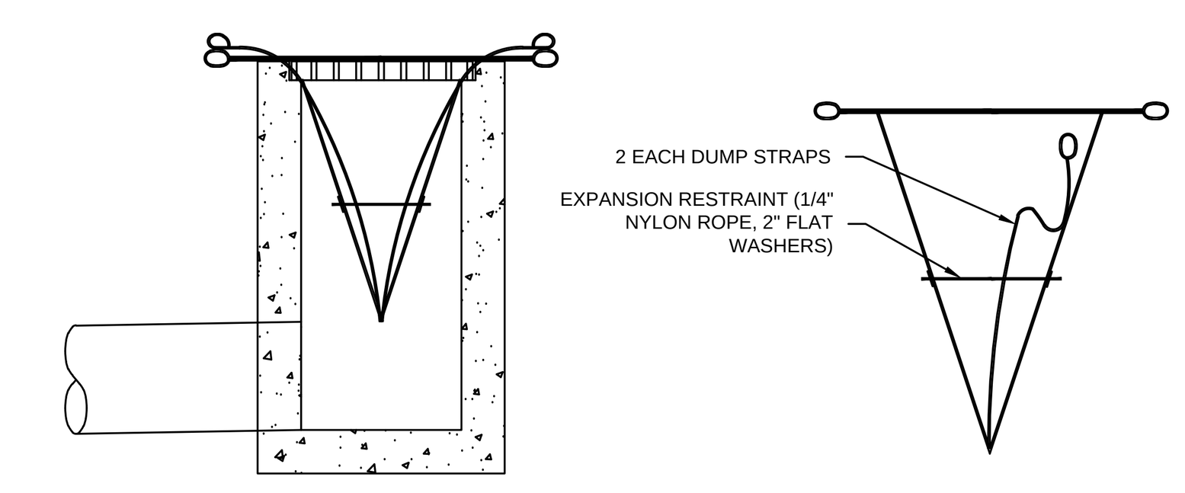
INLET SEDIMENT CONTROL DEVICE WITH CURB DEFLECTOR

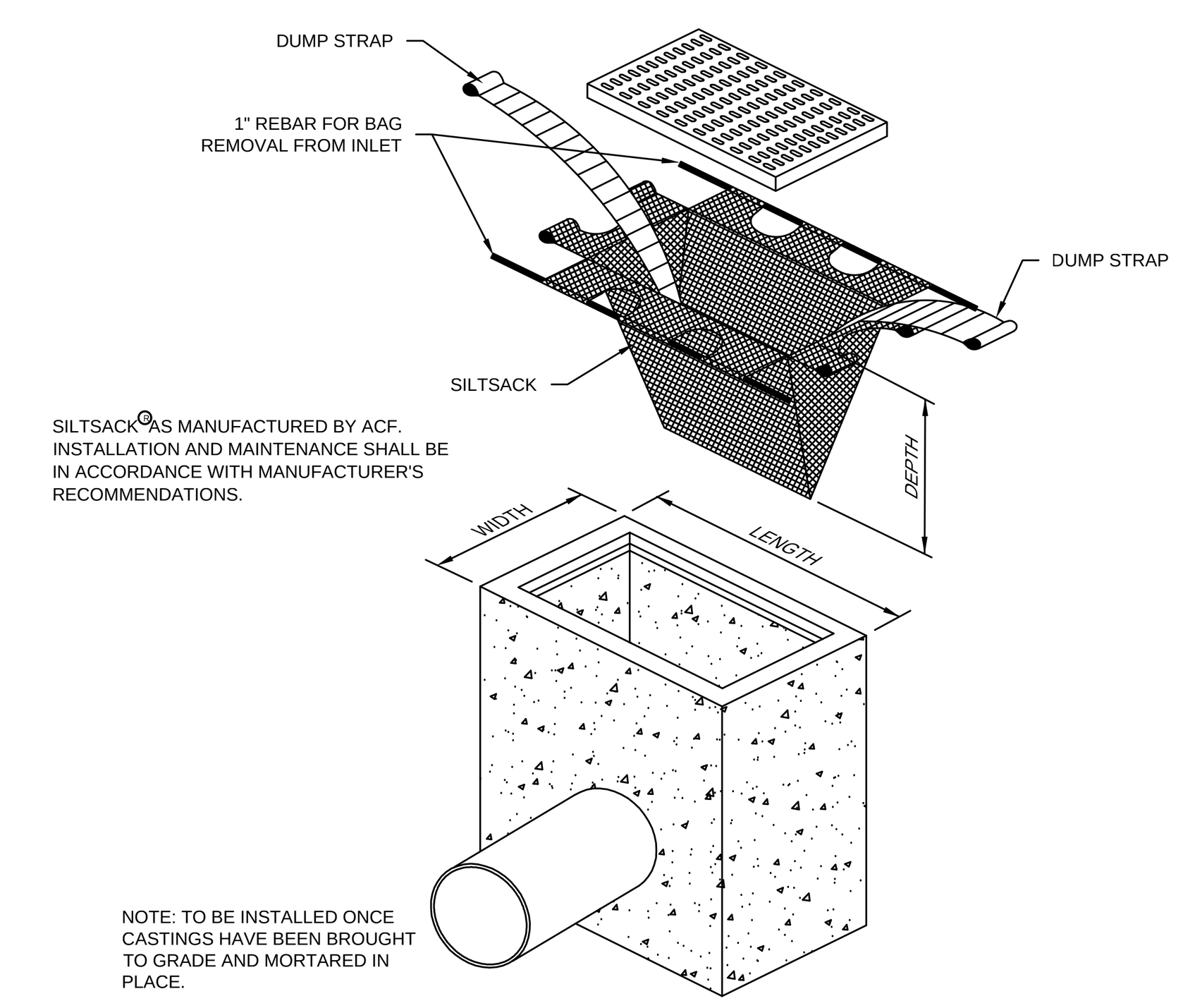
NOT TO SCALE



INLET PROTECTION

N.T.S.



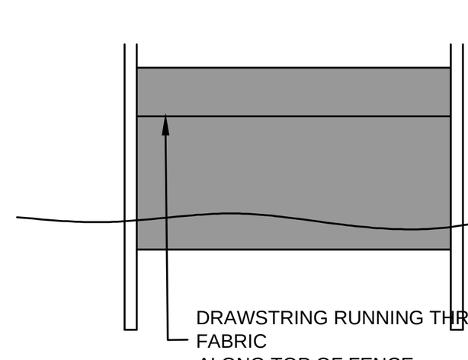


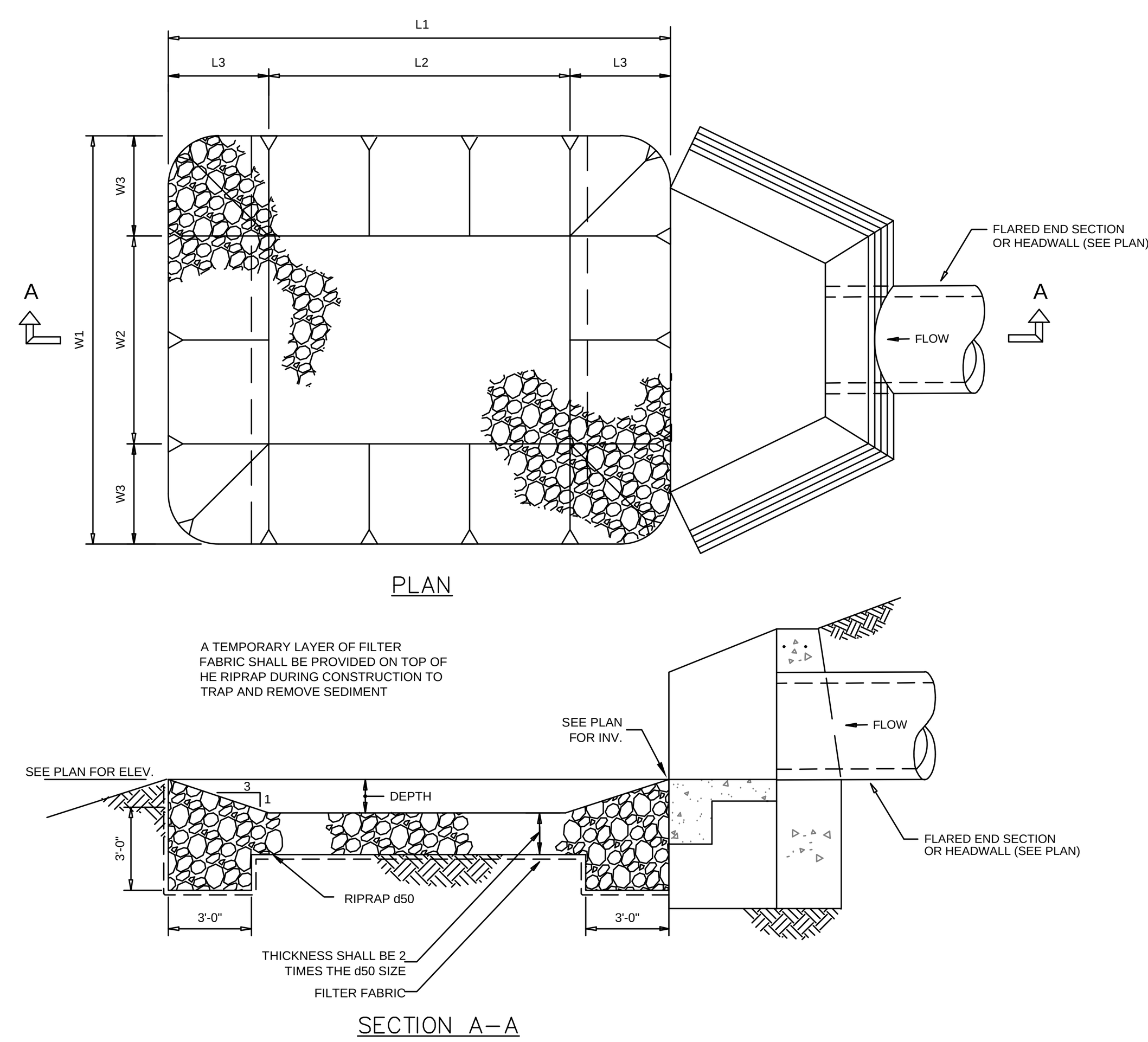
INLET SEDIMENT CONTROL DEVICE

NOT TO SCALE

REMOVABLE PUMPING STATION (LONG DURATION DEWATERING)

SUMP PIT (SHORT DURATION DEWATERING)





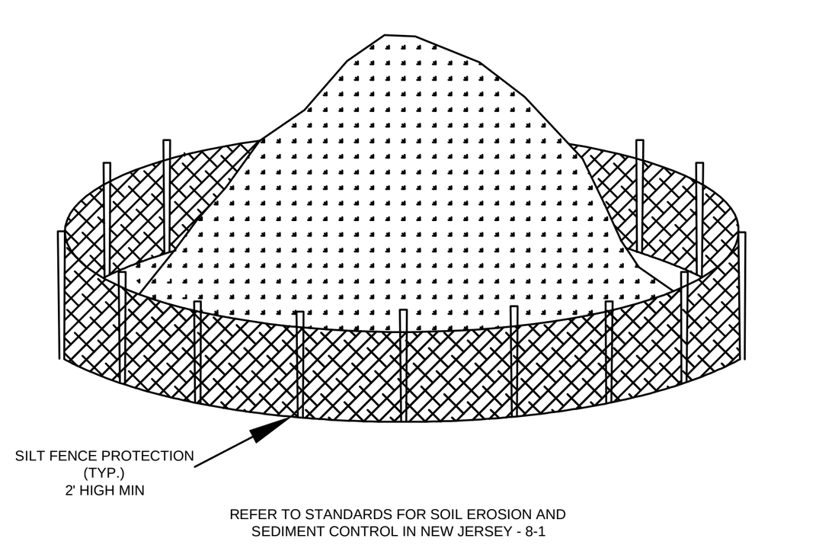
PREFORMED SCOUR HOLE DETAIL

NOT TO SCALE

SCOUR HOLE LOCATION	PIPE SIZE (IN.)	RIPRAP d50 (IN.)	DEPTH (FT.)	L1 (FT.)	L2 (FT.)	L3 (FT.)	W1 (FT.)	W2 (FT.)	W3 (FT.)
FES A100	30	6	1.25	15	7.5	3.75	12.5	5	3.75
FES A200	18	6	0.75	9	4.5	2.25	7.5	3	2.25
FES A300	18	6	0.75	9	4.5	2.25	7.5	3	2.25
FES A400	18	6	0.75	9	4.5	2.25	7.5	3	2.25
HW A01	24	6	1.0	12	6	3	10	4	3
FES B100	24	6	1.0	12	6	3	10	4	3
HW B200	42	6	1.75	21	10.5	5.25	17.5	7	5.25
HW B300	29 X 45	6	1.21	14.6	7.25	3.67	14.8	7.5	3.65
FES B01	30	6	1.25	15	7.5	3.75	12.5	5	3.75
FES C100	18	6	0.75	9	4.5	2.25	7.5	3	2.25
FES C200	36	6	1.50	18	9	4.5	15	6	4.5
HW C01	18	6	0.75	9	4.5	2.25	7.5	3	2.25
HW D100	24	6	1.0	12	6	3	10	4	3
FES E102	24	6	1.0	12	6	3	10	4	3
FES E101	18	6	0.75	9	4.5	2.25	7.5	3	2.25
FES E100	18	6	0.75	9	4.5	2.25	7.5	3	2.25
FES F100	15	6	0.63	7.6	3.75	1.92	6.3	2.5	1.9

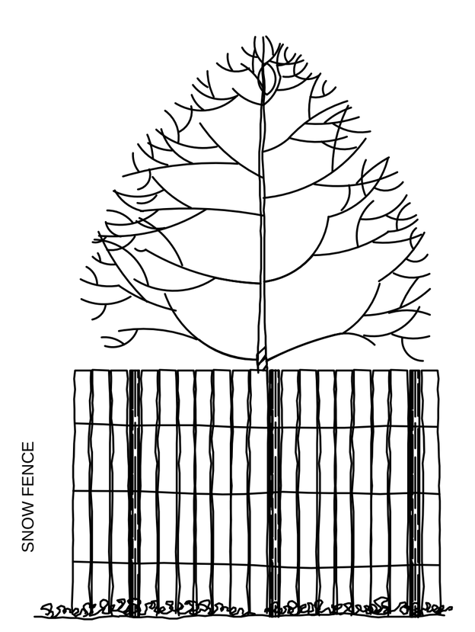
NOTE:
RIPRAP SHALL CONFORM TO "STANDARDS FOR SOIL EROSION AND SEDIMENT CONTROL IN NEW JERSEY."

PREFORMED SCOUR HOLE DIMENSIONS



TOPSOIL STOCK PILE DETAIL

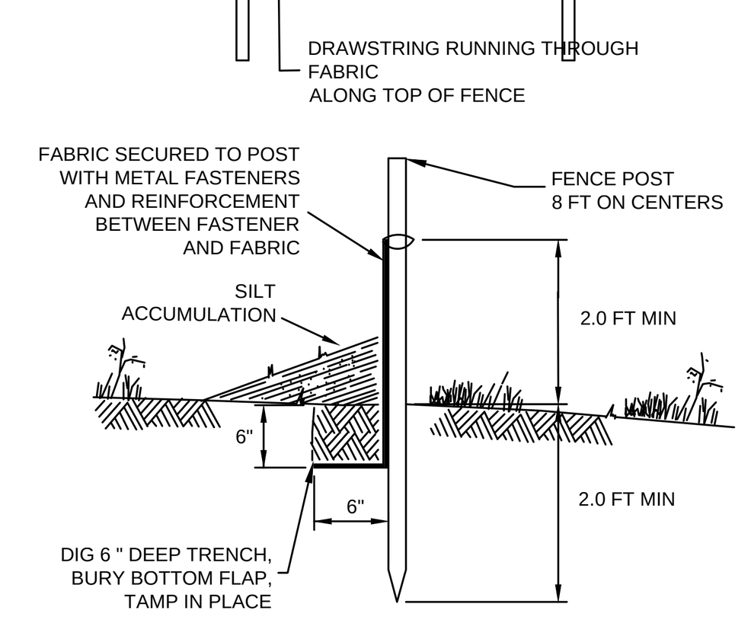
NOT TO SCALE



NOTE:
SNOW FENCE IS TO BE LOCATED 10' FROM THE OUTER PERIMETER OF THE DRIP LINE. IN NO CASE SHALL IT BE CLOSER THAN 10' TO THE TRUNK. NO CONSTRUCTION MATERIALS, FILL, TOPSOIL SOIL, ETC. SHALL BE STORED INSIDE THIS FENCE. EXISTING ELEVATIONS WITHIN THE FENCING AREA SHALL REMAIN UNCHANGED AND SOIL SHALL BE LEFT UNDISTURBED. (TO BE USED FOR SPECIMEN TREES IF IN THE VICINITY OF CLEARING OPERATION)

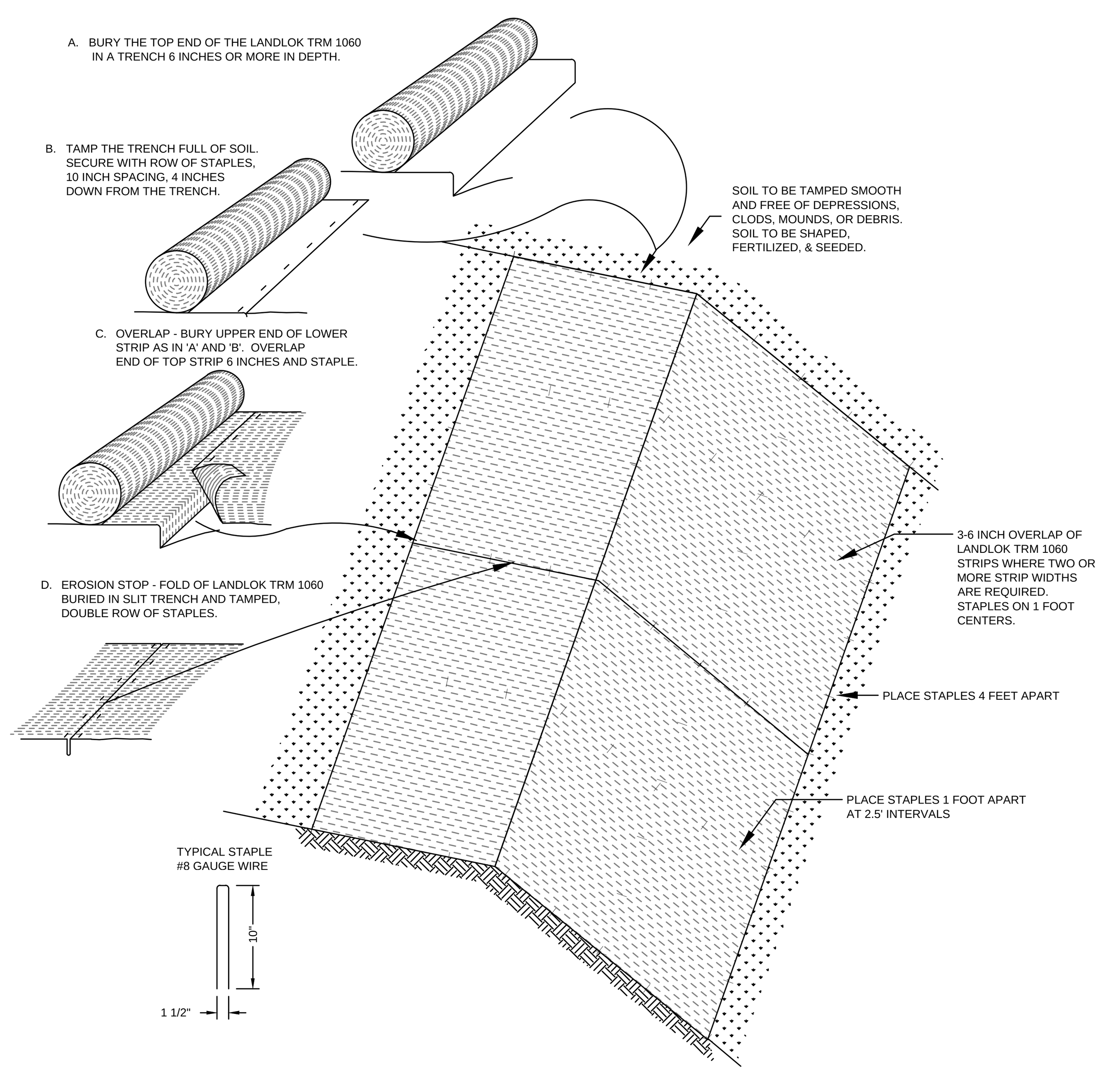
TREE PROTECTION

NOT TO SCALE



SILT FENCE DETAIL

NOT TO SCALE



SLOPE STABILIZATION MATTING

(LANDLOK TRM 1060 OR APPROVED EQUAL)

N.T.S.

Standards for Soil Erosion and Sediment Control in New Jersey — *July 2017*

hydraulic, biological, aesthetic and other environmental functions of the stream.

Soil Management and Preparation

Subgrade soils prior to the application of topsoil shall be free of excessive compaction to a depth of 6.0 inches to enhance the establishment of permanent vegetative cover.

This section of this Standard addresses the potential for excessive soil compaction in light of the intended land use, testing for excessive soil compaction where permanent vegetation is to be established and mitigation of excessive soil compaction when appropriate.

Due to use or setting, certain disturbed areas will not require compaction remediation including, but not limited to the following:

1. Within 20 feet of building foundations with basements, 12 feet from slab or crawl space construction.
2. Where soils or gravel surfaces will be required to support post-construction vehicular traffic loads such as roads, parking lots and driveways (including gravel surfaces), bicycle paths or pedestrian walkways (sidewalks etc)
3. Airports, railways or other transportation facilities
4. Areas requiring industry or government specified soil designs, including golf courses, landfills, wetland restoration, septic disposal fields, wet/lined ponds, etc.
5. Areas governed or regulated by other local, state or federal regulations which dictate soil conditions
6. Brownfields (capped uses), urban redevelopment areas, , in-fill areas, , recycling yards, junk yards, quarries and
7. Slopes determined to be inappropriate for safe operation of equipment
8. Portions of a site where no heavy equipment travel or other disturbance has taken place
9. Areas receiving temporary vegetative stabilization in accordance with the Standard.
10. Where the area available for remediation practices is 500 square feet or less in size.
11. Locations containing shallow (close to the surface) bedrock conditions.

Areas of the site which are subject to compaction testing and/or mitigation shall be graphically denoted on the certified soil erosion control plan.

Soil compaction remediation or testing to prove remediation is not necessary will be required in areas where permanent vegetation is to be established that are not otherwise exempted above. Testing method shall be selected, and soil compaction testing shall be performed by, the contractor or other project owner's representative (e.g. engineer). A minimum of two (2) tests shall be performed for projects with an overall limit of disturbance of up to one (1) acre and at a rate of two (2) tests per acre of the overall limit of disturbance for larger areas which shall be evenly distributed over the area of disturbance subject to testing. Tests shall be performed in areas representative of the construction activity prevailing in the area. In the event this testing indicates compaction in excess of the maximum thresholds indicated for the testing method, the contractor/owner shall have the option to perform compaction mitigation over the entire disturbed area (excluding exempt areas) or to perform additional testing to establish the limits of excessive compaction whereupon only the excessively compacted areas would require compaction mitigation.

Soil compaction testing is not required if/when subsoil compaction remediation (scarification/tillage (6" minimum depth) or similar) is proposed as part of the sequence of construction.

19-2 Return to TOC

Standards for Soil Erosion and Sediment Control in New Jersey — *July 2017*

Soil Test Method Options

1. Probing Wire Test Method

This test shall be conducted with a firm wire (15-1/2 gauge steel wire - e.g. survey marker flag, straight wire stock, etc.), 18 to 21 inches in length, with 6" inches from one end visibly marked on the wire. Conduct wire flag test by holding the wire flag near the flag end and push it vertically into the soil at several different locations in the field to the lesser of a 6 inch depth or the depth at which it bends due to resistance in the soil. Record the depth at which it bends due to resistance in the soil. The wire should penetrate without bending or deforming at least 6" into the ground by hand, without the use of tools. If penetration fails and an obstruction is suspected (rocks, root, debris, etc.) the test can be repeated in the same general area. If the test is successful the soil is not excessively compacted. If the wire is difficult to insert (wire bends or deforms prior to reaching 6 inches in depth) the soil may be excessively compacted and compaction mitigation or further testing via method 3 or 4 below is required, the choice of which is at the contractor/owner's discretion.

2. Handheld Soil Penetrometer Test Method

This test shall be conducted based on the Standard Operation Procedure (SOP) #RCE2010-001, prepared by the Rutgers Cooperative Extension, Implemented June 1, 2010, last revised February 28, 2011. A result of less than or equal to 300 psi shall be considered passing. If the result is greater than 300 psi the soil may be excessively compacted and compaction mitigation or further testing via method 3 or 4 below is required, the choice of which is at the contractor/owner's discretion.

3. Tube Bulk Density Test Method

This test shall be certified by a New Jersey Licensed Professional Engineer utilizing only undisturbed samples (reconstitution of the sample not permitted) collected utilizing the procedure for Soil Bulk Density Tests as described in the USDA NRCS Soil Quality Test Kit Guide, Section 1-4, July 2001. When the texture of the soil to be tested is a sand or loamy sand and lack of soil cohesion or the presence of large amounts of coarse fragments, roots or worm channels prevent the taking of undisturbed samples, this test shall not be used.

Where the results of replicate tests differ by more than ten percent (10%), the samples shall be examined for the following defects:

i. Cracks, worm channels, large root channels or poor soil tube contact within the samples;
ii. Large pieces of gravel, roots or other foreign objects
iii. Smearing or compaction of the upper or lower surface of the samples

If any of the defects described in 3 (i-iii) above are found, the defective core(s) shall be discarded and the test repeated using a new replicate sample for each defective replicate sample. The bulk density (defined as the weight of dry soil per volume) results shall be compared with the Maximum Dry Bulk Densities in Table 19-1. A result of less than or equal to the applicable maximum bulk density shall be considered passing. If the result is greater than the maximum bulk density the soil shall be considered excessively compacted and compaction mitigation is required.

4. Nuclear Density Test Method

This test shall be certified by a New Jersey Licensed Professional Engineer and conducted by a nuclear gauge certified inspector pursuant to ASTM D6938 . The bulk density measurement results shall be compared with the Maximum Dry Bulk Densities in Table 19-1. A result of less than or equal to the applicable maximum bulk density shall be considered passing. If the result is greater than the maximum bulk density the soil shall be considered excessively compacted and compaction mitigation is required.

19-3 Return to TOC

Standards for Soil Erosion and Sediment Control in New Jersey — *July 2017*

Table 19-1 – Maximum Dry Bulk Densities (grams/cubic centimeter) by soil type

Soil Type/Texture	Bulk Density (g/cc)
Coarse, Medium and Fine Sands and Loamy Sands	1.80
Very Fine Sand and Loamy Very Fine Sand	1.77
Sandy Loam	1.75
Loam, Sandy Clay Loam	1.70
Clay Loam	1.65
Sandy Clay	1.60
Silt, Silt Loam	1.55
Silty Clay Loam	1.50
Silty Clay	1.45
Clay	1.40

Source: USDA Natural Resource Conservation Service, Soil Quality Information Sheet, Soil Quality Resource Concerns: Compaction, April 1996

5. Additional testing methods which comform to ASTM standards and pecificaitons, and which produce a dry weight, soil bulk density measurement may be allowed subject to District approval.

Procedures for Soil Compaction Mitigation

If subgrade soils are determined to be excessively compacted by testing, as identified above, procedures shall be used to mitigate excessive soil compaction prior to placement of topsoil and establishment of permanent vegetative cover. Restoration of compacted soils shall be through deep scarification/tillage (6" minimum depth) where there is no danger to underground utilities (cables, irrigation systems, etc.) or in the alternative, another method as specified by a New Jersey Licensed Professional Engineer.

Installation Requirements

Timber, logs, brush, rubbish, rocks, stumps and vegetative matter which will interfere with the grading operation or affect the planned stability or fill areas shall be removed and disposed of according to the plan.

Topsoil is to be stripped and stockpiled in amounts necessary to complete finish grading of all exposed areas requiring topsoil. See Standard for Topsoiling, pg. 8-1.

Fill material is to be free of brush, rubbish, timber, logs, vegetative matter and stumps in amounts that will be detrimental to constructing stable fills.

All structural fills shall be compacted as determined by structural engineering requirements for their intended purpose and as required to reduce slipping, erosion or excessive saturation.

All disturbed areas shall be left with a neat and finished appearance and shall be protected from erosion. See Standards for Permanent Vegetative Cover for Soil Stabilization, pg. 4-1.

Trees to be retained shall be protected if necessary in accordance with the Standard for Tree Protection During Construction, pg. 9-1.

19-4 Return to TOC

REVISION	DATE	CHKD
12		
11		
10		
9		
8		
7		
6		
5		
4 REVISED PER TOWNSHIP COMMENTS	03/31/25	SAD
3 REVISED PER ENGINEERING REVIEW	2/14/25	SAD
2 REVISED PER TOWNSHIP COMMENTS	12/18/24	SAD
1 REVISED PER PB COMPLETENESS REVIEW	09/10/24	SAD

PROJ.: 081391-01-001
DATE: 06/25/2024
CHKD: SAD

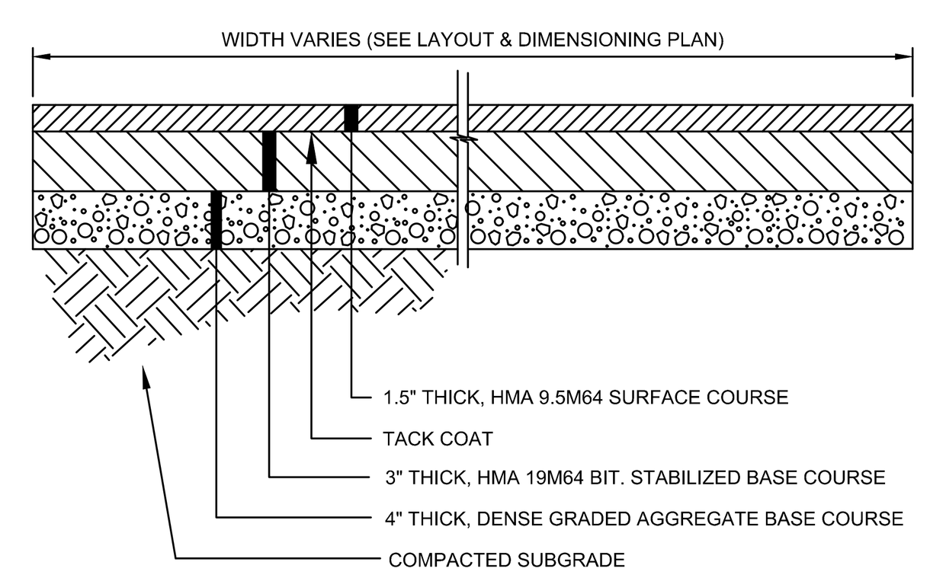
Bowman

Bowman Consulting Group Ltd
3 Paragon Way, Suite 170
Freehold, New Jersey 07728
bowman.com
E-mail: NJ@Bowman.com
Phone: 732-665-5500
FAX: 732-665-5501
NJ Certificate of Authorization No. 24GA28222600

SEAN A. DELANY, N.J. Professional Engineer, Lic. 24GE04447100

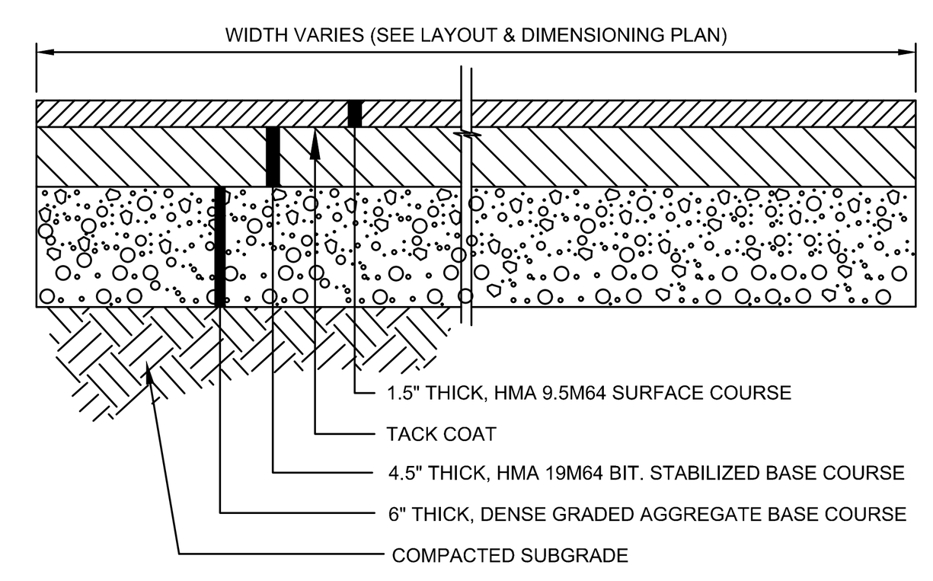
PRELIMINARY AND FINAL MAJOR SUBDIVISION & PRELIMINARY AND FINAL SITE PLAN FOR
VENUE AT HOPEWELL
CONSTRUCTION DETAILS- SESC
BLOCK 93, LOTS 19, 20, 45.01, 46 & 60
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY

SHEET No. 17B OF



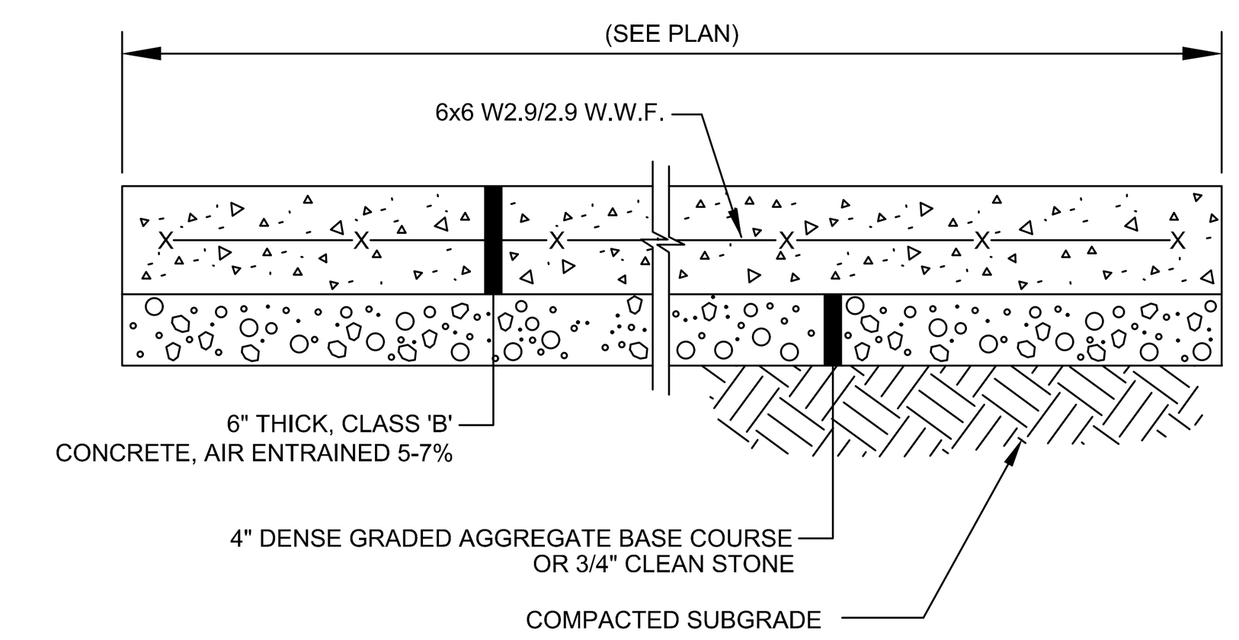
PARKING LOTS–HOT MIX ASPHALT PAVEMENT DETAIL

NOT TO SCALE



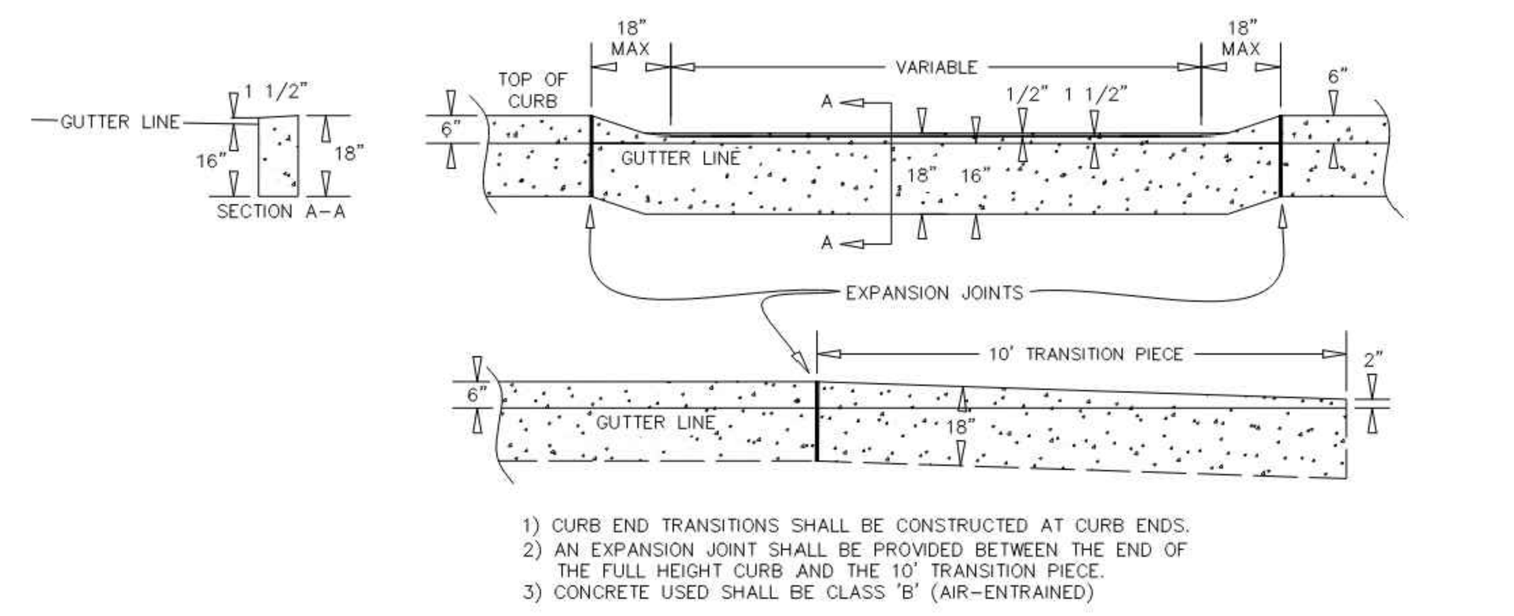
ONSITE ROADS–HOT MIX ASPHALT PAVEMENT DETAIL

NOT TO SCALE



CONCRETE APRON–TYPICAL SECTION

NOT TO SCALE

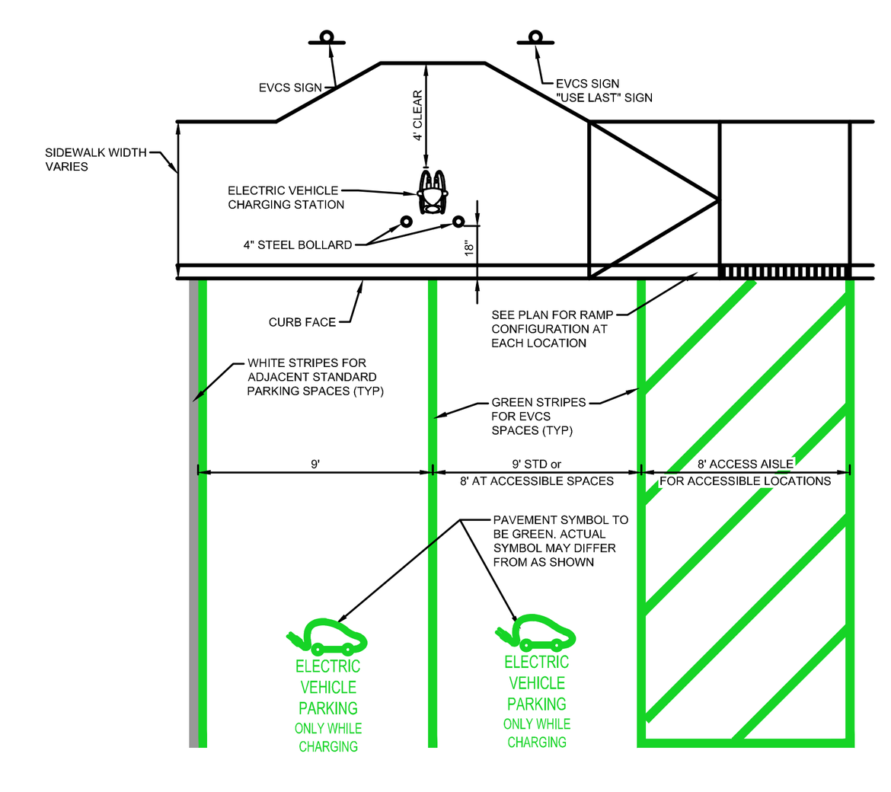


1) CURB END TRANSITIONS SHALL BE CONSTRUCTED AT CURB ENDS.
2) AN EXPANSION JOINT SHALL BE PROVIDED BETWEEN THE END OF THE FULL HEIGHT CURB AND THE 10' TRANSITION PIECE.
3) CONCRETE USED SHALL BE CLASS 'B' (AIR-ENTRAINED)

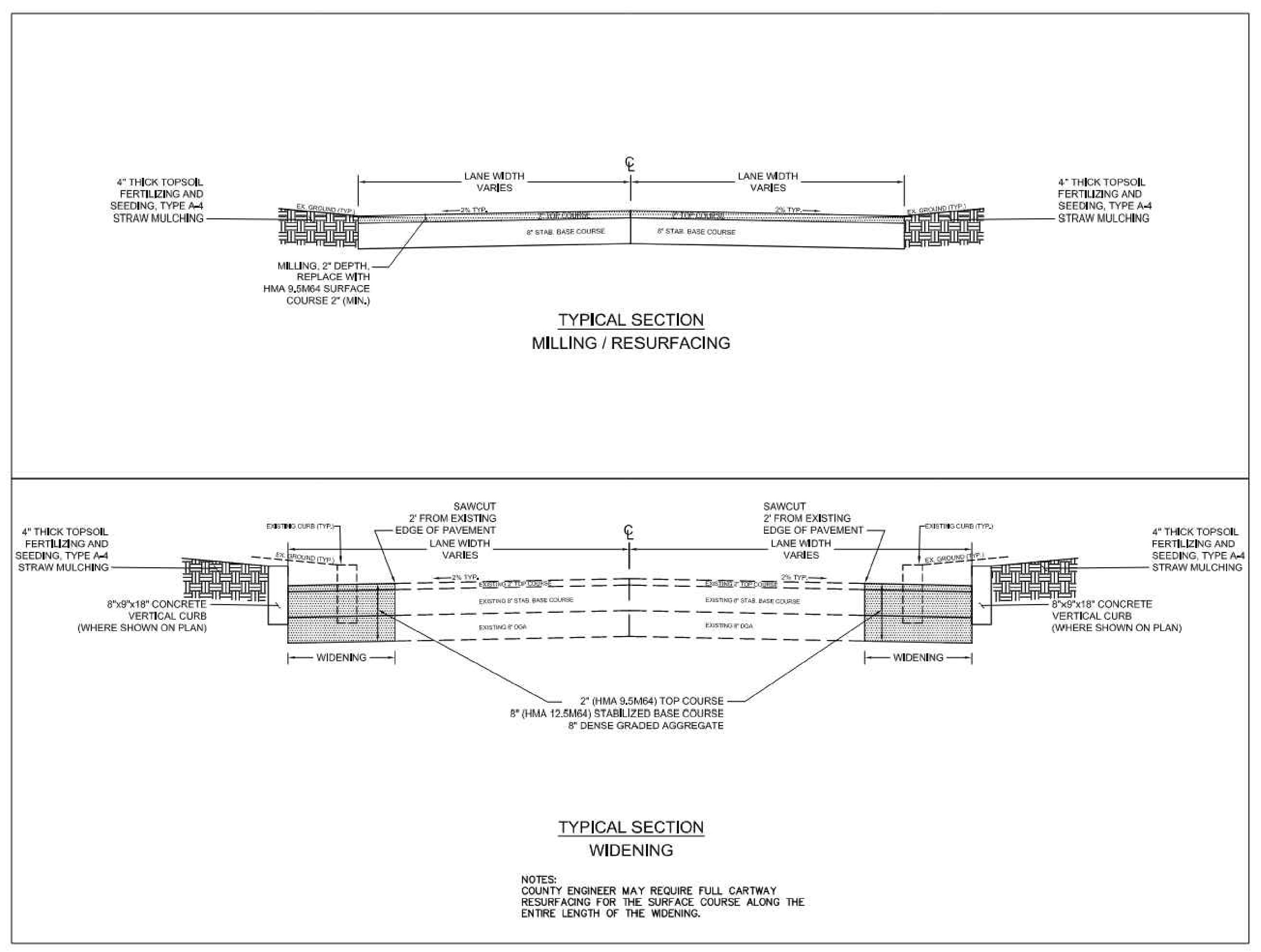
TYPICAL SECTION OF DEPRESSED CURB AT DRIVEWAYS AND CURB TRANSITION PIECE
SCALE: NTS

NOTE: 1/2" EXPANSION JOINTS OF CELLULAR COMPRESSION MATERIAL TO BE PLACED AS SHOWN. 1/4" PREMOLDED EXPANSION JOINTS TO BE PLACED LONGITUDINALLY ADJACENT TO ALL ABUTTING CONCRETE STRUCTURES AS THE ENGINEER MAY DIRECT.

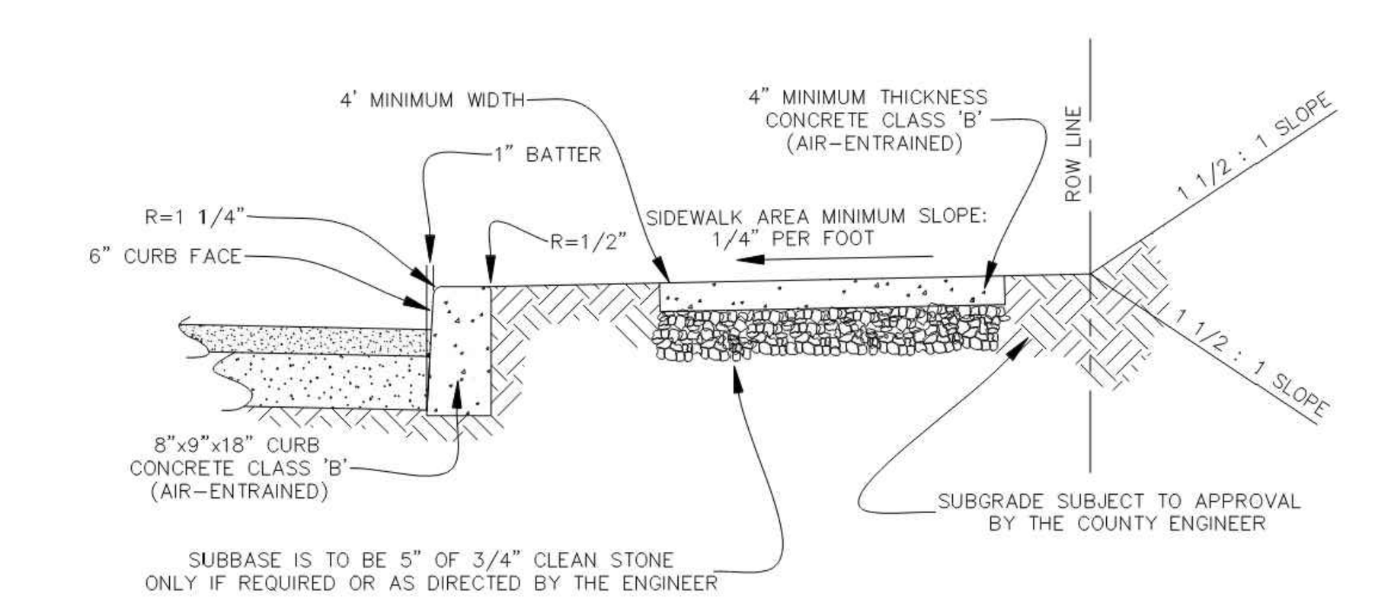
COUNTY OF MERCER
DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE
DIVISION OF ENGINEERING
GREGORY SANDUSKY, P.E. P.L.S. COUNTY ENGINEER
PROFESSIONAL ENGINEER & LAND SURVEYOR
NEW JERSEY LICENSE NO. 36758
DRAWN BY: MIKE WILLIAMSON



ELECTRIC VEHICLE CHARGING STATION PAVEMENT MARKING


LANE WIDTH VARIES
4" THICK TOPSOIL FERTILIZING AND SEEDING, TYPE A-4 STRAW MULCHING
MILLING: 2" DEPTH, REPLACE WITH HMA 9.5M64 SURFACE COURSE (2" MIN.)
TYPICAL SECTION
MILLING / RESURFACING
SAWCUT 2' FROM EXISTING EDGE OF PAVEMENT
8"x9"x18" CONCRETE VERTICAL CURB (WHERE SHOWN ON PLAN)
WIDENING
2" (MIN) 9.5M64 TOP COURSE
5" (MIN) 12.5M64 STABILIZED BASE COURSE
8" DENSE GRADED AGGREGATE
TYPICAL SECTION
WIDENING
NOTES:
COUNTY ENGINEER MAY REQUIRE FULL CARTWAY RESURFACING FOR THE SURFACE COURSE ALONG THE ENTIRE LENGTH OF THE WIDENING.

