

GENERAL NOTES

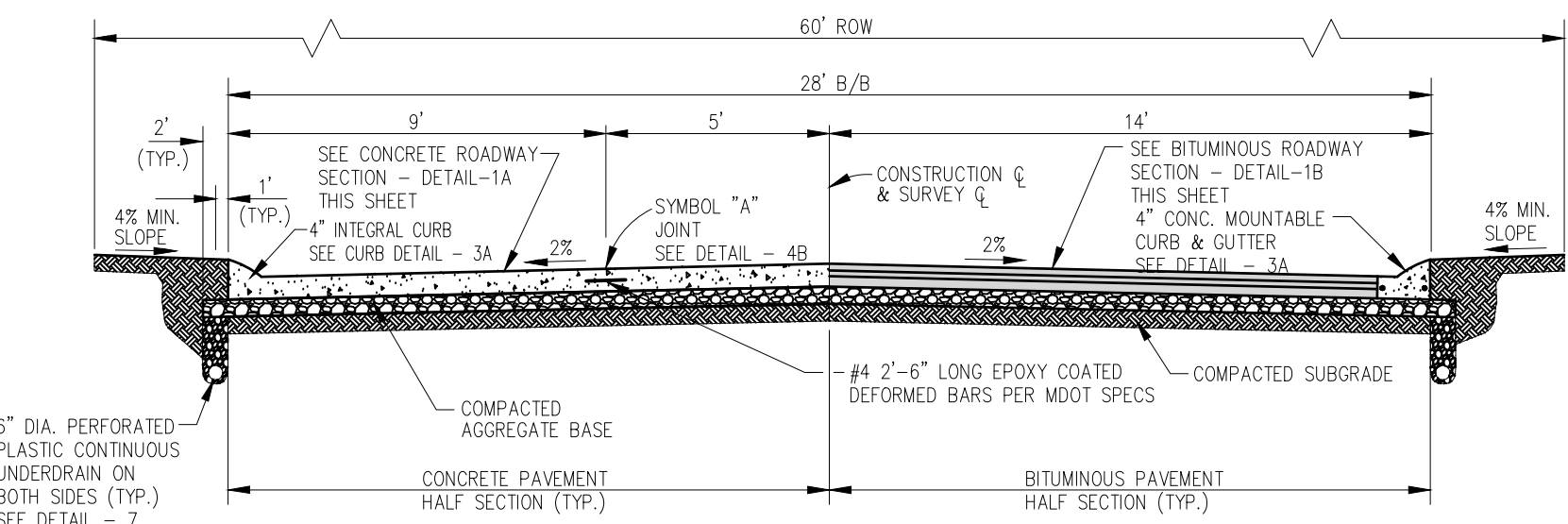
- EXISTING TOPSOIL, VEGETATION AND ORGANIC MATERIALS SHALL BE STRIPPED AND REMOVED FROM PROPOSED PAVEMENT AREA PRIOR TO PLACEMENT OF BASE MATERIALS. TREE ROOTS SHALL BE COMPLETELY REMOVED.
- EXCAVATE TO THE DEPTH OF THE FINAL SUBGRADE ELEVATION TO ALLOW FOR GRADE CHANGES AND THE PLACEMENT OF THE RECOMMENDED PAVEMENT SYSTEM.
- THE PAVEMENT SUBGRADE SHALL BE COMPACTED TO 95% OF THE MAXIMUM DRY DENSITY (MODIFIED PROCTOR) PRIOR TO PLACEMENT OF PROPOSED PAVEMENT. THE FINAL SUBGRADE SHALL BE THOROUGHLY PROOF-ROLLED IN THE PRESENCE OF A GEOTECHNICAL/PAVEMENT ENGINEER TO DETERMINE STABILITY, LOOSE OR YIELDING AREAS WHICH CANNOT BE MECHANICALLY STABILIZED SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE GEOTECHNICAL ENGINEER. ALL FILL MATERIAL AND BASE MATERIAL SHALL BE TESTED AND ITS COMPACTED AND SUITABILITY FOR ACCEPTANCE OF THE BASE MATERIAL AND PAVEMENT SHALL BE CERTIFIED BY SAID TESTING FIRM. THE OWNER SHALL SUPPLY THREE COPIES OF GEOTECHNICAL AND TECHNICAL REPORTS TO THE TOWNSHIP'S CONSULTANT.
- IF IN THE OPINION OF THE INSPECTOR/ENGINEER, FIELD CONDITIONS WARRANT ADDITIONAL TESTING, THE DEVELOPER SHALL ARRANGE FOR AND PAY FOR ALL REQUIRED ADDITIONAL TESTING.
- 21AA AGGREGATE BASE SHALL BE COMPACTED TO ACHIEVE A 95% COMPACTION LEVEL (MODIFIED PROCTOR - ASTM D 1557-91). THE BASE SHALL EXTEND A MINIMUM OF 2 FEET BEYOND THE BACK OF CURB OR THE PAVED EDGE.
- CONCRETE PAVEMENT TESTING SHALL BE REQUIRED FOR ALL PROJECTS.
- ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF THE HARTLAND TOWNSHIP, LCR AND MDT.
- FOR ANY WORK WITHIN THE PUBLIC RIGHT-OF-WAY, THE CONTRACTOR SHALL SECURE ALL NECESSARY PERMITS AND LICENSE ARRANGE FOR ALL INSPECTION.
10. INCH AND 2.0 INCH EXPANSION JOINTS SHALL BE INSTALLED PER TOWNSHIP STANDARDS PER THIS SHEET.
- FILL AREAS SHALL BE MACHINE COMPACTED IN UNIFORM LIFTS TO 95% OF THE MAXIMUM DRY DENSITY (MODIFIED PROCTOR) PRIOR TO PLACEMENT OF PROPOSED PAVEMENT.
- 6" UNDER DRAIN SHALL BE INSTALLED ON BOTH SIDES OF ALL ROADWAYS IN GEOTEXTILE WRAPPED TRENCH. ALSO, PLACE UNDER DRAINS AT ALL DRAINAGE STRUCTURES WITHIN PARKING AREAS, (SEE DETAILS 6 AND 8).
- PRIOR TO BITUMINOUS STREET ACCEPTANCE, THE FULL CROSS SECTION MUST BE INSTALLED PER THE APPROVED PLAN, AND ANY AND ALL REPAIRS TO THE PAVEMENT AND CURB MUST BE COMPLETED AT THE DIRECTION OF THE TOWNSHIP ENGINEER.
- 12% AT THE TIME OF INITIAL ROAD CONSTRUCTION, THE FULL CROSS SECTION MAY BE INSTALLED TO MINIMIZE THE AMOUNT OF PAVEMENT AND CURB REPAIRS. PRIOR TO STREET ACCEPTANCE THE TOWNSHIP ENGINEER WILL INSPECT THE PAVEMENT AND CURB, AND WILL IDENTIFY ANY AREAS TO BE REPAIRED.
- 12b. ALTERNATIVELY, THE TOP COURSE MAY BE OMITTED UNTIL THE MAJORITY OF THE CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED. PRIOR TO STREET ACCEPTANCE, THE TOWNSHIP ENGINEER WILL INSPECT THE BASE PAVEMENT AND CURB, AND WILL IDENTIFY AREAS TO BE REPAIRED PRIOR TO THE INSTALLATION OF THE TOP COURSE.
- PROVIDE MINIMUM 20' DISTANCE TO TRANSITION FROM DETAIL 3E TO DETAIL 3A CURBS.

CONCRETE PAVEMENT

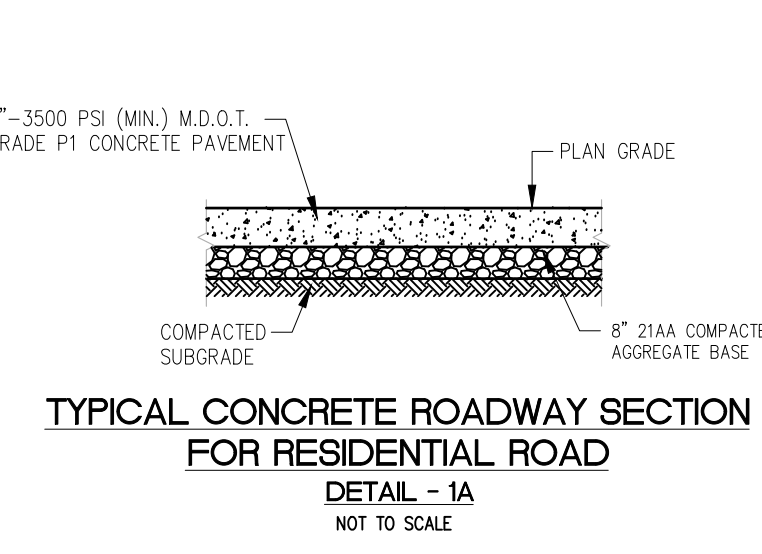
- CONCRETE SHALL CONSIST OF: PORTLAND CEMENT TYPE IA (AR-ENRANCED) WITH A MINIMUM CEMENT CONTENT OF SIX SACKS PER CUBIC YARD, MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3500 PSF AND A SLUMP OF 1" TO 3 INCHES. PAVEMENT SHALL CONFORM TO M.D.O.T. GRADE P1.
- ALL CONCRETE PAVEMENT, DRIVEWAYS, CURB & GUTTER, ETC., SHALL BE SPRAY CURED WITH WHITE MEMBRANE CURING COMPOUND IMMEDIATELY FOLLOWING FINISHING OPERATION.
- THE CONCRETE BATCH PLANT SHALL BE M.D.O.T. CERTIFIED WITH LOCATION APPROVED BY THE TOWNSHIP.
- NO CONCRETE PAVING SHALL BE ALLOWED PRIOR TO MAY 1, OR AFTER NOVEMBER 1 (UNLESS APPROVED BY THE TOWNSHIP).
- DO NOT PLACE CONCRETE WHEN PRECIPITATION IS IMMINENT OR WHEN MOISTURE ON THE EXISTING SURFACE WILL PREVENT SATISFACTORY CURING. UNLESS OTHERWISE APPROVED BY THE ENGINEER IN WRITING, TEMPERATURE AND SEASONAL REQUIREMENTS FOR PLACING CONCRETE WILL BE ACCORDING TO THE CURRENT MDT SPECIFICATIONS. PAVING WILL NOT BE ALLOWED BELOW THESE MINIMUM TEMPERATURES, NOR WHEN FROST IS ON OR IN THE GRADE OR ON THE EXISTING SURFACE.

