HENDERSON COUNTY TRANSFER STATION
SHED NO. 2 REPAIRS
SCOPE OF WORK

Introduction

The following is the scope of work for the Henderson County Transfer Station Shed No. 2 Repairs at the County's facility located at 191 Transfer Station Drive, Hendersonville, NC 28791.

Bid documents that describe the scope of work include:

- Shed No. 2 Repairs Bid Technical Specifications – see Attachment 1
- Shed No. 2 Repairs Bid General, Civil and Structural Drawings -- see Attachment 2

The Shed No. 2 Repairs scope of work includes:

- Existing asphalt pavement removal and new concrete pavement installation
- Repair of existing curb guards
- Shed No. 2 push pit repairs

Scope of Work

New Concrete Pavement

Existing asphalt pavement to be removed and new concrete pavement to be installed as shown on Sheet C-1. The following technical specifications present construction requirements:

- 02050 - Demolition and Modification
- 02860 - Concrete Pavement

Repair Curb Guards

Existing curb guards to be repaired as shown on Sheets C-1 and CD-1.

Shed No. 2 Push Pit Repairs

Shed No. 2 push pit repairs include the back wall concrete repair and steel plate armoring, steel plate armoring at the push pit edge, and a new push pit cross-beam. These repairs are shown on Sheets S2.1, S2.2 and S2.3

Bid

Provide lump sum bids (***write in figures and words***) for the following:

- New Concrete Pavement $_____ ---_____
- Repair Curb Guards $_____ ---_____
- Shed No. 2 Push Pit Repairs $_____ ---_____
- TOTAL $_____ ---_____

Attachment 1

Bid Technical Specifications

SECTION 02050

DEMOLITION AND MODIFICATIONS

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required and demolish, modify, remove and dispose of work shown on the Drawings and as specified herein.

B. Included, but not limited to, are demolition, modifications and removal of existing materials, equipment or work necessary to install the new work as shown on the Drawings and as specified herein and to connect with existing work in approved manner.

C. This Section calls attention to certain activities necessary to maintain and facilitate operations during and immediately following construction and does not purport to cover all of the activities necessary. Exercise due concern for the existing transfer station operation and diligently direct all activities toward maintaining continuous operation of the existing sheds and minimizing operational inconvenience.

D. Demolition, modifications and removals which may be specified under other Sections shall conform to requirements of this Section.

E. Demolition and modifications include:

1. Asphalt pavement area as shown on the plans

2. Steel plate curb guards as shown on the plans

F. Blasting and the use of explosives will not be permitted for any demolition work.

1.02 SUBMITTALS

A. Submit to the Engineer six copies of proposed methods and operations of demolition of the structures and modifications prior to the start of work.

B. Furnish a detailed sequence of demolition and removal work to ensure the uninterrupted progress of the Owner's operations. Sequence shall be compatible with sequence of construction and shutdown coordination requirements.

1.03 JOB CONDITIONS

A. Protection

1. Protect in place existing reinforcing steel from nicks, cuts, burns, excessive bending to the extent noted in the protect plans.

2. Execute the demolition and removal work to prevent damage or injury to structures, occupants thereof and adjacent features which might result from falling debris or other causes, and so as not to interfere with the use, and free and safe passage to and from adjacent structures.

3. Closing or obstructing of roadways, sidewalks and passageways adjacent to the work by the placement or storage of materials will not be permitted and all operations shall be conducted with a minimum interference to traffic on these ways.

4. Erect and maintain barriers, lights, sidewalk sheds and other required protective devices.

B. Scheduling

1. Carry out operations so as to avoid interference with operations and work in the existing facilities.

C. Notification

1. At least 48 hours prior to commencement of a demolition or removal, notify the Engineer in writing of proposed schedule thereof. Owner shall inspect the existing equipment to identify and mark those items which are to remain the property of the Owner. No removals shall be started without the permission of the Engineer.

D. Conditions of Structures

1. The Owner and the Engineer assume no responsibility for the actual condition of the structures to be demolished or modified.

2. Conditions existing at the time of inspection for bidding purposes will be maintained by the Owner insofar as practicable. However, variations to a structure may occur prior to the start of demolition work.

E. Repairs to Damage

1. Promptly repair damage caused to adjacent facilities by demolition operation when directed by Engineer and at no additional cost to the Owner. Repairs shall be made to a condition at least equal to that which existed prior to construction.

F. Traffic Access

1. Conduct demolition and modification operations and the removal of equipment and debris to ensure minimum interference with roads, streets, walks both onsite and offsite and to ensure minimum interference with occupied or used facilities.

2. Special attention is directed towards maintaining safe and convenient access to the existing facilities by County personnel and associated vehicles.

3. Do not close or obstruct streets, walks or other occupied or used facilities without permission from the Engineer. Furnish alternate routes around closed or obstructed traffic in access ways.

1.04 RULES AND REGULATIONS

A. The Building Code of the State of North Carolina, shall control the demolition, modification or alteration of the existing buildings or structures.

B. No building or structure, or any part thereof, shall be demolished until an application has been filed with the Building Inspector and a permit issued. The fee for this permit shall be the Contractor's responsibility.

1.05 DISPOSAL OF MATERIAL

A. Salvageable material, recyclable material and equipment listed hereinafter or on the drawings shall become the property of the Owner. Dismantle all such items to a size that can be readily handled and deliver to a designated storage area.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION

3.01 GENERAL

A. All materials and equipment removed from existing work shall become the property of the Contractor, except for those which the Owner has identified and marked for his/her use or disposal. All materials and equipment marked by the Owner to remain shall be carefully removed, so as not to be damaged, cleaned and stored on or adjacent to the site in a protected place specified by the Engineer or loaded onto trucks provided by the Owner.

B. Dispose of all demolition materials, equipment, debris and all other items, not marked by the Owner to remain, off the site and in conformance with all existing applicable laws and regulations and as described in the drawings.

C. Pollution Controls

1. Use water sprinkling, temporary enclosures and other suitable methods to limit the amount of dust and dirt rising and scattering in the air to the lowest practical level. Comply with governing regulations pertaining to environmental protection.

    a. Do not use water when it may create hazardous or objectionable conditions such as flooding or pollution.

    b. Clean adjacent structures, facilities, and improvements of dust, dirt and debris caused by demolition operations. Return adjacent areas to conditions existing prior to the start of the work.

D. Building Demolition

1. Unless otherwise approved by the Engineer, proceed with demolition from the top of the structure to the ground. Complete demolition work above without disturbing supporting members of the lower level.

2. Demolish concrete and masonry in small sections.

3. Remove structural framing members and lower to ground by means of hoists, derricks, or other suitable methods.

4. Locate demolition equipment throughout the structure and remove material so as to not impose excessive loads to supporting walls, floors or framing.

3.02 STRUCTURAL REMOVALS

A. Remove structures to the lines and grades shown unless otherwise directed by the Engineer. Where no limits are shown, the limits shall be 4-in outside the item to be installed. The removal beyond these limits shall be at the Contractor's expense and these excess removals shall be reconstructed to the satisfaction of the Engineer with no additional compensation to the Contractor.

B. All concrete, reinforcement, structural or miscellaneous metals, plaster, wire mesh and other items contained in or upon the structure shall be removed and taken from the site except as noted in Paragraph 1.03 A.1., and, unless otherwise approved by the Engineer.

C. After removal of parts or all of slabs and like work which tie into new work or existing work, the point of junction shall be neatly repaired so as to leave only finished edges and surface exposed.

3.03 MECHANICAL REMOVALS

A. Mechanical removals shall consist of dismantling and removing of motors, equipment and other appurtenances as specified, shown, or required for the completion of the work.

B. Existing process, water, chemical, gas, fuel oil and other piping not required for the new work shall be removed where shown or where it will interfere with new work. Piping not indicated to be removed or which does not interfere with new work shall be removed to the nearest solid support, capped and left in place.

3.04 ELECTRICAL REMOVALS

A. Electrical removals shall consist of the removal of existing miscellaneous electrical equipment all as shown on the Drawings, specified herein, or as required to perform the work.

B. Where shown or otherwise required, wiring in the underground duct system shall be removed. All such wiring shall be salvaged and stored as specified. Verify the function of all wiring before disconnection and removing it. Ducts which are not to be reused shall be plugged where they enter buildings and made watertight.

C. Where shown or otherwise required, direct-burial cable shall be abandoned. Such cable shall be disconnected at both ends of the run. Where it enters a building or structure the cable shall be cut

back to the point of entrance. All opening in buildings for entrance of abandoned direct-burial cable shall be patched and made watertight.

3.05 CLEAN-UP

A. Remove from the site all debris resulting from the demolition operations as it accumulates. Upon completion of the work, all materials, equipment, waste and debris of every sort shall be removed and premises shall be left, clean, neat and orderly.

END OF SECTION 02050

SECTION 02860

CONCRETE PAVEMENT

PART 1 GENERAL

1.01 SCOPE OF WORK

A. Furnish all labor, materials, equipment and incidentals required for concrete paving complete as shown on the Drawings and as specified herein.

B. Section includes Concrete Paving for roadways.

1.02 SUBMITTALS

A. Submit detailed information on materials proposed and installation methods.

B. Product Data: For each type of product.

C. Design Mixtures: For each concrete paving mixture. Include alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

D. Provide joint layout plan with joints identified.

E. Qualification Data: For qualified ready-mix concrete manufacturer and testing agency.

F. Material Certificates: For the following, from manufacturer:

1. Cementitious materials.
2. Steel reinforcement and reinforcement accessories.
3. Fiber reinforcement.
4. Admixtures.
5. Curing compounds.
6. Applied finish materials.
7. Bonding agent or epoxy adhesive.
8. Joint fillers.

G. Material Test Reports: For each of the following:

1. Aggregates: Include service-record data indicating absence of deleterious expansion of concrete due to alkali-aggregate reactivity.

G. Field quality-control reports.

1.03 REFERENCE STANDARDS

A. American Association of State Highway and Transportation Officials

1. AASHTO M 182-2009: Specification for Burlap Cloth Made from Jute or Kenaf and Cotton Mats

B. American Concrete Institute

1. ACI 117-2010: Specifications for Tolerances for Concrete Construction and Materials

2. ACI 117M-2010: Specifications for Tolerances for Concrete Construction and Materials

3. ACI 301-2010: Specifications for Structural Concrete

4. ACI 301M-2010: Metric Specifications for Structural Concrete

5. ACI 306.1-1990 (Reapproved 2002): Specification for Cold Weather Concreting

6. ACI CP-1-2013: Technician Workbook for ACI Certification of Concrete Field Testing Technician - Grade 1

C. ASTM International

1. ASTM A 184/A 184M-06 (Reapproved 2011): Specification for Fabricated Deformed Steel Bar Mats for Concrete Reinforcement

2. ASTM A 307-12: Specification for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength

3. ASTM A 615/A 615M-12: Specification for Deformed and Plain Billet-Steel Bars for Concrete Reinforcement

4. ASTM A 767/A 767M-09: Specification for Zinc-Coated (Galvanized) Steel Bars for Concrete Reinforcement

5. ASTM A 775/A 775M-07b: Specification for Epoxy-Coated Reinforcing Steel Bars

6. ASTM A 780/A 780M-09: Practice for Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings

7. ASTM A 884/A 884M-12: Specification for Epoxy-Coated Steel Wire and Welded Wire Reinforcement

8. ASTM A 934/A 934M-07: Specification for Epoxy-Coated Prefabricated Steel Reinforcing Bars

9. ASTM A 1064/A 1064M-12: Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete

10. ASTM C 31/C 31M-12: Practice for Making and Curing Concrete Test Specimens in the Field

11. ASTM C 33/C 33M-13: Specification for Concrete Aggregates

12. ASTM C 39/C 39M-12a: Test Method for Compressive Strength of Cylindrical Concrete Specimens

13. ASTM C 94/C 94M-12a: Specification for Ready-Mixed Concrete

14. ASTM C 143/C 143M-12: Test Method for Slump of Hydraulic Cement Concrete

15. ASTM C 150/C 150M-12: Specification for Portland Cement

16. ASTM C 171-07: Specification for Sheet Materials for Curing Concrete

17. ASTM C 172/C 172M-10: Practice for Sampling Freshly Mixed Concrete

18. ASTM C 231/C 231M-10: Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method

19. ASTM C 260/C 260M-10a: Specification for Air-Entraining Admixtures for Concrete

20. ASTM C 309-11: Specification for Liquid Membrane-Forming Compounds for Curing Concrete

21. ASTM C 494/C 494M-12: Specification for Chemical Admixtures for Concrete

22. ASTM C 595/C 595M-12: Specification for Blended Hydraulic Cements

23. ASTM C 618-12a: Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete

24. ASTM C 881/C 881M-10: Specification for Epoxy-Resin-Base Bonding Systems for Concrete

25. ASTM C 979/C 979M-10: Specification for Pigments for Integrally Colored Concrete

26. ASTM C 989/C 989M-12a: Specification for Slag Cement for Use in Concrete and Mortars

27. ASTM C 1017/C 1017M-07: Specification for Chemical Admixtures for Use in Producing Flowing Concrete

28. ASTM C 1059/C 1059M-99 (Reapproved 2008): Specification for Latex Agents for Bonding Fresh to Hardened Concrete

29. ASTM C 1064/C 1064M-12: Test Method for Temperature of Freshly Mixed Hydraulic-Cement Concrete

30. ASTM C 1077-13: Practice for Agencies Testing Concrete and Concrete Aggregates for Use in Construction and Criteria for Testing Agency Evaluation

31. ASTM C 1116/C 1116M-10a: Specification for Fiber-Reinforced Concrete

32. ASTM D 1751-04 (Reapproved 2008): Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types)

33. ASTM D 1752-04a (Reapproved 2008): Specification for Preformed Sponge Rubber Cork and Recycled PVC Expansion Joint Fillers for Concrete Paving and Structural Construction

34. ASTM D 3963/D 3963M-01 (Reapproved 2007): Specification for Fabrication and Jobsite Handling of Epoxy-Coated Steel Reinforcing Bars

35. ASTM E 329-11c: Specification for Agencies Engaged in Construction Inspection and/or Testing

36. ASTM F 568M-07: Specification for Carbon and Alloy Steel Externally Threaded Metric Fasteners

D. North Carolina Department of Transportation (NCDOT)

1. Standard Specifications for Roads and Structures, latest edition.

E. Concrete Reinforcing Steel Institute

1. Manual of Standard Practice. 28th edition.

F. National Ready Mixed Concrete Association

1. Certification of Ready Mixed Concrete Production Facilities (Quality Control Manual - Section 3, "Plant Certification Checklist"). 2006.

