

**WDD ARCHITECTS**  
5050 NORTHSHORE LN  
NORTH LITTLE ROCK, AR 72118

**WDD**  
ARCHITECTS



**BRINKLEY HIGH CHOOOL**

**BRINKLEY PUBLIC SCHOOLS**

**BRINKLEY, ARKANSAS**

**WDD PROJECT NO. 23-069**

**DBA PROJECT NO. 5002516**

**EARLY SITE AND STEEL PACKAGE - PHASE 2**

**NOVEMBER 29, 2024**

**WITTENBERG, DELONY & DAVIDSON, INC.**  
5050 NORTHSHORE LN, NORTH LITTLE ROCK, ARKANSAS 72118  
(501) 376-6681

**Mechanical-Electrical Engineers**  
**INSIGHT ENGINEERING, PLLC**  
201 S CHESTER ST, LITTLE ROCK, ARKANSAS 72201

**Structural Engineers**  
**ENGINEERING CONSULTANTS, INC.**  
401 W CAPITOL AVE, STE 305, LITTLE ROCK, ARKANSAS 72205

**Civil Engineers**  
**MCCLELLAND CONSULTING ENGINEERS, INC.**  
7302 KANIS RD, LITTLE ROCK, ARKANSAS 72204

**Food Service Consultants**  
**MCKAY-LANE CONSULTING, INC.**  
1807 DODSON AVE, FORT SMITH, ARKANSAS 72901

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NEW BRINKLEY HIGH SCHOOL  
BRINKLEY SCHOOL DISTRICT  
BRINKLEY, ARKANSAS**

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## LEGAL ADVERTISEMENT

Proposals will be received on selected Bid Packages for the BRINKLEY HIGH SCHOOL PACKAGE NO. 2 – SITE, BUILDING & SITE CONCRETE, STEEL (FOB), PEMB (FOB) for the BRINKLEY SCHOOL DISTRICT, BRINKLEY, ARKANSAS. The Construction Manager, Baldwin & Shell Construction Company, will receive bids at their offices located at 1000 WEST CAPITOL AVENUE, LITTLE ROCK, ARKANSAS on December 17<sup>th</sup>, 2024 NO LATER THAN 2:00PM LOCAL TIME.

Once the time to receive bids has passed, bids received will be privately opened. Bids offered after the time to receive bids has passed will not be accepted.

Bidders are instructed to review SECTION 00 52 00 – BID PACKAGE SCHEDULE in the project manual and/or addenda for a complete description of Trade Contract & Material Supplier Packages.

ALL Bid Proposals must be submitted on a copy of the Bid Forms provided in the project manual or addenda. Bidders may photocopy these forms. The entire manual does not need to be submitted with the bids. Faxed and emailed Bid Proposals on Bid Forms will be accepted. Phone Quotes will not be accepted.

A 5% Bid Bond or Cashier's Check is required on Trade Contract bids in excess of \$50,000 and Material Supplier Contract bids in excess of \$100,000. Trade Contract Bids must include the cost of Performance Bond and Payment Bond. Successful Trade Contract bidders will be required to furnish the Performance Bond and Payment Bond on Baldwin and Shell standard bond forms without alteration. Material Supplier Contract bids in excess of \$100,000 must include the cost of a Supply Bond. Successful Material Supplier Contract bidders will be required to furnish the Supply Bond on Baldwin and Shell standard bond forms without alteration. All bidders shall meet Baldwin and Shell's Contract Requirements including execution of the attached Baldwin and Shell Standard Subcontract, Purchase Order, Grant Disclosure, Payment Bond, Performance Bond, Supply Bond and Baldwin and Shell Standard Form for Pay Application, and must comply with Baldwin and Shell's policies on Illegal Immigration.

Bidders shall conform to the requirements of the Arkansas licensing laws and regulations for contractors, and shall be licensed before a bid is submitted. Minority participation from firms is highly encouraged but not required.

Both the Owner and Construction Manager reserve the right to reject any and all bids, and to waive any formalities.

You may obtain Bid Documents electronically by contacting:

BALDWIN & SHELL CONSTRUCTION CO.  
CONSTRUCTION MANAGER  
1000 WEST CAPITOL AVENUE  
LITTLE ROCK, ARKANSAS 72201  
501-374-8677  
Ryan Engdahl CPE  
rengdahl@baldwinshell.com

**PART 1 - GENERAL**

**1.01 DESCRIPTION OF BID**

- A. Base Bid: Work includes Site Preparation and Improvements, General Construction, Structural Steel, Concrete Foundation and the Structural Pre-Engineered Metal Building (PEMB), as shown on the Drawings and described herein, all to be let under one prime contract.
- B. Bid Documents: Bidders, sub-bidders, material suppliers and other interested parties are encouraged to obtain complete sets of Bid Documents from the Architect. Complete sets of Bid Documents should always be used in preparing bids. Neither the Owner nor Architect assumes responsibility for errors in bidding or misinterpretations of Bid Documents resulting from the use of incomplete sets of Bid Documents. The documents obtained through the Architect are considered the official version and take precedence if any discrepancies occur. The use of incomplete or inaccurate Bid Documents does not relieve the bidder of the obligation to perform all work related to his bid as detailed in a complete set of Bid Documents.

**1.02 EXAMINATION OF PREMISES**

- A. Before submitting his bid, Contractor will be held to have examined the premises and satisfied himself as to existing conditions under which he will be obligated to operate, or that will in any manner affect Work under this contract.
- B. Bidder must inform himself fully of conditions relating to construction of project and employment of labor. Failure to do so does not relieve successful bidder of his obligation to furnish material and labor necessary to carry out provisions of his contract. Insofar as possible Contractor, in carrying out his Work, must employ such methods or means to avoid any interruption of or interference with Work of any other Contract.

**1.03 CONTRACTOR'S LICENSE**

- A. Parties bidding on this Work must comply with all requirements and regulations of Contractor's License Law of the State of Arkansas, as set forth in Arkansas Code Annotated § 17-25-101 et. seq.
- B. In case of discrepancy between written amounts shown by bidder and amounts in numerical figures on bid form, the amount written out rather than amount in numerical figures shall govern.

#### 1.04 INTERPRETATIONS

- A. No interpretation of plans, specifications or other bid documents will be made orally to any bidder. Requests for interpretation or clarification of Bid Documents must be made in writing addressed to **Wittenberg, Delony & Davidson, Inc.,**  
**ATTN: Gordon Duckworth, AIA, [duck@wddarchitects.com](mailto:duck@wddarchitects.com).**
- 1. TO BE GIVEN CONSIDERATION, REQUESTS FOR INTERPRETATION MUST BE RECEIVED AT LEAST FIVE (5) WORKING DAYS PRIOR TO DATE FIXED FOR OPENING OF BIDS.**
- B. Interpretations and supplemental information will be issued in the form of written addenda issued to prospective prime contract bidders. **ADDENDA WILL NOT BE ISSUED WITHIN THREE (3) WORKING DAYS (72 hours) PRIOR TO DATE FIXED FOR OPENING OF BIDS.** Failure of bidder to receive any addendum shall not relieve bidder from obligation under his bid as submitted. All addenda so issued shall become part of Contract Documents.
- C. Should an error, inconsistency or omission be found in the Bid Documents after the Bid Opening, the Contractor will be deemed to have prepared his bid based upon the more costly or complex way of performing the Work or in accordance with the more stringent requirements.
- D. Anything mentioned in the Specifications and not shown on the Drawings or shown on the Drawings and not mentioned in the Specifications is to have the same effect as if shown or mentioned in both.
- E. Precedence **IS NOT** given to the Specifications over the Drawings or to Large Scale Drawings over Smaller Scale Drawings. All drawings and all specifications are complimentary and shall be viewed collectively when interpreting the Design Intent for the Project. The Architect is the sole judge and interpreter of Design Intent and his decision will be final and binding upon the General Contractor.

#### 1.05 OPENING OF BIDS

- A. Refer to Construction Manager Trade packages.

#### 1.06 WITHDRAWAL OF BIDS PRIOR TO BID OPENING

- A. Refer to Construction Manager Trade packages.

#### 1.07 QUALIFICATIONS OF BIDDER

- A. Refer to Construction Manager Trade packages.



**1.08 POWER OF ATTORNEY**

- A. Attorneys-in-fact who sign bid bonds or contract bonds must file with each bond a certified and effectively dated copy of their power of attorney.

**1.09 LAWS AND REGULATIONS**

- A. Bidder's attention is directed to the fact that all applicable State laws, municipal ordinances, and rules and regulations of authorities having jurisdiction over construction of project shall apply to contract throughout, and they will be deemed to be included in contract the same as though written out in full.

**1.10 BID FORMALITIES AND REJECTION OF BIDS**

- A. Owner reserves right to waive any formalities in a bid or to reject any or all bids.

**1.11 CONDITIONAL BIDS**

- A. Conditional bids will not be considered.

**PART 2 - PRODUCTS (Not Applicable)**

**PART 3 - EXECUTION (Not Applicable)**

**END OF DOCUMENT 00 21 13**

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**PART 1 - GENERAL**

**1.01 EXISTING ASBESTOS INFORMATION**

- A. Asbestos Assessment Report has been made for the Owner by Environmental for this Project. This report has been bound herein for information purposes only.
- B. Additional tests and other exploratory operations may be performed by Contractor, at the Contractor's expense; however, no change in the Contract Sum will be authorized for such additional exploration.

**1.02 ASBESTOS ABATEMENT**

- A. The Owner will enter into a separate contract with an abatement contractor to have all friable asbestos removed from the areas in which the contractor for this project will be working.
- B. During the construction of this project, if work involving friable asbestos is suspected, or encountered, Contractor shall notify Owner or Owner's representative immediately and Owner, with his own forces or by separate contract is responsible for complete investigation, removal and disposition of friable asbestos hazard in accordance with applicable laws and regulations.

**PART 2 - PRODUCTS (Not Applicable)**

**PART 3 - EXECUTION (Not Applicable)**

**END OF DOCUMENT 00 31 19**

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**PART 1 - GENERAL**

**1.01 SOILS REPORT**

- A. A geotechnical investigation of the site has been made for use in site grading and foundation design for this Project. This report has been bound herein for information purposes only. Boring logs and test data are for information only. Conditions are not intended as representations or warranties of accuracy or continuity between each soil boring. Architect and Owner will not be responsible for interpretations or conclusions drawn from this data by Contractor and advise Contractor to make his own investigations as he deems necessary.
- B. Additional boring tests and other exploratory operations may be performed by Contractor, at the Contractor's expense; however, no change in the Contract Sum will be authorized for such additional exploration.

**1.02 SUPPLEMENTAL INFORMATION**

- A. Demolition, clearing, grubbing, preliminary grading, site utility work and building pad preparation is currently being performed by the Owner at the site. Work on the building pad is scheduled to be substantially completed prior to the issuance of a Notice to Proceed for the building construction portion of this project.
- B. Upon completion of the work for the "Earthwork Package", the Contractor for the earthwork package will prepare Construction Record Documents. Information on these drawings will be verified and checked for accuracy and compliance with construction documents by both an independent geotechnical consulting firm and a registered land surveyor employed by the Owner.
- C. Drawings and additional geotechnical information will be assembled by the Architect and furnished to the General Contractor for the building construction portion of this project. Information to be furnished to General Contractor includes, but may not be limited to, the following:
  - 1. Site Grading Plans including all site and building pad elevations.
  - 2. Site Utility Plans including drainage structures.
  - 3. Compaction and Field density test reports.
  - 4. Other pertinent geotechnical data.

- D. This information will be provided for information purposes only. Architect and Owner will not be responsible for interpretations or conclusions drawn from this data by Contractor and will assume no responsibility for interpretations made from said data and advise Contractor to make his own investigations. Additional testing and exploratory operations may be performed by Contractor, at the Contractor's expense; however, no change in the Contract Sum will be authorized for such additional exploration.

**PART 2 - PRODUCTS (Not Applicable)**

**PART 3 - EXECUTION (Not Applicable)**

**END OF DOCUMENT 00 31 32**



Report of Subsurface Exploration and  
Geotechnical Evaluation  
Brinkley High School  
Brinkley, Arkansas  
BUILDING & EARTH SCIENCES, INC.  
PROJECT NO.: LR240081

*PREPARED FOR:*  
WDD Architects

May 30, 2024





Geotechnical, Environmental, and Materials Engineers

29 Collins Industrial Place, Building 1, Suite C  
North Little Rock, Arkansas, 72113  
Ph: 501/504-6929

May 30, 2024

WDD Architects  
5050 Northshore Lane  
North Little Rock, Arkansas 72118

Attention: Mr. Brad Chilcote  
Principal, Vice President

Subject: Subsurface Exploration and Geotechnical Evaluation  
Brinkley High School  
Brinkley, Arkansas  
Building & Earth Sciences, Inc. Project No: LR240081

Dear Mr. Brad Chilcote:

Building & Earth Sciences, Inc. has completed the authorized subsurface exploration and geotechnical engineering evaluation for the Brinkley High School located at 100 Tigers Drive in Brinkley, Arkansas.

The purpose of this exploration and evaluation was to determine general subsurface conditions at the site and to address applicable geotechnical aspects of the proposed construction and site development. The recommendations in this report are based on a physical reconnaissance of the site and observation and classification of samples obtained from 16 soil test borings conducted at the site. Confirmation of the anticipated subsurface conditions during construction is an essential part of geotechnical services.

We appreciate the opportunity to provide consultation services for the proposed project. If you have any questions regarding the information in this report or need any additional information, please call us.

Respectfully Submitted,  
**Building & Earth Sciences, Inc.**

**AR Certificate of Authorization No. 569, Expiration Date 12/31/25**

Stuart M. Scheiderer, P. E.  
Branch Manager  
Arkansas 11424



Joseph D. Vistad, P.E.  
Senior Engineering Review - Principal

Birmingham, AL • Auburn, AL • Huntsville, AL • Montgomery, AL  
Tuscaloosa, AL • Columbus, GA • Louisville, KY • Raleigh, NC • Dunn, NC  
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Key to Hatches

Important Information about this Geotechnical-Engineering Report

## 1.0 PROJECT & SITE DESCRIPTION

The subject site is located at 100 Tigers Drive, Brinkley, Arkansas. Information relative to the proposed site and the proposed development is listed in [Table 1](#) below. Photographs depicting the current site condition are presented on the following page.

**Table 1: Project and Site Description**

Detail	Description
<b>General Site</b>	
Size (Ac.)	±10.0
Existing Development	High School Campus
Vegetation	Mowed Grass
Slopes	No
Retaining Walls	No
Drainage	Surface drainage to existing drainage features
Cuts & Fills	Minimal
<b>Proposed Buildings</b>	
No. of Bldgs	One
Square Ft.	±52,000
Stories	One
Construction	Steel framed with brick and metal panel veneer
Column Loads	100 kips (Assumed)
Wall Loads	2 klf (Assumed)
Preferred Foundation	Conventional Shallow Foundation
Preferred Slab	Slab-on-Grade
<b>Pavements</b>	
Traffic	Not Provided
Standard Duty	Rigid and Flexible
Heavy Duty	Rigid and Flexible

Reference: Boring Location Plan by WDD, Brinkley High School Schematic Design, dated 5/7/24

**Notes:**

1. *If actual loading conditions exceed our assumed loads, Building & Earth Sciences, Inc. should be allowed to review the proposed structural design and its effects on our recommendations for foundation design.*
2. *When a grading plan is finalized, Building & Earth Sciences, Inc. should be allowed to review the plan and its effects on our recommendations.*

**Site Photos**



**Photograph 1: East Side of Existing Building**



**Photograph 2: West Side of Existing Building**



**Photograph 3: North Side of Existing Building and Parking Lot**



**Photograph 4: Modular Buildings**

## 2.0 SCOPE OF SERVICES

The authorized subsurface exploration was performed on May 6 and May 7, 2024 in conformance with our proposal LR260585, dated March 5, 2024. A signed proposal was returned on April 25, 2024..

The purpose of the geotechnical exploration was to determine general subsurface conditions at specific boring locations and to gather data on which to base a geotechnical evaluation with respect to the proposed construction. The subsurface exploration for this project consisted of sixteen (16) soil test borings. Refer to the [Geotechnical Investigation Methodologies Appendix](#) for a description of the drilling and sampling procedures. The site was drilled using a Geoprobe 7822DT equipped with an automatic hammer for performing Standard Penetration Tests (SPT) to help evaluate the relative soil strength.

The soil boring locations were determined in the field by a representative of our staff using boring plan provided and handheld GPS unit. As such, the boring locations shown on the Boring Location Plan attached to this report should be considered approximate.

The results of the laboratory analysis are presented on the enclosed Boring Logs and in tabular form in the Appendix of this report. Descriptions of the laboratory tests that were performed are also included in the Laboratory Test Procedures Appendix.

The soil samples recovered during our site investigation were visually classified and specific samples were selected by the project engineer for laboratory analysis. The laboratory analysis consisted of:

**Table 2: Scope of Laboratory Tests**

Test	ASTM	No. of Tests
Natural Moisture Content	D2216	86
Atterberg Limits	D4318	10
Material Finer Than No. 200 Sieve by Washing	D1140	7

The information gathered from the exploration was evaluated to determine a suitable foundation type for the proposed structure. The information was also evaluated to help determine if any special subgrade preparation procedures will be required during the earthwork phase of the project.

The results of the work are presented within this report that addresses:

- Site geology and potential impact on site development.
- Summary of existing surface conditions.
- A description of the subsurface and groundwater conditions encountered at the boring and test pit locations. Long-term monitoring of groundwater was not included in our scope of work.
- Presentation of field and laboratory test results.
- Site preparation considerations including material types to be expected at the site and treatment of unsuitable soils, if encountered.
- Compaction requirements and recommended criteria to establish suitable material for structural backfill.
- Recommendations to be used for foundation design, including appropriate foundation types, bearing pressures, and depths.
- Recommendations for slab-on-grade design, including a modulus of subgrade reaction.
- Recommendations for suitable pavement sections based on provided or assumed traffic information, including general recommendations for rigid and/or flexible pavement design.

### **3.0 GEOTECHNICAL SITE CHARACTERIZATION**

The following discussion is intended to create a general understanding of the site from a geotechnical engineering perspective. It is not intended to be a discussion of every potential geotechnical issue that may arise, nor to provide every possible interpretation of the conditions identified. The following conditions and subsequent recommendations are based on the assumption that significant changes in subsurface conditions do not occur between boreholes. However, anomalous conditions can occur due to the geologic conditions at the site, and it will be necessary to evaluate the assumed conditions during site grading and foundation installation.

### **3.1 GEOLOGY**

The Geologic Map of Arkansas, published by the Arkansas Geological Commission in coordination with the United States Geological Survey, indicates the site is located within the Mississippi Embayment physiographic province of eastern Arkansas. The

area is comprised of terrace and alluvial deposits resulting primarily of the Mississippi River, White River and their tributaries. Complex sequences of gravels, sands, silts, clays and mixtures of these materials are common. However, individual deposits are often lenticular and discontinuous. The thickness and layering can vary significantly and are sometimes erratic. The soils encountered are considered consistent with the local geology.

### **3.2 EXISTING SURFACE CONDITIONS**

Several structures are located within the proposed construction area. Associated pavements, drives, landscaping and green areas are also present. A large high school building and performing arts center occupied a majority of the construction area, both of which will be demolished to facilitate construction. Modular classrooms also exist and will be relocated. Pavements are also located on the north side of the buildings along West Lynn Street and extended into the campus behind the performing arts center. The existing gymnasium will remain during construction, but will eventually be demolished.

The depth of topsoil was approximated to be between 2 and 3 inches in the green areas investigated. Asphalt and in most cases thin amounts of base were encountered in the remaining borings. The thickness of asphalt ranged from 2.5 to 3.0 inches where present, with up to 2 inches of underlying aggregate base. Variable amounts of concrete, 8 to 12 inches thick, was encountered in isolated areas. Due to the age of the campus, several overlays, movement of buildings, concrete aprons, etc., have occurred. Thus, variable conditions should be expected.

### **3.3 SUBSURFACE CONDITIONS**

A generalized stratification summary has been prepared using data from the soil test borings and is presented in the table below. The stratification depicts the general soil conditions and strata types encountered during our field investigation.

**Table 3: Stratification Summary**

Stratum No.	Description	Consistency/Relative Density
1	<b>Alluvium</b> - Lean Clay (CL) with Sand	Very Soft to Stiff
2	<b>Alluvium</b> - Fat Clay (CH) with Sand	Soft to Stiff
3	<b>Alluvium</b> - Silty Sand (SM)	Loose to Medium Dense



Subsurface soil profiles which show the thickness of the stratum referenced above have also been prepared based on the data obtained at the specific boring locations. The subsurface soil profiles are presented in the Subsurface Soil Profiles Appendix. For specific details on the information obtained from individual soil borings, please refer to the Boring Logs included in the Boring Logs Appendix. The elevations of the borings indicated in this report were estimated based on Google Earth.

### **3.3.1 SOIL TYPE 1 - LEAN CLAY (CL) WITH SAND**

Lean Clay (CL) with Sand was encountered beneath the existing topsoil and pavements in a majority of the borings. Though some of these materials could be fill from original construction of the building, a definitive determination between natural ground and fill could not be made. These soils extended to depths ranging from 11 to 16 feet below existing grades. Laboratory testing indicated plasticity index values within these soils as high as 23, though a majority were below 19 and decreased with depth. These materials were found to contain between 71% and 88% passing the No. 200 sieve. N-values obtained from the borings were below 5 in all borings within 2 feet of the surface, which is considered soft and unstable. The values generally increased with depth, but soft soils extended to as much as 10 feet below the surface in some areas.

### **3.3.2 SOIL TYPE 2 - FAT CLAY (CH) WITH SAND**

Highly plastic soils (CH) were also encountered, most often beneath a thin layer of lean clay. A representative sample of this material type had a liquid limit of 56 and plasticity index of 35, with similar amounts of sand based on visual observations. The N-values were generally higher than those obtained in the overlying clay, though some undercut will also likely be required. The top of this layer, when encountered, ranged between 2 and 4 feet below the surface in most borings but was just beneath the topsoil in an isolated area. The thickness of this layer was variable, extending to depths ranging from 5 to 13.5 feet below existing grades.

### **3.3.3 SOIL TYPE 3 - SILTY SAND (SM)**

Granular silty sand (SM) was encountered beneath the cohesive soils at depths ranging from 11 to 16 feet and extending to the terminal depths explored. These materials were found to be non-plastic or exhibit trace plasticity and contained an average of 36% passing the No. 200 sieve in the samples tested. The consistency was found to be loose to medium dense in most cases.

### 3.3.4 GROUNDWATER

At the time of drilling, groundwater was not encountered in the boreholes. Water levels reported are accurate only for the time and date that the borings were drilled. Long term monitoring of the boreholes was not included as part of our subsurface exploration. The borings were backfilled the same day they were drilled.

### 3.4 SEISMIC SITE CLASSIFICATION

**Table 4: Seismic Site Classification**

Basis of Evaluation	Recommended Site Classification
2015 International Building Code (IBC) and ASCE 7, Chapter 20	D
This recommended seismic site classification is based on the 2015 Edition of the International Building Code, the subsurface conditions encountered in the borings, and our knowledge of the geologic conditions of the site. Our subsurface exploration extended to a maximum depth of about 25 feet; hence the seismic site classification should be re-evaluated in the event subsurface information is made available to a depth of 100 feet.	

### 4.0 SITE DEVELOPMENT CONSIDERATIONS

A grading plan was not available at the time of this report. Based solely on visual observations, significant amounts of cut or fill are not anticipated to obtain finished grades. **Once the grading plan is finalized, Building & Earth Sciences, Inc. should be allowed to review the plan and its effects on our recommendations.**

Based on our evaluation of the subsurface soil information, and the anticipated foundation loads, it appears that construction with a Conventional Shallow Foundation system is feasible. The site development recommendations outlined below are intended for development of the site to support construction with a Conventional Shallow Foundation system. **If a different type of foundation system is preferred, Building & Earth Sciences, Inc. should be allowed to review the site development recommendations to verify that they are appropriate for the preferred foundation system.**

The primary geotechnical concerns for this project are:

- The presence of existing structures on the site. Buried structures and deleterious materials could be encountered.
- Low consistency (N-value $\leq$ 6) clay soils identified across the site within 2 to 5 feet of the surface

- Moisture sensitive soils encountered throughout the site.
- Perched water could be encountered during construction which may require dewatering efforts, particularly beneath existing structures and pavements.

Recommendations addressing the site conditions are presented in the following sections.

#### **4.1 DEMOLITION**

Demolition of existing buildings, pavements, landscaping and other surface items will be required to facilitate construction. Demolition should include footings, utilities and other below grade items as necessary. Voids left by removal of these items should be backfilled with structural fill as outlined in a later section, flowable fill or lean concrete. There is considered to be an increased potential of encountered buried debris given the age of the existing campus. Deleterious items should be removed to their full extent, especially in structural areas. Perched water should be expected beneath existing structures and pavements and will be more prevalent during wet or winter months.

#### **4.2 INITIAL SITE PREPARATION**

All trees, vegetation, roots, topsoil and deleterious materials within construction areas should be removed from the proposed construction areas. Approximately 2 to 3 inches of topsoil were observed in the borings in grass areas. The topsoil thickness is accurate only at the specific boring locations but can be extrapolated between boreholes for initial cost estimating purposes. A geotechnical engineer should observe stripping and grubbing operations to evaluate that all unsuitable materials are removed from locations for proposed construction.

Because of past use of the site, buried structures could be encountered such as foundations, utility lines, septic tanks, etc. If encountered, they should be removed and backfilled in accordance with requirements outlined in the Structural Fill section of this report.

Materials disturbed during clearing operations should be stabilized in place or, if necessary, undercut to undisturbed materials and backfilled with properly compacted, approved structural fill.

During site preparation activities, the contractor should identify borrow source materials that will be used as structural fill and provide samples to the testing laboratory so that conformance to the Structural Fill requirements outlined below and appropriate moisture-density relationship curves can be determined.

#### **4.3 SUBGRADE EVALUATION**

We recommend that the project geotechnical engineer or a qualified representative evaluate the subgrade after the site is prepared. Some unsuitable or unstable areas may be present in unexplored areas of the site. All areas that will require fill or that will support structures should be carefully proofrolled with a heavy (40,000 # minimum), rubber-tired vehicle at the following times.

- After an area has been stripped, and undercut if required, prior to the placement of any fill.
- After grading an area to the finished subgrade elevation in a building or pavement area.
- After areas have been exposed to any precipitation, and/or have been exposed for more than 48 hours.

Some instability may exist during construction, depending on climatic and other factors immediately preceding and during construction. If any soft or otherwise unsuitable soils are identified during the proofrolling process, they must be undercut or stabilized prior to fill placement, pavement construction, or floor slab construction. All unsuitable material identified during the construction shall be removed and replaced in accordance with the Structural Fill section of this report.

#### **4.4 MOISTURE SENSITIVE SOILS**

Moisture sensitive clays were encountered throughout the site during the subsurface exploration. These soils will degrade if allowed to become saturated. Therefore, not allowing water to pond by maintaining positive drainage and temporary dewatering methods (if required) is important to help avoid degradation and softening of the soils.

The contractor should anticipate some difficulty during the earthwork phase of this project if moisture levels are moderate to high during construction. Increased moisture levels will soften the subgrade and the soils may become unstable under the influence of construction traffic. Accordingly, construction during wet weather

conditions should be avoided, as this could result in soft and unstable soil conditions that would require ground modification, such as in place stabilization or undercutting.

#### **4.5 UNDERCUTTING OF LOW CONSISTENCY SOILS**

Low consistency soils ( $N \leq 6$ ) were encountered in all borings within 2 feet of the surface; however, soft soils extended to up to 5 feet throughout most of the site and to as much as 10 feet in isolated areas of the site (reference borings B-03, B-09, P-03, and P-04). Low consistency soils should be undercut to a stable, suitable subgrade. The undercutting should extend laterally 5 feet outside the building footprint.

In the planned pavement areas, the low consistency soils will be removed during grading operations, in order to reach the planned subgrade elevation or the undercutting should extend laterally 3 feet outside of the edge of pavement. It may be possible to stabilize the soft soils in the pavement areas in place. Typical stabilization methods vary widely and include modification of the soft soils with the addition of shot rock or No. 2 stone, as well as utilization of geogrids and graded aggregates. The design of a specific stabilization method is beyond the scope of this investigation but can be provided by Building & Earth Sciences, Inc. as an additional service if desired. Any undercutting or stabilization performed in pavement areas should be conducted under the observation of the geotechnical engineer or a designated representative.

Some unsuitable or unstable areas may be present in unexplored areas of the site. Once the known undercut is complete, the areas planned for construction should be proofrolled in order to identify any additional soft soils requiring removal.

Undercut soils should be replaced with structural fill. Clean, non-organic, non-saturated soils taken from the undercut area can be re-used as structural fill. The placement procedure, compaction and composition of the structural fill must meet the requirements of the Structural Fill section of this report.

The undercutting should be conducted under the observation of the geotechnical engineer or a designated representative. *Weather conditions at the time of construction will affect the undercutting depths and quantities.* Some instability may exist during construction, depending on climatic and other factors immediately preceding and during construction.

#### 4.6 UNDERCUTTING OF HIGHLY PLASTIC SOILS

Based on the laboratory test results, highly plastic clay (CH) was encountered at variable depths and thicknesses. We recommend that the building area be undercut so that the highly plastic clay is located at least 5 feet below the planned subgrade elevation. The undercutting should extend at least 5 feet horizontally outside the building footprint.

In parking and drive areas the highly plastic clays should be undercut to one foot below the planned subgrade elevation (bottom of the base layer). The undercut material should be replaced with structural fill meeting the requirements outlined in the Structural Fill section of this report.

The undercutting should be conducted under the observation of the geotechnical engineer or his representative. *Weather conditions at the time of construction will affect the undercutting depths and quantities.* Some instability may exist during construction, depending on climatic and other factors immediately preceding and during construction.

#### 4.7 STRUCTURAL FILL

Requirements for structural fill on this project are as follows:

**Table 5: Structural Fill Requirements**

Soil Type	USCS Classification	Property Requirements	Placement Location
Sand and Gravel	GW, GP, GM, SW, SP, SM or combinations	Maximum 2" particle size	All locations and depths with proper drainage.
Clay	CL, SC, GC	LL<50, PI<20, $\gamma_d$ >100 pcf	All locations and depths.
Clay	CH	LL>50, PI>25, $\gamma_d$ <100 pcf	Not suitable as structural fill.
Silt	ML, MH	N/A	Not suitable as structural fill.
On-site soils	CL	LL<50, PI<20, $\gamma_d$ >100 pcf	All locations and depths.

Notes:

1. All structural fill should be free of vegetation, topsoil, and any other deleterious materials. The organic content of materials to be used for fill should be less than 3 percent unless approved by the geotechnical engineer.
2. LL indicates the soil Liquid Limit; PI indicates the soil Plasticity Index;  $\gamma_d$  indicates the maximum dry density as defined by the density standard outlined in the table below.
3. Laboratory testing of the soils proposed for fill must be performed in order to verify their conformance with the above recommendations.
4. Any fill to be placed at the site should be reviewed by the geotechnical engineer.

Placement requirements for structural fill are as follows:

**Table 6: Structural Fill Placement Requirements**

Specification	Requirement
Lift Thickness	Maximum 8-inch loose lifts when compacted with large heavy compaction equipment. Maximum 6-inch loose lifts when compacted with lightweight compaction equipment. (thinner lifts may be required in confined locations).
Density	Minimum of 98 percent of maximum dry density as defined by ASTM D698 at all locations and depths.
Moisture	$\pm 2$ percent of optimum moisture as defined by ASTM D698 for cohesive soils. For cohesionless soils with greater than 2 percent passing the US Standard No. 200 sieve, $\pm 3$ percent of optimum moisture as defined above. Moisture requirement is waived for cohesionless soil with less than 12 percent passing the No. 200 sieve.
Density Testing Frequency	One test per 2,500 sf in building areas and one test per 5,000 sf in pavement areas with minimum of 3 tests per lift. One test per 200 feet of trench backfill with minimum of 2 tests per lift. The testing frequency can be increased or decreased by the Geotechnical Engineer of Record in the field based on uniformity of material being placed and compactive effort used.

#### **4.8 EXCAVATION CONSIDERATIONS**

All excavations performed at the site should follow OSHA guidelines for temporary excavations. Excavated soils should be stockpiled according to OSHA regulations to limit the potential cave-in of soils.

It should be noted that fluctuations in the water level could occur due to seasonal variations in rainfall. The contractor must be prepared to remove groundwater seepage from excavations if encountered during construction. Excavations extending below groundwater levels will require dewatering systems (such as well points, sump pumps or trench drains). The contractor should evaluate the most economical and practical dewatering method.

#### **4.9 UTILITY TRENCH BACKFILL**

All utility trenches must be backfilled and compacted in the manner specified above for structural fill. It may be necessary to reduce the lift thickness to 4 to 6 inches to achieve compaction using hand-operated equipment.

#### **4.10 LANDSCAPING AND DRAINAGE CONSIDERATION**

The potential for soil moisture fluctuations within building areas and pavement subgrades should be reduced to lessen the potential of subgrade movement. Site grading should include positive drainage away from buildings and pavements. Excessive irrigation of landscaping poses a risk of saturating and softening soils below shallow footings and pavements, which could result in settlement of footings and premature failure of pavements.

#### **4.11 WET WEATHER CONSTRUCTION**

Excessive movement of construction equipment across the site during wet weather may result in ruts, which will collect rainwater, prolonging the time required to dry the subgrade soils.

During rainy periods, additional effort will be required to properly prepare the site and establish/maintain an acceptable subgrade. The difficulty will increase in areas where clay or silty soils are exposed at the subgrade elevation. Grading contractors typically postpone grading operations during wet weather to wait for conditions that are more favorable. Contractors can typically disk or aerate the upper soils to promote drying during intermittent periods of favorable weather. When deadlines restrict postponement of grading operations, additional measures such as undercutting and replacing saturated soils or stabilization can be utilized to facilitate placement of additional fill material.

### **5.0 FOUNDATION RECOMMENDATIONS**

Specific structural loading conditions were not known at the time of this report; however, based on our experience with similar projects, we anticipate that the individual column loads will be less than 100 kips and wall loads will be less than 2 kips per linear foot. ***If these assumptions concerning structural loading are incorrect, our office should be contacted, such that our recommendations can be reviewed.***

#### **5.1 SHALLOW FOUNDATIONS**

Based on the conditions encountered during our field investigation and after our site preparation and grading recommendations are implemented, the proposed structure can be supported on conventional shallow foundations designed using an allowable soil bearing capacity of 2000 psf.



Even though computed footing dimensions may be less, column footings should be at least 24 inches wide and strip footings should be at least 18 inches wide. These dimensions facilitate hand cleaning of footing subgrades disturbed by the excavation process and the placement of reinforcing steel. They also reduce the potential for localized punching shear failure. **All exterior footings should bear at least 18 inches below the adjacent exterior grade.** Total settlement of footings designed and constructed as recommended above should be 1 inch or less.

The following items should be considered during the preparation of construction documents and foundation installation:

- The geotechnical engineer of record should observe the exposed foundation bearing surfaces prior to concrete placement to verify that the conditions anticipated during the subsurface exploration are encountered.
- All bearing surfaces must be free of soft or loose soil prior to placing concrete.
- Concrete should be placed the same day the excavations are completed and bearing materials verified by the engineer. If the excavations are left open for an extended period, or if the bearing surfaces are disturbed after the initial observation, then the bearing surfaces should be reevaluated prior to concrete placement.
- Water should not be allowed to pond in foundation excavations prior to concrete placement or above the concrete after the foundation is completed.
- Wherever possible, the foundation concrete should be placed “neat”, using the sides of the excavations as forms. Where this is not possible, the excavations created by forming the foundations must be backfilled with suitable structural fill and properly compacted.
- The site should be sloped to drain away from the building foundations.
- Roof drains should be routed away from the foundation soils.

## **6.0 FLOOR SLABS**

Site development recommendations presented in this report should be followed to provide for subgrade conditions suitable for support of grade supported slabs. Floor slabs will be supported on properly compacted structural fill.

We recommend floor slabs for the proposed structure be supported on a minimum four-inch layer of clean, densely-graded granular material commonly referred to as “crusher-run” materials. Alternatively, DOT approved road base with 100% passing

the 1-1/2 in sieve, 15% to 55% passing the No. 4 sieve and less than 12% passing the No 200 sieve. The material passing the #200 sieve should be clean, granular fill with less than 3% clay or friable particles. The purpose of this layer is to help provide a uniform loading condition and act as a capillary break for moisture migration through the subgrade soil. This gravel material should be consolidated in-place with vibratory equipment. a modulus of subgrade reaction of 125 pci can be used in the design of a grade-supported building floor slab.

We recommend a minimum 10-mil thick vapor retarder meeting ASTM E 1745, Class C requirements be placed directly below the slab-on-grade floors. A higher quality vapor retarder (Class A or B) may be used if desired to further inhibit the migration of moisture through the slab-on-grade and should be evaluated based on the floor covering and use. The vapor retarder should extend to the edge of the slab-on-grade floors and should be sealed at all seams and penetrations. The slab should be appropriately reinforced (if required) to support the proposed loads.

Where applicable, we recommend that the floor slab be isolated from the foundation footings so differential settlement of the structure will not induce shear stresses on the floor slab. Temperature and shrinkage reinforcements in slabs on grade maybe considered and incorporated accordingly in the slab design. ACI 360-10 provides guidance on the proper quantity of such reinforcement. The slab should also be appropriately reinforced to support the proposed loads as required. If welded-wire mesh reinforcement is utilized, the mesh reinforcement should be placed 2 inches below the slab surface or upper one-third of the slab thickness, whichever is closer to the surface. Adequate construction joints, contraction joints and isolation joints should also be provided in the slab to reduce the impacts of cracking and shrinkage, in general accordance with ACI standards and guidelines (ACI360R-10).

## **7.0 PAVEMENT CONSIDERATIONS**

Based on the materials encountered at the boring locations and after our recommendations for site preparation are implemented, pavements at the subject site may be designed based on a California Bearing Ratio (CBR) of five (5). Note that no CBR or plate load testing was completed to develop these recommendations. For pavement design purposes, we have assumed two levels of traffic for commonly used pavement sections. Specific traffic information was not provided.

It has been our experience that parking lots experience a certain level of wear and stress greater than roadways designed for similar traffic volumes. Therefore, parking lots are typically designed using the AASHTO method and adjusted based on experience. If the owner would like Building & Earth Sciences, Inc. to assess other likely traffic volumes, we will gladly review other options.

In addition, we have assumed the following design parameters:

**Table 7: Assumed Design Parameters**

Design Criteria	Value
Design life (Years)	20
Terminal Serviceability	2.0
Reliability	85%
Initial Serviceability	4.2
Standard Deviation	0.45 (Flexible)
Standard Deviation	0.35 (Rigid)
Assumed Standard Duty Traffic Volume	<100,000
Assumed Heavy Duty Traffic Volume	<200,000

Note: All base and pavement construction operations should meet minimum requirements of the Arkansas Department of Transportation (ArDOT) Standard Specifications for Highway Construction, 2014 Edition. The applicable sections of the specifications are identified as follows:

**Table 8: DOT Specification Sections**

Material	Specification Section
Portland Cement Concrete Pavement	501
Bituminous Asphalt Wearing Layer	407
Bituminous Asphalt Binder Layer	406
Mineral Aggregate Base Materials	303

## **7.1 FLEXIBLE PAVEMENT**

The asphalt pavement sections described herein were designed using the “AASHTO Guide for Design of Pavement Structures, 1993”. Alternative pavement sections were designed by establishing the structural numbers used for the AASHTO design system and substituting materials based upon structural equivalency as follows:

**Table 9: Structural Equivalent Coefficient**

Material	Structural No.
Asphalt Concrete	0.44
Crushed Stone Base	0.14

The following flexible pavement sections are based on the design parameters presented above:

**Table 10: Asphalt Pavement Recommendations**

Minimum Recommended Thickness (in)		Material
Standard Duty	Heavy Duty	
2	3	<b>Surface Course</b>
6	8	<b>Base</b>

## 7.2 RIGID PAVEMENT

The following rigid pavement sections are based on the design parameters presented above. We assume an effective modulus of subgrade reaction ( $k$ ) of 125 pci. We have assumed concrete elastic modulus ( $E_c$ ) of  $3.6 \times 10^6$  psi, and a concrete modulus of rupture ( $S'_c$ ) of 650 psi.

**Table 11: Rigid Pavement Recommendations**

Minimum Recommended Thickness (in)		Material
Standard Duty	Heavy Duty	
5	6	Portland Cement Concrete, $f'_c=4000$ psi
4	4	<b>Base</b>

The concrete should be protected against moisture loss, rapid temperature fluctuations, and construction traffic for several days after placement. All pavements should be sloped for positive drainage. We recommended the pavements be reinforced to hold any cracks that might develop tightly together and restrain their growth.

All pavement components must be placed and compacted in accordance with the applicable sections of the Arkansas Department of Transportation (ArDOT) Standard Specifications for Highway Construction, 2014 Edition. All base and pavement

construction operations should meet minimum requirements of the Arkansas Department of Transportation (ArDOT) Standard Specifications for Highway Construction, 2014 Edition.

## **8.0 SUBGRADE REHABILITATION**

The subgrade soils often become disturbed during the period between initial site grading and construction of surface improvements. The amount and depth of disturbance will vary with soil type, weather conditions, construction traffic, and drainage.

The engineer should evaluate the subgrade soil during final grading to verify that the subgrade is suitable to receive pavement and/or concrete slab base materials. The final evaluation may include proofrolling or density tests.

Subgrade rehabilitation can become a point of controversy when different contractors are responsible for site grading and building construction. The construction documents should specifically state which contractor will be responsible for maintaining and rehabilitating the subgrade. Rehabilitation may include moisture conditioning and re-compacting soils. When deadlines or weather restrict grading operations, additional measures such as undercutting and replacing saturated soils or chemical stabilization can often be utilized.

## **9.0 CONSTRUCTION MONITORING**

Field verification of site conditions is an essential part of the services provided by the geotechnical consultant. In order to confirm our recommendations, it will be necessary for Building & Earth Sciences, Inc. personnel to make periodic visits to the site during site grading. Typical construction monitoring services are listed below.

- Periodic observation and consultation by a member of our engineering staff during site development.
- Continuous monitoring during structural fill placement.
- Field density testing during structural fill placement.
- Observation and verification of the bearing surfaces exposed after foundation excavation.
- Molding and testing of concrete cylinders.
- Structural steel inspections.
- Sampling of asphalt for verification and coring for determination of in-place density and thickness.

## 10.0 CLOSING AND LIMITATIONS

This report was prepared for WDD Architects, for specific application to the Brinkley High School located in Brinkley, Arkansas. The information in this report is not transferable. This report should not be used for a different development on the same property without first being evaluated by the engineer.

The recommendations in this report were based on the information obtained from our field exploration and laboratory analysis. The data collected is representative of the locations tested. Variations are likely to occur at other locations throughout the site. Engineering judgment was applied in regards to conditions between borings. It will be necessary to confirm the anticipated subsurface conditions during construction.

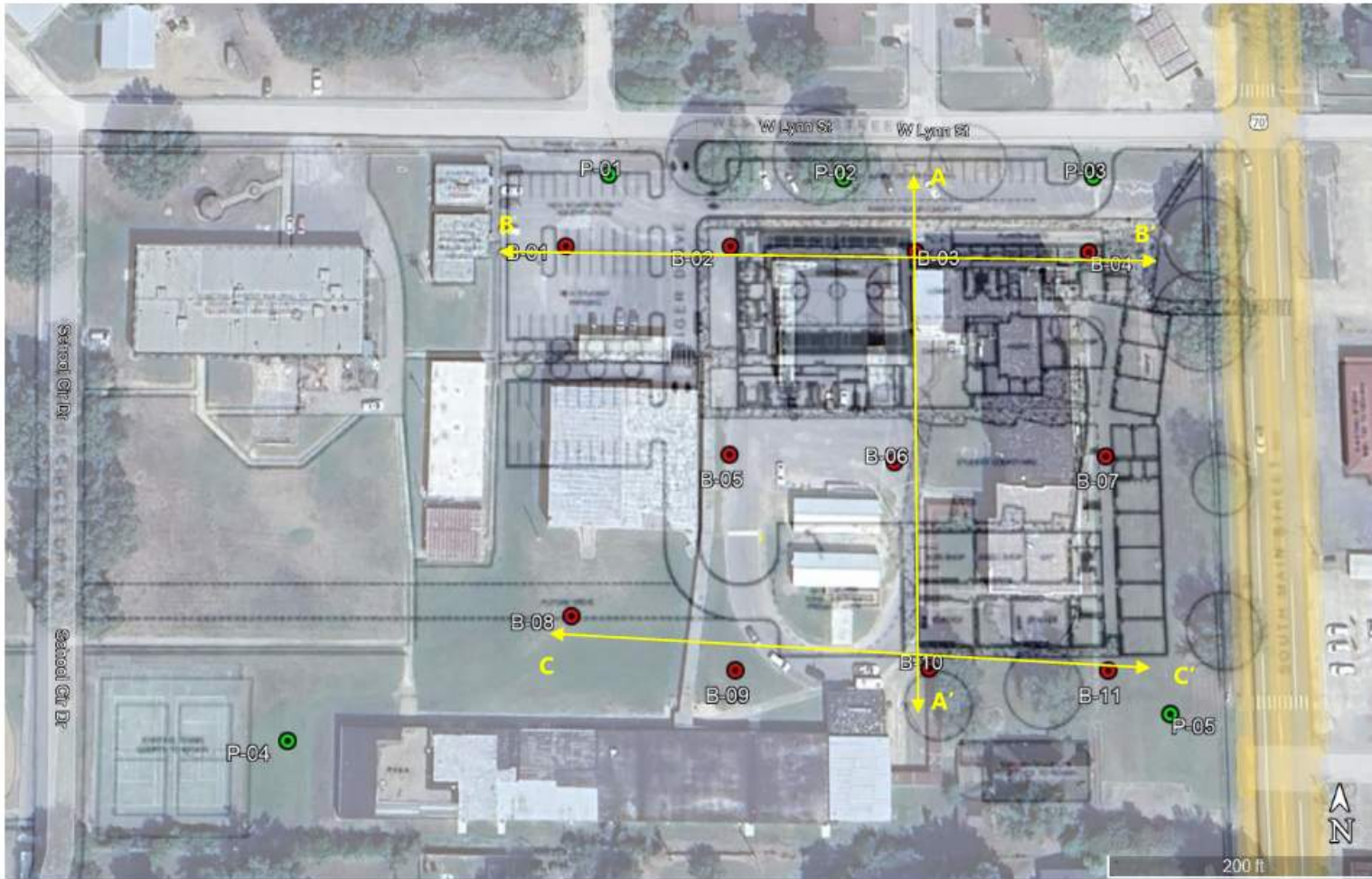
This report has been prepared in accordance with generally accepted standards of geotechnical engineering practice. No other warranty is expressed or implied. In the event that changes are made, or anticipated to be made, to the nature, design, or location of the project as outlined in this report, Building & Earth Sciences, Inc. must be informed of the changes and given the opportunity to either verify or modify the conclusions of this report in writing, or the recommendations of this report will no longer be valid.

The scope of services for this project did not include any environmental assessment of the site or identification of pollutants or hazardous materials or conditions. If the owner is concerned about environmental issues Building & Earth Sciences, Inc. would be happy to provide an additional scope of services to address those concerns.

This report is intended for use during design and preparation of specifications and may not address all conditions at the site during construction. Contractors reviewing this information should acknowledge that this document is for design information only.

An article published by the Geoprofessional Business Association (GBA), titled *Important Information About Your Geotechnical Report*, has been included in the Supporting Documentation Appendix. We encourage all individuals to become familiar with the article to help manage risk.

A-1  
BORING LOCATION PLAN



**REFERENCE USED  
TO PRODUCE THIS  
DRAWING:**

**BORING LOCATION PLAN**

**DATE: 05/07/2024**

Google Earth Satellite  
Imagery dated 09/18/23  
with overlay of created by  
WDD, dated 05/07/24

**PROJECT NO.**

**PROJECT NAME / LOCATION:**

**SCALE:**

LR240081

Brinkley High School  
Brinkley, Arkansas

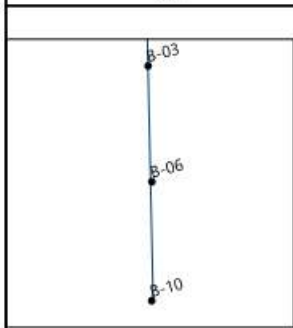
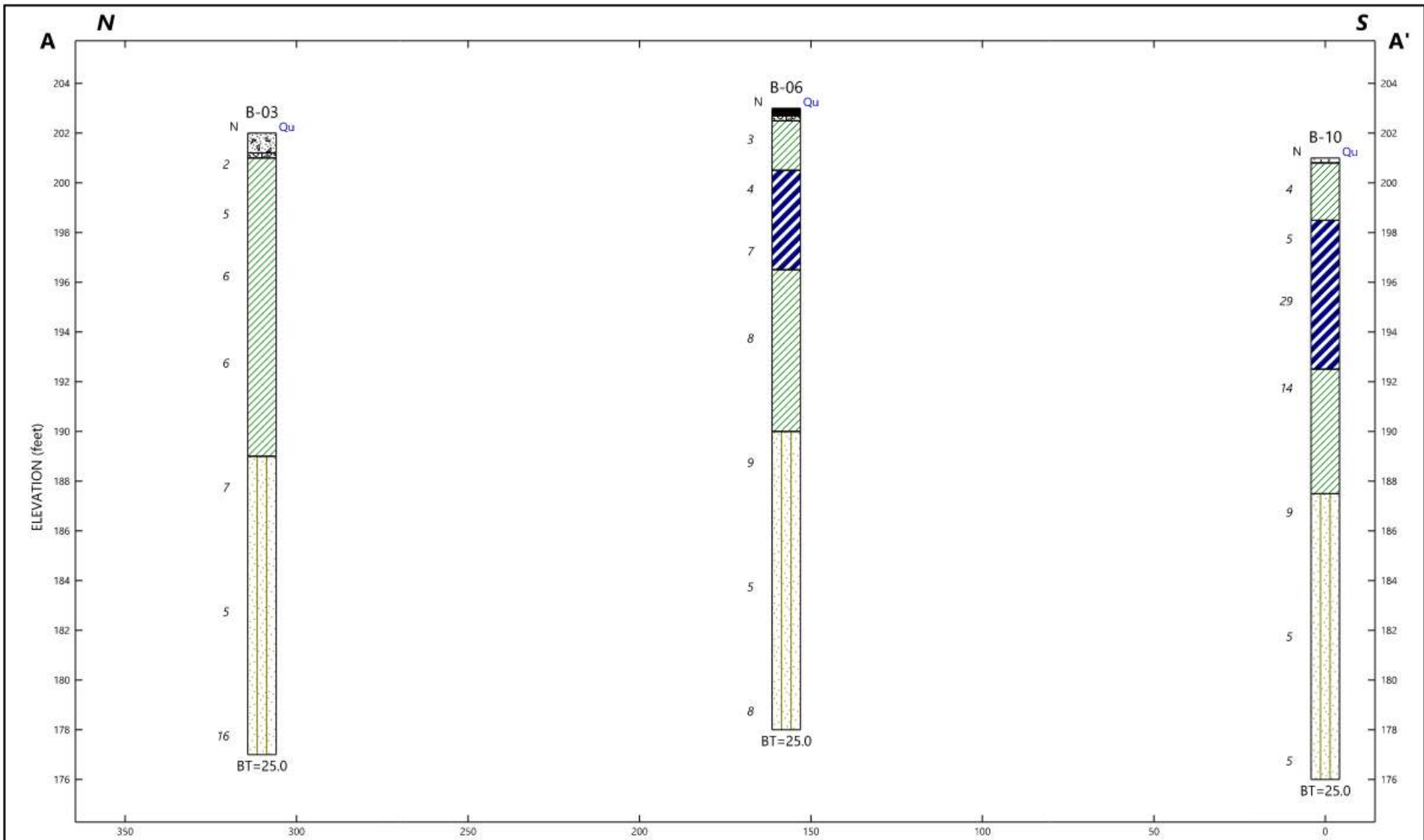
As Shown

**BUILDING & EARTH**

Geotechnical, Environmental, and Materials Engineers



**A-2**  
**SUBSURFACE SOIL PROFILES**



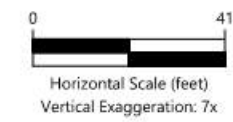
Site Map Scale 1 inch equals 255 feet

**Key to Hatches**

- Concrete
- Aggregate Base Material
- USCS Low Plasticity Clay
- USCS Silty Sand
- Asphalt
- USCS High Plasticity Clay
- Topsoil

**Legend**

- BT=Boring Termination, TPT=Test Pit Terminated
- AR=Auger Refusal, ER=Excavation Refusal
- N=Standard Penetration Test N-Value
- Qu=Unconfined compressive strength estimate from pocket penetrometer test (tsf)
- Water Level Reading at time of drilling.
- Water Level Reading after drilling.



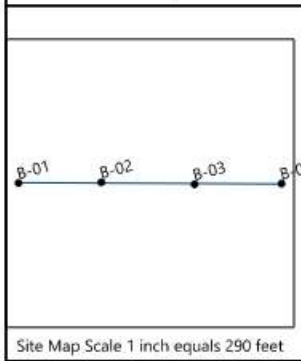
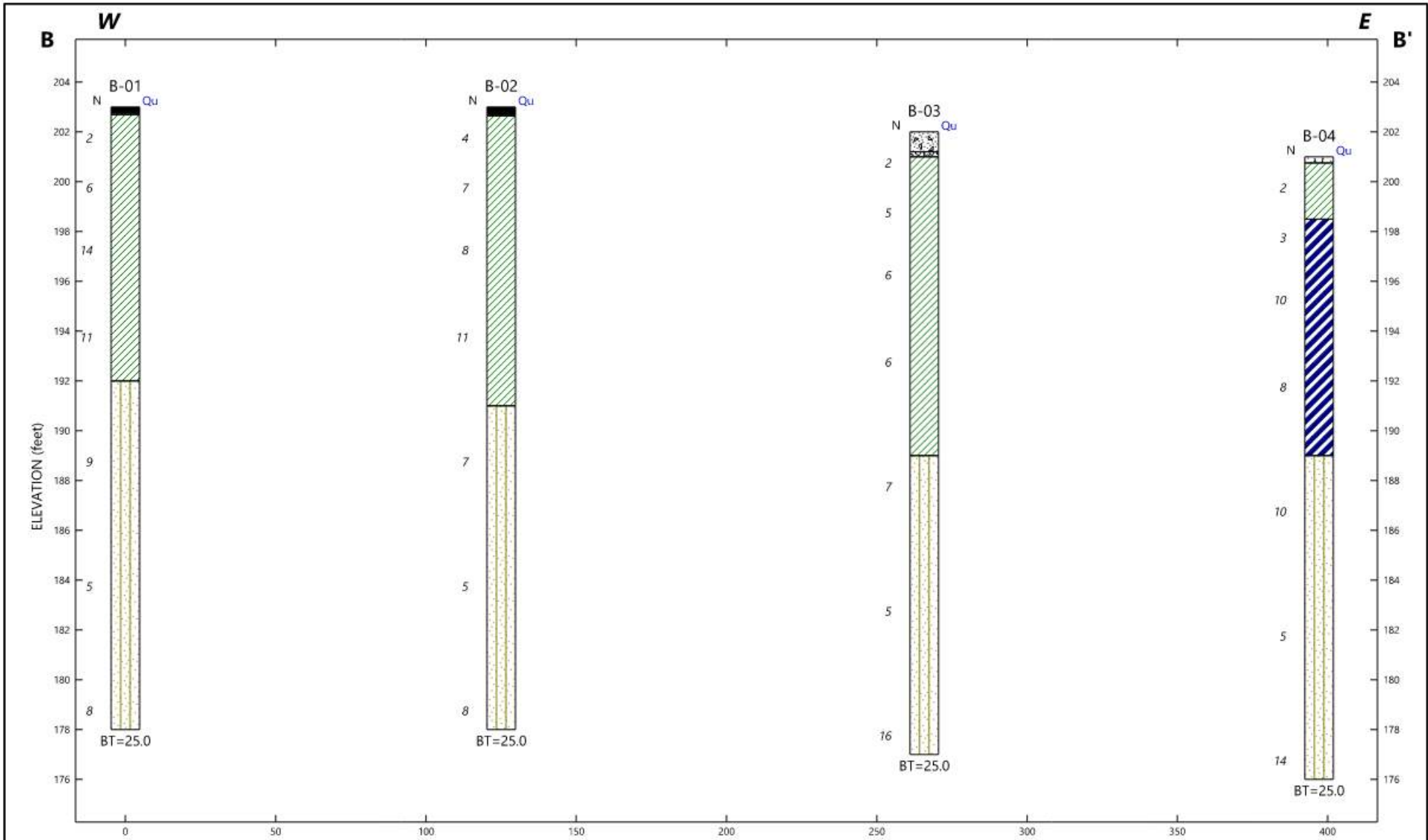
**Building & Earth Sciences, Inc.**  
29 Collins Industrial Place, Little Rock, Arkansas 72113

Brinkley High school  
Brinkley, AR

**A-A': Subsurface Profile**

PROJECT NO: LR240081 | PLATE NO: | DATE: 5/21/24





### Key to Hatches

Asphalt	Aggregate Base Material	USCS Low Plasticity Clay
USCS Silty Sand	Concrete	Topsoil
USCS High Plasticity Clay		

### Legend

BT=Boring Termination, TPT=Test Pit Terminated  
 AR=Auger Refusal, ER=Excavation Refusal  
 N=Standard Penetration Test N-Value  
 Qu=Unconfined compressive strength estimate from pocket penetrometer test (tsf)

Water Level Reading at time of drilling.  
 Water Level Reading after drilling.

0 47  
 Horizontal Scale (feet)  
 Vertical Exaggeration: 8.5x

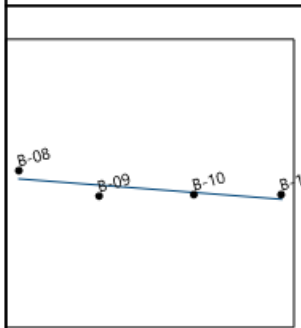
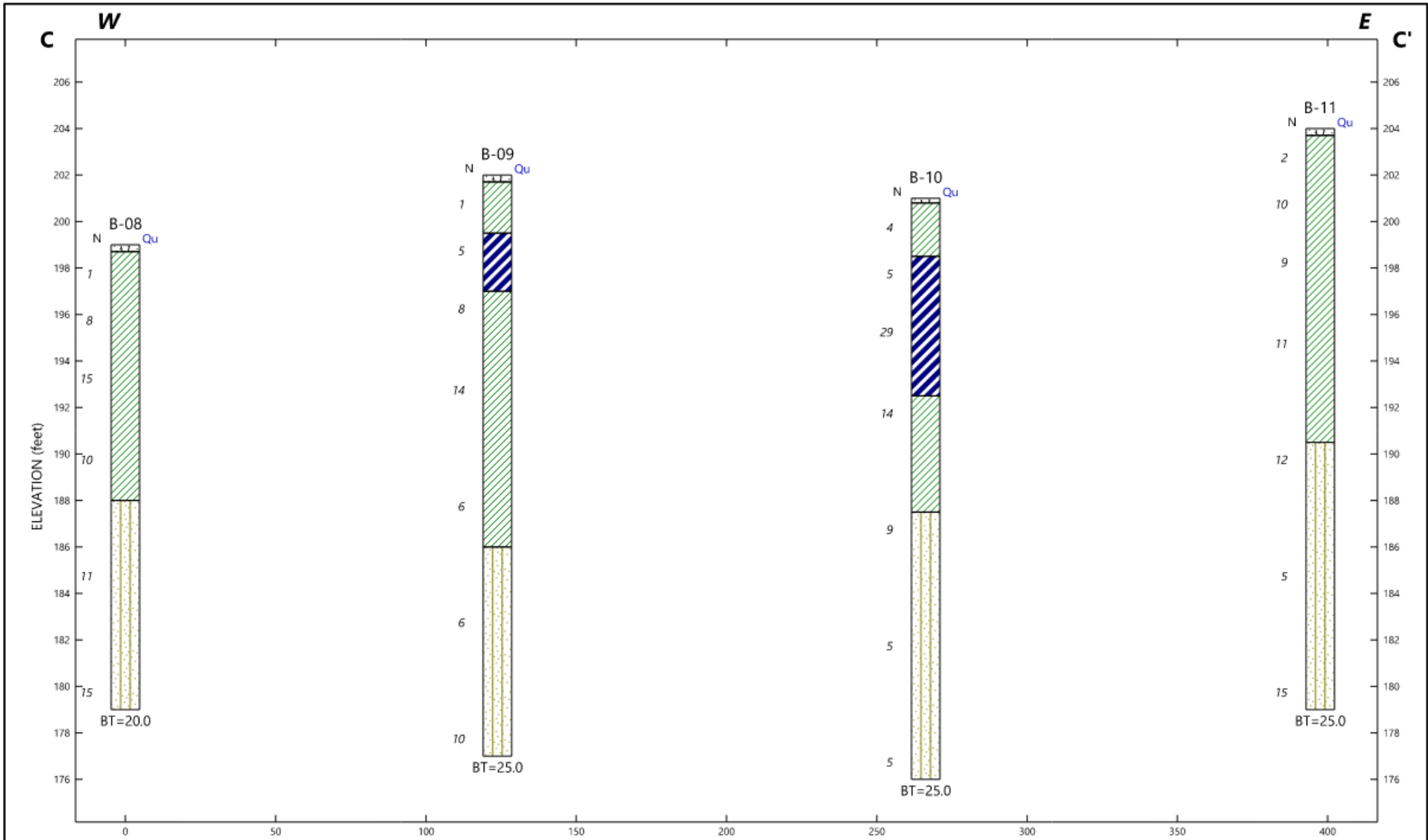
**Building & Earth Sciences, Inc.**  
 29 Collins Industrial Place, Little Rock, Arkansas 72113

Brinkley High school  
 Brinkley, AR

**B-B': Subsurface Profile**

PROJECT NO: LR240081	PLATE NO:	DATE: 5/21/24
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**BUILDING & EARTH**  
 Geotechnical, Environmental, and Materials Engineers



**Key to Hatches**

- Topsoil
- USCS High Plasticity Clay
- USCS Low Plasticity Clay
- USCS Silty Sand

**Legend**

- BT=Boring Termination, TPT=Test Pit Terminated
- AR=Auger Refusal, ER=Excavation Refusal
- N=Standard Penetration Test N-Value
- Qu=Unconfined compressive strength estimate from pocket penetrometer test (tsf)
- ▽ Water Level Reading at time of drilling.
- ▼ Water Level Reading after drilling.



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Brinkley High school  
Brinkley, AR

**C-C': Subsurface Profile**

PROJECT NO: LR240081 | PLATE NO: | DATE: 5/21/24

**BUILDING & EARTH**  
Geotechnical, Environmental, and Materials Engineers

**A-3**  
**BORING LOG DESCRIPTION**

Building & Earth Sciences, Inc. used the gINT software program to prepare the attached boring logs. The gINT program provides the flexibility to custom design the boring logs to include the pertinent information from the subsurface exploration and results of our laboratory analysis. The soil and laboratory information included on our logs is summarized below:

### **DEPTH AND ELEVATION**

The depth below the ground surface and the corresponding elevation are shown in the first two columns.

### **SAMPLE TYPE**

The method used to collect the sample is shown. The typical sampling methods include Split Spoon Sampling, Shelby Tube Sampling, Grab Samples, and Rock Core. A key is provided at the bottom of the log showing the graphic symbol for each sample type.

### **SAMPLE NUMBER**

Each sample collected is numbered sequentially.

### **BLOWS PER INCREMENT, REC%, RQD%**

When Standard Split Spoon sampling is used, the blows required to drive the sampler each 6-inch increment are recorded and shown in column 5. When rock core is obtained the recovery ration (REC%) and Rock Quality Designation (RQD%) is recorded.

### **SOIL DATA**

Column 6 is a graphic representation of four different soil parameters. Each of the parameters use the same graph, however, the values of the graph subdivisions vary with each parameter. Each parameter presented on column 6 is summarized below:

- N-value - The Standard Penetration Test N-value, obtained by adding the number of blows required to drive the sampler the final 12 inches, is recorded. The graph labels range from 0 to 50.
- Qu - Unconfined Compressive Strength estimate from the Pocket Penetrometer test in tons per square foot (tsf). The graph labels range from 0 to 5 tsf.

- Atterberg Limits – The Atterberg Limits are plotted with the Plastic Limit to the left, and Liquid Limit to the right, connected by a horizontal line. The difference in the Plastic and Liquid Limits is referred to as the Plasticity Index. The Atterberg Limits test results are also included in the Remarks column on the far right of the boring log. The Atterberg Limits graph labels range from 0 to 100%.
- Moisture – The Natural Moisture Content of the soil sample as determined in our laboratory.

## **SOIL DESCRIPTION**

The soil description prepared in accordance with ASTM D2488, Visual Description of Soil Samples. The Munsel Color chart is used to determine the soil color. Strata changes are indicated by a solid line, with the depth of the change indicated on the left side of the line and the elevation of the change indicated on the right side of the line. If subtle changes within a soil type occur, a broken line is used. The Boring Termination or Auger Refusal depth is shown as a solid line at the bottom of the boring.

## **GRAPHIC**

The graphic representation of the soil type is shown. The graphic used for each soil type is related to the Unified Soil Classification chart. A chart showing the graphic associated with each soil classification in the Soil Classification Methodology section of this Appendix.

## **REMARKS**

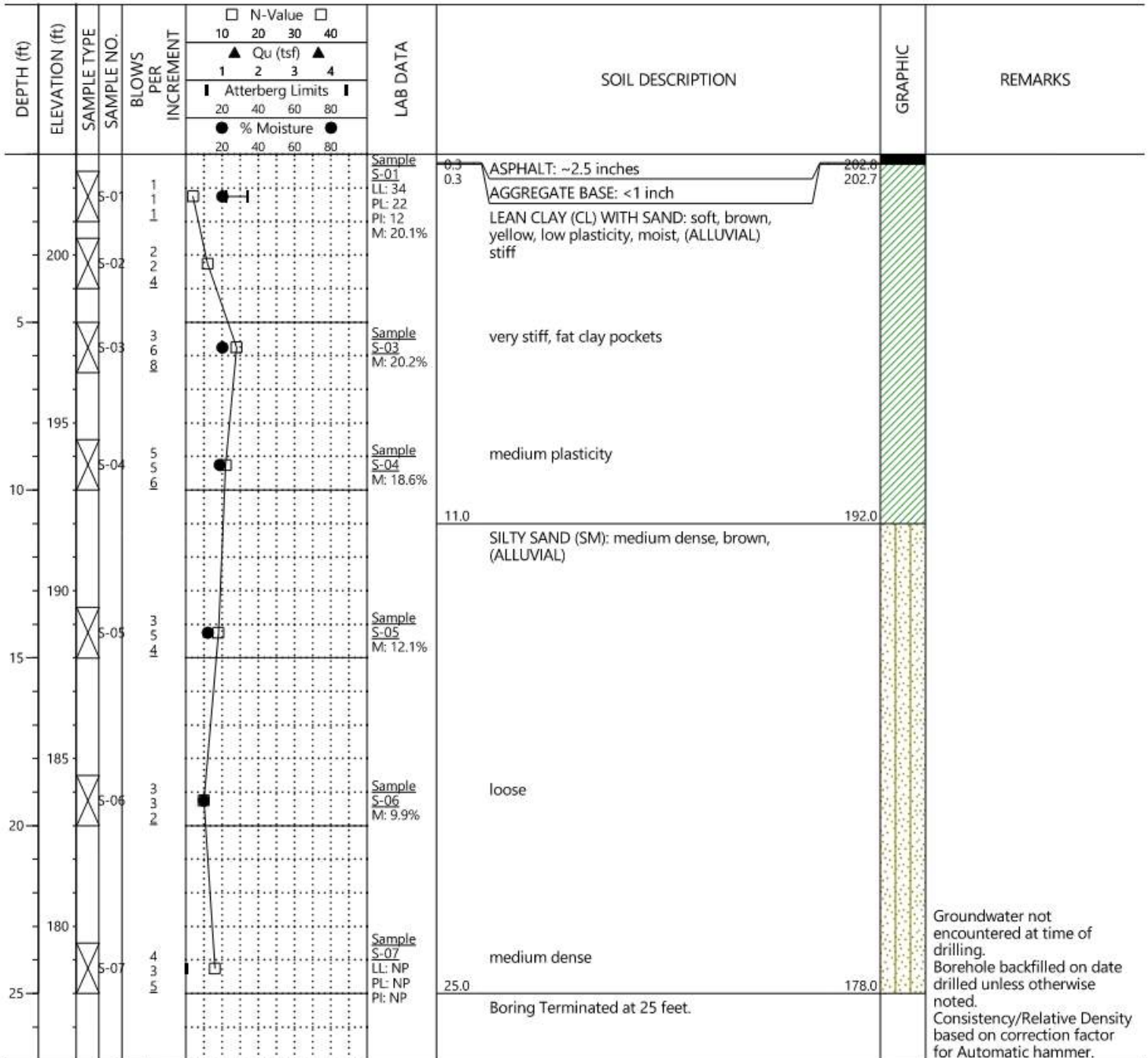
Remarks regarding borehole observations, and additional information regarding the laboratory results and groundwater observations.

**A-4**  
**BORING LOGS**



PROJECT NAME: Brinkley High school  
 PROJECT NUMBER: LR240081  
 DRILLING METHOD: Hollow Stem Auger  
 EQUIPMENT USED: Geoprobe 7822DT  
 HAMMER TYPE: Automatic  
 BORING LOCATION: 34.877555, -91.196468

LOCATION: Brinkley, AR  
 DATE DRILLED: 5/6/24  
 WEATHER: Partly Cloudy  
 ELEVATION: 203  
 DRILL CREW: Building & Earth  
 LOGGED BY: J. St. Pierre

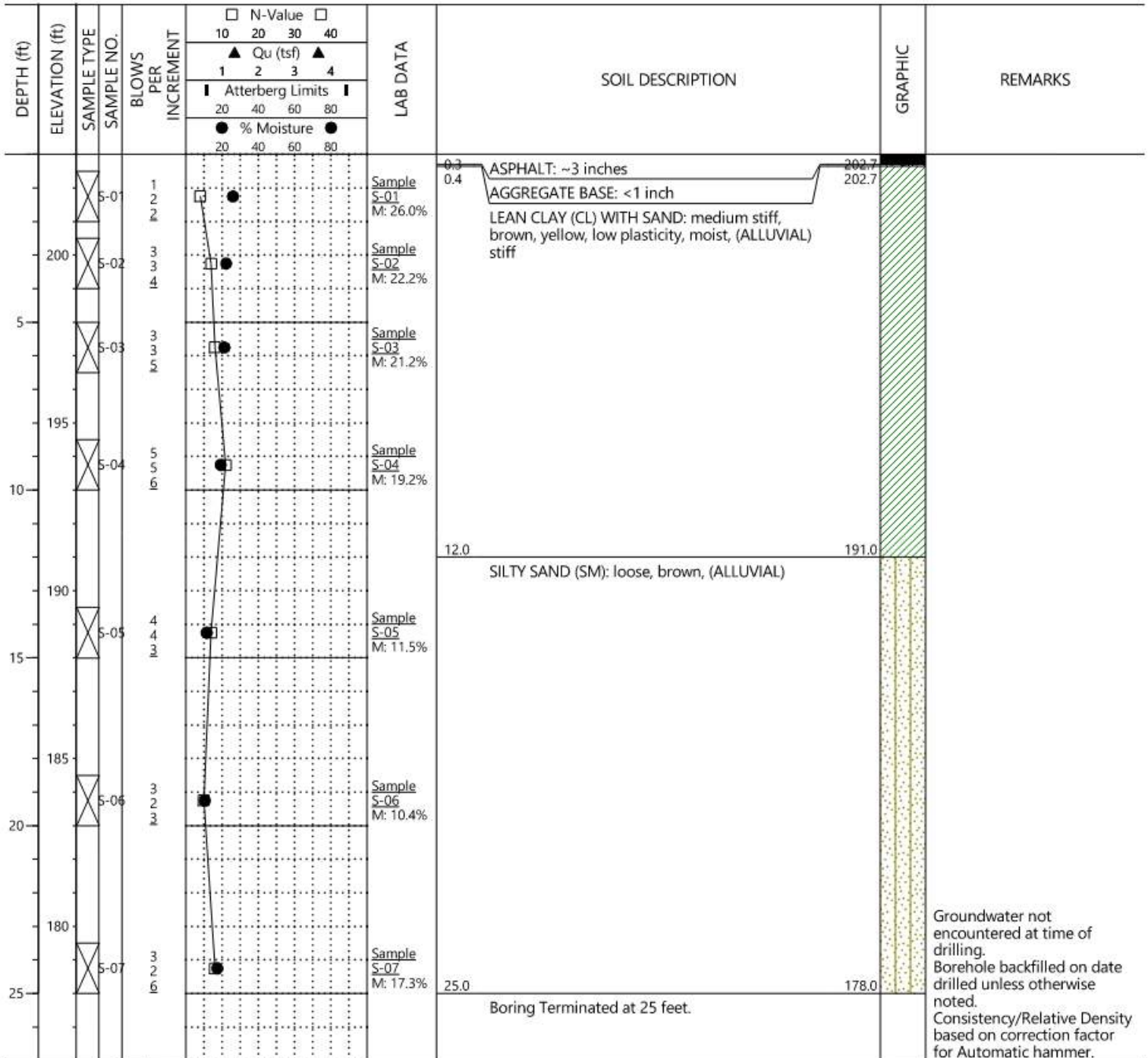


SAMPLE TYPE  Split Spoon

**N-VALUE** STANDARD PENETRATION RESISTANCE (AASHTO T-206)      **REC** RECOVERY      **LL:** LIQUID LIMIT      **M:** NATURAL MOISTURE CONTENT  
**% MOISTURE** PERCENT NATURAL MOISTURE CONTENT      **RQD** ROCK QUALITY DESIGNATION      **PL:** PLASTIC LIMIT      **F:** PERCENT PASSING NO. 200 SIEVE  
 GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING      **UD** UNDISTURBED      **PI:** PLASTICITY INDEX  
 STABILIZED GROUNDWATER LEVEL      **Qu** POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH

PROJECT NAME: Brinkley High school  
 PROJECT NUMBER: LR240081  
 DRILLING METHOD: Hollow Stem Auger  
 EQUIPMENT USED: Geoprobe 7822DT  
 HAMMER TYPE: Automatic  
 BORING LOCATION: 34.877555, -91.196051

LOCATION: Brinkley, AR  
 DATE DRILLED: 5/6/24  
 WEATHER: Partly Cloudy  
 ELEVATION: 203  
 DRILL CREW: Building & Earth  
 LOGGED BY: J. St. Pierre

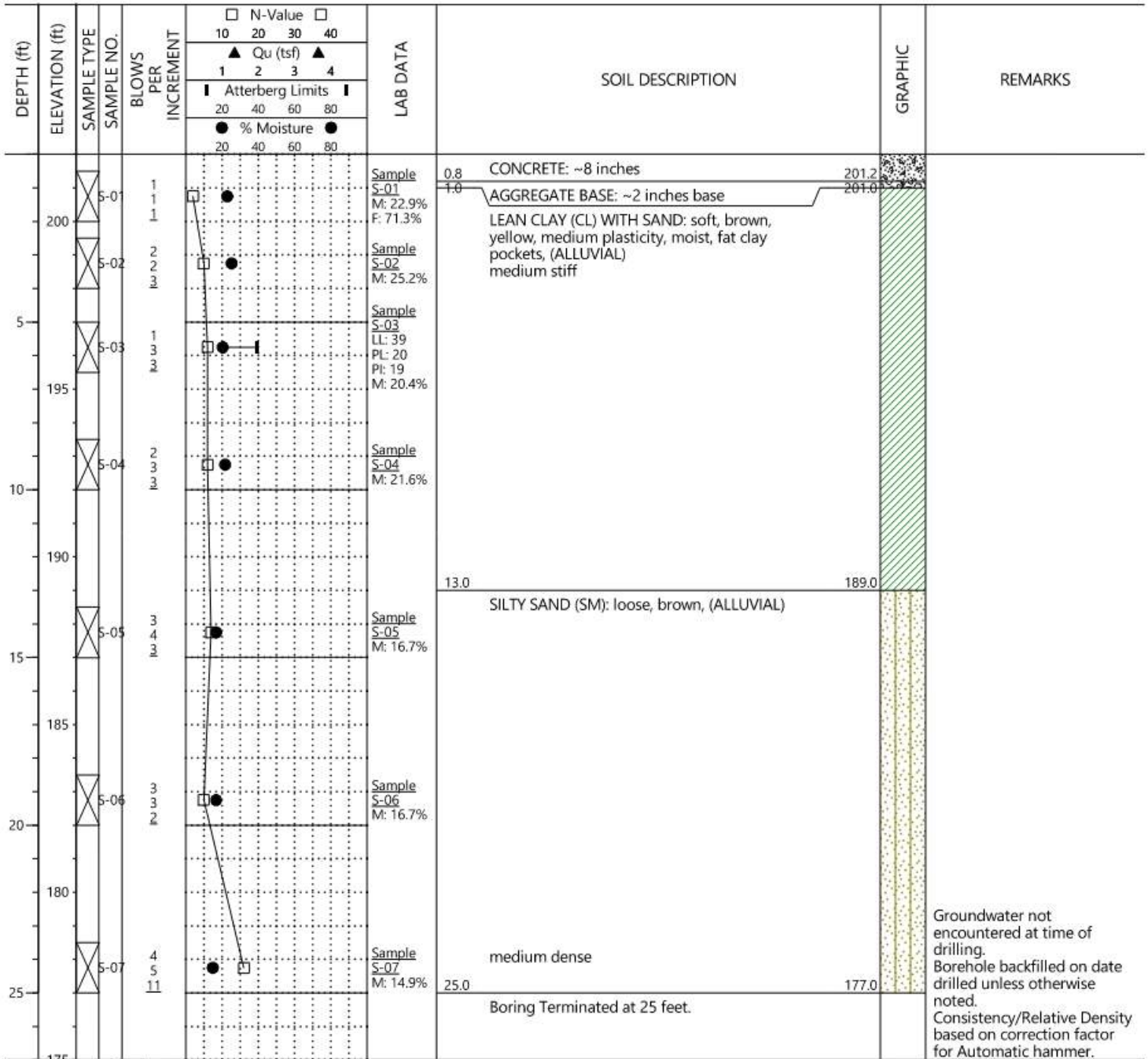


SAMPLE TYPE  Split Spoon

**N-VALUE** STANDARD PENETRATION RESISTANCE (AASHTO T-206)      **REC** RECOVERY      **LL:** LIQUID LIMIT      **M:** NATURAL MOISTURE CONTENT  
**% MOISTURE** PERCENT NATURAL MOISTURE CONTENT      **RQD** ROCK QUALITY DESIGNATION      **PL:** PLASTIC LIMIT      **F:** PERCENT PASSING NO. 200 SIEVE  
 GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING      **UD** UNDISTURBED      **PI:** PLASTICITY INDEX  
 STABILIZED GROUNDWATER LEVEL      **Qu** POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH

PROJECT NAME: Brinkley High school  
 PROJECT NUMBER: LR240081  
 DRILLING METHOD: Hollow Stem Auger  
 EQUIPMENT USED: Geoprobe 7822DT  
 HAMMER TYPE: Automatic  
 BORING LOCATION: 34.877544, -91.195582

LOCATION: Brinkley, AR  
 DATE DRILLED: 5/6/24  
 WEATHER: Partly Cloudy  
 ELEVATION: 202  
 DRILL CREW: Building & Earth  
 LOGGED BY: J. St. Pierre



SAMPLE TYPE  Split Spoon

- N-VALUE** STANDARD PENETRATION RESISTANCE (AASHTO T-206)
- % MOISTURE** PERCENT NATURAL MOISTURE CONTENT
- GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING
- STABILIZED GROUNDWATER LEVEL
- REC** RECOVERY
- RQD** ROCK QUALITY DESIGNATION
- UD** UNDISTURBED
- Qu** POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH
- LL:** LIQUID LIMIT
- M:** NATURAL MOISTURE CONTENT
- PL:** PLASTIC LIMIT
- F:** PERCENT PASSING NO. 200 SIEVE
- PI:** PLASTICITY INDEX

Groundwater not encountered at time of drilling. Borehole backfilled on date drilled unless otherwise noted. Consistency/Relative Density based on correction factor for Automatic hammer.

PROJECT NAME: Brinkley High school  
 PROJECT NUMBER: LR240081  
 DRILLING METHOD: Hollow Stem Auger  
 EQUIPMENT USED: Geoprobe 7822DT  
 HAMMER TYPE: Automatic  
 BORING LOCATION: 34.877544, -91.195144

LOCATION: Brinkley, AR  
 DATE DRILLED: 5/7/24  
 WEATHER: Cloudy, Light Rain  
 ELEVATION: 201  
 DRILL CREW: Building & Earth  
 LOGGED BY: J. St. Pierre

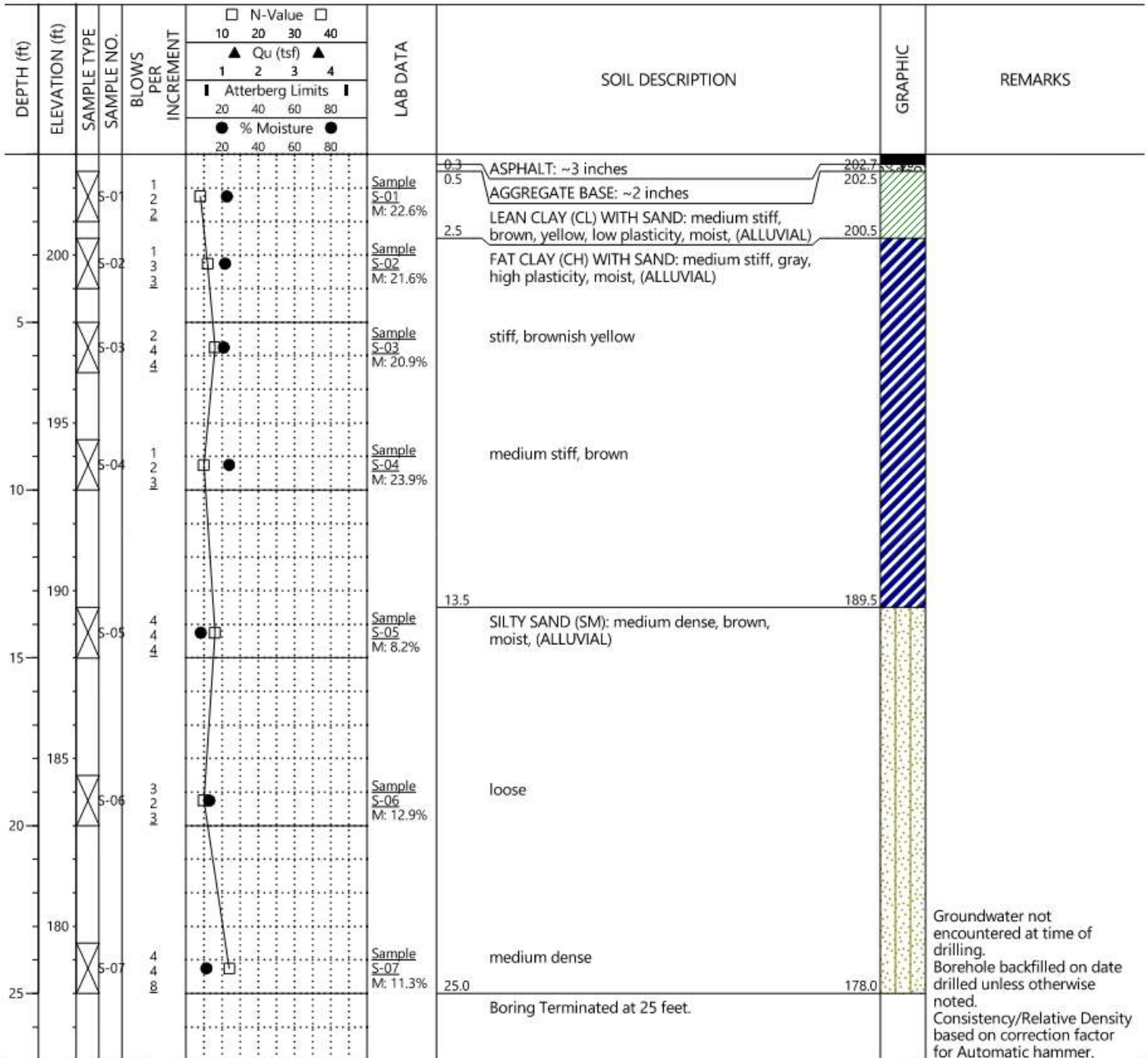
DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	BLOWS PER INCREMENT	LAB DATA				SOIL DESCRIPTION	GRAPHIC	REMARKS
					□ N-Value □	▲ Qu (tsf) ▲	Atterberg Limits				
					10 20 30 40	1 2 3 4	20 40 60 80	20 40 60 80			
	200.8			0.3					TOPSOIL: ~2.5 inches		
	198.5	5-01		2	10	2	79.1	24.1	LEAN CLAY (CL) WITH SAND: soft, brown, reddish brown, low plasticity, wet, fat clay pockets, (ALLUVIAL)		
		5-02		1	10	2	56	21	FAT CLAY (CH) WITH SAND: soft, gray, high plasticity		
5	195	5-03		3	10	2	35	18.8	stiff		
		5-04		3	10	2	35	21.9			
10	190	5-05		4	10	2	30	5	SILTY SAND (SM): medium dense, brown, brownish yellow, wet, (ALLUVIAL)		
		5-06		3	10	2	30	5	loose		
20	180	5-07		3	10	2	30	22.1	medium dense		
25	175			11					Boring Terminated at 25 feet.		Groundwater not encountered at time of drilling. Borehole backfilled on date drilled unless otherwise noted. Consistency/Relative Density based on correction factor for Automatic hammer.

