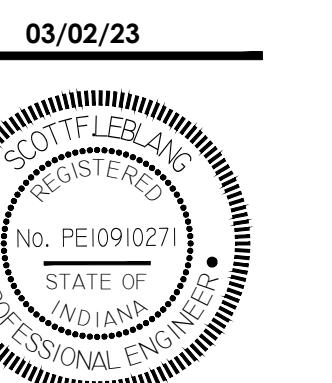
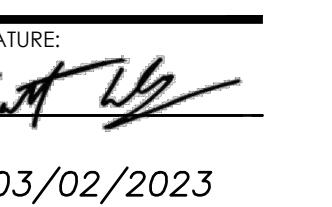


SHEET TITLE: \_\_\_\_\_  
 DRAWN BY: **KRV**  
 DESIGNED BY: **APH**  
 PM REVIEW: **RAN**  
 QA/QC REVIEW: **DSK**  
 DATE: **03/02/23**  
 SEAL: 

SIGNATURE:   
 DATE: **03/02/2023**

SCALE: **N/A**  
 HORIZ: **N/A**  
 VERT: **N/A**  
 ACI JOB #: **20-1114**  
 SHEET NO.: **48** of **56**

## I. DESIGN BASIS

- Building code used in the design of this structure: International Building Code, 2012 Edition with Indiana amendments.
- The editions referenced in the building code listed above shall apply for the following design standards:
  - Concrete: ACI 318
  - Structural Steel: AISC Steel Construction Manual, ASD
  - Steel Joists & Girders: SJI American National Standard (ASD)
  - Cold-Formed Steel: AISI S100
  - Metal Deck: SDI Manuals
  - Wood: NDS for Wood Construction
- Soil Capacity (Assumed at Bottom of Footing)**
  - Minimum Soil Bearing Pressure = 3,000 PSF
  - Contractor must verify that the soils can support this pressure.
- Gravity Dead Loads**
  - Roof = 10 PSF
  - Canopy Roof = 15 PSF
  - All Other = Actual Weights
- Gravity Live Loads**
  - Surcharge Behind Retaining Walls = 100 PSF
- Wind Lateral Live Loads**
  - Ultimate Design Wind Speed = 115 MPH
  - Risk Category = II
  - Wind Exposure = C
  - Internal Pressure Coefficient, GCpi = ±0.18
  - Components/Cladding Wind Pressure = ±42 PSF
- Snow Loads**
  - Ground Snow Load, Pg = 30 PSF
  - Snow Exposure Factor, Ce = 1.0
  - Snow Importance Factor, I = 1.0
  - Thermal Factor, Ct = 1.2
  - Flat Roof Snow Load, Pf = 25.2 PSF
  - Unbalanced, Sliding and Drifts per ASCE 7-10
- Seismic Lateral Live Loads**
  - Occupancy Category = II
  - Seismic Use Group = I
  - Seismic Design Category = B
  - Site Class = D
  - Importance Factor, I = 1.0
  - Response Modification Factor, R = 3.0
  - Spectral Response Coefficients, Cs = 0.034
  - Mapped Spectral Response Accelerations: Ss = 0.095; St = 0.056
  - Spectral Response Coefficients, Sds = 0.101; Sd1 = 0.089
  - Basic Seismic Force Resisting System: Steel System Not Specifically Detailed for Seismic Resistance
  - Analysis Used: Equivalent Lateral Force Procedure
- Serviceability Deflection (≤ Structural Component Span Length)**
  - Floor: Live Load = L/360
  - Roof: Live Load = L/240
  - Total Load = L/180

## II. OVERVIEW

- Any changes to the structural design must have written approval from the Engineer or the certification may be invalidated.
- The Contractor shall be solely responsible for following safety precautions and regulations.
- The Contractor shall be solely responsible for methods, techniques, sequencing and supervision of the Work.
- These Drawings indicate general details of construction. Where conditions are not specifically detailed, construction similar to the drawing details shall be used, unless noted otherwise.
- The Contractor shall use these Drawings together with the drawings and specifications of all other disciplines on the project and shall verify the requirements of other trades that interface with the structural Work.
- These Drawings represent the finished structure. It is the sole responsibility of the Contractor to design, install and inspect adequate and safe temporary bracing, shoring, etc. required during construction until all structural work is completed.
- The Contractor shall comply with the supplier's manufacturing, delivery, handling, storage and erection specifications for all structural system components.
- The current editions of ASTM standards and all references shall apply unless noted otherwise.
- Demolished items shall become the property of the Contractor and shall be removed from the site, unless noted otherwise.
- SHOP DRAWINGS**
  - The General Contractor shall review, check and coordinate the shop drawings and submit a review stamp set to the Engineer for review prior to fabrication. Shop drawings without a Contractor review stamp will be rejected by the Engineer.
  - The Engineer will review shop drawings only for conformance with the design concept and general compliance with the Drawings. The Contractor is solely responsible for errors and omissions associated with the preparation of shop drawings.
  - The Engineer shall review the shop drawings in accordance with a schedule pre-approved by the Engineer; or, in the absence of a schedule, in a manner deemed fit by the Engineer.
  - As a minimum, submit the following applicable shop drawings for review: (1) Concrete mix design specifications; (2) Concrete reinforcing steel; (3) Load bearing masonry reinforcing steel; (4) Structural steel; (5) Steel joists/girders; (6) Metal deck; (7) Wood trusses; (8) Load bearing cold-formed steel framing; (9) Precast concrete.
- INTERFACE WITH EXISTING CONSTRUCTION**
  - The Contractor shall become familiar with existing conditions before proceeding with the Work and shall be solely responsible for protecting existing work that is to remain.
  - The Contractor shall field verify all dimensions, elevations, etc. required for the proper construction and alignment of the Work and shall take the measurements required for structural member fabrication and erection.
  - Any discrepancy in the Drawings of existing conditions and any unknown conditions uncovered during construction shall be immediately brought to the attention of the Engineer.
  - Welding to and within an existing facility may present the following hazards:
    - Fire hazard due to existing building components. (Protect existing combustibles prior to welding and keep a separate watchman and multiple fire extinguishers on hand and remain at the site until satisfied that no fire hazard exists.)
    - Structural liquefaction due to welding across the full steel member section. (Weld in small increments and allow weld to harden before continuing to the next increment.)