BITUMINOUS PAVEMENT

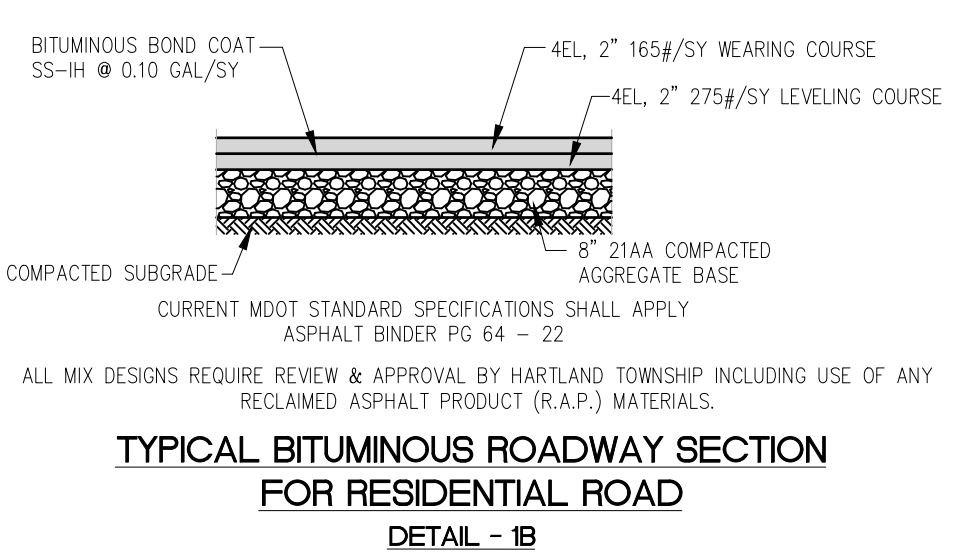
- BITUMINOUS MIXTURE SHALL CONSIST OF: LEVELING COURSE - MDT BITUMINOUS MIXTURE NO. 3EM; LEVELING COURSE - MDT BITUMINOUS MIXTURE NO. 4EM; WEARING COURSE MDT BIT MIX NO. 5EM. ASPHALT CEMENT PENETRATION GRADE 85-100 (PG 64-22) RECLAIMED ASPHALT PAVEMENT (RAP) SHALL BE REVIEWED FOR APPROVAL BY HARTLAND TOWNSHIP.
- ALL BITUMINOUS MATERIAL SHALL BE COMPACTED TO A DENSITY OF 92% OF THE FIELD CONTROL DENSITY AS DETERMINED BY THE THEORETICAL MAXIMUM DENSITY.
- A BOND COAT OF SS-1H EMULSION IS REQUIRED BETWEEN ALL COURSES OF ASPHALT IMMEDIATELY PRIOR TO PLACEMENT OF EACH COURSE OF PAVEMENT. THE BOND COAT SHALL BE APPLIED IN A UNIFORM MANNER OVER THE SURFACE AT A RATE OF 0.10 GALLON/SY BETWEEN LEVELING COURSES & 0.05 GALLON/SY BETWEEN WEARING COURSE AND LEVELING COURSE.
- DO NOT PLACE HMA OR APPLY BOND COAT WHEN PRECIPITATION IS IMMINENT OR WHEN MOISTURE ON THE EXISTING SURFACE WILL PREVENT SATISFACTORY CURING. UNLESS OTHERWISE APPROVED BY THE ENGINEER IN WRITING, TEMPERATURE AND SEASONAL REQUIREMENTS FOR PLACING HMA WILL BE ACCORDING TO THE CURRENT MDT SPECIFICATIONS. PAVING WILL NOT BE ALLOWED BELOW THESE MINIMUM TEMPERATURES, NOR WHEN FROST IS ON OR IN THE GRADE OR ON THE EXISTING SURFACE.



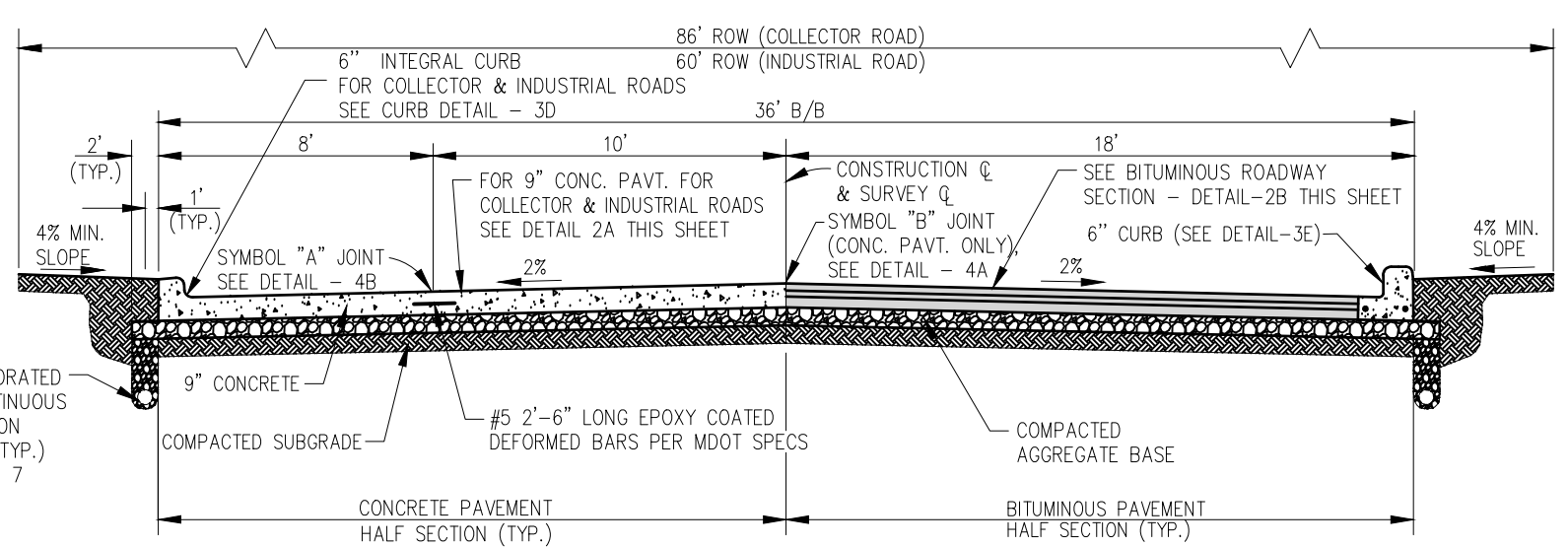
**TYPICAL CROSS SECTION DETAIL - 1
RESIDENTIAL ROAD PAVEMENT (28' B/B)**
NOT TO SCALE



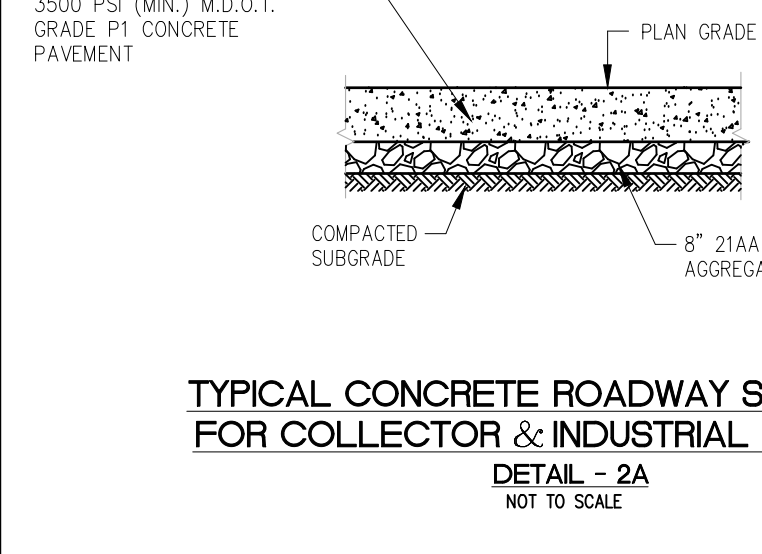
**TYPICAL CONCRETE ROADWAY SECTION
FOR RESIDENTIAL ROAD
DETAIL - 1A**
NOT TO SCALE



