CCR ARCHITECTURE & INTERIORS

DATE: November 11, 2026

PROJECT: Jasper Water Works New Bldg

CCR Project No. 23031-A

FROM: CCR Architecture & Interiors
2920 First Avenue South
Birmingham, AL 35233

TO: Bidders

---

# ADDENDUM NUMBER TWO

INTRODUCTION

The Documents for the above Project are modified as set forth below. All other provisions of the Documents, except as modified herein, shall remain in force.

The Contractor shall be responsible for distributing copies of this addendum to all appropriate subcontractors, suppliers, and manufacturers affected by the modifications set forth below.

**Bid Date, Time, Location:**

Thursday, **Dec 3rd**, 2026, at 2:00 PM CT

Jasper Waterworks and Sewer Board
1620 Alabama Ave
Jasper, AL 35501

**I. SPECIFICATIONS -**

00 00 02 – Spec Index
00 11 16 – Invitation to bid
09 67 23 – Resinous-Flooring

**II. SUBSTITUTIONS -**

Mechanical units: See attached.
Metal Panel Wall: See attached.

## III. CLARIFICATIONS

1. 13 34 19 – METAL BUILDING SYSTEMS: The structural drawings call for the erector to be IAS AC478 certified. We don't hold that certification, so if they require it, I cannot provide a quote.
    a. We will delete this requirement.

2. A701 Finish Schedule: Specs are missing for this finish shown on Sheet A701. I've looked in the project manual but cannot locate them: EX-1 Epoxy Floor
    a. See specifications attached for EX-1 Epoxy Floor.

3. 00 43 73, Document 00 43 73 – Proposed schedule of values form as to supply a Schedule of Values with Bid. Section 00 22 13, Section D. 4.5 – break-Our Pricing Bid Supplement says that a breakout pricing is to be supplied within two days if the Architect asks for it – Can this be supplied within 24 hours after bid by email? Bid day is hectic with many subs waiting until last minute to deliver their quotes because their vendors make them wait for pricing. Couple that with hand delivered bids, it creates a big hurdle for GC's to fill out their Schedule of Values on bid day with enough to submit by the deadline. Can an email be provided where GC's can submit the schedule of values 24 hours after the bid?
    a. There is no objection to submitting schedule of values within 24 hours after the bid.

4. The Bid Form asks for certain subs to be named on the bid form. Section 00 22 13, Section E. 4.6 – Subcontractors, Suppliers, and manufacturers List Bid Supplement, says that a list of subs must be supplied within two days if the Architect requests them. Give the hectic nature of bid day, could the list of subs be supplied within 2 days of a request?
    a. Yes. Will be requested in 2 days.

5. The specs call for Coordination drawings. Is the Owner/Architect requesting BIM drawings? If not BIM, can further clarification be provided as to what acceptable coordination drawings would look like?
    a. This is up to the contractor to know how they coordinated the different trades.

6. The bid form asks for the contractor to provide their proposed number of project days, but section 00 1116, section 1.5 Time of Completion gives a duration of 18 months. Is the project 18 months, roughly 540 days, or does the contractor still need to specify on the bid form?
    a. Contractor shall complete the project within 18 months.

7. Please review 012300 section 3.1-A description and clarify base bid and alternate #1 – they seem to indicate the same scope for each?? We assume the following:
    - Base Bid – no storage building. Install Asphalt Paving in location of structure.
    - Alt#1 – remove asphalt paving and install new open storage shed from foundations-up.

    a. Yes, you assume correctly.

8. Please confirm GC does not need to include a construction office per note on 015000 Section 1.4-A & 2.2-A. If Jasper to provide, please provide description of office available.
    a. Correction – 1.4 INFORMATIONAL SUMITTALS 01 50. 00-4 2.2 TEMPORARY FACILITIES – The city of Jasper **will not** provide construction office in a building adjacent to the site. You would need to provide your own if applicable.

9. Can we provide our own onsite jobsite office, if wanted?
    a. Yes, you can provide a job-site office.

10. Please advise if windscreen is required on temp construction fence per specs 015000 Section 2.1-C. Or, will a 6'H chain link temporary construction fence suffice?
    a. If the AHJ does not require windscreen then we are fine with only a 6' H chain link temporary construction fence.

11. Please advise who pays for the following (Owner or GC):
    **a.** BLDG Permit (who is AHJ? City of Jasper?) **Contractor responsible. AHJ is City of Jasper**
    b. ADEM Permit? **Obtained by Owner (attached). Contractor responsible for paying transfer fee.**
    **c.** NPDES Inspections? **Contractor responsible for all BMPs and Inspections**
    d. Water Tap Fees? **Waived for this project**
    e. Sewer Tap Fees? **Waived for this project**
    **a.** Electrical or Gas aid to construction fees? **Owner will pay aid to construction fees. Contractor to coordinate service and pay standard connection fees.**

12. Is a Geotech report available? Please provide.
    a. See attached for Geotech report.

13. Please provide instructions for Allowances and Unit Prices. None are provided.
    a. There are no allowances.

14. 4'H Chain Link fence listed as "OPT" at FP1 Detention Pond – is this required?
    a. Please include the fence at FP1 Detention Pond.

15. Please confirm Asphalt Paving to be Medium Duty Paving as shown on C6.0 for ALL areas – legend does not specify.
    a. The Typical Medium Duty Paving section shown on Sheet C6.0, Detail 5A, represents MEC's minimum recommended pavement buildup for asphalt paving areas. Refer to the Geotechnical Report for pavement design recommendations based on intended use and subsurface conditions. Where the Geotechnical Report recommends a pavement section exceeding MEC's minimum recommended buildup, the more stringent section shall apply.

16. QTY shown on drawings (12,370 SY): Please advise how this quantity may be adjusted up or down depending on the Alt#1 Storage building (in relation to the concrete slab). For the base bid, it is assumed that the 12,370 SY quantity must add the open storage building area to this amount.
    a. Based on prior coordination with the Architect/Owner, Alternate No. 1 applies to the Open Storage Building structure only, and the associated site improvements are intended to remain unchanged. If Alternate No. 1 is not accepted, the treatment of the building footprint should be confirmed by the Architect/Owner. MEC's recommendation would be to provide asphalt paving within the building footprint in lieu of the building slab; however, the Owner may elect to construct the concrete slab as part of the Base Bid to accommodate future construction of the Open Storage Building. The final direction should be confirmed by the Architect/Owner prior to establishing the applicable asphalt paving quantity.

17. Are Stop Signs required at the driveway entrance/exit from Industrial Parkway? None shown…
    a. Stop signs are not shown on the civil plans. The city reviewed the plans as submitted and did not require stop signs to be added at the Industrial Parkway entrance/exit.

18. The Roof Drain collectors are not shown on Civil or Architectural drawings, but a note requires these to be tied to Storm Drains P-9 – P-11. The roof plan does not indicate downspout location, either. We request the rain leaders be added to the drainage plans for quantity verification for bidding the rain leader piping and the downspout boot adapters.
    a. Downspout locations were not provided to MEC. The Contractor shall determine the length of piping required to make connections from the downspout locations shown on the building plans to the roof drain collection lines (P-9, P-10 & P-11) provided on the civil plans.

19. Are the downspout boot adapters required to be cast-iron?
    a. Yes.

20. Downspout locations also needed for Downspout Adapter Boot quantification.
    a. See plans and Exterior Elevations for downspout locations.

21. Civil Drainage layout plans on C5.0 are inconsistent with C11.4 Profiles when requiring 15" RCP and 15" HDPE. Please advise which is correct.
    a. HDPE is acceptable for storm drainage piping located outside of drive and parking areas and is generally the intended material in those locations. RCP shall be used for storm drainage piping beneath drive and parking areas. RCP may also be substituted for HDPE where desired. Roof drain collection piping shall be as indicated on the plans.

22. There are several column/spread footings that are missing their designation on the S2.1A Fdtn plan… (F3.0, F4.0, etc.)
    a. I see three columns without a footing on roughly line 2.5. (Please let me know if any others are missing.) The southern and northern columns should have an F4.0 footing. The middle column should have an F5.0 footing. That will be added to the footing schedule. It is 5'-0"x5'-0"x1'-0" with 5#5 each way in the bottom.

23. The 14.5A Column/Spread footings on S2.1B do not match dimensions provided on the footing schedule when measured in-scale. Please confirm these are sized correctly.
    a. The F14.5 designation is correct. The drawing is not to scale.

24. Specs are missing for Section 08 33 23 Upward Coiling Doors.
    a. This is in the specifications - See spec section 08 33 23 Upward Coiling Doors

25. One of our subcontractors has requested that Red Dot be approved as a manufacturer for the metal building.
    a. Yes

26. Can we get Inland Building approved as a manufacturer for the metal building?
    a. Yes

## IV. ATTACHEMENTS

1. Updated Specifications as noted above.
2. Geotech Report as noted above.
3. Substitution information as noted above.

END OF ADDENDUM NUMBER TWO

**CCR ARCHITECTURE & INTERIORS**
2920 First Avenue South
Birmingham, Alabama 35233
(205) 324-8864 tel

Project No. CCR—23031A
October 28, 2026

SPECIFICATION FOR
**JASPER WATER WORKS – NEW BUILD**
3877 Industrial Parkway
Jasper, Alabama 35501

INDEX

DIVISION 0 – CONTRACT REQUIREMENTS:

| | |
|---|---|
| 00 11 16 | Invitation to Bid |
| 00 21 13 | Instructions to Bidders |
| 00 22 13 | Supplementary Instructions to Bidders |
| 00 26 00 | Procurement Substitution Procedures |
| 00 41 13 | Bid Form – Stipulated Sum (Single-Prime Contract) |
| 00 43 23 | Alternates Form |
| 00 43 73 | Proposed Schedule for Values Form |
| 00 60 00 | Project Forms |

DIVISION 1 - GENERAL REQUIREMENTS

| | |
|---|---|
| 01 10 00 | Summary of Work |
| 01 23 00 | Alternates |
| 01 25 00 | Substitution Procedures |
| 01 26 00 | Contract Modification Procedures |
| 01 29 00 | Payment Procedures |
| 01 31 00 | Project Management and Coordination |
| 01 33 00 | Submittal Procedures |
| 01 40 00 | Quality Control |
| 01 41 00 | Special Inspections |
| 01 41 005 | Schedule of Special Inspections |
| 01 50 00 | Temporary Facilities and Controls |
| 01 57 23 | Temporary Storm Water Pollution Control |
| 01 77 00 | Closeout Procedures |
| 01 78 23 | Operation and Maintenance Data |
| 01 78 39 | Project Record Documents |

DIVISION 2 – SITEWORK – SEE CIVIL DRAWINGS

| | |
|---|---|
| 02 28 20 | Termite Control |

DIVISION 3 – CONCRETE (SDG, Inc.)

| | |
|---|---|
| 03 30 00 | Cast-In-Place Concrete |

DIVISION 4 - MASONRY

| | |
|---|---|
| 04 01 10 | Masonry Cleaning |
| 04 20 00 | Unit Masonry |
| 04 43 13 | Adhered Natural Stone Veneer |

DIVISION 5 – METALS (SDG, Inc.)

| | |
|---|---|
| 05 12 00 | Structural Steel Framing |
| 05 30 00 | Architectural Long-Span Roof Deck |
| 05 31 00 | Steel Decking |
| 05 40 00 | Cold Formed Metal Framing |
| 05 51 10 | Metal Stairs |
| 05 52 10 | Pipe and Tube Railings |

DIVISION 6 - WOOD AND PLASTICS

| | |
|---|---|
| 06 10 00 | Rough Carpentry |
| 06 16 00 | Sheathing |
| 06 20 00 | Finish Carpentry |
| 06 41 16 | Plastic-Laminate-Clad Architectural Cabinets |

DIVISION 7 – THERMAL AND MOISTURE PROTECTION

| | |
|---|---|
| 07 13 20 | Self-Adhering Sheet Waterproofing |
| 07 21 00 | Thermal Insulation |
| 07 41 13.16 | Standing-Seam Metal Roof Panels |
| 07 42 13 | Metal Wall Panels |
| 07 42 93 | Soffit Panels |
| 07 46 46 | Fiber Cement Siding |
| 07 62 00 | Sheet Metal Flashing and Trim |
| 07 81 00 | Applied Fire Protection |
| 07 84 13 | Penetration Firestopping |
| 07 92 00 | Joint Sealants |

DIVISION 8 - DOORS AND WINDOWS

| | |
|---|---|
| 08 11 13 | Hollow Metal Doors and Frames |
| 08 14 16 | Flush Wood Doors |
| 08 33 23 | Upward Coiling Doors |
| 08 41 13 | Aluminum Entrances and Storefronts |
| 08 56 53 | Transaction Window |
| 08 71 00 | Door Hardware |
| 08 80 00 | Glazing |

DIVISION 9 - FINISHES

| | |
|---|---|
| 09 29 00 | Gypsum Board |

| | |
|---|---|
| 09 30 13 | Ceramic Tiling |
| 09 51 13 | Acoustical Panel Ceilings |
| 09 65 13 | Resilient Base and Accessories |
| 09 65 19 | Resilient Tile Flooring |
| 09 67 23 | Resinous Flooring |
| 09 68 13 | Tile Carpeting |
| 09 90 00 | Painting |

DIVISION 10 - SPECIALTIES

| | |
|---|---|
| 10 22 19 | Non-Unitized Partitions |
| 10 44 13 | Fire Extinguishers, Cabinets, and Accessories |
| 10 80 10 | Toilet and Bath Accessories |

DIVISION 11 – EQUIPMENT

| | |
|---|---|
| 11 30 13 | Residential Appliances |

DIVISION 12 – FURNISHINGS

| | |
|---|---|
| 12 24 13 | Roller Window Shades |
| 12 36 61 | Solid Surfacing Countertops (Quartz) |

DIVISION 13 - SPECIAL CONSTRUCTION

| | |
|---|---|
| 13 34 19 | Metal Building Systems |

DIVISION 21 – FIRE PROTECTION (Michael's Engineering)

| | |
|---|---|
| 21 13 13 | Fire Protection |

DIVISION 22 – PLUMBING (Michael's Engineering)

| | |
|---|---|
| 22 05 00 | Plumbing General Provisions |
| 22 05 13 | Motor Starters Plumbing |
| 22 05 15 | Excavation, Trenching and Backfill |
| 22 05 29 | Plumbing Piping, General Requirements |
| 22 05 48 | Vibration Isolators Plumbing |
| 22 05 53 | Piping and Equipment Identification Plumbing |
| 22 07 19 | Pipe Insulation |
| 22 10 00 | Plumbing Piping |
| 22 11 19 | Plumbing Specialties |
| 22 34 00 | Gas-Fired Water Heaters |
| 22 40 00 | Plumbing Fixtures |
| 22 47 00 | Electric Water Coolers |

DIVISION 23 – MECHANICAL (Michael's Engineering)

| | |
|---|---|
| 23 05 00 | HVAC General Provisions |
| 23 05 29 | HVAC Piping, General Requirements |
| 23 05 48 | Vibration Isolators HVAC |

| | |
|---|---|
| 23 05 53 | Piping and Equipment Identification HVAC |
| 23 05 93 | Test and Balance |
| 23 07 13 | Duct Insulation |
| 23 09 00 | Controls |
| 23 23 00 | Piping Refrigerant and Drains |
| 23 31 00 | Ductwork |
| 23 34 16 | Centrifugal Exhaust Fans |
| 23 34 17 | Ceiling Exhaust Fans |
| 23 37 13 | Diffusers, Registers & Grilles |
| 23 37 23 | Gravity Roof Hoods |
| 23 37 24 | Wall Louvers |
| 23 54 16 | Direct Vent Condensing Furnaces |
| 23 81 26 | Ductless Mini-Split System Air Conditioners |
| 23 81 44 | Outdoor Air Cooled Condensing Units |

DIVISION 26 – ELECTRICAL (GW Engineering)

| | |
|---|---|
| 26 0500 | General Electrical Work |
| 26 0501 | Scope of Work |
| 26 0519 | Conductors |
| 26 0526 | Grounding and Bonding for Electrical Systems |
| 26 0529 | Hangers and Supports for Electrical Systems |
| 26 0532 | Raceway – Non-Metallic |
| 26 0533 | Raceway - Metal |
| 26 0534 | Outlet and Junction Boxes |
| 26 0544 | Sleeves and Sleeve Seals for Electrical Raceways and Cabling |
| 26 2416 | Panelboards – Lighting and Receptacles |
| 26 2417 | Panelboards - Power |
| 26 2726 | Wiring Devices |
| 26 2813 | Fuses |
| 26 2816 | Enclosed Switches and Circuit Breakers |
| 26 3213 | Engine Generator |
| 26 3600 | Automatic Transfer Switches |
| 26 5100 | Interior Lighting |

DIVISION 28 – ELECTRICAL SAFETY AND SECURITY (GW Engineering)

| | |
|---|---|
| 28 3100 | Addressable Fire Alarm System |

DIVISION 32 – EXTERIOR IMPROVEMENTS (Kelly Landscape Architects)

| | |
|---|---|
| 32 8400 | Site Irrigation System |
| 32 9000 | Site Planting |


END OF INDEX

# DOCUMENT 00 11 16 - INVITATION TO BID

## 1.1 1.1 PROJECT INFORMATION

A. Notice to Bidders: All qualified bidders are invited to submit bids for Project as described in this Document according to the Instructions to Bidders.

B. Project Identification: JASPER WATER WORKS CCR PROJECT- 23031-A

C. Project Location: Jasper Waterworks and Sewer Board, Inc.
3877 Industrial Parkway
Jasper, Alabama 35501

D. Owner: Jasper Waterworks and Sewer Board, Inc.
1620 Alabama Avenue
Jasper, Alabama 35501

E. Owner's Representative: Chris Cousins, Municipal Consultants, Inc.

F. Architect: Danny Trotter, AIA
CCR Architecture and Interiors
2920 1st Ave South
Birmingham, Alabama 35233
danny@ccrarchitecture.com

G. Project Description: New construction of an office building with attached metal building service bays and a separate open shed building. This also includes sitework.

H. Construction Contract: Sealed bids will be received for this Work as a Stipulated Sum with Single Prime General Contractor.

I. Owner will receive sealed bids until the bid time and date at the location indicated below. Owner will consider bids prepared in compliance with the Instructions to Bidders issued by Owner, and delivered as follows:
1. Bid Date: **December 3, 2026**
2. Bid Time: **2:00 PM**
3. Location: Jasper Waterworks and Sewer Board, 1620 Alabama Ave, Jasper, AL 35501

J. Bids will be thereafter opened in the presence of the bidders and read aloud.

K. The Contract, if awarded will be awarded to the responsive low Bidder who proposes the lowest Contract Sum on the basis of the Base Bid plus any accepted alternates, subject to the Owner's right to reject any or all Bids and waive any informality and irregularity in the Bids and in the bidding.

## 1.2 BID SECURITY

A. AIA Document A310-2010 "Bid Bond" is the recommended form for a bid bond. A bid bond is required by the Owner.

B. Bid security shall be submitted with each bid in the amount of five percent of the bid amount. No bids may be withdrawn for a period of sixty days after opening of bids. Owner reserves the right to reject any and all bids and to waive informalities and irregularities. Owner will accept Bid Bonds only.