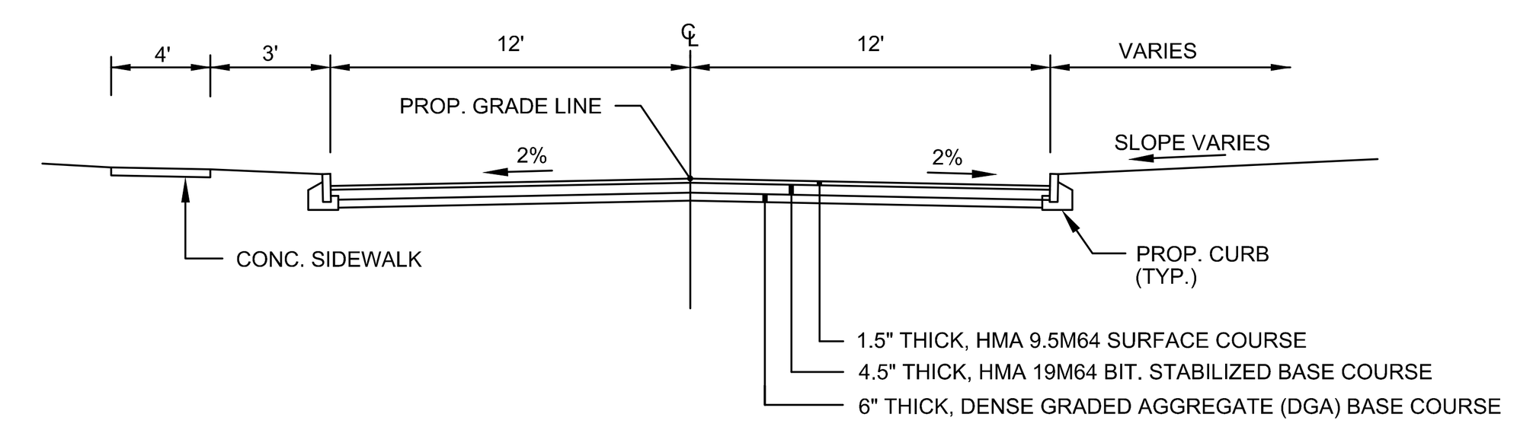
NOTE: 1/2" EXPANSION JOINTS OF CELLULAR COMPRESSION MATERIAL TO BE PLACED AT 20' INTERVALS AND 1/4" PREMOLDED EXPANSION JOINTS TO BE PLACED LONGITUDINALLY ADJACENT TO ALL ABUTTING CONCRETE STRUCTURES AS THE ENGINEER MAY DIRECT. CONSTRUCTION JOINTS TO BE PROVIDED EVERY 20' ALTERNATING WITH EXPANSION JOINTS.


4' MINIMUM WIDTH
4" MINIMUM THICKNESS CONCRETE CLASS 'B' (AIR-ENTRAINED)
1" BATTER
R=1 1/4"
6" CURB FACE
R=1/2"
SIDEWALK AREA MINIMUM SLOPE: 1/4" PER FOOT
ROW LINE
1 1/2 : 1 SLOPE
8"x9"x18" CURB CONCRETE CLASS 'B' (AIR-ENTRAINED)
SUBBASE IS TO BE 5" OF 3/4" CLEAN STONE ONLY IF REQUIRED OR AS DIRECTED BY THE ENGINEER
SUBGRADE SUBJECT TO APPROVAL BY THE COUNTY ENGINEER

REVISED: 2.04.14 CLASS 'B' CONCRETE
PER: GREG SANDUSKY, COUNTY ENGINEER

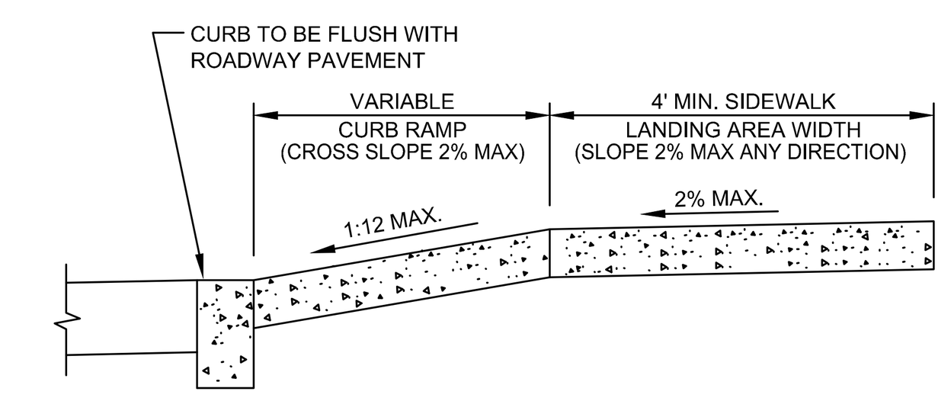
TYPICAL SECTION OF CURB & SIDEWALK DETAIL
SCALE: NTS

COUNTY OF MERCER
DEPARTMENT OF TRANSPORTATION & INFRASTRUCTURE
DIVISION OF ENGINEERING
GREGORY SANDUSKY, P.E. P.L.S. COUNTY ENGINEER
PROFESSIONAL ENGINEER & LAND SURVEYOR
NEW JERSEY LICENSE NO. 36758
DRAWN BY: MIKE WILLIAMSON



TYPICAL SECTION – ONSITE ROADS

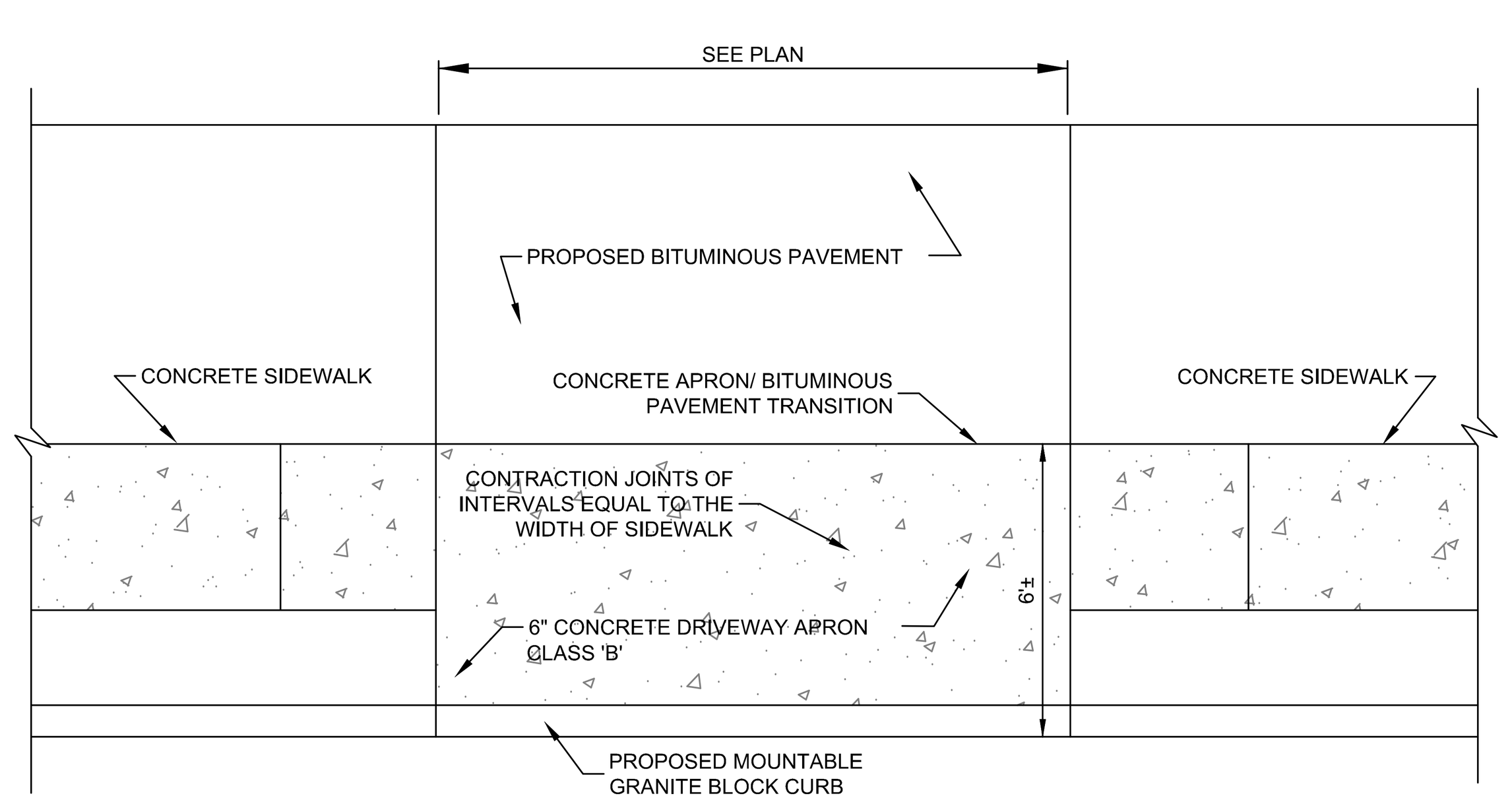
NOT TO SCALE



NOTE: ALL CONCRETE TO BE 4,500 PSI, NJDOT CLASS B, AIR ENTRAINED.

SECTION THROUGH CURB RAMP

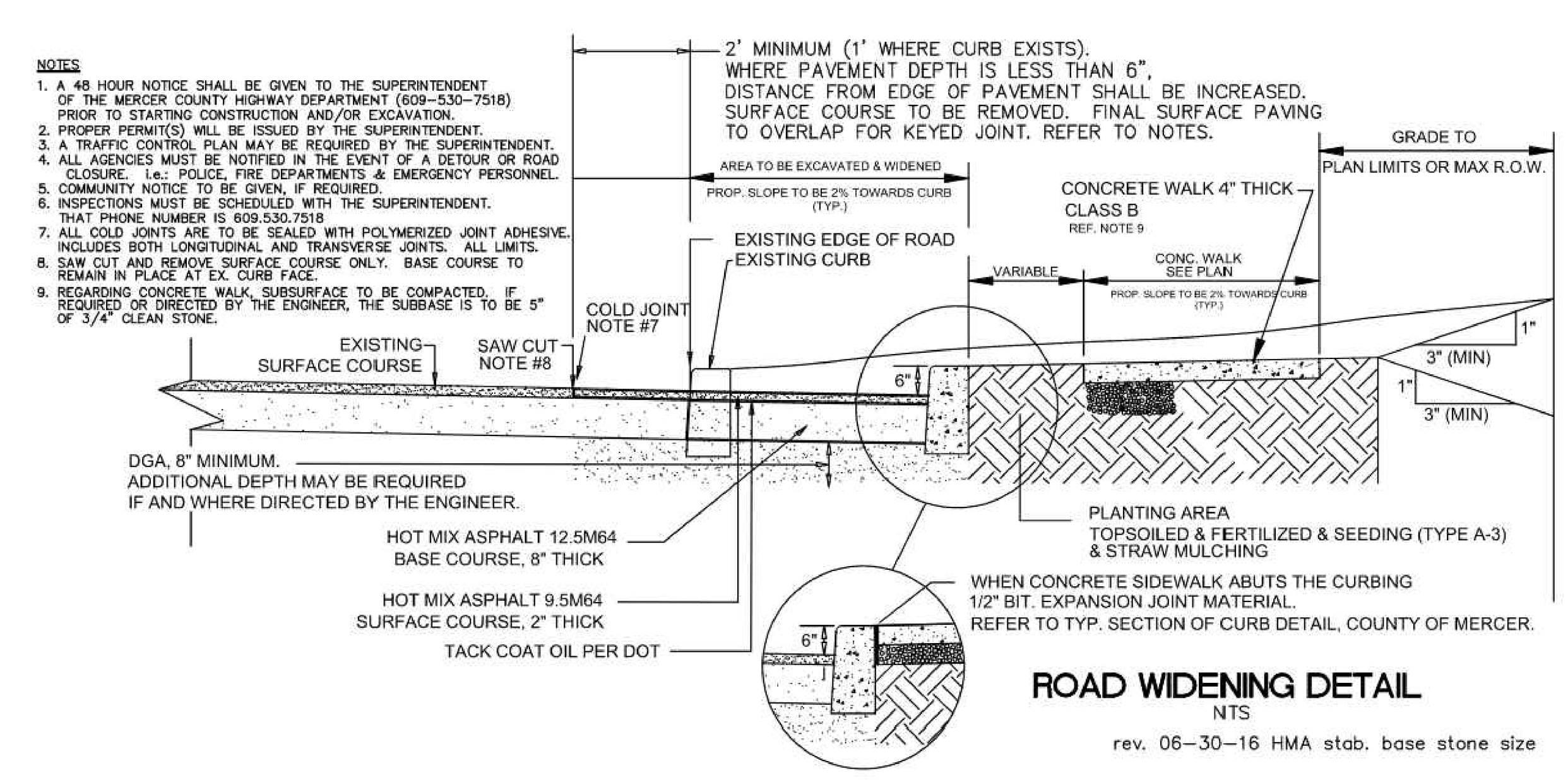
NOT TO SCALE


SEE PLAN
PROPOSED BITUMINOUS PAVEMENT
CONCRETE SIDEWALK
CONCRETE APRON/ BITUMINOUS PAVEMENT TRANSITION
CONCRETE SIDEWALK
CONTRACTION JOINTS OF INTERVALS EQUAL TO THE WIDTH OF SIDEWALK
6" CONCRETE DRIVEWAY APRON CLASS 'B'
PROPOSED MOUNTABLE GRANITE BLOCK CURB

NOTE: CONTRACTION/EXPANSION JOINTS TO BE PLACED AT EQUAL WIDTH OF SIDEWALKS

TYPICAL DRIVEWAY APRON DETAIL

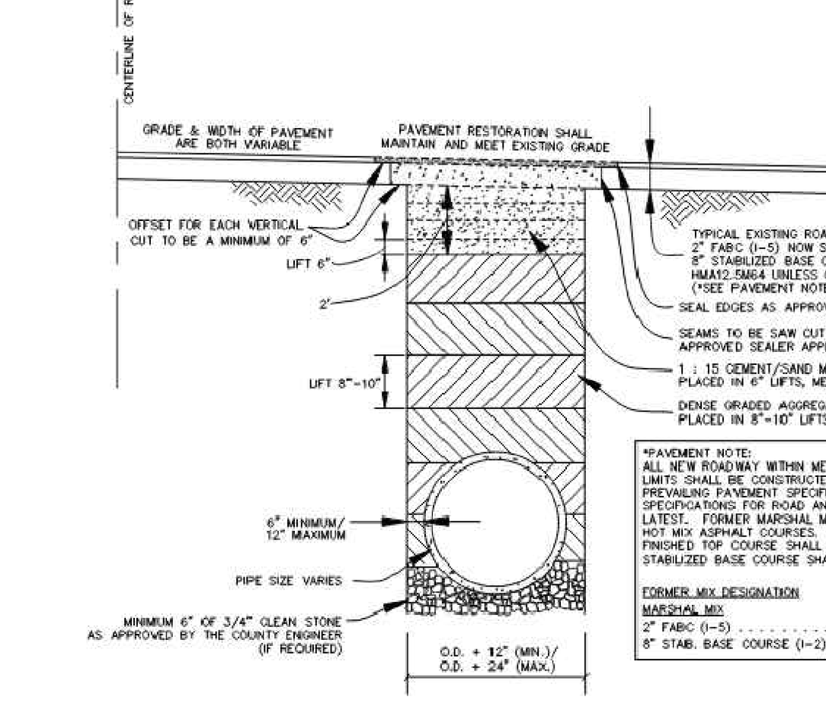
NOT TO SCALE


2" MINIMUM (1" WHERE CURB EXISTS). WHERE PAVEMENT DEPTH IS LESS THAN 6", DISTANCE FROM EDGE OF PAVEMENT SHALL BE INCREASED. SURFACE COURSE TO BE REMOVED. FINAL SURFACE PAVING TO OVERLAP FOR KEYED JOINT. REFER TO NOTES.
GRADE TO PLAN LIMITS OR MAX R.O.W.
CONCRETE WALK 4" THICK CLASS B
EXISTING EDGE OF ROAD
EXISTING CURB
COLD JOINT NOTE #7
EXISTING SURFACE COURSE
SAW CUT NOTE #8
DGA, 8" MINIMUM. ADDITIONAL DEPTH MAY BE REQUIRED IF AND WHERE DIRECTED BY THE ENGINEER.
HOT MIX ASPHALT 12.5M64 BASE COURSE, 8" THICK
HOT MIX ASPHALT 9.5M64 SURFACE COURSE, 2" THICK
TACK COAT OIL PER DOT
PLANTING AREA TOPSOILED & FERTILIZED & SEEDING (TYPE A-3) & STRAW MULCHING
WHEN CONCRETE SIDEWALK ABUTS THE CURBING 1/2" BIT. EXPANSION JOINT MATERIAL
REFER TO TYP. SECTION OF CURB DETAIL, COUNTY OF MERCER.
3" (MIN)
3" (MIN)

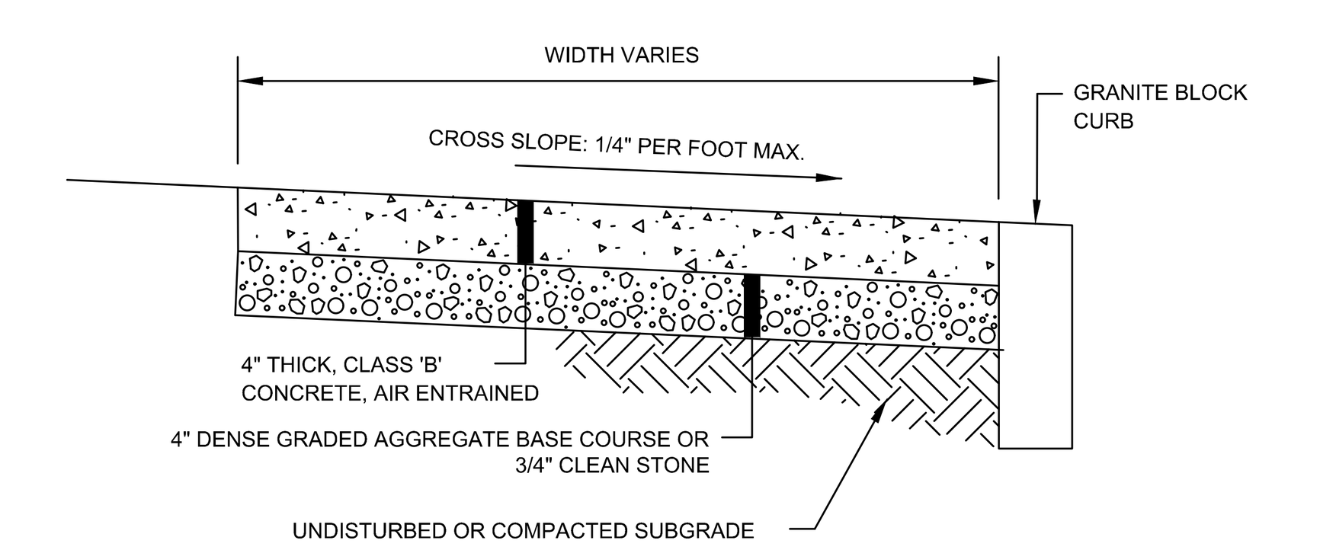
ROAD WIDENING DETAIL

NTS

rev. 06–30–16 HMA stab. base stone size



Mercer County Roadway – Utility Trench Detail



NOTE:
1. ALL CONCRETE TO BE AIR ENTRAINED, 4,500 PSI AT 28 DAYS, NJDOT CLASS B.

CONCRETE SIDEWALK SECTION (ADJACENT TO PARKING STALLS)

NOT TO SCALE

No.	REVISION	DATE	CHKD
12			
11			
10			
9			
8			
7			
6			
5			
4	REVISED PER TOWNSHIP COMMENTS	03/31/25	SAD
3	REVISED PER ENGINEERING REVIEW	2/14/25	SAD
2	REVISED PER TOWNSHIP COMMENTS	12/18/24	SAD
1	REVISED PER PB COMPLETENESS REVIEW	09/10/24	SAD

PROJ: 081391-01-001
DATE: 06/20/2024
CHKD: SAD

Bowman

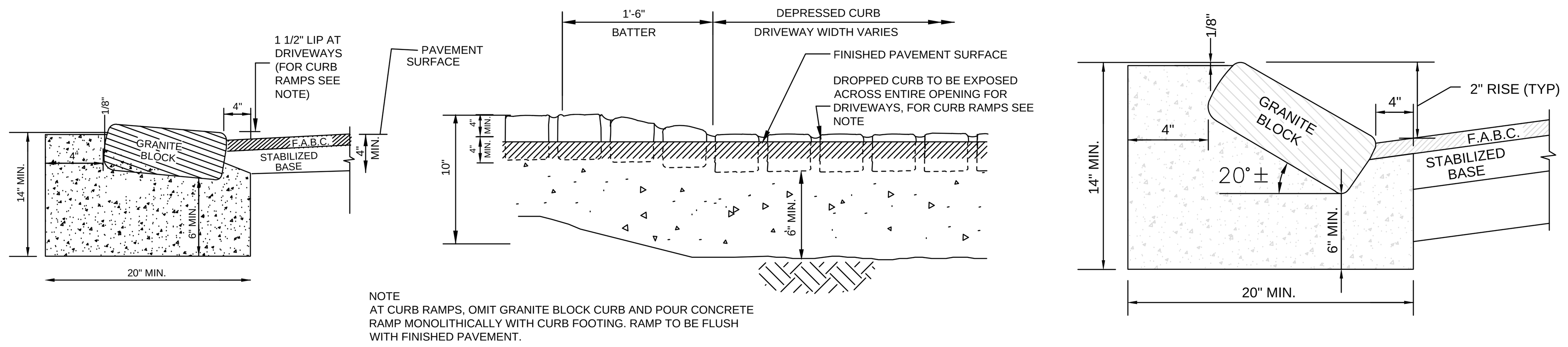
Bowman Consulting Group Ltd
3 Paragon Way, Suite 170
Freehold, New Jersey 07728
bowman.com
Email: NJ@bowman.com
Phone: 732-665-5500
Fax: 732-665-5501
NJ Certificate of Authorization No. 24GA28223500
SEAN A. DELANEY, N.J. Professional Engineer, Lic. 24GE04447100

PRELIMINARY AND FINAL MAJOR SUBDIVISION & PRELIMINARY AND FINAL SITE PLAN FOR
VENUE AT HOPEWELL

081391-SP-DET - SHT-18A-SITE

BLOCK 93, LOTS 19, 20, 45.01, 46 & 60
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY

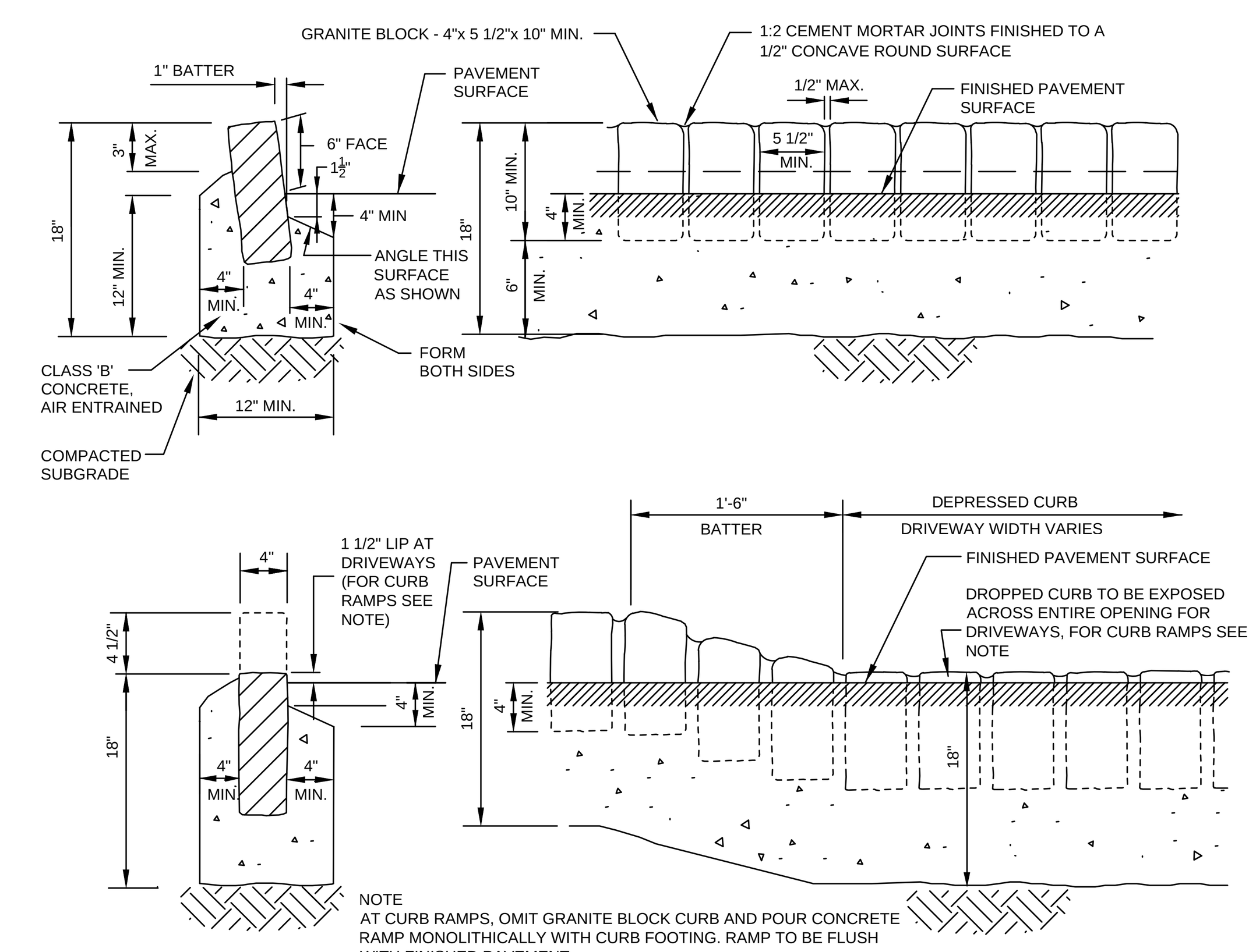
SHEET No.
18A
OF



NOTE
AT CURB RAMPS, OMIT GRANITE BLOCK CURB AND POUR CONCRETE RAMP MONOLITHICALLY WITH CURB FOOTING. RAMP TO BE FLUSH WITH FINISHED PAVEMENT.

MOUNTABLE GRANITE BLOCK CURB AND TRANSITION DETAIL

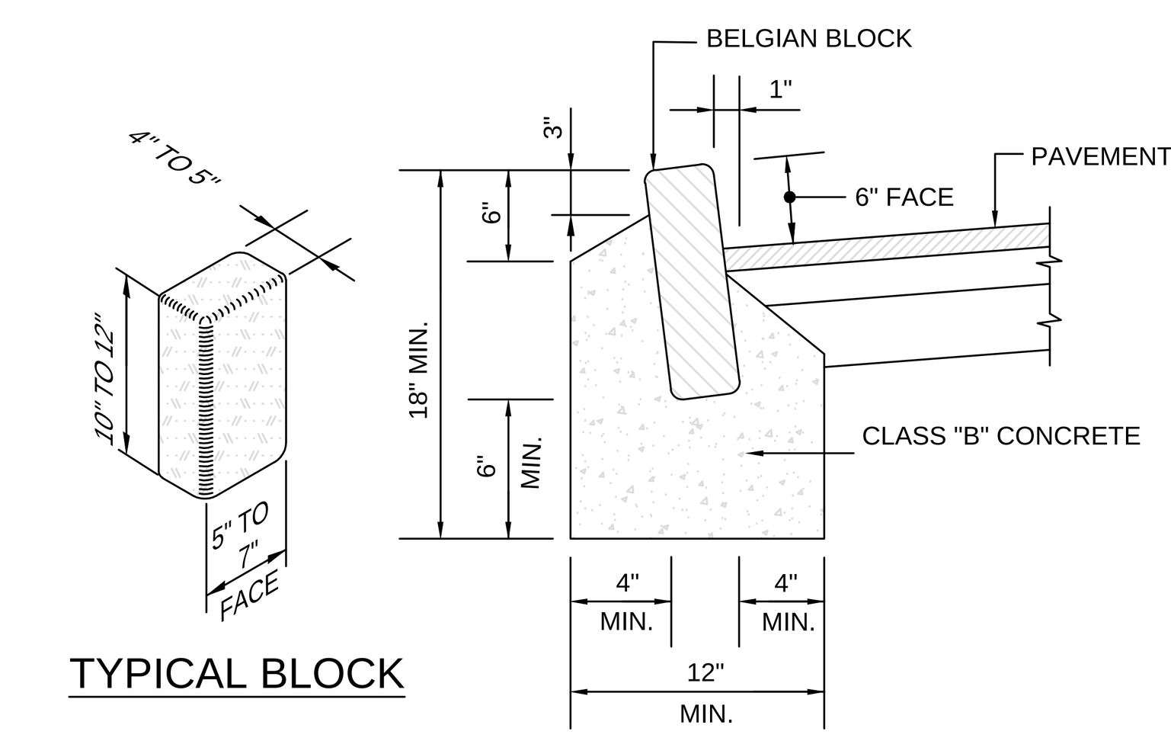
NOT TO SCALE



NOTE
AT CURB RAMPS, OMIT GRANITE BLOCK CURB AND POUR CONCRETE RAMP MONOLITHICALLY WITH CURB FOOTING. RAMP TO BE FLUSH WITH FINISHED PAVEMENT.

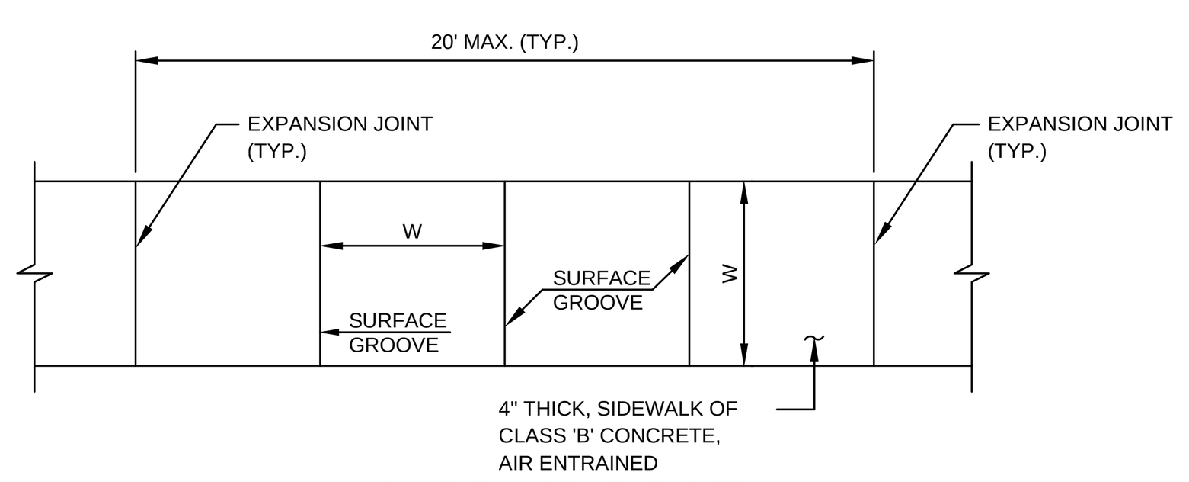
GRANITE BLOCK CURB AND TRANSITION DETAIL

NOT TO SCALE

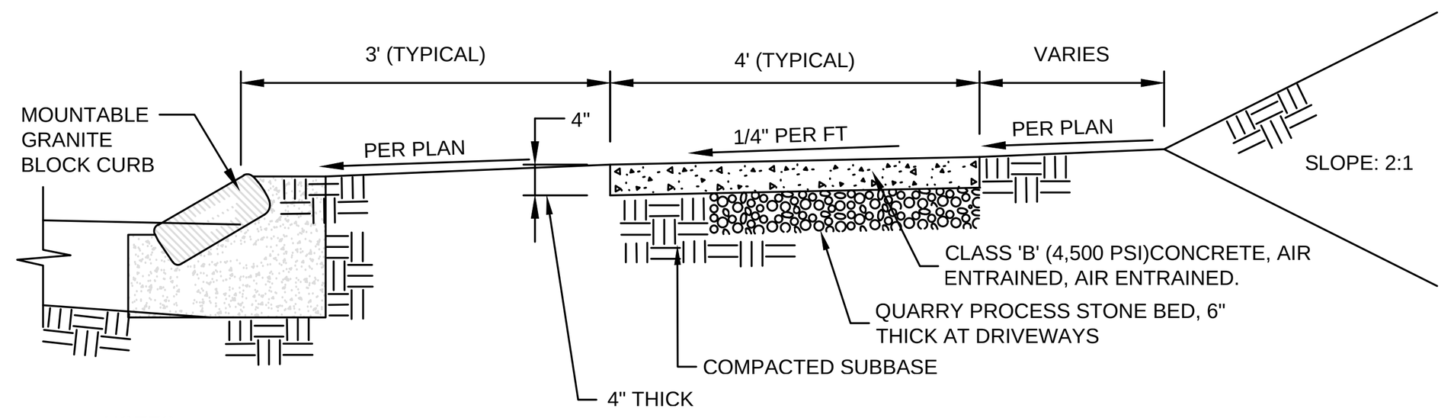


GRANITE BLOCK CURB DETAIL

NOT TO SCALE



JOINT PLACEMENT DETAIL

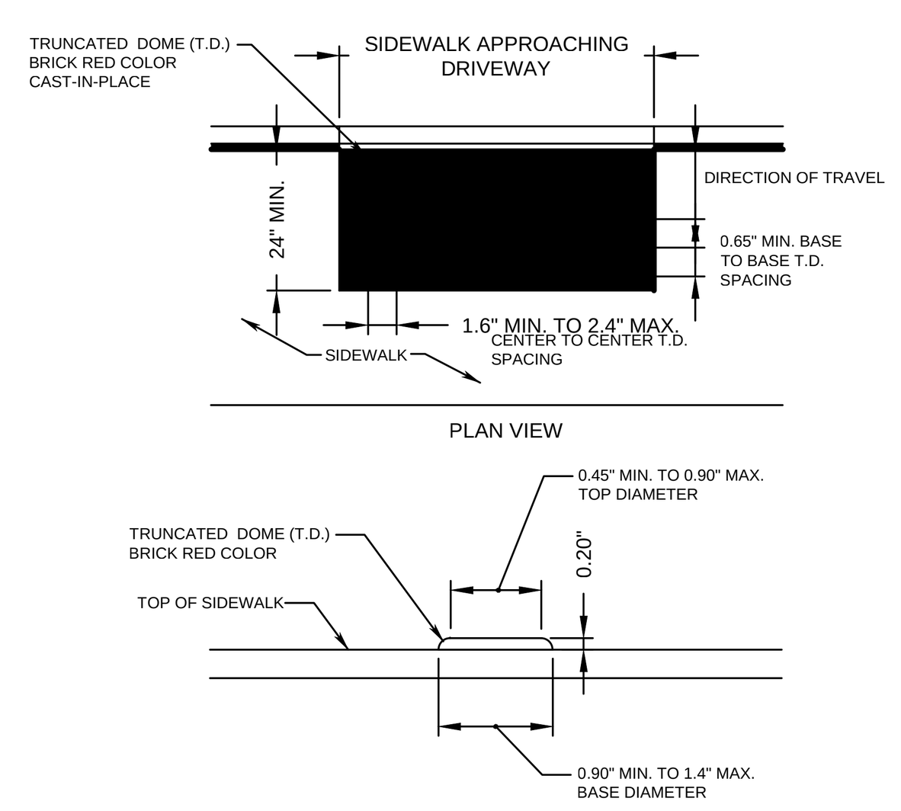


NOTES:

1. 4" CLEAN STONE SUBBASE SHALL BE COMPACTED TO A FIRM AND EVEN SURFACE TO THE SATISFACTION OF THE ENGINEER.
2. ALL CONCRETE SHALL BE AIR-ENTRAINED AND CONTAIN AN AIR CONTENT OF 6% 1.5%
3. CONCRETE SHALL BE STRUCK OFF WITH A TRANSVERSE TEMPLATE AND FINISHED WITH FLOATS AND STRAIGHTEDGES UNTIL A SMOOTH SURFACE HAS BEEN OBTAINED.
4. THE SURFACE SHALL BE FINISHED WITH A WOODEN FLOAT AND BRUSHED WITH A WET, SOFT-HAIRED BRUSH.
5. ALL EDGES SHALL BE FINISHED AND ROUNDED WITH AN EDGING TOOL HAVING A RADIUS OF 1/4 INCH.
6. PREFORMED EXPANSION JOINT FILLER, 1/4" INCH THICK, SHALL BE FORMED AROUND ALL APPURTENANCES, SUCH AS MANHOLES AND UTILITY POLES, EXTENDING INTO OR THROUGH THE CONCRETE.
7. THE SURFACE OF THE CONCRETE SHALL BE SO FINISHED AS TO DRAIN COMPLETELY AT ALL TIMES.

CONCRETE SIDEWALK DETAIL

NOT TO SCALE

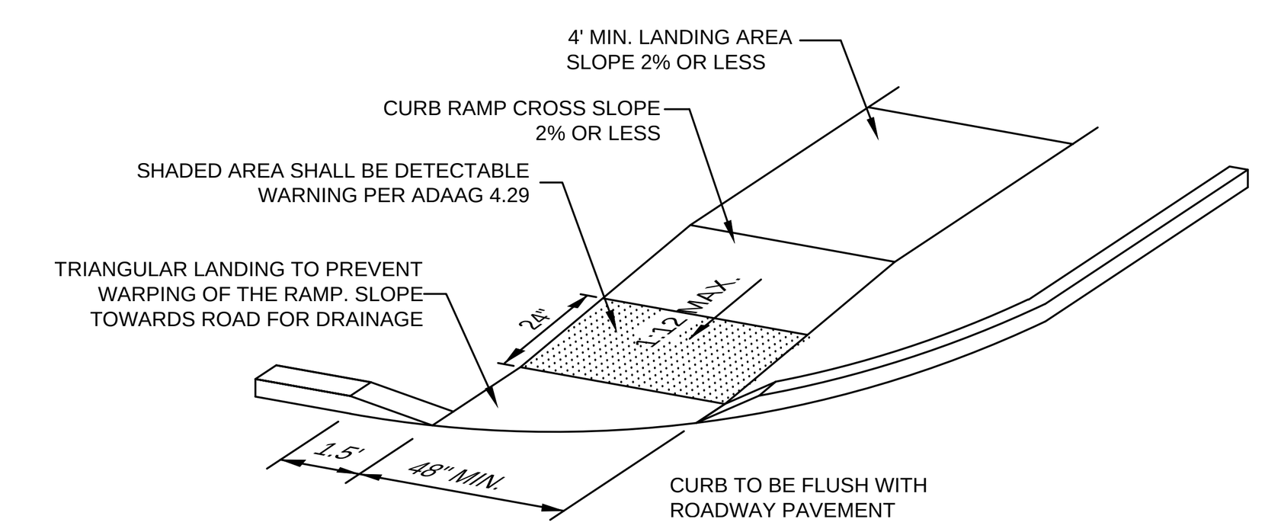


NOTES:

1. DETECTABLE WARNING SURFACE SHALL BE 70% COLOR RED CAST-IN-PLACE CONRETE.
2. CONTRACTOR SHALL PROVIDE A DETECTABLE WARNING SURFACE SUBMITTAL TO PROJECT ENGINEER FOR APPROVAL PRIOR TO CONSTRUCTION.

DETECTABLE WARNING SURFACE

NOT TO SCALE



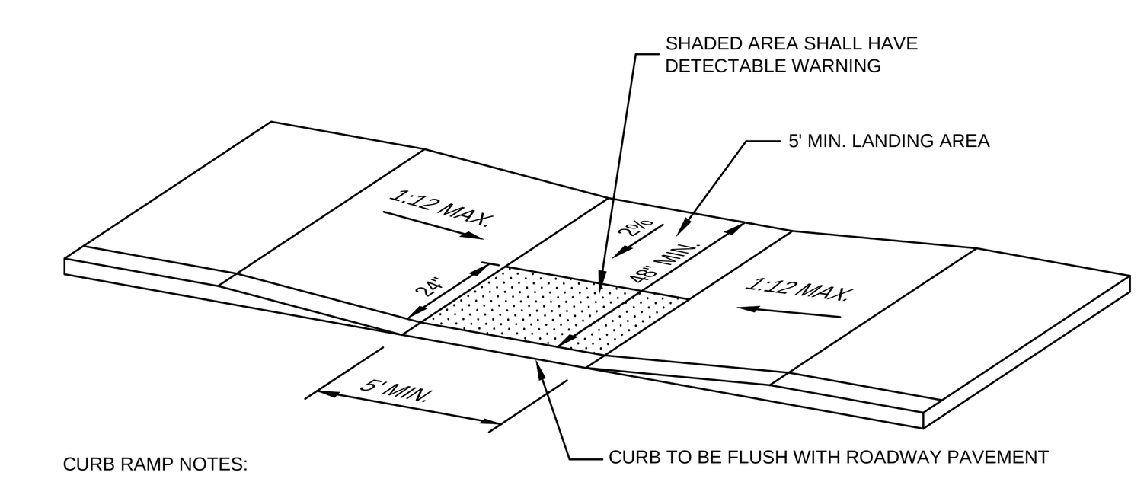
CURB RAMP NOTES:

1. LANDING AREA, APPROACH SIDEWALK TRANSITIONS, AND CURB RAMP SHALL BE KEPT CLEAR OF OBSTRUCTIONS.
2. CURB (DROPPED CURB) GUTTERLINE TO BE FLUSH WITH ROADWAY PAVEMENT A MINIMUM OF 4' AT PARALLEL CURB RAMPS.
3. ALL CONCRETE TO BE 4,500 PSI, NJDOT CLASS B, AIR ENTRAINED AT 30 DAYS.
4. ALL DETECTABLE WARNING OR TRUNCATED DOME SURFACES SHALL BE CAST-IN-PLACE CONSTRUCTION.

CURB RAMP DETAIL (TYPE 'A')

SIDEWALK NOT PERPENDICULAR TO CURB

NOT TO SCALE



CURB RAMP NOTES:

1. LANDING AREA, APPROACH SIDEWALK TRANSITIONS, AND CURB RAMP SHALL BE KEPT CLEAR OF OBSTRUCTIONS.

2. CURB (DROPPED CURB) GUTTERLINE TO BE FLUSH WITH ROADWAY PAVEMENT A MINIMUM OF 5' AT PARALLEL CURB RAMPS.

3. IF CURB IS GRANITE BLOCK, OMIT THE BLOCK WITHIN THE FLUSH AREA AND FORM WITH CONCRETE ONLY. RAMP MAY BE POURED MONOLITHICALLY WITH THE CURB

4. RAMP LENGTH IS AS REQUIRED TO NOT EXCEED MAX SLOPE, AND SHALL BE VERIFIED IN FIELD. RAMPS DRAWN IN PLAN VIEW MAY BE SCHEMATIC TO INDICATE TYPE OF RAMP AND MAY NOT INDICATE ACTUAL LENGTH

5. ALL DETECTABLE WARNING OR TRUNCATED DOME SURFACES SHALL BE EMBEDDED IN THE SIDEWALK

CURB RAMP 'B' DETAIL

SIDEWALK ADJACENT TO CURB

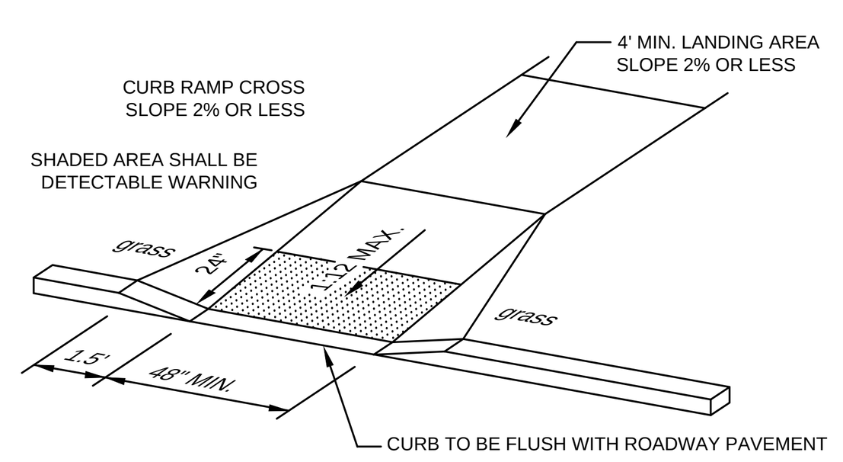
NOT TO SCALE

GENERAL NOTES:

1. LANDING AREA, APPROACH SIDEWALK TRANSITIONS, AND CURB RAMP SHALL BE KEPT CLEAR.
2. DIMENSIONS SHOWN IN TABLES ARE FOR RELATIVELY FLAT SIDEWALK AREAS. CARE SHOULD BE TAKEN WHEN DETERMINING CURB RAMP SIZE BASED ON CURB HEIGHT (H) WHERE ELEVATION. OF CURB AND SIDEWALK VARY DRASTICALLY IN AREA OF PROPOSED CURB RAMP.
3. CURB (DROPPED CURB) GUTTERLINE SHALL BE FLUSH WITH ROADWAY PAVEMENT A MINIMUM OF 4 FEET AT ALL CURB RAMPS, EXCEPT THAT CURB RAMP TYPE 6 SHALL BE A MINIMUM OF 5 FEET.
4. WHERE THE DISTANCE FROM THE GUTTER LINE TO THE OUTSIDE EDGE OF SIDEWALK IS 6 FEET OR LESS, THE PUBLIC SIDEWALK CURB RAMP DELINEATION (SHADED AREA) SHALL BE SAFETY RED IN COLOR.
5. WHERE THE DISTANCE FROM THE GUTTER LINE TO THE OUTSIDE EDGE OF THE SIDEWALK IS 6 FEET OR LESS, CURB RAMP TYPE 7 SHOULD BE USED, INSTEAD OF CURB RAMP TYPES 1 THROUGH 3.
6. CROSSWALKS AND STOP LINES MAY BE MARKED OR UNMARKED, SEE PLANS.
7. DIMENSIONS SHOWN ON THE TABLES ARE FOR 4, 6, OR 8 INCH CURB HEIGHTS, WHERE THE CURB HEIGHTS ARE OTHER THAN WHAT IS PROVIDED IN THE TABLES, THE DIMENSIONS OF THE RAMPS WILL HAVE TO BE CALCULATED BASED ON THE CROSS SLOPES SHOWN.
8. ALL FULL CURB DEPRESSIONS SHALL BE CONSTRUCTED OF CONCRETE, REGARDLESS OF THE CURB TYPE THROUGHOUT THE PROJECT.