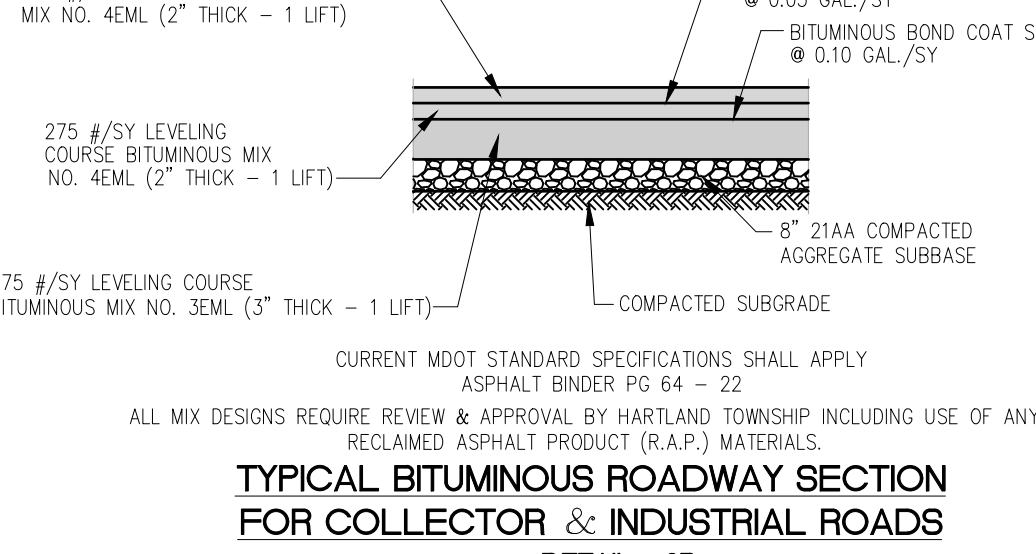
**TYPICAL BITUMINOUS ROADWAY SECTION
FOR RESIDENTIAL ROAD
DETAIL - 1B**
NOT TO SCALE



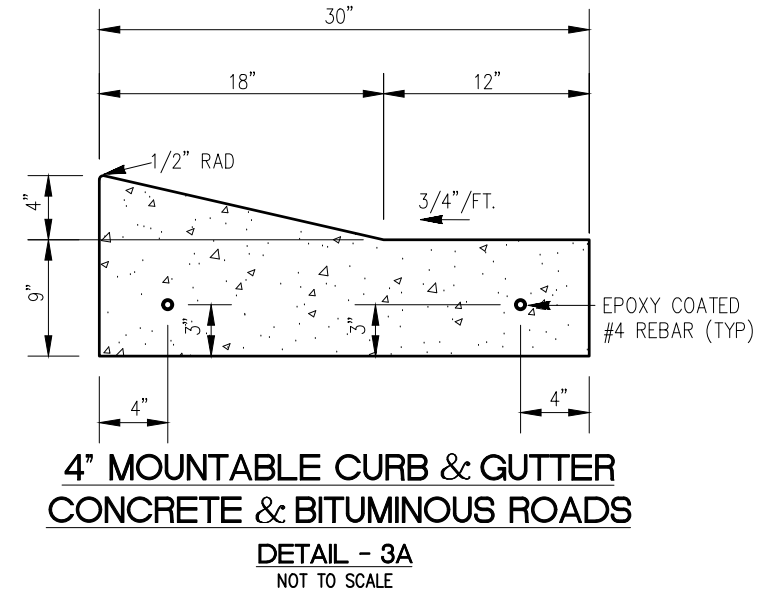
**TYPICAL CROSS SECTION DETAIL - 2
COLLECTOR AND INDUSTRIAL ROAD PAVEMENT (36' B/B)**
NOT TO SCALE



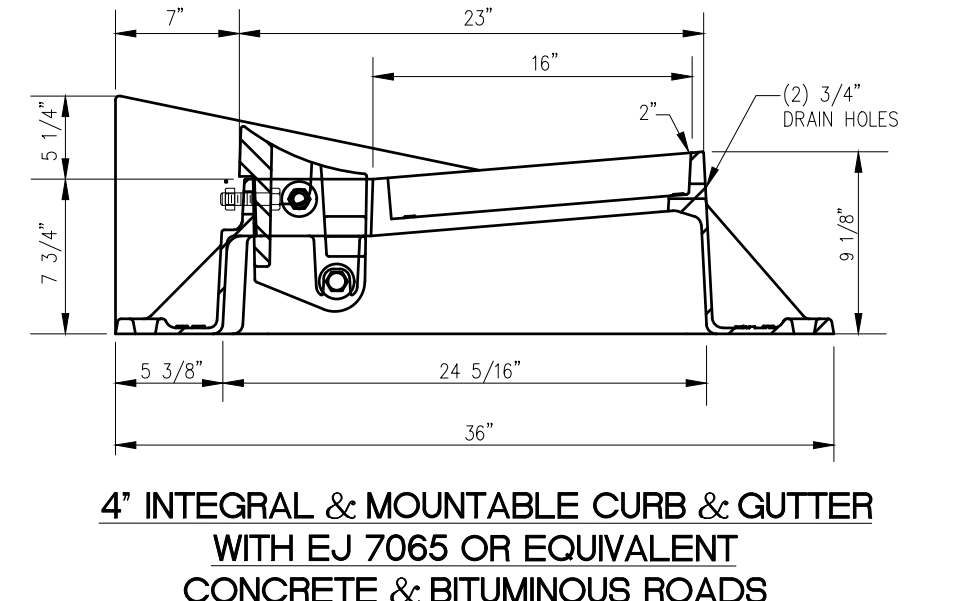
**TYPICAL CONCRETE ROADWAY SECTION
FOR COLLECTOR & INDUSTRIAL ROADS
DETAIL - 2A**
NOT TO SCALE



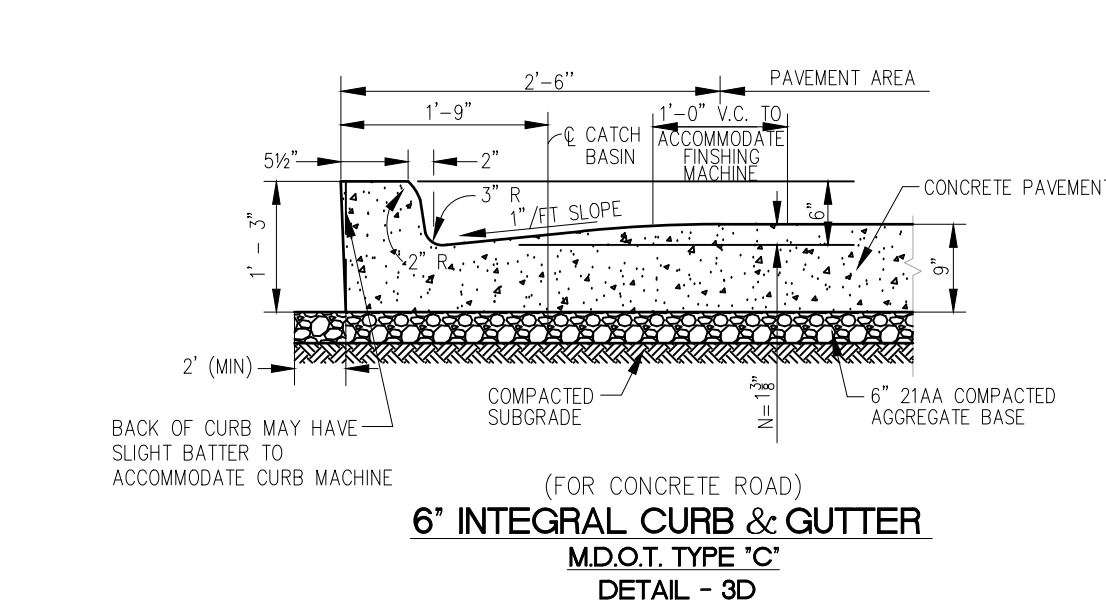
**TYPICAL BITUMINOUS ROADWAY SECTION
FOR COLLECTOR & INDUSTRIAL ROADS
DETAIL - 2B**
NOT TO SCALE



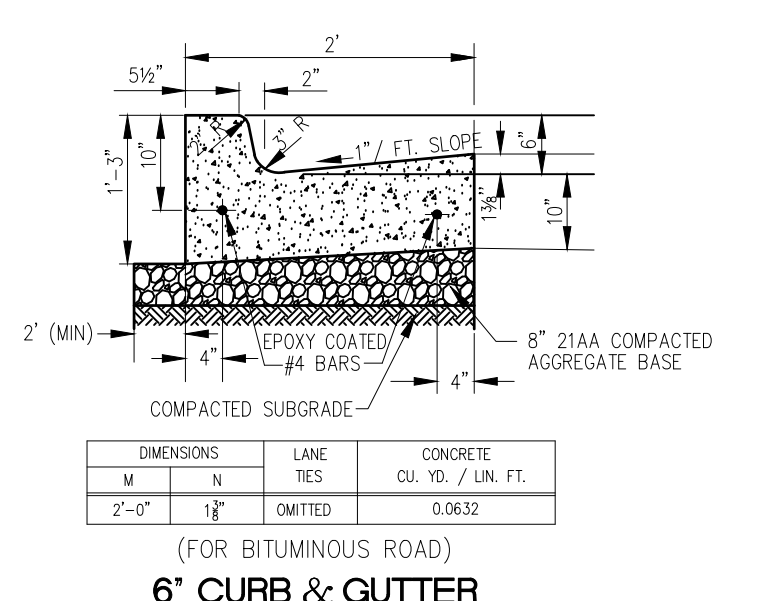
**4' MOUNTABLE CURB & GUTTER
CONCRETE & BITUMINOUS ROADS
DETAIL - 3A**
NOT TO SCALE



**4' INTEGRAL & MOUNTABLE CURB & GUTTER
WITH EJ 7065 OR EQUIVALENT
CONCRETE & BITUMINOUS ROADS
DETAIL - 3B**
NOT TO SCALE