## 1.3 PREBID CONFERENCE

A. A Pre-Bid conference for all bidders will be held at Jasper Waterworks and Sewer Board, 1620 Alabama Avenue, Jasper AL on **November 19, 2026,** at 2:00pm, local time. Prospective bidders are requested and are required to attend.

## 1.4 DOCUMENTS

A. Online Procurement and Contracting Documents: Obtain access after October 28, 2026, by contacting Alabama Graphics Birmingham 205/252-8505. Online access will be provided to prospective prime bidders only thru Alabama Graphics digital plan room. www.algraphicsplanroom.com

## 1.5 TIME OF COMPLETION

A. Bidders shall begin the Work on receipt of the Notice to Proceed and shall complete the Work within the Contract Time. Construction duration is eighteen (18) months.

B. Liquidated damages will be assessed at $500.00 per day for extension beyond eighteen (18) months of construction.

## 1.6 BIDDER'S QUALIFICATIONS

A. Before submission of their bid, Bidders must be properly licensed in the State of Alabama governing their respective trades and be able to obtain insurance and bonds required for the Work. A Performance Bond, a separate Labor and Material Payment Bond, and Insurance in a form acceptable to the Owner will be required of the successful Bidder.

**END OF DOCUMENT 00 1116**

## SECTION 09 67 23 - RESINOUS FLOORING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Resinous Systems of the Following Types:
1. Sherwin-Williams HPF, Shop Floor SB.

1.2 RELATED SECTIONS

A. Section 03300 – Cast-In-Place Concrete.

1.3 REFERENCES

A. ASTM International (ASTM):
1. ASTM C 413 - Standard Test Method for Absorption of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.
2. ASTM D 635 - Standard Test Method for Rate of Burning and/or Extent and Time of Burning of Plastics in a Horizontal Position.
3. ASTM D 695 - Standard Test Method for Compressive Properties of Rigid Plastics.
4. ASTM D1475 - Standard Test Method For Density of Liquid Coatings, Inks, and Related Products.
5. ASTM D 2047 - Standard Test Method for Static Coefficient of Friction of Polish-Coated Flooring Surfaces as Measured by the James Machine.
6. ASTM D 2240 - Standard Test Method for Rubber Property—Durometer Hardness.
7. ASTM D 2244 - Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.
8. ASTM D2369 - Standard Test Method for Volatile Content of Coatings.
9. ASTM D 2370 - Standard Test Method for Tensile Properties of Organic Coatings.
10. ASTM D 3960 - Standard Practice for Determining Volatile Organic Compound (VOC) Content of Paints and Related Coatings.
11. ASTM D 4060 - Standard Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser.
12. ASTM D5441 - Standard Test Method for Analysis of Methyl Tert-Butyl Ether (MTBE) by Gas Chromatography.
13. ASTM D 7234 - Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers.
14. ASTM F 1869 - Standard Test Method for Measuring Moisture Vapor Emission Rate of Concrete Subfloor Using Anhydrous Calcium Chloride.
15. ASTM F 2170 - Standard Test Method for Determining Relative Humidity in Concrete Floor Slabs Using in situ Probes
16. ASTM G 154 - Standard Practice for Operating Fluorescent Ultraviolet (UV) Lamp Apparatus for Exposure of Nonmetallic Materials.

B. International Concrete Repair Institute (ICRI):

1. ICRI 310.2R - Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair.

C. National Floor Safety Institute (NFSI):
1. ANSI/NFSI B101.1 - Test Method for Measuring Wet SCOF of Common Hard-Surface Floor Materials.

1.4 SUBMITTALS

A. Submit under provisions of Section 01300.

B. Product Data:
1. Manufacturer's data sheets on each product to be used, including properites, VOC content, wet static coefficient of friction, compressive strength, tensile strength, eloongation and similar properties.
2. Preparation instructions and recommendations.
3. Storage and handling requirements and recommendations.
4. Typical installation methods.

C. Verification Samples: Two representative units of each system, including color and texture.

D. Shop Drawings: Include details of materials, construction and finish. Include relationship with adjacent construction.

E. Manufacturer’s Certification: Submit manufacturer’s certification that materials comply with specified requirements and are suitable for intended application.

F. Manufacturer’s Project References: Submit manufacturer’s list of successfully completed resinous flooring system projects, including project name and location, name of architect, and type and quantity of flooring systems furnished.

G. Applicator’s Project References: Submit applicator’s list of successfully completed resinous flooring system projects, including project name and location, name of architect, and type and quantity of flooring systems applied.

H. Care and Maintenance Instructions: Submit manufacturer’s care and maintenance instructions, including cleaning instructions.

1.5 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with a minimum five years documented experience.

B. Applicator’s Qualifications:
1. Applicator regularly engaged, for a minimum of 5 years, in application of resinous flooring systems of similar type to that specified.
2. Employ persons trained for application of resinous flooring systems.

C. Source Limitations: Provide each type of product from a single manufacturing source to ensure uniformity.

D. Mock-Up: Construct a mock-up with actual materials in sufficient time for Architect's review and to not delay construction progress. Locate mock-up as acceptable to Architect and provide temporary foundations and support.
   1. Intent of mock-up is to demonstrate quality of workmanship and visual appearance.
   2. If mock-up is not acceptable, rebuild mock-up until satisfactory results are achieved.
   3. Retain mock-up during construction as a standard for comparison with completed work.
   4. Do not alter or remove mock-up until work is completed or removal is authorized.

1.6 PRE-INSTALLATION CONFERENCE

A. Convene a conference approximately two weeks before scheduled commencement of the Work. Attendees shall include Architect, Contractor and trades involved. Agenda shall include schedule, responsibilities, critical path items and approvals.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Delivery Requirements: Deliver materials to site in manufacturer's original, unopened containers and packaging, with labels clearly identifying product name, manufacturer, and batch number.

B. Storage and Handling Requirements:
   1. Store and handle materials in accordance with manufacturer's instructions.
   2. Keep materials in manufacturer's original, unopened containers and packaging until application.
   3. Store materials in clean, dry area indoors between 65 and 80 degrees F.
   4. Store materials out of direct sunlight.
   5. Keep materials from freezing.
   6. Protect materials during storage, handling, and application to prevent contamination or damage.

1.8 PROJECT CONDITIONS

A. Apply flooring system under the following ambient conditions:
   1. Ambient and Concrete Floor Temperatures: Between 65 and 85 degrees F.
   2. Material Temperature: Between 65 and 85 degrees F.
   3. Relative Humidity: Maximum 80 percent.
   4. Dew Point: Floor temperature more than 5 degrees over dew point.

B. Do not apply flooring system under ambient conditions outside manufacturer's limits.

1.9 WARRANTY

A. Submit manufacturer's standard warranty.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturer: The Sherwin-Williams High Performance Flooring, 866-540-1299 swflooring@sherwin.com Website: https://industrial.sherwin-williams.com/na/us/en/resin-flooring.html

B. Requests for substitutions will be considered in accordance with provisions of Section 01600.

2.2 SHERWIN-WILLIAMS HPF, RESUFLOR SHOP FLOOR SB

A. Resuflor Shop Floor SB
1. Primer Coat: Resuflor MPE, 3-5 mils.
2. Broadcast Coat with silica broadcast: Resuflor MPE, 10 mils.
3. Grout Coat: Resuflor MPE, 15 mils.
4. Topcoat: Resutile HTS 100, 3 mils.
5. Color: As selected by Architect from manufacturer's full range.

2.3 SYSTEM PROPERTIES

A. Resuflor Shop Floor SB
1. Abrasion Resitance, Taber Abraser CS-17 Taber Abrasion Wheel, 1,000 gram load, 1,000 revolutions, ASTM D4060, 18 mg/loss
2. Adhesion to Concrete, psi [MPa[, ASTM D4541, 450 [3.10] (concrete failed)
3. Adhesion to Concrete, psi [MPa], ASTM D7234, 732 [4.48] (concrete failed)
4. Coefficent of Friction-COF, James Friction Tester, ASTM D2047, 0.63
5. Coefficient of Friction-Wet Static, BOT 3000, ASNI/NFSI B101.1, 0.94
6. Compressive Strength psi [MPa], D695, 13,500 [93.079]
7. Flammability, ASTM 635, 182 mm/min
8. König Hardness (3 mil/0.08 mm film) (topcoat resin), ASTM D4366, 171.3
9. Resistance to Yellowing as measured using ASTM D2244 after 1000 consecutive hours UV exposure in QUV, ASTM G154, <10 increase of yellowing units (CIE Lab Δb) if pigmented topcoat
10. Shore D hardnes, ASTM D2240, 80-85 @ 0 sec | 75-80 @ 15 sec
11. Sward Hardness (imm film), ASTM D2240, 35-40
12. Tensil Strength, psi [MPa}, ASTM D2370, 8,000 [55.158]
13. Percent Elongation (resin), ASTM D2370, 6%
14. Volatile Organic Compound, VOC lb/gal [g/l], ASTM D3960, Resuflor MPE A+B=0.41 [49] Resutile HTS 100 A+B+C=0.05 [6]
15. Water Absorption (25 hours), ASTM D570, 0.2% weight increase
16.

2.4 PRODUCT PROPERTIES

A. Resuflor MPE: A neutral, two-component, high solids epoxy.
1. Percent Solids, by weight (by volume), ASTM D1475, A + B: 95.45 (94.56).
2. Volatile Organic Compound-VOC, ASTM D3960, Mixed A + B: 0.41 lb./gal (49 g/L).
3. Abrasion Resistance, mg loss, Taber Abraser, C-17 Taber Abrasion Wheel, 1,000 gram load, 1,000 revolutions, ASTM D4060: 83.1.
4. Coefficient of Friction-COF, James Friction Tester, ASTM D2047: 0.59-0.62.

5. Adhesion to Concrete, ASTM D5441: 732 psi (4.48 MPa) concrete failed.
6. Adhesion to Concrete, ASTM D7234: 450 psi (3.10 MPa) concrete failed.
7. Compressive Strength, ASTM D695: 13,500 psi (93.079 MPa).
8. Tensile Strength, ASTM D2370: 8,000 psi (55.158 MPa).
9. Percent Elongation, ASTM D2370: 5.
10. Shor D Hardness, ASTM D2240: 80-85 @ 0 sec, 75-80 @ 15 sec.

B. Resutile HTS 100: A clear high solids, three-component, satin finish, aliphatic, moisture-cure urethane.
1. Percent Solids, by weight (by volume), ASTM D2369, A + B + C: 94.02 (92.57).
2. Volatile Organic Compound-VOC, ASTM D3960, Mixed A + B + C: 0.05 lb/gal (6 g/L).
3. Abrasion Resistance, mg loss, Taber Abraser, C-17 Taber Abrasion Wheel, 1,000 gram load, 1,000 revolutions, ASTM D4060: 18.
4. Coefficient of Friction-COF, James Friction Tester, ASTM D2047: 0.63.
5. Wet Static Coefficient of Friction, BOT 3000, ANSI/NFSI B101.1: 0.94.
6. Flammability, ASTM G154: 182 mm/min.
7. Resistance to Yellowing as measured using ASTM D2244 after 1000 consecutive hours UV exposure in QUV, ASTM G154, <10 increase of yellow units (CIE Lab Δb)
8. Tensile Strength, (resin only), ASTM D2370: 6,250 psi (43,092 MPa).
9. Percent Elongation, (resin only), ASTM D2370: 6.
10. König Hardness, (3 mil/76.2 micron film), ASTM D4366: 171.3.
11. Water Absorption, 24-hour immersion, ASTM C413: 0.2 percent weight increase.

## PART 3 EXECUTION

### 3.1 EXAMINATION

A. Examine concrete surfaces to receive flooring system. Verify concrete is structurally sound.

B. Moisture Testing of Concrete: Perform at least one of the following two tests to determine moisture in concrete. Type of test and frequence as recommended by manufacturer and installer.
1. In-situ Probe Test:
a. Measure relative humidity in concrete in accordance with ASTM F 2170.
b. Application of flooring system shall start only if test results are below 75 percent relative concrete humidity.
c. If test results are above limits, notify Architect and flooring manufacturer in writing.

C. Do not begin preparation or installation until satisfatory moisture test results are achieved. Provide flooring manufacturer's recommended moisture vapor control coating if required.

### 3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Protection of In-Place Conditions: Protect adjacent surfaces and adjoining walls from contact with flooring system materials.

C. Surface Preparation:
1. Prepare concrete surface in accordance with manufacturer's instructions.
2. Remove dirt, dust, debris, oil, grease, curing agents, bond breakers, paint, coatings, sealers, silicones, and other surface contaminants which could adversely affect application of flooring system.
3. Mechanically abrade or shotblast concrete to a surface profile of ICRI 310.2R, CSP 3-5.
4. Key-cut termination points with 1/4-inch (6-mm) by 1/4-inch (6-mm) cut.
5. Patch depressions, divots, and cracks in concrete in accordance with manufacturer's instructions.
6. Mechanically remove loose, delaminated, and damaged concrete and repair in accordance with manufacturer's instructions.
7. Joints: Fill joints in accordance with manufacturer's instructions.

3.3 INSTALLATION

A. Install flooring system in accordance with manufacturer's instructions and approved submittals at locations indicated on the Drawings.

B. Ensure concrete is dry, clean, and prepared in accordance with manufacturer's instructions.

C. Allow concrete to cure a minimum of 7 days before applying flooring system.

D. Mixing:
1. Mix material components together in accordance with manufacturer's instructions.
2. Mix only enough material that can be applied within working time.
3. Add and mix colorants with materials in accordance with manufacturer's instructions to achieve uniform color.

E. Apply flooring system materials to obtain consistent mil thickness and smooth, uniform appearance and texture.

F. Overlay: Apply overlay in accordance with manufacturer's instructions. Apply overlay to prepared concrete surface.

G. Traction Aggregate: Broadcast traction aggregate in accordance with manufacturer's instructions. Broadcast traction aggregate into wet overlay.

H. Cove:
1. Apply cove primer and cove in accordance with manufacturer's instructions at locations indicated on the Drawings.
2. Apply cove to height and shape as indicated on the Drawings.
3. Apply cove to create seamless, smooth transition between flooring and walls.

I. Seal Coat:
1. Apply seal coat in accordance with manufacturer's instructions.

2. Apply seal coat over traction aggregate.

3.4 FIELD QUALITY CONTROL

A. Field Inspection: Coordinate field inspection in accordance with appropriate sections in Division 01.

B. Manufacturer's Services: Coordinate manufacturer's services in accordance with appropriate sections in Division 01.

3.5 CLEANING AND PROTECTION

A. Allow flooring system to dry in accordance with manufacturer's instructions before opening to traffic.

B. Allow flooring system to dry a minimum of 1 week before cleaning by mechanical means.

C. Protect completed flooring system from damage during construction.

END OF SECTION 09 67 23

# TRCeN 800V-230

TRCeN800-230 , TRCeN800V-230

ENERGY RECOVERY VENTILATOR
EC MOTOR

## INDOOR UNIT



Energy recovery core is AHRI Certified®

AHRI CERTIFIED®
www.ahridirectory.org
Air-to-Air ERV
AHRI Standard 1060
Energy Recovery COMPONENT is certified. Actual performance in packaged equipment may vary.

## SPECIFICATIONS

**Ventilation Type:** Static plate, heat and humidity transfer

**Airflow Range:** 250–1,100 CFM

**AHRI 1060 Certified Core:** One L85-G5

**Standard Features:**
Non-fused disconnect
24VAC transformer/relay package
Cross-core differential pressure ports
Independent blower control

**Filters:** Total Qty. 2, MERV 8: 14" x 20" x 2"

**Unit Weight:** 204 lbs.

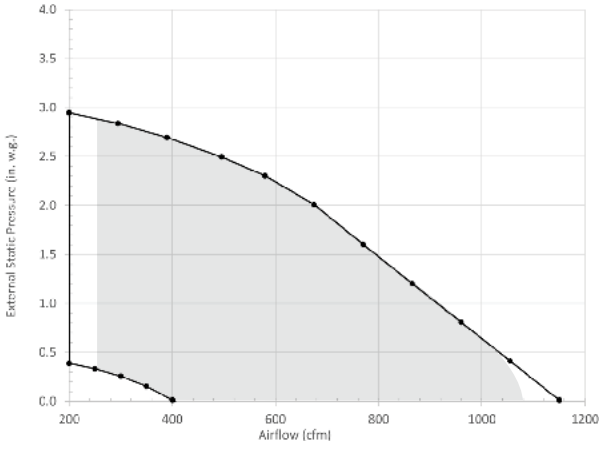
**Max. Shipping Dimensions & Weight (on pallet):**
60" L x 30" W x 55 1/4" H
250 lbs.

**Motor(s):**
Qty. 2, 370W ea., Direct drive EC motorized impeller packages (208–230V/1Ph/60Hz)

**Optional Electrical Accessories:**
STC7D-W: Digital Time Clock (wall mount)
SMC-C: Motion Occupancy Control (ceiling mount)
SMC-W: Motion Occupancy Control (wall mount)
SCO2-W: CO2 Control (wall mount)

**Optional TRCeN General Accessories:**
147594: Bracket Hanging Kit
147596: Vibration Isolator, Hanging, 70 lbs.
147597: Vibration Isolator, Hanging, 85 lbs.
147599: TRCeN500 Flange Kit Rect 12" x 12"
147600: Flange Kit Rect 14" x 14"
990083: MERV8 20" x 20" x 2" filter (single)
990084: MERV8 20" x 20" x 2" filter (case of 12)
990303: MERV13 20" x 20" x 2" filter (single)
BD12: 12" Backdraft Damper
FA12-G: 12" Galvanized Wall Cap
FA12-P: 12" Galvanneal Wall Cap
VW12X12-G: Louver, 10" Round Duct Connection

## EC MOTOR OPERATING RANGE AND FAN PERFORMANCE



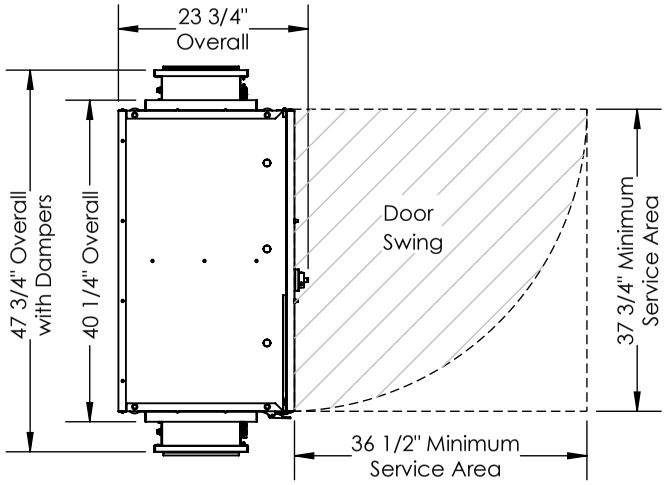

Recommend Operating Range

| Airflow (CFM) | External Static Pressure (Inches Water Column) | Unit Power Consumption (Watts) |
|---|---|---|
| 200 | 2.95 | 571 |
| 295 | 2.84 | 658 |
| 390 | 2.69 | 737 |
| 495 | 2.50 | 813 |
| 580 | 2.30 | 864 |
| 675 | 2.01 | 900 |
| 770 | 1.60 | 900 |
| 865 | 1.20 | 900 |
| 960 | 0.81 | 900 |
| 1055 | 0.41 | 900 |
| 1150 | 0.01 | 900 |

Note: Airflow performance includes effect of clean, standard filter supplied with unit.