G. Unless noted otherwise, where reference is made to one of the above standards, the revision in effect at the time of bid opening shall apply.

1.04 DEFINITIONS

A. Cementitious Materials: Portland cement alone or in combination with one or more of blended hydraulic cement, fly ash, slag cement, and other pozzolans.

B. W/C Ratio: The ratio by weight of water to cementitious materials.

C. Ready-Mix-Concrete Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities" (Quality Control Manual - Section 3, "Plant Certification Checklist").

D. Testing Agency Qualifications: Qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.

1.05 PRECONSTRUCTION TESTING

A. Preconstruction Testing Service: Engage a qualified independent testing agency to perform preconstruction testing on concrete paving mixtures.

1.06 FIELD CONDITIONS

A. Traffic Control: Maintain access for vehicular and pedestrian traffic as required for other construction activities.

B. Cold-Weather Concrete Placement: Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing, or low temperatures. Comply with ACI 306.1 and the following:

1. When air temperature has fallen to or is expected to fall below 40 deg F (4.4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.

2. Do not use frozen materials or materials containing ice or snow.

3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise specified and approved in design mixtures.

C. Hot-Weather Concrete Placement: Comply with ACI 301 (ACI 301M) and as follows when hot-weather conditions exist:

1. Cool ingredients before mixing to maintain concrete temperature below 90 deg F (32 deg C) at time of placement. Chilled mixing water or chopped ice may be used to control temperature, provided water equivalent of ice is calculated in total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.

2. Cover steel reinforcement with water-soaked burlap, so steel temperature will not exceed ambient air temperature immediately before embedding in concrete.

3. Fog-spray forms, steel reinforcement, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

PART 2 PRODUCTS

2.01 CONCRETE, GENERAL

A. ACI Publications: Comply with ACI 301 (ACI 301M) unless otherwise indicated.

2.02 FORMS

A. Form Materials: Plywood, metal, metal-framed plywood, or other approved panel-type materials to provide full-depth, continuous, straight, and smooth exposed surfaces.

1. Use flexible or uniformly curved forms for curves with a radius of 100 feet (30.5 m) or less. Do not use notched and bent forms.

B. Form-Release Agent: Commercially formulated form-release agent that will not bond with, stain, or adversely affect concrete surfaces and that will not impair subsequent treatments of concrete surfaces.

2.03 STEEL REINFORCEMENT

A. Plain-Steel Welded-Wire Reinforcement: ASTM A 1064/A 1064M, fabricated from steel wire into flat sheets.

B. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60 (Grade 420) plain-steel bars. Cut bars true to length with ends square and free of burrs.

C. Epoxy-Coated, Joint Dowel Bars: ASTM A 775/A 775M; with ASTM A 615/A 615M, Grade 60 (Grade 420) plain-steel bars.

D. Tie Bars: ASTM A 615/A 615M, Grade 60 (Grade 420); deformed.

E. Hook Bolts: ASTM A 307, Grade A (ASTM F 568M, Property Class 4.6), internally and externally threaded. Design hook-bolt joint assembly to hold coupling against paving form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.

F. Bar Supports: Bolsters, chairs, spacers, and other devices for spacing, supporting, and fastening reinforcing bars, welded-wire reinforcement, and dowels in place. Manufacture bar supports according to CRSI's "Manual of Standard Practice" from steel wire, plastic, or precast concrete of greater compressive strength than concrete specified, and as follows:

1. Equip wire bar supports with sand plates or horizontal runners where base material will not support chair legs.

2. For epoxy-coated reinforcement, use epoxy-coated or other dielectric-polymer-coated wire bar supports.

G. Epoxy Repair Coating: Liquid, two-part, epoxy repair coating, compatible with epoxy coating on reinforcement.

H. Zinc Repair Material: ASTM A 780/A 780M.

2.04 CONCRETE MATERIALS

A. Cementitious Materials: Use the following cementitious materials, of same type, brand, and source throughout Project:

1. Portland Cement: ASTM C 150/C 150M, gray portland cement Type I/II.

2. Fly Ash: ASTM C 618, Class C or Class F.

3. Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.

B. Normal-Weight Aggregates: ASTM C 33/C 33M, Class 4M, uniformly graded. Provide aggregates from a single source.

1. Maximum Coarse-Aggregate Size: 3/4 inch nominal.

2. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

C. Air-Entraining Admixture: ASTM C 260/C 260M.

D. Chemical Admixtures: Admixtures certified by manufacturer to be compatible with other admixtures and to contain not more than 0.1 percent water-soluble chloride ions by mass of cementitious material.

1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.

2. Retarding Admixture: ASTM C 494/C 494M, Type B.

3. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.

4. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.

5. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.

6. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

E. Water: Potable and complying with ASTM C 94/C 94M.

2.05 CURING MATERIALS

A. Absorptive Cover: AASHTO M 182, Class 3, burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. (305 g/sq. m) dry or cotton mats.

B. Moisture-Retaining Cover: ASTM C 171, polyethylene film or white burlap-polyethylene sheet.

C. Water: Potable.

D. Evaporation Retarder: Waterborne, monomolecular, film forming, manufactured for application to fresh concrete.

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   a. BASF Corporation-Construction Systems.
   b. Bon Tool Co.
   c. Brickform; a division of Solomon Colors.
   d. ChemMasters, Inc.
   e. Dayton Superior.
   f. Euclid Chemical Company (The); an RPM company.
   g. Kaufman Products, Inc.
   h. L&M Construction Chemicals, Inc.
   i. Lambert Corporation.
   j. Metalcrete Industries.
   k. Nox-Crete Products Group.
   l. Sika Corporation.
   m. SpecChem, LLC.
   n. TK Products.
   o. Vexcon Chemicals Inc.
   p. W.R. Meadows, Inc.
   q. Or equal.

2.06 RELATED MATERIALS

A. Joint Fillers: ASTM D 1751, asphalt-saturated cellulosic fiber or ASTM D 1752, cork or self-expanding cork in preformed strips.

B. Slip-Resistive Aggregate Finish: Factory-graded, packaged, rustproof, non-glazing, abrasive aggregate of fused aluminum-oxide granules or crushed emery aggregate containing not less than 50 percent aluminum oxide and not less than 20 percent ferric oxide; unaffected by freezing, moisture, and cleaning materials.

C. Bonding Agent: ASTM C 1059/C 1059M, Type II, non-redispersible, acrylic emulsion or styrene butadiene.

D. Epoxy-Bonding Adhesive: ASTM C 881/C 881M, two-component epoxy resin capable of humid curing and bonding to damp surfaces; of class suitable for application temperature, of grade complying with requirements, and of the following types:

1. Types IV and V, load bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

E. Rock Salt: Sodium chloride crystals, kiln dried, coarse gradation with 100 percent passing 3/8-inch (9.5-mm) sieve and 85 percent retained on a No. 8 (2.36-mm) sieve.

2.07 CONCRETE MIXTURES

A. Prepare design mixtures, proportioned according to ACI 301 (ACI 301M), for each type and strength of normal-weight concrete, and as determined by either laboratory trial mixtures or field experience.

1. Use a qualified independent testing agency for preparing and reporting proposed concrete design mixtures for the trial batch method.

2. When automatic machine placement is used, determine design mixtures and obtain laboratory test results that comply with or exceed requirements.

B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement in concrete as follows:

1. Combined Fly Ash or Pozzolan, and Slag Cement: 50 percent, with fly ash or pozzolan not exceeding 25 percent.

C. Add air-entraining admixture at manufacturer's prescribed rate to result in normal-weight concrete at point of placement having an air content as follows:

1. Air Content: 4-1/2 percent plus or minus 1-1/2 percent for 1-1/2-inch (38-mm) nominal maximum aggregate size.

2. Air Content: 4-1/2 percent plus or minus 1-1/2 percent for 1-inch (25-mm) nominal maximum aggregate size.

3. Air Content: 5 percent plus or minus 1-1/2 percent for 3/4-inch (19-mm) nominal maximum aggregate size.

D. Chemical Admixtures: Use admixtures according to manufacturer's written instructions.

1. Use water-reducing and retarding admixture when required by high temperatures, low humidity, or other adverse placement conditions as required for placement and workability.

E. Concrete Mixtures: Normal-weight concrete.

1. Compressive Strength (28 Days): 6,000 psi.

2. Maximum W/C Ratio at Point of Placement: 0.45.

3. Slump Limit: 4 inches.

2.08 CONCRETE MIXING

A. Ready-Mixed Concrete: Measure, batch, and mix concrete materials and concrete according to ASTM C 94/C 94M. Furnish batch certificates for each batch discharged and used in the Work.

1. When air temperature is between 85 and 90 deg F (30 and 32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine exposed subgrades and subbase surfaces for compliance with requirements for dimensional, grading, and elevation tolerances.

B. Proof-roll prepared subbase surface below concrete paving to identify soft pockets and areas of excess yielding.

1. Completely proof-roll subbase in one direction and repeat in perpendicular direction. Limit vehicle speed to 3 mph.

2. Proof-roll with a pneumatic-tired and loaded, 10-wheel, tandem-axle dump truck weighing not less than 15 tons.

3. Correct subbase with soft spots and areas of pumping or rutting exceeding depth of 1/2 inch.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 PREPARATION OF SUBGRADE AND BASE

A. The subgrade and base beneath concrete pavement shall be prepared in accordance with the applicable sections of these specifications. The final subgrade and base surface shall meet the lines, grades, and cross sections required by the Drawings and established by the Engineer. Subgrade shoulders shall be constructed according to the Drawings.

B. Do not displace base course material.

C. The surface of the base shall be damp at the time the concrete is placed. The Contractor shall sprinkle the base when necessary to provide a damp surface. The Contractor shall satisfactorily correct all soft areas in the subgrade or base prior to placing concrete.

D. Hauling over the base course will not be allowed except where specifically permitted by the special provisions or in writing by the Engineer. The Engineer may allow equipment dumping concrete to operate on the base to the extent and under the conditions the Engineer deems necessary to facilitate placing and spreading the concrete.

E. Remove loose material from compacted subbase surface immediately before placing concrete.

3.03 EDGE FORMS AND SCREED CONSTRUCTION

A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides to required lines, grades, and elevations. Install forms to allow continuous progress of work and so forms can remain in place at least 24 hours after concrete placement.

B. Clean forms after each use and coat with form-release agent to ensure separation from concrete without damage.

3.04 STEEL REINFORCEMENT INSTALLATION

A. General: Comply with CRSI's "Manual of Standard Practice" for fabricating, placing, and supporting reinforcement.

B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.

C. Arrange, space, and securely tie bars and bar supports to hold reinforcement in position during concrete placement. Maintain minimum cover to reinforcement.

D. Install welded-wire reinforcement in lengths as long as practicable. Lap adjoining pieces at least one full mesh, and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.05 JOINTS

A. General: Form construction, isolation, and contraction joints and tool edges true to line, with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to centerline unless otherwise indicated.

1. When joining existing paving, place transverse joints to align with previously placed joints unless otherwise indicated.

B. Construction Joints: Set construction joints at side and end terminations of paving and at locations where paving operations are stopped for more than one-half hour unless paving terminates at isolation joints.

1. Continue steel reinforcement across construction joints unless otherwise indicated. Do not continue reinforcement through sides of paving strips unless otherwise indicated.

2. Provide tie bars at sides of paving strips where indicated.

3. Doweled Joints: Install dowel bars and support assemblies at joints where indicated. Lubricate or coat with asphalt one-half of dowel length to prevent concrete bonding to one side of joint.

C. Isolation Joints: Form isolation joints of preformed joint-filler strips abutting concrete curbs, catch basins, manholes, inlets, structures, other fixed objects, and where indicated.

