

RECORD DRAWING

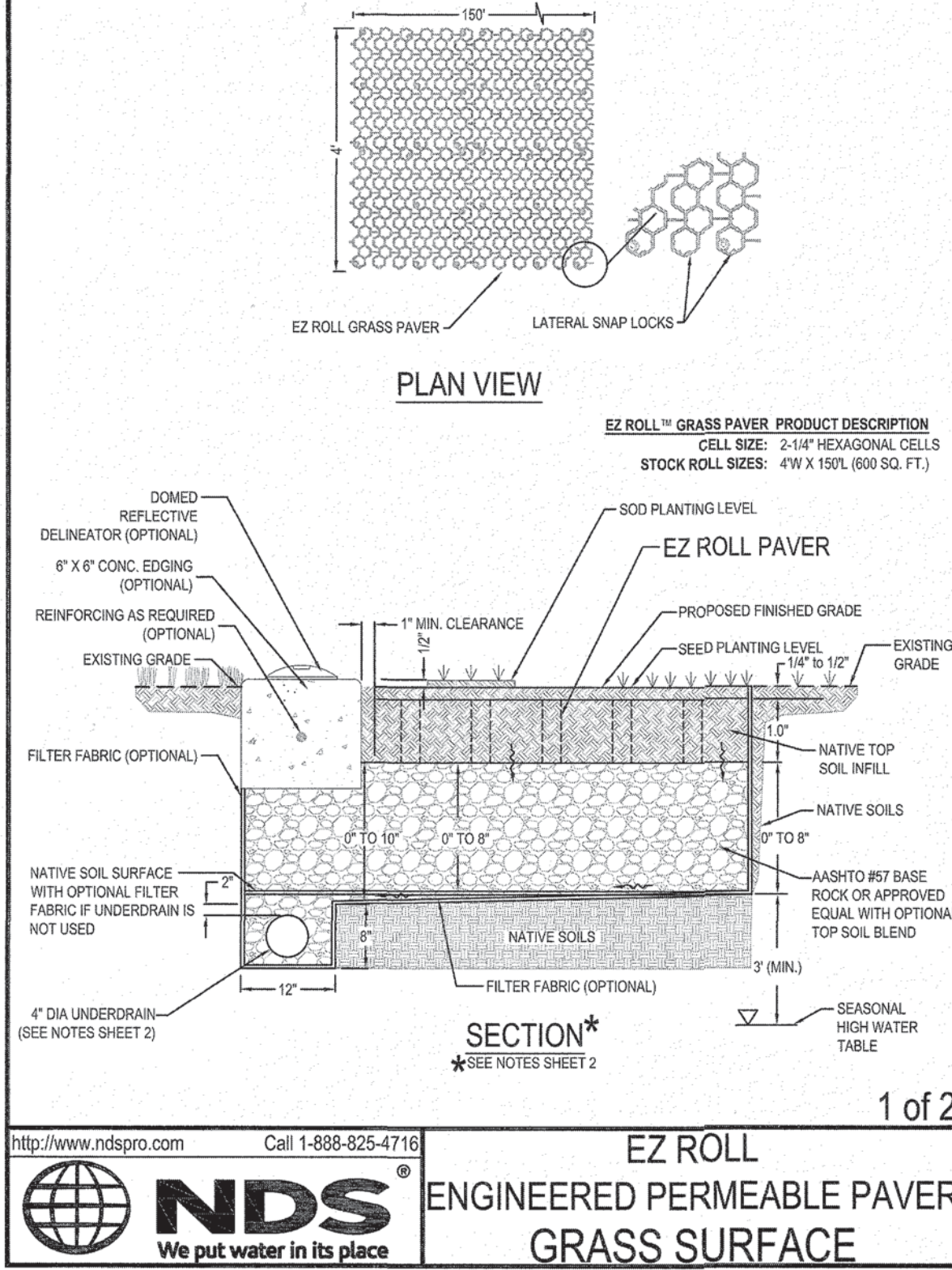
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Professional Land Surveyor
No. 900012



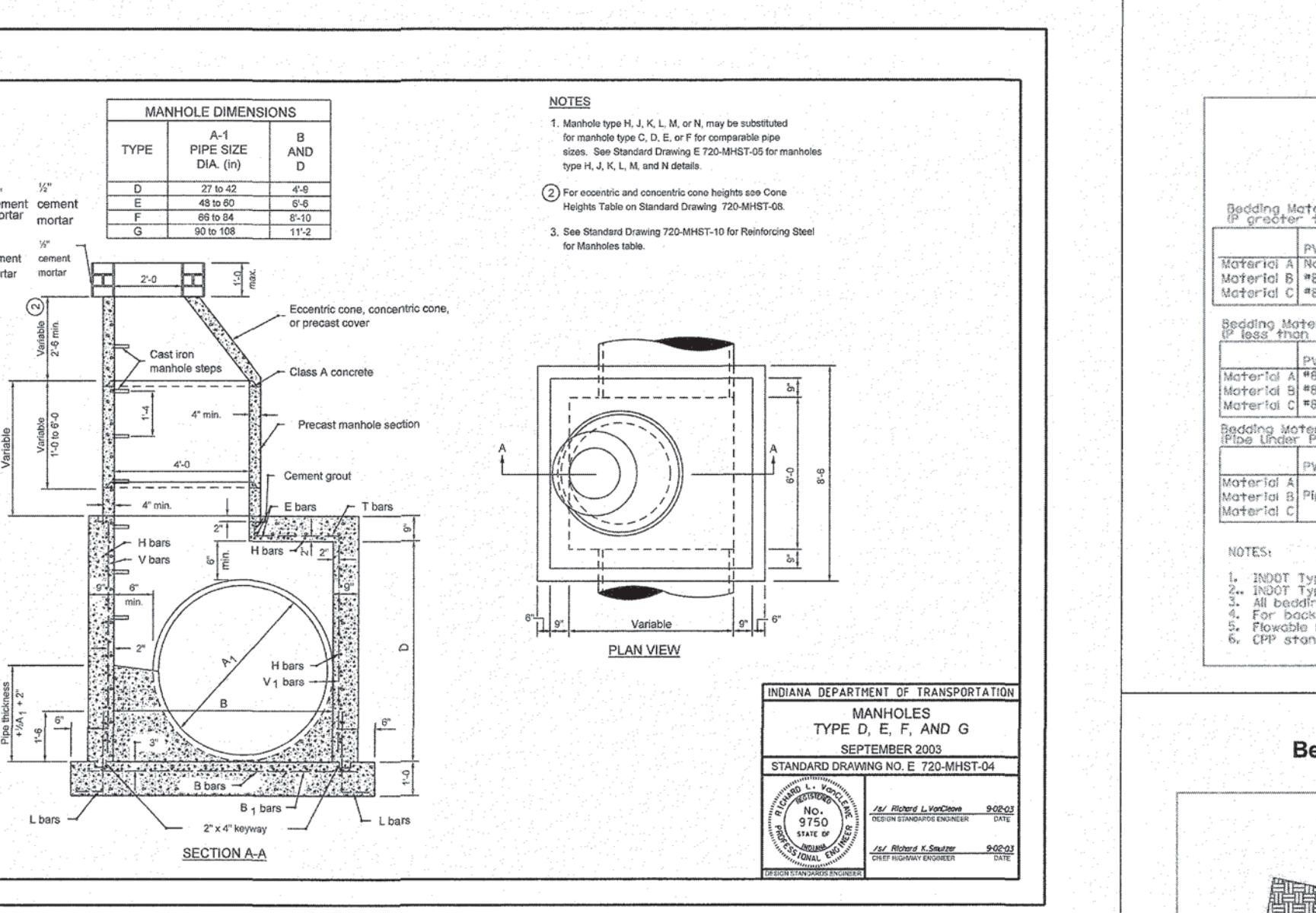
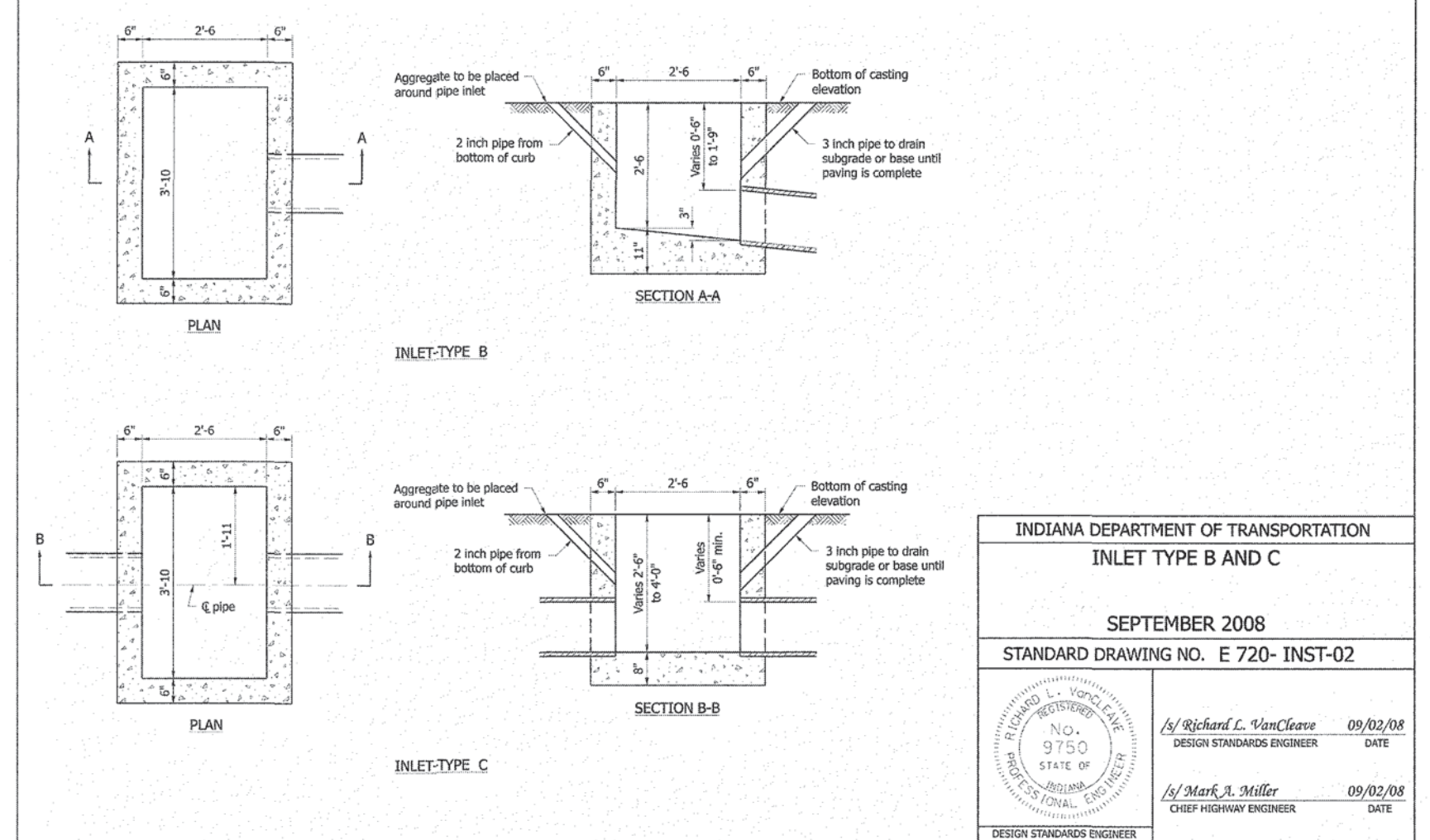