## ELECTRICAL DATA

| Max. Unit Watts/HP | Volts | Hz | Phase | Motor Full Load Amperage (FLA) per Motor | Min. Circuit Ampacity | Max. Overcurrent Protection Device |
|---|---|---|---|---|---|---|
| 370 | 208–230 | 60 | Single | 1.73 | 3.9 | 15 |

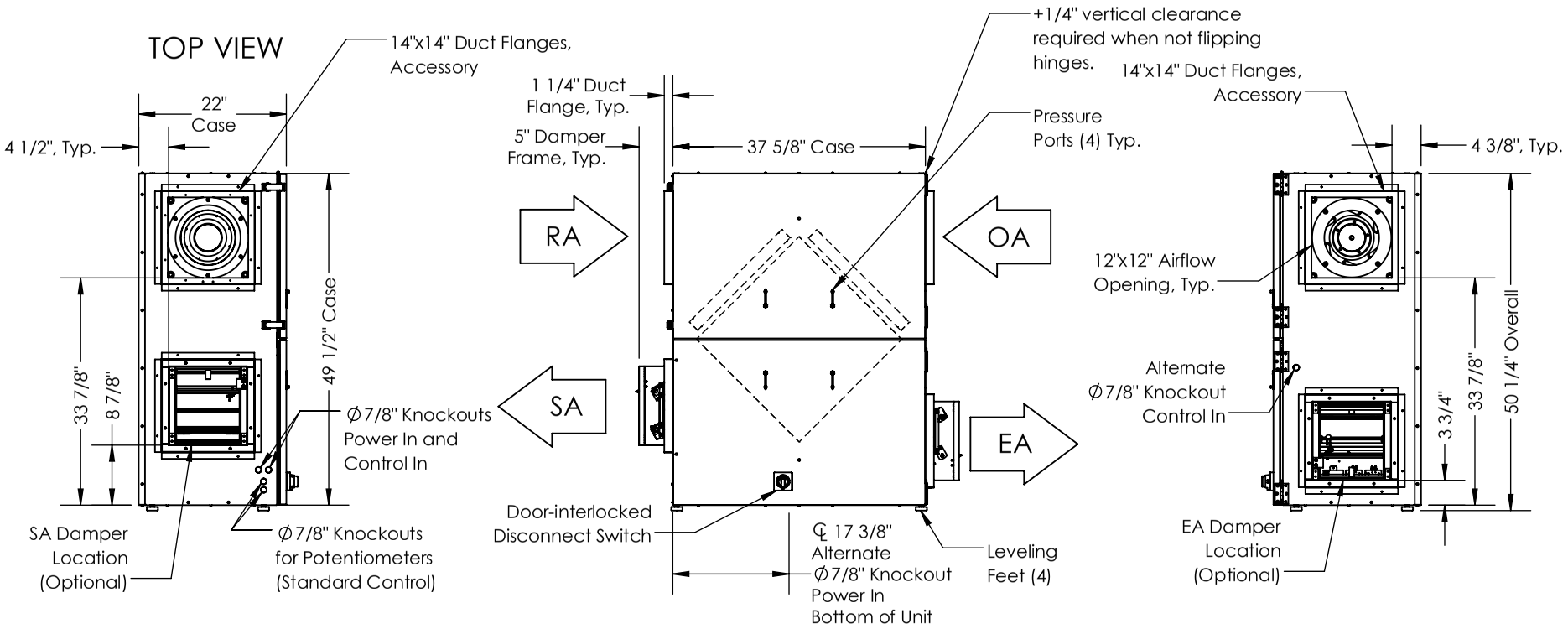



**Abbreviations**
EA: Exhaust Air to outside
OA: Outside Air intake
RA: Room Air to be exhausted
SA: Supply Air to inside

**INSTALLATION ORIENTATION**
Unit may be installed in any orientation.

**NOTE**
1. UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE ROUNDED TO THE NEAREST EIGHTH OF AN INCH.

2. SPECIFICATIONS MAY BE SUBJECT TO CHANGE WITHOUT NOTICE.



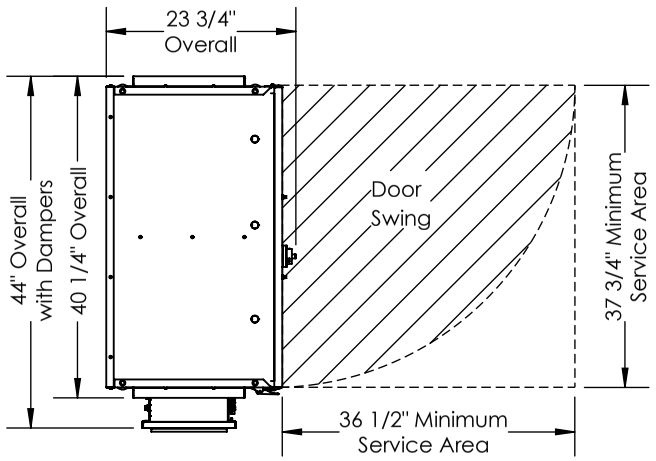

Model: TRCeN800V-230
Drawing Type: Unit Dimension
Version: MAR26

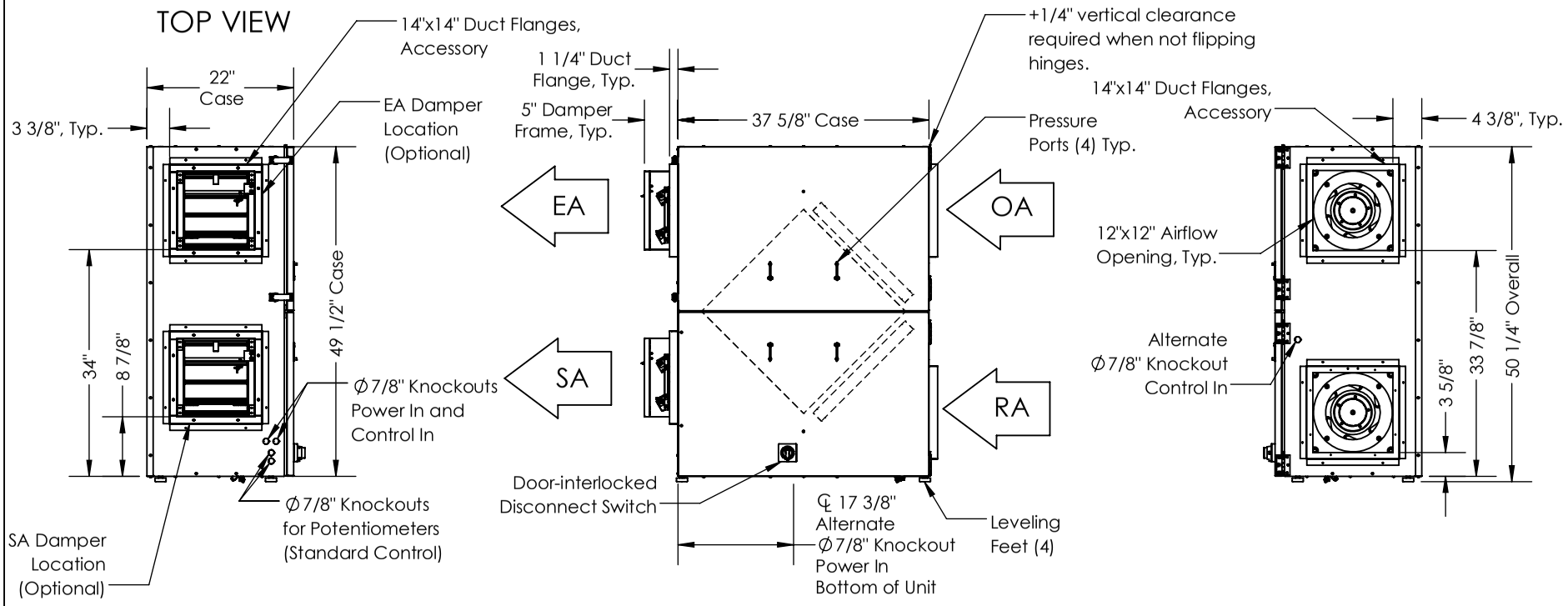
**Abbreviations**
EA: Exhaust Air to outside
OA: Outside Air intake
RA: Room Air to be exhausted
SA: Supply Air to inside

**INSTALLATION ORIENTATION**
Unit may be installed in any orientation.

**NOTE**
1. UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE ROUNDED TO THE NEAREST EIGHTH OF AN INCH.

2. SPECIFICATIONS MAY BE SUBJECT TO CHANGE WITHOUT NOTICE.




Model: TRCeN800H-230
Drawing Type: Unit Dimension
Version: NOV25

# AIA® Document G716™ – 2004

## *Request for Information ("RFI")*

**TO:** Danny Trotter, AIA
CCR Architecture and Interiors
2920 1st Ave South
Birmingham, Alabama 35233
danny@ccrarchitecture.com

**FROM:** Jennifer Champion, Project Administrator
K&A Builders, Inc.
2601 Kaulton Rd.
Tuscaloosa, AL 35401
Jennifer@kandabuilders.com

**PROJECT:** JASPER WATER WORKS CCR PROJECT- 23031-A
Jasper Waterworks and Sewer Board, Inc.
3877 Industrial Parkway
Jasper, Alabama 35501

**ISSUE DATE:** 10/30/26 **RFI NO.** 001

**REQUESTED REPLY DATE:**

**PROJECT NUMBERS:** 23031 - A

**COPIES TO:**

**RFI DESCRIPTION:** *(Fully describe the question or type of information requested.)*
One of our subcontractors has requested that ACI be approved as a manufacturer for the metal building.

**REFERENCES/ATTACHMENTS:** *(List specific documents researched when seeking the information requested.)*
**SPECIFICATIONS:** 13 34 19 - METAL BUILDING SYSTEMS **DRAWINGS:** **OTHER:**

**SENDER'S RECOMMENDATION:** *(If RFI concerns a site or construction condition, the sender may provide a recommended solution, including cost and/or schedule considerations.)*
Attached is the IAS Certificate for ACI. I have also included the email from our subcontractor. We have completed numerous project over the years with this subcontractor and with ACI products and have found them to deliver a quality product and workmanship.

**RECEIVER'S REPLY:** *(Provide answer to RFI, including cost and/or schedule considerations.)*

**BY** **DATE** **COPIES TO**

**Note:** This reply is not an authorization to proceed with work involving additional cost, time or both. If any reply requires a change to the Contract Documents, a Change Order, Construction Change Directive or a Minor Change in the work must be executed in accordance with the Contract Documents.

AIA Document G716 – 2004. Copyright © 2004. All rights reserved. "The American Institute of Architects," "American Institute of Architects," "AIA," the AIA Logo, and "AIA Contract Documents" are trademarks of The American Institute of Architects. This draft was produced at 09:10:32 ET on 01/26/2026 under Order No.500026948 which expires on 01/26/2027, is not for resale, is licensed for one-time use only, and may only be used in accordance with the AIA Contract Documents© Terms of Service. To report copyright violations, e-mail docinfo@aiacontracts.com.
**User Notes:** (3B9ADA42)

K&A BUILDERS

**Jennifer Champion <jennifer@kandabuilders.com>**

# Invitation to Bid - Jasper Water Works New Building

**Jim Harpole** <jim@harpolesteel.com> Fri, Oct 30, 2026 at 1:40 PM
To: Jennifer Champion <jennifer@kandabuilders.com>
Cc: Jeff Jarvis <jeff@kandabuilders.com>

Jennifer,

Please see the attached and below and let me know if you need additional information.

ACI designs and fabricates complete metal building systems including primary structural members, secondary members, joints, roof cladding, and wall cladding components specifically designed to support and transfer loads. Properly assembled components form a complete or partial building shell. ACI has been manufacturing and designing pre-engineered metal building system for over 35 years. The product provided will meet or exceed all specifications, drawings, and design intent.

Jim Harpole, P.E.

Harpole Steel Buildings Inc.

www.harpolesteel.com

(office) 205.803.7373

(cell) 205.790.8243

INTERNATIONAL ACCREDITATION SERVICE®

# CERTIFICATE OF ACCREDITATION

*This is to attest that*

## ACI BUILDING SYSTEMS, LLC

10125 HIGHWAY 6 WEST
BATESVILLE, MISSISSIPPI 38606, U.S.A.

**Inspection Program for Manufacturer of Metal Building Systems MB-160**

has met the requirements of AC472, IAS *Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems*, Part A-*Fabrication of Structural Weldments and Cold-formed Products Requiring Welding*, Part B-*Fabrication of Cold-formed Products Not Requiring Welding*, Part C-*Design of Metal Building Systems*, and the in-plant inspection program is in compliance with Section 1704.2.5.1 of the 2015, 2018, 2021 and 2024 *International Building Code*®, Section 1704.2.5.2 of the 2012 *International Building Code*®, and Section 1704.2.2 of earlier code editions. Periodic plant inspections are conducted by Farabaugh Engineering and Testing Inc. (AA-715) to monitor compliance with the requirements of AC472.

This certificate is valid up to July 1, 2027

IAS ACCREDITED

International Accreditation Service
Issued under the authority of IAS management

Visit www.iasonline.org for current accreditation information.

IAS/MB-AC472/107-2

# Proposed Jasper Water Works Facility

Industrial Parkway

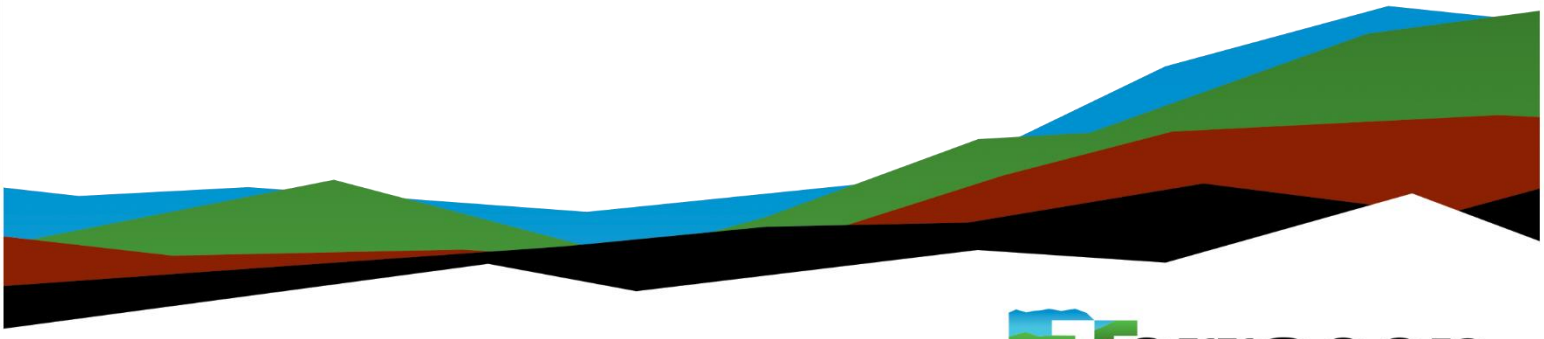
Jasper, Alabama

## Geotechnical Engineering Report

May 8, 2026 | Terracon Project No. LT265042

**Prepared for:**

Jasper Waterworks And Sewer Board
1620 Alabama Avenue
Jasper, Al 35501



Terracon
Explore with us

Nationwide
Terracon.com

- Facilities
- Environmental
- Geotechnical
- Materials

2147 Riverchase Office Road
Birmingham, Alabama 35244
P (205) 942-1289
**Terracon.com**

May 8, 2026

Jasper Waterworks And Sewer Board
1620 Alabama Avenue
Jasper, Al 35501

Attn: Mr. Michael Williams, General Manager

Re: Geotechnical Engineering Report
Proposed Jasper Water Works Facility
Industrial Parkway
Jasper, AL
Terracon Project No. LT265042

Dear Mr. Williams:

We have completed the scope of services for the project in general accordance with Proposal No. LT265042 dated March 23, 2026. In 2025, Terracon completed a Geotechnical Exploration for an initial site layout. A revised site layout warranted the current exploration. Information from the 2025 study will be included in this report.

This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations, floor slabs, pavements, and other site development elements for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,

**Terracon**

ALABAMA LICENSED No. 17908 PROFESSIONAL ENGINEER BRYAN C. RITENOUR

Bryan C. Ritenour, P.E.
Senior Engineer

Matthew S. McCullough, P.E.
Manager, Geotechnical Services

# Table of Contents

**Introduction** ..... **1**
**Project Description** ..... **1**
**Site Conditions** ..... **2**
**Geotechnical Characterization** ..... **3**
**Seismic Site Class** ..... **4**
**Geotechnical Overview** ..... **5**
**Earthwork** ..... **7**
Site Preparation ..... 7
Existing Fill ..... 8
Excavation ..... 8
Soil Stabilization ..... 8
Fill Material Types ..... 9
Fill Placement and Compaction Requirements ..... 10
Utility Trench Backfill ..... 11
Grading and Drainage ..... 12
Earthwork Construction Considerations ..... 12
Construction Observation and Testing ..... 13
**Shallow Foundations** ..... **13**
Design Parameters – Compressive Loads ..... 13
Design Parameters – Overturning and Uplift Loads ..... 14
Foundation Construction Considerations ..... 15
**Floor Slabs** ..... **16**
Floor Slab Design Parameters ..... 16
Floor Slab Construction Considerations ..... 17
**Pavements** ..... **18**
General Pavement Comments ..... 18
Pavement Design Parameters ..... 18
Pavement Section Thicknesses ..... 19
Pavement Drainage ..... 20
Pavement Maintenance ..... 20
**General Comments** ..... **21**

# Figures

GeoModel

# Attachments

## Exploration and Testing Procedures
## Site Location and Exploration Plans
## Exploration and Laboratory Results
## Supporting Information

**Note:** This report was originally delivered in a web-based format. **Blue Bold** text in the report indicates a referenced section heading. For more interactive features, please view your project online at **client.terracon.com**.

Refer to each individual Attachment for a listing of contents.

# Introduction

This report presents the results of our subsurface exploration and Geotechnical Engineering services performed for the proposed Jasper Water Works and Sewer Board facility to be located along Industrial Parkway in Jasper, AL. The purpose of these services was to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Seismic site classification per IBC
- Site preparation and earthwork
- Foundation design and construction
- Floor slab design and construction
- Pavement design and construction based on local practices

In March 2025, Terracon completed a Geotechnical Exploration that included 11 soil borings based on an initial site layout. The boring logs from the 2025 study are included in this report. The geotechnical engineering Scope of Services for this 2026 exploration included the advancement of 17 additional test borings, engineering analysis, and preparation of this report based on a revised site layout.