1. Locate expansion joints at intervals of 50 feet unless otherwise indicated.

2. Extend joint fillers full width and depth of joint.

3. Terminate joint filler not less than 1/2 inch (13 mm) or more than 1 inch (25 mm) below finished surface if joint sealant is indicated.

4. Place top of joint filler flush with finished concrete surface if joint sealant is not indicated.

5. Furnish joint fillers in one-piece lengths. Where more than one length is required, lace or clip joint-filler sections together.

6. During concrete placement, protect top edge of joint filler with metal, plastic, or other temporary preformed cap. Remove protective cap after concrete has been placed on both sides of joint.

D. Contraction Joints: Form weakened-plane contraction joints, sectioning concrete into areas as indicated. Construct contraction joints for a depth equal to at least one-fourth of the concrete thickness, as follows, to match jointing of existing adjacent concrete paving:

1. Grooved Joints: Form contraction joints after initial floating by grooving and finishing each edge of joint with grooving tool to a 1/4-inch radius. Repeat grooving of contraction joints after applying surface finishes.

2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch-wide joints into concrete when cutting action will not tear, abrade, or otherwise damage surface and before developing random contraction cracks.

E. Edging: After initial floating, tool edges of paving, gutters, curbs, and joints in concrete with an edging tool to a 1/4-inch radius. Repeat tooling of edges after applying surface finishes.

3.06 CONCRETE PLACEMENT

A. Before placing concrete, inspect and complete formwork installation, steel reinforcement, and items to be embedded or cast-in.

B. Remove snow, ice, or frost from subbase surface and steel reinforcement before placing concrete. Do not place concrete on frozen surfaces.

C. Moisten subbase to provide a uniform dampened condition at time concrete is placed. Do not place concrete around manholes or other structures until they are at required finish elevation and alignment.

D. Comply with ACI 301 (ACI 301M) requirements for measuring, mixing, transporting, and placing concrete.

E. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.

F. Consolidate concrete according to ACI 301 (ACI 301M) by mechanical vibrating equipment supplemented by hand spading, rodding, or tamping.

1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only

square-faced shovels for hand spreading and consolidation. Consolidate with care to prevent dislocating reinforcement, dowels and joint devices.

G. Screed paving surface with a straightedge and strike off.

H. Commence initial floating using bull floats or darbies to impart an open-textured and uniform surface plane before excess moisture or bleedwater appears on the surface. Do not further disturb concrete surfaces before beginning finishing operations or spreading surface treatments.

I. Slip-Form Paving: Use design mixture for automatic machine placement. Produce paving to required thickness, lines, grades, finish, and jointing.

1. Compact subbase and prepare subgrade of sufficient width to prevent displacement of slip-form paving machine during operations.

3.07 FLOAT FINISHING

A. General: Do not add water to concrete surfaces during finishing operations.

B. Float Finish: Begin the second floating operation when bleedwater sheen has disappeared and concrete surface has stiffened sufficiently to permit operations. Float surface with power-driven floats or by hand floating if area is small or inaccessible to power units. Finish surfaces to true planes. Cut down high spots and fill low spots. Refloat surface immediately to uniform granular texture.

1. Burlap Finish: Drag a seamless strip of damp burlap across float-finished concrete, perpendicular to line of traffic, to provide a uniform, gritty texture.

3.08 CONCRETE PROTECTION AND CURING

A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures.

B. Comply with ACI 306.1 for cold-weather protection.

C. Evaporation Retarder: Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions cause moisture loss approaching 0.2 lb/sq. ft. x h before and during finishing operations. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete but before float finishing.

D. Begin curing after finishing concrete but not before free water has disappeared from concrete surface.

E. Curing Methods: Cure concrete by moisture curing, moisture-retaining-cover curing, curing compound, or a combination of these as follows:

1. Moisture Curing: Keep surfaces continuously moist for not less than seven days with the following materials:
   a. Water.

b. Continuous water-fog spray.
c. Absorptive cover, water saturated and kept continuously wet. Cover concrete surfaces and edges with 12-inch (300-mm) lap over adjacent absorptive covers.

2. Moisture-Retaining-Cover Curing: Cover concrete surfaces with moisture-retaining cover, placed in widest practicable width, with sides and ends lapped at least 12 inches (300 mm), and sealed by waterproof tape or adhesive. Immediately repair any holes or tears occurring during installation or curing period, using cover material and waterproof tape.

3. Curing Compound: Apply uniformly in continuous operation by power spray or roller according to manufacturer's written instructions. Recoat areas subjected to heavy rainfall within three hours after initial application. Maintain continuity of coating, and repair damage during curing period.

3.09 ACCEPTANCE TESTS FOR CONCRETE

A. Responsibility:

Acceptance sampling and testing of paving concrete will be conducted by an independent quality control laboratory employed by the Contractor. The Contractor shall furnish all materials to be tested.

Test Specimens (AASHTO T-23 / ASTM C-31): One set of cylinders per each placement operation per each 100 cubic yards cumulative or fraction thereof for Class AA and A Concrete. One set of cylinders per each 100 cubic yards or fraction thereof for Class B Concrete.

B. Air Control:

The air content (AASHTO T152) of the concrete will be determined on the roadway performed on the first load, and a random load per 30 cubic yards or fraction thereof. When test specimens are made. The sample taken for determination of air content will be obtained immediately after the concrete has been discharged.

Concrete failing to meet specification requirements for air content will be subject to rejection.

Temperature (ASTM C-1064): Performed on the first load and when test specimens are made.

Air Content - Chace Indicator (AASHTO T-l99): Performed on every load.

C. Slump:

The slump of the concrete will be determined in accordance with AASHTO T-119 / ASTM C-143 performed on the first load, and a random load per 30 cubic yards or fraction thereof. When test specimens are made. The sample taken for determination of slump will be obtained immediately after the concrete has been discharged.

When the slump of the concrete is questionable by visual observation, it shall not be placed on the road until tested for slump by the Engineer.

Concrete failing to meet specification requirements for slump will be subject to rejection.

D. Flexural Strength:

The concrete will be tested with respect to flexural strength on a lot by lot basis. For this pavement, a lot shall consist of 4,000 square yards placed without delays in excess of 14 continuous calendar days. Each lot will be divided into 4 equal sublots and from each sublot a set of two 6-inch x 6-inch x 20-inch beams will be made from a randomly selected batch of concrete. The average flexural strength of the 2 beams in each sublot is considered one test. At a minimum, one of the beams shall be cast each day of concrete pavement installation.

When operational conditions, such as a new mix design, lengthy interruptions in paving, or project completion, cause a lot to be determined with less than the specified lot size, the following procedure will be used for acceptance.

If less than 3 sublots have been completed, the square yards of pavement placed and the test results of the beams made will be combined with the most recently completed lot, and acceptance of the combined total square yards will be based on the average of the test results in the revised lot.

If at least 3 sublots have been completed, but the full lot has not been completed, the lot size will be considered as the number of square yards placed and the lot will be accepted on the basis of the average result of the beam tests.

Small areas of pavement, such as intersections, entrances, crossovers, or other irregular areas, will be combined to form a lot consisting of 4,000 square yards of pavement. One set of beams (2) shall be made from a randomly selected batch of concrete placed in each 1,000 square yards or fractional sublot. If at least 3 sublots have been tested, but the full lot has not been completed, the lot size will be considered as the number of square yards placed and the lot will be accepted on the basis of the average result of the tests made. If less than 3 sublots have been tested, the square yards of pavement placed and the test results will be combined with the most recently completed lot of this type of pavement and acceptance of the combined total square yards will be based on the average of all test results in the revised lot.

The flexural strength of concrete in each lot will be determined by testing 6" x 6" x 20" beams at 14 calendar days. Test beams for determining the flexural strength of the concrete will be made by the Engineer from the concrete as it comes from the mixer. The beams will be made and cured in accordance with ASTM C293 except as that immersion in saturated lime water will not be required. Beams will be tested by the Engineer in accordance with ASTM C293. The Contractor shall furnish curing facilities for the test beams in accordance with NCDOT Section 725.

In the event the results of the flexural strength tests performed indicate that a portion of the concrete pavement has not attained a flexural strength or modulus of rupture of 550 psi no later than the age of 14 days, the Contractor shall remove the portion of the pavement represented by the test beam (that day's pour, the sublot or portion thereof) at the discretion of the engineer, shall restore the subbase to the condition specified on the drawings and in the specifications and shall place new concrete pavement at no additional cost to the Owner. New sections of pavement shall be jointed with existing sections at the direction of the Engineer.

Each lot will be checked for outliers by the following procedure (outlier - an extreme test that is to be discarded):

1. Tabulate the test results (X), add them to obtain the sum, and divide this sum by the number of test results (N) to obtain the Mean (y) or Lot Average.

2. Obtain the difference between each test result and the Mean, square each difference, and add the results to obtain the sum of the square of the differences.

3. Divide the sum of the squares of the differences by the number of measurements, less one.

4. Find the square root of the value obtained in Step 3 above. This gives the Standard Deviation for the lot.

5. Divide the difference between the Mean obtained in Step 1 above and the test result in question by the Standard Deviation obtained in Step 4 above. This gives the T value.

6. If the T value (disregarding algebraic sign) obtained in Step 5 above exceeds the Critical T value listed below and no assignable cause can be determined for the test result in question, discard this test result.

Number of Observations, N	Critical T Value
3	1.15
4	1.48
5	1.71
6	1.89
7	2.02
8	2.13

3.10 PROTECTION FROM COLD WEATHER AND RAIN

A. Concrete pavement less than 72 hours old which may be subject to damage by freezing shall be adequately protected until the concrete reaches an age of 72 hours. Concrete damaged as a result of freezing shall be removed and replaced by the Contractor at no cost to the Owner.

B. Protective coverings which will protect the surface of the freshly placed pavement from rain shall be readily available daily at the location of each proposed day's operations prior to beginning work. An adequate quantity of these materials shall be stored at the paving train. Concrete damaged as a result of failure on the part of the Contractor to adequately protect the concrete from rain shall be repaired or removed and replaced by the Contractor as directed by the Engineer at no cost to the Owner.

3.11 PAVEMENT MARKING MATERIALS

A. Pavement marking materials shall be in accordance with NCDOT.

B. All pavement marking paints shall be factory mixed, quick drying and non-bleeding, US Federal Specification (FS) TT-P-115C, Type ill.

C. All pavement marking materials shall be installed as shown on the Drawings or as specified by NCDOT, at the direction of the Engineer.

3.12 REMOVING FORMS

A. Forms shall not be removed from freshly placed concrete until it has hardened sufficiently to resist spalling, cracking, or any other damage, but in no case until at least 12 hours after the concrete has been placed. Any honey-combed areas along the sides or edges of the slab shall be repaired by filling with mortar immediately after the forms have removed. The filling with mortar shall be composed of 1 part of cement to 2 parts of fine aggregate.

B. The Contractor shall perform any work necessary to prevent erosion of the base course from beneath the exposed pavement edge after the forms have been removed and before shoulder material is placed.

C. Unless otherwise permitted by the Engineer, shoulder construction shall be begun as soon as traffic can be placed on the pavement.

3.13 REPAIR AND PROTECTION

A. Remove and replace concrete paving that is broken, damaged, or defective or that does not comply with requirements in this Section. Remove work in complete sections from joint to joint unless otherwise approved by Engineer.

B. Drill test cores, where directed by Engineer, when necessary to determine magnitude of cracks or defective areas. Fill drilled core holes in satisfactory paving areas with portland cement concrete bonded to paving with epoxy adhesive.

C. Protect concrete paving from damage. Exclude traffic from paving for at least 14 days after placement. When construction traffic is permitted, maintain paving as clean as possible by removing surface stains and spillage of materials as they occur.

D. Maintain concrete paving free of stains, discoloration, dirt, and other foreign material. Sweep paving not more than two days before date scheduled for Substantial Completion inspections.

3.14 USE OF NEW PAVEMENT

A. Traffic will not be allowed on the pavement until test beams representative of the pavement have attained a flexural strength as stated above.

B. It shall be the Contractor's responsibility to anticipate the need to place additional pavement adjacent to new pavement, the need to operate mixing and hauling equipment on pavement, and the need to permit traffic on pavement, prior to the routine acceptance testing of beams at 14 calendar days. It shall also be the Contractor's responsibility to make the necessary beams for testing prior to 14 calendar days. The minimum number of beam tests required when early use of pavement is requested is 2 sets of 2 beams for each day's operations. The Contractor is responsible for beam tests. The Contractor shall assume all responsibility for any damages

occurring to the concrete pavement prior to final acceptance by the Engineer. All damaged sections shall be repaired at the direction of the engineer or accordance with these specifications.

C. In addition to the above requirements, no permanent traffic will be allowed on the pavement until construction of the joints, including all sawing and sealing that is required, has been completed.

D. Construction traffic will be permitted on pavement which has reached the required strength during the interval between the initial sawing and the final sawing of the joints. No traffic will be permitted on the pavement after the final sawing of the joints until the joints are sealed and the sealer is tack free.