## III. FOUNDATIONS

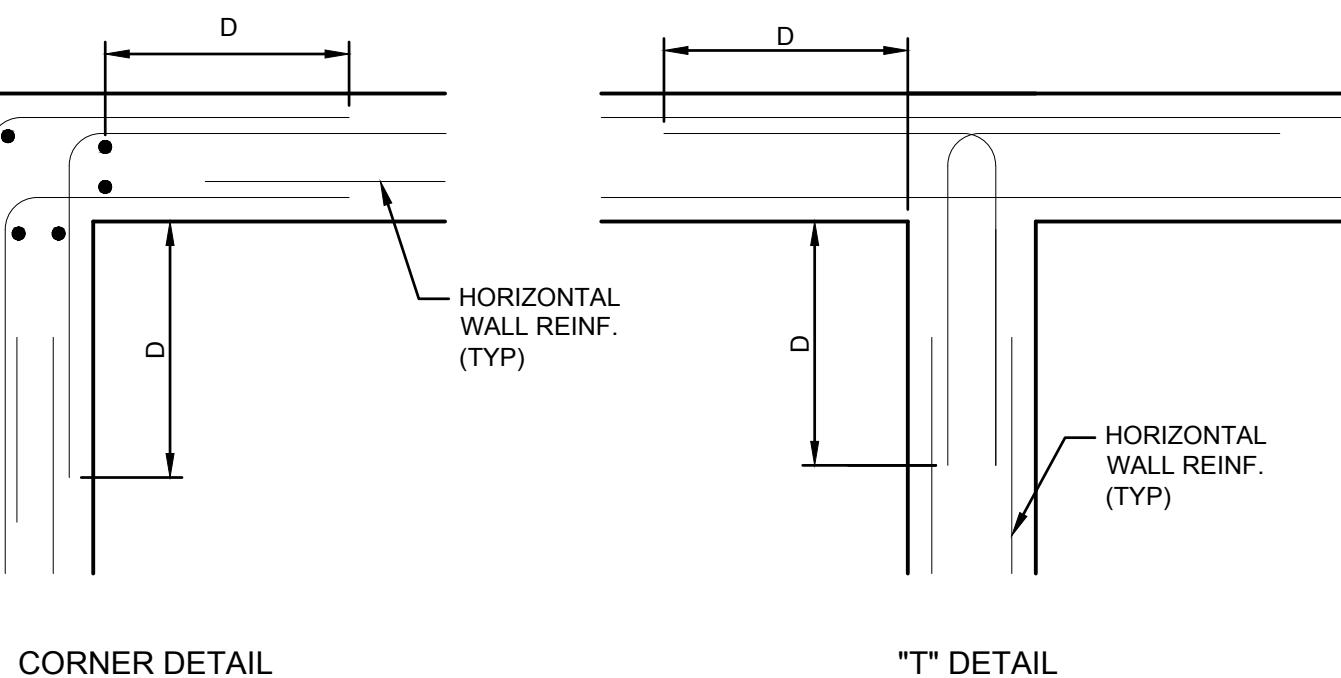
- GENERAL**
  - Footings shall bear on undisturbed, firm, natural soil or compacted fill capable of supporting the minimum soil bearing pressure specified in the "Design Basis" section of these structural notes. A geotechnical engineer/testing agency shall evaluate foundation excavations prior to placing foundation concrete.
  - Contractor shall remove unsuitable soils from below the building and place suitable fill material under the foundation compacted to 100% Standard Proctor in 8" maximum lifts. A geotechnical engineer licensed in the state where the project is located shall test compacted fill placed under foundations.
  - Concrete work shall conform to the specifications in the "Cast-in-Place Concrete" section of these structural notes.
  - If footings are not placed immediately after excavation, install a 2" thick seal of lean concrete to protect the soil from moisture damage.
  - Contractor may locate construction joints in foundation walls on footings at his discretion. Reinforcing shall be continuous across construction joints. In mat and spread footings, construction joints are prohibited without the Engineer's approval.
  - Depress foundation walls 8" at door openings, unless noted otherwise. Contractor shall refer to the architectural drawings for verification of door opening locations.
  - Secure water stops to avoid shifting when concrete is placed.
  - Column centerlines and pile caps are located on column centerlines unless noted otherwise.
- RETAINING WALLS**
  - Provide at least 12" of free draining backfill for full wall height.
  - Provide control joints at approximate equal intervals not to exceed 25 feet nor three times the wall height. Joints must be 1/8 wall thickness and continuous on entire front and back wall faces. Terminate/cut 1/2 horizontal reinforcing at control joints (top bars to remain continuous).
  - Provide expansion joints at every 4th control joint, unless noted otherwise.