Exhibits showing the site and boring locations are shown on the **Site Location** and **Exploration Plan**, respectively. The results of the laboratory testing performed on soil samples obtained from the site during our field explorations are included on the boring logs in the **Exploration Results** section.

# Project Description

Our most recent understanding of the project was provided in our proposal and was discussed during project planning. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

| Item | Description |
|---|---|
| **Information Provided** | The site location, revised Site Plan, and Grading Plan was provided by Mr. Zac Megehee (Megehee Engineering Corp). |
| **Project Description** | The furnished Grading Plan shows a new campus for the JWWSB and will include the structures listed below:<br>Office/Service Center: Approximately 100’ X 275’<br>Open Air Storage: Approximately 200’ X 70’ |

| Item | Description |
|---|---|
| **Building Construction** | Pre-engineered metal and/or wood framed with a concrete slab on grade |
| **Finished Floor Elevation** | EL 380 for the Office/Service Center structure<br>About El 375 to El 378 for the Open Storage Structure |
| **Maximum Loads** | ▪ Walls: 2 kips per linear foot (klf)<br>▪ Columns: 75 kips<br>▪ Floor Slabs: 100 psf |
| **Grading/Slopes** | The Grading Plan indicates up to about 3 feet of fill will be required to grade the site. |
| **Below-Grade Structures** | None shown |
| **Free-Standing Retaining Walls** | None shown |
| **Storm Water Management** | Two stormwater detention ponds are shown on the Grading Plan. |
| **Pavements** | Asphalt and/or concrete paving is anticipated. |

Terracon should be notified if any of the above information is inconsistent with the planned construction, especially the structural loading and grading assumptions, as modifications to our recommendations may be necessary.

# Site Conditions

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic maps.

| Item | Description |
|---|---|
| **Parcel Information** | The project site is located along Industrial Parkway in Jasper, AL.<br>Latitude/Longitude (approximate) 33.8092° N, 87.2329° W<br>(See **Site Location**) |
| **Existing Improvements** | There is no existing development, but we understand that fill material of unknown depths was likely placed to grade the site. However, comparing the site elevations on the U.S.G.S. topographic map with the current site elevations indicates that up to about 30 feet of fill was placed in the extreme northern portions of the site. |

| Item | Description |
|---|---|
| **Current Ground Cover** | Grass, bare ground |
| **Existing Topography** | Gently sloping downward from west to east with a relief of about 5 feet |

# Geotechnical Characterization

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical evaluation of the site. Conditions observed at each exploration point are indicated on the individual logs. The individual logs can be found in the **Exploration Results** and the GeoModel can be found in the **Figures** attachment of this report.

As part of our evaluation, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each boring location, refer to the GeoModel.

| Model Layer | Layer Name | General Description |
|---|---|---|
| **1** | **Surface Layer** | Topsoil (1” to 8”)<br>Crushed Stone (4” encountered at boring B-10 only) |
| **2** | **Existing Fill** | Lean Clay or Silt, variable sand content or Silty Sand<br>Some fill is composed of pulverized shale fragments |
| **3** | **Native Soils** | Typically, Lean Clay (CL) or Silt (ML) with variable sand content, tan, brown, gray, very stiff to hard |
| **4** | **Native Shale** | Brown or medium to dark gray, variable weathering, moderately hard, becomes harder with depth |

Borings B-9, B-11, B-12, B-15, B-16, B-17, B-19, D-1, and P-1 through P-7 were terminated on native shale bedrock at, or near, their target borings depths ranging from about 3.6 feet to 29 feet. Borings, P-2 and D-2 were terminated within the existing fill at boring depths of 3.6 feet and 10 feet, respectively. The remaining borings encountered auger refusal on native bedrock at depths ranging from about 5.5 to 20 feet below the existing ground surface.

The 2025 borings were advanced using a hollow stem auger drilling technique while the 2026 borings were drilled using solid stem augers. Both drilling techniques allow short

term groundwater observations to be made while drilling. Groundwater seepage was encountered during drilling at the locations and depths indicated in the table below.

| Boring | Depth to Groundwater Observed During Drilling (feet) |
|---|---|
| B-4 | 1’ During And After Completion Of Drilling |
| B-6 | 4’ During Drilling; 2.5’ At Completion Of Drilling |
| B-7 | 3’ During Drilling; 1.5’ At Completion Of Drilling |
| B-8 | 3’ During And After Completion Of Drilling |
| B-9 | No Water During Drilling; 14’ At Completion Of Drilling |
| B-11 | 1’ During And After Completion Of Drilling |
| B-12 | 5’ During And After Completion Of Drilling |
| B-13 | 5’ During Drilling; 3.5’ At Completion Of Drilling |
| B-14 | 5’ During Drilling; 4’ At Completion Of Drilling |
| B-17 | 23’ During Drilling; 23’ At Completion Of Drilling |
| B-18 | 14’ During Drilling; 15’ At Completion Of Drilling; |
| B-19 | No Water During Drilling; 23’ At Completion Of Drilling |

Groundwater was not observed in borings not listed above during drilling or during the relatively short period the borings remained open prior to being backfilled. Groundwater conditions may be different at the time of construction. Groundwater conditions may change because of seasonal variations in rainfall, runoff, and other conditions not apparent at the time of drilling. Long-term groundwater monitoring was outside the scope of services for this project.

The shallow groundwater levels listed above (i.e., 5’ or less below the surface) are likely due to surface water infiltrating the existing fill and residing on the surface of the underlying shale bedrock. Seepage from the variably compacted existing fill should be anticipated during undercutting and footing and utility trench excavations.

## Seismic Site Class

The seismic design requirements for buildings and other structures are based on Seismic Design Category. Site Classification is required to determine the Seismic Design Category for a structure. The Site Classification is based on the upper 100 feet of the site profile defined by a weighted average value of either shear wave velocity, standard penetration resistance, or undrained shear strength in accordance with Section 20.4 of ASCE 7 and the International Building Code (IBC). Based on the soil properties observed at the site and as described on the exploration logs and results, our professional opinion is that a **Seismic Site Classification of C** be considered for the project. Subsurface

explorations at this site were extended to a maximum depth of 20 feet. The site properties below the boring depth to 100 feet were estimated based on our experience and knowledge of geologic conditions of the general area. Additional deeper borings or geophysical testing may be performed to confirm the conditions below the current boring depth.

# Geotechnical Overview

The site can be suitably prepared for the proposed construction based upon geotechnical conditions encountered in the test borings, provided that the recommendations provided in this report are implemented in the design and construction phases of this project.

Beneath a thin surface layer of topsoil or crushed stone (Geomodel Layer 1), borings B-1, through B-3, B-6 through B-9, B-11, B-13, B-17 through B-19, D-2, P-2, and P-4 through P-7 encountered a layer of previously placed fill (Geomodel Layer 2) consisting of lean clay or silt with variable sand content or silty sand, and pulverized shale fragments. Also, several of the split spoon samples obtained in the upper fill had trace amounts of rootlets. The existing fill generally extended to depths of about 2 feet to 3 feet below the existing ground surface. However, borings B-17 through B-19 and boring D-2 encountered thicker existing fill confirming the suspected deeper fill depths along the eastern side of the site. The SPT N-values recorded within the fill generally ranged from 3 to 32 blows per foot (bpf) indicating variable consistencies of the fill. However, N-values exceeding 50 lows per foot were recorded where the existing fill contained more pulverized shale fragments. We have no records to indicate the degree of control during placement of the fill, however, based on the variable N-values it appears that portions of the fill were not placed in a controlled manner (i.e., not placed in thin lifts and evenly compacted).

Beneath the surface layer at borings B-4, B-5, B-10 B-4, B-5, B-10, B-12, B-14, B-15, B-16, D-1, P-1, P-3, and beneath the fill at the remaining borings (except D-2), the borings encountered very stiff to hard native soils generally consisting of Lean Clay (CL) or Silt (ML) with varying amounts of sand (Geomodel Layer 3).

All of the borings (except D-2) encountered native shale bedrock (Geomodel Layer 4) beneath either the surface layer, existing fill, or native soils. The shale bedrock extended to the boring termination or auger refusal depth.

After stripping of the site and perform cuts necessary to reach final subgrade, the exposed subgrade should be compacted using a heavy vibratory sheep’s foot compactor and then proof-rolled under the observation of the Geotechnical Engineer as further discussed in the **Earthwork** section of this report. Any soft, loose, or otherwise unstable soils excessively deflecting during the proof-roll should be undercut and replaced with structural fill or stabilized as discussed in the **Earthwork** section of this report.

Due to the variable density/consistency existing fill, the project budget should include contingencies for improving the condition of the existing fill in building, hardscape, and pavement areas. If wet weather conditions persist the time of site grading, it is likely that the upper 1 to 2 feet of the existing fill will need to be removed followed by moisture conditioning (i.e., drying) and compaction of the remaining fill. Any unstable or excessively moist material should be removed, moisture conditioned (i.e., dried), and placed in accordance with the engineered fill placement recommendations in this report. Moisture conditioning is often time consuming, therefore, the project schedule should include sufficient time to allow the Contractor to dry the material. Also, performing the earthwork operators in seasonally cooler and wetter times of the year could prolong the moisture conditioning process and result in larger areas needing remediation.

Excavated on-site soil may be selectively reused as fill. Several of the split spoon samples from the existing fill contained trace amounts of rootlets. The project budget should include contingencies for discarding on-site materials that contain greater amounts of organics.

Based on the conditions encountered and estimated load-settlement relationships, the proposed structures can be supported on conventional continuous or spread footing foundations after proper site preparations.

Support of foundations, floor slabs, and pavements on or above approved existing fill materials is discussed in this report. However, even with the recommended construction procedures, there is inherent risk for the owner that compressible fill or unsuitable material, within or buried by the fill, will not be discovered. This risk of unforeseen conditions cannot be eliminated without complete removal and replacement of the existing fill, but can be reduced by following the recommendations contained in this report.

Even after proper site preparation, the near surface soils could become unstable with typical earthwork and construction traffic, especially after precipitation events. The effective drainage should be completed early in the construction sequence and maintained after construction to avoid potential issues. If possible, the grading should be performed during the warmer and drier times of the year. If grading is performed during the winter months, an increased risk for possible undercutting and replacement of unstable subgrade will persist. Additional site preparation recommendations, including subgrade improvement and fill placement, are provided in the **Earthwork** section.

The recommendations contained in this report are based upon the results of field and laboratory testing (presented in the **Exploration Results**), engineering analyses, and our current understanding of the proposed project. The **General Comments** section provides an understanding of the report limitations.

# Earthwork

Earthwork is anticipated to include clearing and grubbing, excavations, subgrade stabilization, improvement/recompaction of the existing fill, and engineered fill placement. The following sections provide recommendations for use in the preparation of specifications for the work. Recommendations include critical quality criteria, as necessary, to render the site in the state considered in our geotechnical engineering evaluation for foundations, floor slabs, and pavements.

## Site Preparation

After stripping the site and making the necessary cuts to finish subgrade, but prior to fill placement, the exposed subgrade should be compacted using a heavy vibratory sheepsfoot roller having a maximum static weight of 12,000 lbs. and capable of exerting a minimum impact energy of 20,000 lbs.

After densification/compaction as described above, the subgrade should be proofrolled with an adequately loaded vehicle such as a fully-loaded tandem-axle dump truck. The proofrolling should be performed under the observation of the Geotechnical Engineer or representative. Areas excessively deflecting under the proofroll should be delineated and subsequently addressed by the Geotechnical Engineer. Such areas should either be removed, further densified in place, or stabilized by other methods discussed in the following sections, depending on site and weather conditions. Excessively wet or dry material should either be removed or moisture conditioned and recompacted. Compacted structural fill soils should then be placed to the proposed design grade and the moisture content and compaction of subgrade soils should be maintained until foundation or pavement construction.

Due to the variable density/consistency of the existing fill, the project budget should include contingencies for improving the condition of the existing fill. If wet weather conditions persist the time of site grading, it is likely that the upper 1 to 2 feet of the existing fill will need to be removed followed by moisture conditioning (i.e., drying) and compaction of the remaining fill. The material to be removed should be moisture conditioned (i.e., dried) and placed in accordance with the engineered fill placement recommendations in this report. Moisture conditioning is often time consuming, therefore, the project schedule should include sufficient time to allow the Contractor to dry the material. Also, performing the earthwork operators in traditionally cooler and wetter times of the year could prolong the moisture conditioning process.

After construction, poorly drained areas of the site could experience ponding surface water during wetter times of the year. If so, underdrains may be required to collect the water. The underdrains should consist of a trench filled with open graded stone (ALDOT #57 stone) that can discharge into storm drain structures. The need for a pipe

incorporated into the drain will depend on the amount of groundwater flow. The crushed stone should be covered with a non-woven filter fabric to prevent clogging.

If undercuts extended below the groundwater elevation, the initial layer of backfill will need to consist of open graded stone (ALDOT #57 stone) to above the water elevation. The stone should be covered with a non-woven filter fabric prior to continued backfilling.

## Existing Fill

As noted in **Geotechnical Characterization**, the borings encountered previously placed fill. The SPT N-values recorded within the fill generally ranged from 3 to 32 blows per foot (bpf) indicating variable consistencies of the fill. However, N-values exceeding 50 lows per foot were recorded where the existing fill contained more pulverized shale fragments. We have no records to indicate the degree of control during placement of the fill, however, based on the variable N-values it appears that portions of the fill were not placed in a controlled manner (i.e., not placed in thin lifts and evenly compacted).

Even after recompaction of the existing fill, an inherent risk remains for the owner that compressible fill or unsuitable material, within or buried by the fill, will not be discovered. This risk of unforeseen conditions cannot be eliminated but can be reduced by following the recommendations contained in this report.

After the planned grading has been completed, the entire building and pavement subgrade areas should be proofrolled with heavy, rubber tire construction equipment, to aid in delineating areas of soft or otherwise unsuitable soil. Areas of soft or otherwise unsuitable material should be undercut and replaced with new structural fill.

## Excavation

We anticipate that excavation of the existing fill and native soils can be accomplished with light to medium duty earthmoving equipment. However, excavation of the shale bedrock will likely require large excavators with rock teeth, or possibly jackhammering in the harder shale. The bottom of excavations should be thoroughly cleaned of loose soils and disturbed materials prior to backfill placement and/or construction.

## Soil Stabilization

Unstable subgrades may develop in areas subjected to repetitive construction traffic or if earthwork is performed during the wetter and cooler periods of the year. Methods of subgrade improvement, as described below, could include scarification, moisture conditioning and recompaction, removal of unstable materials and replacement with granular fill (with or without geosynthetics). The appropriate method of improvement, if required, would be dependent on factors such as schedule, weather, the size of area to

be stabilized, and the nature of the instability. More detailed recommendations can be provided during construction as the need for subgrade stabilization occurs. Performing site grading operations during warm seasons and dry periods would help reduce the amount of subgrade stabilization required.

If the exposed subgrade is unstable during proofrolling operations, it could be stabilized using one of the methods outlined below.

- **Scarification and Recompaction** - It may be feasible to scarify, dry, and recompact the exposed soils. The success of this procedure would depend primarily upon favorable weather and sufficient time to dry the soils. Stable subgrades likely would not be achievable if the thickness of the unstable soil is greater than about 1 foot, if the unstable soil is at or near groundwater levels, or if construction is performed during a period of wet or cool weather when drying is difficult.
- **Crushed Stone** - The use of crushed stone or crushed gravel is a common procedure to improve subgrade stability. Typical undercut depths would be expected to range from about 12 to 18 inches below finished subgrade elevation. The use of high modulus geotextiles (i.e., engineering fabric or geogrid) could also be considered after underground work such as utility construction is completed. Prior to placing the fabric or geogrid, we recommend that all below grade construction, such as utility line installation, be completed to avoid damaging the fabric or geogrid. Equipment should not be operated above the fabric or geogrid until one full lift of crushed stone fill is placed above it. The maximum particle size of granular material placed over geotextile fabric or geogrid should not exceed 1-1/2 inches.

Further evaluation of the need and recommendations for subgrade stabilization can be provided during construction as the geotechnical conditions are exposed.

## Fill Material Types

Fill required to achieve design grade should be classified as structural fill. Structural fill is material used below, or within 10 feet of structures, pavements or constructed slopes.

**Reuse of On-Site Soil:** Excavated on-site soil may be selectively reused as fill. Several of the spilt spoon samples from the existing fill contained trace amounts of rootlets. The project budget should include contingencies for discarding on-site materials that greater amounts of organics. Material property requirements for on-site soil for use as structural fill are noted in the table below:

| Property | Structural Fill |
|---|---|
| Composition | Free of deleterious material |

| Property | Structural Fill |
|---|---|
| Maximum particle size | 4 inches |
| Fines content | Not limited |
| Plasticity | Liquid Limit less than 50<br>Plasticity index less than 30 |
| GeoModel Layer Expected to be Suitable[1,2] | 2 and 3 |

1. Based on subsurface exploration.
2. Moisture conditioning (i.e., drying) will likely be required to achieve a moisture content suitable for compaction.

**Imported Fill Materials:** Imported fill materials should meet the following material property requirements. Regardless of its source, compacted fill should consist of approved materials that are free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade.

| Soil Type [1] | USCS Classification | Acceptable Parameters (for Structural Fill) |
|---|---|---|
| Low Plasticity Cohesive | CL, SC, SM, ML | Liquid Limit less than 50<br>Plasticity index less than 30 |
| Granular | GW, GP, GC, SW, SP, SC | Less than 50% passing No. 200 sieve |

1. Structural fill should consist of approved materials free of organic matter and debris. Frozen material should not be used, and fill should not be placed on a frozen subgrade. A sample of each material type should be submitted to the Geotechnical Engineer for evaluation prior to use on this site. Additional geotechnical consultation should be provided prior to use of uniformly graded gravel on the site.

## Fill Placement and Compaction Requirements

Structural fill should meet the following compaction requirements.

| Item | Structural Fill |
|---|---|
| **Maximum Lift Thickness** | 8 inches or less in loose thickness when heavy, self-propelled compaction equipment is used<br>4 to 6 inches in loose thickness when hand-guided equipment (i.e. jumping jack or plate compactor) is used |

| Item | Structural Fill |
|---|---|
| **Minimum Compaction Requirements** [1] | 98% of max. |
| **Water Content Range** [1] | Low plasticity cohesive: -2% to +2% of optimum<br>Granular: -3% to +3% of optimum |

1. Maximum density and optimum water content as determined by the standard Proctor test (ASTM D 698).

## Utility Trench Backfill

Any soft or unsuitable materials encountered at the bottom of utility trench excavations should be removed and replaced with structural fill or bedding material in accordance with public works specifications for the utility be supported. This recommendation is particularly applicable to utility work requiring grade control and/or in areas where subsequent grade raising could cause settlement in the subgrade supporting the utility. Trench excavation should not be conducted below a downward 1:1 projection from existing foundations without engineering review of shoring requirements and geotechnical observation during construction.