ADA SIDEWALK AND CURB RAMP NOTES

NOT TO SCALE



CURB RAMP NOTES:

1. LANDING AREA, APPROACH SIDEWALK TRANSITIONS, AND CURB RAMP SHALL BE KEPT CLEAR OF OBSTRUCTIONS.

2. CURB (DROPPED CURB) CENTERLINE TO BE FLUSH WITH ROADWAY PAVEMENT A MINIMUM OF 4' AT ALL CURB RAMPS.

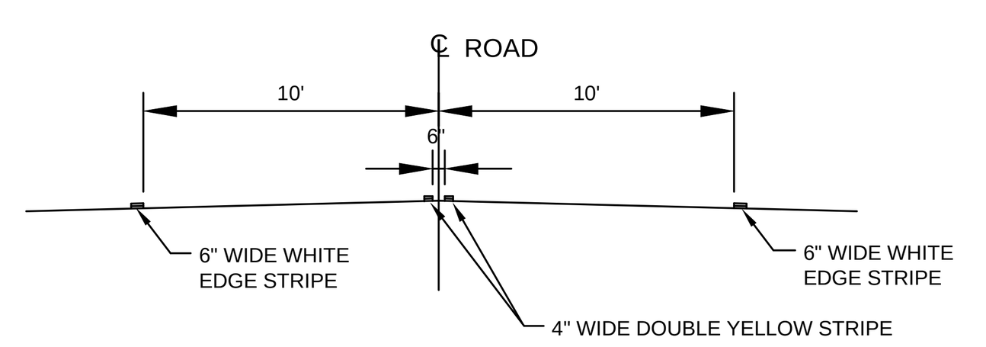
3. IF CURB IS GRANITE BLOCK, OMIT THE BLOCK WITHIN THE FLUSH AREA AND FORM WITH CONCRETE ONLY. RAMP MAY BE POURED MONOLITHICALLY WITH THE CURB

4. RAMP LENGTH IS AS REQUIRED TO NOT EXCEED MAX SLOPE, AND SHALL BE VERIFIED IN FIELD. RAMPS DRAWN IN PLAN VIEW MAY BE SCHEMATIC TO INDICATE TYPE OF RAMP AND MAY NOT INDICATE ACTUAL LENGTH

CURB RAMP 'C' DETAIL

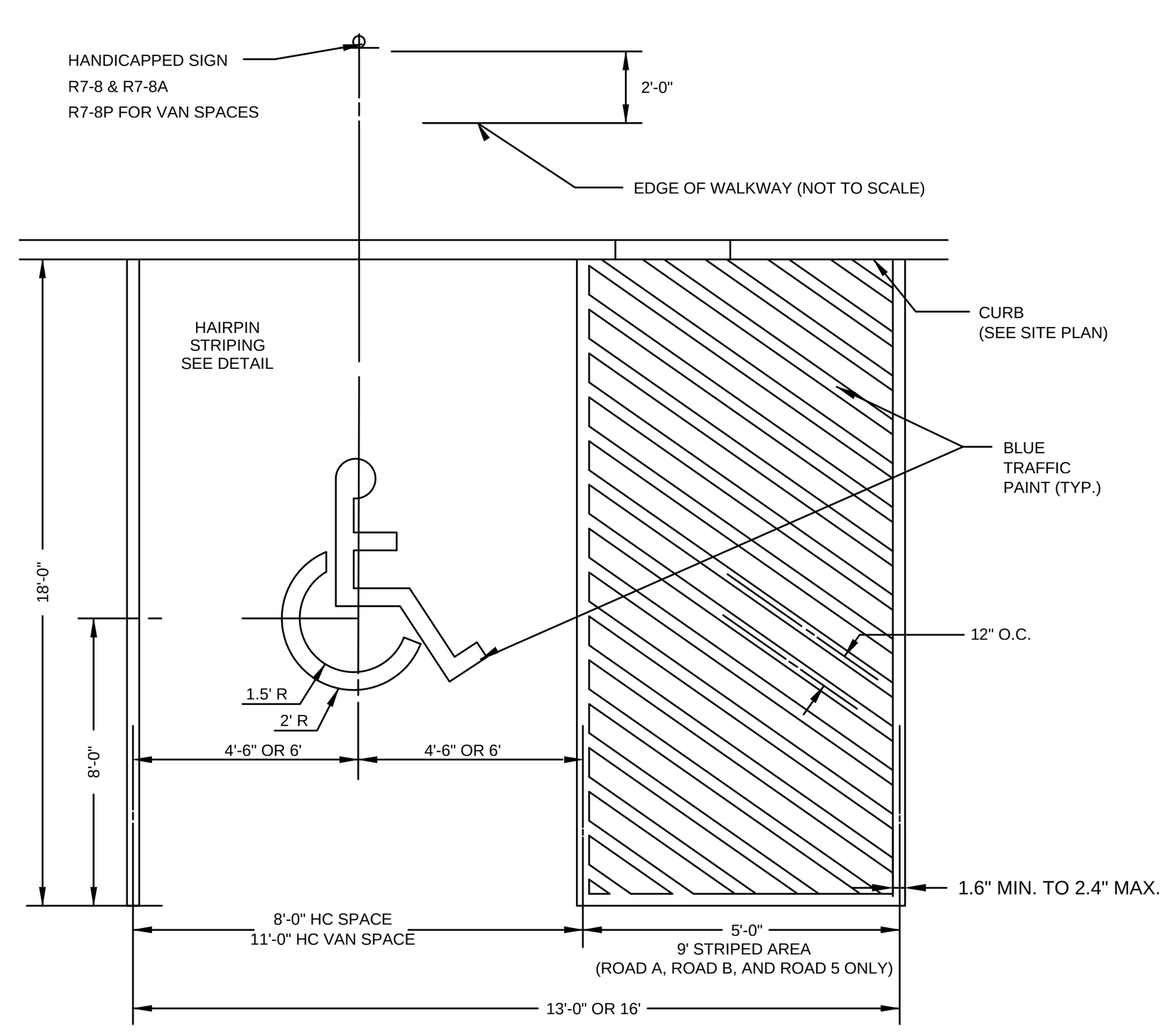
SIDEWALK PERPENDICULAR TO CURB

NOT TO SCALE



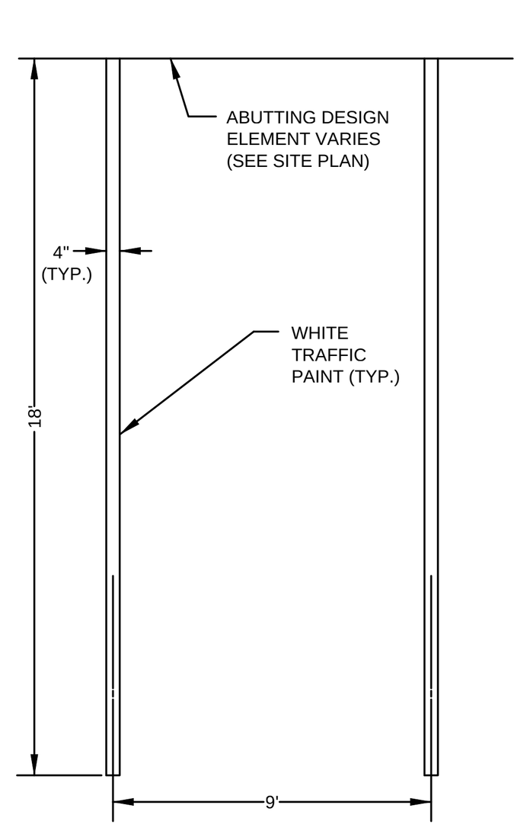
ROAD STRIPING (TYP.)

N.T.S.



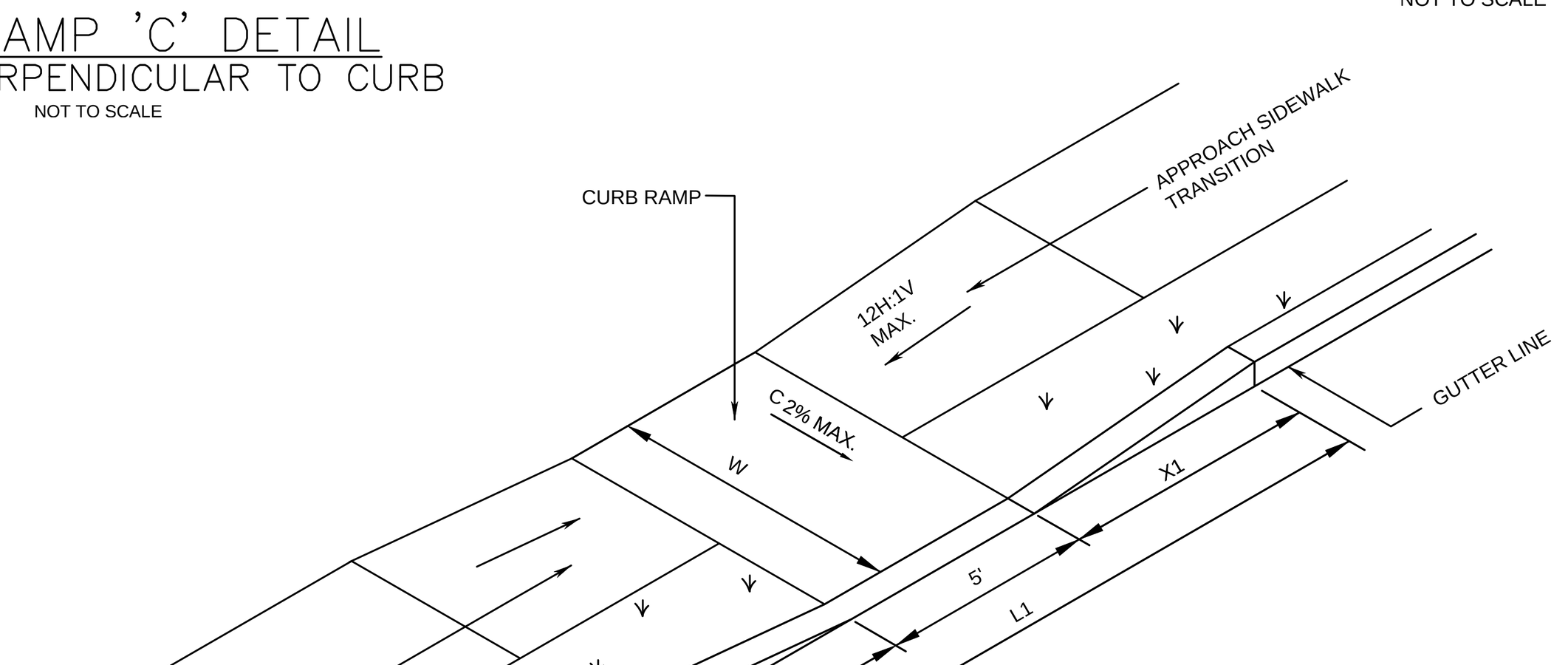
TYPICAL HC ACCESSIBLE ADA PARKING SPACE

NOT TO SCALE



PARKING SPACE STRIPING

N.T.S.



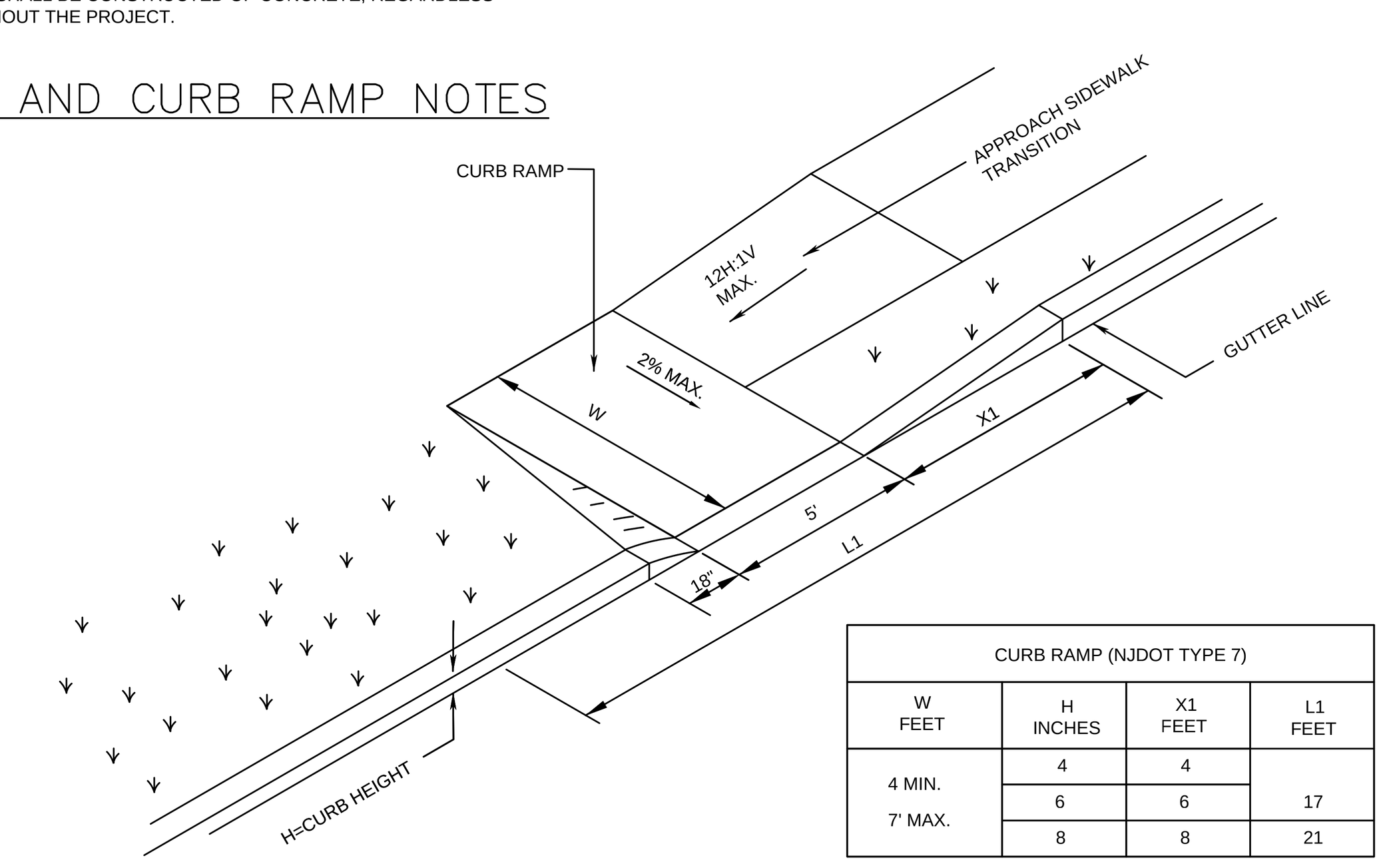
CURB RAMP (NJDOT TYPE 7)

W FEET	H INCHES	X1 FEET	L1 FEET
4 MIN. 7' MAX.	4	4	
	6	6	17
	8	8	21

CURB RAMP DIMENSIONS

ADA SIDEWALK AND CURB RAMP TYPE 'E'

NOT TO SCALE



CURB RAMP (NJDOT TYPE 7)

W FEET	H INCHES	X1 FEET	L1 FEET
4 MIN. 7' MAX.	4	4	
	6	6	17
	8	8	21

CURB RAMP DIMENSIONS

ADA SIDEWALK AND CURB RAMP TYPE 'D'

NOT TO SCALE

12				
11				
10				
9				
8				
7				
6				
5				
4	REVISED PER TOWNSHIP COMMENTS	03/31/25	SAD	
3	REVISED PER ENGINEERING REVIEW	2/14/25	SAD	
2	REVISED PER TOWNSHIP COMMENTS	12/18/24	SAD	
1	REVISED PER PB COMPLETENESS REVIEW	09/10/24	SAD	
	REVISION	DATE	CHKD	

PROJ.: 081391-01-001
DATE: 06/25/2024
CHKD: SAD

Bowman

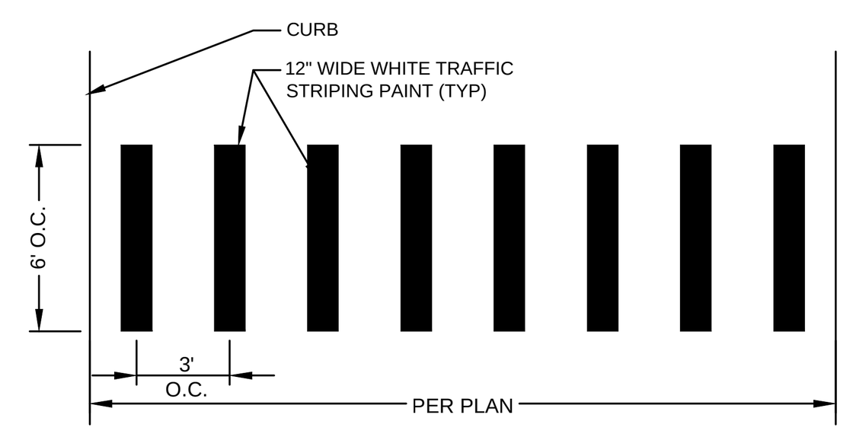
Bowman Consulting Group Ltd
3 Paragon Way, Suite 170
Freehold, New Jersey 07728
bowman.com
E-mail: NJ@Bowman.com
Phone: 732-665-5500
FAX: 732-665-5501
NJ Certificate of Authorization No. 24GA28222600

SEAN A. DELANY, N.J. Professional Engineer, Lic. 24GE04447100

PRELIMINARY AND FINAL MAJOR SUBDIVISION &
PRELIMINARY AND FINAL SITE PLAN FOR
VENUE AT HOPEWELL
081391-SP-DET - SHT-18B-SITE
BLOCK 93, LOTS 19, 20, 45.01, 46 & 60
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY

SHEET No.
18B
OF

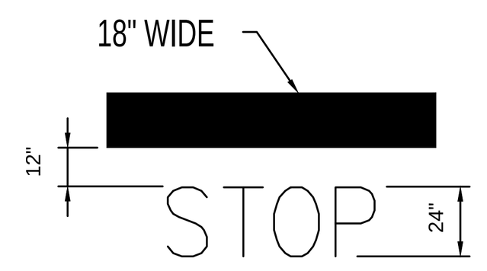
V:\081391 - Nursery Road-Hopewell\081391-01-001 (ENG) - Venue at Hopewell SP\Engineering\Engineering Plans\02 Site Plans\081391-SP-DET.dwg 03/31/25 03:54:33PM, dino.spinelli, LAYOUT:SHT-18B-SITE



NOTE: ALL PAINT TO BE THERMOPLASTIC.

CROSSWALK STRIPING

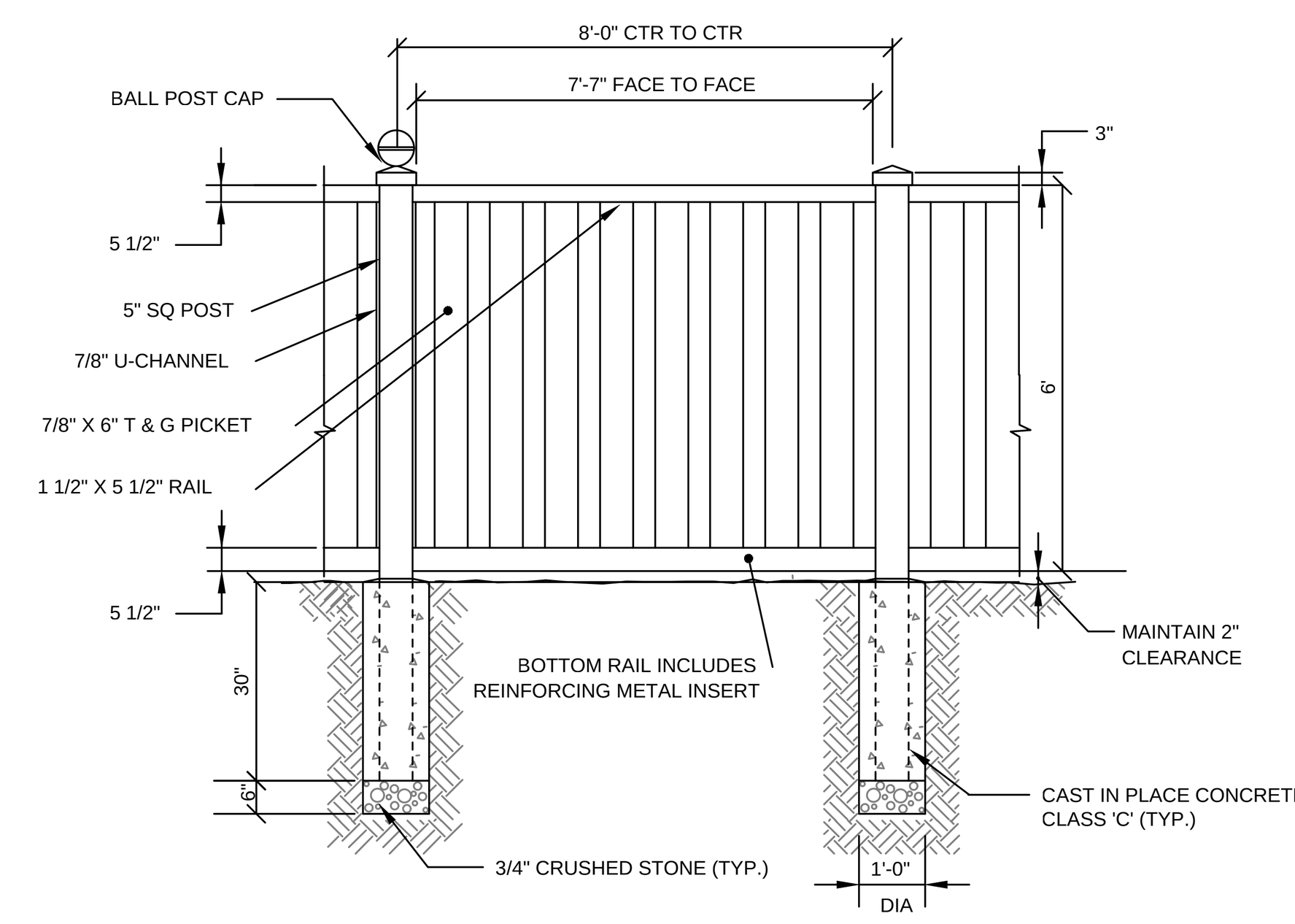
NOT TO SCALE



NOTE: ALL PAINT TO BE THERMOPLASTIC.

STOP BAR DETAILS

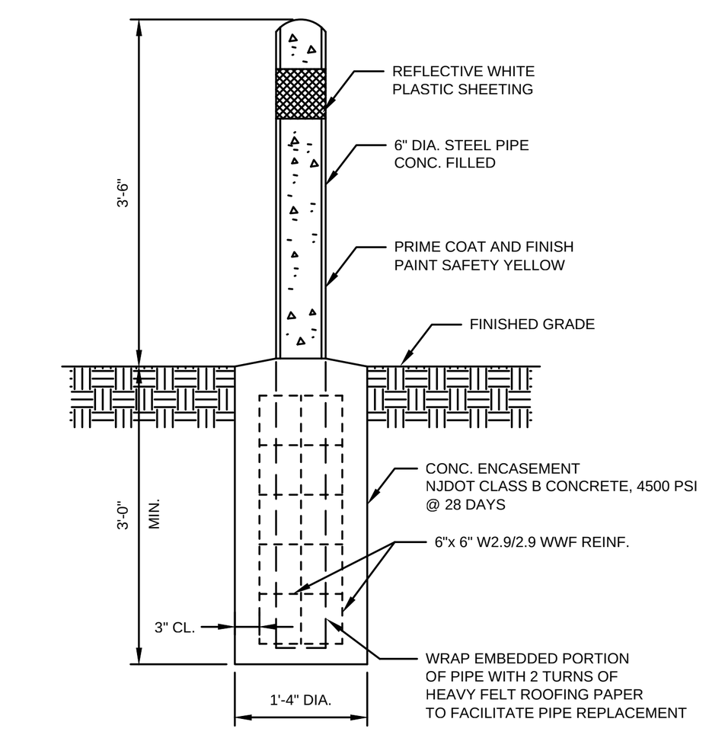
NOT TO SCALE



NOTES:
1. PRIVACY FENCE AS MANUFACTURED BY MASTER-HALCO FENCE OR APPROVED EQUAL.
MATERIAL: VINYL, COLOR: TAN
2. SPECIFICATION SHOWN CAN BE CHANGED BY MASTER-HALCO ONLY.
3. FOOTING WIDTH TO BE (2)X POST WIDTH. MINIMUM DEPTH 30".

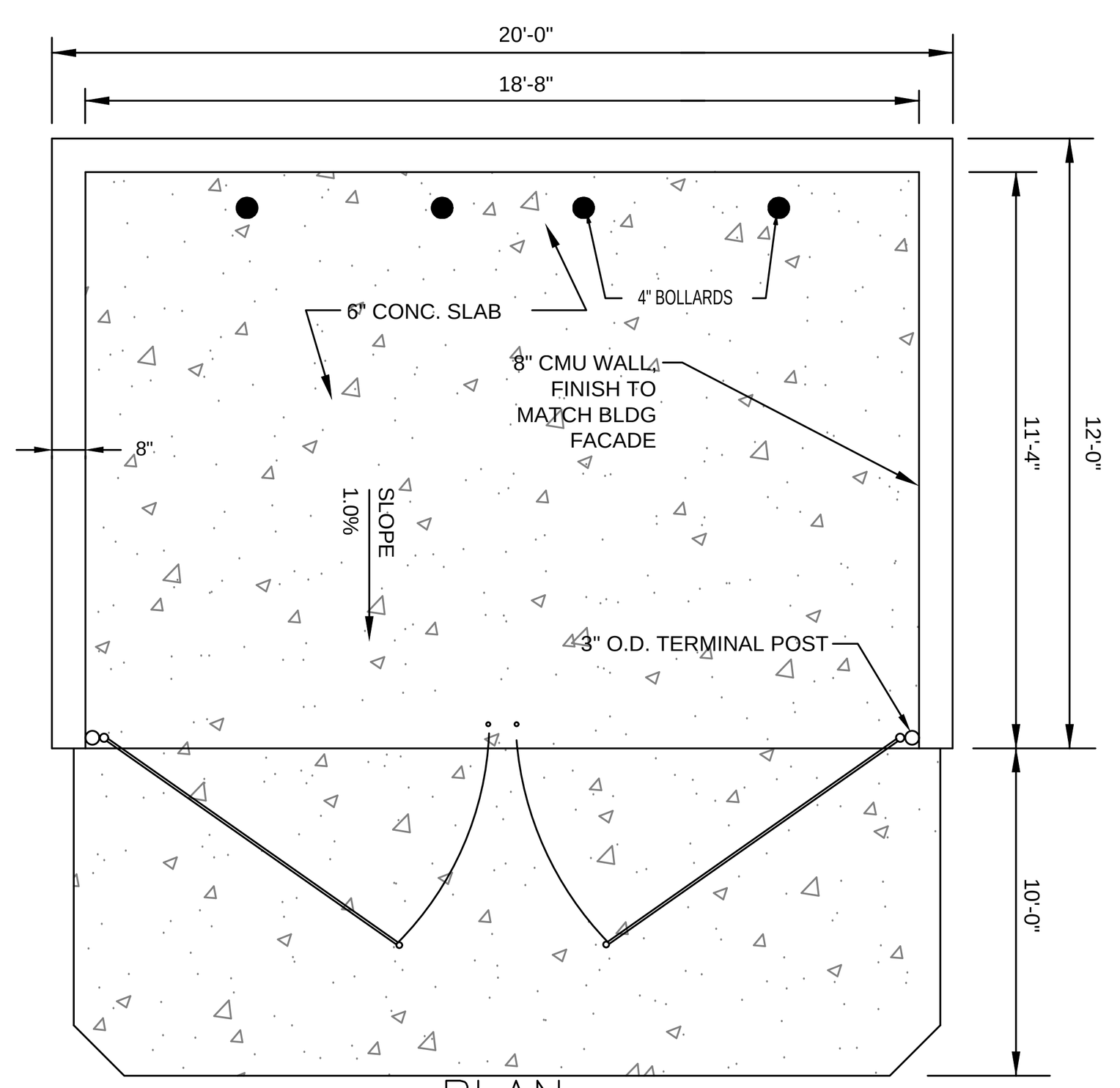
6' VINYL PRIVACY FENCE OR APPROVED EQUAL

NOT TO SCALE

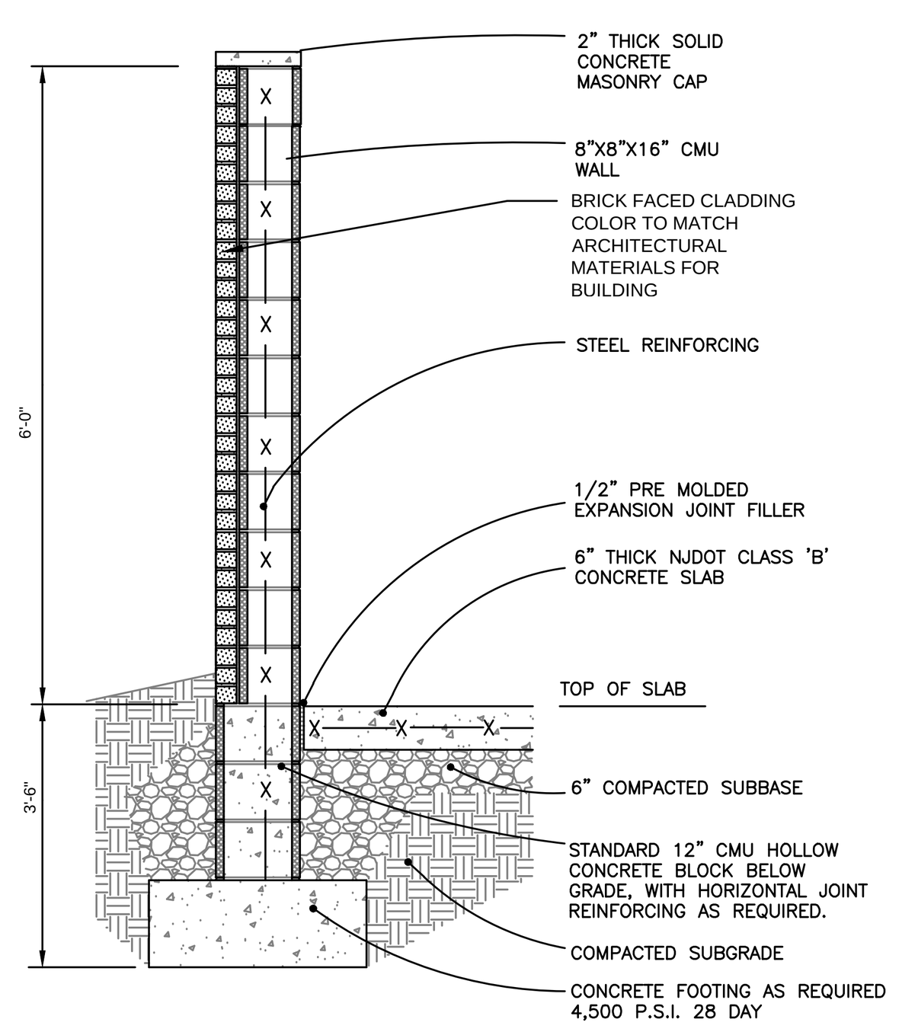


BOLLARD DETAIL

NOT TO SCALE

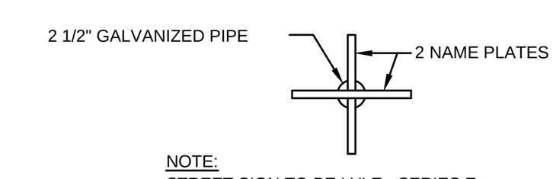


PLAN



TRASH ENCLOSURE SECTION VIEW

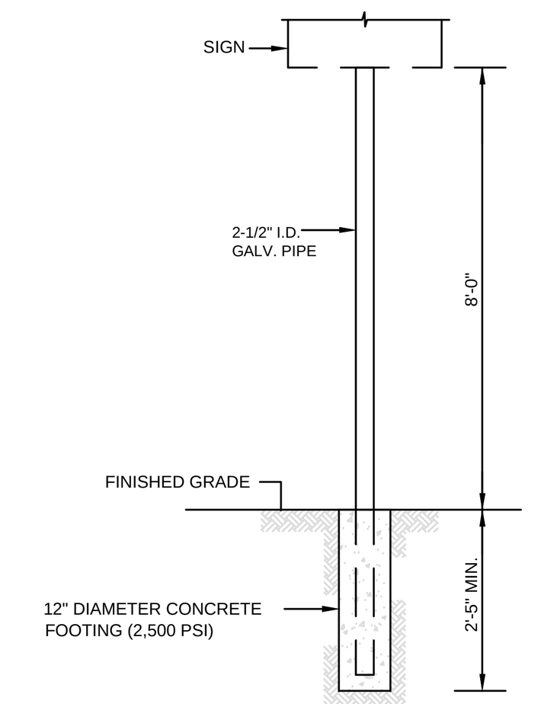
NOT TO SCALE



NOTE:
STREET SIGN TO BE LYLE - SERIES E, EMBOSSED WITH BLACK LETTERING ON WHITE BACKGROUND OR EQUAL APPROVED BY TOWNSHIP ENGINEER.

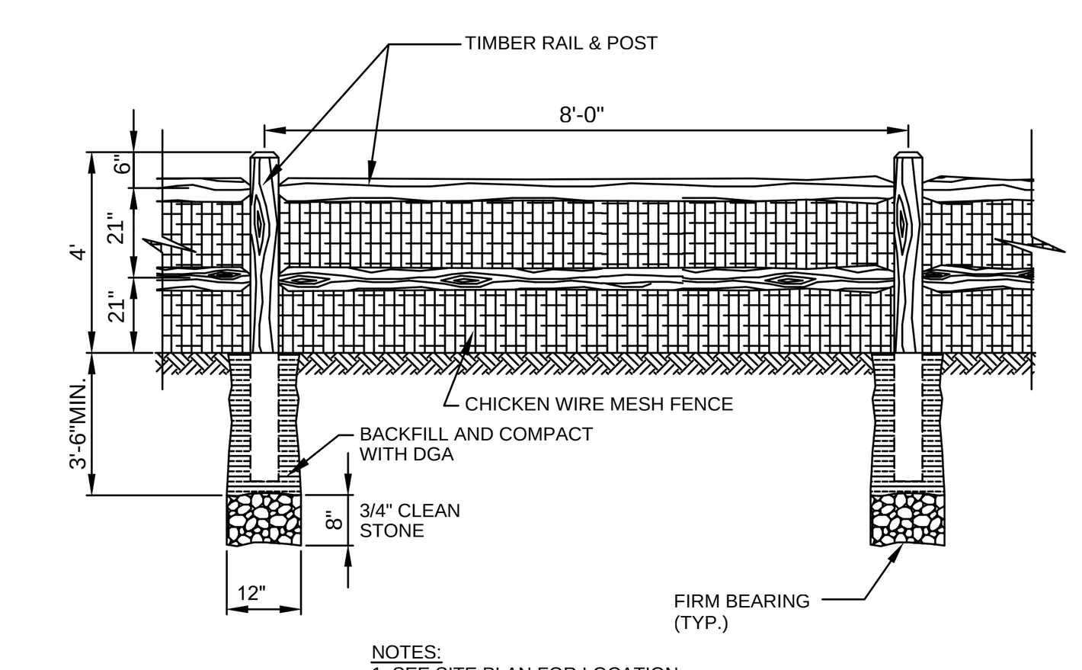
STREET SIGN DETAIL

NOT TO SCALE



STREET SIGN POST DETAIL

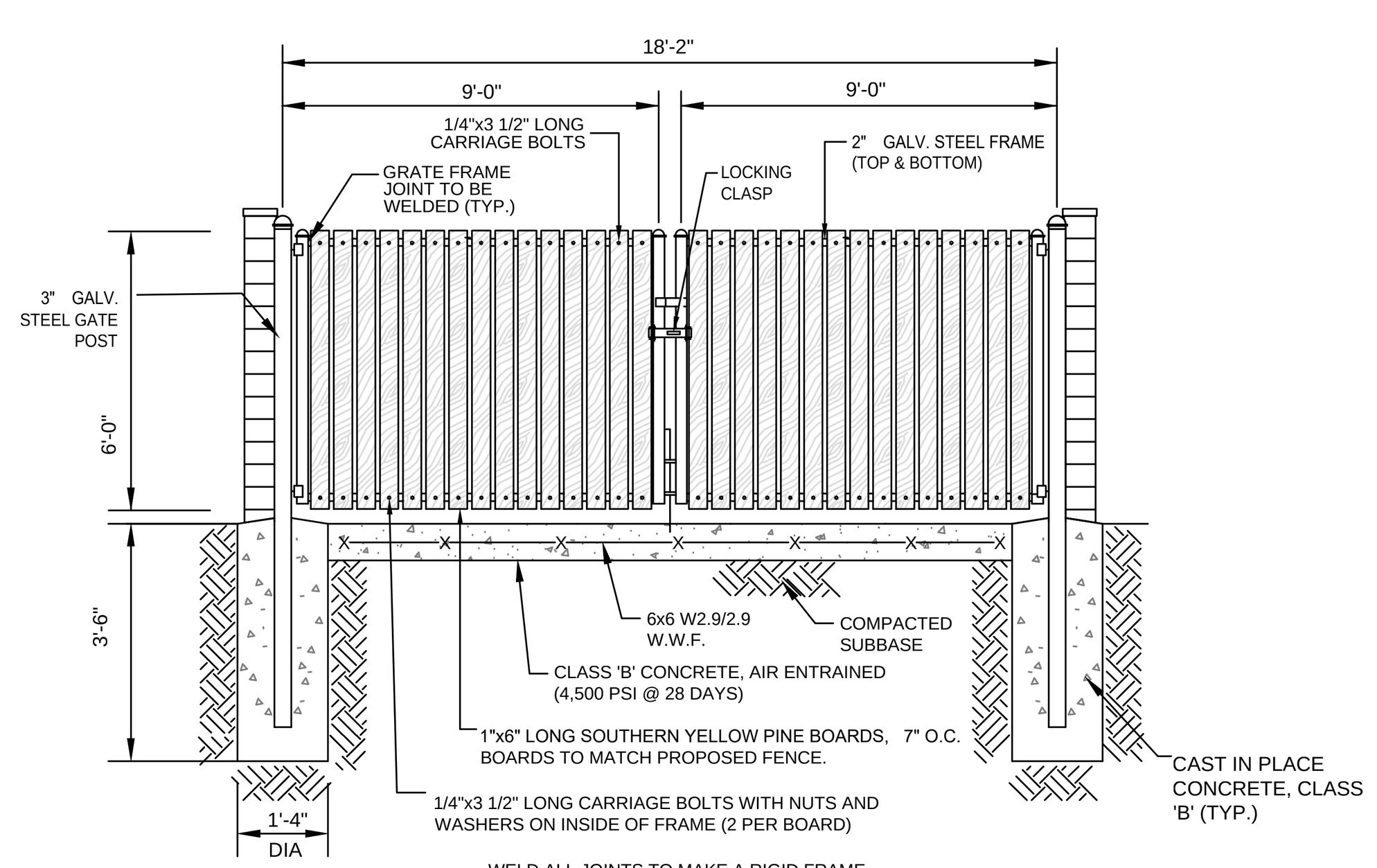
NOT TO SCALE



NOTES:
1. SEE SITE PLAN FOR LOCATION
2. GATE AND CORNER POSTS TO HAVE 14" DIA. FOOTINGS.

SPLIT RAIL FENCE DETAIL OR APPROVED EQUAL

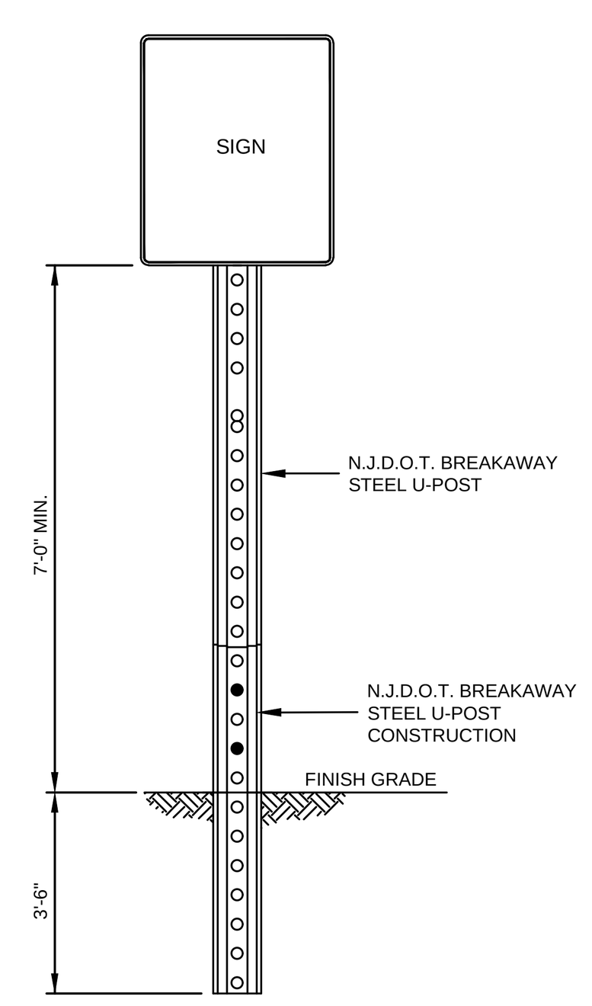
NOT TO SCALE



WELD ALL JOINTS TO MAKE A RIGID FRAME.

TRASH ENCLOSURE DETAIL – COAH LOT

NOT TO SCALE

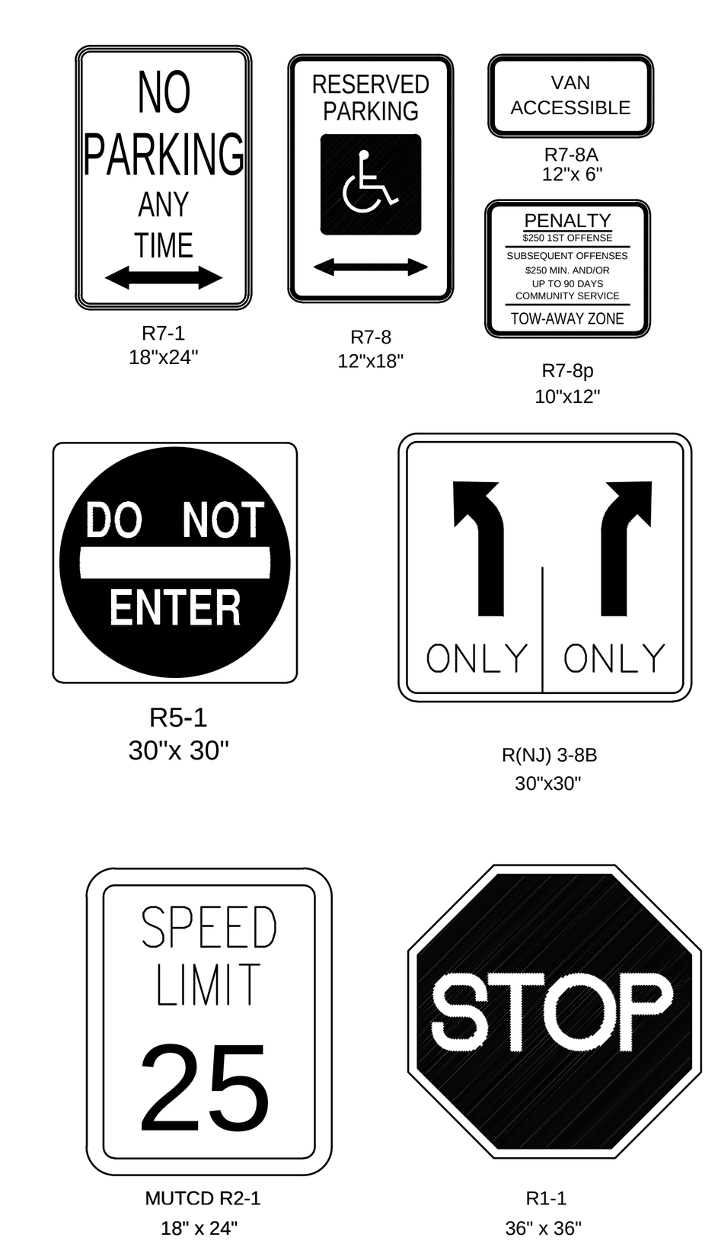


GENERAL NOTES:

1. ALL POSTS SHALL BE OF ADEQUATE LENGTH TO MEET THE REQUIREMENTS FOR ERECTION AS STATED IN THE CURRENT "MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES FOR STREET AND HIGHWAYS".
2. ALL STEEL POSTS AND BRACKETS SHALL BE CUT, BENT AND HOLES PUNCHED AND DRILLED BEFORE GALVANIZING. GALVANIZING SHALL BE IN CONFORMANCE WITH CURRENT A.S.T.M. SPECIFICATIONS A 123.
3. POSTS SHALL BE 2 PIECE STEEL U-POST IN CONFORMANCE WITH THE NOTES BELOW.
4. BOLTS SHALL NOT PROTRUDE MORE THAN 3/4" BEYOND THE NUT WHEN TIGHT BUT SHALL ENGAGE ALL THREADS IN THE NUT.

SIGN POST DETAIL

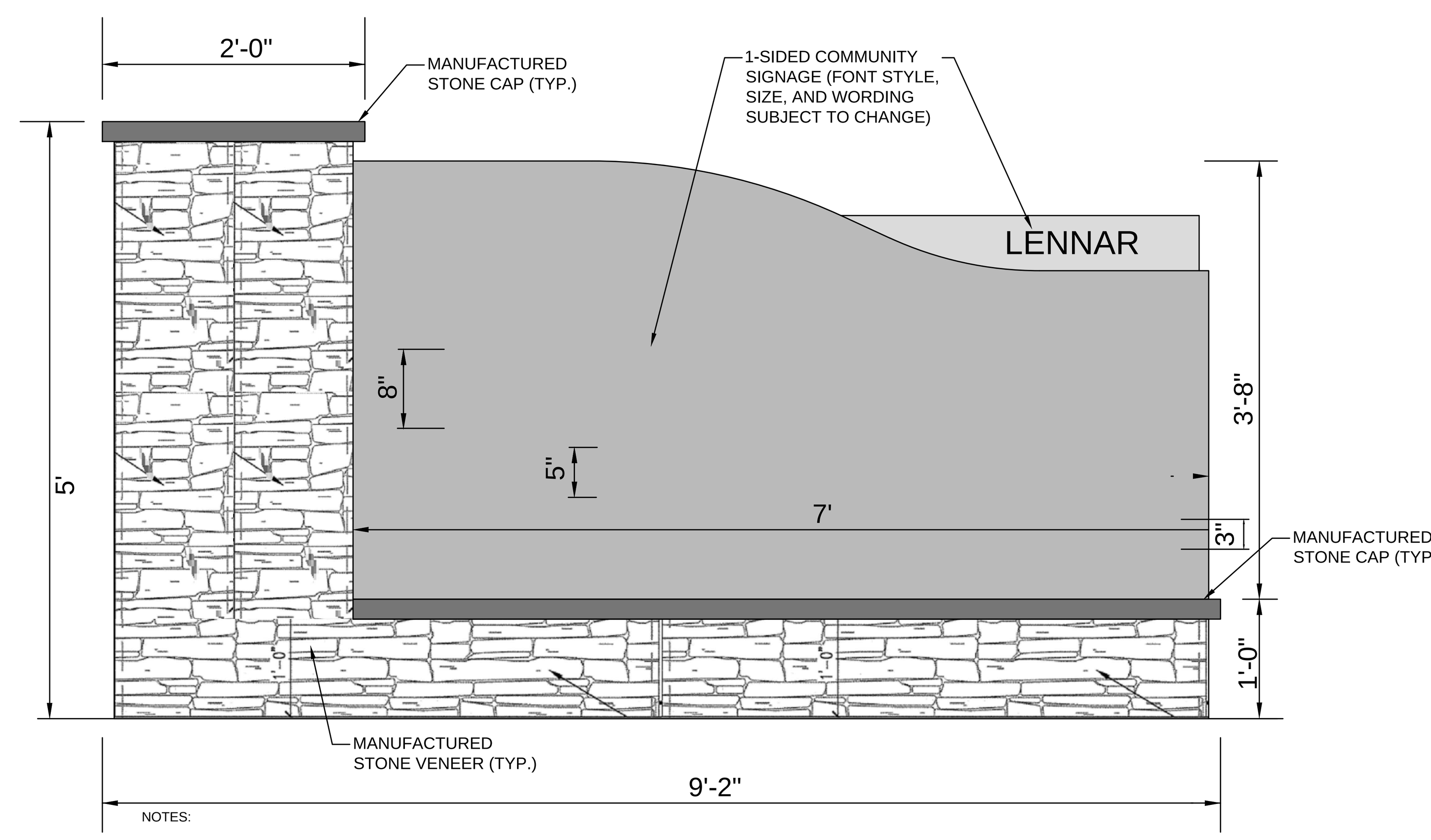
NOT TO SCALE



NOTE:
1. SIGNS TO BE MOUNTED IN ACCORDANCE WITH MUTCD.

SIGN DETAILS

NOT TO SCALE



NOTES:

1. FINAL SIGN WORDING, FONT AND TEXT SIZE TO BE DETERMINED.
2. SIGN DIMENSIONS SHALL NOT EXCEED THE REQUIREMENTS OF THE HOPEWELL TOWNSHIP LAND USE ORDINANCE.
3. CONTINUOUS CONCRETE FOOTINGS AND FOUNDATION WALLS FOR SIGN TO BE PROVIDED BY APPLICANT'S CONSULTING STRUCTURAL ENGINEER.
4. SIGN TO BE EXTERNALLY ILLUMINATED AS SHOWN ON APPROVED LIGHTING PLANS. ILLUMINATION TO COMPLY WITH THE REQUIREMENTS OF THE HOPEWELL TOWNSHIP LAND USE ORDINANCE.