SAMPLE TYPE  Split Spoon

**N-VALUE** STANDARD PENETRATION RESISTANCE (AASHTO T-206)      **REC** RECOVERY      **LL:** LIQUID LIMIT    **M:** NATURAL MOISTURE CONTENT  
**% MOISTURE** PERCENT NATURAL MOISTURE CONTENT      **RQD** ROCK QUALITY DESIGNATION    **PL:** PLASTIC LIMIT    **F:** PERCENT PASSING NO. 200 SIEVE  
 GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING      **UD** UNDISTURBED      **PI:** PLASTICITY INDEX  
 STABILIZED GROUNDWATER LEVEL      **Qu** POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH

PROJECT NAME: Brinkley High school  
 PROJECT NUMBER: LR240081  
 DRILLING METHOD: Hollow Stem Auger  
 EQUIPMENT USED: Geoprobe 7822DT  
 HAMMER TYPE: Automatic  
 BORING LOCATION: 34.877124, -91.196060

LOCATION: Brinkley, AR  
 DATE DRILLED: 5/7/24  
 WEATHER: Cloudy, Light Rain  
 ELEVATION: 203  
 DRILL CREW: Building & Earth  
 LOGGED BY: J. St. Pierre

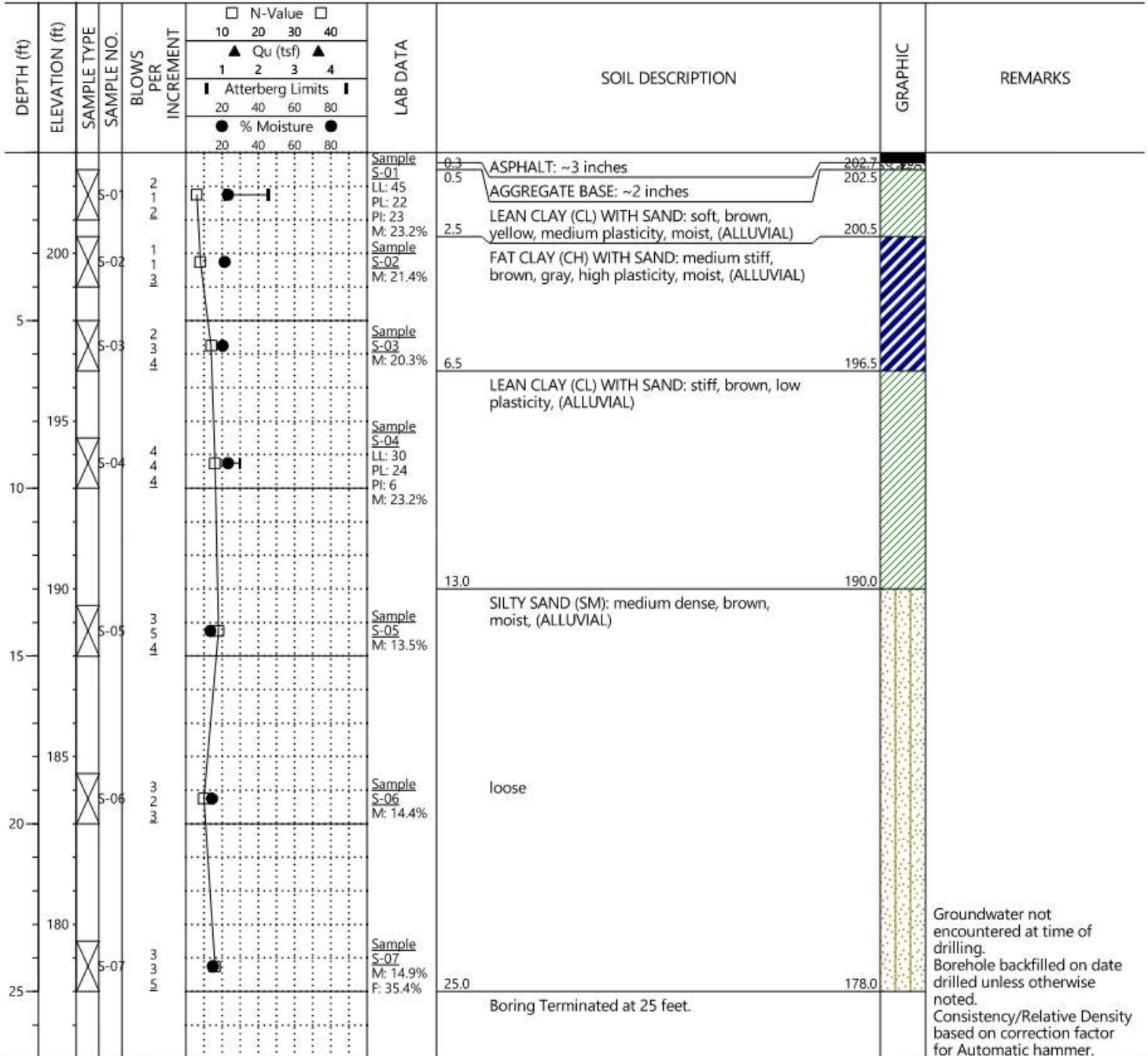


SAMPLE TYPE  Split Spoon

**N-VALUE** STANDARD PENETRATION RESISTANCE (AASHTO T-206)      **REC** RECOVERY      **LL:** LIQUID LIMIT    **M:** NATURAL MOISTURE CONTENT  
**% MOISTURE** PERCENT NATURAL MOISTURE CONTENT      **RQD** ROCK QUALITY DESIGNATION    **PL:** PLASTIC LIMIT    **F:** PERCENT PASSING NO. 200 SIEVE  
 GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING    **UD** UNDISTURBED      **PI:** PLASTICITY INDEX  
 STABILIZED GROUNDWATER LEVEL      **Qu** POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH

PROJECT NAME: Brinkley High school  
 PROJECT NUMBER: LR240081  
 DRILLING METHOD: Hollow Stem Auger  
 EQUIPMENT USED: Geoprobe 7822DT  
 HAMMER TYPE: Automatic  
 BORING LOCATION: 34.877124, -91.195569

LOCATION: Brinkley, AR  
 DATE DRILLED: 5/7/24  
 WEATHER: Cloudy, Light Rain  
 ELEVATION: 203  
 DRILL CREW: Building & Earth  
 LOGGED BY: J. St. Pierre

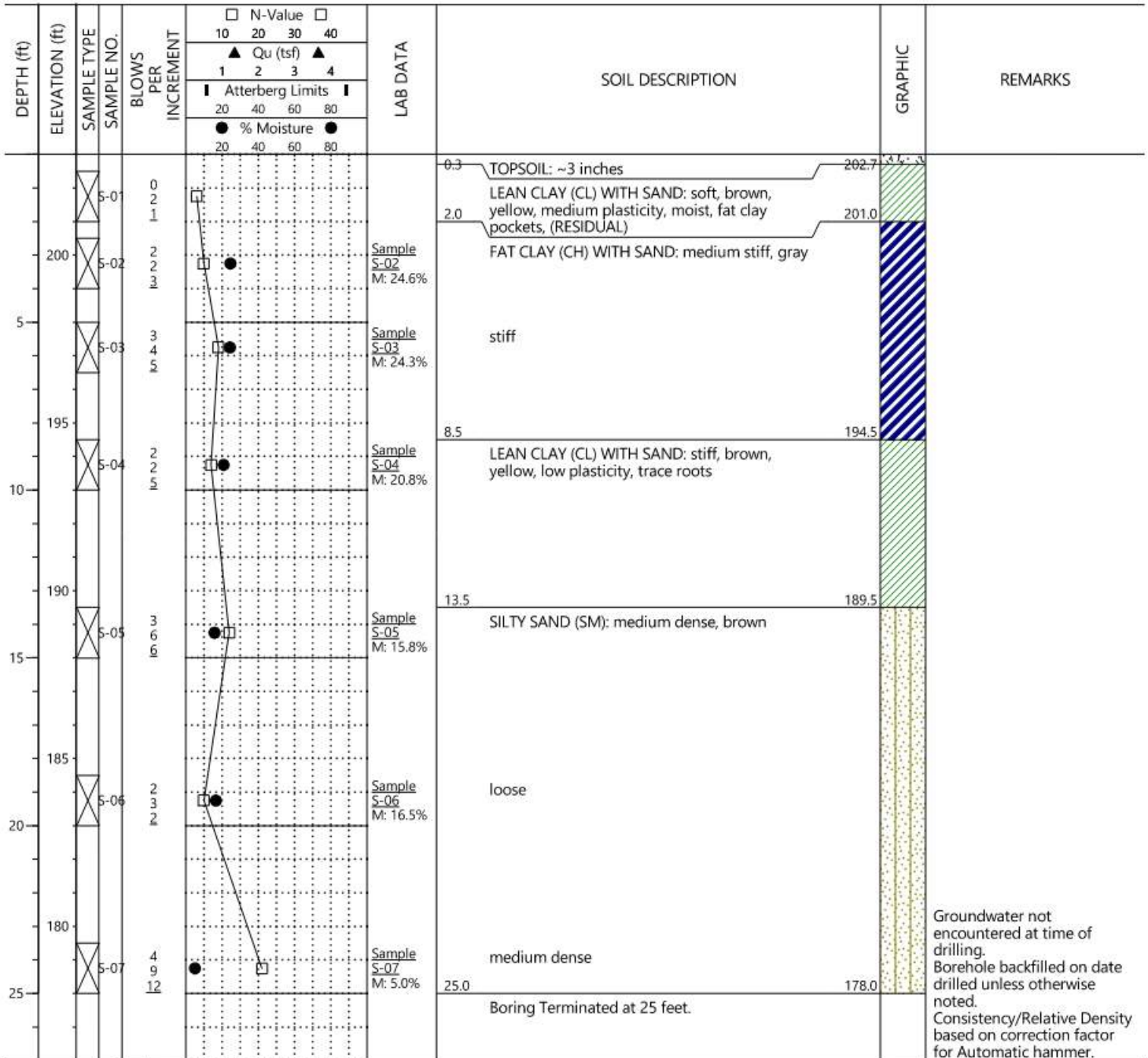


SAMPLE TYPE  Split Spoon

**N-VALUE** STANDARD PENETRATION RESISTANCE (AASHTO T-206)      **REC** RECOVERY      **LL:** LIQUID LIMIT      **M:** NATURAL MOISTURE CONTENT  
**% MOISTURE** PERCENT NATURAL MOISTURE CONTENT      **RQD** ROCK QUALITY DESIGNATION      **PL:** PLASTIC LIMIT      **F:** PERCENT PASSING NO. 200 SIEVE  
 GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING      **UD** UNDISTURBED      **PI:** PLASTICITY INDEX  
 STABILIZED GROUNDWATER LEVEL      **Qu** POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH

PROJECT NAME: Brinkley High school  
 PROJECT NUMBER: LR240081  
 DRILLING METHOD: Hollow Stem Auger  
 EQUIPMENT USED: Geoprobe 7822DT  
 HAMMER TYPE: Automatic  
 BORING LOCATION: 34.877120, -91.195122

LOCATION: Brinkley, AR  
 DATE DRILLED: 5/7/24  
 WEATHER: Cloudy, Light Rain  
 ELEVATION: 203  
 DRILL CREW: Building & Earth  
 LOGGED BY: J. St. Pierre

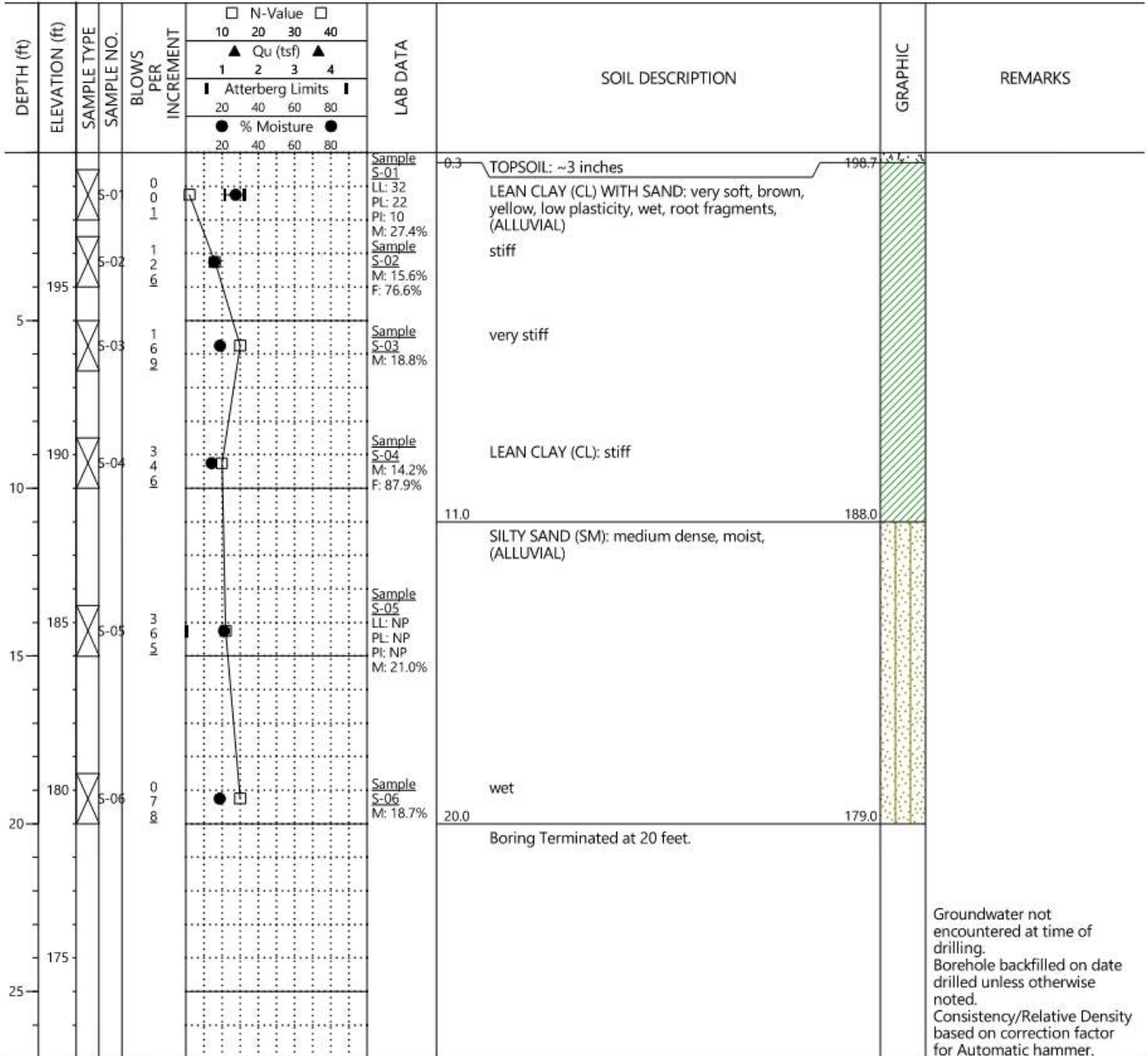


SAMPLE TYPE  Split Spoon

**N-VALUE** STANDARD PENETRATION RESISTANCE (AASHTO T-206)      **REC** RECOVERY      **LL:** LIQUID LIMIT    **M:** NATURAL MOISTURE CONTENT  
**% MOISTURE** PERCENT NATURAL MOISTURE CONTENT      **RQD** ROCK QUALITY DESIGNATION    **PL:** PLASTIC LIMIT    **F:** PERCENT PASSING NO. 200 SIEVE  
 GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING    **UD** UNDISTURBED      **PI:** PLASTICITY INDEX  
 STABILIZED GROUNDWATER LEVEL      **Qu** POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH

PROJECT NAME: Brinkley High school  
 PROJECT NUMBER: LR240081  
 DRILLING METHOD: Hollow Stem Auger  
 EQUIPMENT USED: Geoprobe 7822DT  
 HAMMER TYPE: Automatic  
 BORING LOCATION: 34.876797, -91.196454

LOCATION: Brinkley, AR  
 DATE DRILLED: 5/7/24  
 WEATHER: Cloudy, Light Rain  
 ELEVATION: 199  
 DRILL CREW: Building & Earth  
 LOGGED BY: J. St. Pierre



SAMPLE TYPE  Split Spoon

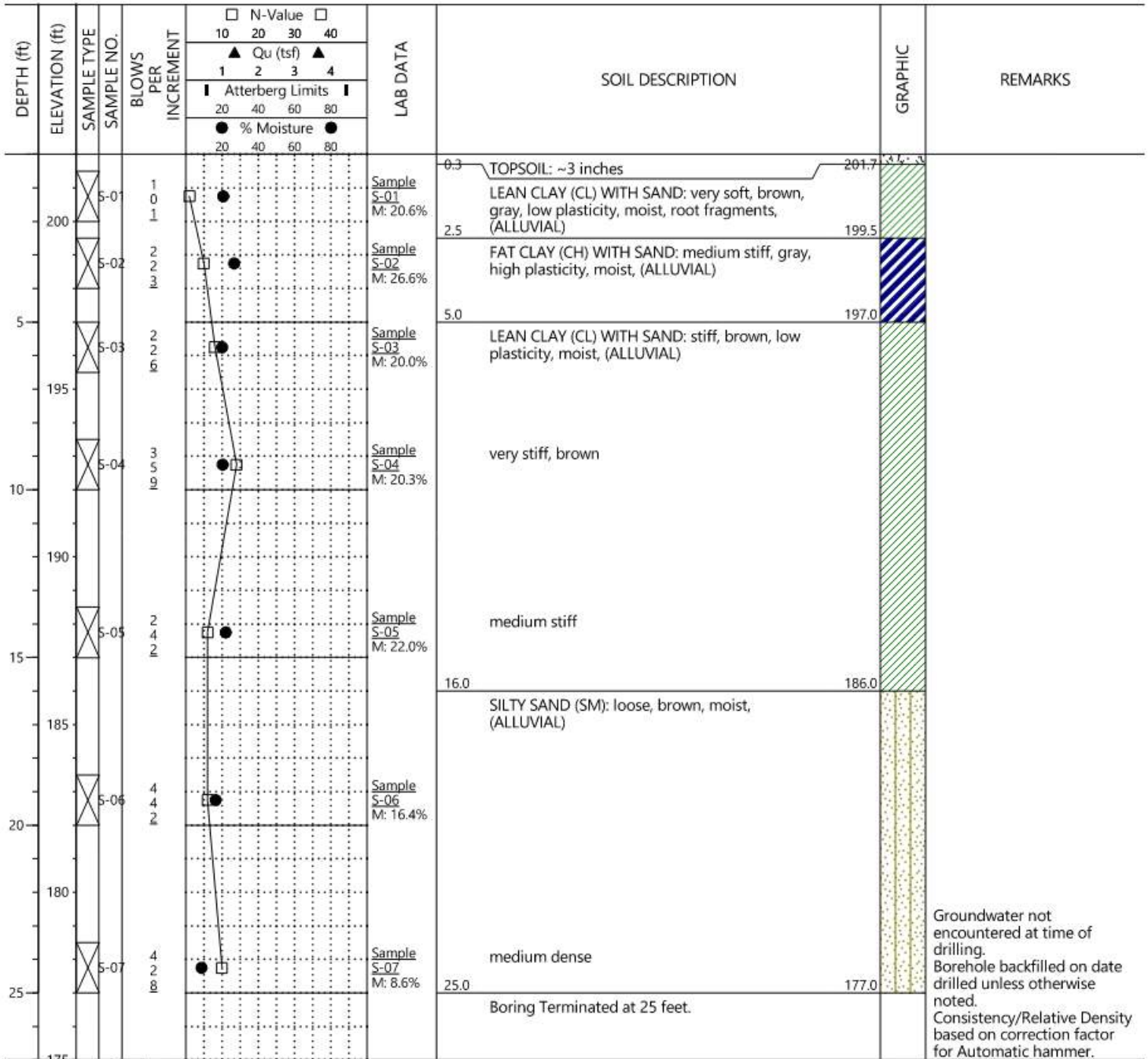
**N-VALUE** STANDARD PENETRATION RESISTANCE (AASHTO T-206)      **REC** RECOVERY      **LL:** LIQUID LIMIT      **M:** NATURAL MOISTURE CONTENT  
**% MOISTURE** PERCENT NATURAL MOISTURE CONTENT      **RQD** ROCK QUALITY DESIGNATION      **PL:** PLASTIC LIMIT      **F:** PERCENT PASSING NO. 200 SIEVE  
 GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING      **UD** UNDISTURBED      **PI:** PLASTICITY INDEX  
 STABILIZED GROUNDWATER LEVEL      **Qu** POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH

Groundwater not encountered at time of drilling. Borehole backfilled on date drilled unless otherwise noted. Consistency/Relative Density based on correction factor for Automatic hammer.



PROJECT NAME: Brinkley High school  
 PROJECT NUMBER: LR240081  
 DRILLING METHOD: Hollow Stem Auger  
 EQUIPMENT USED: Geoprobe 7822DT  
 HAMMER TYPE: Automatic  
 BORING LOCATION: 34.876689, -91.196051

LOCATION: Brinkley, AR  
 DATE DRILLED: 5/7/24  
 WEATHER: Cloudy, Light Rain  
 ELEVATION: 202  
 DRILL CREW: Building & Earth  
 LOGGED BY: J. St. Pierre



SAMPLE TYPE Split Spoon



- N-VALUE** STANDARD PENETRATION RESISTANCE (AASHTO T-206)
- % MOISTURE** PERCENT NATURAL MOISTURE CONTENT
- GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING
- STABILIZED GROUNDWATER LEVEL
- REC** RECOVERY
- RQD** ROCK QUALITY DESIGNATION
- UD** UNDISTURBED
- Qu** POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH
- LL:** LIQUID LIMIT
- M:** NATURAL MOISTURE CONTENT
- PL:** PLASTIC LIMIT
- F:** PERCENT PASSING NO. 200 SIEVE
- PI:** PLASTICITY INDEX

PROJECT NAME: Brinkley High school  
 PROJECT NUMBER: LR240081  
 DRILLING METHOD: Hollow Stem Auger  
 EQUIPMENT USED: Geoprobe 7822DT  
 HAMMER TYPE: Automatic  
 BORING LOCATION: 34.876692, -91.195574

LOCATION: Brinkley, AR  
 DATE DRILLED: 5/7/24  
 WEATHER: Cloudy, Light Rain  
 ELEVATION: 201  
 DRILL CREW: Building & Earth  
 LOGGED BY: J. St. Pierre

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	BLOWS PER INCREMENT	LAB DATA				SOIL DESCRIPTION	GRAPHIC	REMARKS
					□ N-Value □	▲ Qu (tsf) ▲	Atterberg Limits				
					10 20 30 40	1 2 3 4	20 40 60 80	20 40 60 80			
200	200.8	5-01	1	1					0.2	TOPSOIL: ~2 inches	
		5-02	2	1					2.5	LEAN CLAY (CL) WITH SAND: medium stiff, brown, yellow, low plasticity, moist, root fragments, (ALLUVIAL)	
		5-03	3	2						FAT CLAY (CH) WITH SAND: medium stiff, gray, high plasticity, moist, (ALLUVIAL)	
5	195	5-04	4	3					8.5	LEAN CLAY (CL) WITH SAND: very stiff, brown, low plasticity, moist, (ALLUVIAL)	
		5-05	5	4					13.5	SILTY SAND (SM): medium dense, brown, moist, (ALLUVIAL)	
15	185	5-06	6	2						loose	
20	180	5-07	7	1					25.0	Boring Terminated at 25 feet.	

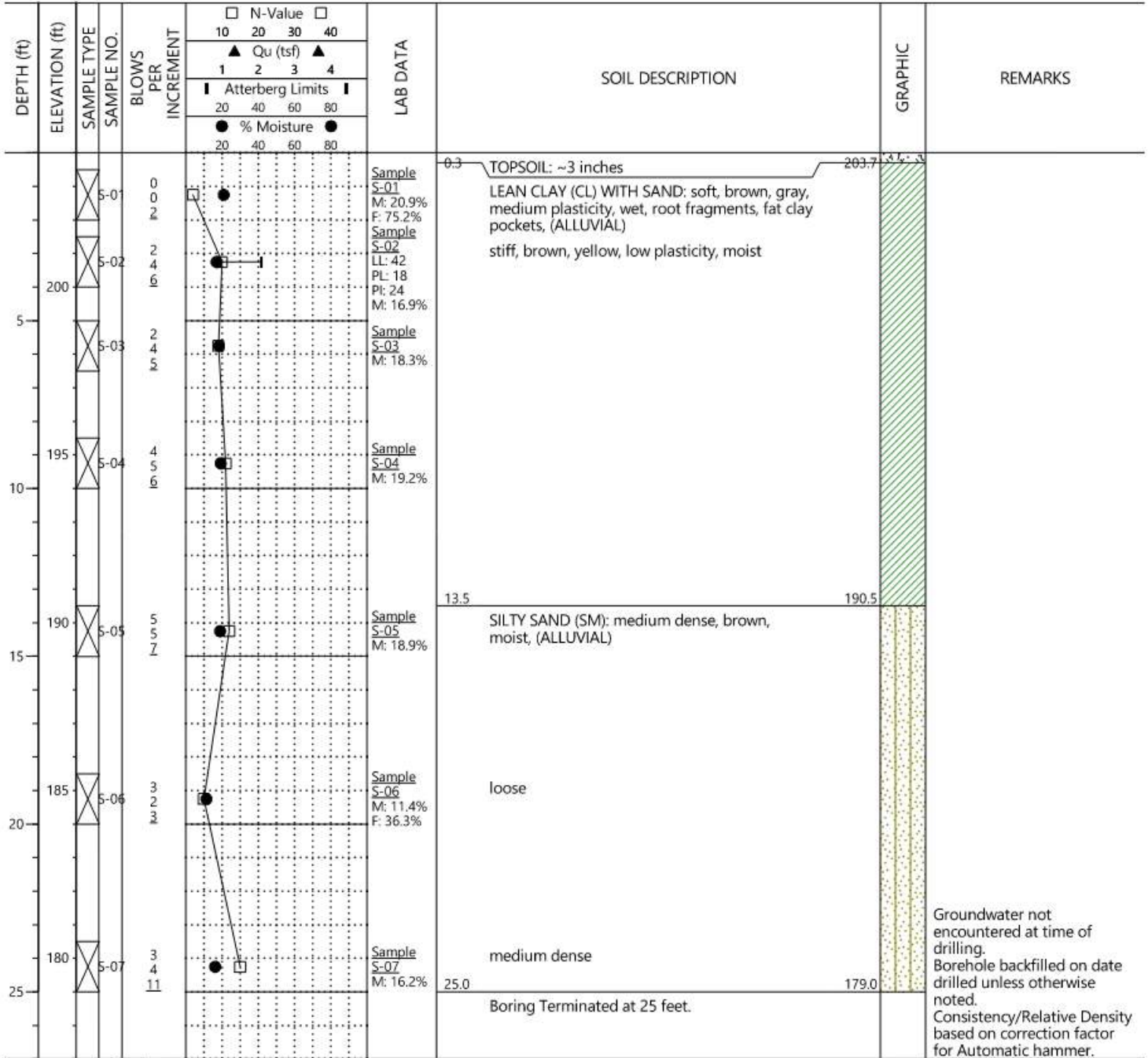
SAMPLE TYPE  Split Spoon

**N-VALUE** STANDARD PENETRATION RESISTANCE (AASHTO T-206)      **REC** RECOVERY      **LL:** LIQUID LIMIT    **M:** NATURAL MOISTURE CONTENT  
**% MOISTURE** PERCENT NATURAL MOISTURE CONTENT      **RQD** ROCK QUALITY DESIGNATION    **PL:** PLASTIC LIMIT    **F:** PERCENT PASSING NO. 200 SIEVE  
 GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING    **UD** UNDISTURBED      **PI:** PLASTICITY INDEX  
 STABILIZED GROUNDWATER LEVEL      **Qu** POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH

Groundwater not encountered at time of drilling. Borehole backfilled on date drilled unless otherwise noted. Consistency/Relative Density based on correction factor for Automatic hammer.

PROJECT NAME: Brinkley High school  
 PROJECT NUMBER: LR240081  
 DRILLING METHOD: Hollow Stem Auger  
 EQUIPMENT USED: Geoprobe 7822DT  
 HAMMER TYPE: Automatic  
 BORING LOCATION: 34.876689, -91.195135

LOCATION: Brinkley, AR  
 DATE DRILLED: 5/7/24  
 WEATHER: Cloudy, Light Rain  
 ELEVATION: 204  
 DRILL CREW: Building & Earth  
 LOGGED BY: J. St. Pierre



SAMPLE TYPE  Split Spoon

- N-VALUE** STANDARD PENETRATION RESISTANCE (AASHTO T-206)
- % MOISTURE** PERCENT NATURAL MOISTURE CONTENT
- GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING
- STABILIZED GROUNDWATER LEVEL
- REC** RECOVERY
- RQD** ROCK QUALITY DESIGNATION
- UD** UNDISTURBED
- Qu** POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH
- LL:** LIQUID LIMIT
- M:** NATURAL MOISTURE CONTENT
- PL:** PLASTIC LIMIT
- F:** PERCENT PASSING NO. 200 SIEVE
- PI:** PLASTICITY INDEX

Groundwater not encountered at time of drilling. Borehole backfilled on date drilled unless otherwise noted. Consistency/Relative Density based on correction factor for Automatic hammer.

PROJECT NAME: Brinkley High school  
 PROJECT NUMBER: LR240081  
 DRILLING METHOD: Hollow Stem Auger  
 EQUIPMENT USED: Geoprobe 7822DT  
 HAMMER TYPE: Automatic  
 BORING LOCATION: 34.877706, -91.196358

LOCATION: Brinkley, AR  
 DATE DRILLED: 5/6/24  
 WEATHER: Partly Cloudy  
 ELEVATION: 203  
 DRILL CREW: Building & Earth  
 LOGGED BY: J. St. Pierre

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	BLOWS PER INCREMENT	LAB DATA				SOIL DESCRIPTION	GRAPHIC	REMARKS
					□ N-Value □	▲ Qu (tsf) ▲	Atterberg Limits				
					10 20 30 40	1 2 3 4	20 40 60 80	20 40 60 80			
1.0	202.0								CONCRETE: 12 inches		
2.5	200.5								LEAN CLAY (CL) WITH SAND: medium stiff, brown, yellow, medium plasticity, moist, (ALLUVIAL)		
5.0	198.0								FAT CLAY (CH) WITH SAND: medium stiff, gray, high plasticity, moist, (ALLUVIAL)		
6.5	196.5								LEAN CLAY (CL) WITH SAND: stiff, brown, low plasticity, moist, (ALLUVIAL)		
Boring Terminated at 6.5 feet.											
Groundwater not encountered at time of drilling. Borehole backfilled on date drilled unless otherwise noted. Consistency/Relative Density based on correction factor for Automatic hammer.											

SAMPLE TYPE  Split Spoon

**N-VALUE** STANDARD PENETRATION RESISTANCE (AASHTO T-206)

**% MOISTURE** PERCENT NATURAL MOISTURE CONTENT

GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING

STABILIZED GROUNDWATER LEVEL

**REC** RECOVERY

**RQD** ROCK QUALITY DESIGNATION

**UD** UNDISTURBED

**Qu** POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH

**LL:** LIQUID LIMIT **M:** NATURAL MOISTURE CONTENT

**PL:** PLASTIC LIMIT **F:** PERCENT PASSING NO. 200 SIEVE

**PI:** PLASTICITY INDEX

PROJECT NAME: Brinkley High school  
 PROJECT NUMBER: LR240081  
 DRILLING METHOD: Hollow Stem Auger  
 EQUIPMENT USED: Geoprobe 7822DT  
 HAMMER TYPE: Automatic  
 BORING LOCATION: 34.877699, -91.195762

LOCATION: Brinkley, AR  
 DATE DRILLED: 5/6/24  
 WEATHER: Partly Cloudy  
 ELEVATION: 202  
 DRILL CREW: Building & Earth  
 LOGGED BY: J. St. Pierre

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	BLOWS PER INCREMENT	LAB DATA				SOIL DESCRIPTION	GRAPHIC	REMARKS
					□ N-Value □	▲ Qu (tsf) ▲	Atterberg Limits				
					10 20 30 40	1 2 3 4	20 40 60 80	20 40 60 80			
200	201.8	5-01	2	2					0.2	TOPSOIL: ~2 inches	
200	201.8	5-02	4	4					201.8	LEAN CLAY (CL) WITH SAND: medium stiff, brown, yellow, low plasticity, moist, (ALLUVIAL)	
205	201.8	5-02	5	4						stiff	
210	201.8	5-03	5	5						very stiff	
215	201.8	5-03	8	8					6.5	Boring Terminated at 6.5 feet.	
215	201.8								195.5		

SAMPLE TYPE  Split Spoon

- N-VALUE** STANDARD PENETRATION RESISTANCE (AASHTO T-206)      **REC** RECOVERY      **LL:** LIQUID LIMIT    **M:** NATURAL MOISTURE CONTENT
- % MOISTURE** PERCENT NATURAL MOISTURE CONTENT      **RQD** ROCK QUALITY DESIGNATION    **PL:** PLASTIC LIMIT    **F:** PERCENT PASSING NO. 200 SIEVE
- GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING    **UD** UNDISTURBED      **PI:** PLASTICITY INDEX
- STABILIZED GROUNDWATER LEVEL      **Qu** POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH

Groundwater not encountered at time of drilling. Borehole backfilled on date drilled unless otherwise noted. Consistency/Relative Density based on correction factor for Automatic hammer.

PROJECT NAME: Brinkley High school  
 PROJECT NUMBER: LR240081  
 DRILLING METHOD: Hollow Stem Auger  
 EQUIPMENT USED: Geoprobe 7822DT  
 HAMMER TYPE: Automatic  
 BORING LOCATION: 34.877703, -91.195127

LOCATION: Brinkley, AR  
 DATE DRILLED: 5/7/24  
 WEATHER: Cloudy, Light Rain  
 ELEVATION: 201  
 DRILL CREW: Building & Earth  
 LOGGED BY: J. St. Pierre

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	BLOWS PER INCREMENT	LAB DATA				SOIL DESCRIPTION	GRAPHIC	REMARKS
					□ N-Value □	▲ Qu (tsf) ▲	Atterberg Limits				
					10 20 30 40	1 2 3 4	20 40 60 80	20 40 60 80			
0.2	200.8								TOPSOIL: ~2 inches		
2.0	199.0								LEAN CLAY (CL) WITH SAND: very soft, brown, gray, medium plasticity, moist, fat clay pockets, root fragments, (ALLUVIAL)		
		S-02							FAT CLAY (CH) WITH SAND: very soft, gray, high plasticity, moist, (ALLUVIAL)		
5.0	196.0										
		S-03							LEAN CLAY (CL) WITH SAND: soft, brown, low plasticity, moist, (ALLUVIAL)		
6.5	194.5								Boring Terminated at 6.5 feet.		
195											
190											
185											
180											
175											

SAMPLE TYPE  Split Spoon

**N-VALUE** STANDARD PENETRATION RESISTANCE (AASHTO T-206)      **REC** RECOVERY      **LL:** LIQUID LIMIT      **M:** NATURAL MOISTURE CONTENT  
**% MOISTURE** PERCENT NATURAL MOISTURE CONTENT      **RQD** ROCK QUALITY DESIGNATION      **PL:** PLASTIC LIMIT      **F:** PERCENT PASSING NO. 200 SIEVE  
 GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING      **UD** UNDISTURBED      **PI:** PLASTICITY INDEX  
 STABILIZED GROUNDWATER LEVEL      **Qu** POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH

Groundwater not encountered at time of drilling. Borehole backfilled on date drilled unless otherwise noted. Consistency/Relative Density based on correction factor for Automatic hammer.

PROJECT NAME: Brinkley High school  
 PROJECT NUMBER: LR240081  
 DRILLING METHOD: Hollow Stem Auger  
 EQUIPMENT USED: Geoprobe 7822DT  
 HAMMER TYPE: Automatic  
 BORING LOCATION: 34.876549, -91.197151

LOCATION: Brinkley, AR  
 DATE DRILLED: 5/7/24  
 WEATHER: Cloudy, Light Rain  
 ELEVATION: 201  
 DRILL CREW: Building & Earth  
 LOGGED BY: J. St. Pierre

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	BLOWS PER INCREMENT	LAB DATA				SOIL DESCRIPTION	GRAPHIC	REMARKS
					□ N-Value □	▲ Qu (tsf) ▲	Atterberg Limits				
					10	20	30	40			
					1	2	3	4			
					20	40	60	80			
					20	40	60	80			
200	200.9	S-01		1					0.1	TOPSOIL: ~1 inch	
				2						LEAN CLAY (CL) WITH SAND: medium stiff, brown, yellow, low plasticity, wet, root fragments, (ALLUVIAL)	
				3							
		S-02		0					2.5	FAT CLAY (CH) WITH SAND: soft, brown, gray, (ALLUVIAL)	
				1							
				2							
5	198.5	S-03		0						gray	
				0							
				0							
				3					6.5	Boring Terminated at 6.5 feet.	
195	194.5										
190											
185											
180											
175											

Groundwater not encountered at time of drilling. Borehole backfilled on date drilled unless otherwise noted. Consistency/Relative Density based on correction factor for Automatic hammer.

SAMPLE TYPE  Split Spoon

- N-VALUE** STANDARD PENETRATION RESISTANCE (AASHTO T-206)
- % MOISTURE** PERCENT NATURAL MOISTURE CONTENT
- GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING
- STABILIZED GROUNDWATER LEVEL
- REC** RECOVERY
- RQD** ROCK QUALITY DESIGNATION
- UD** UNDISTURBED
- Qu** POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH
- LL:** LIQUID LIMIT
- M:** NATURAL MOISTURE CONTENT
- PL:** PLASTIC LIMIT
- F:** PERCENT PASSING NO. 200 SIEVE
- PI:** PLASTICITY INDEX

PROJECT NAME: Brinkley High school  
 PROJECT NUMBER: LR240081  
 DRILLING METHOD: Hollow Stem Auger  
 EQUIPMENT USED: Geoprobe 7822DT  
 HAMMER TYPE: Automatic  
 BORING LOCATION: 34.876603, -91.194986

LOCATION: Brinkley, AR  
 DATE DRILLED: 5/7/24  
 WEATHER: Cloudy, Light Rain  
 ELEVATION: 203  
 DRILL CREW: Building & Earth  
 LOGGED BY: J. St. Pierre

DEPTH (ft)	ELEVATION (ft)	SAMPLE TYPE	SAMPLE NO.	BLOWS PER INCREMENT	LAB DATA				SOIL DESCRIPTION	GRAPHIC	REMARKS
					□ N-Value □	▲ Qu (tsf) ▲	Atterberg Limits				
					10 20 30 40	1 2 3 4	20 40 60 80	20 40 60 80			
0.0	202.7	S-01		0	□	▲			TOPSOIL: ~3 inches		
0.0	202.7	S-01		0	□	▲			FAT CLAY (CH) WITH SAND: very soft, gray, brown, high plasticity, wet, root fragments, (ALLUVIAL)		
1.4	201.3	S-02		0	□	▲			medium stiff, moist		
1.4	201.3	S-02		0	□	▲					
5.0	198.0	S-03		4	□	▲			LEAN CLAY (CL) WITH SAND: very stiff, brown, low plasticity, moist, (ALLUVIAL)		
6.5	196.5	S-03		9	□	▲			Boring Terminated at 6.5 feet.		
195											
10											
190											
15											
185											
20											
180											
25											

SAMPLE TYPE  Split Spoon

- N-VALUE** STANDARD PENETRATION RESISTANCE (AASHTO T-206)
- % MOISTURE** PERCENT NATURAL MOISTURE CONTENT
- GROUNDWATER LEVEL IN THE BOREHOLE AT TIME OF DRILLING
- STABILIZED GROUNDWATER LEVEL
- REC** RECOVERY
- RQD** ROCK QUALITY DESIGNATION
- UD** UNDISTURBED
- Qu** POCKET PENETROMETER UNCONFINED COMPRESSIVE STRENGTH
- LL:** LIQUID LIMIT
- M:** NATURAL MOISTURE CONTENT
- PL:** PLASTIC LIMIT
- F:** PERCENT PASSING NO. 200 SIEVE
- PI:** PLASTICITY INDEX

Groundwater not encountered at time of drilling. Borehole backfilled on date drilled unless otherwise noted. Consistency/Relative Density based on correction factor for Automatic hammer.



**A-5**  
**LABORATORY TEST RESULTS**

## LABORATORY TEST RESULTS

The results of the laboratory testing are presented in the following tables.

BORING NO.	DEPTH	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE	CLASSIFICATION
B-01	0.5 - 2.0	20.1	34	22	12		
B-01	5.0 - 6.5	20.2					
B-01	8.5 - 10.0	18.6					
B-01	13.5 - 15.0	12.1					
B-01	18.5 - 20.0	9.9					
B-01	23.5 - 25.0		NP	NP	NP		
B-02	0.5 - 2.0	26.0					
B-02	2.5 - 4.0	22.2					
B-02	5.0 - 6.5	21.2					
B-02	8.5 - 10.0	19.2					
B-02	13.5 - 15.0	11.5					
B-02	18.5 - 20.0	10.4					
B-02	23.5 - 25.0	17.3					
B-03	0.5 - 2.0	22.9				71	
B-03	2.5 - 4.0	25.2					
B-03	5.0 - 6.5	20.4	39	20	19		
B-03	8.5 - 10.0	21.6					
B-03	13.5 - 15.0	16.7					
B-03	18.5 - 20.0	16.7					
B-03	23.5 - 25.0	14.9					
B-04	0.5 - 2.0	24.1				79	
B-04	2.5 - 4.0	18.8	56	21	35		
B-04	5.0 - 6.5	22.9					
B-04	8.5 - 10.0	21.9					
B-04	13.5 - 15.0		30	25	5		
B-04	23.5 - 25.0	22.1					
B-05	0.5 - 2.0	22.6					
B-05	2.5 - 4.0	21.6					
B-05	5.0 - 6.5	20.9					
B-05	8.5 - 10.0	23.9					
B-05	13.5 - 15.0	8.2					

**TABLE L-1: General Soil Classification Test Results**

Soils with a Liquid Limit (LL) greater than 50 and Plasticity Index (PI) greater than 25 usually exhibit significant volume change with varying moisture content and are considered to be highly plastic

<sup>(1)</sup> Indicates visual classification. WR indicates weathered rock.

## LABORATORY TEST RESULTS

The results of the laboratory testing are presented in the following tables.

BORING NO.	DEPTH	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE	CLASSIFICATION
B-05	18.5 - 20.0	12.9					
B-05	23.5 - 25.0	11.3					
B-06	0.5 - 2.0	23.2	45	22	23		
B-06	2.5 - 4.0	21.4					
B-06	5.0 - 6.5	20.3					
B-06	8.5 - 10.0	23.2	30	24	6		
B-06	13.5 - 15.0	13.5					
B-06	18.5 - 20.0	14.4					
B-06	23.5 - 25.0	14.9				35	
B-07	2.5 - 4.0	24.6					
B-07	5.0 - 6.5	24.3					
B-07	8.5 - 10.0	20.8					
B-07	13.5 - 15.0	15.8					
B-07	18.5 - 20.0	16.5					
B-07	23.5 - 25.0	5.0					
B-08	0.5 - 2.0	27.4	32	22	10		
B-08	2.5 - 4.0	15.6				77	
B-08	5.0 - 6.5	18.8					
B-08	8.5 - 10.0	14.2				88	
B-08	13.5 - 15.0	21.0	NP	NP	NP		
B-08	18.5 - 20.0	18.7					
B-09	0.5 - 2.0	20.6					
B-09	2.5 - 4.0	26.6					
B-09	5.0 - 6.5	20.0					
B-09	8.5 - 10.0	20.3					
B-09	13.5 - 15.0	22.0					
B-09	18.5 - 20.0	16.4					
B-09	23.5 - 25.0	8.6					
B-10	0.5 - 2.0	27.4					
B-10	2.5 - 4.0	22.2					
B-10	5.0 - 6.5	25.5					

**TABLE L-1: General Soil Classification Test Results**

Soils with a Liquid Limit (LL) greater than 50 and Plasticity Index (PI) greater than 25 usually exhibit significant volume change with varying moisture content and are considered to be highly plastic

<sup>(1)</sup> Indicates visual classification. WR indicates weathered rock.

**LABORATORY TEST RESULTS**

The results of the laboratory testing are presented in the following tables.

BORING NO.	DEPTH	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE	CLASSIFICATION
B-10	8.5 - 10.0	14.9					
B-10	13.5 - 15.0	13.9					
B-10	18.5 - 20.0	14.3					
B-11	0.5 - 2.0	20.9				75	
B-11	2.5 - 4.0	16.9	42	18	24		
B-11	5.0 - 6.5	18.3					
B-11	8.5 - 10.0	19.2					
B-11	13.5 - 15.0	18.9					
B-11	18.5 - 20.0	11.4				36	
B-11	23.5 - 25.0	16.2					
P-01	0.5 - 2.0	26.9					
P-01	2.5 - 4.0	23.3					
P-01	5.0 - 6.5	19.7					
P-02	0.5 - 2.0	14.3					
P-02	2.5 - 4.0	16.1					
P-02	5.0 - 6.5	14.8					
P-03	2.5 - 4.0	33.7					
P-03	5.0 - 6.5	21.8					
P-04	0.5 - 2.0	21.2					
P-04	2.5 - 4.0	26.6					
P-04	5.0 - 6.5	25.0					
P-05	0.5 - 2.0	25.1					
P-05	2.5 - 4.0	25.5					
P-05	5.0 - 6.5	16.6					

**TABLE L-1: General Soil Classification Test Results**

Soils with a Liquid Limit (LL) greater than 50 and Plasticity Index (PI) greater than 25 usually exhibit significant volume change with varying moisture content and are considered to be highly plastic  
 (1) Indicates visual classification. WR indicates weathered rock.

**A-6**  
**LABORATORY TEST PROCEDURES**

A brief description of the laboratory tests performed is provided in the following sections.

### **DESCRIPTION OF SOILS (VISUAL-MANUAL PROCEDURE) (ASTM D2488)**

The soil samples were visually examined by our engineer and soil descriptions were provided. Representative samples were then selected and tested in accordance with the aforementioned laboratory-testing program to determine soil classifications and engineering properties. This data was used to correlate our visual descriptions with the Unified Soil Classification System (USCS).

### **POCKET PENETROMETER**

### **NATURAL MOISTURE CONTENT (ASTM D2216)**

Natural moisture contents (M%) were determined on selected samples. The natural moisture content is the ratio, expressed as a percentage, of the weight of water in a given amount of soil to the weight of solid particles.

### **ATTERBERG LIMITS (ASTM D4318)**

The Atterberg Limits test was performed to evaluate the soil's plasticity characteristics. The soil Plasticity Index (PI) is representative of this characteristic and is bracketed by the Liquid Limit (LL) and the Plastic Limit (PL). The Liquid Limit is the moisture content at which the soil will flow as a heavy viscous fluid. The Plastic Limit is the moisture content at which the soil is between "plastic" and the semi-solid stage. The Plasticity Index ( $PI = LL - PL$ ) is a frequently used indicator for a soil's potential for volume change. Typically, a soil's potential for volume change increases with higher Plasticity Indices.

### **MATERIAL FINER THAN NO. 200 SIEVE BY WASHING (ASTM D1140)**

Grain-size tests were performed to determine the partial soil particle size distribution. The amount of material finer than the openings on the No. 200 sieve (0.075 mm) was determined by washing soil over the No. 200 sieve. The results of wash #200 tests are presented on the boring logs included in this report and in the table of laboratory test results.

A-7

GEOTECHNICAL INVESTIGATION METHODOLOGIES

The subsurface exploration, which is the basis of the recommendations of this report, has been performed in accordance with industry standards. Detailed methodologies employed in the investigation are presented in the following sections.

### **DRILLING PROCEDURES - STANDARD PENETRATION TEST (ASTM D1586)**

At each boring location, soil samples were obtained at standard sampling intervals with a split-spoon sampler. The borehole was first advanced to the sample depth by augering and the sampling tools were placed in the open hole. The sampler was then driven 18 inches into the ground with a 140-pound automatic hammer free-falling 30 inches. The number of blows required to drive the sampler each 6-inch increment was recorded. The initial increment is considered the “seating” blows, where the sampler penetrates loose or disturbed soil in the bottom of the borehole.

The blows required to penetrate the final two (2) increments are added together and are referred to as the Standard Penetration Test (SPT) N-value. The N-value, when properly evaluated, gives an indication of the soil’s strength and ability to support structural loads. Many factors can affect the SPT N-value, so this result cannot be used exclusively to evaluate soil conditions.

The SPT testing was performed using a drill rig equipped with an automatic hammer. Automatic hammers mechanically control the height of the hammer drop, and doing so, deliver higher energy efficiency (90 to 99% efficiency) than manual hammers (60% efficiency) which are dropped using a manually operated rope and cathead system. Because historic data correlations were developed based on use of a manual hammer, it is necessary to adjust the N-values obtained using an automatic hammer to make these correlations valid. Therefore, an energy correction factor of 1.3 was applied to the recorded field N-values from the automatic hammer for the purpose of our evaluation. The N-values discussed or mentioned in this report and shown on the boring logs are recorded field values.

Samples retrieved from the boring locations were labeled and stored in plastic bags at the jobsite before being transported to our laboratory for analysis. The project engineer prepared Boring Logs summarizing the subsurface conditions at the boring locations.

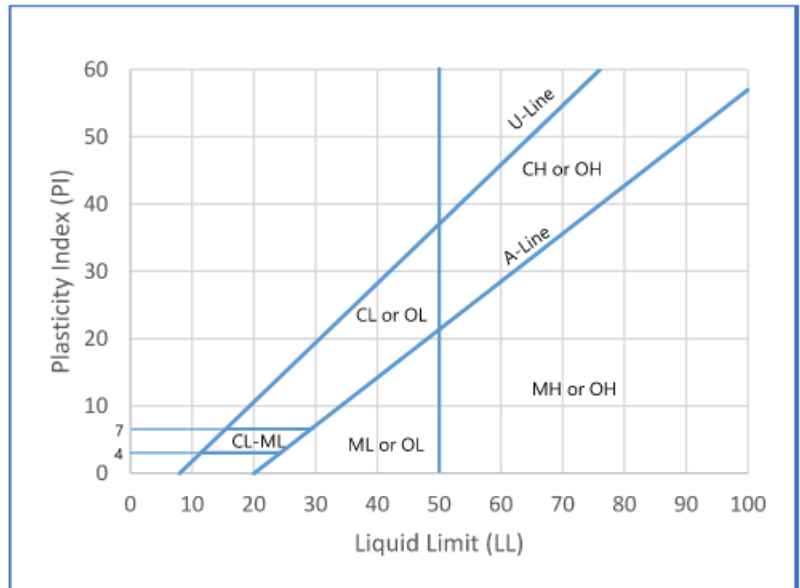


## SOIL CLASSIFICATION METHODOLOGY

Major Divisions			Symbols		Group Name & Typical Description
			Lithology	Group	
<b>Coarse Grained Soils</b>  More than 50% of material is larger than No. 200 sieve size	<b>Gravel and Gravelly Soils</b>  More than 50% of coarse fraction is larger than No. 4 sieve	<b>Clean Gravels</b> (Less than 5% fines)		<b>GW</b>	Well-graded gravels, gravel – sand mixtures, little or no fines
				<b>GP</b>	Poorly-graded gravels, gravel – sand mixtures, little or no fines
		<b>Gravels with Fines</b> (More than 12% fines)		<b>GM</b>	Silty gravels, gravel – sand – silt mixtures
				<b>GC</b>	Clayey gravels, gravel – sand – clay mixtures
	<b>Sand and Sandy Soils</b>  More than 50% of coarse fraction is smaller than No. 4 sieve	<b>Clean Sands</b> (Less than 5% fines)		<b>SW</b>	Well-graded sands, gravelly sands, little or no fines
				<b>SP</b>	Poorly-graded sands, gravelly sands, little or no fines
		<b>Sands with Fines</b> (More than 12% fines)		<b>SM</b>	Silty sands, sand – silt mixtures
				<b>SC</b>	Clayey sands, sand – clay mixtures
<b>Fine Grained Soils</b>  More than 50% of material is smaller than No. 200 sieve size	<b>Silts and Clays</b>  Liquid Limit less than 50	<b>Inorganic</b>		<b>ML</b>	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silt with slight plasticity
				<b>CL</b>	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		<b>Organic</b>		<b>OL</b>	Organic silts and organic silty clays of low plasticity
	<b>Silts and Clays</b>  Liquid Limit greater than 50	<b>Inorganic</b>		<b>MH</b>	Inorganic silts, micaceous or diatomaceous fine sand, or silty soils
				<b>CH</b>	Inorganic clays of high plasticity
		<b>Organic</b>		<b>OH</b>	Organic clays of medium to high plasticity, organic silts
<b>Highly Organic Soils</b>				<b>PT</b>	Peat, humus, swamp soils with high organic contents

**Table 1: Soil Classification Chart (based on ASTM D2487)**

Building & Earth Sciences classifies soil in general accordance with the Unified Soil Classification System (USCS) presented in ASTM D2487. Table 1 and Figure 1 exemplify the general guidance of the USCS. Soil consistencies and relative densities are presented in general accordance with Terzaghi, Peck, & Mesri's (1996) method, as shown on Table 2, when quantitative field and/or laboratory data is available. Table 2 includes Consistency and Relative Density correlations with N-values obtained using either a manual hammer (60 percent efficiency) or automatic hammer (90 percent efficiency). The *Blows Per Increment* and *SPT N-values* displayed on the boring logs are the unaltered values measured in the field. When field and/or laboratory data is not available, we may classify soil in general accordance with the Visual Manual Procedure presented in ASTM D2488.







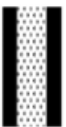



**Figure 1: Plasticity Chart (based on ASTM D2487)**

Non-cohesive: Coarse-Grained Soil		Cohesive: Fine-Grained Soil				
SPT Penetration (blows/foot)		Relative Density	SPT Penetration (blows/foot)		Consistency	Estimated Range of Unconfined Compressive Strength (tsf)
			Automatic Hammer*	Manual Hammer		
Automatic Hammer*	Manual Hammer		< 2	< 2	Very Soft	< 0.25
0 - 3	0 - 4	Very Loose	2 - 3	2 - 4	Soft	0.25 - 0.50
3 - 8	4 - 10	Loose	3 - 6	4 - 8	Medium Stiff	0.50 - 1.00
8 - 23	10 - 30	Medium Dense	6 - 12	8 - 15	Stiff	1.00 - 2.00
23 - 38	30 - 50	Dense	12 - 23	15 - 30	Very Stiff	2.00 - 4.00
> 38	> 50	Very Dense	> 23	> 30	Hard	> 4.00

**Table 2: Soil Consistency and Relative Density (based on Terzaghi, Peck & Mesri, 1996)**

\* - Modified based on 80% hammer efficiency





## KEY TO LOGS

 Standard Penetration Test ASTM D1586 or AASHTO T-206	 Dynamic Cone Penetrometer (Sower DCP) ASTM STP-399
 Shelby Tube Sampler ASTM D1587	 No Sample Recovery
 Rock Core Sample ASTM D2113	 Groundwater at Time of Drilling
 Auger Cuttings	 Groundwater as Indicated

**Table 1: Symbol Legend**

Soil	Particle Size	U.S. Standard
<b>Boulders</b>	Larger than 300 mm	N.A.
<b>Cobbles</b>	300 mm to 75 mm	N.A.
<b>Gravel</b>	75 mm to 4.75 mm	3-inch to #4 sieve
Coarse	75 mm to 19 mm	3-inch to ¾-inch sieve
Fine	19 mm to 4.75 mm	¾-inch to #4 sieve
<b>Sand</b>	4.75 mm to 0.075 mm	#4 to #200 Sieve
Coarse	4.75 mm to 2 mm	#4 to #10 Sieve
Medium	2 mm to 0.425 mm	#10 to #40 Sieve
Fine	0.425 mm to 0.075 mm	#40 to #200 Sieve
<b>Fines</b>	Less than 0.075 mm	Passing #200 Sieve
Silt	0.075 mm to 2 µm	N.A.
Clay	Less than 2 µm	N.A.

**Table 2: Standard Sieve Sizes**

<b>N-Value</b> 	Standard Penetration Test Resistance calculated using ASTM D1586 or AASHTO T-206. Calculated as sum of original, field recorded values.	<b>Atterberg Limits</b>  PL LL	A measure of a soil's plasticity characteristics in general accordance with ASTM D4318. The soil Plasticity Index (PI) is representative of this characteristic and is bracketed by the Liquid Limit (LL) and the Plastic Limit (PL).
<b>Qu</b> 	Unconfined compressive strength, typically estimated from a pocket penetrometer. Results are presented in tons per square foot (tsf).	<b>% Moisture</b> 	Percent natural moisture content in general accordance with ASTM D2216.

**Table 3: Soil Data**

Hollow Stem Auger	Flights on the outside of the shaft advance soil cuttings to the surface. The hollow stem allows sampling through the middle of the auger flights.
Mud Rotary / Wash Bore	A cutting head advances the boring and discharges a drilling fluid to support the borehole and circulate cuttings to the surface.
Solid Flight Auger	Flights on the outside bring soil cuttings to the surface. Solid stem requires removal from borehole during sampling.
Hand Auger	Cylindrical bucket (typically 3-inch diameter and 8 inches long) attached to a metal rod and turned by human force.

**Table 4: Soil Drilling Methods**

Descriptor	Meaning
Trace	Likely less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

**Table 5: Descriptors**

<b>Manual Hammer</b>	The operator tightens and loosens the rope around a rotating drum assembly to lift and drop a sliding, 140-pound hammer falling 30 inches.
<b>Automatic Trip Hammer</b>	An automatic mechanism is used to lift and drop a sliding, 140-pound hammer falling 30 inches.
<b>Dynamic Cone Penetrometer (Sower DCP) ASTM STP-399</b>	Uses a 15-pound steel mass falling 20 inches to strike an anvil and cause penetration of a 1.5-inch diameter cone seated in the bottom of a hand augered borehole. The blows required to drive the embedded cone a depth of 1-3/4 inches have been correlated by others to N-values derived from the Standard Penetration Test (SPT).

**Table 6: Sampling Methods**

<b>Non-plastic</b>	A 1/8-inch thread cannot be rolled at any water content.
<b>Low</b>	The thread can barely be rolled and the lump cannot be formed when drier than the plastic limit.
<b>Medium</b>	The thread is easy to roll and not much time is required to reach the plastic limit. The thread cannot be re-rolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit.
<b>High</b>	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be re-rolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.

**Table 7: Plasticity**

<b>Dry</b>	Absence of moisture, dusty, dry to the touch.
<b>Moist</b>	Damp but no visible water.
<b>Wet</b>	Visible free water, usually soil is below water table.

**Table 8: Moisture Condition**

<b>Stratified</b>	Alternating layers of varying material or color with layers at least 1/2 inch thick.
<b>Laminated</b>	Alternating layers of varying material or color with layers less than 1/4 inch thick.
<b>Fissured</b>	Breaks along definite planes of fracture with little resistance to fracturing.
<b>Slickensides</b>	Fracture planes appear polished or glossy, sometimes striated.
<b>Blocky</b>	Cohesive soil that can be broken down into small angular lumps which resist further breakdown.
<b>Lensed</b>	Inclusion of small pockets of different soils, such as small lenses of sand scattered through a mass of clay.
<b>Homogeneous</b>	Same color and appearance throughout.

**Table 9: Structure**

## KEY TO HATCHES

Hatch	Description	Hatch	Description	Hatch	Description
	<b>GW</b> - Well-graded gravels, gravel – sand mixtures, little or no fines		Asphalt		Clay with Gravel
	<b>GP</b> - Poorly-graded gravels, gravel – sand mixtures, little or no fines		Aggregate Base		Sand with Gravel
	<b>GM</b> - Silty gravels, gravel – sand – silt mixtures		Topsoil		Silt with Gravel
	<b>GC</b> - Clayey gravels, gravel – sand – clay mixtures		Concrete		Gravel with Sand
	<b>SW</b> - Well-graded sands, gravelly sands, little or no fines		Coal		Gravel with Clay
	<b>SP</b> - Poorly-graded sands, gravelly sands, little or no fines		<b>CL-ML</b> - Silty Clay		Gravel with Silt
	<b>SM</b> - Silty sands, sand – silt mixtures		Sandy Clay		Limestone
	<b>SC</b> - Clayey sands, sand – clay mixtures		Clayey Chert		Chalk
	<b>ML</b> - Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silt with slight plasticity		Low and High Plasticity Clay		Siltstone
	<b>CL</b> - Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays		Low Plasticity Silt and Clay		Till
	<b>OL</b> - Organic silts and organic silty clays of low plasticity		High Plasticity Silt and Clay		Sandy Clay with Cobbles and Boulders
	<b>MH</b> - Inorganic silts, micaceous or diatomaceous fine sand, or silty soils		Fill		Sandstone with Shale
	<b>CH</b> - Inorganic clays of high plasticity		Weathered Rock		Coral
	<b>OH</b> - Organic clays of medium to high plasticity, organic silts		Sandstone		Boulders and Cobbles
	<b>PT</b> - Peat, humus, swamp soils with high organic contents		Shale		Soil and Weathered Rock

**Table 1: Key to Hatches Used for Boring Logs and Soil Profiles**



**IMPORTANT INFORMATION ABOUT THIS GEOTECHNICAL-ENGINEERING  
REPORT**

## Important Information about This

# Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

### Geotechnical Services Are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical-engineering study conducted for a civil engineer may not fulfill the needs of a constructor — a construction contractor — or even another civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client. No one except you should rely on this geotechnical-engineering report without first conferring with the geotechnical engineer who prepared it. *And no one — not even you — should apply this report for any purpose or project except the one originally contemplated.*

### Read the Full Report

Serious problems have occurred because those relying on a geotechnical-engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

### Geotechnical Engineers Base Each Report on a Unique Set of Project-Specific Factors

Geotechnical engineers consider many unique, project-specific factors when establishing the scope of a study. Typical factors include: the client's goals, objectives, and risk-management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical-engineering report that was:

- not prepared for you;
- not prepared for your project;
- not prepared for the specific site explored; or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical-engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light-industrial plant to a refrigerated warehouse;
- the elevation, configuration, location, orientation, or weight of the proposed structure;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project changes—even minor ones—and request an

assessment of their impact. *Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.*

### Subsurface Conditions Can Change

A geotechnical-engineering report is based on conditions that existed at the time the geotechnical engineer performed the study. *Do not rely on a geotechnical-engineering report whose adequacy may have been affected by:* the passage of time; man-made events, such as construction on or adjacent to the site; or natural events, such as floods, droughts, earthquakes, or groundwater fluctuations. *Contact the geotechnical engineer before applying this report to determine if it is still reliable.* A minor amount of additional testing or analysis could prevent major problems.

### Most Geotechnical Findings Are Professional Opinions

Site exploration identifies subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ — sometimes significantly — from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide geotechnical-construction observation is the most effective method of managing the risks associated with unanticipated conditions.

### A Report's Recommendations Are Not Final

Do not overrely on the confirmation-dependent recommendations included in your report. *Confirmation-dependent recommendations are not final*, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations *only* by observing actual subsurface conditions revealed during construction. *The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's confirmation-dependent recommendations if that engineer does not perform the geotechnical-construction observation required to confirm the recommendations' applicability.*

### A Geotechnical-Engineering Report Is Subject to Misinterpretation

Other design-team members' misinterpretation of geotechnical-engineering reports has resulted in costly

problems. Confront that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Constructors can also misinterpret a geotechnical-engineering report. Confront that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing geotechnical construction observation.

### **Do Not Redraw the Engineer's Logs**

Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical-engineering report should *never* be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, *but recognize that separating logs from the report can elevate risk.*

### **Give Constructors a Complete Report and Guidance**

Some owners and design professionals mistakenly believe they can make constructors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give constructors the complete geotechnical-engineering report, *but* preface it with a clearly written letter of transmittal. In that letter, advise constructors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. *Be sure constructors have sufficient time to perform additional study.* Only then might you be in a position to give constructors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

### **Read Responsibility Provisions Closely**

Some clients, design professionals, and constructors fail to recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help

others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

### **Environmental Concerns Are Not Covered**

The equipment, techniques, and personnel used to perform an *environmental* study differ significantly from those used to perform a *geotechnical* study. For that reason, a geotechnical-engineering report does not usually relate any environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated environmental problems have led to numerous project failures.* If you have not yet obtained your own environmental information, ask your geotechnical consultant for risk-management guidance. *Do not rely on an environmental report prepared for someone else.*

### **Obtain Professional Assistance To Deal with Mold**

Diverse strategies can be applied during building design, construction, operation, and maintenance to prevent significant amounts of mold from growing on indoor surfaces. To be effective, all such strategies should be devised for the *express purpose* of mold prevention, integrated into a comprehensive plan, and executed with diligent oversight by a professional mold-prevention consultant. Because just a small amount of water or moisture can lead to the development of severe mold infestations, many mold-prevention strategies focus on keeping building surfaces dry. While groundwater, water infiltration, and similar issues may have been addressed as part of the geotechnical-engineering study whose findings are conveyed in this report, the geotechnical engineer in charge of this project is not a mold prevention consultant; *none of the services performed in connection with the geotechnical engineer's study were designed or conducted for the purpose of mold prevention.* Proper implementation of the recommendations conveyed in this report will not of itself be sufficient to prevent mold from growing in or on the structure involved.

### **Rely, on Your GBC-Member Geotechnical Engineer for Additional Assistance**

Membership in the Geotechnical Business Council of the Geoprofessional Business Association exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project. Confer with your GBC-Member geotechnical engineer for more information.



8811 Colesville Road/Suite G106, Silver Spring, MD 20910  
Telephone: 301/565-2733 Facsimile: 301/589-2017  
e-mail: [info@geoprofessional.org](mailto:info@geoprofessional.org) [www.geoprofessional.org](http://www.geoprofessional.org)

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BID FORM – TRADE CONTRACTOR PACKAGES

BRINKLEY HIGH SCHOOL PACKAGE 2  
BRINKLEY SCHOOL DISTRICT  
BRINKLEY, ARKANSAS

SECTION 00 41 00 – BID FORM – TRADE CONTRACTOR PACKAGES

NAME OF JOB: BRINKLEY HIGH SCHOOL PACKAGE NO. 2 – SITE,  
BUILDING & SITE CONCRETE, STEEL (FOB), PEMB (FOB)

BID PLACE: 1000 W. Capitol Avenue, Little Rock, AR 72201

BID DATE: December 17th @ 2:00PM Local Time

Proposal of:

\_\_\_\_\_  
NAME

\_\_\_\_\_  
ADDRESS

\_\_\_\_\_  
CITY, STATE, ZIP CODE

Hereinafter called “Bidder”

ARKANSAS CONTRACTOR’S LICENSE NO \_\_\_\_\_

FEDERAL TAX ID NO \_\_\_\_\_

TO: BALDWIN & SHELL CONSTRUCTION COMPANY  
1000 WEST CAPITOL AVENUE, LITTLE ROCK, AR 72201

Bids shall be privately reviewed and tabulated. The bid shall be based on the items and brands named on the Contract Documents:

The Undersigned, having carefully examined the Plans and Specifications, the General Conditions of the Contract and other related Baldwin and Shell Contract Documents and having made a thorough survey of the sites of the proposed work, satisfying themselves as to the conditions under which the work under this contract must be performed, hereby propose(s) to furnish all of the necessary labor, materials, and miscellaneous services called for in the Contract Documents, in the manner and under the conditions required as follows:

Bidder agrees to perform all of the work of the indicated Trade Contractor Package described in the Contract Documents, Specifications and shown on the plans for the complete Trade Contractor Package:

**Trade Contractor Package No.:** \_\_\_\_\_

**Trade Contractor Package Title:** \_\_\_\_\_

(See Bid Package Schedule for description of Trade Contract Packages)

\_\_\_\_\_  
\_\_\_\_\_  
DOLLARS (\$ \_\_\_\_\_)

BRINKLEY HIGH SCHOOL PACKAGE 2  
BRINKLEY SCHOOL DISTRICT  
BRINKLEY, ARKANSAS

**PERFORMANCE AND PAYMENT BONDS**

For a Trade Contractor Package Bid Proposal Amount in excess of \$50,000.00 the Bidder agrees to provide a Performance Bond and Payment Bond executed on Baldwin and Shell’s Standard Forms without alteration and as described in the Project Manual for the following amount **included in the above Base Bid Proposal**: *(Insert N/A for Trade Contractor Package Proposal of less than \$50,000)*

\_\_\_\_\_ (\$ \_\_\_\_\_ )  
DOLLARS

**BID BONDS**

A 5% Bid Bond or Cashier’s Check is required on Trade Contract Package bids in excess of \$50,000.00.

The Bid security attached in the sum of:

\_\_\_\_\_ (\$ \_\_\_\_\_ )  
DOLLARS

is to become the property of the Construction Manager in the event the Contract and Bonds are not executed within the time set forth as liquidated damages for the delay and additional expense to the Owner caused thereby.

**TRENCH SAFETY**

**Ark. Code Ann. § 22-9-212 requires the contractor to indicate on this bid form the cost of Trenching Safety Systems. (NOTE: THIS COST SHALL BE INCLUDED IN THE ABOVE BASE BID)**

\_\_\_\_\_ (\$ \_\_\_\_\_ )  
DOLLARS

I, We acknowledge receipt of the following addenda:

No. \_\_\_\_\_ No. \_\_\_\_\_ No. \_\_\_\_\_ No. \_\_\_\_\_ No. \_\_\_\_\_ No. \_\_\_\_\_ No. \_\_\_\_\_

I, We acknowledge our bid is based on all the project drawings and specifications:

Dated: \_\_\_\_\_

Bidders hereby agree to commence work under this proposal on or before a date to be specified in a written notice to proceed from the Construction Manager.

The time for completion for the Base Bid is listed below:

**See Construction Manager’s Project Schedule.**

BID FORM – TRADE CONTRACTOR PACKAGES

BRINKLEY HIGH SCHOOL PACKAGE 2  
BRINKLEY SCHOOL DISTRICT  
BRINKLEY, ARKANSAS

Bidder understands that the Construction Manager reserves the right to reject any or all bids and to waive any formalities in the bidding. The bidder agrees that this bid shall be good and may not be withdrawn for a period of 60 calendar days after scheduled closing time for receiving bids.

Upon receipt of written notice of the acceptance of this bid, bidder will execute Baldwin and Shell's Standard Subcontract Agreement without alteration within seven (7) days and deliver a Performance and Payment Bond on Baldwin and Shell's standard Bond forms, without alteration, and as required by the General Conditions of the Contract.

**Respectfully submitted:**

**Bidder:** \_\_\_\_\_

**Name:** \_\_\_\_\_  
Print Name

**By:** \_\_\_\_\_  
Authorized Company Officer Signature

**Title:** \_\_\_\_\_

**Business Address:** \_\_\_\_\_  
\_\_\_\_\_

Are you a WBE, MBE, SBE, DBE, DVBE, or HUB Owned Business? If Other, please list: \_\_\_\_\_  
Circle All That Apply

**Telephone Number:** (\_\_\_\_) \_\_\_\_\_

**Fax Number:** (\_\_\_\_) \_\_\_\_\_

**Email Address:** \_\_\_\_\_

BRINKLEY HIGH SCHOOL PACKAGE 2  
BRINKLEY SCHOOL DISTRICT  
BRINKLEY, ARKANSAS

TO: BRINKLEY SCHOOL DISTRICT

I, hereby state:

- (1) I am the duly authorized agent of \_\_\_\_\_. The bidder submitting the competitive bid which is attached to this statement, for the purpose of certifying the facts pertaining to the existence of collusion among and between bidders and state officials, as well as facts pertaining to the giving or offering of things of value to government personnel in return for special consideration in the awarding of any contract pursuant to the bid to which this statement is attached.
- (2) I am fully aware of the facts and circumstances surrounding the making of the bid to which this statement is attached have been personally and directly involved in the proceeding leading to the submission of the bid.
- (3) Neither the bidder nor anyone subject to the bidder's direction or control has been a party:
  - (A) To any collusion among bidders in restraint of freedom of competition by agreement to bid at a fixed price or to refrain from bidding;
  - (B) To any collusion with any state official or employee as to quantity, quality or price in the prospective contract, or as to any other terms of the prospective contract; or
  - (C) In any discussion between bidders and any state official concerning exchange of money or other thing of value of special consideration in the awarding of contract.

\_\_\_\_\_  
**Signature**

**Subscribed and sworn to before me this**  
\_\_\_\_\_ day of \_\_\_\_\_, 2024

\_\_\_\_\_  
**Notary Public**

BRINKLEY HIGH SCHOOL PACKAGE 2  
BRINKLEY SCHOOL DISTRICT  
BRINKLEY, ARKANSAS

The following information is provided to assist bidders in complying with various laws and rules governing the bidding. It represents most of the requirements, which are often overlooked, and therefore, the cause for rejection of bid. Use of this checklist in no way relieves the bidder from complying with all other laws, parts of laws, regulations and requirements of the Specifications. Prior to sealing and/or submitting Proposal, **check-off** these items for accuracy and completeness:

**ITEMS CHECKLIST**

- Five percent (5%) Bid Bond enclosed, signed and made out to the Construction Manager. (A cashier's check or money order in the amount of 5% of the bid made out to the Construction Manager is permitted. Company or personal checks not acceptable.) This is only required if the bid is in excess of \$50,000.00.
- Bid signed by Authorized Company Officer.
- Addenda/addendum acknowledged.
- Date of construction documents acknowledged.
- Corrections initialed.
- Contractor's license number furnished (if bid equals or exceeds \$50,000.00).
- Project description, Trade Contractor Package name & number, and bidder's name on the outside of envelope.
- Use proper bid form.
- Bid must be delivered prior to bid opening time. If bid is mailed, allow sufficient time for mail delivery.
- Non-collusion statement signed and notarized.
- Alternates included where applicable.
- Unit Prices included on Unit Price Bid Form where applicable.

END OF SECTION



UNIT PRICES BID FORM

BRINKLEY HIGH SCHOOL PACKAGE 2  
BRINKLEY SCHOOL DISTRICT  
BRINKLEY, ARKANSAS

SECTION 00 42 00 – UNIT PRICES BID FORM (ATTACHMENT TO THE TRADE CONTRACTOR’S BID FORM)

UNIT PRICES

The Undersigned agrees that the following UNIT PRICES shall govern changes in the Work, whether they are ADDITIONS or DEDUCTIONS to the Contract Sum required during the course of the work. Unit Prices shall be the same for Additions or Deductions. All Unit Prices shall be total installed costs including overhead, profit, Geotechnical engineering and all other necessary costs. Proposing separate add and deduct unit prices shall subject this Bid Proposal to being rejected as “non-responsive”.

ITEM & UNIT OF MEASURE

ADDITION or DEDUCTION  
(Enter one price only)

MASS UNDERCUT (Export):

- 1. Unsuitable material below finished sub grade removed and disposed of offsite per cu. yd.

\$ \_\_\_\_\_

TRENCH UNDERCUT:

- 2. Unsuitable material below finished utility trench sub grade removed and disposed of offsite per cu. yd.

\$ \_\_\_\_\_

FOOTINGS UNDERCUT:

- 3. Unsuitable material below finished concrete slab trench sub grade removed and disposed of offsite per cu. yd.

\$ \_\_\_\_\_

STRUCTURAL FILL (Import):

- 4. Structural Fill backfilled with specified material per cu. yd.

\$ \_\_\_\_\_

STONE BACKFILL:

- 5. Stone Backfill with specified material per cu. yd.

\$ \_\_\_\_\_

LEAN CONCRETE BACKFILL:

- 6. Lean Concrete Backfill with specified material per cu. yd.

\$ \_\_\_\_\_

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MASS ROCK EXCAVATION:

7. Remove Mass Rock as further defined in these specifications per cu. yd.

\$ \_\_\_\_\_

TRENCH ROCK EXCAVATION:

8. Remove Rock from trench as further defined in these specifications per cu. yd.

\$ \_\_\_\_\_

HYDROMULCHING:

9. Hydromulching as further defined in these specifications per sq. yd.

\$ \_\_\_\_\_

Respectfully submitted:

Bidder: \_\_\_\_\_

Name: \_\_\_\_\_  
Print Name

By: \_\_\_\_\_  
Authorized Company Officer Signature

Title: \_\_\_\_\_

Business Address: \_\_\_\_\_  
\_\_\_\_\_

Are you a WBE, MBE, SBE, DBE, DVBE, or HUB Owned Business? If Other, please list: \_\_\_\_\_  
Circle All That Apply

Telephone Number: (\_\_\_\_) \_\_\_\_\_

Fax Number: (\_\_\_\_) \_\_\_\_\_

Email Address: \_\_\_\_\_

(SEAL)  
(If Bid is by a Corporation)

END OF DOCUMENT

BRINKLEY HIGH SCHOOL PACKAGE 2  
BRINKLEY SCHOOL DISTRICT  
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SECTION 00 52 00 – BID PACKAGE SCHEDULE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and other Division 01 Specifications Sections apply to this Section and all Sections.

1.2 SUMMARY

- A. This Section includes a summary of each contract, including responsibilities for coordination and temporary facilities and controls.

- B. Related Sections include the following:

00 01 01	PROJECT TITLE PAGE
00 01 10	TABLE OF CONTENTS
00 11 16	INVITATION TO BID
00 21 13	INSTRUCTIONS TO BIDDERS
00 31 19	EXISTING CONDITION INFORMATION
00 31 32.01	GEOTECHNICAL DATA
00 31 32.02	COPY OF GEOTECHNICAL REPORT
00 41 00	BID FORM – TRADE CONTRACTOR PACKAGES
00 41 50	BID FORM – MATERIAL SUPPLIER PACKAGES
00 42 00	UNIT PRICES BID FORM
00 52 00	BID PACKAGE SCHEDULE
00 52 10	CONSTRUCTION MANAGER CONTRACT DOCUMENTS
00 52 13	AGREEMENT FORM – STIPULATED SUM (SINGLE PRIME CONTRACT) AIA A101 – 2017, Standard Form of Agreement Between Owner and Contractor (Reference Only)
00 72 13	GENERAL CONDITIONS
00 73 19.13	OSHA GUIDELINES FOR TRENCH SAFETY
01 11 00	SUMMARY OF WORK
01 33 00	SUBMITTAL AND SUBSTITUTION PROCEDURES WD&D Substitution Form
01 45 23	TESTING AND INSPECTION SERVICES
01 50 00	TEMPORARY FACILITIES AND CONTROLS
01 74 23	FINAL CLEANING
01 78 00	CLOSEOUT SUBMITTALS

BRINKLEY HIGH SCHOOL PACKAGE 2  
BRINKLEY SCHOOL DISTRICT  
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- C. Baldwin and Shell Standard Contract Documents: Each and Every Trade Contractor and Materials Purchase Order Company agrees to execute Baldwin and Shell's Standard Subcontract or Material Purchase Order and related Performance Bond and Payment Bond without alteration.
- D. Every Trade Contractor and Material Package bidder agrees to abide by Baldwin & Shell's EEO and Anti-Harassment Policy.
- E. Every Trade Contractor and Material Package bidder agrees to abide by Baldwin & Shell's Substance Abuse Policy.

1.3 COORDINATION

- A. Project Coordinator shall be responsible for coordination between the Trade and Materials Contracts.
  - 1. Construction Manager shall act as Project Coordinator.

1.4 TRADE CONTRACT BID PACKAGES

- A. Trade Contracts are separate contracts with the Construction Manager that represent significant construction activities performed concurrently with and closely coordinated with construction activities performed on the project under other separate trade contracts. Trade Contract Bid Packages for this project include:

- 1. ***Asbestos Abatement & Remediation (Previously Bid)***
- 2. ***Building Demolition (Previously Bid)***
- 3. **Building & Site Concrete**
- 4. **Earthwork & Storm Drainage**
- 5. **Site Utilities**
- 6. **Earthwork, Storm Drainage, & Site Utilities Combo**

1.5 EXTENT OF TRADE CONTRACT WORK

- A. The extent of each trade contract is indicated in the Contract Documents. Except where no other more specific description is contained in the Contract Documents, general names and terminology on the drawings and in specification sections determine which trade contract includes a specific element of work.
- B. Local custom and trade-union jurisdictional settlements do not control the scope of work included in each trade contract. When a potential jurisdictional dispute or similar interruption of construction activities is first identified or threatened, the affected trade contracts shall promptly negotiate a reasonable settlement to avoid or minimize the pending interruption and its delays.

BRINKLEY HIGH SCHOOL PACKAGE 2  
BRINKLEY SCHOOL DISTRICT  
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1.6 CONTRACT DOCUMENTS

- A. The Owner through the Construction Manager will furnish 1 complete electronic set of Contract Documents to the successful trade Contractor for use in construction of the Work unless otherwise negotiated. Each Trade Contractor shall supply complete sets of Contract Documents to subcontractors or material suppliers.
- B. Additional sets of Contract Documents, beyond the sets furnished by the Owner, which are requested by a Trade Contractor, may be purchased from the Construction Manager at the Trade Contractor's expense. Refer to the General Conditions.

1.7 EXAMINATION OF THE PREMISES

- A. Before submitting proposal, each Trade Contractor will be held to have examined the premises and existing conditions under which Trade Contractor will be obligated to operate or that will in any manner affect the work under this contract.

1.8 RESPONSIBILITIES OF OWNER

- A. Responsibilities of Owner include the following:
  - 1. Owner furnished items as defined in the Contract Documents.

1.9 RESPONSIBILITIES OF CONSTRUCTION MANAGER

- A. Responsibilities of Construction Manager include the following:
  - 1. Provide two primary control points for layout.
  - 2. Provide temporary toilets.
  - 3. Provide 120-volt single phase electrical power fees. The electrical trade contractor is to provide the distribution of temporary power.
  - 4. Provide cost for dumpsters for construction waste, except for masonry waste.
  - 5. Pay for construction testing services as required by the Contract Documents.

1.10 RESPONSIBILITIES OF EACH TRADE CONTRACTOR

- A. All Trade Contractors in excess of \$50,000.00 must furnish a Performance and Payment Bond and it must be on Baldwin and Shell's Standard Bond Forms before a contract can be issued.
- B. Except as otherwise specifically stated in the Contract Documents, each Trade Contractor shall provide and pay for all materials, labor, tools, equipment, transportation, superintendence, engineering and layout, safety, protection of work by others, traffic control, weather protection, clean up, storage, performance and payment bonds and **taxes legally collectable because of the work**. Each Trade Contractor shall provide all other services and facilities of every nature whatsoever necessary to execute the work of each contract and shall deliver the work complete in every respect within the specified time.

BRINKLEY HIGH SCHOOL PACKAGE 2  
BRINKLEY SCHOOL DISTRICT  
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- C. Engineering and Layout for your Work.
- D. Coordination with other trades.
- E. Temporary Facilities and Controls: In addition to specific responsibilities for temporary facilities and controls indicated in this Section and in Division 1 Section "Temporary Facilities and Controls", each contractor is responsible for the following:
  - 1. Installation, operation, maintenance, and removal of each temporary facility is usually considered as its own normal construction activity, and costs associated with each facility.
  - 2. Plug-in electric power cords and extension cords, supplementary plug-in task lighting, and special lighting and electrical power necessary exclusively for its own activities.
  - 3. Its own storage and fabrication sheds.
  - 4. Temporary enclosures for its own construction activities.
  - 5. Waste disposal, including collection and legal disposal of its own hazardous, dangerous, unsanitary, or other harmful waste materials. **Dumpster for construction waste provided by Construction Manager except for waste caused by Demolition trade contractors and Masonry Trade Contractors, Demolition and Masonry Trade Contractors shall haul off site their own waste or provide separate dumpsters for their sole and exclusive use. In no case shall any Demolition or Masonry Trade Contractor dispose of waste in Construction Manager provided dumpsters.**
  - 6. Progress cleaning of its own areas on a daily basis.
  - 7. Secure lockup of its own tools, materials, and equipment.
  - 8. Construction aids and miscellaneous services and facilities necessary exclusively for its own construction activities.
  - 9. Fire stopping of penetrations created by its work.
- F. Existing Conditions: Repair damage to existing improvements, facilities, buildings and utilities to the satisfaction of the Owner, without compromise to existing warranties, at no additional cost to the Owner.

1.11 WORK PERFORMED UNDER SEPARATE TRADE CONTRACTS

- A. This is not a complete list of all Work but is a general guideline. The Contract Documents for these sections determine the total scope of the work. Each Trade Contract Bid Package can be summarized as follows:

BRINKLEY HIGH SCHOOL PACKAGE 2  
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**1. *Asbestos Abatement & Remediation (Previously Bid)***

*This Trade Package shall include the complete Scope of Work as described in the following Specification Sections without exception:*

*02 26 00 – HAZARDOUS MATERIAL ASSESSMENT  
Asbestos Sampling - High School Building  
Asbestos Survey - Small Gym*

*The Scope of Work shall specifically include but not necessarily be limited to the following:*

- a. Engineering & Layout for your Work.*
- b. Cost of Safety for your Personnel*
- c. Protection of Work by Others.*
- d. Daily Clean up.*
- e. Include Work Referred to as in the Related Specifications Section of the Specifications Sections Listed for this Trade Bid Package. All Work Related to or that is Integral for the Completion of the Work Specified under this Trade Bid Package are included.*
- f. Mobilizations & All Necessary Equipment Required for Completion of Work for this Package*
- g. Remove and properly dispose of all hazardous materials as required in the Asbestos Surveys.*
- h. Legally & Completely Dispose of Construction Debris & Provide Dumpsters for your Work.*
- i. Maintain and control dust from abatement.*
- j. Provide Superintendent throughout entire project.*
- k. Include Phase 1 work only.*
- l. File NOI with the Arkansas Department of Environmental Quality per Rule 21.*
- m. Provide temporary power for your work.*

BRINKLEY HIGH SCHOOL PACKAGE 2  
BRINKLEY SCHOOL DISTRICT  
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**2. *Building Demolition (Previously Bid)***

*This Trade Package shall include the complete Scope of Work as described in the following Specification Sections without exception:*

*02 41 13 – SELECTIVE SITE DEMOLITION  
02 41 19 – SELECTIVE STRUCTURE DEMOLITION*

*The Scope of Work shall specifically include but not necessarily be limited to the following:*

- a. *Engineering & Layout for your Work.*
- b. *Cost of Safety for your Personnel*
- c. *Protection of Work by Others.*
- d. *Daily Clean up.*
- e. *Include Work Referred to as in the Related Specifications Section of the Specifications Sections Listed for this Trade Bid Package. All Work Related to or that is Integral for the Completion of the Work Specified under this Trade Bid Package are included.*
- f. *Mobilizations & All Necessary Equipment Required for Completion of Work for this Package*
- g. *Dumpsters for your work.*
- h. *Coordination with Utility Companies.*
- i. *Legally & Completely Dispose of Construction Debris & Provide Dumpsters for your Work. Provide landfill tickets for verification.*
- j. *Building Demo in Entirety - All Structures, MEP / FP Systems, Interior Elements, Furniture, Fixtures, & Equipment.*
- k. *Remove All Utilities Completely. Includes Capping (Make Safe) & Removal of All Utilities Back to the Site Point of Entry above building slab.*
- l. *Dust & Erosion Control as required.*
- m. *Keep Dust/Mud/Rocks off of Roads.*
- n. *Import approved select fill at basement level of High School & Regrade Existing.*
- o. *Provide Earthwork Necessary to Conform Grade to Specified Levels Per Contract Drawings.*
- p. *Include Phase 1 work only.*
- q. *Exclude removal of building foundations except at basement of High School building.*
- r. *Exclude removal of site Asphalt, Sidewalk, Curb & Gutter and Base Rock.*
- s. *Fill Excavations, Open Pits, Trenches, & Holes in Ground Areas Due to Building & above slab utility demo.*
- t. *Provide Superintendent throughout entire project.*



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**3. Building & Site Concrete**

This Trade Package shall include the complete Scope of Work as described in the following Specification Sections without exception:

03 10 00 – Concrete Forming and Accessories  
03 20 00 – Concrete Reinforcing  
03 20 01 – Site Concrete Reinforcing  
03 30 00 – Cast-In-Place Concrete  
03 47 00 – Site Cast-In-Place Concrete  
03 60 00 – Grouting  
31 31 16 – Termite Control

The Scope of Work shall specifically include but not necessarily be limited to the following:

- a. Engineering and Layout for your work
- b. Cost of safety for your personnel
- c. Protection of Work by others
- d. Daily Clean up
- e. Include work referred to as in the Related Specifications Section of the Specifications Sections listed for this Trade Bid Package. All Work related to or that is integral for the completion of the Work specified under this Trade Bid Package are included
- f. Provide All Necessary Equipment Required for Completion of Work
- g. Multiple Mobilizations for Phase 1 and 2 as Required to Complete this Bid Package
- h. Provide, Maintain, and Remove Washout Pit Upon Completion
- i. Concrete Foundations; Complete
- j. Slab on Grade, Base Rock, Under-slab vapor barriers, Vapor Barriers; Complete
- k. Raised & Recessed floor slabs, Ramps, Risers, Stairs, Benches, Steps, Seating, Locker bench bases/tops, Complete
- l. Provide Concrete Reinforcing Steel & Devices; Complete
- m. Removal of Debris/Spoils Offsite Generated by Work of this Trade Package
- n. Provide and Install Expansion Joints & Covers that occur in concrete
- o. Provide Concrete Light Pole Bases, including rubbing – Anchor Bolts and Light Poles by Electrical Subcontractor
- p. Install Anchor Bolts, Handrail Sleeves, Embeds, Bollards, Dumpster Gate & Posts – Supplied by Structural Steel Supplier
- q. Include Detectable Warning Surfaces at Sidewalks
- r. Provide all Exterior Sidewalks, Curb & Gutter, Mechanical / Housekeeping / Transformer / Generator Pad, and Dumpster Enclosure Pad and all Base Rock per plans and specs – Coordinate with Material Suppliers and MEP Subcontractors
- s. Waterstops as Required by Plans and Specs
- t. Exclude base rock under Asphalt
- u. Termite Control
- v. Grouting of Base Plates
- w. Excavation and Backfill of All Building Concrete Work
- x. Excavation of any recesses slab areas whether located in the Building or on Site

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- y. Tie into existing sidewalks, curbs & gutters and concrete paving (to include saw-cutting as needed)
- z. All building & site concrete sawcut, expansion, and control joints
- aa. Exclude Concrete Flagpole Base – By Flagpole Subcontractor
- bb. Exclude Sealed Concrete & Polished Concrete Floor Finishes – to be by Others
- cc. Exclude sidewalk to relocated portable classrooms – By Others
- dd. Laser Screed equipment must be utilized when pouring building slabs
- ee. Provide Unit Prices for All Applicable Items on the Unit Price Bid Form

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**4. Earthwork & Storm Drainage**

This Trade Package shall include the complete Scope of Work as described in the following Specification Sections without exception:

02 41 19 – Selective Site Demolition  
31 00 00 - Earthwork  
31 00 10 – Earthwork - Architectural  
31 11 00 – Clearing & Grubbing  
31 23 33 – Trenching and Backfilling  
33 05 33.14 – Corrugated-Wall, Smooth Interior HDPE Pipe  
33 42 10 – Storm Utility Drainage Piping

The Scope of Work shall specifically include but not necessarily be limited to the following:

- a. Engineering and Layout for your work
- b. Cost of safety for your personnel
- c. Protection of Work by others
- d. Daily Clean up
- e. Include work referred to as in the Related Specifications Section of the Specifications Sections listed for this Trade Bid Package. All Work related to or that is integral for the completion of the Work specified under this Trade Bid Package are included
- f. Provide All Necessary Equipment Required for Completion of Work
- g. Multiple Mobilizations for Phase 1 and 2 as Required to Complete this Bid Package
- h. Furnish and Install Erosion Control Measures for your Work
- i. Provide, Maintain, and Remove Construction Entrances
- j. Include Tree Protection
- k. Salvage engraved brick pavers, bench, sign and marquee digital sign, D.01
- l. Include removal of items stated to be by Earthwork Contractor, D.01
- m. Installation, Maintenance, and Removal of SWPPP. (Maintain while on site)
- n. Include all costs for Grading Permit
- o. Haul Off of All Debris/Spoils Generated by Work of this Trade Package
- p. Clear and Grub Site as Shown on Plans and Specs; Remove and dispose of offsite
- q. Import/Export of Soils Per Plans, Specs, and Geotechnical Report
- r. Include removal of building foundations/footings
- s. Include removal of Site Concrete, Asphalt, Sidewalk and Curb & Gutter
- t. Strip, Stockpile, and Respread Stockpiled Topsoil as Required; haul off any excess
- u. Backfill curb & gutter
- v. Maintain clean streets while on site
- w. Provide All Site Storm and Roof Drainage piping and structures; Complete
- x. Provide connections to downspouts, including downspout boots
- y. Provide roof drains to within 5' of building at storm drain lines that run under-slab, final connection by Plumbing Subcontractor
- z. Trenching, backfill, and compaction for storm drainage work, per Geotech report
- aa. Trench Safety
- bb. Exclude Specified Undercut and Replacement of Unsuitable Soils Allowances
- cc. Provide applicable Unit Prices on the Unit Prices Bid Form

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**5. Site Utilities**

This Trade Package shall include the complete Scope of Work as described in the following Specification Sections without exception:

- 31 23 33 – Trenching and Backfilling
- 33 05 31.11 – Polyvinyl Chloride Gravity Sewer Pipe
- 33 12 19 – Water Utility Distribution Fire Hydrants
- 33 14 01 – Polyvinyl Chloride Pipe and Fittings
- 33 30 00 – Sewage Collection System

The Scope of Work shall specifically include but not necessarily be limited to the following:

- a. Engineering and Layout for your work
- b. Cost of safety for your personnel
- c. Protection of Work by others
- d. Daily Clean up
- e. Include work referred to as in the Related Specifications Section of the Specifications Sections listed for this Trade Bid Package. All Work related to or that is integral for the completion of the Work specified under this Trade Bid Package are included
- f. Provide All Necessary Equipment Required for Completion of Work
- g. Multiple Mobilizations for Phase 1 and 2 as Required to Complete this Bid Package
- h. Furnish and Install Erosion Control Measures for your Work
- i. Protect and Maintain Condition of Erosion Control Measures Provided Under this Trade Package During the Execution of this Scope of Work
- j. Provide and Install Site Sanitary Sewer and Domestic Water; Complete
- k. Provide Sanitary Sewer Services from main to within 5' from Building – Final Connection by Plumbing Subcontractor.
- l. Include local sanitary sewer inspection and manhole tie-in fees
- m. Provide concrete at protection collars for sanitary sewer cleanouts
- n. Include cutting and capping and/ or removal of sewer lines as shown
- o. Exclude Grease trap and associated Sanitary Sewer lines – By Plumbing Subcontractor
- p. Provide Water service from main to meter setter/meter.
- q. Provide and Install the Irrigation service and setter/meter
- r. Include local domestic water fees for meters, inspections and tie-ins
- s. Exclude water service from meter to building – By Plumbing Subcontractor
- t. Include cutting and capping and/or removal of water lines as shown.
- u. Site Fire Line to within 5' of building slab edge & all Fire Hydrant assemblies up to and including the Demarcation Valve.
- v. Provide Site FDC from FDC to within 5' of building
- w. Exclude gas piping – By Plumbing Subcontractor
- x. Trench compaction per Geotech report
- y. Trench Safety
- z. Exclude Specified Undercut and Replacement of Unsuitable Soils Allowances
- aa. Provide applicable Unit Prices on Unit Prices Bid Form

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**6. Earthwork, Storm Drainage, & Site Utilities Combo**

This Trade Package shall include the complete Scope of Work as described in Trade Contractor Package #4 Earthwork & Storm Drainage and Trade Contractor Package #5 Site Utilities without exception.

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PART 2 - DEFINITION OF THE EXTENT OF TRADE CONTRACT WORK

- A. Determines which Trade contract includes a specific element of work.
- B. Local custom and trade union jurisdictional settlements do not control the scope-of-work included in each Trade contract. When a potential jurisdictional dispute or similar interruption of construction activities is first identified or threatened, the affected Trade contracts shall promptly negotiate a reasonable settlement to avoid or minimize the pending interruption and its delays.
- C. As point of clarifications, note the following:
  - 1. Construction Manager will provide Temporary Toilets.
  - 2. Construction Manager will be responsible for Temporary Fencing.
  - 3. Construction Manager will be responsible for Geotechnical Testing and Inspections.

1.12 MATERIALS PURCHASE ORDER BID PACKAGES

- A. Materials Purchase Order Bid Packages: All Materials Purchase Order Bid Packages are separate supply contracts with the Construction Manager and shall include furnishing all shop drawings and other required submittals. Coordinate work of these supply contracts with Construction Manager's Representative and work of Trade Contractors. Refer to Contract Documents for details of packages. Material Purchase Order Packages in excess of \$100,000.00 will require a 5% Bid Bond and a 100% Payment Bond. Cost of the 100% Payment Bond is to be included in the Bid Amount. Material Purchase Order Packages for this project include:

- 60. Structural Steel (FOB)**
- 61. PEMB (FOB)**

1.13 WORK PERFORMED UNDER SEPARATE MATERIALS PURCHASE ORDER BID PACKAGES

- A. This is not a complete list of all Work but is a general guideline. The Contract Documents for these sections determine the total scope of the work. Each Materials Purchase Order Bid Package can be summarized as follows:

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**60. Structural & Miscellaneous Steel Fabrication (FOB)**

This Material Purchase Order Bid Package shall include the complete Scope of Work as described in the following Specification Sections without exception:

- 05 10 00 – Structural Steel
- 05 20 00 – Metal Joists
- 05 30 00 – Metal Decking
- 05 40 00 – Cold Formed Structural Steel Framing
- 05 50 00 – Metal Fabrications (as applicable)

The Scope of Work shall specifically include but not necessarily be limited to the following:

- a. Engineering, Submittals and Shop Drawings
- b. Exclude Sales Tax
- c. Provide a bid bond with your bid if the bid is in excess of \$100,000.00.
- d. Include the costs of premiums for a Material Supply Bond in your bid if the bid is in excess of \$100,000.00.
- e. Note: Structural Steel Shops at areas where it ties into PEMB shall be provided first to coordinate with PEMB Supplier
- f. Note: must meet all GALVANIZED requirements
- g. Coordination through the GC with PEMB Supplier, and MEP Contractors
- h. Furnish FOB to the project site, All Structural and Miscellaneous metal per Plans and Specs.
- i. Furnish FOB to the project site, All Composite and Steel Decking
- j. Furnish FOB to the project site, All Handrails
- k. Furnish FOB to the project site, All Metal Ladders (Access, Roof) and Bollards
- l. Furnish FOB to the project site, Anchor Bolts & Base Plates for Structural Steel Items
- m. Furnish FOB to the project site, embeds & loose lintels
- n. Furnish FOB to the project site Structural Steel Joists
- o. Furnish FOB to the project site Dumpster gates, frame, hardware, and supports
- p. Furnish FOB to the project site, Mechanical equipment frames
- q. Furnish FOB to the project site, channel tie beam, splice, and embed connections
- r. Furnish FOB to the project site, 1-1/2" diameter steel pipe for Stage Lighting
- s. Furnish FOB to the project site, Galvanized steel at Equipment Screen
- t. Furnish FOB to the project site, steel clip angles, bent plates and anchors at exterior wall fins
- u. Exclude PEMB
- v. Exclude Stock Hat Channel for Cladding Support
- w. Exclude Stainless Steel Wall Panels
- x. Exclude Curtain and Clothes Hanger Rods

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**61. PEMB (FOB)**

This Trade Package shall include the complete Scope of Work as described in the following Specification Sections without exception:

13 34 19 – Metal Building Systems

The Scope of Work shall specifically include but not necessarily be limited to the following:

- a. Engineering, Submittals and Shop Drawings
- b. Exclude Sales Tax
- c. Provide a bid bond with your bid if the bid is in excess of \$100,000.00.
- d. Include the costs of premiums for a Material Bond in your bid if the bid is in excess of \$100,000.00
- e. Provide BIM, if required
- f. Provide Shop Drawings and Reactions
- g. Provide FOB All Items Associated with Pre-Engineered Metal Building including All Miscellaneous Steel/Metal Associated with PEMB
- h. Provide any Hangers and Outriggers as noted in drawings as by the MBM
- i. Provide any Purlins as noted in drawings as by the MBM
- j. Furnish FOB to the project site, All Metal Building Insulation
- k. Furnish FOB to the project site, All PEMB Metal Roof Decking & Wall Panels
- l. Furnish FOB to the project site, All Gutters & Downspouts at PEMB Structure Only
- m. Furnish FOB to the project site, All required Flashings and Trims associated with the PEMB
- n. Furnish FOB to the project site, All PEMB Framing - Primary & Secondary
- o. Furnish FOB to the project site, All anchor bolts for PEMB
- p. Furnish FOB to the project site, Snow & Ice Retention System



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PART 2 – ENGINEERING AND SHOP DRAWINGS

1.14 CONSTRUCTION DRAWINGS AND PROJECT MANUAL

- A. The owner (through the Construction Manager) will furnish electronic sets of Contract Drawings and the Project Manuals in the following quantities, without cost, to each Trade Contractor for his use in construction of the work unless otherwise negotiated. Each Trade Contractor is to supply all Contract Drawings and Project Manuals to his subcontractors or material suppliers.
  - 1. Everyone one (1) electronic set except:
    - a. Trade Contract/Material Purchase Order .....1 set
- B. Additional sets or portions of Contract Drawings and Project Manuals, beyond the sets furnished by the Owner, that are requested by a Trade Contractor or Materials Purchase Order Company, will be furnished for the actual cost of printing at the Trade Contractor’s or Materials Purchase Order Company’s expense.