## IV. CONCRETE

- CAST-IN-PLACE CONCRETE**
  - Applicable Specifications**
    - Structural Concrete: ACI 301
    - Hot Weather Concreting: ACI 305
    - Cold Weather Concreting: ACI 306
    - Concrete Mix: ACI 304
    - Reinforcement Lap & Embedment Length: ACI 318
    - Reinforcement Detailing: ACI 315
    - Welding Reinforcing Steel: AWS D1.4
    - Portland Cement Concrete: ASTM C150
    - Aggregate: ASTM C33
    - Reinforcing Steel: ASTM A615
    - Welded Wire Fabric, Min. 70 ksi Strength: ASTM A185
    - Epoxy Coated Reinforcing Steel: ASTM A775
    - Mineral Admixtures: ASTM C484
    - Air-Entraining Admixtures: ASTM C260
    - Ready-Mixed Concrete: ASTM C94
  - Interior and Foundation Concrete**
    - Interior and foundation concrete shall have a minimum strength of 4,000 psi at 28 days.
    - Concrete exposed to weather shall have a minimum strength of 4,000 psi at 28 days, limestone aggregate and 4%-7% entrained air.
    - Minimum concrete cover for reinforcing steel:
      - Cast against & permanently exposed to earth: 3"
      - Formed surfaces exposed to weather or in contact with soil:
        - #5 bars or less: 1-1/2"
        - #6 bars or greater: 2"
      - Formed surface not exposed to weather: 1-1/2"
      - Formed surfaces not exposed to weather or not in contact with soil:
        - Slabs, walls, joists: 3/4"
        - Beams & columns – primary reinforcement: 1-1/2"
        - Beams & columns – ties, stirrups, spirals: 1-1/2"
    - Steel reinforcing shall be Grade 60. Ties and stirrups shall be Grade 60.
    - Lap continuous reinforcing steel with Class B splices per ACI 315, unless noted otherwise.
    - Provide plastic or stainless steel supports for reinforcing steel to insure minimum concrete cover.
    - Set reinforcing steel and secure prior to placing concrete. Vertical dowels for masonry wall reinforcing may be floated in place.
    - Reinforcing steel shall be continuous at corners. Extend wall vertical reinforcing into footings and provide dowels as required.
    - Do not field bend reinforcing bars embedded in hardened concrete.
    - Welded wire fabric shall conform to the specifications in the "Slab-on-Grade" section of these structural notes.
    - Concrete superstructure formwork shall remain in place until concrete has obtained at least 90% of 28 day compressive strength. Contractor shall be responsible for shoring and re-shoring.
  - SLAB-ON-GRADE**
    - Concrete work shall conform to the specifications in the "Cast-in-Place Concrete" section of these structural notes.
    - Welded wire fabric shall conform to ASTM A185 specifications; be supplied in flat sheets, lap adjoining pieces by at least one full mesh and be held in place as needed to remain in the proper position when concrete is placed.
    - Provide one layer of 6x6-W1.4xW1.4 welded wire fabric placed 1-1/2" below the top of the slab, unless noted otherwise.
    - Polypropylene fiber reinforcement is prohibited without the written authorization of the Engineer.
    - Provide 6 mil polyethylene vapor barrier over 4" porous subgrade or porous fill compacted to 95% Standard Proctor under interior concrete slabs.
    - Porous fill shall be clean granular material with 100% passing through a 1-1/2" sieve and no more than 5% passing through a No. 4 sieve.
    - Maximum joint spacing shall be 24 times the slab thickness. Sawcut joints as soon as possible after concrete is placed. Do not spell joint edges. Fill sawn joints with epoxy resin 4-6 weeks after slab is cast. Remove debris from joints prior to filling.
    - Provide expansion joints between exterior slabs-on-grade and the building.
    - See architectural drawings for locations of depressed slabs and drains. Slope slab to drains.

## V. STEEL

- STRUCTURAL STEEL**
  - Applicable Specifications (Fy=Minimum Yield Strength)**
    - W Shapes, Min. Fy = 50 ksi: ASTM A992
    - HSS Round Shapes, Min Fy = 42 ksi: ASTM A500, Grade B
    - HSS Rectangular Shapes, Min. Fy = 46 ksi: ASTM A500, Grade B
    - H S, C, MC, L Shapes, Min. Fy = 36 ksi: ASTM A36
    - Up Shapes, Min. Fy = 50 ksi: ASTM A572, Grade 50
    - Bearing Plates, Min. Fy = 36 ksi: ASTM A36
    - Anchor Bolts, Min. Ultimate Strength, Fu = 120 ksi: ASTM A325
    - Threaded Rods, Min. Fy = 36 ksi: ASTM A36
    - Non-Shrink Grout, Min. 8,000 psi Strength: ASTM C1107
    - Structural Steel Construction: AISC, Type 2
    - Hot-Dip Galvanizing: ASTM A153
    - Welding, Min. Fy = 58 ksi for filler material: AWS D1.1
    - Corten Channels, Bars, Angles, Beams, Min. Fy = 50 ksi: ASTM A588
    - Corten Flat Sheets, Min. Fy = 46 ksi: ASTM A606-4
    - Corten Tubes, Min. Fy = 50 ksi: ASTM A847
  - Steel fabricator shall maintain detailed quality control procedures as required by the special inspection specifications of the International Building Code.
  - Connections shall be shear type unless noted otherwise and designed by the fabricator for shear loads indicated on these Drawings in accordance with the AISC specifications designated in the "Design Basis" section of these structural notes.
  - Columns, anchor bolts, base plates, etc. are designed for the final loading condition and have not been investigated for potential loadings during erection and construction. This investigation is the sole responsibility of the Contractor.
  - Moment connections are denoted with the symbol (►) on these Drawings. The fabricator shall submit calculations and shop drawings for all special connections, including moment connections.
  - Bolts shall be snug-fit shear/bearing type with minimum 3/4" diameter, unless noted otherwise.
  - A certified welder shall perform all welding work. Use E70XX electrodes for welding, unless noted otherwise. Provide continuous minimum sized fillet welds in accordance with AISC specifications. Touch up welded connections with zinc rich primer.
  - Drill or punch holes in steel. Provide smooth edges for slotted holes. Burning and torch cutting at the site is not permitted.
  - Shop paint structural steel permanently exposed to view with one coat of SSPC Paint 15 (Type I, Red Oxide), unless noted otherwise.
  - Hot-dip galvanize structural steel permanently exposed to the weather, including brick shelf angles and lintels at exterior openings.
  - Field repair permanent coatings damaged during transport, erecting and field welding to match the shop applied coating.
  - The structural steel erector shall provide temporary guying and bracing.
  - Provide angle frames at roof openings and rooftop mechanical units in accordance with details provided in these Drawings.
  - All Corten steel must be supplied by Evans Metal Products Co., Inc., 2400 Johnson Street, Elkhart, IN 46514; (574) 264-2166 or by an approved alternate fabricator. Alternate fabricators must be approved by the Architect and Engineer in writing.