On-site low plasticity materials are considered suitable for backfill of utility and pipe trenches, provided the material is free of organic matter and deleterious substances. However, material used as trench backfill should comply with the pipe manufacturer or governing municipality's requirements.

Trench backfill should be mechanically placed and compacted as discussed earlier in this report. Compaction of initial lifts should be accomplished with hand-operated tampers or other lightweight compactors. Where trenches are placed beneath slabs, footings, or pavements, the backfill should satisfy the gradation requirements of engineered fill discussed in this report. Flooding or jetting for placement and compaction of backfill is not recommended.

For low permeability subgrades, utility trenches are a common source of water infiltration and migration. Utility trenches penetrating beneath the building should be effectively sealed to restrict water intrusion and flow through the trenches, which could migrate below the building. The trench should provide an effective trench plug that extends at least 5 feet from the face of the building exterior. The plug material should consist of cementitious flowable fill or low permeability clay. The trench plug material should be placed to surround the utility line. If used, the clay trench plug material should be placed and compacted to comply with the water content and compaction recommendations for structural fill stated previously in this report.

## Grading and Drainage

All grades must provide effective drainage away from the building and paved areas during and after construction and should be maintained throughout the life of the structure. Water retained next to the building can result in soil movements greater than those discussed in this report. Greater movements can result in unacceptable differential floor slab and/or foundation movements, cracked slabs and walls, and roof leaks. In areas where hardscapes and/or paving do not abut against the structure, the roof should have gutters/drains with downspouts that discharge onto splash blocks at a distance of at least 10 feet from the building.

Exposed ground should be sloped and maintained at a minimum 5% away from the building for at least 10 feet beyond the perimeter of the building. Locally, flatter grades may be necessary to transition ADA access requirements for flatwork. After building construction and landscaping have been completed, final grades should be verified to document effective drainage has been achieved. Grades around the structure should also be periodically inspected and adjusted, as necessary, as part of the structure's maintenance program. Where paving or flatwork abuts the structure, a maintenance program should be established to effectively seal and maintain joints and prevent surface water infiltration.

## Earthwork Construction Considerations

Upon completion of filling and grading, care should be taken to maintain the subgrade water content prior to construction of grade-supported improvements such as floor slabs and pavements. Construction traffic over the completed subgrades should be avoided. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. Water collecting over or adjacent to construction areas should be removed. If the subgrade freezes, desiccates, saturates, or is disturbed, the affected material should be removed, or the materials should be scarified, moisture conditioned, and recompacted prior to floor slab construction.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, "Excavations" and its appendices, and in accordance with any applicable local and/or state regulations.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety or the contractor's activities; such responsibility shall neither be implied nor inferred.

## Construction Observation and Testing

The earthwork efforts should be observed by the Geotechnical Engineer (or others under their direction). Observation should include documentation of adequate removal of surficial materials (vegetation, topsoil, foundations/slabs, and pavements), evaluation and remediation of existing fill materials, as well as proofrolling and mitigation of unsuitable areas delineated by the proofroll.

Each lift of compacted fill should be tested, evaluated, and reworked, as necessary, as recommended by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency of at least one test for every 1,000 square feet of compacted fill in the building areas and 5,000 square feet in pavement areas. Where not specified by local ordinance, one density and water content test should be performed for every 50 linear feet of compacted utility trench backfill and a minimum of one test performed for every 12 vertical inches of compacted backfill.

In areas of foundation excavations, the bearing subgrade should be evaluated by the Geotechnical Engineer. If unanticipated conditions are observed, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer's evaluation of subsurface conditions, including assessing variations and associated design changes.

# Shallow Foundations

If the site has been prepared in accordance with the requirements noted in **Earthwork**, the following design parameters are applicable for shallow foundations.

## Design Parameters – Compressive Loads

| Item | Description |
|---|---|
| **Maximum Net Allowable Bearing Pressure** [1, 2] | Foundations bearing upon approved recompacted existing fill, stiff to hard native clayey soils, shale bedrock, or new structural fill<br>2,000 psf Main Building (Office/Service Center)<br>1,000 psf Open Air Storage Building |
| **Required Bearing Stratum** [3] | GeoModel Layer 2, 3, or 4, or new structural fill |

| Item | Description |
|---|---|
| **Minimum Foundation Dimensions** | Per IBC 1809.7 |
| **Ultimate Passive Resistance[4] (equivalent fluid pressures)** | 330 pcf (cohesive backfill) |
| **Sliding Resistance [5]** | 0.30 ultimate coefficient of friction |
| **Minimum Embedment below Finished Grade [6]** | 18 inches |
| **Estimated Total Settlement from Structural Loads [2]** | Less than about 1 inch |
| **Estimated Differential Settlement [2, 7]** | About 1/2 of total settlement |

1. The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. Values assume that exterior grades are no steeper than 20% within 10 feet of structure.
2. Values provided are for maximum loads noted in **Project Description**. Additional geotechnical consultation will be necessary if higher loads are anticipated.
3. Unsuitable or soft soils should be overexcavated and replaced per the recommendations presented in **Earthwork**.
4. Use of passive earth pressures require the sides of the excavation for the spread footing foundation to be nearly vertical and the concrete placed neat against these vertical faces or that the footing forms be removed and compacted structural fill be placed against the vertical footing face. Assumes no hydrostatic pressure. Apply a factor of safety of at least 1.5 when designing for lateral force resistance.
5. Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Frictional resistance for granular materials is dependent on the bearing pressure which may vary due to load combinations.
6. Embedment necessary to minimize the effects of frost and/or seasonal water content variations. For sloping ground, maintain depth below the lowest adjacent exterior grade within 5 horizontal feet of the structure.
7. Differential settlements are noted for equivalent-loaded foundations and bearing elevation as measured over a span of 50 feet.

## Design Parameters – Overturning and Uplift Loads

Uplift resistance of spread footings can be developed from the effective weight of the footing and the overlying soils with consideration to the IBC basic load combinations.

| Item | Description |
|---|---|
| **Soil Moist Unit Weight** | 120 pcf |

| Item | Description |
|---|---|
| **Soil Effective Unit Weight**[1] | 60 pcf |
| **Soil weight included in uplift resistance** | Soil included within the prism extending up from the top perimeter of the footing at an angle of 20 degrees from vertical to ground surface |

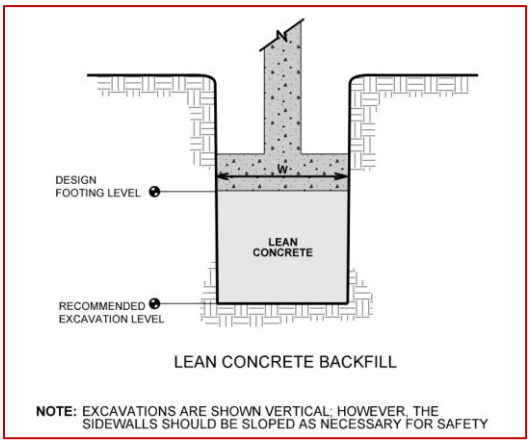
1. Effective (or buoyant) unit weight should be used for soil above the foundation level and below a water level. The high groundwater level should be used in uplift design as applicable.

## Foundation Construction Considerations

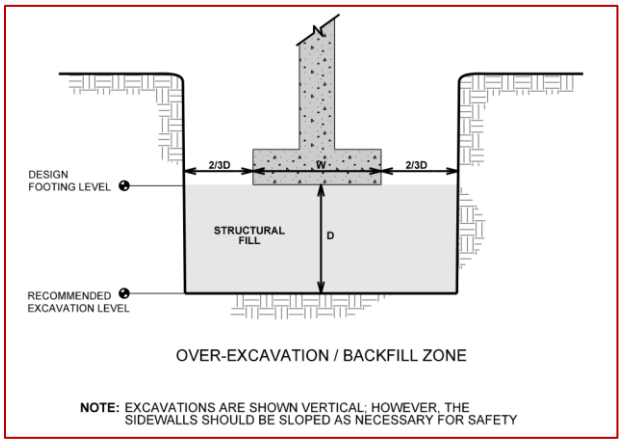
As noted in **Earthwork**, the footing excavations should be evaluated under the observation of the Geotechnical Engineer. The base of all foundation excavations should be free of water and loose soil, prior to placing concrete. Concrete should be placed soon after excavating to reduce bearing soil disturbance. Care should be taken to prevent wetting or drying of the bearing materials during construction. Excessively wet or dry material or any loose/disturbed material in the bottom of the footing excavations should be removed/reconditioned before foundation concrete is placed.

Sensitive soils exposed at the surface of footing excavations may require surficial compaction with hand-held dynamic compaction equipment prior to placing structural fill, steel, and/or concrete. Should surficial compaction not be adequate, construction of a working surface consisting of either crushed stone or a lean concrete mud mat may be required prior to the placement of reinforcing steel and construction of foundations.

If unsuitable bearing soils are observed at the base of the planned footing excavation, the excavation should be extended deeper to suitable soils, and the footings could bear directly on these soils at the lower level or on lean concrete backfill placed in the excavations. The lean concrete replacement zone is illustrated on the sketch below.



Overexcavation for structural fill placement below footings should be conducted as shown below. The overexcavation should be backfilled up to the footing base elevation, with structural fill placed, as recommended in the **Earthwork** section.




# Floor Slabs

Design parameters for floor slabs assume the requirements for **Earthwork** have been followed. Specific attention should be given to positive drainage away from the structure and positive drainage of the aggregate base beneath the floor slab.

Depending upon the site and weather conditions at the time of construction, unsuitable, weak, and/or loose soils may be observed at the floor slab subgrade level. These soils should be densified in place or undercut and replaced with structural fill.

## Floor Slab Design Parameters

| Item | Description |
|---|---|
| **Floor Slab Support**[1] | Minimum 4 inches base course meeting material specifications of ACI 302<br>Subgrade compacted to recommendations in **Earthwork** |
| **Estimated Modulus of Subgrade Reaction** [2] | 100 pounds per square inch per inch (psi/in) for point loads |

1. Floor slabs should be structurally independent of building footings or walls to reduce the possibility of floor slab cracking caused by differential movements between the slab and foundation.

| Item | Description |
|---|---|

2. Modulus of subgrade reaction is an estimated value based upon our experience with the subgrade condition, the requirements noted in **Earthwork**, and the floor slab support as noted in this table. It is provided for point loads. For large area loads the modulus of subgrade reaction would be lower.

The use of a vapor retarder should be considered beneath concrete slabs on grade covered with wood, tile, carpet, or other moisture sensitive or impervious coverings, when the project includes humidity-controlled areas, or when the slab will support equipment sensitive to moisture. When conditions warrant the use of a vapor retarder, the slab designer should refer to ACI 302 and/or ACI 360 for procedures and cautions regarding the use and placement of a vapor retarder.

Saw-cut contraction joints should be placed in the slab to help control the location and extent of cracking. For additional recommendations, refer to the ACI Design Manual. Joints or cracks should be sealed with a waterproof, non-extruding compressible compound specifically recommended for heavy duty concrete pavement and wet environments.

Where floor slabs are tied to perimeter walls or turn-down slabs to meet structural or other construction objectives, our experience indicates differential movement between the walls and slabs will likely be observed in adjacent slab expansion joints or floor slab cracks beyond the length of the structural dowels. The Structural Engineer should account for potential differential settlement through use of sufficient control joints, appropriate reinforcing or other means.

Settlement of floor slabs supported on existing fill materials cannot be accurately predicted but could be larger than normal and result in some cracking. Mitigation measures, as noted in **Existing Fill** within **Earthwork**, are critical to the performance of floor slabs. In addition to the mitigation measures, the floor slab can be stiffened by adding steel reinforcement, grade beams, and/or post-tensioned elements.

## Floor Slab Construction Considerations

Finished subgrade, within and for at least 10 feet beyond the floor slab, should be protected from traffic, rutting, or other disturbance and maintained in a relatively moist condition until floor slabs are constructed. If the subgrade should become damaged or desiccated prior to construction of floor slabs, the affected material should be removed, and structural fill should be added to replace the resulting excavation. Final conditioning of the finished subgrade should be performed immediately prior to placement of the floor slab support course.

The Geotechnical Engineer should observe the condition of the floor slab subgrades immediately prior to placement of the floor slab support course, reinforcing steel, and

concrete. Attention should be paid to high traffic areas that were rutted and disturbed earlier, and to areas where backfilled trenches are located.

# Pavements

## General Pavement Comments

Pavement designs are provided for the traffic conditions and pavement life conditions as noted in the following sections of this report. A critical aspect of pavement performance is site preparation. Pavement designs noted in this section must be applied to the site which has been prepared as recommended in the **Earthwork** section.

## Pavement Design Parameters

Traffic patterns and anticipated loading conditions were not available at the time that this report was prepared. However, we anticipate that traffic loads will be produced primarily by automobile traffic and occasional delivery and trash removal trucks. The thickness of pavements subjected to heavy truck traffic should be determined using expected traffic volumes, vehicle types, and vehicle loads and should be in accordance with local, city or county ordinances.

We have provided estimated pavement thickness design based upon our expectation of the quality of the subgrade as prescribed by the **Site Preparation** conditions as outlined in **Earthwork**, a subgrade maintained in a dry condition for the life of the project, and our experience with similar facilities. The subgrade in fill areas should be compacted to at least 98% of the standard Proctor maximum dry density.

## Pavement Section Thicknesses

The following table provides our opinion of minimum thickness for AC sections:

**Asphaltic Concrete Design**

| Layer | Thickness (inches) | |
|---|---|---|
| | Light Duty [1] | Heavy Duty [1] |
| AC Wearing Surface [2, 3] | 1.0 | 1.0 |
| AC Binder [2] | 2.0 | 2.5 |
| Aggregate Base [2] | 6.0 | 8.0 |

1. See **Pavement Desing Parameters** section for more specifics regarding traffic assumptions.
2. All materials should meet the current Alabama Department of Transportation (ALDOT) Standard Specifications for Highway Construction.
   - Asphaltic Surface - ALDOT 424A Superpave Bituminous Concrete Wearing Surface Layer, ½ inch maximum aggregate size mix
   - Asphaltic Binder - ALDOT 424B Superpave Bituminous Concrete Upper Binder Layer, ¾ inch maximum aggregate size mix
   - Aggregate Base – ALDOT 825B Dense Graded Aggregate Base, compacted to 100% of the modified Proctor
3. A minimum 1.0-inch surface course should be used on ACC pavements.

The following table provides our estimated minimum thickness of PCC pavements.

**Portland Cement Concrete Design**

| Layer | Thickness (inches) | |
|---|---|---|
| | Light Duty [1] | Heavy Duty [1] And Dumpster Pad |
| PCC [2] | 5.0 | 6.0 |
| Aggregate Base | 4.0 | 4.0 |

1. See **Project Description** for more specifics regarding traffic classifications.
2. All materials should meet Section 450 of the Alabama Department of Transportation (ALDOT) Standard Specifications for Highway Construction.

Areas for parking of heavy vehicles, concentrated turn areas, and start/stop maneuvers could require thicker pavement sections. Edge restraints (i.e. concrete curbs or aggregate shoulders) should be planned along curves and areas of maneuvering vehicles.

A minimum 4-inch thick base course layer is recommended to help reduce potential for slab curl, shrinkage cracking, and subgrade pumping through joints. Proper joint spacing will also be required to prevent excessive slab curling and shrinkage cracking. Joints should be sealed to prevent entry of foreign material and doweled where necessary for load transfer. PCC pavement details for joint spacing, joint reinforcement, and joint sealing should be prepared in accordance with ACI 330 and ACI 325.

Where practical, we recommend early-entry cutting of crack-control joints in PCC pavements. Cutting of the concrete in its "green" state typically reduces the potential for micro-cracking of the pavements prior to the crack control joints being formed, compared to cutting the joints after the concrete has fully set. Micro-cracking of pavements may lead to crack formation in locations other than the sawed joints, and/or reduction of fatigue life of the pavement.

Openings in pavements, such as decorative landscaped areas, are sources for water infiltration into surrounding pavement systems. Water can collect in the islands and migrate into the surrounding subgrade soils thereby degrading support of the pavement. Islands with raised concrete curbs, irrigated foliage, and low permeability near-surface soils are particular areas of concern. To reduce the risk of excess water migrating into the surrounding subgrade, the curb and gutter could be placed directly on the cohesive soil subgrade rather than on the unbound granular base course.

## Pavement Drainage

Pavements should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements could saturate the subgrade and contribute to premature pavement deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section.

## Pavement Maintenance

The pavement sections represent minimum recommended thicknesses and, as such, periodic upkeep should be anticipated. Preventive maintenance should be planned and provided for through an on-going pavement management program. Maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment. Pavement care consists of both localized (e.g., crack and joint sealing and patching) and global maintenance (e.g., surface sealing). Additional engineering consultation is recommended to determine the type and extent of a cost-

effective program. Even with periodic maintenance, some movements and related cracking may still occur, and repairs may be required.

Pavement performance is affected by its surroundings. In addition to providing preventive maintenance, the civil engineer should consider the following recommendations in the design and layout of pavements:

- Final grade adjacent to paved areas should slope down from the edges at a minimum 2%.
- Subgrade and pavement surfaces should have a minimum 2% slope to promote proper surface drainage, unless flatter slopes are required for ADA compliance.
- Install joint sealant and seal cracks immediately.
- Seal all landscaped areas in or adjacent to pavements to reduce moisture migration to subgrade soils.
- Place compacted, low permeability backfill against the exterior side of curb and gutter.
- Place curb, gutter and/or sidewalk directly on cohesive subgrade soils rather than on unbound granular base course materials.