1.15 EXAMINATION OF THE PREMISES

- A. Before submitting his quotation, each Trade Contractor will be held to have examined the premises and satisfied himself as to existing conditions under which he will be obligated to operate or that will in any manner affect the work under this contract.

1.16 TRADE CONTRACTORS USE OF PREMISES

- A. General: The Trade Contractors shall limit their use of the premises to construction activities in areas indicated; allow for Owner occupancy and use by the public.
  - 1. Confine operations to areas within contract limits indicated. Portions of the site beyond areas in which construction operations are indicated are not to be disturbed.
  - 2. Burial of waste materials: Do not dispose of organic and hazardous material on site, either by burial or by burning.
  - 3. Each Trade Contractor will be responsible for leaving work area broom clean.

1.17 COLOR RELATED ITEMS

- A. Verify color/texture/pattern selections prior to ordering and prior to application/installation.

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1.18 TIME FOR COMPLETION

- A. Time for substantial completion of all work under this contract is **per the Construction Manager's schedule.**

PART 2 - PRODUCTS – NOT USED

PART 3 - EXECUTION – NOT USED

END OF SECTION

Project # «Project»

«SubcontractNumber»

## SUBCONTRACT

DATE: «DateOfSubcontract»

SUBCONTRACT#: «SubcontractNumber»

This AGREEMENT is by and between

**CONTRACTOR:** Baldwin & Shell Construction Co.  
«BSFirmName»  
«BSMailAddress»  
«BSMailCity», «BSMailState» «BSMailZip»

and

**SUBCONTRACTOR:** «FirmName»  
«FirmAddress»  
«FirmCity», «FirmState» «FirmZip»

**SUBCONTRACTOR CONTACT:** «ContactFName» «ContactLName»  
**Phone:** «FirmPhone»  
**Fax:** «FirmFax»  
**Cell:** «MobilePhone»  
**Email:** «EMail»

**FEDERAL ID NO:** «FederalIDnumber»

**PROJECT:** «CompleteProjDescription»

**LOCATION:** «JobShipAddress»  
«JobShipCity», «JobShipState» «JobShipZip»

**OWNER:** «Owner»  
**OWNER REP:** «OwnerContact»

**ARCHITECT/ENGINEER:** «ArchEngName»  
«ArchEngShipAddress1»  
«ArchEngShipCity», «ArchEngShipState» «ArchEngShipZip»

**Architects Project No.** «ArchProjectNumber»

**DATE OF GENERAL CONTRACT WITH OWNER:** «OwnerContractDate»

### ARTICLE 1 THE CONTRACT DOCUMENTS

1.1 The Contract Documents for this Subcontract consist of this Agreement and any attached Exhibits, the Drawings and Specifications for the Project, the General and Supplementary Conditions, Addenda and all other documents constituting the agreement between the Contractor and the

Owner (the "General Contract"), all of which have been furnished to and carefully reviewed by the Subcontractor. The Contract Documents shall not include any proposals, correspondence or agreements dated, made or alleged to have been made prior to the date of this Subcontract unless specifically incorporated in writing.

- 1.2 Subcontractor shall be bound to the Contractor by the terms of the General Contract **including without limitation any terms relating to indemnification, dispute resolution, forum selection, no damages for delay, liquidated damages, termination, or payment.** Subcontractor shall conform to and comply with the provisions of the General Contract, furnish such shop drawings, submittals or samples as may be required, and assume toward the Contractor all the obligations and responsibilities that the Contractor assumes in and by the General Contract with the Owner, insofar as they are applicable to this Subcontract.

ARTICLE 2  
THE WORK

- 2.1 Subcontractor shall furnish all labor, material, supervision, equipment, temporary storage, insurance, taxes, fees and permits necessary to complete the Work described below.

«SLNotes»

- 2.2 Subcontractor is an independent contractor. The Subcontractor is solely responsible for, and has control over, all construction means, methods, techniques, sequences, procedures, and coordination of all portions of the Work, unless the Contractor gives specific written instructions concerning such. Subcontractor shall continually stay informed of the conditions and progress of the Project and immediately notify Contractor and other subcontractors of any conditions or work under this Subcontract that might interfere with work performed by other subcontractors. All work shall be performed by skilled and reputable workmen and subject to approval and acceptance of the Architect/Engineer, Contractor and Owner. Subcontractor shall provide a schedule of all anticipated material and equipment purchases with estimated delivery dates within **FOURTEEN (14) DAYS** of execution of this Agreement for approval by Contractor. **NO WORK SHALL BE PERFORMED UNTIL ALL CONTRACT DOCUMENTS HAVE BEEN EXECUTED AND CERTIFICATES OF INSURANCE, BONDS, ILLEGAL IMMIGRANT DISCLOSURE CERTIFICATION, SEX OFFENDER DISCLOSURE CERTIFICATION, APPLICABLE GRANT DISCLOSURES AND SAFETY PROGRAMS HAVE BEEN RECEIVED AND APPROVED.**

- 2.3 Subcontractor shall furnish all necessary shop drawings, samples and other submittal documentation to the following individual and address:

«LocationToSendSubmittals»

Attn: «ProjectManager»

Phone: «PMPhone»

Fax: «PMFax»

Cell: «PMCell»

Email: «PMEMail»

All submittals are due within thirty (30) days of execution of this Subcontract.

- 2.4 Subcontractor may submit all required contract documents, i.e., executed subcontracts, certificates of insurance, safety programs, bonds, illegal immigrant, and sex offender disclosures certifications when required via email to [compliance@baldwinshell.com](mailto:compliance@baldwinshell.com).

ARTICLE 3  
TIME OF PERFORMANCE

- 3.1 Time is of the essence of this Subcontract so the entire Project shall be completed in accordance with the Contract Documents and the Project Schedule as set forth in **Exhibit "SCH01"** or, in the absence of such Exhibit, on or before **«ProjectCompletionDate»**. Either of such schedules may be revised by the Contractor from time to time, in its sole discretion. Subcontractor agrees to begin the Work as soon as the Project is ready for such Work or, in any event, within five (5) days after being notified by Contractor to proceed. Subcontractor shall diligently and continuously prosecute and complete the Work in cooperation and coordination with the other work being performed on the Project, and in such time, order and manner as directed by Contractor and in accordance with the Project Schedule so as not to delay the commencement, progress, or completion of the Work or of the Project. Furthermore, Subcontractor will provide sufficient manpower including any overtime required to maintain the Project Schedule at no additional charge unless the necessity for overtime is caused by others failing to maintain their schedule through no fault of this Subcontractor or circumstance beyond the control of this Subcontractor (such as "acts of God").
- 3.2 In agreeing to perform the Work in accordance herewith, Subcontractor has taken into account and has made allowances for delays which should be reasonably anticipated or foreseeable.
- 3.3 **IF THE SUBCONTRACTOR IS PREVENTED FROM COMPLETING ANY PART OF ITS WORK DUE TO DELAY BEYOND ITS CONTROL, ITS CONTRACT TIME WILL BE EXTENDED IN AN AMOUNT EQUAL TO THE TIME LOST DUE TO SUCH DELAY IF THE SUBCONTRACTOR COMPLIES WITH THE NOTICE PROVISION OF PARAGRAPH 3.4. DELAYS BEYOND THE CONTROL OF THE SUBCONTRACTOR INCLUDE, BUT ARE NOT LIMITED TO, ACTS OR NEGLIGENCE BY OWNER, CONTRACTOR OR OTHER SUBCONTRACTORS, FIRES, FLOODS, EPIDEMICS OR PANDEMICS, ABNORMAL WEATHER CONDITIONS, OR ACTS OF GOD. THE EXTENSION OF TIME FOR DELAY BEYOND THE CONTROL OF SUBCONTRACTOR SHALL BE SUBCONTRACTOR'S SOLE AND EXCLUSIVE REMEDY FOR SUCH DELAY IF CAUSED BY OWNER OR ANOTHER SUBCONTRACTOR (UNLESS CONTRACTOR ACTUALLY RECOVERS SUCH DAMAGES ON BEHALF OF SUBCONTRACTOR). IN NO EVENT SHALL CONTRACTOR BE LIABLE TO SUBCONTRACTOR FOR DELAYS CAUSED BY OR WITHIN THE CONTROL OF SUBCONTRACTOR, OR DELAYS BEYOND THE CONTROL OF BOTH CONTRACTOR AND SUBCONTRACTOR, INCLUDING BUT NOT LIMITED TO FIRES, FLOODS, EPIDEMICS, ABNORMAL WEATHER CONDITIONS, OR ACTS OF GOD. NOTHING IN THIS PARAGRAPH BARS A CHANGE IN CONTRACT PRICE PURSUANT TO ARTICLE 9 TO COMPENSATE SUBCONTRACTOR DUE TO DELAY, INTERFERENCE, OR DISRUPTION DIRECTLY ATTRIBUTABLE TO THE ACTIONS OR INACTIONS OF THE CONTRACTOR, BUT IN NO EVENT SHALL CONTRACTOR BE LIABLE FOR ANY CONSEQUENTIAL DAMAGES, WHICH SUBCONTRACTOR WAIVES. CONSEQUENTIAL DAMAGES INCLUDE, BUT ARE NOT LIMITED TO, PRINCIPAL OFFICE EXPENSES AND PERSONNEL COMPENSATION, LOSS OF BUSINESS OR FINANCING, LOSS OF PROFIT, AND IMPACT TO REPUTATION.**
- 3.4 Subcontractor shall provide written notification to Contractor of any event for which compensation is sought under paragraph 3.3 within **FIVE (5) DAYS** from the time such event begins.
- 3.5 Because time is of the essence, Subcontractor shall reimburse, defend and indemnify Contractor for any liquidated or actual damages that may be asserted against, assessed against or incurred by Contractor which are attributable to or caused in whole or in part by Subcontractor's failure to perform the Work required by this Subcontract within the time fixed or in the manner provided for in this Subcontract. Liquidated or actual damages, when assessed, shall not exceed Subcontractor's proportionate share of the responsibility for such liquidated or actual damages. This paragraph shall survive any abandonment by or termination of this Subcontract.

ARTICLE 4  
THE CONTRACT PRICE

4.1 The Contractor agrees to pay the Subcontractor for the performance of the Work as indicated below:

Item	Phase	Description	Qty	UM	Unit Price	Extended Price
«Item»	«JobPhase»	«Description»	«Quar	«UnitofMeas	«UnitPrice»	\$«ExtendedPrice»

in current funds, subject to additions and deductions for changes as may be agreed upon in writing.

4.2 The Contract Price includes all taxes now levied or hereafter imposed on any tangible personal property sold or transferred to the Contractor under this Subcontract, and the Subcontractor agrees to pay such taxes. The Subcontractor is exclusively liable for and shall pay any tax, assessment, or contribution for Unemployment Insurance or Social Security Tax levied by the Federal or any State government on the salaries or wages of all persons employed by the Subcontractor and the Subcontractor agrees to comply with all the rules, regulations and requirements of any Federal and/or State Agency or Commission having jurisdiction thereof.

ARTICLE 5  
PAYMENT

5.1 Prior to submittal of the first billing, Subcontractor shall submit a Schedule of Values electronically **Exhibit “SOV01”** to the Project Manager providing a complete breakdown of the costs of the work performed under this Agreement for approval by the Contractor.

5.2 Subcontractor shall submit Payment Application **Exhibit “PA01”** to the Contractor’s corporate address of:

**P.O. Box 1750**  
**Little Rock, Arkansas 72203**  
**Or**  
[invoices@baldwinshell.com](mailto:invoices@baldwinshell.com)

by the «BillDay» day of the month. When emailing billings Subcontractor shall reference the Job # and Subcontract # in the subject line of the email. The billing shall be for all Work accomplished up to that date, less the aggregate of all previous payments. The Subcontractor shall calculate and deduct a retained percentage of «Retainage» to arrive at the net invoice amount. If billings are not received by the stated date, payment will not be made until the second month following receipt. If payments are made on account of materials not incorporated in the work but delivered and suitably stored at the site, or at some other location agreed upon in writing, such payments shall be in accordance with the terms and conditions of the Contract Documents. Payment shall be predicated upon a Certificate of Insurance as per Article VII. If materials stored offsite are eligible for payment, a Certificate of Insurance will be required. The Certificate must list the location where the materials are stored, a description of stored materials, the job for which the materials are stored, the monetary value of the stored materials, and show Baldwin & Shell Construction Company as the named insured. **NO PAYMENTS WILL BE ISSUED UNTIL SCHEDULE OF VALUES (Exhibit “SOV01”) IS RECEIVED AND APPROVED IN THE CORPORATE OFFICE.**

5.3 Before issuance of any payment, the Subcontractor, if required, shall identify in writing, and submit waivers of lien from, each supplier or sub-subcontractor of Subcontractor, or provide evidence satisfactory to the Contractor that all payrolls, material bills, and all known indebtedness connected with the Work have been satisfied, or both of the above.

Final payment, constituting the entire unpaid balance of the Contract Price, shall be made by the Contractor to the Subcontractor when the Work is fully performed in accordance with the requirements of the Contract Documents, final close out documents are received and approved, the Architect/Engineer has issued a certificate for payment covering the Subcontractor's completed work, and the Contractor has received payment from the Owner. No claims for additional compensation in excess of Contract Price shall be accepted after issuance of final payment.

- 5.4 **SUBCONTRACTOR ACCEPTS THE RISK OF NON-PAYMENT IF OWNER DOES NOT PAY FOR WORK INCLUDED IN SUBCONTRACTOR'S MONTHLY APPLICATIONS OR MAKE FINAL PAYMENT TO CONTRACTOR. OWNER'S PAYMENT TO CONTRACTOR OF SUCH FUNDS IS A CONDITION PRECEDENT TO ANY OBLIGATION OF CONTRACTOR TO PAY SUBCONTRACTOR.**
- 5.5 Progress payments or final payment may be withheld by Contractor on account of defective work not remedied, claims filed, reasonable evidence indicating the probability of the filing of claims or reasonable doubt that the Subcontract can be completed for the balance of the Subcontract amounts then unpaid or within the time under the Project Schedule. **Contractor may offset against any sums due Subcontractor hereunder the amount of any liquidated and unliquidated obligations of Subcontractor to Contractor, whether or not arising out of this Subcontract or another subcontract or other obligation.**
- 5.6 In its sole discretion, Contractor may pay the Subcontractor by joint check payable to it and any of its sub-subcontractors or suppliers to either Subcontractor or sub-subcontractors. Requests by Subcontractors to issue joint checks will be considered. Contractor assumes no liability for failure to perform this service to Subcontractor.

#### ARTICLE 6

##### PERFORMANCE AND PAYMENT BONDS

- 6.1 If applicable, the cost of a 100% Performance Bond and 100% Payment Bond is included in the Contract Price. Subcontractor shall furnish Subcontract Performance Bond and Subcontract Payment Bond on the Contractor's bond forms which are attached as **Exhibits "SCPERF01 & SCPMT01"**. The bonds shall be issued by a surety acceptable to Contractor. No payments will be processed until properly executed bonds have been received by the Contractor, who also reserves the right to terminate this Subcontract if such bonds are not furnished. **NO OTHER BOND FORMS WILL BE ACCEPTED. ALL BONDS SHALL BE ADJUSTED BY RIDER FOR ADDITIVE CHANGE ORDERS. NO DEDUCTIVE BOND RIDER WILL BE ACCEPTED FOR DEDUCTIVE CHANGE ORDERS UNLESS APPROVED BY CONTRACTOR.**

#### ARTICLE 7

##### INDEMNITY, INSURANCE AND WAIVER OF SUBROGATION

- 7.1 **TO THE FULLEST EXTENT PERMITTED BY LAW, SUBCONTRACTOR SHALL INDEMNIFY, HOLD HARMLESS AND DEFEND CONTRACTOR, ARCHITECT, AND OWNER, TOGETHER WITH THEIR AGENTS, SERVANTS, EMPLOYEES, REPRESENTATIVES, OFFICERS, DIRECTORS OR THEIR HEIRS, AND SURETIES, FROM AND AGAINST ANY AND ALL CLAIMS, DAMAGES, LOSSES, EXPENSES, ATTORNEYS' FEES, AND CAUSES OF ACTION ARISING OUT OF OR RESULTING FROM THE FAILURE OF SUBCONTRACTOR TO PERFORM ITS CONTRACTUAL OBLIGATIONS OR SATISFY ANY STATUTORY OR COMMON LAW DUTIES. THIS INDEMNIFICATION OBLIGATION SHALL INCLUDE, BUT NOT BE LIMITED TO: (i) ALL CLAIMS BY OWNER OR OTHERS AGAINST CONTRACTOR BASED ON ANY DEFECTS OR IMPROPER PERFORMANCE OF SUBCONTRACTOR'S WORK; (ii) ALL CLAIMS, DAMAGE, LOSSES, EXPENSES, ATTORNEY'S FEES AND CAUSES OF ACTION ATTRIBUTABLE TO BODILY INJURY, SICKNESS, DISEASE OR DEATH, OR DAMAGE TO OR**

**DESTRUCTION OF TANGIBLE PROPERTY, INCLUDING LOSS OF USE RESULTING THEREFROM, TO THE EXTENT CAUSED BY ANY BREACH OF WARRANTY, FAILURE TO PERFORM THE REQUIREMENTS OF THE CONTRACT DOCUMENTS, OR NEGLIGENT ACT OR OMISSION OF SUBCONTRACTOR OR ANYONE DIRECTLY OR INDIRECTLY EMPLOYED BY SUBCONTRACTOR OR ANYONE FOR WHOSE ACTS SUBCONTRACTOR IS LIABLE. SUBCONTRACTOR'S INDEMNITY OBLIGATIONS SHALL REMAIN IN FULL FORCE AND EFFECT REGARDLESS OF WHETHER THE CLAIM RELATES TO A CLAIM UNDER SUBCONTRACTOR'S WORKERS COMPENSATION POLICY. SUBCONTRACTOR'S OBLIGATION TO INDEMNIFY SHALL NOT BE CONSTRUED TO NEGATE, ABRIDGE OR OTHERWISE REDUCE ANY OTHER RIGHT OR OBLIGATION OF CONTRIBUTION OR INDEMNITY WHICH WOULD OTHERWISE EXIST AS TO ANY PARTY OR PERSON IN ANY OTHER PROVISION OF THIS SUBCONTRACT OR UNDER THE LAW. IN THE EVENT OF ANY INDEMNIFIED CLAIM AGAINST CONTRACTOR BY ANY THIRD PERSON, CONTRACTOR RESERVES THE RIGHT TO CHOOSE LEGAL COUNSEL AND DIRECT THE DEFENSE OF SUCH CLAIM AT SUBCONTRACTOR'S SOLE COST AND EXPENSE.**

7.2 Before commencing the Work, and as a condition of payment, the Subcontractor shall purchase and maintain insurance that will protect it from the claims arising out of its operations under this agreement, whether the operations are by the Subcontractor or any of its consultants or subcontractors or anyone directly or indirectly employed by any of them, or by anyone for whose acts any of them may be liable. Subcontractor shall purchase and maintain insurance and clauses of the types and descriptions, and in the amounts specified as set forth below, but not less than the types and amounts specified in the General Contract, through insurance companies satisfactory to the Contractor.

**1) Commercial General Liability (CGL)**

- a) CGL with limits of insurance of not less than \$1,000,000 Each Occurrence, \$2,000,000 Products/Completed Operations Aggregate, \$1,000,000 Personal & Advertising Injury, \$100,000 Fire Damage Limit (any one fire), \$5,000 Medical Expense (any one person) and \$2,000,000 General Annual Aggregate. If the CGL coverage contains a General Aggregate Limit, such General Aggregate Limit shall apply separately to each project.
- b) CGL coverage shall be written on ISO Occurrence form CG 00 01 1207 or a substitute form providing equivalent coverage and shall cover liability arising from premises, operations, independent contractors, products-completed operations, and personal and advertising injury.
- c) **Baldwin & Shell Construction Company and all other parties as required by contract shall be included as Additional Insured on the CGL, using an endorsement providing equivalent coverage to the additional insured.** This insurance for the additional insured shall be as broad as the coverage provided for the named insured Subcontractor. It shall apply as primary and non-contributory insurance before any other insurance or self-insurance, including any deductible, maintained by, or provided to, the additional insured.
- d) Subcontractor shall maintain CGL coverage for itself and all additional insured for the duration of the project and maintain Completed Operations coverage for itself and each additional insured for at least 5 years after completion of the Work, or full duration of the applicable Statute of Repose.

**2) Automobile Liability**

- a) Business Auto Liability with limits of at least \$1,000,000 each accident.
- b) Business Auto coverage must include coverage for liability arising out of all



owned, leased, hired and non-owned automobiles.

- c) **Baldwin & Shell Construction Company and all other parties as required by contract shall be included as Additional Insured on the auto policy.**

### **3) Commercial Umbrella**

- a) Umbrella limits must be at least \$1,000,000.
- b) Umbrella coverage must include all entities that are additional insured on the CGL.
- c) Umbrella coverage for such additional insured shall apply as primary and non-contributory insurance before any other insurance or self-insurance.

### **4) Workers Compensation and Employers Liability**

- a) Employers Liability Insurance limits of at least **\$500,000** each accident for bodily injury by accident and **\$500,000** each employee for injury by disease.
- b) Where applicable, U.S. Longshore and Harbor Workers Compensation Act Endorsement shall be attached to the policy.
- c) Where applicable, the Maritime Coverage Endorsement shall be attached to the policy.

### **5) Waiver of Subrogation**

Subcontractor waives all rights against Contractor, Owner and Architect and their agents, officers, directors and employees for recovery of damages to the extent these damages are covered by commercial general liability, commercial umbrella liability, business auto liability or workers compensation and employers' liability insurance maintained per requirements stated above.

### **6) Certificates of Insurance**

Subcontractor shall provide Contractor with valid certificates of insurance prior to commencement of Work verifying said insurance requirements have been met. Attached to each certificate of insurance shall be a copy of the Additional Insured Endorsement that is part of the Subcontractor's Commercial General Liability Policy.

- 7.3 The Subcontractor shall purchase insurance coverage required under this agreement at the Subcontractor's sole expense. The policies shall contain a provision that coverage will not be cancelled or not renewed until at least thirty (30) days prior written notice has been received by the Contractor. Certificates of Insurance or, if required, copies of the policies, showing required coverage to be in force shall be delivered to the Contractor prior to commencement of the Work. Subcontractor authorizes Contractor to contact Subcontractor's insurance agency or carrier to verify coverage. In the event the Subcontractor fails to obtain or maintain any insurance coverage required under this agreement the Contractor may, but shall not be obligated to, purchase such coverage for the Contractor's benefit and charge the expense to the Subcontractor, or pursue other appropriate remedies against the Subcontractor including but not limited to termination of this agreement.

## ARTICLE 8

### COMPLIANCE WITH LAWS, PERMITS, FEES AND SAFETY

- 8.1 The Subcontractor shall comply with all applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities bearing on performance of the Work. Subcontractor authorizes Contractor to contact Subcontractor's insurance agency or carrier to verify coverage. The Subcontractor shall secure and pay for permits, fees, licenses and inspections by government agencies necessary for proper execution and completion of the Work, the furnishing of which is required of the Contractor by the General Contract. **NO WORK SHALL BE PERFORMED UNTIL ALL WRITTEN SAFETY PROGRAMS HAVE BEEN REVIEWED BY**

**CONTRACTOR AND ALL SAFETY DATA SHEETS (SDS) APPLICABLE TO THE WORK HAVE BEEN FILED ON THE PROJECT JOB SITE.**

- 8.2 In accordance with applicable federal and state law, the Subcontractor shall certify that the Subcontractor does not employ or contract with an illegal immigrant by completion of the attached form **Exhibit "IIDC01"**. Subcontractor shall submit subcontractors' certification to Contractor upon execution of this Subcontract. **In addition**, Subcontractor shall obtain certifications from its subcontractors certifying that the subcontractor does not employ or contract with illegal immigrants. Subcontractor shall maintain all certifications of its subcontractors for the entire term of the Subcontract.
- 8.3 Subcontractor shall certify that the Subcontractor does not allow anyone listed on the National Sex Offender Registry to perform any onsite work pursuant to this subcontract by completion of the attached form **Exhibit "SODC01"**. Subcontractor shall submit subcontractors' certification to Contractor upon execution of this Subcontract. **In addition**, Subcontractor shall obtain certifications from its subcontractors certifying that the subcontractor does not allow anyone listed on the National Sex Offender Registry to perform any onsite work pursuant to this subcontract. Subcontractor shall maintain all certifications of its subcontractor for the entire term of the Subcontract. Furthermore, Subcontractor shall perform a routine review to ensure compliance throughout the duration of this subcontract.
- 8.4 If applicable to the Project, for all state agency General Contracts and in accordance with Arkansas Governor's Executive Order 98-04, Subcontractor, shall execute and return to the Contractor the Contract and Grant Disclosure and Certification Form **Exhibit "CGDC01"** upon execution of this Subcontract. Failure to make any disclosure required by Executive Order 98-04, or any violation of any rule, regulation, or policy adopted pursuant to that Order, shall be a material breach of the terms of this Subcontract and subject to all legal remedies available to the Contractor.
- 8.5 The Subcontractor shall take reasonable safety precautions with respect to performance of this Subcontract, shall comply with safety measures initiated by the Contractor and with applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities for the safety of persons and property in accordance with the requirements of the General Contract. The Subcontractor shall report to the Contractor within three (3) days any injury to an employee or agent of the Subcontractor which occurred at the site.

**ARTICLE 9****CHANGES IN THE WORK AND CLAIMS  
FOR ADDITIONAL COMPENSATION OR TIME**

- 9.1 Contractor may, at any time, without notice to the Subcontractor's surety and without invalidating this Subcontract, make any changes to the Work, whether such changes increase or diminish the amount of the Work or the Subcontract Sum. Any such changes will be made by written order from Contractor in the form of written Change Order or Field Work Order. Subcontractor shall not make any changes whatsoever except upon written order from Contractor. Subcontractor shall not be entitled to additional compensation for alleged extra work or materials, or changes of any kind except to the extent the same was ordered by Contractor pursuant to written Change Order or written Field Work Order. If Subcontractor performs any alleged additional work which is not upon written order from Contractor, including but not limited to Work directed by Owner or Architect/Engineer, such alleged additional work will be performed at the sole expense of Subcontractor, and Subcontractor expressly and unequivocally waives any right for additional compensation for any such claimed changes in Subcontractor's Work.

- 9.2 If the change in Work provides for an adjustment to the Contract Price, the adjustment shall be based as follows:
- (a) If Contractor is also entitled to an adjustment of its contract sum pursuant to the General Contract for changes in Work thereunder, the actual contract sum adjustment Contractor receives under the General Contract for that portion of the change in Work associated with this Subcontract and based on the terms and conditions outlined in the Contract Documents for calculating the change.
  - (b) In all other cases, changes in the Subcontract sum shall be calculated by either:
    - (1) the unit prices and rates stated in the Contract Documents; or
    - (2) a lump-sum agreed upon; or
    - (3) Time and material cost basis based on pre-approved labor, labor burden, equipment, overhead and profit rates; or
    - (4) As may be otherwise agreed upon
- 9.2.1 If Contractor and Subcontractor cannot agree as to the amount, either of money or time, to be allowed or deducted for any changes in the Work for the Project, it shall nevertheless be the duty of the Subcontractor, upon written notice from the Contractor, to proceed immediately with the change in the Work. The determination of the amount of money or time shall be referred to mediation as provided for in Article 13 below. **IF ANY CHANGES IN WORK CAUSES THIS SUBCONTRACT AMOUNT TO REQUIRE STATE CONTRACTOR LICENSING THE SUBCONTRACTOR SHALL OBTAIN AND SUBMIT TO CONTRACTOR PROOF OF LICENSURE THROUGH THE PARTICULAR STATE LICENSING AUTHORITY (if not already licensed) PRIOR TO FURTHER PAYMENTS.**
- 9.3 Subcontractor shall give written notice to the Contractor of all claims for extras and for extensions of time, promptly and in accordance with the Contract Documents, but in any event within **FIVE (5) DAYS** of the occurrence giving rise to the claim, failing which notice the claim is waived. The notice shall describe in as much detail as possible the change or claim and the cost and time impact of such. Subcontractor shall only be entitled to such additional compensation as shall be paid by Owner to Contractor on Subcontractor's behalf. Subcontractor shall pay all expenses, including Contractor's attorneys' fees, in processing any claim for additional compensation or time extensions on behalf of Subcontractor. Upon request, Subcontractor shall advance payment or provide security for such expenses, and such payment or security shall be a condition precedent to any obligation to process any claim on behalf of Subcontractor.

ARTICLE 10  
DAMAGE TO OTHER WORK

- 10.1 In carrying out its Work, Subcontractor shall take necessary precautions to protect the finished work of Contractor or other trades from damage caused by its operations, and Subcontractor shall repair or replace to Contractor's satisfaction on Contractor's demand all damage caused by its operation, at no expense to the Contractor.

ARTICLE 11  
SITE & SUBSTRATE CONDITIONS

- 11.1 Subcontractor shall continuously keep the premises free from accumulations of waste material or debris caused by its employees or work, and at the direction of the Contractor shall remove all the waste material or debris from and about the Project and shall leave its work clean. In its discretion, and upon **TWENTY-FOUR (24) HOURS** notice, the Contractor may remove the waste material or debris and charge the cost to the Subcontractor. Subcontractor shall locate its materials and equipment to avoid interference with other trades.

- 11.2 Subcontractor has thoroughly studied the existing conditions of the Project site and made allowances for all Project site conditions in the Subcontract Price and furthermore accepts the conditions as satisfactory prior to commencing work. All conditions found unsatisfactory, that could not reasonably be determined at the time the Subcontract Price was determined, shall immediately be brought to the attention of the Contractor. Failure to notify Contractor of unsatisfactory site conditions, including substrates for installation of work performed under this Subcontract, shall obligate the Subcontractor to make all corrections to site or substrate conditions and repair and/or replace unsatisfactory work under this Subcontract due to unsatisfactory site or substrate conditions at no expense to the Contractor.

ARTICLE 12  
CONTRACTOR REMEDIES AND TERMINATION

- 12.1 If the Subcontractor fails to supply enough skilled workers, proper materials or maintain the Project Schedule, or fails to promptly pay its workers, subcontractors or suppliers, or disregards laws, regulations or orders of any public authority having jurisdiction, or otherwise is guilty of a material breach of this agreement, the Subcontractor shall be in default. If the Subcontractor fails within **THREE (3) DAYS** after written notification to commence and continue satisfactory correction of the default with diligence, then the Contractor, without prejudice to any other rights or remedies, shall have the right to any of the following remedies:
- 12.1.1 Supply workers, materials, equipment and facilities as the Contractor deems necessary for the completion of the Work or any part which the Subcontractor has failed to complete or perform, and charge the cost, including reasonable overhead, profit, attorneys' fees, costs and expenses to the Subcontractor.
  - 12.1.2 Contract with one or more additional contractors to perform such part of the Work as the Contractor determines will provide the most expeditious completion of the Subcontract Work, and charge the cost, including reasonable overhead, profit, attorneys' fees, costs and expenses to the Subcontractor.
  - 12.1.3 Withhold any payments due or to become due the Subcontractor pending corrective action in amounts sufficient to cover losses to the extent deemed necessary by the Contractor.

In the event of an emergency affecting the safety of persons or property or time sensitive work that would adversely affect the completion of the project if not performed immediately the Contractor may proceed as above without notice, but the Contractor shall give the Subcontractor notice promptly thereafter.

- 12.2 If the Subcontractor fails to commence and satisfactorily continue correction of a default within **THREE (3) DAYS** after written notification issued under paragraph 12.1, then the Contractor may issue a second written notification, to the Subcontractor and its surety. Such notice shall state that if the Subcontractor fails to commence and continue correction of a default within **SEVEN (7) DAYS** of the written notification, the Subcontract will be terminated by final notice of such. Thereafter, the Contractor may furnish those materials, equipment or employ such workers or subcontractors as the Contractor deems necessary to maintain the orderly progress of the Project. All costs incurred by the Contractor in performing the Work, including reasonable overhead, profit and attorneys' fees, costs and expenses, shall be deducted from any moneys due or to become due the Subcontractor. The Subcontractor shall be liable for the payment of any amount by which such expense may exceed the unpaid balance of the Contract Price. At the Subcontractor's request, the Contractor shall provide a detailed accounting of the costs to finish the Work.
- 12.3 If Work is performed under this Article, the Contractor or other subcontractors shall have the right to take and use any materials, implements, equipment, appliances or tools furnished by or belonging

to the Subcontractor and located at the Project site for the purpose of completing any remaining Work.

ARTICLE 13  
DISPUTE RESOLUTION

- 13.1 If a dispute arises out of or relates to this agreement, the parties shall first endeavor to settle the dispute through direct negotiation.
- 13.2 Unless otherwise agreed in writing, Subcontractor shall continue Work and maintain the Project Schedule pending any dispute and its resolution. If Subcontractor continues so to perform, Contractor shall continue to make payments in accordance with this agreement.
- 13.3 Disputes between Subcontractor and Contractor not resolved by direct negotiation shall be submitted to mediation pursuant to the Construction Industry Mediation Rules of the American Arbitration Association. Mediation is a condition precedent to any form of binding dispute resolution. The parties shall share equally the mediator's and any filing fees. Unless otherwise mutually agreed, the mediation will take place in Little Rock, Arkansas.
- 13.4 If there is an arbitration provision in the General Contract, arbitration shall be in accordance with it. Subcontractor shall join in and become a party to and be bound by such arbitration proceedings. If, because of the objections of other parties, or because of the provisions of the arbitration clause in the General Contract, it is not possible for Subcontractor, or its subcontractors or suppliers, to become parties to the arbitration proceedings, and if Subcontractor's Work becomes an issue in arbitration proceedings then the Subcontractor will, at its own expense, supply counsel, evidence, and witnesses to establish Subcontractor's performance of its obligations to Contractor under this Subcontract. Subcontractor will be bound by any award.

ARTICLE 14  
WARRANTY

- 14.1 The Subcontractor warrants to the Owner, Architect/Engineer and Contractor that materials and equipment furnished under this Subcontract will be of good quality and new unless otherwise required or permitted by the Contract Documents, that the Work will be free from defects not inherent in the quality required or permitted, and that the Work will conform to the requirements of the Contract Documents. Work not conforming to these requirements, including substitutions not properly approved and authorized, may be considered defective. The Subcontractor's warranty excludes remedy for damage or defect caused by abuse, modifications not executed by the Subcontractor, improper or insufficient maintenance, improper operation, or normal wear and tear under normal usage. This warranty shall be in addition to and not in limitation of any other warranty or remedy required by law or by the Contract Documents.

ARTICLE 15  
NON-ASSIGNMENT

- 15.1 Subcontractor shall not assign nor sublet this Subcontract nor assign any money due or to become due hereunder without first obtaining written consent. Contractor reserves the right to refuse any part of work which Subcontractor proposes to sublet. Sublet entities are obligated to all conditions and requirements of this subcontract including but not limited to all provisions addressing bonds, insurances, licenses, certifications.

ARTICLE 16  
GENERAL CLAUSES

**Space:** Space on the jobsite is limited. Subcontractor is responsible for all storage, handling, hoisting, uncrating, distribution and stocking of material related to its scope of work. Materials must

be stored in an area designated by Contractor. Materials stored improperly will be moved at no additional cost, or Contractor will relocate material at Subcontractor's cost and without liability for damage.

**Deliveries:** All deliveries must be coordinated with Contractor's Project Superintendent. Subcontractor must give at least 48 hours advance written notice of deliveries.

**Supervisor:** Subcontractor will provide a full-time, English-speaking Supervisor. The Supervisor must be present at the jobsite whenever the Subcontractor has workers on site. Contractor must approve the selection and any change of Supervisor.

**Drugs or Alcohol:** The use of any illegal drugs or consumption of any alcoholic beverages at the site will not be tolerated. Any personnel found to be using or under the influence of these substances will be removed from the site by Contractor and not allowed to return. **Repeated violations may result in the termination of this Subcontract.** If requested, Subcontractor shall conduct post-accident substance testing of its personnel on site at the time of the accident.

**Daily Reports:** Subcontractor will provide Contractor complete and accurate daily reports, to be turned in by noon of the following work day.

**Weekly Meetings:** Subcontractor representatives bearing authority to make decisions for the Subcontractor must attend all Contractor weekly progress/safety meetings while there is work in progress or as directed by Contractor. **These meetings are mandatory.**

**Cleanup:** Subcontractor is responsible for general cleanup of its work refuse on a daily basis. If Subcontractor fails to comply, Contractor may perform the cleanup at Subcontractor's cost.

**Safety:** Hardhats, safety glasses, long pants, shirts with sleeves and work boots are required at all times. In addition, Subcontractor is responsible for any additional personal protective equipment relating to its scope of work. Such equipment includes, but is not limited to, fall protection, approved masks, safety appliances and fire extinguishers.

**Unacceptable Prior Work:** Subcontractor will notify Contractor's Project Superintendent in writing of unacceptable substrate, prior to proceeding with work upon it or in that area.

**Schedule:** Subcontractor shall furnish adequate and qualified manpower to meet Contractor's Project Schedule. Subcontractor shall adhere to the schedule. Contractor reserves the right to accelerate the schedule at no additional cost. Subcontractor must coordinate with other trades.

**Damage to Other Work:** Subcontractor shall repair or restore any work damaged by Subcontractor's employees or persons for whom it is responsible.

**Conduct on Jobsite:** At no time will inappropriateness be allowed on the jobsite, including without limitation obscene language, gestures, publications, electronic images, clothing with offensive language or objectionable gestures. Failure to strictly abide by these terms of conduct may result in immediate removal of the individual or company from the jobsite and shall be considered breach of this Agreement.

**Drawings, Specification, Shop Drawings and Product Data:** Subcontractor shall maintain an approved set of all documents on the jobsite at all times when work under this Subcontract is being performed.

**Radios, Headphones and Other Distracting Devices:** All devices not necessary for performing the Work under this Subcontract that interfere with the ability of the Contractor and the Subcontractor to maintain a safe workplace are not allowed in the jobsite work areas.

**Work Times:** Contractor shall determine standard work times for the project. Subcontractor shall not waver from the work times established by Contractor without written consent from Contractor.

#### ARTICLE 17

#### GOVERNING LAW AND INTERPRETATION

- 17.1 This Agreement shall be governed by the laws of Arkansas. The parties acknowledge that each has had the opportunity to consult counsel with regard to its terms, and accordingly the language is not to be construed against or for either party. This Agreement constitutes the entire agreement between the parties and supersedes all previous oral or written understandings. Contractor's failure to exercise any right hereunder or to insist upon performance of any of the terms, covenants

Project # «Project»

«SubcontractNumber»

or conditions hereof shall not be a waiver or relinquishment of the requirement for future performance of such terms, covenants and conditions by Subcontractor.

**BALDWIN & SHELL CONSTRUCTION CO:**

«OurDivision»

**SUBCONTRACTOR:**

«FirmName»

By: \_\_\_\_\_

By: \_\_\_\_\_

Name (printed): \_\_\_\_\_

Name (printed): \_\_\_\_\_

Title: \_\_\_\_\_

Title: \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_



Sample Certificate for Subcontractors

CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement.

PRODUCER Agent Name Agent Address CONTACT NAME: Please provide contact information PHONE (A/C, No, Ext): FAX (A/C, No): E-MAIL ADDRESS: INSURER(S) AFFORDING COVERAGE NAIC # INSURER A: ABC Insurance Company 12345 INSURED Subcontractor Name and Address Name should match contract INSURER B: INSURER C: INSURER D: INSURER E: INSURER F:

COVERAGES CERTIFICATE NUMBER: REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

Table with columns: INSR LTR, TYPE OF INSURANCE, ADDL INSR, SUBR WVD, POLICY NUMBER, POLICY EFF (MM/DD/YYYY), POLICY EXP (MM/DD/YYYY), LIMITS. Rows include General Liability, Automobile Liability, Umbrella Liability, and Workers Compensation and Employers' Liability.

DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (Attach ACORD 101, Additional Remarks Schedule, if more space is required)

Baldwin & Shell Construction Company & Project Owner(s) are included as Additional Insured under the Auto Liability and Additional Insured under the General Liability for both "Ongoing Operations" per ISO CG2010 and "Products/Completed Operations" per ISO CG2037 or using an endorsement providing equivalent coverage to the additional insureds and are attached as required by written contract.

CERTIFICATE HOLDER CANCELLATION

CERTIFICATE HOLDER Baldwin & Shell Construction Company P.O. Box 1750 Little Rock, AR 72203 CANCELLATION SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS. AUTHORIZED REPRESENTATIVE Must be signed by a licensed agent



### SUBCONTRACTOR PERFORMANCE BOND

BOND NUMBER.....

.....as Principal, and....., a corporation organized and existing under the laws of the State of ....., as Surety, are held and firmly bound unto BALDWIN & SHELL CONSTRUCTION CO., Little Rock, Arkansas, as Obligee, in the amount of..... Dollars(\$.....), for the payment whereof Principal and Surety jointly and severally bind themselves, their heirs, executors, administrators, successors and assigns.

Whereas, Principal has by written agreement dated .....entered into a subcontract with Obligee for..... (the "Subcontract") which is by this reference made a part hereof.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if the Principal shall promptly and faithfully perform all terms and conditions of the Subcontract, then this obligation shall be null and void; otherwise it shall remain in full force and effect.

Whenever Principal shall be, and be declared by Obligee to be, in default under the Subcontract, the Obligee having performed Obligee's obligations thereunder:

- (1) After immediate, best efforts investigation, but in any event within fifteen (15) days of such declaration, Surety shall, at its expense:
  - (a) Arrange for Principal, with consent of Obligee, to perform and timely complete the Subcontract; or
  - (b) Undertake to perform and timely complete the Subcontract itself, through its agents or independent contractors; or
  - (c) Obtain bids or negotiated proposals from qualified subcontractors acceptable to Obligee for a subcontract for performance and timely completion of the Subcontract, arrange for a contract to be prepared for execution by Obligee and the subcontractor selected with Obligee's concurrence, to be secured with performance and payment bonds executed by a qualified surety equivalent to the bonds issued on the Subcontract, and pay to Obligee the amount of damages in excess of the balance of the Subcontract price incurred by Obligee resulting from Subcontractor default; or
  - (d) Waive its right to perform and complete, arrange for completion, or obtain a new contractor, determine the amount for which it may be liable to Obligee, and, as soon as practicable after the amount is determined, tender payment therefor to Obligee.
- (2) Notwithstanding the provisions of Paragraph 1, Obligee, after reasonable notice to Surety, may arrange for the performance of Principal's obligation under the Subcontract subject to the provisions of Paragraph 4 herein;
- (3) If Surety elects to perform and complete, arrange for completion, or obtain a new contractor, as provided above, Surety is obligated, subject to the limit of this bond and without duplication, for:
  - (a) The responsibilities of Subcontractor for correction of defective work and completion of the contract;
  - (b) Additional legal, design professional, and delay costs resulting from Subcontractor's default or from the actions of or failure to act of Surety; and
  - (c) Liquidated damages, or if none are specified in the Subcontract, actual damages caused by delayed performance or non-performance of Subcontractor;
- (4) The balance of the Subcontract price, as defined below, shall be credited against the reasonable cost of completing performance of the Subcontract. If completed by the Obligee, and the reasonable cost exceeds the balance of the Subcontract price, the Surety shall pay to the Obligee such excess, but in no event shall the aggregate liability of the Surety exceed the amount of this bond. If the Surety performs under Paragraph 1 above, the balance of the Subcontract price shall be paid to the Surety at the times and in

the manner as such sums would have been payable to Principal had there been no default under the Subcontract. The term "balance of the Subcontract price," shall mean the total amount payable by Obligee to Principal under the Subcontract and any changes to it, less amounts properly paid by Obligee under the Subcontract.

No change, extension, addition or alteration of any provision of the Subcontract and no forbearance on the part of the Obligee will operate to relieve Surety from liability on this Performance Bond, and Surety hereby consents to any such changes, extensions, addition or alteration without further notice to it.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the Obligee, its successors or assigns.

Signed and sealed this.....day of ....., 20.....

....., Principal

By: .....

Name: .....

Title: .....

....., Surety

By: .....

Name: .....

Title: .....

**SUBCONTRACTOR PAYMENT BOND**

BOND NUMBER.....

.....as Principal, and  
....., a corporation organized and existing under  
the laws of the State of ..... as Surety, are held and firmly bound unto BALDWIN &  
SHELL CONSTRUCTION CO., Little Rock, Arkansas, as Obligee, for the use and benefit of Claimants as  
below defined, in the amount of .....  
..... Dollars (\$.....), for the payment whereof Principal and Surety  
jointly and severally bind themselves, their heirs, executors, administrators, successors and assigns.

Whereas, Principal has by written agreement dated .....entered  
into a subcontract with Obligee for .....  
..... (the "Subcontract") which is by this reference made a part hereof.

NOW, THEREFORE, THE CONDITION OF THIS OBLIGATION is such that, if the Principal shall  
promptly make payment to all Claimants for (a) all labor, materials or equipment used in the performance  
of the Subcontract, or (b) employment, sales, workers' compensation or unemployment taxes due and  
payable by the Principal in connection with its performance of the Subcontract, then this obligation shall  
be void; otherwise it shall remain in full force and effect, subject, however, to the following conditions:

- (1) In addition to the Obligee or a federal or state tax authority, Claimant means any individual or entity furnishing labor, materials or equipment for use in the performance of the Subcontract. Such "labor, materials or equipment" shall include, without limitation, that part of water, gas power, light, heat, oil, gasoline, telephone service, rental equipment or temporary labor utilized in the performance of the work under the Subcontract, any design professional services required for performance of the work of the Principal or its subcontractors, and all other items for which a materialmen's or laborer's lien may be asserted in the jurisdiction where the labor, materials or equipment were furnished.
- (2) Each Claimant who has not been paid in full before the expiration of ninety (90) days after the date on which (a) the last of such Claimant's work or labor was performed, or materials were furnished by such Claimant, or (b) taxes became due and payable, may sue on this bond for the use of such Claimant. The Obligee shall not be liable for the payment of any costs or expenses of any such suit.
- (3) No suit or action shall be commenced hereunder by any Claimant, (a) after the expiration of one (1) year following the date on which Principal last performed work under the Subcontract or (b) other than in a court of competent jurisdiction in the jurisdiction in which the project is situated. However, if any limitation embodied in this bond is prohibited by any law such limitation shall be deemed to be amended so as to be equal to the minimum period of limitation permitted by such law,
- (4) The amount of this bond shall be reduced by and to the extent of any payment or payments made in good faith hereunder.

No change, extension, addition or alteration of any provision of the Subcontract and no forbearance on the part of the Obligee will operate to relieve Surety from liability on this Payment Bond, and Surety hereby consents to any such changes, extensions, addition or alteration without further notice to it.

Signed and sealed this.....day of ....., 20.....

....., Principal

By: .....

Name: .....

Title: .....

....., Surety

By: .....

Name: .....

Title: .....

**SUPPLY BOND**

BOND NUMBER.....

KNOW ALL MEN BY THESE PRESENTS: That ..... as Principal, and....., a corporation organized and existing under the laws of the State of ....., as Surety, are held and firmly bound unto BALDWIN & SHELL CONSTRUCTION CO., Little Rock, Arkansas, as Oblige, in the amount of.....Dollars(\$.....), for the payment whereof Principal and Surety jointly and severally bind themselves, their heirs, executors, administrators, successors and assigns.

Whereas, Principal entered into that certain Purchase Order/Material Contract with the Oblige dated ..... for ....., a copy of which is by referenced made a part hereof ("Purchase Order/Material Contract").

NOW, THEREFORE, if Principal shall faithfully comply with all terms and conditions of said Purchase Order/Material Contract, or if the Principal shall pay, indemnify, and hold harmless the Oblige from all direct damages sustained by the Oblige as a result of any default by the Principal under the Purchase Order/Material Contract, then this obligation shall be void; otherwise to remain in full force and effect.

PROVIDED, further, that any suit by the Oblige under this bond must be instituted before the earlier of; (a) the expiration of one year from the date the Principal was obligated under the Purchase Order/Material Contract to deliver the materials to the Oblige, or (b) the expiration of one year from the date any other default by the Principal under the Purchase Order/Material Contract. If the limitation set forth in the bond is void, prohibited by law or unenforceable for any reason, the minimum period of limitation available to sureties as a defense in the jurisdiction of the suit shall be applicable, and said period of limitation shall be deemed to have accrued and shall commence to run no later than the earlier of (y) the date the Principal was obligated under the Purchase Order/Material Contract to deliver the materials to the Oblige or (z) the date of any other default by the Principal under the Purchase Order/Material Contract; and

PROVIDED, further that no right of action shall accrue on this bond to or for the use of any person or corporation other than the Oblige named herein or its successor.

Signed and sealed this.....day of ....., 20.....

....., Principal

By: .....

Name: .....

Title: .....

....., Surety

By: .....

Name: .....

Title: .....

**CONTRACT AND GRANT DISCLOSURE AND CERTIFICATION FORM**

Failure to complete all of the following information may result in a delay in obtaining a contract, lease, purchase agreement, or grant award with any Arkansas State Agency.

SUBCONTRACTOR: \_\_\_\_\_ SUBCONTRACTOR NAME: \_\_\_\_\_  
 **Yes**  **No**

TAXPAYER ID NAME: \_\_\_\_\_ IS THIS FOR:  **Goods?**  **Services?**  **Both?**

YOUR LAST NAME: \_\_\_\_\_ FIRST NAME: \_\_\_\_\_ M.I.: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

CITY: \_\_\_\_\_ STATE: \_\_\_\_\_ ZIP CODE: \_\_\_\_\_ COUNTRY: \_\_\_\_\_

**AS A CONDITION OF OBTAINING, EXTENDING, AMENDING, OR RENEWING A CONTRACT, LEASE, PURCHASE AGREEMENT, OR GRANT AWARD WITH ANY ARKANSAS STATE AGENCY, THE FOLLOWING INFORMATION MUST BE DISCLOSED:**

**F O R I N D I V I D U A L S \***

Indicate below if: you, your spouse or the brother, sister, parent, or child of you or your spouse *is* a current or former: member of the General Assembly, Constitutional Officer, State Board or Commission Member, or State Employee:

Position Held	Mark (√)		Name of Position of Job Held [senator, representative, name of board/ commission, data entry, etc.]	For How Long?		What is the person(s) name and how are they related to you? [i.e., Jane Q. Public, spouse, John Q. Public, Jr., child, etc.]	
	Current	Former		From MM/YY	To MM/YY	Person's Name(s)	Relation
General Assembly							
Constitutional Officer							
State Board or Commission Member							
State Employee							

**None of the above applies**

**F O R A N E N T I T Y ( B U S I N E S S ) \***

Indicate below if any of the following persons, current or former, hold any position of control or hold any ownership interest of 10% or greater in the entity: member of the General Assembly, Constitutional Officer, State Board or Commission Member, State Employee, or the spouse, brother, sister, parent, or child of a member of the General Assembly, Constitutional Officer, State Board or Commission Member, or State Employee. Position of control means the power to direct the purchasing policies or influence the management of the entity.

Position Held	Mark (√)		Name of Position of Job Held [senator, representative, name of board/commission, data entry, etc.]	For How Long?		What is the person(s) name and what is his/her % of ownership interest and/or what is his/her position of control?		
	Current	Former		From MM/YY	To MM/YY	Person's Name(s)	Ownership Interest (%)	Position of Control
General Assembly								
Constitutional Officer								
State Board or Commission Member								
State Employee								

**None of the above applies**

## Contract and Grant Disclosure and Certification Form

**Failure to make any disclosure required by Governor's Executive Order 98-04, or any violation of any rule, regulation, or policy adopted pursuant to that Order, shall be a material breach of the terms of this contract. Any contractor, whether an individual or entity, who fails to make the required disclosure or who violates any rule, regulation, or policy shall be subject to all legal remedies available to the agency.**

**As an additional condition of obtaining, extending, amending, or renewing a contract with a state agency I agree as follows:**

1. Prior to entering into any agreement with any subcontractor, prior or subsequent to the contract date, I will require the subcontractor to complete a **CONTRACT AND GRANT DISCLOSURE AND CERTIFICATION FORM**. Subcontractor shall mean any person or entity with whom I enter an agreement whereby I assign or otherwise delegate to the person or entity, for consideration, all, or any part, of the performance required of me under the terms of my contract with the state agency.
  
2. I will include the following language as a part of any agreement with a subcontractor:

*Failure to make any disclosure required by Governor's Executive Order 98-04, or any violation of any rule, regulation, or policy adopted pursuant to that Order, shall be a material breach of the terms of this subcontract. The party who fails to make the required disclosure or who violates any rule, regulation, or policy shall be subject to all legal remedies available to the contractor.*
  
3. No later than ten (10) days after entering into any agreement with a subcontractor, whether prior or subsequent to the contract date, I will mail a copy of the **CONTRACT AND GRANT DISCLOSURE AND CERTIFICATION FORM** completed by the subcontractor and a statement containing the dollar amount of the subcontract to the state agency.

**I certify under penalty of perjury, to the best of my knowledge and belief, all of the above information is true and correct and that I agree to the subcontractor disclosure conditions stated herein.**

Signature \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

Vendor Contact Person \_\_\_\_\_ Title \_\_\_\_\_ Phone No. \_\_\_\_\_

*Agency use only*

Agency \_\_\_\_\_ Agency \_\_\_\_\_ Agency \_\_\_\_\_ Contact \_\_\_\_\_ Contract  
Number \_\_\_\_\_ Name \_\_\_\_\_ Contact Person \_\_\_\_\_ Phone No. \_\_\_\_\_ or Grant No. \_\_\_\_\_



Exhibit "IIDC01"

Subcontract # \_\_\_\_\_  
Subcontract Date: \_\_\_\_\_

JOB #:  
JOB NAME:

### Illegal Immigrant Disclosure Certification

\_\_\_\_\_ certifies that as of the date of this subcontract the subcontractor does not employ or contract with illegal immigrants.

Furthermore, if we subcontract any portion of our work all subcontractors shall certify in a manner that does not violate federal law in existence on January 1, 2007, that the subcontractor, as of the date of their subcontract, does not employ or contract with illegal immigrants. We shall maintain on file the certification of the subcontractor throughout the duration of the term of the contract.

Furthermore, subcontractor agrees and understands that if subcontractor or its subcontractors are found to be in violation of any laws concerning illegal immigrants Baldwin & Shell Construction Co. may terminate the subcontract with the subcontractor and the termination of the subcontract for the violation of this law shall not be considered a breach of the contract by the contractor.

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date





Exhibit "SODC01"

JOB #:  
JOB NAME:

Subcontract # \_\_\_\_\_  
Subcontract Date: \_\_\_\_\_

**Sex Offender Disclosure Certification**

\_\_\_\_\_ certifies that as of the date of this subcontract none of our employees who will perform onsite work pursuant to this subcontract are listed on the National Sex Offender Registry.

Furthermore, if we subcontract any portion of our work all subcontractors shall certify that the subcontractor, as of the date of their subcontract, that none of their employees who will perform onsite work pursuant to this subcontract are listed on the National Sex Offender Registry. We shall maintain on file the certification of the subcontractor throughout the duration of the term of the contract.

Furthermore, subcontractor agrees and understands that if subcontractor or its subcontractors are found to be in violation of this certification, Baldwin & Shell Construction Co. may terminate the subcontract with the subcontractor and the termination of the subcontract for the violation of this agreement shall not be considered a breach of the contract by the contractor.

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Print Name

\_\_\_\_\_  
Signature

\_\_\_\_\_  
Date

---

**AGREEMENT FORM - STIPULATED SUM (SINGLE PRIME CONTRACT)**

**PART 1 - GENERAL**

**1.01 AUTHORITY**

- A. The Agreement Form and Exhibit A, Insurance and Bonds, are an integral part of all sections of Project Manual. Their contents and provisions shall be carefully noted in performance of Work. Include this Agreement Form and Exhibit A in the bid documents for all building construction and renovation projects.
- B. The Agreement Form is the legal instrument which is typically signed by an owner and a contractor subsequent to contract award. A legally binding contract is actually created when accepted, without qualification, the Contractor's bid. However it is this Agreement Form, which when subsequently signed by the parties, formalizes the Contract and confirms the Contractor's intention to be bound by its provisions.

**1.02 GOVERNING STANDARD DOCUMENT**

- A. "Standard Form of Agreement Between Owner and Contractor", AIA Document A101 - 2017 of American Institute of Architects, 2017 Edition, Articles 1 through 9 inclusive, and AIA Document A101 - 2017 Exhibit A is hereby referenced and incorporated into these specifications and is to be used as the General Conditions for this contract.

**PART 2 - PRODUCTS (Not Applicable)**

**PART 3 - EXECUTION (Not Applicable)**

**END OF DOCUMENT 00 52 13**

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**PART 1 - GENERAL**

**1.01 CONTRACTOR'S GUARANTY BOND**

- A. Contractor shall furnish "Performance and Payment Bond" in amount equal to 100% of contract price, as security for faithful performance of this contract and for payment of all indebtedness for labor and materials furnished or performed in connection with this contract. Bond shall be written by surety company which has qualified and is authorized to do business in the State of Arkansas and must be executed by a resident or nonresident agent who is licensed by the Insurance Commissioner to represent surety company executing said bond and filing with said bond, his power of attorney as his authority. Mere countersigning of a bond will not be sufficient. Bond shall be written in favor of Owner, and executed pursuant to terms of Arkansas Code Annotated §18-44-501 et seq., §18-44-503 et seq., §19-4-1401 et seq., and §22-9-401 et seq. The Surety guarantees that the Principal shall comply with Ark. Code Ann. §22-9-301 et seq. by payment and full compliance with all prevailing hourly wage contract provisions where the contract amount exceeds the amount provided by law. An original and two copies of bond must be furnished, with power of attorney attached to each. Bond must not be dated prior to date of the contract. Contractor shall file (not record) the original with the Clerk in the Circuit Court of the County in which Work to be performed is located. Contractor to pay all expenses incident the filing of bond. Remaining two copies should be certified by the Clerk to evidence filing of original, and these two copies submitted to Architect.

**PART 2 - PRODUCTS (Not Applicable)**

**PART 3 - EXECUTION (Not Applicable)**

**END OF DOCUMENT 00 61 13**

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# AIA® Document A201® – 2017

## General Conditions of the Contract for Construction

**for the following PROJECT:**

*(Name and location or address)*

New Brinkley High School  
100 Tiger Drive  
Brinkley, AR 72021

**THE OWNER:**

*(Name, legal status and address)*

Brinkley Public Schools  
200 Tiger Drive  
Brinkley, AR 72021

**THE ARCHITECT:**

*(Name, legal status and address)*

WDD Architects  
5050 NorthShore Lane  
North Little Rock, AR 72118

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- 11 INSURANCE AND BONDS
- 12 UNCOVERING AND CORRECTION OF WORK
- 13 MISCELLANEOUS PROVISIONS

**ADDITIONS AND DELETIONS:**

The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed. A vertical line in the left margin of this document indicates where the author has added necessary information and where the author has added to or deleted from the original AIA text.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

For guidance in modifying this document to include supplementary conditions, see AIA Document A503™, *Guide for Supplementary Conditions*.

14      **TERMINATION OR SUSPENSION OF THE CONTRACT**

15      **CLAIMS AND DISPUTES**

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## **ARTICLE 1 GENERAL PROVISIONS**

### **§ 1.1 Basic Definitions**

#### **§ 1.1.1 The Contract Documents**

The Contract Documents are enumerated in the Agreement between the Owner and Contractor (hereinafter the Agreement) and consist of the Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of the Contract, other documents listed in the Agreement, and Modifications issued after execution of the Contract. A Modification is (1) a written amendment to the Contract signed by both parties, (2) a Change Order, (3) a Construction Change Directive, or (4) a written order for a minor change in the Work issued by the Architect. Unless specifically enumerated in the Agreement, the Contract Documents do not include the advertisement or invitation to bid, Instructions to Bidders, sample forms, other information furnished by the Owner in anticipation of receiving bids or proposals, the Contractor's bid or proposal, or portions of Addenda relating to bidding or proposal requirements.

#### **§ 1.1.2 The Contract**

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect and Contractor shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

#### **§ 1.1.3 The Work**

The term "Work" means the construction and services required by the Contract Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The Work may constitute the whole or a part of the Project.

#### **§ 1.1.4 The Project**

The Project is the total construction of which the Work performed under the Contract Documents may be the whole or a part and which may include construction by the Owner and by Separate Contractors.

#### **§ 1.1.5 The Drawings**

The Drawings are the graphic and pictorial portions of the Contract Documents showing the design, location and dimensions of the Work, generally including plans, elevations, sections, details, schedules, and diagrams.

#### **§ 1.1.6 The Specifications**

The Specifications are that portion of the Contract Documents consisting of the written requirements for materials, equipment, systems, standards and workmanship for the Work, and performance of related services.

#### **§ 1.1.7 Instruments of Service**

Instruments of Service are representations, in any medium of expression now known or later developed, of the tangible and intangible creative work performed by the Architect and the Architect's consultants under their respective professional services agreements. Instruments of Service may include, without limitation, studies, surveys, models, sketches, drawings, specifications, and other similar materials.

#### **§ 1.1.8 Initial Decision Maker**

The Initial Decision Maker is the person identified in the Agreement to render initial decisions on Claims in accordance with Section 15.2. The Initial Decision Maker shall not show partiality to the Owner or Contractor and shall not be liable for results of interpretations or decisions rendered in good faith.

### **§ 1.2 Correlation and Intent of the Contract Documents**

**§ 1.2.1** The intent of the Contract Documents is to include all items necessary for the proper execution and completion of the Work by the Contractor. The Contract Documents are complementary, and what is required by one shall be as binding as if required by all; performance by the Contractor shall be required only to the extent consistent with the Contract Documents and reasonably inferable from them as being necessary to produce the indicated results.

§ 1.2.1.1 The invalidity of any provision of the Contract Documents shall not invalidate the Contract or its remaining provisions. If it is determined that any provision of the Contract Documents violates any law, or is otherwise invalid or unenforceable, then that provision shall be revised to the extent necessary to make that provision legal and enforceable. In such case the Contract Documents shall be construed, to the fullest extent permitted by law, to give effect to the parties' intentions and purposes in executing the Contract.

§ 1.2.2 Organization of the Specifications into divisions, sections and articles, and arrangement of Drawings shall not control the Contractor in dividing the Work among Subcontractors or in establishing the extent of Work to be performed by any trade.

§ 1.2.3 Unless otherwise stated in the Contract Documents, words that have well-known technical or construction industry meanings are used in the Contract Documents in accordance with such recognized meanings.

### § 1.3 Capitalization

Terms capitalized in these General Conditions include those that are (1) specifically defined, (2) the titles of numbered articles, or (3) the titles of other documents published by the American Institute of Architects.

### § 1.4 Interpretation

In the interest of brevity the Contract Documents frequently omit modifying words such as "all" and "any" and articles such as "the" and "an," but the fact that a modifier or an article is absent from one statement and appears in another is not intended to affect the interpretation of either statement.

### § 1.5 Ownership and Use of Drawings, Specifications, and Other Instruments of Service

§ 1.5.1 The Architect and the Architect's consultants shall be deemed the authors and owners of their respective Instruments of Service, including the Drawings and Specifications, and retain all common law, statutory, and other reserved rights in their Instruments of Service, including copyrights. The Contractor, Subcontractors, Sub-subcontractors, and suppliers shall not own or claim a copyright in the Instruments of Service. Submittal or distribution to meet official regulatory requirements or for other purposes in connection with the Project is not to be construed as publication in derogation of the Architect's or Architect's consultants' reserved rights.

§ 1.5.2 The Contractor, Subcontractors, Sub-subcontractors, and suppliers are authorized to use and reproduce the Instruments of Service provided to them, subject to any protocols established pursuant to Sections 1.7 and 1.8, solely and exclusively for execution of the Work. All copies made under this authorization shall bear the copyright notice, if any, shown on the Instruments of Service. The Contractor, Subcontractors, Sub-subcontractors, and suppliers may not use the Instruments of Service on other projects or for additions to the Project outside the scope of the Work without the specific written consent of the Owner, Architect, and the Architect's consultants.

### § 1.6 Notice

§ 1.6.1 Except as otherwise provided in Section 1.6.2, where the Contract Documents require one party to notify or give notice to the other party, such notice shall be provided in writing to the designated representative of the party to whom the notice is addressed and shall be deemed to have been duly served if delivered in person, by mail, by courier, or by electronic transmission if a method for electronic transmission is set forth in the Agreement.

§ 1.6.2 Notice of Claims as provided in Section 15.1.3 shall be provided in writing and shall be deemed to have been duly served only if delivered to the designated representative of the party to whom the notice is addressed by certified or registered mail, or by courier providing proof of delivery.

### § 1.7 Digital Data Use and Transmission

The parties shall agree upon protocols governing the transmission and use of Instruments of Service or any other information or documentation in digital form. The parties will use AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, to establish the protocols for the development, use, transmission, and exchange of digital data.

### § 1.8 Building Information Models Use and Reliance

Any use of, or reliance on, all or a portion of a building information model without agreement to protocols governing the use of, and reliance on, the information contained in the model and without having those protocols set forth in AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, and the requisite AIA Document



G202™–2013, Project Building Information Modeling Protocol Form, shall be at the using or relying party's sole risk and without liability to the other party and its contractors or consultants, the authors of, or contributors to, the building information model, and each of their agents and employees.

## **§ 1.9 ORDER OF PRECEDENCE**

**§ 1.9.1** In case of conflicts between the drawings and specifications, regarding locations and dimensions, the drawings shall govern. In case of conflicts between the drawings and specifications, regarding written requirements for equipment, systems, standards and workmanship for the Work, and performance of related services, the specifications shall govern. In any case of omissions or errors in figures, drawings or specification, the Contractor shall upon discovery submit the matter to the Architect for clarification. The Architect's clarifications are final and binding on all parties, subject to an equitable adjustment in Contract Time or Price pursuant to Articles 7 and 8 or claims and disputes in accordance with Article 15.

**§ 1.9.2** Where figures are given, they shall be preferred to scaled dimensions.

**§ 1.9.3** Any terms that have well-known technical or trade meanings, unless otherwise specifically defined in the Contract Documents, shall be interpreted in accordance with the well-known meanings.

**§ 1.9.4** In case of any inconsistency, conflict or ambiguity among the Contract Documents, the documents shall govern in the following order:

- a. Change Order and written Modifications to this Agreement
- b. this Agreement
- c. drawings (large scale governing over small scale)
- d. approved submittals
- e. information furnished by the Owner
- f. other documents listed in the Agreement (Among categories of documents having the same order of precedence, the term or provision that includes the latest date shall control. Information identified in one Contract Document and not identified in another shall not be considered a conflict or inconsistency.)

## **ARTICLE 2 OWNER**

### **§ 2.1 General**

**§ 2.1.1** The Owner is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Owner shall designate in writing a representative who shall have express authority to bind the Owner with respect to all matters requiring the Owner's approval or authorization. Except as otherwise provided in Section 4.2.1, the Architect does not have such authority. The term "Owner" means the Owner or the Owner's authorized representative.

**§ 2.1.2** The Owner shall furnish to the Contractor, within fifteen days after receipt of a written request, information necessary and relevant for the Contractor to evaluate, give notice of, or enforce mechanic's lien rights. Such information shall include a correct statement of the record legal title to the property on which the Project is located, usually referred to as the site, and the Owner's interest therein.

### **§ 2.2 Evidence of the Owner's Financial Arrangements**

**§ 2.2.1** Prior to commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract. The Contractor shall have no obligation to commence the Work until the Owner provides such evidence. If commencement of the Work is delayed under this Section 2.2.1, the Contract Time shall be extended appropriately.

**§ 2.2.2** Following commencement of the Work and upon written request by the Contractor, the Owner shall furnish to the Contractor reasonable evidence that the Owner has made financial arrangements to fulfill the Owner's obligations under the Contract only if (1) the Owner fails to make payments to the Contractor as the Contract Documents require; (2) the Contractor identifies in writing a reasonable concern regarding the Owner's ability to make payment when due; or (3) a change in the Work materially changes the Contract Sum. If the Owner fails to provide such evidence, as required, within fourteen days of the Contractor's request, the Contractor may immediately stop the Work and, in that event, shall notify the Owner that the Work has stopped. However, if the request is made because a change in the Work materially changes the Contract Sum under (3) above, the Contractor may immediately stop only that portion of the

Work affected by the change until reasonable evidence is provided. If the Work is stopped under this Section 2.2.2, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided in the Contract Documents.

§ 2.2.3 After the Owner furnishes evidence of financial arrangements under this Section 2.2, the Owner shall not materially vary such financial arrangements without prior notice to the Contractor.

§ 2.2.4 Where the Owner has designated information furnished under this Section 2.2 as "confidential," the Contractor shall keep the information confidential and shall not disclose it to any other person. However, the Contractor may disclose "confidential" information, after seven (7) days' notice to the Owner, where disclosure is required by law, including a subpoena or other form of compulsory legal process issued by a court or governmental entity, or by court or arbitrator(s) order. The Contractor may also disclose "confidential" information to its employees, consultants, sureties, Subcontractors and their employees, Sub-subcontractors, and others who need to know the content of such information solely and exclusively for the Project and who agree to maintain the confidentiality of such information.

### § 2.3 Information and Services Required of the Owner

§ 2.3.1 Except for permits and fees that are the responsibility of the Contractor under the Contract Documents, including those required under Section 3.7.1, the Owner shall secure and pay for necessary approvals, easements, assessments and charges required for construction, use or occupancy of permanent structures or for permanent changes in existing facilities.

§ 2.3.2 The Owner shall retain an architect lawfully licensed to practice architecture, or an entity lawfully practicing architecture, in the jurisdiction where the Project is located. That person or entity is identified as the Architect in the Agreement and is referred to throughout the Contract Documents as if singular in number.

§ 2.3.3 If the employment of the Architect terminates, the Owner shall employ a successor to whom the Contractor has no reasonable objection and whose status under the Contract Documents shall be that of the Architect.

§ 2.3.4 The Owner may furnish surveys to Construction Manager describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the sites. The Construction Manager shall independently locate such utility lines and shall be responsible for all breaks and damage to such lines during construction. The Construction Manager shall immediately restore service in the event of any breaks and damage to such lines during construction. Construction Manager shall fully inspect and familiarize itself with the plans, specifications, and site of the Project.

§ 2.3.5 The Owner shall furnish information or services required of the Owner by the Contract Documents with reasonable promptness. The Owner shall also furnish any other information or services under the Owner's control and relevant to the Contractor's performance of the Work with reasonable promptness after receiving the Contractor's written request for such information or services.

§ 2.3.6 Unless otherwise provided in the Contract Documents, the Owner shall furnish to the Contractor one copy of the Contract Documents for purposes of making reproductions pursuant to Section 1.5.2.

### § 2.4 Owner's Right to Stop the Work

If the Contractor fails to correct Work that is not in accordance with the requirements of the Contract Documents as required by Section 12.2 or repeatedly fails to carry out Work in accordance with the Contract Documents, the Owner may issue a written order to the Contractor to stop the Work, or any portion thereof, until the cause for such order has been eliminated; however, the right of the Owner to stop the Work shall not give rise to a duty on the part of the Owner to exercise this right for the benefit of the Contractor or any other person or entity, except to the extent required by Section 6.1.3.

### § 2.5 Owner's Right to Carry Out the Work

If the Contractor defaults or neglects to carry out the Work in accordance with the Contract Documents and fails within a ten-day period after receipt of notice from the Owner to commence and continue correction of such default or neglect with diligence and promptness, the Owner may, without prejudice to other remedies the Owner may have, correct such default or neglect. Such action by the Owner and amounts charged to the Contractor are both subject to prior approval of the Architect and the Architect may, pursuant to Section 9.5.1, withhold or nullify a Certificate for

Payment in whole or in part, to the extent reasonably necessary to reimburse the Owner for the reasonable cost of correcting such deficiencies, including Owner's expenses and compensation for the Architect's additional services made necessary by such default, neglect, or failure. If current and future payments are not sufficient to cover such amounts, the Contractor shall pay the difference to the Owner. If the Contractor disagrees with the actions of the Owner or the Architect, or the amounts claimed as costs to the Owner, the Contractor may file a Claim pursuant to Article 15.

### **ARTICLE 3 CONTRACTOR**

#### **§ 3.1 General**

**§ 3.1.1** The Contractor is the person or entity identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number. The Contractor shall be lawfully licensed, if required in the jurisdiction where the Project is located. The Contractor shall designate in writing a representative who shall have express authority to bind the Contractor with respect to all matters under this Contract. The term "Contractor" means the Contractor or the Contractor's authorized representative.

**§ 3.1.2** The Contractor shall perform the Work in accordance with the Contract Documents.

**§ 3.1.3** The Contractor shall not be relieved of its obligations to perform the Work in accordance with the Contract Documents either by activities or duties of the Architect in the Architect's administration of the Contract, or by tests, inspections or approvals required or performed by persons or entities other than the Contractor.

#### **§ 3.2 Review of Contract Documents and Field Conditions by Contractor**

**§ 3.2.1** Execution of the Contract by the Contractor is a representation that the Contractor has visited the site, become generally familiar with local conditions under which the Work is to be performed, and correlated personal observations with requirements of the Contract Documents.

**§ 3.2.2** Because the Contract Documents are complementary, the Contractor shall, before starting each portion of the Work, carefully study and compare the various Contract Documents relative to that portion of the Work, as well as the information furnished by the Owner pursuant to Section 2.3.4, shall take field measurements of any existing conditions related to that portion of the Work, and shall observe any conditions at the site affecting it. These obligations are for the purpose of facilitating coordination and construction by the Contractor and are not for the purpose of discovering errors, omissions, or inconsistencies in the Contract Documents; however, the Contractor shall promptly report to the Architect any errors, inconsistencies or omissions discovered by or made known to the Contractor as a request for information in such form as the Architect may require. It is recognized that the Contractor's review is made in the Contractor's capacity as a contractor and not as a licensed design professional, unless otherwise specifically provided in the Contract Documents.

**§ 3.2.3** The Contractor is not required to ascertain that the Contract Documents are in accordance with applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, but the Contractor shall promptly report to the Architect any nonconformity discovered by or made known to the Contractor as a request for information in such form as the Architect may require.

**§ 3.2.4** If the Contractor believes that additional cost or time is involved because of clarifications or instructions the Architect issues in response to the Contractor's notices or requests for information pursuant to Sections 3.2.2 or 3.2.3, the Contractor shall submit Claims as provided in Article 15. If the Contractor fails to perform the obligations of Sections 3.2.2 or 3.2.3, the Contractor shall pay such costs and damages to the Owner, subject to Section 15.1.7, as would have been avoided if the Contractor had performed such obligations. If the Contractor performs those obligations, the Contractor shall not be liable to the Owner or Architect for damages resulting from errors, inconsistencies or omissions in the Contract Documents, for differences between field measurements or conditions and the Contract Documents, or for nonconformities of the Contract Documents to applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities.

#### **§ 3.3 Supervision and Construction Procedures**

**§ 3.3.1** The Contractor shall supervise and direct the Work, using the Contractor's best skill and attention. The Contractor shall be solely responsible for, and have control over, construction means, methods, techniques, sequences, and procedures, and for coordinating all portions of the Work under the Contract. If the Contract Documents give specific instructions concerning construction means, methods, techniques, sequences, or procedures, the Contractor

shall evaluate the jobsite safety thereof and shall be solely responsible for the jobsite safety of such means, methods, techniques, sequences, or procedures. If the Contractor determines that such means, methods, techniques, sequences or procedures may not be safe, the Contractor shall give timely notice to the Owner and Architect, and shall propose alternative means, methods, techniques, sequences, or procedures. The Architect shall evaluate the proposed alternative solely for conformance with the design intent for the completed construction. Unless the Architect objects to the Contractor's proposed alternative, the Contractor shall perform the Work using its alternative means, methods, techniques, sequences, or procedures.

**§ 3.3.2** The Contractor shall be responsible to the Owner for acts and omissions of the Contractor's employees, Subcontractors and their agents and employees, and other persons or entities performing portions of the Work for, or on behalf of, the Contractor or any of its Subcontractors.

**§ 3.3.3** The Contractor shall be responsible for inspection of portions of Work already performed to determine that such portions are in proper condition to receive subsequent Work.

### **§ 3.4 Labor and Materials**

**§ 3.4.1** Unless otherwise provided in the Contract Documents, the Contractor shall provide and pay for labor, materials, equipment, tools, construction equipment and machinery, water, heat, utilities, transportation, and other facilities and services necessary for proper execution and completion of the Work, whether temporary or permanent and whether or not incorporated or to be incorporated in the Work.

**§ 3.4.2** Except in the case of minor changes in the Work approved by the Architect in accordance with Section 3.12.8 or ordered by the Architect in accordance with Section 7.4, the Contractor may make substitutions only with the consent of the Owner, after evaluation by the Architect and in accordance with a Change Order or Construction Change Directive.

**§ 3.4.3** The Contractor shall enforce strict discipline and good order among the Contractor's employees and other persons carrying out the Work. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

### **§ 3.5 Warranty**

**§ 3.5.1** The Contractor warrants to the Owner and Architect that materials and equipment furnished under the Contract will be of good quality and new unless the Contract Documents require or permit otherwise. The Contractor further warrants that the Work will conform to the requirements of the Contract Documents and will be free from defects, except for those inherent in the quality of the Work the Contract Documents require or permit. Work, materials, or equipment not conforming to these requirements may be considered defective. The Contractor's warranty excludes remedy for damage or defect caused by abuse, alterations to the Work not executed by the Contractor, improper or insufficient maintenance, improper operation, or normal wear and tear and normal usage. If required by the Architect, the Contractor shall furnish satisfactory evidence as to the kind and quality of materials and equipment.

**§ 3.5.2** All material, equipment, or other special warranties required by the Contract Documents shall be issued in the name of the Owner, or shall be transferable to the Owner, and shall commence in accordance with Section 9.8.4.

### **§ 3.6 Taxes**

The Contractor shall pay sales, consumer, use and similar taxes for the Work provided by the Contractor that are legally enacted when bids are received or negotiations concluded, whether or not yet effective or merely scheduled to go into effect.

### **§ 3.7 Permits, Fees, Notices and Compliance with Laws**

**§ 3.7.1** Unless otherwise provided in the Contract Documents, the Contractor shall secure and pay for the building permit as well as for other permits, fees, licenses, and inspections by government agencies necessary for proper execution and completion of the Work that are customarily secured after execution of the Contract and legally required at the time bids are received or negotiations concluded.

**§ 3.7.2** The Contractor shall comply with and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities applicable to performance of the Work.

§ 3.7.3 If the Contractor performs Work knowing it to be contrary to applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of public authorities, the Contractor shall assume appropriate responsibility for such Work and shall bear the costs attributable to correction.

#### § 3.7.4 Concealed or Unknown Conditions

If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor in writing, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence or good faith belief of such remains or features may be made as provided in Article 15.

#### § 3.8 Allowances

§ 3.8.1 The Contractor shall include in the Contract Sum all allowances stated in the Contract Documents. Items covered by allowances shall be supplied for such amounts and by such persons or entities as the Owner may direct, but the Contractor shall not be required to employ persons or entities to whom the Contractor has reasonable objection.

§ 3.8.2 Unless otherwise provided in the Contract Documents,

- .1 allowances shall cover the cost to the Contractor of materials and equipment delivered at the site and all required taxes, less applicable trade discounts;
- .2 Contractor's costs for unloading and handling at the site, labor, installation costs, overhead, profit, and other expenses contemplated for stated allowance amounts shall be included in the Contract Sum but not in the allowances; and
- .3 whenever costs are more than or less than allowances, the Contract Sum shall be adjusted accordingly by Change Order. The amount of the Change Order shall reflect (1) the difference between actual costs and the allowances under Section 3.8.2.1 and (2) changes in Contractor's costs under Section 3.8.2.2.

§ 3.8.3 Materials and equipment under an allowance shall be selected by the Owner with reasonable promptness.

#### § 3.9 Superintendent

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Communications that alter or clarify the Contract Documents shall be confirmed in writing.

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor in writing, stating whether the Owner or the Architect (1) has reasonable objection to the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 3.9.3 The Contractor shall not employ a proposed superintendent to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not change the superintendent without the Owner's consent, which shall not unreasonably be withheld or delayed.

**§ 3.10 Contractor's Construction and Submittal Schedules**

§ 3.10.1 The Contractor, promptly after being awarded the Contract, shall submit for the Owner's and Architect's information a Contractor's construction schedule for the Work. The schedule shall contain detail appropriate for the Project, including (1) the date of commencement of the Work, interim schedule milestone dates, and the date of Substantial Completion; (2) an apportionment of the Work by construction activity; and (3) the time required for completion of each portion of the Work. The schedule shall provide for the orderly progression of the Work to completion and shall not exceed time limits current under the Contract Documents. The schedule shall be revised at appropriate intervals as required by the conditions of the Work and Project.

§ 3.10.2 The Contractor, promptly after being awarded the Contract and thereafter as necessary to maintain a current submittal schedule, shall submit a submittal schedule for the Architect's approval. The Architect's approval shall not be unreasonably delayed or withheld. The submittal schedule shall (1) be coordinated with the Contractor's construction schedule, and (2) allow the Architect reasonable time to review submittals. If the Contractor fails to submit a submittal schedule, or fails to provide submittals in accordance with the approved submittal schedule, the Contractor shall not be entitled to any increase in Contract Sum or extension of Contract Time based on the time required for review of submittals.

§ 3.10.3 The Contractor shall perform the Work in general accordance with the most recent schedules submitted to the Owner and Architect.

**§ 3.11 Documents and Samples at the Site**

The Contractor shall make available, at the Project site, the Contract Documents, including Change Orders, Construction Change Directives, and other Modifications, in good order and marked currently to indicate field changes and selections made during construction, and the approved Shop Drawings, Product Data, Samples, and similar required submittals. These shall be in electronic form or paper copy, available to the Architect and Owner, and delivered to the Architect for submittal to the Owner upon completion of the Work as a record of the Work as constructed.

**§ 3.12 Shop Drawings, Product Data and Samples**

§ 3.12.1 Shop Drawings are drawings, diagrams, schedules, and other data specially prepared for the Work by the Contractor or a Subcontractor, Sub-subcontractor, manufacturer, supplier, or distributor to illustrate some portion of the Work.

§ 3.12.2 Product Data are illustrations, standard schedules, performance charts, instructions, brochures, diagrams, and other information furnished by the Contractor to illustrate materials or equipment for some portion of the Work.

§ 3.12.3 Samples are physical examples that illustrate materials, equipment, or workmanship, and establish standards by which the Work will be judged.

§ 3.12.4 Shop Drawings, Product Data, Samples, and similar submittals are not Contract Documents. Their purpose is to demonstrate how the Contractor proposes to conform to the information given and the design concept expressed in the Contract Documents for those portions of the Work for which the Contract Documents require submittals. Review by the Architect is subject to the limitations of Section 4.2.7. Informational submittals upon which the Architect is not expected to take responsive action may be so identified in the Contract Documents. Submittals that are not required by the Contract Documents may be returned by the Architect without action.

§ 3.12.5 The Contractor shall review for compliance with the Contract Documents, approve, and submit to the Architect, Shop Drawings, Product Data, Samples, and similar submittals required by the Contract Documents, in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness and in such sequence as to cause no delay in the Work or in the activities of the Owner or of Separate Contractors.

**§ 3.12.6** By submitting Shop Drawings, Product Data, Samples, and similar submittals, the Contractor represents to the Owner and Architect that the Contractor has (1) reviewed and approved them, (2) determined and verified materials, field measurements and field construction criteria related thereto, or will do so, and (3) checked and coordinated the information contained within such submittals with the requirements of the Work and of the Contract Documents.

**§ 3.12.7** The Contractor shall perform no portion of the Work for which the Contract Documents require submittal and review of Shop Drawings, Product Data, Samples, or similar submittals, until the respective submittal has been approved by the Architect.

**§ 3.12.8** The Work shall be in accordance with approved submittals except that the Contractor shall not be relieved of responsibility for deviations from the requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples, or similar submittals, unless the Contractor has specifically notified the Architect of such deviation at the time of submittal and (1) the Architect has given written approval to the specific deviation as a minor change in the Work, or (2) a Change Order or Construction Change Directive has been issued authorizing the deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples, or similar submittals, by the Architect's approval thereof.

**§ 3.12.9** The Contractor shall direct specific attention, in writing or on resubmitted Shop Drawings, Product Data, Samples, or similar submittals, to revisions other than those requested by the Architect on previous submittals. In the absence of such notice, the Architect's approval of a resubmission shall not apply to such revisions.

**§ 3.12.10** The Contractor shall not be required to provide professional services that constitute the practice of architecture or engineering unless such services are specifically required by the Contract Documents for a portion of the Work or unless the Contractor needs to provide such services in order to carry out the Contractor's responsibilities for construction means, methods, techniques, sequences, and procedures. The Contractor shall not be required to provide professional services in violation of applicable law.

**§ 3.12.10.1** If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

**§ 3.12.10.2** If the Contract Documents require the Contractor's design professional to certify that the Work has been performed in accordance with the design criteria, the Contractor shall furnish such certifications to the Architect at the time and in the form specified by the Architect.

### **§ 3.13 Use of Site**

The Contractor shall confine operations at the site to areas permitted by applicable laws, statutes, ordinances, codes, rules and regulations, lawful orders of public authorities, and the Contract Documents and shall not unreasonably encumber the site with materials or equipment.

### **§ 3.14 Cutting and Patching**

**§ 3.14.1** The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be reasonably restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

**§ 3.14.2** The Contractor shall not damage or endanger a portion of the Work or fully or partially completed construction of the Owner or Separate Contractors by cutting, patching, or otherwise altering such construction, or by excavation. The Contractor shall not cut or otherwise alter construction by the Owner or a Separate Contractor except with written consent of the Owner and of the Separate Contractor. Consent shall not be unreasonably withheld. The Contractor shall not unreasonably withhold, from the Owner or a Separate Contractor, its consent to cutting or otherwise altering the Work.

### **§ 3.15 Cleaning Up**

**§ 3.15.1** The Contractor shall keep the premises and surrounding area free from accumulation of waste materials and rubbish caused by operations under the Contract. At completion of the Work, the Contractor shall remove waste materials, rubbish, the Contractor's tools, construction equipment, machinery, and surplus materials from and about the Project.

**§ 3.15.2** If the Contractor fails to clean up as provided in the Contract Documents, the Owner may do so and the Owner shall be entitled to reimbursement from the Contractor.

### **§ 3.16 Access to Work**

The Contractor shall provide the Owner and Architect with access to the Work in preparation and progress wherever located.

### **§ 3.17 Royalties, Patents and Copyrights**

The Contractor shall pay all royalties and license fees. The Contractor shall defend suits or claims for infringement of copyrights and patent rights and shall hold the Owner and Architect harmless from loss on account thereof, but shall not be responsible for defense or loss when a particular design, process, or product of a particular manufacturer or manufacturers is required by the Contract Documents, or where the copyright violations are contained in Drawings, Specifications, or other documents prepared by the Owner or Architect. However, if an infringement of a copyright or patent is discovered by, or made known to, the Contractor, the Contractor shall be responsible for the loss unless the information is promptly furnished to the Architect.

### **§ 3.18 Indemnification**

**§ 3.18.1** To the fullest extent permitted by law, the Contractor shall indemnify and hold harmless the Owner, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), but only to the extent caused by the negligent acts or omissions of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, regardless of whether or not such claim, damage, loss, or expense is caused in part by a party indemnified hereunder. Such obligation shall not be construed to negate, abridge, or reduce other rights or obligations of indemnity that would otherwise exist as to a party or person described in this Section 3.18.

**§ 3.18.2** In claims against any person or entity indemnified under this Section 3.18 by an employee of the Contractor, a Subcontractor, anyone directly or indirectly employed by them, or anyone for whose acts they may be liable, the indemnification obligation under Section 3.18.1 shall not be limited by a limitation on amount or type of damages, compensation, or benefits payable by or for the Contractor or a Subcontractor under workers' compensation acts, disability benefit acts, or other employee benefit acts.

## **ARTICLE 4 ARCHITECT**

### **§ 4.1 General**

**§ 4.1.1** The Architect is the person or entity retained by the Owner pursuant to Section 2.3.2 and identified as such in the Agreement.

**§ 4.1.2** Duties, responsibilities, and limitations of authority of the Architect as set forth in the Contract Documents shall not be restricted, modified, or extended without written consent of the Owner, Contractor, and Architect. Consent shall not be unreasonably withheld.



## **§ 4.2 Administration of the Contract**

**§ 4.2.1** The Architect will provide administration of the Contract as described in the Contract Documents and will be an Owner's representative during construction until the date the Architect issues the final Certificate for Payment. The Architect will have authority to act on behalf of the Owner only to the extent provided in the Contract Documents.

**§ 4.2.2** The Architect will visit the site at intervals appropriate to the stage of construction, or as otherwise agreed with the Owner, to become generally familiar with the progress and quality of the portion of the Work completed, and to determine in general if the Work observed is being performed in a manner indicating that the Work, when fully completed, will be in accordance with the Contract Documents. However, the Architect will not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of the Work. The Architect will not have control over, charge of, or responsibility for the construction means, methods, techniques, sequences or procedures, or for the safety precautions and programs in connection with the Work, since these are solely the Contractor's rights and responsibilities under the Contract Documents.

**§ 4.2.3** On the basis of the site visits, the Architect will keep the Owner reasonably informed about the progress and quality of the portion of the Work completed, and promptly report to the Owner (1) known deviations from the Contract Documents, (2) known deviations from the most recent construction schedule submitted by the Contractor, and (3) defects and deficiencies observed in the Work. The Architect will not be responsible for the Contractor's failure to perform the Work in accordance with the requirements of the Contract Documents. The Architect will not have control over or charge of, and will not be responsible for acts or omissions of, the Contractor, Subcontractors, or their agents or employees, or any other persons or entities performing portions of the Work.

## **§ 4.2.4 Communications**

The Owner and Contractor shall include the Architect in all communications that relate to or affect the Architect's services or professional responsibilities. The Owner shall promptly notify the Architect of the substance of any direct communications between the Owner and the Contractor otherwise relating to the Project. Communications by and with the Architect's consultants shall be through the Architect. Communications by and with Subcontractors and suppliers shall be through the Contractor. Communications by and with Separate Contractors shall be through the Owner. The Contract Documents may specify other communication protocols.

**§ 4.2.5** Based on the Architect's evaluations of the Contractor's Applications for Payment, the Architect will review and certify the amounts due the Contractor and will issue Certificates for Payment in such amounts.