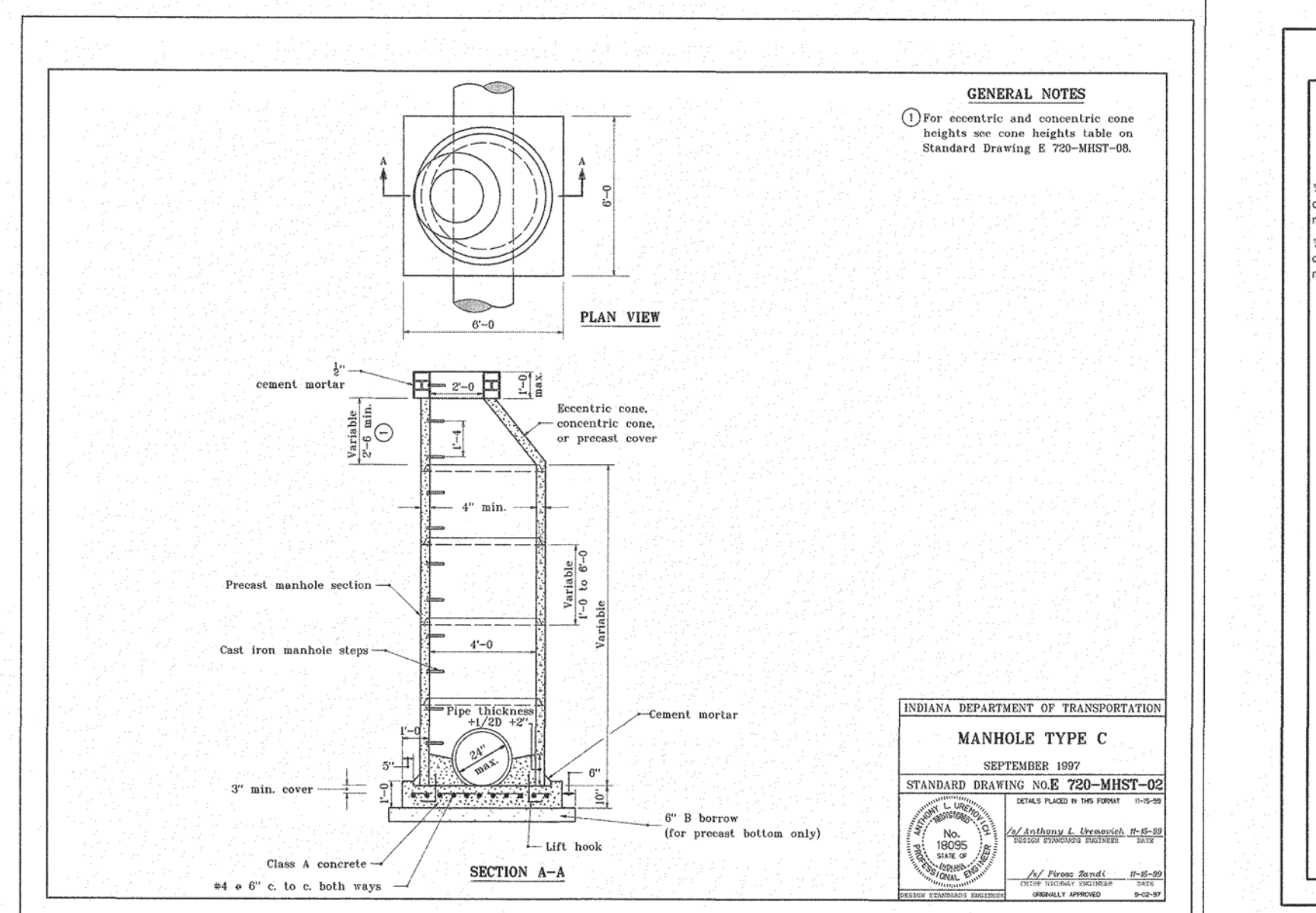
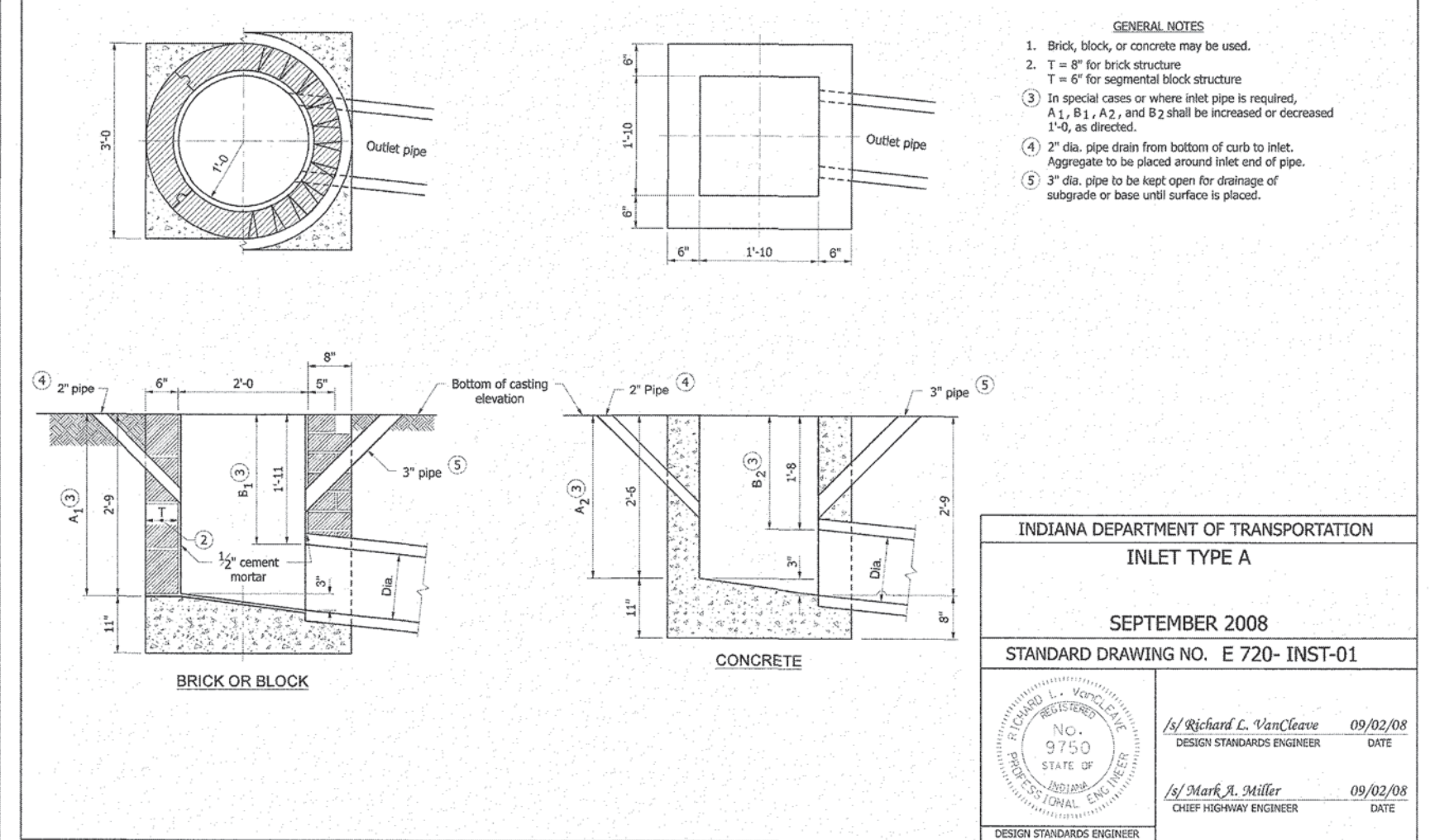
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NDS ENGINEERED PERMEABLE PAVER GRASS SURFACE

- NOTES:**
- ENGINEERING PROPERTIES:**
1. COMPRESSIVE STRENGTH OF EZ ROLL:
EMPTY PAVERS: ULTIMATE LOAD = 53,883 LBS / 373 PSI
FILLED PAVERS: ULTIMATE LOAD = 400,000 LBS
 2. TOP SOIL FILL:
NDS RECOMMENDS NATIVE TOP SOIL FOR BACKFILL INSIDE THE PAVERS.
3. EXTEND TOP SOIL INSIDE PAVES AN ADDITIONAL 1/4" TO 1/2" INCH ABOVE PAVES SURFACE AND MATCH SURROUNDING GRADE. PROPOSED FINISHED GRADE SLOPE PER PROJECT GRADING PLAN. PROTECT PAVES AREA UNTIL GRASS IS SUFFICIENTLY ESTABLISHED TO HANDLE TRAFFIC. PROVIDE 1" MINIMUM CLEARANCE BETWEEN ANY CONCRETE EDGE AND PAVES.