E. The Contractor shall take particular care to protect the exposed pavement edges and ends.

3.15 PAVEMENT THICKNESS

A. Pavement thickness shall be as shown on the drawings.

B. Pavement thickness will be determined by the Engineer based on measurements made by the Engineer prior to concrete placement between the bottom of the concrete screed and the top of the pavement base stone across the full width of pavement at intervals of at least every 10 feet of pavement length. Cooperate fully with the Engineer by moving the screed into position for measurements as requested by the Engineer.

C. Correct any location of deficient depth prior to concrete placement.

END OF SECTION 02860

Attachment 2

Bid Drawings

BID SET
HENDERSON COUNTY TRANSFER STATION
SHED NO. 2 REPAIRS

OWNER

HENDERSON COUNTY
SOLID WASTE DIVISION
191 TRANSFER STATION DRIVE
HENDERSONVILLE, NC 28792

SCS ENGINEERS
www.scsengineers.com

CIVIL DESIGNER

SCS ENGINEERS, PC
3801 LAKE BOONE TRAIL, SUITE 410
RALEIGH, NORTH CAROLINA 27607
CONTACT: (919) 662-3015
NC CORP. LICENSE NO. C-1837
JOB NO. 02220205.05

ARCON STRUCTURAL ENGINEERS, INC

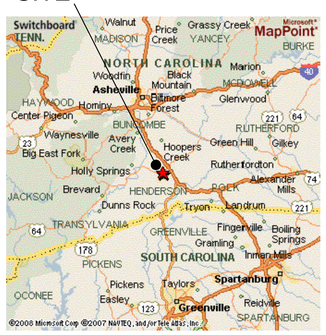
STRUCTURAL

ARCON STRUCTURAL
22391 GILBERTO - SUITE E
RANCHO SANTA MARGARITA, CA 92688
CONTACT: (949) 766-5102

SITE

AREA MAP
NOT TO SCALE

SITE



LOCATION MAP
NOT TO SCALE

SITE ADDRESS

HENDERSON COUNTY TRANSFER STATION
191 TRANSFER STATION DRIVE
HENDERSONVILLE, NC 28791

INDEX OF SHEETS	
SHEET	TITLE
GENERAL	
G-1	TITLE SHEET
G-2	SITE MAP
CIVIL	
C-1	SITE LAYOUT PLAN
CD-1	DETAILS
STRUCTURAL	
S2.1	MAT & FOUNDATION PLAN
S2.2	STRUCTURAL DETAILS
S2.3	MAT & FOUNDATION PLAN

BID SET
DECEMBER 2025

REV. | DATE | DESCRIPTION | CK. BY

SHEET TITLE: TITLE SHEET
PROJECT TITLE: TRANSFER STATION SHED NO. 2 REPAIRS

CLIENT
HENDERSON COUNTY
SOLID WASTE DIVISION
191 TRANSFER STATION DRIVE
HENDERSONVILLE, NORTH CAROLINA 28791

SCS ENGINEERS, PC
3801 LAKE BOONE TRAIL, SUITE 410
RALEIGH, NORTH CAROLINA 27607
PHONE: (919) 662-3015

PROJ. NO. 02220205.05 | DSN. BY: KJY | DWN. BY: JLB | CHK. BY: KJY | QA/QA REVIEW BY: KJY | APP. BY: KJY

CADD FILE: DRAWINGS
DATE: DEC. 2025
SCALE: AS SHOWN
DRAWING NO. **G-1**

N

0 60 120 180
SCALE IN FEET

NOTES:

1. EXISTING TOPOGRAPHY AND FEATURES FROM JANUARY 12, 2023 SURVEY COMPLETED BY ATLAS SURVEYING, INC.
2. ALL SURVEY DATA IS IN NORTH CAROLINA STATE PLANE COORDINATE SYSTEM, NAD 83 (HORIZONTAL DATUM) AND NAVD 88 (VERTICAL DATUM).
3. PROPERTY LINES ARE GIS OBTAINED AND HAVE NOT BEEN SURVEYED IN.

LEGEND

- PROPERTY LINE
- LANDFILL FACILITY BOUNDARY
- PARCEL BOUNDARY
- LANDFILL UNIT LIMITS
- MW-3 GROUND WATER MONITORING WELL
- MP3 LANDFILL GAS MONITORING WELL
- TR2 FORMER TRACE PROPERTY LANDFILL
- SM7 LANDFILL GAS MONITORING WITHIN A STRUCTURE
- BR-3 SURFACE WATER MONITORING LOCATION
- PROJECT AREA
- SURVEY CONTROL POINT (NGS MONUMENT)

CLOSED MSW DISPOSAL AREA
GAS PUMPS & GAS STORAGE AREA
RECYCLING & MSW WASTE DROP-OFF (AREA 6)
ZONING MAP
SCALES AND SCALE HOUSE
SINGLE STREAM RECYCLING COMPACTOR
TRANSFER STATION
SHED NO. 2 PROJECT AREA
SHED 1
SHED 2
SHED 3
PAINT COLLECTION AND STORAGE AREA
LANDFILL MAINTENANCE FACILITY
HENDERSON COUNTY ANIMAL SHELTER
HENDERSON COUNTY SCHOOL BUS MAINTENANCE FACILITY
TRANSFER STATION DR
STONEY MOUNTAIN RD
PROPERTY LINE
TRAILER STAGING AREA
TRUCK TURNAROUND AND EXISTING SCALES
PROPERTY CORNER STAKE
MAIN FACILITY ENTRANCE
UNNAMED BRANCH
BRANCH

MW-3, MW-6, AMW-20, AMW-1S, AMW-25, AMW-1D, MW-7, MW-8, MW-2, MW-1, MP1
SM10, SM5, SM7, SM6B, SM6A, SM1, SM3, SM2, SM4
BR-3, BR-2, BR-1

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HENDERSON COUNTY PIN NO. 9650614773 DB 1029/PG 73
HENDERSON COUNTY PIN NO. 9650616886 DB 1019/PG 459
HENDERSON COUNTY PIN NO. 9650616612 DB 1029/PG 73
HENDERSON COUNTY PIN NO. 9650615489 DB 1006/PG 97
HENDERSON COUNTY BOARD OF PUBLIC SCHOOLS PIN No. 9650618525 DB 824/PG 213
HENDERSON COUNTY PIN No. 9650611510 DB 1533/PG 137
HENDERSON COUNTY PIN No. 9650612414 DB 1533/PG 137
HENDERSON COUNTY PIN No. 9650613339 DB 1533/PG 137
CHRISTOPHER JOHN WALTERS PIN NO. 9650612208 DB 1475/PG 667
RICHARD BRYAN CAPPS PIN NO. 9650612208 DB 694/PG 631
JACK R. LEVI & BESSIE LEVI PIN No. 9650609854 DB 433/PG 409
HENDERSON COUNTY PIN No. 9650716325 DB 554/PG 171

BID SET
DECEMBER 2025

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NO.	DESCRIPTION	DATE	CK. BY

SHEET TITLE: SITE MAP
PROJECT TITLE: TRANSFER STATION SHED NO. 2 REPAIRS

CLIENT
HENDERSON COUNTY
SOLID WASTE DIVISION
191 TRANSFER STATION DRIVE
HENDERSONVILLE, NORTH CAROLINA 28791

SCS ENGINEERS, PC
3801 LAKE BOONE TRAIL, SUITE 410
RALEIGH, NORTH CAROLINA 27607
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PROJ. NO. 02220205.05 | DSN. BY: KJY | DWN. BY: JLB | CHK. BY: KJY | G/A R/W BY: KJY | APP. BY: KJY

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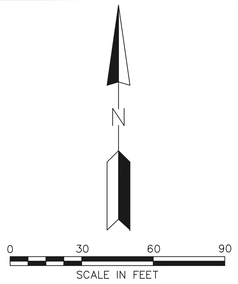


NOTES:

1. EXISTING TOPOGRAPHY AND FEATURES FROM JANUARY 12, 2023 SURVEY COMPLETED BY ATLAS SURVEYING, INC.

EXISTING LEGEND

- 2-FT CONTOUR LINE
- 2200 – 10-FT CONTOUR LINE
- X – FENCE LINE
- GR – GUARD RAIL
- OHP – OVERHEAD UTILITY LINE
- SD – STORMWATER PIPE
- UE – BURIED ELECTRIC
- UG – BURIED GAS
- SS – SANITARY PIPE
- W – WATER PIPE
- UT – BURIED COMMUNICATIONS
- TREE EXTENTS
- BOLLARD
- STORMWATER INLET
- STORMWATER MANHOLE
- LIGHT POLE
- MW – MONITORING WELL
- G – GAS METER
- POWER POLE
- SPG – WATER SPIGOT
- SSCO – SANITARY CLEANOUT
- S – SANITARY MANHOLE
- SANITARY VALVE
- WATER VALVE
- W – WATER METER
- S – APPROX. SEWER LINE FROM RECORD

PROPOSED LEGEND

- 2-FT MINOR CONTOUR LINE
- 2210 – 10-FT MAJOR CONTOUR LINE
- X18 – HORIZONTAL CONTROL POINT
- GUARDRAIL
- CONCRETE PAVEMENT (1/–)
- BUILDING EXTENTS

BID SET
DECEMBER 2025

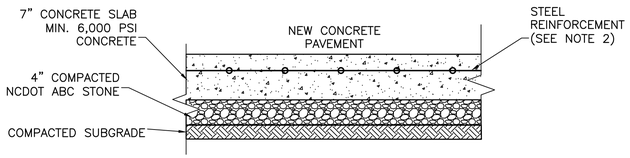
PAVING NOTES

GENERAL NOTES:

1. ALL PAVING SHALL BE IN ACCORDANCE WITH NCDOT SPECIFICATIONS.
2. ALL NEW PAVEMENT SHALL MEET EXISTING PAVEMENT FLUSH.

SUBGRADE NOTES:

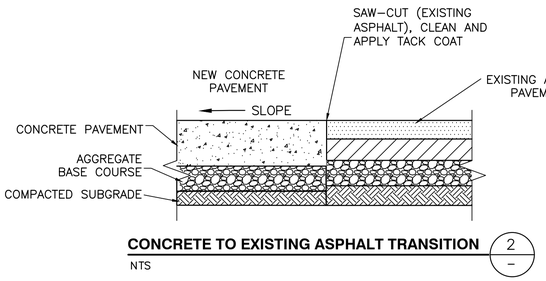
1. THE CONTRACTOR SHALL PERFORM EXCAVATIONS TO FACILITATE DRAINAGE AND DIRECT SURFACE WATER AWAY FROM OPEN EXCAVATIONS USING DIVERSIONS TO LIMIT RUNOFF INTO THE EXCAVATIONS.
2. CARE SHALL BE TAKEN TO AVOID EXCESS TRAFFIC ON THE EXCAVATED SUBGRADES PRIOR TO PLACEMENT OF FILL AND/OR PAVEMENT BASE COURSE MATERIALS. FINAL EXCAVATION IN SOIL SHALL BE MADE USING A SMOOTH EDGED BUCKET, WHERE POSSIBLE. ANY UNSUITABLE MATERIAL PRESENT AT THE SUBGRADE LEVEL SHOULD BE REMOVED AND REPLACED WITH COMPACTED SELECT FILL, CRUSHED STONE, OR SCREENED GRAVEL, PER ENGINEER.
3. THE TOP TWELVE (12) INCHES OF SUBGRADE IN CUT AREAS UNDER ANY PROPOSED ROADWAY SHALL BE COMPACTED TO A DENSITY OF 95 PERCENT MAXIMUM STANDARD PROCTOR DRY DENSITY AS DETERMINED BY ASTM D6938. INSPECTION OF THE SUBGRADE PRIOR TO THE PLACEMENT OF BASE COURSE SHALL BE PERFORMED BY PROOF ROLLING AND WITNESSED BY A QUALIFIED ENGINEER.
4. SELECT FILL SHALL BE PLACED TO A DEPTH OF UP TO 24 INCHES BELOW THE PAVEMENT SUBGRADE IN FILL AREAS AND COMPACTED TO 100% STD. PROCTOR (ASTM D698).