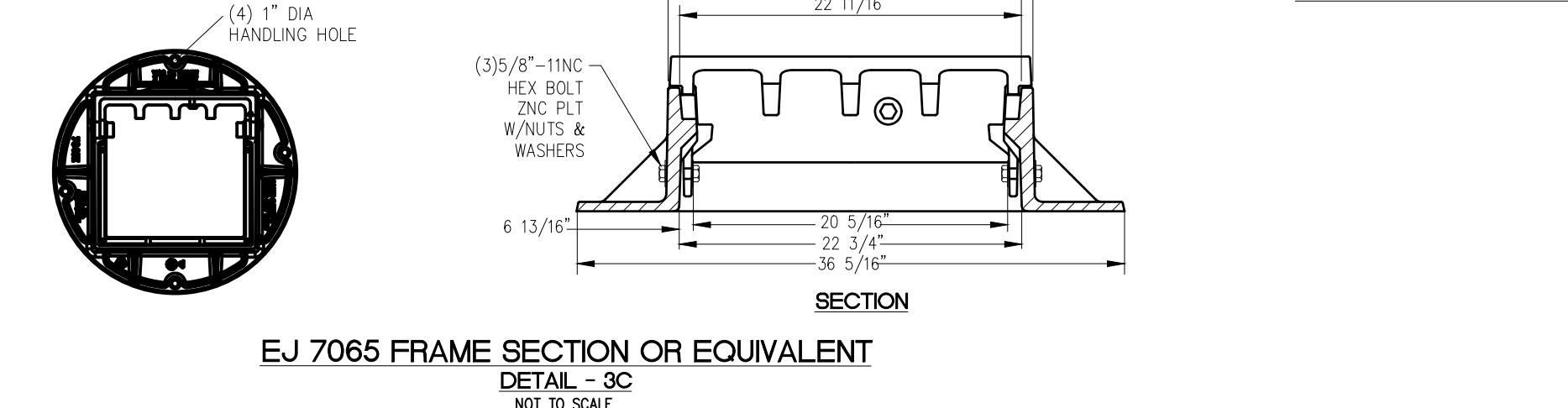


**6' INTEGRAL CURB & GUTTER
M.D.O.T. TYPE 'C'
DETAIL - 3D**
NOT TO SCALE

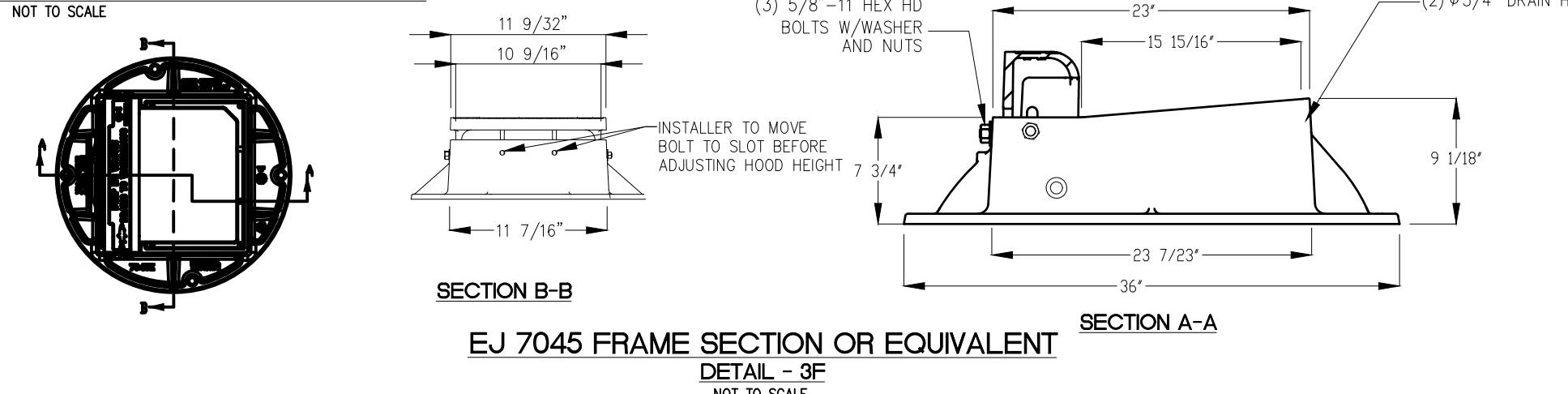


**6' CURB & GUTTER
DETAIL - 3E**
NOT TO SCALE

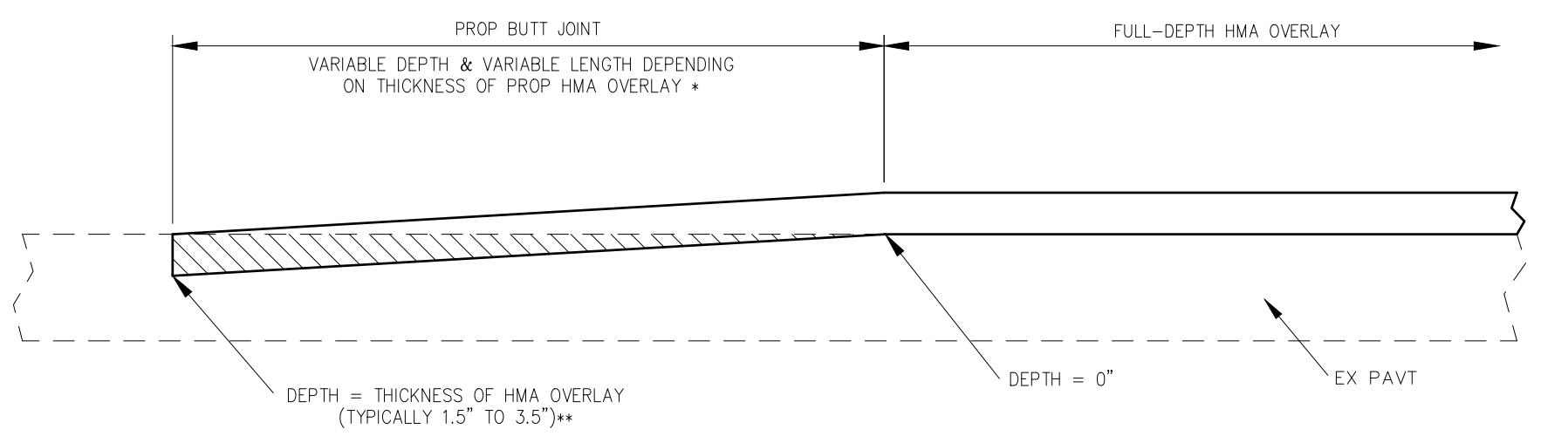
CONCRETE CURB & GUTTER DETAIL - 3



**EJ 7065 FRAME SECTION OR EQUIVALENT
DETAIL - 3C**
NOT TO SCALE



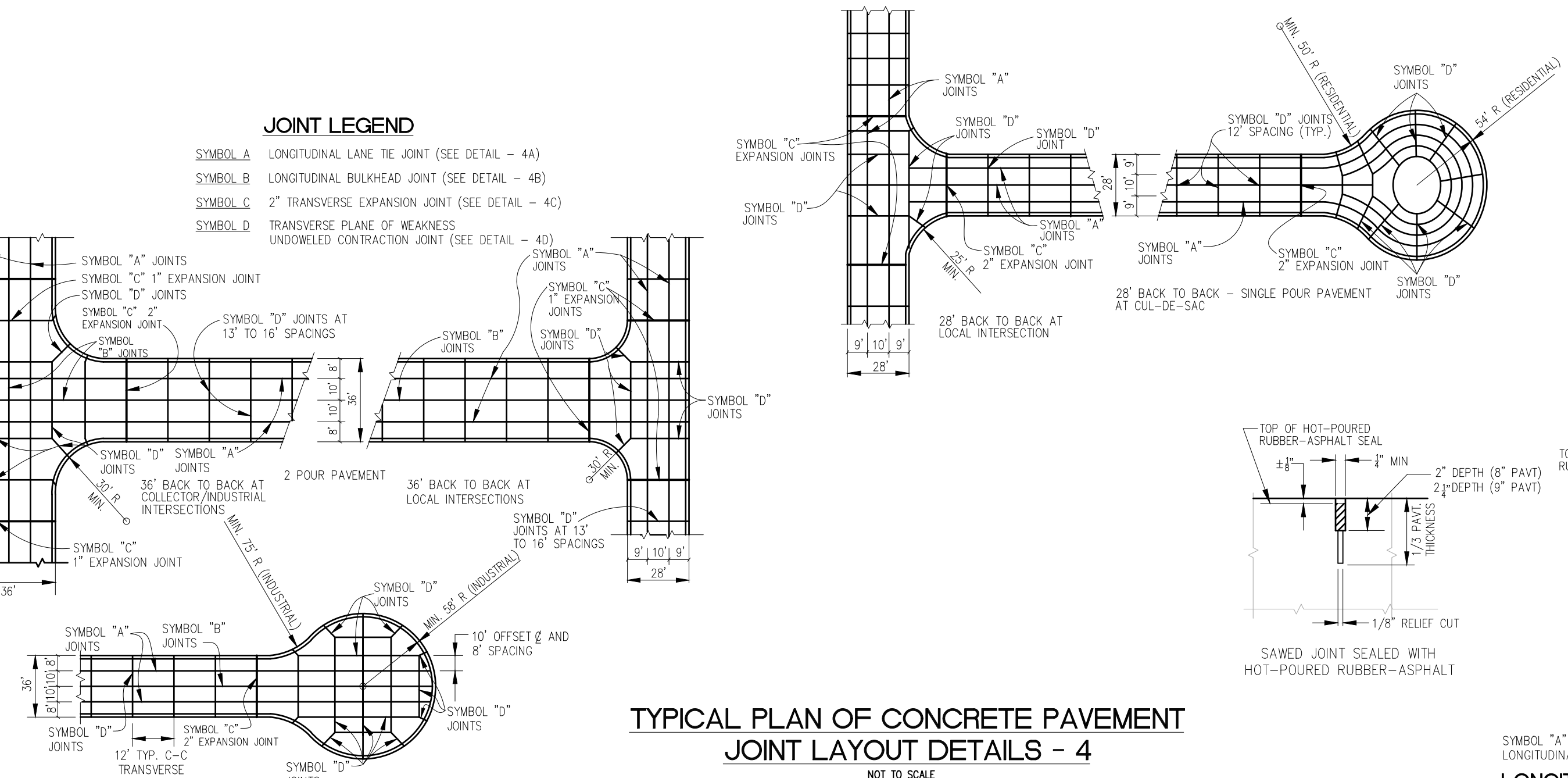
**EJ 7045 FRAME SECTION OR EQUIVALENT
DETAIL - 3F**
NOT TO SCALE



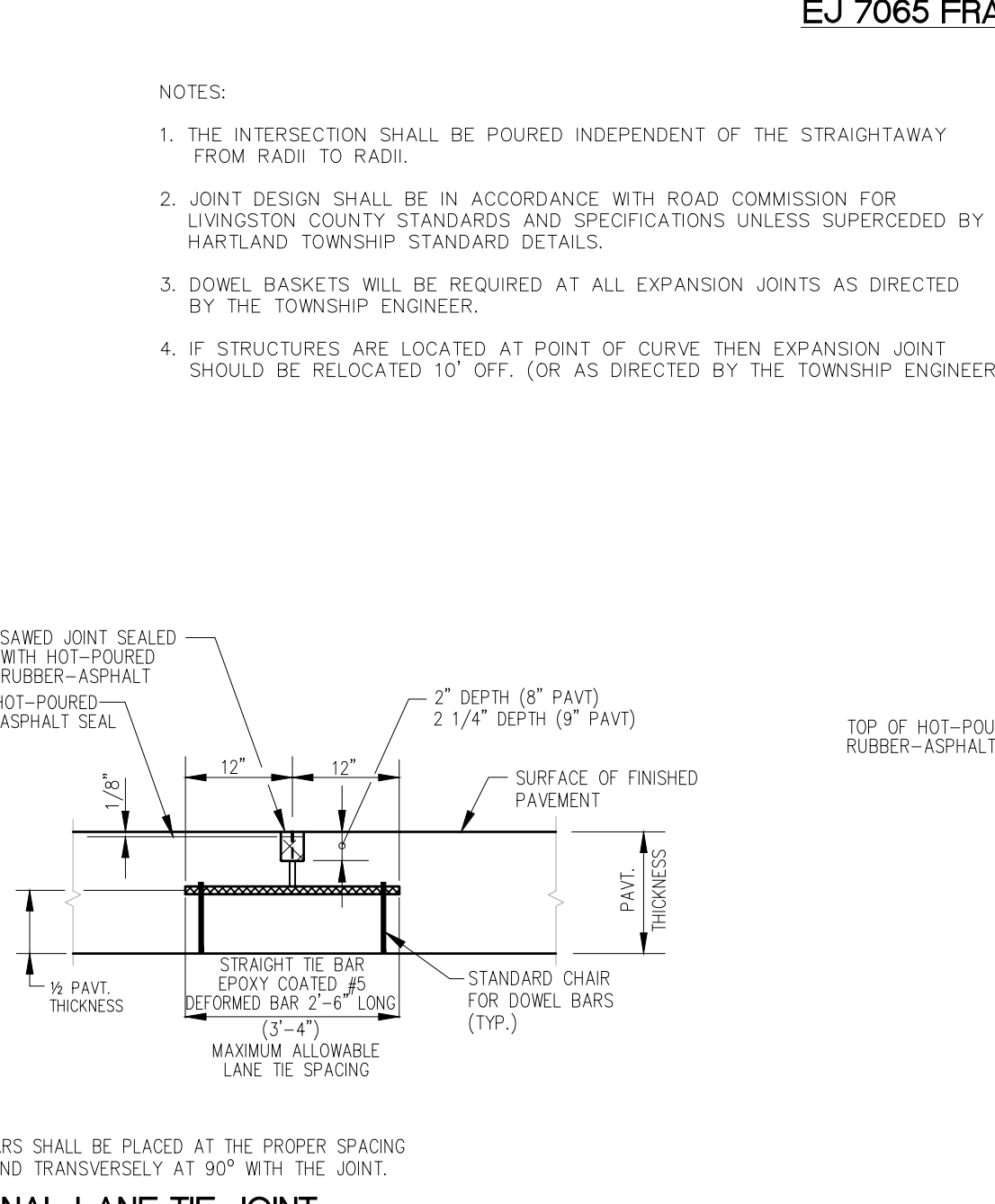