Corner & Tee Typical Details with Reinforcing Bar Lap Chart

MINIMUM REINFORCING BAR LAP/EMBEDMENT (D) LENGTH TABLE		
REBAR SIZE	VERT. BARS	HORIZ. BARS
#4	25"	33"
#5	31"	41"
#6	37"	49"

NTS

**STATE ROAD 19  
CORRIDOR IMPROVEMENTS  
(PA7663)**

PROJECT:

**SITE CONSTRUCTION DETAILS**

SHEET TITLE:

DRAWN BY:

NI

DESIGNED BY:

CAK/ZDH

PM REVIEW:

RAN

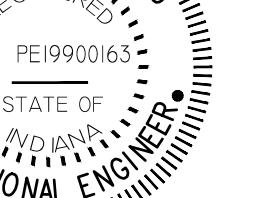
QA/GC REVIEW:

DSK

DATE:

03/02/23

SEAL:



SIGNATURE:

D. Karp

DATE:

03/02/2023

SCALE:

HORZ: AS SHOWN

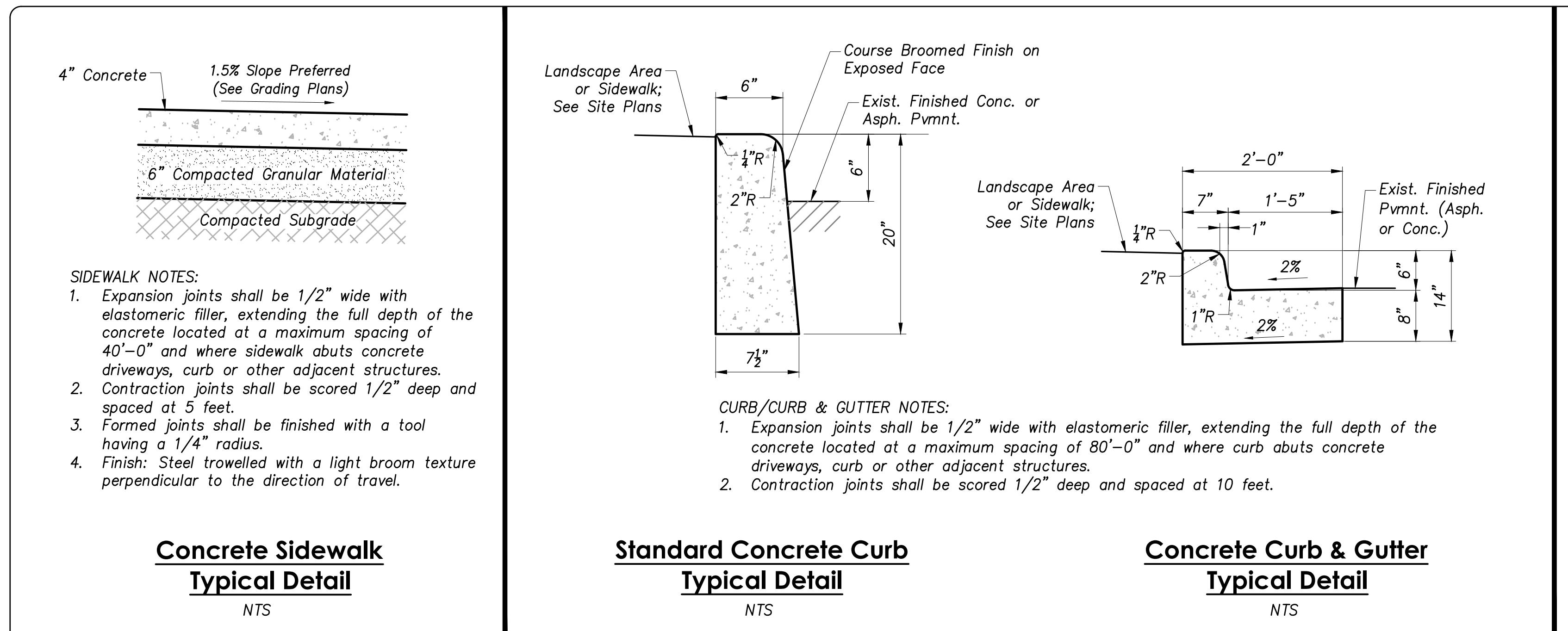
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**20-1114**

SHEET NO.