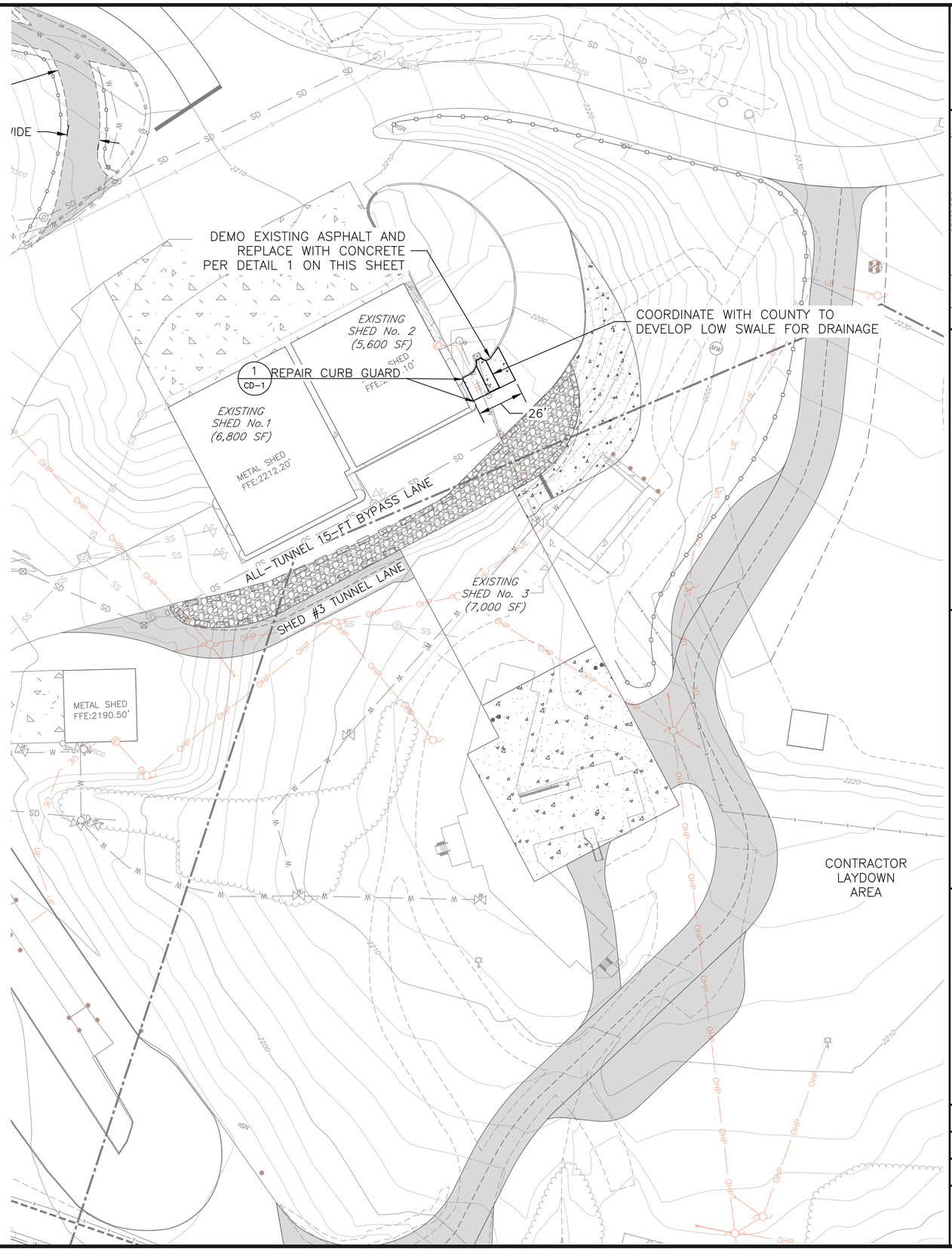
CONCRETE PAVING NOTES:

1. **THE CONTRACTOR SHALL SUBMIT FOR REVIEW A JOINTING PLAN SHOWING LONGITUDINAL AND TRANSVERSE JOINTS.** THE PAVEMENT SHOULD BE DIVIDED INTO PANEL RANGING IN SIZE FROM 10 TO 12 FEET. THE RATIO OF LENGTH TO WIDTH FOR THE INDIVIDUAL PANELS SHOULD NOT EXCEED 1.25.
2. STEEL REINFORCEMENT TO CONCRETE RATIO SHALL BE A MINIMUM OF 0.5 PERCENT REINFORCEMENT. REINFORCEMENT SHALL BE #4 REBAR SPACED 10" IN BOTH DIRECTIONS WITH 2" CLEAR COVER ON TOP.
3. DOWELS SHOULD BE PROVIDED AT ANY CONSTRUCTION (COLD) JOINTS. THE DOWELS SHOULD BE 1-INCH IN DIAMETER AND 15 INCHES LONG AND PLACED AT A CENTER SPACING OF 18 INCHES.
4. USE TREMCO DYMONIC® 100 SEALANT FOR JOINTS.

CONCRETE PAVEMENT SECTION (1/–)
NTS



CONCRETE TO EXISTING ASPHALT TRANSITION (2/–)
NTS



REV.	DATE	DESCRIPTION	CK. BY

SHEET TITLE: **SITE LAYOUT PLAN**

PROJECT TITLE: **TRANSFER STATION SHED NO. 2 REPAIRS**

CLIENT:
HENDERSON COUNTY
SOLID WASTE DIVISION
191 TRANSFER STATION DRIVE
HENDERSONVILLE, NORTH CAROLINA 28791

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PHONE: (919) 662-3015

PROJ. NO.	DWN. BY:	CHK. BY:	D/A RVW BY:	APP. BY:
02220205.05	JLB	KJY	KJY	KJY
DSN. BY: KJY				

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DATE: DEC. 2025
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DRAWING NO. **C-1**

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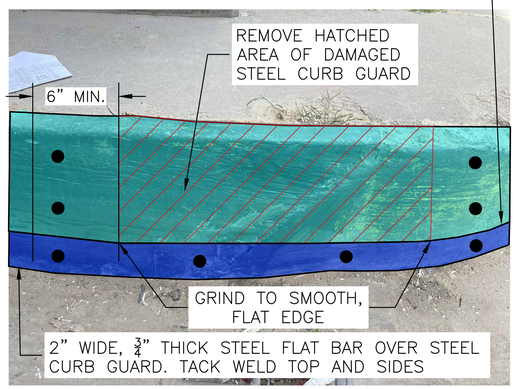
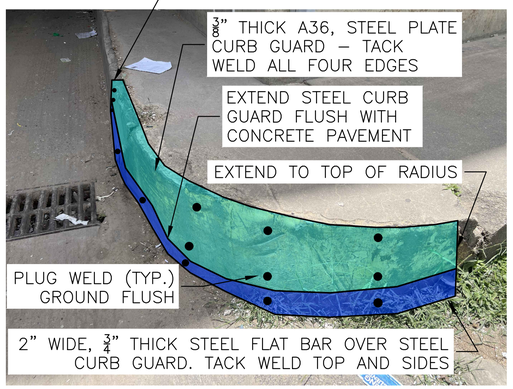
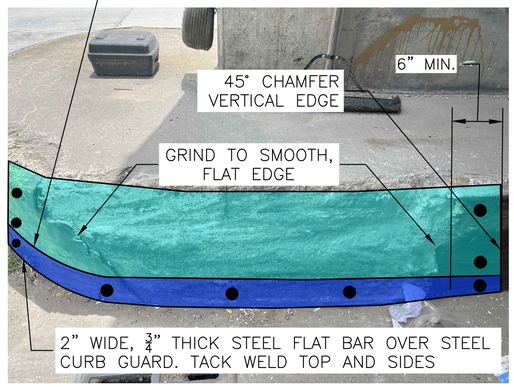


REPAIR

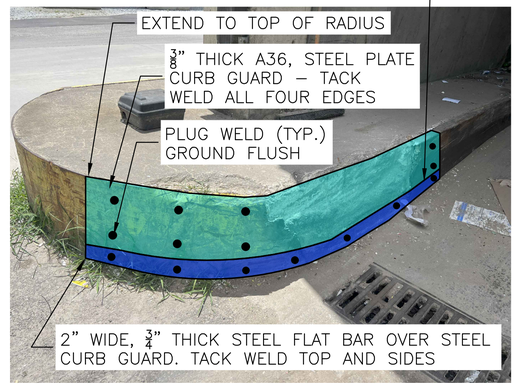


REPAIR

NORTH CURB



REPAIR



REPAIR

SOUTH CURB

REPAIR CURB GUARD — 1 / C-1

NTS

BID SET
DECEMBER 2025

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REV.	DATE	DESCRIPTION	CK. BY

SHEET TITLE: **DETAILS**

PROJECT TITLE: **TRANSFER STATION SHED NO. 2 REPAIRS**

CLIENT
HENDERSON COUNTY
SOLID WASTE DIVISION
191 TRANSFER STATION DRIVE
HENDERSONVILLE, NORTH CAROLINA 28791

SCS ENGINEERS, PC
3801 LAKE BOONE TRAIL, SUITE 410
RALEIGH, NORTH CAROLINA 27607
PHONE: (919) 662-3015

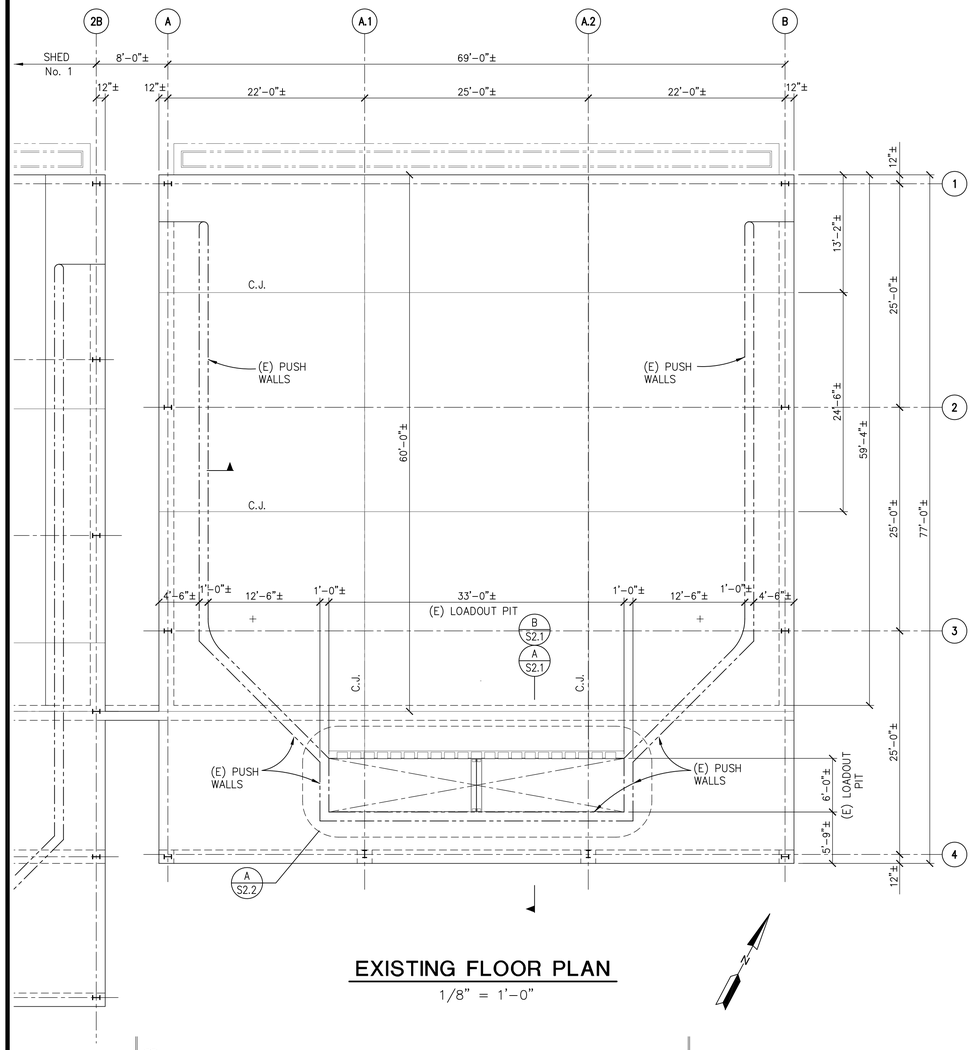
PROJ. NO. 02220205.05 | DSN. BY: KJY | DWN. BY: JLB | CHK. BY: KJY | Q/A RVW BY: KJY | APP. BY: KJY