 4. GRASS PAVERS ARE TO BE USED FOR AREAS OF PEDESTRIAN USE, EROSION CONTROL, AND OCCASIONAL VEHICULAR TRAFFIC USE (E.G. OVERFLOW PARKING AND EMERGENCY/FIRE LANES).
- AASHTO #57 BASE ROCK:**
5. GRADATION OF AASHTO #57 COARSE BASE ROCK: 100% PASSING 1 1/2" SCREEN, 95-100% PASSING 3/4", 25-60% PASSING 1/2", AND 0-10% PASSING NO. 200.
 6. OPTIONAL: ADD PULVERIZED NATIVE TOP SOIL EQUAL TO 15% OF TOTAL VOLUME. BLEND TO OBTAIN HOMOGENEOUS MIXTURE PRIOR TO PLACEMENT.
 7. THICKNESS OF AGGREGATE LAYER IS AS FOLLOWS: NO BASE REQUIRED FOR EROSION CONTROL AND PEDESTRIAN-ONLY LOADS (COMPACTION OF NATIVE SOIL RECOMMENDED FOR SLOPES UP TO 3%); 4 INCHES FOR LIGHT LOADS (GOLF CARTS); 6 INCHES FOR MEDIUM LOADS (CARS AND PICKUP TRUCKS); 8 INCHES FOR HEAVY LOADS (FIRE TRUCKS).
 8. COMPACT WITH ONE TO THREE PASSES OF 5-TON STEEL WHEEL ROLLER. SINCE IT IS DIFFICULT TO MEASURE DENSITY OF COARSE AGGREGATE, APPROACH OF REQUIRING A FIXED DENSITY IS NOT APPLICABLE.
- FILTER FABRIC (OPTIONAL):**
9. FILTER FABRIC MAY BE USED TO PREVENT MIGRATION OF FINES FROM SURROUNDING NATIVE SOILS INTO COARSE AGGREGATE LAYER. THE FABRIC PREVENTS CLOGGING OF AGGREGATE LAYER AND EXTENDS ITS USEFUL LIFE. USE OF FILTER FABRIC IS STRONGLY RECOMMENDED AROUND EDGE DRAIN.
 10. NDS RECOMMENDS NON-WOVEN NEEDLE-PUNCHED GEOTEXTILE. WOVEN GEOTEXTILES SHOULD NOT BE USED.
 11. USE FILTER FABRIC WITH ADS < 60 MM FOR NATIVE SOILS WITH 50% OR LESS PARTICLES BY WEIGHT PASSING NO. 200 SIEVE. USE FILTER FABRIC WITH ADS < 0.38 MM FOR NATIVE SOILS WITH 50% OR GREATER PARTICLES BY WEIGHT PASSING THE NO. 200 SIEVE.
- UNDERDRAIN:**
12. NDS RECOMMENDS UNDERDRAIN TO COLLECT PERCOLATED WATER AND CONVEY TO PROJECT STORMWATER FACILITY FOR NATIVE SOIL THAT IS NRCS HYDROLOGIC SOIL GROUP C OR D (LOW PERCOLATION RATE). UNDERDRAIN IS OPTIONAL FOR SOIL GROUP B (MODERATE INFILTRATION) AND CAN BE ELIMINATED FOR SOIL GROUP A (GOOD INFILTRATION).
 13. USE MINIMUM 1/4" INCH DIA PERFORATED PVC OR POLYETHYLENE PIPE AT 200-FI CENTERS. MINIMUM ONE PIPE. PIPE TO BE INSTALLED AT MINIMUM 0.5% SLOPE. RECOMMENDED 3/4" INCHES OF OPENING / LINEAR FOOT.
 14. UNDERDRAIN TO DRAIN INTO PROJECT STORMWATER FACILITY (CATCH BASIN / OPEN CHANNEL / BASIN).
 15. INVERT OF PIPE RECOMMENDED TO BE ABOVE PROJECT HIGH WATER LEVEL. TO PREVENT BACKFLOW OF WATER INTO PAVES SYSTEM. UNDERDRAIN TO BE SURROUNDED BY 4" OF AASHTO #57 COARSE AGGREGATE, WITH MIN. 2" BEDDING.
- SUBGRADE NATIVE SOIL:**
16. COMPACT SUBGRADE NATIVE SOILS TO 95% STANDARD PROCTOR DENSITY PER ASTM D698 FOR SOILS WITH CALIFORNIA BEARING RATIO > 20%, R VALUE > 30, AASHTO A-1, A-2, AND A-3 SOILS.
 17. NDS RECOMMENDS THAT ENGINEER-OF-RECORD CONSIDER HIGHER LEVEL OF COMPACTION FOR CBR > 5 TO 20%, R VALUE 10 TO 30, AASHTO A-4 SOILS FOR HEAVY LOADS WHERE INFILTRATION INTO NATIVE SOILS IS NOT A REQUIREMENT.