**§ 4.2.6** The Architect has authority to reject Work that does not conform to the Contract Documents. Whenever the Architect considers it necessary or advisable, the Architect will have authority to require inspection or testing of the Work in accordance with Sections 13.4.2 and 13.4.3, whether or not the Work is fabricated, installed or completed. However, neither this authority of the Architect nor a decision made in good faith either to exercise or not to exercise such authority shall give rise to a duty or responsibility of the Architect to the Contractor, Subcontractors, suppliers, their agents or employees, or other persons or entities performing portions of the Work.

**§ 4.2.7** The Architect will review and approve, or take other appropriate action upon, the Contractor's submittals such as Shop Drawings, Product Data, and Samples, but only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Architect's action will be taken in accordance with the submittal schedule approved by the Architect or, in the absence of an approved submittal schedule, with reasonable promptness while allowing sufficient time in the Architect's professional judgment to permit adequate review. Review of such submittals is not conducted for the purpose of determining the accuracy and completeness of other details such as dimensions and quantities, or for substantiating instructions for installation or performance of equipment or systems, all of which remain the responsibility of the Contractor as required by the Contract Documents. The Architect's review of the Contractor's submittals shall not relieve the Contractor of the obligations under Sections 3.3, 3.5, and 3.12. The Architect's review shall not constitute approval of safety precautions or of any construction means, methods, techniques, sequences, or procedures. The Architect's approval of a specific item shall not indicate approval of an assembly of which the item is a component.

**§ 4.2.8** The Architect will prepare Change Orders and Construction Change Directives, and may order minor changes in the Work as provided in Section 7.4. The Architect will investigate and make determinations and recommendations regarding concealed and unknown conditions as provided in Section 3.7.4.

§ 4.2.9 The Architect will conduct inspections to determine the date or dates of Substantial Completion and the date of final completion; issue Certificates of Substantial Completion pursuant to Section 9.8; receive and forward to the Owner, for the Owner's review and records, written warranties and related documents required by the Contract and assembled by the Contractor pursuant to Section 9.10; and issue a final Certificate for Payment pursuant to Section 9.10.

§ 4.2.10 If the Owner and Architect agree, the Architect will provide one or more Project representatives to assist in carrying out the Architect's responsibilities at the site. The Owner shall notify the Contractor of any change in the duties, responsibilities and limitations of authority of the Project representatives.

§ 4.2.11 The Architect will interpret and decide matters concerning performance under, and requirements of, the Contract Documents on written request of either the Owner or Contractor. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness.

§ 4.2.12 Interpretations and decisions of the Architect will be consistent with the intent of, and reasonably inferable from, the Contract Documents and will be in writing or in the form of drawings. When making such interpretations and decisions, the Architect will endeavor to secure faithful performance by both Owner and Contractor, will not show partiality to either, and will not be liable for results of interpretations or decisions rendered in good faith.

§ 4.2.13 The Architect's decisions on matters relating to aesthetic effect will be final if consistent with the intent expressed in the Contract Documents.

§ 4.2.14 The Architect will review and respond to requests for information about the Contract Documents. The Architect's response to such requests will be made in writing within any time limits agreed upon or otherwise with reasonable promptness. If appropriate, the Architect will prepare and issue supplemental Drawings and Specifications in response to the requests for information.

## **ARTICLE 5 SUBCONTRACTORS**

### **§ 5.1 Definitions**

§ 5.1.1 A Subcontractor is a person or entity who has a direct contract with the Contractor to perform a portion of the Work at the site. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Subcontractor or an authorized representative of the Subcontractor. The term "Subcontractor" does not include a Separate Contractor or the subcontractors of a Separate Contractor.

§ 5.1.2 A Sub-subcontractor is a person or entity who has a direct or indirect contract with a Subcontractor to perform a portion of the Work at the site. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and means a Sub-subcontractor or an authorized representative of the Sub-subcontractor.

### **§ 5.2 Award of Subcontracts and Other Contracts for Portions of the Work**

§ 5.2.1 Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor in writing whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

§ 5.2.2 The Contractor shall not contract with a proposed person or entity to whom the Owner or Architect has made reasonable and timely objection. The Contractor shall not be required to contract with anyone to whom the Contractor has made reasonable objection.

§ 5.2.3 If the Owner or Architect has reasonable objection to a person or entity proposed by the Contractor, the Contractor shall propose another to whom the Owner or Architect has no reasonable objection. If the proposed but rejected Subcontractor was reasonably capable of performing the Work, the Contract Sum and Contract Time shall be increased or decreased by the difference, if any, occasioned by such change, and an appropriate Change Order shall be issued before commencement of the substitute Subcontractor's Work. However, no increase in the Contract Sum or Contract Time shall be allowed for such change unless the Contractor has acted promptly and responsively in submitting names as required.

§ 5.2.4 The Contractor shall not substitute a Subcontractor, person, or entity for one previously selected if the Owner or Architect makes reasonable objection to such substitution.

### § 5.3 Subcontractual Relations

By appropriate written agreement, the Contractor shall require each Subcontractor, to the extent of the Work to be performed by the Subcontractor, to be bound to the Contractor by terms of the Contract Documents, and to assume toward the Contractor all the obligations and responsibilities, including the responsibility for safety of the Subcontractor's Work that the Contractor, by these Contract Documents, assumes toward the Owner and Architect. Each subcontract agreement shall preserve and protect the rights of the Owner and Architect under the Contract Documents with respect to the Work to be performed by the Subcontractor so that subcontracting thereof will not prejudice such rights, and shall allow to the Subcontractor, unless specifically provided otherwise in the subcontract agreement, the benefit of all rights, remedies, and redress against the Contractor that the Contractor, by the Contract Documents, has against the Owner. Where appropriate, the Contractor shall require each Subcontractor to enter into similar agreements with Sub-subcontractors. The Contractor shall make available to each proposed Subcontractor, prior to the execution of the subcontract agreement, copies of the Contract Documents to which the Subcontractor will be bound, and, upon written request of the Subcontractor, identify to the Subcontractor terms and conditions of the proposed subcontract agreement that may be at variance with the Contract Documents. Subcontractors will similarly make copies of applicable portions of such documents available to their respective proposed Sub-subcontractors.

### § 5.4 Contingent Assignment of Subcontracts

§ 5.4.1 Each subcontract agreement for a portion of the Work is assigned by the Contractor to the Owner, provided that

- .1 assignment is effective only after termination of the Contract by the Owner for cause pursuant to Section 14.2 and only for those subcontract agreements that the Owner accepts by notifying the Subcontractor and Contractor; and
- .2 assignment is subject to the prior rights of the surety, if any, obligated under bond relating to the Contract.

When the Owner accepts the assignment of a subcontract agreement, the Owner assumes the Contractor's rights and obligations under the subcontract.

§ 5.4.2 Upon such assignment, if the Work has been suspended for more than 30 days, the Subcontractor's compensation shall be equitably adjusted for increases in cost resulting from the suspension.

§ 5.4.3 Upon assignment to the Owner under this Section 5.4, the Owner may further assign the subcontract to a successor contractor or other entity. If the Owner assigns the subcontract to a successor contractor or other entity, the Owner shall nevertheless remain legally responsible for all of the successor contractor's obligations under the subcontract.

## ARTICLE 6 CONSTRUCTION BY OWNER OR BY SEPARATE CONTRACTORS

### § 6.1 Owner's Right to Perform Construction and to Award Separate Contracts

§ 6.1.1 The term "Separate Contractor(s)" shall mean other contractors retained by the Owner under separate agreements. The Owner reserves the right to perform construction or operations related to the Project with the Owner's own forces, and with Separate Contractors retained under Conditions of the Contract substantially similar to those of this Contract, including those provisions of the Conditions of the Contract related to insurance and waiver of subrogation.

§ 6.1.2 When separate contracts are awarded for different portions of the Project or other construction or operations on the site, the term "Contractor" in the Contract Documents in each case shall mean the Contractor who executes each separate Owner-Contractor Agreement.

§ 6.1.3 The Owner shall provide for coordination of the activities of the Owner's own forces and of each Separate Contractor with the Work of the Contractor, who shall cooperate with them. The Contractor shall participate with any Separate Contractors and the Owner in reviewing their construction schedules. The Contractor shall make any revisions to its construction schedule deemed necessary after a joint review and mutual agreement. The construction schedules shall then constitute the schedules to be used by the Contractor, Separate Contractors, and the Owner until subsequently revised.

§ 6.1.4 Unless otherwise provided in the Contract Documents, when the Owner performs construction or operations related to the Project with the Owner's own forces or with Separate Contractors, the Owner or its Separate Contractors shall have the same obligations and rights that the Contractor has under the Conditions of the Contract, including, without excluding others, those stated in Article 3, this Article 6, and Articles 10, 11, and 12.

## § 6.2 Mutual Responsibility

§ 6.2.1 The Contractor shall afford the Owner and Separate Contractors reasonable opportunity for introduction and storage of their materials and equipment and performance of their activities, and shall connect and coordinate the Contractor's construction and operations with theirs as required by the Contract Documents.

§ 6.2.2 If part of the Contractor's Work depends for proper execution or results upon construction or operations by the Owner or a Separate Contractor, the Contractor shall, prior to proceeding with that portion of the Work, promptly notify the Architect of apparent discrepancies or defects in the construction or operations by the Owner or Separate Contractor that would render it unsuitable for proper execution and results of the Contractor's Work. Failure of the Contractor to notify the Architect of apparent discrepancies or defects prior to proceeding with the Work shall constitute an acknowledgment that the Owner's or Separate Contractor's completed or partially completed construction is fit and proper to receive the Contractor's Work. The Contractor shall not be responsible for discrepancies or defects in the construction or operations by the Owner or Separate Contractor that are not apparent.

§ 6.2.3 The Contractor shall reimburse the Owner for costs the Owner incurs that are payable to a Separate Contractor because of the Contractor's delays, improperly timed activities or defective construction. The Owner shall be responsible to the Contractor for costs the Contractor incurs because of a Separate Contractor's delays, improperly timed activities, damage to the Work or defective construction.

§ 6.2.4 The Contractor shall promptly remedy damage that the Contractor wrongfully causes to completed or partially completed construction or to property of the Owner or Separate Contractor as provided in Section 10.2.5.

§ 6.2.5 The Owner and each Separate Contractor shall have the same responsibilities for cutting and patching as are described for the Contractor in Section 3.14.

## § 6.3 Owner's Right to Clean Up

If a dispute arises among the Contractor, Separate Contractors, and the Owner as to the responsibility under their respective contracts for maintaining the premises and surrounding area free from waste materials and rubbish, the Owner may clean up and the Architect will allocate the cost among those responsible.

## ARTICLE 7 CHANGES IN THE WORK

### § 7.1 General

§ 7.1.1 Changes in the Work may be accomplished after execution of the Contract, and without invalidating the Contract, by Change Order, Construction Change Directive or order for a minor change in the Work, subject to the limitations stated in this Article 7 and elsewhere in the Contract Documents.

§ 7.1.2 A Change Order shall be based upon agreement among the Owner, Contractor, and Architect. A Construction Change Directive requires agreement by the Owner and Architect and may or may not be agreed to by the Contractor. An order for a minor change in the Work may be issued by the Architect alone.

§ 7.1.3 Changes in the Work shall be performed under applicable provisions of the Contract Documents. The Contractor shall proceed promptly with changes in the Work, unless otherwise provided in the Change Order, Construction Change Directive, or order for a minor change in the Work.

### § 7.2 Change Orders

§ 7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, Contractor, and Architect stating their agreement upon all of the following:

- .1 The change in the Work;
- .2 The amount of the adjustment, if any, in the Contract Sum; and
- .3 The extent of the adjustment, if any, in the Contract Time.

### **§ 7.3 Construction Change Directives**

**§ 7.3.1** A Construction Change Directive is a written order prepared by the Architect and signed by the Owner and Architect, directing a change in the Work prior to agreement on adjustment, if any, in the Contract Sum or Contract Time, or both. The Owner may by Construction Change Directive, without invalidating the Contract, order changes in the Work within the general scope of the Contract consisting of additions, deletions, or other revisions, the Contract Sum and Contract Time being adjusted accordingly.

**§ 7.3.2** A Construction Change Directive shall be used in the absence of total agreement on the terms of a Change Order.

**§ 7.3.3** If the Construction Change Directive provides for an adjustment to the Contract Sum, the adjustment shall be based on one of the following methods:

- .1 Mutual acceptance of a lump sum properly itemized and supported by sufficient substantiating data to permit evaluation;
- .2 Unit prices stated in the Contract Documents or subsequently agreed upon;
- .3 Cost to be determined in a manner agreed upon by the parties and a mutually acceptable fixed or percentage fee; or
- .4 As provided in Section 7.3.4.

**§ 7.3.4** If the Contractor does not respond promptly or disagrees with the method for adjustment in the Contract Sum, the Architect shall determine the adjustment on the basis of reasonable expenditures and savings of those performing the Work attributable to the change, including, in case of an increase in the Contract Sum, an amount for overhead and profit as set forth in the Agreement, or if no such amount is set forth in the Agreement, a reasonable amount. In such case, and also under Section 7.3.3.3, the Contractor shall keep and present, in such form as the Architect may prescribe, an itemized accounting together with appropriate supporting data. Unless otherwise provided in the Contract Documents, costs for the purposes of this Section 7.3.4 shall be limited to the following:

- .1 Costs of labor, including applicable payroll taxes, fringe benefits required by agreement or custom, workers' compensation insurance, and other employee costs approved by the Architect;
- .2 Costs of materials, supplies, and equipment, including cost of transportation, whether incorporated or consumed;
- .3 Rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
- .4 Costs of premiums for all bonds and insurance, permit fees, and sales, use, or similar taxes, directly related to the change; and
- .5 Costs of supervision and field office personnel directly attributable to the change.

**§ 7.3.5** If the Contractor disagrees with the adjustment in the Contract Time, the Contractor may make a Claim in accordance with applicable provisions of Article 15.

**§ 7.3.6** Upon receipt of a Construction Change Directive, the Contractor shall promptly proceed with the change in the Work involved and advise the Architect of the Contractor's agreement or disagreement with the method, if any, provided in the Construction Change Directive for determining the proposed adjustment in the Contract Sum or Contract Time.

**§ 7.3.7** A Construction Change Directive signed by the Contractor indicates the Contractor's agreement therewith, including adjustment in Contract Sum and Contract Time or the method for determining them. Such agreement shall be effective immediately and shall be recorded as a Change Order.

**§ 7.3.8** The amount of credit to be allowed by the Contractor to the Owner for a deletion or change that results in a net decrease in the Contract Sum shall be actual net cost as confirmed by the Architect. When both additions and credits covering related Work or substitutions are involved in a change, the allowance for overhead and profit shall be figured on the basis of net increase, if any, with respect to that change.

**§ 7.3.9** Pending final determination of the total cost of a Construction Change Directive to the Owner, the Contractor may request payment for Work completed under the Construction Change Directive in Applications for Payment. The Architect will make an interim determination for purposes of monthly certification for payment for those costs and certify for payment the amount that the Architect determines, in the Architect's professional judgment, to be

reasonably justified. The Architect's interim determination of cost shall adjust the Contract Sum on the same basis as a Change Order, subject to the right of either party to disagree and assert a Claim in accordance with Article 15.

**§ 7.3.10** When the Owner and Contractor agree with a determination made by the Architect concerning the adjustments in the Contract Sum and Contract Time, or otherwise reach agreement upon the adjustments, such agreement shall be effective immediately and the Architect will prepare a Change Order. Change Orders may be issued for all or any part of a Construction Change Directive.

#### **§ 7.4 Minor Changes in the Work**

The Architect may order minor changes in the Work that are consistent with the intent of the Contract Documents and do not involve an adjustment in the Contract Sum or an extension of the Contract Time. The Architect's order for minor changes shall be in writing. If the Contractor believes that the proposed minor change in the Work will affect the Contract Sum or Contract Time, the Contractor shall notify the Architect and shall not proceed to implement the change in the Work. If the Contractor performs the Work set forth in the Architect's order for a minor change without prior notice to the Architect that such change will affect the Contract Sum or Contract Time, the Contractor waives any adjustment to the Contract Sum or extension of the Contract Time.

### **ARTICLE 8 TIME**

#### **§ 8.1 Definitions**

**§ 8.1.1** Unless otherwise provided, Contract Time is the period of time, including authorized adjustments, allotted in the Contract Documents for Substantial Completion of the Work.

**§ 8.1.2** The date of commencement of the Work is the date established in the Agreement.

**§ 8.1.3** The date of Substantial Completion is the date certified by the Architect in accordance with Section 9.8.

**§ 8.1.4** The term "day" as used in the Contract Documents shall mean calendar day unless otherwise specifically defined.

#### **§ 8.2 Progress and Completion**

**§ 8.2.1** Time limits stated in the Contract Documents are of the essence of the Contract. By executing the Agreement, the Contractor confirms that the Contract Time is a reasonable period for performing the Work.

**§ 8.2.2** The Contractor shall not knowingly, except by agreement or instruction of the Owner in writing, commence the Work prior to the effective date of insurance required to be furnished by the Contractor and Owner.

**§ 8.2.3** The Contractor shall proceed expeditiously with adequate forces and shall achieve Substantial Completion within the Contract Time.

#### **§ 8.3 Delays and Extensions of Time**

**§ 8.3.1** If the Contractor is delayed at any time in the commencement or progress of the Work by (1) an act or neglect of the Owner or Architect, of an employee of either, or of a Separate Contractor; (2) by changes ordered in the Work; (3) by labor disputes, fire, unusual delay in deliveries, unavoidable casualties, adverse weather conditions documented in accordance with Section 15.1.6.2, or other causes beyond the Contractor's control; (4) by delay authorized by the Owner pending mediation and binding dispute resolution; or (5) by other causes that the Contractor asserts, and the Architect determines, justify delay, then the Contract Time shall be extended for such reasonable time as the Architect may determine.

**§ 8.3.2** Claims relating to time shall be made in accordance with applicable provisions of Article 15.

**§ 8.3.3** This Section 8.3 does not preclude recovery of damages for delay by either party under other provisions of the Contract Documents.

### **ARTICLE 9 PAYMENTS AND COMPLETION**

#### **§ 9.1 Contract Sum**

**§ 9.1.1** The Contract Sum is stated in the Agreement and, including authorized adjustments, is the total amount payable by the Owner to the Contractor for performance of the Work under the Contract Documents.

**§ 9.1.2** If unit prices are stated in the Contract Documents or subsequently agreed upon, and if quantities originally contemplated are materially changed so that application of such unit prices to the actual quantities causes substantial inequity to the Owner or Contractor, the applicable unit prices shall be equitably adjusted.

### **§ 9.2 Schedule of Values**

Where the Contract is based on a stipulated sum or Guaranteed Maximum Price, the Contractor shall submit a schedule of values to the Architect before the first Application for Payment, allocating the entire Contract Sum to the various portions of the Work. The schedule of values shall be prepared in the form, and supported by the data to substantiate its accuracy, required by the Architect. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment. Any changes to the schedule of values shall be submitted to the Architect and supported by such data to substantiate its accuracy as the Architect may require, and unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's subsequent Applications for Payment.

### **§ 9.3 Applications for Payment**

**§ 9.3.1** At least ten days before the date established for each progress payment, the Contractor shall submit to the Architect an itemized Application for Payment prepared in accordance with the schedule of values, if required under Section 9.2, for completed portions of the Work. The application shall be notarized, if required, and supported by all data substantiating the Contractor's right to payment that the Owner or Architect require, such as copies of requisitions, and releases and waivers of liens from Subcontractors and suppliers, and shall reflect retainage if provided for in the Contract Documents.

**§ 9.3.1.1** As provided in Section 7.3.9, such applications may include requests for payment on account of changes in the Work that have been properly authorized by Construction Change Directives, or by interim determinations of the Architect, but not yet included in Change Orders.

**§ 9.3.1.2** Applications for Payment shall not include requests for payment for portions of the Work for which the Contractor does not intend to pay a Subcontractor or supplier, unless such Work has been performed by others whom the Contractor intends to pay.

**§ 9.3.2** Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. If approved in advance by the Owner, payment may similarly be made for materials and equipment suitably stored off the site at a location agreed upon in writing. Payment for materials and equipment stored on or off the site shall be conditioned upon compliance by the Contractor with procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, and shall include the costs of applicable insurance, storage, and transportation to the site, for such materials and equipment stored off the site.

**§ 9.3.3** The Contractor warrants that title to all Work covered by an Application for Payment will pass to the Owner no later than the time of payment. The Contractor further warrants that upon submittal of an Application for Payment all Work for which Certificates for Payment have been previously issued and payments received from the Owner shall, to the best of the Contractor's knowledge, information, and belief, be free and clear of liens, claims, security interests, or encumbrances, in favor of the Contractor, Subcontractors, suppliers, or other persons or entities that provided labor, materials, and equipment relating to the Work.

### **§ 9.4 Certificates for Payment**

**§ 9.4.1** The Architect will, within seven days after receipt of the Contractor's Application for Payment, either (1) issue to the Owner a Certificate for Payment in the full amount of the Application for Payment, with a copy to the Contractor; or (2) issue to the Owner a Certificate for Payment for such amount as the Architect determines is properly due, and notify the Contractor and Owner of the Architect's reasons for withholding certification in part as provided in Section 9.5.1; or (3) withhold certification of the entire Application for Payment, and notify the Contractor and Owner of the Architect's reason for withholding certification in whole as provided in Section 9.5.1.

**§ 9.4.2** The issuance of a Certificate for Payment will constitute a representation by the Architect to the Owner, based on the Architect's evaluation of the Work and the data in the Application for Payment, that, to the best of the Architect's knowledge, information, and belief, the Work has progressed to the point indicated, the quality of the

Work is in accordance with the Contract Documents, and that the Contractor is entitled to payment in the amount certified. The foregoing representations are subject to an evaluation of the Work for conformance with the Contract Documents upon Substantial Completion, to results of subsequent tests and inspections, to correction of minor deviations from the Contract Documents prior to completion, and to specific qualifications expressed by the Architect. However, the issuance of a Certificate for Payment will not be a representation that the Architect has (1) made exhaustive or continuous on-site inspections to check the quality or quantity of the Work; (2) reviewed construction means, methods, techniques, sequences, or procedures; (3) reviewed copies of requisitions received from Subcontractors and suppliers and other data requested by the Owner to substantiate the Contractor's right to payment; or (4) made examination to ascertain how or for what purpose the Contractor has used money previously paid on account of the Contract Sum.

### **§ 9.5 Decisions to Withhold Certification**

**§ 9.5.1** The Architect may withhold a Certificate for Payment in whole or in part, to the extent reasonably necessary to protect the Owner, if in the Architect's opinion the representations to the Owner required by Section 9.4.2 cannot be made. If the Architect is unable to certify payment in the amount of the Application, the Architect will notify the Contractor and Owner as provided in Section 9.4.1. If the Contractor and Architect cannot agree on a revised amount, the Architect will promptly issue a Certificate for Payment for the amount for which the Architect is able to make such representations to the Owner. The Architect may also withhold a Certificate for Payment or, because of subsequently discovered evidence, may nullify the whole or a part of a Certificate for Payment previously issued, to such extent as may be necessary in the Architect's opinion to protect the Owner from loss for which the Contractor is responsible, including loss resulting from acts and omissions described in Section 3.3.2, because of

- .1 defective Work not remedied;
- .2 third party claims filed or reasonable evidence indicating probable filing of such claims, unless security acceptable to the Owner is provided by the Contractor;
- .3 failure of the Contractor to make payments properly to Subcontractors or suppliers for labor, materials or equipment;
- .4 reasonable evidence that the Work cannot be completed for the unpaid balance of the Contract Sum;
- .5 damage to the Owner or a Separate Contractor;
- .6 reasonable evidence that the Work will not be completed within the Contract Time, and that the unpaid balance would not be adequate to cover actual or liquidated damages for the anticipated delay; or
- .7 repeated failure to carry out the Work in accordance with the Contract Documents.

**§ 9.5.2** When either party disputes the Architect's decision regarding a Certificate for Payment under Section 9.5.1, in whole or in part, that party may submit a Claim in accordance with Article 15.

**§ 9.5.3** When the reasons for withholding certification are removed, certification will be made for amounts previously withheld.

**§ 9.5.4** If the Architect withholds certification for payment under Section 9.5.1.3, the Owner may, at its sole option, issue joint checks to the Contractor and to any Subcontractor or supplier to whom the Contractor failed to make payment for Work properly performed or material or equipment suitably delivered. If the Owner makes payments by joint check, the Owner shall notify the Architect and the Contractor shall reflect such payment on its next Application for Payment.

### **§ 9.6 Progress Payments**

**§ 9.6.1** After the Architect has issued a Certificate for Payment, the Owner shall make payment in the manner and within the time provided in the Contract Documents, and shall so notify the Architect.

**§ 9.6.2** The Contractor shall pay each Subcontractor, no later than seven days after receipt of payment from the Owner, the amount to which the Subcontractor is entitled, reflecting percentages actually retained from payments to the Contractor on account of the Subcontractor's portion of the Work. The Contractor shall, by appropriate agreement with each Subcontractor, require each Subcontractor to make payments to Sub-subcontractors in a similar manner.

**§ 9.6.3** The Architect will, on request, furnish to a Subcontractor, if practicable, information regarding percentages of completion or amounts applied for by the Contractor and action taken thereon by the Architect and Owner on account of portions of the Work done by such Subcontractor.



**§ 9.6.4** The Owner has the right to request written evidence from the Contractor that the Contractor has properly paid Subcontractors and suppliers amounts paid by the Owner to the Contractor for subcontracted Work. If the Contractor fails to furnish such evidence within seven days, the Owner shall have the right to contact Subcontractors and suppliers to ascertain whether they have been properly paid. Neither the Owner nor Architect shall have an obligation to pay, or to see to the payment of money to, a Subcontractor or supplier, except as may otherwise be required by law.

**§ 9.6.5** The Contractor's payments to suppliers shall be treated in a manner similar to that provided in Sections 9.6.2, 9.6.3 and 9.6.4.

**§ 9.6.6** A Certificate for Payment, a progress payment, or partial or entire use or occupancy of the Project by the Owner shall not constitute acceptance of Work not in accordance with the Contract Documents.

**§ 9.6.7** Unless the Contractor provides the Owner with a payment bond in the full penal sum of the Contract Sum, payments received by the Contractor for Work properly performed by Subcontractors or provided by suppliers shall be held by the Contractor for those Subcontractors or suppliers who performed Work or furnished materials, or both, under contract with the Contractor for which payment was made by the Owner. Nothing contained herein shall require money to be placed in a separate account and not commingled with money of the Contractor, create any fiduciary liability or tort liability on the part of the Contractor for breach of trust, or entitle any person or entity to an award of punitive damages against the Contractor for breach of the requirements of this provision.

**§ 9.6.8** Provided the Owner has fulfilled its payment obligations under the Contract Documents, the Contractor shall defend and indemnify the Owner from all loss, liability, damage or expense, including reasonable attorney's fees and litigation expenses, arising out of any lien claim or other claim for payment by any Subcontractor or supplier of any tier. Upon receipt of notice of a lien claim or other claim for payment, the Owner shall notify the Contractor. If approved by the applicable court, when required, the Contractor may substitute a surety bond for the property against which the lien or other claim for payment has been asserted.

#### **§ 9.7 Failure of Payment**

If the Architect does not issue a Certificate for Payment, through no fault of the Contractor, within seven days after receipt of the Contractor's Application for Payment, or if the Owner does not pay the Contractor within seven days after the date established in the Contract Documents, the amount certified by the Architect or awarded by binding dispute resolution, then the Contractor may, upon seven additional days' notice to the Owner and Architect, stop the Work until payment of the amount owing has been received. The Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable costs of shutdown, delay and start-up, plus interest as provided for in the Contract Documents.

#### **§ 9.8 Substantial Completion**

**§ 9.8.1** Substantial Completion is the stage in the progress of the Work when the Work or designated portion thereof is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use.

**§ 9.8.2** When the Contractor considers that the Work, or a portion thereof which the Owner agrees to accept separately, is substantially complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

**§ 9.8.3** Upon receipt of the Contractor's list, the Architect will make an inspection to determine whether the Work or designated portion thereof is substantially complete. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work or designated portion thereof for its intended use, the Contractor shall, before issuance of the Certificate of Substantial Completion, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

**§ 9.8.4** When the Work or designated portion thereof is substantially complete, the Architect will prepare a Certificate of Substantial Completion that shall establish the date of Substantial Completion; establish responsibilities of the Owner and Contractor for security, maintenance, heat, utilities, damage to the Work and insurance; and fix the time

within which the Contractor shall finish all items on the list accompanying the Certificate. Warranties required by the Contract Documents shall commence on the date of Substantial Completion of the Work or designated portion thereof unless otherwise provided in the Certificate of Substantial Completion.

**§ 9.8.5** The Certificate of Substantial Completion shall be submitted to the Owner and Contractor for their written acceptance of responsibilities assigned to them in the Certificate. Upon such acceptance, and consent of surety if any, the Owner shall make payment of retainage applying to the Work or designated portion thereof. Such payment shall be adjusted for Work that is incomplete or not in accordance with the requirements of the Contract Documents.

**§ 9.9 Partial Occupancy or Use**

**§ 9.9.1** The Owner may occupy or use any completed or partially completed portion of the Work at any stage when such portion is designated by separate agreement with the Contractor, provided such occupancy or use is consented to by the insurer and authorized by public authorities having jurisdiction over the Project. Such partial occupancy or use may commence whether or not the portion is substantially complete, provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, retainage, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers a portion substantially complete, the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld. The stage of the progress of the Work shall be determined by written agreement between the Owner and Contractor or, if no agreement is reached, by decision of the Architect.

**§ 9.9.2** Immediately prior to such partial occupancy or use, the Owner, Contractor, and Architect shall jointly inspect the area to be occupied or portion of the Work to be used in order to determine and record the condition of the Work.

**§ 9.9.3** Unless otherwise agreed upon, partial occupancy or use of a portion or portions of the Work shall not constitute acceptance of Work not complying with the requirements of the Contract Documents.

**§ 9.10 Final Completion and Final Payment**

**§ 9.10.1** Upon receipt of the Contractor's notice that the Work is ready for final inspection and acceptance and upon receipt of a final Application for Payment, the Architect will promptly make such inspection. When the Architect finds the Work acceptable under the Contract Documents and the Contract fully performed, the Architect will promptly issue a final Certificate for Payment stating that to the best of the Architect's knowledge, information and belief, and on the basis of the Architect's on-site visits and inspections, the Work has been completed in accordance with the Contract Documents and that the entire balance found to be due the Contractor and noted in the final Certificate is due and payable. The Architect's final Certificate for Payment will constitute a further representation that conditions listed in Section 9.10.2 as precedent to the Contractor's being entitled to final payment have been fulfilled.

**§ 9.10.2** Neither final payment nor any remaining retained percentage shall become due until the Contractor submits to the Architect (1) an affidavit that payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the Owner or the Owner's property might be responsible or encumbered (less amounts withheld by Owner) have been paid or otherwise satisfied, (2) a certificate evidencing that insurance required by the Contract Documents to remain in force after final payment is currently in effect, (3) a written statement that the Contractor knows of no reason that the insurance will not be renewable to cover the period required by the Contract Documents, (4) consent of surety, if any, to final payment, (5) documentation of any special warranties, such as manufacturers' warranties or specific Subcontractor warranties, and (6) if required by the Owner, other data establishing payment or satisfaction of obligations, such as receipts and releases and waivers of liens, claims, security interests, or encumbrances arising out of the Contract, to the extent and in such form as may be designated by the Owner. If a Subcontractor refuses to furnish a release or waiver required by the Owner, the Contractor may furnish a bond satisfactory to the Owner to indemnify the Owner against such lien, claim, security interest, or encumbrance. If a lien, claim, security interest, or encumbrance remains unsatisfied after payments are made, the Contractor shall refund to the Owner all money that the Owner may be compelled to pay in discharging the lien, claim, security interest, or encumbrance, including all costs and reasonable attorneys' fees.

**§ 9.10.3** If, after Substantial Completion of the Work, final completion thereof is materially delayed through no fault of the Contractor or by issuance of Change Orders affecting final completion, and the Architect so confirms, the Owner shall, upon application by the Contractor and certification by the Architect, and without terminating the

Contract, make payment of the balance due for that portion of the Work fully completed, corrected, and accepted. If the remaining balance for Work not fully completed or corrected is less than retainage stipulated in the Contract Documents, and if bonds have been furnished, the written consent of the surety to payment of the balance due for that portion of the Work fully completed and accepted shall be submitted by the Contractor to the Architect prior to certification of such payment. Such payment shall be made under terms and conditions governing final payment, except that it shall not constitute a waiver of Claims.

§ 9.10.4 The making of final payment shall constitute a waiver of Claims by the Owner except those arising from

- .1 liens, Claims, security interests, or encumbrances arising out of the Contract and unsettled;
- .2 failure of the Work to comply with the requirements of the Contract Documents;
- .3 terms of special warranties required by the Contract Documents; or
- .4 audits performed by the Owner, if permitted by the Contract Documents, after final payment.

§ 9.10.5 Acceptance of final payment by the Contractor, a Subcontractor, or a supplier, shall constitute a waiver of claims by that payee except those previously made in writing and identified by that payee as unsettled at the time of final Application for Payment.

## ARTICLE 10 PROTECTION OF PERSONS AND PROPERTY

### § 10.1 Safety Precautions and Programs

The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs in connection with the performance of the Contract.

### § 10.2 Safety of Persons and Property

§ 10.2.1 The Contractor shall take reasonable precautions for safety of, and shall provide reasonable protection to prevent damage, injury, or loss to

- .1 employees on the Work and other persons who may be affected thereby;
- .2 the Work and materials and equipment to be incorporated therein, whether in storage on or off the site, under care, custody, or control of the Contractor, a Subcontractor, or a Sub-subcontractor; and
- .3 other property at the site or adjacent thereto, such as trees, shrubs, lawns, walks, pavements, roadways, structures, and utilities not designated for removal, relocation, or replacement in the course of construction.

§ 10.2.2 The Contractor shall comply with, and give notices required by applicable laws, statutes, ordinances, codes, rules and regulations, and lawful orders of public authorities, bearing on safety of persons or property or their protection from damage, injury, or loss.

§ 10.2.3 The Contractor shall implement, erect, and maintain, as required by existing conditions and performance of the Contract, reasonable safeguards for safety and protection, including posting danger signs and other warnings against hazards; promulgating safety regulations; and notifying the owners and users of adjacent sites and utilities of the safeguards.

§ 10.2.4 When use or storage of explosives or other hazardous materials or equipment, or unusual methods are necessary for execution of the Work, the Contractor shall exercise utmost care and carry on such activities under supervision of properly qualified personnel.

§ 10.2.5 The Contractor shall promptly remedy damage and loss (other than damage or loss insured under property insurance required by the Contract Documents) to property referred to in Sections 10.2.1.2 and 10.2.1.3 caused in whole or in part by the Contractor, a Subcontractor, a Sub-subcontractor, or anyone directly or indirectly employed by any of them, or by anyone for whose acts they may be liable and for which the Contractor is responsible under Sections 10.2.1.2 and 10.2.1.3. The Contractor may make a Claim for the cost to remedy the damage or loss to the extent such damage or loss is attributable to acts or omissions of the Owner or Architect or anyone directly or indirectly employed by either of them, or by anyone for whose acts either of them may be liable, and not attributable to the fault or negligence of the Contractor. The foregoing obligations of the Contractor are in addition to the Contractor's obligations under Section 3.18.

§ 10.2.6 The Contractor shall designate a responsible member of the Contractor's organization at the site whose duty shall be the prevention of accidents. This person shall be the Contractor's superintendent unless otherwise designated by the Contractor in writing to the Owner and Architect.

§ 10.2.7 The Contractor shall not permit any part of the construction or site to be loaded so as to cause damage or create an unsafe condition.

**§ 10.2.8 Injury or Damage to Person or Property**

If either party suffers injury or damage to person or property because of an act or omission of the other party, or of others for whose acts such party is legally responsible, notice of the injury or damage, whether or not insured, shall be given to the other party within a reasonable time not exceeding 21 days after discovery. The notice shall provide sufficient detail to enable the other party to investigate the matter.

**§ 10.3 Hazardous Materials and Substances**

§ 10.3.1 The Contractor is responsible for compliance with any requirements included in the Contract Documents regarding hazardous materials or substances. If the Contractor encounters a hazardous material or substance not addressed in the Contract Documents and if reasonable precautions will be inadequate to prevent foreseeable bodily injury or death to persons resulting from a material or substance, including but not limited to asbestos or polychlorinated biphenyl (PCB), encountered on the site by the Contractor, the Contractor shall, upon recognizing the condition, immediately stop Work in the affected area and notify the Owner and Architect of the condition.

§ 10.3.2 Upon receipt of the Contractor's notice, the Owner shall obtain the services of a licensed laboratory to verify the presence or absence of the material or substance reported by the Contractor and, in the event such material or substance is found to be present, to cause it to be rendered harmless. Unless otherwise required by the Contract Documents, the Owner shall furnish in writing to the Contractor and Architect the names and qualifications of persons or entities who are to perform tests verifying the presence or absence of the material or substance or who are to perform the task of removal or safe containment of the material or substance. The Contractor and the Architect will promptly reply to the Owner in writing stating whether or not either has reasonable objection to the persons or entities proposed by the Owner. If either the Contractor or Architect has an objection to a person or entity proposed by the Owner, the Owner shall propose another to whom the Contractor and the Architect have no reasonable objection. When the material or substance has been rendered harmless, Work in the affected area shall resume upon written agreement of the Owner and Contractor. By Change Order, the Contract Time shall be extended appropriately and the Contract Sum shall be increased by the amount of the Contractor's reasonable additional costs of shutdown, delay, and start-up.

§ 10.3.3 To the fullest extent permitted by law, the Owner shall indemnify and hold harmless the Contractor, Subcontractors, Architect, Architect's consultants, and agents and employees of any of them from and against claims, damages, losses, and expenses, including but not limited to attorneys' fees, arising out of or resulting from performance of the Work in the affected area if in fact the material or substance presents the risk of bodily injury or death as described in Section 10.3.1 and has not been rendered harmless, provided that such claim, damage, loss, or expense is attributable to bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the Work itself), except to the extent that such damage, loss, or expense is due to the fault or negligence of the party seeking indemnity.

§ 10.3.4 The Owner shall not be responsible under this Section 10.3 for hazardous materials or substances the Contractor brings to the site unless such materials or substances are required by the Contract Documents. The Owner shall be responsible for hazardous materials or substances required by the Contract Documents, except to the extent of the Contractor's fault or negligence in the use and handling of such materials or substances.

§ 10.3.5 The Contractor shall reimburse the Owner for the cost and expense the Owner incurs (1) for remediation of hazardous materials or substances the Contractor brings to the site and negligently handles, or (2) where the Contractor fails to perform its obligations under Section 10.3.1, except to the extent that the cost and expense are due to the Owner's fault or negligence.

§ 10.3.6 If, without negligence on the part of the Contractor, the Contractor is held liable by a government agency for the cost of remediation of a hazardous material or substance solely by reason of performing Work as required by the Contract Documents, the Owner shall reimburse the Contractor for all cost and expense thereby incurred.

## § 10.4 Emergencies

In an emergency affecting safety of persons or property, the Contractor shall act, at the Contractor's discretion, to prevent threatened damage, injury, or loss. Additional compensation or extension of time claimed by the Contractor on account of an emergency shall be determined as provided in Article 15 and Article 7.

## ARTICLE 11 INSURANCE AND BONDS

### § 11.1 Contractor's Insurance and Bonds

§ 11.1.1 The Contractor shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Contractor shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located. The Owner, Architect, and Architect's consultants shall be named as additional insureds under the Contractor's commercial general liability policy or as otherwise described in the Contract Documents.

§ 11.1.2 The Contractor shall provide surety bonds of the types, for such penal sums, and subject to such terms and conditions as required by the Contract Documents. The Contractor shall purchase and maintain the required bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 11.1.3 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

§ 11.1.4 **Notice of Cancellation or Expiration of Contractor's Required Insurance.** Within three (3) business days of the date the Contractor becomes aware of an impending or actual cancellation or expiration of any insurance required by the Contract Documents, the Contractor shall provide notice to the Owner of such impending or actual cancellation or expiration. Upon receipt of notice from the Contractor, the Owner shall, unless the lapse in coverage arises from an act or omission of the Owner, have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by the Contractor. The furnishing of notice by the Contractor shall not relieve the Contractor of any contractual obligation to provide any required coverage.

### § 11.2 Owner's Insurance

§ 11.2.1 The Owner shall purchase and maintain insurance of the types and limits of liability, containing the endorsements, and subject to the terms and conditions, as described in the Agreement or elsewhere in the Contract Documents. The Owner shall purchase and maintain the required insurance from an insurance company or insurance companies lawfully authorized to issue insurance in the jurisdiction where the Project is located.

§ 11.2.2 **Failure to Purchase Required Property Insurance.** If the Owner fails to purchase and maintain the required property insurance, with all of the coverages and in the amounts described in the Agreement or elsewhere in the Contract Documents, the Owner shall inform the Contractor in writing prior to commencement of the Work. Upon receipt of notice from the Owner, the Contractor may delay commencement of the Work and may obtain insurance that will protect the interests of the Contractor, Subcontractors, and Sub-Subcontractors in the Work. When the failure to provide coverage has been cured or resolved, the Contract Sum and Contract Time shall be equitably adjusted. In the event the Owner fails to procure coverage, the Owner waives all rights against the Contractor, Subcontractors, and Sub-subcontractors to the extent the loss to the Owner would have been covered by the insurance to have been procured by the Owner. The cost of the insurance shall be charged to the Owner by a Change Order. If the Owner does not provide written notice, and the Contractor is damaged by the failure or neglect of the Owner to purchase or maintain the required insurance, the Owner shall reimburse the Contractor for all reasonable costs and damages attributable thereto.

§ 11.2.3 **Notice of Cancellation or Expiration of Owner's Required Property Insurance.** Within three (3) business days of the date the Owner becomes aware of an impending or actual cancellation or expiration of any property insurance required by the Contract Documents, the Owner shall provide notice to the Contractor of such impending or actual cancellation or expiration. Unless the lapse in coverage arises from an act or omission of the Contractor: (1) the Contractor, upon receipt of notice from the Owner, shall have the right to stop the Work until the lapse in coverage has been cured by the procurement of replacement coverage by either the Owner or the Contractor; (2) the Contract Time and Contract Sum shall be equitably adjusted; and (3) the Owner waives all rights against the Contractor,

Subcontractors, and Sub-subcontractors to the extent any loss to the Owner would have been covered by the insurance had it not expired or been cancelled. If the Contractor purchases replacement coverage, the cost of the insurance shall be charged to the Owner by an appropriate Change Order. The furnishing of notice by the Owner shall not relieve the Owner of any contractual obligation to provide required insurance.

### **§ 11.3 Waivers of Subrogation**

**§ 11.3.1** The Owner and Contractor waive all rights against (1) each other and any of their subcontractors, sub-subcontractors, agents, and employees, each of the other; (2) the Architect and Architect's consultants; and (3) Separate Contractors, if any, and any of their subcontractors, sub-subcontractors, agents, and employees, for damages caused by fire, or other causes of loss, to the extent those losses are covered by property insurance required by the Agreement or other property insurance applicable to the Project, except such rights as they have to proceeds of such insurance. The Owner or Contractor, as appropriate, shall require similar written waivers in favor of the individuals and entities identified above from the Architect, Architect's consultants, Separate Contractors, subcontractors, and sub-subcontractors. The policies of insurance purchased and maintained by each person or entity agreeing to waive claims pursuant to this section 11.3.1 shall not prohibit this waiver of subrogation. This waiver of subrogation shall be effective as to a person or entity (1) even though that person or entity would otherwise have a duty of indemnification, contractual or otherwise, (2) even though that person or entity did not pay the insurance premium directly or indirectly, or (3) whether or not the person or entity had an insurable interest in the damaged property.

**§ 11.3.2** If during the Project construction period the Owner insures properties, real or personal or both, at or adjacent to the site by property insurance under policies separate from those insuring the Project, or if after final payment property insurance is to be provided on the completed Project through a policy or policies other than those insuring the Project during the construction period, to the extent permissible by such policies, the Owner waives all rights in accordance with the terms of Section 11.3.1 for damages caused by fire or other causes of loss covered by this separate property insurance.

### **§ 11.4 Loss of Use, Business Interruption, and Delay in Completion Insurance**

The Owner, at the Owner's option, may purchase and maintain insurance that will protect the Owner against loss of use of the Owner's property, or the inability to conduct normal operations, due to fire or other causes of loss. The Owner waives all rights of action against the Contractor and Architect for loss of use of the Owner's property, due to fire or other hazards however caused.

### **§11.5 Adjustment and Settlement of Insured Loss**

**§ 11.5.1** A loss insured under the property insurance required by the Agreement shall be adjusted by the Owner as fiduciary and made payable to the Owner as fiduciary for the insureds, as their interests may appear, subject to requirements of any applicable mortgagee clause and of Section 11.5.2. The Owner shall pay the Architect and Contractor their just shares of insurance proceeds received by the Owner, and by appropriate agreements the Architect and Contractor shall make payments to their consultants and Subcontractors in similar manner.

**§ 11.5.2** Prior to settlement of an insured loss, the Owner shall notify the Contractor of the terms of the proposed settlement as well as the proposed allocation of the insurance proceeds. The Contractor shall have 14 days from receipt of notice to object to the proposed settlement or allocation of the proceeds. If the Contractor does not object, the Owner shall settle the loss and the Contractor shall be bound by the settlement and allocation. Upon receipt, the Owner shall deposit the insurance proceeds in a separate account and make the appropriate distributions. Thereafter, if no other agreement is made or the Owner does not terminate the Contract for convenience, the Owner and Contractor shall execute a Change Order for reconstruction of the damaged or destroyed Work in the amount allocated for that purpose. If the Contractor timely objects to either the terms of the proposed settlement or the allocation of the proceeds, the Owner may proceed to settle the insured loss, and any dispute between the Owner and Contractor arising out of the settlement or allocation of the proceeds shall be resolved pursuant to Article 15. Pending resolution of any dispute, the Owner may issue a Construction Change Directive for the reconstruction of the damaged or destroyed Work.

## **ARTICLE 12 UNCOVERING AND CORRECTION OF WORK**

### **§ 12.1 Uncovering of Work**

**§ 12.1.1** If a portion of the Work is covered contrary to the Architect's request or to requirements specifically expressed in the Contract Documents, it must, if requested in writing by the Architect, be uncovered for the Architect's examination and be replaced at the Contractor's expense without change in the Contract Time.

§ 12.1.2 If a portion of the Work has been covered that the Architect has not specifically requested to examine prior to its being covered, the Architect may request to see such Work and it shall be uncovered by the Contractor. If such Work is in accordance with the Contract Documents, the Contractor shall be entitled to an equitable adjustment to the Contract Sum and Contract Time as may be appropriate. If such Work is not in accordance with the Contract Documents, the costs of uncovering the Work, and the cost of correction, shall be at the Contractor's expense.

## § 12.2 Correction of Work

### § 12.2.1 Before Substantial Completion

The Contractor shall promptly correct Work rejected by the Architect or failing to conform to the requirements of the Contract Documents, discovered before Substantial Completion and whether or not fabricated, installed or completed. Costs of correcting such rejected Work, including additional testing and inspections, the cost of uncovering and replacement, and compensation for the Architect's services and expenses made necessary thereby, shall be at the Contractor's expense.

### § 12.2.2 After Substantial Completion

§ 12.2.2.1 In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.

§ 12.2.2.2 The one-year period for correction of Work shall be extended with respect to portions of Work first performed after Substantial Completion by the period of time between Substantial Completion and the actual completion of that portion of the Work.

§ 12.2.2.3 The one-year period for correction of Work shall not be extended by corrective Work performed by the Contractor pursuant to this Section 12.2.

§ 12.2.3 The Contractor shall remove from the site portions of the Work that are not in accordance with the requirements of the Contract Documents and are neither corrected by the Contractor nor accepted by the Owner.

§ 12.2.4 The Contractor shall bear the cost of correcting destroyed or damaged construction of the Owner or Separate Contractors, whether completed or partially completed, caused by the Contractor's correction or removal of Work that is not in accordance with the requirements of the Contract Documents.

§ 12.2.5 Nothing contained in this Section 12.2 shall be construed to establish a period of limitation with respect to other obligations the Contractor has under the Contract Documents. Establishment of the one-year period for correction of Work as described in Section 12.2.2 relates only to the specific obligation of the Contractor to correct the Work, and has no relationship to the time within which the obligation to comply with the Contract Documents may be sought to be enforced, nor to the time within which proceedings may be commenced to establish the Contractor's liability with respect to the Contractor's obligations other than specifically to correct the Work.

## § 12.3 Acceptance of Nonconforming Work

If the Owner prefers to accept Work that is not in accordance with the requirements of the Contract Documents, the Owner may do so instead of requiring its removal and correction, in which case the Contract Sum will be reduced as appropriate and equitable. Such adjustment shall be effected whether or not final payment has been made.

## **ARTICLE 13 MISCELLANEOUS PROVISIONS**

### **§ 13.1 Governing Law**

The Contract shall be governed by the law of the place where the Project is located, excluding that jurisdiction's choice of law rules. If the parties have selected arbitration as the method of binding dispute resolution, the Federal Arbitration Act shall govern Section 15.4.

### **§ 13.2 Successors and Assigns**

**§ 13.2.1** The Owner and Contractor respectively bind themselves, their partners, successors, assigns, and legal representatives to covenants, agreements, and obligations contained in the Contract Documents. Except as provided in Section 13.2.2, neither party to the Contract shall assign the Contract as a whole without written consent of the other. If either party attempts to make an assignment without such consent, that party shall nevertheless remain legally responsible for all obligations under the Contract.

**§ 13.2.2** The Owner may, without consent of the Contractor, assign the Contract to a lender providing construction financing for the Project, if the lender assumes the Owner's rights and obligations under the Contract Documents. The Contractor shall execute all consents reasonably required to facilitate the assignment.

### **§ 13.3 Rights and Remedies**

**§ 13.3.1** Duties and obligations imposed by the Contract Documents and rights and remedies available thereunder shall be in addition to and not a limitation of duties, obligations, rights, and remedies otherwise imposed or available by law.

**§ 13.3.2** No action or failure to act by the Owner, Architect, or Contractor shall constitute a waiver of a right or duty afforded them under the Contract, nor shall such action or failure to act constitute approval of or acquiescence in a breach thereunder, except as may be specifically agreed upon in writing.

### **§ 13.4 Tests and Inspections**

**§ 13.4.1** Tests, inspections, and approvals of portions of the Work shall be made as required by the Contract Documents and by applicable laws, statutes, ordinances, codes, rules, and regulations or lawful orders of public authorities. Unless otherwise provided, the Contractor shall make arrangements for such tests, inspections, and approvals with an independent testing laboratory or entity acceptable to the Owner, or with the appropriate public authority, and shall bear all related costs of tests, inspections, and approvals. The Contractor shall give the Architect timely notice of when and where tests and inspections are to be made so that the Architect may be present for such procedures. The Owner shall bear costs of tests, inspections, or approvals that do not become requirements until after bids are received or negotiations concluded. The Owner shall directly arrange and pay for tests, inspections, or approvals where building codes or applicable laws or regulations so require.

**§ 13.4.2** If the Architect, Owner, or public authorities having jurisdiction determine that portions of the Work require additional testing, inspection, or approval not included under Section 13.4.1, the Architect will, upon written authorization from the Owner, instruct the Contractor to make arrangements for such additional testing, inspection, or approval, by an entity acceptable to the Owner, and the Contractor shall give timely notice to the Architect of when and where tests and inspections are to be made so that the Architect may be present for such procedures. Such costs, except as provided in Section 13.4.3, shall be at the Owner's expense.

**§ 13.4.3** If procedures for testing, inspection, or approval under Sections 13.4.1 and 13.4.2 reveal failure of the portions of the Work to comply with requirements established by the Contract Documents, all costs made necessary by such failure, including those of repeated procedures and compensation for the Architect's services and expenses, shall be at the Contractor's expense.

**§ 13.4.4** Required certificates of testing, inspection, or approval shall, unless otherwise required by the Contract Documents, be secured by the Contractor and promptly delivered to the Architect.

**§ 13.4.5** If the Architect is to observe tests, inspections, or approvals required by the Contract Documents, the Architect will do so promptly and, where practicable, at the normal place of testing.

**§ 13.4.6** Tests or inspections conducted pursuant to the Contract Documents shall be made promptly to avoid unreasonable delay in the Work.



### § 13.5 Interest

Payments due and unpaid under the Contract Documents shall bear interest from the date payment is due at the rate the parties agree upon in writing or, in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

## ARTICLE 14 TERMINATION OR SUSPENSION OF THE CONTRACT

### § 14.1 Termination by the Contractor

§ 14.1.1 The Contractor may terminate the Contract if the Work is stopped for a period of 30 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, for any of the following reasons:

- .1 Issuance of an order of a court or other public authority having jurisdiction that requires all Work to be stopped;
- .2 An act of government, such as a declaration of national emergency, that requires all Work to be stopped;
- .3 Because the Architect has not issued a Certificate for Payment and has not notified the Contractor of the reason for withholding certification as provided in Section 9.4.1, or because the Owner has not made payment on a Certificate for Payment within the time stated in the Contract Documents; or
- .4 The Owner has failed to furnish to the Contractor reasonable evidence as required by Section 2.2.

§ 14.1.2 The Contractor may terminate the Contract if, through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, their agents or employees, or any other persons or entities performing portions of the Work, repeated suspensions, delays, or interruptions of the entire Work by the Owner as described in Section 14.3, constitute in the aggregate more than 100 percent of the total number of days scheduled for completion, or 120 days in any 365-day period, whichever is less.

§ 14.1.3 If one of the reasons described in Section 14.1.1 or 14.1.2 exists, the Contractor may, upon seven days' notice to the Owner and Architect, terminate the Contract and recover from the Owner payment for Work executed, as well as reasonable overhead and profit on Work not executed, and costs incurred by reason of such termination.

§ 14.1.4 If the Work is stopped for a period of 60 consecutive days through no act or fault of the Contractor, a Subcontractor, a Sub-subcontractor, or their agents or employees or any other persons or entities performing portions of the Work because the Owner has repeatedly failed to fulfill the Owner's obligations under the Contract Documents with respect to matters important to the progress of the Work, the Contractor may, upon seven additional days' notice to the Owner and the Architect, terminate the Contract and recover from the Owner as provided in Section 14.1.3.

### § 14.2 Termination by the Owner for Cause

§ 14.2.1 The Owner may terminate the Contract if the Contractor

- .1 repeatedly refuses or fails to supply enough properly skilled workers or proper materials;
- .2 fails to make payment to Subcontractors or suppliers in accordance with the respective agreements between the Contractor and the Subcontractors or suppliers;
- .3 repeatedly disregards applicable laws, statutes, ordinances, codes, rules and regulations, or lawful orders of a public authority; or
- .4 otherwise is guilty of substantial breach of a provision of the Contract Documents.

§ 14.2.2 When any of the reasons described in Section 14.2.1 exist, and upon certification by the Architect that sufficient cause exists to justify such action, the Owner may, without prejudice to any other rights or remedies of the Owner and after giving the Contractor and the Contractor's surety, if any, seven days' notice, terminate employment of the Contractor and may, subject to any prior rights of the surety:

- .1 Exclude the Contractor from the site and take possession of all materials, equipment, tools, and construction equipment and machinery thereon owned by the Contractor;
- .2 Accept assignment of subcontracts pursuant to Section 5.4; and
- .3 Finish the Work by whatever reasonable method the Owner may deem expedient. Upon written request of the Contractor, the Owner shall furnish to the Contractor a detailed accounting of the costs incurred by the Owner in finishing the Work.

§ 14.2.3 When the Owner terminates the Contract for one of the reasons stated in Section 14.2.1, the Contractor shall not be entitled to receive further payment until the Work is finished.

§ 14.2.4 If the unpaid balance of the Contract Sum exceeds costs of finishing the Work, including compensation for the Architect's services and expenses made necessary thereby, and other damages incurred by the Owner and not expressly waived, such excess shall be paid to the Contractor. If such costs and damages exceed the unpaid balance, the Contractor shall pay the difference to the Owner. The amount to be paid to the Contractor or Owner, as the case may be, shall be certified by the Initial Decision Maker, upon application, and this obligation for payment shall survive termination of the Contract.

### § 14.3 Suspension by the Owner for Convenience

§ 14.3.1 The Owner may, without cause, order the Contractor in writing to suspend, delay or interrupt the Work, in whole or in part for such period of time as the Owner may determine.

§ 14.3.2 The Contract Sum and Contract Time shall be adjusted for increases in the cost and time caused by suspension, delay, or interruption under Section 14.3.1. Adjustment of the Contract Sum shall include profit. No adjustment shall be made to the extent

- .1 that performance is, was, or would have been, so suspended, delayed, or interrupted, by another cause for which the Contractor is responsible; or
- .2 that an equitable adjustment is made or denied under another provision of the Contract.

### § 14.4 Termination by the Owner for Convenience

§ 14.4.1 The Owner may, at any time, terminate the Contract for the Owner's convenience and without cause.

§ 14.4.2 Upon receipt of notice from the Owner of such termination for the Owner's convenience, the Contractor shall

- .1 cease operations as directed by the Owner in the notice;
- .2 take actions necessary, or that the Owner may direct, for the protection and preservation of the Work; and
- .3 except for Work directed to be performed prior to the effective date of termination stated in the notice, terminate all existing subcontracts and purchase orders and enter into no further subcontracts and purchase orders.

§ 14.4.3 In case of such termination for the Owner's convenience, the Owner shall pay the Contractor for Work properly executed; costs incurred by reason of the termination, including costs attributable to termination of Subcontracts; and the termination fee, if any, set forth in the Agreement.

## ARTICLE 15 CLAIMS AND DISPUTES

### § 15.1 Claims

#### § 15.1.1 Definition

A Claim is a demand or assertion by one of the parties seeking, as a matter of right, payment of money, a change in the Contract Time, or other relief with respect to the terms of the Contract. The term "Claim" also includes other disputes and matters in question between the Owner and Contractor arising out of or relating to the Contract. The responsibility to substantiate Claims shall rest with the party making the Claim. This Section 15.1.1 does not require the Owner to file a Claim in order to impose liquidated damages in accordance with the Contract Documents.

#### § 15.1.2 Time Limits on Claims

The Owner and Contractor shall commence all Claims and causes of action against the other and arising out of or related to the Contract, whether in contract, tort, breach of warranty or otherwise, in accordance with the requirements of the binding dispute resolution method selected in the Agreement and within the period specified by applicable law, but in any case not more than 10 years after the date of Substantial Completion of the Work. The Owner and Contractor waive all Claims and causes of action not commenced in accordance with this Section 15.1.2.

#### § 15.1.3 Notice of Claims

§ 15.1.3.1 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered prior to expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party and to the Initial Decision Maker with a copy sent to the Architect, if the Architect is not serving as the Initial Decision Maker. Claims by either party under this Section 15.1.3.1 shall be initiated within 21 days after

occurrence of the event giving rise to such Claim or within 21 days after the claimant first recognizes the condition giving rise to the Claim, whichever is later.

§ 15.1.3.2 Claims by either the Owner or Contractor, where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2, shall be initiated by notice to the other party. In such event, no decision by the Initial Decision Maker is required.

#### § 15.1.4 Continuing Contract Performance

§ 15.1.4.1 Pending final resolution of a Claim, except as otherwise agreed in writing or as provided in Section 9.7 and Article 14, the Contractor shall proceed diligently with performance of the Contract and the Owner shall continue to make payments in accordance with the Contract Documents.

§ 15.1.4.2 The Contract Sum and Contract Time shall be adjusted in accordance with the Initial Decision Maker's decision, subject to the right of either party to proceed in accordance with this Article 15. The Architect will issue Certificates for Payment in accordance with the decision of the Initial Decision Maker.

#### § 15.1.5 Claims for Additional Cost

If the Contractor wishes to make a Claim for an increase in the Contract Sum, notice as provided in Section 15.1.3 shall be given before proceeding to execute the portion of the Work that is the subject of the Claim. Prior notice is not required for Claims relating to an emergency endangering life or property arising under Section 10.4.

#### § 15.1.6 Claims for Additional Time

§ 15.1.6.1 If the Contractor wishes to make a Claim for an increase in the Contract Time, notice as provided in Section 15.1.3 shall be given. The Contractor's Claim shall include an estimate of cost and of probable effect of delay on progress of the Work. In the case of a continuing delay, only one Claim is necessary.

§ 15.1.6.2 If adverse weather conditions are the basis for a Claim for additional time, such Claim shall be documented by data substantiating that weather conditions were abnormal for the period of time, could not have been reasonably anticipated, and had an adverse effect on the scheduled construction.

#### § 15.1.7 Waiver of Claims for Consequential Damages

The Contractor and Owner waive Claims against each other for consequential damages arising out of or relating to this Contract. This mutual waiver includes

- .1 damages incurred by the Owner for rental expenses, for losses of use, income, profit, financing, business and reputation, and for loss of management or employee productivity or of the services of such persons; and
- .2 damages incurred by the Contractor for principal office expenses including the compensation of personnel stationed there, for losses of financing, business and reputation, and for loss of profit, except anticipated profit arising directly from the Work.

This mutual waiver is applicable, without limitation, to all consequential damages due to either party's termination in accordance with Article 14. Nothing contained in this Section 15.1.7 shall be deemed to preclude assessment of liquidated damages, when applicable, in accordance with the requirements of the Contract Documents.

#### § 15.2 Initial Decision

§ 15.2.1 Claims, excluding those where the condition giving rise to the Claim is first discovered after expiration of the period for correction of the Work set forth in Section 12.2.2 or arising under Sections 10.3, 10.4, and 11.5, shall be referred to the Initial Decision Maker for initial decision. The Architect will serve as the Initial Decision Maker, unless otherwise indicated in the Agreement. Except for those Claims excluded by this Section 15.2.1, an initial decision shall be required as a condition precedent to mediation of any Claim. If an initial decision has not been rendered within 30 days after the Claim has been referred to the Initial Decision Maker, the party asserting the Claim may demand mediation and binding dispute resolution without a decision having been rendered. Unless the Initial Decision Maker and all affected parties agree, the Initial Decision Maker will not decide disputes between the Contractor and persons or entities other than the Owner.

§ 15.2.2 The Initial Decision Maker will review Claims and within ten days of the receipt of a Claim take one or more of the following actions: (1) request additional supporting data from the claimant or a response with supporting data

from the other party, (2) reject the Claim in whole or in part, (3) approve the Claim, (4) suggest a compromise, or (5) advise the parties that the Initial Decision Maker is unable to resolve the Claim if the Initial Decision Maker lacks sufficient information to evaluate the merits of the Claim or if the Initial Decision Maker concludes that, in the Initial Decision Maker's sole discretion, it would be inappropriate for the Initial Decision Maker to resolve the Claim.

§ 15.2.3 In evaluating Claims, the Initial Decision Maker may, but shall not be obligated to, consult with or seek information from either party or from persons with special knowledge or expertise who may assist the Initial Decision Maker in rendering a decision. The Initial Decision Maker may request the Owner to authorize retention of such persons at the Owner's expense.

§ 15.2.4 If the Initial Decision Maker requests a party to provide a response to a Claim or to furnish additional supporting data, such party shall respond, within ten days after receipt of the request, and shall either (1) provide a response on the requested supporting data, (2) advise the Initial Decision Maker when the response or supporting data will be furnished, or (3) advise the Initial Decision Maker that no supporting data will be furnished. Upon receipt of the response or supporting data, if any, the Initial Decision Maker will either reject or approve the Claim in whole or in part.

§ 15.2.5 The Initial Decision Maker will render an initial decision approving or rejecting the Claim, or indicating that the Initial Decision Maker is unable to resolve the Claim. This initial decision shall (1) be in writing; (2) state the reasons therefor; and (3) notify the parties and the Architect, if the Architect is not serving as the Initial Decision Maker, of any change in the Contract Sum or Contract Time or both. The initial decision shall be final and binding on the parties but subject to mediation and, if the parties fail to resolve their dispute through mediation, to binding dispute resolution.

§ 15.2.6 Either party may file for mediation of an initial decision at any time, subject to the terms of Section 15.2.6.1.

§ 15.2.6.1 Either party may, within 30 days from the date of receipt of an initial decision, demand in writing that the other party file for mediation. If such a demand is made and the party receiving the demand fails to file for mediation within 30 days after receipt thereof, then both parties waive their rights to mediate or pursue binding dispute resolution proceedings with respect to the initial decision.

§ 15.2.7 In the event of a Claim against the Contractor, the Owner may, but is not obligated to, notify the surety, if any, of the nature and amount of the Claim. If the Claim relates to a possibility of a Contractor's default, the Owner may, but is not obligated to, notify the surety and request the surety's assistance in resolving the controversy.

§ 15.2.8 If a Claim relates to or is the subject of a mechanic's lien, the party asserting such Claim may proceed in accordance with applicable law to comply with the lien notice or filing deadlines.

### § 15.3 Mediation

§ 15.3.1 Claims, disputes, or other matters in controversy arising out of or related to the Contract, except those waived as provided for in Sections 9.10.4, 9.10.5, and 15.1.7, shall be subject to mediation as a condition precedent to binding dispute resolution.

§ 15.3.2 The parties shall endeavor to resolve their Claims by mediation which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Mediation Procedures in effect on the date of the Agreement. A request for mediation shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the mediation. The request may be made concurrently with the filing of binding dispute resolution proceedings but, in such event, mediation shall proceed in advance of binding dispute resolution proceedings, which shall be stayed pending mediation for a period of 60 days from the date of filing, unless stayed for a longer period by agreement of the parties or court order. If an arbitration is stayed pursuant to this Section 15.3.2, the parties may nonetheless proceed to the selection of the arbitrator(s) and agree upon a schedule for later proceedings.

§ 15.3.3 Either party may, within 30 days from the date that mediation has been concluded without resolution of the dispute or 60 days after mediation has been demanded without resolution of the dispute, demand in writing that the other party file for binding dispute resolution. If such a demand is made and the party receiving the demand fails to

file for binding dispute resolution within 60 days after receipt thereof, then both parties waive their rights to binding dispute resolution proceedings with respect to the initial decision.

§ 15.3.4 The parties shall share the mediator's fee and any filing fees equally. The mediation shall be held in the place where the Project is located, unless another location is mutually agreed upon. Agreements reached in mediation shall be enforceable as settlement agreements in any court having jurisdiction thereof.

**§ 15.4 Arbitration**

§ 15.4.1 If the parties have selected arbitration as the method for binding dispute resolution in the Agreement, any Claim subject to, but not resolved by, mediation shall be subject to arbitration which, unless the parties mutually agree otherwise, shall be administered by the American Arbitration Association in accordance with its Construction Industry Arbitration Rules in effect on the date of the Agreement. The Arbitration shall be conducted in the place where the Project is located, unless another location is mutually agreed upon. A demand for arbitration shall be made in writing, delivered to the other party to the Contract, and filed with the person or entity administering the arbitration. The party filing a notice of demand for arbitration must assert in the demand all Claims then known to that party on which arbitration is permitted to be demanded.

§ 15.4.1.1 A demand for arbitration shall be made no earlier than concurrently with the filing of a request for mediation, but in no event shall it be made after the date when the institution of legal or equitable proceedings based on the Claim would be barred by the applicable statute of limitations. For statute of limitations purposes, receipt of a written demand for arbitration by the person or entity administering the arbitration shall constitute the institution of legal or equitable proceedings based on the Claim.

§ 15.4.2 The award rendered by the arbitrator or arbitrators shall be final, and judgment may be entered upon it in accordance with applicable law in any court having jurisdiction thereof.

§ 15.4.3 The foregoing agreement to arbitrate and other agreements to arbitrate with an additional person or entity duly consented to by parties to the Agreement, shall be specifically enforceable under applicable law in any court having jurisdiction thereof.

**§ 15.4.4 Consolidation or Joinder**

§ 15.4.4.1 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may consolidate an arbitration conducted under this Agreement with any other arbitration to which it is a party provided that (1) the arbitration agreement governing the other arbitration permits consolidation, (2) the arbitrations to be consolidated substantially involve common questions of law or fact, and (3) the arbitrations employ materially similar procedural rules and methods for selecting arbitrator(s).

§ 15.4.4.2 Subject to the rules of the American Arbitration Association or other applicable arbitration rules, either party may include by joinder persons or entities substantially involved in a common question of law or fact whose presence is required if complete relief is to be accorded in arbitration, provided that the party sought to be joined consents in writing to such joinder. Consent to arbitration involving an additional person or entity shall not constitute consent to arbitration of any claim, dispute or other matter in question not described in the written consent.

§ 15.4.4.3 The Owner and Contractor grant to any person or entity made a party to an arbitration conducted under this Section 15.4, whether by joinder or consolidation, the same rights of joinder and consolidation as those of the Owner and Contractor under this Agreement.

# **Additions and Deletions Report for AIA® Document A201® – 2017**

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## **PAGE 1**

New Brinkley High School  
100 Tiger Drive  
Brinkley, AR 72021

...

Brinkley Public Schools  
200 Tiger Drive  
Brinkley, AR 72021

...

WDD Architects  
5050 NorthShore Lane  
North Little Rock, AR 72118

## **PAGE 10**

The Contract Documents form the Contract for Construction. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations, or agreements, either written or oral. The Contract may be amended or modified only by a Modification. The Contract Documents shall not be construed to create a contractual relationship of any kind (1) between the Contractor and the Architect or the Architect's consultants, (2) between the Owner and a Subcontractor or a Sub-subcontractor, (3) between the Owner and the Architect or the Architect's consultants, or (4) between any persons or entities other than the Owner and the Contractor. The Architect and Contractor shall, however, be entitled to performance and enforcement of obligations under the Contract intended to facilitate performance of the Architect's duties.

## **PAGE 12**

### **§ 1.9 ORDER OF PRECEDENCE**

**§ 1.9.1** In case of conflicts between the drawings and specifications, regarding locations and dimensions, the drawings shall govern. In case of conflicts between the drawings and specifications, regarding written requirements for equipment, systems, standards and workmanship for the Work, and performance of related services, the specifications shall govern. In any case of omissions or errors in figures, drawings or specification, the Contractor shall upon discovery submit the matter to the Architect for clarification. The Architect's clarifications are final and binding on all parties, subject to an equitable adjustment in Contract Time or Price pursuant to Articles 7 and 8 or claims and disputes in accordance with Article 15.

**§ 1.9.2** Where figures are given, they shall be preferred to scaled dimensions.

**§ 1.9.3** Any terms that have well-known technical or trade meanings, unless otherwise specifically defined in the Contract Documents, shall be interpreted in accordance with the well-known meanings.

§ 1.9.4 In case of any inconsistency, conflict or ambiguity among the Contract Documents, the documents shall govern in the following order:

- a. Change Order and written Modifications to this Agreement
- b. this Agreement
- c. drawings (large scale governing over small scale)
- d. approved submittals
- e. information furnished by the Owner
- f. other documents listed in the Agreement (Among categories of documents having the same order of precedence, the term or provision that includes the latest date shall control. Information identified in one Contract Document and not identified in another shall not be considered a conflict or inconsistency.)

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§ 2.3.4 The Owner shall may furnish surveys to Construction Manager describing physical characteristics, legal limitations and utility locations for the site of the Project, and a legal description of the site. The Contractor shall be entitled to rely on the accuracy of information furnished by the Owner but shall exercise proper precautions relating to the safe performance of the Work sites. The Construction Manager shall independently locate such utility lines and shall be responsible for all breaks and damage to such lines during construction. The Construction Manager shall immediately restore service in the event of any breaks and damage to such lines during construction. Construction Manager shall fully inspect and familiarize itself with the plans, specifications, and site of the Project.

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If the Contractor encounters conditions at the site that are (1) subsurface or otherwise concealed physical conditions that differ materially from those indicated in the Contract Documents or (2) unknown physical conditions of an unusual nature that differ materially from those ordinarily found to exist and generally recognized as inherent in construction activities of the character provided for in the Contract Documents, the Contractor shall promptly provide notice to the Owner and the Architect before conditions are disturbed and in no event later than 14 days after first observance of the conditions. The Architect will promptly investigate such conditions and, if the Architect determines that they differ materially and cause an increase or decrease in the Contractor's cost of, or time required for, performance of any part of the Work, will recommend that an equitable adjustment be made in the Contract Sum or Contract Time, or both. If the Architect determines that the conditions at the site are not materially different from those indicated in the Contract Documents and that no change in the terms of the Contract is justified, the Architect shall promptly notify the Owner and Contractor, Contractor in writing, stating the reasons. If either party disputes the Architect's determination or recommendation, that party may submit a Claim as provided in Article 15.

§ 3.7.5 If, in the course of the Work, the Contractor encounters human remains or recognizes the existence of burial markers, archaeological sites or wetlands not indicated in the Contract Documents, the Contractor shall immediately suspend any operations that would affect them and shall notify the Owner and Architect. Upon receipt of such notice, the Owner shall promptly take any action necessary to obtain governmental authorization required to resume the operations. The Contractor shall continue to suspend such operations until otherwise instructed by the Owner but shall continue with all other operations that do not affect those remains or features. Requests for adjustments in the Contract Sum and Contract Time arising from the existence or good faith belief of such remains or features may be made as provided in Article 15.

...

§ 3.9.1 The Contractor shall employ a competent superintendent and necessary assistants who shall be in attendance at the Project site during performance of the Work. The superintendent shall represent the Contractor, and communications given to the superintendent shall be as binding as if given to the Contractor. Communications that alter or clarify the Contract Documents shall be confirmed in writing.

...

§ 3.9.2 The Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the name and qualifications of a proposed superintendent. Within 14 days of receipt of the information, the Architect may notify the Contractor, Contractor in writing, stating whether the Owner or the Architect (1) has reasonable objection to

the proposed superintendent or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

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**§ 3.12.10.1** If professional design services or certifications by a design professional related to systems, materials, or equipment are specifically required of the Contractor by the Contract Documents, the Owner and the Architect will specify all performance and design criteria that such services must satisfy. The Contractor shall be entitled to rely upon the adequacy and accuracy of the performance and design criteria provided in the Contract Documents. The Contractor shall cause such services or certifications to be provided by an appropriately licensed design professional, whose signature and seal shall appear on all drawings, calculations, specifications, certifications, Shop Drawings, and other submittals prepared by such professional. Shop Drawings, and other submittals related to the Work, designed or certified by such professional, if prepared by others, shall bear such professional's written approval when submitted to the Architect. The Owner and the Architect shall be entitled to rely upon the adequacy and accuracy of the services, certifications, and approvals performed or provided by such design professionals, provided the Owner and Architect have specified to the Contractor the performance and design criteria that such services must satisfy. Pursuant to this Section 3.12.10, the Architect will review and approve or take other appropriate action on submittals only for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. The Contractor shall not be responsible for the adequacy of the performance and design criteria specified in the Contract Documents.

...

**§ 3.14.1** The Contractor shall be responsible for cutting, fitting, or patching required to complete the Work or to make its parts fit together properly. All areas requiring cutting, fitting, or patching shall be reasonably restored to the condition existing prior to the cutting, fitting, or patching, unless otherwise required by the Contract Documents.

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**§ 5.2.1** Unless otherwise stated in the Contract Documents, the Contractor, as soon as practicable after award of the Contract, shall notify the Owner and Architect of the persons or entities proposed for each principal portion of the Work, including those who are to furnish materials or equipment fabricated to a special design. Within 14 days of receipt of the information, the Architect may notify the Contractor in writing whether the Owner or the Architect (1) has reasonable objection to any such proposed person or entity or (2) requires additional time for review. Failure of the Architect to provide notice within the 14-day period shall constitute notice of no reasonable objection.

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**§ 12.2.2.1** In addition to the Contractor's obligations under Section 3.5, if, within one year after the date of Substantial Completion of the Work or designated portion thereof or after the date for commencement of warranties established under Section 9.9.1, or by terms of any applicable special warranty required by the Contract Documents, any of the Work is found to be not in accordance with the requirements of the Contract Documents, the Contractor shall correct it promptly after receipt of written notice from the Owner to do so, unless the Owner has previously given the Contractor a written acceptance of such condition. The Owner shall give such notice promptly after discovery of the condition. During the one-year period for correction of Work, if the Owner fails to notify the Contractor and give the Contractor an opportunity to make the correction, the Owner waives the rights to require correction by the Contractor and to make a claim for breach of warranty. If the Contractor fails to correct nonconforming Work within a reasonable time during that period after receipt of notice from the Owner or Architect, the Owner may correct it in accordance with Section 2.5.



**Certification of Document's Authenticity**  
AIA® Document D401™ – 2003

I, \_\_\_\_\_, hereby certify, to the best of my knowledge, information and belief, that I created the attached final document simultaneously with its associated Additions and Deletions Report and this certification at 12:21:43 ET on 05/23/2024 under Order No. 2114499194 from AIA Contract Documents software and that in preparing the attached final document I made no changes to the original text of AIA® Document A201™ – 2017, General Conditions of the Contract for Construction, other than those additions and deletions shown in the associated Additions and Deletions Report.



\_\_\_\_\_  
(Signed)

\_\_\_\_\_  
PRESIDENT - CAS

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
5/23/24

\_\_\_\_\_  
(Dated)

**PART 1 - GENERAL**

**1.01 REFERENCE DOCUMENT**

- A. These Supplementary Conditions are included as a part of the contract documents for this project to amend the provisions of the "General Conditions of the Contract for Construction", Document A201 of the American Institute of Architects, 2017 Edition, as required for this project. Reference herein to articles of the General Conditions refer to said Document A201.

**1.02 PARAGRAPH 3.3 SUPERVISION AND CONSTRUCTION PROCEDURES**

- A. Add subparagraph 3.3.4 as follows:

"3.3.4 Contractor (1) shall review any specified construction or installation procedure (including those recommended by manufacturers); (2) shall advise the Architect (a) if the specified procedure deviates from good construction practice, (b) if following the procedure will affect any warranties, including the Contractor's general warranty, or (c) of any objections the contractor may have to the procedure; and (3) to propose any alternative procedure which the Contractor will warrant."

**1.03 PARAGRAPH 3.4 LABOR AND MATERIALS**

- A. Add Subparagraphs 3.4.4 as follows:

"3.4.4 All contractors and subcontractors engaged in the Owner/Contractor Agreement shall conform to the labor laws of the State in which Work is to be performed and the various acts amendatory and supplementary thereto; and to all other laws, ordinances and legal requirements applicable thereto."

**1.04 PARAGRAPH 3.5 WARRANTY**

- A. Add subparagraph 3.5.3 as follows:

"3.5.3 The Contractor shall guarantee and warrant his and his subcontractor's work and materials (including the materials and work of suppliers of the Contract and his subcontractors) for a period of one year from the date of Substantial Completion. This Warranty shall be for a longer period on certain items if so designated in the Specifications. The foregoing one-year guaranty and warranty shall not in any way limit, restrict or affect the liability of the Contractor, or his subcontractors, for indemnity as provided for in this Contract, nor shall it in any way shorten the period of limitation fixed by law for the filing of any action against the Contractor for enforcement of the or breach of any provision of the contract documents. Should the Contractor elect to use any of the equipment in the building during the construction period, he shall make arrangements with

the subcontractor or supplier of the equipment for any extension of warranty of that equipment made necessary by such use. The Warranty period for such equipment to the Owner shall not be reduced by the use of equipment by the Contractor".

#### **1.05 PARAGRAPH 3.12 SHOP DRAWINGS, PRODUCT DATA AND SAMPLES**

A. Add the following to subparagraph 3.12.5.1:

"3.12.5.1 Incomplete or poorly prepared shop drawings or other submittals will be returned to the Contractor to be revised or redrawn prior to resubmittal. The Contractor will hold the Architect and Owner harmless against claims for losses or injury caused by errors or omissions in the shop drawings or other submittals for the Work made by the Contractor, a subcontractor, any lower tier subcontractor, manufacturer, supplier or distributor."

B. Delete subparagraph 3.12.8 and substitute the following:

"3.12.8 The Contractor shall not be relieved of responsibility for deviations from requirements of the Contract Documents by the Architect's approval of Shop Drawings, Product Data, Samples or similar submittals unless the Contractor has specifically informed the Architect of such deviations in a separate writing or by submitting a separate written request for change at the time of submittal and the Architect has given written approval to the specific deviation. The Contractor shall not be relieved of responsibility for errors or omissions in Shop Drawings, Product Data, Samples or similar submittals by the Architect's approval thereof."

#### **1.06 PARAGRAPH 4.2 ARCHITECT'S ADMINISTRATION OF THE CONTRACT**

A. Add sub-subparagraph 4.2.4.1 as follows:

"4.2.4.1 Any direct communications between the Owner and the Contractor; or between the Contractor or Sub-contractors and the Architect's Consulting Engineers that affect the performance or administration of the Contract shall be made or confirmed in writing, with copies to the Architect, and any such communications that represent a modification of the Contract requirements will be documented appropriately. Any communications among the Architect and Subcontractors shall be confirmed in writing to the Contractor."

#### **1.07 PARAGRAPH 7.2 CHANGE ORDERS**

A. Delete subparagraph 7.2.1 and substitute the following:

"7.2.1 All requests for changes, additions or deductions, shall be submitted in a complete itemized breakdown acceptable to the Architect."

- 7.2.2 Wherein unit prices are stated in the contract, submit itemized break down showing each unit price and it quantities.
- 7.2.3 The contractor shall present an itemized accounting together with appropriate supporting data for the purposes of considering additions or deductions. Supporting data shall include but is not limited to the following:
- .1 costs of labor, including social security, old age and unemployment insurance, fringe benefits required by agreement or custom, and worker or workmen's compensation insurance;
  - .2 costs of materials, supplies and equipment, including cost of transportation, whether incorporated or consumed;
  - .3 rental costs of machinery and equipment, exclusive of hand tools, whether rented from the Contractor or others;
  - .4 costs of premiums for all bonds and insurance, permit fees, and sales, use or similar taxes related to the Work; and
  - .5 additional costs of supervision and field office personnel directly attributable to the change.
  - .6 the value of all such additions and deductions shall then be computed as set forth in Paragraph 7.2.5.
- 7.2.4 The burden of proof of cost rests upon the Contractor. Contractor agrees that Owner or Owner's Representative shall have the right, at reasonable times, to inspect and audit the books and records of Contractor to verify the propriety and granting of such cost.
- 7.2.5 Compute requests for changes be they additions or deductions as follows:
- .1 For work performed by the Contractor:

Net cost of material and delivery	a
State Sales Tax	b
Net Placing cost	c
W.C. Insurance Premium and FICA Tax	d _____
	a+b+c+d
Overhead and Profit, shall not exceed 12% x (a+b+c+d)	e _____
Allowable Bond Premium	f _____
TOTAL COST	(a+b+c+d)+e+f
  - .2 Credit for work omitted shall be computed as outlined in 7.2.5.1 "a through e" except the contractor's share of overhead and profit is 7%.
  - .3 For work performed by Subcontractors:  
Subcontractors shall compute their work as outlined in 7.2.5.1 "a through e". To the cost of that portion of the work (change) that is performed by the subcontractor, the general contractor shall add an overhead and profit change of five (5%) percent plus the allowable bond premium.

**1.08 PARAGRAPH 9.3 APPLICATIONS FOR PAYMENT**

- A. Delete subparagraph 9.3.1 and substitute the following:

"9.3.1 The Contractor shall present to the Architect an application for payment on or before the twenty-fifth day of each calendar month. These periodical estimates for partial payment shall be submitted on forms, prepared at the Contractor's expense and conforming to AIA Document G702. An original and a requested number of copies of such estimate shall be tendered to the Architect."

1. Each application for payment shall be accompanied by a revised Construction Schedule. Failure to provide the revised Construction Schedule may cause a delay in processing payment applications. Any areas of the Construction Schedule that are delayed from the previous schedule shall be highlighted for the Architects attention and a detailed explanation of the reason for the delay shall accompany the revised schedule.

## **1.09 PARAGRAPH 9.6 PROGRESS PAYMENTS**

A. Delete subparagraph 9.6.1 and substitute the following:

"9.6.1 Retainage: No later than the 10th day of each calendar month, the Owner will make partial payment to the Contractor, but the Owner will retain 5% of the amount of each payment. Retaining 5% of each payment will continue until final completion and acceptance of all work covered by the contract. However, the Architect may upon approval by the Owner, at any time after 50% of the Contract Work has been completed and based on satisfactory workmanship, and progress has been attained, including written consent of surety, recommend that any of the remaining partial payments be stopped. The retainage will be paid to the Contractor after completion of the Contract for Construction and after the Contractor has submitted all Project Record Documents, Maintenance Manuals, Warranties and Guarantees (Close-Out Documents). No retainage shall be held on materials properly stored at the site or in the Contractor's bonded or insured warehouse if certificates of insurance or bond and invoices are provided."

9.6.1.1 Progress payments will be made for work completed or for materials delivered and properly stored, in accordance with subparagraph 9.6.1, through the Contracted Construction Period. No payments will be made after the Contracted Construction Period has expired until Final Payment, unless an extension of the Contract Time has been granted. In which case, an additional progress payment will be made for work performed during the extension time period only."

## **1.10 PARAGRAPH 9.8 SUBSTANTIAL COMPLETION**

A. Add the following sub-subparagraphs 9.8.3.1 thru 9.8.3.3 as follows:

"9.8.3.1 If the Architect or any of the Architect's Consultants determines that the Work has still not reached Substantial Completion a second list of deficiencies will be issued to the Contractor.

9.8.3.2 Any additional inspections by the Architect or the Architect's Consultants to determine Substantial Completion will be considered additional services and will be billed directly to the Owner.

9.8.3.3 The Contractor will reimburse the Owner for expenses related to these additional services, or, the Owner may choose to withhold money from Progress Payment(s) or from retainage as reimbursement for additional services."

**1.11 PARAGRAPH 9.10 FINAL COMPLETION AND FINAL PAYMENT**

A. Add sub-subparagraphs 9.10.1.1 thru 9.10.1.4 as follows:

- "9.10.1.1 If the Architect or any of the Architect's Consultants determines that the Work has not reached Final Completion a list of deficiencies will be issued to the Contractor.
- 9.10.1.2 Any additional inspections by the Architect or the Architect's Consultants to determine Final Completion will be considered additional services and will be billed directly to the Owner.
- 9.10.1.3 The Contractor will reimburse the Owner for expenses related to these additional services, or, the Owner may choose to withhold money from Final Payment or from retainage as reimbursement for additional services.
- 9.10.1.4 Before issuance of the final certificate, the Contractor shall obtain in writing from the bonding company approval of such payment. No certificate issued nor payment made to the Contractor, nor partial or entire use or occupancy of the Contract Work by the Owner, shall be an acceptance of any work or materials not in accordance with this contract."
- 9.10.1.5 Final payment will not be made until all project closeout documents are received from the Contractor and a release from the Contractor's Surety Company is received.

**1.12 PARAGRAPH 11.1 CONTRACTOR'S INSURANCE AND BONDS**

A. Delete subparagraph 11.1.2 and substitute the following:

- "11.1.2 Coverages, whether written on an occurrence or claims-made basis, shall be maintained without interruption from date of commencement of the work until date of final payment and termination of any coverage required to be maintained after final payment. The insurance required shall be written for not less than the following, or greater if required by law:
  - .1 Workers' Compensation:
    - (a) State: Statutory
    - (b) Applicable Federal: Statutory
    - (c) Employers' Liability: Per Accident: \$100,000  
Disease, Policy Limit: \$500,000  
Disease, Each Employee: \$100,000.
  - .2 Commercial General Liability (including premises-operations); independent contractors protective; products and completed operations) as follows:
    - (a) Coverage should apply at each work site. Limits required as follows:
      - (1) General Aggregate: Per Project: \$2,000,000
      - Completed Operations: Aggregate: \$1,000,000
      - Personal Injury: \$1,000,000

- Each Occurrence Limit: \$1,000,000
- (2) Products and Completed Operations to be maintained for one year after final payment.
- (3) Property Damage Liability Insurance will provide X, C, or U coverage as applicable.
- (b) Comprehensive General Liability. Coverage provided will be on the Comprehensive General Liability form with the Broad Form General Liability Endorsement. Limits provided as follows:
  - (1) Combined Single Limit: \$1,000,000 each occurrence and aggregate
  - (2) Products and Completed Operations to be maintained for one year after final payment.
  - (3) Property Damage Liability Insurance will provide X, C, or U coverage as applicable.
  - (4) Contractual Liability:
    - Bodily Injury: Combined Single Limit
    - Property Damage: \$1,000,000 Each Occurrence
  - (5) Personal Injury, with Employment Exclusion deleted:
    - Combined Single Limit
    - \$1,000,000 Each Occurrence
  - (6) Bodily Injury and Property Damage (Combined Single Limit) (any auto, including Owned, Hired and Non-Owned Autos):
    - Bodily Injury: Combined Single Limit
    - Property Damage: \$1,000,000 Each Occurrence"
  - (7) Umbrella Liability: \$5,000,000

B. Add sub-subparagraph 11.1.2.1 as follows:

"11.1.2.1 The performance-payment bond shall be in compliance with the laws of the State in which the Work is to be performed and as stipulated in Document 00 61 13, Performance and Payment Bond, of these specifications."

C. Add sub-subparagraphs 11.1.3.1 and 11.1.3.2 as follows:

"11.1.3.1 The Contractor shall furnish one copy of each certificate of insurance herein required for each copy of the agreement which shall specifically set forth evidence of all coverage required by subparagraphs 11.1.1 and 11.1.2. Furnish to the Owner copies of any endorsements that are subsequently issued amending coverage of limits."

"11.1.3.2 The Contractor shall not commence work under this contract until he has obtained all insurance with responsible insurance companies satisfactory to the Owner required under this article, and such insurance has been accepted by the Owner. Nothing in this article shall create any obligation on the part of the Architect to see that the specified insurance is maintained."

D. Add subparagraph 11.1.5 as follows:

"11.1.5 All Subcontractors shall be required to maintain contractors liability insurance the same as required to be maintained by the Prime Contractor as specified in 11.1.1 and the limits of liability shall be not less than those required to be maintained by the Prime Contractor unless their operations are covered to the specified limits by the insurance maintained by the Prime Contractor."

**1.13 PARAGRAPH 11.2 OWNER'S INSURANCE**

A. Delete subparagraph 11.2.1 and substitute the following:

"11.2.1 The Contractor shall procure and maintain during the term of this contract, Owner's Protective Liability Insurance with an endorsement to the policy to include as additional insured, the Architect, with limits not less than \$1,000,000 each occurrence and \$1,000,000 in the aggregate for property damage liability."

B. Add subparagraph 11.2.2.1 as follows:

"11.2.2.1 Contractor shall procure and maintain during the life of this contract Builder's Risk or Course of Construction (COC) Insurance, or installation Floater Insurance, and any extended coverage which shall cover damage for the project."

**1.14 PARAGRAPH 15.1 CLAIMS**

A. Refer to sub-paragraph 15.1.5, Claims for Additional Time and add the following sub-subparagraph 15.1.6.3 as follows:

"15.1.6.3 In order for a claim for additional time due to adverse weather conditions to be considered valid, the Contractor must show that adverse weather conditions beyond those normally expected have occurred. For claims related specifically to "Rain Days" the following table of normal rain days will be employed to determine if the Contractor is entitled to a time extension. A "Rain Day" is defined as a 24 hour period in which 1/100" (.01) of rain or more falls and is recorded by the National Weather Service or other official reporting service in the immediate vicinity of the project. Extensions of time will be granted if the number of officially reported "Rain Days" is greater than normal during a given month. Claims for additional time must be submitted with the Contractor's monthly payment application for review. Failure to make timely and proper request for additional time will result in no time extension being allowed.

Average Days with 1/100" of Precipitation or More: Northeast Arkansas

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
9	8	11	11	11	9	9	8	8	8	9	9



**PART 2 - PRODUCTS (Not Applicable)**

**PART 3 - EXECUTION (Not Applicable)**

**END OF DOCUMENT 00 73 00**

**PART 1 - GENERAL**

**1.01 EXCAVATION SAFETY PROCEDURES**

- A. In accordance with Arkansas Code Annotated § 22-9-212 et. seq., the Contractor shall include a separate pay item for trench or excavation safety systems for any trench or excavation which equals or exceeds five (5) feet in depth and this pay item shall be a part of the base bid.
  
- B. The Occupational Safety and Health Administration (OSHA) Safety and Health Regulations for Construction, 29 CFR 1926, Subpart P - Excavations (07-01-2021 Edition), is hereby referenced and incorporated into this Project Manual and must be complied with at all times.

**PART 2 - PRODUCTS (Not Applicable)**

**PART 3 - EXECUTION (Not Applicable)**

**END OF DOCUMENT 00 73 19.13**

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**PART 1 - GENERAL**

**1.01 CONTRACT BASIS**

- A. Work is based upon conditions at site, Project Manual, contract Drawings for WDD Project No. 23-069, all addenda issued and the Contract executed between Owner and Contractor.