# General Comments

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

Our services and any correspondence are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is

solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly effect excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety and cost estimating including excavation support and dewatering requirements/design are the responsibility of others. Construction and site development have the potential to affect adjacent properties. Such impacts can include damages due to vibration, modification of groundwater/surface water flow during construction, foundation movement due to undermining or subsidence from excavation, as well as noise or air quality concerns. Evaluation of these items on nearby properties are commonly associated with contractor means and methods and are not addressed in this report. The owner and contractor should consider a preconstruction/precondition survey of surrounding development. If changes in the nature, design, or location of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

# Figures

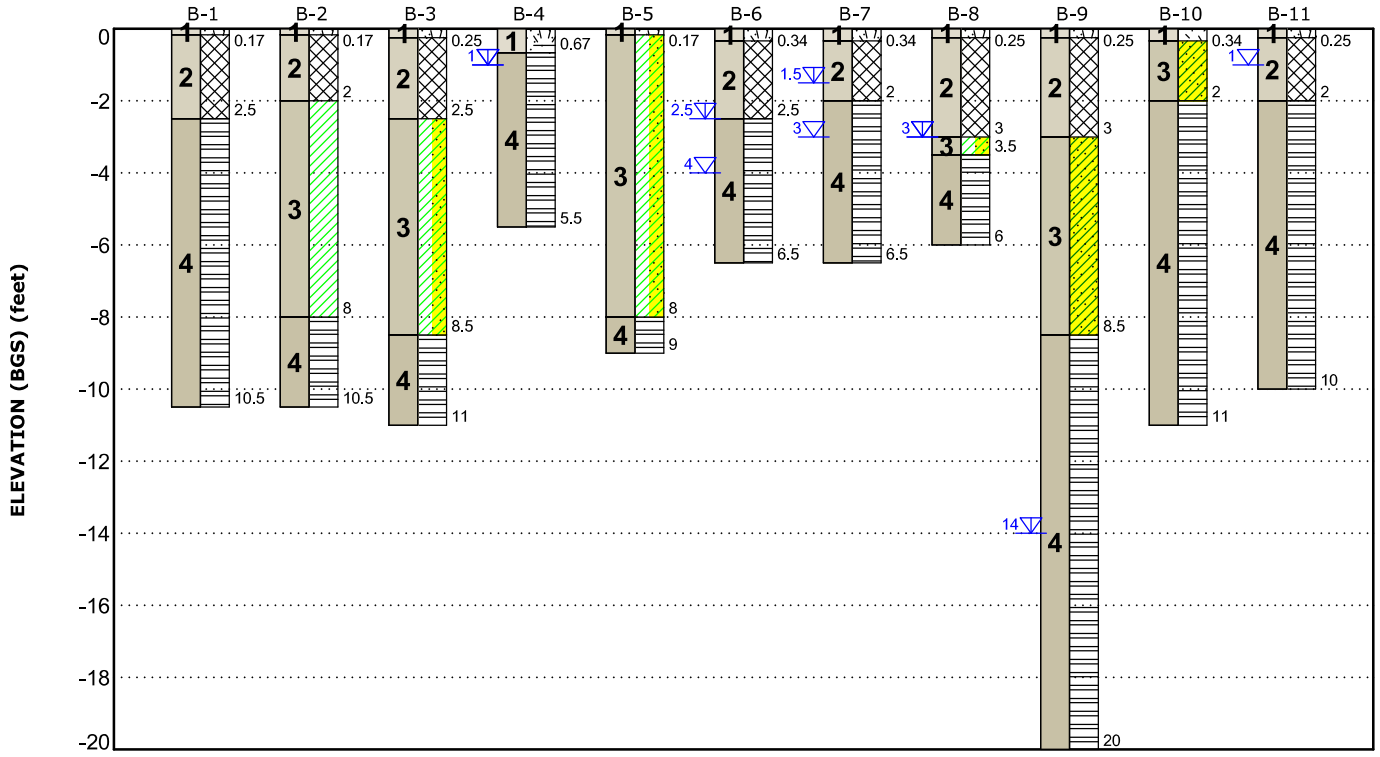
**Contents:**

GeoModel (3 Pages)

Jasper Water Works Facility
Industrial Parkway | Jasper, AL
Terracon Project No. E1255058

Terracon
2147 Riverchase Office Rd
Hoover, AL

# GeoModel




This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

| Model Layer | Layer Name | General Description |
|---|---|---|
| 1 | Surface Layer | Topsoil (2" to 8")<br>Crushed Stone (4" encountered at boring B-10 only) |
| 2 | Existing Fill | Typically, Lean Clay (CL) with variable sand content, tan with dark gray, trace rootlets |
| 3 | Native Soils | Typically, Lean Clay (CL) with variable sand content, tan, brown, gray, very stiff to hard |
| 4 | Native Shale | Medium to dark gray, moderately hard, becomes harder with depth |

**Legend**

Topsoil | Fill
Shale | Lean Clay
Lean Clay with Sand | Sandy Lean Clay
Base

▽ First Water Observation
▽ Second Water Observation

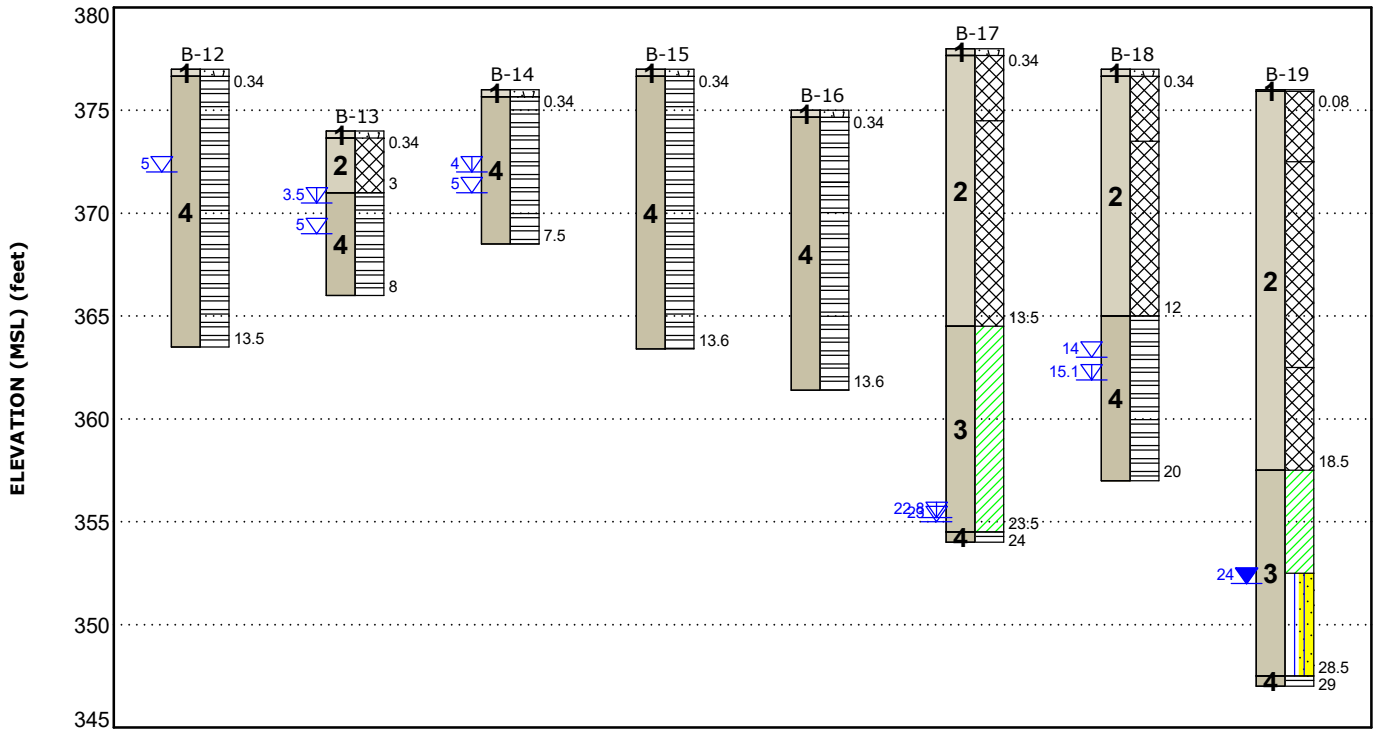
Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time.
Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

Jasper Water Works Facility
3715 Industrial Pkwy | Jasper, AL
Terracon Project No. LT265042

2147 Riverchase Office Rd
Hoover, AL

# GeoModel




This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

| Model Layer | Layer Name | General Description |
|---|---|---|
| 1 | Surface Layer | Topsoil (1" to 8")<br>Crushed Stone (4" encountered at boring B-10 only) |
| 2 | Existing Fill | Lean Clay or Silt, variable sand content or Silty Sand<br>Some fill is composed of pulverized shale fragments |
| 3 | Native Soils | Typically, Lean Clay (CL) or Silt (ML) with variable sand content, tan, brown, gray, very stiff to hard |
| 4 | Native Shale | Brown or medium to dark gray, variable weathering, moderately hard, becomes harder with depth |

**Legend**

- Topsoil
- Fill
- Silt with Sand
- Shale
- Lean Clay

▽ First Water Observation
▽ Second Water Observation
▼ Third Water Observation

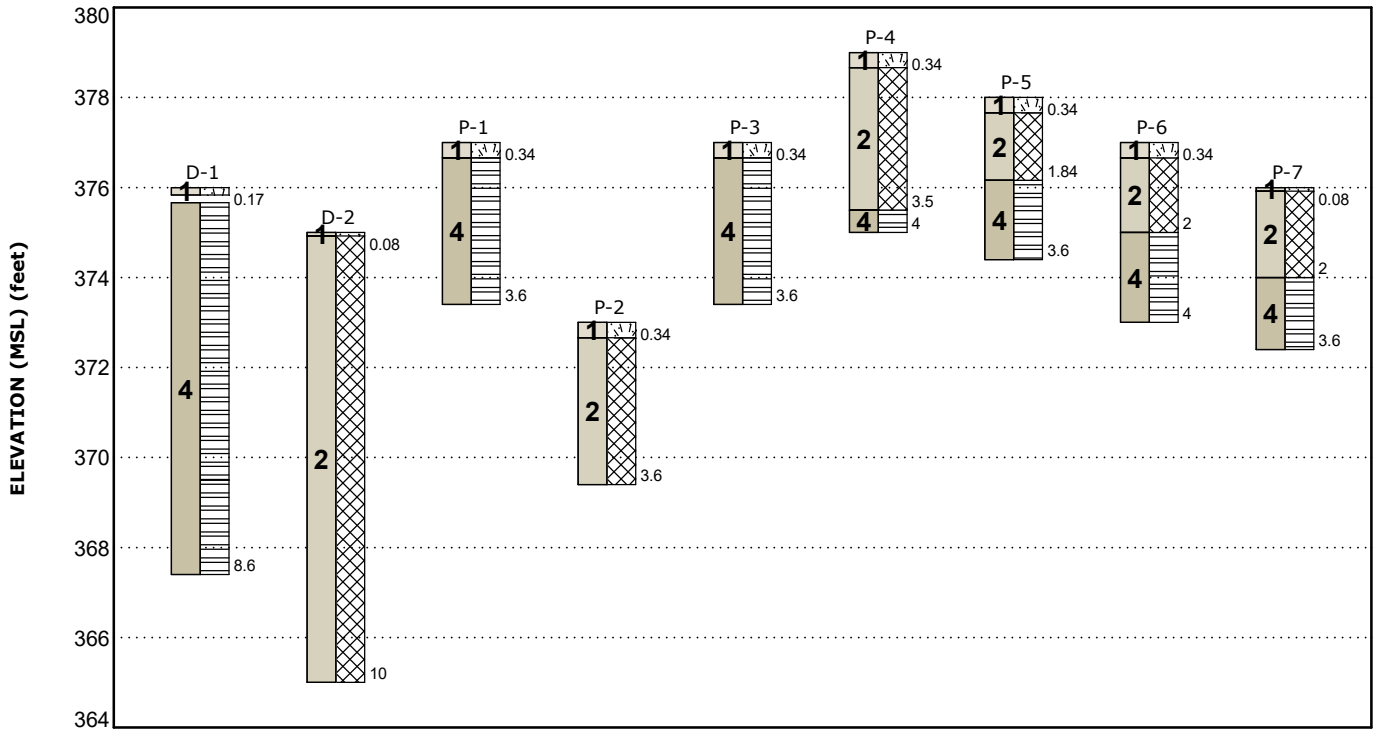
Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time.
Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

Jasper Water Works Facility
3715 Industrial Pkwy | Jasper, AL
Terracon Project No. LT265042

Terracon
2147 Riverchase Office Rd
Hoover, AL

# GeoModel




This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

| Model Layer | Layer Name | General Description |
|---|---|---|
| 1 | Surface Layer | Topsoil (1" to 8")<br>Crushed Stone (4" encountered at boring B-10 only) |
| 2 | Existing Fill | Lean Clay or Silt, variable sand content or Silty Sand<br>Some fill is composed of pulverized shale fragments |
| 3 | Native Soils | Typically, Lean Clay (CL) or Silt (ML) with variable sand content, tan, brown, gray, very stiff to hard |
| 4 | Native Shale | Brown or medium to dark gray, variable weathering, moderately hard, becomes harder with depth |

**Legend**

Topsoil
Shale
Fill

First Water Observation
Second Water Observation
Third Water Observation

Groundwater levels are temporal. The levels shown are representative of the date and time of our exploration. Significant changes are possible over time.
Water levels shown are as measured during and/or after drilling. In some cases, boring advancement methods mask the presence/absence of groundwater. See individual logs for details.

NOTES:
Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project. Numbers adjacent to soil column indicate depth below ground surface.

# Attachments

# Exploration and Testing Procedures

## Field Exploration

| Number of Borings | Approximate Boring Depth (feet) | Planned Location |
|---|---|---|
| 11 (2025) | 5.5 to 20 | Various Locations On Site |
| 5 (2026) | 7.5 to 13.6 | Main Building (Office/Service Center) |
| 3 (2026) | 20 to 29 | Open Air Storage Building |
| 2 (2026) | 8.6 to 10 | Stormwater Ponds |
| 7 (2026) | 3.6 to 4 | Parking And Drives |

**Boring Layout and Elevations:** Terracon personnel provided the boring layout using handheld GPS equipment (estimated horizontal accuracy of about ±10 feet) and referencing existing site features. If a more precise boring layout and elevations are desired, we recommend borings be surveyed.

**Subsurface Exploration Procedures:** We advanced the borings with a track-mounted and truck mounted rotary drill rig. The 2025 borings were advanced using a hollow stem auger drilling technique while the 2026 borings were drilled using solid stem augers. Four samples were obtained in the upper 10 feet of each boring and at intervals of 5 feet thereafter. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon was driven into the ground by a 140-pound automatic hammer (track mounted rig) or safety hammer hoisted by a rope and cathead (truck mounted rig) falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration is recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. We observed and recorded groundwater levels during drilling and sampling. For safety purposes, all borings were backfilled with auger cuttings after their completion.

We also observed the boreholes while drilling and at the completion of drilling for the presence of groundwater. Groundwater observations are included on the individual boring logs.

The sampling depths, penetration distances, and other sampling information was recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by a Geotechnical Engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials observed during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were

prepared from the field logs. The final boring logs represent the Geotechnical Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

## Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests. The laboratory testing program included the following types of tests:

- Moisture Content
- Atterberg Limits
- Percent Fines

The laboratory testing program often included examination of soil samples by an engineer. Based on the results of our field and laboratory programs, we described and classified the soil samples in accordance with the Unified Soil Classification System.

# Site Location and Exploration Plans

**Contents:**

Site Location
Exploration Plan

Note: All attachments are one page unless noted above.

## Site Location

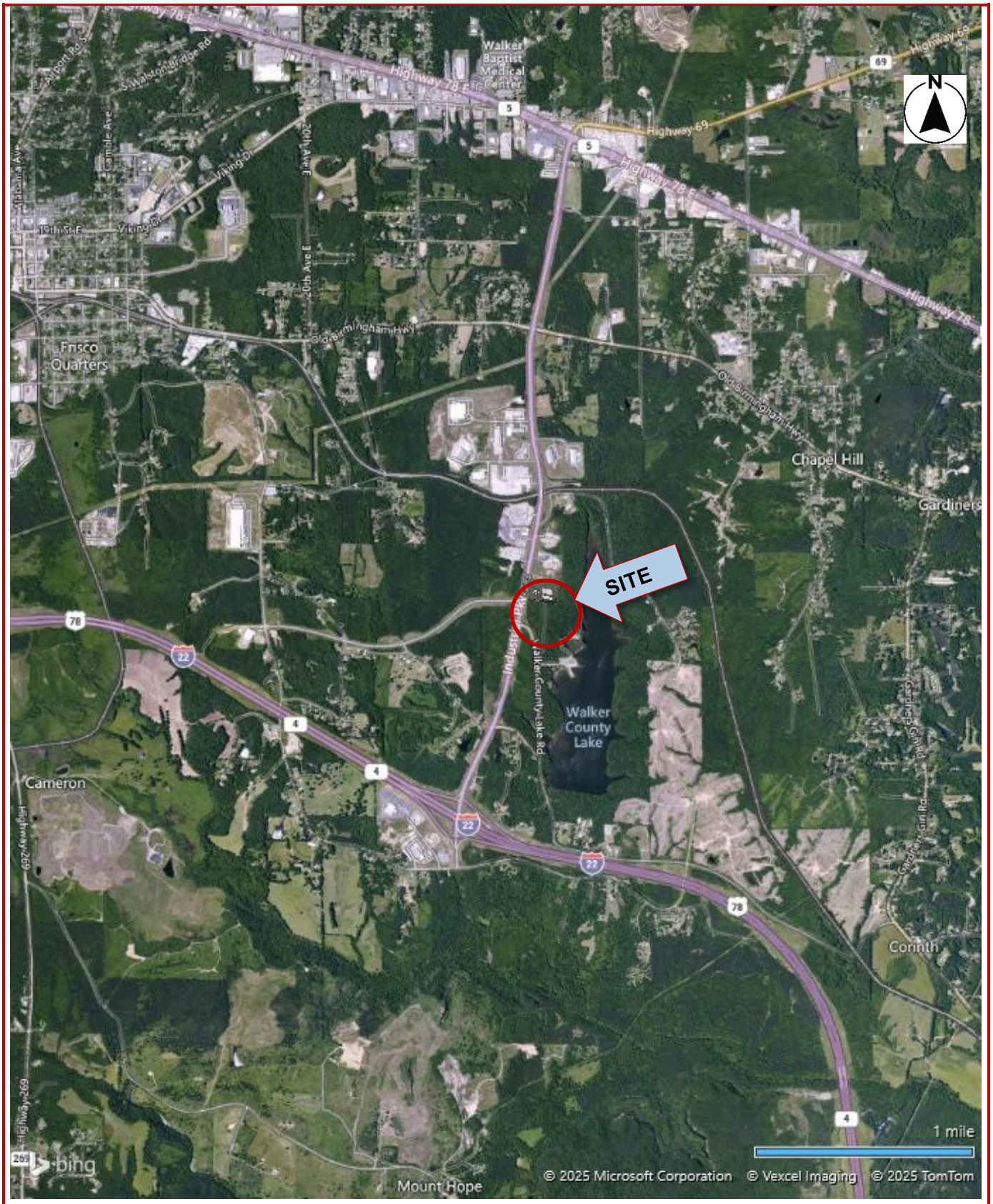



DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES MAP PROVIDED BY MICROSOFT BING MAPS