**TERMINAL BUTT JOINT
DETAIL - 5**
NOT TO SCALE

* NOTE: PER MDT ROAD DESIGN MANUAL, SECTION 6.03.11, IT IS RECOMMENDED TO MILL THE BUTT JOINT 25 FT FOR EVERY 0.75" OF OVERLAY THICKNESS. FOR EXAMPLE, A 3" OVERLAY WOULD REQUIRE A 100 FT LONG BUTT JOINT.
(3" / 0.75") x 25' = 100'

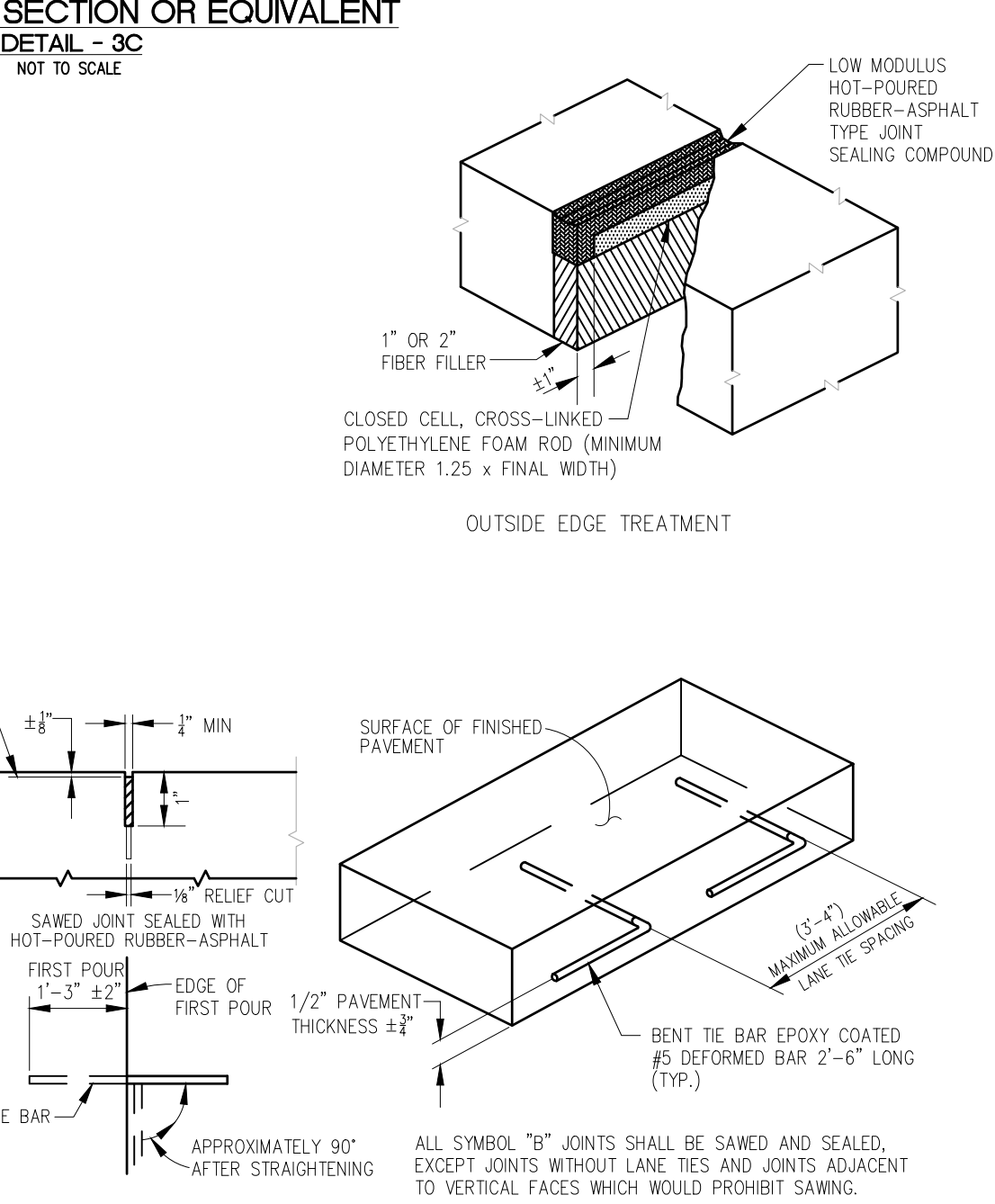
** NOTE: WHEN OVERLAYING EXISTING CONCRETE PAVEMENT, IT IS NOT RECOMMENDED TO MILL BUTT JOINT MORE THAN 1.5-2" DEEP SO REINFORCEMENT (IF PRESENT) WILL NOT BE EXPOSED.