**1.02 OWNER**

- A. Wherever term "Owner" or "Owners" is used in the Contract Documents it refers to Brinkley Public Schools. All papers required to be delivered to Owner shall be delivered to Dr. Brenda Poole, Superintendent, 200 Tiger Drive, Brinkley, AR 72021.

**1.03 ARCHITECT**

- A. Wherever term "Architect" or "Architects" is used in the Contract Documents it refers to **Wittenberg, Delony & Davidson, Inc., 5050 Northshore Ln, North Little Rock, Arkansas 72118.**

**1.04 TIME FOR COMPLETION**

- A. Time for completion shall be as stated in the Owner Contractor Agreement.

**1.05 RESPONSIBILITIES OF CONTRACTOR**

- A. Except as otherwise specifically stated in the contract, Contractor shall provide and pay for all materials, labor, tools, equipment, water, light, heat, power, transportation, superintendence, temporary construction of every nature, taxes legally collectible because of the Work and all other services and facilities of any nature necessary to execute Work as shown and/or specified under the contract and deliver it complete in every respect within specified time.
- B. If, during the course of construction of this project, the Contractor discovers errors, inconsistencies or omissions in the Contract Documents, the Contractor will report them to the Architect who will issue written instructions to the Contractor. If the Contractor performs Work knowing there is an error, inconsistency or omission in the Contract Documents without giving notice to the Architect or receiving written instruction from the Architect, the Contractor assumes responsibility for the Work and will bear all costs associated with the performance or correction of the Work.

## **1.06 COORDINATION OF WORK**

- A. General Contractor to give special attention for coordination of work by various trades to provide uniform and symmetrical layout and spacing of exposed components which affect the finished architectural design and appearance. Where spacing and related locations are not specifically shown on the drawings, or where in doubt, Contractor's Superintendent shall consult Architect's Representative prior to installation of that part of the Work. Location of electrical and telephone outlets shall be verified with Architect prior to installation.

## **1.07 PRECONSTRUCTION CONFERENCE**

- A. Either before or soon after actual award of Contract (but in any event prior to start of construction), Contractor or his representative shall attend Preconstruction Conference with representatives of Owner and Architect. Conference will serve to acquaint participants with general plan of contract administration and requirements under which construction operation is to proceed, and will inform Contractor, in detail, of obligations imposed on him and his subcontractors.
  - 1. Hold pre-installation meetings where select specified product systems required to meet warranty or guarantee, which may include Contractor, Architect, Engineer, Consultant, Installer, Owner's Representative, and Manufacturer's Designated Representative.

## **1.08 CONSTRUCTION DRAWINGS AND SPECIFICATIONS**

- A. Architect to furnish one (1) set of contract drawings and specifications, without cost, to Construction Manager for use in constructing Work. Construction Manager shall supply all contract drawings and specifications to his subcontractors or material suppliers. - Additional sets or partial sets of Bidding Documents (including addenda) requested by Construction Manager, will be furnished for actual cost of printing, handling and shipping costs at Construction Manager's expense. Bidding Documents may also be obtained in electronic format through Southern Reprographics at [www.sriplanroom.com](http://www.sriplanroom.com) for a non-refundable fee as pre-determined by level of access.

## **1.09 DEFINITION**

- A. The word "Provide", as used throughout these specifications, means furnish and install.

## **1.10 REFERENCE STANDARDS**

- A. Except as otherwise noted, references throughout Project Manual to Codes, Federal Specifications, ASTM Standards, Association or Industry Specifications and other published standards, are to latest edition or publication of such standards.

## 1.11 PERMITS

- A. Utilizing the contract documents (Project Manual and Drawings) prepared by the Architect and his Consultants, along with information provided by the Owner or his Consultants, the Contractor is responsible for securing permits required to successfully complete the project. This responsibility includes payment for the permit and coordination of all submittals.
- B. Storm Water Discharge Permit: Contractor shall be responsible for obtaining this permit from Arkansas Department of Environmental Quality for construction sites where **one (1) acre** or more is disturbed, and meet all other storm water regulations. Contractor shall keep a copy of his Storm Water Discharge Permit on the job site at all times.

## 1.12 INFORMATIONAL DRAWINGS

- A. Drawings bound into working drawing set and labeled as informational drawings are not part of the Contract Documents. Information on these drawings is for reference and coordination only and is not a representation or warranty of existing or proposed conditions. The Architect and Owner are not responsible for interpretations or conclusions made by the Contractor based on these drawings.

### **PART 2 - PRODUCTS (Not Applicable)**

### **PART 3 - EXECUTION (Not Applicable)**

**END OF SECTION 01 11 00**

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## **PART 1 - GENERAL**

### **1.01 DESCRIPTION**

- A. Make submittals required by Contract Documents; revise and resubmit as necessary to establish compliance with specified requirements. Submittals which are received from sources other than through the General Contractor's office will be returned by the Architect without action. Submit at least one original of manufacturer's product literature. The remainder of the number of copies required for submittal may be reproductions of manufacturer's literature. **FAX submittals, poor quality reproductions or illegible submittals will not be accepted.**
- B. Contractor's submittal of (and Architect's review of) shop drawings, product data or samples which relate to work not complying with requirements of Contract Documents, does not constitute an acceptable or valid request for a substitution, nor approval thereof.

### **1.02 RELATED DOCUMENTS**

- A. Applicable portions of the Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to the execution of the Contract, other documents listed in the Agreement and Modifications issued after the execution of the Contract shall apply to this Section.

### **1.03 QUALITY ASSURANCE**

- A. Coordination of Submittals: Prior to each submittal, carefully review and coordinate all aspects of each item being submitted. By affixing Contractor's approval stamp to each submittal, certify that coordination has been performed.
- B. Verify that each item and submittal for it conform in all respects with specified requirements.
- C. Certificates: Document required of Contractor, or of a manufacturer, supplier, installer, or subcontractor through Construction Manager. The purpose is to document procedures, acceptability of methods, or personnel qualifications for a portion of the work.

### **1.04 TIMING OF SUBMITTALS**

- A. General: Make submittals far enough in advance of scheduled dates of installation to provide required time for reviews, securing necessary approvals, possible revision and resubmittal, placing orders and securing delivery.
- B. Owner will not bear costs of delays due to late submittals.



## 1.05 COORDINATION AND SEQUENCING

- A. Coordinate preparation and processing of submittals with performance of work so that work will not be delayed by submittals.
- B. Coordinate and sequence different categories of submittals for same work, and for interfacing units of work, so that one will not be delayed for coordination of Architect's review with another.

## 1.06 SUBMITTAL FORMAT AND TRANSMISSION

- A. Provide submittals in electronic format, with the exception of material samples. Use PDF as the electronic format, unless otherwise specified or directed by the architect.
- B. Compile the electronic submittal file as a single, complete document. Name the electronic submittal file specifically according to its contents. **Bookmark individual submittals exceeding 20 pages, and those with multiple products and systems integrated into a single submission.**
- C. Electronic files must be of sufficient quality that all information is legible. Generate PDF files from original documents so that the text included in the PDF file is both searchable and can be copied.
- D. E-mail electronic submittal documents smaller than 5MB in size to e-mail addresses as directed by the architect.
- E. Provide electronic documents over 5MB through an electronic FTP file sharing system. Confirm that the electronic FTP file sharing system can be accessed from the architect's computer network. The Contractor is responsible for setting up, providing, and maintaining the electronic FTP file sharing system for the construction contract period of performance.
- F. Provide hard copies of submittals when requested by the architect. Up to 3 additional hard copies of any submittal may be requested at the discretion of the architect, at no additional cost to the owner.

## PART 2 - PRODUCTS

### 2.01 PROGRESS SCHEDULE

- A. Within 7 days after Notice to Proceed, submit to Architect a bar-chart type progress schedule indicating time bar for each trade or operation of work to be performed. Time bar shall demonstrate planned work, properly sequenced and intermeshed, for expeditious completion of Work. Identify phases if required.

- B. Distribute progress schedule including all updates to Architect, Owner, subcontractor, suppliers, fabricators, and others with need-to-know schedule compliance requirements. Post copy in field office.

## **2.02 SCHEDULE OF VALUES**

- A. Immediately after execution of the Contract Documents, Contractor shall submit for approval a Schedule of Values totaling the amount of the Contract.

## **2.03 LIST OF SUBCONTRACTORS**

- A. Immediately after execution of the Contract Documents, Contractor shall submit for approval a listing of all subcontractors to be used for the project stating portions of Work to be performed, address and telephone number of firm, and contact at firm familiar with project.
- B. If all subcontractors have not been determined, submit a partial listing with regular updates indicating newly added subcontractors.

## **2.04 ROOFING APPLICATOR CERTIFICATE**

- A. A photocopy of the roofing membrane manufacturer's current and valid "Approved Applicator" Certificate (must be an Approved Applicator at least three months prior to the bid date) for the approved system they intend to use on this project must be submitted.

## **2.05 SUBSTITUTION REQUESTS**

- A. Products specified herein establish a quality standard for comparison by manufacturers of similar products. Products of other manufacturers may be substituted for those specified herein on an "Approved Equal" basis. DO NOT propose the substitution of products that do not meet or exceed the quality standards established by the specified product. Products proposed as equivalent MUST be submitted through the General Contractor for review by the Architect after the Contract for Construction is awarded. DO NOT request approval of products prior to the awarding of the contract.
- B. Requests for substitution will be reviewed when extensive revisions to contract documents are not required and changes are in keeping with general intent of Contract Documents; when timely, fully documented and properly submitted; and when one or more of following conditions is satisfied, all as judged by Architect/Engineer. Otherwise, requests will be returned without action except to record non-compliance with these requirements.
  - 1. Where request is directly related to an "or equal" clause or other language of same effect in Contract Documents.
  - 2. Where required product, material or method cannot be provided within Contract Time, but not as a result of Contractor's failure to pursue the Work promptly or to coordinate various activities properly.

3. Where required product, material or method cannot be provided in a manner which is compatible with other materials of the Work, or cannot be properly coordinated therewith, or cannot be warranted as required, or cannot be used without adversely affecting Owner's insurance coverage on completed work, or will encounter other substantial non-compliance items which are not possible to otherwise overcome except by making requested substitution, which Contractor thereby certified to overcome such non-compatibility, non-coordination, non-warranty, non-insurable or other non-compliance as claimed.
4. Where required product, material or method cannot receive required approval by a governing authority, and requested substitution can be so approved.

C. **SUBSTITUTIONS REQUESTS MUST BE SUBMITTED WITHIN 45 DAYS**

**AFTER THE DATE OF THE NOTICE TO PROCEED.** Substitution requests received after that time will be returned and the Contractor will be required to provide the product specified, except in the following instances:

1. Unavailability of product, material or method, not due to the Contractor's failure to pursue the work promptly or to coordinate various activities properly.
2. Where a specified product or material contains a hazardous material, as defined in 40 CFR 261 and as defined by applicable state and local regulations and of which the Owner and Architect refuse to approve for use, based on Contractor furnished information.

- D. Submit request for substitutions in writing using the Substitution Request form found at the end of this Section. This is the only form that will be accepted.
- E. Submit 3 copies of substitution request, fully identified for product or method being replaced by substitution, including related specification section and drawing number(s), and fully documented to show compliance with requirements for substitutions. Include manufacturer's product data/drawings, description of installation methods, material samples where applicable, complete color and finish selection cards or samples, Contractor's detailed comparison of significant qualities between specified item and proposed substitution, statement of effect on construction time and coordination with other affected work, cost information or proposal, and Contractor's statement to the effect that proposed substitutions will result in overall work equal-to-or-better-than work originally indicated.
- F. Failure to provide the requested data and samples within the specified time frame will be grounds for rejection as a comparable product.
- G. Do not incorporate substitutions into Shop Drawings until they have been reviewed by the Architect and written permission has been issued to make the proposed substitution a part of the contract.
- H. Under no circumstances shall Architect's review of any such substitution relieve Contractor from timely, full and proper performance of Work.

- I. In the event that the substitution of a product by the General Contractor necessitates the redrawing, redesign, modification or other change to the Contract Documents, the General Contractor will bear all associated costs of these changes.

## 2.06 REQUEST FOR SUPPLEMENTARY INFORMATION

- A. Make timely requests of Architect for additional information required in planning and production of Work.
- B. File requests in ample time to permit appropriate action by all parties involved and avoid delay in performance of Work.
- C. Owner will not bear costs for delays due to Contractor's failure to request information in a timely manner.

## 2.07 SHOP DRAWINGS

- A. Provide newly-prepared information, on reproducible sheet formats, with graphic information at accurate scale (except as otherwise indicated), with name of preparer indicated (firm name). Do not duplicate and submit Architect's construction drawings as shop drawings. Show dimensions and notes which are based on field measurement. Identify materials and products in work shown. Indicate compliance with standards, and special coordination requirements. **DIGITAL SUBMISSIONS ARE ALLOWED.**
- B. Shop drawings must bear Contractor's approval stamp. This approval stamp certifies that the Contractor has reviewed the shop drawings, product data, samples or similar submittals for conformance with the Contract Documents. All deviations will be noted in writing and highlighted on the submittal for Architect's review. The Architect is not responsible for errors, omissions or deviations in the shop drawings, product data, samples or similar submittals by the Contractor.
- C. Submittals are reviewed by the Architect for design intent only. The Contractor is responsible for verification of dimensional requirements, compliance with contract documents and local codes, quantities and coordination of all affected trades.
- D. Under no circumstances shall Architect's review of shop drawings or submittals relieve Contractor from timely, full and proper performance of Work in accordance with the Contract Documents.
- E. **Contract Documents (including all drawings, specifications, addenda and supplemental information) will not be made available in any digital format or on any other reproducible media to Prime Bidders or Sub-bidders before the award of a Contract nor will they be made available to the Contractor or Sub-contractors after the award of a Contract. Prime Bidders may obtain Bidding Documents in electronic or paper format through Southern Reprographics at [www.sriplanroom.com](http://www.sriplanroom.com) for a non-refundable fee as pre-determined by level of access.**

- F. CAD files will be available to the successful Contractor or Sub-contractors with a release letter or per AIA Document C106™ - 2013 Digital Data Licensing Agreement, after the award of a Contract.

## 2.08 PRODUCT DATA

- A. Collect required data into one submittal for each unit of work or system; mark each copy to show which choices and options are applicable to project AND WHICH ARE AVAILABLE FOR SELECTION BY THE ARCHITECT WITHOUT ADDITIONAL COST. NO PAYMENT WILL BE MADE FOR ADDITIONAL COST OF ANY CHOICES OR OPTIONS SUBMITTED BY THE CONTRACTOR FOR SELECTION BY THE ARCHITECT AND NOT CLEARLY SHOWN AS NOT AVAILABLE WITHIN THE CONTRACT.
- B. Include manufacturer's standard published recommendations for application and use, compliance with standards, application of labels and seals, notation of field measurements which have been checked, and special coordination requirements.
- C. Maintain one set of product data (for each submission) at project site, available for reference by Architect and others.
- D. Do not submit product data until compliance with requirements of contract documents has been confirmed by Contractor.
- E. Copies:
1. Submit 3 paper copies of product data for Architect's review for items specified in various specification sections, **unless digital submission.**
  2. Three paper copies required for mechanical and electrical data, **unless digital submission.**
- F. Installer's Copy: Do not proceed with installation of materials, products or systems until final authorized copy of applicable product data is in possession of installer.
- G. **Material Safety Data Sheet (MSDS):** MSDS provides basic information on a material or chemical product. A MSDS describes the properties and potential hazards of the material, how to use it safely, and what to do in an emergency. DO NOT PROVIDE WITHIN A SHOP DRAWING SUBMISSION UNLESS SPECIFICALLY REQUESTED BY THE DESIGN PROFESSIONAL. MSDS information shall be kept on file with the contractor and subcontractors for reference. Refer to OSHA MSDS Rules for clarification at website: <https://msdsauthoring.com/msds-safety-data-sheet-chemicals-osh-msds-rules>.

## 2.09 SAMPLES

- A. Unless precise color and pattern is specified in Contract Documents, submit accurate color and pattern charts or actual material samples to Architect for selection. Refer to pertinent sections of specifications for detailed submission requirements. Provide units identical with final condition of proposed materials or products for the work. Include "range" samples (not less than 3 units) where unavoidable variations must be expected, and describe or identify variations between units of each set.
- B. Make all submissions affecting color selection within sufficient time to allow selection without causing delay in Work.
- C. Submit items requiring color selection or verification AS ONE SUBMISSION to facilitate coordination of all colors at one time. Interior items may be submitted separately from exterior items.
- D. Provide full set of optional samples where Architect's selection is required. DO NOT INCLUDE OPTIONS REQUIRING ADDITIONAL COST.
- E. Samples are submitted for review and confirmation of color, pattern, texture and "kind" by Architect. Architect will not "test" samples (except as otherwise indicated) for compliance with other requirements, which are therefore the exclusive responsibility of Contractor.
- F. Submit 3 sets of samples in final submittal.
  - 1. Furnish two sets to Architect and assemble one set on site. When all samples are on site, Owner and Architect are to review. Contractor shall provide job samples indicating finished color selections for any and all items requiring finish color for project.
  - 2. Quality Control Set: Maintain returned final set of samples at project site, in suitable condition and available for quality control comparisons by Architect and Owner. Written approval from Owner is required before the work is begun for any finish requiring color review.
- G. Reusable Samples: Returned samples which are intended or permitted to be incorporated into Work must be in undamaged condition at time of use.

## 2.10 STRUCTURAL SUBMITTALS

- A. Structural submittals, where required, include shop drawings, design calculations, diagrams, illustrations, schedules, performance charts, nomenclature charts, samples, brochures and other data prepared by the Contractor or any subcontractor, manufacturer, supplier, fabricator, or distributor and which illustrate some portion of the Project directly related to the structural design of the project.
- B. Contractor shall make all submittals in advance of installation or construction to allow sufficient time for review.

- C. Work requiring shop drawings, whether called for by the Contract Documents or requested by the Contractor, shall not commence until the submission has been reviewed by the Architect/Structural Engineer. Work may commence if the Contractor verifies the accuracy of the Architect/Structural Engineer's corrections and notations and complies with them without exception and without requesting change in Contract Sum or Contract Time.

## **PART 3 - EXECUTION**

### **3.01 SUBMITTAL PREPARATION**

- A. Permanently mark each submittal to identify project, date, Contractor, subcontractor, submittal name and similar information to distinguish it from other submittals. Show Contractor's executed review and approval marking.
- B. Indicate project, date, "To: "; "From: "; names of subcontractors, suppliers, manufacturers, required references, category and type of submittal, purpose, description, distribution record and signature of transmitter.
- C. Indicate drawing number and specifications section number to which submittal applies.

### **3.02 ARCHITECTS ACTION ON SUBMITTALS**

- A. Architect will respond to submittals from Contractor by completing the "LETTER OF TRANSMITTAL" form.
- B. Architect's Submittal Review: Submittal review does not relieve Contractor(s) of compliance with Contract Documents or local codes. Review is only for conformance with the design intent of the Project and compliance with information given in the Contract Documents. The contractor is responsible to coordinate and to confirm all dimensions for use at the site. The contractor is responsible for coordination of the work of all trades.
- C. Architect's Action: Where action and return is required or requested, Architect will review each submittal and mark per the following, and where possible return within fifteen (15) working days of receipt. When a submittal must be coordinated with submittals of other trades, Contractor is responsible for gathering all information and forwarding to Architect as a single submittal.
- D. Architect's Response:
  - 1. Final Unrestricted Release: Work may proceed, provided it complies with notations and corrections on submittal and with Contract Documents, when submittal is returned with the following: **Marking: "Reviewed"**.
  - 2. Final-But-Restricted Release: Work may proceed, provided it complies with notations and corrections on submittal and with Contract Documents, when submittal is returned with the following: **Marking: "Reviewed and Noted"**.

3. Returned for Resubmittal: Do not proceed with work. Revise submittal in accordance with notations thereon, and resubmit without delay to obtain a different action marking. Do not allow submittals with the following marking (or unmarked submittals where a marking is required) to be used in connection with performance of the Work: **Marking: "Revise and Resubmit"**.
4. Other Action: Where submittal is returned for other reasons, with Architect explanation included, it will not be marked or marked "Revise and Resubmit".

**END OF SECTION 01 33 00**



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**WITTENBERG, DELONY & DAVIDSON, INC.**

5050 Northshore Ln  
North Little Rock, AR 72118  
Tel: 501-376-6681 Fax: 501-372-6317

**SUBSTITUTION  
REQUEST**

**WDD does NOT Pre-Qualify before bidding  
To Be Submitted AFTER Award of Contract**

Project:

Date:

Project No:

Contractor:

Contact Person:

**Contractor hereby requests consideration of a product substitution as follows:**

1. Refer To: Section - \_\_\_\_\_ and/or Drawing - \_\_\_\_\_

2. Item Description: \_\_\_\_\_

3. Proposed Substitution: \_\_\_\_\_

Manufacturer: \_\_\_\_\_

Model Number: \_\_\_\_\_

Description: \_\_\_\_\_

4. Reason for Substitution: \_\_\_\_\_

\_\_\_ Availability \_\_\_\_\_ Quality Advantage

\_\_\_ Delivery Schedule \_\_\_\_\_ Performance Advantage

\_\_\_ Cost Advantage \_\_\_\_\_ Other: \_\_\_\_\_

5. Coordination: \_\_\_\_\_

Difference in dimensions between the specified and proposed substitute **(WILL)**  
**(WILL NOT)** affect dimensions on drawings and adjacent items.

Describe the effect of the substitution on work of other trades: \_\_\_\_\_  
\_\_\_\_\_

Describe the effect of the substitution on other required new or existing materials  
including electrical wiring, piping, ductwork, finishes, structure, etc.: \_\_\_\_\_  
\_\_\_\_\_

Acceptance of this substitution will cause **(NO CHANGE IN)**  
**(A REDUCTION OF \_\_\_\_\_ DAYS FROM)** the completion date of this project.

Describe any required architectural or engineering design changes required to  
accommodate the substitution: \_\_\_\_\_  
\_\_\_\_\_

6. Differences: \_\_\_\_\_

The proposed substitution **(MEETS) (DOES NOT MEET)** the reference standards  
(ASTM, AWI, UL, etc.) as specified.

The proposed substitution **(MEETS) (DOES NOT MEET)** the fire rating classification  
(class, type, FM, UL, NFPA) as specified.

The proposed substitution is available in the following **(COMPARABLE) (LIMITED)**  
**(ADDITIONAL)** finishes.

Note: Any additional cost associated with proposed substitute finishes will be  
absorbed by the contractor if this substitution is approved and implemented.

7. Warranty:  
 Specified Warranty Length and Coverage: \_\_\_\_\_  
 Substitute Warranty Length and Coverage (Sample warranty attached): \_\_\_\_\_
8. This substitution will result in a cost savings and credit of \$ \_\_\_\_\_.
9. The proposed substitute has been used in the following installations (attached): \_\_\_\_\_
10. Service and replacement material are available from the following (attached): \_\_\_\_\_

By submitting this Request for Substitution, the Contractor accepts the following terms and conditions:

1. The proposed substitution, if accepted, will provide performance equivalent to the material or equipment specified. Should a substitution be accepted and should the substitute material or equipment prove defective or otherwise unsatisfactory for the service intended, the Contractor will replace the material or equipment with the material or equipment specified.
2. If the substitution will affect a correlated function, adjacent construction, or work of other trades or contractors, the necessary changes and modifications to affected work are considered to be part of the substitution and will be accomplished without additional cost to the Owner.
3. In the event that the substitution of materials or equipment necessitates the redrawing, redesign, modification or other change to the Contract Documents, the General Contractor will bear all associated costs of these changes.

Contractor warrants that they have verified and believe this substitute is equal or superior to the specified item in all respects. There will be no additional cost associated with coordinating installation of this substitute. Costs and effects of the substitution, as outlined herein, are certified and complete. Claims for additional costs related to acceptance of this substitution, which may become apparent later, are waived.

Manufacturer's product cut sheets, drawings, samples, data sheets, sample warranties, manufacturer's certification, etc. for the substitute are attached.

Contractor: \_\_\_\_\_

Date: \_\_\_\_\_

By: \_\_\_\_\_

Typed Name: \_\_\_\_\_

**Architect's Action:**

- \_\_\_\_\_ Substitution is Accepted  
 \_\_\_\_\_ Substitution is Rejected for the following reason(s): \_\_\_\_\_

By: \_\_\_\_\_

Typed Name: \_\_\_\_\_

Date: \_\_\_\_\_

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Section Includes: Testing laboratory services and inspection services.
  
- B. Contractor to include, in Base Bid, cost of all field and laboratory testing which is required by various sections of Technical Divisions of these specifications. This will include, but is in no way limited to the following tests:
  - 1. Soil Compaction
  - 2. Soil Bearing
  - 3. Parking Lots:
    - a. Subgrade Densities
    - b. Base Course Densities
    - c. Asphalt Densities
    - d. Core Samples to Determine Asphalt Thickness
  - 4. Concrete:
    - a. Making Test Cylinders
    - b. Compression Tests
    - c. Concrete floor moisture vapor emission, in-situ relative humidity and pH (alkalinity) testing at concrete substrates scheduled to receive finish flooring as indicated on Drawings and/or specified in various finish flooring sections. Refer to current version of ASTM F 2170.
      - 1) Testing shall be conducted based on flooring moisture and pH tolerance requirements submitted by finish flooring trades.
      - 2) Areas failed to achieve the required moisture and/or pH levels shall be re-mitigated and re-tested at no additional cost to the Owner.
      - 3) Moisture vapor and pH Test results shall be signed off by respective flooring manufacturers and installers to obtain full warranty on flooring product and installation.
      - 4) The Owner may conduct and pay for his own random moisture and pH tests at his sole discretion to verify and confirm Construction Manager's test results.
      - 5) Information on grout mixing and placement, and on grout testing is contained in Grouting Concrete Masonry Walls, **TEK 3-2A** and Grout Quality Assurance, **TEK 18-8B** (refs. 1,2), respectively, as published in the National Concrete Masonry Association (NCMA).
  - 5. Structural Steel Welding
  - 6. Topsoil analysis of existing and that brought in off-site
  - 7. Other tests required by Specification Sections

## **1.02 RELATED DOCUMENTS**

- A. Applicable portions of the Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, and Addenda issued prior to the execution of the Contract, other documents listed in the Agreement and Modifications issued after the execution of the Contract shall apply to this Section. The general requirements for this work are in Division 1 of the Specifications.

## **1.03 SUBMITTALS AND SUBSTITUTIONS**

- A. In accordance with Section 01 33 00.
- B. Substitutions will not be considered prior to the award of the General Contract.

## **1.04 QUALIFICATIONS OF LABORATORIES**

- A. Meet "Recommended Requirements for Independent Laboratory Qualification", published by American Council of Independent Laboratories.
- B. Meet basic requirements of ASTM E329, "Standards of Recommended Practice for Inspection and Testing Agencies for Concrete and Steel as used in Construction".
- C. Authorized to operate in state where project is located.
- D. Testing equipment must be calibrated at reasonable intervals by devices of accuracy, traceable to either National Bureau of Standards or accepted values of national physical constants.

## **1.05 LABORATORIES DUTIES**

- A. Perform specified inspections, sampling and testing of materials and methods of construction. Comply with specified standards. Ascertain compliance of materials with requirements of projects.
- B. Promptly notify Architect and Contractor of observed irregularities or deficiencies of work or products.
- C. Promptly submit written report of each test and inspection; two copies to Architect and one copy to Contractor for record document files. Each report shall include the following:
  - 1. Date issued
  - 2. Project title and number
  - 3. Testing laboratory name, address and telephone number
  - 4. Name and signature of laboratory inspector
  - 5. Date and time of sampling or inspection
  - 6. Record of temperature and weather conditions
  - 7. Date of test
  - 8. Identification of product

9. Location of sample or test in project
10. Type of inspection or test
11. Results of tests and compliance with contract documents
12. Interpretation of test results, when requested by owner or owner's representative.

#### **1.06 LIMITATIONS OF AUTHORITY OF TESTING LABORATORIES**

- A. Laboratories shall not be authorized to release, revoke, alter or enlarge on requirements of contract documents; approve or accept any portion of work or perform any duties of Contractor or Architect.

#### **1.07 CONTRACTOR'S RESPONSIBILITIES**

- A. Cooperate with laboratory personnel, provide access to work and operations.
- B. Secure and deliver to laboratory adequate quantities of representational samples of materials proposed to be used which require testing.
- C. Provide laboratory with preliminary design mix proposed to be used for concrete and other materials mixes which require control by testing laboratory.
- D. Furnish copies of manufacturer's test reports of products as required.
- E. Furnish incidental labor and facilities as follows:
  1. To provide access to work to be tested.
  2. To obtain and handle samples at project site or at source of product to be tested.

#### **1.08 SPECIAL INSPECTIONS**

- A. Special inspections shall be required in accordance with Chapter 17 of the Building Code. The construction manager (CM) shall be responsible for coordinating all inspections with relevant inspection agency.
  1. Arkansas Special Inspections Guidelines and Special Inspection Forms, revised January 01, 2023, may be downloaded from the Structural Engineers Association of Arkansas website at [www.seaoar.org/resources](http://www.seaoar.org/resources) and comply with the 2021 AFPC (2021 IBC in conjunction with the State of Arkansas Amendments), hereafter referred to as the Building Code.
- B. Special Inspector shall keep respective records of inspections. Inspection reports shall be submitted to the Building Official or Authority Having Jurisdiction (AHJ) and to the registered design professional in responsible charge.
- C. Reports shall indicate that inspected work was done in conformance to approved construction documents. Discrepancies shall be brought to the immediate attention of contractor for correction. If the discrepancies are not corrected, the discrepancies shall be brought to the attention of the Building Official (AHJ) and the registered design professional in responsible charge, prior to the completion of that phase of the work.

- D. A final report of inspections documenting required Special Inspections, and correction of any discrepancies, shall be submitted to the Owner, Building Official (AHJ) and the registered design professional in responsible charge at the completion of respective portion(s) of the work.

### **1.09 HAZARDOUS MATERIAL ABATEMENT**

- A. During the construction of this project, if work involving hazardous material is suspected, or encountered, Contractor shall notify Owner or Owner's representative immediately and Owner, with his own forces or by separate contract is responsible for complete investigation, removal and disposition of hazard material in accordance with applicable laws and regulations.

### **PART 2 - PRODUCTS (Not Applicable)**

### **PART 3 - EXECUTION**

#### **3.01 REPAIR AND PROTECTION**

- A. Upon completion of inspection, testing, sample taking and similar services performed on the work, repair damaged work and restore substrates and finishes to eliminate deficiencies, including deficiencies in the visual qualities of exposed finishes. Protect work exposed by or for testing activities and protect repaired work.

**END OF SECTION 01 45 23**

**PART 1 - GENERAL**

**1.01 GENERAL SITE REQUIREMENTS**

- A. Do not close or obstruct streets, walks or other occupied or used facilities without permission from authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways.
- B. Ensure safe passage of persons around areas of construction. Conduct operations to prevent injury to adjacent buildings, structures, facilities and persons.
- C. Erect temporary covered passageways as required by authorities having jurisdiction.
- D. Provide dust-proof partitions if required. If not indicated on the drawings, provide dust-proof partitions as directed by the Architect to comply with applicable sections of the Life Safety Code.
- E. Provide temporary enclosures at doors and other openings in walls as necessitated by weather conditions. Construct enclosures with fire retardant treated lumber. Tape joints and caulk to prevent dust and debris from migrating beyond construction areas. Maintain enclosures in good repair and remove when no longer needed.
- F. Provide interior and exterior shoring, bracing or support as needed to prevent movement, settlement or collapse.

**1.02 PROJECT SIGNS**

- A. Subject to prior approval of Owner as to size, design, type, location and to local regulations, Contractor and his subcontractors may erect temporary signs for purposes of identification and controlling traffic.
- B. Additional banner signs with grommets may be provided by the Architect to be placed as directed. Signs shall be maintained throughout the project then returned to architect's site representative or discarded.
- C. Construction Manager shall furnish and erect temporary construction sign at job site and remove sign at end of construction period. Paint and letter as directed by Architect to identify project, Owner, Architect and Contractor. Refer to general sign drawing (s) following this Section for reference and to Section 01 21 00 - Allowances.



### **1.03 JOB OFFICES AND STORAGE**

- A. Contractor and his subcontractors shall maintain office and storage facilities on site as may be necessary. Locate so as to cause no interference with work to be performed on the site by Owner or with Owner's operations. Consult with Architect regarding locations. Office shall have as a minimum the following items:
  - 1. Complete set of Construction Documents including all addenda and supplemental information.
  - 2. Telephone and fax machine.
  - 3. Layout and meeting space for Architects or Owners representative to use when visiting the site.
  - 4. Complete job file with copies of all correspondence concerning the project.
  - 5. Other standard office equipment as is normally required to operate a business.
- B. Upon completion of project, or as directed by Architect, Contractor shall remove temporary structures and facilities from the site, same to become his property. Leave the premises in condition required by Contract.

### **1.04 SANITARY ARRANGEMENTS**

- A. Contractor, at beginning of Work, to provide on premises suitable temporary convenience and enclosure for use of workmen on job. Maintain in sanitary condition and remove at completion of Work or when directed by Architect.

### **1.05 TEMPORARY UTILITIES FOR CONSTRUCTION**

- A. Provide all gas and electric service for heating, cooling, lighting and power required for construction purposes.
- B. Provide all water required for construction purposes. Run temporary lines and provide necessary standpipes.
- C. Contractor to pay all utility charges until time of substantial completion.

### **1.06 USE CHARGES**

- A. General: Installation and removal of and use charges for temporary facilities shall be included in the Contract Sum unless otherwise directed. Allow other entities to use temporary services and facilities without cost, including, but not limited to Construction Coordinator, Design Professional, testing agencies, and authorities having jurisdiction.
- B. Sewer Service: Pay sewer-service use charges for sewer usage by all entities for construction operations.
- C. Water Service: Pay water-service use charges for water used by all entities for construction operations.

- D. Electric Power Service: Pay electric-power-service use charges for electricity used by all entities for construction operations.
- E. Water Service from Existing System: Water from Owner's existing water system is available for use with metering and with payment of use charges. Provide meter connections and extensions of services as required for construction operations.

**1.07 TEMPORARY HEATING**

- A. Provide temporary heating, coverings and enclosures necessary to protect operations and materials against damage by dampness and cold, to dry out work, and facilitate completion of Work.
- B. Maintain critical installation temperatures required in separate Sections of the Specifications. Repair or replace at no additional cost to Owner, any materials and work damaged by dampness, insufficient or abnormal heat.

**PART 2 - PRODUCTS (Not Applicable)**

**PART 3 - EXECUTION (Not Applicable)**

**END OF SECTION 01 50 00**

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**TEMPORARY STORM WATER POLLUTION CONTROL****PART 1 - GENERAL****1.01 SUMMARY OF WORK**

- A. Work shall consist of temporary and permanent storm water pollution prevention measures through the use of berms, sediment basins, sediment dams, fiberglass roving, filter fabric, silt fences, brush barriers, baled straw erosion checks, temporary flexible pipe slope drains and temporary seeding.
- B. Temporary storm water pollution prevention measures shall be performed promptly when problem conditions exist or when storm water pollution problems are anticipated in certain areas to minimize soil erosion and siltation. Temporary measures shall be properly maintained until permanent control measures are functioning properly.
- C. The Contractor shall comply with all Federal, State and local laws and regulations concerning controlling pollution of the environment. He shall take all necessary precautions to prevent pollution of streams, lakes, ponds and reservoirs with fuel, oils, bitumens, chemicals, soil sedimentation or other harmful materials, and to prevent pollution of the atmosphere from particulate gaseous matter.

**1.02 RELATED SECTIONS**

- A. Section 31 00 00 - Earthwork.
- B. Section 31 10 00 - Site Clearing.
- C. Section 31 23 33 - Trenching and Backfilling.

- 1.03** At the Preconstruction Conference, or prior to the start of applicable construction, the Contractor shall submit his schedule for the accomplishment of temporary and permanent storm water pollution control work as applicable for clearing and grubbing, trenching and backfill to the Owner and Engineer. The location of the project, nature of the soil, topographic features and proximity to watercourses shall be considered when imposing such limitations.

**PART 2 - MATERIALS****2.01 SEED AND FERTILIZER**

- A. Refer to Section 32 92 19.

**2.02 STRAW BALES**

- A. Straw shall be the threshed plant residue of oats, wheat, barley, rye or rice from which the grain has been removed.

### **2.03 FENCE OR WIRE FABRIC**

- A. The fence fabric shall be a commercial grade of woven wire fence fabric. The wire fabric shall be a welded wire fabric.

### **2.04 FILTER FABRIC OR SILT FENCING**

- A. Nonwoven polypropylene or polyester fabric.
- B. Manufacturer: Typar 3401, Trevira S1115, or equal.

### **2.05 ACCESSORIES**

- A. Wood or steel stakes. If using steel stakes (rebar), stakes shall have safety caps meeting OSHA requirements.
- B. Rectangular hay bales shall be secured with twine or nylon rope.
- C. Filter fabric shall be supported by steel or wooden posts and backed with a woven wire fabric for support.

## **PART 3 - EXECUTION**

### **3.01 PERMITTING**

- A. A Storm Water Pollution Prevention Plan **is** required since the area to be disturbed is **more than** one acre.

**END OF SECTION**

**PART 1 - GENERAL**

**1.01 CLEANING AND WASTE REMOVAL**

A. Progress Cleaning:

1. The premises and the job site shall be maintained in a reasonable neat and orderly condition and kept free from accumulations of waste materials and rubbish during the entire construction period. Remove crates, cartons, and other flammable waste materials or trash from the work areas at the end of each working day. Do not allow debris to blow onto adjoining properties. Respond immediately to request from adjoining property owners to remove any debris that does manage to show up on adjoining properties. Collect and remove waste materials, debris, and rubbish from site weekly, daily if necessary and dispose off-site.
2. Remove debris and rubbish from pipe chases, plenums, attics, crawl spaces, and other closed or remote spaces, prior to enclosing the space.
3. Broom and vacuum clean interior areas prior to start of surface finishing and continue cleaning to eliminate dust.

B. Final Cleaning:

1. Use cleaning materials and agents recommended by manufacturer or fabricator of surface to be cleaned. Do not use cleaning agents that are potentially hazardous to health or property, or that might damage finished surfaces.
2. Employ experienced workers or professional cleaners for final cleaning. Clean each surface or unit of Work to condition expected from a commercial building cleaning and maintenance program. Comply with manufacturer's published instructions.
3. Complete following cleaning operations before requesting inspection for Substantial Completion, where applicable to project scope:
  - a. Clean Project Site, yard, and grounds, in areas disturbed by construction activities, including landscape development areas, of rubbish, waste materials, litter and foreign substances. Sweep paved areas broom clean. Remove petro-chemical spills, stains, and other foreign deposits. Rake grounds to a smooth even-textured surface.
  - b. Remove tools, construction equipment, machinery, and surplus material from Project Site.
  - c. Remove snow and ice to provide safe access to building.
  - d. Clean exposed exterior and interior hard-surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
  - e. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
  - f. Broom clean concrete floors in unoccupied spaces.

- g. Vacuum clean carpet and similar soft surfaces, removing debris and excess nap. Shampoo if required.
- h. Clean transparent materials, including mirrors and glass in doors and windows. Remove glazing compounds and other substances that are noticeable vision-obscuring materials. Replace chipped, scratched, or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces. Do not use razor blades to clean glass. Any scratches on the glass caused by the cleaning process will be cause for the removal and replacement of the damaged glass at the Contractor's expense.
- i. Remove labels that are not permanent labels.
- j. Touch-up and otherwise repair and restore marred exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored, or that show evidence of repair or restoration. Do not paint over "UL" and similar labels, including mechanical and electrical name plates.
- k. Wipe surfaces of mechanical and electrical equipment, and other similar equipment. Remove excess lubrication, paint and mortar droppings and other foreign substances.
- l. Plumbing fixtures are to be cleaned to a sanitary condition, free of stains, including stains resulting from water exposure.
- m. Replace all disposable filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grills. Clean ducts, blowers, and coils if units were operated without filters during construction.
- n. Clean light fixtures, lamps, globes, and reflectors to function with full efficiency. Replace burned out bulbs, and defective and noisy starters in fluorescent and mercury vapor fixtures.
- o. Leave Project clean and ready for occupancy.
- 4. Engage an experienced licensed exterminator to make a final inspection, and rid Project of rodents, insects, and other pests. Comply with regulations of local authorities having jurisdiction.
- 5. Remove temporary protection and facilities installed during construction to protect previously completed installations during remainder of construction.
- 6. Comply with governing regulations and safety standards for cleaning operations. Remove waste materials from Project Site and dispose of in accordance with requirements of local authorities having jurisdiction.
  - a. Extra materials of value that remain after completion of construction and have become the Owner's property are to be stored as directed by Owner.

**PART 2 - PRODUCTS** - Not Used

**PART 3 - EXECUTION** - Not Used

**END OF SECTION 01 74 23**

**PART 1 - GENERAL**

**1.01 DESCRIPTION**

- A. Upon completion of Work and prior to final payment, a digital electronic copy of the following items must be submitted to Architect, tabbed and with a Table of Contents conforming to the current version of the CSI MasterFormat. Formatted items may be submitted on a thumb drive or via Microsoft OneDrive file hosting service (OneDrive also works as the storage backend of the web version of Microsoft 365 / Office cloud storage):
1. General Contractors letter of warranty
  2. General Contractors letter stating that all deficiency list items are complete
  3. Lien releases
  4. Consent of Surety to pay final retainage
  5. List of all subcontractors and suppliers, including portions of the work performed, address and telephone number of firm, and a contact name familiar with the project. Two (2) copies. One copy in each binder.
  6. Guarantees and Warranties: Refer to specific sections of Project Manual for general requirements on warranties, product/workmanship bonds, and maintenance agreements. Furnish two (2) fully executed copies of each guarantee and warranty specified for review by Architect, one copy in each binder.
  7. Certificates: Fully executed copy of each certificate specified, where applicable:
    - a. Certificate of Occupancy
    - b. Final Termite Inspection
    - c. Final Plumbing Inspection
    - d. Final Electrical Inspection
    - e. Certificate of Air Balance
  8. Miscellaneous other inspection reports, where applicable:
    - a. Boiler and Tank
    - b. Elevators and Hoist Systems
    - c. Backflow Preventers on Potable Water
    - d. Fire Suppression System
    - e. Fire Alarm System
    - f. Security System
    - g. Backup Power Generator
    - h. Cable Test/Certification Reports and Startup Records
  9. Instructions: Operating, service and maintenance manual or instruction sheet for each item as requested by specifications and required for Owner's use.
  10. Building hardware packet as described in Section 08 71 00, if applicable.
  11. Shop Drawings: A complete file of final copies of all shop drawings used in construction of project.
  12. Complete set of all submittals for products used in construction of project.
- B. Project Record Drawings: The Contractor shall provide one (1) complete set of project record drawings and two (2) CD's of scanned images of the drawings.



1. Cloud and reference each of the following items on the Record Drawings:
  - a. written addendum items
  - b. addendum drawings
  - c. "X" drawings
  - d. Supplemental Instructions
  - e. Change Orders
  - f. responses to RFI's
  - g. any other deviations from the original drawings that are made in the field
2. Record final locations of underground lines by depth from finished grade and by accurate horizontal offset distances to permanent surface improvements such as buildings, curbs, edges, or walks.

**PART 2 - PRODUCTS** - Not Used

**PART 3 - EXECUTION**

**3.01 EXTENDED WARRANTIES**

- A. The entire project is warranted for a period of one (1) year from the date of substantial completion and several materials and systems require extended warranties. It is the responsibility of the General Contractor to review the Project Manual to determine the term of the extended warranties and provide the extended warranties required.

**END OF SECTION 01 78 00**

**PART 1 - GENERAL**

**1.01 ASBESTOS SURVEY REPORT**

- A. An Asbestos Survey has been performed for the Owner by Environmental Protection Associates at (501) 562-3818 for this project. These reports has been bound herein for information purposes only.
  - 1. Asbestos Sampling - High School Building, dated August 20, 2024.
  - 2. Asbestos Survey - Small Gym, dated August 20, 2024.
  
- B. Additional tests and other exploratory operations may be performed by Contractor, at the Contractor's expense; however, no change in the Contract Sum will be authorized for such additional exploration.

**1.02 ASBESTOS ABATEMENT**

- A. Drawings, general provisions of the contract, including general and supplementary conditions and other Division 01 specifications, shall apply to the work of this section.
  
- B. Recommended Licensed and Certified Contractors:
  - 1. Environmental Protection Associates (501) 562-3818
  - 2. Gerken Environmental Enterprises, Inc. (501) 225-4191
  - 3. Nabholz Environmental (501) 217-5506
  - 4. Parker Environmental (501) 653-7713
  - 5. Snyder Environmental (888) 353-2080
  
- C. During the construction of this project, if work involving friable asbestos is suspected, or encountered, Contractor shall notify Owner or Owner's representative immediately and Owner, with his own forces or by separate contract is responsible for complete investigation, removal and disposition of friable asbestos hazard in accordance with applicable laws and regulations.

**PART 2 - PRODUCTS (Not Applicable)**

**PART 3 - EXECUTION (Not Applicable)**

**END OF DOCUMENT 02 26 00**

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#9 Remington Cove  
Little Rock, Arkansas 72204  
Phone: 501-562-3818  
Fax: 501-562-5701  
Toll Free: 1-800-530-7706

# Asbestos Sampling

**To:** Brad Chilcote, AIA, LEED AP, ALP  
WDD Architects  
5050 Northshore Lane  
North Little Rock, AR 72118

**From:** Gary Nooner

**Email:** [bradc@wddarchitects.com](mailto:bradc@wddarchitects.com)

**Fax:**

**Date:** August 20, 2020

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**Phone:** 501-376-6681

**Cell:** 501-425-3940

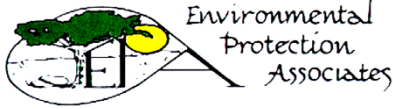
**Pages:** 19 Including cover sheet

**Re:** High School Building  
Brinkley Public Schools

**cc:**

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**Comments**



#9 Remington Cove  
Little Rock, Arkansas 72204  
501-562-3818  
Fax 501-562-5701

August 20, 2024

WDD Architects  
5050 Northshore Lane  
North Little Rock, AR 72118

**RE: Asbestos Sampling**

High School Building  
Brinkley Public Schools  
200 Tigers Drive  
Brinkley, AR 72021

**Mr. Brad Chilcote, AIA, LEED AP, AL**

On August 13, 2024 at your request I collected samples from the above referenced location to determine if asbestos was present. Twenty-eight (28) samples were collected for laboratory analysis.

Laboratory analysis of these samples have determined the following:

**Asbestos Detected in the following Materials**

Description	Location	
Sample #BHS-01, 02 Roofing	Roof	Approx. 18,000 Sft.
Sample #BHS-15 Lab Counter Top (Black)	2nd Floor - Room 210	Approx. 300 Sft.
Sample #BHS-16 Lab Counter Top (Green)	2nd Floor - Room 208	Approx. 200 Sft.
Sample #BHS-17 Chemical Vent hood	2nd Floor - Room 210	Approx. 100 Sft.
Sample #BHS-18 Floor Tile and Mastic (2 layers)	2nd Floor - Room 210	Approx. 4,900 Sft.
Sample #BHS-19 Floor Tile and Mastic (2 layers or Carpet)	1st Floor - Addition	Approx. 4,900 Sft.
<b>Assumed</b> Gasket, rope and/or refractory mud	Boiler room - Boilers	2 ea. Boilers 6'x4'x4' & 5'x4'x4'

Federal and state regulations with the exception of OSHA, determine a material to be asbestos containing if it contains 1% or more asbestos. OSHA states that any amount is an asbestos material.

Therefore the following materials must be removed by a licensed asbestos contractor if disturbed by renovation or demolition.

**Roofing, Lab Counter Tops, Chemical Vent hood, Floor Tile & Mastic and Assumed Boilers in Basement**

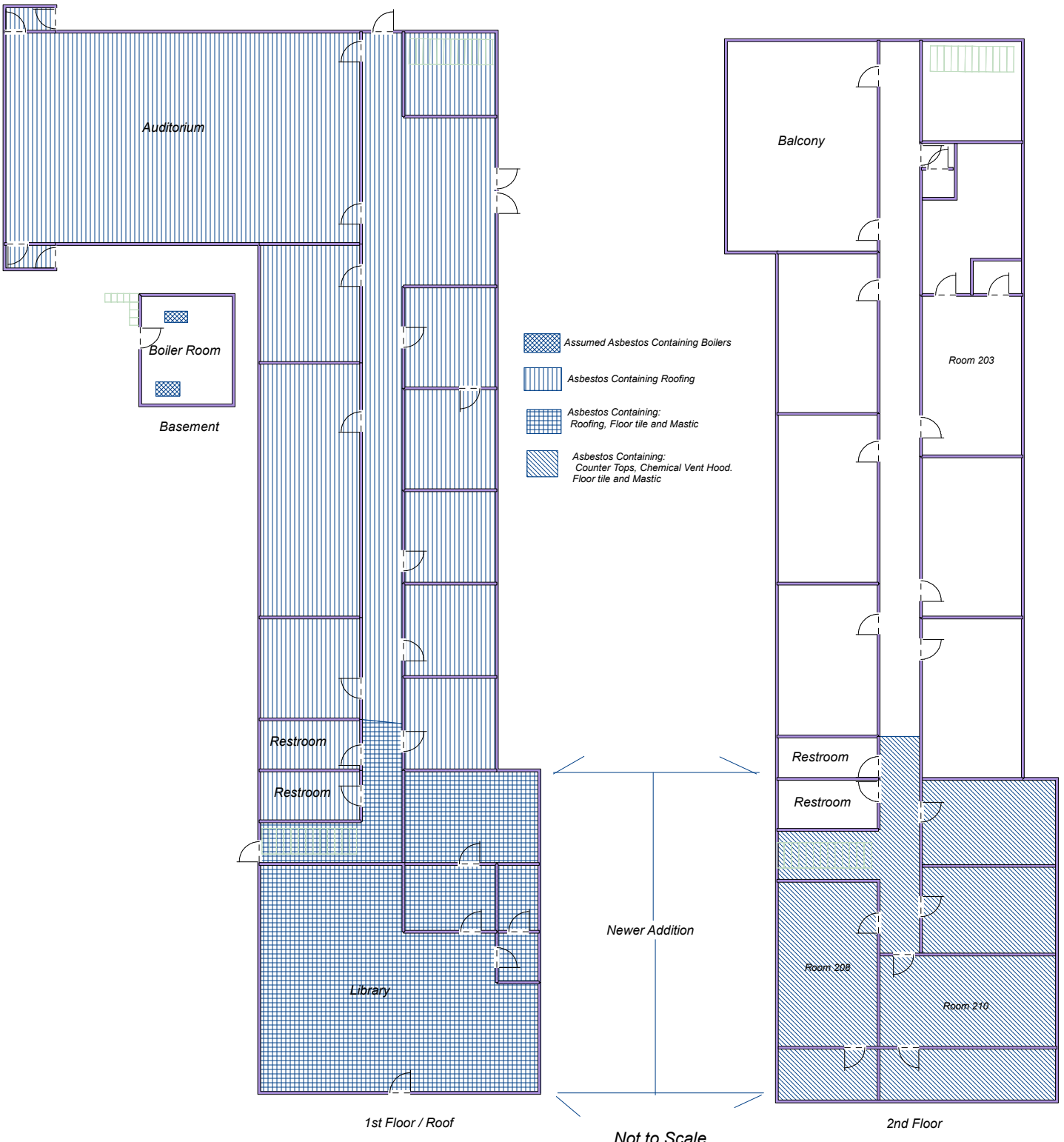
For further clarification of the Arkansas asbestos regulation 21. You may contact the Arkansas Department of Environmental Quality (ADEQ) Phone - 501-682-0718 or visit their website at - [www.adeq.state.ar.us](http://www.adeq.state.ar.us)

I have attached my chain of custody and laboratory findings. Please contact me with any Questions you may have.

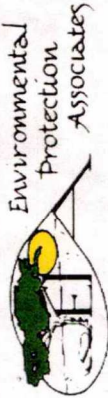
Sincerely,

Gary Nooner  
Inspector  
License No. 005065

Enclosures



High School Building



# Asbestos Sampling Chain of Custody Field Data Sheet

#9 Remington Cove  
Little Rock, Arkansas 72204  
501-562-3818  
Fax 501-562-5701

*Call 202-664-486*

<b>Client</b>	Brad Chilcote, AIA, LEED AP, ALP	<b>Inspector</b>	Gary Nooner
WDD Architects	High School Building	<b>Building ID</b>	High School Building
5050 Northshore Lane	Brinkley Public Schools	<b>Date</b>	8/13/2024
North Little Rock, AR 72118	200 Tigers Drive	<b>Turnaround Time</b>	Rush (24 hour)
	Brinkley, AR 72021		

SAMPLE ID	HA	Sample Description	Sample Location	A	C	Class (S,T,M)	Fraility (F,NF)	Condition (G,D,SD)	Damage (%)	POT. DAM (L,M,H)	Quantity
BHS-01		Example: FT1- 12 x 12 white Floor tile	Roof	X		M	NF	D	30%	H	+/- 18,000 sift
BHS-02		Roofing	Roof	X		M	NF	D	30%	H	See Above
BHS-03		Sheetrock & Joint Compound	2nd Floor - Ceilings	X		M	F	D	30%	H	+/- 18,000 sift
BHS-04		Sheetrock & Joint Compound	2nd Floor - Ceilings	X		M	F	D	30%	H	See Above
BHS-05		Plaster	2nd Floor - Ceilings	X		S	F	D	30%	H	+/- 13,000 sift
BHS-06		Plaster	2nd Floor - Ceilings	X		S	F	D	30%	H	See Above
BHS-07		Lay-in Ceiling Tile	2nd Floor - Ceilings	X		M	F	D	30%	H	+/- 18,000 sift
BHS-08		Lay-in Ceiling Tile	2nd Floor - Ceilings	X		M	F	D	30%	H	See Above
BHS-09		Sheetrock & Joint Compound	2nd Floor - Walls	X		M	F	D	30%	H	Undetermined
BHS-10		Sheetrock & Joint Compound	2nd Floor - Walls	X		M	F	D	30%	H	Undetermined
BHS-11		No-Drip Tape	HVAC Units in each room	X		M	NF	G	5%	H	+/- 20 left
BHS-12		Ceramic Tile and Grout	2nd Floor - Small Restroom	X		M	NF	G	5%	H	+/- 180 sift
BHS-13		Floor Tile and Adhesive	2nd Floor - Room 203	X		M	NF	G	5%	H	+/- 800 sift
BHS-14		Ceramic Tile and Grout	2nd Floor - off of Room 203	X		M	NF	G	5%	H	+/- 80 sift
BHS-15		Lab Counter Top (Black)	2nd Floor - Room 210	X		M	NF	G	5%	H	+/- 300 sift
BHS-16		Lab Counter Top (Green)	2nd Floor - Room 208	X		M	NF	G	5%	H	+/- 200 sift
BHS-17		Chemical Vent hood	2nd Floor - Room 210	X		M	NF	G	5%	H	+/- 100 sift
BHS-18		Floor Tile and Mastic (2 layers)	2nd Floor - Addition	X		M	NF	G	10%	H	+/- 4,900 sift x2
BHS-19		Floor Tile and Mastic (2 layers or Carpet)	1st Floor - Addition	X		M	NF	G	10%	H	+/- 4,900 sift x2
BHS-20		Plaster	1st Floor - Ceilings	X		S	F	D	30%	H	+/- 11,000 sift
BHS-21		Sheetrock & Joint Compound	1st Floor - Ceilings	X		M	F	D	30%	H	+/- 15,000 sift
BHS-22		Lay-in Ceiling Tile	1st Floor - Ceilings	X		M	F	D	30%	H	+/- 15,000 sift
BHS-23		Ceramic Tile and Grout	1st & 2nd Floor - Main Restrooms	X		M	NF	G	15%	H	+/- 1,000 sift
BHS-24		Sheetrock & Joint Compound	Boiler Room - Ceilings	X		M	F	G	10%	H	+/- 550 sift
BHS-25		White Mastic on Fiberglass Pipes	Boiler Room / Crawlspace	X		M	NF	D	30%	H	+/- 2,400 left
BHS-26		White Mastic on Canvas	Boiler Room	X		M	NF	G	10%	H	+/- 50 'ft
BHS-27		White Mastic on Small Tank	Boiler Room	X		M	NF	G	10%	H	+/- 50 sift
BHS-28		Roof Shingle / Debris	Boiler Room - Shed Roof	X		M	NF	D	30%	H	+/- 200 sift
Assumed		Gasket, rope and/or refractory mud	Boiler room - Boilers	X		M	NF	G	5%	H	2 ea. Boilers 6'x4'x4 & 5'x4'x4'

10:30AM

HA - Homogeneous Area A - Analyze C - Catalogue ♦ - Analyze only if the previous sample was found to be negative.

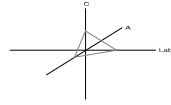
Class: S-surfacings, T-thermal, M-miscellaneous. Fraility: F-frail, NF-non-frail. Condition: G-good, D-damaged, SD-severely damaged. POT. DAM (Potential Damage): L-low, M-moderate, H-high

Relinquished By	<i>Doug Kern</i>	Time	08:00	Date	8-16-24	Relinquished By		Time		Date	AUG 19 2024
Received By		Time		Date		Received By		Time		Date	
Comments:	<b>Composite Sample all positive Sheetrock and Joint Compound Samples</b>										

*Aldrew S. Rice*

**CA Labs**  
Dedicated to Quality

**Crisp Analytical, L.L.C.**  
1929 Old Denton Road  
Carrollton, TX 75006  
Phone 972-242-2754  
Fax 972-242-2798



**CA Labs, L.L.C.**  
12232 Industriplex, Suite 32  
Baton Rouge, LA 70809  
Phone 225-751-5632  
Fax 225-751-5634

## **Materials Characterization - Bulk Asbestos Analysis**

### **Laboratory Analysis Report - Polarized Light**

#### **Environmental Protection Associates**

#9 Remington Cove  
Little Rock, AR 72204

**Attn:** Gary Nooner

Customer Project: High School Building, Brinkley Public Sch  
Reference #: CAL24086486AG Date: 08/20/24

#### **Analysis and Method**

Summary of polarized light microscopy (PLM / Stereomicroscopy bulk asbestos analysis) using the methods described in 40CFR Part 763 Appendix E to Subpart E (Interim and EPA 600 / R-93 / 116 (Improved). The sample is first viewed with the aid of a stereomicroscope. Numerous liquid slide preparations are created for analysis under the polarized microscope where identifications and quantifications are performed. Calibrated liquid refractive oils are used as liquid mounting medium. These oils are used for identification (dispersion staining). A calibrated visual estimation is reported, should any asbestiform mineral be present. Other techniques such as acid washing are used in conjunction with refractive oils for detection of smaller quantities of asbestos. All asbestos percentages are based on calibrated visual estimation traceable to NIST standards for regulated asbestos. Traceability to measurement and calibration is achieved by using known amounts and types of asbestos from standards where analyst and laboratory accuracy are measured. As little as 0.001% asbestos can be detected in favorable samples, while detection in unfavorable samples may approach the detection limit of 0.50% (well above the laboratory definition of trace).

#### **Discussion**

Vermiculite containing samples may contain trace amounts of actinolite/tremolite. When not detected by PLM, these samples should be analyzed using TEM methods and / or water separation techniques. Suspected actinolite/vermiculite presence will be indicated through the sample comment section of this report.

Fibrous talc containing samples may contain a regulated asbestos fiber known as anthophyllite. Under certain conditions the same fiber may actually contain both talc and anthophyllite (a phenomenon called intergrowth). Again, TEM detection methods are recommended. CA Labs PLM report comments will denote suspected amounts of asbestiform anthophyllite with talc, where further analysis is recommended.

Some samples (floor tiles, surfacings, etc.) may contain fibers too small to be detectable by PLM analysis and should be analyzed by TEM bulk protocols.

A "trace asbestos" will be reported if the analyst observes far less than 1% asbestos. CA Labs defines "trace asbestos" as a few fibers detected by the analyst in several preparations and will indicate as such under these circumstances.

Since allowable variation in quantification of samples close to 1% is high, <1% may be reported. Such results are ideal for point counting, and the technique is mandatory for friable samples (NESHAP, Nov. 1990 and clarification letter 8 May 1991) under 1% percent asbestos or "trace asbestos". **In order to make all initial PLM reports issued from CA Labs NESHAP compliant, all <1% asbestos results (except floor tiles) will be point counted at no additional charge.**

#### **Qualifications**

CA Labs is accredited by the National Voluntary Accreditation Program (NVLAP) for selected test methods for airborne fiber analysis (TEM), and for bulk asbestos fiber analysis (PLM). CA Labs is also accredited by AIHA LAP, LLC. in the PLM asbestos field of testing for Industrial Hygiene. All analysts have completed college courses or hold a degree in a natural science (geology, biology, or environmental science). Recognition by a state professional board in one these disciplines is preferred, but not required. Extensive in-house training programs are used to augment the educational background of the analyst. The Laboratory Director and Quality Manager have received supplemental McCrone Research training for asbestos identification. Analysis performed at Crisp Analytical Labs, LLC 1929 Old Denton Road Carrollton, TX 75006

*Dallas NVLAP Lab Code 200349-0 TEM/PLM TDSHS 30-0235*  
**AIHA LAP, LLC Laboratory #102929**



Overview of Project Sample Material Containing Asbestos

<b>Customer Project:</b>		High School Building, Brinkley Public Schools			<b>CA Labs Project #:</b> CAL24086486AG	
Laboratory Sample ID	Sample #	Layer #	Analysts Physical Description of Subsample	Asbestos type / calibrated visual estimate percent	List of Affected Building Material Types	
70190	BHS-01	1-1	<b>Roofing/</b> various black tar and black felt layers	<b>2% Chrysotile</b>	various black tar and black felt layers gray transite green transite	
70191	BHS-02	2-1	<b>Roofing/</b> various black tar and black felt layers	<b>2% Chrysotile</b>	white transite tan floor tile black mastic	
70204	BHS-15	15-1	<b>Lab Countertop/</b> gray transite	<b>20% Chrysotile</b>		
70205	BHS-16	16-1	<b>Lab Countertop/</b> green transite	<b>22% Chrysotile</b>		
70206	BHS-17	17-1	<b>Chemical Vent Hood/</b> white transite	<b>20% Chrysotile</b>		
70207	BHS-18	18-3	tan floor tile	<b>2% Chrysotile</b>		
70207		18-4	black mastic	<b>2% Chrysotile</b>		
70208	BHS-19	19-3	tan floor tile	<b>2% Chrysotile</b>		

Dallas NVLAP Lab Code 200349-0 TEM/PLM TDSHS 30-0235

**AIHA LAP, LLC Laboratory #102929**

**Glossary of abbreviations (non-asbestos fibers and non-fibrous minerals):**

ca - carbonate	pe - perlite	fg - fiberglass	pa - palygorskite (clay)
gypsum - gypsum	qu - quartz	mw - mineral wool	
bi - binder		wo - wollastinite	
or - organic		ta - talc	
ma - matrix		sy - synthetic	
mi - mica		ce - cellulose	
ve - vermiculite		br - brucite	
ot - other		ka - kaolin (clay)	

This report relates to the items tested as received. This report is not to be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST, AIHA LAP, LLC, or any other agency of the federal government. This report may not be reproduced except in full without written permission from CA Labs. These results are submitted pursuant to CA Labs' current terms and sale, condition of sale, including the company's standard warranty and limitations of liability provisions and no responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless notified in writing to return the samples covered by this report, CA Labs will store the samples for a period of ninety (90) days before discarding. A shipping or handling fee may be assessed for the return of any samples.

**CA Labs**  
**Dedicated to Quality**

**Crisp Analytical, L.L.C.**  
 1929 Old Denton Road  
 Carrollton, TX 75006  
 Phone 972-242-2754  
 Fax 972-242-2798

**CA Labs, L.L.C.**  
 12232 Industriplex, Suite 32  
 Baton Rouge, LA 70809  
 Phone 225-751-5632  
 Fax 225-751-5634

Overview of Project Sample Material Containing Asbestos

<b>Customer Project:</b>		High School Building, Brinkley Public Schools		<b>CA Labs Project #:</b> CAL24086486AG	
Laboratory Sample ID	Sample #	Layer #	Analysts Physical Description of Subsample	Asbestos type / calibrated visual estimate percent	List of Affected Building Material Types
70208		19-4	black mastic	2% <b>Chrysotile</b>	

Dallas NVLAP Lab Code 200349-0 TEM/PLM TDSHS 30-0235  
**AIHA LAP, LLC Laboratory #102929**

**Glossary of abbreviations (non-asbestos fibers and non-fibrous minerals):**

ca - carbonate	pe - perlite	fg - fiberglass	pa - palygorskite (clay)
gypsum - gypsum	qu - quartz	mw - mineral wool	
bi - binder		wo - wollastinite	
or - organic		ta - talc	
ma - matrix		sy - synthetic	
mi - mica		ce - cellulose	
ve - vermiculite		br - brucite	
ot - other		ka - kaolin (clay)	

This report relates to the items tested as received. This report is not to be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST, AIHA LAP, LLC, or any other agency of the federal government. This report may not be reproduced except in full without written permission from CA Labs. These results are submitted pursuant to CA Labs' current terms and sale, condition of sale, including the company's standard warranty and limitations of liability provisions and no responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless notified in writing to return the samples covered by this report, CA Labs will store the samples for a period of ninety (90) days before discarding. A shipping or handling fee may be assessed for the return of any samples.

**Polarized Light Asbestiform Materials Characterization**

<b>Customer Info:</b>	<b>Attn:</b> Gary Nooner	<b>Customer Project:</b>	<b>CA Labs Project #:</b>
<b>Environmental Protection Associates</b>		High School Building, Brinkley Public Schools	CA L24086486AG
#9 Remington Cove Little Rock, AR 72204		<b>Turnaround Time:</b> 24 hours	<b>Date:</b> 8/20/2024
Phone #	501-562-3818		<b>Samples Rec'd:</b> 8/19/24 10:30AM
Fax #			<b>Date Of Sampling:</b> 8/13/2024
			<b>Purchase Order #:</b>

Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homo-geneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
70190	BHS-01		1-1	<b>Roofing/</b> various black tar and black felt layers	n	<b>2% Chrysotile</b>	20% ce	78% qu,bi
70191	BHS-02		2-1	<b>Roofing/</b> various black tar and black felt layers	n	<b>2% Chrysotile</b>	20% ce	78% qu,bi
70192	BHS-03		3-1	<b>Sheetrock &amp; Joint Compound/</b> white surfaced white compound	n	<b>None Detected</b>		100% mi,qu,ca
70192			3-2	white drywall with brown paper	n	<b>None Detected</b>	15% ce	85% qu,gy
70193	BHS-04		4-1	<b>Sheetrock &amp; Joint Compound/</b> white surfaced white compound	n	<b>None Detected</b>		100% mi,qu,bi,ca
70193			4-2	white drywall with brown paper	n	<b>None Detected</b>	10% ce	90% qu,gy
70194	BHS-05		5-1	<b>Plaster/</b> white surfaced tan plaster	n	<b>None Detected</b>		100% qu,bi,ca

Dallas NVLAP Lab Code 200349-0 TEM/PLM TDSHS 30-0235

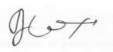
**AIHA LAP, LLC Laboratory #102929**

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.

Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

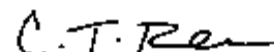
ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:



Justin Cox  
Analyst

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
2. Fire Damage no significant fiber damages effecting fibrous percentages
3. Actinolite in association with Vermiculite
4. Layer not analyzed - attached to previous positive layer and contamination is suspected
5. Not enough sample to analyze



Technical Manager  
Tanner Rasmussen

Senior Analyst  
Julio Robles

6. Anthophyllite in association with Fibrous Talc
7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

**Polarized Light Asbestiform Materials Characterization**

**Customer Info:** Attn: Gary Nooner  
**Environmental Protection Associates**  
#9 Remington Cove  
Little Rock, AR 72204  
Phone # 501-562-3818  
Fax #

**Customer Project:** High School Building, Brinkley Public Schools  
**Turnaround Time:** 24 hours

**CA Labs Project #:** CAL24086486AG  
**Date:** 8/20/2024  
**Samples Rec'd:** 8/19/24 10:30AM  
**Date Of Sampling:** 8/13/2024  
**Purchase Order #:**

Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homo-geneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
70195	BHS-06		6-1	Plaster/ tan plaster	y	None Detected		100% qu,bi,ca
70196	BHS-07		7-1	Lay-in Ceiling Tile/ white surfacing	y	None Detected		100% qu,bi
70196			7-2	tan ceiling tile	y	None Detected	35% ce 35% fg	30% qu,ca
70197	BHS-08		8-1	Lay-in Ceiling Tile/ white surfacing	y	None Detected		100% qu,bi
70197			8-2	tan ceiling tile	y	None Detected	35% ce 35% fg	30% qu,ca
70198	BHS-09		9-1	Sheetrock & Joint Compound/ white surfaced white compound	n	None Detected		100% mi,qu,bi,ca
70198			9-2	white compound (beneath tape)	y	None Detected		100% mi,qu,ca

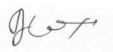
Dallas NVLAP Lab Code 200349-0 TEM/PLM TDSHS 30-0235

**AIHA LAP, LLC Laboratory #102929**

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.  
Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

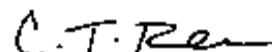
ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:



Justin Cox  
Analyst

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
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5. Not enough sample to analyze



Technical Manager  
Tanner Rasmussen

Senior Analyst  
Julio Robles

6. Anthophyllite in association with Fibrous Talc
7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

**Polarized Light Asbestiform Materials Characterization**

<b>Customer Info:</b>	<b>Attn:</b> Gary Nooner	<b>Customer Project:</b>	<b>CA Labs Project #:</b>
<b>Environmental Protection Associates</b>		High School Building, Brinkley Public Schools	CA L24086486AG
#9 Remington Cove Little Rock, AR 72204		<b>Turnaround Time:</b> 24 hours	<b>Date:</b> 8/20/2024
Phone #	501-562-3818		<b>Samples Rec'd:</b> 8/19/24 10:30AM
Fax #			<b>Date Of Sampling:</b> 8/13/2024
			<b>Purchase Order #:</b>

Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homo-geneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
70198			9-3	white drywall with brown paper	n	<b>None Detected</b>	10% ce	90% qu,gy
				<b>Sheetrock &amp; Joint Compound/ white surfaced</b>				100%
70199	BHS-10		10-1	white compound	n	<b>None Detected</b>		mi,qu,bi,ca
70199			10-2	white compound (beneath tape)	y	<b>None Detected</b>		100% mi,qu,ca
70199			10-3	white drywall with brown paper	n	<b>None Detected</b>	10% ce	90% qu,gy
70200	BHS-11		11-1	<b>No-Drip Tape/ black sealant</b>	y	<b>None Detected</b>		100% qu,gy,bi
70201	BHS-12		12-1	<b>Ceramic Tile and Grout/ tan ceramic tile</b>	y	<b>None Detected</b>		100% qu,ma
70201			12-2	gray grouting	y	<b>None Detected</b>		100% qu,ca

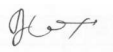
Dallas NVLAP Lab Code 200349-0 TEM/PLM TDSHS 30-0235

**AIHA LAP, LLC Laboratory #102929**

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.  
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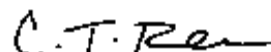
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gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:



Justin Cox  
Analyst

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Technical Manager  
Tanner Rasmussen

Senior Analyst  
Julio Robles

6. Anthophyllite in association with Fibrous Talc
7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

## Polarized Light Asbestiform Materials Characterization

<b>Customer Info:</b>	Attn: Gary Nooner	<b>Customer Project:</b>	<b>CA Labs Project #:</b>
<b>Environmental Protection Associates</b>		High School Building, Brinkley Public Schools	CA L24086486AG
#9 Remington Cove Little Rock, AR 72204		<b>Turnaround Time:</b> 24 hours	<b>Date:</b> 8/20/2024
Phone #	501-562-3818		<b>Samples Rec'd:</b> 8/19/24 10:30AM
Fax #			<b>Date Of Sampling:</b> 8/13/2024
			<b>Purchase Order #:</b>

Laboratory Sample ID	Sample #	Com ment	Layer #	Analysts Physical Description of Subsample	Homo-geneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
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<b>Floor Tile and Adhesive/</b>								
70202	BHS-13		13-1	white floor tile	y	None Detected		100% qu,ca
70202			13-2	gray leveling compound	y	None Detected		100% qu,bi,ca
<b>Ceramic Tile and Grout/ tan</b>								
70203	BHS-14		14-1	spotted ceramic tile	y	None Detected		100% qu,ma
70203			14-2	gray grouting	y	None Detected		100% qu,ca
70204	BHS-15		15-1	Lab Countertop/ gray transite	y	20% Chrysotile		80% qu,ca,ma
<b>Lab Countertop/ green</b>								
70205	BHS-16		16-1	transite	y	22% Chrysotile		78% qu,ca,ma
<b>Chemical Vent Hood/ white</b>								
70206	BHS-17		17-1	transite	y	20% Chrysotile		80% qu,ca,ma

Dallas NVLAP Lab Code 200349-0 TEM/PLM TDSHS 30-0235

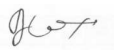
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Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.

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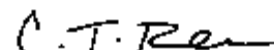
ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:



Justin Cox  
Analyst

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
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Technical Manager  
Tanner Rasmussen

6. Anthophyllite in association with Fibrous Talc
7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

Senior Analyst  
Julio Robles

**Polarized Light Asbestiform Materials Characterization**

<b>Customer Info:</b>	<b>Attn:</b> Gary Nooner	<b>Customer Project:</b>	<b>CA Labs Project #:</b>
<b>Environmental Protection Associates</b>		High School Building, Brinkley Public Schools	CA124086486AG
#9 Remington Cove Little Rock, AR 72204		<b>Turnaround Time:</b> 24 hours	<b>Date:</b> 8/20/2024
Phone #	501-562-3818		<b>Samples Rec'd:</b> 8/19/24 10:30AM
Fax #			<b>Date Of Sampling:</b> 8/13/2024
			<b>Purchase Order #:</b>

Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homo-geneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
<b>Floor Tile and Mastic/ gray</b>								
70207	BHS-18		18-1	floor tile	y	None Detected		100% qu,ca
70207			18-2	tan mastic	y	None Detected		100% gy,bi
70207			18-3	tan floor tile	y	2% Chrysotile		98% qu,ca
70207			18-4	black mastic	y	2% Chrysotile		98% gy,bi
<b>Floor Tile and Mastic/ white</b>								
70208	BHS-19		19-1	floor tile	y	None Detected		100% qu,ca
70208			19-2	tan mastic	y	None Detected		100% gy,bi
70208			19-3	tan floor tile	y	2% Chrysotile		98% qu,ca

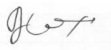
Dallas NVLAP Lab Code 200349-0 TEM/PLM TDSHS 30-0235

**AIHA LAP, LLC Laboratory #102929**

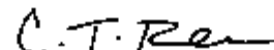
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Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:



Justin Cox  
Analyst



Technical Manager  
Tanner Rasmussen

Senior Analyst  
Julio Robles

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
2. Fire Damage no significant fiber damages effecting fibrous percentages
3. Actinolite in association with Vermiculite
4. Layer not analyzed - attached to previous positive layer and contamination is suspected
5. Not enough sample to analyze

6. Anthophyllite in association with Fibrous Talc
7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

**Polarized Light Asbestiform Materials Characterization**

<b>Customer Info:</b>	<b>Attn:</b> Gary Nooner	<b>Customer Project:</b>	<b>CA Labs Project #:</b>
<b>Environmental Protection Associates</b>		High School Building, Brinkley Public Schools	CA L24086486AG
#9 Remington Cove Little Rock, AR 72204		<b>Turnaround Time:</b> 24 hours	<b>Date:</b> 8/20/2024
Phone #	501-562-3818		<b>Samples Rec'd:</b> 8/19/24 10:30AM
Fax #			<b>Date Of Sampling:</b> 8/13/2024
			<b>Purchase Order #:</b>

Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homo-geneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
70208			19-4	black mastic	y	2% Chrysotile		98% gy,bi
70209	BHS-20		20-1	Plaster/ tan plaster	y	None Detected		100% qu,bi,ca
				Sheetrock & Joint Compound/ white surfaced				
70210	BHS-21		21-1	white compound	n	None Detected	2% ta	98% qu,mi,bi,ca
70210			21-2	white drywall with brown paper	n	None Detected	15% ce	85% qu,gy
70211	BHS-22		22-1	Lay-in Ceiling Tile/ white surfacing	y	None Detected		100% qu,bi
70211			22-2	tan ceiling tile	y	None Detected	30% ce 35% fg	35% qu,pe,ca
70212	BHS-23		23-1	Ceramic Tile and Grout/ tan ceramic tile	y	None Detected		100% qu,ma

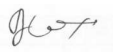
Dallas NVLAP Lab Code 200349-0 TEM/PLM TDSHS 30-0235

**AIHA LAP, LLC Laboratory #102929**

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.  
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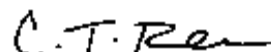
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or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
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Approved Signatories:



Justin Cox  
Analyst

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
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Technical Manager  
Tanner Rasmussen

Senior Analyst  
Julio Robles

6. Anthophyllite in association with Fibrous Talc
7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested



**Polarized Light Asbestiform Materials Characterization**

<b>Customer Info:</b>	<b>Attn:</b> Gary Nooner	<b>Customer Project:</b>	<b>CA Labs Project #:</b>
<b>Environmental Protection Associates</b>		High School Building, Brinkley Public Schools	CA L24086486AG
#9 Remington Cove Little Rock, AR 72204		<b>Turnaround Time:</b> 24 hours	<b>Date:</b> 8/20/2024
Phone #	501-562-3818		<b>Samples Rec'd:</b> 8/19/24 10:30AM
Fax #			<b>Date Of Sampling:</b> 8/13/2024
			<b>Purchase Order #:</b>

Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homo-geneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
70212			23-2	gray grouting	y	None Detected		100% qu,ca
70212			23-3	gray ceramic tile	y	None Detected		100% qu,ma
70213	BHS-24		24-1	<b>Sheetrock &amp; Joint Compound/ white surfaced white compound</b>	n	None Detected		100% mi,qu,bi,ca
70213			24-2	tan drywall with brown paper	n	None Detected	10% ce	90% qu,gy
70214	BHS-25		25-1	<b>Mastic on Fiberglass Pipes/ tan surfacing</b>	y	None Detected		100% qu,bi
70214			25-2	yellow insulation	y	None Detected	100% fg	
70215	BHS-26		26-1	<b>Mastic on Canvas/ yellow insulation with foil</b>	n	None Detected	85% fg	15% ot

Dallas NVLAP Lab Code 200349-0 TEM/PLM TDSHS 30-0235

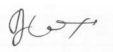
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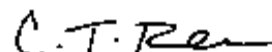
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Justin Cox  
Analyst

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
2. Fire Damage no significant fiber damages effecting fibrous percentages
3. Actinolite in association with Vermiculite
4. Layer not analyzed - attached to previous positive layer and contamination is suspected
5. Not enough sample to analyze



Technical Manager  
Tanner Rasmussen

Senior Analyst  
Julio Robles

6. Anthophyllite in association with Fibrous Talc
7. Contamination suspected from other building materials
8. Favorable scenario for water separation on vermiculite for possible analysis by another method
9. < 1% Result point counted positive
10. TEM analysis suggested

**Polarized Light Asbestiform Materials Characterization**

<b>Customer Info:</b>	<b>Attn:</b> Gary Nooner	<b>Customer Project:</b>	<b>CA Labs Project #:</b>
<b>Environmental Protection Associates</b>		High School Building, Brinkley Public Schools	CA L24086486AG
#9 Remington Cove Little Rock, AR 72204		<b>Turnaround Time:</b> 24 hours	<b>Date:</b> 8/20/2024
Phone #	501-562-3818		<b>Samples Rec'd:</b> 8/19/24 10:30AM
Fax #			<b>Date Of Sampling:</b> 8/13/2024
			<b>Purchase Order #:</b>

Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homo-geneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
70216	BHS-27		27-1	<b>Mastic on Tank/ tan surfacing</b>	y	<b>None Detected</b>		100% qu,bi
70216			27-2	<b>yellow insulation</b>	y	<b>None Detected</b>	100% fg	
				<b>Roof Shingle, Debris/ black roofing shingle with white</b>				
70217	BHS-28		28-1	<b>gravel</b>	y	<b>None Detected</b>	10% ce	90% qu,bi

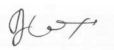
Dallas NVLAP Lab Code 200349-0 TEM/PLM TDSHS 30-0235

**AIHA LAP, LLC Laboratory #102929**

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.  
Preparation Method: HCL acid washing for carbonate based samples, chemical reduction for organically bound components, oil immersion for identification of asbestos types by dispersion attaining / becke line method.

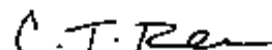
ca - carbonate	mi - mica	fg - fiberglass	ce - cellulose
gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:



Justin Cox  
Analyst

1. Fire Damage significant fiber damage - reported percentages reflect unaltered fibers
2. Fire Damage no significant fiber damages effecting fibrous percentages
3. Actinolite in association with Vermiculite
4. Layer not analyzed - attached to previous positive layer and contamination is suspected
5. Not enough sample to analyze



Technical Manager  
Tanner Rasmussen

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9. < 1% Result point counted positive
10. TEM analysis suggested

STATE OF ARKANSAS DEPARTMENT OF ENERGY AND ENVIRONMENT

*Division of Environmental Quality*

OFFICE OF AIR QUALITY, ASBESTOS PROGRAM

**GARY NOONER**

*having satisfied the requirements necessary to meet the provisions of AHERA/ASHARA under TSCA Title II and the Arkansas Pollution Control and Ecology Commission's Rule 21 pursuant to A.C.A. § 20-27-1001, et seq., within the State of Arkansas is hereby certified to perform activities related to asbestos containing material in the following discipline(s)*

Discipline	Issue Date	Effective Date	Expiration Date
Air Monitor	12/05/2023	12/12/2023	12/31/2024
Contractor Supervisor	12/05/2023	12/12/2023	12/31/2024
Inspector	12/04/2023	12/12/2023	12/31/2024
Project Designer	12/06/2023	12/12/2023	12/31/2024



Certification Number: 005065

Handwritten signature of Caleb J. Osborne in black ink.

**Caleb J. Osborne**  
Division of Environmental Quality, Director  
Chief Administrator, Environment  
Arkansas Department of Energy & Environment

STATE OF ARKANSAS DEPARTMENT OF ENERGY AND ENVIRONMENT

*Division of Environmental Quality*

OFFICE OF AIR QUALITY, ASBESTOS PROGRAM  
ENVIRONMENTAL PROTECTION ASSOCIATES (EPA)

*having qualified as required by law in accordance with the rules adopted by the  
Arkansas Pollution Control and Ecology Commission's Rule 21 pursuant to A.C.A. 20-27-1001, et seq.,  
relative to performing asbestos related work within the State of Arkansas is licensed as an*

**Asbestos Abatement Contractor**

**License Number: 000020**



**Issue Date: 11/30/2023**  
**Expiration Date: 12/1/2024**

**Caleb J. Osborne**  
Division of Environmental Quality, Director  
Chief Administrator, Environment  
Arkansas Department of Energy & Environment

*State of Arkansas*  
**Commercial Contractors Licensing Board**

ENVIRONMENTAL PROTECTION ASSOCIATES OF RUSSELLVILLE, INC.  
9 REMINGTON COVE  
LITTLE ROCK, AR 72204

ENVIRONMENTAL PROTECTION ASSOCIATES OF RUSSELLVILLE, INC.

**This is to Certify That**

is duly licensed under the provisions of Ark. Code Ann. § 17-25-101 et. seq. as amended and is entitled to practice Contracting in the State of Arkansas within the following classifications/specialties:

- BUILDING
- (COMMERCIAL & RESIDENTIAL)
- SPECIALTY
- Asbestos
- Environmental General

**This contractor has an unlimited suggested bid limit.**

from May 17, 2024 until April 30, 2025 when this Certificate expires.

*Witness our hands of the Board, dated at North Little Rock, Arkansas:*



*[Handwritten Signature]*

CHAIRMAN

*[Handwritten Signature]*

SECRETARY

May 17, 2024 - dsa



# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

1/3/2024

**THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.**

**IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).**

<b>PRODUCER</b> Sterling Seacrest Pritchard, Inc. 4601 East McCain Blvd Suite B North Little Rock AR 72117		<b>CONTACT NAME:</b> <b>PHONE (A/C, No, Ext):</b> 501-588-0857 <b>E-MAIL ADDRESS:</b>	<b>FAX (A/C, No):</b>
<b>INSURED</b> Environmental Protection Associates of Russellville, Inc. 9 Remington Cove Little Rock AR 72204		<b>ENVIPRO-02</b>	
		<b>INSURER(S) AFFORDING COVERAGE</b>	
		<b>INSURER A:</b> Arch Specialty Insurance Company	<b>NAIC #</b> 21199
		<b>INSURER B:</b> Lafayette Insurance	18295
		<b>INSURER C:</b> Berkley Casualty Company	15911
		<b>INSURER D:</b>	
		<b>INSURER E:</b>	
		<b>INSURER F:</b>	

**COVERAGES**

CERTIFICATE NUMBER: 626015020

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL SUBR INSD WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	<input checked="" type="checkbox"/> <b>COMMERCIAL GENERAL LIABILITY</b> <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> Blkt Contractual <input checked="" type="checkbox"/> XCU Included GENL AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:	Y Y	12EMP2232804	12/31/2023	12/31/2024	EACH OCCURRENCE	\$ 1,000,000
						DAMAGE TO RENTED PREMISES (Ea occurrence)	\$ 100,000
						MED EXP (Anyone person)	\$ 5,000
						PERSONAL & ADV INJURY	\$ 1,000,000
						GENERAL AGGREGATE	\$ 2,000,000
						PRODUCTS - COMP/OPAGG	\$ 2,000,000
							\$
B	<input checked="" type="checkbox"/> <b>AUTOMOBILE LIABILITY</b> <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS <input checked="" type="checkbox"/> NON-OWNED AUTOS ONLY	Y Y	60521561	12/31/2023	12/31/2024	COMBINED SINGLE LIMIT (Ea accident)	\$ 1,000,000
						BODILY INJURY (Per person)	\$
						BODILY INJURY (Per accident)	\$
						PROPERTY DAMAGE (Per accident)	\$
							\$
A	<input checked="" type="checkbox"/> <b>UMBRELLA LIAB</b> <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE <input type="checkbox"/> DED <input checked="" type="checkbox"/> RETENTION \$ n	Y Y	12EMX2232904	12/31/2023	12/31/2024	EACH OCCURRENCE	\$ 5,000,000
						AGGREGATE	\$ 5,000,000
							\$
C	<input checked="" type="checkbox"/> <b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N <input type="checkbox"/> Y <input type="checkbox"/> N	AMWC408701	12/31/2023	12/31/2024	<input checked="" type="checkbox"/> PER STATUTE	OTH-ER
						E L EACH ACCIDENT	\$ 1,000,000
						E L DISEASE - EA EMPLOYEE	\$ 1,000,000
						E L DISEASE - POLICY LIMIT	\$ 1,000,000
A	Pollution Incl Mold Professional Liability		12EMP2232804	12/31/2023	12/31/2024	Limit Per Incident	1,000,000
						Aggregate	2,000,000

**DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)**

Reference Number: 200189892.

The following applies when required in a written contract or agreement: Certificate holder and owner are included as additional insureds on a primary and non-contributory basis with respect to General Liability (including completed operations), Auto Liability, Professional Liability, and Umbrella. Waiver of subrogation is provided on General Liability, Auto Liability, Umbrella, Professional Liability, and Workers Compensation.

**CERTIFICATE HOLDER**

International Paper Company, its subsidiaries and affiliated Companies  
PO Box 100085 - IP  
Duluth GA 30096

**CANCELLATION**

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

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#9 Remington Cove  
Little Rock, Arkansas 72204  
Phone: 501-562-3818  
Fax: 501-562-5701  
Toll Free: 1-800-530-7706

# Asbestos Survey

**To:** Brad Chilcote, AIA, LEED AP, ALP  
WDD Architects  
5050 Northshore Lane  
North Little Rock, AR 72118

**From:** Gary Nooner

**Email:** [bradc@wddarchitects.com](mailto:bradc@wddarchitects.com)

**Fax:**

**Date:** August 20, 2024

---

**Phone:** 501-376-6681  
**Cell:** 501-425-3940

**Pages:** 15 Including cover sheet

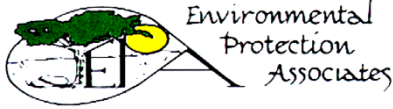
---

**Re:** Small Gym  
Brinkley Public Schools

**cc:**

---

**Comments**



#9 Remington Cove  
Little Rock, Arkansas 72204  
501-562-3818  
Fax 501-562-5701

August 20, 2024

WDD Architects  
5050 Northshore Lane  
North Little Rock, AR 72118

**RE: Asbestos Survey**

Small Gym  
Brinkley Public Schools  
200 Tigers Drive  
Brinkley, AR 72021

**Mr. Brad Chilcote, AIA, LEED AP, ALP**

On August 15, 2024 at your request I collected samples from the above referenced location to determine if asbestos was present. Thirteen (13) samples were collected for laboratory analysis.

Laboratory analysis of these samples have determined the following:

**Asbestos Detected in the following Materials**

	<b>Description</b>	<b>Location</b>	
<b>Sample # BG-01</b>	Flooring	See Drawing Area # 4	Approx. 60 Sft.
<b>Sample # BG-05</b>	Flooring	See Drawing Areas # 11, 12, 13, & 14	Approx. 550Sft.
<b>Sample # BG-09</b>	Window Putty	Upper Exterior Windows behind Sheet Metal panels	Approx. 26 each
<b>Sample # BG-10</b>	Stucco and Tar	Upper Wall behind Sheet Metal Panels	Approx. 1,500 Sft.

Federal and state regulations with the exception of OSHA, determine a material to be asbestos containing if it contains 1% or more asbestos. OSHA states that any amount is an asbestos material.

Therefore the following materials must be removed by a licensed asbestos contractor if disturbed by renovation or demolition.

**Flooring from areas 4, 11, 12,13 &14, Exterior Window Putty and Stucco / Tar**

For further clarification of the Arkansas asbestos regulation 21. You may contact the Arkansas Department of Environmental Quality (ADEQ) Phone - 501-682-0718 or visit their website at - [www.adeg.state.ar.us](http://www.adeg.state.ar.us)

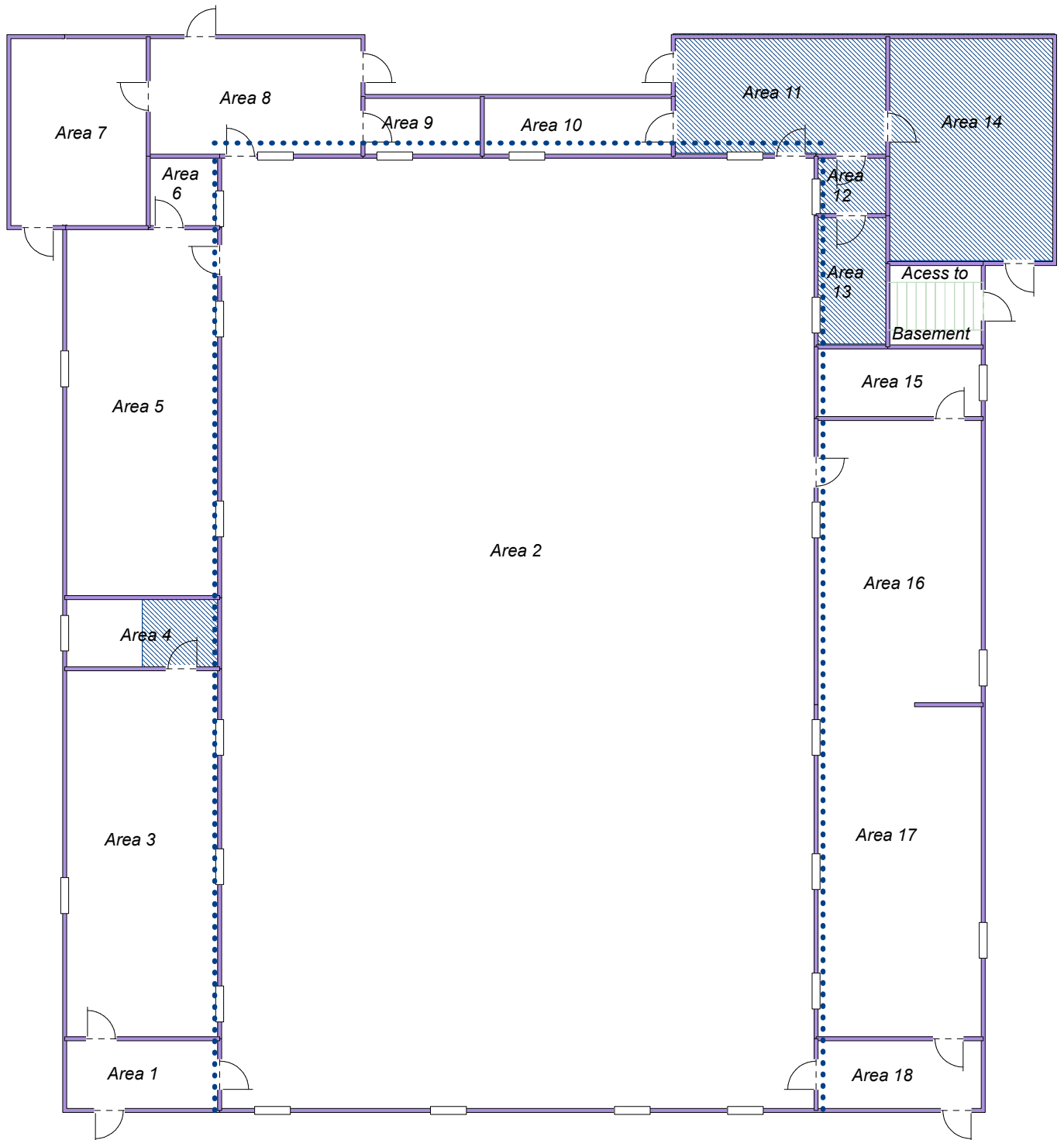
I have attached my chain of custody and laboratory findings. Please contact me with any Questions you may have.