MONUMENT ENTRANCE SIGN

NOT TO SCALE

4	REVISED PER TOWNSHIP COMMENTS	03/21/25	SAD
3	REVISED PER ENGINEERING REVIEW	2/14/25	SAD
2	REVISED PER TOWNSHIP COMMENTS	12/18/24	SAD
1	REVISED PER PB COMPLETENESS REVIEW	09/10/24	SAD
	REVISION	DATE	CHKD

PROJ: 081391-01-001
DATE: 06/25/2024
CHKD: SAD

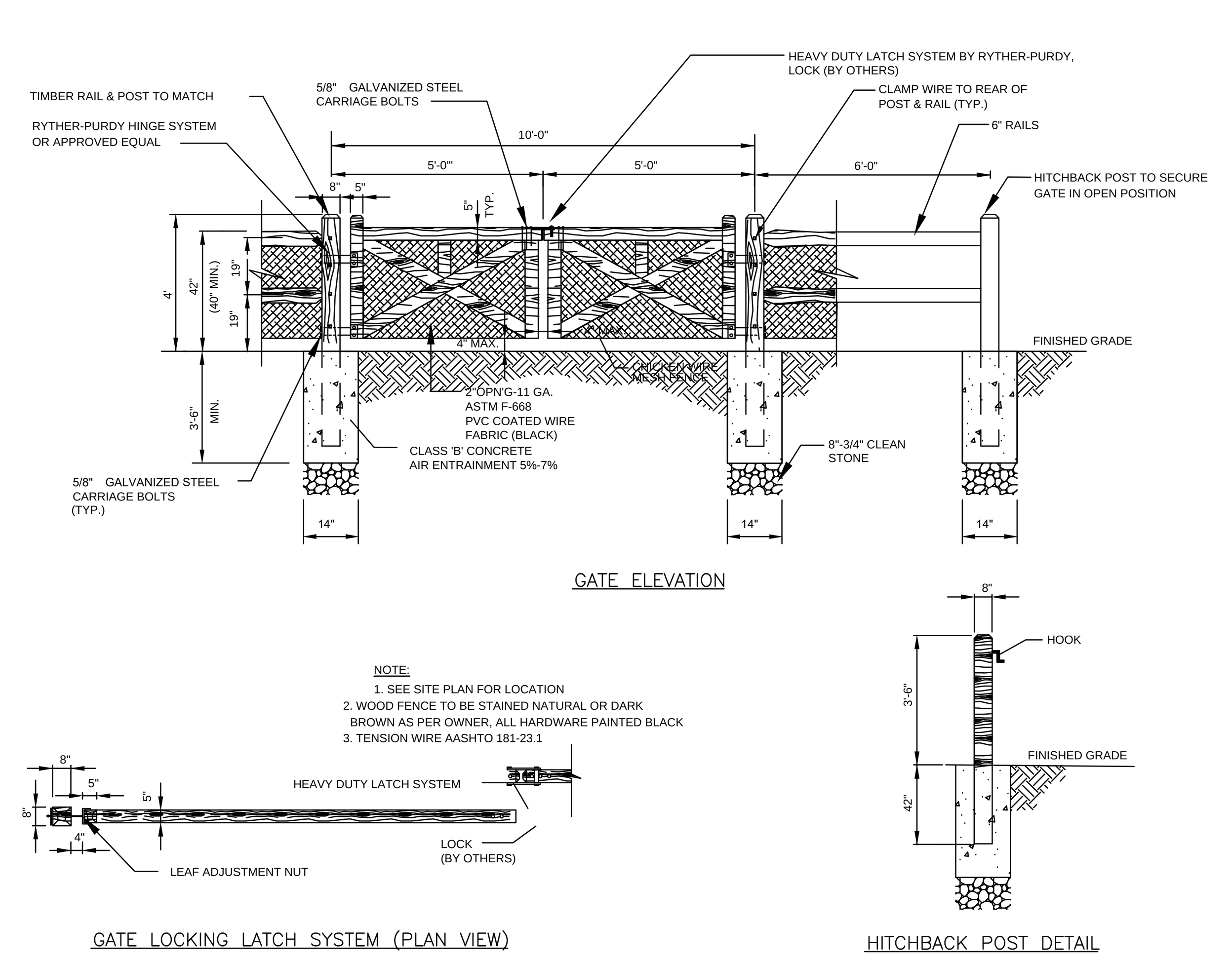
Bowman

Bowman Consulting Group Ltd
3 Paragon Way, Suite 170
Freehold, New Jersey 07728
bowman.com
E-mail: NJ@bowman.com
Phone: 732-665-5550
FAX: 732-665-5551
NJ Certificate of Authorization No. 24GA28223800
SEAN A. DELANY, N.J. Professional Engineer, Lic. 24GE04447100

PRELIMINARY AND FINAL MAJOR SUBDIVISION & PRELIMINARY AND FINAL SITE PLAN FOR
VENUE AT HOPEWELL
081391-SP-DET - SHT-18C-SITE
BLOCK 93, LOTS 19, 20, 45.01, 46 & 60
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY

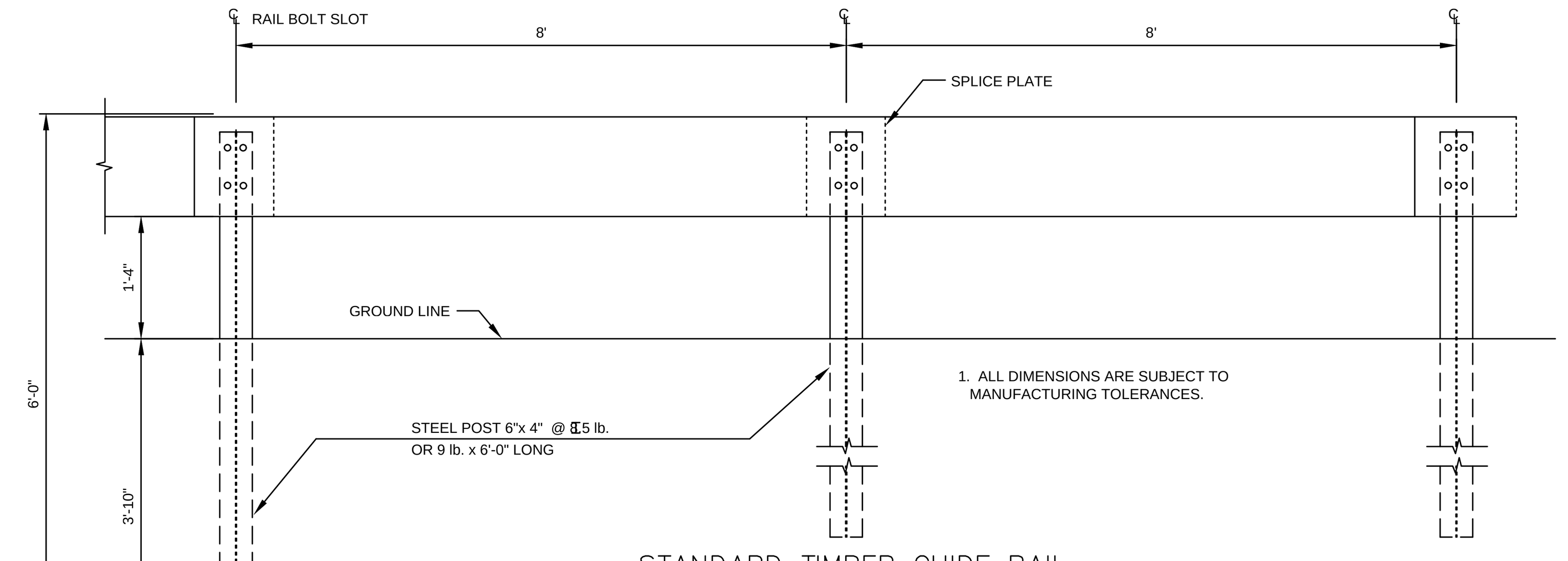
SHEET No.
18C
OF

V:\081391 – Nursery Road–Hopewell\081391–01–001 (ENG) – Venue at Hopewell SP\Engineering\Engineering Plans\02 Site Plans\081391–SP–DET.dwg 03/31/25 03:53:28PM, dino.spinelli, LAYOUT:SHT–18C–SITE



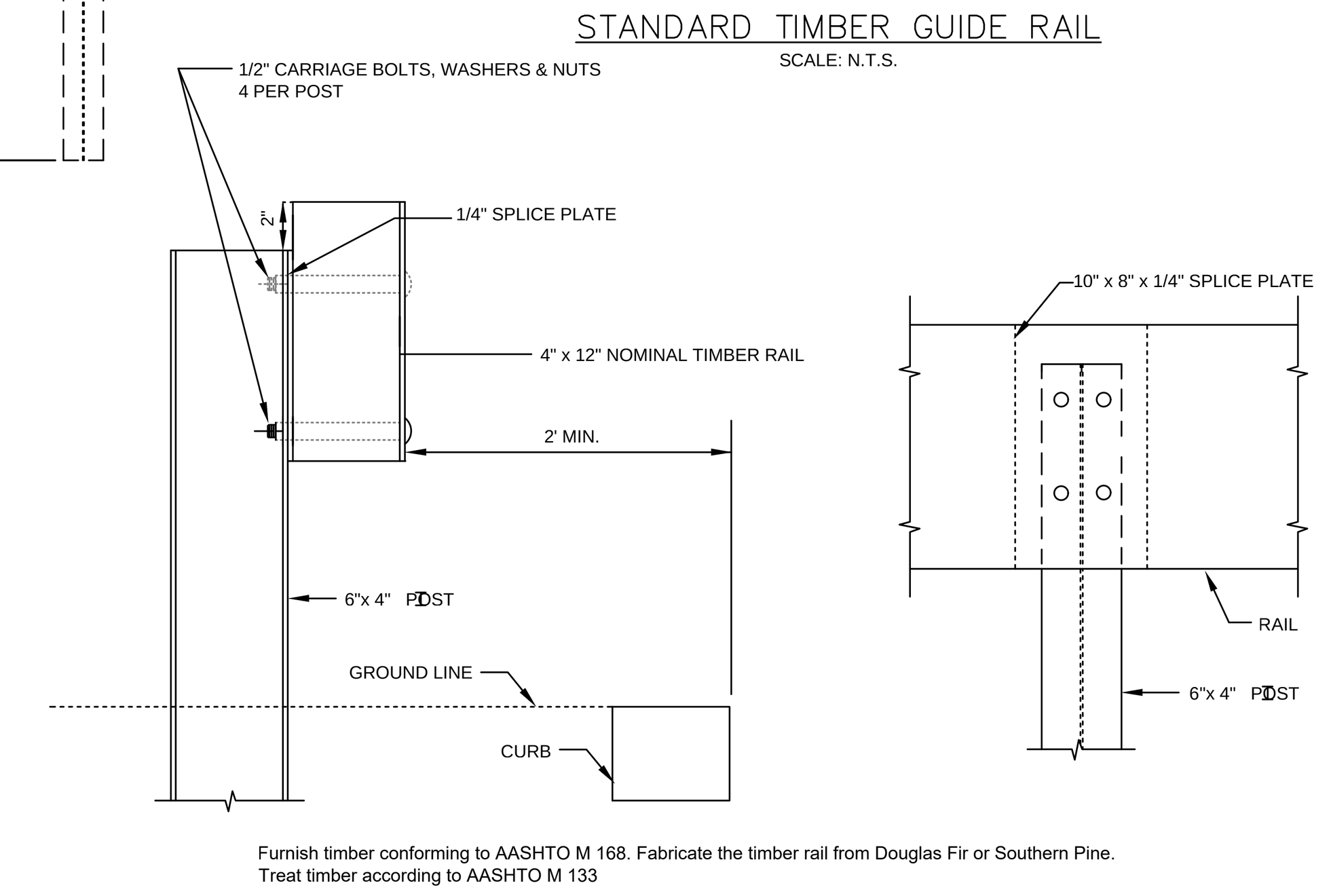
10' WIDE SPLIT RAIL FENCE DOUBLE LEAF WOOD GATE DETAIL AT STORMWATER BASIN

NOT TO SCALE



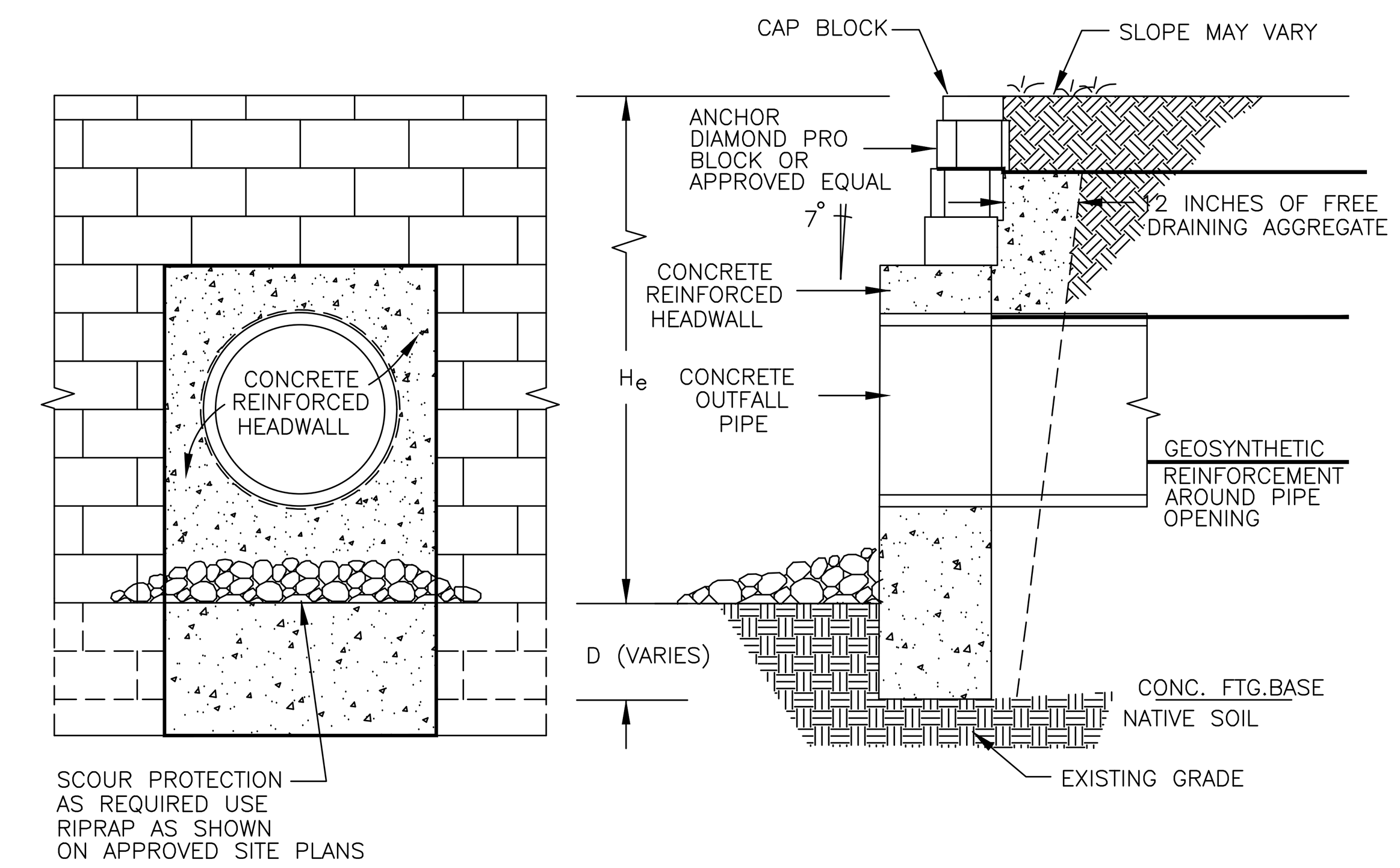
STANDARD TIMBER GUIDE RAIL

SCALE: N.T.S.



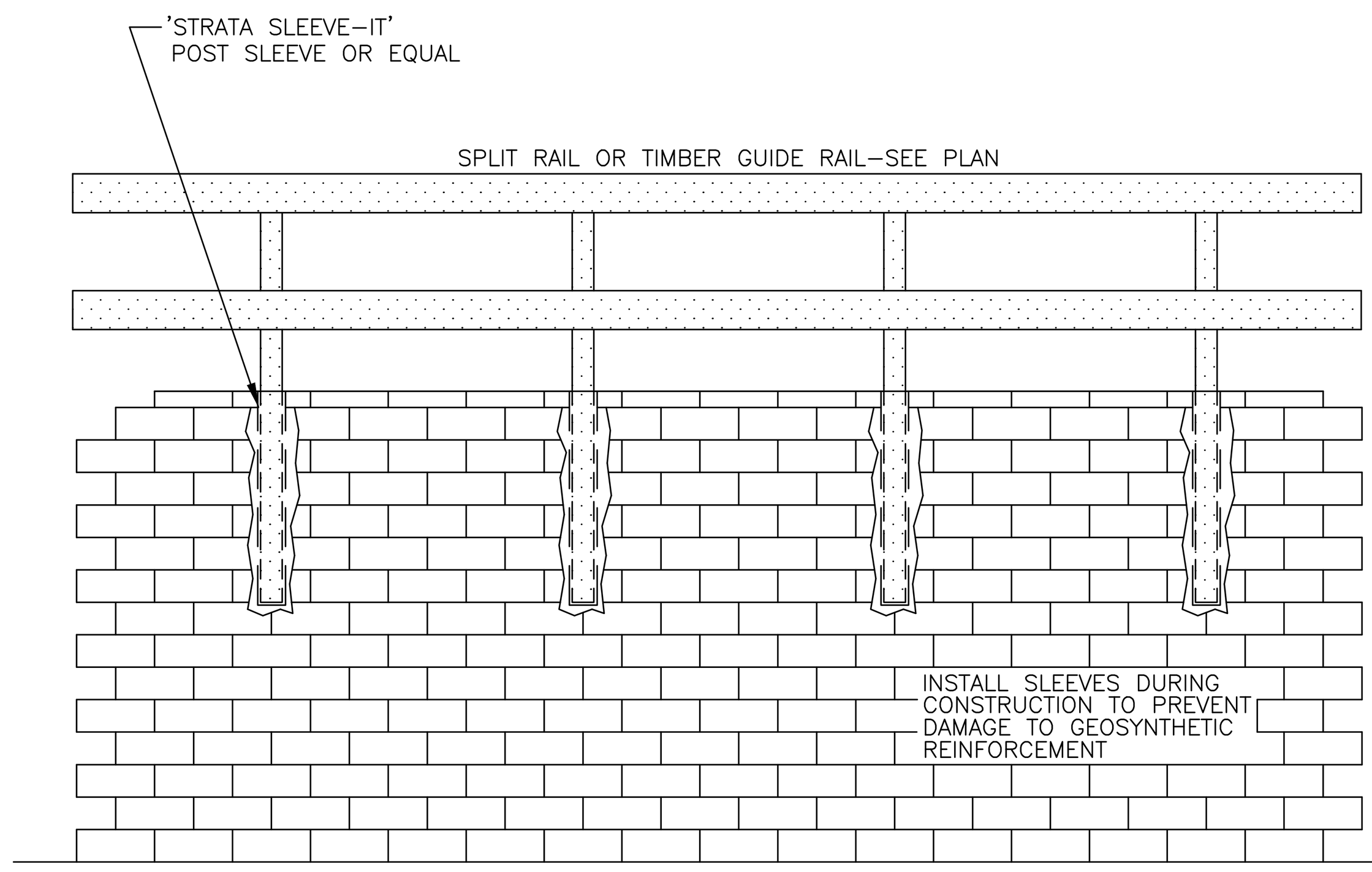
TIMBER BEAM GUIDE RAIL OR APPROVED EQUAL

N.T.S.



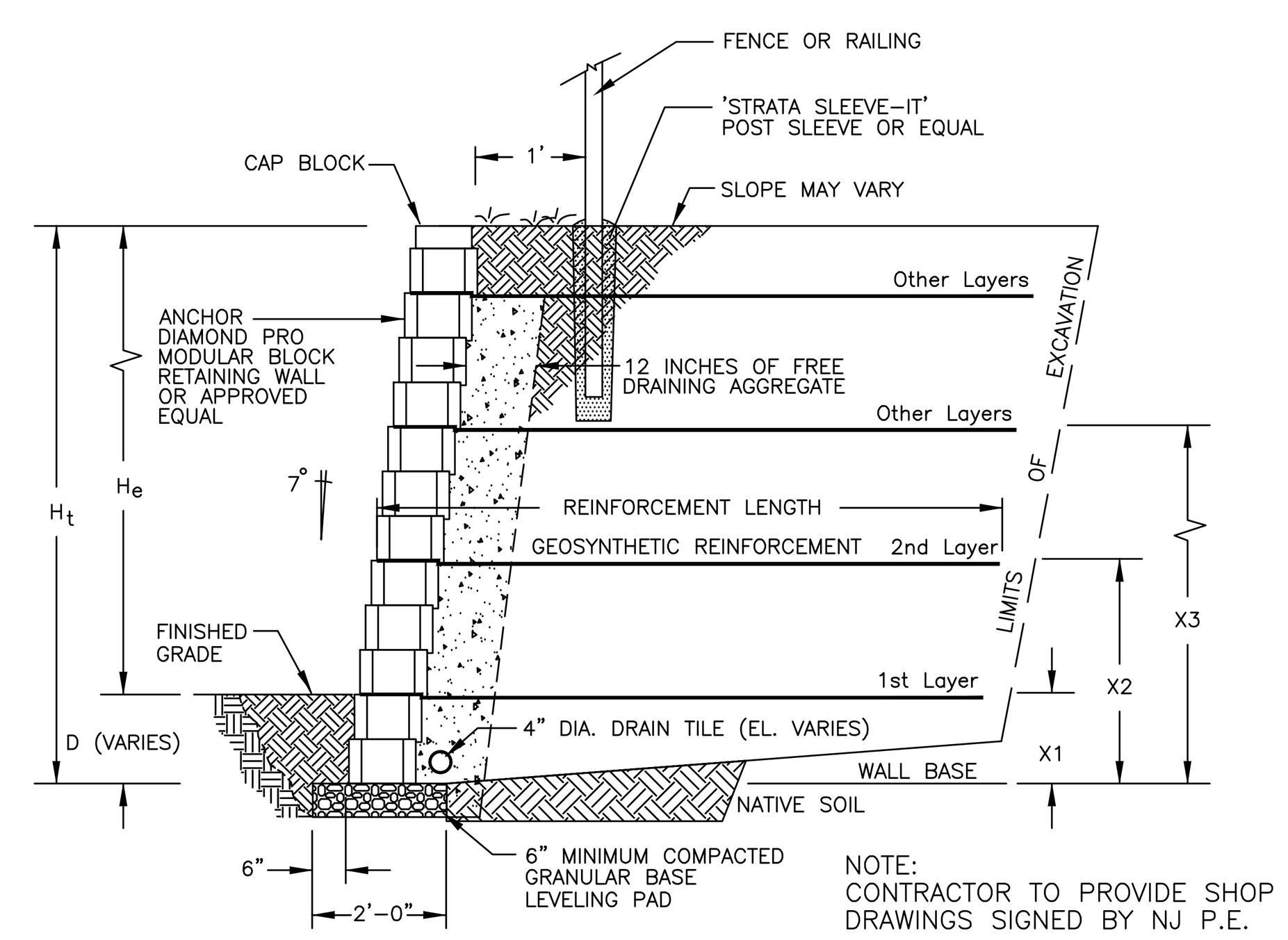
PIPE OUTLET DETAIL

NOT TO SCALE



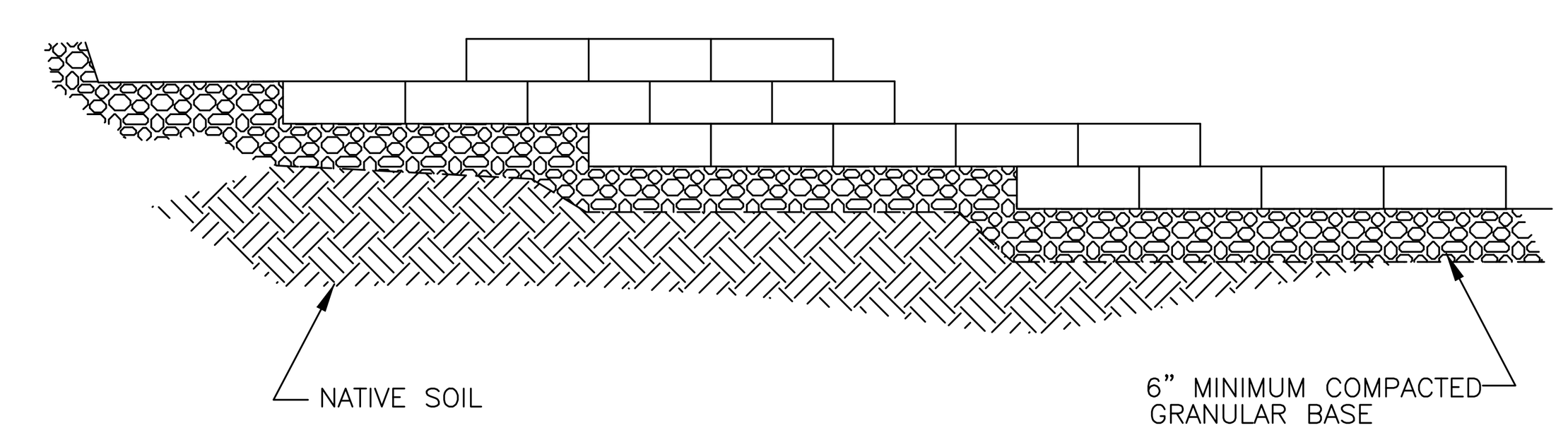
WALL FACE VIEW WITH RAILING OR FENCE

NOT TO SCALE



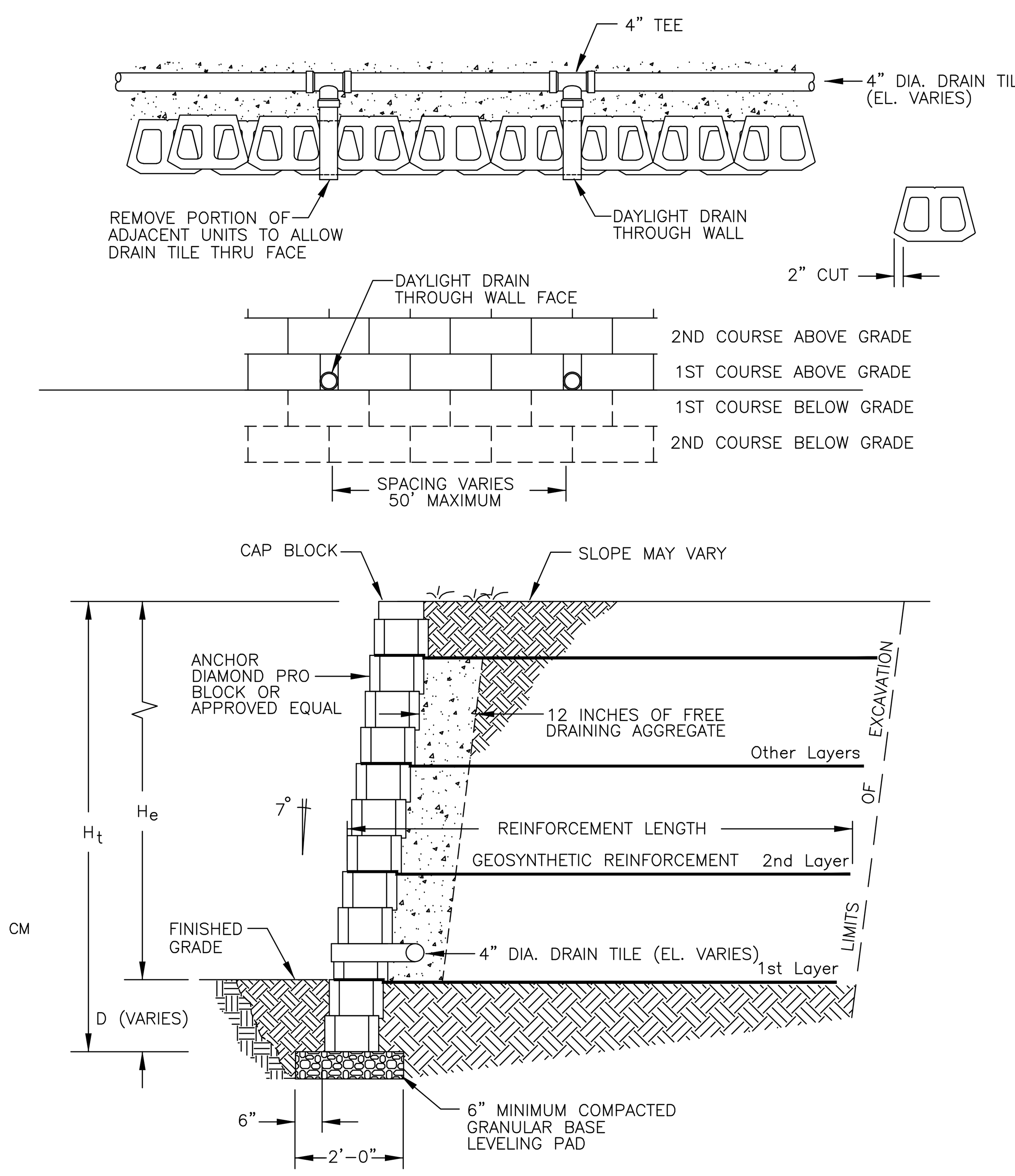
MODULAR BLOCK RETAINING WALL (OR EQUAL) – GEOSYNTHETIC REINFORCED (WALL HEIGHT > 4')

NOT TO SCALE



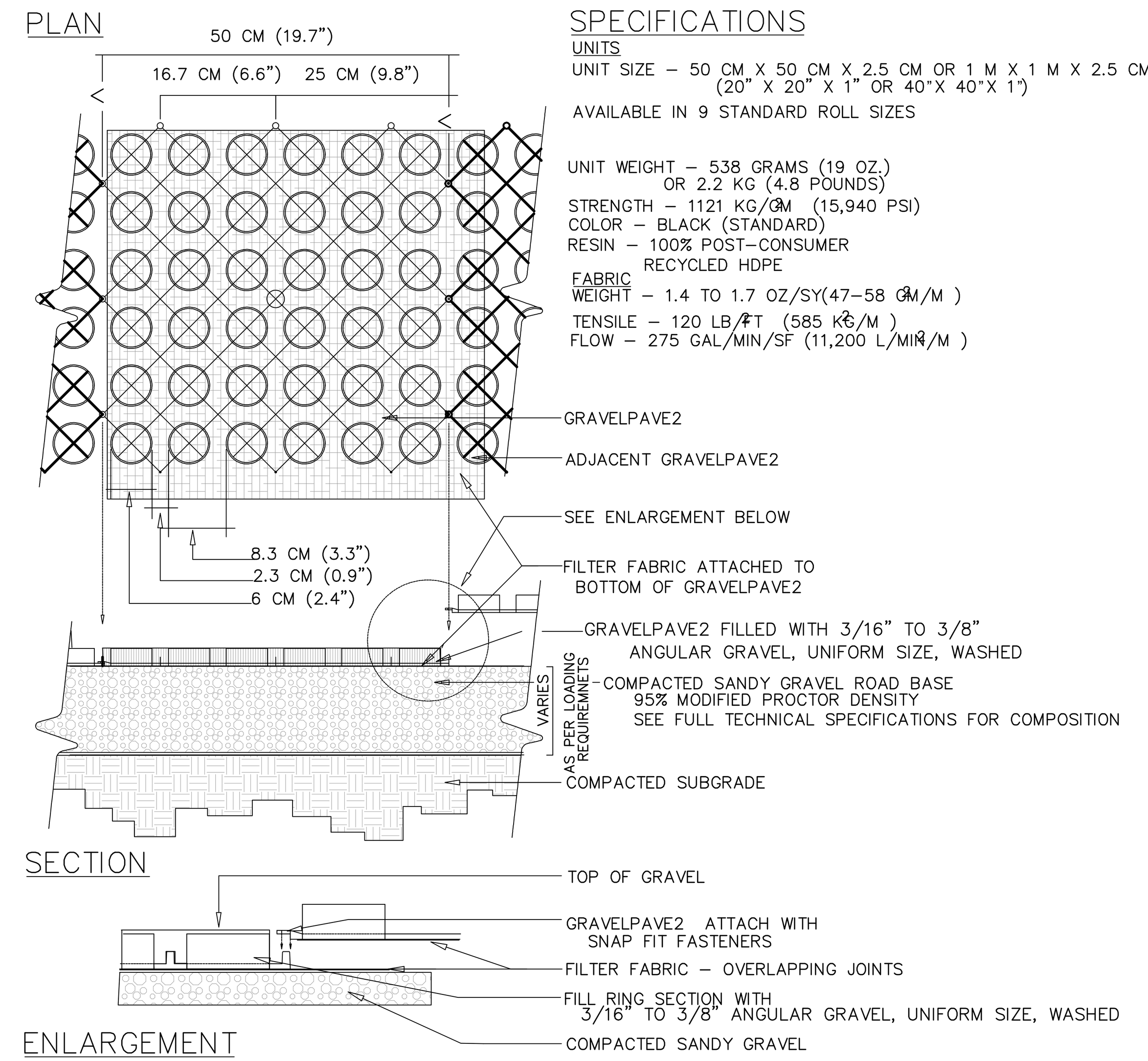
TYPICAL STEP-UP DETAIL

NOT TO SCALE



DAYLIGHT DRAIN TILE THROUGH WALL

NOT TO SCALE



SPECIFICATIONS

UNITS

UNIT SIZE – 50 CM X 50 CM X 2.5 CM OR 1 M X 1 M X 2.5 CM (20" X 20" X 1" OR 40"X 40"X 1")

AVAILABLE IN 9 STANDARD ROLL SIZES

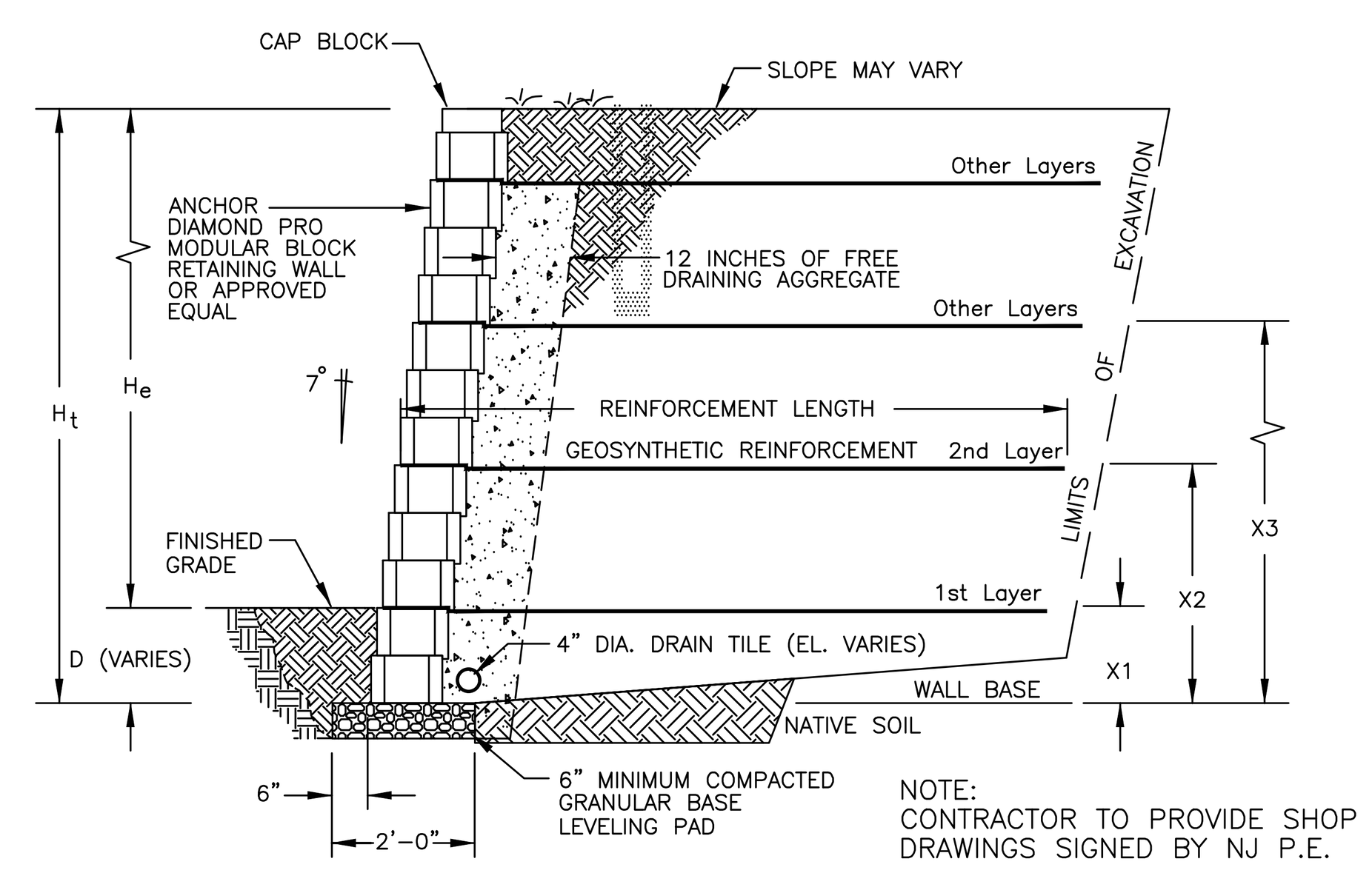
UNIT WEIGHT – 538 GRAMS (19 OZ.) OR 2.2 KG (4.8 POUNDS)
STRENGTH – 1121 KG/CM (15,940 PSI)
COLOR – BLACK (STANDARD)
RESIN – 100% POST-CONSUMER RECYCLED HDPE

FABRIC
WEIGHT – 1.4 TO 1.7 OZ/SY(47-58 GM/M)
TENSILE – 120 LB/FT (585 KG/M)
FLOW – 275 GAL/MIN/SF (11,200 L/MIN/M)

GRAVELPAVE2
OR APPROVED EQUAL
800-233-1510 OR 303-233-8383
WWW.INVISIBLESTRUCTURES.COM

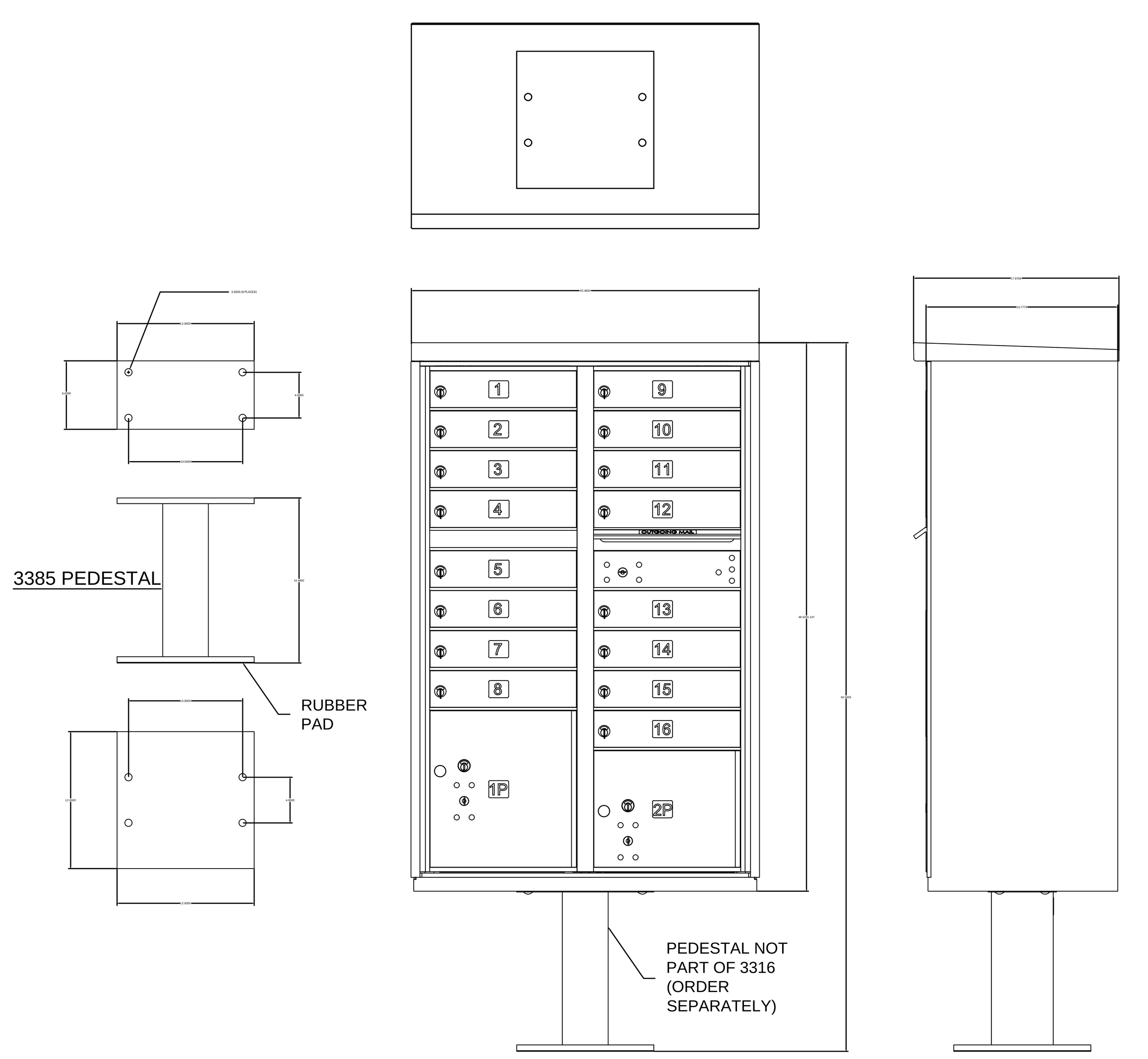
STABILIZED GRAVEL EMERGENCY ACCESS

NOT TO SCALE



MODULAR BLOCK RETAINING WALL (OR EQUAL) – GEOSYNTHETIC REINFORCED (WALL HEIGHT < 2.5')

NOT TO SCALE



GR16 TENANT DOOR CBU MAILBOX
USPS APPROVED (INCLUDES PEDESTAL)

CLUSTER BOX UNIT MAILBOX-16 UNIT

NOT TO SCALE

REVISION	DATE	CHKD
12		
11		
10		
9		
8		
7		
6		
5		
4 REVISED PER TOWNSHIP COMMENTS	03/31/25	SAD
3 REVISED PER ENGINEERING REVIEW	2/14/25	SAD
2 REVISED PER TOWNSHIP COMMENTS	12/18/24	SAD
1 REVISED PER PB COMPLETENESS REVIEW	09/10/24	SAD

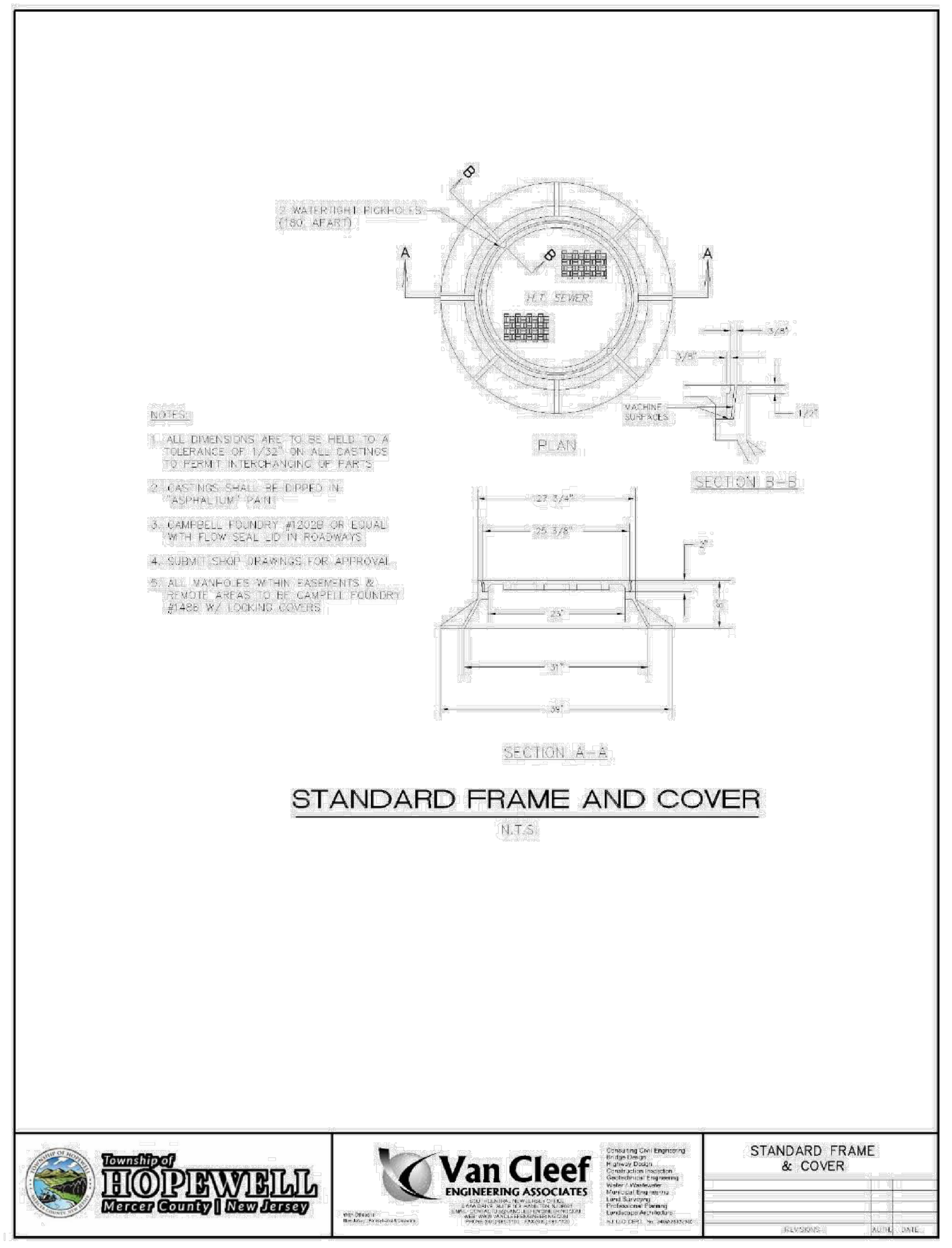
PROJ.: 081391-01-001
DATE: 06/25/2024
CHKD: SAD

Bowman

Bowman Consulting Group Ltd
3 Paragon Way, Suite 170
Freehold, New Jersey 07728
bowman.com
E-mail: NJ@Bowman.com
Phone: 732-665-5500
FAX: 732-665-5501
NJ Certificate of Authorization No. 24GA28222600
SEAN A. DELANY, N.J. Professional Engineer, Lic. 24GE04447100

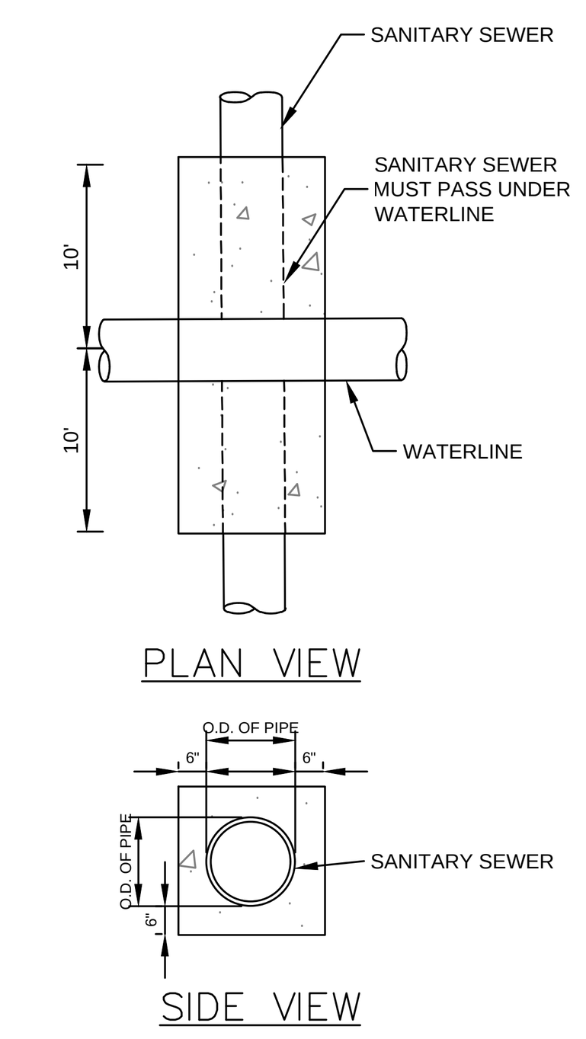
PRELIMINARY AND FINAL MAJOR SUBDIVISION & PRELIMINARY AND FINAL SITE PLAN FOR
VENUE AT HOPEWELL
081391-SP-DET - SHT-18D-UTILITY
BLOCK 93, LOTS 19, 20, 45.01, 46 & 60
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY

SHEET No.
18D
OF



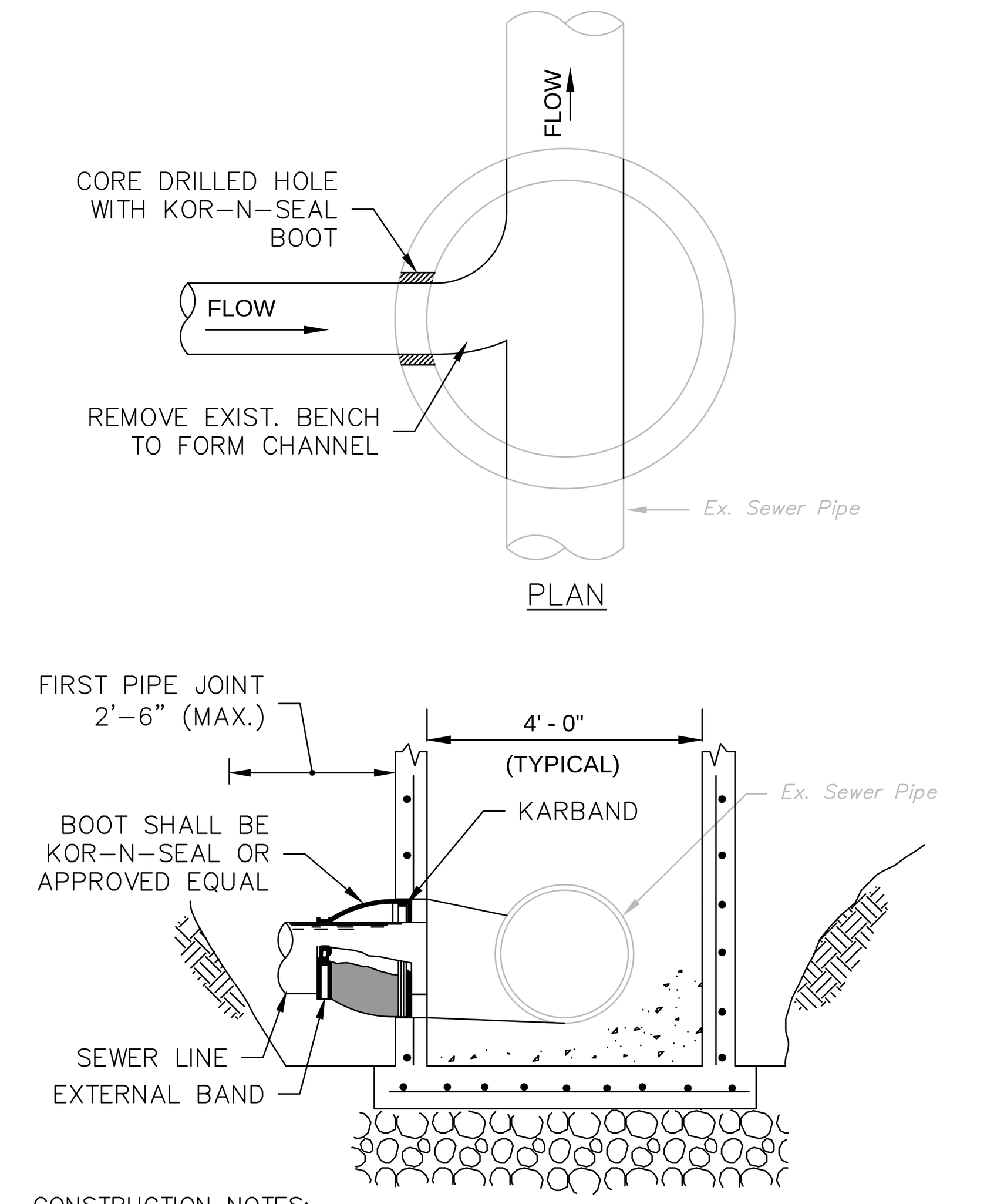
STANDARD FRAME AND COVER

N.T.S.