## Exploration Plan

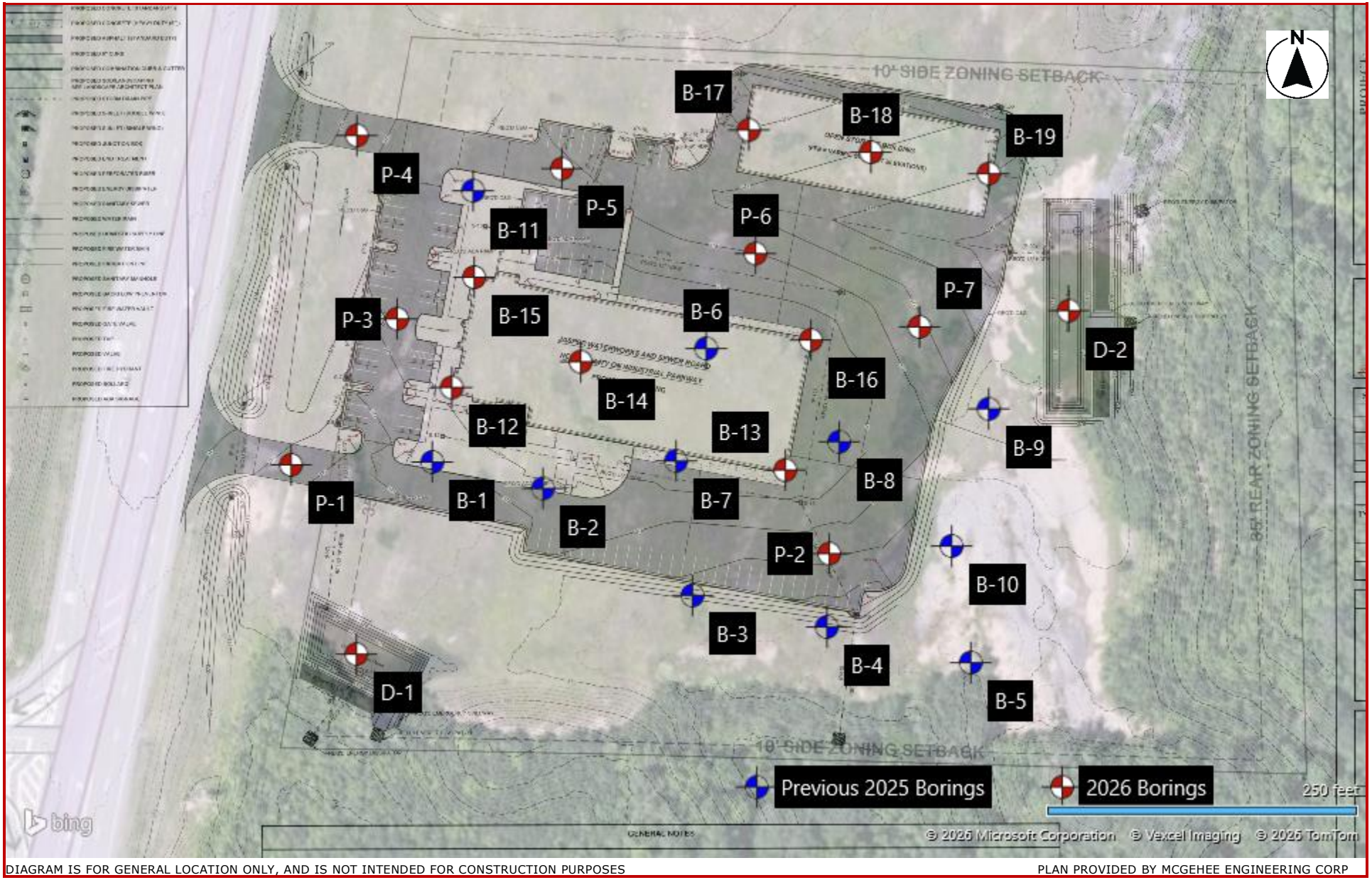



DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

PLAN PROVIDED BY MCGEHEE ENGINEERING CORP

# Exploration and Laboratory Results

**Contents:**

2025 Boring Logs (B-1 through B-11)
2026 Boring Logs (B-12 through B-19, D-1, D-2, P-1 through P-7)

Note: All attachments are one page unless noted above.

Jasper Water Works Facility
Industrial Parkway | Jasper, AL
Terracon Project No. E1255058

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. B-1

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits<br>LL-PL-PI |
|---|---|---|---|---|---|---|---|---|
| 1 | | 0.2 **TOPSOIL (2")** | | | | | | |
| 2 | | **FILL - LEAN CLAY WITH SAND**, trace rootlets, dark tan with dark gray, some shale fragments | | | | 3-2-2<br>N=4 | 14.0 | |
| | | 2.5 | | | | | | |
| 4 | | **SHALE**, medium to dark gray, moderately hard | 5 | | | 50/4"<br>N=50+ | | |
| | | | | | | 50/3"<br>N=50+ | | |
| | | | 10 | | | 50/2"<br>N=50+ | | |
| | | 10.5 ***Auger Refusal at 10.5 Feet*** | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
No water observed during drilling

**Drill Rig**
CME 55

**Driller**
UES

**Notes**

**Advancement Method**
Hollow stem auger

**Logged by**
CMR

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Boring Started**
05-27-2025

**Boring Completed**
05-27-2025

Jasper Water Works Facility
Industrial Parkway | Jasper, AL
Terracon Project No. E1255058

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. B-2

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits<br>LL-PL-PI |
|---|---|---|---|---|---|---|---|---|
| 1 | | 0.2 **TOPSOIL (2")** | | | | | | |
| 2 | | **FILL - LEAN CLAY WITH SAND**, dark tan with gray | | | | 1-2-4<br>N=6 | 19.7 | |
| | | 2.0 | | | | | | |
| 3 | | **LEAN CLAY (CL)**, yellow brown with light gray, very stiff | | | | 6-10-14<br>N=24 | 19.4 | 40-23-17 |
| | | becomes dark tan with gray, hard and contains relict shale bedding | 5 | | | 11-16-50/1"<br>N=50+ | | |
| | | 8.0 | | | | | | |
| 4 | | **SHALE**, medium to dark gray, moderately hard | | | | 50/1"<br>N=50+ | | |
| | | 10.5 | 10 | | | | | |
| | | ***Auger Refusal at 10.5 Feet*** | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
No water observed during drilling

**Drill Rig**
CME 55

**Driller**
UES

**Notes**

**Advancement Method**
Hollow stem auger

**Logged by**
CMR

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Boring Started**
05-27-2025

**Boring Completed**
05-27-2025

Jasper Water Works Facility
Industrial Parkway | Jasper, AL
Terracon Project No. E1255058

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. B-3

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits<br>LL-PL-PI |
|---|---|---|---|---|---|---|---|---|
| 1 | | 0.3 **TOPSOIL (3")** | | | | | | |
| 2 | | **FILL - LEAN CLAY WITH SAND**, dark tan with gray, few roots and rootlets | | | | 1-2-2<br>N=4 | 14.2 | |
| | | 2.5 | | | | | | |
| 3 | | **LEAN CLAY WITH SAND (CL)**, tan and light gray, hard, contains relict shale bedding | 5 | | | 20-28-34<br>N=62 | 10.7 | 34-22-12 |
| | | | | | | 27-34-48<br>N=82 | 10.5 | |
| | | 8.5 | | | | | | |
| 4 | | **SHALE**, medium to dark gray, moderately hard | 10 | | | 50/4"<br>N=50+ | | |
| | | 11.0 | | | | | | |
| | | ***Auger Refusal at 11 Feet*** | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
No water observed during drilling

**Drill Rig**
CME 55

**Driller**
UES

**Notes**

**Advancement Method**
Hollow stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Logged by**
CMR

**Boring Started**
05-27-2025

**Boring Completed**
05-27-2025

Jasper Water Works Facility
Industrial Parkway | Jasper, AL
Terracon Project No. E1255058

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. B-4

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits<br>LL-PL-PI |
|---|---|---|---|---|---|---|---|---|
| 1 | | **TOPSOIL (3")**<br>0.7 | | | | | | |
| 4 | | **SHALE**, medium to dark gray, moderately hard | | ▽ | | 2-2-28<br>N=30 | 19.6 | |
| | | | | | | 50/3"<br>N=50+ | | |
| | | | 5 | | | 50/2"<br>N=50+ | | |
| | | 5.5<br>***Auger Refusal at 5.5 Feet*** | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
▽ Water encountered at 1' during drilling
▽ At completion of drilling

**Drill Rig**
CME 55

**Driller**
UES

**Notes**

**Advancement Method**
Hollow stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Logged by**
CMR

**Boring Started**
05-27-2025

**Boring Completed**
05-27-2025

Jasper Water Works Facility
Industrial Parkway | Jasper, AL
Terracon Project No. E1255058

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. B-5

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits<br>LL-PL-PI |
|---|---|---|---|---|---|---|---|---|
| 1 | | 0.2 **TOPSOIL (2")** | | | | | | |
| 3 | | **LEAN CLAY WITH SAND (CL)**, light tan with gray and brown, very stiff, with relict shale bedding | | | | 3-6-10<br>N=16 | 11.1 | |
| | | becomes hard | | | | 28-50/1"<br>N=50+ | 10.8 | |
| | | contains weathered shale seams | 5 | | | 12-20-36<br>N=56 | 10.1 | |
| | | 8.0 | | | | | | |
| 4 | | **SHALE**, medium to dark gray, moderately hard | | | | 50/2"<br>N=50+ | | |
| | | 9.0 | | | | | | |
| | | ***Auger Refusal at 9 Feet*** | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
No water observed during drilling

**Drill Rig**
CME 55

**Driller**
UES

**Notes**

**Advancement Method**
Hollow stem auger

**Logged by**
CMR

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Boring Started**
05-27-2025

**Boring Completed**
05-27-2025

Jasper Water Works Facility
Industrial Parkway | Jasper, AL
Terracon Project No. E1255058

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. B-6

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits<br>LL-PL-PI |
|---|---|---|---|---|---|---|---|---|
| 1 | | 0.3 **TOPSOIL (4")** | | | | | | |
| 2 | | **FILL - LEAN CLAY WITH SAND**, trace rootlets, tan with gray | | | | 2-1-2<br>N=3 | 15.3 | |
| | | 2.5 | | | | | | |
| 4 | | **SHALE**, medium to dark gray, moderately hard | | | | 12-16-28<br>N=44 | | |
| | | | 5 | | | 50/3"<br>N=50+ | | |
| | | 6.5 | | | | | | |
| | | ***Auger Refusal at 6.5 Feet*** | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
Water encountered at 4' during drilling
At completion of drilling

**Drill Rig**
CME 55

**Driller**
UES

**Notes**

**Advancement Method**
Hollow stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Logged by**
CMR

**Boring Started**
05-27-2025

**Boring Completed**
05-27-2025

Jasper Water Works Facility
Industrial Parkway | Jasper, AL
Terracon Project No. E1255058

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. B-7

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits<br>LL-PL-PI |
|---|---|---|---|---|---|---|---|---|
| 1 | | 0.3 **TOPSOIL (4")** | | | | | | |
| 2 | | **FILL - LEAN CLAY WITH SAND**, dark tan and gray, with roots and rootlets | | ▽ | | 1-2-3<br>N=5 | 16.4 | 36-24-12 |
| | | 2.0 | | | | | | |
| 4 | | **SHALE**, medium to dark gray, moderately weathered | | ▽ | | 46-50/3"<br>N=50+ | | |
| | | | 5 | | | 38-50/5"<br>N=50+ | | |
| | | 6.5 | | | | | | |
| | | ***Auger Refusal at 6.5 Feet*** | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
▽ Water encountered at 3' during drilling
▽ At completion of drilling

**Drill Rig**
CME 55

**Driller**
UES

**Notes**

**Advancement Method**
Hollow stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Logged by**
CMR

**Boring Started**
05-27-2025

**Boring Completed**
05-27-2025

Jasper Water Works Facility
Industrial Parkway | Jasper, AL
Terracon Project No. E1255058

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. B-8

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits<br>LL-PL-PI |
|---|---|---|---|---|---|---|---|---|
| 1 | | 0.3 **TOPSOIL (3")** | | | | | | |
| 2 | | **FILL - SANDY LEAN CLAY**, trace roots and rootlets, tan and dark gray | | | | 2-2-3<br>N=5 | 24.1 | |
| | | 3.0 | | ▽ | | 21-28-50/1"<br>N=50+ | 8.7 | |
| 3 | | 3.5 **LEAN CLAY WITH SAND (CL)**, dark gray, hard | | | | | | |
| 4 | | **SHALE**, medium to dark gray, moderately hard | 5 | | | 50/1"<br>N=50+ | | |
| | | 6.0 ***Auger Refusal at 6 Feet*** | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
▽ Water encountered at 3' during drilling
▽ At completion of drilling

**Drill Rig**
CME 55

**Driller**
UES

**Notes**

**Advancement Method**
Hollow stem auger

**Logged by**
CMR

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Boring Started**
05-27-2025

**Boring Completed**
05-27-2025

Jasper Water Works Facility
Industrial Parkway | Jasper, AL
Terracon Project No. E1255058

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. B-9

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits<br>LL-PL-PI |
|---|---|---|---|---|---|---|---|---|
| 1 | | 0.3 **TOPSOIL (3")** | | | | | | |
| 2 | | **FILL - LEAN CLAY WITH SAND**, trace gravel, dark tan with black | | | | 3-6-9<br>N=15 | 15.3 | |
| | | 3.0 | | | | | | |
| 3 | | **SANDY LEAN CLAY (CL)**, dark tan with gray, hard, with relict shale | | | | 15-19-25<br>N=44 | 16.5 | 35-23-12 |
| | | | 5 | | | 13-14-19<br>N=33 | 13.9 | |
| | | 8.5 | | | | | | |
| 4 | | **SHALE**, medium to dark gray, moderately hard | | | | 8-22-48<br>N=70 | | |
| | | | 10 | | | | | |
| | | | | ▽ | | 26-50/6"<br>N=50+ | | |
| | | | 15 | | | | | |
| | | | | | | 50/5"<br>N=50+ | | |
| | | 20.0 | | | | | | |
| | | ***Boring Terminated at 20 Feet*** | 20 | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
No water observed during drilling
▽ At completion of drilling

**Drill Rig**
CME 55

**Driller**
UES

**Notes**

**Advancement Method**
Hollow stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Logged by**
CMR

**Boring Started**
05-27-2025

**Boring Completed**
05-27-2025

Jasper Water Works Facility
Industrial Parkway | Jasper, AL
Terracon Project No. E1255058

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. B-10

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits<br>LL-PL-PI |
|---|---|---|---|---|---|---|---|---|
| 1 | | 0.3 **BASE (4")** | | | | | | |
| 3 | | **SANDY LEAN CLAY (CL)**, light gray with brown, hard, contains highly to completely weathered shale | | | | 8-17-36<br>N=53 | 7.0 | |
| | | 2.0 | | | | | | |
| 4 | | **SHALE**, medium to dark gray, moderately hard | | | | 50/4"<br>N=50+ | | |
| | | | 5 | | | 50/4"<br>N=50+ | | |
| | | | 10 | | | 50/2"<br>N=50+ | | |
| | | 11.0 | | | | | | |
| | | ***Auger Refusal at 11 Feet*** | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
No water observed during drilling

**Drill Rig**
CME 55

**Driller**
UES

**Notes**

**Advancement Method**
Hollow stem auger

**Logged by**
CMR

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Boring Started**
05-27-2025

**Boring Completed**
05-27-2025

Jasper Water Works Facility
Industrial Parkway | Jasper, AL
Terracon Project No. E1255058

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. B-11

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits<br>LL-PL-PI |
|---|---|---|---|---|---|---|---|---|
| 1 | | 0.3 **TOPSOIL (3")** | | | | | | |
| 2 | | **FILL - LEAN CLAY WITH SAND**, dark tan, some shale fragments | | ▽ | | 4-12-50/3"<br>N=50+ | 10.1 | |
| | | 2.0 | | | | | | |
| 4 | | **SHALE**, medium to dark gray, moderately hard | | | | 50/2"<br>N=50+ | | |
| | | | 5 | | | 50/2"<br>N=50+ | | |
| | | 10.0 | | | | | | |
| | | ***Boring Terminated at 10 Feet*** | 10 | | | 50/2"<br>N=50+ | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
▽ Water encountered at 1' during drilling

**Drill Rig**
CME 55

**Driller**
UES

**Notes**

**Advancement Method**
Hollow stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Logged by**
CMR

**Boring Started**
05-27-2025

**Boring Completed**
05-27-2025

Jasper Water Works Facility
3715 Industrial Pkwy | Jasper, AL
Terracon Project No. LT265042

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. B-12

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) / Elevation: 377 (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0.3 **4" TOPSOIL** 376.66 | | | | | | | |
| 4 | | **SHALE**, medium to dark gray, moderately hard | 5 | ▽ | | 50/1" N=50+ | | | |
| | | | | | | 50/1" N=50+ | | | |
| | | | 10 | | | 50/1" N=50+ | | | |
| | | | | | | 50/1" N=50+ | | | |
| | | 13.5 363.5 | | | | | | | |
| | | ***Boring Terminated at 13.6 Feet*** | | | | 50/1" N=50+ | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
▽ Water observed at 5' while drilling

**Drill Rig**
CME 45

**Driller**
Smith Drilling

**Notes**

**Advancement Method**
Solid stem auger

**Logged by**
CMR

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Boring Started**
04-12-2026

**Boring Completed**
04-12-2026

Jasper Water Works Facility
3715 Industrial Pkwy | Jasper, AL
Terracon Project No. LT265042

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. B-13

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) / Elevation: 374 (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0.3 **4" TOPSOIL** 373.66 | | | | | | | |
| 2 | | **FILL - LEAN CLAY WITH SAND**, dark gray with brown | | | | 3-4-9<br>N=13 | 11.1 | 30-21-9 | |
| | | 3.0 371 | | | | | | | |
| 4 | | **SHALE**, medium to dark gray, moderately hard | 5 | | | 50/1"<br>N=50+ | | | |
| | | 8.0 366 | | | | 50/1"<br>N=50+ | | | |
| | | ***Auger Refusal at 8 Feet*** | | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
Water observed at 5' while drilling
At completion of drilling

**Drill Rig**
CME 45

**Driller**
Smith Drilling

**Notes**

**Advancement Method**
Solid stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Logged by**
CMR

**Boring Started**
04-12-2026

**Boring Completed**
04-12-2026

Jasper Water Works Facility
3715 Industrial Pkwy | Jasper, AL
Terracon Project No. LT265042

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. B-14

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) / Elevation: 376 (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0.3 **4" TOPSOIL** 375.66 | | | | | | | |
| 4 | | **SHALE**, medium to dark gray, moderately hard | 5 | ▽ | | 50/1" N=50+ | | | |
| | | | | ▽ | | 50/1" N=50+ | | | |
| | | 7.5 368.5 | | | | 50/1" N=50+ | | | |
| | | ***Auger Refusal at 7.5 Feet*** | | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
▽ Water observed at 5' while drilling
▽ At completion of drilling

**Drill Rig**
CME 45

**Driller**
Smith Drilling

**Notes**

**Advancement Method**
Solid stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Logged by**
CMR

**Boring Started**
04-12-2026

**Boring Completed**
04-12-2026

Jasper Water Works Facility
3715 Industrial Pkwy | Jasper, AL
Terracon Project No. LT265042

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. B-15

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) / Elevation: 377 (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0.3 **4" TOPSOIL** 376.66 | | | | | | | |
| 4 | | **SHALE**, medium to dark gray, moderately hard | 5 | | | 50/1" N=50+ | | | |
| | | | | | | 50/1" N=50+ | | | |
| | | | 10 | | | 50/1" N=50+ | | | |
| | | | | | | 50/1" N=50+ | | | |
| | | 13.6 363.4 ***Boring Terminated at 13.6 Feet*** | | | | 50/1" N=50+ | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
No water observed during drilling