Sincerely,

Gary Nooner  
Inspector  
License No. 005065




Enclosures





**Brinkley High School Gym (Small)**

Not to Scale

-  Asbestos Containing Flooring and Mastic. On Wood Sub-floor
-  Asbestos Containing Window Putty
-  Asbestos Containing Stucco / Tar



# Asbestos Sampling Chain of Custody Field Data Sheet

#9 Remington Cove  
Little Rock, Arkansas 72204  
501-562-3818  
Fax 501-562-5701

CA 24086485

Client Brad Chilcote, AIA, LEED AP, ALP WDD Architects 5050 Northshore Lane North Little Rock, AR 72118	Property Small Gym Brinkley Public Schools 200 Tigers Drive Brinkley, AR 72021
Inspector Gary Noonan	Building ID
Date 8/15/2024	Turnaround Time Rush (24 hour)

SAMPLE ID	HA	Sample Description	Sample Location	A	C	Class (S,T,M)	Friability (F,NF)	Condition (G,D,SD)	Damage (%)	POT. DAM (L,M,H)	Quantity
BG-01		Flooring Example: FT-1. 12 x 12 white floor tile	See Drawing Area # 4	X		M	N	G	10%	H	+/- 60 sft
BG-02		Flooring	See Drawing Areas # 1 & 18	X		M	N	G	10%	H	+/- 130 sft
BG-03		Lay-in Ceiling Tile	See Drawing Area # 5	X		M	F	G	10%	H	+/- 390 sft
BG-04		Flooring	See Drawing Area # 8	X		M	N	G	10%	H	+/- 180 sft
BG-05		Flooring	See Drawing Areas # 11, 12, 13, & 14	X		M	N	G	10%	H	+/- 550 sft
BG-06		Lay-in Ceiling Tile	See Drawing Area # 14	X		M	F	G	10%	H	+/- 265 sft
BG-07		1'x1' Acoustical Tiles (Ceiling & Walls)	See Drawing Areas # 3, 11, 14, & 2	X		M	N	G	10%	H	+/- 1,000 sft
BG-08		Flooring	See Drawing Area # 15	X		M	N	G	10%	H	+/- 85 sft
BG-09		Window Putty	Upper Exterior Windows behind Sheet Metal panels	X		M	N	G	10%	H	26 Each
BG-10		Stucco and Tar	Upper Wall behind Sheet Metal Panels	X		M	N	G	10%	H	+/- 1,500 sft
BG-11		Roof Shingle and Felt paper	Upper Gym Roof	X		M	N	G	10%	H	+/- 5,500 sft
BG-12		Roofing	Lower Roof	X		M	N	G	10%	H	+/- 4,500 sft
BG-13		Roof Edge Flashing	Lower Roof	X		M	N	G	10%	H	+/- 1,500 sft

**HA - Homogeneous Area**    **A - Analyze**    **C - Catalogue**    **♦ - Analyze only if the previous sample was found to be negative.**

**Class:** S-surfacings, T-thermal, M-miscellaneous.    **Friability:** F-friable, NF-non-friable.    **Condition:** G-good, D-damaged, SD-severely damaged.    **POT. DAM** (Potential Damage): L-low, M-moderate, H-high

Relinquished By: Doug Noonan    Time: 11:00    Date: 8-16-24    Relinquished By: \_\_\_\_\_    Time: \_\_\_\_\_    Date: \_\_\_\_\_

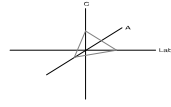
Received By: \_\_\_\_\_    Time: \_\_\_\_\_    Date: \_\_\_\_\_

Comments: **Composite Sample all positive Sheetrock and Joint Compound Samples**

10:30AM  
AUG 19 2024  
Andrew Sikes

**CA Labs**  
Dedicated to Quality

**Crisp Analytical, L.L.C.**  
1929 Old Denton Road  
Carrollton, TX 75006  
Phone 972-242-2754  
Fax 972-242-2798



**CA Labs, L.L.C.**  
12232 Industriplex, Suite 32  
Baton Rouge, LA 70809  
Phone 225-751-5632  
Fax 225-751-5634

## **Materials Characterization - Bulk Asbestos Analysis**

### **Laboratory Analysis Report - Polarized Light**

#### **Environmental Protection Associates**

#9 Remington Cove  
Little Rock, AR 72204

**Attn:** Gary Nooner

**Customer Project:** Small Gym, Brinkley Public School  
**Reference #:** CAL24086485AG **Date:** 08/20/24

#### **Analysis and Method**

Summary of polarized light microscopy (PLM / Stereomicroscopy bulk asbestos analysis) using the methods described in 40CFR Part 763 Appendix E to Subpart E (Interim and EPA 600 / R-93 / 116 (Improved). The sample is first viewed with the aid of a stereomicroscope. Numerous liquid slide preparations are created for analysis under the polarized microscope where identifications and quantifications are performed. Calibrated liquid refractive oils are used as liquid mounting medium. These oils are used for identification (dispersion staining). A calibrated visual estimation is reported, should any asbestiform mineral be present. Other techniques such as acid washing are used in conjunction with refractive oils for detection of smaller quantities of asbestos. All asbestos percentages are based on calibrated visual estimation traceable to NIST standards for regulated asbestos. Traceability to measurement and calibration is achieved by using known amounts and types of asbestos from standards where analyst and laboratory accuracy are measured. As little as 0.001% asbestos can be detected in favorable samples, while detection in unfavorable samples may approach the detection limit of 0.50% (well above the laboratory definition of trace).

#### **Discussion**

Vermiculite containing samples may contain trace amounts of actinolite/tremolite. When not detected by PLM, these samples should be analyzed using TEM methods and / or water separation techniques. Suspected actinolite/vermiculite presence will be indicated through the sample comment section of this report.

Fibrous talc containing samples may contain a regulated asbestos fiber known as anthophyllite. Under certain conditions the same fiber may actually contain both talc and anthophyllite (a phenomenon called intergrowth). Again, TEM detection methods are recommended. CA Labs PLM report comments will denote suspected amounts of asbestiform anthophyllite with talc, where further analysis is recommended.

Some samples (floor tiles, surfacings, etc.) may contain fibers too small to be detectable by PLM analysis and should be analyzed by TEM bulk protocols.

A "trace asbestos" will be reported if the analyst observes far less than 1% asbestos. CA Labs defines "trace asbestos" as a few fibers detected by the analyst in several preparations and will indicate as such under these circumstances.

Since allowable variation in quantification of samples close to 1% is high, <1% may be reported. Such results are ideal for point counting, and the technique is mandatory for friable samples (NESHAP, Nov. 1990 and clarification letter 8 May 1991) under 1% percent asbestos or "trace asbestos". **In order to make all initial PLM reports issued from CA Labs NESHAP compliant, all <1% asbestos results (except floor tiles) will be point counted at no additional charge.**

#### **Qualifications**

CA Labs is accredited by the National Voluntary Accreditation Program (NVLAP) for selected test methods for airborne fiber analysis (TEM), and for bulk asbestos fiber analysis (PLM). CA Labs is also accredited by AIHA LAP, LLC. in the PLM asbestos field of testing for Industrial Hygiene. All analysts have completed college courses or hold a degree in a natural science (geology, biology, or environmental science). Recognition by a state professional board in one these disciplines is preferred, but not required. Extensive in-house training programs are used to augment the educational background of the analyst. The Laboratory Director and Quality Manager have received supplemental McCrone Research training for asbestos identification. Analysis performed at Crisp Analytical Labs, LLC 1929 Old Denton Road Carrollton, TX 75006

*Dallas NVLAP Lab Code 200349-0 TEM/PLM TDSHS 30-0235*  
**AIHA LAP, LLC Laboratory #102929**

Overview of Project Sample Material Containing Asbestos

<b>Customer Project:</b>		Small Gym, Brinkley Public School			<b>CA Labs Project #:</b> CAL24086485AG	
Laboratory Sample ID	Sample #	Layer #	Analysts Physical Description of Subsample	Asbestos type / calibrated visual estimate percent	List of Affected Building Material Types	
70177	BG-01	1-1	<b>Flooring/ tan linoleum</b>	<b>21% Chrysotile</b>	<b>tan linoleum tan floor tile off-white surfaced off-white caulking brown surfaced black tar</b>	
70181	BG-05	5-1	<b>Flooring/ tan floor tile</b>	<b>4% Chrysotile</b>		
70185	BG-09	9-1	<b>Window Putty/ off-white surfaced off-white caulking</b>	<b>2% Chrysotile</b>		
70186	BG-10	10-1	<b>Stucco and Tar/ brown surfaced black tar</b>	<b>4% Chrysotile</b>		

Dallas NVLAP Lab Code 200349-0 TEM/PLM TDSHS 30-0235  
**AIHA LAP, LLC Laboratory #102929**

**Glossary of abbreviations (non-asbestos fibers and non-fibrous minerals):**

ca - carbonate	pe - perlite	fg - fiberglass	pa - palygorskite (clay)
gypsum - gypsum	qu - quartz	mw - mineral wool	
bi - binder		wo - wollastinite	
or - organic		ta - talc	
ma - matrix		sy - synthetic	
mi - mica		ce - cellulose	
ve - vermiculite		br - brucite	
ot - other		ka - kaolin (clay)	

This report relates to the items tested as received. This report is not to be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST, AIHA LAP, LLC, or any other agency of the federal government. This report may not be reproduced except in full without written permission from CA Labs. These results are submitted pursuant to CA Labs' current terms and sale, condition of sale, including the company's standard warranty and limitations of liability provisions and no responsibility or liability is assumed for the manner in which the results are used or interpreted. Unless notified in writing to return the samples covered by this report, CA Labs will store the samples for a period of ninety (90) days before discarding. A shipping or handling fee may be assessed for the return of any samples.

**Polarized Light Asbestiform Materials Characterization**

<b>Customer Info:</b>	<b>Attn:</b> Gary Nooner	<b>Customer Project:</b>	<b>CA Labs Project #:</b>
<b>Environmental Protection Associates</b>		Small Gym, Brinkley Public School	CAL24086485AG
#9 Remington Cove Little Rock, AR 72204		<b>Turnaround Time:</b> 24 hours	<b>Date:</b> 8/20/2024
Phone #	501-562-3818		<b>Samples Rec'd:</b> 8/19/24 10:30AM
Fax #			<b>Date Of Sampling:</b> 8/15/2024
			<b>Purchase Order #:</b>

Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homo-geneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
70177	BG-01		1-1	<b>Flooring/ tan linoleum</b>	y	<b>21% Chrysotile</b>		79% qu,ma
70177			4	1-2 brown mastic				
70178	BG-02		2-1	<b>Flooring/ red linoleum with black backing</b>	y	<b>None Detected</b>	20% ce	80% qu,bi
70178			2-2	black mastic	y	<b>None Detected</b>		100% gy,bi
70179	BG-03		3-1	<b>Lay-in Ceiling Tile/ white surfacing</b>	y	<b>None Detected</b>		100% qu,bi
70179			3-2	tan ceiling tile	y	<b>None Detected</b>	40% ce 30% fg	30% qu,pe
70180	BG-04		4-1	<b>Flooring/ off-white floor tile</b>	y	<b>None Detected</b>		100% qu,ca

Dallas NVLAP Lab Code 200349-0 TEM/PLM TDSHS 30-0235


**AIHA LAP, LLC Laboratory #102929**

Analysis Method: Interim (40CFR Part 763 Appendix E to Subpart E) / Improved (EPA-600 / R-93/116). All samples received in good condition unless noted.

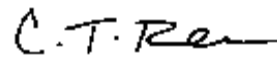
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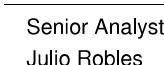
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gy - gypsum	ve - vermiculite	mw - mineral wool	br - brucite
bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

Approved Signatories:

  
Robert Olivarez  
Analyst

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Tanner Rasmussen

  
Senior Analyst  
Julio Robles

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10. TEM analysis suggested

**Polarized Light Asbestiform Materials Characterization**

<b>Customer Info:</b>	<b>Attn:</b> Gary Nooner	<b>Customer Project:</b>	<b>CA Labs Project #:</b>
<b>Environmental Protection Associates</b>		Small Gym, Brinkley Public School	CAL24086485AG
#9 Remington Cove Little Rock, AR 72204		<b>Turnaround Time:</b> 24 hours	<b>Date:</b> 8/20/2024
Phone #	501-562-3818		<b>Samples Rec'd:</b> 8/19/24 10:30AM
Fax #			<b>Date Of Sampling:</b> 8/15/2024
			<b>Purchase Order #:</b>

Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homo-geneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
70180			4-2	tan mastic	y	None Detected		100% gy,bi
70181	BG-05		5-1	Flooring/ tan floor tile	y	4% Chrysotile		96% qu,ca
70181			5-2	black mastic	y	None Detected		100% gy,bi
70181			5-3	black felt	y	None Detected	60% ce	40% qu,bi
70181			5-4	brown mastic	y	None Detected		100% qu,bi
70182	BG-06		6-1	Lay-in Ceiling Tile/ white vinyl surfacing	y	None Detected		100% qu,ma
70182			6-2	yellow ceiling tile	y	None Detected	100% fg	


Dallas NVLAP Lab Code 200349-0 TEM/PLM TDSHS 30-0235

**AIHA LAP, LLC Laboratory #102929**

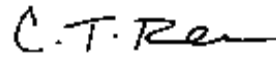
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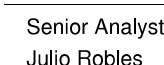
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bi - binder	ot - other	wo - wollastonite	ka - kaolin (clay)
or - organic	pe - perlite	ta - talc	pa - palygorskite (clay)
ma - matrix	qu - quartz	sy - synthetic	

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Analyst

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**Polarized Light Asbestiform Materials Characterization**

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<b>Environmental Protection Associates</b>		Small Gym, Brinkley Public School	CAL24086485AG
#9 Remington Cove Little Rock, AR 72204		<b>Turnaround Time:</b> 24 hours	<b>Date:</b> 8/20/2024
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Laboratory Sample ID	Sample #	Comment	Layer #	Analysts Physical Description of Subsample	Homo-geneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
70183	BG-07		7-1	<b>1x1 Acoustical Tiles/ white surfacing</b>	y	<b>None Detected</b>		100% qu,bi
70183			7-2	<b>tan ceiling tile</b>	y	<b>None Detected</b>	100% ce	
70184	BG-08		8-1	<b>Flooring/ off-white floor tile</b>	y	<b>None Detected</b>		100% qu,ca
70184			8-2	<b>tan mastic</b>	y	<b>None Detected</b>		100% gy,bi
70185	BG-09		9-1	<b>Window Putty/ off-white surfaced off-white caulking</b>	n	<b>2% Chrysotile</b>		98% qu,bi,ca
70186	BG-10		10-1	<b>Stucco and Tar/ brown surfaced black tar</b>	n	<b>4% Chrysotile</b>		96% qu,bi
70186			10-2	<b>gray stucco</b>	y	<b>None Detected</b>		100% qu,ca


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**AIHA LAP, LLC Laboratory #102929**

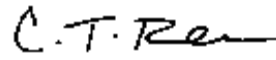
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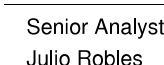
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<b>Environmental Protection Associates</b>		Small Gym, Brinkley Public School	CAL24086485AG
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Laboratory Sample ID	Sample #	Com ment	Layer #	Analysts Physical Description of Subsample	Homo-geneous (Y/N)	Asbestos type / calibrated visual estimate percent	Non-asbestos fiber type / percent	Non-fibrous type / percent
<b>Roof Shingle and Felt Paper/ black roofing shingle with black backing</b>								
70187	BG-11		11-1	backing	y	<b>None Detected</b>	20% fg	80% qu,bi
70187			11-2	black felt	y	<b>None Detected</b>	60% ce	40% qu,bi
<b>Roofing/ black tar and black felt layers</b>								
70188	BG-12		12-1	felt layers	n	<b>None Detected</b>	30% ce 10% fg	60% qu,bi
70188			12-2	white sealant	y	<b>None Detected</b>		100% qu,gy,bi
70188			12-3	off-white foam	y	<b>None Detected</b>		100% ot
70188			12-4	tan insulation	y	<b>None Detected</b>	100% ce	
<b>Roof Edge Flashing/ black tar and black felt layers</b>								
70189	BG-13		13-1	and black felt layers	n	<b>None Detected</b>	30% ce 10% fg	60% qu,bi


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**AIHA LAP, LLC Laboratory #102929**

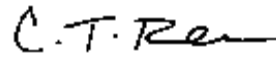
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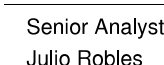
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**Polarized Light Asbestiform Materials Characterization**

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**Environmental Protection Associates**  
#9 Remington Cove  
Little Rock, AR 72204

**Customer Project:** Small Gym, Brinkley Public School  
**Turnaround Time:** 24 hours

**CA Labs Project #:** CAL24086485AG  
**Date:** 8/20/2024  
**Samples Rec'd:** 8/19/24 10:30AM  
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**Purchase Order #:**

Phone # 501-562-3818  
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70189			13-2	white sealant	y	None Detected	100% qu,gy,bi	
70189			13-3	off-white foam	y	None Detected	100% ot	

Dallas NVLAP Lab Code 200349-0 TEM/PLM TDSHS 30-0235

**AIHA LAP, LLC Laboratory #102929**

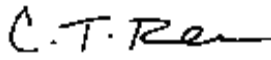
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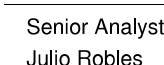
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STATE OF ARKANSAS DEPARTMENT OF ENERGY AND ENVIRONMENT

*Division of Environmental Quality*

OFFICE OF AIR QUALITY, ASBESTOS PROGRAM

**GARY NOONER**

*having satisfied the requirements necessary to meet the provisions of AHERA/ASHARA under TSCA Title II and the Arkansas Pollution Control and Ecology Commission's Rule 21 pursuant to A.C.A. § 20-27-1001, et seq., within the State of Arkansas is hereby certified to perform activities related to asbestos containing material in the following discipline(s)*

Discipline	Issue Date	Effective Date	Expiration Date
Air Monitor	12/05/2023	12/12/2023	12/31/2024
Contractor Supervisor	12/05/2023	12/12/2023	12/31/2024
Inspector	12/04/2023	12/12/2023	12/31/2024
Project Designer	12/06/2023	12/12/2023	12/31/2024



Certification Number: 005065

Handwritten signature of Caleb J. Osborne in black ink.

**Caleb J. Osborne**  
Division of Environmental Quality, Director  
Chief Administrator, Environment  
Arkansas Department of Energy & Environment

STATE OF ARKANSAS DEPARTMENT OF ENERGY AND ENVIRONMENT

*Division of Environmental Quality*

OFFICE OF AIR QUALITY, ASBESTOS PROGRAM  
ENVIRONMENTAL PROTECTION ASSOCIATES (EPA)

*having qualified as required by law in accordance with the rules adopted by the  
Arkansas Pollution Control and Ecology Commission's Rule 21 pursuant to A.C.A. 20-27-1001, et seq.,  
relative to performing asbestos related work within the State of Arkansas is licensed as an*

**Asbestos Abatement Contractor**

**License Number: 000020**



**Issue Date: 11/30/2023**  
**Expiration Date: 12/1/2024**

**Caleb J. Osborne**  
Division of Environmental Quality, Director  
Chief Administrator, Environment  
Arkansas Department of Energy & Environment

*State of Arkansas*  
**Commercial Contractors Licensing Board**

ENVIRONMENTAL PROTECTION ASSOCIATES OF RUSSELLVILLE, INC.  
9 REMINGTON COVE  
LITTLE ROCK, AR 72204

ENVIRONMENTAL PROTECTION ASSOCIATES OF RUSSELLVILLE, INC.

**This is to Certify That**

is duly licensed under the provisions of Ark. Code Ann. § 17-25-101 et. seq. as amended and is entitled to practice Contracting in the State of Arkansas within the following classifications/specialties:

- BUILDING
- (COMMERCIAL & RESIDENTIAL)
- SPECIALTY
- Asbestos
- Environmental General

**This contractor has an unlimited suggested bid limit.**

from May 17, 2024 until April 30, 2025 when this Certificate expires.

*Witness our hands of the Board, dated at North Little Rock, Arkansas:*



*[Handwritten Signature]*

CHAIRMAN

*[Handwritten Signature]*

SECRETARY

May 17, 2024 - dsa



# CERTIFICATE OF LIABILITY INSURANCE

DATE (MM/DD/YYYY)

1/3/2024

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AFFIRMATIVELY OR NEGATIVELY AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW. THIS CERTIFICATE OF INSURANCE DOES NOT CONSTITUTE A CONTRACT BETWEEN THE ISSUING INSURER(S), AUTHORIZED REPRESENTATIVE OR PRODUCER, AND THE CERTIFICATE HOLDER.

IMPORTANT: If the certificate holder is an ADDITIONAL INSURED, the policy(ies) must have ADDITIONAL INSURED provisions or be endorsed. If SUBROGATION IS WAIVED, subject to the terms and conditions of the policy, certain policies may require an endorsement. A statement on this certificate does not confer rights to the certificate holder in lieu of such endorsement(s).

<b>PRODUCER</b> Sterling Seacrest Pritchard, Inc. 4601 East McCain Blvd Suite B North Little Rock AR 72117	<b>CONTACT NAME:</b> PHONE (A/C, No, Ext): 501-588-0857	<b>FAX (A/C, No):</b>	
	<b>E-MAIL ADDRESS:</b>		
<b>INSURED</b> Environmental Protection Associates of Russellville, Inc. 9 Remington Cove Little Rock AR 72204	<b>INSURER(S) AFFORDING COVERAGE</b>		<b>NAIC #</b>
	<b>INSURER A:</b> Arch Specialty Insurance Company		21199
	<b>INSURER B:</b> Lafayette Insurance		18295
	<b>INSURER C:</b> Berkley Casualty Company		15911
	<b>INSURER D:</b>		
	<b>INSURER E:</b>		

**COVERAGES**

CERTIFICATE NUMBER: 626015020

REVISION NUMBER:

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

INSR LTR	TYPE OF INSURANCE	ADDL SUBR INSD WVD	POLICY NUMBER	POLICY EFF (MM/DD/YYYY)	POLICY EXP (MM/DD/YYYY)	LIMITS	
A	<input checked="" type="checkbox"/> <b>COMMERCIAL GENERAL LIABILITY</b> <input type="checkbox"/> CLAIMS-MADE <input checked="" type="checkbox"/> OCCUR <input checked="" type="checkbox"/> Blkt Contractual <input checked="" type="checkbox"/> XCU Included GENL AGGREGATE LIMIT APPLIES PER: <input checked="" type="checkbox"/> POLICY <input checked="" type="checkbox"/> PRO-JECT <input type="checkbox"/> LOC OTHER:	Y Y	12EMP2232804	12/31/2023	12/31/2024	EACH OCCURRENCE	\$ 1,000,000
						DAMAGE TO RENTED PREMISES (Ea occurrence)	\$ 100,000
						MED EXP (Anyone person)	\$ 5,000
						PERSONAL & ADV INJURY	\$ 1,000,000
						GENERAL AGGREGATE	\$ 2,000,000
						PRODUCTS - COMP/OPAGG	\$ 2,000,000
							\$
B	<input checked="" type="checkbox"/> <b>AUTOMOBILE LIABILITY</b> <input checked="" type="checkbox"/> ANY AUTO <input type="checkbox"/> OWNED AUTOS ONLY <input type="checkbox"/> HIRED AUTOS ONLY <input type="checkbox"/> SCHEDULED AUTOS NON-OWNED AUTOS ONLY	Y Y	60521561	12/31/2023	12/31/2024	COMBINED SINGLE LIMIT (Ea accident)	\$ 1,000,000
						BODILY INJURY (Per person)	\$
						BODILY INJURY (Per accident)	\$
						PROPERTY DAMAGE (Per accident)	\$
							\$
A	<input checked="" type="checkbox"/> <b>UMBRELLA LIAB</b> <input checked="" type="checkbox"/> OCCUR <input type="checkbox"/> EXCESS LIAB <input type="checkbox"/> CLAIMS-MADE DED <input checked="" type="checkbox"/> RETENTION \$ n	Y Y	12EMX2232904	12/31/2023	12/31/2024	EACH OCCURRENCE	\$ 5,000,000
						AGGREGATE	\$ 5,000,000
							\$
C	<b>WORKERS COMPENSATION AND EMPLOYERS' LIABILITY</b> ANY PROPRIETOR/PARTNER/EXECUTIVE OFFICER/MEMBER EXCLUDED? (Mandatory in NH) If yes, describe under DESCRIPTION OF OPERATIONS below	Y/N N/A	AMWC408701	12/31/2023	12/31/2024	<input checked="" type="checkbox"/> PER STATUTE	OTH-ER
						E L. EACH ACCIDENT	\$ 1,000,000
						E L. DISEASE - EA EMPLOYEE	\$ 1,000,000
						E L. DISEASE - POLICY LIMIT	\$ 1,000,000
A	Pollution Incl Mold Professional Liability		12EMP2232804	12/31/2023	12/31/2024	Limit Per Incident	1,000,000
						Aggregate	2,000,000

**DESCRIPTION OF OPERATIONS / LOCATIONS / VEHICLES (ACORD 101, Additional Remarks Schedule, may be attached if more space is required)**

Reference Number: 200189892.

The following applies when required in a written contract or agreement: Certificate holder and owner are included as additional insureds on a primary and non-contributory basis with respect to General Liability (including completed operations), Auto Liability, Professional Liability, and Umbrella. Waiver of subrogation is provided on General Liability, Auto Liability, Umbrella, Professional Liability, and Workers Compensation.

**CERTIFICATE HOLDER****CANCELLATION**

International Paper Company, its subsidiaries and affiliated Companies  
 PO Box 100085 - IP  
 Duluth GA 30096

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, NOTICE WILL BE DELIVERED IN ACCORDANCE WITH THE POLICY PROVISIONS.

AUTHORIZED REPRESENTATIVE

© 1988-2015 ACORD CORPORATION. All rights reserved.

**PART 1 - GENERAL**

**1.01 DESCRIPTION**

- A. Work Included: Site preparation includes, but is not necessarily limited to:
  - 1. Temporary fencing and protective barricades.
  - 2. Protection of trees and shrubs to remain.
  - 3. Felling of trees removed, removal of stumps, roots and debris from Work.
  - 4. Removal of obstructions which interfere with Work.
  - 5. Stripping of topsoil and vegetation from earth areas of site.
  - 6. Removal of concrete and removal of asphaltic concrete pavement.
  - 7. Abandonment and capping wells or cisterns.
  - 8. Demolition and removal of buildings or building elements.
  - 9. Protection of active utilities and removal of utilities abandoned.

**1.02 RELATED DOCUMENTS**

- A. Applicable portions of the Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, and Addenda issued prior to the execution of the Contract, other documents listed in the Agreement and Modifications issued after the execution of the Contract shall apply to this Section. The general requirements for this work are located in Division 1 of the Specifications.

**1.03 SUBMITTALS AND SUBSTITUTIONS**

- A. In accordance with Section 01 33 00.
- B. Substitutions will not be considered prior to the award of the General Contract.

**1.04 QUALITY ASSURANCE**

- A. Workmen Qualifications: One person present during tree clearing and grubbing operations, thoroughly familiar with types of trees involved. Direct trimming of roots and limbs where required.
- B. Codes and Standards: Comply with pertinent codes and regulations, plus requirements of insurance carriers providing coverage for Work.

**1.05 JOB CONDITIONS**

- A. Dust Control: Prevent spread of dust during performance of Work. Thoroughly moisten surfaces required to prevent dust nuisance to public, neighbors, and concurrent performance of other work on site.
- B. On-site Burning: Will not be permitted.

- C. Protection: Protect existing objects not to be removed. In event of damage, immediately make repairs and replacements necessary to approval of Architect at Contractor's expense.

## **1.06 HAZARDOUS MATERIAL ABATEMENT**

- A. During the construction of this project, if work involving hazardous material is suspected, or encountered, Contractor shall notify Owner or Owner's representative immediately and Owner, with his own forces or by separate contract is responsible for complete investigation, removal and disposition of hazard material in accordance with applicable laws and regulations.

## **PART 2 - PRODUCTS**

### **2.01 BARRICADES AND FENCE MATERIALS**

- A. Materials required for barricades, tree protection and related fencing furnished by Contractor.

### **2.02 FILL MATERIAL**

- A. Refer to Section 31 00 10, if applicable.

## **PART 3 - EXECUTION**

### **3.01 PREPARATION**

- A. Notification: Notify Architect at least two full working days prior to commencing work.
- B. Site Inspection:
  - 1. Prior to work of this Section, carefully inspect entire site and objects designated to be removed or preserved.
  - 2. Locate existing utility lines to be abandoned and determine requirements for disconnecting and capping.
  - 3. Locate existing active utility lines which are to remain and determine requirements for their protection.
- C. Clarification:
  - 1. Drawings do not purport to show all objects existing on site.
  - 2. Before commencing work of this Section, verify with Architect all objects to be removed and all objects to be preserved.
- D. Scheduling:
  - 1. Schedule work in a careful manner with necessary consideration for neighbors and public.
  - 2. Avoid interference with use of, and passage to and from, adjacent buildings and facilities.

### **3.02 DISCONNECTION OF UTILITIES**

- A. Before commencing demolition or removal, and if not already accomplished, disconnect or arrange for disconnection of utility service connections, including water, gas, electricity, and telephone, to buildings to be demolished complying with regulations of utility concerned. Plug sanitary sewer lines in accordance with local requirements. Conduct operations at Contractor's expense and in manner to preserve service to areas and structures not demolished. If underground utility services disconnections are required in public thorough-fares, comply with removal and restoration of pavement requirements and other pertinent matters.
- B. Preserve in operating condition active utilities bordering or traversing site designated to remain. Protect property, including, but not limited to, valve boxes, poles, guys and related appurtenances. Repair damage to active utility, due to work under contract, to satisfaction of utility concerned. Remove utility lines that are to be abandoned from building area.

### **3.03 STRIPPING TOPSOIL**

- A. Remove existing grass and overburden before excavating topsoil.
- B. Prior to beginning excavation or fill, strip the topsoil to a depth of at least 6 inches or to a depth sufficient to remove all organic material and stockpile for future use.
- C. In general, remove topsoil where structures are to be built, trenches dug and roads, parking lots, walks and similar improvements constructed within the areas presently covered with topsoil.
- D. Store topsoil clear of the construction area.
- E. Take reasonable care to prevent the topsoil from becoming mixed with subsoil or eroding.

### **3.04 DEMOLITION OF STRUCTURES**

- A. Demolish buildings and/or building elements designated for demolition, pulling out foundations and concrete slabs. Completely remove designated building components and any obstructions above ground level and down to bottom of footings below ground level. Salvageable materials become property of Contractor unless otherwise shown or specified and shall be promptly removed from site.
- B. Fill holes and trenches resulting from demolition and removal, to ground surface. Rock and materials from masonry construction may be used in backfilling up to a depth of 1 foot below ground surface if sufficient fine materials are mixed therewith to fill voids. Use dirt for top 1 foot of fill, free from trash, wood, pipe and debris.
- C. After clearing, perform rough grading necessary to provide complete run-off of surface water.



- D. Barricade open excavations until backfilled. Do not backfill until backfill materials have been inspected and approved by Architect's representative.
- E. Wet down masonry thoroughly during demolition to prevent spread of dust.
- F. Leave parcel site in safe and clean condition, free from rubbish, debris, materials, and equipment.
- G. When Contractor starts building demolition, excluding interior striping of salvable items including plumbing and electrical fixtures, he is to continue work during normal working days suitable to operations until demolition and site clearance is completed, unless otherwise specifically authorized by Owner.

### **3.05 PROTECTION AND REPAIR**

- A. Erect temporary barricades and fencing required to protect existing and new site construction including but not limited to new and existing walks, drives, roads, curb and gutter, etc. during construction.
- B. Allow no heavy traffic on new or existing paving unless authorized in writing by Owner.
- C. Contractor is responsible for restoring all existing site construction, including softscape (landscape), that is damaged during construction to new condition.
- D. If it is necessary to cut or trench across any existing paving (including walks), Contractor is responsible for restoring damaged areas to new condition.

### **3.06 PROTECTION OF TREES TO REMAIN**

- A. At trees to remain, construct temporary barricade around tree at tree's approximate drip line. Provide barricades at least 3 feet high, consisting of 2 inch by 4 inch or larger posts set at least 18 inches into ground, no more than 6 feet on centers, joined at top by 1 inch by 6 inch or larger boards firmly nailed to posts.
- B. Trimming of Trees: In company with Architect, ascertain limbs and roots which are to be trimmed and clearly mark them to designate approved cutting point. Cut evenly, using proper tools and skilled workmen to achieve neat severance with least possible damage to tree. Promptly coat cut area with approved pruning paint complying with manufacturer's recommendations. In case of root cuts, apply wet burlap or related protection approved by Architect, to prevent drying out.

### **3.07 TREE/BRUSH REMOVAL**

- A. Remove trees, brush and vegetation except trees which are to remain, from Project site. Material resulting from clearing becomes property of Contractor, who shall be responsible for disposal.

- B. Wet down areas where required during site clearing to prevent spread of dust.
- C. Blasting on Project site is not allowed as a means of tree removal.

**3.08 STUMPS AND ROOTS**

- A. Remove completely stumps and roots from areas within building walls and 5 feet outside building walls. Remove remaining stumps and roots to clear depth of not less than 2 feet below subgrade level. Material resulting from grubbing becomes property of Contractor, to dispose of by him. Burn no material on premises.

**3.09 OBSTRUCTIONS**

- A. Remove existing obstructions from area to be occupied by Work under this Contract unless otherwise specified herein, or specifically directed by Architect to remain.

**3.10 REMOVAL OF DEBRIS AND CLEANING**

- A. Remove and legally dispose of rubbish and debris found on demolition area at start of the Work that resulting from demolition activities or deposited on site by others during the duration of contract. Keep project area and public right-of-way reasonably clear at all times. Upon completion of work remove temporary construction, equipment, salvaged materials, trash and debris leaving entire project area in neat condition.

**END OF SECTION 02 41 13**

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**PART 1 - GENERAL****1.01 DESCRIPTION**

- A. Work Included: Demolition and removal work required for construction and connecting new Work to existing building and for reconstructing existing building. Work also includes barricades, temporary protection, dust protection, removal from site trash and debris from demolition work, and repairing existing hardscape/softscape damaged during the course of the work.
- B. Extent of selective demolition work is generally indicated on drawings. Selective demolition not shown on the drawings may be determined by examination of existing facilities and the proposed new and reconstructed work. Existing items not shown on the plans of proposed work and preventing the execution of proposed work are in the scope of the selective demolition work.
- C. Disconnecting, removal and/or relocation and reconnecting of existing mechanical, electrical and fire protection work including equipment, piping and wiring are included in this Contract.

**1.02 RELATED DOCUMENTS**

- A. Applicable portions of the Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, and Addenda issued prior to the execution of the Contract, other documents listed in the Agreement and Modifications issued after the execution of the Contract shall apply to this Section. The general requirements for this work are in Division 1 of the Specifications.

**1.03 SCHEDULES**

- A. Before commencing any alteration work, submit for review and approval of the Architect, a schedule showing the commencement, the order, and the completion dates for the various parts of this work.
- B. Before starting any work relating to existing utilities that will temporarily discontinue service to the existing building, notify the Owner 5 days in advance and obtain the Owner's approval before proceeding with this phase of work. Do not disconnect or disrupt service without Owner's prior approval.

**1.04 HAZARDOUS MATERIAL ABATEMENT**

- A. During the construction of this project, if work involving hazardous material is suspected, or encountered, Contractor shall notify Owner or Owner's representative immediately and Owner, with his own forces or by separate contract is responsible for complete investigation, removal and disposition of hazard material in accordance with applicable laws and regulations.

## **PART 2 - PRODUCTS**

### **2.01 BARRICADE AND SUPPORT MATERIALS**

- A. Before starting demolition and removal work, furnish and erect necessary barricades. Barricades shall provide for safe passage at all times. Provide temporary protection to keep existing building weathertight. Dust proof areas that are to be kept in use in manner to permit necessary passage for personnel and the protection of equipment. During process of demolition and removal, install temporary supports and bracing, to prevent building damage.
- B. If approved by Architect, materials from demolition work may be used for construction of temporary protective barricades, temporary partitions, noise barriers and dust barriers and for temporary non-structural supports. Where suitable materials are not available from demolition work, furnish materials of proper type and construction to perform function specified above.

### **2.02 OTHER MATERIALS**

- A. Provide materials, not specifically described but required for proper completion of work of this Section, selected by Contractor subject to Architect's approval.

## **PART 3 - EXECUTION**

### **3.01 PREPARATION**

- A. Make such explorations and probes as are necessary to ascertain required protection measures before proceeding with alteration work. Give particular attention to shoring and bracing requirements so as to prevent any damage to existing construction.
- B. Provide, erect, and maintain catch platforms, lights, barriers, weather protection, warning signs, and other items as required for proper protection of the workmen engaged in alteration operations, and adjacent construction.
- C. Provide and maintain weather protection at exterior openings so as to fully protect the interior premises against damage from the elements until such openings are closed by new construction.
- D. Provide and maintain temporary protection of the existing building where demolition, removal, and new work is being done, connections made, materials handled, or equipment moved.
- E. Take necessary precautions to prevent dust and dirt from rising by wetting demolished masonry, concrete, plaster, gypsum board, sprayed fireproofing and similar debris, or by other means. Protect unaltered portions of the existing building affected by the operations under this section by dust-proof partitions and other adequate means.

- F. Do not close or obstruct walkways or passageways without the authorization of the Owner. Do not store or place materials in passage-way or other means of egress. Conduct operations with minimum traffic interference.
- G. Owner will be continuously occupying areas of the building immediately adjacent to areas of selective demolition. Conduct selective demolition work in manner that will minimize need for disruption of Owner's normal operations. Provide minimum of 72 hours advance notice to Owner of demolition activities which will severely impact Owner's normal operations.

### **3.02 UTILITY SERVICE**

- A. Maintain existing utilities indicated to remain, keep in service, and protect against damage during demolition operations.
- B. Do not interrupt existing utilities serving occupied or used facilities, except when authorized in writing by authorities having jurisdiction. Provide temporary services such as emergency power, fire alarm, heating and air conditioning, during interruptions to existing utilities, as acceptable to Owner and governing authorities. Allow no interruption in service unless coordinated with Owner at least 24 hours in advance.
- C. Disconnect and seal utilities serving interior area to be demolished, prior to start of demolished work.
- D. Protect smoke and fire detectors from construction damage, dust and false alarms.
- E. Request Owner to identify any data/communication wiring above the ceiling that should be removed. Remove this wiring and all abandoned conduit and wiring above ceiling.

### **3.03 INSTALLATION/APPLICATION/PERFORMANCE**

- A. Provide alteration work as indicated on the drawings or required for the work of this Contract. Be responsible for any damage that may be caused by such work to any part or parts of existing structures or items designated for reuse or salvage. Perform patching, restoration, and new work in accordance with applicable technical sections of the Specifications.
- B. Where alterations occur, or new and old work join, cut, remove, patch, repair, or refinish the adjacent surfaces or as required by the involved conditions, and leave in as good a condition as existed prior to the commencing of the work. Refinish painted surfaces from intersection to intersection unless indicated otherwise. Materials and workmanship employed in the alterations, unless otherwise indicated or specified, shall conform to that of the original work. Materials not specifically described but required for a complete and proper installation of the work, shall be new, first quality of their respective kinds, as selected by Contractor subject to the approval of the Architect. Alteration work shall be performed by the various respective trades that normally perform the particular items of work.

- C. Finish new and adjacent existing surfaces as specified for new work. Clean existing surfaces of dirt, grease and loose paint before refinishing.
- D. Where alterations occur in areas to be completed during later phases of the work only prepare adjacent surfaces as necessary and complete finishing during proper phase of the work.
- E. If it will be necessary to disrupt internal pedestrian traffic flow along means of egress from the building, the Contractor must consult the presiding code official in regards to temporary means of egress, temporary exit signage and other related items. Implementation of requirements made by the code official are the responsibility of the Contractor.
- F. If unanticipated mechanical, electrical or structural elements which conflict with intended function or design are encountered, investigate and measure both nature and extent of the conflict. Submit report to Owner's Representative in written, accurate detail. Pending receipt of directive from Owner's Representative rearrange selective demolition schedule as necessary to continue overall job progress without delay.

### **3.04 SALVAGE**

- A. Certain items and materials removed from existing building in demolition work are to be relocated or reused by Contractor in new construction work under this Contract. Items and materials for relocation or reuse and which are damaged by careless handling in removal may be rejected by Architect if considered unsuitable for re-use. Replace rejected items at Contractor's expense. Salvable materials, removed in demolition work and not for relocation or re-use or not turned over to the Owner for disposition, become property of Contractor and shall be hauled away from site as they are removed.
- B. In all cases of interior demolition, door hardware, light fixtures, emergency lighting, art work, furniture, window treatments such as blinds, drapes, curtains and operating hardware, signage and graphics and other interior decor items are to be carefully removed and turned over to Owner unless designated to be cleaned or refurbished and reinstalled.

### **3.05 REMOVAL OF DEBRIS AND CLEANING**

- A. Remove and legally dispose of rubbish and debris found in demolition area at start of the Work that resulted from demolition activities or were deposited on site by others during the duration of contract. Keep project area and public right-of-way reasonably clear at all times. Upon completion of work remove temporary construction, equipment, salvaged materials, trash and debris leaving entire project area in a neat and clean condition.

### **3.06 PROTECTION AND REPAIR**

- A. Erect temporary barricades and fencing required to protect existing and new site construction including but not limited to new and existing walks, drives, roads, curb and gutter, etc. during construction activities.
- B. Allow no heavy traffic on new or existing paving unless authorized in writing by Owner.
- C. Contractor is responsible for restoring all existing site construction, including softscape (landscape) and hardscape, that is damaged during construction to new condition.
- D. If it is necessary to cut or trench across any existing paving (including walks), Contractor is responsible for restoring damaged areas to new condition.

**END OF SECTION 02 41 19**



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**PART 1 - GENERAL**

**1.01 WORK INCLUDED**

- A. Cast-in-place concrete, including formwork.

**1.02 RELATED WORK**

- A. Section 03 15 00 - Site Concrete Expansion, Construction, and Contraction Joints.
- B. Section 03 20 01 - Site Concrete Reinforcing.

**1.03 REFERENCES**

- A. American Concrete Institute, Box 19150, Redford Station, Detroit, Michigan 48219 (latest revision).
  - 1. ACI 211.1: Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete.
  - 2. ACI 211.2: Standard Practice for Selecting Proportions for Structural Lightweight Concrete.
  - 3. ACI 211.3: Standard Practice for Selecting Proportions for No-Slump Concrete.
  - 4. ACI 304R: Guide for Measuring, Mixing, Transporting, and Placing Concrete.
  - 5. ACI 304.2R: Placing Concrete by Pumping Method.
  - 6. ACI 304.3R: High Density Concrete: Measuring, Mixing, Transporting and Placing.
  - 7. ACI 304.4R: Placing Concrete with Belt Conveyors.
  - 8. ACI 305R: Hot Weather Concreting.
  - 9. ACI 306R: Cold Weather Concreting.
  - 10. ACI 309: Standard Practice for Consolidating of Concrete.
  - 11. ACI 309.1R: Behavior of Fresh Concrete During Vibration.
  - 12. ACI 309.2R: Identification and Control of Consolidation-Related Surface Defects in Formed Concrete.
  - 13. ACI 318: Building Code Requirements for Reinforced Concrete.
  - 14. ACI 347: Recommended Practice for Concrete Formwork.
- B. American Society of Testing For Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103 (latest revision).
  - 1. ASTM C31: Making and Curing Concrete Test Specimens in the Field.
  - 2. ASTM C33: Specification for Concrete Aggregates.
  - 3. ASTM C42: Obtaining and Testing Drilled Cores and Sawed Beams of Concrete.
  - 4. ASTM C143: Test for Slump of Portland Cement Concrete.
  - 5. ASTM C150: Specifications for Portland Cement.
  - 6. ASTM C172: Sampling Freshly Mixed Concrete.
  - 7. ASTM C173: Test for Air Content of Freshly Mixed Concrete by the Volumetric Method.

8. ASTM C231: Test for Air Content of Freshly Mixed Concrete by the Pressure Method.
  9. ASTM C260: Specification for Air-Entraining Admixtures for Concrete.
  10. ASTM C309: Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
  11. ASTM C494: Specification for Chemical Admixtures for Concrete.
  12. ASTM E329: Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction.
- C. Concrete Reinforcing Steel Institute, "Manual of Standard Practice."
- D. Local Codes and Ordinances: Wherever provisions of the Standard Building Code or the local current ordinances are more stringent than the above referenced Specifications and Standards, the local codes and ordinances shall govern.

#### **1.04 SUBMITTALS**

- A. Submit the following in accordance with the Specifications:
1. Product Data: Submit manufacturer's product data for reinforcement and forming accessories, patching compounds, curing compounds, and other materials.
  2. Shop Drawings: Submit for review prior to Installation, Shop Drawings of all reinforcing steel, including bar cutting lists, typical bar bend diagrams, construction of forms including jointing, reveals, and location and pattern of form tie placement.
  3. Design Mix: Prior to placement of concrete, the Contractor shall submit a design mix showing the proportions and compressive strength obtained from the concrete at 7 and 28 days. The design mix shall include a complete list of materials including type, brand, source, and amount of; cement, fly ash, ground slag, coarse aggregate, fine aggregate, water, air content and admixtures, if applicable. The mix design shall be submitted to the Architect at least ten (10) days prior to the start of operations. Placement of concrete shall not begin until the mix design is approved in writing by the Architect.

#### **1.05 QUALITY ASSURANCE/ACCEPTANCE:**

- A. Inspection: Architect shall have access and rights to inspect batch plants, cement mills, and facilities of suppliers, manufacturers, and subcontractors providing products specified.
- B. Batch Plant:
1. Certification: Current certification that weighing scales have been tested and are within tolerances as set forth in National Bureau of Standards Handbook No. 44.
  2. Equipment: Semi-automatic or fully automatic.
- C. Evaluation and acceptance of concrete shall conform to ACI 318.
- D. The Contractor shall engage a testing laboratory acceptable to Owner and Architect to perform material evaluation tests and to design concrete mixes. All testing shall be paid for by the Contractor.

- E. The mixing or alternate use of cement from different manufactures will not be permitted. The source of any materials shall not be changed without the written approval of the Architect.
- F. If the cement furnished produces erratic results under field conditions incident to the placing of the concrete, or in regard to the strength of the finished product, or in the time of the initial or final set, the Contractor shall, without notice from the Architect, cease the use of that source of cement.
- G. Should a change in sources be made, or admixtures added or deleted from the mix, a new design mix must be submitted to the Architect for approval.
- H. The Contractor is responsible for product quality control during handling, blending, mixing, transporting, and placement operations, and for necessary adjustments in proportioning of the materials to produce an acceptable mix. The Contractor shall perform all applicable quality control sampling and testing required to ensure that the completed concrete complies with all requirements and specifications. The Contractor shall furnish all personnel, equipment, and facilities necessary to perform the required sampling and pay for testing.
- I. The Contractor shall be responsible for ensuring that all concrete cylinders, including those made for determination of quality acceptance, are properly cured while at the jobsite.
- J. Field Sampling and Testing:
  - 1. Field samples shall be made and cured in accordance with ASTM C31 for each concrete strength, at the rate of 4 test cylinders and one slump test for each 50 cubic yards of concrete from each days pour. Make air content check for each set of test cylinders in accordance with ASTM C173 or ASTM C231. Air content and slump shall be checked and recorded at both truck discharge and point of placement for pumped concrete from the first load each day and every 50 cubic yards thereafter.
  - 2. Test Cylinders: One at 7 days, two at 28 days, and reserve the remaining cylinder for testing after a longer period as required by the Architect if the 28-day tests do not meet or exceed the required strength.
  - 3. The taking of samples from small pours of 10 cubic yards or less may be omitted at the discretion of the Architect.
  - 4. Additional Test Slumps: Every 25 cubic yards, recording location for report.
  - 5. When early form removal is requested, field cure cylinders will be tested at 7 days or less to determine sufficient strength.
- K. Testing: Where average strength of any group of 3 cylinders falls below the minimum comprehensive strength, or an individual cylinder falls more than 500 psi below minimum compressive strength specified, the Contractor will be required to have a certified laboratory core the concrete and test it in accordance with ASTM C42. Specimens shall be selected by the Architect from location in structure represented by test specimen or specimens which failed. At the discretion of the Architect, Swiss hammer testing may or may not be used to aid in determination of acceptable concrete.

1. Specimens shall be secured, prepared, and tested in accordance with ASTM C42, within a period of 60 days after placement of concrete.
  2. Concrete will be deemed approved meeting the strength requirements of this Section if it meets the strength requirements of ACI 318.
  3. The cost of cutting specimens from the structure, patching the resulting holes, and making laboratory analysis shall be at the sole expense of the Contractor.
  4. Holes from which the cored samples are taken shall be packed solid with no slump concrete proportioned in accordance with ACI 211. Patching shall have the same design strength as the specified concrete.
  5. Should laboratory analysis indicate that the proper concrete mix has not been used, all concrete poured where inappropriate mix was used shall be subject to rejection, before, during, or after the pour.
  6. If any of the specimens cut from the structure fail to meet the requirements of ACI 318, the Architect shall have the right to require the defective concrete to be replaced, at the Contractors sole expense, and at no additional cost to the Owner.
- L. Sampling: In addition, the slump test specified in this Section, the Contractor shall keep a cone and rod apparatus on the Project site for random testing of batches. When concrete does not meet the specified slump requirements, and when directed by the Architect, the Contractor will immediately perform a slump test in accordance with ASTM C143. Concrete not meeting the slump requirements shall be removed from the Project site.
- M. The Contractor shall provide an opportunity for the Architect to observe all quality control sampling and testing procedures.

## **PART 2 - PRODUCTS**

### **2.01 CEMENT**

- A. Portland cement: ASTM C150 Type I.

### **2.02 WATER**

- A. Clean and free from oil, acid, alkali, salt, organic matter, or other deleterious substances.
- B. Potable.

### **2.03 CONCRETE AGGREGATES**

- A. General: Natural aggregates, well graded, free from deleterious coatings and organic materials conforming to ASTM C33 (latest revision).
1. Import non-reactive aggregates if local aggregates are reactive. (Appendix XI-ASTM C33).
  2. Wash aggregates uniformly before use.
  3. Other aggregate gradations can be approved by Architect.

- B. Fine Aggregates:
  - 1. Clean, sharp, natural or manufactured sand, free of loam, clay, lumps, or other detrimental materials and conforming to ASTM C33.
  - 2. Less than 2 percent passing the No. 200 sieve.
  - 3. Maximum size 1-1/2 inches.
  
- C. Coarse Aggregates:
  - 1. Natural gravel, crushed gravel, crushed stone, or combination of these materials.
  - 2. Less than 15 percent float or elongated particles (long dimension >5 times short dimension).
  - 3. Less than 0.5 percent passing the No. 200 sieve.

## **2.04 CONCRETE AIR-ENTRAINING ADMIXTURES**

- A. Manufacturer:
  - 1. Air-Mix or Perma-Air by the Euclid Chemical Co.
  - 2. Sealtight Air Entraining Admixture by W.R. Meadows of Texas.
  - 3. Master Builders, MB-VR.
  - 4. Or approved equal.
  
- B. ASTM C260; nontoxic after 30 days.
  
- C. Use only the specified non-corrosive non-chloride accelerator. Calcium chloride is not permitted.
  
- D. Provide for concrete exposed to freezing and thawing, required to be watertight or placed during cold weather. Air Content: 5 to 6 percent.

## **2.05 ADMIXTURES**

- A. Water-Reducing Admixture: Conforming to ASTM C494, Type A:
  - 1. Eucom WR-75 by the Euclid Chemical Company.
  - 2. Pozzolith 200N by Master Builder.
  - 3. Plastocrete 160 by Sika Chemical Corporation.
  
- B. Water-Reducing Retarding Admixture: Conforming to ASTM C494, Type D:
  - 1. Eucom Retarder-75 by the Euclid Chemical Company.
  - 2. Pozzolith 100XR by Master Builder.
  - 3. Plastiment by Sika Chemical Company.
  
- C. High-Range Water-Reducing Admixture (Superplasticizer): Conforming to ASTM C494, Type F or G:
  - 1. Eucom 37 by Euclid Chemical Company.
  - 2. Rheobuild 1000 by Master Builders.
  - 3. Sikament by Sika Chemical Company.

- D. Non-Corrosive Non-Chloride Accelerator Admixture: Conforming to ASTM C494 Type C or E:
  - 1. Accelguard 80 by Euclid Chemical Company.
  - 2. Or approved equal.
  - 3. Manufacturer must have long-term non-corrosive test data from an independent testing laboratory (of at least 1 year's duration) using an acceptable accelerated corrosion test method using electrical potential measures.
- E. Prohibited Admixtures: Calcium chloride, thiocyanates or admixtures containing more than 0.05 percent chloride ions.
- F. Certification: Submit written conformance to the requirements and chloride ion content of the admixture to Architect prior to mix design review.

## **2.06 FORMS**

- A. Unexposed Finish Concrete: Plywood, lumber, metal or other acceptable material approved by the Architect. Lumber shall be dressed on at least 2 edges and 2 sides for a tight fit if used.
- B. Form Coatings: Commercial formulation from coating compound with maximum VOC of 350 mg/l that will not bond, stain, or adversely affect concrete surfaces in contact with and will not impair succeeding treatments of concrete surfaces.
- C. Form Ties: Factory-fabricated, adjustable-length, removable or snap-off metal form ties, designed to prevent deflection and spalling of concrete upon removal. Units provided shall not leave any metal closer than 1-1/2 inch to exposed surface. Provide ties that, when removed, will leave holes no larger than 1 inch in diameter in concrete surface.

## **2.07 BONDING AGENT**

- A. Manufacturer: Sonnebond by Sonneborn; or approved equal.
- B. Submit product specifications and manufacturer's specific instructions for application on this Project for Architect's approval.
- C. Product must meet Project requirements with regard to surface, pot life, set time, vertical or horizontal application, forming restrictions, or other stated requirements.

## **2.08 BOND BREAKER**

- A. Manufacturers:
  - 1. Williams Tilt-Up Compound, Williams Distributors Inc., Seattle, Washington.
  - 2. Silco seal 77, Superior concrete Accessories, Franklin Park, Illinois.
  - 3. Or Equal.

- B. Non-staining type.
- C. Provide positive bond prevention.
- D. Submit copies of manufacturer's data, recommendations, and instructions for specific use on this Project for review.

## **2.09 CURING COMPOUND**

- A. Liquid Membrane-Forming Curing Compound: ASTM C309, Type I, Class A. Moisture loss not more than 0.005 gr./sq. cm. applied at 200 square feet per gallon.
  - 1. Conspec, Conspec Cure & Seal.
  - 2. Sonneborn, Kure-N-Seal.
  - 3. Master Builders, MasterKure.
  - 4. Or approved equal.

## **2.10 BONDING AND REPAIR MATERIALS**

- A. Rewettable Bonding Compounds:
  - 1. Polyvinyl acetate type.
  - 2. Manufacturer:
    - a) Euco Weld by the Euclid Chemical Co.
    - b) Weldcrete by the Larsen Co.
    - c) Sonnocrete by Sonneborn.
    - d) Daraweld C by W. R. Grace.
  - 3. Use only in areas not subject to moisture.
- B. Non-Rewettable Bonding Compounds:
  - 1. Polymer modified type.
  - 2. Manufacturer:
    - a) Euco-Bond by the Euclid Chemical Co.
    - b) Or approved equal.
- C. Bonding Admixture:
  - 1. Latex, non-rewettable type.
  - 2. Manufacturer:
    - a) SBR Latex or Flex-Con by the Euclid Chemical Co.
    - b) Daraweld C by W. R. Grace.
- D. Patching Mortar:
  - 1. Free flowing or gel consistency.
  - 2. Polymer modified cementitious mortar.
  - 3. Manufacturer:
    - a) Euco Thin Coat or Concrete Coat by the Euclid Chemical Co. for horizontal repairs.
    - b) Verticoat by the Euclid Chemical Co. for vertical or overhead repairs.
    - c) Sikatop 121 or 122 by the Sika Chemical Co. for horizontal repairs.
    - d) Sikatop 123 by the Sika Chemical Co. for vertical or overhead repairs.



- E. Underlayment Compound:
  - 1. Free-flowing, self-leveling, pumpable cementitious base compound.
  - 2. Manufacturer:
    - a) Flo-Top by the Euclid Chemical Co.
    - b) Or approved equal.
  
- F. Repair Topping:
  - 1. Self-leveling, polymer modified high strength topping.
  - 2. Manufacturer: Thin Top SL by the Euclid Chemical Co.

### **PART 3 - EXECUTION**

#### **3.01 DESIGN OF CONCRETE MIX**

- A. Submit mix design on each class of concrete for review; include standard deviation analysis or trial mixture test data.
  
- B. Proportion mix design in accordance with ACI 318, Section 5.3, "Proportioning on the Basis of Field Experience and/or Trial Mixtures".
  
- C. If trial batches are used:
  - 1. Prepare mix design by independent testing laboratory.
  - 2. Achieve an average compressive strength 1200 psi higher than the specified strength, or 1400 psi for specified concrete strengths over 5000 psi.
  - 3. Certified copies of laboratory trial mix reports and cylinder tests shall be submitted to Architect by the testing laboratory for approval.
  
- D. Do not place concrete prior to receipt of Architect's written approval of mixes and cylinder test results.
  
- E. Design mix and perform tests to meet the requirements as specified.
  
- F. Slump: 2"-4"
  
- G. Water/Cement Ratio:
  - 1. Watertight concrete exposed to fresh water and freeze/thaw: 0.50 max.
  - 2. Air entrained concrete exposed to fresh water: 0.50 max.
  
- H. Combined Aggregate Gradings:
  - 1. Aggregates for concrete shall be proportioned in accordance with "Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete." ACI 211.1.
  - 2. Maximum aggregate size: Do not exceed one-fifth the narrowest dimension between sizes of forms or 3/4 of the clear space between reinforcing bars, 1-1/2 inch maximum.

### 3.02 MIXES

- A. Strength: Concrete minimum strength at 28 days. All site concrete minimum strength to be 3,500 psi unless noted on Drawings or specified in other Sections.
- B. Mix Designs:
  - 1. Prepare design mixes for each type of concrete, in accordance with ACI 301 and ACI 318, except as otherwise specified.
- C. Conform to ACI 304 current edition for measuring, mixing, transporting and placing concrete.
- D. Concrete Mix Adjustments: Mix design adjustments may be requested by the Contractor when characteristics of materials, job conditions, weather, test results, or other circumstances warrant, and as approved by Architect. Laboratory test data for revised mix design and strength results shall be submitted to and approved by Architect prior to using in Work.

### 3.03 FORMS

- A. Coordinate with other trades whose work may be located within or below concrete.
- B. Coordinate installation of joint materials and vapor retarders with placement of forms and reinforcing steel.
- C. Notify Architect 1 full working day prior to erection of forms for inspection.
- D. Cleaning and Tightening:
  - 1. Clean forms thoroughly and adjacent surfaces to receive concrete.
  - 2. Remove chips, wood, sawdust, dirt or other debris immediately prior to concrete placement.
  - 3. Retighten forms after concrete placement to eliminate leaks.
- E. Design:
  - 1. Design, erect, support, brace, and maintain formwork in accordance with:
    - a) Building Codes Requirements for Reinforced Concrete (ACI 318).
    - b) Recommended Practice for Concrete Formwork (ACI 347).
    - c) Construction Industry Standards (OSHA 2207).
  - 2. Design formwork to be readily removable without impact, shock, or damage to concrete surfaces and adjacent materials.
- F. Reuse of Forms: Do not reuse forms unless they are in new and undamaged condition.
- G. Chamfer exposed corners and edges 3/4 inch unless otherwise specified or shown on Drawing. Use wood, metal, PVC or rubber chamfer strips fabricated to produce uniform smooth lines and tight edge joints.
- H. Preparation of Form Surfaces: Coat the contact surfaces of forms with a form-coating compound where applicable prior to placement of reinforcement.

- I. Other Trades: Provide openings in concrete form work to accommodate Work of other trades. Determine size and location of openings, recesses, and chases for other trades providing such ties. Accurately place and securely support items built-in to form.
- J. Form Tolerances: Construct forms to sizes, shapes, lines, and dimensions shown, work in finished structures.
- K. Removal of Forms:
  - 1. Do not disturb forms until concrete is sufficiently strong to withstand possible injury.
  - 2. Do not remove shoring until member has acquired sufficient strength to support its weight and the load upon it.
  - 3. Do not remove forms until the concrete has attained 67 percent of 28-day strength or a minimum of 4 days. Use a method of form removal which will not cause overstressing of the concrete.

### **3.04 FORM TIES**

- A. Place in uniform patterns on exposed surfaces.
- B. Number and placement sufficient to withstand pressures and limit deflection of forms to acceptable limits.

### **3.05 PLACING CONCRETE - GENERAL**

- A. Do not place concrete without Architect being present.
- B. Allow other trades reasonable time to complete portions of work which must be completed before concrete is placed.
- C. Notify Architect at least 1 full working day in advance before starting to place concrete to permit inspection of forms, reinforcing, sleeves, conduits, boxes, inserts, or other work required to be installed in concrete.
- D. Review curing methods with Architect and verify curing materials and equipment are at Project site.
- E. Placement shall conform to requirements and recommendations of ACI 304 and ACI 318, except as modified in these Specifications.
- F. Place concrete as soon as possible after leaving mixer in layers not over 1.5 feet deep:
  - 1. Without segregation or loss of ingredients.
  - 2. Without splashing forms or steel above.
- G. Do not use concrete truck chutes, pipes, finishing tools, etc., constructed of aluminum.
- H. Before depositing concrete:
  - 1. Remove debris from space to be occupied by concrete.

2. Dampen:
    - a) Gravel fill beneath slabs on ground.
    - b) Sand where vapor barrier is specified.
    - c) Wood forms.
  3. Verify reinforcement is secured in position.
- I. Before placing concrete, clean and inspect form work, reinforcing steel, and items to be embedded or cast-in-place. Notify other trades prior to placement of concrete to permit the installation of their Work. Coordinate the installation of joint materials and vapor barriers with placement of forms and reinforcing steel.
- J. Conveying:
1. Concrete shall be conveyed from the mixer to the place of final deposit by methods which will prevent the separation or loss of materials.
  2. Conveying equipment shall be capable of providing a supply of concrete at the site of placement without interruptions sufficient to permit loss of plasticity between successive increments.
  3. Provide equipment for chuting, pumping, and pneumatically conveying concrete of proper size and design to insure a practically continuous flow of concrete at the point of delivery and without segregation of the materials.
  4. Keep open troughs and shutes clean and free from coatings of hardened concrete.
  5. Do not allow concrete to drop freely more than 10 feet. Equipment and methods used for conveying are subject to the approval of Architect.

### **3.06 ADDITION OF WATER AT PROJECT SITE**

- A. Do not add water to concrete at Project site if slump is within specified range.
- B. With the Architect's approval, add water to concrete arriving at Project site with a slump less than the specified range, provided it can be demonstrated that the specified water-cement ratio will not be exceeded.

### **3.07 CONSOLIDATION AND VISUAL OBSERVATION**

- A. Concrete shall be consolidated with internal vibrators having a frequency of at least 800 vpm, with amplitude required to consolidate concrete in the section being placed.
- B. At least one standby vibrator in operable condition shall be at the placement site prior to and during placing concrete.
- C. Consolidation equipment and methods shall conform to ACI 309 "Recommended Practice for Consolidation of Concrete".
- D. Vibrator operator is required to see the concrete being consolidated to ensure good quality workmanship; or Contractor shall have a person actually observe the vibration of the concrete and will advise the vibrator operator of changes needed to assure complete consolidation.
- E. Do not use vibrators to transport concrete in forms.

### **3.08 PLACING CONCRETE IN HOT WEATHER**

- A. Comply with the requirements of ACI 305.
- B. Do not place concrete at times when temperature is forecast to exceed 100 degrees F within 12 hours after the concrete is placed.
- C. Fog spray forms, reinforcing steel, and subgrade just before placing concrete.
- D. Make every effort to maintain concrete temperature:
  - 1. Temperature of concrete shall be below 90 degrees F at time of placement, cool the ingredients before mixing by use of chilled water.
  - 2. Concrete batches with temperature in excess of 90 degrees F will be rejected.
- E. Place concrete promptly upon arrival at Project and vibrate immediately after placement.
- F. Do not add water to retemper.
- G. Consider placing concrete in late afternoon as opposed to early morning.
- H. Protect and cure exposed surfaces by one of the following:
  - 1. Continuous water curing.
  - 2. Moisture-cover curing.

### **3.09 PLACING CONCRETE IN COLD WEATHER (ACI 306R-78)**

- A. Preparation:
  - 1. Comply with the requirements of ACI 306.
  - 2. Additives for the sole purpose of providing freeze protection shall not be used.
  - 3. Arrangements for covering, insulating, housing, or steam heating newly-placed concrete shall be made in advance of placement and shall be adequate to maintain temperature and moisture conditions recommended.
- B. Placement:
  - 1. Surfaces to be in contact with concrete shall be free of snow, ice, and frost and shall be above 40 degrees F.
  - 2. Do not place concrete on frozen subgrade.
  - 3. Placement of insulating material, tarpaulins, or other movable coverings shall follow closely the placing of concrete so that only a few feet of concrete are exposed to outside air at any time.
- C. Curing and Protection:
  - 1. Keep concrete continuously moist and covered and maintain concrete temperature at a minimum of 50 degrees F for 7 days; temperature shall be uniform throughout concrete. If high early strength concrete is used, this temperature requirement may be reduced to 3 days.

2. It is recommended forms be left in place for the entire period of protection; use insulated blankets or other approved method on slab surfaces.
3. Limit rapid temperature changes at end of protection period to avoid thermal cracking.

### **3.10 PATCHING - GENERAL**

- A. Prior to starting patching work, except as specified, obtain Architect's approval of proposed patching techniques and mixes.

### **3.11 REPAIR OF DEFECTIVE AREAS**

- A. Definition: Concrete in place that does not conform to specified design strength, shapes, alignments, and elevations as shown on Drawings and contains surface defects.
- B. Evaluation and acceptance of concrete shall conform to ACI 318.
- C. With prior approval of Architect, as to method and procedure, repair defective areas in conformance with ACI 301, Chapter 9, except that the specified bonding compound shall be used.
- D. Surface Repairs:
  1. Remove and replace concrete having defective surfaces if defects cannot be repaired to satisfaction of Owner.
  2. Honey-combed areas and rock pockets:
    - a) Repair immediately after removal of forms.
    - b) Prepare no-slump concrete mortar and test so that, when dry, patching mortar will match surrounding color and strength.
    - c) Cut out to solid concrete or minimum of 1-inch depth.
    - d) Make edges for cuts perpendicular to the concrete surface.
    - e) Thoroughly clean and dampen with water.
    - f) Apply bonding compound.
    - g) Compact no-slump concrete into patch, and finish to blend with adjacent finished concrete.
    - h) Cure in same manner as adjacent concrete.
  3. High Areas: Grind after concrete has cured at least 14 days.
  4. Low Areas:
    - a) Repair during or immediately after completion of surface finishing operations.
    - b) Cut out low areas and replace with fresh concrete of same type and class as original concrete.
    - c) Finish repaired areas to blend into adjacent concrete.
  5. Defective Areas:
    - a) Cut out and replace with fresh concrete of same type and class as original concrete.
    - b) Finish repaired areas to blend into adjacent concrete.
  6. Make structural repairs with prior approval of Architect, as to method and procedure, using the specified epoxy adhesive or epoxy mortar. Where epoxy

- injection procedures must be used, use an approved low viscosity epoxy made by the manufacturers previously specified.
7. Level floors for subsequent finishes by use of specified underlayment material.
  8. Where required, level exposed floors by use of the specified self-leveling repair topping.
  9. Repair methods not specified above may be used, subject to approval of Architect.

### **3.12 BLOCKOUTS AT PIPES OR OTHER PENETRATIONS**

- A. Submit proposed blockouts for review in accordance with the Specifications.

### **3.13 CONCRETE CURING**

- A. Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Start initial curing as soon as free water has disappeared from concrete surface after placing and finishing. Weather permitting, keep continuously moist for not less than 7 days. Begin final curing procedures immediately following initial curing and before concrete has dried. Continue final curing for at least 7 days in accordance with ACI 301. Avoid rapid drying at end of final curing period.
- B. Curing Methods: Perform curing of concrete by curing and sealing compound, by moist curing, by moisture-retaining cover curing, and by combinations thereof, as specified herein.
  1. Provide moisture curing by keeping concrete surface continuously wet by covering with water, by water-fog spray, or by covering concrete surface with specified absorptive cover, thoroughly saturating cover with water and keeping continuously wet. Place absorptive cover to provide coverage of concrete surfaces and edges, with 4-inch lap over adjacent absorptive covers.
  2. Provide moisture-cover curing by covering concrete surface with moisture-retaining cover for curing concrete, placed in widest practicable width with sides and ends lapped at least 3 inches and sealed by waterproof tape or adhesive. Immediately repair any holes or tears during curing period using cover material and waterproof tape.
  3. Provide curing and sealing compound on interior slabs left exposed and to exterior slabs and walks, as follows:
    - a) Apply specified curing and sealing compound to concrete slabs as soon as final finishing operations are complete (within 2 hours). Apply uniformly in continuous operation by power-spray or roller in accordance with manufacturer's directions. Recoat areas subjected to heavy rainfall within 3 hours after initial application. Maintain continuity of coating and repair damage during curing period.
    - b) Use membrane curing compounds that will not affect surfaces to be covered with finish materials applied directly to concrete.
- C. Curing Formed Surfaces:
  1. Cure formed concrete surfaces, including underside of beams, supported slabs, and other similar surfaces, by moist curing with forms in place for full curing period or until forms are removed.
  2. If forms are removed, continue curing by methods specified above, as applicable.

- D. Curing Unformed Surfaces:
1. Cure unformed surfaces; i.e., slabs and other flat surfaces by application of appropriate curing compound.
  2. Final cure concrete surfaces to receive finish flooring by moisture-retaining cover, unless otherwise directed by Architect.

### 3.14 SURFACE FINISHES

- A. As-Cast Finish:
1. For formed concrete surfaces not exposed-to-view in the finished work or by other construction, unless otherwise indicated.
  2. This is concrete surface having texture imparted by form facing material used, with tie holes and defective areas repaired and patched and fins and other projections exceeding 1/4 inch in height rubbed down or chipped off.
- B. Smooth Form Finish:
1. For formed concrete surfaces exposed-to-view, or that will be covered with a coating material applied directly to concrete, or a covering material applied directly to concrete, i.e.; waterproofing, damp-proofing, painting or other similar system.
  2. This is cast-in-place concrete surface obtained with selected form facing material, arranged orderly and symmetrically with a minimum of seams.
  3. Repair and patch defective areas with fins or other projections completely removed and smoothed.
- C. Related Unformed Surfaces: At tops of walls, horizontal offsets, and similar unformed surfaces occurring adjacent to formed surfaces, strike-off smooth and finish with texture matching adjacent formed surfaces. Continue final surface treatment of formed surfaces uniformly across adjacent unformed surfaces unless otherwise specified or shown on Drawings.
- D. Float Finish: Apply float finish to slab surfaces to receive trowel finish and other finishes specified.
1. After screeding, consolidating, and leveling concrete slabs, do not work surface until ready for floating. Begin floating when surface water has disappeared, or when concrete has stiffened sufficiently to permit operation of power-driven floats, or both. Consolidate surface with power-driven floats, or by hand-floating if area is small or inaccessible to power units.
  2. Check and level surface plane to tolerances of Ff 18 - F1 15. Cut down high spots and fill low spots. Uniformly slope surfaces to drains. Immediately after leveling, refloat surface to uniform, smooth, granular texture.
- E. Grout Cleandown Finish:
1. After repairing defects, saturate surface thoroughly and keep saturated during grouting operations.
  2. Use a grout consisting of 1 part cement, 1-1/2 to 2 parts of fine sand and sufficient water for a thick creamy consistency.
  3. Apply by brush, trowel or rubber float to completely fill air bubbles and holes.



4. Float vigorously with a wood, sponge-rubber or cork float immediately after applying grout. Excess grout shall be scraped off with a sponge-rubber float.
  5. After grout has been allowed to stand undisturbed to allow some loss of plasticity, but not damp appearance, the surface should be rubbed with a clean, dry burlap to remove all excess grout. All air holes shall be filled but no visible film of grout shall remain after the rubbing.
- F. Trowel Finish: After floating, begin first trowel finish operation using a power-driven trowel. Begin final troweling when surface produces a ringing sound as trowel is moved over surface. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance, and with surface leveled to tolerances of Ff 20 - fl 17. Grind smooth surface defects which would telegraph through applied floor covering. Apply where exposed-to-view, and where slab surfaces are to be covered other thin finish coating system.
- G. Non-Slip Broom Finish:
1. Finish concrete as specified, except only trowel the surface once.
  2. Finish surface by drawing fine-hair broom lightly across surface.
  3. Brooming:
    - a) Broom in same direction and parallel to expansion joints.
    - b) Inclined slab: Broom perpendicular to slope. Texture shall be as approved by the Architect from sample panels.
    - c) Round Roof Slab: Broom surface in radial direction.
- H. Class 2, Rubbed Finish in accordance with Standard Specifications for Highway Construction, Section 802.20, Arkansas Department of Transportation, current Edition and this Section:
1. After removal of forms, rubbing of concrete shall be start as soon as its condition will permit.
  2. Immediately before starting this Work, concrete shall be thoroughly saturated with water. Sufficient time shall have elapsed before wetting down to allow the mortar used in the pointing of rod holes and defects to thoroughly set.
  3. Surfaces to be finished shall be rubbed with a medium coarse carborundum stone using a small amount of mortar on its face.
  4. Mortar shall be composed of cement and fine sand mixed in proportions used in the concrete being finished.
  5. Rubbing shall be continued until form marks, projections, and irregularities have been removed, voids filled, and a uniform surface has been obtained.
  6. Paste produced from rubbing shall be left in place at this time.
  7. After concrete above the surface being treated has been cast, the final finish shall be obtained by rubbing with a fine carborundum stone and water. Rubbing shall be continued until the entire surface is smooth texture.
  8. Finish will not be acceptable if a uniform texture and color have not been achieved. Should the finish not be acceptable, the surface shall be given a sprayed finish or other approved finish that is satisfactory to the Architect.
  9. After final rubbing is completed and the surface is dried, it shall be rubbed with burlap to remove loose power and left free from all unsound patches, paste, powder, and objectionable marks.

- I. Class 3, Textured Coating Finish in accordance with Standard Specifications for Highway Construction, Section 802.19, Arkansas Department of Transportation, latest edition, and this Section:
  1. Material provided for textured coating finish shall be a commercial paint type texturing product produced specifically for this purpose, and shall consist of a synthetic non-alkyd resin containing mica, perlite, non-biodegradable fibers, and durable tinting pigments. The material shall be listed on the QPL. Material shall be approved by Engineer.
  2. Unless otherwise specified in the Contract, the color of the textured coating finish shall be concrete gray, equal or close to Shade 36622 of the Federal Color Standard 595 B. The exact shade shall be selected by the Owner.
  3. Surfaces to be coated shall be free of efflorescence, laitance, flaking, coatings, dirt, oil, and other foreign substances.
  4. The sprayed finish shall not be applied over surfaces cured with membrane curing compound until 30 days has elapsed from application of the membrane.
  5. Prior to application of the finish, the surfaces shall be free of moisture, as determined by sight and touch, and in a condition consistent with manufacturer's published recommendations.
  6. The finish shall be applied at a rate as recommended by the manufacturer and as approved by the Engineer.
  7. The finish shall be applied with heavy duty spray equipment capable of maintaining a constant pressure as necessary for proper application.
  8. Completed finish shall be tightly bonded to the structure and shall present a uniform appearance and texture equal to or better than the required for rubbed finish.
  9. If necessary, an additional coat or coats shall be applied to produce the desired surface texture and uniformity.
  10. Upon failure to adhere positively to the structure without chipping or cracking, or to attain the desired surface appearance, the coating shall be removed from the structure and the surface given a rubbed finish, or another approved finish satisfactory to the Engineer.

### **3.15 WATER LEAKAGE TESTS - WATER HOLDING STRUCTURES**

- A. Subject water holding structures to leakage tests after concrete has been cured and obtained its design strength and before backfill, brick facing, or other Work that will cover exposed faces of walls is begun.
- B. Fill basins to be subjected to leakage tests with water to normal liquid level line.
- C. After basin has been kept full for 48 hours, it will be assumed, for purposes of the test, that moisture absorption by the concrete in the basin is complete.
- D. Valves and gates to the structure shall then be closed, and the change in water surface measured for a 24-hour period.
- E. During test period, examine exposed portions of the structure and mark visible leaks or damp spots; such leaks or damp spots shall be later patched or corrected in a manner acceptable to Architect.

### **3.16 MISCELLANEOUS ITEMS**

- A. Filling Holes:
  - 1. Fill in holes and openings left in concrete for the passage of Work by other trades after their Work is in place.
  - 2. Mix, place, and cure concrete to blend with in-place construction. Provide other miscellaneous concrete filling required to complete Work.
- B. Non-Shrink Grout Application: Grout base plates, equipment bases, clarifier base, and other location indicated with specified non-shrink grout. Provide non-metallic type where grout is exposed.

### **3.17 PROTECTION**

- A. No Work or walking on finished surfaces will be allowed for 16 hours after the concrete is placed.
- B. Provide plywood or other acceptable protective cover at all traffic areas throughout the job.
- C. Protect exposed concrete floors, steps, and walks from paint and other materials or equipment which may blemish or damage these surfaces.

**END OF SECTION**

**PART 1 - GENERAL**

**1.01 DESCRIPTION**

- A. Work Included: Form cast-in-place concrete required and subsequently remove forms except as otherwise specified.

**1.02 RELATED DOCUMENTS**

- A. Applicable portions of the Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, Addenda issued prior to the execution of the Contract, other documents listed in the Agreement and Modifications issued after the execution of the Contract shall apply to this Section. The general requirements for this work are in Division 1 of the Specifications.

**1.03 SUBMITTALS AND SUBSTITUTIONS**

- A. In accordance with Section 01 33 00.
- B. Substitutions will not be considered prior to the award of the General Contract.

**1.04 QUALITY ASSURANCE**

- A. Qualifications of Workmen: Provide foreman at all times during execution of this portion of the Work, thoroughly familiar with type materials being installed, referenced standards, and requirements of this work, and who shall direct work performed under this Section.
- B. Codes and Standards:
  - 1. In addition to complying with pertinent codes and regulations, comply with pertinent recommendations contained in "Recommended Practice for Concrete Formwork", publication ACI 347 of the American Concrete Institute.
  - 2. Where provisions of pertinent codes and standards conflict with requirements of this Section more stringent provisions govern.

**PART 2 - PRODUCTS**

**2.01 WOOD FORM MATERIALS**

- A. Form Lumber: Provide form lumber in contact with exposed concrete using new material except as allowed for re-use of forms. Provide form lumber as follows, a combination thereof, or an equal approved in advance by Architect:
  - 1. "Plyform", class I or II, bearing label of the American Plywood Association.
  - 2. Southern Pine or Douglas Fir, number 2 grade, seasoned, surfaced 4 sides.

- B. Form Sealers: Provide "React S" by Conspec, or approved equal.

## **2.02 TIES AND SPREADERS**

- A. Type: Type which does not leave an open hole through concrete and which permits neat and solid patching at every hole.
- B. Design: Metal not less than one inch from surface at completion of concrete work.

## **2.03 EXPANSION JOINTS**

- A. Non-extruding, pre-moulded filler strips conforming to ASTM D 1751 or D 1752 and compatible with sealant material used to seal joints.

## **2.04 FORMED JOINTS**

- A. Non-staining materials; of wood, plastic, or metals, formed to be removed without spalling concrete.

## **2.05 KEYED JOINTS**

- A. KEY-LOK® by Form-A-Key Products, BoMetals QuicKey by White Cap, Muller Construction Co. or approved equal. Top of stakes set 3/8" below slab surface so when joint form is placed on stakes, painted portion of joint is finished elevation. Finish concrete to top of joint and burn in with hand trowel.

## **2.06 OTHER MATERIALS**

- A. Provide materials, not specifically described but required for completion of concrete formwork as selected by Contractor subject to advance approval of Architect.

## **PART 3 - EXECUTION**

### **3.01 CONSTRUCTION OF FORMS**

- A. General: Construct substantial, sufficiently tight forms to prevent fins and leakage of mortar, and able to withstand deflection when filled with wet concrete.
- B. Layout:
  - 1. Form cast-in-place concrete to shapes, sizes, lines, and dimensions required.
  - 2. Exercise particular care in form layout to avoid necessity for cutting of concrete after placement.
  - 3. Make proper provision for inserts, sleeves, pipes, openings, offsets, recesses, anchorage, blocking, and related features as required.

- C. Forms for footings and related below grade concrete may be omitted when soil and workmanship permit accurate excavation to size and where omission is approved by Architect.
- D. Removal of forms: Time for removing forms is subject to weather conditions after concrete is poured. Remove form work in manner to insure complete safety of structure. Do not place building materials on slabs until they are strong enough to carry the imposed load. Contractor shall decide when to remove forms and accept full responsibility for their removal.

### **3.02 JOINTS**

- A. If proposed layout of joints differs from layout shown on drawings, Contractor shall submit three (3) copies of alternate layout plan to Architect for review. Do not proceed with alternate layout of joints without written approval from Architect.
- B. Provide mechanical "Keyed Kold" joint screed forms used in placing concrete slabs on grade installed to comply with manufacturer's specifications.
- C. Construction Joints: Where joint is made, thoroughly clean concrete surface and remove all laitance. In addition, thoroughly wet and slush vertical joints with a coat of neat cement grout immediately before placing new concrete.
- D. Expansion Joints: Do not run reinforcement, corner protection angles, or related fixed metal items, embedded in or bonded into concrete continuous through expansion joints. Provide filler strips for expansion joints between slabs on grade and all joints between slabs on grade and vertical surfaces. Construct joints 1/2-inch thick and full depth of slab, unless otherwise noted.
- E. Saw-cut Control Joints: In "Green" concrete the following tables will apply.
  - 1. Depth of cut:
    - a. Soff-Cut Saw: 1" minimum
    - b. Wet-Cut Saw: 1/4 slab thickness
  - 2. Joint spacing based upon slab thickness, UNLESS NOTED OTHERWISE:
    - a. 4" slab equals 10'-0" o.c.
    - b. 5" slab equals 13'-0" o.c.
    - c. 6" or thicker slab equals 15'-0" o.c.

### **3.03 RUBBED SURFACES**

- A. Construct forms for exposed cast-in-place concrete with smooth exterior grade plywood or steel with joints butted tight to prevent fins and leaking. As soon as forms are stripped, rub down concrete surface with carborundum grinders using water and Portland cement as rubbing agent. Rub exposed concrete until a uniformly even surface is obtained, with no joint marks or defects showing. Do not apply neat cement or grout to concrete as painted or plastered finish coat.

### **3.04 JOINT-FREE SURFACES**

- A. No joint allowed in formed surfaces where joint-free surfaces are required. In forming for joint-free surfaces, use metal lined forms and cover form joints with form tape.

### **3.05 CHAMFERED CORNERS**

- A. Chamfer corners of rectangular concrete members formed with wood forms except where flush with adjacent concrete or masonry, or where covered with other materials.

**END OF SECTION 03 10 00**

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**SITE CONCRETE EXPANSION, CONSTRUCTION, AND CONTRACTION JOINTS****PART 1 - GENERAL****1.01 SUMMARY**

- A. Provide expansion, construction, and contraction joints as specified.

**1.02 RELATED SECTIONS**

- A. Section 03 01 00 - Site Concrete Work.

**1.03 REFERENCES**

- A. American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.
1. ASTM A36 - Specification for Structural Steel.
  2. ASTM D226 - Specification for Asphalt-Saturated Organic Felt used in Roofing and Waterproofing.
  3. ASTM D994 - Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).
  4. ASTM D1190 - Specification for Concrete joint Sealer, Hot-Poured Elastic Type.
  5. ASTM D1751 - Specification for Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Non-extruding and Resilient Bituminous Types).
- B. Corp of Engineers, (U.S. Department of the Army) Pulaski Building, 20 Massachusetts Avenue, North West, Washington, D.C. 20314.
1. CRD-C-572 - Polyvinylchloride Waterstops.
- C. Federal Specifications: SS-S-210A; Sealing Compound for Expansion Joints.

**PART 2 - PRODUCTS****2.01 WATERSTOPS**

- A. Center bulb type extruded from an elastomeric plastic compound, the basic resin of virgin polyvinyl chloride (PVC).
- B. Size as recommended by manufacturer for each application or as shown on Drawing. Generally, 6 inches for walls with a 12 inches thickness and 9 inches for walls thicker than 12 inches.
- C. Specific gravity approximately 1.37 and the shore durometer Type A hardness, approximately 80.
- D. Meet the performance requirements of the Corps of Engineers' Specification CRD-C-572.



- E. Constant thickness from the edge of the bulb to the outside edge.
- F. Have a number of parallel ribs or protrusions on each side of the center of the strip.
- G. Corrugated type or tapered waterstops are not acceptable.
- H. The minimum weight per foot for waterstop shall be 0.75 pound for 3/16-inch by 6-inch, 1.35 pounds for 3/8-inch by 6-inch, and 2.05 pounds for 3/8-inch by 9-inch.
- I. Manufacturers:
  1. Southern Metal and Plastic Products, Inc.
    - a) Type 11RCB for 4-inch by 3/16-inch.
    - b) Type 17RCB for 6-inch by 3/8-inch.
    - c) Type 18RCB for 9-inch by 3/8-inch.
  2. Vinylex Corporation.
    - a) Catalog No. RB6-38H for the 6-inch by 3/8-inch.
    - b) Catalog No. RB9-38H for the 9-inch by 3/8-inch.
  3. Greenstreak Plastic Products.
    - a) Style 732 for the 6-inch by 3/8-inch.
    - b) Style 735 for the 9-inch by 3/8-inch.
  4. Or approved equal.

## **2.02 BOND BREAKER TAPE FOR EXPANSION JOINTS**

- A. Where indicated, adhesive-backed glazed butyl or polyethylene tape that will satisfactorily adhere to the pre-molded joint material or concrete surface.
- B. Same width as joint.

## **2.03 PREMOLDED JOINT FILLER - BITUMINOUS TYPE**

- A. Bituminous type conforming to ASTM D994 or D1751, unless otherwise shown or specified.
- B. Use around pipe penetrations through existing walls.
- C. Manufacturers:
  1. Synko Flex Products Inc.; Synko Flex Preformed Plastic Adhesive Waterstop.
  2. American Colloid Co.; Waterstop RX.

## **2.04 BOND BREAKER**

- A. Bond breaker, except where a tape is specifically called for, shall be either bond breaker tape, as specified, or a bond prevention material, non-staining type, as specified in Section 03 01 00.

## **2.05 CORK EXPANSION JOINT FILLER**

- A. Manufacturer: W.R. Meadows Sealtight, or equal.

- B. Seal joints with a pourable two-component cold-applied compound to depth as indicated on Drawings.

## **2.06 POURABLE JOINT FILLERS - RUBBER ASPHALT FILLER**

- A. Hot-pour type, conforming to ASTM D1190. Use primer recommended by the manufacturer.

## **2.07 COAL-TAR TAPE**

- A. Manufacturer's:
  1. Protecto Wrap 200, by Protecto Wrap Co., Denver, CO.
  2. Tapecoat CT, by Tapecoat Company, Inc., Evanston, IL.
  3. Or equal.

## **2.08 STEEL EXPANSION JOINT DOWELS**

- A. Smooth steel conforming to ASTM A36. Coating on bars with an approved, FUSION BONDED COATING.

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION OF WATERSTOPS - GENERAL**

- A. Join waterstops at intersections so continuous seal is provided.
- B. Center waterstop on joint.
- C. Hold waterstop positively in correct position.
- D. If waterstop is damaged, repair in acceptable manner.
- E. Vibrate concrete to obtain impervious concrete in the vicinity of joints.
- F. In horizontal joints, fill areas below waterstop completely with concrete; make visual inspection of entire waterstop area during concrete placement.

### **3.02 WATERSTOPS IN CONSTRUCTION JOINTS**

- A. Horizontal Waterstops:
  1. Place immediately after the pour is completed and before concrete has begun to set.
  2. Puddle each side to level concrete and assure that waterstop is properly embedded.
  3. Where stops are spliced, lap at least 12 inches and secure together.
  4. After concrete has set to the point where the surface can be cut with a broom or a stream of water, cut off the surface to a rough finish with laitance removed and the concrete left clean.

- B. Vertical Waterstop: Place and secure in forms prior to placing concrete.

### **3.03 PLASTIC WATERSTOP**

- A. Install in accordance with details shown and manufacturer's instructions.
- B. Allow at least 10 minutes before pulling or straining the new splice.
- C. Finished splices shall provide a cross section that is dense and free of porosity with tensile strength of not less than 80 percent of unspliced materials.

### **3.04 SPLICES AND JOINTS**

- A. Prior to use of the waterstop material in the field, submit a sample of a fabricated cross constructed of each size or shape of material to be used for approval.
- B. Fabricate samples so that the material and workmanship represent the fittings provided under this Section.
- C. Make field splices and joints in accordance with waterstop manufacturer's instructions using a thermostatically controlled heating iron.

### **3.05 JOINT PREPARATION - GENERAL**

- A. Accurately locate and construct joints to produce straight joints.
- B. Vertical or horizontal, except where walls intersect sloping floors.
- C. Do not commence concrete pour until after joint preparation has been inspected and approved by Architect.

### **3.06 CONSTRUCTION JOINTS**

- A. Prior to placing abutting concrete, clean contact surface by sandblasting or other approved means to remove laitance and expose the aggregate.
- B. Remove concrete from exposed portion of reinforcing steel.
- C. Do not damage the waterstop, if one is present, during the cleaning process.
- D. Grout for horizontal construction joints shall be as specified in Section 03 47 00.
- E. Roughen surface of hardened concrete by one of the following methods:
  - 1. Sandblast foundation and reinforcing dowels after concrete has fully cured to remove laitance and spillage and to expose sound aggregate.
  - 2. Water-blast the foundation and reinforcing dowels after concrete has partially cured to remove laitance and spillage and to expose sound aggregate.

3. Green cut fresh concrete with high pressure water and hand tools to remove laitance and spillage from the foundation and reinforcing dowels, and to expose sound aggregate.

### **3.07 LOCATION**

- A. Joints as shown on the Drawings or approved by Architect.

### **3.08 TIME BETWEEN POURS**

- A. At least 2 hours shall elapse after depositing concrete in long or high columns or heavy walls before depositing in beams, girders, or slabs supported thereon.
- B. For short columns and low height walls, 10 feet or less, wait at least 45 minutes prior to depositing concrete in beams, girders, brackets, column capitals, or slabs supported thereon.
- C. Beams, girders, brackets, column capitals, and haunches shall be considered as part of the floor or roof system and shall be placed monolithically therewith.
- D. Where cold joints will result and this joint will be below the finished water surface, provide and install a waterstop in the joint.