CONCRETE ENCASEMENT DETAIL

N.T.S.

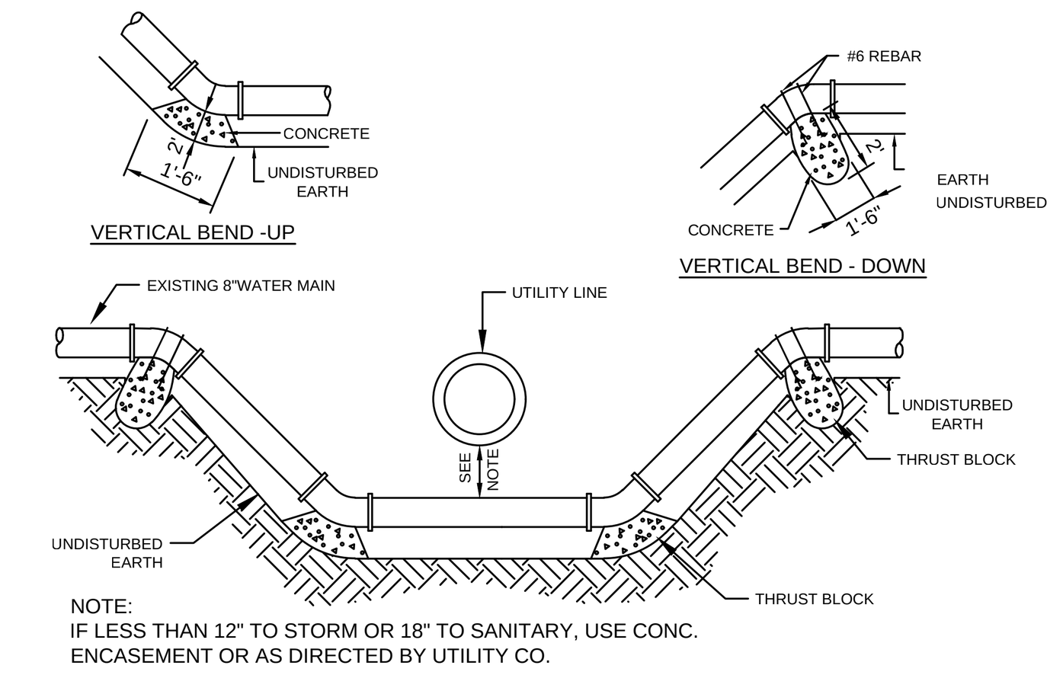


CONSTRUCTION NOTES:

1. A FLEXIBLE MANHOLE BOOT IS TO BE INSTALLED AT ALL MANHOLE AND PIPE CONNECTIONS.
2. FLEXIBLE BOOTS ARE TO BE INSTALLED ACCORDING TO MANUFACTURER'S SPECIFICATIONS.
3. RECONSTRUCT BENCH TO PROVIDE SMOOTH FLOW THROUGH MANHOLE.
4. ALL EXISTING MANHOLES SHALL BE REHABILITATED AS DETERMINED BY THE ENGINEER.

CONNECTION TO EXISTING MANHOLE

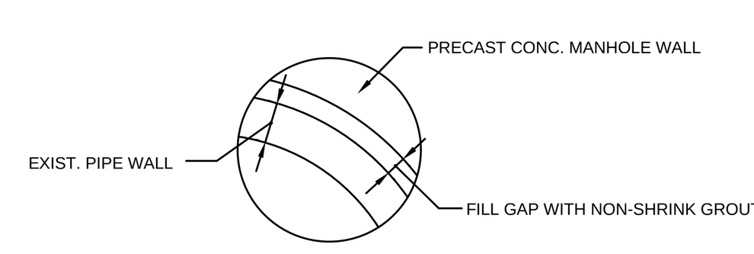
N.T.S.



NOTE:
IF LESS THAN 12" TO STORM OR 18" TO SANITARY, USE CONC. ENCASEMENT OR AS DIRECTED BY UTILITY CO.

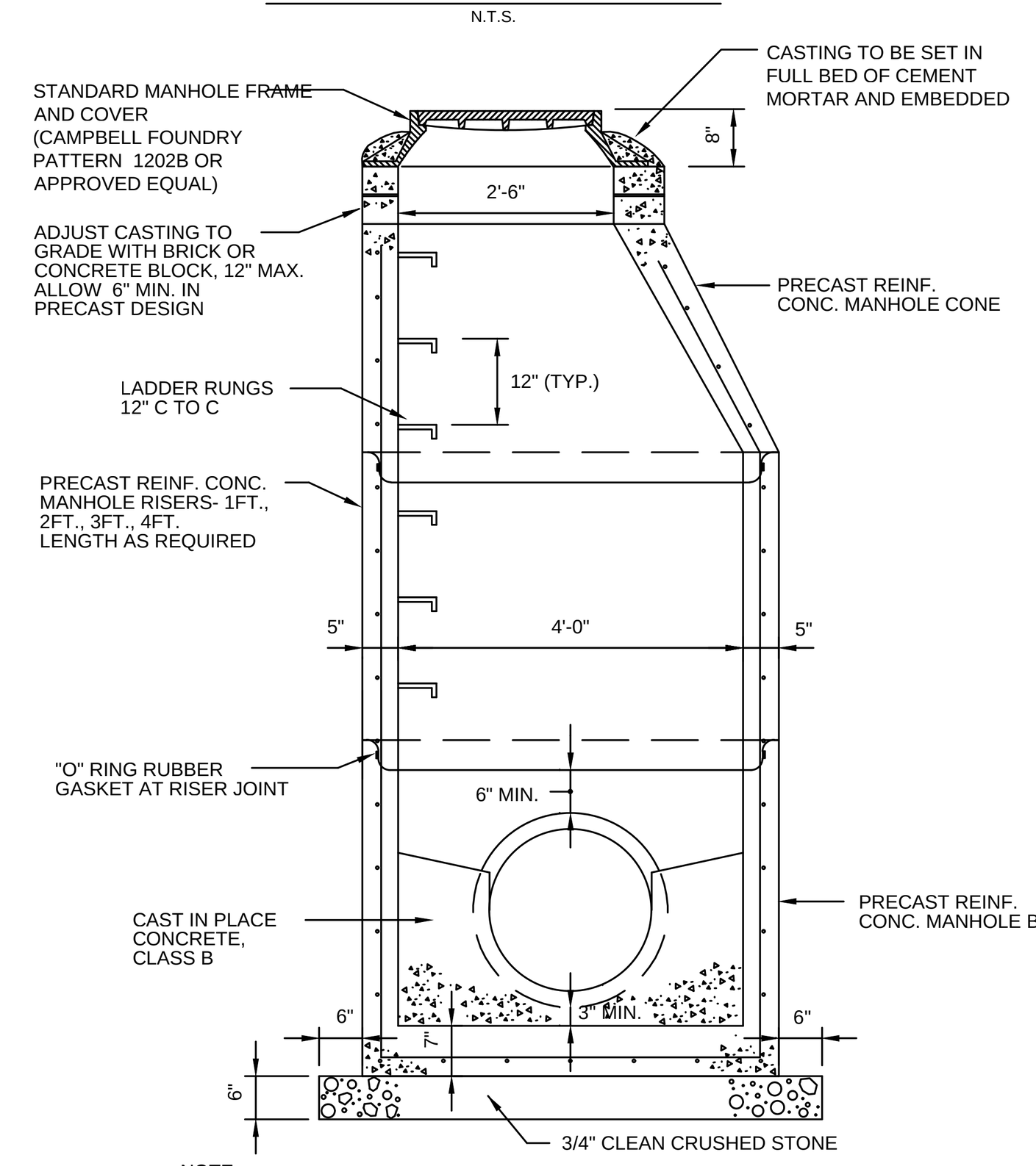
DEPRESSED WATERLINE

NOT TO SCALE



PIPE/WALL JOINT DETAIL

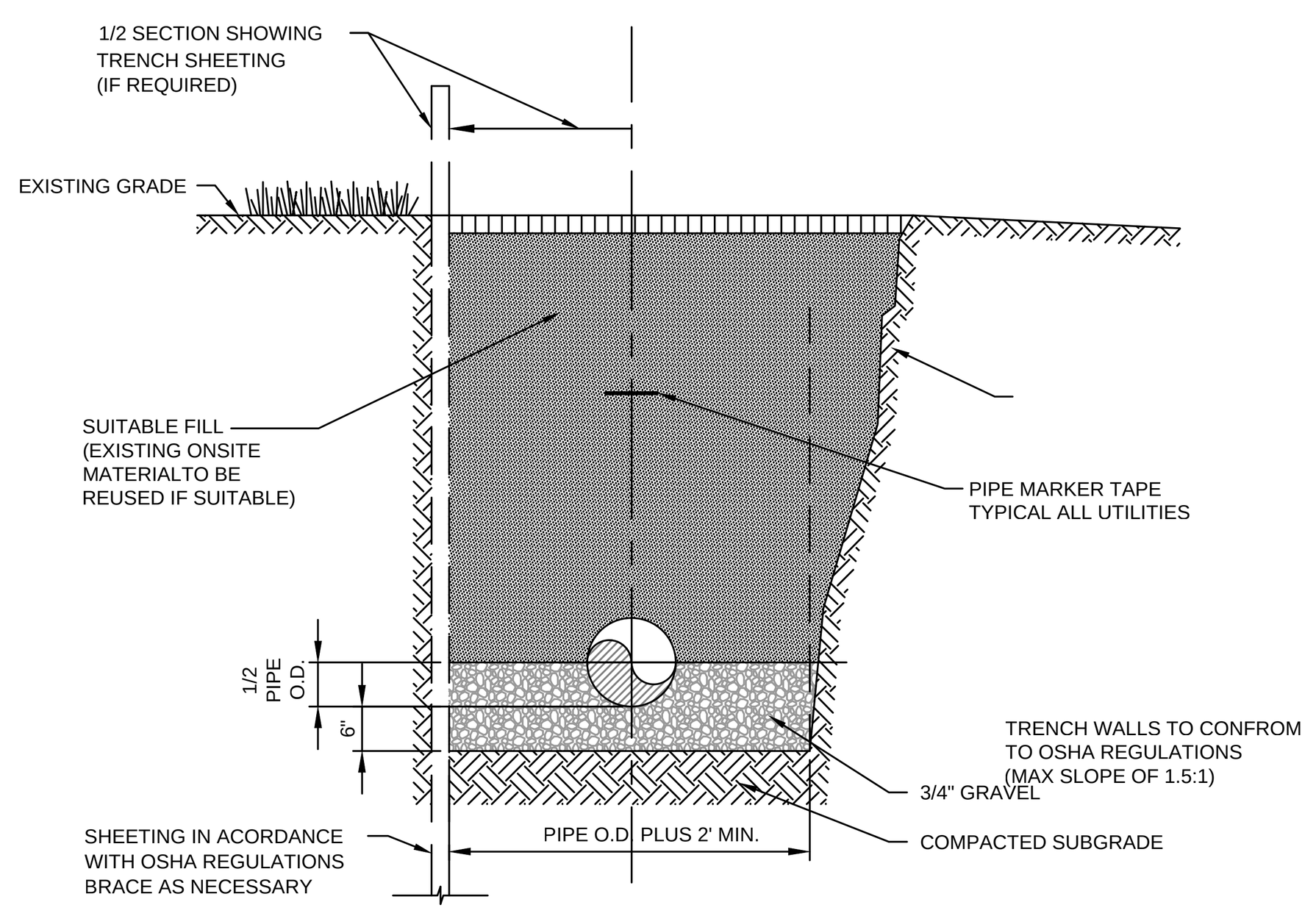
N.T.S.



NOTE:
1. STRUCTURE TO BE CONSTRUCTED AS PRECAST REINFORCED CONCRETE.
2. ALL CONCRETE TO BE 4,500 PSI, NJDOT CLASS B, AIR ENTRAINED.
3. PRECAST MANHOLE SECTIONS PER ASTM C478

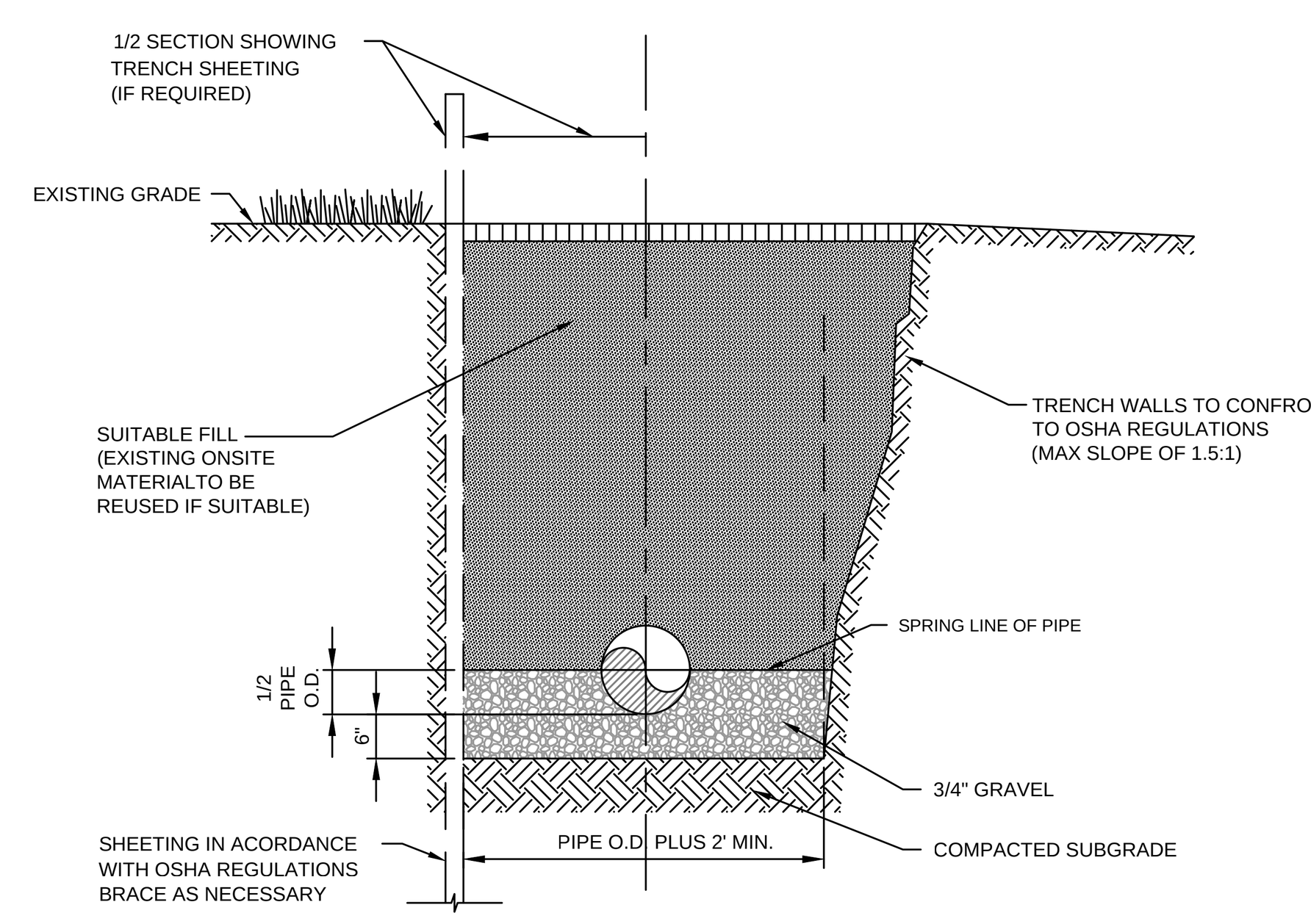
STORM PRECAST MANHOLE

N.T.S.



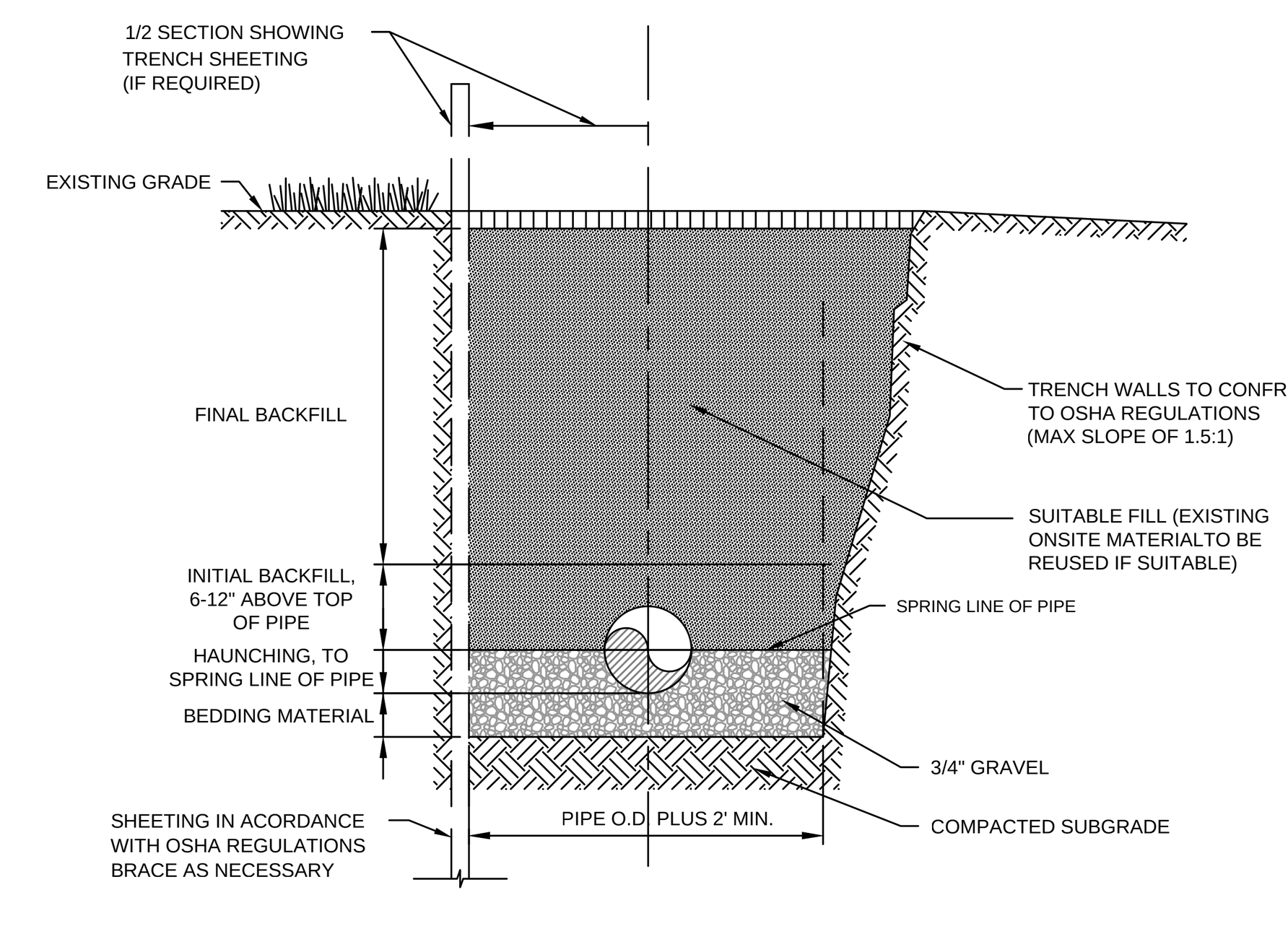
WATER MAIN TRENCH DETAIL

NOT TO SCALE



PIPE TRENCH DETAIL - RCP PIPE

NOT TO SCALE



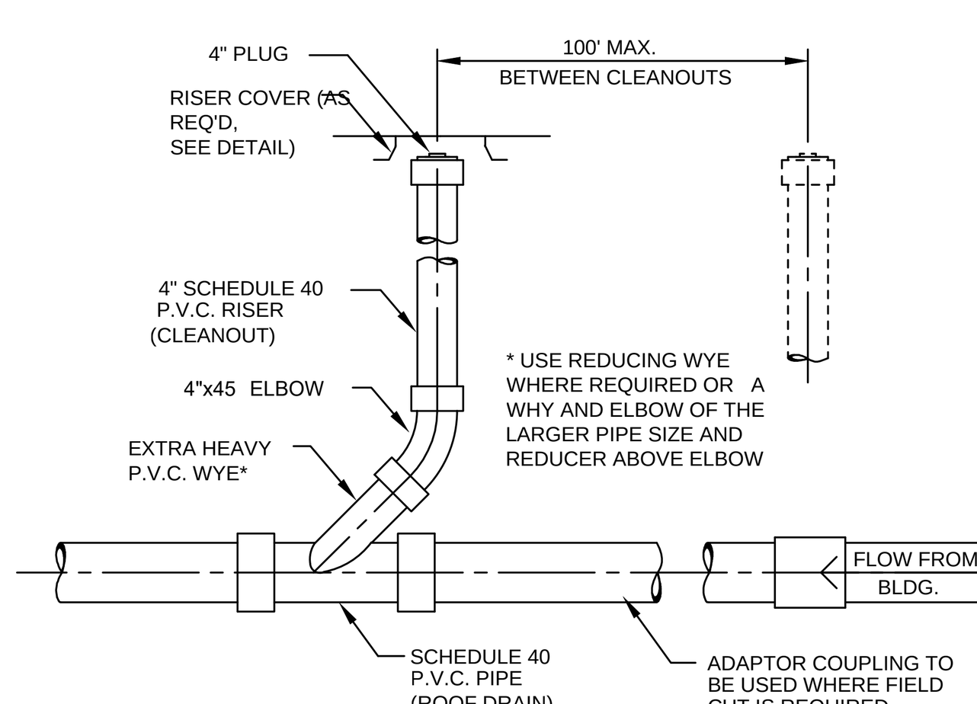
PIPE TRENCH DETAIL - H.D.P.E. PIPE

NOT TO SCALE

NOTES:

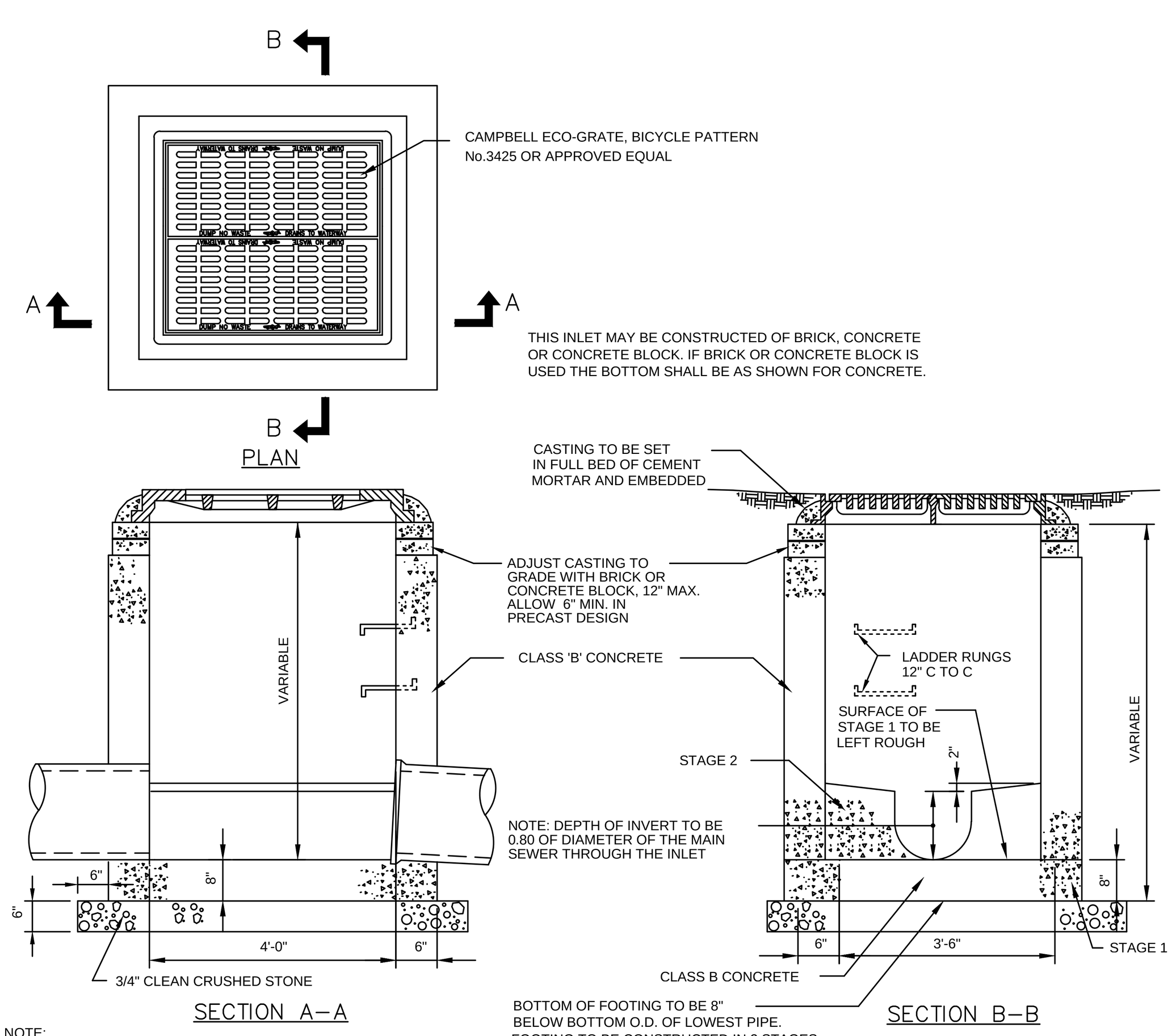
1. FOUNDATION: WHERE THE TRENCH BOTTOM IS UNSTABLE, THE CONTRACTOR SHALL EXCAVATE TO A DEPTH REQUIRED BY THE ENGINEER AND REPLACE WITH A FOUNDATION OF CLASS I OF II MATERIAL AS DEFINED IN ASTM D2321, "STANDARD PRACTICE FOR INSTALLATION OF THERMOPLASTIC PIPE FOR SEWERS ANDOTHER GRAVITY-FLOW APPLICATIONS," LATEST EDITION; AS AN ALTERNATIVE AND AT THE DISCRETION OF THE ENGINEER, THE TRENCH BOTTOM MAY BE STABILIZED USING A WOVEN GEOTEXTILE FABRIC.
2. BEDDING: SUITABLE MATERIAL SHALL BE CLASS I, II, OR III AND INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.

   UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, MINIMUM BEDDING THICKNESS SHALL BE 4" FOR 4" TO 24" AND 42" TO 48" CORRUGATED POLYETHYLENE PIPE AND 6" FOR 30 TO 26" CPEP.
3. HAUNCHING AND INITIAL BACKFILL: SUITABLE MATERIAL SHALL BE CLASS I, II, OR III AND INSTALLED AS REQUIRED IN ASTM D2321, LATEST EDITION.



ROOF DRAIN CLEANOUT DETAIL

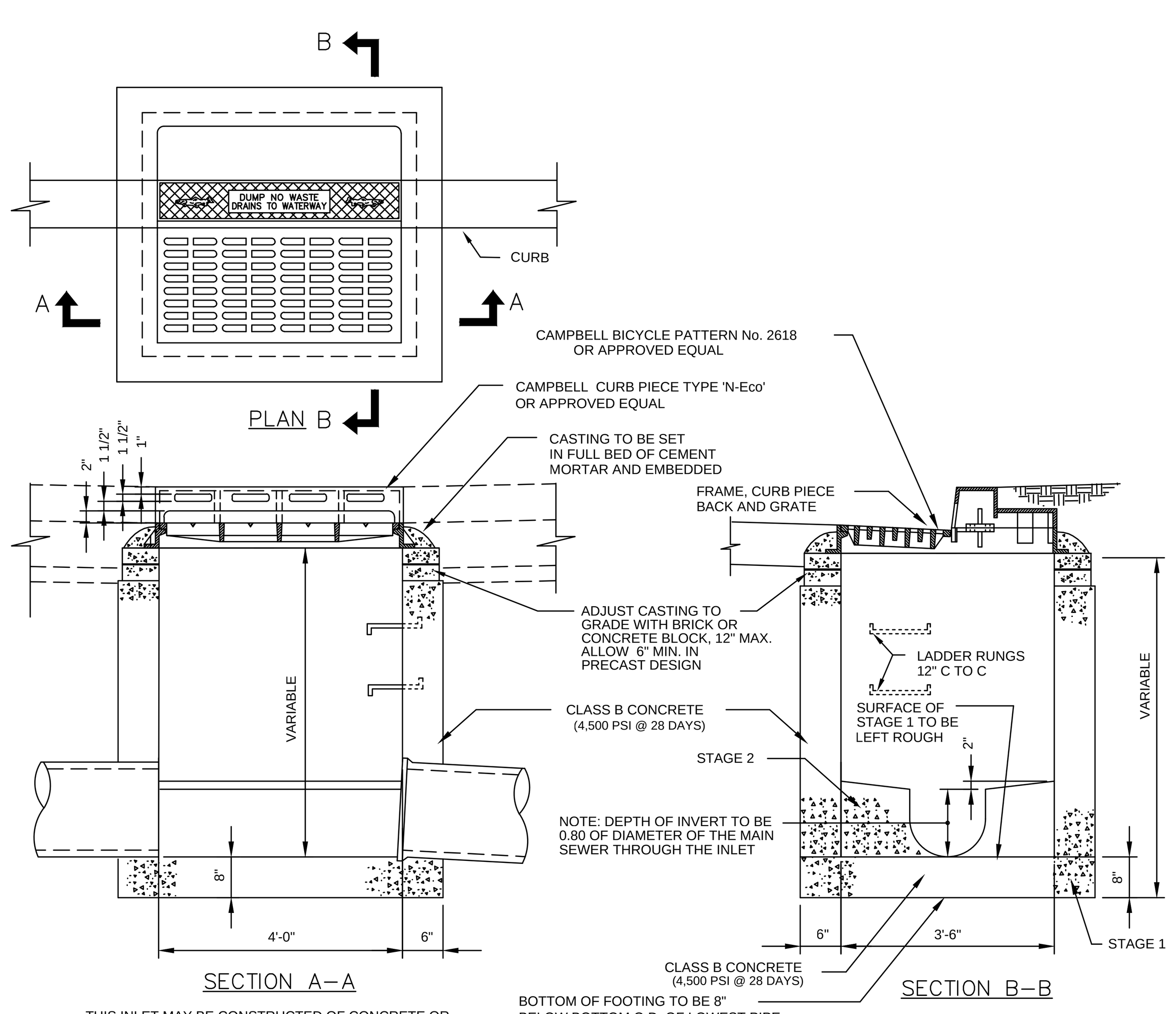
NOT TO SCALE



NOTE:
1. STRUCTURE TO BE CONSTRUCTED AS PRECAST REINFORCED CONCRETE.
2. ALL CONCRETE TO BE 4,500 PSI, NJDOT CLASS B, AIR ENTRAINED.

INLET TYPE "E"

N.T.S.



THIS INLET MAY BE CONSTRUCTED OF CONCRETE OR CONCRETE BLOCK.

INLET TYPE "B" DETAIL WITH C.I. CURB PIECE-BACK-FRAME AND GRATE

N.T.S.

INLET & MANHOLE NOTES

1. CORBELLING OF INLET WALLS WILL BE PERMITTED AT THE RATE OF 1/2" PER 8" OF HEIGHT OF WALL: MAXIMUM CORBEL 6" PER WALL.
2. WHEN THE ITEM MANHOLES, INLETS AND CATCH BASINS, ADDITIONAL DEPTH, IS SCHEDULED IN THE PROPOSAL AND THE DEPTH OF A STRUCTURE EXCEEDS 10' AS MEASURED FROM TOP OF COVER OR GRATE TO INVERT OF DRAINAGE STRUCTURE, THE WALLS OF THE STRUCTURE BELOW A DEPTH OF 8' SHALL BE 12" THICK, AND THE OVERALL HORIZONTAL DIMENSIONS OF FOUNDATIONS SHALL BE INCREASED 12", AND EXCEPT IN ROCK THE DEPTH INCREASED TO 12".
3. EXCEPT FOR CATCH BASINS AND TYPE A INLETS, FOOTINGS AND INVERTS SHALL BE CONSTRUCTED IN TWO STAGES, AND THE BOTTOM OF THE FOOTINGS SHALL BE 8" BELOW THE OUTER WALL OF THE LOWEST PIPE IN INLETS AND 10" IN MANHOLES.
4. LADDER RUNGS OF PRECAST INLETS SHALL BE SPACED A MAXIMUM OF 18".
5. INLET FOUNDATIONS WHICH ARE PRECAST SHALL BE PLACED ON A 6" THICK BED OF COMPACTED COARSE AGGREGATE SIZE No. 57. THE COARSE AGGREGATE SHALL EXTEND 6" BEYOND THE HORIZONTAL LIMITS OF THE INLET FOUNDATION.
6. CASTINGS FOR PRECAST INLETS AND MANHOLES SHALL BE ADJUSTED TO GRADE WITH COURSES OF BRICK, AS REQUIRED, 12" MAXIMUM. 6" MIN. SHALL BE ALLOWED FOR IN PRECAST DESIGN.
7. WHEN THE DEPTH OF A PRECAST INLET EXCEEDS 10' AS MEASURED FROM TOP OF GRATE TO INVERT, THE FOUNDATION SHALL BE INCREASED TO 12". WHEN ROCK IS ENCOUNTERED THE DEPTH OF THE FOUNDATION SHALL NOT BE INCREASED.
8. MINIMUM WALL REINFORCEMENT FOR PRECAST INLETS TYPE A, B, C, E, D-1 AND B MODIFIED.

DEPTH BELOW TOP OF GRATE	HORIZONTAL REINFORCEMENT	VERTICAL REINFORCEMENT	WALL THICKNESS
0' TO 10'-0"	#4 @ 10" C.C.	#4 @ 18" C.C.	6"
10'-1" TO 15'-0"	#4 @ 8" C.C.	#4 @ 18" C.C.	6"
15'-1" TO 20'-0"	#4 @ 6" C.C.	#4 @ 18" C.C.	6"

   REINFORCING SHOWN FOR PRECAST INLETS IS THE MINIMUM REQUIRED. ADDITIONAL REINFORCING FOR HANDLING IS THE RESPONSIBILITY OF THE CONTRACTOR.
9. THE ITEM OF RESET HEADS SHALL INCLUDE RAISING OR LOWERING THE HEAD CASTINGS OF INLETS AND CATCH BASINS, OR THE RAISING OF MANHOLE HEAD CASTINGS, FOR A MAXIMUM OF 12". ALL OTHER CHANGES IN POSITION OF HEAD CASTING SHALL BE CONSIDERED AS RECONSTRUCTED MANHOLES OR RECONSTRUCTED INLETS OR CATCH BASINS.
10. WHEN CURB PIECE HEIGHT SPECIFIED IS GREATER THAN CURB FACE HEIGHT, DEPRESS THE GUTTER OF GRATE SO THAT THE TOP OF CURB PIECE IS AT THE SAME ELEVATION AS THE TOP OF CURB.

NO.	REVISION	DATE	CHKD
12			
11			
10			
9			
8			
7			
6			
5			
4	REVISED PER TOWNSHIP COMMENTS	03/31/25	SAD
3	REVISED PER ENGINEERING REVIEW	2/14/25	SAD
2	REVISED PER TOWNSHIP COMMENTS	12/18/24	SAD
1	REVISED PER PB COMPLETENESS REVIEW	09/10/24	SAD

PROJ.: 081391-01-001
DATE: 06/25/2024
CHKD: SAD

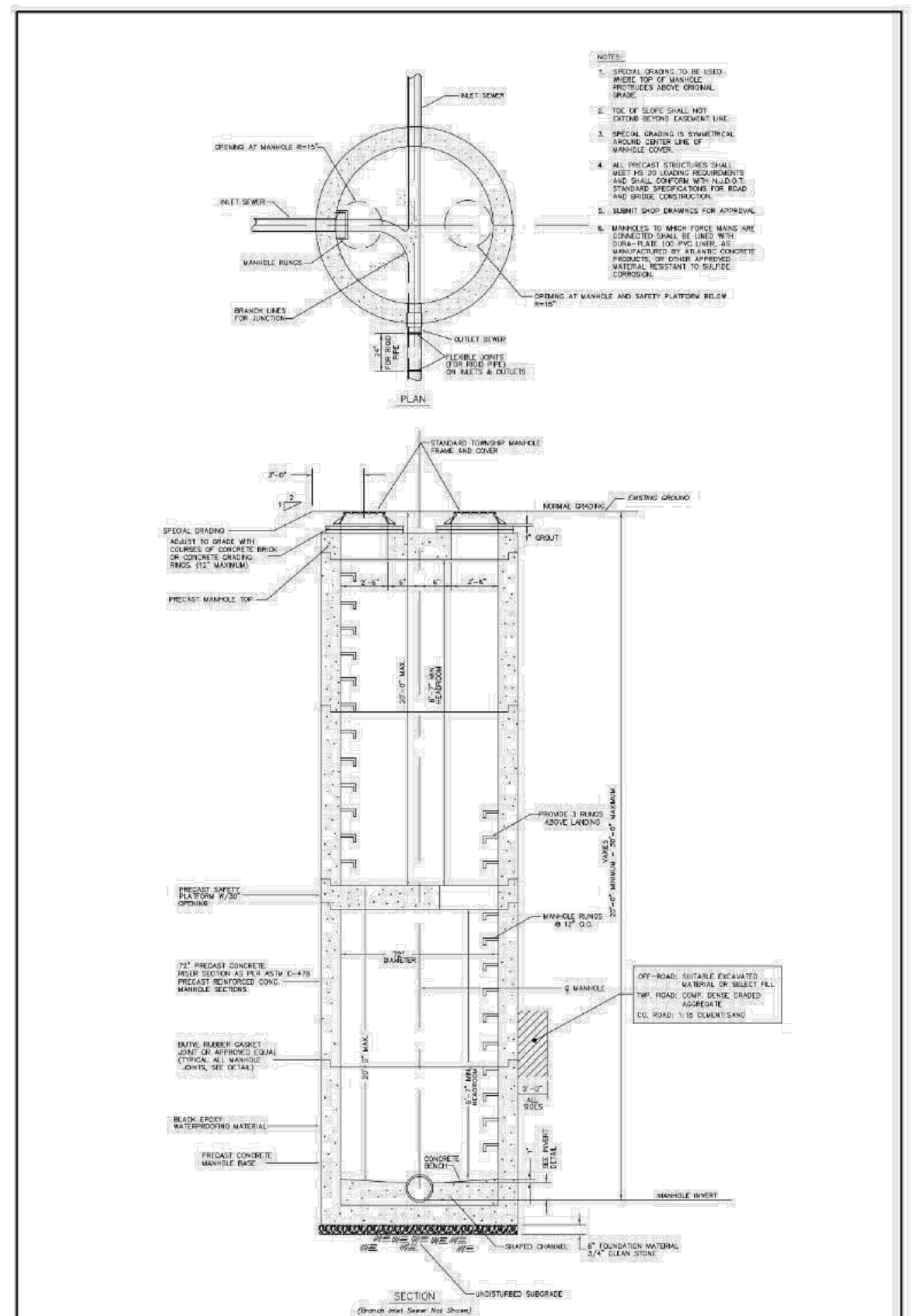
Bowman

Bowman Consulting Group Ltd
3 Paragon Way, Suite 170
Freehold, New Jersey 07728
bowman.com
E-mail: NJ@Bowman.com
Phone: 732-665-5500
FAX: 732-665-5501
NJ Certificate of Authorization No. 24GA28222600
SEAN A. DELANY, N.J. Professional Engineer, Lic. 24GE04447100

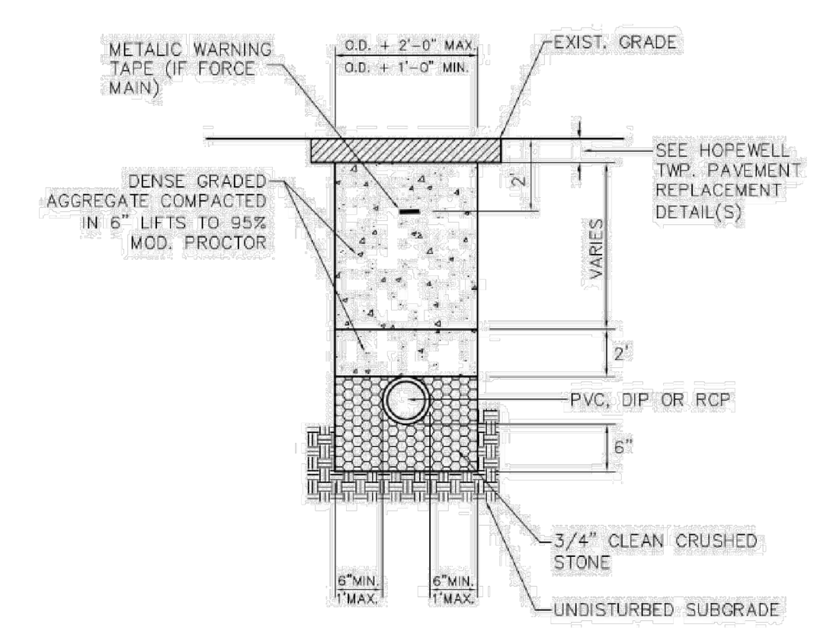
PRELIMINARY AND FINAL MAJOR SUBDIVISION & PRELIMINARY AND FINAL SITE PLAN FOR
VENUE AT HOPEWELL
081391-SP-DET - SHT-18E-UTILITY
BLOCK 93, LOTS 19, 20, 45.01, 46 & 60
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY

SHEET No.
18E
OF

V:\081391 - Nursery Road-Hopewell\081391-01-001 (ENG) - Venue at Hopewell SP\Engineering\Engineering Plans\02 Site Plans\081391-SP-DET.dwg 03/31/25 03:53:07PM, dino.spinelli, LAYOUT:SHT-18E-UTILITY

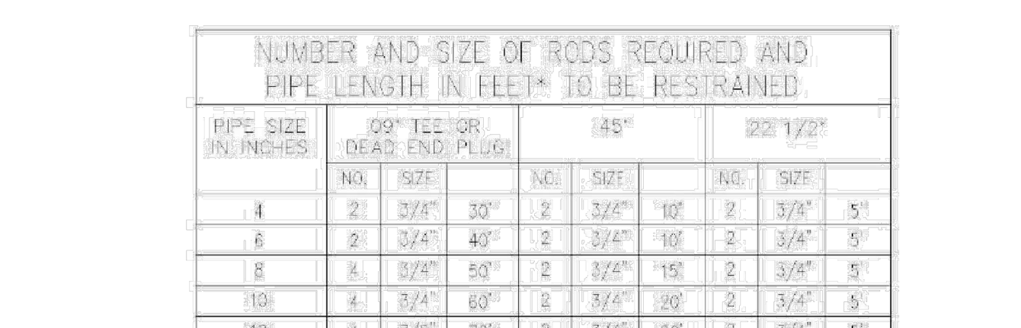


DEEP PRECAST MANHOLE



TRENCH HOPEWELL TWP. ROADWAY

NOT TO SCALE



NUMBER AND SIZE OF RODS REQUIRED AND PIPE LENGTH IN FEET* TO BE RESTRAINED									
PIPE SIZE IN INCHES	90° TEE OR DEAD END PLUG			45°			22 1/2°		
	NO.	SIZE		NO.	SIZE		NO.	SIZE	
4	2	3/4"	30'	2	3/4"	10'	2	3/4"	5'
6	2	3/4"	40'	2	3/4"	10'	2	3/4"	5'
8	4	3/4"	50'	2	3/4"	15'	2	3/4"	5'
10	4	3/4"	60'	2	3/4"	20'	2	3/4"	5'
12	4	7/8"	70'	2	3/4"	20'	2	3/4"	5'
14	4	1"	80'	2	3/4"	25'	2	3/4"	5'
16	4	1"	80'	2	3/4"	25'	2	3/4"	5'

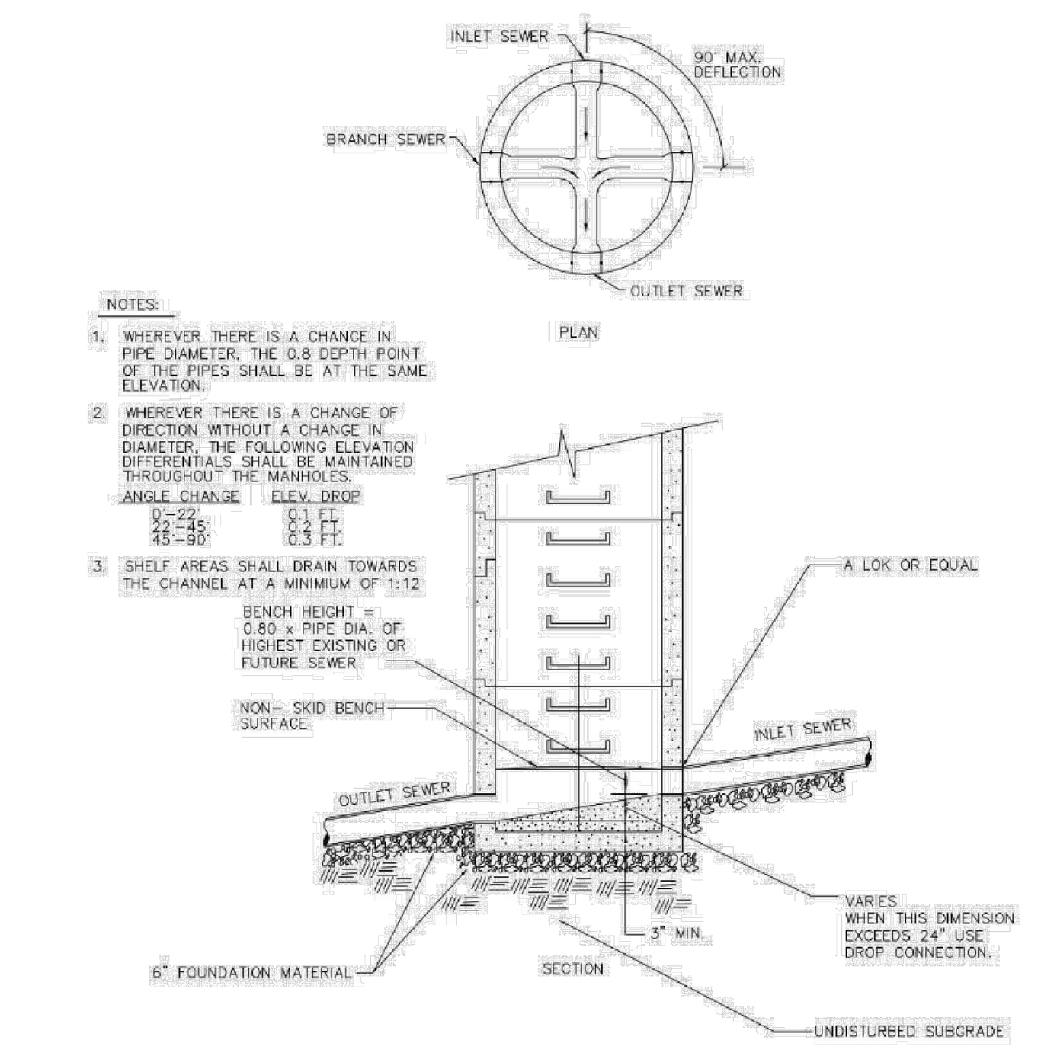
* LENGTH OF PIPE TO BE RESTRAINED IS FOR EACH SIDE OF BEND

NOTES:

1. USE MECHANICAL JOINT RETAINER MEGA LUG OR EQUAL. PROVIDE A THRUST RESTRANT SYSTEM EQUIVALENT TO THAT LISTED IN THE TABLE FOR CLAMPS AND RODS. ALL JOINTS WITHIN THE LENGTH LISTED IN THE TABLE SHALL BE RESTRAINED.
2. LENGTHS ARE BASED ON THE FOLLOWING CRITERIA: 150 PSI MAXIMUM PRESSURE AND 3' - 6' OF COVER. TABLE IS FOR USE WITH CI/DIP ONLY. IF TEST CONDITIONS ARE MORE SEVERE OR LARGER PIPES ARE PROPOSED, THEN SPECIAL COMPUTATIONS MUST BE MADE BY DESIGNER.
3. A ANTI-RUST COATING SHALL BE APPLIED TO ALL BOLTS, NUTS, WASHERS, RODS, THRUST RESTRAINT BOLTS AND ALL UNCOATED HARDWARE.