CADD FILE: DRAWINGS

DATE: DEC. 2025

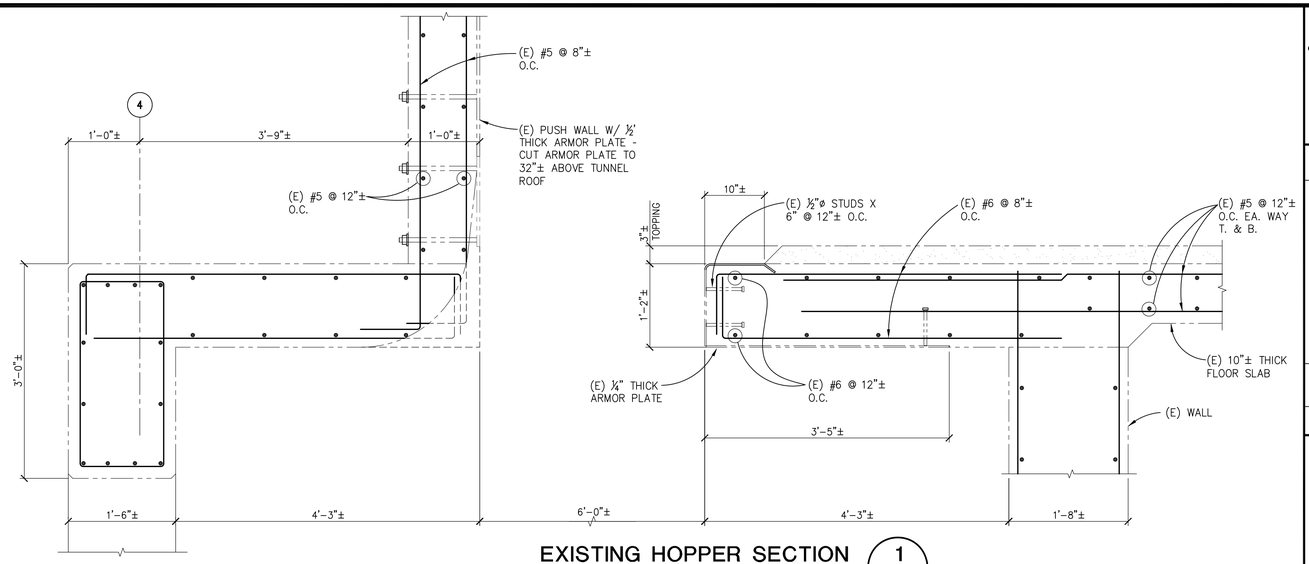
SCALE: AS SHOWN

DRAWING NO. **CD-1**



EXISTING FLOOR PLAN

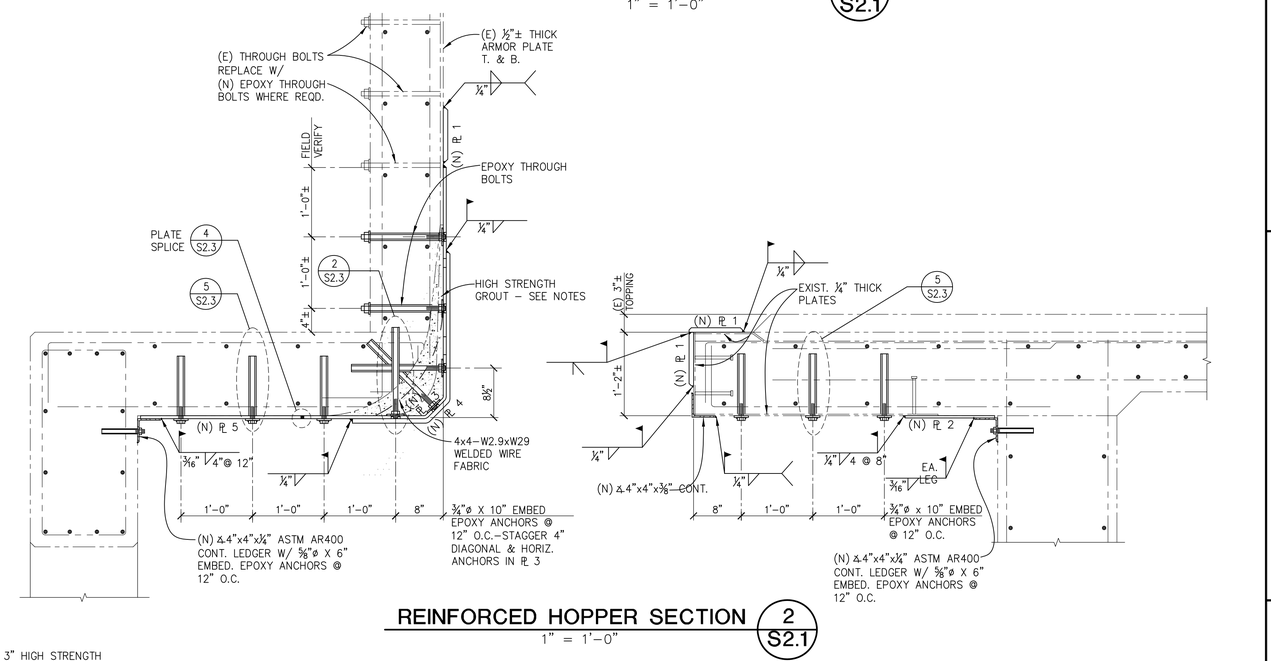
1/8" = 1'-0"



EXISTING HOPPER SECTION

1" = 1'-0"

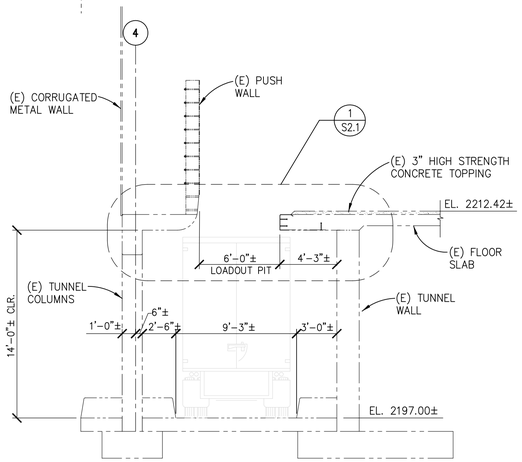
1 S2.1



REINFORCED HOPPER SECTION

1" = 1'-0"

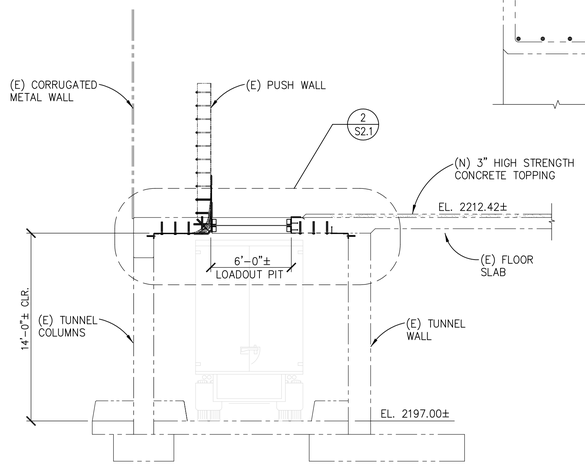
2 S2.1



EXISTING TUNNEL SECTION

3/16" = 1'-0"

A S2.1



NEW TUNNEL SECTION

3/16" = 1'-0"

B S2.1

NOTES:

1. EPOXY ADHESIVE FOR EMBEDDED ANCHORS AND THRU-BOLT SHALL BE HILTI-RE 500 V3 (INSTALL PER ICC-ES REPORT No. ESR-3814).
2. SEE DETAIL 1/S2.3 FOR ARMOR AND SACRIFICIAL PLATE THICKNESSES AND DIMENSIONS.
3. INFILL VOIDS BETWEEN ARMOR PLATES AND EXISTING CONCRETE WITH HIGH STRENGTH GROUT, WITH FORM-AND-POUR TECHNIQUES IN ACCORDANCE WITH ACI RAP BULLETIN 4. INSTALLATION OF HIGH STRENGTH GROUT MUST BE IN STRICT ADHERENCE TO PRODUCT MANUFACTURER SPECIFICATIONS. HIGH STRENGTH GROUT FOR INFILL SHOULD BE:
   - SIKAGROUT-885 MF
   - FIVE STAR GROUT
   - OTHER SIMILAR PRODUCT INDICATED FOR THIS TYPE OF APPLICATION AND APPROVED BY THE ENGINEER.
4. FORM AND POUR REPAIRS IN ACCORDANCE WITH ACI RAP BULLETIN 4 MUST INCLUDE:
   - SOUNDING OF EXISTING CONCRETE SURFACE TO LOCATE THE EXTENT OF DELAMINATED OR POORLY BONDED CONCRETE.
   - MARKING THE AREA REQUIRING REPAIR DETERMINED BY SOUNDING.
   - SAW-CUTTING THE PERIMETER OF REPAIR TO A MINIMUM DEPTH OF 1" TO PREVENT FEATHER EDGING.
   - REMOVAL OF ALL CRACKED AND SPALLED CONCRETE UNTIL SOUND SUBSTRATE IS REACHED.
   - CHIPPING AROUND EXPOSED REINFORCING STEEL BARS TO CREATE A MINIMUM OF ¾" CLEARANCE ALL AROUND THE BARS.
   - APPLICATION OF TWO COATS OF BONDING AGENT SUCH AS SIKA ARMATEC 110 TO THE EXPOSED REINFORCING STEEL PER PRODUCT DATA GUIDE.
   - ENSURING THAT MINIMUM APPLICATION THICKNESS OF HIGH STRENGTH GROUT IS 1".
   - PREPARING THE WORK AREA BY HIGH PRESSURE WATER BLAST, SCABBLER, OR OTHER APPROPRIATE MECHANICAL MEANS, TO OBTAIN AN EXPOSED AGGREGATE SURFACE WITH A MINIMUM SURFACE PROFILE OF ±⅛".
   - REMOVAL OF ALL DETERIORATED CONCRETE, DIRT, OIL, GRASE, LEACHATE, AND ALL BOND-INHIBITTING MATERIALS FROM THE CONCRETE SURFACE.
   - PREPARATION OF CONCRETE SURFACE TO BE SATURATED SURFACE DRY (SSD) WITH NO STANDING WATER DURING APPLICATION.
   - CASTING OF THE HIGH STRENGTH GROUT BY POURING INTO THE VOID OR PUMPING FROM THE BOTTOM AND APPROPRIATE VIBRATION.

LEGEND:

(E) INDICATES EXISTING CONSTRUCTION

(N) INDICATES NEW CONSTRUCTION

INDICATES HIGH STRENGTH GROUT FILL

NORTH CAROLINA PROFESSIONAL ENGINEER SEAL PE054876 ENGINEER HERNAN MONTOYA 12-31-2026

REV.	DATE	DESCRIPTION	CK. BY

SHEET TITLE: **MAT & FOUNDATION PLAN**

PROJECT TITLE: **TRANSFER STATION SHED NO. 2**

CLIENT: **HENDERSON COUNTY**
SOLID WASTE DIVISION
191 TRANSFER STATION DRIVE
HENDERSONVILLE, NORTH CAROLINA 28791

SCS ENGINEERS, PC
3801 LAKE BOONE TRAIL, SUITE 410
RALEIGH, NORTH CAROLINA 27607
PHONE: (919) 662-3015

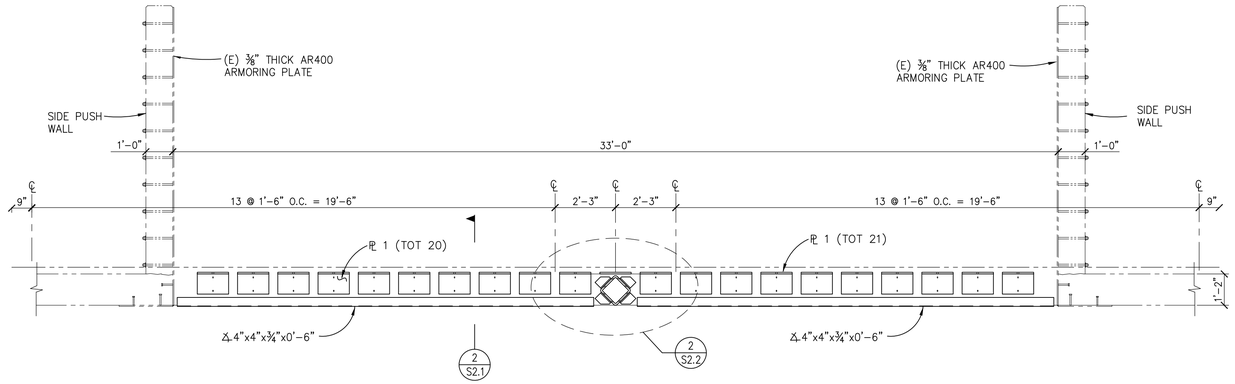
PROJ. NO. 02226205.02 | DSN. BY: M.JB | DWN. BY: CFC | CHK. BY: KJY | Q/A RVW BY: JCT | APP. BY: KJY

CADD FILE: DRAWINGS

DATE: DECEMBER 2025

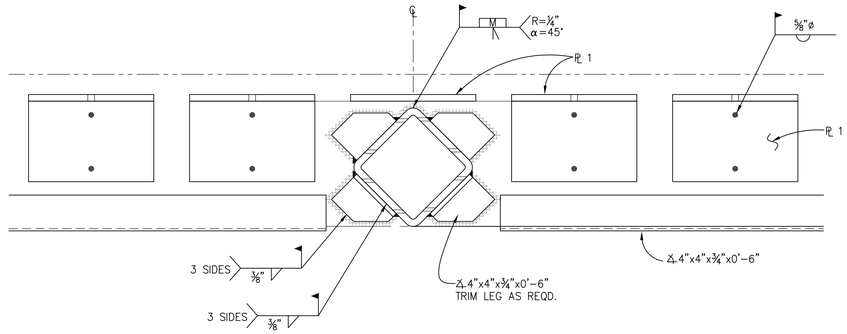
SCALE: AS SHOWN

DRAWING NO. **S2.1**



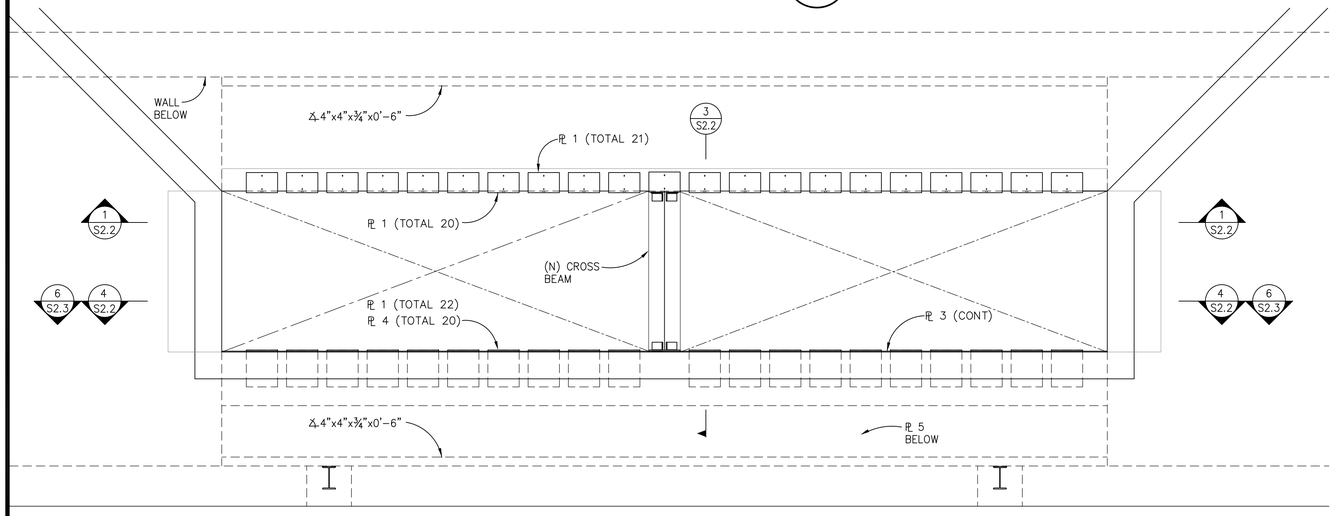
HOPPER FRONT ELEVATION 1 S2.2

3/8" = 1'-0"