 18. NDS RECOMMENDS THAT ENGINEER-OF-RECORD CONSULT WITH PROJECT GEOLOGICAL ENGINEER FOR SOIL MODIFICATION (E.G. LIME TREATMENT) AND COMPACTION LEVEL FOR CBR < 5% AND R VALUE < 10, AASHTO A-5, A-6, AND A-7 SOILS.

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J. MATERIALS

Storm sewer manholes and inlets shall be constructed of cast in place concrete or pre-cast reinforced concrete. Material and construction shall conform to the latest edition of the Indiana Department of Transportation (INDOT) "Standard Specifications", Sections 702 and 720.

Pipe and fittings used in storm sewer construction shall conform to the latest edition of the INDOT "Standard Specifications", Section 907 and 908. In addition, ductile iron pipe and fittings shall conform to AWWA C-151. Polyethylene pipe used for private storm sewers shall conform to ASTM F2868 or INDOT specifications. Other pipe and fittings not specified herein or in Sections 907-908 of the latest edition of the INDOT "Standard Specifications" may be used only when specifically authorized by the Town of Pendleton. Pipe joints shall be flexible and leak resistant as defined in AASHTO R82, with a maximum leakage rate of 200 gals./day/ft. If the storm sewer pipe is to be placed within a road right-of-way or in an area subject to loading, the pipe and fittings shall be reinforced concrete (RCP) or corrugated polypropylene (CPP).

K. SPECIAL HYDRAULIC STRUCTURES