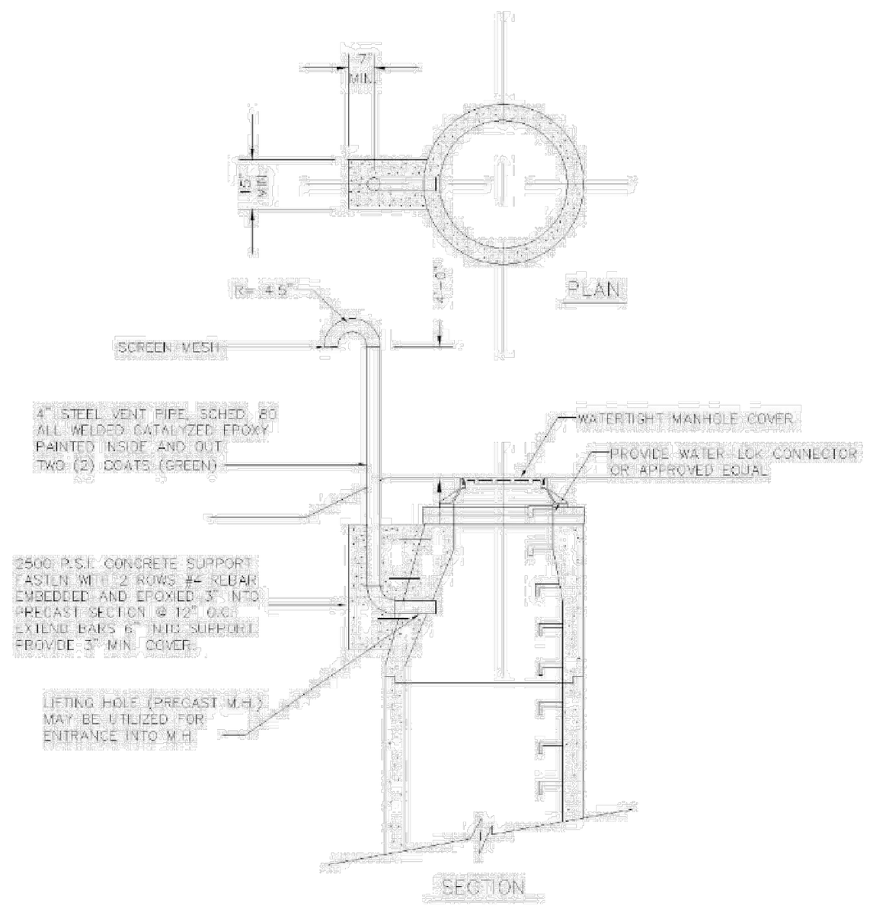
FORCE MAIN JOINT RESTRAINT SCHEDULE

NOT TO SCALE



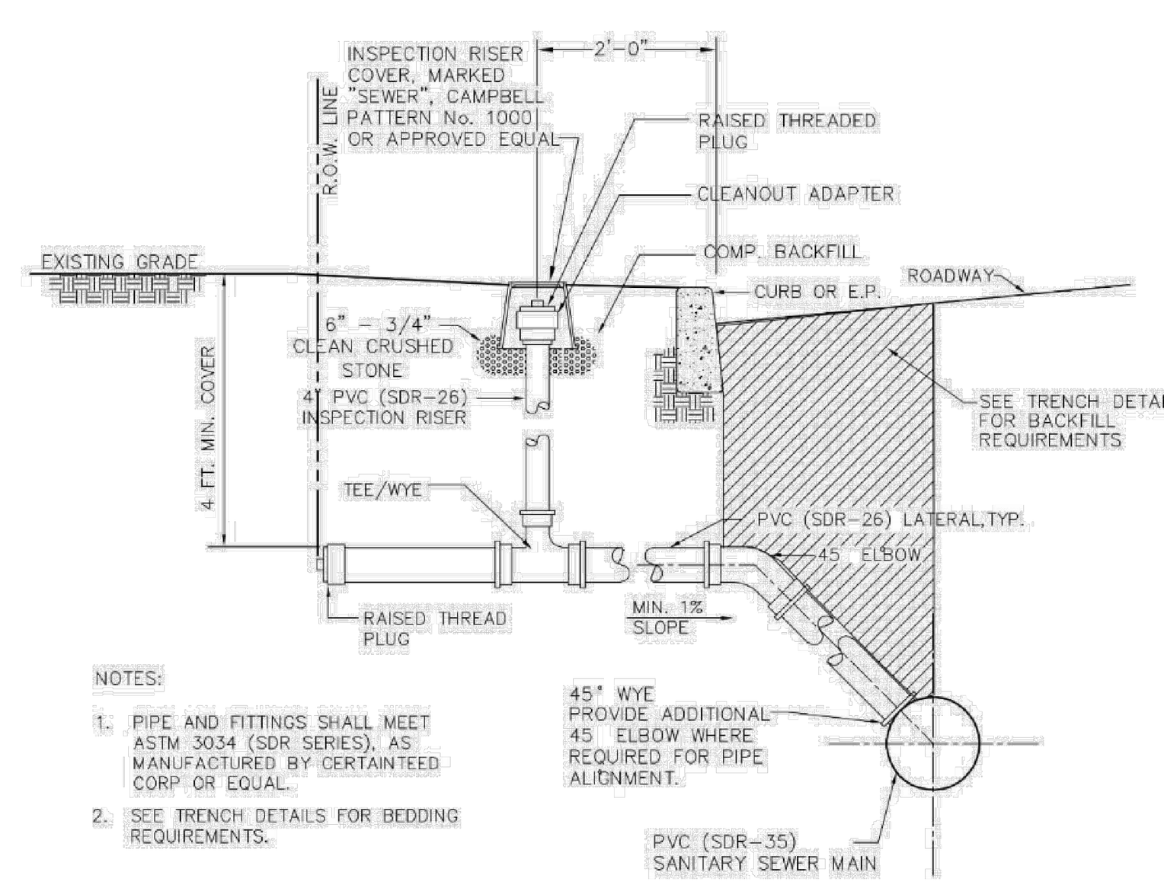
INVERT DETAIL

N.T.S.



WATERTIGHT MANHOLE VENT

N.T.S.



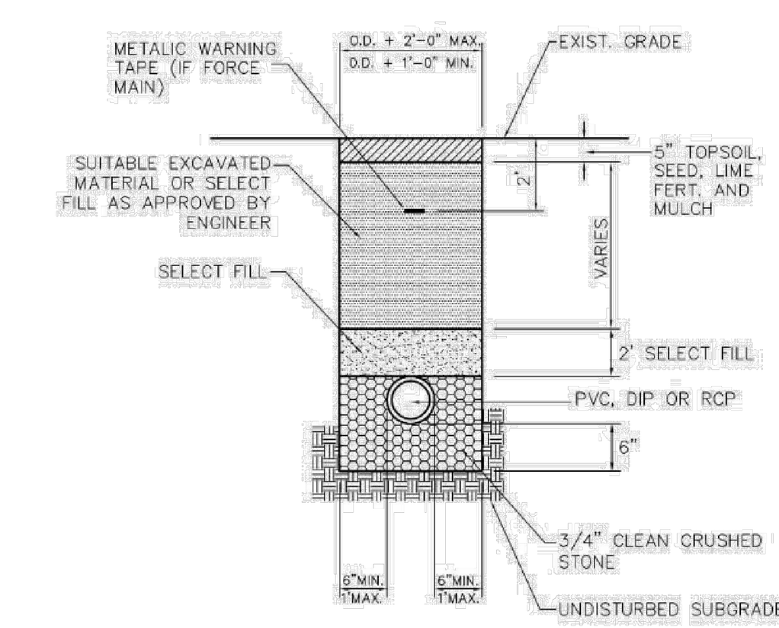
LATERAL

N.T.S.

SIZE OF PIPE	MAXIMUM JOINT DEFLECTION IN DEGREES	DEFLECTION IN INCHES	APPROXIMATE RADIUS IN FEET OF PRODUCED BY SUCCESSION OF JOINTS
4	5°	19	206
6	5°	19	206
8	5°	19	206
10	5°	19	206
12	5°	19	206
14	5°	19	206

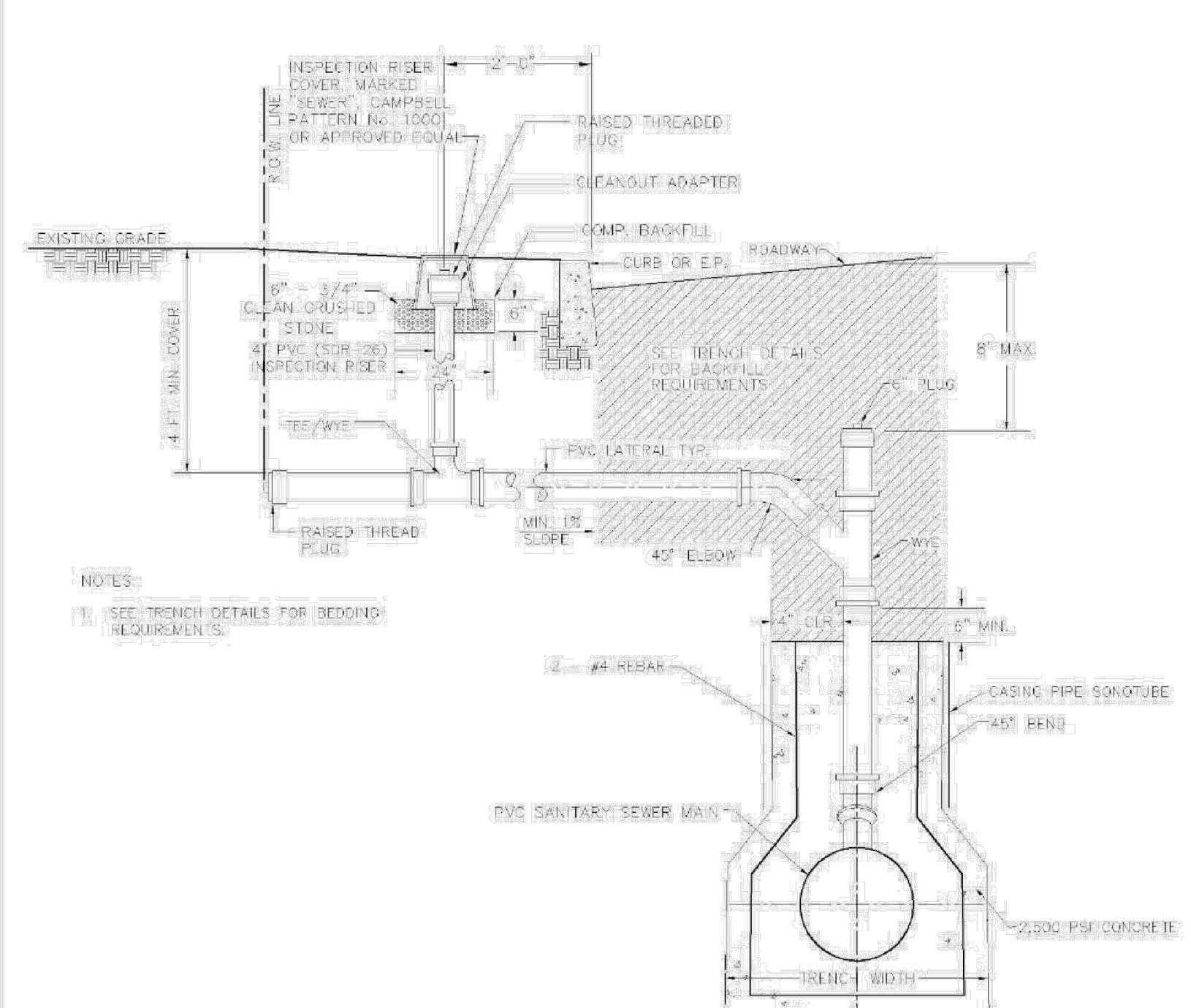
TYTON JOINT PIPE OR AS PER MANUFACTURE'S RECOMMENDATIONS FOR APPROVED EQUAL

MAXIMUM DEFLECTION FULL LENGTH PIPE

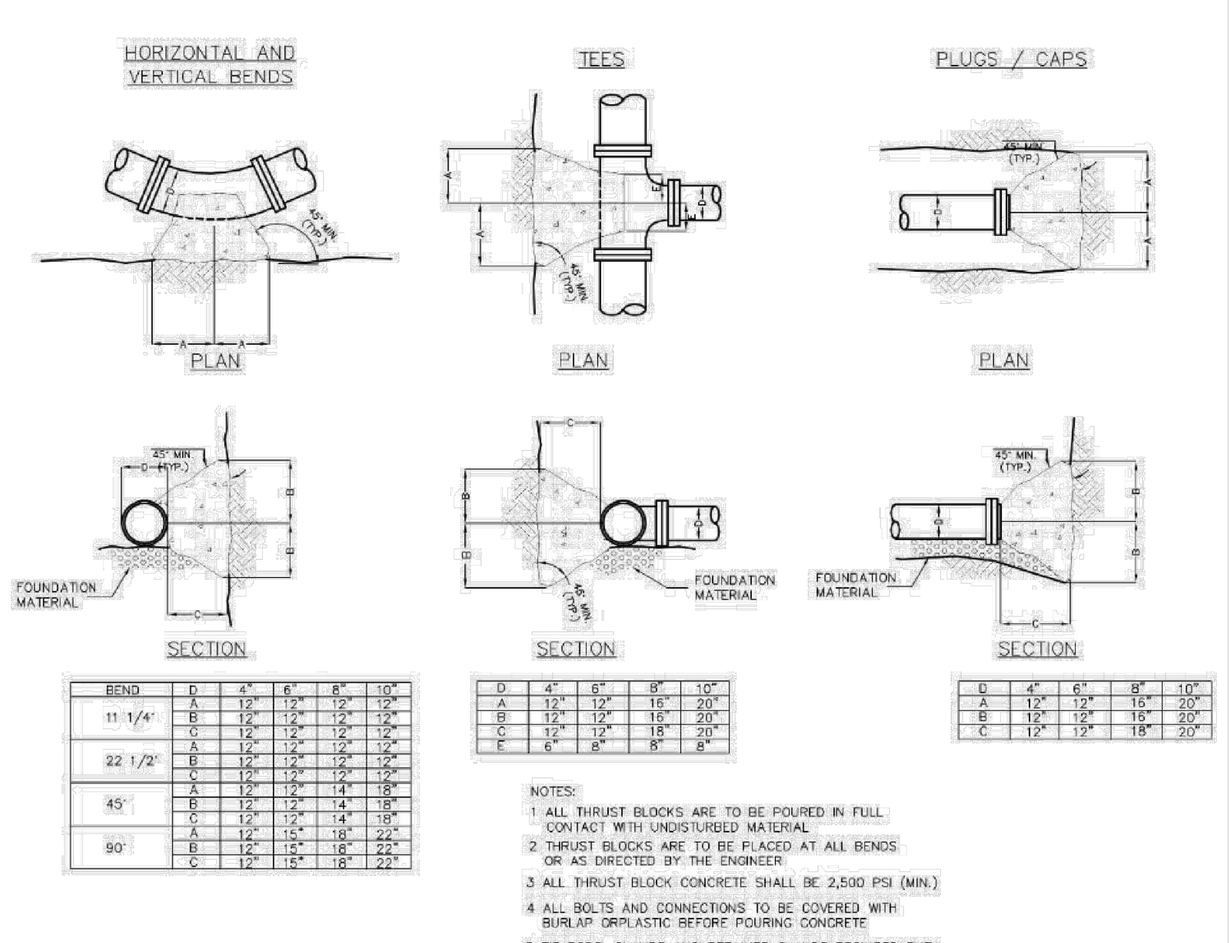


TRENCH OFF-ROAD AREA

NOT TO SCALE

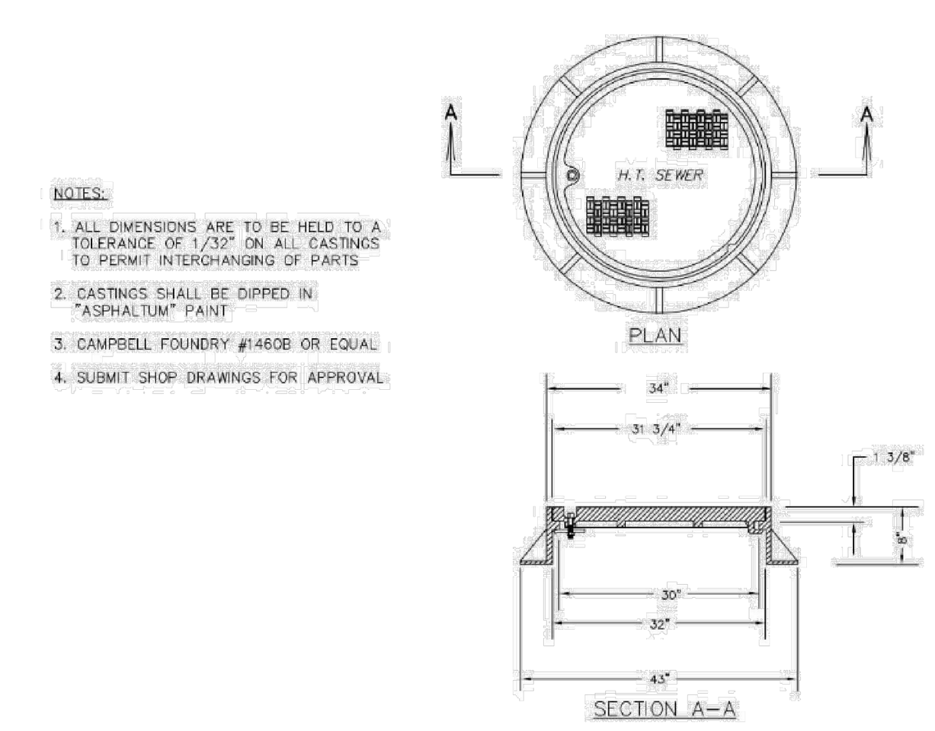


DEEP HOUSE LATERAL



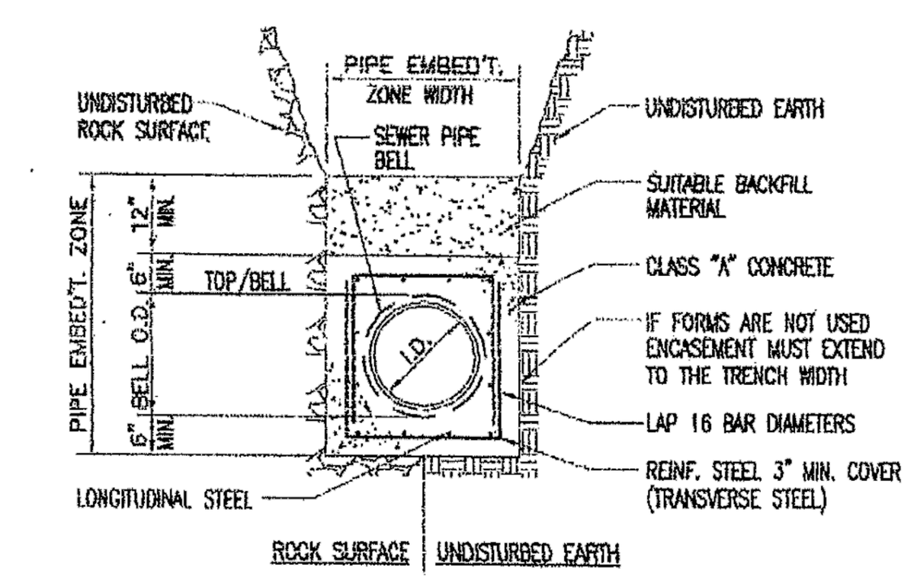
THRUST BLOCK DETAILS

N.T.S.



CLEANOUT AND AIR VALVE FRAME AND COVER

N.T.S.



1. TO BE USED WHERE DIRECTED OR WHERE SEWER IS LESS THAN 18" ABOVE UTILITY
2. ALL REINFORCING STEEL SHALL BE #4 AT 12" O.C. EACH WAY

REV. 3 – JULY, 2019
REV. 2 – MAY, 2013
REV. 1 – JANUARY, 2003

Jacobs Environmental, Inc. Piscataway, New Jersey August 1996 | Ewing-Lawrence Sewerage Authority Standard Details | SANITARY Full Encasement | 31 of 34

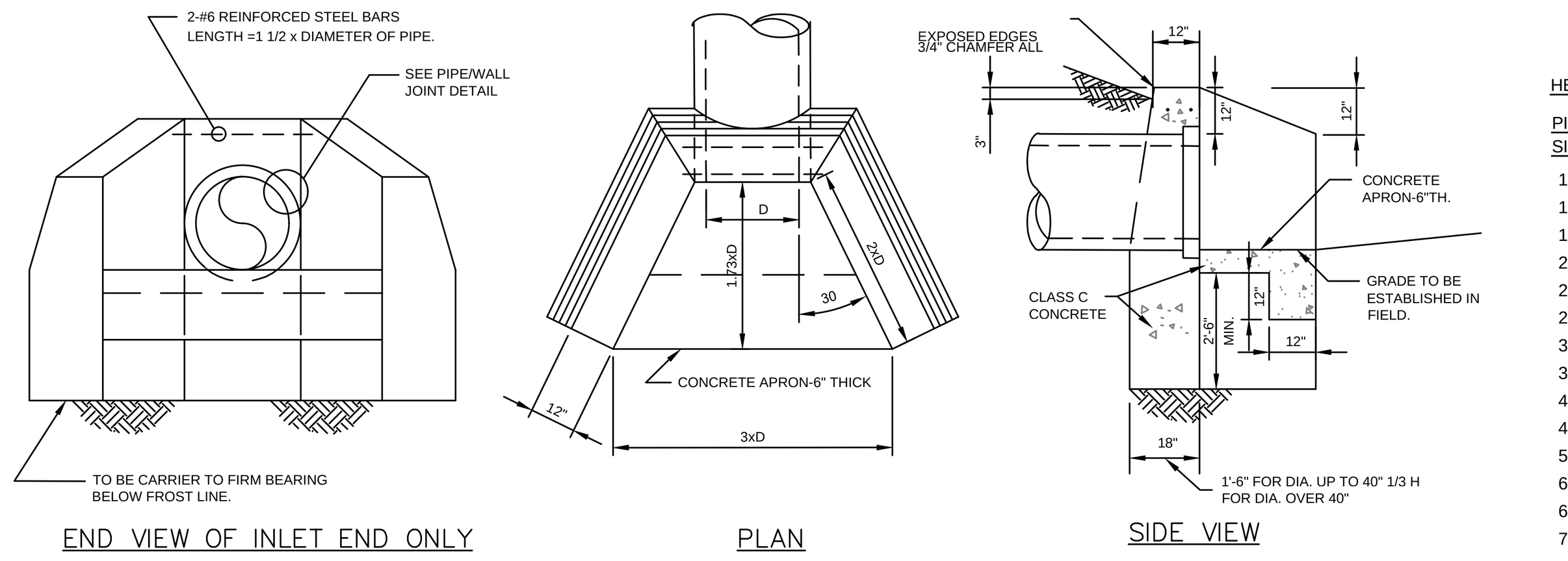
PRELIMINARY AND FINAL MAJOR SUBDIVISION & PRELIMINARY AND FINAL SITE PLAN FOR
VENUE AT HOPEWELL
081391-SP-DET - SHT-18F-UTILITY
BLOCK 93, LOTS 19, 20, 45.01, 46 & 60
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY

Bowman
Bowman Consulting Group Ltd
3 Paragon Way, Suite 170
Freehold, New Jersey 07728
bowman.com
Email: NJ@bowman.com
Phone: 732-665-5500
Fax: 732-665-5501
NJ Certificate of Authorization No. 24GA28222600
SEAN A. DELANEY, N.J. Professional Engineer, Lic. 24GE04447100

PROJ: 081391-01-001
DATE: 06/25/2024
CHKD: SAD

NO.	REVISION	DATE	CHKD
1	REVISED PER PB COMPLETENESS REVIEW	09/10/24	SAD
2	REVISED PER TOWNSHIP COMMENTS	12/19/24	SAD
3	REVISED PER ENGINEERING REVIEW	2/14/25	SAD
4	REVISED PER TOWNSHIP COMMENTS	03/21/25	SAD

SHEET No. 18F OF

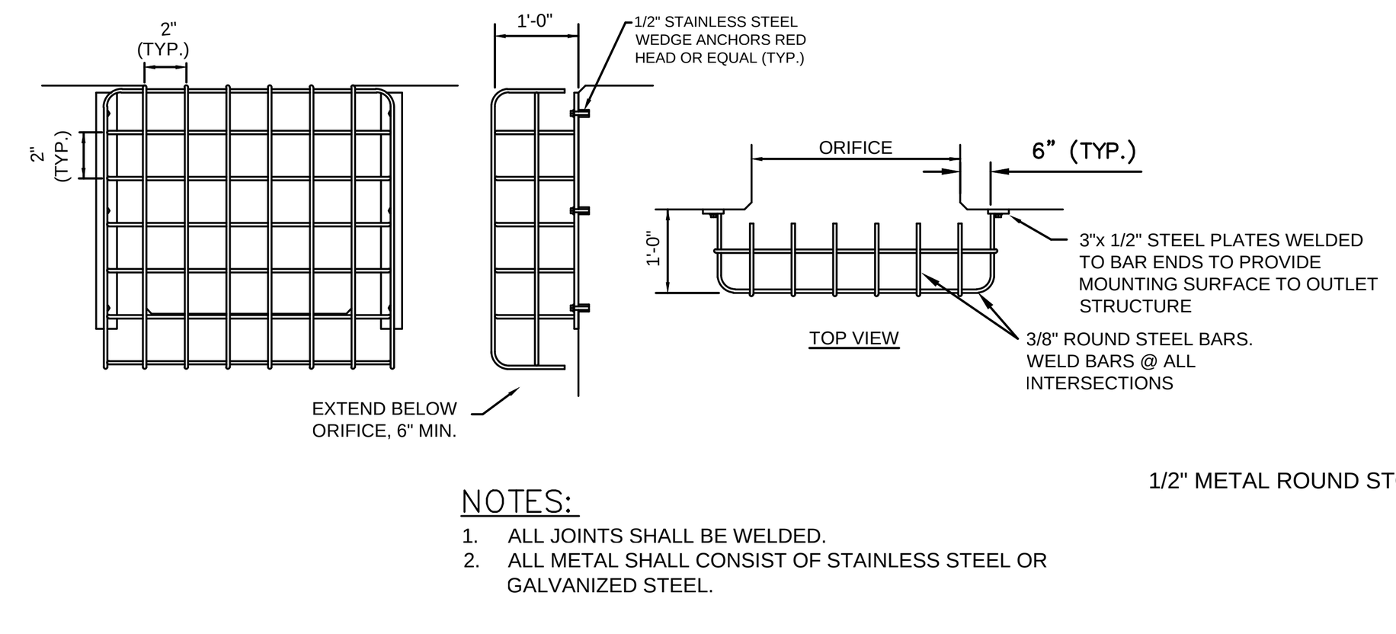


HEADWALLS IN CUBIC YARDS

PIPE SIZE	CORR. STEEL PIPE IN C.Y.	REIN. CONC. PIPE IN C.Y.	APRONS IN C.Y.
12"	1.4	1.4	0.2
15"	1.7	1.7	0.2
18"	2.1	2.1	0.3
21"	2.5	2.5	0.4
24"	2.9	2.9	0.5
27"	3.3	3.4	0.6
30"	3.7	3.8	0.7
36"	4.7	4.8	0.9
42"	5.8	6.3	1.2
48"	7.6	8.4	1.5
54"	9.7	10.7	1.8
60"	12.2	13.4	2.1
66"	15.0	16.4	2.5
72"	18.1	19.9	3.0

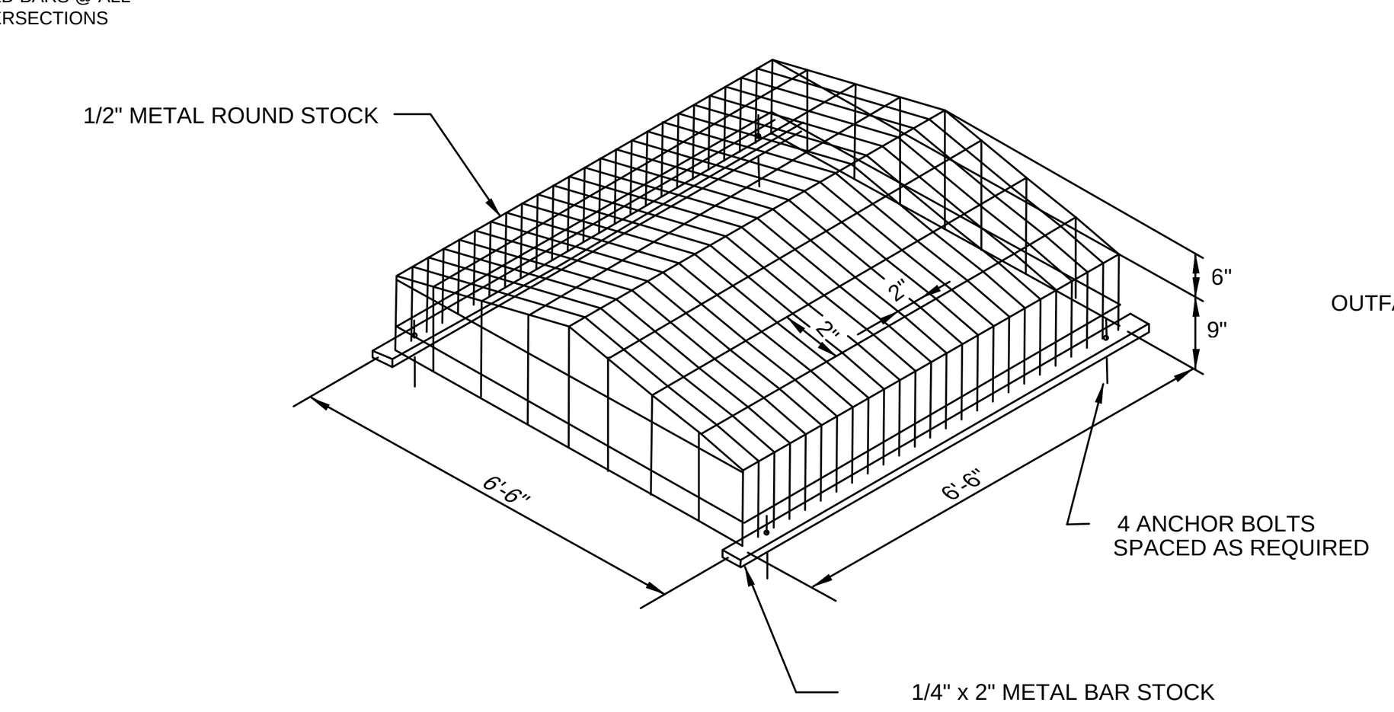
GENERAL NOTES
1. ALL EDGES TO BE CHAMFERED 1".
2. THE RUBBING OF HEADWALLS TO REMOVE FORM MARKS AS REQUIRED IN SUBSECTIONS 501.14 FOR CONCRETE STRUCTURES, WILL NOT BE REQUIRED FOR HEADWALLS AT THE BOTTOM OF EMBANKMENTS IN RURAL AREAS.
3. FOR SLOPE DRAIN HEADWALLS, DIMENSIONS AND APRON GRADES SHALL BE SET BY ENGINEER.
4. FOR MORE THAN ONE PIPE, SET THE PIPES A MINIMUM OF ONE FOOT APART (OUTSIDE BARREL TO OUTSIDE BARREL): THERE SHALL BE 12" ABOVE THE TOP OF A PIPE IN A WINGWALL: THE TERMINUS OF THE WINGWALL SHALL BE 2D FROM THE CENTERLINE OF THE PIPE IN A WINGWALL.
5. THE TERMINUS FOR OUTLET AND INLET APRONS SHALL BE SET BY EXTENDING THE PIPE GRADE AHEAD AND BACK, RESPECTIVELY.
6. FOR ARCH PIPE, THE SPAN SHALL BE SUBSTITUTED FOR D.
7. IF PRECAST HEADWALLS ARE TO BE USED, SHOP DRAWINGS OF THE UNITS SHALL BE PROVIDED TO THE ENGINEER FOR REVIEW AND APPROVAL.

PRECAST CONCRETE HEADWALL WITH WINGWALLS
NOT TO SCALE



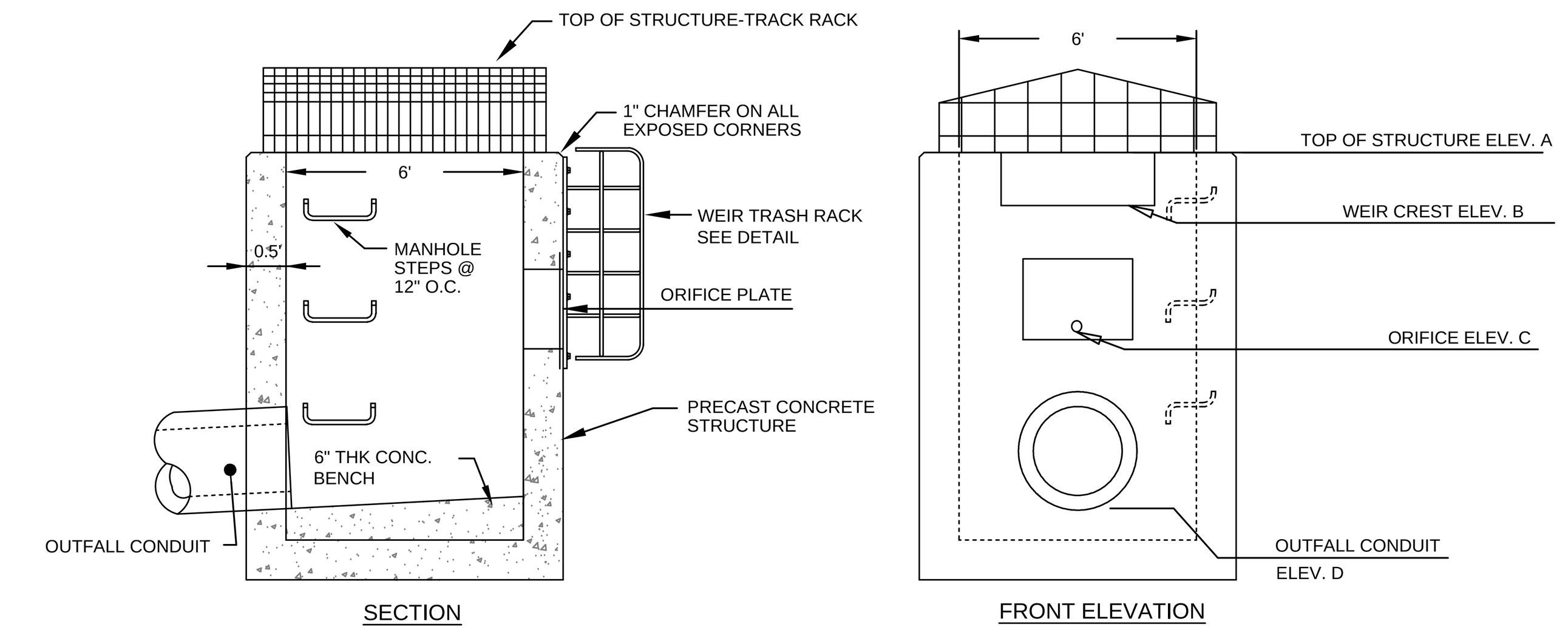
NOTES:
1. ALL JOINTS SHALL BE WELDED.
2. ALL METAL SHALL CONSIST OF STAINLESS STEEL OR GALVANIZED STEEL.

ORIFICE TRASH RACK DETAIL
NOT TO SCALE



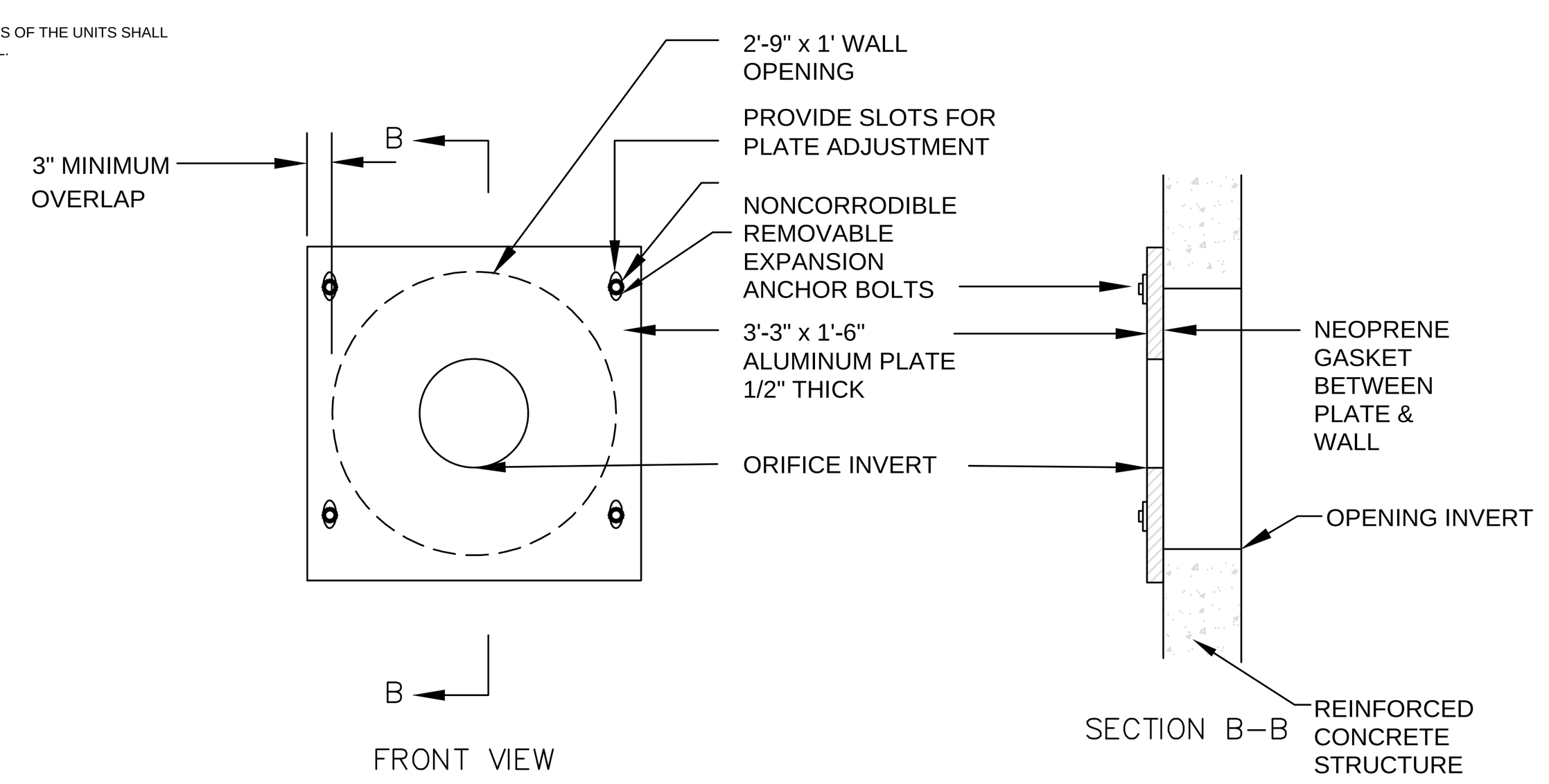
NOTES:
1. ALL JOINTS SHALL BE WELDED.
2. ALL METAL SHALL CONSIST OF STAINLESS STEEL OR GALVANIZED STEEL.

TOP OF STRUCTURE TRASH RACK
NOT TO SCALE



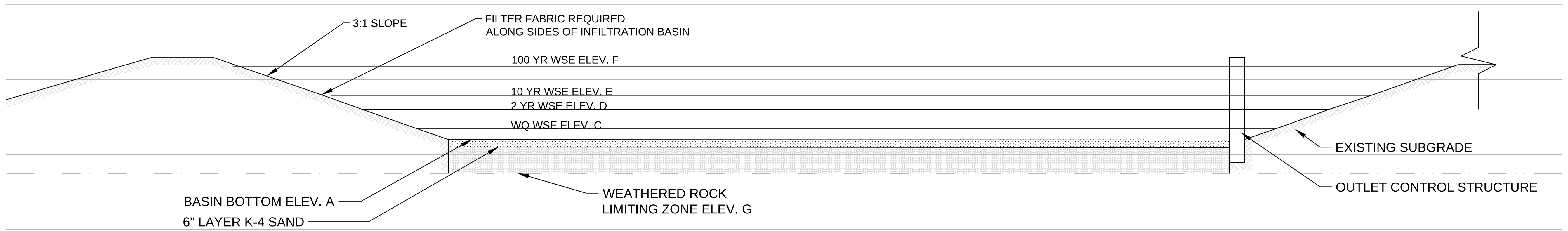
TRASH RACKS NOT SHOWN FOR CLARITY
SEE PLAN FOR WING WALLS AND GRADING

OUTLET CONTROL STRUCTURE DETAIL
NOT TO SCALE



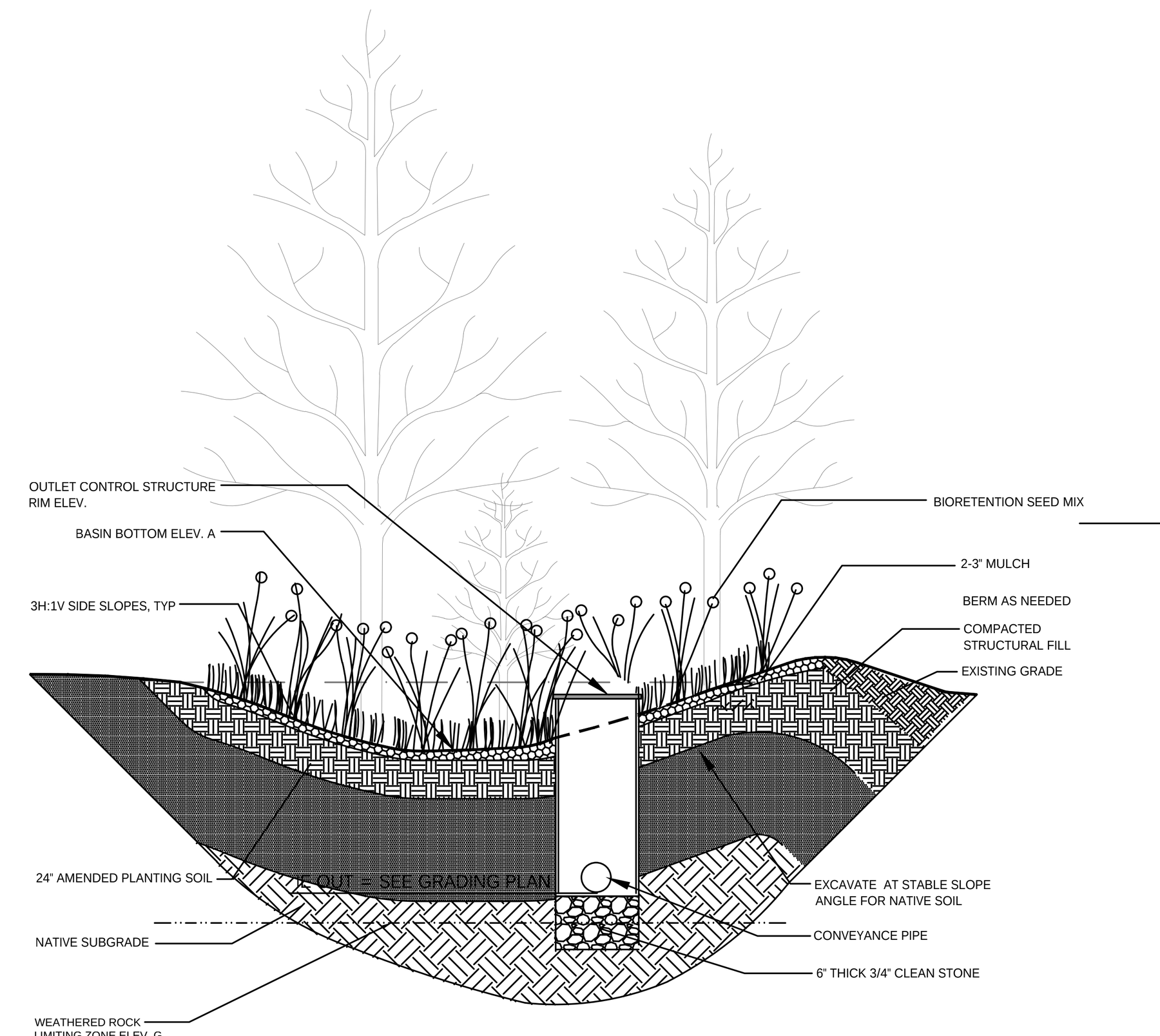
ORIFICE PLATE DETAIL
NOT TO SCALE

BASIN	ID	ELEV. "A"	WEIR LENGTH	ELEV. "B"	ORIFICE SIZE	ELEV. "C"	OUTLET PIPE SIZE	ELEV. "D"	WEIR 2 LENGTH	ELEV. "B"	ORIFICE 2 SIZE	ELEV. "C"
1	OS 1	210.86	4'	209.67	2.5"	209.17	30"	206.86				
2	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
3	OS 39	217.00	4'	215.50	2.5"	212.90	18"	208.00				
4A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
4B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
5	OS 11	202.21	4'	201.25	2.5"	200.02	30"	200.00				
6	OS 28	203.00	4'	200.10	2.5"	199.50	24"	198.65				
7	OS 30	208.86	4'	207.99	2.5"	207.17	30"	206.65				
8	OS 35	183.00	4'	179.79	2.5"	179.17	24"	178.65	3'	158.30		
9	OS 32	183.00	4'	179.93	2.5"	179.30	24"	178.65				
10	OS 568	183.00	4'	182.00	2' L x 0.16' H	179.88	18"	179.00				
11	OS 57	184.00	4'	182.75	2.5"	181.00	24"	180.00				
12	OS 91	205.00	4'	203.02	7.5"	201.90	30"	200.65				
13	OS 84	196.00	4'	193.95	2.5"	192.70	18"	191.30				
14	OS 104	194.21	4'	193.45	2.5"	192.40	24"	192.00				
15	OS 105	197.86	4'	198.58	6.5"	197.35	30"	195.30				
16A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
16B	OS 59	182.00	4'	180.00	2' L x 0.16' H	179.00	18"	178.00				
17A	OS 657	183.00	4'	182.00	2.5"	179.18	18"	178.65				
17B	OS 144	183.00	4'	179.86	2.5"	179.35	18"	179.00				
18	OS 121	190.00	4'	189.34	2.5"	187.25	24"	186.00				
19	OS 379	199.00	4'	197.75	2.5"	196.00	15"	194.30				
20	OS 431	154.00	4'	152.75	2.5"	151.68	30"	151.00				
21	OS 433	154.00	4'	152.33	2.5"	150.68	24"	149.30				
22	OS 664	152.00	4'	149.47	2.5"	148.15	18"	147.30				
23	OS 534	149.00	4'	146.50	2.5"	145.28	18"	144.30				
24	OS 532	149.00	4'	146.25	5"	145.17	18"	144.30				
25	OS 530	148.00	4	145.95	4.5"	144.42	18"	144.00				
26	OS 598	148.00	4'	146.00	2.5"	144.36	24"	143.65				
27	OS 592	172.00	4'	172.25	8"	170.47	15"	167.65	2'	171.75		
28	OS 593	168.40	4'	170.00	2.5' L x 0.75' H	167.87	24"	165.65	1'	169.50		
29	OS 461	188.21	4'	187.49	2.5"	186.87	18"	186.00				
30	OS 462	180.00	4'	179.00	2.5"	175.93	18"	176.00				
31	OS 459	197.00	4'	195.00	2.5"	192.97	24"	192.30				
32	OS 661	196.21	4'	197.00	3' L x 0.5' H	194.53	24"	195.00				
33	OS 443	191.00	4'	186.25	2.5"	184.96	18"	184.00				
34	OS 616	195.00	4'	192.33	2.5"	191.09	15"	190.00				
35	OS 617	194.00	4'	193.05	2.5"	191.44	15"	189.65				
36A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
36B	OS 367	195.00	4'	193.55	3' L x 0.2' H	192.53	15"	190.65				
37A	OS 620	198.00	4'	196.48	2.5"	194.77	15"	193.65				
37B	OS 358	195.86	4'	196.63	2.5"	194.81	18"	193.00				
38	OS 315	209.00	4'	206.69	2.5"	205.26	18"	205.00				
39	OS 629	205.00	4'	203.04	6"	201.71	15"	200.65				
40	OS 630	206.00	4'	204.67	2' L x 0.5' H	202.65	15"	201.65				
41	OS 269	186.00	4'	184.13	2.5"	182.50	24"	182.00				
42	OS 272	185.00	4'	184.01	2.5"	182.60	18"	181.00				
43	OS 285	181.00	4'	178.58	2.5"	177.62	24"	177.00				
44	OS 289	170.00	4'	167.50	2.5"	166.41	24"	166.00				
45	OS 290	170.00	4'	169.00	2.5"	167.25	18"	166.00	2'	168.50		
46A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
46B	OS 260	184.00	4'	184.45	2.5"	183.82	18"	179.65				
47	OS 262	189.00	4'	189.52	2.5"	188.84	18"	189.00				
48	OS 242	195.00	4'	193.00	2.5"	191.40	24"	191.00				
49	OS 641	187.00	4'	184.74	2.5"	183.55	24"	183.00				
50	OS 240	188.00	4'	185.30	2.5"	184.32	24"	183.65				
51	OS 238	191.00	4'	185.71	4' L x 1' H	184.05	30"	184.00				
52	OS 633	199.00	4'	195.72	3' L x 0.5' H	195.08	18"	195.00				
53	OS 665	204.00	4'	201.91	2' L x 0.33' H	201.02	24"	201.00				
54	OS 666	203.00	4'	202.42	2' L x 0.33' H	201.40	24"	201.00				
55	OS 227	196.00	4'	193.82	1.83' L x 0.2' H	192.80	18"	191.65				
56	OS 230	196.00	4'	193.62	3' L x 0.5' H	192.19	18"	191.65				
57	OS 203	206.00	4'	203.60	2.5"	202.34	36"	202.00				
58	OS 207	203.00	4'	199.91	2.5"	198.97	36"	199.00				