**49 of 56**



**Concrete Sidewalk  
Typical Detail**

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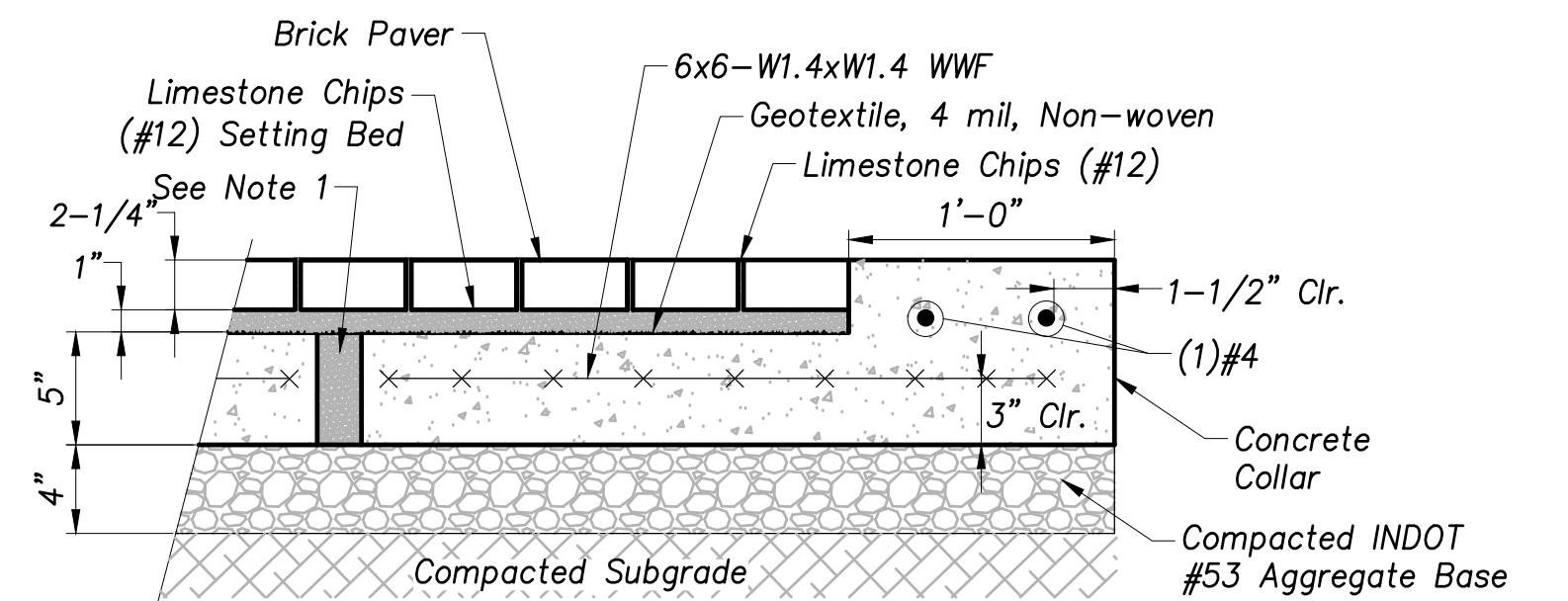
**Standard Concrete Curb  
Typical Detail**

NTS

**Concrete Curb & Gutter  
Typical Detail**

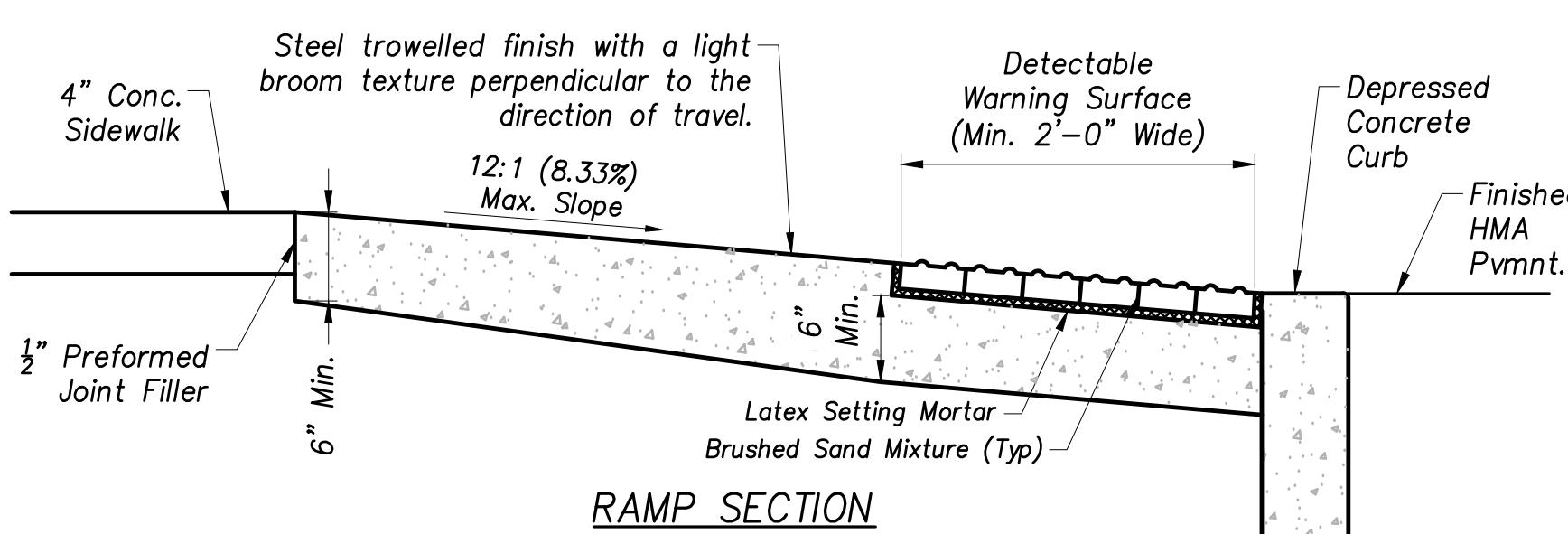
NTS

- BRICK PAVER NOTES:**
- 2" Dia. core drilled weep holes @ 4'-0" o.c., centered in walk, filled with limestone chips (#12) & capped w/geotextile.
  - Install 1/2" preformed expansion joint between concrete collar and adjacent construction.