**Drill Rig**
CME 45

**Driller**
Smith Drilling

**Notes**

**Advancement Method**
Solid stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Logged by**
CMR

**Boring Started**
04-12-2026

**Boring Completed**
04-12-2026

Jasper Water Works Facility
3715 Industrial Pkwy | Jasper, AL
Terracon Project No. LT265042

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. B-16

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) / Elevation: 375 (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0.3 **4" TOPSOIL** 374.66<br>**WEATHERED SHALE**, tan and gray | | | | 50/6" N=50+ | | | |
| 4 | | 3.5 371.5<br>**SHALE**, medium to dark gray, moderately hard | 5 | | | 50/1" N=50+ | | | |
| | | | | | | 50/1" N=50+ | | | |
| | | | 10 | | | 50/1" N=50+ | | | |
| | | 13.6 361.4<br>***Boring Terminated at 13.6 Feet*** | | | | 50/1" N=50+ | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
No water observed during drilling

**Drill Rig**
CME 45

**Driller**
Smith Drilling

**Notes**

**Advancement Method**
Solid stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Logged by**
CMR

**Boring Started**
04-12-2026

**Boring Completed**
04-12-2026

Jasper Water Works Facility
3715 Industrial Pkwy | Jasper, AL
Terracon Project No. LT265042

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. B-17

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) / Elevation: 378 (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0.3 **4" TOPSOIL** 377.66<br>**FILL - LEAN CLAY**, with shale gravel, brown and gray | | | | 50/6"<br>N=50+ | 11.4 | | |
| 2 | | 3.5 374.5<br>**FILL - PULVERIZED WEATHERED SHALE**, dark gray | 5 | | | 50/1"<br>N=50+ | | | |
| | | | | | | 50/1"<br>N=50+ | | | |
| | | | 10 | | | 50/1"<br>N=50+ | | | |
| | | 13.5 364.5 | | | | | | | |
| 3 | | **LEAN CLAY (CL)**, gray and tan with brown, hard, with relict shale bedding | 15 | | | 13-17-19<br>N=36 | 14.0 | | |
| | | | 20 | | | 12-15-22<br>N=37 | | | |
| | | 23.5 354.5 | | | | | | | |
| 4 | | 24.0 **SHALE**, with coal, dark gray to black, moderately hard 354 | | | | 50/6"<br>N=50+ | | | |
| | | ***Boring Terminated at 24 Feet*** | | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
Water observed at 23' while drilling
At completion of drilling

**Drill Rig**
CME 45

**Driller**
Terracon

**Logged by**
CMR

**Boring Started**
04-13-2026

**Boring Completed**
04-13-2026

**Notes**

**Advancement Method**
Solid stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

Jasper Water Works Facility
3715 Industrial Pkwy | Jasper, AL
Terracon Project No. LT265042

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. B-18

Location: See Exploration Plan

| Model Layer | Graphic Log | Depth (Ft.) | Elevation: 377 (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0.3 | **4" TOPSOIL** 376.66 | | | | | | | |
| 2 | | 3.5 | **FILL - SILT WITH SAND**, with shale gravel, tan and gray 373.5 | | | | 21-32-50/6" N=50+ | 6.0 | | |
| | | | **FILL - LEAN CLAY WITH SAND**, with shale gravel, dark gray | 5 | | | 4-4-6 N=10 | 7.2 | | |
| | | | | | | | 50/1" N=50+ | | | |
| | | | | 10 | | | 16-6-6 N=12 | 11.7 | | |
| 4 | | 12.0 | **SHALE**, medium to dark gray, moderately hard 365 | | | | | | | |
| | | | | 15 | | | 50/1" N=50+ | | | |
| | | | becomes harder | | | | | | | |
| | | 20.0 | 357 | 20 | | | | | | |
| | | | ***Auger Refusal at 20 Feet*** | | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
Water observed at 14' while drilling
At completion of drilling

**Drill Rig**
CME 45

**Driller**
Terracon

**Logged by**
CMR

**Boring Started**
04-13-2026

**Boring Completed**
04-13-2026

**Notes**

**Advancement Method**
Solid stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

Jasper Water Works Facility
3715 Industrial Pkwy | Jasper, AL
Terracon Project No. LT265042

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. B-19

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) / Elevation: 376 (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0.1 **1" TOPSOIL** 375.92<br>**FILL - SANDY SILT**, with weathered shale gravel, gray | | | | 9-19-13<br>N=32 | | | |
| | | 3.5 372.5 | | | | | | | |
| 2 | | **FILL - LEAN CLAY WITH SAND**, trace gravel, tan and light brown | 5 | | | 4-3-4<br>N=7 | 21.1 | | |
| | | becomes brown and gray, with gravel | | | | 5-2-3<br>N=5 | 15.2 | | |
| | | | 10 | | | 4-2-2<br>N=4 | | | |
| | | 13.5 362.5 | | | | | | | |
| | | **FILL - LEAN CLAY WITH SAND**, with organics and shale gravel, dark gray with brown | 15 | | | 4-5-7<br>N=12 | | | |
| | | 18.5 357.5 | | | | | | | |
| 3 | | **LEAN CLAY (CL)**, light gray with tan, very stiff, trace remnant topsoil | 20 | | | 5-10-11<br>N=21 | | | |
| | | 23.5 352.5 | | | | | | | |
| | | **SILT WITH SAND (ML)**, tan and brown, hard, with relict shale bedding | 25 | ▼ | | 20-33-50/6"<br>N=50+ | | | |
| | | 28.5 347.5 | | | | | | | |
| 4 | | 29.0 **SHALE**, medium to dark gray 347 | | | | 50/6"<br>N=50+ | | | |
| | | ***Boring Terminated at 29 Feet*** | | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
No water observed during drilling

▼ At completion of drilling

**Drill Rig**
CME 45

**Driller**
Terracon

**Logged by**
CMR

**Boring Started**
04-13-2026

**Boring Completed**
04-13-2026

**Notes**

**Advancement Method**
Solid stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

Jasper Water Works Facility
3715 Industrial Pkwy | Jasper, AL
Terracon Project No. LT265042

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. D-1

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) / Elevation: 376 (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0.2 **2" TOPSOIL** 375.8 | | | | | | | |
| 4 | | **HIGHLY WEATHERED SHALE**, brown and gray | 5 | | | 16-25-50/6" N=50+ | | | |
| | | | | | | 50/6" N=50+ | | | |
| | | 6.5 369.5 **SHALE**, medium to dark gray, moderately hard | | | | 50/1" N=50+ | | | |
| | | 8.6 367.4 ***Boring Terminated at 8.6 Feet*** | | | | 50/1" N=50+ | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
No water observed during drilling

**Drill Rig**
CME 45

**Driller**
Smith Drilling

**Notes**

**Advancement Method**
Solid stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Logged by**
CMR

**Boring Started**
04-12-2026

**Boring Completed**
04-12-2026

Jasper Water Works Facility
3715 Industrial Pkwy | Jasper, AL
Terracon Project No. LT265042

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. D-2

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) / Elevation: 375 (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0.1 **1" TOPSOIL** 374.92<br>**FILL - SILTY SAND**, tan with gray | | | | | | | |
| | | | | | X | 4-4-7<br>N=11 | 18.9 | | 44.6 |
| | | becomes light tan | | | X | 6-8-10<br>N=18 | 19.7 | | |
| 2 | | | 5 | | | | | | |
| | | with pulverized shale gravel | | | X | 5-6-9<br>N=15 | | | |
| | | becomes gray | | | X | 10-13-17<br>N=30 | | | |
| | | 10.0 365<br>***Boring Terminated at 10 Feet*** | 10 | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
No water observed during drilling

**Drill Rig**
CME 45

**Driller**
Smith Drilling

**Notes**

**Advancement Method**
Solid stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Logged by**
CMR

**Boring Started**
04-12-2026

**Boring Completed**
04-12-2026

Jasper Water Works Facility
3715 Industrial Pkwy | Jasper, AL
Terracon Project No. LT265042

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. P-1

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) / Elevation: 377 (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0.3 **4" TOPSOIL** 376.66 | | | | | | | |
| 4 | | **SHALE**, medium to dark gray, moderately hard | | | | 16-50/2" N=50+ | | | |
| | | 3.6 373.4 | | | | | | | |
| | | ***Boring Terminated at 3.6 Feet*** | | | | 50/1" N=50+ | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
No water observed during drilling

**Drill Rig**
CME 45

**Driller**
Smith Drilling

**Notes**

**Advancement Method**
Solid stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Logged by**
CMR

**Boring Started**
04-12-2026

**Boring Completed**
04-12-2026

Jasper Water Works Facility
3715 Industrial Pkwy | Jasper, AL
Terracon Project No. LT265042

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. P-2

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) / Elevation: 373 (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0.3 **4" TOPSOIL** 372.66 | | | | | | | |
| 2 | | **FILL - SILT WITH SAND**, dark gray with brown, contains shale fragments | | | | 50/1" N=50+ | | | |
| | | 3.6 369.4 | | | | | | | |
| | | ***Boring Terminated at 3.6 Feet*** | | | | 50/1" N=50+ | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
No water observed during drilling

**Drill Rig**
CME 45

**Driller**
Smith Drilling

**Notes**

**Advancement Method**
Solid stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Logged by**
CMR

**Boring Started**
04-12-2026

**Boring Completed**
04-12-2026

Jasper Water Works Facility
3715 Industrial Pkwy | Jasper, AL
Terracon Project No. LT265042

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. P-3

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) / Elevation: 377 (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0.3 **4" TOPSOIL** 376.66 | | | | | | | |
| 4 | | **SHALE**, gray, moderately hard | | | | 50/1" N=50+ | | | |
| | | 3.6 373.4 | | | | | | | |
| | | ***Boring Terminated at 3.6 Feet*** | | | | 50/1" N=50+ | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
No water observed during drilling

**Drill Rig**
CME 45

**Driller**
Smith Drilling

**Notes**

**Advancement Method**
Solid stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Logged by**
CMR

**Boring Started**
04-12-2026

**Boring Completed**
04-12-2026

Jasper Water Works Facility
3715 Industrial Pkwy | Jasper, AL
Terracon Project No. LT265042

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. P-4

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) — Elevation: 379 (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0.3 **4" TOPSOIL** 378.66 | | | | | | | |
| 2 | | **SILTY SAND**, with weathered shale gravel, dark gray with tan | | | | 4-11-16<br>N=27 | 12.3 | | |
| | | 3.5 375.5 | | | | | | | |
| 4 | | 4.0 **HIGHLY WEATHERED SHALE**, tan and gray 375 | | | | 50/6"<br>N=50+ | | | |
| | | ***Boring Terminated at 4 Feet*** | | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
No water observed during drilling

**Drill Rig**
CME 45

**Driller**
Smith Drilling

**Notes**

**Advancement Method**
Solid stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Logged by**
CMR

**Boring Started**
04-12-2026

**Boring Completed**
04-12-2026

Jasper Water Works Facility
3715 Industrial Pkwy | Jasper, AL
Terracon Project No. LT265042

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. P-5

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) — Elevation: 378 (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0.3 **4" TOPSOIL** — 377.66 | | | | | | | |
| 2 | | **FILL - SILTY SAND**, brown and gray<br>1.8 — 376.16 | | | | 50/1"<br>N=50+ | | | |
| 4 | | **SHALE**, medium to dark gray, moderately hard<br>3.6 — 374.4 | | | | | | | |
| | | ***Boring Terminated at 3.6 Feet*** | | | | 50/1"<br>N=50+ | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).
See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
No water observed during drilling

**Drill Rig**
CME 45

**Driller**
Smith Drilling

**Notes**

**Advancement Method**
Solid stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Logged by**
CMR

**Boring Started**
04-12-2026

**Boring Completed**
04-12-2026

Jasper Water Works Facility
3715 Industrial Pkwy | Jasper, AL
Terracon Project No. LT265042

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. P-6

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) — Elevation: 377 (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0.3 **4" TOPSOIL** — 376.66 | | | | | | | |
| 2 | | **FILL - SANDY SILT**, with shale fragments, brown to gray | | | | | | | |
| | | 2.0 — 375 | | | X | 10-20-22<br>N=42 | 12.9 | | |
| 4 | | **HIGHLY WEATHERED SHALE**, dark gray | | | | | | | |
| | | 4.0 — 373 | | | X | 50/6"<br>N=50+ | | | |
| | | ***Boring Terminated at 4 Feet*** | | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
No water observed during drilling

**Drill Rig**
CME 45

**Driller**
Smith Drilling

**Notes**

**Advancement Method**
Solid stem auger

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Logged by**
CMR

**Boring Started**
04-12-2026

**Boring Completed**
04-12-2026

Jasper Water Works Facility
3715 Industrial Pkwy | Jasper, AL
Terracon Project No. LT265042

Terracon
2147 Riverchase Office Rd
Hoover, AL

# Boring Log No. P-7

| Model Layer | Graphic Log | Location: See Exploration Plan<br>Depth (Ft.) / Elevation: 376 (Ft.) | Depth (Ft.) | Water Level Observations | Sample Type | Field Test Results | Water Content (%) | Atterberg Limits LL-PL-PI | Percent Fines |
|---|---|---|---|---|---|---|---|---|---|
| 1 | | 0.1 **1" TOPSOIL** 375.92 | | | | | | | |
| 2 | | **SILT WITH SAND**, dark gray and tan | | | | | | | |
| | | 2.0 374 | | | | 7-50/1" N=50+ | 11.5 | | |
| 4 | | **SHALE**, medium to dark gray, moderately hard | | | | | | | |
| | | 3.6 372.4 | | | | 50/1" N=50+ | | | |
| | | ***Boring Terminated at 3.6 Feet*** | | | | | | | |

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

**Water Level Observations**
No water observed during drilling

**Drill Rig**
CME 45

**Driller**
Smith Drilling

**Notes**

**Advancement Method**
Solid stem auger

**Logged by**
CMR

**Boring Started**
04-12-2026

**Abandonment Method**
Boring backfilled with auger cuttings upon completion.

**Boring Completed**
04-12-2026

# Supporting Information

**Contents:**

General Notes
Unified Soil Classification System

Note: All attachments are one page unless noted above.

Terracon
2147 Riverchase Office Rd
Hoover, AL

# General Notes

| Sampling | Water Level | Field Tests |
|---|---|---|
| Standard Penetration Test | Water Initially Encountered<br>Water Level After a Specified Period of Time<br>Water Level After a Specified Period of Time<br>Cave In Encountered<br><br>Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations. | N Standard Penetration Test Resistance (Blows/Ft.)<br>(HP) Hand Penetrometer<br>(T) Torvane<br>(DCP) Dynamic Cone Penetrometer<br>UC Unconfined Compressive Strength<br>(PID) Photo-Ionization Detector<br>(OVA) Organic Vapor Analyzer |

## Descriptive Soil Classification

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

## Location And Elevation Notes

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

## Strength Terms

**Relative Density of Coarse-Grained Soils**
(More than 50% retained on No. 200 sieve.)
Density determined by Standard Penetration Resistance

| Relative Density | Standard Penetration or N-Value (Blows/Ft.) |
|---|---|
| Very Loose | 0 - 3 |
| Loose | 4 - 9 |
| Medium Dense | 10 - 29 |
| Dense | 30 - 50 |
| Very Dense | > 50 |

**Consistency of Fine-Grained Soils**
(50% or more passing the No. 200 sieve.)
Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance

| Consistency | Unconfined Compressive Strength Qu (tsf) | Standard Penetration or N-Value (Blows/Ft.) |
|---|---|---|
| Very Soft | less than 0.25 | 0 - 1 |
| Soft | 0.25 to 0.50 | 2 - 4 |
| Medium Stiff | 0.50 to 1.00 | 5 - 8 |
| Stiff | 1.00 to 2.00 | 9 - 15 |
| Very Stiff | 2.00 to 4.00 | 16 - 30 |
| Hard | > 4.00 | > 30 |

## Relevance of Exploration and Laboratory Test Results

Exploration/field results and/or laboratory test data contained within this document are intended for application to the project as described in this document. Use of such exploration/field results and/or laboratory test data should not be used independently of this document.

# Unified Soil Classification System

| Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A] | | | | Soil Classification | |
|---|---|---|---|---|---|
| | | | | Group Symbol | Group Name [B] |
| **Coarse-Grained Soils:** More than 50% retained on No. 4 sieve | **Gravels:** More than 50% of coarse fraction retained on No. 4 sieve | **Clean Gravels:** Less than 5% fines [C] | Cu≥4 and 1≤Cc≤3 [E] | GW | Well-graded gravel [F] |
| | | | Cu<4 and/or [Cc<1 or Cc>3.0] [E] | GP | Poorly graded gravel [F] |
| | | **Gravels with Fines:** More than 12% fines [C] | Fines classify as ML or MH | GM | Silty gravel [F, G, H] |
| | | | Fines classify as CL or CH | GC | Clayey gravel [F, G, H] |
| | **Sands:** 50% or more of coarse fraction passes No. 4 sieve | **Clean Sands:** Less than 5% fines [D] | Cu≥6 and 1≤Cc≤3 [E] | SW | Well-graded sand [I] |
| | | | Cu<6 and/or [Cc<1 or Cc>3.0] [E] | SP | Poorly graded sand [I] |
| | | **Sands with Fines:** More than 12% fines [D] | Fines classify as ML or MH | SM | Silty sand [G, H, I] |
| | | | Fines classify as CL or CH | SC | Clayey sand [G, H, I] |
| **Fine-Grained Soils:** 50% or more passes the No. 200 sieve | **Silts and Clays:** Liquid limit less than 50 | **Inorganic:** | PI > 7 and plots above "A" line [J] | CL | Lean clay [K, L, M] |
| | | | PI < 4 or plots below "A" line [J] | ML | Silt [K, L, M] |
| | | **Organic:** | $\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$ | OL | Organic clay [K, L, M, N] |
| | | | | | Organic silt [K, L, M, O] |
| | **Silts and Clays:** Liquid limit 50 or more | **Inorganic:** | PI plots on or above "A" line | CH | Fat clay [K, L, M] |
| | | | PI plots below "A" line | MH | Elastic silt [K, L, M] |
| | | **Organic:** | $\frac{LL\ oven\ dried}{LL\ not\ dried} < 0.75$ | OH | Organic clay [K, L, M, P] |
| | | | | | Organic silt [K, L, M, Q] |
| **Highly organic soils:** | Primarily organic matter, dark in color, and organic odor | | | PT | Peat |

[A] Based on the material passing the 3-inch (75-mm) sieve.
[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.
[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.
[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.
[E] $Cu = D_{60}/D_{10}$ $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$
[F] If soil contains ≥ 15% sand, add "with sand" to group name.
[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.
[H] If fines are organic, add "with organic fines" to group name.
[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.
[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.
[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.
[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.
[N] PI ≥ 4 and plots on or above "A" line.
[O] PI < 4 or plots below "A" line.
[P] PI plots on or above "A" line.
[Q] PI plots below "A" line.