EXTENDED DETENTION–INFILTRATION BASIN DETAIL

BASIN	ELEV. "A"	ELEV. "C"	ELEV. "D"	ELEV. "E"	ELEV. "F"	ELEV. "G"
1	209.00	209.02	209.29	209.51	210.07	205.30
2	209.00	209.05	210.28	211.38	211.61	205.30
3	213.00	213.31	213.60	214.09	215.07	206.50
4A	200.00	201.53	204.59	205.47	205.77	190.50
4B	200.00	201.51	204.36	205.46	205.74	190.50
5	200.00	200.02	200.16	201.11	201.99	190.50
6	199.00	199.49	200.14	200.38	200.72	193.40
7	207.00	207.16	207.80	208.16	208.61	193.40
8	179.00	179.17	179.64	179.94	180.40	174.30
9	179.00	179.29	179.78	180.08	180.48	174.30
10	179.00	179.83	180.43	181.09	182.19	173.70
11	180.00	181.0	182.35	183.01	183.68	179.20
12	201.00	201.90	202.74	203.38	203.94	200.40
13	192.00	192.70	193.74	194.22	194.84	185.80
14	192.00	192.37	193.27	193.72	194.31	185.80
15	196.00	197.35	198.47	199.06	199.58	193.80
16A	178.00	179.17	179.74	180.18	180.60	175.90
16B	178.00	178.97	179.68	180.28	180.72	175.90
17A	179.00	179.18	179.71	180.39	180.47	173.80
17B	179.00	179.31	179.87	180.09	179.00	173.80
18	186	187.25	188.87	189.62	190.08	198.70
19	195	196	197.53	198.09	198.59	201.40
20	151.00	151.68	152.80	153.18	153.76	145.80
21	150.00	150.68	151.95	152.60	153.29	138.60
22	148.00	148.15	149.16	149.71	150.36	137.10
23	145.00	145.28	146.23	146.82	147.44	137.10
24	145.00	145.17	145.89	146.50	147.10	138.10
25	146.00	144.42	145.46	146.24	146.92	142.30
26	144	144.36	145.62	146.28	146.99	146.20
27	168	170.47	171.73	172.37	172.77	181.20
28	167	167.87	168.44	168.79	168.69	181.20
29	186	186.88	187.34	187.63	187.99	186.30
30	176	175.93	176.62	177.42	179.02	175.70
31	193	192.97	193.37	193.84	194.72	189.50
32	193	194.53	195.02	195.35	196.21	192.50
33	187	187.79	189.14	189.79	190.35	182.30
34	191	191.09	192.03	192.56	193.10	190.30
35	191	191.44	192.7	193.37	193.93	190.30
36A	191	192.24	193.77	194.45	195.00	190.30
36B	191	192.53	193.30	193.89	194.44	190.30
37A	194	194.77	196.06	196.83	197.42	194.90
37B	194	194.81	196.24	196.90	197.55	194.90
38	205	205.26	206.35	206.94	207.55	195.50
39	201	201.71	202.70	203.39	203.88	197.50
40	202	202.65	203.18	203.64	204.67	201.30
41	182	182.69	184.13	184.55	185.14	183.60
42	181	181.53	182.74	183.36	184.27	183.60
43	177	177.53	178.70	179.14	179.69	178.10
44	166	165.96	166.66	167.28	167.86	161.90
45	166.00	167.05	168.62	169.16	169.66	161.90
46A	181	181.66	183.25	184.40	186.37	171.00
46B	184	183.42	183.79	183.94	184.21	171.00
47	189	188.76	189.21	189.58	189.98	181.90
48	191	191.36	192.12	192.97	193.53	187.00
49	183	183.55	184.46	184.96	185.57	182.90
50	184	184.32	185.04	185.49	186.05	184.50
51	184	184.03	184.88	185.71	187.55	183.80
52	193	195.08	195.47	195.69	196.09	191.30
53	200	201.01	201.69	202.24	202.79	194.70
54	200	201.39	202.17	202.77	203.39	194.70
55	192	192.78	193.55	194.17	194.77	188.20
56	192	192.19	192.48	192.71	193.18	188.20
57	202	202.34	203.34	203.84	204.32	201.10
58	199	198.97	199.67	200.11	200.61	195.00



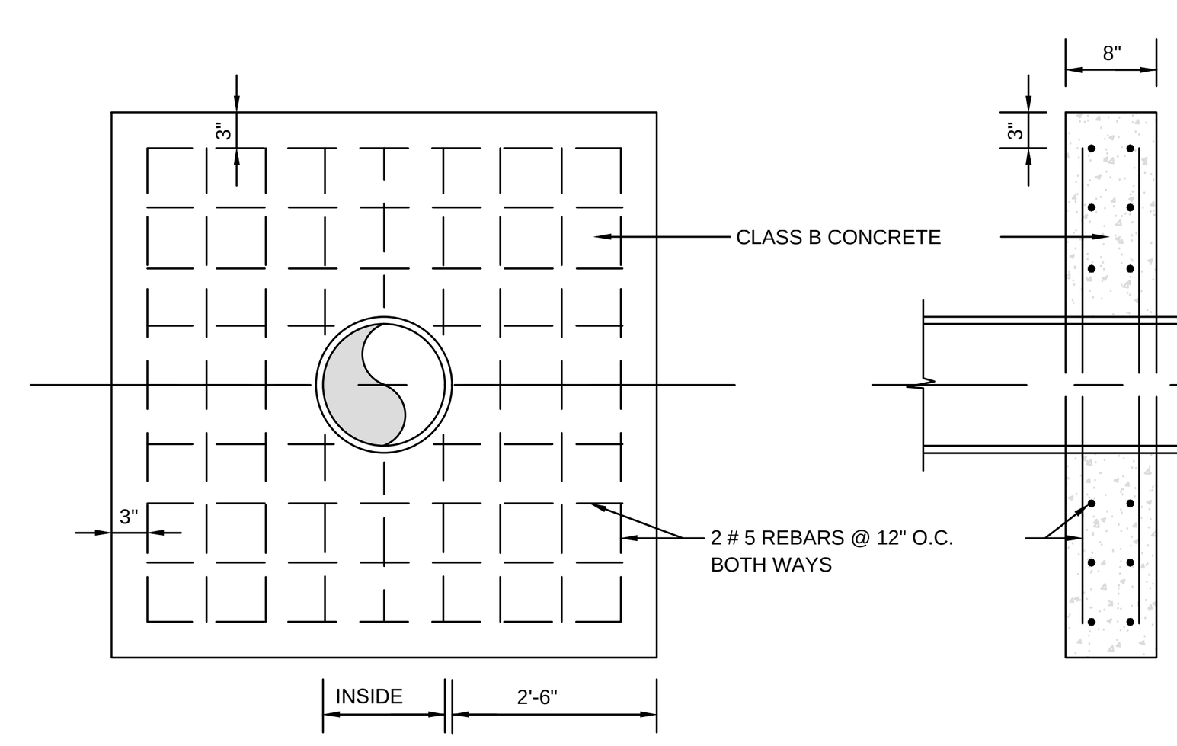
INFILTRATION RAIN GARDEN WITH PLANTING SOIL NOTES

DESIGN NOTES:
1. PLANT WITH PLANTS PER LANDSCAPE ARCHITECT DWGS. NATIVE PLANTS ARE PREFERRED, BECAUSE NON-NATIVE AND INVASIVE SPECIES CAN MOVE DOWNSTREAM AND DAMAGE HABITAT. IF NON-NATIVES ARE CHOSEN, BE SURE THAT THEY WILL NOT DAMAGE DOWNSTREAM HABITAT.

CONSTRUCTION NOTES:
2. BUILD AND VEGETATE BIORETENTION BASIN AS EARLY AS POSSIBLE TO ESTABLISH PLANTINGS BEFORE DIRECTING STORMWATER RUNOFF TO IT OR DIVERT STORMWATER AROUND FACILITY. PREFERABLY, THIS PERIOD WOULD LAST A MINIMUM OF 3 MONTHS OR PER LANDSCAPE ARCHITECT GUIDELINES.
3. INFILTRATION AREAS SHALL BE FENCED OFF FROM THE FIRST DAY OF EARTH MOVING UNTIL PROJECT COMPLETION TO PREVENT COMPACTION OF THE SUBGRADE, DIRT TRACKING ONTO ANY LAYER OF THE FACILITY AND STOCKPILING OF CONSTRUCTION MATERIALS THAT MAY CLOG THE SURFACE.
4. DURING EXCAVATION OF NATIVE SOILS TO THE BOTTOM OF THE FACILITY, RAINFALL MAY CAUSE FINES TO CLOG THE SURFACE OF THE FACILITY. IF THE NATIVE SOIL HAS BEEN EXPOSED TO RAINFALL, HAND RAKE THE SURFACE TO A DEPTH OF 3" TO RESTORE INFILTRATION CAPACITY.
5. DURING AREA DRAIN INSTALLATION, DISTURB NATIVE SOILS AS LITTLE AS POSSIBLE.

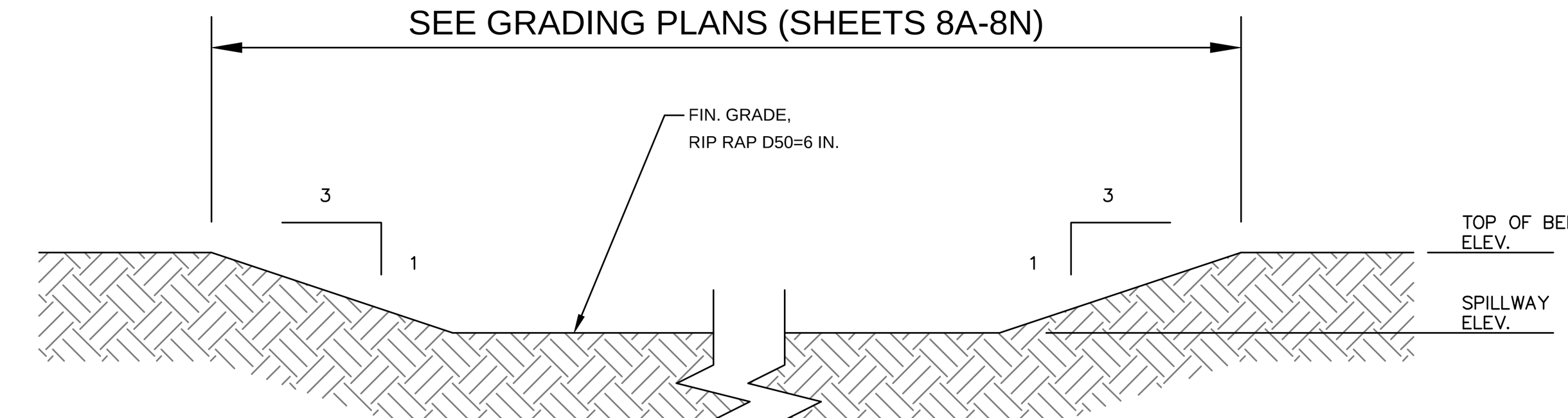
TYPICAL SECTION RAIN GARDEN
N.T.S.

BIORETENTION SOIL NOTES:
1. THE AMENDED PLANTING SOIL BED MATERIAL SHOULD CONSIST OF THE FOLLOWING MIX, BY WEIGHT: 85 TO 95 PERCENT SANDS, WITH NO MORE THAN 25% OF THE SANDS AS FINE OR VERY FINE SANDS; NO MORE THAN 15% SILT AND CLAY WITH 2% TO 5% CLAY CONTENT. THE ENTIRE MIX SHALL THEN BE AMENDED WITH 3 TO 7% ORGANICS. THE MIX MUST BE CERTIFIED BY EITHER THE VENDOR WHO PREMIXES THE SOIL OR BY A PROFESSIONAL ENGINEER LICENSED BY THE STATE OF NEW JERSEY PRESENT DURING ANY ONSITE SOIL MATERIAL MIXING. THE MATERIAL'S PH SHOULD RANGE FROM 5.5 TO 6.5. THE MATERIAL SHALL BE PLACED IN 12 TO 18 INCH LIFTS. ADDITIONAL MATERIAL MAY BE NECESSARY TO ACCOUNT FOR THE SUBSEQUENT SETTLING OF THE MATERIAL OVER TIME.
2. THE MULCH LAYER ON THE SURFACE OF THE PLANTING SOIL BED PROVIDES AN ENVIRONMENT FOR PLANT GROWTH BY MAINTAINING MOISTURE, PROVIDING MICROORGANISMS, AND DECOMPOSING INCOMING ORGANIC MATTER. THE MULCHLAYER MAY ALSO ACT AS A FILTER FOR FINER PARTICLES STILL IN SUSPENSION AND MAINTAIN AN ENVIRONMENT FOR THE MICROBIAL COMMUNITY TO HELP BREAK DOWN URBAN RUNOFF POLLUTANTS. CARE MUST BE TAKEN TO ENSURE THAT THE MULCH LAYER DOES REDUCE THE DESIGN PERMEABILITY RATE OF THE SURFACE. THE MULCH LAYER SHOULD CONSIST OF STANDARD 1 TO 2 INCH SHREDDED HARDWOOD OR CHIPS. IT SHOULD BE APPLIED TO A DEPTH OF 2 TO 4 INCHES AND REPLENISHED AS NECESSARY. HOWEVER, PRIOR TO UTILIZING A MULCH LAYER, CONSIDERATION SHOULD BE GIVEN TO PROBLEMS CAUSED BY SCOUR AND FLOATATION DURING STORM EVENTS AND THE POTENTIAL FOR MOSQUITO BREEDING.



NOTES:
1. PRIOR TO CONSTRUCTION OF COLLAR, THE OUTSIDE OF THE PIPE SHALL BE CLEANED.
2. ALL REINFORCEING STEEL SHALL BE GRADE 40.
3. ANTI-SEEP COLLARS SHALL BE INSTALLED ON ALL BASIN DISCHARGE PIPES IN ACCORDANCE WITH CLAY CORE DETAILS. DOWNSTREAM OF CLAY CORE, ANTI-SEEP COLLARS SHALL BE INSTALLED AT MAX. 50' INTERVALS TO DISCHARGE POINT.
4. ALL DIMINSIONS APPLY FOR R.C.P., H.E.R.C.P., CONCRETE BOX CULVERTS, ETC.

TYPICAL ANTI–SEEP COLLAR (OR APPROVED EQUAL)
NOT TO SCALE



TYPICAL SECTION THRU SPILLWAY

EMERGENCY SPILLWAY DETAIL
NOT TO SCALE

NO.	REVISION	DATE	CHKD
1	REVISED PER PB COMPLETENESS REVIEW	09/10/24	SAD
2	REVISED PER TOWNSHIP COMMENTS	12/18/24	SAD
3	REVISED PER ENGINEERING REVIEW	2/14/25	SAD
4	REVISED PER TOWNSHIP COMMENTS	03/31/25	SAD
5			
6			
7			
8			
9			
10			
11			
12			

PROJ.: 081391-01-001
DATE: 06/25/2024
CHKD: SAD

Bowman

Bowman Consulting Group Ltd
3 Paragon Way, Suite 170
Freehold, New Jersey 07728
bowman.com
E-mail: NJ@Bowman.com
Phone: 732-665-5500
FAX: 732-665-5501
NJ Certificate of Authorization No. 24GA28222600
SEAN A. DELANY, N.J. Professional Engineer, Lic. 24GE04447100

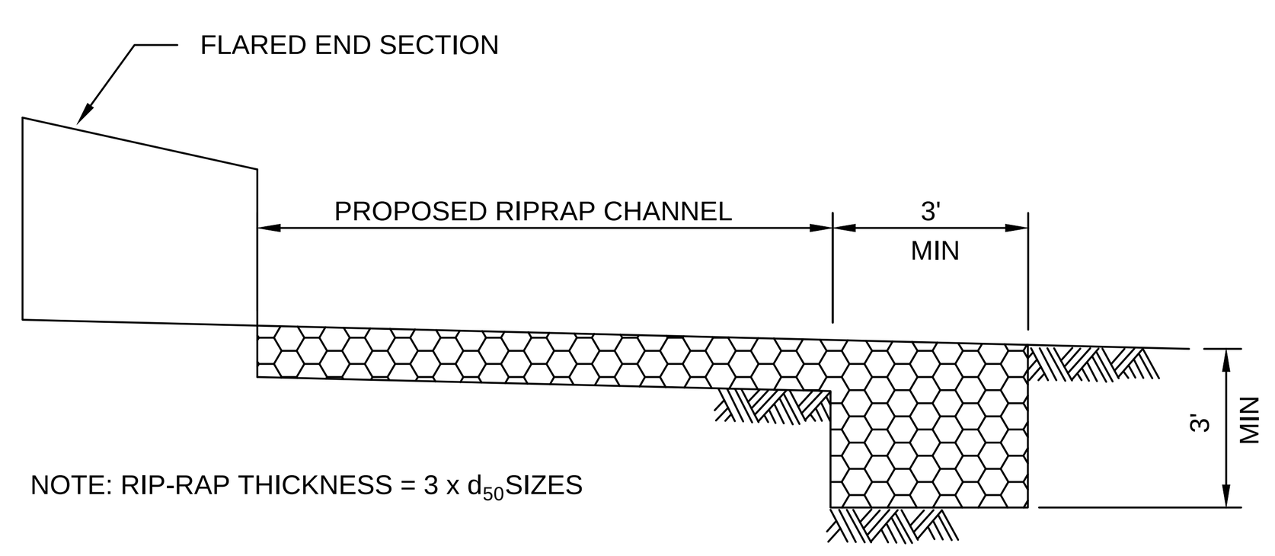
PRELIMINARY AND FINAL MAJOR SUBDIVISION &
PRELIMINARY AND FINAL SITE PLAN FOR
VENUE AT HOPEWELL
081391-SP-DET - SHT-18G-UTILITY
BLOCK 93, LOTS 19, 20, 45.01, 46 & 60
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY

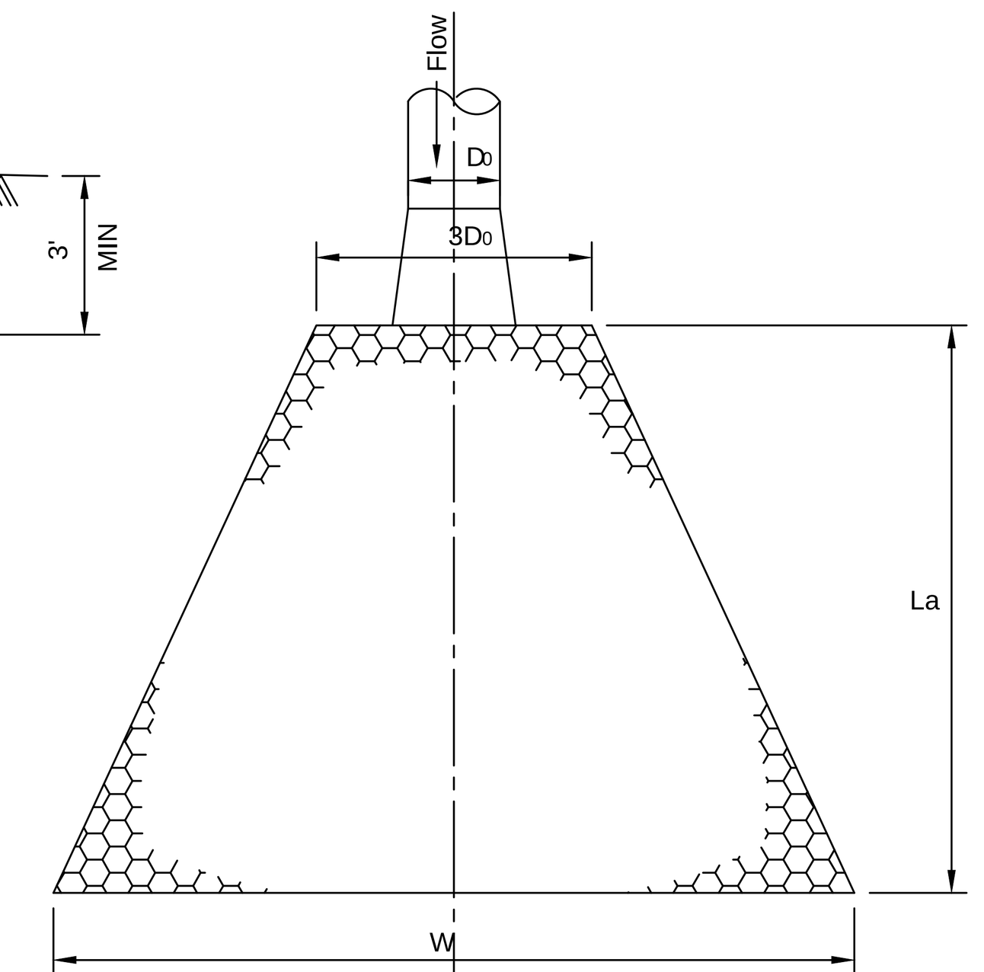
SHEET No.
18G
OF

THE WIDTH OF THE APRON AT THE CULVERT SHALL BE AT LEAST TRIPLE D_0. WHERE THERE IS A WELL-DEFINED CHANNEL DOWNSTREAM OF THE APRON, THE APRON BOTTOM WIDTH SHALL BE AT LEAST EQUAL TO THE CHANNEL BOTTOM WIDTH THE LINING SHALL EXTEND AT LEAST ONE FOOT ABOVE THE TAILWATER ELEVATION BUT NO LOWER THAN 2/3 OF THE VERTICAL CONDUIT DIMENSION ABOVE THE CONDUIT INVERT. THE BOTTOM GRADE SHALL BE 0.0% AND LEVEL. THERE SHALL BE NO OVERFALL AT THE END OF THE APRON OR THE CULVERT.

50% BY WEIGHT OF THE RIPRAP MIX SHALL BE SMALLER THAN d_{50} LARGEST STONE SHALL BE LESS THAN 1.5 TIMES d_{50} APRON THICKNESS SHALL BE EITHER:

1) THREE TIMES THE d_{50} SIZE, OR
2) TWO TIMES THE d_{50} SIZE WITH A FILTER LAYER



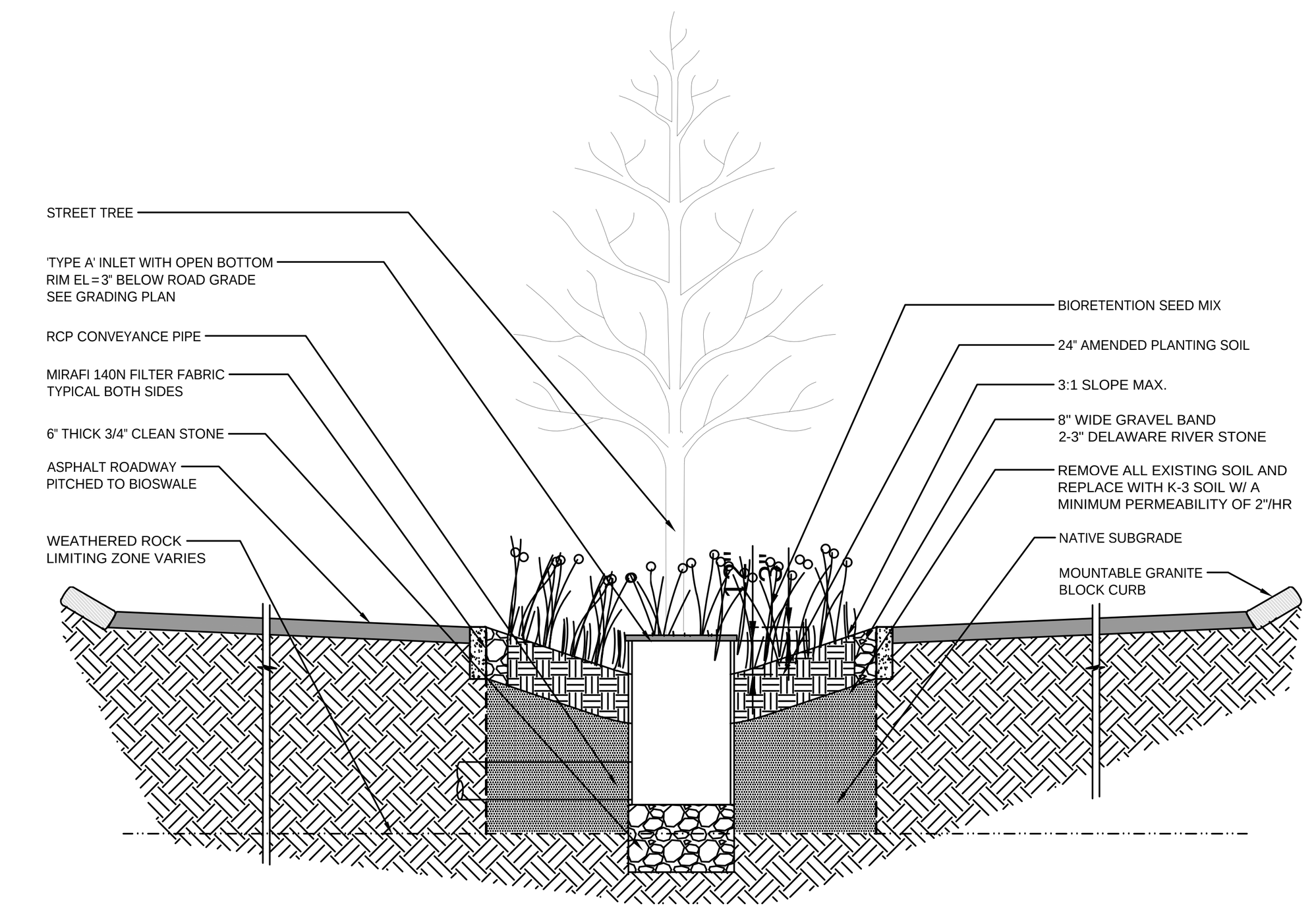


CONDUIT OUTLET PROTECTION SUMMARY

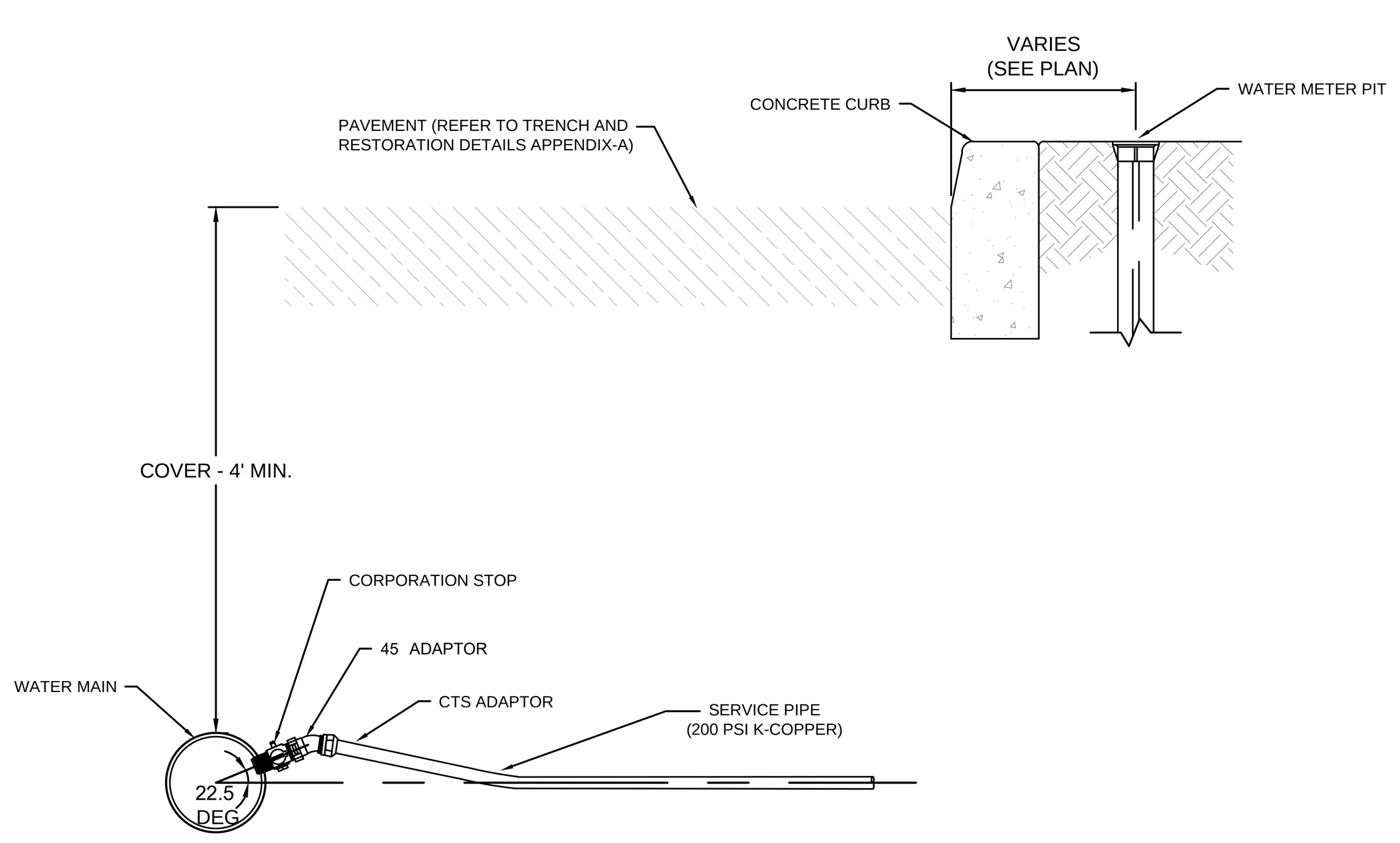
F.E.S. No.	Q (CFS)	D_0 (FT)	TW (FT)	La (FT)	Wa (FT)	D(50) (IN)
HW 115	8.38	3.50	0.70	27.0	37.5	6

Q = 25 YEAR PEAK FLOW IN CUBIC FEET PER SECOND
D_0 = MAXIMUM CONDUIT WIDTH IN FEET
TW = TAILWATER DEPTH AT THE END OF THE APRON (OR 0.2 D WHERE TW IS INDETERMINATE)
La = APRON LENGTH IN FEET
Wa = APRON WIDTH AT THE OUTFALL END (NOT APPLICABLE FOR WELL-DEFINED CHANNELS)
d_{50} = MEDIAN RIPRAP SIZE IN INCHES

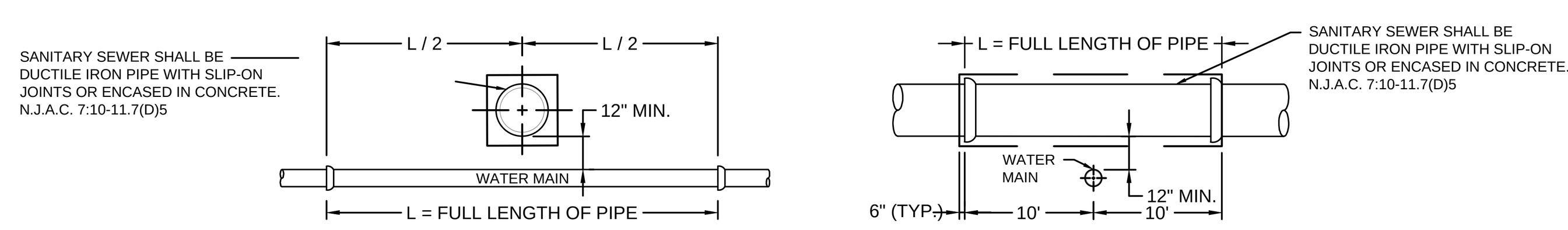
RIP RAP APRON
CONDUIT OUTLET PROTECTION DETAIL
N.T.S



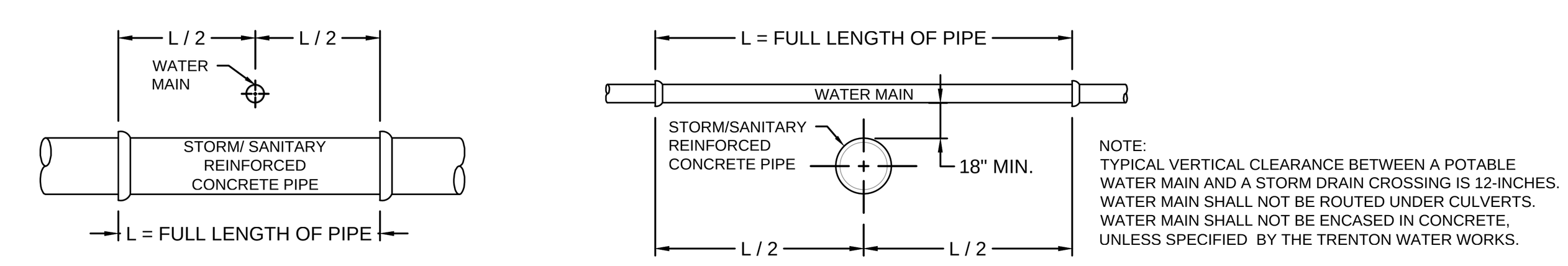
ROAD B BIORETENTION SWALE DETAIL
TYPICAL
NOT TO SCALE



TYPICAL WATER SERVICE LINE INSTALLATION
NOT TO SCALE

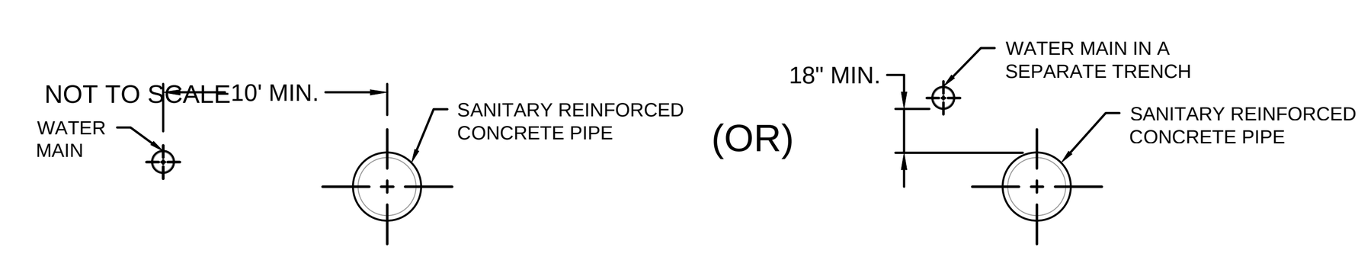


SANITARY SEWER OVER WATER MAIN



NOTE:
TYPICAL VERTICAL CLEARANCE BETWEEN A POTABLE WATER MAIN AND A STORM DRAIN CROSSING IS 12-INCHES. WATER MAIN SHALL NOT BE ROUTED UNDER CULVERTS. WATER MAIN SHALL NOT BE ENCASED IN CONCRETE, UNLESS SPECIFIED BY THE TRENTON WATER WORKS.

WATER MAIN OVER STORM/ SANITARY



SEWER PARALLEL INSTALLATION

STORM/ SANITARY INSTALLATION AROUND WATER MAIN

12			
11			
10			
9			
8			
7			
6			
5			
4	REVISED PER TOWNSHIP COMMENTS	03/31/25	SAD
3	REVISED PER ENGINEERING REVIEW	2/14/25	SAD
2	REVISED PER TOWNSHIP COMMENTS	12/18/24	SAD
1	REVISED PER PB COMPLETENESS REVIEW	09/10/24	SAD
	REVISION	DATE	CHKD

PROJ.: 081391-01-001
DATE: 06/25/2024
CHKD: SAD

Bowman

Bowman Consulting Group Ltd
3 Paragon Way, Suite 170
Freehold, New Jersey 07728
bowman.com
E-mail: NJ@Bowman.com
Phone: 732-665-5500
FAX: 732-665-5501
NJ Certificate of Authorization
No. 24GA28222600
SEAN A. DELANY, N.J. Professional Engineer, Lic. 24GE04447100

PRELIMINARY AND FINAL MAJOR SUBDIVISION &
PRELIMINARY AND FINAL SITE PLAN FOR
VENUE AT HOPEWELL
081391-SP-DET - SHT-18H-UTILITY
BLOCK 93, LOTS 19, 20, 45.01, 46 & 60
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY

SHEET No.
18H
OF

V:\081391 - Nursery Road-Hopewell\081391-01-001 (ENG) - Venue at Hopewell SP\Engineering\Engineering Plans\02 Site Plans\081391-SP-DET.dwg 03/31/25 03:56:49PM, dino.spinelli, LAYOUT:SHT-18H-UTILITY

TABLE OF CONTENTS

C:\Word\Developerpacket

DEVELOPER'S PACKET

Developer's responsibility:

The developer shall be required to submit three (2) sets of utility site plans along with an electronic copy on disk in AutoCAD Version 2014 or higher detailing the proposed water utility and associated site plan. The plans shall show property lines (with house address) and curb lines. One of the pages within the site plan shall include an overall plan of the development at a scale of 1 inch equals 100 feet. The rest of the site plans shall be at a scale of 1 inch equals 40 feet or 50 feet for detail purposes. All water appurtenances shall be shown on the site plans. All site plans shall include both plan and profile views with both water and sewer plotted. The water main shall have a cover of 4 feet and all NJDEP Safe Drinking Water Act Regulations for separation of water mains and sewer mains shall apply.

For all developments and for any new service connections, the Trenton Water Works shall require that the owner/developer install all water meters and other required devices prior to establishing service. Establishing service shall mean opening the curb valve and allowing water to flow into the property. The developer shall not establish service. Only the Trenton Water Works shall establish service after the developer has satisfactorily met the aforementioned requirements. If service is established by anyone other than duly authorized Trenton Water Work personnel, the unauthorized service shall be discontinued without notice to the developer or business.

It is the Developer's responsibility to obtain or purchase all materials, permits, approvals, certifications, registrations, easements, etc., and pay all fees required for the construction of the development and any water related appurtenances. The Trenton Water Works, as the purveyor, shall sign and submit the properly prepared documents (permits for the construction of distribution system, stream encroachment permit, wetlands permits & N.J.D.O.T. Permits - 3 site plans) where applicable, only if they are in agreement with the content and if they meet the requirements for materials, specifications and diagrams of this Developer's Packet as prepared by the Trenton Water Works.

The developer shall apply for N.J.D.O.T. Permits through the Trenton Water Works, Engineering Office. For details how to apply the developer shall contact the Trenton Water Works, Engineering Office by calling: (609) 989-3444.

Permits for the Construction of the distribution system, stream encroachment, or wetlands shall be submitted to the Trenton Water Works, Engineering Office. If the permits for construction of the distribution system, and/or stream encroachment, and/or wetlands are applicable, they must be properly prepared before endorsement by the General Superintendent and Chief Engineer of the Trenton Water Works.

The developer/contractor shall be required to submit an "Application For Soil Erosion And Sediment Control" where their construction is to disturb an area of 5,000 square feet or greater. "Disturb" as defined by the Mercer County Soil Conservation District and means any activity involving the clearing, excavating, storing, grading, filling or transporting of soil or any other activity which causes soil to be exposed to the danger of erosion. The application shall be submitted to:

Mercer County Soil Conservation District
508 Hughes Drive
Hamilton Square, NJ 08690
Attn: Bill Brash, Director; (609) 586-9603

This would comply with the State of New Jersey, Soil Erosion and Sediment Control Act established in 1975, Chapter 251.

Trenton Water Works responsibility as the Water Purveyor:

It is the responsibility of the Water Utility to assure that the appropriate N.J. State Departments are informed when their jurisdictions of the State Department are to be affected by water utility work in the public right-of-way. There are two state departments that will recognize only the Water Utility as the responsible party for submission of their permits where water appurtenances are involved. These departments are:

1) New Jersey Department of Environmental Protection
Water Supply Element
Bureau of Safe Drinking Water
401 East State Street
CN 426
Trenton, NJ 08625-0426
Attn: James Montgomery; Compliance Investigator I; (609) 292-5550

2) New Jersey Department of Transportation
Region III, Permits
Route 79 & Daniels Way
Freehold, NJ 07728-7717
Attn: Mazhar Paroya; (732) 625-4333

Requirements of the N.J.D.E.P., Bureau of Safe Drinking Water:

SIMPLIFIED WATER MAIN CERTIFICATION:

The N.J.D.E.P. requires for any main extension which includes more than 30 service connections, but less than 50 service connections, or generates a demand of more than 12,000 gallons per day. It shall be done in accordance with N.J.A.C. 7:10-11.5(b)1. The permit application review fee is specified in N.J.A.C. 7:10-15.3(d)2.

STANDARD APPLICATION FORM:

The N.J.D.E.P. requires for any water main extension which includes 50 or more service connections, is 3,000 or more feet in length, or includes an interconnection with another public community water system, a water distribution map depicting locations of existing mains and proposed extension(s) of water mains. It shall be done in accordance to N.J.A.C. 7:10-11.5(b). The permit application review fee is specified in N.J.A.C. 7:10-15.3(d) 3 or 4, as applicable.

STREAM ENCROACHMENT OR WETLANDS PERMIT:

The N.J.D.E.P. requires that a standard application form shall be submitted in accordance with N.J.A.C. 7:10-11.5 and shall include plans, specifications and an engineer's report prepared pursuant to N.J.A.C. 7:10-11.4(d) through (f) below by a qualified New Jersey Licensed Professional Engineer. The plans shall bear the engineer's seal as required by N.J.S.A. 45:8-45.

To summarize the above requirements, the Trenton Water Works requires that the Developer prepare the following:

1. Where applicable, a properly filled out form with application fee and the signature and seal of a Licensed Professional Engineer in the State of New Jersey.

2. Three (3) site plans (hard copy) including all applicable Trenton Water Works details, specifications and materials as well as the incorporation of all N.J.D.E.P., Safe Drinking Water Act Regulations. Additionally an electronic copy of the site plan with a plan view of the water utility (inclusive of profile changes) shall be submitted in AutoCAD Version 2013 or higher.
   a. One site plan - N.J.D.E.P.
   b. One site plan - The Township having jurisdiction.
   c. One site plan - The Trenton Water Works.

3. A letter with the above information submitted by a Licensed Practicing Professional Engineer in the State of New Jersey.

Failure to comply or properly fill the appropriate permit form, shall result in a rejection by the Trenton Water Works. This will require a re-submittal of the proper documents.

Requirements of the N.J. Department of Transportation:

The N.J.D.O.T. requires that any developer or entity that is to perform construction work involving the installation of any water appurtenances where it may directly or indirectly affect a state highway, shoulder, property, etc., or it's traffic patterns to submit a N.J. State Highway Application along with three (3) sets of site plans and an application fee through the water purveyor. The site plans must detail the area for construction and must include Trenton Water Works details, specifications and materials as well as incorporate the appropriate N.J.D.E.P., Safe Drinking Water Act Regulations.

The developer shall pay a permit fee determined by the N.J.D.O.T. after the application has been processed by the N.J.D.O.T. A traffic control plan (3 sets) may also be required by the N.J.D.O.T. if they deem it necessary.

The actual submission to the N.J.D.O.T shall be by the Trenton Water Works. To summarize the above, the Contractor/Developer is required to submit the following:

1. Three (3) sets of the site plans showing the area of construction, its relation with the water utility including all water utility parameters. The plans may have to go through some revisions. If so, an additional 3 site plans shall be needed for submission to N.J.D.O.T.

2. Three (3) sets of the Traffic Control Plans, if traffic is to be directly or indirectly affected, shall be submitted along with the site plans.

3. The Application Fee and Permit Fee as designated by the N.J.D.O.T. shall be submitted at the appropriate time.

MATERIAL SPECIFICATIONS

For new construction that is to become part of the Trenton Water Works distribution system, the current requirements and specifications are as follows:

1. Pipe shall be ductile iron, class 52, cement lined, and shall have push on joints. (ANSI/AWWA 151/A21.51)

2. **Valves shall be U.S. Pipe Resilient Wedge Gate Valve for Water Systems**, 250 psi Operating Pressure, 500 psi Test Pressure, 2 inch square operating nut, mechanical joint ends, Non-Rising stem and shall open right (clockwise). They shall conform to or exceed the requirements of AWWA C509 and AWWA C500. The size range is between 3 inches and 12 inches inclusive.

   Valves 16 inch and larger shall be U.S. Pipe Resilient Wedge Pattern, side wedge type. Have a 2 inch square operating nut, O-ring seals, mechanical joint ends, a none-rising stem, and shall open-right (clockwise). The working pressure shall be 150 psi with a hydrostatically tested pressure of 300 psi. (ANSI/AWWA C515)

3. Fittings shall be ductile iron pressure rating 350 psi, cement lined and shall have mechanical end joints. (ANSI/AWWA C110/A21.10).

   OR Fitting shall be U. S. Pipe TRIM TYTON Ductile Iron Mechanical Joint (3"-30") in accordance with AWWA\ANSI C153\A21.53 standards with mechanical joint bells. Glands, bolts, nuts and gaskets shall be in accordance with the requirements of AWWA\ANSI C153\A21.53 standards. The working pressure shall be 350 psi. Fittings shall have an asphaltic outside coating in accordance with AWWA\ANSI C153\A21.53 and certified to ANSI/NSF 61 standard. Fittings shall be cement lined and seal coated with an asphaltic coating in accordance with AWWA\ANSI C104\A21.4.

4. Service Material:

   A. Standard 1" service

   a) Corporations for 1" services shall be Mueller catalog # B-25008N, 1 inch size, and shall have an inlet with Mueller CC thread and an outlet with a Conductive Compression connection for CTS O.D. tubing.

   b) Service tubing shall be 1 inch (ASTM B88) type "K" copper with a maximum working pressure of 200 psi. If installation conditions require a larger size, then the tubing shall be as described above but sized appropriately larger.

   c) Curb valves shall be Mueller Mark II Oriseal Curb Valve Catalog #H15172, 1 inch size and an inlet with Conductive Compression connection for CTS O.D. Tubing, and an outlet with Female Iron Pipe (F.I.P.) thread, have a quarter turn check and shall not have a drain.

   d) Curb boxes shall be Mueller Cast Iron Boxes - Improved Extension Type - Arch Pattern, with pentagonal plug. Box extension shall be 50.5 inches to 60 inches fully extended. Upper

section shall be 1 ¼ inch. Curb box shall fit 1 inch Mueller Mark II Oriseal curb valve (compression or flared) Mueller Catalog # H 10385. Foot pieces for curb boxes shall be Mueller Cast Iron Foot Piece to fit Mueller Mark II Oriseal Curb Valve (compression or flared) Mueller Catalog # H 10397.

   e) Curb valve rod shall be Mueller Catalog # 10385- 39 inches long (Part No. 84247).

   B. Standard 1-$^{1}/_{2}$" or 2" service

   a) Corporations shall be Mueller catalog # H15010, 1-$^{1}/_{2}$ inch or 2 inch size, and shall have an inlet with Mueller CC thread and an outlet with a flared eighth bend connection suitable for a (ASTM B88) "K" copper service tubing.

   b) Service tubing shall be 1-1/2 inch or 2 inch size (ASTM B88) type "K" copper with a maximum working pressure of 200 psi.

   c) Curb valves shall be Mueller Mark, II Oriseal, 110 Compression Connection, catalog #H15172, 1 ½ -inch or 2-inch size, and shall have an inlet with a Mueller 110 Compression Connection for CTS O.D. tubing, and outlet with Female Iron Pipe (F.I.P.) thread, have a quarter turn check and shall not have a drain or Mueller Mark II Oriseal Curb Valve Catalog #H10283, 1 ½ -inch or 2 inch size and inlet/outlet with Female Iron Pipe (F.I.P.) thread, have a quarter turn check and shall not have a drain.

   d) Curb boxes shall be Mueller Cast Iron Boxes - Improved Extension Type - Arch Pattern, with pentagonal plug. Box extension shall be 50.5 inches to 60 inches fully extended. Curb box shall fit 1-1/2-inch or 2-inch size, Mark II Oriseal Mueller 110 Compression Connection curb valve (compression or flared). Mueller catalog number H-10336.

   e) Curb valve rods shall be Mueller Catalog # H10386 - 36 inches long in 1 ½ inch size (Part No. 580563).

5. Valve Boxes:

   a) Top sections shall be Bingham & Taylor catalog Short Top Section # 55-S, 16 inches long double flanged. or catalog Long Top Section # 56-S, 26 inches long double flanged, and shall have the standard Trenton Water Works additional support flanges 6 inches from the top of the top section, and shall have lids marked with "TWW WATER". Shaft diameter shall be 5-1/4".

   b) Bottom sections shall be (Bingham & Taylor) catalog # 64 slid bottom and shall be 36 inches long.

6. Steel Coupling Devices (Smith-Blair style 441 or Dresser Style 38 or Powerseal style 3501)

   a) Sleeve: Ductile iron ASTM A-536. Ends shall have smooth inside taper for uniform gasket seating.

   b) Gaskets: Grade 30-standard-specially compounded rubber with ingredients to produce superior storage characteristics, performance and resistance to set after installation. Temperature range -40° F to +150° F.

   c) Follower Flanges: Ductile Iron ASTM A-536. Designed for high strength/weight ratio. Thickness determined by coupling size.

   d) Bolts and Nuts: High strength low alloy steel with heavy, semi-finished hexagon nuts to AWWA C111(ANSI-A21.11) standards.

   e) Finish: Blue shop coat enamel.

7. Repair Clamp Couplings: (Smith-Blair Style 226 or Dresser Style 360)

   a) Band: Stainless Steel.

   b) Lugs: High Strength Ductile Iron ASTM A536.

   c) Gasket: Grade 30 specially compounded rubber of all new materials with ingredients to produce superior storage characteristics, performance and resistance to set after installation. Temperature range -40° F to +150° F.