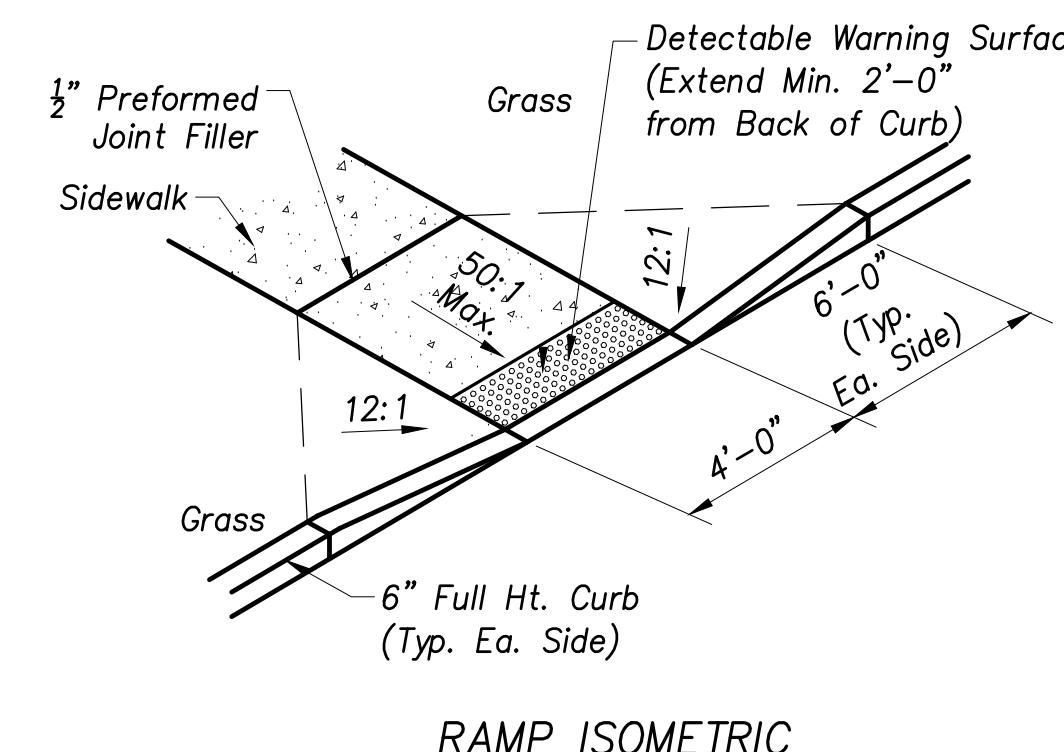


**Brick Paver Sidewalk Detail  
(Placemaking Node 5 - Brick Plaza)**

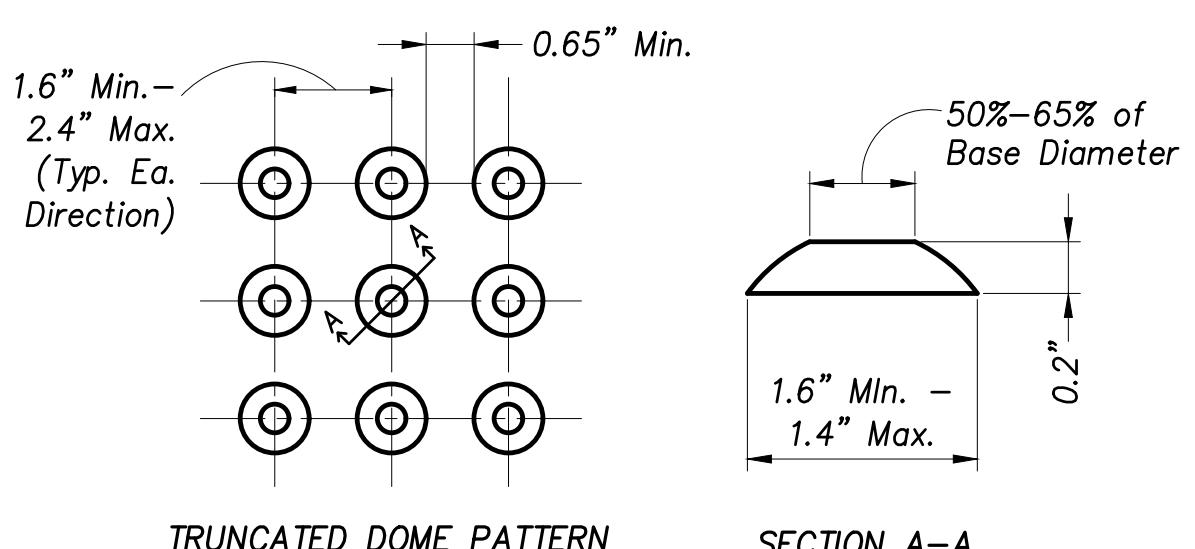
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**RAMP SECTION**