### **3.09 EXPANSION JOINTS - GENERAL**

- A. Provide pre-molded joint filler of sufficient width to completely fill the joint space.
- B. If a waterstop is in the joint, accurately cut pre-molded joint filler to butt tightly against the waterstop and the side forms.
- C. At locations where joint sealant is to be applied, precut pre-molded joint filler the required depth.
- D. Form cavities for joint sealant with either precut, pre-molded joint filler or smooth, accurately-shaped material that can be removed.
- E. Thoroughly vibrated concrete along the joint form to produce a dense, smooth surface.
- F. Repair surface irregularities along the joint sealant cavity due to improper concrete consolidation or faulty form removal with an approved compound compatible with the joint sealant in a manner that is satisfactory to the sealant manufacturer.

### **3.10 INSTALLATION OF BITUMINOUS TYPE OR CLOSED CELL FOAM TYPE PREMOLDED JOINT FILLER**

- A. Drive nails at about 1 foot on centers through the filler to provide anchors into the concrete when it is placed.

- B. Place pre-molded joint filler in the forms in the proper position before concrete is poured.
- C. Install pre-molded joint filler in walks (to provide expansion and contraction joints at not more than 20-foot intervals), at changes in direction at intersections, and at each side of driveway entrances.

### **3.11 POURABLE JOINT FILLER - GENERAL**

- A. Install pourable joint fillers in accordance with the manufacturer's instructions.
- B. Thoroughly clean joints by sandblasting concrete surfaces of each side of joint from plastic waterstop to top of joint, dry the joint, and remove dust and foreign material; prime before pouring the filler.
- C. Avoid damaging waterstop by sandblasting operations.
- D. Primer compatible with filler material.

### **3.12 RUBBER ASPHALT JOINT FILLER**

- A. Heat rubber asphalt filler material in a double-walled boiler and place in the joint by means of a nozzle.
- B. Prevent spillage outside of the joint.
- C. Begin pouring joint filler at the bottom of the horizontal joint and proceed upwards in a manner that will preclude the possibility of trapping air in the joint.
- D. Use masking tape at each side of joint to assist in cleaning all spillage.

### **3.2 CONTROL JOINTS IN FLOOR SLABS**

- A. Form tongue-and-groove construction joints with keyway in bulkhead forms.
- B. Key horizontal joints the full length of the member.
- C. Key width shall occupy the interior one-third section, and depth of the key shall be 2 inches.

### **3.13 STEEL EXPANSION JOINT DOWELS**

- A. Install parallel to wall or slab face and in true horizontal position by securing tightly in forms with rigid ties.
- B. Orient dowels to permit joint movement.

**END OF SECTION**

**PART 1 - GENERAL**

**1.01 DESCRIPTION**

- A. Work Included: Furnish and install reinforcement and associated items required for cast-in-place concrete.

**1.02 RELATED DOCUMENTS**

- A. Applicable portions of the Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, and Addenda issued prior to the execution of the Contract, other documents listed in the Agreement and Modifications issued after the execution of the Contract shall apply to this Section. The general requirements for this work are in Division 1 of the Specifications.

**1.03 SUBMITTALS AND SUBSTITUTIONS**

- A. In accordance with Section 01 33 00.
  - 1. Furnish Shop Drawings for review by Architect, on reinforcing steel including special details, bending diagrams, schedules, bar lists, placing diagrams, and accessories. In addition to provisions in General Conditions, submit reinforcing Shop Drawings prepared by or under supervision of registered professional engineer. Reproduction (in any form) of Contract Drawings are not to be used for Shop Drawings. Furnish two prints and one sepia reproducible of Shop Drawings to Architect for review. Submit related shop drawings together. Partial submittals will not be accepted.
- B. Substitutions will not be considered prior to the award of the General Contract.

**1.04 QUALITY ASSURANCE**

- A. Qualifications of Workmen: Provide foreman at all times during execution of this portion of the Work, thoroughly familiar with type materials being installed, referenced standards, and requirements of this work, and who shall direct work performed under this Section.
- B. Codes and Standards:
  - 1. In addition to complying with pertinent codes and regulations, comply with pertinent recommendations contained in "Manual of Standard Practice for Detailing Reinforced Concrete Structures", publication ACI 315 of the American Concrete Institute.
  - 2. Where provisions of pertinent codes and standards conflict with requirements of this Section more stringent provisions govern.

## **PART 2 - PRODUCTS**

### **2.01 CONCRETE REINFORCEMENT**

- A. Concrete Reinforcement Materials: New, free from rust, and complying with following reference standards:
  - 1. Bars for Reinforcement: "Specifications for Deformed Billet-Steel Bars for Concrete Reinforcement", ASTM A-615, grade 60 unless otherwise shown.
  - 2. Wire Fabric: ASTM A1064 - Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
  - 3. Supports, Spacers, and Chairs: Types which will hold reinforcement in position shown in accordance with requirements of ACI CODE-318 except as specified.

### **2.02 OTHER MATERIALS**

- A. Provide metal accessories, including spacers, chairs, ties, and devices necessary for properly assembling, placing, spacing, and supporting reinforcement (including welded wire fabric at 2" from top of slab) in place. Provide materials, not specifically described but required for complete and proper installation of concrete reinforcement, as selected by Contractor subject to approval of Architect.

## **PART 3 - EXECUTION**

### **3.01 SITE CONDITIONS**

- A. Inspection:
  - 1. Carefully inspect installed work of other trades and verify work is complete to point where this installation may properly commence.
  - 2. Verify that concrete reinforcement may be installed to comply with pertinent codes and regulations, reviewed Shop Drawings, and original design.
- B. Discrepancies:
  - 1. In event of discrepancy, immediately notify Architect.
  - 2. Do not proceed with installation in areas of discrepancy until discrepancies have been fully resolved.

### **3.02 BENDING**

- A. General: Fabricate reinforcement to comply with reviewed Shop Drawings. Do not use bars with kinks and bends not shown on Drawings or on reviewed Shop Drawings. Do not bend and straighten steel in manner that will injure material.
- B. Assembly: Tack-welding not acceptable for assembly of reinforcement without specific approval of the Structural Engineer. When permitted by Engineer all welding shall conform to reinforcing steel welding code (AWS D.12.1) of the American Welding Society.

### 3.03 PLACING OF REINFORCEMENT

- A. Placing:
1. Support and wire together reinforcing bars to prevent displacement by construction loads and placing of concrete. On ground and where necessary, supporting Normal Weight concrete blocks may be used. Provide at flat formwork, metal or plastic coated bar chairs and spacers. Provide galvanized, stainless steel or plastic coated accessories where concrete surface will be exposed to weather in finished structure and where rust would impair architectural finishes.
  2. Lap welded wire fabric minimum of 12" in structural slabs and minimum of 6" in slabs-on-grade. Support mesh in final position in all slabs. Lifting of mesh into final position is not permitted.
  3. Do not bend bars after embedded in concrete.
- B. Cleaning Reinforcement: Remove loose, flaky rust, mill scale, mud, oil, and related coatings that will destroy and reduce bond during concrete placement.
- C. Splices: Splice where shown on Drawings or reviewed Shop Drawings.
- D. Concrete Reinforcement Protection: If not detailed otherwise, where concrete is deposited against ground, reinforcement shall have minimum of 3" concrete between it and the ground. If concrete surfaces after removal of forms are to be in contact with ground or exposed to weather, protect reinforcing with minimum of 2" of concrete for bars larger than No. 5 and 1-1/2" for No. 5 bars and smaller. Provide minimum 3/4" concrete covering for reinforcing in slabs and 1-1/2" minimum cover in beams at surfaces not exposed directly to ground or weather.

**END OF SECTION 03 20 00**



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**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Provide reinforcing steel and welded wire fabric.
- B. Conform to "Placing Reinforcing Bars", Recommended Practices, Joint Effort of CRSI-WCRSI, prepared under the direction of the CRSI Committee on Engineering Practice.
- C. Notify Architect when reinforcing is ready for inspection and allow sufficient time for this inspection prior to casting concrete.

**1.02 RELATED SECTIONS**

- A. Section 03 01 00 - Site Concrete Work.

**1.03 REFERENCES**

- A. American Concrete Institute, 22400 West Seven Mile Road, Detroit, Michigan 48219.
  - 1. ACI-318 - Building Code Requirements for Reinforcing Concrete.
- B. American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.
  - 1. ASTM A185 - Specification for Steel Welded Wire, Fabric, Plain, for Concrete Reinforcement.
  - 2. ASTM A497 - Specification for Welded Deformed Steel Wire Fabric for Concrete Reinforcement.
  - 3. ASTM A615 - Specification for Deformed and Plain Billet-Steel for Concrete Reinforcement.
- C. American Welding Society, 550 North West LeJeune Road, Miami, Florida 33126.
  - 1. AWS D1.4 - Structural Welding Code; Reinforcing Steel.
- D. Concrete Reinforcing Steel Institute, 933 North Plum Grove Road, Schamburg, Illinois 60195.
  - 1. CRSI-MSP-1- Manual of Standard Practice.

**1.04 SUBMITTALS**

- A. Submit the following in accordance with the Frontend Documents:
  - 1. Bending lists.
  - 2. Placing drawings.
  - 3. Shop drawings.

- B. Shop Drawings:
  - 1. Bars for footings, including dowels, shall not be fabricated and shipped without prior review of Shop Drawings by the Architect.
  - 2. Otherwise, Shop and Placing Drawings shall include reinforcing placing plans and details indicating size, location, arrangement, placing sequence, etc., and shall conform to ACI 315.

### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Steel:
  - 1. Deliver with suitable hauling and handling equipment.
  - 2. Tag for easy identification.
  - 3. Store to prevent contact with the ground.
- B. Unloading, storing, and handling of bars shall conform to CRSI publication "Placing Reinforcing Bars".

## **PART 2 - PRODUCTS**

### **2.01 DEFORMED REINFORCING BARS**

- A. Deformed billet-steel bars conforming to ASTM A615, Grade 60.

### **2.02 WELDED WIRE FABRIC**

- A. Conform to ASTM A185 or A497.

### **2.03 ACCESSORIES:**

- A. Tie wire: 16-gage, black, soft-annealed wire.
- B. Bar supports: proper type for intended use.
- C. Bar supports in beams, columns, walls, and slabs exposed to view after stripping: Small rectangular concrete blocks of same color and strength of concrete that is being placed around them.
- D. Concrete supports: for reinforcing concrete placed on grade.
- E. Conform to requirements of "Placing Reinforcing Bars" published by CRSI.

## **PART 3 - EXECUTION**

### **3.01 REINFORCING STEEL**

- A. Clean metal reinforcement of loose mill scale, oil, earth and other contaminants.

- B. Straightening and re-bending reinforcing steel:
  1. Do not straighten or re-bend metal reinforcement.
  2. Where construction access through reinforcing is a problem, use bundle or space bars instead of bending.
  3. Submit details and obtain Architect's review prior to placing.
  
- C. Protection, spacing, and positioning of reinforcing steel: Conform to the current edition of the ACI Standard Building Code Requirements for Reinforced Concrete (ACI 318), reviewed placing drawings and design drawings.
  
- D. Location Tolerance: Conform to the current edition of "Placing Reinforcing Bars" published by Concrete Reinforcing Steel Institute and to the Details and Notes on the Drawings.
  
- E. Splicing:
  1. Conform to Drawings and current edition of ACI Code 318.
  2. Stagger splices in adjacent bars.
  
- F. Tying deformed reinforcing bars: Conform to current edition of "Placing Reinforcing Bars" published by Concrete Reinforcing Steel Institute and to details and notes on Drawings.
  
- G. Field Bending:
  1. Field bending of reinforcing steel bars is not permitted when re-bending will later be required to straighten bars.
  2. Consult with Architect prior to pouring if there is a need to work out a solution to prevent field bending.

### **3.02 REINFORCEMENT AROUND OPENINGS**

- A. Place an equivalent area of steel around pipe or opening and extend on each side sufficiently to develop bond in each bar.
  
- B. See Drawings for bar extension length each side of opening.
  
- C. Where welded wire fabric is used; provide extra reinforcement using fabric or deformed bars.

### **3.03 WELDING REINFORCEMENT**

- A. Welding shall not be permitted unless Contractor submits detailed Shop Drawings, qualifications, and radiographic nondestructive testing procedures for review by Architect.
  1. Obtain results of this review prior to proceeding.
  2. Basis for submittals: Structural Welding Code, Reinforcing Steel, AWS D1.4, published by American Welding Society, and applicable portions of ACI 318, current edition.
  3. Test 10 percent of welds using radiographic, nondestructive testing procedures in accordance to the above referenced codes.

### **3.04 PLACING WELDED WIRE FABRIC:**

- A. Conform to ACI 318 and to current Manual of Standard Practice, Welded Wire Fabric, by Wire Reinforcement Institute regarding placement, bends, laps, and other requirements.
- B. Placing:
  - 1. Extend fabric to within 2 inches of edges of slab.
  - 2. Lap splices at least 1-1/2 courses of fabric and a minimum of 6 inches.
  - 3. Tie laps and splices securely at ends and at least every 24 inches with 16-gage black annealed steel wire.
  - 4. Place welded wire fabric at the proper distance above bottom of slab.

**END OF SECTION**

**PART 1 - GENERAL**

**1.01 DESCRIPTION**

- A. Work Included: Cast-in-place, reinforced concrete required. Provisions of this Section are applicable to structural concrete at building as well as to site improvement work.

**1.02 RELATED DOCUMENTS**

- A. Applicable portions of the Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, and Addenda issued prior to the execution of the Contract, other documents listed in the Agreement and Modifications issued after the execution of the Contract shall apply to this Section. The general requirements for this work are in Division 1 of the Specifications.

**1.03 SUBMITTALS AND SUBSTITUTIONS**

- A. In accordance with Section 01 33 00.
  - 1. Design Mix: Prior to placement of concrete, submit concrete mix designs proposed by the concrete supplier for class of concrete, including recent test results substantiating the quality of concrete produced by each mix.
- B. Substitutions will not be considered prior to the award of the General Contract.

**1.04 QUALITY ASSURANCE**

- A. Qualifications of Workmen:
  - 1. Provide foreman at all times during execution of this portion of the Work, thoroughly trained and experienced in placing type concrete specified and who shall direct work performed under this Section.
  - 2. Finishing of Exposed Surfaces of Concrete: Use thoroughly trained and experienced journeyman concrete finishers.
- B. Codes and Standards:
  - 1. In addition to complying with pertinent codes and regulations, comply with pertinent recommendations of "Building Code Requirements for Structural Concrete", publication ACI CODE-318 of latest issue of the American Concrete Institute.
  - 2. American Concrete Institute, ACI PRC-302.1R-04, or most current revised issue, Guide for Concrete Floor and Slab Construction.
  - 3. Where provisions of pertinent codes and standards conflict with requirements of this Section more stringent provisions govern.
  - 4. ACI SP-66 - ACI Detailing Manual.
  - 5. ACI 301 - Standard Specifications for Structural Concrete.

6. ACI SPEC-301-20: Specifications for Concrete Construction.

**1.05 LABORATORY TESTING**

- A. All required testing will be performed by testing laboratory selected by Owner. Cost for laboratory services for concrete tests and mix designs paid by Contractor. Material for tests furnished by Contractor.
- B. Contractor shall submit three (3) copies of certified laboratory test reports to Architect for review.
- C. Testing Procedures:
  - 1. Material Testing: Laboratory to re-check at plant materials as often as necessary to produce concrete of specified strength and consistency including:
    - (a) Fine aggregate.
    - (b) Coarse aggregate.
    - (c) Cast-in-place concrete.
  - 2. Concrete Slump: 6" with allowable variation of plus or minus 1 inch.
  - 3. Quality Control: As work progresses testing laboratory personnel shall conduct tests of concrete in accordance with following procedures:
    - (a) Secure composite samples from the same batch complying with ASTM C 172.
    - (b) Perform one (1) slump test for each set of strength test cylinders complying with ASTM C 143.
    - (c) Make one (1) strength test (4 specimens) for each 40 cubic yards and at least one (1) set for each day's pour.
    - (d) Mold four (4) strength test specimens from each sample complying with ASTM C 31 and protect and cure under standard moisture and temperature conditions in accordance with Section 7 of above ASTM method.
    - (e) Test two (2) specimens at seven (7) days complying with ASTM C 39. If specimens for a particular batch test at or above required strength for that batch, it is not necessary to test the remaining specimens. Hold the remaining specimens for an additional ninety (90) days in case future testing is required. If the specimens tested at seven (7) days do not meet or exceed the desired strength requirements, the remaining two (2) specimens will be tested at twenty-eight (28) days. Average strength of two (2) specimens from each group tested is basis for acceptance or rejection of concrete. If tested strength falls below strength specified at twenty-eight (28) days, Architect has the right to order the removal and replacement of defective concrete at Contractor's expense. If Contractor wishes to obtain test cores from in-place concrete, cost of coring, testing and patching will be paid by Contractor.
  - 4. Flatness: Variation in flatness within a 10' area shall not exceed 1/8" +/-.

**1.06 REFERENCES**

- A. Publications listed below form a part of this specification to extent referenced.

1. ACI 117-10: Standard Specifications for Tolerances for Concrete Construction and Materials
2. ACI 211.1-91(R2009): Standard Practice for Selecting Proportions for Normal, Heavyweight, and Mass Concrete
3. ACI 211.2-98(R2004): Standard Practice for Selecting Proportions for Structural Lightweight Concrete.
4. ASTM B46.1-2019, Surface Texture (Surface Roughness, Waviness, and Lay).
5. ASTM C494 - Standard Specification for Chemical Admixtures for Concrete.
6. ASTM C1059 - Standard Specification for Latex Agents for Bonding Fresh To Hardened Concrete.
7. ASTM C1602 - Standard Specification for Mixing Water Used in the Production of Hydraulic Cement Concrete.
8. ASTM C1895-20 Standard Test Method for determination of Mohs Scratch Hardness Tests.
9. ASTM D5767-18 Standard test Method for Instrumental Measurement of Distinctness of Image (DOI) Gloss of Coated Surfaces.
10. ASTM E1155-20 Standard Test Method for Determining FF Floor Flatness and FL Floor Levelness Numbers.
11. ASTM C260 - Standard Specification For Air-Entraining Admixtures For Concrete.
12. ASTM C33/C33M-23 - Standard Specification for Concrete Aggregates
13. PCI - Portland Cement Association - Concrete Slab Surface Defects: Causes, Prevention, Repair, ©2001 or more current publication.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

- A. Portland Cement: Conform to ASTM "Standard Specifications for Portland Cement", C150, Type I. Use one brand of cement. Mix shall contain at least 470 lb. of Portland Cement per cubic yard of concrete. Use 520 lb of cement if freeze thaw deicing chemicals used or required by conditions.
- B. Aggregates: Conform to ASTM "Standard Specifications for Concrete Aggregates", C33. Provide aggregate of natural sand and gravel or prepared from stone or gravel, free from adherent coatings. Maximum size of pieces 1", except for footings and foundation walls which may be 1-1/2" maximum size. Use pea gravel aggregate for concrete mix used for filling voids in concrete block walls where required. Aggregate for topping slabs not larger than 3/4" with 30% to 50% passing a 1/2" sieve.
- C. Water: ASTM C1602. Clean and free from injurious amounts of oils, acids, alkalis, organic materials, and deleterious substances. **Non-potable water will not be used in concrete mixing.**
- D. Fly ash will NOT be allowed. [ except at below grade applications. DO NOT USE in architecturally exposed concrete, particularly at floor conditions, including polished concrete, if applicable. ]



- E. Air Entrainment: ASTM C260 and ASTM C494. Comply with current building code.

## **2.02 CONCRETE STRENGTHS**

- A. Cast-in-place Concrete: Designed to develop 3,500 psi minimum compressive strength at 28 days, unless noted otherwise on Structural Drawings. \*\*\*Refer to Division 32, EXTERIOR IMPROVEMENTS for strengths required for various concrete site improvements.\*\*\* Designed to develop 3,500 psi minimum compressive strength at 28 days if exposed to weather, unless noted otherwise on Structural Drawings.

## **2.03 GROUT**

- A. Non-Shrink, Non-Metallic, Flowable Grout meeting ASTM C1107/CRD C621 (structural steel grouting, base plates, anchor bolts, tuck pointing):
  1. Con-Spec CS-100
  2. W.R. Meadows Sealtight CG-86™
  3. Master® Builders Solutions MasterFlow 110AN
  4. L&M DURAGROUT™
  5. SikaGrout 212
  6. Kaufman Products SureGrout
  7. Euclid N.S. Grout
  8. Dayton Superior 1107 Advantage Grout
  9. Approved equal.

## **2.04 CONCRETE FLOOR SEALER**

- A. Furnish and apply to concrete surfaces shown on finish schedule as "Sealed Concrete", polyurethane concrete sealer:
  1. Spec Cote Urethane by Dayton Superior. Primer to be Spec Cote WB High Performance Water-Based Epoxy Coating.
  2. Approved equal.
- B. Surface Preparation: Concrete floor should be sound clean and dry and free of oil, dirt, grease, paint, laitance, and the typical membrane forming curing compounds. The concrete should be at least 28 days old. Floors should be mechanically prepared i.e., shot-blast, sandblast, to result in a International Concrete Repair Institute (ICRI) Concrete Surface Profile (CSP) of between CSP #1-2, or the texture of medium grit sandpaper to ensure proper adhesion. If oils or grease are present chemical degreasers should be used to thoroughly degrease concrete before shot-blasting.
- C. Minimum of two (2) applications are required.
- D. Provide clear color for all applications.

## **2.05 CONCRETE CURING COMPOUND**

- A. SpecChem E-Cure® Water-Based Concrete Curing Compound; non-yellowing.
  - 1. Tested per CDPH Standard Method V 1.2-2017 and complies with all LEED V.4 Requirements.
  - 2. Adhesion tested by TCNA (Tile Council) for compliance with thin-set mortar and vinyl tile adhesive. Meets the moisture retention of ASTM C 309 Type 1D, Class A & B on a hard troweled concrete surface.

## **2.06 UNDERSLAB DRAINAGE FILL**

- A. Crushed stone or washed gravel, uniformly graded from 1 inch minimum to 3/4 inch maximum size.

## **2.06 CONCRETE PATCH AND REPAIR**

- A. Provide Adhesives Technology Crackbond® JF Joint & Crack Filler, a two-component polyurea joint filler designed for heavy duty traffic, property repairs and freezer applications. It is solvent free, flexible and with its low viscosity and self-leveling design, allows for 10-15 % movement of installed joint width. It may be used in temperatures between -40 °F to 120 °F (-40 °C to 49 °C). Excellent for the filling of active cracks in concrete in exterior horizontal applications. Polyurea formulation offers long term product adhesion and stability without cracking or deterioration.

## **2.07 OTHER MATERIALS**

- A. Provide materials, not specifically described but required for complete and proper installation of cast-in-place concrete, selected by Contractor subject to approval of Architect.

## **PART 3 - EXECUTION**

### **3.01 MIXING AND PLACING CONCRETE**

- A. Preparation: Clean equipment for transporting concrete. Remove debris, water, and ice from places to be occupied by concrete. Remove laitance and unsound material from hardened concrete before additional concrete is added.
- B. Mixing: Ready-mixed concrete, mixed and delivered in accordance with following requirements only of ASTM C 94.
  - 1. Tolerances in Slump,
  - 2. Measuring Materials,
  - 3. Batching Plant,
  - 4. Mixers and Agitators,
  - 5. Mixing and Delivery,
  - 6. Use of Non-Agitating Equipment
  - 7. Inspection.

- C. Conveying: Convey concrete from mixer to place of deposit by methods that prevent separation and loss of materials.
- D. Placing:
  - 1. Deposit as nearly as practicable in final position to avoid segregation due to re-handling and flowing. Place at rate to assure concrete is plastic and flows readily into spaces between bars. Do not use concrete contaminated by foreign material or re-tempered concrete.
  - 2. When placing is started, carry a continuous operation until placement of panel or section is completed.
- E. Hot Weather Concreting: Place, handle, and cure concrete complying with ACI SPEC-305.1.
- F. Cold Weather Concreting: Provide adequate equipment for handling concrete materials and protecting concrete during freezing and near freezing weather. Concrete materials, reinforcements, forms, and ground in contact with concrete to be free of frost, snow, and ice. Details of approved procedures are available in ACI SPEC-306.1. Contractor to keep accurate thermometer on job where the work is proceeding.
- G. Porous Backfill: Crushed stone or gravel graded from 25 mm to 20 mm (1 inch to 3/4 inch).

### **3.02 PROTECTION OF ADJACENT SURFACES**

- A. Contractor responsible for any work soiled and stained by dripping cement, water, or concrete. Protect same with tarpaulin or similar devices while pouring concrete.

### **3.03 CONSOLIDATION**

- A. Consolidate concrete by vibration, spading, rodding, or forking. Work around reinforcement, embedded items and into corner of forms. Over-vibrating and use of vibrators to transport concrete within forms not allowed. When consolidating by vibration, keep spare vibrator on job site during concrete placing. Use vibrators of length to extend within 6 inches of bottom of freshly poured concrete, vibrator being raised with each succeeding pour.

### **3.04 CONCRETE CURING AND FINISHING**

- A. **Curing Period:** Cure concrete for minimum period of 7 days at a temperature above 50° F. by one of approved methods listed below. Protect fresh concrete from heavy rain, flowing water, mechanical injury and from injurious action of sun. Comply with ACI 306.1 for cold-weather protection, and follow recommendations in ACI 305R for hot-weather protection during curing. Begin curing after finishing concrete, but not before free water has disappeared from concrete surface.

- B. **Potable Water Curing:** If cured with water, keep concrete wet by mechanical sprinklers or by any approved method which will keep surface continuously wet.
- C. **Evaporation Retarder:** Waterborne, monomolecular film forming, manufactured for application to fresh concrete. Apply evaporation retarder to concrete surfaces if hot, dry, or windy conditions prevail. Apply according to manufacturer's written instructions after placing, screeding, and bull floating or darbying concrete, but before float finishing.
- D. **Curing Compounds: NO CHEMICAL CURING COMPOUNDS ALLOWED.**
- E. **Waterproofing Paper or Opaque Polyethylene Film:** Conform to ASTM C 171. Cover concrete immediately following final finishing operation. Anchor securely, seal edges or apply in manner to prevent moisture escaping from concrete.
- F. **Curing Blanket:** AASHTO M-182, Class II, ASTM C-171 burlap cloth made from jute or kenaf, weighing approximately 9 oz./sq. yd. dry.
- G. **Concrete Patching:** Immediately after stripping forms, examine surfaces. Patch honeycombing, defective joints, voids, tie holes, and defects before concrete is thoroughly dry. However, make no attempt to correct or fill any honeycomb spots, or any other defects until they have been examined by Architect and approval obtained as to correction to be employed. Finish of patch to match adjoining surface.
- H. **Concrete Finishes (ACI 301, latest edition):**
  - 1. Interior General: Floor slabs, including topping slabs, to be smooth and steel troweled to hard dense surface (non-burnished), except where required to be depressed. Rough float finish depressed surface. Protect concrete floors during construction period.
  - 2. Exterior: Pads, Steps, Stairs, Slabs and other surfaces to receive light-medium broomed finish for non-slip surface.

### 3.05 FLOOR SLOPE TO DRAINS

- A. Slope floors to drain outlets. Low spots where pools of water can stand on finished floors are not acceptable. Slope to drains 1/8" per lineal foot unless otherwise marked.
- B. Slope floors uniformly from perimeter walls and partitions to drain outlets (unless otherwise indicated).
- C. When multiple drains are shown in a room, space equally. Create dedicated area per drain outlet and slope floor uniformly from area perimeter to drain outlet (unless otherwise indicated).

**END OF SECTION 03 30 00**

**PART 1 - GENERAL****1.01 DESCRIPTION**

- A. Work Included: Repair and filling of voids, holes and depressions in concrete.
  - 1. On grade, above and below grade, interior and exterior applications.
  - 2. Structural grouting of column base plates, machine base plates, anchor bolts, bearing plates, bridge seats, precast wall panels.

**1.02 RELATED DOCUMENTS**

- A. Applicable portions of the Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, and Addenda issued prior to the execution of the Contract, other documents listed in the Agreement and Modifications issued after the execution of the Contract shall apply to this Section. The general requirements for this work are in Division 1 of the Specifications.

**1.03 SUBMITTALS AND SUBSTITUTIONS**

- A. In accordance with Section 01 33 00.
- B. Substitutions will not be considered prior to the award of the General Contract.

**PART 2 - PRODUCTS****2.01 MANUFACTURER**

- A. Dayton Superior Corporation, 1125 Byers Road, Miamisburg, OH 45342, Customer Service: 888-977-9600, Technical Services: 877-266-7732 [www.daytonsuperior.com](http://www.daytonsuperior.com)

**2.02 MATERIALS**

- A. Non-Shrink, Non-Metallic Grout: Provide Dayton Superior 1107 Advantage Grout, a non-shrink, non metallic, non-corrosive, cementitious grout designed to provide a controlled, positive expansion to ensure an excellent bearing area.
  - 1. Meet ASTM C1107-20: Standard Specification for Packaged Dry, Hydraulic-Cement Grout (non-shrink).
  - 2. Approved equal manufacturers:
    - a. MasterFlow® 555
    - b. NS Grout, Euclid Chemical
    - c. Sikagrout® 212
  - 3. Perform grout placement in accordance with the recommendations of ACI and the manufacturer's published specifications for mixing and placing.

- B. Patching Compound: Provide "All-Patch 20".
- C. Feather Patch: Provide Polymer Modified Mortar Conspec "Feather Patch", ChemMasters "FeatherPatch" or approved equal. For exterior (or interior) use and can be applied from feather edge to 1 inch per lift. May be used for horizontal, vertical and overhead surfaces. Install per manufacturer's written recommendations and directions. Must be sealed immediately with water based curing and sealing compound, such as Polyseal™ WB, SafeSeal™ or Safe-Cure & Seal 20.
- D. Two Component Acrylic Polymer Modified Topping and Underlayment: Provide PATCHCRETE® as manufactured by Lyons Manufacturing, Inc., 214-381-8100 or approved equal. Install per manufacturer's written recommendations and directions.
- E. Floor Topping: Provide Level Topping™ Exterior by Dayton Superior, or approved equal. Cement based, non-shrink, self-leveling topping for horizontal concrete designed for exterior use. This is not a gypsum based product.

### **PART 3 - EXECUTION**

#### **3.01 MIXING, PLACING AND FINISHING**

- A. Mix in accordance with the manufacturer's directions to consistencies required for application.
- B. Level repaired surfaces flush with adjacent surfaces and trowel to a smooth finish.

**END OF SECTION 03 60 00**

## PART 1 - GENERAL

### 1.01 DESCRIPTION

- A. Work Included: Furnish and erect specified steel framing, column bases, lintels and related structural steel shapes and accessories.

### 1.02 RELATED DOCUMENTS

- A. Applicable portions of the Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, and Addenda issued prior to the execution of the Contract, other documents listed in the Agreement and Modifications issued after the execution of the Contract shall apply to this Section. The general requirements for this work are in Division 1 of the Specifications.
- B. Miscellaneous metal fabrications, architecturally exposed structural steel, metal stairs and ladders, steel joists and joist girders, cold-formed metal framing, and metal deck are specified elsewhere in these Specifications.

### 1.03 SUBMITTALS AND SUBSTITUTIONS

- A. In accordance with Section 01 33 00.
1. Furnish Shop Drawings, for review by Architect, on structural steel showing necessary fabrication details, fittings, fastenings, anchorage and erection details. In addition to provisions of the General Conditions, prepare structural steel Shop Drawings by or under the supervision of a registered professional engineer. Do not use reproductions, in any form, of the Contract Drawings for Shop Drawings. Furnish two prints of Shop Drawings submitted to Architect for review. Submit related shop drawings together; partial submittals will not be accepted. Furnish mill certificates on foreign steel proposed for use and not produced within the continental USA. Include with mill certificates certified copies of mill test reports giving names and locations of mills and shops, and chemical analysis and physical properties of steel required for this project.
    - a. **Contract Document electronic files (including all drawings, specifications, addenda and supplemental information) will not be made available to Bidders or Sub-bidders before the award of a Contract nor will they be made available to the Contractor or Sub-contractors after the award of a Contract. Only conventional, paper reproductions of such information will be made available to parties listed above.**
  2. All drawings shall bear the stamp of a structural engineer licensed in the state in which the project is located.
- B. Substitutions will not be considered prior to the award of the General Contract.



## 1.04 QUALITY ASSURANCE

- A. Codes and Standards: In addition to complying with pertinent codes and regulations, comply with:
1. AISC "Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings", Latest Edition.
  2. AISC "Code of Standard Practice", Latest Edition.
  3. AISC "Specification for Structural Steel Buildings - Allowable Stress Design and Plastic Design", Latest Edition.
  4. AISC "Load and Resistance Factor Design Specification for Structural Steel Buildings", Latest Edition.
  5. "Code for Welding in Building Construction" of the American Welding Society.
  6. "Specifications for Architecturally Exposed Structural Steel" of the American Institute of Steel Construction.
  7. Steel Structures Painting Council (SSPC): Painting Manual, Vol. 1, Good Painting Practice. Painting Manual, Vol. 2, Systems and Specifications.
  8. Conform to ASTM A 6, "Specification for General Requirements for Rolled Steel Plates, Shapes, Sheet Piling and Bars for Structural Use".
  9. AISC "Architecturally Exposed Structural Steel (AESS)", Latest Edition. Refer to AISC Code of Standard Practice (ANSI/AISC 303-22). AESS can fall within the following five categories:
    - a. AESS 1: Basic Elements
    - b. AESS 2: Feature Elements Not in Close View
    - c. AESS 3: Feature Elements in Close View
    - d. AESS 4: Showcase Elements
    - e. AESS C: Custom Elements
- B. Conflicting Requirements: In event of conflict between pertinent codes and regulations and requirements of referenced standards or these specifications, provisions of more stringent govern.

## PART 2 - PRODUCTS

### 2.01 STRUCTURAL STEEL

- A. Steel Shapes: Provide structural steel shapes, not otherwise indicated on Structural Drawings using high-strength steel, 50 ksi minimum yield strength, conforming to ASTM A992.
- B. Pipe Columns: ASTM A501,  $F_y = 36$  ksi. or A53, Type E,  $F_y = 35$  ksi
- C. Rectangular HSS: ASTM A500, Grade B ( $F_y=46$  ksi) or have equal yield, ultimate, and weldability properties.
- D. Round HSS: ASTM A500, Grade B ( $F_y=42$  ksi) or have equal yield, ultimate, and weldability properties.

- E. Steel Plates, Channels and Angles: ASTM A36, 36 ksi minimum yield strength.
- F. Headed Stud Shear Connectors: ASTM A108, Grade 1015 or 1020, cold finished carbon steel with dimensions complying with AISC Specifications.
- G. Furnish structural steel for this Project manufactured within continental limits of the United States of America unless mill certificates are submitted to and approved by Structural Engineer.

## **2.02 BOLTS AND NUTS**

- A. High Strength Bolts:
  - 1. Meet ASTM A 325 for high strength bolts.
  - 2. Make bolt holes 1/16 inch larger than nominal bolt diameter.
  - 3. Threads may be included in shear plane of bolts.
- B. Machine Bolts and Anchor Bolts: Meet ASTM A307 and A449.
- C. Bolted Truss Connections: ASTM A325, slip critical in oversize round holes.

## **2.03 SHOP PRIMER**

- A. Lead free, alkyd primer: Manufacturer's standard.

## **2.04 OTHER MATERIALS**

- A. For materials, not specifically described but required for complete and proper installation of structural steel, use new material, free from rust, first quality of their respective kinds, and subject to approval of Architect.

## **PART 3 - EXECUTION**

### **3.01 MEASUREMENT AND DIMENSIONS**

- A. Contractor to verify measurements and dimensions at job site. Bring any conflict between actual measurements and dimensions shown on the Drawings and any existing condition which will prevent fabrication and erection of steel work as detailed to attention of Architect as soon as they are discovered. Contractor responsible for errors of Shop Drawings, fabrication, correct fitting, and alignment of the structural members. Shop or field splices in standard structural rolled shapes not acceptable unless shown on Contract Drawings.

### **3.02 WORKMANSHIP**

- A. Fabricate and erect to comply with the "Specifications for the Design, Fabrication and Erection of Structural Steel for Buildings" and the "Code of Standard Practice" as adopted by the American Institute of Steel Construction.

### 3.03 SHOP PRIMER

- A. For surface preparation, shop painting and touch-up painting of structural steel shapes, conform to the "Steel Structures Painting Manual", Volumes 1 and 2, of the Steel Structures Painting Council. **DO NOT PRIME OR PAINT STRUCTURAL STEEL THAT IS TO RECEIVE SPRAY FIREPROOFING.**

### 3.04 WELDING

- A. Shop and field welders continuously employed as welders are acceptable on basis of satisfactory reports dated not more than 2 years prior to award of this Contract. All others must have been re-qualified in past 6 months complying with AWS D 1.0, Appendix.

### 3.05 LINTELS

- A. Furnish and place all structural steel lintels required for all openings unless concrete lintels or reinforced concrete block lintels are shown on Drawings. Build structural members size marked on Drawings or if not shown as determined by the Structural Engineer. Weld members together with exterior weld being a continuous bead to prevent water from running between the members. Bear on walls 8 inches at each end for openings up to 6'-0" wide and 10 inches for wider openings where not otherwise shown.

### 3.06 HIGH-STRENGTH BOLTING

- A. Comply with the "Specification of Structural Joints" approved by the Research Council on Riveted and Bolted Structural Joints of the Engineering Foundation using calibrated-wrench tightening or turn-of-nut tightening methods. By either method, use a calibrating device to check tools and equipment and to provide means of reliable inspection. When turn-of-nut method tightening is used to provide bolt tension complying with ASTM A325, match-mark outer face of nut with the protruding bolt point before final tightening for visual means of noting actual nut rotation. Above marks may be made by wrench operator with crayon or daub of paint, after bolts have been brought to "snug tight" condition.

### 3.07 INSPECTION

- A. Engage an independent testing and inspection agency to inspect high-strength bolted connections and welded connections and to perform tests and prepare test reports.
- B. Testing agency shall conduct and interpret tests, state in each report whether test specimens comply with requirements and specifically state any deviations.
- C. Provide access for testing agency to places where structural steel work is being fabricated or produced so that inspection and testing can be accomplished.
- D. Testing agency may inspect structural steel at plant before shipment.

- E. Correct deficiencies in structural steel work that inspections and laboratory test reports have indicated to be not in compliance with requirements. Perform additional tests, at Contractor's expense, as necessary to reconfirm any noncompliance of original work and to show compliance of corrected work.
- F. Shop Bolted Connections: Inspect or test in accordance with AISC specifications.
- G. Shop Welding: Inspect and test during the fabrication or structural steel assemblies, as follows:
  - 1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.
  - 2. Perform visual inspections of all welds.
  - 3. Perform tests of welds as follows. Inspection procedures listed are to be used at Contractor's option.
    - a. Liquid Penetrant Inspection: ASTM E165 or Magnetic Particle Inspection, ASTM E709, performed on root pass and on finished weld on ten percent of fillet welds. Cracks or zones of incomplete fusion or penetration are not acceptable.
    - b. Radiographic Inspection: ASTM E94 and ASTM E142, minimum quality level "202T" or Ultrasonic Inspection: ASTM E164 on 50 percent of full penetration welds.
- H. Field Welding: Inspect and test during erection of structural steel as follows:
  - 1. Certify welders and conduct inspections and tests as required. Record types and locations of defects found in work. Record work required and performed to correct deficiencies.
  - 2. Perform visual inspections of all welds.
  - 3. Perform tests of welds as follows.
    - a. Liquid Penetrant Inspection: ASTM E165 or Magnetic Particle Inspection, ASTM E709, performed on root pass and on finished weld on ten percent of fillet welds. Cracks or zones of incomplete fusion or penetration are not acceptable.
    - b. Radiographic Inspection: ASTM E94 and ASTM E142, minimum quality level "202T" or Ultrasonic Inspection: ASTM E164 on 50 percent of full penetration welds

### **3.08 ERECTION**

- A. Use Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings of AISC except as otherwise specified.
- B. Sequence: Contractor responsible for erection method and sequence.

- C. Progress: As erection progresses, secure the work to take care of dead loads, wind, and erection stresses. Where structural steel is being erected, completely connect the in-place work in the tier below. **Not more than four stories of steel may be erected above the story in which all final structural connections have been made.**
- D. Alignment: After erection, accurately align and adjust the various members forming parts of a completed frame and structure before being made secure.
- E. Tolerances: AISC Code of Standard Practice apply except as otherwise specified.
- F. Erection Shims: Sufficient shims may be installed to maintain structure within tolerances. Maximum shim thickness at any one joint no greater than 1/2-inch.
- G. Field Assembly: Provide even bearing at field erected column splices and related compression joints which depend upon contact bearing upon completion with respect to the centroid of the contact area. Provide at least 65 percent of the entire contact area in full bearing and the separation of any remaining portion not to exceed 0.02 inches, except locally at toes of flanges where a 50 percent greater separation is permissible; otherwise perform corrective measures.
- H. Anchors: Locate and install anchor bolts and anchors, preset by templates, into connecting work. Provide bearing plates under ends of primary structural members resting on masonry and set in full beds of non-shrink grout.
- I. Base Plates: Support and align column base plates on steel leveling devices. After support members have been plumbed and properly positioned and anchor nuts tightened, pack solidly entire bearing area under plate with non-shrink grout specified in "Concrete" Division of these Specifications. Leave leveling devices in place and cut off flush with edge of column base plates.
- J. All welds, cut edges and areas where primer is missing or damaged is to be cleaned and re-primed.

**END OF SECTION 05 10 00**

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## **PART 1 - GENERAL**

### **1.01 DESCRIPTION**

- A. Work Included: Furnish, erect, and brace open-web steel joists specified.

### **1.02 RELATED DOCUMENTS**

- A. Applicable portions of the Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, and Addenda issued prior to the execution of the Contract, other documents listed in the Agreement and Modifications issued after the execution of the Contract shall apply to this Section. The general requirements for this work are in Division 1 of the Specifications.

### **1.03 SUBMITTALS AND SUBSTITUTIONS**

- A. In accordance with Section 01 33 00.
1. Furnish Shop Drawings, for review by Architect showing necessary fabrication details, fittings, fastenings, anchorage and erection details. In addition to provisions of the General Conditions, prepare Shop Drawings by or under the supervision of a registered professional engineer. Do not use reproductions, in any form, of the Contract Drawings for Shop Drawings. Submit related shop drawings together; partial submittals will not be accepted. Furnish mill certificates on foreign steel proposed for use and not produced within the continental USA. Include with mill certificates certified copies of mill test reports giving names and locations of mills and shops, and chemical analysis and physical properties of steel required for this project.
    - a. **Contract Document electronic files (including all drawings, specifications, addenda and supplemental information) will not be made available to Bidders or Sub-bidders before the award of a Contract nor will they be made available to the Contractor or Sub-contractors after the award of a Contract. Only conventional, paper reproductions of such information will be made available to parties listed above.**
  2. All drawings and calculations shall bear the stamp of a structural engineer licensed in the state in which the project is located.
- B. Substitutions will not be considered prior to the award of the General Contract.

### **1.04 QUALITY ASSURANCE**

- A. Comply to following specifications and code, with modifications specified:
1. American Institute of Steel Construction and the Steel Joist Institute Standard Specifications for Open Web Steel Joists.

2. American Welding Society D1.1 Code for Welding in Building Construction.
- B. Joist designation requirements denotes joist depth, series and chord size.
- C. Perform steel joist design and manufacture by an SJI member to comply with AISC-SJI Standard Specifications for Open Web Steel Joists for the series required.

## **PART 2 - PRODUCTS**

### **2.01 OPEN-WEB STEEL JOISTS**

- A. Conform to the "Standard Specifications and Load Tables" of the Steel Joist Institute. Fabricate by member of the Steel Joist Institute.

### **2.02 SHOP PRIMER**

- A. Lead free primer: Century Industrial Coatings, #220-D-406 CenturyGuard™ Water-based Gray Dip Joist Primer in 1 mil dry film thickness, or approved equal.

### **2.03 OTHER MATERIALS**

- A. Provide materials, not specifically described but required for complete and proper installation of steel joists, of new, free from rust, first quality material of their respective kinds, subject to approval of Architect.

## **PART 3 - EXECUTION**

### **3.01 SHOP PRIMER**

- A. Paint joists and accessories with protective paint shop coat using type standard with manufacturer and conforming to requirements of the Steel Joist Institute. Paint joists and accessories exposed to view with shop coat using type that will not bleed through or affect the finish coat. Apply shop coat by dip, brush or spray method and thoroughly work into joints. Where practicable, do not paint surfaces subject to erection welding. If painted, remove paint to expose clean steel for minimum distance of 2 inches on either side of surface to be welded. Included in this requirement are steel surfaces to which joists are attached by welding. After erection, wire brush field connections and touch up welded, corroded or abraded areas with same paint as shop coat. **DO NOT PRIME OR PAINT METAL JOISTS THAT ARE TO RECEIVE SPRAY FIREPROOFING.**

### **3.02 ERECTION**

- A. Fasten joists in place and install bridging prior to receiving any construction loads. Join steel to steel connections by welding. Where joists bear on masonry use connections set into the masonry. Provide joists extensions where required for attachment of ceiling system.

- B. Erection Welding: Comply with AWS D1.1, Code for Welding in Building Construction.
- C. Accessories: Furnish special fitting for openings, overhangs and ceiling extenders where required and not otherwise detailed or specified.

**END OF SECTION 05 20 00**



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## PART 1 - GENERAL

### 1.01 DESCRIPTION

- A. Work Included: Furnish and erect steel decking specified.

### 1.02 RELATED DOCUMENTS

- A. Applicable portions of the Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, and Addenda issued prior to the execution of the Contract, other documents listed in the Agreement and Modifications issued after the execution of the Contract shall apply to this Section. The general requirements for this work are in Division 1 of the Specifications.

### 1.03 SUBMITTALS AND SUBSTITUTIONS

- A. In accordance with Section 01 33 00.
1. Shop Drawings:
    - a. Before metal decking is delivered to job site, submit Shop Drawings to Architect for review. Submit related shop drawings together; partial submittals will not be accepted. Do not use reproductions, in any form, of the Contract Drawings for Shop Drawings.
    - b. Show sizes, locations, marking of decking units, sizes of holes to be cut in the shop, end closures types and fittings, and methods of securing, anchoring, and attaching to structural members.
    - c. Show verification that members used are adequate to carry live and dead loads involved.
    - d. Show welds, both shop and field, by currently recommended symbols of the American Welding Society.
    - e. Furnish one print of Shop Drawings for Architect review, in addition to acceptable Portable Document Format (PDF) file submissions.
    - f. **Contract Document electronic files (including all drawings, specifications, addenda and supplemental information) will not be made available to Bidders or Sub-bidders before the award of a Contract nor will they be made available to the Contractor or Sub-contractors after the award of a Contract. Only conventional, paper reproductions of such information will be made available to parties listed above.**
- B. Substitutions will not be considered prior to the award of the General Contract.

### 1.04 QUALITY ASSURANCE

- A. Following specifications and codes govern with modifications specified herein:

1. American Iron and Steel Institute: AISI S100-16, North American Specification for the Design of Cold-Formed Steel Structural Members.
  2. Steel Deck Institute: Design Manual for Composite Deck, Form Decks, and Roof Decks.
  3. American Welding Society: Code for Welding in Building Construction.
  4. ASTM A653 / A653M-20: Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process
- B. Conflicting Requirements: In event of conflict between pertinent codes and regulations, referenced standards requirements and these specifications, provisions of the more stringent govern.

## **PART 2 - PRODUCTS**

CHECK WITH STRUCTURAL ENGINEER IF OTHER THAN 'B' DECK ('F' Roof Deck, 1.5CD Composite Deck for added strength)

### **2.01 STEEL DECKING**

- A. Type 'B', 1.5 inch rib depth, 22 gage steel by Vulcraft Division of Nucor Corporation, or approved equal manufactured by member of the Steel Deck Institute. Chemically clean steel deck of oil, grease and dirt.
- B. Provide manufacturer's standard shop primer-painted steel sheet, top and bottom sides, at areas that do not receive spray applied fireproofing meeting ASTM A1008/A1008M, Grade C or D.
  1. Primer for Shop Painted Sheets: Manufacturer's standard primer. When finish painting of steel decking is specified in Section 09 91 00 - Painting, primer coating shall be compatible with specified finish painting.
  2. Provide impermanent or provisional two-coat bright white primer on bottom sides along with either primer-painted or galvanized topsides if conditions warrant.

## **PART 3 - EXECUTION**

### **3.01 FABRICATION**

- A. Fabricate metal decking to comply with final Shop Drawings and the referenced standards.

### **3.02 SHOP PRIMER**

- A. Paint steel deck and accessories with protective paint shop coat using type standard with manufacturer and conforming to requirements of the Steel Deck Institute. After erection, wire brush field connections and touch up welded, corroded or abraded areas with same paint as shop coat. **DO NOT PRIME OR PAINT METAL DECK THAT IS TO RECEIVE SPRAY FIREPROOFING.**

### 3.03 ERECTION

- A. General: Erect metal decking to comply with the Drawings and final Shop Drawings, aligning straight, plumb, and level.
- B. Provide sump plates or pans, cant strips, vent clips, and rubber closures required for complete and proper installation.
- C. Cut decking to provide openings required by structural design Drawings and holes required for work of other trades. Form penetrations where decking is to receive concrete prior to concrete placement. Cut decking only after concrete has attained 75% of its design strength.
- D. Attach decking by puddle welding to supporting structure. **MECHANICAL FASTENING OR POWDER ACTUATED FASTENING WILL NOT BE ALLOWED.**
- E. Touch-up field welds and burned and abraded spots in shop finish using material equivalent to shop finish.
- F. Flexible Closure Strips: Install flexible closure strips over partitions, walls, and where indicated. Install with adhesive according to manufacturer's written instructions to ensure complete closure.

**END OF SECTION 05 30 00**

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**PART 1 - GENERAL****1.01 DESCRIPTION**

- A. Work Included: Furnish and erect structural steel framing and accessories.

**1.02 RELATED DOCUMENTS**

- A. Applicable portions of the Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, and Addenda issued prior to the execution of the Contract, other documents listed in the Agreement and Modifications issued after the execution of the Contract shall apply to this Section. The general requirements for this work are in Division 1 of the Specifications.

**1.03 SUBMITTALS AND SUBSTITUTIONS**

- A. In accordance with Section 01 33 00.
1. Shop Drawings:
    - a. Submit shop drawings showing complete details for the fabrication and erection of members. Manufacturer's professional engineer shall be licensed in the state where proposed project is located.
    - b. Submit details, schedules, procedures, and diagrams showing the sequence of erection.
    - c. Provide setting drawings, templates, instructions and directions for installation of anchorage devices.
    - d. Submit shop drawings for review prior to starting any work. Work performed prior to shop drawing review is at contractors risk.
    - e. **Contract Document electronic files (including all drawings, specifications, addenda and supplemental information) will not be made available to Bidders or Sub-bidders before the award of a Contract. CAD files will be available to the Contractor or Sub-contractors with a release letter or per AIA Document C106™ - 2013 Digital Data Licensing Agreement, after the award of a Contract.**
    - f. **INCLUDE ALL COMPONENTS REQUIRED FOR A COMPLETE FRAMING SYSTEM, INCLUDING EXTERIOR SOFFITS. REFER TO SECTION 07 42 93 - SOFFIT PANELS.**
- B. Substitutions will not be considered prior to the award of the General Contract.

**1.04 REFERENCES**

- A. American Iron and Steel Institute (AISI)
1. "Specification for the Design of Cold-Formed Steel Structural Members" .
  2. "Cold-Formed Steel Design Manual" (Latest).

- B. American National Standards Institute (ANSI)
  - 1. ANSI A58.1 - "Roof, Wind and Snow Loads".
- C. American Society for Testing and Materials (ASTM):
  - 1. ASTM A446 - Steel Sheet, Zinc-coated (galvanized) by Hot-Dip Process, Structural (Physical) Quality.
  - 2. ASTM A570 Hot-Rolled Carbon Steel Sheet & Strip, Structural Quality.
  - 3. ASTM A525 - Sheet Steel, Zinc-Coated (Galvanized) by the Hot-Dip Process, General Requirements.
  - 4. ASTM A611 - "Standard Specification for Steel, Cold-Rolled Sheet, Carbon, Structural."
  - 5. ASTM C955 - "Standard Specification for Load Bearing Steel Studs, Runners (Track), Bracing, and Bridging."
- D. American Welding Society (AWS):
  - 1. AWS D1.1 - "Structural Welding Code" and D1.3 - "Specifications for Welding Sheet Steel in Structures."
  - 2. AWS - "Standard Qualification Procedure".
- E. Metal Lath/Steel Framing Association (ML/SFA) - "Lightweight Steel Framing Systems Manual," Latest Edition.
- F. American Society of Civil Engineers (ASCE) - "Minimum Design Loads for Buildings and Other Structures: Chapter 6 - Wind Loads".

## **1.05 PERFORMANCE REQUIREMENTS**

- A. Contractor is responsible for design, fabrication and erection of steel stud framing to meet the requirements of the latest adopted Local Code.
- B. Compute all structural properties in accordance with AISI "Specifications for the Design of Cold Formed Steel Structural Members."
- C. Provide weldments as required in accordance with American Welding Society (AWS) AWS D1.3 "Structural Welding Code - Sheet Steel".

## **1.06 SYSTEM DESCRIPTION**

- A. Design Requirements: The supplier shall design and/or verify the size and strength of all light gauge cold-formed Metal Framing members and connections in accordance with the ML/SFA Lightweight Steel Framing Systems Manual.
  - 1. Design shall use the superimposed design loads specified in the "Design Criteria" section of the "Structural General Notes" in the contract drawings.
  - 2. Design shall be based upon information shown on the drawings and specified herein.
  - 3. Maximum deflection of exterior wall systems shall not exceed L/600 for Masonry Veneer and L/360 for EIFS Veneer.

4. 18 gage studs are the minimum allowed for framing that supports masonry.
- B. Design shall conform to: AISI Specification for the Design of Cold-Formed Steel Structural Members. Wall bridging shall be designed to provide resistance to minor axis bending and rotation of wall studs. Designated selected exterior and/or interior walls shall be designed to provide frame stability and lateral load resistance. All connections (member to member, and member to structure) shall be designed and detailed.
- C. Qualification of Field Welding: Qualify welding process and welding operators in accordance with AWS “Standard Qualification Procedure”.

## **1.07 DELIVERY AND STORAGE**

- A. Protect steel studs from rusting and damage.
- B. Deliver to project site in manufacturer's unopened containers or bundles, fully identified with name, brand, type and grade.
- C. Store off the ground in a dry, ventilated space.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Provide products manufactured by one of the following manufacturers or by a current member of the Steel Stud Manufacturers Association.
  1. Consolidated Systems Incorporated, 4900 Hungerford Road, Memphis, Tennessee 38118, Phone (901) 365-0226
  2. Dietrich Industries Inc., 500 Grant Street, Suite 226, Pittsburgh, Pennsylvania 15219, Phone (412) 281-2805
  3. Marino\WARE, 400 Metuchen Road, South Plainfield, NJ, 800-627-4661.
  4. Telling Industries, 1400 Southwire Road, Osceola, AR 72370, 888-711-3124.
  5. The Steel Network, Inc., Telephone: 888-474-4876.
  6. Approved equal.

### **2.02 GENERAL REQUIREMENTS**

- A. Provide type, size, gauge and physical properties as described by the manufacturer's load and height tables and in accordance with the current local building code. All section properties shall be calculated in accordance with the AISI Specification for the Design of Cold-Formed Steel Structural Members (latest edition).
- B. Structural calculations specifically related to this project and performed by the manufacturer's professional engineer will indicate depths, gages and spacings of studs required to meet deflection and load bearing requirements. Professional engineer shall be licensed in the state where proposed project is located.



- C. At all instances where radius steel stud and drywall construction is shown on drawings it is intended that the radius be smooth not faceted. Contractor is required to provide smooth face radius by whatever means necessary.
- D. Runners: Match studs; type recommended by stud manufacturer for floor and ceiling support of studs, and for vertical abutment of drywall work at other work.

### **2.03 MATERIALS**

- A. All structural members shall be formed from steel conforming to ASTM A653-94.
- B. All structural members shall be zinc coated in accordance with ASTM A924, G-60 coating.
- C. System Components: With each type of steel stud required, utilize runners (tracks), shoes, clips, angles, ties, fasteners, door jamb reinforcers, bridging and accessories for the applications indicated, as needed to product a complete metal stud system in both vertical and horizontal planes for interior and exterior conditions.

### **2.04 FABRICATION**

- A. General: Framing components may be prefabricated prior to erection. Fabricate components plumb, square, true to line and braced against racking with joints welded. Perform lifting of prefabricated components in a manner to prevent damage or distortion.
- B. Fastenings: Attach similar components by welding. Attach dissimilar components by bolting, or screw fasteners, as standard with manufacturer.
- C. Cutting of steel framing members may be accomplished with a saw or shear. Torch cutting of load carrying members is not permitted. Cut framing components squarely for attachment to perpendicular members, or as required for an angular fit against abutting members. Hold members positively in place until fastened.
- D. Wire tying of framing components is not permitted.

## **PART 3 - EXECUTION**

### **3.01 ERECTION**

- A. Anchor tracks securely to supporting structure to transfer imposed loads.
- B. Provide complete, uniform and level bearing support for bottom track at each bearing stud location.
- C. At intersection and abutting track joints, anchor abutting track pieces securely to a common structural element, or splice them together.

- D. Splices in axial loaded studs not permitted.
- E. Framed Wall Openings: Include properly designed header and multiple (or heavier) studs at each edge of opening, to compensate for those removed.
- F. Diagonal Bracing: Install at wall locations used as "shear walls" for frame stability and to resist wind and lateral loads. Anchor bracing securely for uplift and horizontal shear. Position additional stud(s) as required to resist the vertical component.
- G. General:
  - 1. Install continuous tracks sized to match studs. Align tracks accurately to the layout at base and top of studs. Secure tracks as recommended by the stud manufacturer for the type of construction involved, except do not exceed 24" o.c. spacing for nail or power-driven fasteners, nor 16" o.c. for other types of attachment. Provide fasteners at corners and end of tracks.
  - 2. Set studs plumb, except as needed for diagonal bracing or required for no-plumb walls or warped surfaces and similar requirements.
  - 3. Where stud system abuts structural columns or walls anchor ends of stiffeners to support structure.
  - 4. Install supplementary framing, blocking and bracing in the metal framing system wherever walls or partitions are indicated to support handrails, bumper guards, wall mounted door stops, fixtures, equipment, services, casework, heavy trim and furnishings, and similar work requiring attachment to the wall or partition. Where type of supplementary support is not otherwise indicated, comply with the stud manufacturer's recommendations and industry standards in each case, considering the weight or loading resulting from the item supported.
  - 5. Secure studs to top and bottom runner tracks by either welding or screw fastening at both inside and outside flanges.
  - 6. Frame wall openings larger than 2'-0" square with double stud at each jamb of frame except where more than 2 are either shown or indicated in manufacturer's instructions. Install runner tracks and jamb studs with stud shoes or by welding, and space jack studs same as full-height studs of the wall. Secure stud system all around to wall opening frame in the manner indicated.
  - 7. Frame both sides of expansion and control joints, as shown for the wall system, with a separate stud and do not bridge and joint with components of the stud system.
  - 8. **Provide framing, including cross-bracing, for attachment of exterior soffit components able to resist upward wind forces, where applicable. Refer to Section 07 42 93 - Soffit Panels.**

**END OF SECTION 05 40 00**

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**PART 1 - GENERAL**

**1.01 DESCRIPTION**

- A. Work Included: Furnish and install miscellaneous metal items required and specified. Provide miscellaneous bolts, anchors, supports, braces, and connections necessary for completion of Work.

**1.02 RELATED DOCUMENTS**

- A. Applicable portions of the Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, and Addenda issued prior to the execution of the Contract, other documents listed in the Agreement and Modifications issued after the execution of the Contract shall apply to this Section. The general requirements for this work are in Division 1 of the Specifications.

**1.03 SUBMITTALS AND SUBSTITUTIONS**

- A. In accordance with Section 01 33 00.
  - 1. Submit Shop Drawings on miscellaneous metal items for review by Architect, prior to fabrication. Include type, grade, class of metal and sizes, details of fabrication, methods of assembling, connections to supporting construction, reinforcement, and location of hardware.
    - a. **Contract Document electronic files (including all drawings, specifications, addenda and supplemental information) will not be made available to Bidders or Sub-bidders before the award of a Contract nor will they be made available to the Contractor or Sub-contractors after the award of a Contract. Only conventional, paper reproductions of such information will be made available to parties listed above.**
- B. Substitutions will not be considered prior to the award of the General Contract.

**1.04 REFERENCES**

- A. American Institute of Steel Construction (AISC):
  - 1. Specifications for the Design, Fabrication and Erection of Structural Steel for Building
- B. American National Standards Institute (ANSI):
  - 1. ANSI A14.3, "Ladders, Fixed, Safety Requirements."
- C. American Society for Testing and Materials (ASTM):
  - 1. ASTM A36, "Structural Steel."
  - 2. ASTM A53, "Hot-Dipped, Zinc-coated Welded and Seamless Steel Pipe."

3. ASTM A123, "Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products."
  4. ASTM A153, "Zinc Coating (Hot-Dip) on Iron and Steel Hardware."
  5. ASTM A307, "Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength."
  6. ASTM A446, "Specification for Sheet Steel, Zinc-Coated by the Hot-Dip Process."
  7. ASTM A500, "Cold-Formed Welded and Seamless Carbon Steel Structural Tubing in Round and Shapes."
  8. ASTM A568, "Specification for General Requirements for Steel, Carbon and High-Strength Low Alloy Hot-Rolled Sheet and Cold Rolled Sheet."
  9. ASTM A627, "Specification for Homogeneous Tool-Resisting Steel Bars for Security Applications."
  10. ASTM A780, "Practice for Repair of Damaged Hot-Dipped Galvanized Coatings."
  11. ASTM B221, "Aluminum-Alloy Extruded Bar, Rod, Wire, Shape, and Tube."
- D. American Welding Society (AWS):
1. AWS D1.1 - Structural Welding Code.
- E. Steel Structures Painting Council Specification (SSPC):
1. Steel Structures Painting Manual.

## **1.05 QUALITY ASSURANCE**

- A. Qualifications of Welders: Use certified welders and the shielded arc process for welding performed in connection with work of this Section.
- B. Codes and Standards: In addition to complying with pertinent codes and regulations, comply with:
1. "Specification for the Design, Fabrication, and Erection of Structural Steel for Buildings" of the American Institute of Steel Construction.
  2. "Code for Welding in Building Construction" of the American Welding Society.
- C. Conflicting Requirements: In event of conflict between pertinent codes and regulations, requirements of the referenced standards, and these specifications, provisions of more stringent govern.
- D. Design, engineer, fabricate and install handrails and railing systems to comply with requirements of ASTM E985 for structural performance based on testing performed in accordance with ASTM E 894 and E 935. Conform to the current version of the IBC.
- E. Handrails, guardrails, and their supports to be designed for 50 lbs per linear foot, applied in any direction at the top of the top rail, and a concentrated load of 200 lb applied in any direction at any location along the top of the rail. The uniform load and concentrated loads are not to be applied simultaneously. Other components, including guardrail infill and bottom rails, are to be designed for 100 lbs acting on a projected area of 1 square foot, including the open space between components. The effects of this load are not to be combined with the load on the top rail.

- F. ASTM E 985 - For railing - related definitions and structural performance criteria.

## **PART 2 - PRODUCTS**

### **2.01 MATERIALS**

- A. Steel plates, angles, and other structural shapes shall conform to ASTM A36.
- B. Steel pipe shall conform to ASTM A53, Grade B, Schedule 40.
- C. Galvanized steel pipe and tube shall conform to ASTM A53.
- D. Steel Tubing shall conform to ASTM A500.
- E. Sheet Steel, Galvanized: ASTM A446.
- F. Sheet and Strip Steel, Hot Rolled: ASTM A568.
- G. Extruded Aluminum: ASTM B221.
- H. Anchors and Fasteners for Aluminum: Stainless steel.
- I. Welding Materials: AWS D1.1; type required for materials being welded.
- J. Anchors
  1. Threaded Type Concrete Inserts: Galvanized malleable iron or cast steel capable of receiving 3/4 inch diameter machine bolts.
  2. Slotted Type Concrete Inserts: Welded box type fabricated with minimum 1/8 inch thick galvanized pressed steel plate with slot to receive 3/4 inch diameter square head bolt and knockout cover.
  3. Expansion Shield for Masonry Anchorage: FS FF-2-325.
  4. Toggle Bolts: FS FF-B-588.
- K. Fasteners
  1. Bolts, Nuts and Washers for Exterior Locations: ASTM A307, galvanized in accordance with ASTM A153.
  2. Bolts, Nuts and Washers for Interior Locations: ASTM A307, Grade A, regular hexagon head.
  3. Bolts, Round Head: ANSI B-18.5
  4. Wood Screws, Flat Head Carbon Steel: ANSI B-18.6.1.
  5. Plain Washers, Helical Spring Type Carbon Steel: FS FF-W-84.
- L. **Stock Hat Channel for Cladding Support:**
  1. Galvanized G90 Solid / Vented, 18ga / 16ga for exterior cladding applications.
    - a. Vented hat channels shall be use in horizontal orientation where vertically oriented exterior cladding is detailed to allow for moisture mitigation, maintaining a drained and ventilated cavity.

- b. Hat channels can be installed in a number of ways depending on the cladding needs. Where hat channels are used as furring, behind a concealed fastener system, they can be oriented in either direction. In an installation where there are exposed fasteners, they can also be installed either direction, and sometimes in both directions to allow for panels to share hat channels. Channels project out 1".
  - c. 16ga hat channels to be used where a heavier duty panel, or more durable support system is required. Use 18ga for lighter weight options.
2. Provide Clark Dietrich ProChannel Ci Cladding Support with Grip-Deck TubeSeal® Technology to be installed as rainscreen framing over exterior continuous insulations, providing a minimal thermal footprint while providing a stable support system for exterior wall cladding construction on a ventilated rainscreen system. The ProChannel Ci shall meet the requirements of AISI S100-16 (2020) w/S2-20 and AISI S240-20. The Grip-Deck TubeSeal® meets the requirements of ASTM C1513. The fasteners are provided pre-assembled (screw and sleeve), the length will depend on the insulation thickness and back-up wall material. For a complete description of the ProChannel Ci and Grip-Deck TubeSeal® refer to the submittal sheet.

## **2.02 FABRICATION**

- A. Fabricate steel items according to approved shop drawings and to applicable portions of AISC Specifications. Conceal welds where possible; grind exposed welds smooth and flush with adjacent finished surface. Ease exposed edges to small uniform radius.
- B. Pre-assemble products in shop to greatest extent possible. Disassemble units to extent necessary for shipping and handling. Clearly mark units for re-assemble and installation.
- C. For exposed to view fabrications, use materials which are smooth and free of surface blemishes including pitting, seams marks, roller marks, roller trade names and roughness. Remove blemishes by grinding or by welding and grinding, prior to cleaning, treating and application of surface finishes including zinc coating.
- D. Fabricate items with joints tightly fitted and secured.
- E. Fit and shop assemble in largest practical sections for delivery to Project site.
- F. Exposed Mechanical Fastenings: Flush countersunk screws or bolts; unobtrusively located; consistent with design of structure, except where specifically noted otherwise.
- G. Make exposed joints butt tight, flush and hairline.
- H. Fabricate anchorage and related components of same material and finish as metal fabrication, unless indicated otherwise.

### **2.03 ROUGH HARDWARE**

- A. Furnish bent or otherwise custom fabricated bolts, plates, anchors, hangers, dowels, and other miscellaneous steel and iron shapes as required for framing and supporting woodwork, and for anchoring or securing woodwork to concrete or other structures. Straight bolts and other stock rough hardware items are specified in Division 6 sections.
- B. Fabricate items to sizes, shapes, and dimensions required. Furnish malleable-iron washers for heads and nuts which bear on wood structural connections; elsewhere, furnish steel washers.

### **2.04 LOOSE STEEL LINTELS**

- A. Fabricate loose structural steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated.
- B. Weld adjoining members together to form a single unit where indicated.
- C. Size loose lintels for equal bearing of one inch per foot of clear span but not less than 8 inches bearing at each side of openings, unless otherwise indicated.
- D. All steel lintels shall be coated with a zinc rich primer.

### **2.05 MISCELLANEOUS FRAMING AND SUPPORTS**

- A. General: Provide steel framing and supports for applications indicated or which are not a part of structural steel framework, as required to complete work.
- B. Fabricate units to sizes, shapes, and profiles indicated and required to receive adjacent other construction retained by framing and supports. Fabricate from structural steel shapes, plates, and steel bars of welded construction using mitered joints for field connection. Cut, drill, and tap units to receive hardware, hangers, and similar items.
  - 1. Equip units with integrally welded anchors for casting into concrete or building into masonry. Furnish inserts if units must be installed after concrete is placed.
    - a. Except as otherwise indicated, space anchors 24 inches o.c. and provide minimum anchor units in the form of steel straps 1-1/4 inch x 8 inches long.

### **2.06 SHELF AND RELIEVING ANGLES**

- A. Fabricate shelf and relieving angles from steel angles of sizes indicated and for attachment to concrete framing. Provide slotted holes to receive 3/4 inch bolts, spaced not more than 6 inches from ends and not more than 24 inches o.c., unless otherwise indicated.
- B. Galvanize shelf angles to be installed on exterior concrete framing.



## **2.07 FINISHES, GENERAL**

- A. Comply with NAAMM “Metal Finishes Manual” for recommendations relative to application and designations of finishes.
- B. Finish metal fabrications after assembly.
- C. Galvanizing: For those items indicated for galvanizing, apply zinc-coating by the hot-dip process compliance with the following requirements:
  - 1. ASTM A153 for galvanizing iron and steel hardware.
  - 2. ASTM A123 for galvanizing both fabricated and unfabricated iron and steel products made of uncoated rolled, pressed, and forged shapes, plates, bars, and strip 0.0299 inch thick and heavier.
- D. Preparation for Shop Priming: Prepare un-coated ferrous metal surfaces to comply with minimum requirements indicated below for SSPC surface preparation specifications and environmental exposure conditions of installed metal fabrications:
  - 1. Interiors (SSPC Zone 1A): SSPC-SP3 “Power Tool Cleaning”:
  - 2. Apply shop primer to un-coated surfaces of metal fabrications, except those with galvanized finish or to be embedded in concrete, sprayed-on fireproofing, or masonry, unless otherwise indicated. Comply with requirements of SSPC-PA1 “Paint Application Specification No. 1” for shop painting.
  - 3. Lead Free, Zinc Rich Alkyd Primer - Air Dry: Manufacturer's standard.

## **2.08 STAINLESS STEEL WALL PANELS (FOOD SERVICE)**

- A. Fabricated according to details, drawings, and specifications.
- B. Provide the following:
  - 1. 18 gauge stainless steel wall panels set on top of wall base, 8'-0" high x 48" wide, verify area with drawings, ? { to cover all walls in the rear entrance, corridor, janitor's closet, kitchen, serving areas and dish wash } ?. No paneling inside the office, dry storage, locker, and toilet.
  - 2. Keep number of symmetrical vertical 1" Z type shaped overlap seams to a minimum. Silicone all seams and edges watertight.
  - 3. Furnish and install stainless steel outlet covers for all electrical outlets where panels are installed.
  - 4. Hang panels level and true.
  - 5. Trim free edges and corners with Component Hardware stainless steel cap trim.
  - 6. Cut all openings in panels as required by field conditions and de burr all sharp edges.
  - 7. Around door and window openings trim to frame with 18-gauge stainless steel angles as required by field conditions.
  - 8. Round outside corners on radius to match wall cature as required by field conditions.

9. Attach to wall with a heat resistant adhesive applied to wall and back of paneling with a roller brush allow adhesive to set per manufactures instructions and then apply paneling to wall, silicone or liquid nail may not be used as an adhesive.
10. Where stainless steel screws are required to hold paneling to wall, pre-drill holes in wall and in paneling, place plastic expansion sleeve in hole and tighten stainless steel round head screw to paneling, the use of lead expansion anchors shall not be allowed.
11. One year on site parts, service, and labor warranty.

## **2.09 RODS**

- A. Curtain Rods for Shower Curtains: 1" diameter brass tube with chromium plated finish. Install rods with matching wall flanges and oval head C.P. screws.
- B. Clothes Hanger Rods: Provide Knappe and Vogt Model No. 660SS stainless steel rod in lengths required with No. 735 flanges. Provide Model No. 760NP center support for rods over 6'-0" long.

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION**

- A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing miscellaneous metal fabrications to in-place construction; include threaded fasteners for concrete and masonry inserts, toggle bolts, through-bolts, lag bolts, wood screws, and other connectors as required.
- B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installation of miscellaneous metal fabrications. Set metal fabrication accurately in location, alignment, and elevation; with edges and surfaces level, plumb, true, and free of rack; and measured from established lines and levels.
- C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete masonry or similar construction.
- D. Fit exposed connections accurately together to form hairline joints. Weld connections that are not to be left as exposed joints, but cannot be shop welded because of shipping size limitations. Do not weld, cut or abrade the surfaces of exterior units which have been hot-dip galvanized after fabrication, and are intended for bolted or screwed field connections.
- E. Field Welding: Comply with AWS Code for procedures of manual shielded metal-arc welding, appearance and quality of welds made, methods used in correcting welding work, and the following:
  1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
  2. Obtain fusion without undercut or overlap.

3. Remove welding flux immediately.
4. At exposed connections, finish exposed welds and surfaces smooth and blended so that no roughness shows after finishing and contour of welded surface matches those adjacent.

### **3.02 CLEANING**

- A. Touch-Up Painting: Immediately after erection, clean field welds, bolted connections, and abraded areas of shop paint, and paint exposed areas with same material as used for shop painting to comply with SSPC-PA 1 requirements for touch-up of field painted surfaces.
  1. Apply by brush or spray to provide a minimum dry film thickness of 2.0 mils.
- B. For galvanized surfaces clean welds, bolted connections and abraded areas and apply galvanizing repair paint to comply with ASTM A780.

**END OF SECTION 05 50 00**

**PART 1 - GENERAL**

**1.01 DESCRIPTION**

- A. Work Includes: Provide rough carpentry, and installation of items specified in other Sections, normally installed by carpenters. Section specifies wood blocking, framing, sheathing, furring, nailers, sub-flooring, rough hardware, and light wood construction.

**1.02 RELATED DOCUMENTS**

- A. Applicable portions of the Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications and Addenda issued prior to the execution of the Contract, other documents listed in the Agreement and Modifications issued after the execution of the Contract shall apply to this Section. The general requirements for this work are in Division 1 of the Specifications.

**1.03 SUBMITTALS AND SUBSTITUTIONS**

- A. In accordance with Section 01 33 00.
- B. Substitutions will not be considered prior to the award of the General Contract.
- C. Shop Drawings: Show fabrication and installation details for trusses.
  - 1. Show location, pitch, span, camber, configuration, and spacing for each type of truss required.
  - 2. Indicate sizes, stress grades, and species of lumber.
  - 3. Indicate locations of permanent bracing required to prevent buckling of individual truss members due to design loads.
  - 4. Indicate locations, sizes, and materials for permanent bracing required to prevent buckling of individual truss members due to design loads.
  - 5. Indicate type, size, material, finish, design values, orientation, and location of metal connector plates.
  - 6. Show splice details and bearing details.

**1.04 QUALITY ASSURANCE**

- A. Material Grading: Identify hardboard, particleboard, lumber, and plywood by affixing grademark, stamp, or related identifying marks indicating material grades, rules or standards under which they are produced, and complying with rule or standard under which the material is produced. Use certified inspection agency certified by the Board of Review, American Lumber Standards Committee, to grade lumber species. In lieu of piece grade-marking, a certificate of inspection from an agency certified by the Board of Review, American Lumber Standards Committee may be furnished for precut lumber. Applicable grading rules are as follows:

1. Douglas Fir, White Fir, and Cedar: "Standard Grading and Dressing Rules for West Coast Lumber" as published by the West Coast Lumber Inspection Bureau.
  2. Ponderosa and Western White Pine: "Grading Rules for Western Lumber", published by the Western Wood Products Association.
  3. Southern Yellow Pine: "Standard Grading Rules for Southern Pine Lumber" as published by the Southern Pine Inspection Bureau.
  4. Redwood: "Standard Specifications for Grades of California Redwood Lumber" as published by Redwood Inspection Service.
- B. Plywood: Conform to U. S. Product Standard PS 1 issued by the National Bureau of Standards. Stamp or brand each standard size panel to show type and grade of panel. When used structurally, plywood to meet performance standards for its type as described in Product Standard PS 1 for Douglas Fir plywood. Furnish material identified as to species, grade, and glue type by an approved agency or independent testing laboratory with appropriate affixed grade-marks on each panel. Provide in addition to above requirements, exterior type plywood for permanently exposed plywood in outdoor applications.
- C. Qualifications of Workmen: Provide sufficient skilled workmen and carpenter foreman present at all times during execution of this portion of the Work, thoroughly familiar with type construction involved, materials and techniques specified.

## **1.05 PRODUCT HANDLING**

- A. Protection:
1. Store materials to ensure proper ventilation and drainage. Protect against damage and weather.
  2. Deliver materials to job site and store, in safe area, out of the way of traffic, and shored off ground surface.
  3. Identify framing lumber as to grades and store grades separately.
  4. Protect metal products with adequate weatherproof outer wrappings.
  5. Use extreme care in off-loading lumber to prevent damage, splitting, and breaking materials.
- B. Replacements: In event of damage, immediately make repairs and replacements necessary to approval of Architect at Contractor's expense.

## **PART 2 - PRODUCTS**

### **2.01 LUMBER**

- A. Provide lumber for structural carpentry using following species provided grade for each is not lower than minimum shown:
- |    |   |              |
|----|---|--------------|
| 1. | Pine, Southern Yellow - SPIB Rules (KD) | No. 2 Common |
| 2. | Fir, Douglas - WCLIB Rules              | Standard     |
| 3. | Fir, White - WCLIB Rules                | Standard     |
| 4. | Pine, Western White - WWPA Rules        | Standard     |

- 5. Redwood - RIS Rules Construction Heart
- 6. Cedar, Western Red, & Incense - WCLIB Rules Standard

- B. Lumber (except where otherwise noted): Surfaced 4 sides unless, in addition to being dressed, it has been notched, ship-lapped, or patterned.
- C. Lumber Dimensions: Are nominal.
- D. Structural Performance: Metal-plate-connected wood trusses shall be capable of withstanding design loads within limits and under conditions indicated. Comply with requirements in TPI 1 unless more stringent requirements are specified below.
  - 1. Design Loads: As indicated.
  - 2. Maximum Deflection under Design Loads:
    - a. Roof Trusses: Vertical deflection of 1/360 of span.
- E. Comply with applicable requirements and recommendations of TPI 1, TPI DSB, and SBCA BCSI.
- F. Wood Structural Design Standard: Comply with applicable requirements in AF&PA's "National Design Specifications for Wood Construction" and its "Supplement."

## **2.02 FIRE-RETARDANT AND PRESERVATIVE TREATED LUMBER**

- A. Manufacturers: Provide wood treatment by or under license from Chemical Specialties, Inc., One Woodlawn Green, Suite 250, 200 E. Woodlawn Road, Charlotte, NC 28217. ASD. Tel: (800) 421-8661, or approved equal by one of the following companies:
  - 1. Osmose, Inc., 1016 Everee Ln., Griffin, GA 30224
  - 2. Arch Wood Protection, Inc., 1955 Lake Park Dr., Ste. 250, Smyrna, GA 30080
  - 3. Hoover Treated Wood Products, Inc., 154 Wire Rd., Thomson, GA 3082
- B. Fasteners and Connectors: For treated wood and where wood is in ground contact, subject to high relative humidity, or exposed to weather, provide steel fasteners with hot-dip galvanized coating per ASTM A153/A153M; provide steel connectors with hot-dip galvanized coating per ASTM A653, Class G185 sheet with 1.85 ounces of zinc coating per square foot.
- C. Wood Preservative Treatment:
  - 1. ACQ Preserve.
    - a. Use 0.25 lb/cu ft (4.0 kg/cu m) retention.
    - b. Kiln dry after treatment to 19 percent maximum moisture content for lumber and 18 percent for plywood.
    - c. Treat wood in the following locations:
      - 1) In contact with roofing, flashing, or waterproofing.
      - 2) In contact with masonry or concrete.
      - 3) Within 18 inches (450 mm) of grade.
      - 4) Exposed to weather.
      - 5) Other locations indicated.

- D. Fire-Retardant Treatment:
  - 1. Lumber: Comply with AWWPA C20 .
  - 2. Plywood: Comply with AWWPA C2 7, Type A.
  - 3. Surface Burning Characteristics: UL FRS rating; flame spread and smoke developed ratings of 25 or less in a test of 30 minutes' duration.
  - 4. Treatment: D-Blaze®.

### **2.03 PLYWOOD**

- A. Plywood (not otherwise specified or noted on the Drawings): Douglas Fir or Southern Yellow Pine panels, C-D grade for concealed applications and A-C grade for exposed applications, meeting U.S. Product Standard PS 1.
- B. Wall Sheathing:
  - 1. Minimum 11/32 inch thick with supports 16 inches on center and 15/32 inch thick with supports 24 inches on center unless specified otherwise.
  - 2. Minimum 48 inches wide at corners without corner bracing of framing.
- C. Roof Sheathing:
  - 1. Minimum 19/32 inch thick or span rating of 40/20 or 23/32 inch thick or span rating of 48/24 for supports 24 inches on center.
- D. The backs of parapet walls are required to be sheathed with Exterior Grade plywood.

### **2.04 HARDWARE**

- A. Provide rough hardware required for proper installation of carpentry work. Furnish hot-dipped galvanized, nails, spikes, screws, bolts, ply clips and similar items using proper types and ample sizes to fasten and hold the various members securely in place.
- B. Provide fasteners of size and type indicated that comply with requirements specified in this article for material and manufacture.
  - 1. Provide fasteners for use with metal framing anchors that comply with written recommendations of metal framing manufacturer.
- C. ASTM F1667 - Standard Specification for Driven Fasteners: Nails, Spikes, and Staples.

### **2.05 BLOCKING**

- A. Provide solid wood blocking system capable of sustaining loads as listed within these documents, including drawings. Do not cut or bend metal studs, or cut wood studs, to achieve flush fit to face of studs. Blocking is to span between vertical studs and be fire resistant where applicable. Verify with architect any condition or loading requirement not listed. 2x solid blocking or two layers of 5/8" or 3/4" plywood, depending on required loads and clearances, may be used at contractor option. Coordinate any electrical and audio visual components, including back-boxes and conduit, with respective contractors.
  - 1. Attach blocking between studs for support of surface mounted items.

- a. Plumbing fixtures.
- b. Toilet partitions.
- c. Wall cabinets.
- d. Toilet accessories
- e. Hardware.
- f. Architectural woodwork.
- g. Grab bars.
- h. Handrails and railings.
- i. Signage.
- j. Other items requiring backing for attachment.

## **2.06 OTHER MATERIALS**

- A. Provide materials, not specifically described but required for a complete and proper installation using new material, suitable for the intended use, and subject to approval of Architect.

## **PART 3 - EXECUTION**

### **3.01 WORKMANSHIP**

- A. Carpentry: Produce joints true, tight, and well nailed. Lay out, install and fit wood framing, furring, stripping, and blocking as required by conditions encountered.
- B. All Work: Plumb, level, and brace with sufficient nails, spikes, and bolts required to ensure secure attachment and rigidity.
- C. Any piece of work or carpentry material with defects that prevent it from serving its intended purpose satisfactorily, including crooked, warped, bowed, or otherwise defective material, even if within the limits of grade specified, will be rejected. Replace with an acceptable piece.

### **3.02 TEMPORARY ENCLOSURES AND PROTECTION**

- A. Provide temporary enclosures at door, window, and related openings in exterior walls, as necessitated by weather and adverse conditions. Maintain enclosures in good repair and remove when no longer needed. Protect door and window frames.

### **3.05 PLYWOOD INSTALLATION**

- A. Roof Sheathing: Apply with surface grain at right angles to supports. Support end joints of sheets on bearings and stagger with alternate courses in line. Provide edge blocking or suitable edge support. Fasten plywood in place with 8d nails spaced 6" o.c. at edge and end supports and 12" o.c. at intermediate supports. Provide hold-down clips as required.



- B. Wall Sheathing: Apply with surface grain parallel to supports. Support end joints of sheets on bearings and stagger with alternate courses in line. Provide edge blocking or suitable edge support.

**END OF SECTION 06 10 00**

**PART 1 - GENERAL**

**1.01 DESCRIPTION**

- A. Work Included: Furnish, deliver, and erect pre-engineered metal building structural components shown on drawings and conforming to these specifications.
- B. Furnish building design of manufacturer regularly engaged in fabrication of pre-engineered structures.

**1.02 RELATED DOCUMENTS**

- A. Applicable portions of the Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, and Addenda issued prior to the execution of the Contract, other documents listed in the Agreement and Modifications issued after the execution of the Contract shall apply to this Section. The general requirements for this work are in Division 1 of the Specifications.

**1.03 SUBMITTALS AND SUBSTITUTIONS**

- A. In accordance with Section 01 33 00.
  - 1. Furnish Shop Drawings, for review by Architect showing necessary fabrication details, fittings, fastenings, foundation reactions for all load cases, anchorage and erection details. In addition to provisions of the General Conditions, prepare Shop Drawings by or under the supervision of a registered professional engineer. Do not use reproductions, in any form, of the Contract Drawings for Shop Drawings. Shop Drawings shall be submitted to Architect for review. Submit related shop drawings together; partial submittals will not be accepted. Furnish mill certificates on foreign steel proposed for use and not produced within the continental USA. Include with mill certificates certified copies of mill test reports giving names and locations of mills and shops, and chemical analysis and physical properties of steel required for this project.
  - 2. All drawings and calculations shall bear the stamp of a structural engineer licensed in the state of Arkansas.
- B. Substitutions will not be considered prior to the award of the General Contract.

**1.04 REFERENCE STANDARDS**

- A. Conform to latest edition of the following standards where applicable to structural design of building:
  - 1. "Recommended Design Practices Manual", Latest Edition - Metal Building Manufacturer's Association.

2. "Manual of Steel Construction", Latest Edition - American Institute of Steel Construction
3. "Cold Formed Steel Design Manual", Latest Edition - American Iron and Steel Institute.
4. "Aluminum Construction Manual", Latest Edition - The Aluminum Association.
5. "Code for Welding in Building Construction", Latest Edition - American Welding Society.

## **1.05 DESIGN LOADS**

- A. General: Basic design loads include live, wind, and dead loads. Other loads, whether of static, dynamic, or kinetic nature, are considered auxiliary loads.
- B. Refer to Pre-Engineered metal building notes on Structural Drawings for Roof Live Load, Roof Dead Load, Superimposed Roof Dead Load, Roof Deflections, Perimeter Wall Deflections, Drift Under Wind Loading and other loading requirements.
- C. Certification:
  1. Submit letter from metal building manufacturer certifying that the building proposed will be furnished to meet or exceed all the above design load criteria and that all structural design will be in strict conformance with that prescribed in the MBMA "Design Practices Manual".
  2. After awarding of Contract, submit complete structural analysis prepared by metal building manufacturer to Architect upon request for same.

## **1.06 GUARANTEES**

- A. Provide one year labor and material warranty.

## **PART 2 - PRODUCTS**

### **2.01 MANUFACTURERS**

- A. Provide pre-engineered structural system by or one of the following manufacturers or approved equal.
  1. Alliance Steel
  2. American Buildings Company
  3. Architectural Integrated Metals
  4. Butler Manufacturing Company
  5. Pinnacle Structures
  6. Varco Pruden
  7. Approved equal

## **2.02 PRE-ENGINEERED STRUCTURAL SYSTEM**

- A. Primary Structural: Frames will consist of welded up plate section columns and roof beams or trusses complete with necessary splice plates for bolted field assembly. All bolts for field assembly of primary framing will be high strength bolts as indicated on erection drawings.
- B. Beam and post endwall frames will consist of endwall corner posts, endwall roof beams, and endwall posts as required by design criteria.
- C. Exterior columns will be welded-up "H" sections or cold-formed "C" sections; interior columns will be "H" sections or tube columns.
- D. Connection of all major structural members will be made with A 325 high-tensile bolts through prepunched or predrilled holes for exact alignment.

## **2.04 WALL COVERING SUPPORTS**

- A. Girt Configuration and Thickness: Provide building manufacturer's standard design criteria, to include meeting deflection and girt spacing as detailed on the drawings.

## **2.05 STRUCTURAL STEEL PRIMER**

- A. Give all un-coated structural steel 1 shop coat rust-inhibitive (primer) paint which meets or exceeds Federal Specifications TT-P-664, or submit certification that it conforms to a recognized authoritative specification, such as a Federal or Military authority or the Structural Steel Painting Council.

# **PART 3 - EXECUTION**

## **3.01 GENERAL**

- A. Deliver and erect the pre-engineered components specified and complying with manufacturer's erection drawings and specifications.
- B. Perform assembly and erection by the manufacturer's own crew or by an erector trained and authorized by the manufacturer with the erectors work being inspected and certified by the manufacturer.

## **3.02 ERECTION**

- A. Bolt settings and other dimensions shall be held to a tolerance of 1/8-inch $\pm$ . Use templates or other gaging devices to assure accurate spacing of anchor bolts. Bolt field connections unless otherwise required.

1. Set bases or sill members to obtain uniform bearing. Anchors and anchor bolts for securing members to concrete curb or structural steel sub-frame shall be of black steel, set accurately to templates and of proper size to adequately resist applicable design loads at the base.

**END OF SECTION 13 34 19**

**PART 1 - GENERAL****1.01 SUMMARY**

- A. Perform earthwork.
- B. Meet requirements for excavation safety, or to facilitate construction due to wet conditions.
- C. Perform excavation regardless of type, nature, or condition of materials encountered.
- D. Contractor shall make his own estimate of the type and extent of the various materials to be excavated in order to accomplish the work.
- E. There will be no extra compensation for dewatering.

**1.02 RELATED SECTIONS**

- A. Section 31 23 33 - Trenching and Backfilling.

**1.03 REFERENCES**

- A. ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA, 19428-2959 USA Phone: (610) 832-9585 Fax: (610) 832-9555.
  - 1. ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb Rammer and 12-in. Drop.
  - 2. ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.
  - 3. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 10 lb Rammer and 18-in. Drop.
  - 4. ASTM D2216 - Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures.
  - 5. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
  - 6. ASTM D3017 - Test Method for Moisture Content of Soil and Soil-Aggregate in Place of Nuclear Methods (Shallow Depth).
- B. Occupational Safety and Health Administration (OSHA) Standard for Excavation and Trenches Safety System, 29 CFR 1926, Subpart P: Excavations.
- C. Arkansas Statute 291 of 1993.

## **1.04 DEFINITIONS**

- A. Relative Compaction:
  - 1. The ratio, in percent, of the as-compacted field dry density to the laboratory maximum dry density as determined by the Standard Proctor Test, ASTM D698, or as determined by the Modified Proctor Test, ASTM D1557, as applicable.
  - 2. Corrections for oversize material may be applied to either the as-compacted field dry density or the maximum dry density, as determined by the Engineer.
- B. Optimum Moisture Content:
  - 1. Moisture content of the material for which the maximum dry density is obtained as determined by ASTM D698 or D1557.
  - 2. Field moisture contents shall be determined on the basis of the fraction passing the 3/4-inch sieve.
- C. Completed Course: A course or layer that is ready for the next layer or the next phase of construction.

## **1.05 SUBMITTALS**

- A. Submit in accordance with specifications.
- B. Provide the following:
  - 1. Samples of imported material.
  - 2. Samples of onsite material to be used as fill.
  - 3. Certification that imported materials conform to the Specification requirements along with copies of the test results from a qualified commercial testing laboratory.
  - 4. Proctor curves on fill material as prepared by approved laboratory.

## **1.06 PROJECT CONDITIONS**

- A. Beginning work of this Section means acceptance of existing conditions.

## **PART 2 - PRODUCTS**

### **2.01 FILL**

- A. Free from roots, organic matter, trash, and debris with maximum particle size of 1-1/2 inches.
- B. It is intended that structural backfill material be obtained from on site to the maximum extent possible.

### **2.02 TOPSOIL**

- A. Selected topsoil at the site, properly stored and protected, free from roots, sticks, hard clay, and stones which will not pass through a 2-inch square opening.
- B. Provide imported topsoil of equal quality if required to accomplish the work.

### **2.03 COMPACTION EQUIPMENT**

- A. Provide compaction equipment of suitable type and adequate to obtain the densities specified.
- B. Operate compaction equipment in strict accordance with the manufacturer's instructions and recommendations.
- C. Hand-operated equipment shall be capable of achieving the specified densities.