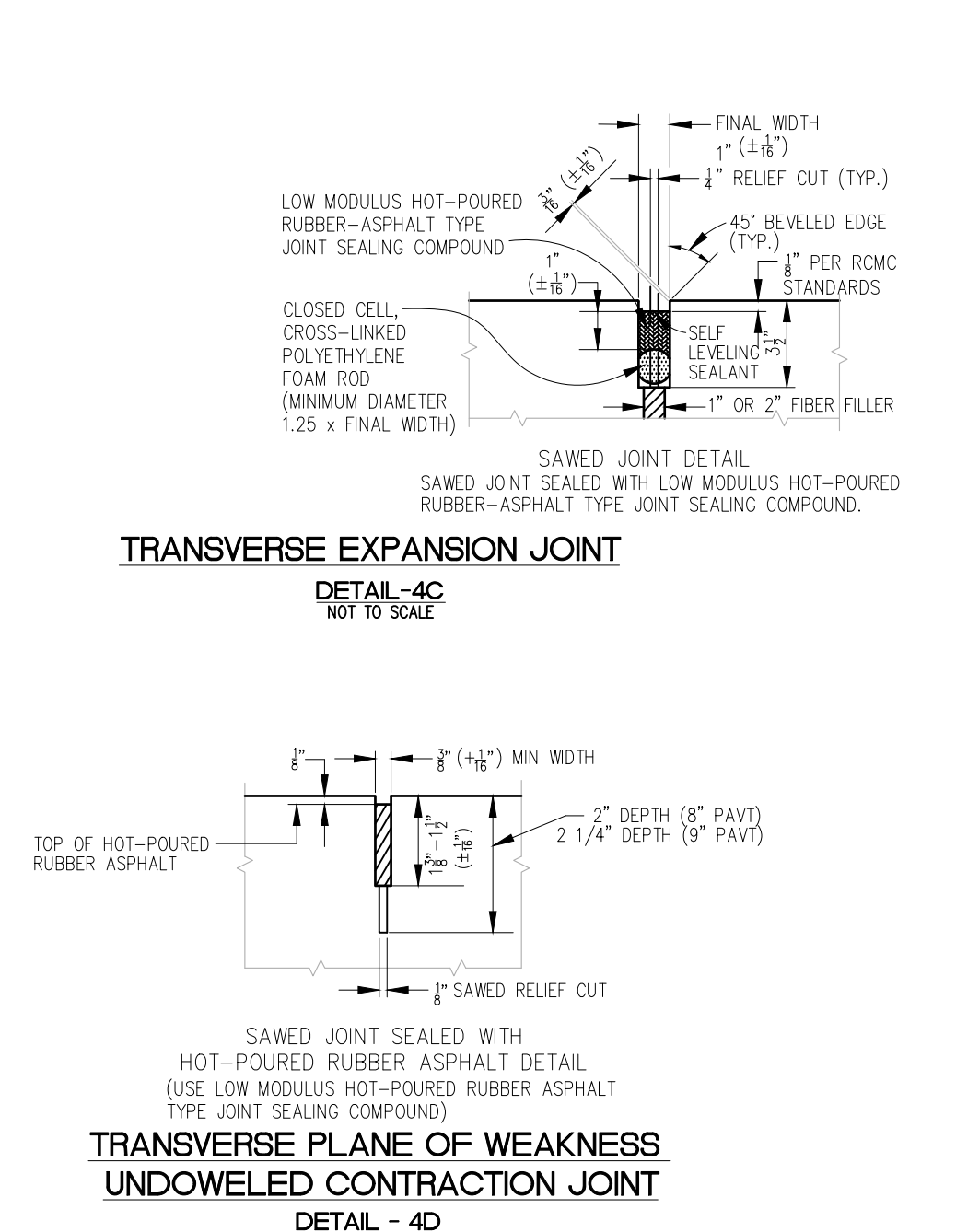
**TYPICAL PLAN OF CONCRETE PAVEMENT
JOINT LAYOUT DETAILS - 4**
NOT TO SCALE



**LONGITUDINAL LANE TIE JOINT
DETAIL - 4A**
NOT TO SCALE



**LONGITUDINAL BULKHEAD JOINT
DETAIL - 4B**
NOT TO SCALE

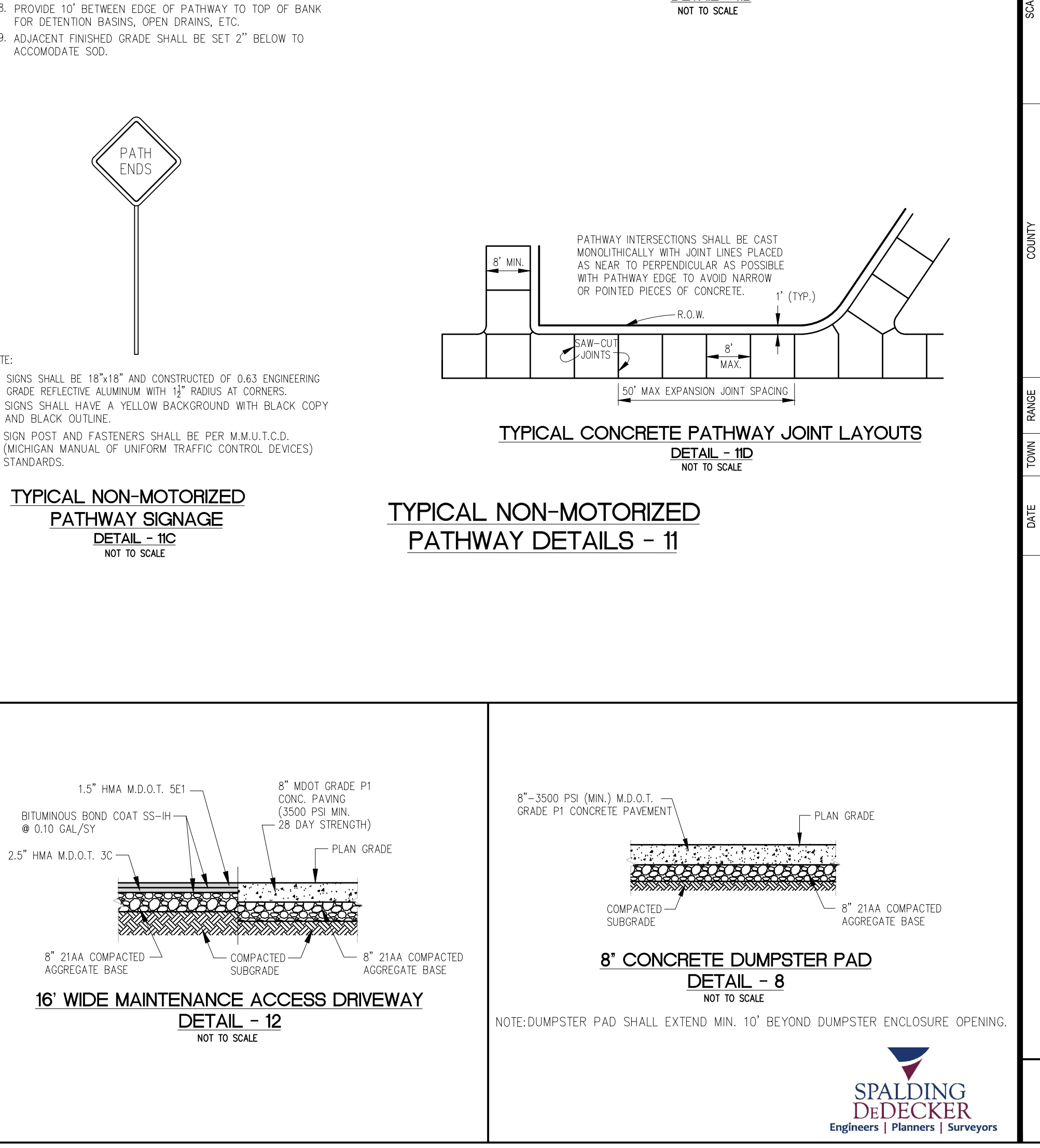
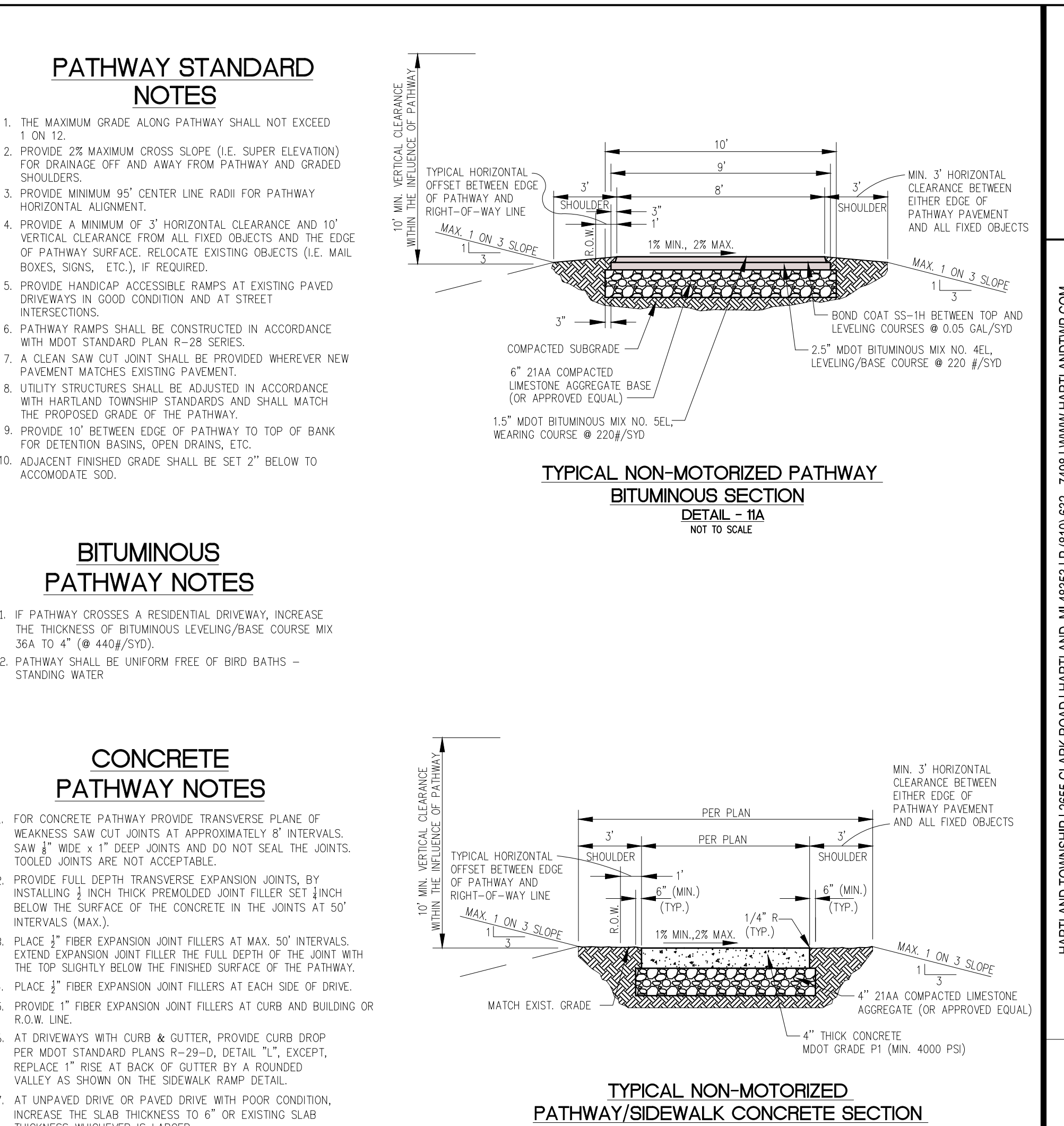
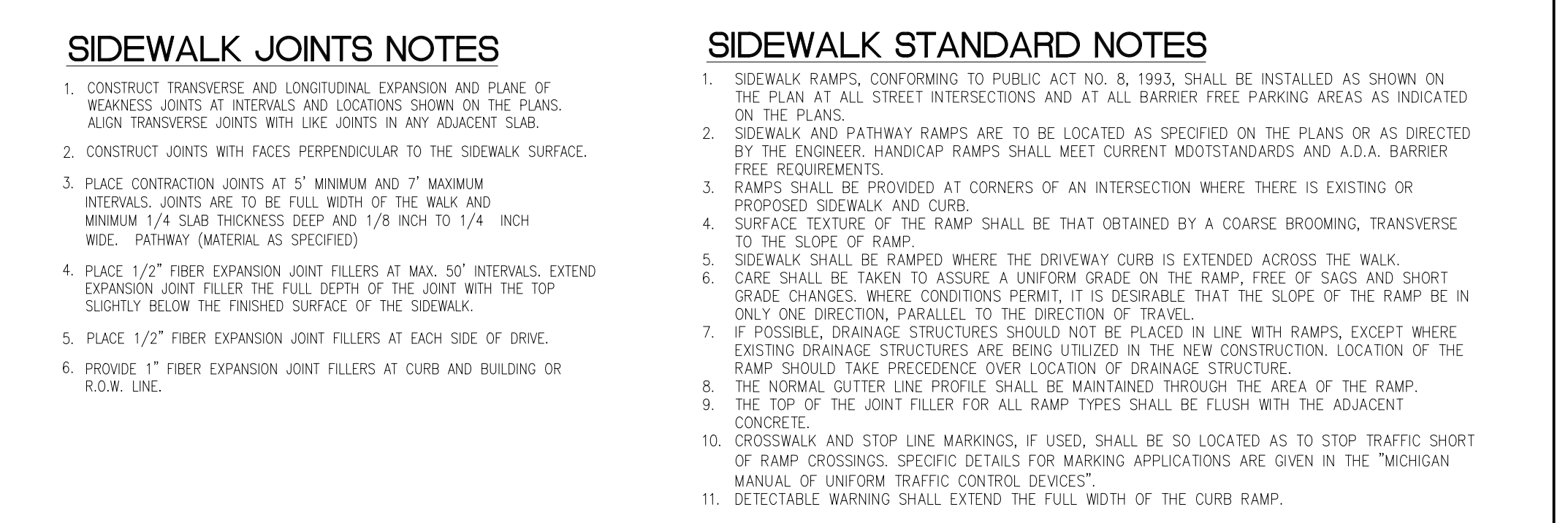
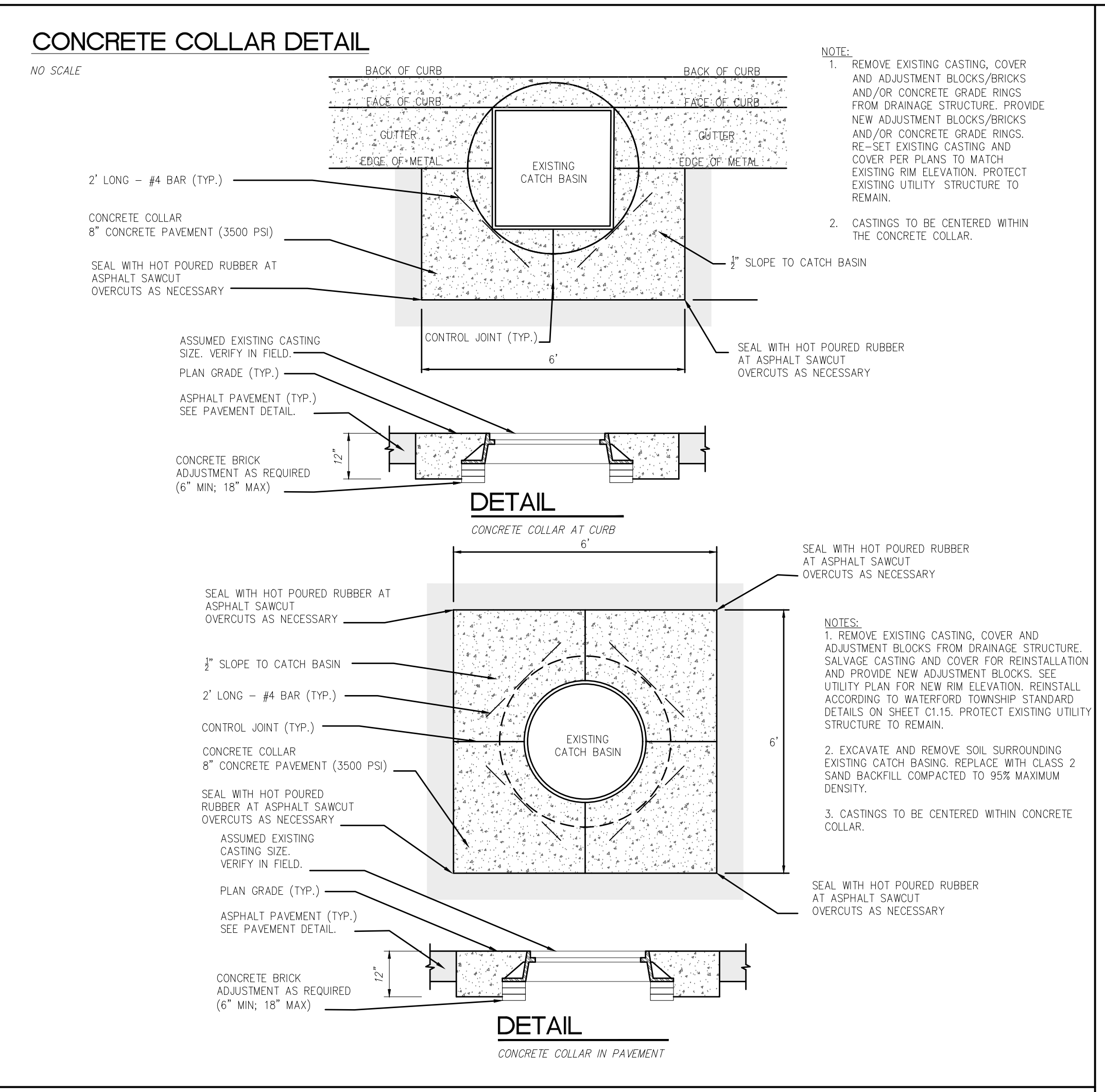