Special hydraulic structures required to control the flow of water in storm runoff drainage systems include junction chambers, drop manholes, silt/basin, and other special structures. The use of these structures shall be limited to those locations justified by prudent planning and by careful and thorough hydraulic

FIGURE 4-2 Bedding and Backfill Standards for Storm Sewers

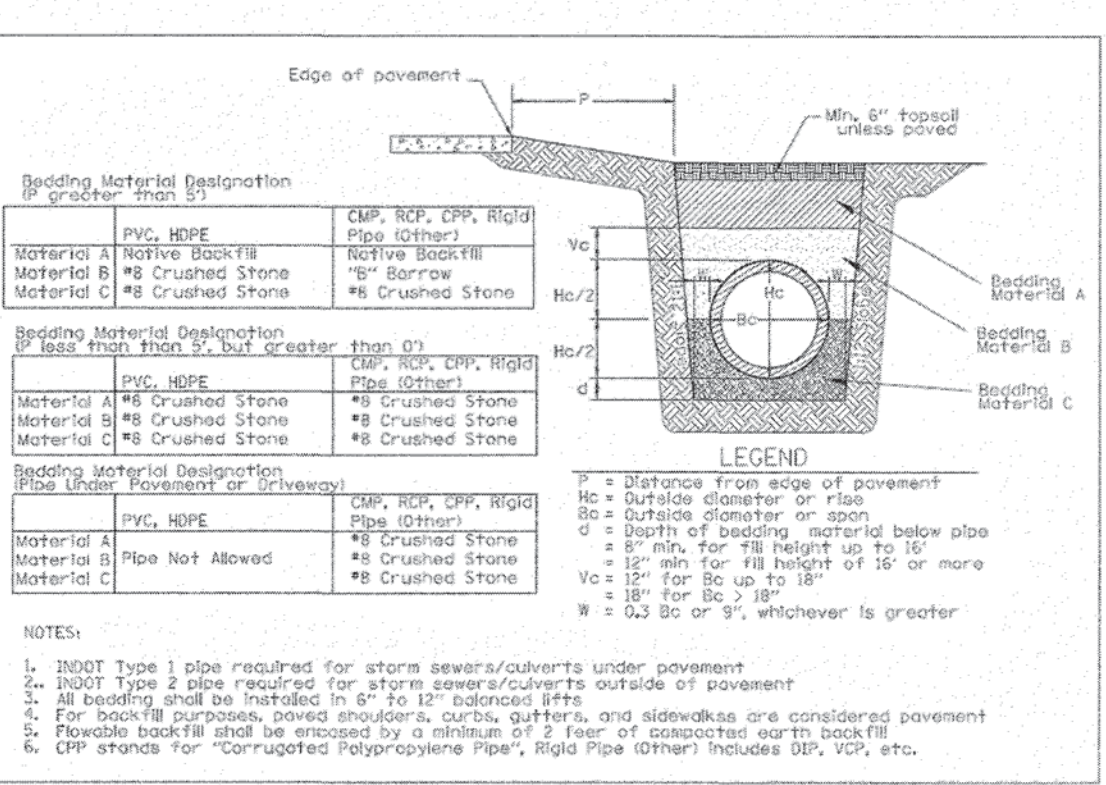
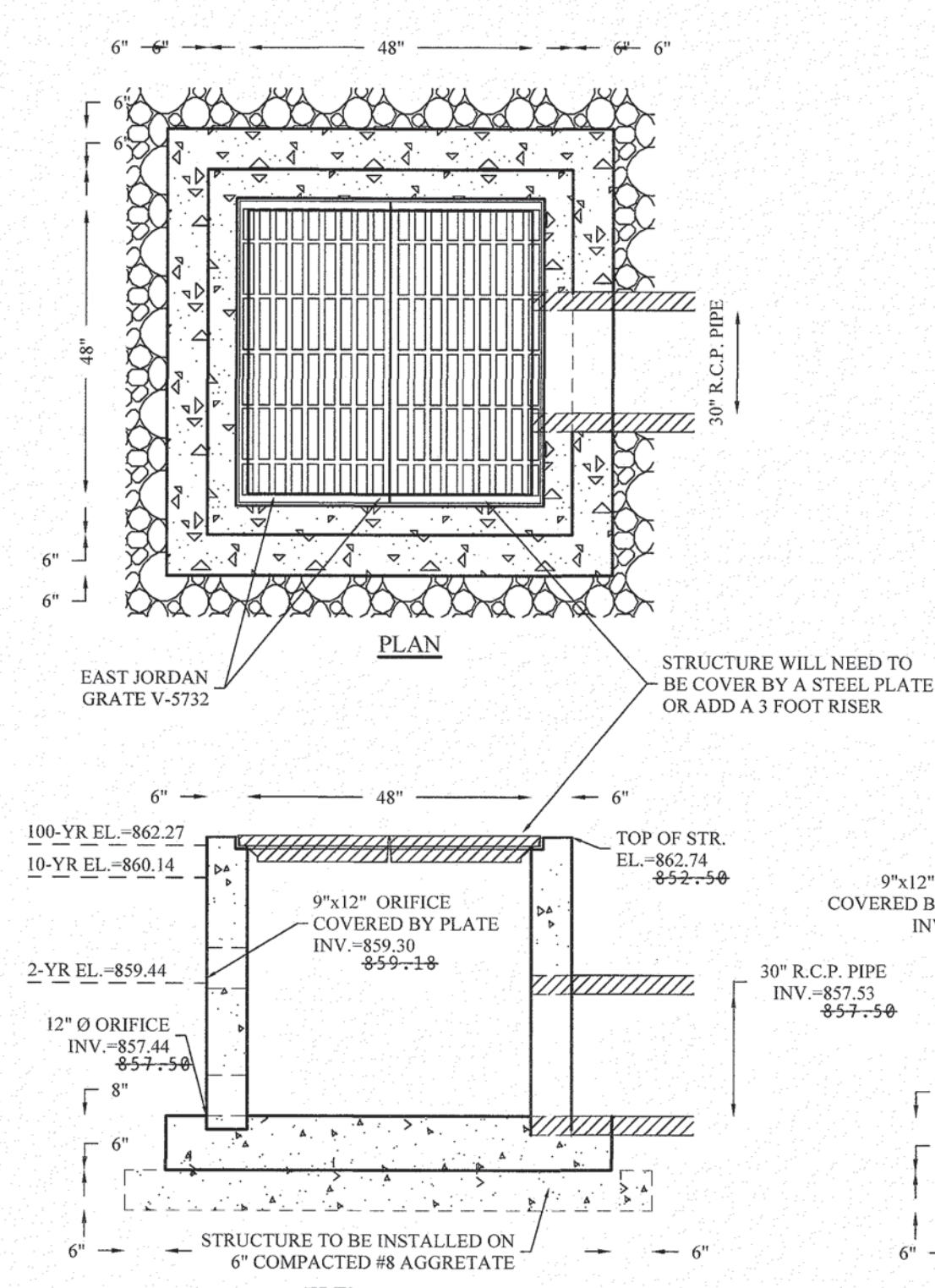
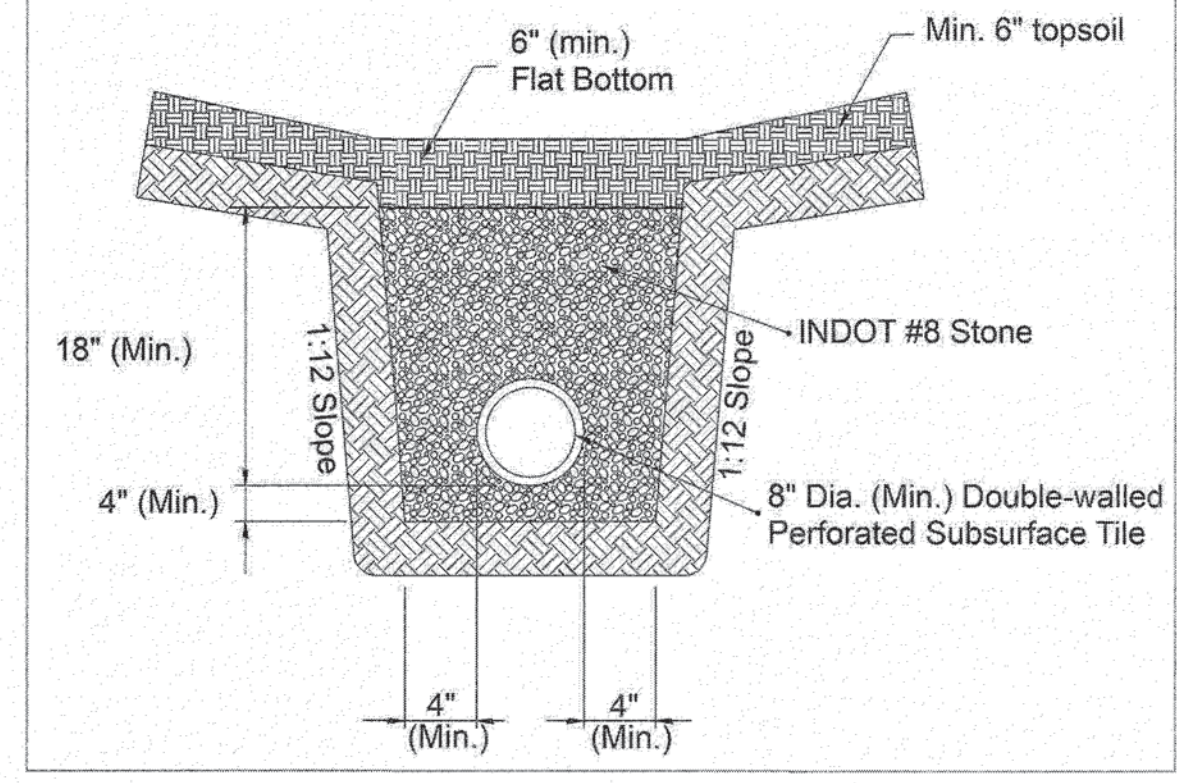
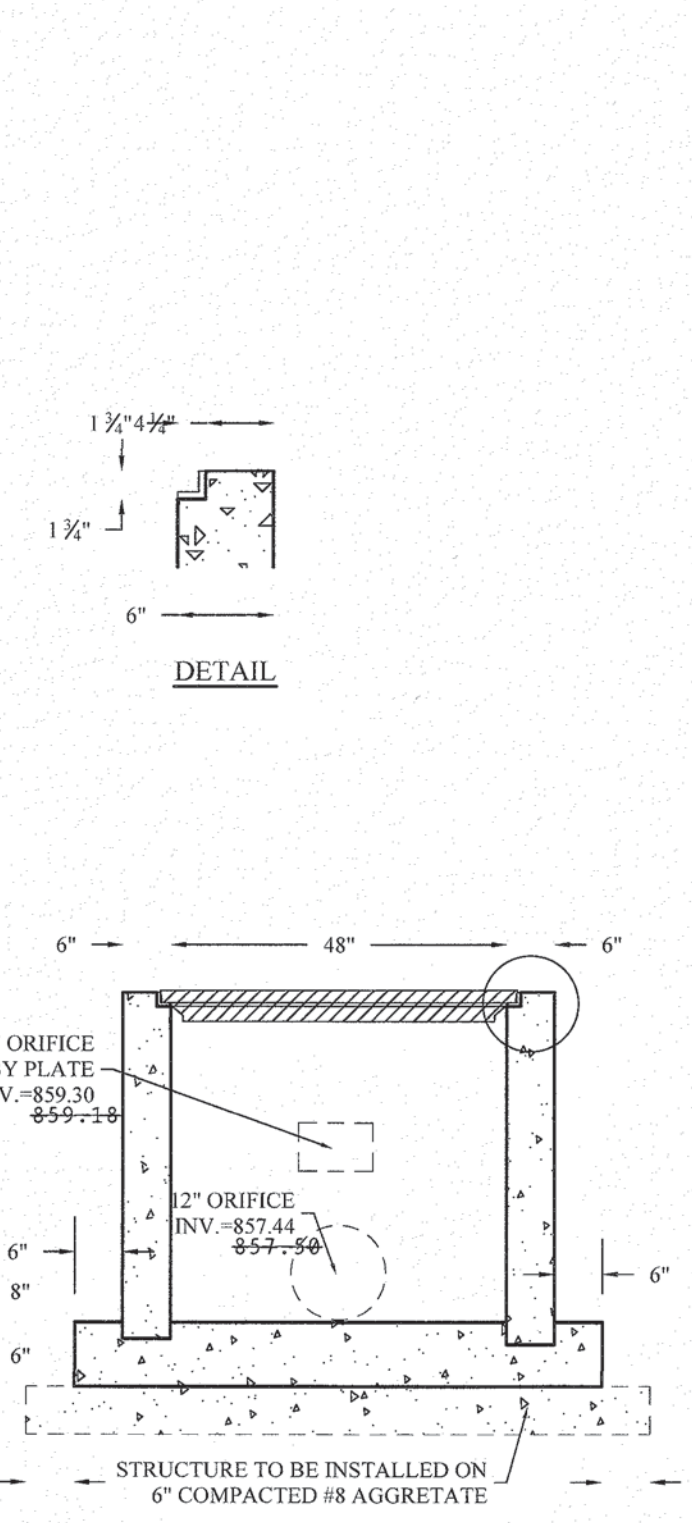


FIGURE 4-3 Bedding and Backfill Standards for Sub-drains under Swales



OUTLET CONTROL STR. #401 (LAKE #1) NOT-TO-SCALE



OUTLET CONTROL STR. #402 (LAKE #2) NOT-TO-SCALE