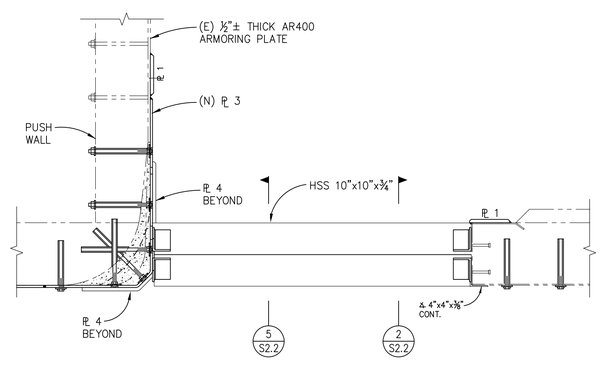
HOPPER CROSS BEAM TO FLOOR 2 S2.2

1½" = 1'-0"



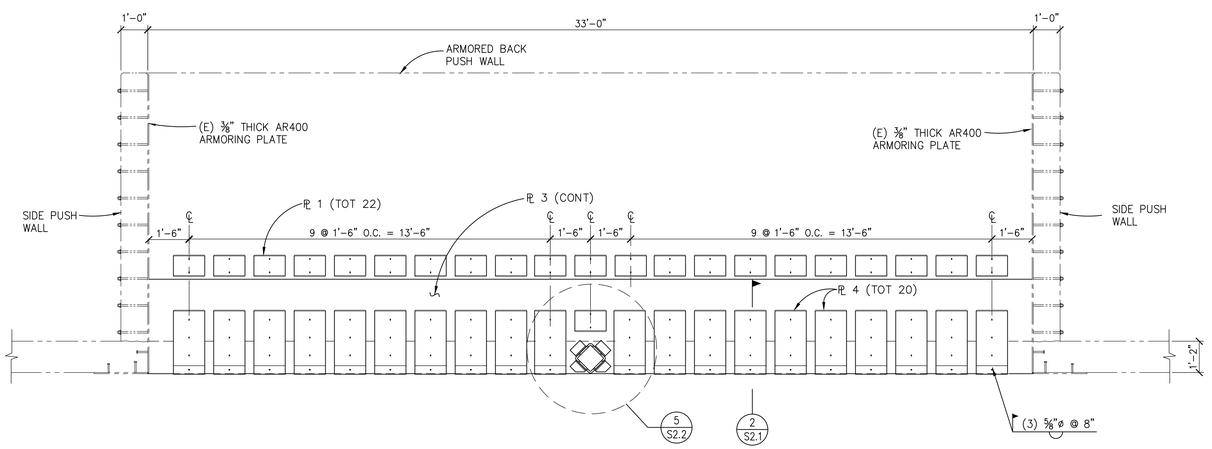
HOPPER PLAN VIEW A S2.2

3/8" = 1'-0"



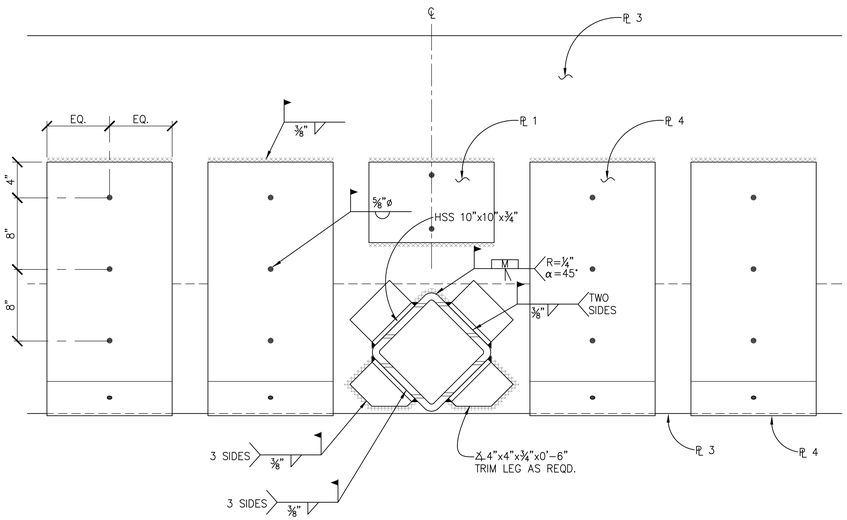
HOPPER CROSS BEAM 3 S2.2

3/4" = 1'-0"



HOPPER BACK ELEVATION 4 S2.2

3/8" = 1'-0"



HOPPER CROSS BEAM TO WALL 5 S2.2

1½" = 1'-0"

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NORTH CAROLINA PROFESSIONAL ENGINEER SEAL PE054876 HERMAN MONTOYA
12-31-2026

REV.	DATE	DESCRIPTION	CK. BY

SHEET TITLE: STRUCTURAL DETAILS

PROJECT TITLE: TRANSFER STATION SHED NO. 2

PROJ. NO. 02220205.02 | DWN. BY: CFC | D/A RVW BY: JCT | DSN. BY: M.JB | CHK. BY: K.J.Y | APP. BY: K.J.Y

CADD FILE: DRAWINGS

DATE: DECEMBER 2025

SCALE: AS SHOWN

DRAWING NO. S2.2

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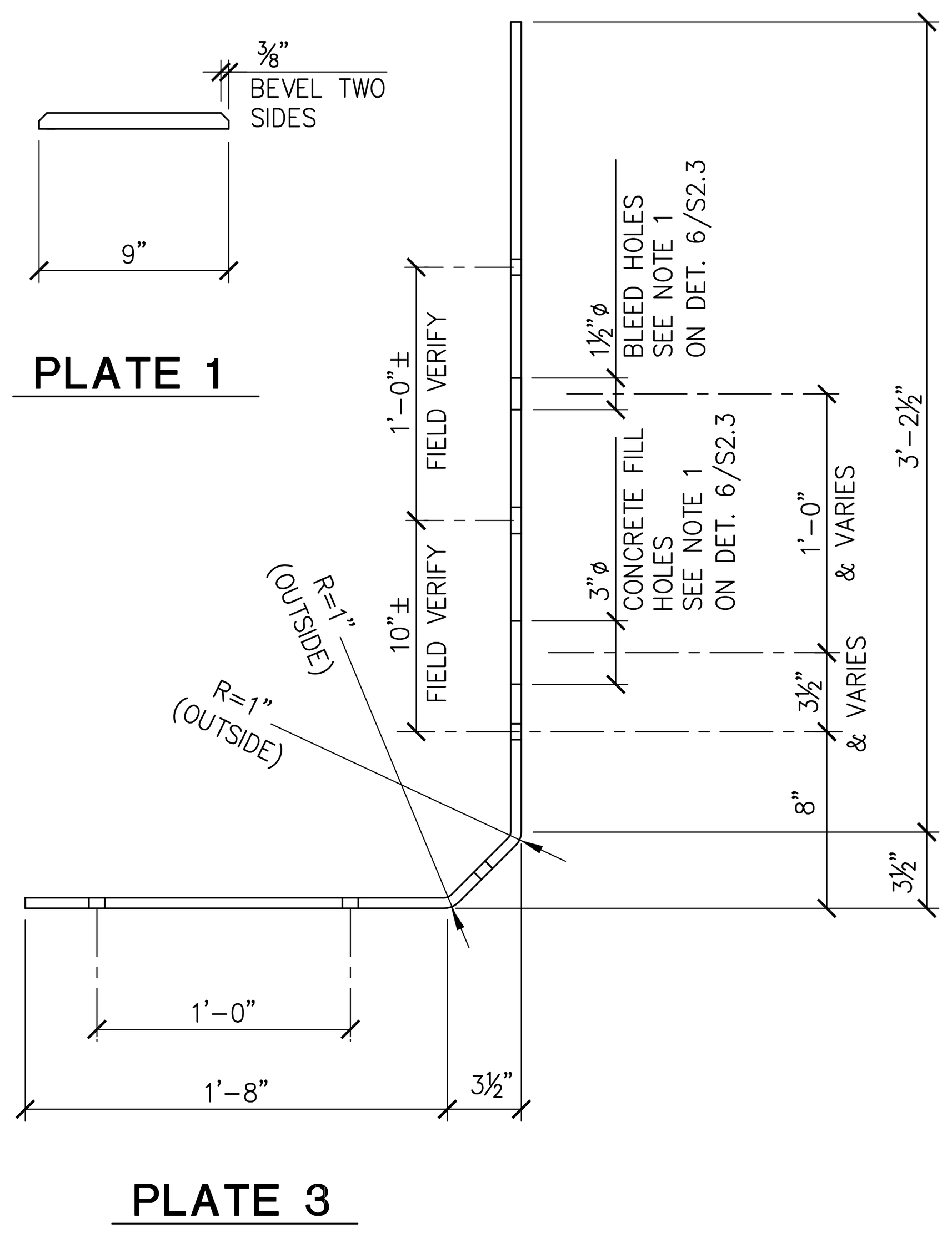
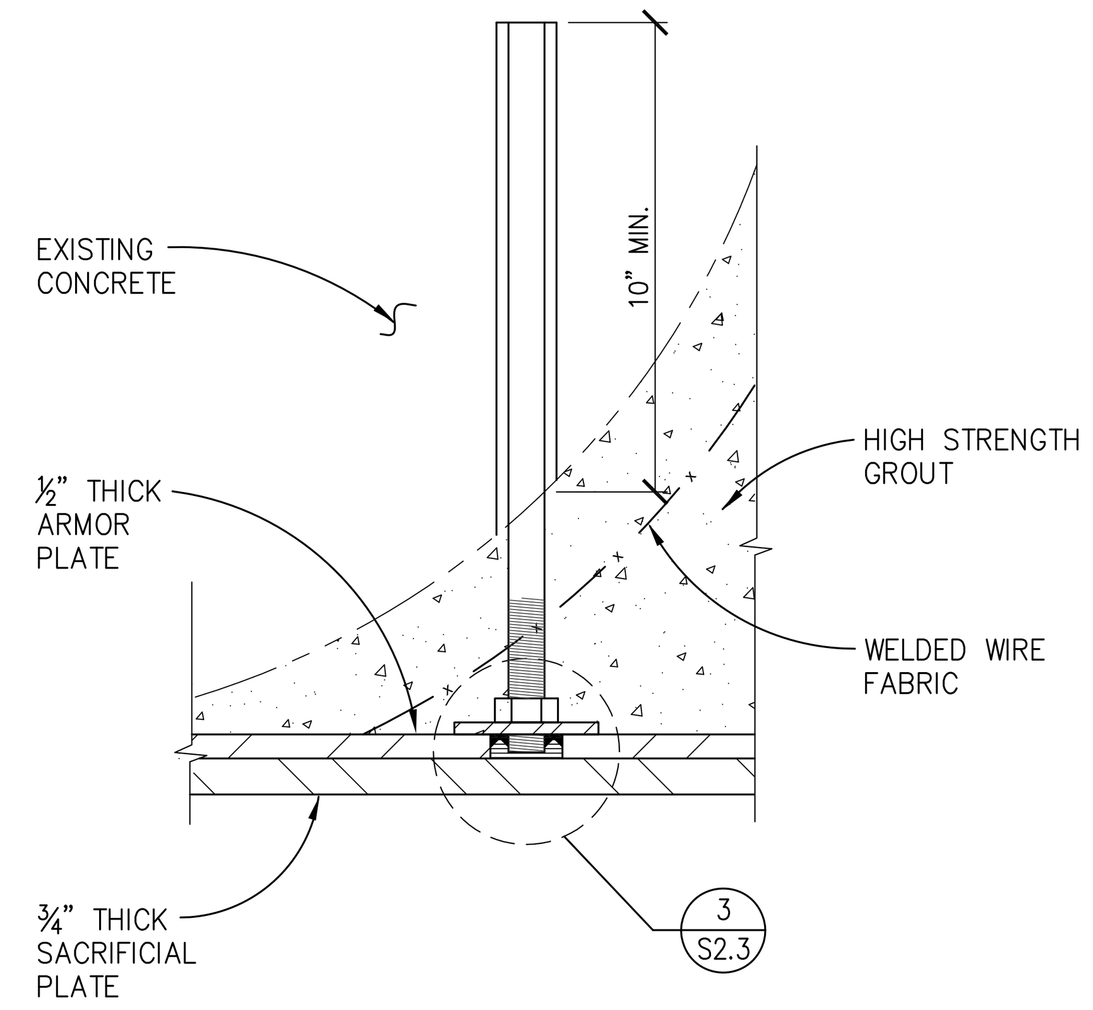
ARMOR & SACRIFICIAL PLATE SIZES:

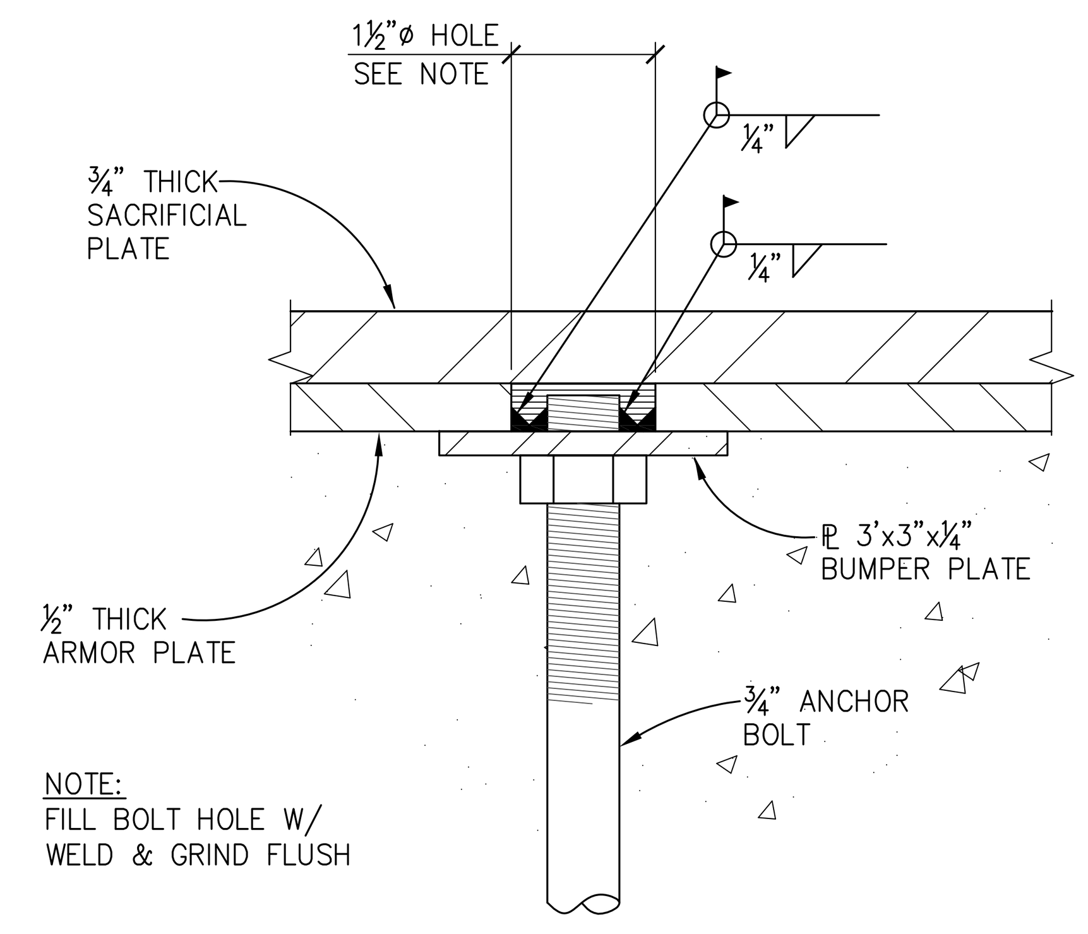
- ℙ 1: 1'-2" x ¾" x0'-9" PLATES (ASTM A36)
- ℙ 2: 1'-3" x ⅜" THICK CONTINUOUS PLATE (ASTM AR400)
- ℙ 3: ½" THICK CONTINUOUS BENT PLATE (ASTM AR400)
- ℙ 4: 1'-2" x ¾" BENT PLATE (ASTM A36)
- ℙ 5: 2'-3" x ½" THICK CONTINUOUS PLATE (ASTM AR400)



ARMOR PLATES 1/S2.3
1 1/2" = 1'-0"



EPOXY ANCHOR BOLT 2/S2.3
3"=1'-0"



ANCHOR BOLT TO PLATE 3/S2.3
6"=1'-0"

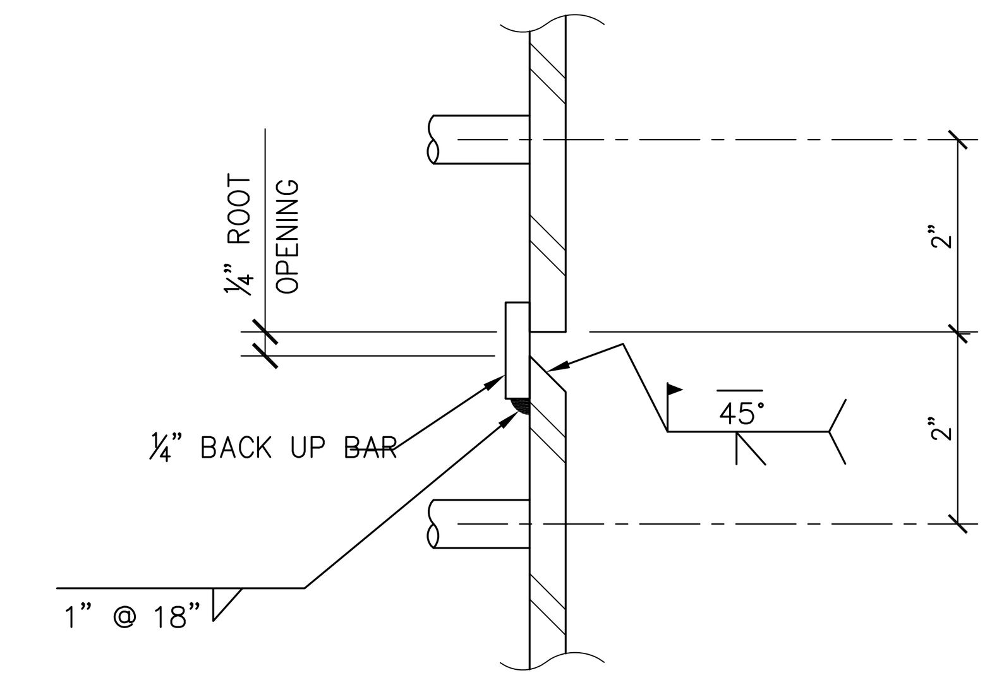
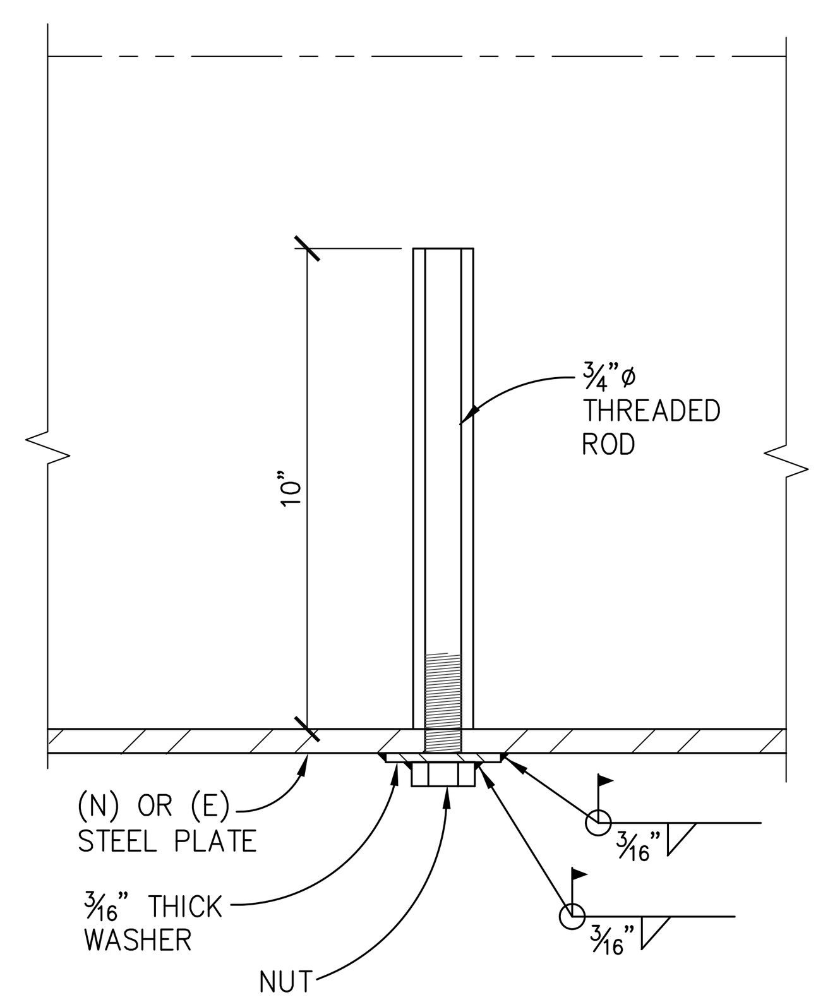
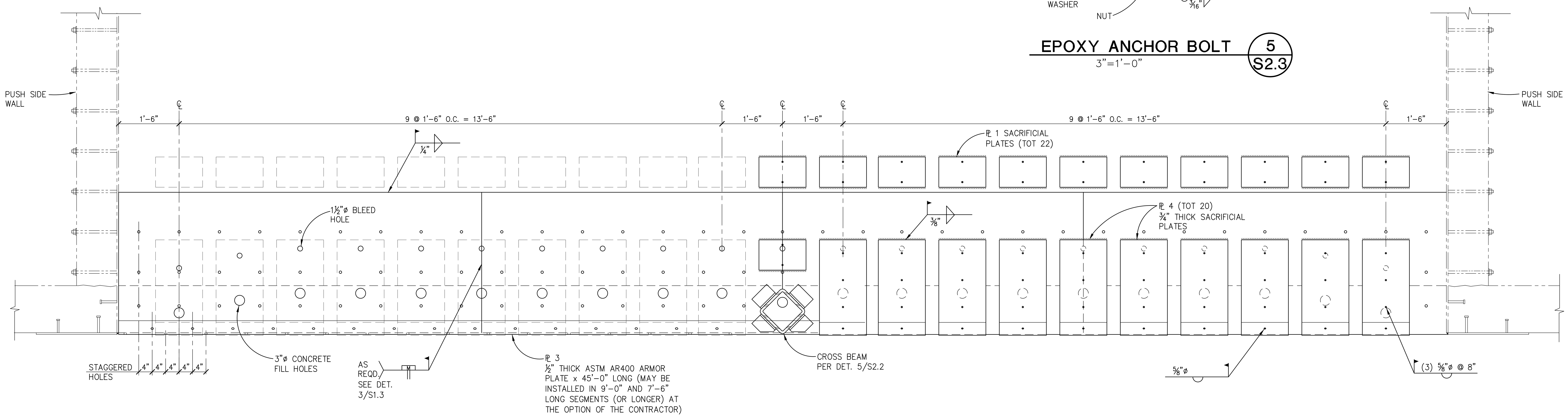


PLATE SPLICE DETAIL 4/S2.3
6"=1'-0"



EPOXY ANCHOR BOLT 5/S2.3
3"=1'-0"



BACK OF HOPPER PLATE LAYOUT 6/S2.3
3/4" = 1'-0"

NOTES:

1. LOCATION OF FILL AND BLEED HOLES MUST BE SUCH AS TO ENSURE COMPLETE HIGH STRENGTH GROUT FILLING AND PROPER VIBRATION WITHIN THE SPACE BETWEEN (E) ½"± THICK ARMOR PLATE & (N) P 3 AND THE EXISTING CONCRETE, WITHOUT VOIDS OR HONEY COMBING.
2. HEIGHT OF ℙ 4 MUST BE SUCH AS TO COVER BLEED HOLES.

NORTH CAROLINA SEAL PE054876 ENGINEER
12-31-2026

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SHEET TITLE: **MAT & FOUNDATION PLAN**

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CLIENT: **HENDERSON COUNTY**
SOLID WASTE DIVISION
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DSN. BY: MJB	CHK. BY: KJY	APP. BY: KJY

CADD FILE: DRAWINGS

DATE: DECEMBER 2025

SCALE: AS SHOWN

DRAWING NO. **S2.3**