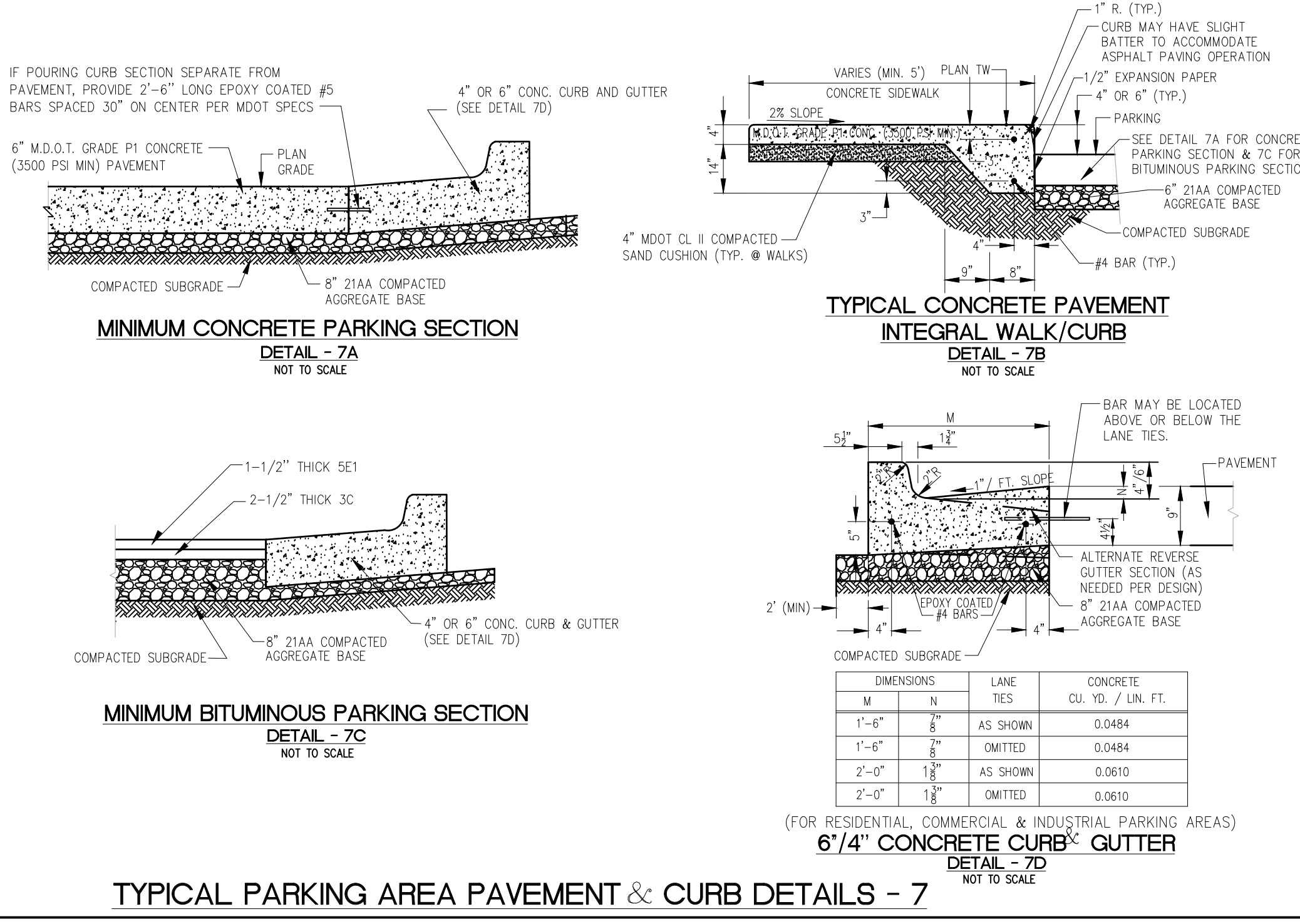
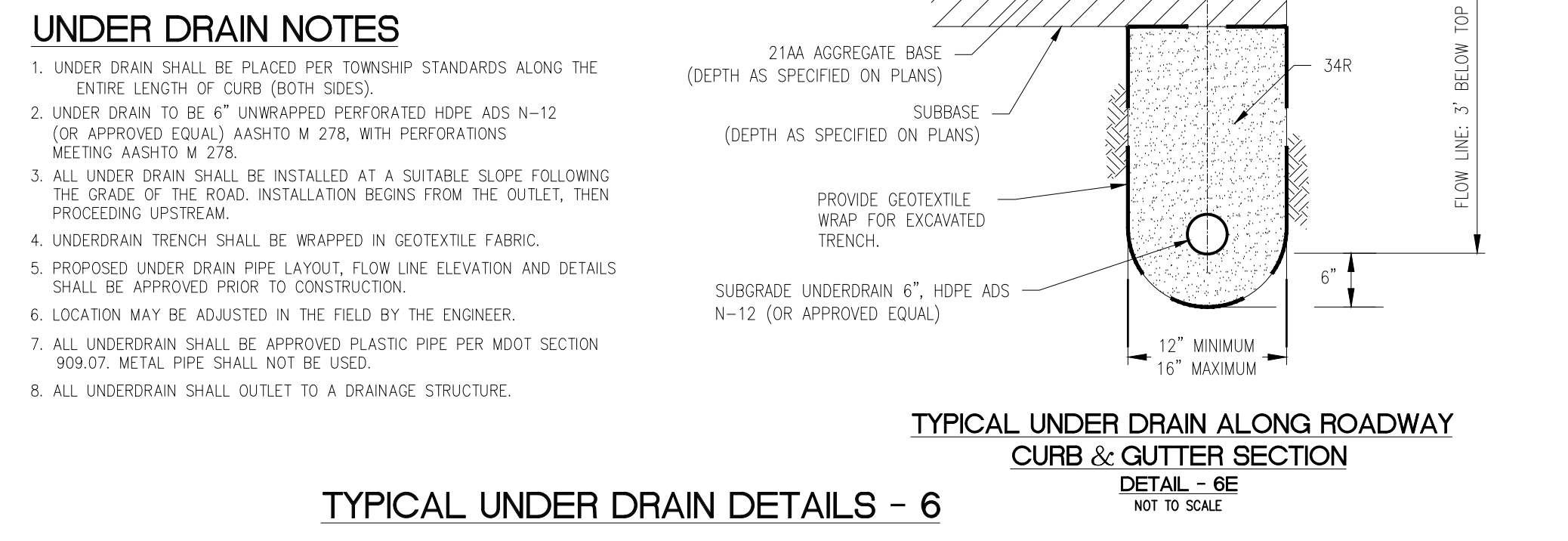
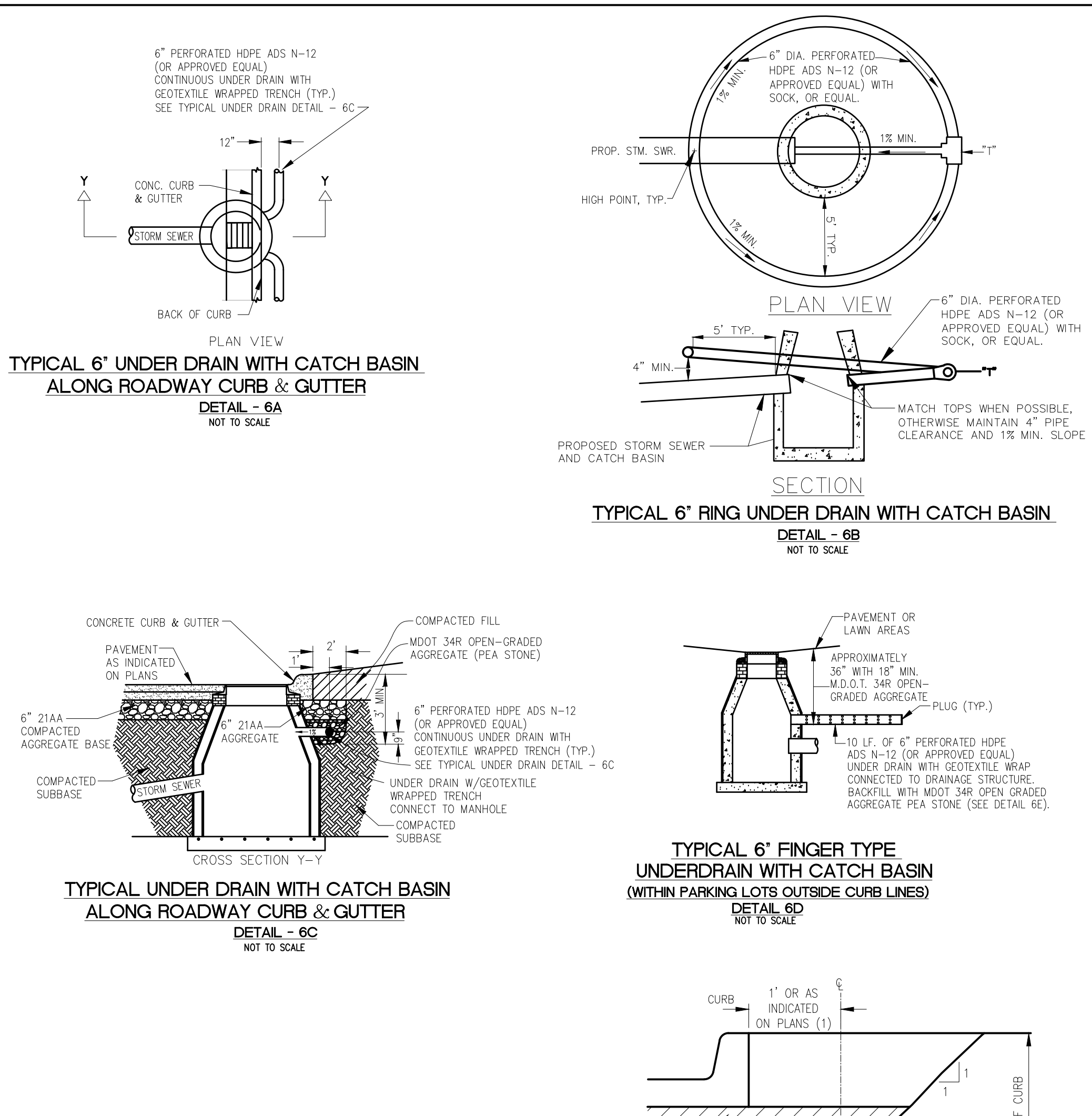


**TRANSVERSE EXPANSION JOINT
DETAIL - 4C**
NOT TO SCALE



**TRANSVERSE PLANE OF WEAKNESS
UNDOWELED CONTRACTION JOINT
DETAIL - 4D**
NOT TO SCALE

- NOTES:
- THE INTERSECTION SHALL BE POURED INDEPENDENT OF THE STRAIGHTAWAY FROM RADI TO RADI.
 - JOINT DESIGN SHALL BE IN ACCORDANCE WITH ROAD COMMISSION FOR LIVINGSTON COUNTY STANDARDS AND SPECIFICATIONS UNLESS SUPERCEDED BY HARTLAND TOWNSHIP STANDARD DETAILS.
 - DOWEL BASKETS WILL BE REQUIRED AT ALL EXPANSION JOINTS AS DIRECTED BY THE TOWNSHIP ENGINEER.
 - IF STRUCTURES ARE LOCATED AT POINT OF CURVE THEN EXPANSION JOINT SHOULD BE RELOCATED 10' OFF. (OR AS DIRECTED BY THE TOWNSHIP ENGINEER.)



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