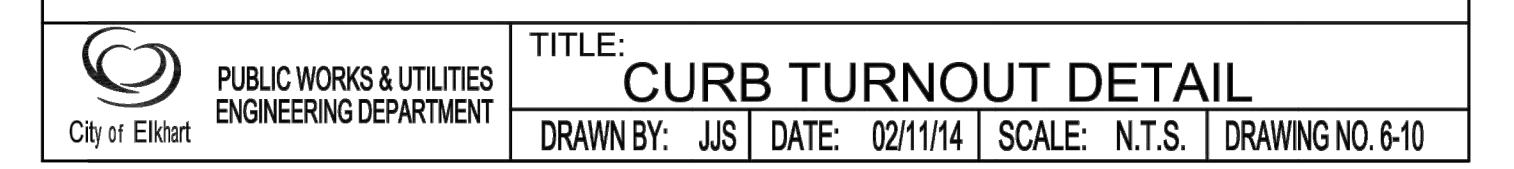
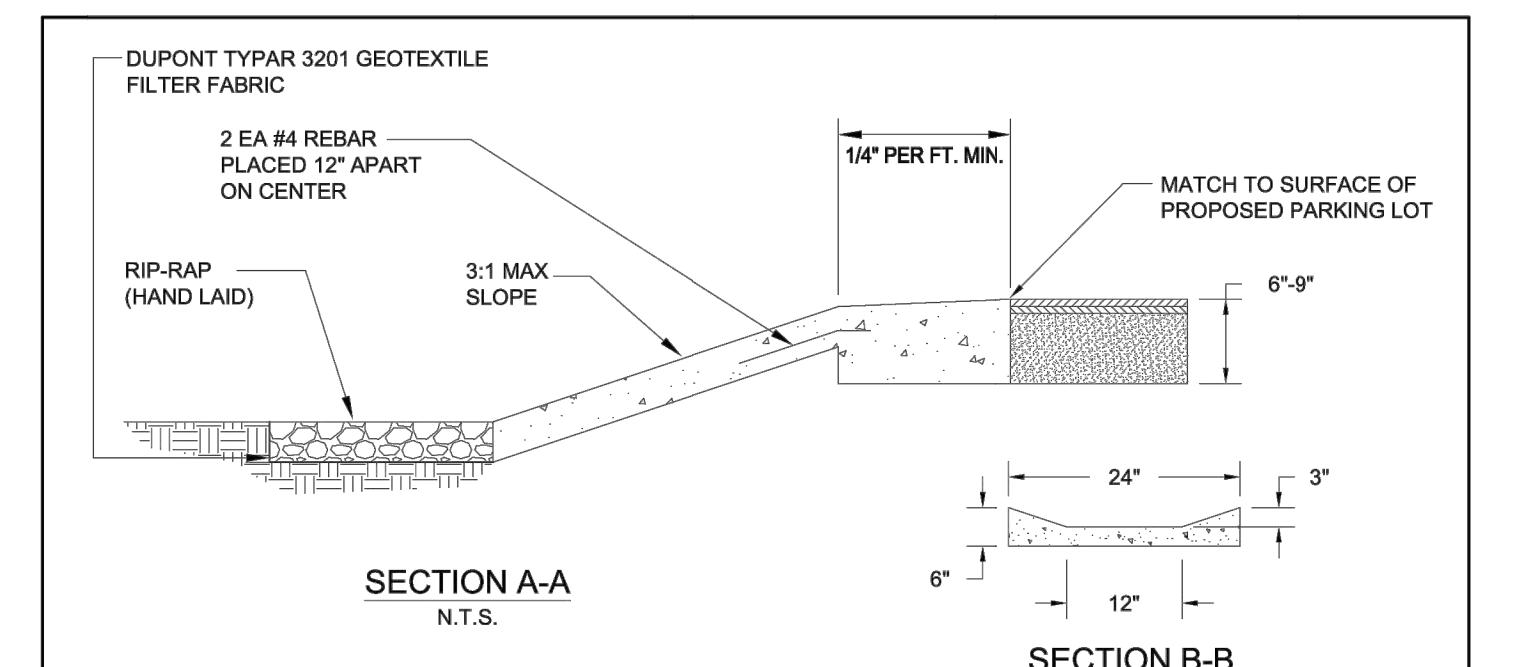
**RAMP ISOMETRIC**



**DETECTABLE WARNING SURFACE DETAILS & NOTES**

**Curb Ramp Typical Detail**

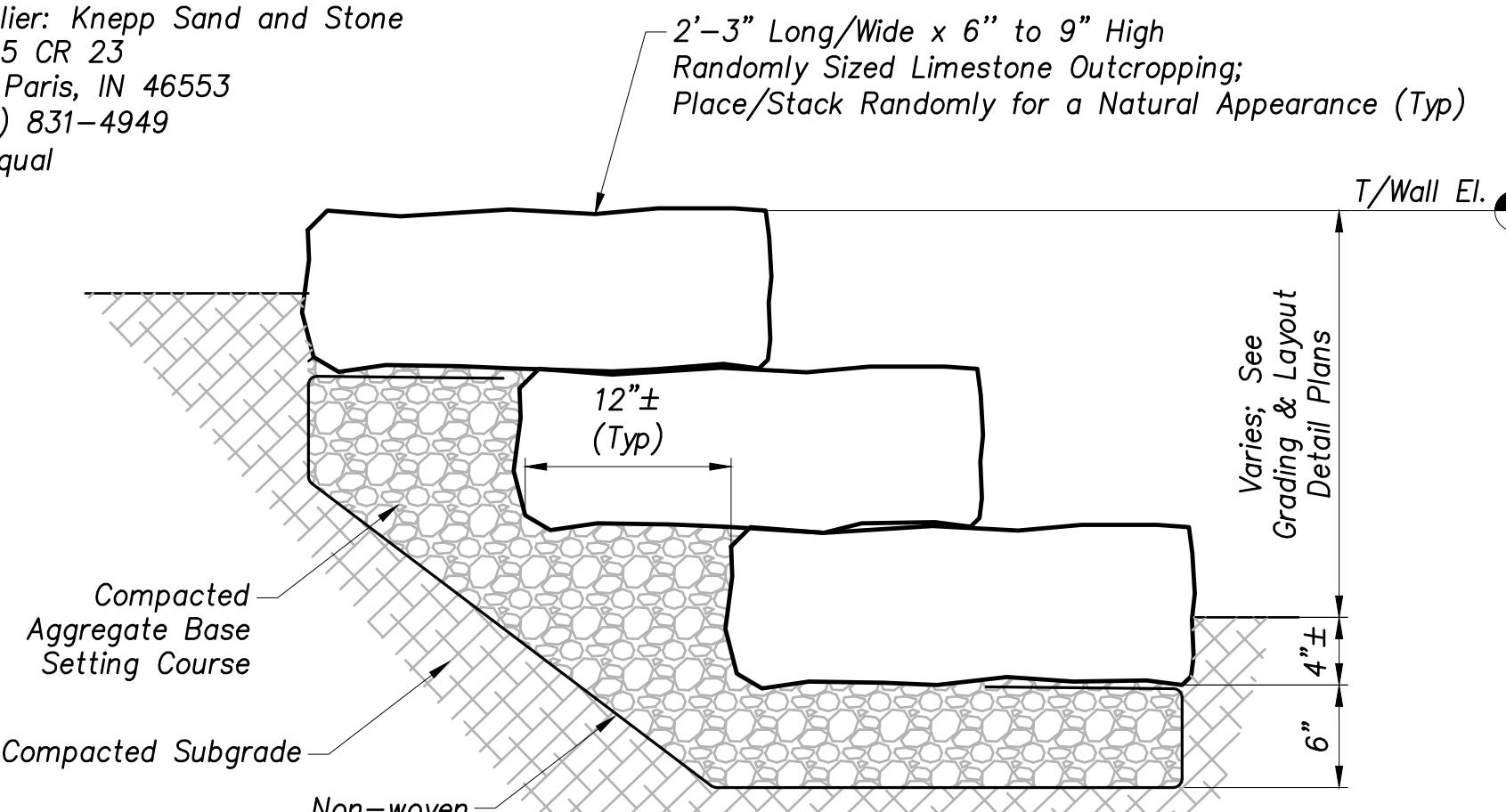
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**Curb Turnout Detail  
(Drive Approach 1)**