8. Tapping Sleeves and Tapping Valves (Shall meet AWWA approved standards):

   U.S. Pipe Type H-615 Mechanical Joint Tapping Sleeve (flanged tapping end) with AB/CD gaskets and U.S. Pipe Resilient Wedge Tapping Valve, open right (clockwise), flanged by mechanical joint.

   or: Smith-Blair #622 Tapping Sleeve (flanged tapping end) and U.S. Pipe Resilient Wedge Tapping Valve, open right (clockwise), flanged by mechanical joint

   Tapping Sleeve:

   a) Body: 3/8" Carbon Steel ASTM A285 Grade A PVQ.

   b) Flanges: AWWA C207 Class D, ANSI 150 lb. drilling.

   c) Gasket: Grade 60 Concave Wedge Gasket-compounded to resist-oil, acids, alkalies, most (aliphatic) hydro-carbon fluids, water and many compounds. Temperatures up to 212° F.

   d) Bolts and Nuts: High strength low alloy steel with heavy semi-finished hexagon nuts to AWWA C111(ANSI A21.11) standards. Optional-type 304 stainless steel bolts and nuts. Nuts are Teflon coated to prevent galling.

   e) Finish: Blue shop coat enamel. Optional-fusion bonded epoxy, coated to an average of 12 mil thickness.

   Tapping Valve:

   a) Valve: AWWA C509-87 and AWWA C500-86, 250 psi working pressure except 20" and 24" valves. 20" and 24" valves 150 psi working pressure.

   b) Body: D.I., Full shell Thickness
   Exterior: D.I., Protective coatings per AWWA C550-81.
   Interior: Free of pockets or ledges.

   c) Bonnet: D.I., Protective coatings per AWWA C550-81.

   d) Gate: It shall be completely covered with rubber over all interior and exterior ferrous surfaces.

   e) "O" Ring Steam: It shall be replaceable with the valve under pressure in the full-open position.

   f) Tapping Sleeve Flange: It shall be in accordance with MSS SP60.

Note: The Smith-Blair #622 shall apply with regards to the various sizes of tapping sleeves and tapping valves with the exception of a size on size cut.

Note: The Mechanical Joint Tapping Sleeve may be substituted for the above tapping sleeves. All size on size taps shall be made using a U.S. Pipe Type H-615 Ductile Iron Mechanical Joint Tapping Sleeve.

9. Threaded Rods:

   All rod used for clamping shall be $^{3}/_{4}$" rolled thread and conform to ASTM A242-81.

10. 90° Bend Eye Bolt:

   All 90° Bend Eye Bolt's shall be Corrosion Resistant High Strength Tensile 70,000 psi minimum, yield point 50,000 psi minimum, Low Alloy with the eye welded closed rolled thread $^{3}/_{4}$" diameter 10 threads UNC 2.

11. Underground Pipe Clamps:

   All underground pipe clamps shall be formed from ½" x 2" steel with two ½" x 2" washers with $^{9}/_{16}$" holes. All parts shall be corrosion resistant high strength, tensile 70,000 psi minimum, yield point 50,000 psi minimum Low Alloy and shall conform to ASTM A242-81.

12. Fire Hydrants:

   a) U.S. Pipe METROPOLITAN/ M-94 AWWA dry barrel fire hydrant.

   b) Dry top traffic model design with break away coupling.

   c) Valve opening sizes shall be 4-$^{1}/_{2}$" for 10 inch and smaller mains and 5-$^{1}/_{4}$" for 12 inch and larger mains.

   d) Operating nut shall open left (counter clockwise) and working pressure shall be 250 psi.

   e) The fire hydrant nozzle shall be (NST) National Standard Thread (as per NFPA 1963 Standard for fire hose connections) consisting of two 2-$^{1}/_{2}$" butts and one 4-$^{1}/_{2}$" butt.

PROCEDURE FOR INSPECTION AND CONTRIBUTION OF WATER FACILITIES IN A DEVELOPMENT WITH PUBLIC STREETS BY TRENTON WATER WORKS (TWW)

It is the intent of this procedure to secure the best workmanship consistent with the job conditions and the contractor's skill. No provision in this procedure shall be construed by the contractor as an excuse for poor workmanship or results. The contractor shall guarantee that the material, equipment, and apparatus required for the development shall be free from all defects in the material, design, and the workmanship. The contractor shall give satisfactory and continuous service under all conditions of service required and specified or which may be reasonably inferred from the submitted mark-up plans, procedures, and specifications and that all work performed by him/her shall be perfect in material and workmanship. The contractor shall agree to repair or replace, at his own expense, any part of the material, apparatus, or workmanship proving defective in inspection prior to Trenton Water Works' ownership takeover of the new water distribution facilities. A visual, operational, and performance inspection shall be made to the following:

1. **Valve Boxes: (See Roadway Box Installation Detail)**

   a) In bituminous base streets, a round **concrete collar** is required around the top section of the valve box **with a diameter of 18 inches** and **a depth of 6 inches** that stops 2 inches below the finished grade or is even with the top of the base course. The concrete shall be Class C, 3000 psi (air entrained, 2% none Chloride accelerator, NJDOT approved).

   b) Both sections of the valve box shall be plumb and the bottom of the valve box shall be situated so that the valve nut is centered and can be operated with the valve key.

   c) Valve boxes shall also be free of dirt, asphalt, stones, rocks, sand, or any other material, or debris.

   d) **No Adapters** shall be used to raise the valve boxes to finished grade.

2. **Mechanical Joint End (M.J.E.) Gate Valves: (See standard valve replacement detail)**

   a) The M.J.E. gate valve with the U.S. Pipe Resilient Wedge, **open right** is made by U.S. Pipe Valve and Hydrant.

   b) All valves shall open clockwise (open right). TWW **shall not** accept any counter-clockwise (left-handed) to open valves.

   c) All gate valves in the project must be fully open when the project's final inspection is performed unless indicated by the engineer or the appropriate representative of the Trenton Water Works.

3. **Fire Hydrants (F.H.): (See Standard Fire Hydrant Detail)**

   a) All public fire hydrants shall be U.S. Pipe METROPOLITAN/ M-94 Dry-Barrel with either the 4-$^{1}/_{2}$" or 5-$^{1}/_{4}$" valve sizes.

   b) Before a fire hydrant can be dispensed from the TWW's yard, it must be checked by the contractor/developer for damage and it's bury size (6 inch increments) must be specified.

   c) **Hydrants** shall be **installed plumb** and have a distance of **no more than 5 inches between** the top of the **curb and** the bottom of the breakaway **coupling**. **NO HYDRANT ADAPTORS SHALL BE ALLOWED.**

   d) If a Mechanical Joint Tee is used, the **hydrant shall be rodded back** to the gate valve and the gate valve must be rodded back to the Mechanical Joint Tee. M. J. Field Lok Tyton Gaskets shall be used in new fire hydrant installation. All hydrants shall have a **concrete thrust block** below the location of where the drip hole is on the hydrant.

   e) **Stone** (clear gravel) shall be placed around the area below the hydrant barrel for a **distance of 18" and 6" above the Hydrant Lateral** to allow for adequate drainage from the hydrant.

   f) A distance of **18 inches** shall exist **between** the street side of the **curb** to the front of the 4 1/2" **steamer cap.**

4. **Curb Boxes: (See Service Line Installation Detail)**

   a) The **curb** stop **lid** shall be **visible** and flush with the surrounding ground. The pentagonal insert shall be intact and free of dirt, cement, etc.

   b) The **curb** stop **box** shall be at a distance of approximately **18 inches** from the street side of the **curb to** the center of the **curb box**.

   c) **Services** to curb stops from the main shall be **perpendicular to the main.** If for any reason this is not possible, the deviation must be noted on as-built sketches. The **Service Record Sheet** shall be **filled out by** the **Contractor/Developer** before the Hydrostatic Test can be performed.

5. **Flushers: (See Flusher Assembly Detail)**

   a) **A 2 inch Flusher assembly shall** be installed **at** the **end** of a dead end water main, **whenever a hydrant is not present to flush and when the water main is 8 inches or less.** The top of the flusher assembly shall be female threaded pipe and shall be within 6 inches of grade.

   b) A circular **concrete collar** shall be placed around the top of the valve box with a diameter of 18 inches for the Flusher Assembly and a depth of 6 inches on the sides of the valve boxes at a depth of 6 inches that stops 2 inches below the top of the grade or is even with the top of the base course.

6. **Water Main:**

   a) The top of the water main shall be installed with 4 **feet of cover**. This is the distance from the **top** of the pipe **to** the top of **grade**. In order for the Trenton Water Works to allow a deviation in the depth of cover, it shall be present to the developer beforehand with site plans showing the proposed profiles. The cover may not vary from a minimum of 3½ feet to a maximum of 5 feet. Profiles of the water main and sewer main must be indicated on the site plans. **ALL REGULATIONS OF THE N.J. SAFE DRINKING WATER ACT, STANDARDS FOR THE CONSTRUCTION OF PUBLIC COMMUNITY WATER SYSTEMS MUST BE COMPLIED WITH.** If there are any questions, regarding this requirement can be obtained from the N.J.D.E.P. by calling (609) 292-5550.

   b) The water main shall be installed so as to be consistently offset with one side of the street. The water main shall be approximately 5 to 10 feet off the curb line in the limits of the street pavement, unless there exists conditions which would make such an installation impractical.

7. **Disinfection:**

   a) Disinfection shall be done in accordance with the AWWA Standard C651-86, Section 5.1 Tablet Method.

   b) During construction the pipe and appurtenances shall be kept clean and dry.

   c) During construction of the water main, chlorine tablets (calcium Hypochlorite; 65% available chlorine) shall be attached to the inside top of the water main in each length of pipe. Tablets shall be attached by a food-grade adhesive (AWWA C651a-90) such as:

   PERMATEX Form-A Gasket No. 2 Sealant
   (Fast Drying, Hard Setting)
   or
   Permatex Clear RTV Silicone Adhesive Sealant
   (Fast Drying, Hard Setting)

   The products have both been approved by the USDA. They are manufactured by Loctite Corporation, Kansas City, KS 66115.

   d) The amount of chlorine tablets shall be determined in the field by the engineer or the duly authorized representative of the Trenton Water Works.

   e) When installation has been completed, the water main shall be filled with water. The water shall remain in the pipe for **at least 24 hours.**

   f) After the 24 hour contact period, the Trenton Water Works' Water Quality Office shall be contacted at 609-989-3216 so that a determination of the residual chlorine concentration can be ascertained. It is recommended that a **24 hours notice** be given to the Water Quality Office so that provisions for testing can be arranged.

   g) The main shall not be flushed until after the hydrostatic test has been performed and approved by the Trenton Water Works' Engineering Office.

8. **Hydrostatic Tests:**

   a) Hydrostatic testing shall be done in accordance with AWWA Standard C600-82 Section 4 and shall performed under the supervision of the Trenton Water Works' Engineering Office (609-989-3212). The contractor shall subject the water main, services (corp to curbstop), valves, hydrants and appurtenances to a water pressure of not less than one hundred and fifty (150) pounds per square inch (PSI) for two (2) hours with allowable leakage as per AWWA Standards.

   b) The contractor shall provide the hydraulic pump with an "in line" check valve to prevent backflow through the pump during testing.

9. **Bacteriological and Turbidity Testing:**

   a) After the Hydrostatic test has passed and has been accepted by the Trenton Water Works' Engineering Office (609) 989-3212, the water main shall be flushed to remove the heavily chlorinated water per NJDEP/EPA regulation and to scour the interior of the pipe. The duration of the flushing shall be determined in the field by the engineer or the duly authorized representative of the Trenton Water Works.

   b) Once flushing is completed, the Trenton Water Works' Water Quality office shall perform a Bacteriological and a Turbidity Analysis. This office can be reached by calling 609-989-3216.

10. **Tapping Sleeves and Tapping Valves:**

   a) Trenton Water Works will accept the following tapping appurtenances, which shall meet AWWA standards.

   Smith-Blair #622 Tapping Sleeve Flanged & U.S. Pipe Resilient Wedge Tapping Valve (Gate), open right, flanged by mechanical joint.

   b) **The developer shall be responsible to perform his own wet cuts and service taps into the Trenton Water Works distribution system. Before the wet cut can be made, the appropriate water meter(s), backflow prevention device(s), and street opening permit(s) must be obtained and the Trenton Water Works Engineering Office (609-989-3212) must be notified 3 working days in advance to allow the scheduling of a representative to observe the making of the cut.**

NOTE: For Ductile Iron Pipe, the Smith-Blair #622 shall be used on all the various sizes of tapping sleeves with the exception of a size on size cut.

NOTE: A U.S. Pipe Mechanical Joint Tapping Sleeve Type H-615 can also be substituted for the above Tapping sleeve, if the flanged end of the sleeve can bolt directly to a Mechanical Joint Tapping Valve (as per TWW Specifications for valves – U.S. Pipe Resilient Wedge pattern).

NOTE: For Cast Iron Pipe, all size on size and size on one size smaller (i.e. 12"x10" cut) tapping sleeves shall be the U.S. Pipe Type H-615 Ductile Iron Mechanical Joint Tapping Sleeve with AB & CD gaskets.

11. **Thrust Blocks and Rodding of Mechanical Joint Fittings:**

   IT IS THE RESPONSIBILITY OF THE CONTRACTOR TO ASSURE THAT ALL MECHANICAL JOINT FITTINGS ARE PROPERLY RESTRAINED.

   a) At a minimum Retainer glands or the U.S. Pipe M.J. Gripper Gland with 3/4" threaded rods shall be used on ALL JOINTS within 20 feet from a Mechanical Joint Fitting.

   b) All plugs, caps, tees, flushers and bends, unless otherwise specified, shall be provided with thrust blocks or suitably restrained joints as shown or directed by Trenton Water Works. (See detail drawing showing thrust and anchoring blocks)

   c) All thrust restraints shall be designed to withstand the test pressure, working pressure, and any potential surge pressure of the pipe.

   d) Concrete thrust blocks of both the vertical and horizontal orientation shall be made of concrete having a compressive strength of not less than 2000 psi after 28 days. Thrust blocks shall be placed between solid ground and the fitting to be anchored. Each instance shall be as shown in the enclosed thrust block detail or as directed by Trenton Water Works.

Upon written notice from the contractor to the effect that he/she has performed all the work required by the specifications, marked up plans, and requirements, Trenton Water Works will inspect the job promptly to see if everything is satisfactory. Most of what has been previously inspected and accepted by the Trenton Water Works need not be re-examined in great detail, but if something needing correction is discovered in the work that had been approved earlier, the former acceptance shall not prevent the Engineer from requiring that it be remedied by the contractor.

12. **Water Main Installation through a Bridge Structure:**

   All water mains and fittings shall be U. S. Pipe TR Flex restrained joint ductile iron pipe. The Tyton Joint gasket shall be used. Gate valves shall be used as specified in Item 2 of this section. They shall be installed at approximately 50 feet from each side of the bridge structure.

   The Rollers and Hangers are the recommended support structure for the water main installation through a bridge. They shall be designed by the entity designing the bridge structure. The design must incorporate the proper materials so the water main structure is adequately supported. All local, state, and federal codes that are applicable shall be complied with. The design drawing shall be submitted to the Trenton Water Works, Engineering Office for final approval.

13. **Application and Installation for Domestic and Fireline Service:**

   a) All the water services, which are to be constructed along public streets that have existing facilities capable of providing adequate service without adversely affecting existing customers, the developer shall be responsible for the complete installation of domestic and / or fire line service to the building, unit, or complex to receive service. This shall be performed as per all the requirements of the Trenton Water Works for materials, specifications and diagrams. Where there is no existing or where the existing main can not provide adequate service, the developer shall furnish and install adequate water main and services. Where an existing water service(s) exists and will not be utilized for water service, all such water services will be shut off at the corporation stop (main) by the property owner. Water service will not be established until any and all existing water service(s) are disconnected.

   b) The developer shall fill out the service application and submit to the Trenton Water Works' Customer Service Office located on the 2nd floor of 333 Courtland Street at the corner of Mulberry Street.

   I) When the developer applies for a water service account, he/she must submit the following information:

   1) Billing Address
   2) Street Address (House #, not Lot #)

   3) Size of Domestic/Irrigation Service
   4) Size of Water Meter
   5) Size of Fireline Service if applicable

   II) The developer shall be responsible for contacting the Trenton Water Works Water Meter Office (phone: (609) 989-3225/3226), before completion of plumbing on the homeowner's side of the water service. At this time the Meter Office can provide a meter setup ("jumper"; 1-$^{1}/_{2}$" or larger for domestic services) for the plumber to install the meter horizontally. If the service is less than 1-$^{1}/_{2}$", the developer shall install twenty (20) inches of copper (spool piece) in a horizontal position as per diagram within this packet. Upon proper installation of the meter setup or copper spool piece, the developer/owner shall contact the meter office within 30 calendar days to activate the account for water usage. Failure to do so shall result in loss of the deposit.

14. **Irrigation Systems and Their Required Backflow Prevention:**

   a) An irrigation system that is connected to a public potable water system shall have the required safeguards to prevent the potential of a cross connection. This shall be done in compliance with the N.J.D.E.P. Safe Drinking Water Act Regulation N.J.A.C. 7:10 - 10.3 to 10.4 for Physical Connections. The irrigation line shall also be metered.

The degree of backflow protection required to protect potable water is dependent on the type of irrigation system to be installed. This protection shall fall into 1 of 2 categories.

Category #1 In this case, the irrigation line is tapped off the main in the street (public/private). No domestic tap(s) are off the irrigation line. No additives of any kind are used and no alternate sources are tied into (i.e. elevated Storage lines, ponds, etc.) the irrigation line. A **Reduced Pressure Zone Backflow Preventer (shall meet AWWA standards)** shall be the required method of backflow prevention. It must be located just downstream of the potable water tap and the meter, preferably **inside a heated structure/building**. This is to prevent the backflow of stagnant water into the potable domestic supply. When designing the structure, foresight must used to allow for adequate room to read the meter and test the backflow preventer. The backflow preventer must be mounted in a horizontal position, unless approved otherwise by the reviewing engineer.

Category #2 In this case, the irrigation line is tapped off the main in the street (public/private). No domestic tap(s) are off the irrigation line. Here additives such as liquid fertilizer or anti-freeze (Ethylene glycol or Propylene glycol; used when winterizing irrigation systems) are added. This type of service will be required to comply with the N.J. Safe Drinking Water Act Regulations 7:10-10.2. A **(RPZBFP) Reduced Pressure Zone Backflow Preventer (shall meet AWWA standards)** shall be the required method of backflow prevention. It must be located just downstream the potable water tap and the meter, **inside a heated structure/building**; N.J.A.C. 7:10-10.4(c)1. N.J.D.E.P. regulations prevent installation of the RPZBFP in a vault/pit due to the mechanical nature of the port allowing the differential relief valve to release to atmosphere in the vault. This would leave the unit vulnerable to contamination if located in a confined space below grade. This requirement would comply with the N.J. Safe Drinking Water Act Regulations. A Reduced Pressure Zone Backflow Preventer can be allowed in a pit/vault only when specifically permitted by the N.J.D.E.P. The Trenton Water Works would want proof in writing of such a condition. In addition, the port from the

differential relief valve would have to be piped out of the pit/vault and terminate at least twelve inches (12") above grade with a down facing elbow. When designing the structure, foresight must used to allow for adequate room to read the meter and test the backflow preventer. The backflow preventer must be mounted in a horizontal position, unless approved otherwise by the reviewing engineer.

15. **Domestic Water Line Service and Their Required Backflow Prevention:**

   A domestic water line service that is connected to a public potable water system shall have the required safeguards to prevent the potential of a cross connection hazard(s). This shall be done in compliance with the N.J.D.E.P. Safe Drinking Water Act Regulation N.J.A.C. 7:10 - 10.2 (e) for Physical Connections. The domestic water line service shall also be metered.

   In this case, the domestic water line service tapped off the main in the street (public/private) and the facility have an unapproved water supply (e.g. private well). A **(RPZBFP) Reduced Pressure Zone Backflow Preventer (shall meet AWWA standards)** shall be the required method of backflow prevention. It must be located just downstream the potable water tap and the meter, **inside a heated structure/building**; N.J.A.C. 7:10-10.4(c)1. N.J.D.E.P. regulations prevent installation of the RPZBFP in a vault/pit due to the mechanical nature of the port allowing the differential relief valve to release to atmosphere in the vault. This would leave the unit vulnerable to contamination if located in a confined space below grade. This requirement would comply with the N.J. Safe Drinking Water Act Regulations. A Reduced Pressure Zone Backflow Preventer can be allowed in a pit/vault only when specifically permitted by the N.J.D.E.P. The Trenton Water Works would want proof in writing of such a condition. In addition, the port from the differential relief valve would have to be piped out of the pit/vault and terminate at least twelve inches (12") above grade with a down facing elbow. When designing the structure, foresight must used to allow for adequate room to read the meter and test the backflow preventer. The backflow preventer must be mounted in a horizontal position, unless approved otherwise by the reviewing engineer.

16. **Fire Protection and Backflow Prevention for Wet Fire Protection Systems:**

The degree of backflow protection required to protect potable water is dependent on the type of wet fire protection system to be installed. Basically, this protection falls into 1 of 4 categories.

Category #1 In this situation the fire line can be tapped off the domestic line under the limited area sprinkler system (20 or less sprinkle heads) BOCA Code. The fire line must be tapped after the meter (downstream side) and include a **Double Gate Double Check Backflow Preventer Device (shall meet AWWA standards)**. The backflow preventer must be mounted in a horizontal position, unless approved otherwise by the reviewing engineer.

Category #2 In this case the fire line is tapped off of the main in the street and either does or does not have a domestic use line tapped off of it. No additives of any kind are used and no alternate sources are tied in. (ie. elevated storage lines, ponds, etc) to the fire line. In this case a **Double Gate Double Check Backflow Preventer Device with Detector Assembly (shall meet AWWA standards)** must be placed just downstream of the potable water tap or just **inside the building** if no potable water tap exists. This is to prevent the backflow of stagnant water into the fresh domestic supply for the building or back into the main in the street. The backflow preventer must be mounted in a horizontal position, unless approved otherwise by the reviewing engineer. The detector check assembly shall be lead free equipped with a Sensus SR meter (reads in cu/ft) with an ECR register and a touch pad

device for out side reading. The Owner and/or Contractor is responsible to supply, install, and maintain it.

Category #3 In this case the fire line is tapped off of the main in the street and either does or does not have a domestic use line tapped off of it as in # 1 above. Here N.J.D.E.P. Safe Drinking Water Act Regulation N.J.A.C. 7:10-10.3 (b) applies as follow: A facility that is served by a public community water system and that contains a chemical substance or solution, uses a chemical, non-potable water, physical or biological process shall be protected by a **Reduced Pressure Zone Backflow Preventer with Detector Assembly (shall meet AWWA standards).** Example: The fire line has anti-freeze (Ethylene glycol or Propylene glycol) for an outside unheated area that must be fire protected, (such as a loading dock). The RPZBFP must be put on the fire line as close as possible as to the point of addition of the chemical substance. **As a further precaution a Double Gate Double Check Backflow Preventer Device with Detector Assembly (shall meet AWWA standards)** must be placed on the fire line as the line enters the building from the street. The backflow preventer must be mounted in a horizontal position, unless approved otherwise by the reviewing engineer.

If the entire fire line, both inside and outside sections, are to be anti-freeze protected, then a reduced pressure zone backflow preventer with detector assembly must be installed just as the fire line enters the building from the main. In this case owner/contractor/developer will have choice to install **Reduced Pressure Zone Backflow Preventer with Detector Assembly (shall meet AWWA standards)** as the fire line enters the building from the main. The backflow preventer must be mounted in a horizontal position, unless approved otherwise by the reviewing engineer. The detector check assembly shall be lead free equipped with a Sensus SR meter (reads in cu/ft) with an ECR register and a touch pad device for out side reading. The Owner and/or Contractor is responsible to supply, install, and maintain it.

Category #4 In this situation the fire line enters from the street and either does or does not have a domestic use line tapped off of it just as in #1 above. However, in this case the fire protection is supplemented by a storage tank or a well system (either with or without anti-freeze). In this case a **Reduced Pressure Zone Backflow Preventer with Detector Assembly (shall meet AWWA standards)** must be installed **inside the building** to the fire line as the line enters the building from the street. If, however, the storage tank is only filled with Trenton water works supplied potable water then a Double Gate Double Check Assembly with Detector Assembly (**shall meet AWWA standards**) shall suffice in place of a reduced pressure backflow prevention device with Detector Assembly (**shall meet AWWA standards**). The backflow preventer must be mounted in a horizontal position, unless approved otherwise by the reviewing engineer. The detector check assembly shall be lead free equipped with a Sensus SR meter (reads in cu/ft) with an ECR register and a touch pad device for outside reading. The Owner and/or Contractor is responsible to supply, install, and maintain it.

Note: In any of above cases, if a private fire hydrant is installed off a private service, a Fireline Detector Check (single check) with a metered by-pass shall be installed. Meter shall be lead free Sensus SR meter (reads in cu.ft.) with an ECR register and touch pad device. The Fireline Detector Check with metered by-pass shall be installed on the fire hydrant lateral and shall be in a vault. The Owner and/or Contractor shall be solely responsible to design, supply, install, and maintain this detector check, meter and meter vault.

FIRE LINE (Backflow Prevention) AND DOMESTIC LINE REQUIREMENTS AND SET-UPS:

The primary objective of the Trenton Water Works is the preservation of safe potable water that is free from contamination of foreign liquids and water from other sources. The greatest chance for a cross connection can occur when installing Fire Protection Systems or installing domestic water service to a residence that previously had well water.

1) **The Trenton Water Works shall furnish only one (1) meter per service tap (shutoff valve) per owner of building** unless the structure is a commercial building with individual units. Any other metering arrangements must be approved by the Trenton Water Works. If an existing Fire Line or domestic system is refurbished, it must be upgraded to satisfy the most recent requirements for the Trenton Water Works as described in this packet.

2) The minimum Backflow Prevention on irrigation and Fire Line services to be used within the Trenton Water Works system shall be **ONE DEVICE** consisting of a **Double Gate Double Check Backflow Preventer (shall meet AWWA standards)**. This does not include fire hydrants on a private Fire Line unless they are tapped off an unapproved source. If the service is a Fire Line, the backflow preventer shall need to include a detector assembly. The backflow preventer must be mounted in a horizontal position, unless approved otherwise by the reviewing engineer.

3) **A REDUCED PRESSURE ZONE BACKFLOW PREVENTER with DETECTOR ASSEMBLY** shall be required as the minimum Backflow Prevention to be used within the Trenton Water Works system where the unapproved water supply is derived from any surface source or a known contaminated source or where the premises is a hospital, sewage or industrial waste treatment plant or pumping station, or is a chemical, industrial or manufacturing industries wherein liquids, vapors, gases, or chemicals of unsafe, unknown or questionable quality are handle. This shall include but not be limited to irrigation or Fire Line systems in which an unapproved foreign substance or water supply is used. The detector check shall be lead free Sensus SR meter (reads in cu/ft) with an ECR register and a touch pad device for out side reading. The Owner and/or Contractor is responsible to supply, install, and maintain it.

4) A gate valve shall be **REQUIRED** before and after the Backflow Preventer, if they are not provided as part of the Backflow Preventer Device to meet the AWWA standards.

5) The developer/contractor shall be responsible for the installation of the complete water service from the water main to about 18 inches behind the proposed curb line. After water service application has been filled out with the Customer Service Office and meeting the Trenton Water Works requirements such as installation of appropriate water meter(s), if applicable the approval and installation of appropriate backflow prevention device(s), and obtaining all necessary permits, the developer/contractor shall notify the Trenton Water Works Engineering Office (609-989-3212) 3 working days in advance to allow the scheduling of a representative to observe the installation of Fire Line/Domestic Services. The developer/contractor shall perform the service installation work only after the water appurtenance material has been inspected by a Trenton Water Works Official. The installation of service(s) shall not be allowed from the water main if the job is not approved by the Trenton Water Works Engineering Office.

6) If approval is granted for a domestic service to be tapped off a fire line, the **domestic tap shall be performed outside the building** and shall have a curb stop (As per TWW specifications). Refer to the attached Trenton Water Works detail.

7) A curb stop, outside of the building, shall be **REQUIRED** in the utility right-of-way at the curb. Curb stops shall be accessible and not hidden by trees, shrubs, etc.

8) The meter setup for the domestic line must always be inside the building. Water meters on domestic lines are always installed **HORIZONTALLY**. When the Meter Office is contacted by the plumber after filling out an application, a "jumper", the length of the meter and threaded size on both sides will be loaned to the prospective plumber/contractor for sizes 1-$^{1}/_{2}$" and greater. A jumper shall be picked up and installed by the developer/plumber for services less than 1-$^{1}/_{2}$". A shut off valve shall be **REQUIRED** in front of and behind the water meter inside of the building. Conduit must be installed from meter to outside wall for outside reading device.

   A proper **Backflow Preventer with Detector Assembly (shall meet AWWA standards)** is required on the fire line. The backflow preventer must be mounted in a horizontal position, unless approved otherwise by the reviewing engineer. The detector check shall be lead free Sensus SR meter (reads in cu/ft) with an ECR register and a touch pad device for out side reading. The Owner and/or Contractor is responsible to supply, install, and maintain it.

9) All Construction shall be reviewed for Cross Connection Control to determine if any protection against backflow/backsiphonage is required. Review for protection of domestic water supply shall be made in accordance with the New Jersey Safe Drinking Water Regulations (NJDEPE), the National Plumbing Code Book and Trenton Water Works Criteria. The Plumbing Inspector has the jurisdiction to upgrade any backflow protection requirement on private property for new construction.

10) The process for final acceptance of the water main and related appurtenances can not be consummated until the Water Quality (Bacteria, Chlorine, Turbidity, etc.) and Hydrostatic (Pressure test to 150 psi) Tests have passed and met the approval of the Trenton Water Works.

NOTE: **NO INTERCONNECTION** of any kind shall be considered by the Trenton Water Works between any sanitary system and the Trenton Water Works Water Distribution System without a proper backflow prevention plan and a prior review and approval of the N.J.D.E.P. An air gap would be mandatory with a minimum distance specified by the Department of Environmental Protection and agreed upon by the Trenton Water Works.

NOTE: The attached drawings are **EXAMPLES** of domestic and fire line connections to buildings.

METER SETUP REQUIREMENTS

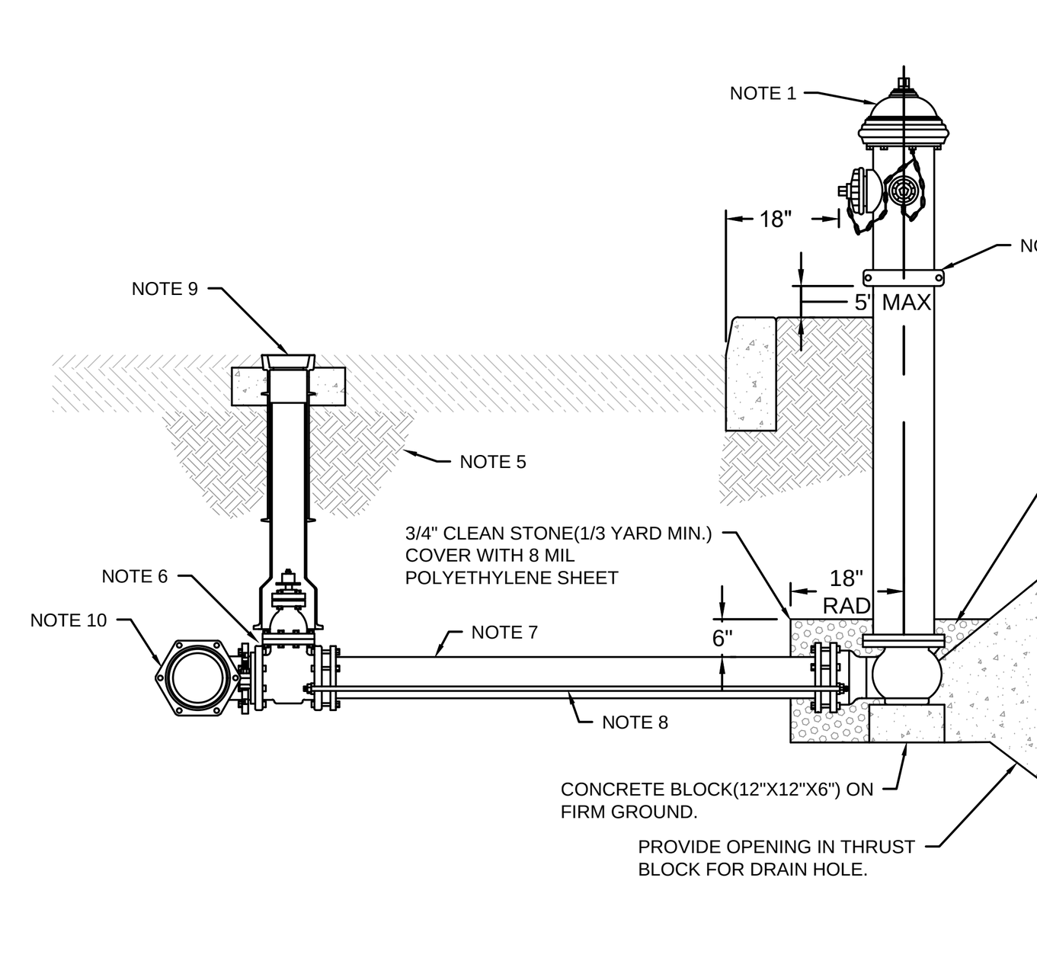
* Where the laying length is flanged on both sides of the meter setup subtract 3/8 inch.

Meter Size	Meter Type	Valve before and after meter	Length before the meter	Length after the meter	Meter Size above 2" Include the strainer & flanged adaptor dimension in the laying length
5/8"	Disc	Ball Valve	N/A	N/A	25 inches
3/4"	Disc	Ball Valve	N/A	N/A	25 inches
1"	Disc	Ball Valve	N/A	N/A	25 inches
1 1/2"	Disc	Ball Valve	N/A	N/A	35 Inches
2"	Disc	Ball Valve	N/A	N/A	35 inches
3"	Disc (Compound)	Gate Valve	21 inches	21 inches	17-1/4 inches *
3"	Turbo	Gate Valve	21 inches	21 inches	19-3/8 inches *
4"	Disc (Compound)	Gate Valve	28 inches	28 inches	29-3/8 inches *
4"	Turbo	Gate Valve	28 inches	28 inches	23-3/8 inches *
6"	Turbo	Gate Valve	42 inches	42 inches	27-3/8 inches *
6"	Compact Fire Line Meter Assembly	Gate Valve	42 inches	18 inches	45-5/8 inches
8"	Turbo	Gate Valve	56 inches	56 inches	30-3/8 inches *
8"	Compact Fire Line Meter Assembly	Gate Valve	56 inches	24 inches	53-5/8 inches *
10"	Turbo	Gate Valve	70 inches	70 inches	41-3/8 inches *
10"	Compact Fire Line Meter Assembly	Gate Valve	70 inches	30 inches	68-5/8 inches *

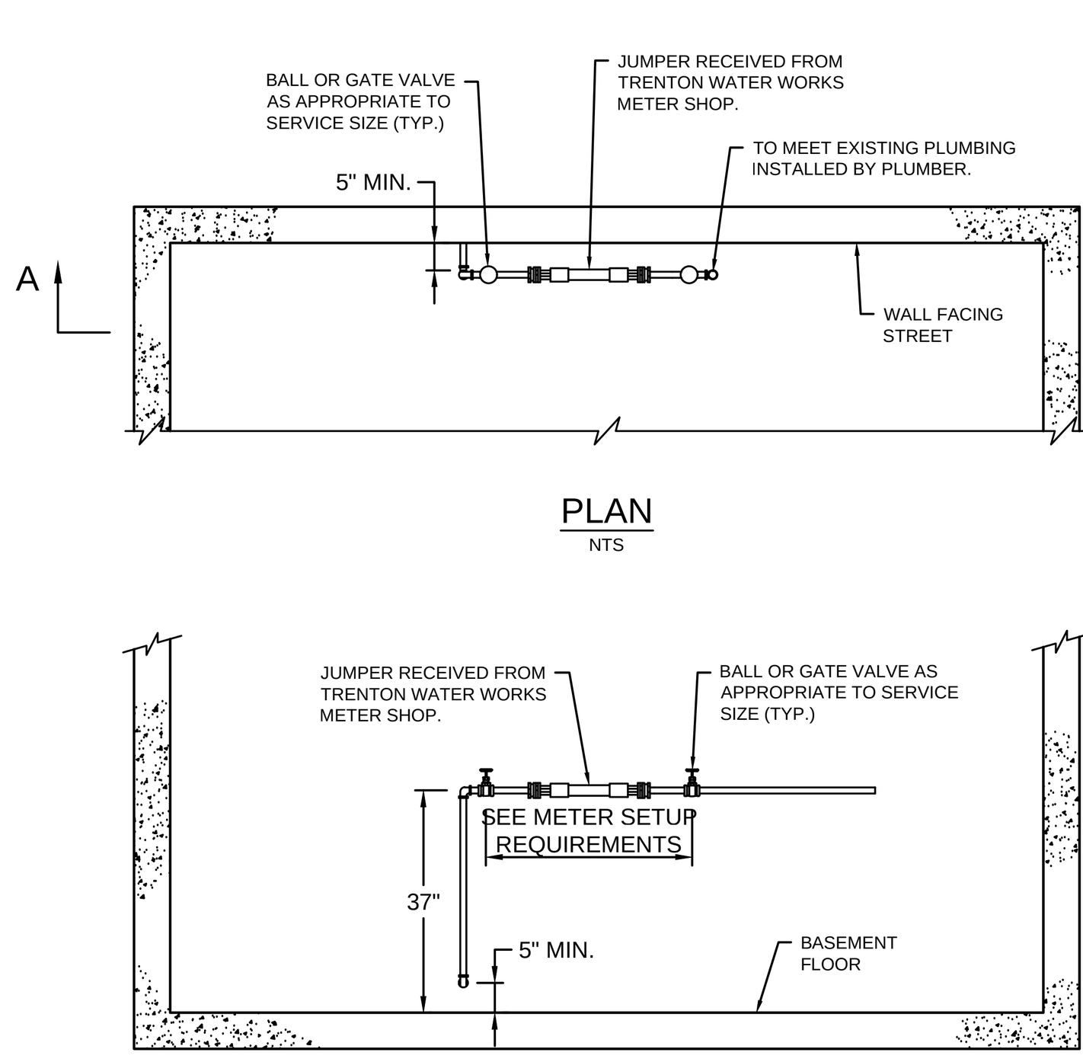
1. Services 2 inches and smaller shall be copper pipe and straight on both sides of the meter setup.
2. For 3 inch and larger meter setups and where the pipe is Ductile Iron or Cast Iron, the street side of the meter setup shall be flanged pipe and the customer's side of the meter setup shall be flanged.
3. For 3 inch and larger meter setups where the pipe is copper or steel, both sides of the meter setup shall be flanged.
4. The service pipe before and after a Compact Fire line Meter Assembly shall be Ductile Iron pipe only, with a flanged pipe on the street side and a plain end pipe on the customer's side.
5. All meters must be installed horizontally. No unmetered bypasses shall be accepted.
6. All 3 inch or larger meters, strainers, as well as Compact Fire line Meter Assemblies shall be supported by concrete pillars.

7. A ball valve shall be installed for meters up to 2 inch and a rising stem gate valve shall be installed for meters 3 inch and larger before and after the meter. Valves shall be required before and after the meter as previously indicated.

8. Buildings not having cellars which are on a concrete slab or have a crawl spaces less than 4 feet in depth, shall have a straight conduit for the remote wire and shall be placed from the meter location to the outside of the building. Where this is not possible, a meter vault shall be placed immediately after the curb stop within 18 inches after the face of the curb. The meter vault and the area immediately around the curb shall be even with the surrounding area. The meter vault shall be the responsibility of the property owner or association having jurisdiction. This shall not be the Trenton Water Works' responsibility. The Trenton Water Works Meter Repair Office shall install the water meter once the meter vault has been properly installed and the service is out to the curb.



STANDARD HYDRANT DETAIL
NOT TO SCALE



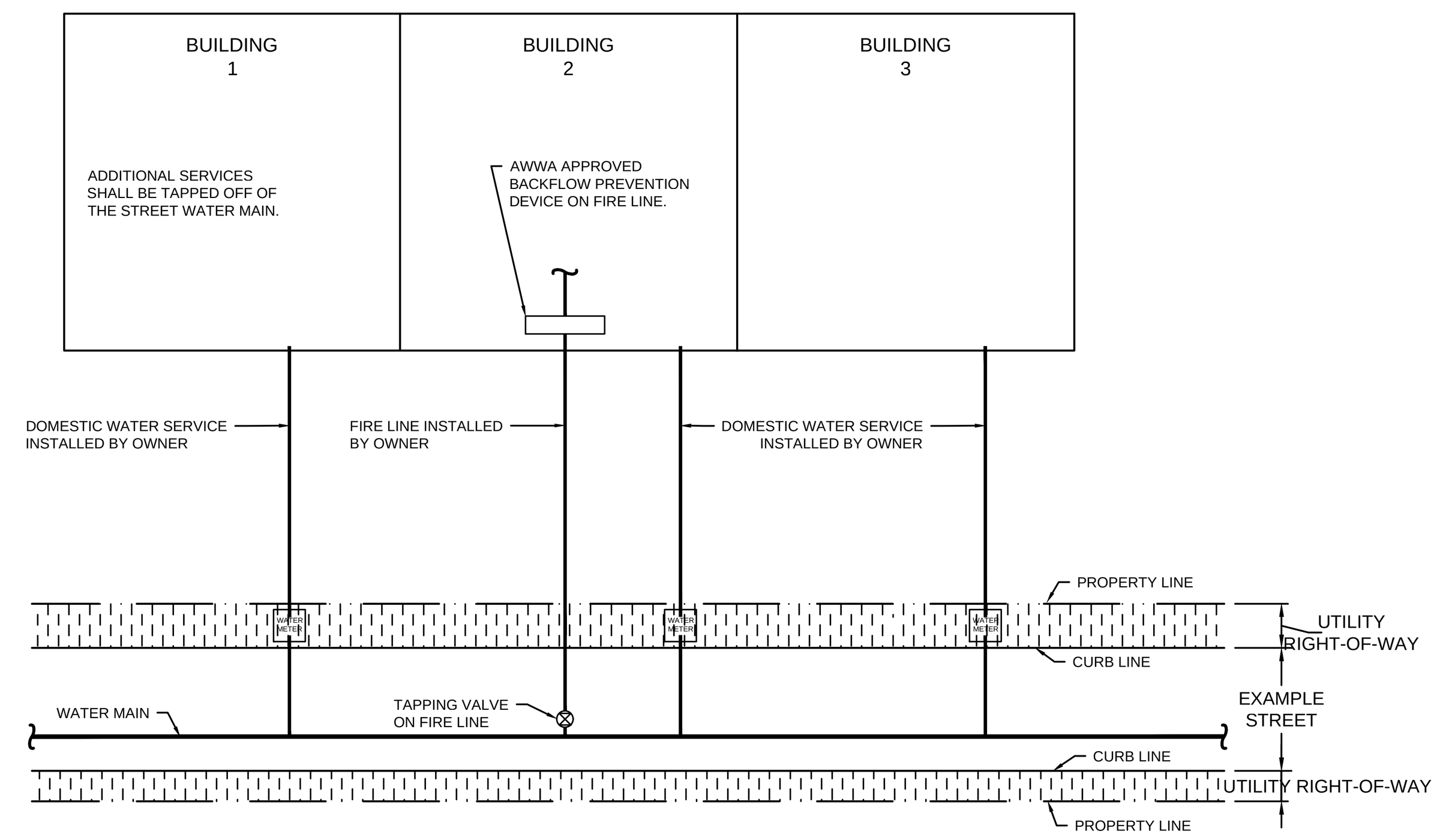
STANDARD METER SETUP DETAIL
NOT TO SCALE

NOTES:

1. ALL METER SETUPS SHALL BE APPROVED BY THE TRENTON WATER WORKS METER SHOP.
2. METER SHALL BE INSTALLED IN A HORIZONTAL POSITION.

NOTES:

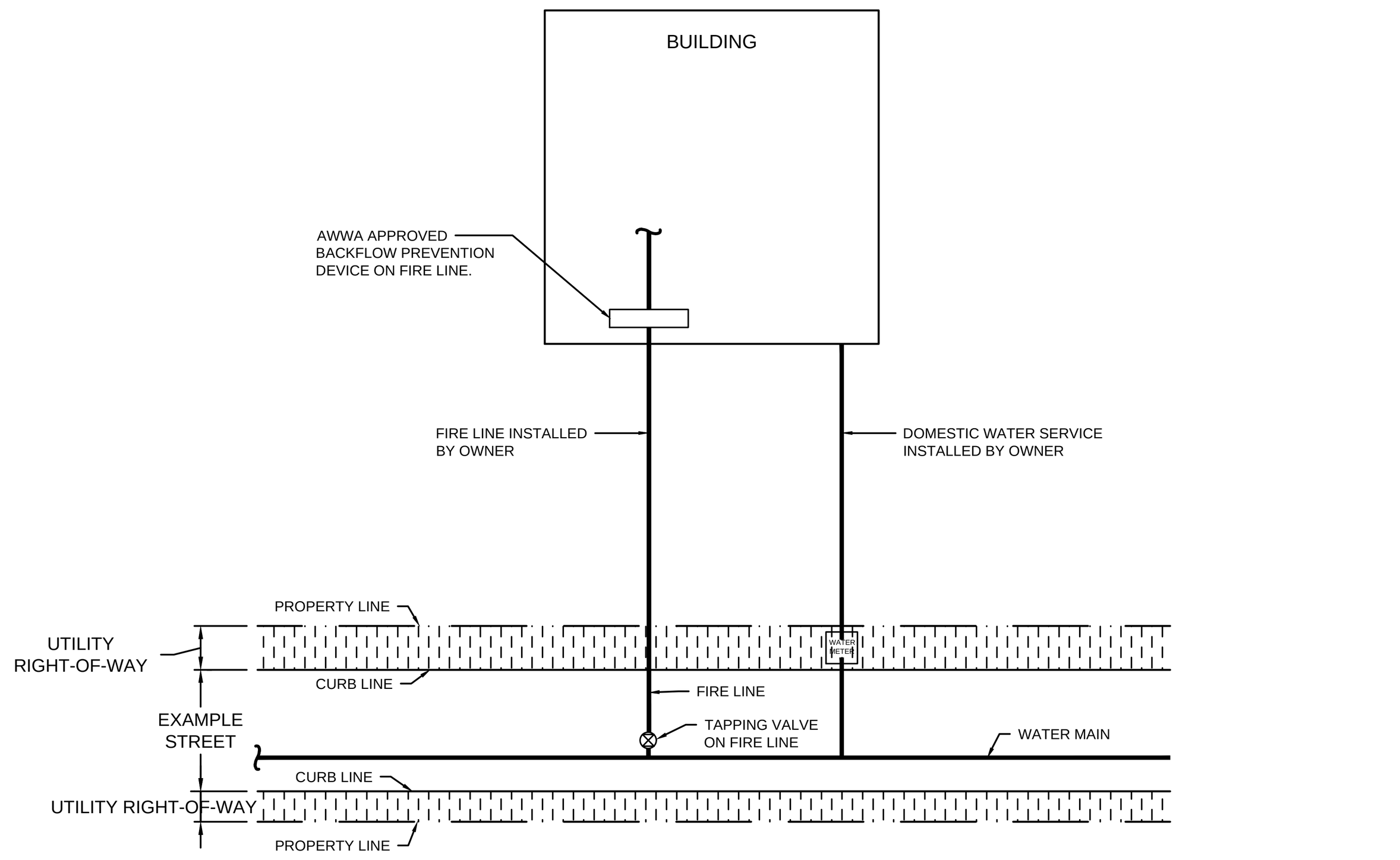
1. SERVICES INSTALLED BY THE TRENTON WATER WORKS TO 18" BEHIND THE CURB LINE.



FIRE PREVENTION & METERING DETAIL
NOT TO SCALE

NOTES:

1. THE OWNER IS RESPONSIBLE TO INSTALL WATER SERVICES.



FIRE PREVENTION & METERING DETAIL
NOT TO SCALE

No.	REVISION	DATE	CHKD
1	REVISED PER PB COMPLETENESS REVIEW	09/10/24	SAD
2	REVISED PER TOWNSHIP COMMENTS	12/18/24	SAD
3	REVISED PER ENGINEERING REVIEW	2/14/25	SAD
4	REVISED PER TOWNSHIP COMMENTS	03/31/25	SAD
5			
6			
7			
8			
9			
10			
11			
12			

PROJ.: 081391-01-001
DATE: 06/25/2024
CHKD: SAD

Bowman

Bowman Consulting Group Ltd
3 Paragon Way, Suite 170
Freehold, New Jersey 07728
bowman.com
E-mail: NJ@Bowman.com
Phone: 732-665-5500
FAX: 732-665-5501
NJ Certificate of Authorization No. 24GA28222600
SEAN A. DELANY, N.J. Professional Engineer, Lic. 24GE04447100

PRELIMINARY AND FINAL MAJOR SUBDIVISION & PRELIMINARY AND FINAL SITE PLAN FOR
VENUE AT HOPEWELL
081391-SP-DET - SHT-18I-UTILITY
BLOCK 93, LOTS 19, 20, 45.01, 46 & 60
TOWNSHIP OF HOPEWELL, MERCER COUNTY, NEW JERSEY

SHEET No.
18I
OF

V:\081391 – Nursery Road–Hopewell\081391–01–001 (ENG) – Venue at Hopewell SP\Engineering\Engineering Plans\02 Site Plans\081391–SP–DET.dwg 03/31/25 03:55:45PM, dino.spinelli, LAYOUT:SHT–18I–UTILITY