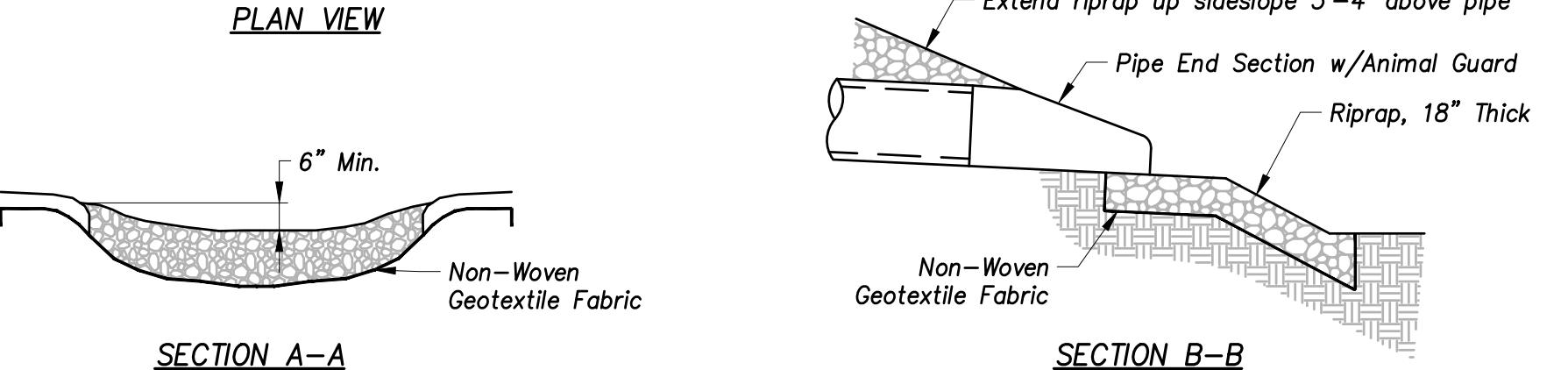
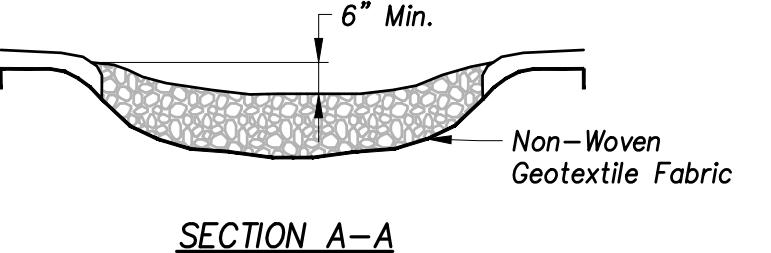
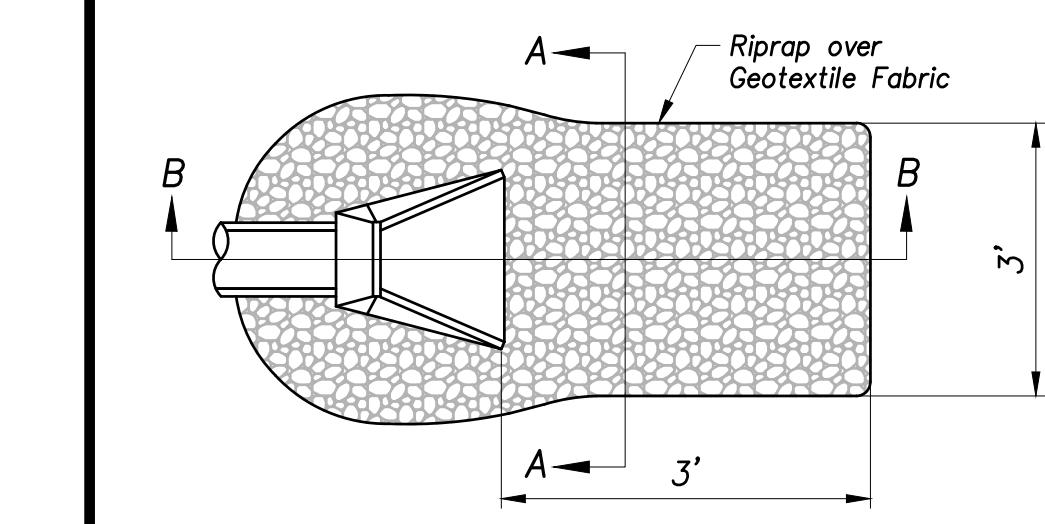
NTS

**Limestone Outcropping**  
Product: Chilton Weathered Edge Outcroping  
Manufacturer: Beuchel Stone  
Supplier: Krepp Sand and Stone  
70765 CR 23  
New Paris, IN 46553  
(574) 831-4949  
Or Equal



**Limestone Outcropping Typical Detail**

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**Pipe End Section & Riprap Apron Detail**

NTS

## STATE ROAD 19 CORRIDOR IMPROVEMENTS (PA7663)

PROJECT:

### SITE CONSTRUCTION DETAILS