### **2.04 MOISTURE CONTROL EQUIPMENT**

- A. Provide equipment for applying water of a type and quality adequate for the work; it shall not leak; and be equipped with a distributor bar or other approved device to assure uniform application.
- B. Provide equipment for mixing and drying out material consisting of blades, discs, or other approved equipment.

### **2.05 WATER REMOVAL EQUIPMENT**

- A. Provide and operate equipment adequate to keep excavation and trenches free of water.

### **2.06 IMPORTED MATERIAL ACCEPTANCE**

- A. Import only if insufficient material is available on-site.
- B. Locate and arrange use of a site near the construction area for obtaining borrow material.
- C. Additional tests required at the borrow area:
  - 1. Standard Proctor.
  - 2. Remolded permeability.
  - 3. Atterberg limits.
- D. Cost for testing and imported material shall be the responsibility of the Contractor.

### **2.07 SELECTED MATERIAL ACCEPTANCE**

- A. Provide samples for testing representative of the actual material to be installed in the work. Take samples from each 2,000 cubic yards of material stockpiled. Depending on the uniformity of the material, Engineer may request more frequent samples.
- B. Forward test results to the Engineer at least 10 days before the material is required for use. If tests indicate that the material does not meet Specification requirements, the material shall not be installed in the work.



- C. Material which is placed in the work but does not conform to the Specification requirements shall be removed and replaced at the Contractor's sole expense.

### **PART 3 - EXECUTION**

#### **3.01 CLEARING AND GRUBBING**

- A. Clearing and grubbing is not required on this project.

#### **3.02 STRIPPING TOPSOIL**

- A. Remove existing grass and overburden before excavating topsoil.
- B. Prior to beginning excavation or fill, strip the topsoil to a depth of at least 6 inches or to a depth sufficient to remove organic material and stockpile for future use.
- C. In general, remove topsoil where structures are to be built, trenches dug, and similar improvements constructed within the areas presently covered with topsoil.
- D. Store topsoil clear of the construction area.
- E. Take reasonable care to prevent the topsoil from becoming mixed with subsoil or eroding.

#### **3.03 STRUCTURAL EXCAVATION**

- A. Contractor shall be solely responsible for trench and excavation safety systems in accordance with ACT 291 of 1993 and OSHA requirements.
- B. Identify required lines, levels, and grades.
- C. Identify known underground utilities. Contractor will be responsible for locating utilities.
- D. The method of excavation is optional, however, no equipment shall be operated in a manner that will endanger existing structures and their integrity.
- E. Use excavation support system such as sheet piling where ever necessary.
- F. Allow for forms, working space, granular base, and finish topsoil where shown on Drawings or required.
- G. Do not carry excavation for footings and slabs deeper than the elevation shown on Drawings after allowing for base material. Excavation of material to depths below the grades indicated, unless so directed by the Engineer or Owner's representative, will be deemed unauthorized excavation.
- H. If undercutting occurs below the planned dirt grade, the same fill material as specified for backfill shall be placed and compacted to 100 Percent Standard Proctor Density as

defined in this Section up to the planned dirt grade in 8 inch lifts, at no additional cost to the Owner. Do not attempt to over compact excessively wet soil. Allow to dry first by scarifying and aerating before remolding.

### **3.04 DEWATERING EXCAVATION**

- A. Remove water during periods when concrete is being deposited, pipe is being laid, and placing of backfill unless water settling is required, and at other times as required for efficient and safe execution of the work.
- B. Accomplish removal of groundwater in a manner that will preserve the strength of the foundation soils, will not cause instability of the excavation slopes, and will not result in damage to existing structures.
- C. Where necessary to these purposes, lower the water level in advance of excavation, utilizing wells, well points, or similar methods.
- D. Maintain the water level in the gravel stratum as measured in piezometers, a minimum of 3 feet below the prevailing excavation level or as needed to prevent bottom heave of the excavation.
- E. Open pumping, sumps, and ditches: If these result in boils, loss of fines, softening of the ground or instability of slopes, areas shall not be accepted.
- F. Install wells and well points with suitable screens and filters so that continuous pumping of fines does not occur.
- G. Operate well points continuously to prevent boils and loss of consolidation.
- H. Arrange discharge to facilitate collection of samples by Engineer.
- I. Avoid settlement or damage to adjacent property.
- J. Dispose of water in a manner that will not damage adjacent property, as approved.

### **3.05 GRANULAR FILL MATERIAL UNDER FACILITIES**

- A. Place fill granular material as specified in this Section within the influence area beneath slabs, and structures, and as shown on the Drawings.
- B. Do not exceed loose lifts of 6 inches.
- C. Compact each lift to not less than 95 Percent Modified Proctor Density.
- D. Place and compact a 6-inch layer of granular fill to at least 95 Percent Modified Proctor density immediately beneath spread footings, slabs on grade, or other concrete structures.
- E. Moisten material as required to aid compaction ( $\pm 2$  percent optimum moisture).
- F. Place material in horizontal lifts and in a manner to avoid segregation.

- G. Correct and repair subsequent damage to slabs, piping, concrete structures, facilities, or other structures caused by settlement of fill material.

### **3.06 BACKFILL AND STRUCTURES**

- A. Remove form materials and trash from excavation before placing backfill.
- B. Do not operate earth-moving equipment within 5 feet of walls of concrete structures for the purpose of depositing or compacting backfill material.
- C. Compact backfill adjacent to concrete walls with hand-operated tampers or similar equipment that will not damage the structure.
- D. Backfill water-holding basins only after satisfactory leakage tests have been conducted.
- E. Place earth fill in areas not designated to be structural fill or granular fill.
- F. Deposit material in maximum 6-inch loose lifts, and compact each lift to not less than 95 Percent Standard Proctor.

### **3.07 FILL NOT BENEATH STRUCTURES OR FACILITIES**

- A. Place earth fill to the lines and grades shown.
- B. Place fill material in maximum 6-inch loose lifts and compact each lift to not less than 95 Percent Standard Proctor.
- C. Make proper allowance for topsoil where required.

### **3.08 MOISTURE CONTROL**

- A. During compacting operations, maintain optimum practicable moisture content required for compaction purposes in each lift of fill.
- B. Maintain moisture content uniform throughout the lift.
- C. Add water to the material at the site of excavation. Supplement, if required, by sprinkling the fill.
- D. At the time of compaction, maintain the water content of the material at optimum moisture content, plus or minus 2 percentage points, except as otherwise specified for embankments.
- E. Do not attempt to compact fill material that contains excessive moisture.
- F. Aerate material by blading, discing, harrowing, or other methods, to hasten the drying process.

### **3.09 FIELD DENSITY TESTS**

- A. Test Methods: ASTM D2922, D1556, D2216, and D3017.
- B. Cooperate with testing work by leveling small test areas designated by the Engineer.
- C. Backfill test areas.
- D. Field density test shall be performed for fill material placed on each side of the box culverts.
- E. Engineer may order testing of lift of fill at any time, location, or elevation.

### **3.10 SITE GRADING**

- A. Perform earthwork to lines and grades as shown on Drawings with proper allowance for topsoil where specified or shown on Drawings.
- B. Shape, trim, and finish slopes to conform with the lines, grades, and cross sections shown.
- C. Slopes shall be free of loose exposed roots and stones exceeding 1½-inch diameter.
- D. Round tops of banks to circular curbs, in general, not less than a 6-foot radius.
- E. Neatly and smoothly trim rounded surfaces; over-excavating and backfilling to the proper grade are not acceptable.
- F. Finished site grading shall be reviewed by the Engineer.

### **3.11 DISPOSAL OF EXCESS EXCAVATION**

- A. Dispose of excess excavated materials, not required or suitable for use as backfill or fill off site.

### **3.12 SETTLEMENT**

- A. Settlement in backfill, fill, or in structures built over the backfill or fill, that may occur within the 1-year guarantee period in the General Conditions shall be considered to be caused by improper compaction methods.
- B. Restore structures damaged by settlement to original condition.

**END OF SECTION**

**PART 1 - GENERAL**

**1.01 DESCRIPTION**

- A. Work Included: Earthwork for this project includes but is not necessarily limited to:
  - 1. Layout of building and site improvements.
  - 2. Excavating for foundations, utilities and other below grade work.
  - 3. Filling and backfilling of all excavations.
  - 4. Rough and finish grading of the site.
  - 5. Granular drainage fill.
- B. Perform excavation regardless of type, nature or condition of materials encountered.
- C. All excavation under this Section is unclassified and no allowances will be made for nature of material encountered. Contractor shall make soil investigations as he considers necessary for his own determination of types of materials existing at the site. Refer to Section 00 31 32 for information concerning Geotechnical Investigation.
- D. There will be no extra compensation for dewatering.

**1.02 RELATED DOCUMENTS**

- A. Applicable portions of the Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications, and Addenda issued prior to the execution of the Contract, other documents listed in the Agreement and Modifications issued after the execution of the Contract shall apply to this Section. The general requirements for this work are in Division 1 of the Specifications.

**1.03 SUBMITTALS AND SUBSTITUTIONS**

- A. In accordance with Section 01 33 00.
  - 1. Samples of all imported material. Provide 25 pound bags of material to Geotechnical engineer's office at least 10 days before the material is to be imported to the site.
  - 2. Samples of all on-site material to be used as fill.
  - 3. Certification that imported materials conform to the specification requirements along with copies of the test results from a qualified commercial testing laboratory.
  - 4. Proctor curves on fill material as prepared by approved laboratory.
- B. All fill material requires approval prior to placement.
- C. Substitutions will not be considered prior to the award of the General Contract.

## 1.04 JOB CONDITIONS

- A. Beginning work of this Section means acceptance of existing conditions.
- B. Dust Control: Control dust on and near the Work if dust is caused by Contractor's operations during performance of the Work or if resulting from condition in which Contractor leaves the site.

## 1.05 REFERENCES

- A. Arkansas State Highway and Transportation Department, Standard Specifications for Highway Construction, latest edition.
  - 1. AHTD Section 207 - Stone Backfill.
  - 2. AHTD Section 303 - Aggregate Base Course.
- B. ASTM International, 100 Barr Harbor drive, PO Box C700, West Conshohocken, PA 19428-2959, USA Phone: (610) 832-9585.
  - 1. ASTM D698 - Test for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5 lb. Rammer and 12 in. Drop.
  - 2. ASTM D1556 - Test Method for Density of Soil in Place by the Sand-Cone Method.
  - 3. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 10 lb. Rammer and 18 in. Drop.
  - 4. ASTM D2216 - Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock and Soil-Aggregate Mixtures.
  - 5. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
  - 6. ASTM D3017 - Test Method for Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).
  - 7. ASTM C136 - Method for Sieve Analysis of Fine and Coarse Aggregates.
- C. AASHTO - American Association of State Highway and Transportation Officials
  - 1. AASHTO T 27 - Sieve Analysis of Fine and Coarse Aggregates.
- D. Occupational Safety and Health Administration (OSHA) Standard for Excavation and Trenches Safety System, 29 CFR 1926, Subpart P = Excavations.
- E. Arkansas Statute 291 of 1993.

## 1.06 DEFINITIONS

- A. Relative Compaction: The ratio, in percent, of the as-compacted field dry density to the laboratory maximum dry density as determined by the Standard Proctor Test, ASTM D698, or as determined by the Modified Proctor Test, ASTM D1557, as applicable. Corrections for oversize material may be applied to either the as-compacted field dry density or the maximum dry density, as determined by the Architect.

- B. Optimum Moisture Content: Moisture content of the material for which the maximum dry density is obtained as determined by ASTM D698 or D1557. Field moisture contents shall be determined on the basis of the fraction passing the 3/4" sieve.
- C. Completed Course: A course or layer that is ready for the next layer or the next phase of construction.
- D. Under-Cut: Additional excavation into native soils beyond sub-grade or stripping depth that is required to provide an adequate depth of suitable backfill bearing material.
- E. Sub-grade: The following shall define the sub-grade elevations:
  - 1. Footings: The elevation of the bottom of the footing.
  - 2. Building slabs: The elevation at the bottom of the capillary break.
  - 3. Walkways and Paving: The elevation at the bottom of the paving section.
  - 4. Utility Trenches: The elevation of the bottom of the pipe bedding.
  - 5. Landscaped Areas: The elevation below the stripping depth or the soil planting section, whichever is lower.
- F. Unsuitable material shall be that material below the sub-grade elevation that does not meet bearing capacity requirements as defined by the field Geotechnical engineer. Material not previously approved by Geotechnical engineer as unsuitable will not be considered for compensation.

#### **1.07 UNSUITABLE MATERIAL**

- A. The Contractor will be compensated beyond his base bid for excavation and off-site disposal of un-anticipated unsuitable soils only as verified and documented by the Geotechnical engineer in the field. No compensation will be made to the Contractor for unverified and undocumented quantities.
- B. Measure in-place bank yards of material that is to be removed by field measurement that shall be observed, verified, and documented by the Geotechnical Engineer prior to backfilling with imported Granular fill. Measurement by truck tickets will not be accepted. Measurement of excavation prior to backfilling will also be used to determine the quantity of excess import required to replace the excavated material.
- C. Soil integrity will be influenced by the weather conditions and the Contractor's handling and protection of the material as it is removed and placed. It is the sole responsibility of the Contractor to protect soils from the elements. The Contractor will be responsible for removing material, including previously inspected fill or exposed sub-grade, that is deemed unsuitable due to lack of protection and replacing with acceptable material at no additional cost to the Owner.
- D. Compensation will not be made for material that was not defined and verified in the field as unsuitable material by the Geotechnical engineer.

## **PART 2 - PRODUCTS**

### **2.01 EARTH FILL**

- A. Place earth fill in areas not designated to be structural fill or backfill.
- B. Free from roots, organic matter, trash and debris with maximum particle size of 1-1/2 inches.
- C. Imported fill is to consist of clayey sand (SC), sandy clay (CL) or clayey gravel (GC).
- D. Engineered fill is to consist of approved low volume-change material designated as CL or GC soils having a Liquid Limit less than 40 and a Plasticity Index less than 20 or Class 7 Aggregate Base Course.
- E. It is intended that fill be obtained from the site excavation to the maximum extent possible. DO NOT CONSTRUCT BORROW PITS ON SITE WITHOUT WRITTEN AUTHORIZATION FROM THE ARCHITECT.

### **2.02 STRUCTURAL (FLOWABLE) FILL**

- A. Imported structural fill, Controlled Low Strength Material (CLSM), is to consist of a natural or artificial mixture of sand, coarse aggregate, cement and water, uniformly well graded from coarse to fine. The mix shall have good workability and flowability with self-compacting and self-leveling characteristics. Conform to ASTM D4832.
- B. Conform to the AHTD Section 303 classifications for Class 3, Class 4 or Class 7 as required by existing soil conditions.

### **2.03 UNDERSLAB DRAINAGE FILL**

- A. Crushed stone or washed gravel, uniformly graded from 3/4" minimum size to 1-1/2" maximum size (ASTM C-33 #57 or equivalent).

### **2.04 CRUSHED SYENITE FILL**

- A. Fill and Backfill Inside Building Walls: Crushed syenite, similar to Donna-Fill. Deliver to job in moist condition. Settle in place by completely immersing under water for optimum compaction. Keep water level above syenite at all times during placing.

### **2.05 TOPSOIL**

- A. Selected topsoil from the site, properly stored and protected, free from roots, sticks, hard clay and stones which will not pass through a 1 in. square opening. Provide analysis of topsoil to ascertain percentage of nitrogen, phosphorus, potash, soluble sale content, organic matter content, and pH value.



- B. Provide imported topsoil of equal quality if required to accomplish the work.
  - 1. Natural, fertile, friable soil, possessing characteristics of representative productive soils in the vicinity. Obtain from naturally well-drained areas, without admixture of subsoil and free from Johnson grass (sorgam halepense), nut grass (cyprus rotundus), and objectionable weeds and toxic substances. Topsoil furnished shall be free from trash, brush, and stones over 1 inch in diameter, and related extra-neous material.
  - 2. Provide to Architect soil analysis including analysis for noxious weeds, nematodes, organic content and foreign matter. Conduct analysis using methods approved by the Association of Official Agricultural Chemists of the State Agricultural Experiment Station.
  - 3. Preliminary soils test may be conducted by Contractor for conditional acceptance by Architect. Shipping and delivery of topsoil may begin after acceptance of preliminary test findings, when acceptable. Conduct additional soils tests specified in soils testing lab.
  
- C. **Topsoil Removal:** Prior to the commencement of construction, the site shall be cleared of all vegetation in construction areas. After the site is cleared, all topsoil shall be stripped from the site and an adequate amount stored (4 inch minimum thickness) for reuse on the site for final seeding or landscaping. Excess topsoil may be used on embankment slopes or excavated slopes after final compaction of the embankment material or back-slopes. No topsoil shall be placed in areas to receive pavement, sidewalks or structures. Topsoil, because of its compressible organic content, shall not be used in areas that will support embankments, structures, or pavements. See Geotechnical Report for approximate stripping depths required.

## 2.06 COMPACTION EQUIPMENT

- A. Provide compaction equipment of suitable type and adequate to obtain the densities specified.
- B. Operate compaction equipment in strict accordance with the manufacturer's instructions and recommendations.
- C. Maintain equipment in such condition that it will deliver the manufacturer's rated compactive effort.
- D. Hand operated equipment shall be capable of achieving the specified densities.

## 2.07 MOISTURE CONTROL EQUIPMENT

- A. Provide equipment for applying water of a type and quality adequate for the work; it shall not leak and shall be equipped with a distributor bar or other approved device to assure uniform application.
- B. Provide equipment for mixing and drying out material consisting of blades, discs or other approved equipment.

## **2.08 WATER REMOVAL EQUIPMENT**

- A. Provide and operate equipment adequate to keep excavation and trenches free of water, including but not limited to pumps and hoses.

## **2.09 SELECTED MATERIAL ACCEPTANCE**

- A. Provide samples for testing representative of the actual material to be installed in the work. Take samples from material stockpiled. Depending on the uniformity of the material, Architect may request additional samples.
- B. Tests required at the borrow area:
  - 1. Standard Proctor.
  - 2. Atterberg limits.
- C. Forward test results to Architect at least 10 days before the material is required for use. If tests indicate that the material does not meet specification requirements, the material shall not be installed in the work.
- D. Material which is placed in the work but does not conform to the specification requirements shall be removed and replaced at the Contractor's expense.

## **2.10 OTHER MATERIALS**

- A. Provide materials, not specifically described but required for proper completion of work of this Section, selected by Contractor subject to Architect approval.

## **PART 3 - EXECUTION**

### **3.01 CLEARING AND GRUBBING**

- A. Complete clearing and grubbing work as specified in Section 02 41 13 prior to beginning work in this section.

### **3.02 LAYOUT AND STAKING**

- A. The Contractor will employ and pay a competent, independent, Registered Professional Land Surveyor with demonstrated ability to perform the layout work required.
- B. Definitions
  - 1. "Control Stakes" are the original reference points set by Engineer for the construction work.
  - 2. "Construction Staking" is an additional staking required as the project progresses which is the responsibility of Contractor.

- C. Engineer shall provide the following staking:
  1. Set temporary bench marks.
  2. Reset stakes found to be in error.
  
- D. Contractor shall provide the following staking:
  1. All construction staking except as provided by Engineer above.
  2. Reset stakes, marks or pins lost due to Contractor's operations.
  
- E. Electronic copies of surveying staking points will not be made available for this project.
  
- F. Control Staking
  1. Notify Engineer, in writing, at least five days in advance of the date when control staking services are desired.
  2. Engineer shall provide control staking.
  3. Examine stakes before commencing operations.
  4. Notify Engineer if validity of any control stake is questionable.
  5. Engineer will check stake or stakes in question.
  6. Any control stakes found to be in error will be reset by Engineer.
  7. If stakes are valid, Contractor shall pay for cost of checking stakes.
  8. Contractor shall inform his employees, subcontractors and vendors of importance of control stakes and the necessity of their preservation.
  9. Contractor shall pay for resetting any control stakes, marks, or pins lost due to Contractor's operations.
  
- G. Construction Staking
  1. Provide all construction staking as needed to complete the Work.
  
- H. If site conditions vary from those indicated, the Contractor shall notify the Architect immediately.

### **3.03 STRUCTURAL EXCAVATION**

- A. Excavate subsoil required for building foundations both interior and exterior, construction operations and other work. Excavate for structures to the lines and grades shown or as required to accomplish the construction.
  1. After excavating footings and prior to placing any fill material, Contractor is to arrange for qualified testing agency to perform hand held penetrometer tests at 10 foot intervals along entire length of perimeter footing and along all interior grade beams to determine that minimum soil bearing capacity has been achieved.
  
- B. The method of excavation used is optional; however, no equipment shall be operated within 5 feet of existing structures or newly completed construction.
  
- C. Excavation that cannot be accomplished without endangering present or new structures shall be done with hand tools.
  
- D. Machine slope banks to angle of repose or less until shored.

- E. Excavate to the depths and widths required.
- F. Do not interfere with normal 45 degree bearing splay of foundations.
- G. Allow for forms, working space, granular base and finish topsoil.
- H. Do not carry excavation for footings and slabs deeper than the elevation shown.
  - 1. Fill over excavations under footings with concrete of equal strength to that of the footing when excavations are deeper than the elevation shown.
  - 2. Replace excavation carried below the grade lines shown or established by the Architect with the same fill Material as specified for the overlying fill or backfill, compact as required for such overlying fill or backfill.
  - 3. Where the overlying area is not to receive fill or backfill, replace the over excavated material and compact to a density not less than that of the underlying ground.
  - 4. Correct over excavated areas and unauthorized excavation at the Contractor's expense.
- I. Correct cuts below grade by similarly cutting adjoining areas and creating a smooth transition.
- J. Hand trim excavation and leave free of loose matter.
- K. Remove lumped subsoil, boulders and rock.
- L. Stockpile excavated material in area designated on site and remove excess subsoil not being reused from site.

### **3.04 EXCAVATION SAFETY**

- A. The Contractor shall be solely responsible for making the excavation in a safe manner.
- B. Provide appropriate measures to retain excavation side slopes to ensure that men working in or near the excavation are protected.

### **3.05 DEWATERING EXCAVATION**

- A. Remove water during periods when concrete is being deposited, pipe is being laid and placing of backfill unless water settling is required and at such other times as required for efficient and safe execution of the work.
- B. Accomplish removal of groundwater in a manner that will preserve the strength of the foundation soils, will not cause instability of the excavation slopes and will not result in damage to existing structures.
- C. Where necessary to these purposes, lower water level in advance of excavation, utilizing wells, wellpoints or similar methods.

- D. Maintain the water level in the gravel stratum as measured in piezometers, a minimum of 3 feet below the prevailing excavation.
- E. Open pumping, sumps and ditches: If these methods result in boils, loss of fines, softening of the ground or instability of slopes, they will not be permitted.
- F. Install wells and wellpoints with suitable screens and filters so that continuous pumping of fines does not occur.
- G. Operate well points continuously so as to prevent boils and loss of consolidation.
- H. Arrange discharge to facilitate collection of samples by Architect.
- I. Avoid settlement or damage to adjacent property.
- J. Dispose of water in a manner that will not damage adjacent property, as approved by Architect.

### **3.06 UNDERCUTTING**

- A. Undercut areas on the site that do not meet the permeability requirements to such depth as to allow placement of sufficient impervious material as determined by permeability testing at borrow area as stated in Part 2 of this section.
- B. Prior to placement of fill in the undercut area, scarify the upper 6" of subgrade and re-compact to 95 percent of ASTM D1557. Refer to geotechnical report if applicable.

### **3.07 FOUNDATION SUBGRADE PREPARATION**

- A. After completion of excavation and prior to foundation or fill construction, proofroll the excavation surface with a loaded tandem-axle dump truck or similar heavy wheeled vehicle to detect soft or loose zones.
- B. Conduct proof-rolling in the presence of Architect.
- C. If soft or loose zones are found, excavate the material to a depth accepted by Architect, then fill and compact as specified for the overlying fills.
- D. Prior to placement of overlying fill or concrete, scarify the upper 6" of subgrade and re-compact the foundation subgrade to at least 95 percent of ASTM D1557. Refer to geotechnical report if applicable.

### **3.08 FILL MATERIAL**

- A. Place structural fill material within the influence area beneath all piping, slabs, structures and other areas of excavation.

- B. Place fill in 6" loose lifts and compact each lift to 95 percent of ASTM D1557. Refer to geotechnical report if applicable.
- C. Moisten material as required to aid compaction (+ or - 2 percent optimum moisture content).
- D. Place material in horizontal lifts and in a manner which avoids segregation.
- E. Correct and repair subsequent damage to slabs, piping, concrete structures, facilities or other structures caused by settlement of fill material.

### **3.09 BACKFILL**

- A. Remove form materials and trash from excavation before placing backfill.
- B. Do not operate earth moving equipment within 5 feet of walls of concrete structures for the purpose of depositing or compacting backfill material.
- C. Compact backfill adjacent to concrete walls with hand operated tampers or similar equipment that will not damage the structure.
- D. Place backfill material in 6" loose lifts and compact each lift to 95 percent of ASTM D1557. Refer to geotechnical report if applicable.
- E. Backfill all utility excavations and compact to minimum 95 percent of ASTM D698.

### **3.10 SUBGRADE PREPARATION AND FILL MATERIAL AT PAVED AREAS**

- A. Paved areas include areas to receive Gravel Surfacing, Asphalt Concrete Paving, Portland Cement Concrete Paving, etc. Refer to geotechnical report if applicable.
- B. Scarify upper 6" of natural subgrade and recompact to 90 percent of ASTM D1557. Refer to geotechnical report if applicable.
- C. Place structural fill material to the lines and grades shown in maximum 6" loose lifts and compact each lift to not less than 90 percent of ASTM D1557. Refer to geotechnical report if applicable.

### **3.11 MOISTURE CONTROL**

- A. During compacting operations, maintain optimum practicable moisture content required for compaction purposes in each lift of fill.
- B. Maintain moisture content uniform throughout the lift.
- C. Add water to the material at the site of excavation. Supplement, if required, by sprinkling the fill.

- D. At the time of compaction, maintain the water content of the material at optimum moisture content, plus or minus 2 percent, except as otherwise specified for embankments.
- E. Do not attempt to compact fill material that contains excessive moisture.
- F. Aerate material by blading, discing, harrowing or other methods to hasten the drying process.

### 3.12 FIELD DENSITY TESTS

- A. Test Methods: ASTM D2922, D2216 and D3017.
- B. Cooperate with testing work by leveling small test areas designated by the Architect.
- C. Backfill test areas.
- D. Field density test shall be performed for every 50 cubic yards of fill material placed.
- E. Architect may order testing of any lift of fill at any time, location or elevation.

### 3.13 FINISH SITE GRADING AND TOPSOIL PLACEMENT

- A. **Finished Grading:** After all structures have been completed and all backfills have been compacted, all areas on the project construction site which have been disturbed by the Contractor shall be brought to true grade with a minimum of 4 inches of topsoil. Perform earthwork to lines and grades as shown with proper allowance for topsoil.
- B. Provide a minimum 4" depth of topsoil in all areas within the limits of construction that are disturbed during the course of this work except areas that are to receive sod or paving material.
  - 1. **Areas To Receive Sod:** After subgrade preparation, furnish, place, and spread 3" minimum thickness of topsoil over earth areas to be sodded. Do not spread topsoil in frozen or muddy condition. Make allowance for settlement to obtain 3" finished full depth of topsoil. Till thoroughly areas where existing topsoil has not been removed to depth of at least 3" until condition of soil is friable and of uniform texture. Remove stones over 1" in diameter, sticks, and rubbish.
- C. Shape, trim and finish slopes to conform with the lines, grades and cross sections shown.
- D. Make slopes free of loose exposed roots and stones exceeding 3 inches in diameter.
- E. Round tops of banks to circular curves, in general, not less than a 6 foot radius.
- F. Neatly and smoothly trim rounded surfaces; over excavating and backfilling to the proper grade are not acceptable.

G. Finish site grading will be reviewed by Architect.

### **3.14 DISPOSAL OF EXCESS EXCAVATION**

- A. Dispose of excess excavated materials, not required or suitable for use as backfill or fill off-site OR outside of the area of work.
- B. Compact excess material as specified for fill, dress the completed disposal area to slopes no greater than 4:1 (horizontal:vertical) and slope to drain.

### **3.15 SETTLEMENT**

- A. Settlement in backfill, fill or in structures built over the backfill or fill, which may occur within the 1-year guarantee period in the General Conditions will be considered to be caused by improper compaction methods.
- B. Restore structures damaged by settlement to original condition.

**END OF SECTION 31 00 10**



**PART 1 - GENERAL**

**1.01 DESCRIPTION**

- A. Work shall consist of cutting, removing from the ground, and properly disposing of trees, stumps, hedge, brush, roots, logs, weeds, rubbish, sod refuse dumps, sawdust piles, lumbering slash, and other materials within the designated area.
- B. The work shall also include selective clearing, preserving existing vegetation, scalping, and the preservation of objects designated to remain.

**1.02 DEFINITIONS**

- A. Clearing - The removal of all trees, brush, and other objectionable growth, and the removal and disposal of logs, rubbish piles, refuse dumps, sawdust piles, lumbering slash, and other objectionable matter from the surface of the ground in the areas shown on the plans or as designated by the Engineer.
- B. Grubbing - The grubbing and removal of all stumps, roots, and other objectionable matter, lying wholly or in part below the surface of the ground.
- C. Selective Clearing - The trimming of selected trees and shrubs, the removal from the ground and disposal of logs, root pods, brush, refuse dumps, and other undesirable debris, and the cutting, removal, and disposal of all undergrowth, stumps, and standing trees, except those trees and shrubs designated to be preserved. The selective clearing areas will be shown on the plans.
- D. Scalping - Areas not classified as clearing and grubbing and that are within construction limits shall be scalped, if appropriate. Scalping shall include the removal and disposal of material such as saplings less than 4-inches in diameter measured 12-inches above the ground, logs, brush, roots, grass, residue of agricultural crops, refuse dumps, and decayed matter.
- E. Clearing and Grubbing Trees - The cutting, grubbing and removal of individual, isolated trees and stumps greater than 4-inches diameter measured 12-inches above the ground as shown on the plans or designated by the Engineer to be removed.

**PART 2 - MATERIALS**

**2.01 GENERAL**

- A. Provide materials suitable and in adequate quantity required to accomplish the work of this Section.

## **PART 3 - EXECUTION**

### **3.01 CONSTRUCTION REQUIREMENTS**

- A. The project site shall be cleared as defined above, except those objects designated to remain shall be carefully protected from abuse, marring, or damage during construction operations.
- B. Trees shall be felled and removed in such a manner as to avoid injury to other trees or objects designated to remain. In case of injury to bark, limbs, or roots of vegetation designed to remain, the Contractor shall repair such damage by corrective pruning or other appropriate methods. Trees or other debris falling outside the construction area shall be removed and disposed of according to these specifications.
- C. Holes remaining after removal of trees, stumps, etc. shall be backfilled with select fill and compacted as directed except in areas to be excavated. The Contractor shall complete the operation by blading, bulldozing, or other approved methods so that the site shall be free of holes, ditches, or other abrupt changes in elevations that resulted from the clearing and grubbing operations.

### **3.02 CLEARING AND GRUBBING**

- A. The site shall be cleared of stumps, brush, logs, rubbish, trees, and shrubs, with the exception of such trees, shrubs, and areas designed on the plans or by the Engineer for preservation.
- B. Merchantable timber in the clearing area shall become the property of Contractor, unless otherwise provided.
- C. When perishable material is burned, it shall be under the constant care of a competent watcher. Burning shall be accomplished at such times and in such manner that the surrounding vegetation, adjacent property, or anything designated to remain on the site will not be jeopardized. Upon notice from the Engineer that meteorological conditions render burning undesirable, the Contractor shall cease all burning until notified by the Engineer that meteorological conditions are suitable for a resumption of burning operations.
- D. When specified, burning will not be permitted unless the material to be burned is placed in an incineration pit and an acceptable forced air combustion device is used that will minimize the emission of smoke, fly ash, and other pollutants. This device shall be constructed so that the forced air is directed over the fire by plenums or ducts. The use of open fans or mulch blowers will not be permitted.
- E. The Contractor shall comply with all Federal, State, County, and City laws, regulations, or ordinances applicable to the disposal of clearing and grubbing material. Materials and debris that cannot be burned shall be removed from the project site and disposed of at locations off the project, outside the limits of view from any public road, street, park, or other public facility. The Contractor shall make all necessary arrangements with the property owner for obtaining suitable disposal locations.

- F. Disposal operations and final cleanup of the site, including seeding and stabilization, shall comply with these specification requirements. When requested by the Engineer, the Contractor shall furnish copies of all agreements with property owners.

### **3.03 SELECTIVE CLEARING**

- A. This work shall be performed in such a manner as to leave the designated areas in a park-like condition and susceptible to economical mowing. Disposal of all material shall comply with the methods set out in the Clearing and Grubbing requirements.
- B. Stumps, trees, and shrubs, except those designated to be preserved, shall be severed flush with or below the ground.
- C. Movement and operation of equipment shall be such that roots, branches, and trunks of trees and shrubs selected for retention will not be scarred, broken, or otherwise damaged to the extent that the life of the plant is endangered.

### **3.04 PRESERVED VEGETATION**

- A. Trees, shrubs, brush, vines, and other natural perennial vegetation shall be protected in the areas designated as Preserved Vegetation.
- B. Areas designated as Preserved Vegetation shall not be used for parking, storage, or other construction support activities that will damage vegetation or compact the soil. Care shall be taken to prevent spills of materials hazardous to vegetation such as oil, hydraulic fluid, salts, etc.. Erosion and sedimentation control shall be such that sediment is not deposited in depths greater than 2-inches within any portion of the Preserved Vegetation area.
- C. Clearing and grubbing may be required through preserved vegetation areas for drainage outlets, channels, or other required construction.

### **3.05 SCALPING**

- A. The Contractor shall scalp areas where excavation or embankment is to be made, except that mowed sod need not be removed where the embankment to be constructed is more than 3-feet in height.
- B. All suitable material resulting from the scalping operation shall be placed on finished slopes, adjacent to the area from which it is obtained, after excavation or embankment operations are complete.
- C. Unsuitable material shall be disposed of as specified for Clearing and Grubbing.

**END OF SECTION**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Work of this Section also includes:
  - 1. Replacing topsoil that contains regenerative material.
  - 2. Disposal of trees, stumps, brush, roots, limbs, and other waste materials from clearing operations.
  - 3. Imported topsoil.
  - 4. Crush rock backfill required by over-excavation.
  - 5. Imported pipe zone material.
  - 6. Trench settlement repair, including replacing roadway surfacing, sidewalk, or other structures.
  - 7. Replacing damaged culverts.
  
- B. Trench excavation is classified as common excavation and includes removal of material of whatever types encountered including rock to depths shown or as directed by Engineer.
  
- C. Pipe zone includes full width of excavated trench from bottom of pipe to a point 6 inches above top outside surface of pipe barrel.
  
- D. Conform to federal, state, and local codes governing safe loading of trenches with excavated material.
  
- E. The right is reserved to modify the use, location, and quantities of the various types of backfill during construction as Engineer considers to be in the best interest of Owner.
  
- F. There shall be no extra compensation for dewatering and rock excavation. Rock excavation shall be quantified by the geotechnical testing agency and shall be paid per the unit price given.

**1.02 REFERENCES**

- A. ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA, 19428-2959.
  - 1. ASTM D448 - Classifications for Standard Sizes of Aggregate and Bridge Construction.
  - 2. ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb. (2.49-kg.) Rammer and 12-inch (304.8-mm) Drop.
  - 3. ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 10-lb. (4.54-kg.) Rammer and 18-inch (457-mm) Drop.
  - 4. ASTM D2487 - Standard Classification of Soils for Engineering Purposes.

5. ASTM D2922 - Test Methods for Density of Soils and Soil-Aggregates in Place by Nuclear Method.
- B. Occupational Safety and Health Administration (OSHA) Standard for Excavation and Trenches Safety System, 29 CFR 1926, Subpart P: Excavations.
- C. The Contractor shall be solely responsible for trench and excavation safety systems in accordance with Act 291 of 1993.

## **PART 2 - PRODUCTS**

### **2.01 FOUNDATION STABILIZATION**

- A. Crushed gravel or crushed rock, free from dirt, clay balls, or organic material, well graded from coarse to fine, containing sufficient finer material for proper compaction, and meeting ASTM D448 Size No. 67 (Concrete Aggregate).

### **2.02 PIPE ZONE MATERIAL**

- A. Select material shall consist of fine loose earth or sand free from clods or rocks larger than 3/4 inches in dimension and of proper moisture content for maximum consolidation.
- B. Crushed granular material conforming to ASTM D448, Size No. 67.
- C. Washed stone bedding size 1/4-inch to 3/4-inch.

### **2.03 COMMON FILL MATERIALS**

- A. Material shall not contain pieces larger than 3 inches, and shall be free of roots, debris, or organic matter.

### **2.04 SELECT FILL MATERIALS**

- A. Local regulatory agency Class 7, Class 3, and Class 4 as specified in this Section.
- B. ASTM Soil Classification GC as set forth in ASTM Designation D2487. On site material may be used, provided it is in accordance with ASTM D2487.

### **2.05 BEDDING MATERIAL**

- A. Pea gravel, sand, or other locally available bedding material, as approved.

### **2.06 TRENCH BACKFILL**

- A. Granular Backfill:
  1. Natural or artificial mixture of gravel and soil mortar uniformly well graded from coarse to fine.
  2. Local regulatory agency Section 303 Class 3, Class 4, or Class 7 as specified in this Section.

## **2.07 PVC DRAIN PIPE TRENCH**

- A. See Drawings for trench details.

## **2.08 COMPACTION EQUIPMENT**

- A. Suitable type and adequate to obtain the amount of compaction specified.
- B. Operate in strict accordance with manufacturer's instructions and recommendations and maintain in such condition so that it will deliver manufacturer's rated compactive effort.

## **2.09 IMPORTED TOPSOIL**

- A. Suitable sandy loam from an approved source.
- B. Must possess friability and a high degree of fertility.
- C. Free of clods, roots, gravel, and other inert material.
- D. Free of quackgrass, horsetail, and other noxious vegetation and seed.

## **PART 3 - EXECUTION**

### **3.01 PREPARATION**

- A. Where clearing or partial clearing of right-of-way is necessary, complete prior to start of trenching.
- B. Cut trees and brush as near to surface of ground as practicable, remove stumps, and pile for disposal.
- C. Do not permit excavated materials to cover brush or trees prior to disposal.

### **3.02 PREVENT TRENCH WATER AND ANIMALS FROM ENTERING PIPE**

- A. When pipe laying is not in progress, including noon hours, open ends of pipe shall be closed; and no trench water, animals, or foreign material shall be permitted to enter the pipe.

### **3.03 DISPOSAL OF CLEARED MATERIAL**

- A. Dispose of material in such a manner to meet requirements of state, county, and local regulations regarding health, safety, and public welfare.
- B. Dispose of nonflammable and flammable material off the construction site in an approved location.
- C. Do not leave material on the Project site, shove onto abutting private properties, or bury in embankments or trenches.

### **3.04 REMOVAL OF OBSTRUCTIONS**

- A. Remove obstructions within trench area or adjacent thereto such as tree roots, stumps, abandoned piling, logs, and debris.
- B. Engineer may, if requested, make changes in the trench alignment to avoid major obstructions, if such alignment changes can be made within the easement or right-of-way without adversely affecting the intended function of the facility.
- C. Dispose of obstructions in accordance with this Section.

### **3.05 REMOVAL AND REPLACEMENT OF TOPSOIL**

- A. Where trenches cross lawns, garden areas, fields, or other areas on which reasonable topsoil conditions exist, remove topsoil for a depth of 6 inches for full width of trench to be excavated.
- B. Use equipment capable of removing a uniform depth of material.
- C. Stockpile removed topsoil at regular intervals, and do not mix with other excavated material.
- D. Locate stockpiles so that material of one ownership is not transported and stockpiled on property of another ownership.
- E. Minimum finished depth of topsoil over trenches: 5 inches.
- F. Imported topsoil may be substituted for stockpiling and replacing topsoil.
- G. Maintain finished grade of topsoil level with area adjacent to trench until final acceptance by Engineer.
- H. Repair damage to adjacent topsoil caused by work operations.
  - 1. Remove rock, gravel, clay, and other foreign materials from the surface.
  - 2. Regrade.
  - 3. Add topsoil as required.

### **3.06 TRENCH WIDTH**

- A. Minimum width of unsheeted trenches where pipe is to be laid shall be 18 inches greater than the outside diameter of the pipe, or as approved.
- B. Maximum width at top of trench will not be limited, except where excess width of excavation would cause damage to adjacent structures or property or cause undue stresses on the pipe.
- C. Confine trench widths to dedicated rights-of-way or construction easements, unless special written agreements have been made with affected property owner.

### **3.07 EXCAVATION**

- A. Excavate trench to lines and grades shown or as established by Engineer with proper allowance for pipe thickness and for pipe base or special bedding when required.
- B. If trench is excavated below required grade, correct with foundation stabilization material.
- C. Place material over full width of trench in compacted layers not exceeding 6 inches deep to established grade with allowance for pipe base or special bedding.

### **3.08 PREPARATION OF TRENCH - LINE AND GRADE**

- A. Do not deviate more than ½ inch from line or ½ inch from grade. Measure for grade at the pipe invert, not at the top of the pipe, because of permissible variation in pipe wall thickness.
- B. Grade the bottom of the trench by hand to the line and grade where the pipe is to be laid, with proper allowance for pipe thickness and for pipe base when specified or indicated.
- C. Remove hard spots that would prevent a uniform thickness of bedding.
- D. Check the grade with a straightedge and correct irregularities found.
- E. The trench bottom shall form a continuous and uniform bearing and support for the pipe at every point between bell holes, except that the grade may be disturbed for the removal of lifting tackle.

### **3.09 SHORING, SHEETING, AND BRACING OF TRENCHES**

- A. Sheet and brace trench when necessary to prevent caving during excavation in unstable material or to protect adjacent structures, property, workers, and the public.
- B. Increase trench widths accordingly by the thickness of the sheeting.
- C. Maintain sheeting in place until pipe has been placed and backfilled at pipe zone.
- D. Remove shoring and sheeting as backfilling is done in a manner that will not damage pipe or permit voids in backfill.
- E. Conform to safety requirements of federal, state, or local public agency having jurisdiction for sheeting, shoring, and bracing of trenches; the most stringent of these requirements shall apply.

### **3.10 LOCATION OF EXCAVATED MATERIALS**

- A. Place excavated material only within construction easement, right-of-way, or approved working area.



- B. Do not obstruct private or public traveled roadways or streets.

### **3.11 REMOVAL OF WATER**

- A. Provide and maintain ample means and devices to promptly remove and dispose of water entering trench during time trench is being prepared for pipe laying, during laying of pipe, and until backfill at pipe zone is completed.
  - 1. These provisions apply during the noon hour as well as overnight.
  - 2. Provide necessary means and devices, as approved, to positively prevent under water from entering the construction area of another contractor.
- B. Dispose of water in a manner to prevent damage to adjacent property.
- C. Drainage of trench water through the pipeline under construction is prohibited.

### **3.12 FOUNDATION STABILIZATION**

- A. When existing material in bottom of trench is unsuitable for supporting pipe, excavate unsuitable material.
- B. Backfill trench to subgrade of pipe base with foundation stabilization material specified.
- C. Place foundation stabilization material over the full width of trench and compact in layers not exceeding 6 inches deep to required grade by making passes with a vibratory compactor (or equivalent).
- D. Material shall be considered unsuitable when it contains more than 5 percent organic material by volumetric sampling or when it will not support a reading of 1.5 on a hand penetrometer.

### **3.13 ROCK IN PIPE TRENCH**

- A. Where rock is encountered in bottom of trench, support pipe on bedding material.
- B. Minimum Bedding Thickness: Minimum of 4 inches or one eighth of the outside diameter of pipe, whichever is greater.
- C. Extend bedding up pipe sides one sixth of outside diameter of the pipe, minimum.
- D. Backfill over pipe according to pipe zone type.

### **3.14 PIPE ZONE BACKFILL**

- A. Depth of the pipe zone above pipe barrel varies with pipe material.
- B. Particular attention must be given to area of pipe zone from flow line to centerline of pipe to ensure firm support is obtained to prevent lateral movement of pipe during final backfilling of pipe zone.

- C. Backfill area of pipe zone from bottom of pipe to horizontal centerline of pipe by hand-placing material around pipe in 4-inch layers.
- D. Achieve continuous support beneath pipe haunches by "walking in" and slicing with shovel.
- E. Backfill area of pipe zone from horizontal centerline to top of pipe zone with pipe zone material as determined by class of backfill.
- F. In lieu of selected material for pipe zone in upper portion of pipe zone, imported pipe zone material approved by Engineer for trench backfill may be substituted.
- G. If the Engineer determines that the existing material is insufficient or unsuitable at trench side for selected material for pipe zone in upper portion of pipe zone, provide suitable material from other trench excavation along pipeline or imported pipe zone material.

### **3.15 TRENCH BACKFILL ABOVE PIPE ZONE**

- A. When backfill is placed mechanically, push backfill material onto slope of backfill previously placed and allow to slide down into trench.
- B. Do not push backfill into trench in such a way as to permit free fall of material until at least 2 feet of cover is provided over top of pipe.
- C. Under no circumstances allow sharp, heavy pieces of material to drop directly onto pipe or tamped material around pipe.
- D. Do not use backfill material of consolidated masses larger than ½ cubic foot.

### **3.16 EXCESS EXCAVATED MATERIAL**

- A. Dispose of excess excavated material off project site in an approved area.

### **3.17 DRAINAGE CULVERTS**

- A. Replace drainage culverts which are removed on near right angles to pipe centerline.
- B. If pipe cannot be reused or is damaged during removal, dispose of it and provide new pipe.
- C. Protect culverts from damage or restore to equivalent condition.
- D. Replace culverts to existing lines and grades.
- E. Do not replace culverts until proposed pipeline is installed and backfill of trench has been completed to subgrade of culvert.

### **3.18 PIPE COVER**

- A. Place select material from excavation over pipe to provide minimum coverage, as shown on Drawings or as directed by Engineer.

### **3.19 DRAINAGE DITCH RESTORATION**

- A. Undercrossings of minor drainage ditches not covered in another Specification Section shall be backfilled so that upper 1 foot of material in ditch between ditch banks is clay.
- B. Compact material for full ditch width by 6 passes of vibratory compactor (or equivalent).
- C. Where indicated on Drawings, provide concrete arch, and/or riprap on ditch banks.

### **3.20 SETTLEMENT**

- A. Correct settlement noted in backfill, fill, or in structures built over backfill or fill within warranty period.

### **3.21 IMPORTED TOPSOIL**

- A. Should regenerative material be present in soil, remove both surface and root which appears in within 1 year following acceptance of Project in a manner satisfactory to Owner.

**END OF SECTION**

**PART 1 - GENERAL**

**1.01 DESCRIPTION**

- A. Perform foundation and under floor termite control treatment in accordance with the Arkansas Pest Control Law and to qualify construction under this Contract for continuous guaranteed protection specified.
  
- B. Applicable Regulations:
  - 1. International Building Code
  - 2. Arkansas Pest Control Law, A.C.A. 17-30-101 et. Seq. and Regulations
    - a. Circular 6 revised December, 2013
    - b. Arkansas State Plant Board
  - 3. Federal Insecticide, Fungicide and Rodenticide Act, (Public Law 92-516 of Oct. 21, 1972 as amended by Public Law 100-532, October 25, 1988).

**1.02 RELATED DOCUMENTS**

- A. Applicable portions of the Agreement, Conditions of the Contract (General, Supplementary, and other Conditions), Drawings, Specifications and Addenda issued prior to the execution of the Contract, other documents listed in the Agreement and Modifications issued after the execution of the Contract shall apply to this Section. The general requirements for this work are located in Division 1 of the Specifications.

**1.03 SUBMITTALS AND SUBSTITUTIONS**

- A. In accordance with Section 01 33 00.
  
- B. Substitutions will not be considered prior to the award of the General Contract.
  
- C. Submit a Termicide Application Plan, including Product Data, Design Data, Test Reports and Certificates.

**1.04 GUARANTEE**

- A. Furnish damage guarantee with service and re-service for any subterranean termite infestation without cost to Owner. Write Damage Guaranty Contract additionally to cover any and all subterranean termite damage to the structures and contents in amount of \$10,000. Such damage to be repaired, replaced or corrected at Contractor's expense.

- B. Furnish damage guarantee effective for 5 year period after completion of initial treatment without payment of additional fees or premiums by Owner. Upon expiration of 5-year period, Owner has option of extending damage guarantee contract at an annual fee mutually agreed upon by Owner and applicator. Owner reserves the right to cancel as of any anniversary date. Service, re-service, and Damage Guaranty provisions of the extended damage contract are noncancellable by applicator. Annual fee subject to revision by giving advance written notice to Owner.
- C. Include in the warranty annual inspections of the buildings, whether new or renovated, or building additions during the warranty period. If live subterranean termite infestation or subterranean termite damage is discovered during the warranty period, and the soil and building conditions have not been altered in the interim:
  - 1. Re-treat the site and perform other treatment as may be necessary for elimination of subterranean termite infestation;
  - 2. Repair damage caused by termite infestation; and
  - 3. Reinspect the building approximately 180 days after the re-treatment.

## **1.05 ADMINISTRATIVE**

- A. Coordinate work related to final grades, landscape planting, foundations, or any other alterations to finished or renovated construction which might alter the condition of treated soils with this specification.

## **PART 2 - PRODUCTS**

### **2.01 SYSTEM DESCRIPTION**

- A. Chemical termite control uses liquid termiticide treatments applied to the soil, forming a continuous chemical barrier in the soil around both sides of the foundation. The application may be surface applied or rodded and trenched. This barrier prevents foraging termites from reaching the foundation and piers. Only the soil adjacent to these foundation elements is treated. For slab construction (including foundations, patios and garages), the entire soil (or gravel) surface shall be treated before the vapor barrier is installed and the slab poured over it. Soil treatment shall be coordinated with all building activities from foundation construction through final grading of the soil around the building's exterior. In order for the treatment to be effective, the final phase of the application must be done after final grading and, where required, after landscaping is completed so that treated soil is not disturbed.

### **2.02 TERMITE CONTROL CHEMICALS**

- A. Use chemicals approved by the Arkansas State Plant Board and of type required to give guaranteed protection specified.

## **PART 3 - EXECUTION**

### **3.01 PREPARATION**

- A. From investigation at the site determine soil texture or otherwise obtain this information from the County Agent, Soil Conservation Service or other approved authorities, if not already known.
- B. Eliminate food sources by removing debris from clearing and grubbing and post construction wood scraps such as ground stakes, form boards, and scrap lumber from the site, before termiticide application begins.

### **3.02 TREATMENT**

- A. Perform foundation and under floor termite control treatment at buildings to be constructed under this Contract. Use type chemical approved by the Arkansas State Plant Board and currently known to give guaranteed protection for the soil and fill used at this Project. Apply chemical using applicator licensed by the Arkansas State Plant Board. Apply in sufficient quantity under and around the structures, to qualify building and contents for continuous guaranteed protection against damage by subterranean termites.
- B. Reapply soil treatment solution to areas disturbed by subsequent excavation or construction activities following application.
- C. **Under New Slabs:** Apply under slabs at the rate recommended by manufacturer. Apply after placement of gravel drainage fill and immediately prior to placement of vapor barrier. When necessary to insure proper penetration, the ground surface will be left loose or lightly scarified until treatment has been completed.
- D. **Critical Areas:** Treat a one foot strip along critical areas under walls, around interior piers and pipes rising from the ground at the rate recommended by manufacturer. Treatment shall be applied as specified for overall treatment under slabs.
- E. **Outside of Foundations:** Apply a one foot strip along the outside of the foundations of the building at the rate recommended by manufacturer. Apply in a trench dug to a depth of approximately 2" below finish grade. Loosen earth in trench to a depth of 12" before treating. This treatment is to be performed prior to finish grading.
  - 1. If the exterior perimeter treatment is applied when the horizontal barrier is applied it will be damaged or removed before construction is completed. The exterior foundation perimeter treatment will have to occur in phases when any pads, porches, aprons, sidewalks, final grading or landscape planting are simultaneously involved adjacent to the building foundation. This treatment area should be coordinated after all major construction but before any pads, porches, or other items requiring special consideration are poured adjacent to the foundation walls. Submit written verification that final grading, landscape planting and other items adjacent to the foundation will not disturb treatment of the soil on the exterior sides of foundation walls, grade beams, and similar structures.

### **3.03 APPLICATION PLAN**

- A. Prior to commencing application of termiticide, submit a Termiticide Application Plan addressing the following items:
  - a. proposed sequence of treatment work including dates and times of application
  - b. termiticide trade name
  - c. EPA registration number
  - d. chemical composition
  - e. concentration of original and diluted material
  - f. formulation
  - g. manufacturer's recommended application rates
  - h. regional requirements
  - i. application rate of active ingredients
  - j. method of application
  - k. area or volume to be treated
  - l. amount to be applied
  - m. copy of the pest control business license
  - n. copy of the pesticide applicator certificates

### **3.04 APPLICATION**

- A. For areas to be treated, establish complete and unbroken vertical and horizontal soil poison barriers between the soil and all portions of the intended structure which may allow termite access to wood and wood related products. Make applications to crawl spaces in accordance with label directions. Applications to crawl space areas that are used as plenum air spaces will not be permitted.

### **3.05 EQUIPMENT CALIBRATION AND TANK MEASUREMENT**

- A. Submit a list of equipment to be used. Conduct calibration test on the application equipment to be used immediately prior to commencement of termiticide application. Measure the volume and contents of the application tank. Testing must confirm that the application equipment is operating within the manufacturer's specifications and meets the specified requirements. Submit written certification of the equipment calibration test results within 1 week of testing. Where results from the equipment calibration and tank measurements tests are unsatisfactory, re-treatment will be required.

### **3.06 FIELD QUALITY CONTROL**

- A. Verification of Measurement
  - 1. Once termiticide application has been completed, measure tank contents to determine the remaining volume. The total volume measurement of used contents for the application must equal the application rate established in the application plan. Submit written verification that the volume of termiticide used meets the application rate established in the application plan.

- B. Inspection
  - 1. Technical Representative: Provide a technical representative who is a certified pesticide applicator. The technical representative must be present at all meetings concerning treatment measures for subterranean termites and during treatment application.

### **3.07 CLOSEOUT ACTIVITIES**

- A. Upon completion of this work, submit the Pest Management Report, or an equivalent computer product, to the contractor. This form shall identify the target pest, type of operation, brand name and manufacturer of pesticide, formulation, concentration or rate of application used.

### **3.08 PROTECTION OF TREATED AREA**

- A. Immediately after the application, protect the area from other use by erecting barricades as required or directed, including signage. Place signage inside the entrances to crawl spaces and identify the space as treated with termiticide and not safe for children or animals. Cover treated areas with plastic if slab is not to be poured immediately following termiticide application.
- B. Disturbance of Treated Soils
  - 1. Re-treat soil and fill material disturbed after treatment before placement of slabs or other covering structures.

**END OF SECTION 31 31 16**



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**PART 1 - GENERAL****1.01 SUMMARY**

- A. This item shall consist of a foundation course for surface course, for other base courses, or for pavements.
- B. It shall be constructed on the prepared subgrade, subbase, or other completed base course according to these specifications and in substantial conformity with the lines, grades, compacted thickness, and typical cross section shown on the plans.

**PART 2 - PRODUCTS****2.01 MATERIALS**

- A. Aggregate Base Course shall be either gravel and/or crushed stone so proportioned as to meet the requirements for a class of aggregate specified in the following table:

Sieve,mm	Class 1	Class 2	Class 3	Class 4	Class 5	Class 6	Class 7	Class 8	
				<b>PERCENT PASSING</b>					
75 (3")	100	100	100						
50 (2")	95-100	95-100	95-100						
37.5 (1-1/2")				85-100	100	100	100		
25.0 (1")								100	
19.0 (3/4")	60-100	60-100	60-100	60-100	60-100	50-90	50-90	65-100	
9.5 (3/8")	40-8-	40-80	40-80	40-80	40-80				
4.75 (#4)	30-60	30-60	20-60	30-60	30-60	25-55	25-55	25-55	
2.0 (#10)	20-50	20-50	20-45	20-45	20-45				
0.425 (#40)	10-35	10-35	10-35	10-35	10-35	10-30	10-30	10-30	
0.075 (#200)	3-15	3-15	3-12	3-12	3-12	3-10	3-10	3-10	
MAX. PLASTICITY INDEX (MINUS									
0.425 MATL.)	13	10	6	6	6	6	6	6	
MINIMUM PERCENT CRUSHED (RETAINED ON 4.75 mm [#4] SIEVE									
					15				
MINIMUM PERCENT CRUSHER-RUN MATERIAL									
						90	90	90	

- B. Class 7 and 8 shall be any mechanically crushed natural rock or stone of igneous, sedimentary, and/or metamorphic origin produced from a solid geological formation by quarrying method.
- C. The Contractor shall have the option of using any higher numbered class Aggregate Base Course than that specified, provided that payment will be for the class specified.
- D. Material furnished for Aggregate Base Course, Class 3 through Class 8, shall have a percent of wear by the Los Angeles Test not greater than 45 as determined by AASHTO T 96.

- E. When it is necessary to blend two or more materials, each material shall be proportioned separately through mechanical feeders to ensure uniform production. Premixing or blending to avoid separate feedings will not be permitted. Production of material by blending materials on the roadway to obtain a mixture that will comply with the requirements specified herein will not be permitted.
- F. For the purpose of this specification, shale and slate are not considered to be gravel or stone. The material furnished shall not obtain more than 5percent by weight of shale, slate, and other objectionable, deleterious, or injurious matter.
- G. For Class 1 and 2 materials, the fraction passing the 0.075 mm (#200) sieve shall not be greater than three-fourths of the fraction passing the 0.425 mm (#40) sieve. For Classes 3 through 8, the fraction passing the 0.075 mm (#200) sieve shall not be greater than two-thirds of the fraction passing the 0.425 mm (#40) sieve. For Classes 3 through 8 the fraction passing the 0.425 mm (#40) sieve shall have a liquid limit not greater than 25.
- H. To ensure that gravel is uniformly graded, the difference between the percent passing the various sieves shall be as follows for Classes 3, 4 and 5:

Sieve		Percent
19.0 mm - 9.5 mm	(3/4" - 3/8")	5 min.
9.5 mm - 4.75 mm	(3/8" - #4)	5 min.
4.75 mm - 2.00 mm	(#4 - #10)	5 min.
2.0 mm - 0.425 mm	(#10 - #40)	4 min.

- I. When the material contains aggregate larger than that specified above for the class called for in the Contract, the oversize aggregate shall be removed by screening or by screening and crushing. The removal of large size aggregate by hand methods will not be permitted.

**PART 3 - EXECUTION**

**3.01 CONSTRUCTION REQUIREMENTS**

- A. The base course material shall be placed on a completed and approved subgrade or existing base that has been bladed to substantially conform to the grade and cross section shown on the plans.
- B. The subgrade shall be prepared as specified in Section 31 00 00 - Earthwork, and shall be free from an excess or deficiency of moisture at the time of placing base course material.
  - 1. The subgrade shall also comply, where applicable, with the requirements of other items that may be contained in the Contract that provide for the construction, reconstruction, or shaping of the subgrade or the reconstruction of the existing base course.
- C. Base course material shall not be placed on a frozen subgrade or subbase.

- D. The aggregate shall be placed on the subgrade or other base course material and spread uniformly to such depth and lines that when compacted it will have the thickness, width, and cross section shown on the Drawings.
- E. If the required compacted depth of the base course exceeds 150 mm (6 inches), the base shall be constructed in two or more layers of approximate equal thickness. The maximum compacted thickness of any one layer shall not exceed 150 mm (6 inches) except when vibrating or other approved types of special compacting equipment are used, the compacted depth of a single layer of base course may be increased to 200 mm (8 inches) upon approval of the Engineer.
- F. The material shall be spread the same day that it is hauled. Spreading shall be performed in such a manner that no segregation of course and fine particles nor nests or hard areas caused by dumping the aggregate on the subgrade will exist. Care shall be taken to prevent mixing of subgrade or unspecified material with the base course material during the blading and spreading operation.
- G. Aggregate shall not be dumped or mixed on an existing or newly constructed ACHM course or PCC Pavement that will not be overlaid under the same Contract nor on any open graded base course. Mechanical spreading equipment shall be used, if necessary, to place the base course on the subgrade.
- H. If sufficient working space is not available to allow proper aeration or addition of water to the base, the base material shall be mixed by any satisfactory method before placement.
- I. Each course shall be thoroughly mixed for the full depth of the course and shall be compacted by any satisfactory method that will produce the density thereafter specified.
  - 1. The aggregate shall be maintained substantially at optimum moisture during the mixing, spreading, and compacting operations, water being added or the material aerated as may be necessary.
  - 2. The specified grade and cross section shall be maintained by blading throughout the compaction operation.
  - 3. The material in each course shall be compacted to a density, as determined by AASHTO T 238, Method B, of not less than 98 percent of the maximum laboratory density determined in the laboratory by AASHTO T 180, Method D.
  - 4. The aggregate shall be compacted across the full width of application.
- J. The compacted base course shall be tested for depth and any deficiencies corrected by scarifying, placing additional material, mixing, reshaping, and recompacting to the specified density, as directed.
- K. Where neither prime coat nor surfacing is provided in the same Contract with the base course, the material in the base course shall be uniformly compacted, stable, and free of segregated areas.
- L. The Contractor shall maintain the base course in a satisfactory condition until accepted.

### 3.02 QUALITY CONTROL

- A. To assure that the material used meets the requirements of the specifications, certain tests for quality control and acceptance will be performed as specified herein. The properties for which quality control and acceptance testing will be performed are gradation, density, moisture content, plasticity index, and thickness as specified in each Section.
- B. The maximum laboratory density shall be determined as follows:

<b>% Retained - 4.75 mm (#4) Sieve</b>	<b>Test Method</b>
10 Max.	AASHTO T 99, Method A
11 - 30	AASHTO T 99, Method C
31 Min.	AASHTO T 180, Method D

**Note:** In lieu of AASHTO T224, correction for coarse particles retained on the 3/4" (19.0 mm) sieve shall be determined by replacing with an equal mass of material passing the 3/4" (19.0 mm) sieve and retained on the #4 (4.75 mm) sieve.

- C. The in-place density shall be determined by using AASHTO T 310, Direct Transmission. The moisture content shall be determined by AASHTO T 310. A new maximum laboratory density and optimum moisture will be determined whenever the Engineer deems necessary or upon evidence provided by the Contractor.
- D. Tests for gradation, liquid limit, and plasticity index shall be performed by AASHTO T 11, T 27, T 89, and T 90.
- E. The Contractor shall furnish all personnel, equipment, and facilities necessary to perform the required sampling and testing.
- F. The Contractor shall provide the Engineer with the opportunity to observe all quality control sampling and testing.
- G. All quality control sampling and testing shall be performed by or under the direct supervision of a technician acceptable to the Owner. Test reports shall be signed and copies made available to the Engineer if requested.
- H. If the results of any test shows that the required minimum density has not been obtained, corrective action shall be taken, followed by a re-test at the same location. The original and re-test reports shall be cross referenced. All corrective actions shall be performed by the Contractor at no cost to the Owner.

### 3.03 ACCEPTANCE

- A. Acceptance testing for thickness (when specified on the Drawings), gradation, plasticity index, density, and moisture content will be based on lots. The size of standard lots will be 100 cubic yards. Partial lots, of any size, may be established by the Engineer at any time.
- B. Test methods for acceptance shall be the same as specified for quality control testing.

- C. The item of work being tested shall not be considered complete or accepted until passing test reports are submitted to the Engineer.
- D. The Contractor shall take one test for all properties in each lot or partial lot at a location randomly selected by the Engineer.
- E. In addition to the required acceptance tests, the Engineer may require the Contractor to test any location that, by visual observation, appears to be defective.
- F. The Contractor's acceptance sampling and testing procedures and results will be subject to independent assurance sampling and testing conducted by the Owner. The Contractor shall be required to make changes to the equipment and/or procedures if the such tests are unable to verify the Contractor's test results.
- G. All acceptance testing performed by the Contractor is subject to observation by the Engineer. All test reports shall be signed and submitted to the Engineer the next business day after the tests are performed.
- H. If a lot or a partial lot fails to meet the specifications, the Contractor shall remove and replace that lot or partial lot with acceptable material at no cost to the Owner. Tests will be performed on the replacement material as required for the original material. Acceptance of the replacement material will be the same as for the original material.
- I. Payment for the quantity in the original lot will be withheld or recovered, and released after the removal and replacement has been acceptably performed.

**END OF SECTION**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Prepare asphaltic concrete pavement in accordance with this Section and where indicated on the Drawings.
- B. Contractor will pay cost of testing.
- C. Construct Work of this Section that is adjacent to or connected to city streets in accordance with requirements of the City for city streets.
- D. Secure permits and inspections, post necessary bonds, and pay necessary fees.

**1.02 REFERENCES**

- A. American Association of State Highway and Transportation Officials, 444 North Capitol Street, North West, Suite 225, Washington, DC 20001.
  - 1. AASHTO M14 - Anionic Emulsified Asphalt.
  - 2. AASHTO M81 - Cut-Back Asphalt Concrete (Rapid-Curing Type).
  - 3. AASHTO M82 - Cut-Back Asphalt Concrete (Medium-Curing Type).
  - 4. AASHTO M208 - Cationic Emulsified Asphalt.
- B. American Society of Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.
  - 1. ASTM C207 - Specification for Hydrated Lime for Masonry Purposes.
  - 2. ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb. (2.49-kg) Rammer and 12-in. (304.8-mm) Drop.
  - 3. ASTM D946 - Specification for Penetration-Graded Asphalt Cement for Use in Pavement Construction.
  - 4. ASTM D977 - Specification for Emulsified Asphalt.
- C. Arkansas Department of Transportation, P.O. Box 2262, Little Rock, Arkansas 72203.
  - 1. ARDOT - Standard Specifications, Division 400, Latest Edition.

**PART 2 - PRODUCTS**

**2.01 ASPHALTIC PAVING MATERIALS**

- A. Prime Coat: Medium curing cut-back asphalt; MC-30 or MC070; AASHTO M82; heated and applied within the temperature range 80 degrees F. - 150 degrees F.
- B. Tack Coat:
  - 1. Rapid curing cut-back asphalt:
    - a. AASHTO M81

- b. SS-1
  - c. Application temperature 70 degrees F. - 160 degrees F.
  - d. Rapid curing emulsified asphalt to match aggregate type.
  - e. Cationic: CRS-1; AASHTO M208
  - f. Application temperature 125 degrees F. - 185 degrees F.
- C. Hot-mix surfacing material shall meet the following requirements:
- 1. Asphaltic Cement: Mix Design in accordance with Arkansas State Highway and Transportation Department, latest edition.
  - 2. Testing: Tests of asphalt mixtures and materials will be made by commercial testing laboratory approved by Owner. Submit test reports to Engineer.
  - 3. Owner shall pay for all passing tests. Contractor shall be responsible for the cost of testing all material which fails to meet the requirements.

## **PART 3 - EXECUTION**

### **3.01 SUBGRADE PREPARATION**

- A. Subgrade for asphalt paving improvements shall have organic silty and clayey topsoils and other unsuitable material removed and replaced with approved material.
- B. Fill and tamp traces of utility trenches.
- C. Scarify and re-compact subgrade; proof roll with dump truck.
- D. Replace soft spots as needed.

### **3.02 BASE COURSE FOR ASPHALTIC PAVING**

- A. Place material on prepared subgrade for a total compacted thickness, as required on plans.
  - 1. Spread course the same day the material is hauled. It shall be thoroughly mixed, either by repeated handling with a blade grader or by harrowing sufficiently to secure a uniform mixture of coarse and fine particles.
  - 2. Compact base course by systematically rolling and watering as required to obtain a firm, uniform, smooth surface as specified in Part 300 of ARDOT Standard Specifications for Highway Construction.
  - 3. Set blue tops prior to final finishing of base course.
- B. Minimum density shall be 100 Percent Modified Proctor (ASTM D-1557).
- C. Prime coat shall not be put down until base course is compacted.

### **3.03 PRIME COAT**

- A. After acceptance of completed base course, a prime coat shall be uniformly distributed over the prepared base at the rate of 0.3 gallon per square yard.



- B. Remove surplus asphalt material.
- C. Construct and maintain barricades to keep traffic off the primed surface until it is thoroughly cured and ready for asphalt pavement (3 days minimum).

### **3.04 TACK COAT**

- A. Apply tack coat when an asphalt course is to be laid on an asphalt or concrete surface.
- B. Clean surface to be treated with prime or tack.
  - 1. Sweep with mechanical broom immediately preceding the application of prime or tack.
  - 2. Remove patches of asphalt, dirt or other material which does not form an integral part of the surface.
  - 3. When directed, sprinkle the surface with water and give an additional sweeping.

### **3.05 HOT-MIX SURFACING FOR ASPHALTIC PAVING**

- A. Plant Mixing and Transporting: Mixing, transportation, and temperature limitations for hot-mix surface course materials shall be in accordance with the requirements of Division 400, Asphalt Pavements of the ARDOT Standard Specifications for Highway Construction, latest Edition.
- B. Placing, compacting, and acceptance shall be in accordance with Division 400, Asphalt Pavements of the ARDOT Standard Specifications for Highway Construction, latest Edition.

**END OF SECTION**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Construction of concrete curbs, gutters, sidewalks, and streets.

**1.02 RELATED SECTIONS**

- A. Section 03 01 00 - Site Concrete Work.
- B. Section 03 15 00 - Site Expansion, Construction, and Contraction Joints.
- C. Section 03 20 01 - Site Concrete Reinforcing.
- D. Section 31 00 00 - Earthwork.
- E. Section 31 10 00 - Site Clearing.
- F. Section 31 23 33 - Trenching and Backfilling.

**1.03 REFERENCES**

- A. American Concrete Institute, 22400 W. Seven Mile Road, Detroit, Michigan 48219.
  - 1. ACI 614.
- B. American Society for Testing and Materials, 1961 Race Street, Philadelphia, Pennsylvania 19103.
  - 1. ASTM C94 - Specification for Ready-Mixed Concrete.
  - 2. ASTM C309 - Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
  - 3. ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures, Using 5.5-lb (2.49-kg) Rammer and 12-in (304.8-mm) Drop.
  - 4. ASTM D994 - Specification for Preformed Expansion Joint Filler for Concrete (Bituminous Type).

**1.04 SUBMITTALS**

- A. Submit complete information regarding concrete mix to Engineer for review in accordance with the requirements of ASTM C94, Alternate 2.

## **PART 2 - PRODUCTS**

### **2.01 CURB FORMS**

- A. 2-inch dressed dimension lumber or metal of equal strength, free from defects that would impair appearance or structural quality of completed curb.
  - 1. Metal forms: Subject to approval of Engineer.
- B. Short-Radius Forms: 1-inch dressed lumber or plywood.
- C. Curb Face: No horizontal joints in form material closer than 7 inches from top of curb.
- D. Stakes and Bracing Materials: Provide as required to hold forms securely in place.

### **2.02 SIDEWALK FORMS**

- A. 2-inch dressed lumber, straight and free from defects, or standard metal forms.
- B. Short-Radius Forms: 1-inch dressed lumber or plywood.
- C. Stakes and Bracing Materials: Provide as required to hold forms securely in place.

### **2.03 CRUSHED ROCK BASE**

- A. Clean gravel or crushed rock conforming to requirements for granular fill as specified in Section 31 23 33.

### **2.04 EXPANSION JOINT FILLER**

- A. 1/2-inch thick preformed asphalt-impregnated expansion joint material conforming to ASTM D994.

### **2.05 CONCRETE**

- A. Ready mixed conforming to ASTM C94, Alternate 2.
- B. Compressive Strength: 3,000 psi at 28 days.
- C. Maximum Strength of Aggregate: 1-1/2-inch.
- D. Slump: 2 to 4 inches.

### **2.06 CURING COMPOUND**

- A. Liquid membrane-forming, clear or translucent, suitable for spray application.
- B. Conform to ASTM C309, Type 1.

## **2.07 ACCEPTANCE OF MATERIALS**

- A. Materials shall be subject to inspection for suitability by the Engineer prior to or during incorporation into the work.

## **PART 3 - EXECUTION**

### **3.01 EXCAVATION AND BACKFILL**

- A. Excavate and backfill in accordance with Section 31 23 33.

### **3.02 PREPARATION OF SUBGRADE**

- A. Bring the areas where curbs and sidewalks are to be constructed to required grade on undisturbed ground and compact by sprinkling and rolling or mechanical tamping.
- B. As depressions occur, refill with suitable material and recompact until the surface is at the proper grade.
- C. Compact subgrade on fill to 95 percent of maximum density at optimum moisture content as determined by ASTM D698.

### **3.03 PLACING CRUSHED ROCK BASE**

- A. After subgrade for sidewalks and curbs is compacted and at proper grade, spread at least 4 inches granular fill and compact to at least 95 percent of maximum density as determined by ASTM D698.
- B. Sprinkle with water and compact by rolling or other method.
- C. Top of compact granular fill shall be at proper level to receive concrete.

### **3.04 SETTING FORMS**

- A. Construct forms to the shape, lines, grades, and dimensions called for on the Drawings.
- B. Stake wood or metal forms securely in place, true to line and grade.
- C. Brace forms to prevent change of shape or movement in any direction resulting from the weight of the concrete during placement.
- D. Construct short-radius curved forms to exact radius.
- E. Tops of forms shall not depart from grade line more than 1/8 inch when checked with a 10 foot straightedge.
- F. Alignment of straight sections shall not vary more than 1/8 inch in 10 feet.
- G. Forms shall be cleaned and oiled thoroughly after each use and before concrete is placed.

### 3.05 CURB CONSTRUCTION

- A. Construct curbs to line and grade shown or established by the Engineer, and conform to the details shown on Drawings.
- B. Place, process, finish, and cure concrete in conformance with this Section and the applicable requirements of ACI 614. Wherever requirements differ, the more stringent shall govern.
- C. Cast in uniform lengths of approximately 10 to 20 feet, except at closures where lengths may not be less than 6 feet.
- D. Placement of Preformed Asphalt-Impregnated Expansion Joints:
  - 1. At intervals not exceeding 40 feet.
  - 2. Beginning and end of curved portions of the curb.
  - 3. Connections to existing curbs.
- E. Contraction Joints:
  - 1. Place at intervals not exceeding 10 feet.
  - 2. Open type joint.
  - 3. Provide by inserting thin, oiled steel sheet vertically in fresh concrete to force coarse aggregate away from joint.
  - 4. Steel sheet shall be inserted the full depth of the curb.
  - 5. After initial set has occurred in the concrete and prior to removing the front curb form, steel sheet shall be removed with a sawing motion.
- F. As soon as concrete has set sufficiently to support its own weight, remove the front form and finish all exposed surfaces.
  - 1. Finish top of curb with a steel trowel.
  - 2. Finish edges with a steel edging tool.
  - 3. Rub formed faces with burlap sack or similar device to produce a uniformly textured surface, free from form marks, honeycomb, and other defects.
- G. Curing:
  - 1. Upon completion of finishing, apply approved curing compound to exposed surfaces of curb.
  - 2. Curing shall continue for a minimum of 5 days.
- H. Backfilling Curb: Upon completion of curing period, but not before 7 days has elapsed since pouring the concrete, backfill the curb as specified in Section 31 23 33.
- I. Adjusting:
  - 1. Finished curb shall present a uniform appearance for both grade and alignment
  - 2. Remove curb sections showing abrupt changes in alignment or grade or that are more than 1/4 inch away from location as staked or that are defective for any reason.
  - 3. Construct new curb at Contractor's expense.

### **3.06 SIDEWALK CONSTRUCTION**

- A. Thickness of sidewalks shall a minimum of 4 inches or as shown on the Drawings, with a turned down edge. Concrete shall be placed true to grade to ensure that ponding of water will not occur.
- B. Place, process, finish, and cure concrete in conformance with this Section and the applicable requirements of ACI 614. Where the requirements differ, the more stringent shall govern.
- C. Placement of Preformed Asphalt Expansion Joints:
  - 1. Where sidewalk ends.
  - 2. Around posts, poles, or other objects protruding through the sidewalk.
  - 3. At maximum intervals of 15 feet.
- D. Contraction Joints:
  - 1. Provide transversely to the walks.
  - 2. Saw cut weakened plane joints shall be straight and at right angles to the surface of the walk. Saw cuts shall be constructed midway between expansion joints to a depth of 25 percent of slab thickness. Saw cuts shall be performed within 24 hours of placement.
- E. Reinforcing: 6 by 6 inch, No. 10 mesh shall be installed.
- F. Finish:
  - 1. Broom surface with fine hair broom at right angles to length of walk and tool at edges, joints, and markings.
  - 2. Walks shall be scored at no less than 5-foot intervals and within 24 hours of concrete placement.
- G. Curing:
  - 1. Upon completion of finishing, apply an approved curing compound to exposed surfaces.
  - 2. Protect sidewalks from damage for period of 7 days.

### **3.07 CONCRETE STREET PAVING**

- A. In areas shown to receive concrete paving on the Drawings, concrete shall be placed in accordance with Division 3 (Site Concrete Work).

**END OF SECTION**

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**PART 1 - GENERAL****1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. This Section includes the following:
  - 1. Expansion and contraction joints within portland cement concrete surfaces.
  - 2. Joints between cement concrete and asphalt pavement.

**1.03 SUBMITTALS**

- A. Product Data: For each joint-sealant product indicated.
- B. Samples: For each type and color of joint sealant required. Install joint-sealant samples in 1/2-inch- (13-mm-) wide joints formed between two 6-inch- (150-mm-) long strips of material matching the appearance of exposed surfaces adjacent to joint sealants.
- C. Product Certificates: For each type of joint sealant and accessory, signed by product manufacturer.
- D. Compatibility and Adhesion Test Reports: From sealant manufacturer, indicating the following:
  - 1. Materials forming joint substrates and joint-sealant backings have been tested for compatibility and adhesion with joint sealants.
  - 2. Interpretation of test results and written recommendations for primers and substrate preparation needed for adhesion.

**1.04 QUALITY ASSURANCE**

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer.
- B. Source Limitations: Obtain each type of joint sealant through one source from a single manufacturer.
- C. Preconstruction Compatibility and Adhesion Testing: Submit to joint-sealant manufacturers, for testing indicated below, samples of materials that will contact or affect joint sealants.
  - 1. Use ASTM C 1087 to determine whether priming and other specific joint preparation techniques are required to obtain rapid, optimum adhesion of joint sealants to joint substrates.
  - 2. Submit not fewer than eight pieces of each type of material, including joint substrates, shims, joint-sealant backings, secondary seals, and miscellaneous materials.

3. Schedule sufficient time for testing and analyzing results to prevent delaying the Work.
4. For materials failing tests, obtain joint-sealant manufacturer's written instructions for corrective measures including use of specially formulated primers.
5. Testing will not be required if joint-sealant manufacturers submit joint preparation data that are based on previous testing of current sealant products for adhesion to, and compatibility with, joint substrates and other materials matching those submitted.

#### **1.05 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver materials to Project site in original unopened containers or bundles with labels indicating manufacturer, product name and designation, color, expiration date, pot life, curing time, and mixing instructions for multicomponent materials.
- B. Store and handle materials to comply with manufacturer's written instructions to prevent their deterioration or damage due to moisture, high or low temperatures, contaminants, or other causes.

#### **1.06 PROJECT CONDITIONS**

- A. Do not proceed with installation of joint sealants under the following conditions:
  1. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer.
  2. When ambient and substrate temperature conditions are outside limits permitted by joint-sealant manufacturer or are below 40 deg F (4.4 deg C).
  3. When joint substrates are wet or covered with frost.
  4. Where joint widths are less than those allowed by joint-sealant manufacturer for applications indicated.
  5. Where contaminants capable of interfering with adhesion have not yet been removed from joint substrates.

### **PART 2 - PRODUCTS**

#### **2.01 MANUFACTURERS**

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products listed in other Part 2 articles.

#### **2.02 MATERIALS, GENERAL**

- A. Compatibility: Provide joint sealants, backing materials, and other related materials that are compatible with one another and with joint substrates under conditions of service and application, as demonstrated by joint-sealant manufacturer based on testing and field experience.
- B. Colors of Exposed Joint Sealants: As selected by Engineer from manufacturer's full range between the color black and dark grey.



- C. Finish of Joint: Sand joint filler.

### **2.03 COLD-APPLIED JOINT SEALANTS**

- A. Type NS Silicone Sealant for Concrete: Single-component, low-modulus, neutral-curing, nonsag silicone sealant complying with ASTM D 5893 for Type NS.
  - 1. Available products:
    - a. Crafcro Inc.; RoadSaver Silicone.
    - b. Dow Corning Corporation; 888.

### **2.04 JOINT-SEALANT BACKER MATERIALS**

- A. General: Provide joint-sealant backer materials that are nonstaining; are compatible with joint substrates, sealants, primers, and other joint fillers; and are approved for applications indicated by joint-sealant manufacturer based on field experience and laboratory testing.
- B. Round Backer Rods for Cold- and Hot-Applied Sealants: ASTM D 5249, Type 1, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.
- C. Backer Strips for Cold- and Hot-Applied Sealants: ASTM D 5249; Type 2; of thickness and width required to control sealant depth, prevent bottom-side adhesion of sealant, and fill remainder of joint opening under sealant.
- D. Round Backer Rods for Cold-Applied Sealants: ASTM D 5249, Type 3, of diameter and density required to control sealant depth and prevent bottom-side adhesion of sealant.

### **2.05 PRIMERS**

- A. Primers: Product recommended by joint-sealant manufacturer where required for adhesion of sealant to joint substrates indicated, as determined from preconstruction joint-sealant-substrate tests and field tests.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine joints indicated to receive joint sealants, with Installer present, for compliance with requirements for joint configuration, installation tolerances, and other conditions affecting joint-sealant performance.
  - 1. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Surface Cleaning of Joints: Clean out joints immediately before installing joint sealants to comply with joint-sealant manufacturer's written instructions.
- B. Joint Priming: Prime joint substrates where indicated or where recommended in writing by joint-sealant manufacturer, based on preconstruction joint-sealant-substrate tests or prior experience. Apply primer to comply with joint-sealant manufacturer's written

instructions. Confine primers to areas of joint-sealant bond; do not allow spillage or migration onto adjoining surfaces.

### **3.03 INSTALLATION OF JOINT SEALANTS**

- A. General: Comply with joint-sealant manufacturer's written installation instructions for products and applications indicated, unless more stringent requirements apply.
- B. Sealant Installation Standard: Comply with recommendations in ASTM C 1193 for use of joint sealants as applicable to materials, applications, and conditions indicated.
- C. Install backer materials of type indicated to support sealants during application and at position required to produce cross-sectional shapes and depths of installed sealants relative to joint widths that allow optimum sealant movement capability.
  - 1. Do not leave gaps between ends of backer materials.
  - 2. Do not stretch, twist, puncture, or tear backer materials.
  - 3. Remove absorbent backer materials that have become wet before sealant application and replace them with dry materials.
- D. Install sealants using proven techniques that comply with the following and at the same time backings are installed:
  - 1. Place sealants so they directly contact and fully wet joint substrates.
  - 2. Completely fill recesses provided for each joint configuration.
  - 3. Produce uniform, cross-sectional shapes and depths relative to joint widths that allow optimum sealant movement capability.
- E. Tooling of Nonsag Sealants: Immediately after sealant application and before skinning or curing begins, tool sealants according to requirements specified below to form smooth, uniform beads of configuration indicated; to eliminate air pockets; and to ensure contact and adhesion of sealant with sides of joint.
  - 1. Remove excess sealants from surfaces adjacent to joint.
  - 2. Use tooling agents that are approved in writing by joint-sealant manufacturer and that do not discolor sealants or adjacent surfaces.
- F. Provide joint configuration to comply with joint-sealant manufacturer's written instructions, unless otherwise indicated.
- G. Provide recessed joint configuration for silicone sealants of recess depth and at locations indicated.

### **3.04 CLEANING**

- A. Clean off excess sealants or sealant smears adjacent to joints as the Work progresses by methods and with cleaning materials approved by manufacturers of joint sealants and of products in which joints occur.

### **3.05 PROTECTION**

- A. Protect joint sealants during and after curing period from contact with contaminating substances and from damage resulting from construction operations or other causes so sealants are without deterioration or damage at time of Substantial Completion. If,

despite such protection, damage or deterioration occurs, cut out and remove damaged or deteriorated joint sealants immediately and replace with joint sealant so installations with repaired areas are indistinguishable from the original work.

**END OF SECTION**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Paint parking lot lines, letter, directional arrows, island curbs, and other areas as shown on the Drawings.

**1.02 SUBMITTALS**

- A. Provide the following:
  - 1. Paint System Data Sheet (PSDS) from paint manufacturer for each system used (sample form attached).
  - 2. Technical Data Sheets for each product used in the paint system.
  - 3. Copies of the paint system submittals to the coating applicator.

**1.03 QUALITY ASSURANCE**

- A. Inspection by Engineer, or waiver of inspection of any particular portion of the Work, shall not be construed to relieve Contractor of his responsibility to perform the Work in accordance with these specifications.

**1.04 WARRANTY**

- A. Contractor shall warrant to Owner and guarantee Work under this Section against defective workmanship and materials for a period of 1 year commencing on the date of final acceptance of the Work.

**PART 2 - PRODUCTS**

**2.01 PAINT**

- A. Sherwin-Williams, Promar Traffic Marking.
  - 1. Yellow, Series No. B29Y2.
  - 2. White, Series No. B29W1.
  - 3. Medium blue, Series No. TM2133, Latex.
- B. Colors where shown on Drawings.

## **PART 3 - EXECUTION**

### **3.01 GENERAL**

- A. Paint shall be applied in 2 coats to a clean dry surface using template or a striping machine. Stripes shall be a uniform width of 4 inches wide. Other markings shall be as shown on Drawings.

**END OF SECTION**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Work described in this section includes the installation, materials, equipment and instructions necessary for a complete, operable, automatic irrigation system, both at time of installation and at maturity of the plant materials.
- B. The extent of the automatic irrigation system shall include, but is not limited to:
  - 1. Plumbing connections to potable water source(s).
  - 2. Installation of sleeves and piping.
  - 3. Excavation and backfilling of trenches.
  - 4. Electrical service to and from system controller(s).
  - 5. Supplying and installing all required system equipment and related materials.
  - 6. Programming and adjustment of automatic system controller(s).
  - 7. System testing and related adjustment of all system components.

**1.02 SUBMITTALS**

- A. Make all submittals far enough in advance of scheduled dates of installation to provide required time for reviews, for possible revisions, and resubmittals, and for placing orders and securing deliveries.
- B. Shop drawings: Indicate extent of irrigation system, with piping types and sizes, locations and elevations. Indicate location of meter(s), backflow preventer(s), valves, controller(s), sensor(s), sprinkler heads and sleeves. Include all head types, patterns, and specifications. Show installation details for all above listed components of the irrigation system.
- C. Calculations: Provide a report showing necessary hydraulic calculations to ensure the irrigation system can provide adequate water and the appropriate pressure to the areas identified on the plans. Include dynamic and static pressure determinations, friction factor pipe sizing, friction loss, velocity head, velocity flow, and water hammer.
- D. The irrigation system shall be designed to the extent possible to promote water, soil and energy conservation.
- E. Product Manual: Submit technical specification sheets and or performance data for all proposed system components. Submit the address and telephone number of the subcontractor installing the system and the local representative for the equipment.

**1.03 QUALITY ASSURANCE**

- A. To the greatest extent possible, provide system components produced by a single manufacturer. Provide secondary materials as recommended by the primary system manufacturer.

- B. Provide installation by a licensed sprinkler contractor with a minimum of two (2) consecutive years experience in this area of work and having installed other jobs of similar size and scope. Evidence of contractor's qualifications shall be presented before the award of contract.
- C. Conform to all codes, statutes, laws and regulations governing the protection of public safety.

#### **1.04 PROJECT CONDITIONS**

- A. Determine the locations of all utilities, subsurface drainage and underground construction so that proper precautions may be taken not to disturb or damage during all operations. The Contractor to repair immediately, at his expense, any damage to utilities or other construction resulting from the work covered by this specification.
- B. Coordinate work schedules with others to avoid interference with the work of other trades.
- C. Store materials delivered to site, prior to actual usage, in a secure place not to interfere with other trades or construction and protect from vandalism, damage by weather or other elements.

### **PART 2 - PRODUCTS**

#### **2.01 GENERAL**

- A. Materials shall be new and without flaws or defects, and of quality and performance as specified. Excess materials at completion are property of the Contractor, to be removed from the site.
- B. The sprinkler system design and installation shall be based on using the equipment of:
  - Rain Bird Sales, Inc. - Glendora, CA
  - Hunter Industries, Inc. - San Marcos, CA
  - The Toro Company - Riverside, CA
- C. Substitutions shall be made only with the written approval of the Owner's Representative. Substitutions will not be considered prior to opening of bids.

#### **2.02 PIPE AND FITTINGS**

- A. Mainline Piping Aboveground shall be copper tube, Type K, drawn temper, copper tube fittings; soldered joints.
- B. Mainline Piping Belowground shall be schedule 40 polyvinyl chloride (PVC) pipe.

- C. Lateral Piping Belowground shall be polyvinyl chloride (PVC) pipe; meeting ASTM D1785, Class 200 for solvent weld connections; Sch 40 for threaded connections. The minimum pipe size shall be 3/4 inch in diameter.
- D. Polyvinyl chloride (PVC) fittings, meeting ASTM D2466, Sch 40 for solvent weld connections; ASTM C2467, Sch 40 for threaded connections.
- E. PVC solvent cement shall comply with ASTM D2564, regular-bodied for pipe 2 inches and smaller.
- F. Use Teflon tape or an appropriate sealant for all threaded connections.

### **2.03 CONTROL WIRES AND CONNECTORS**

- A. Use 1/c #14 type direct buried 600 volt wiring for all 24VAC low voltage wiring. Color code the common neutral wiring from all other wires.
- B. Wire Connectors shall be either 3M DBY or King "One Step" Connections or approved equal.

### **2.04 AUTOMATIC CONTROLLERS(S) AND SENSOR(S)**

- A. Automatic controller shall be of a hybrid type that combines electromechanical and microprocessor-based circuitry capable of fully automatic and manual operation. The controller will be housed in a weather-proof, lockable, cabinet suitable for wall mounting or free-standing pedestal mounting.
- B. The rain and freeze sensors shall be wall mounted devices that shall interrupt the watering cycle from starting if either the ambient air temperature falls below 37 degrees Fahrenheit or if approximately .10 inch of rainfall has accumulated due to precipitation at a rate equal to or greater than .25 inch per hour prior to or during an irrigation cycle.

### **2.05 VALVES**

- A. The remote control valves shall be a normally closed, 24VAC solenoid actuated, globe type valve. It shall have a manual flow control stem for accurate regulation and/or shutoff of outlet flow.
- B. The automatic drain valves shall be a pressure activated type, capable of opening when system pressure drops below 2.5 psi, and closing when system pressure reaches 5.5 psi.
- C. Manual gate valves for use as a cut off or isolation valve on lines up to 3 inches in diameter shall be as manufactured by Red-White Valve Corporation, Carson, CA or approved equal.

### **2.06 VALVE BOXES**

- A. Provide valve boxes for all remote control valves and manual gate valves. The manufacturer shall be Ametek, Plymouth Products Division, Shelboyan, WI or approved equal.



- B. When used with a single valve use a 10 inch round box with a twist lock cover.

## **2.07 SPRINKLER HEADS**

- A. Provide 4 inch to 6 inch pop-up spray head for each spray area. The sprinkler shall have a pressure activated wiper seal that will clean debris from the pop-up stem as it retracts.

## **2.08 DRIP IRRIGATION**

- A. Provide pressure compensating inline emitter drip irrigation tubing. Tubing shall flow 0.6-0.9 gph within a pressure operating range of 8.5 – 60psi.
- B. Each drip zone shall be equipped with a zone valve, filter and pressure regulator. Review manufacturers specified installation and provide all additional components to provide functional drip irrigation system.

## **PART 3 - EXECUTION**

### **3.01 GENERAL**

- A. Verify that the work of this section is installed in accordance with all pertinent codes and regulations and manufacturer's current recommendations.
- B. Prior to all work of this section, carefully inspect the installed work of all other trades and verify that all such work is complete to the point where this work may properly commence. Coordinate the installation of the sprinkler system with the landscape installation, avoiding the rootballs of trees.
- C. When sprinkler system work is to be installed close to or will interfere with the work of other trades, the Contractor shall assist in working out space conditions to permit all work to be installed satisfactorily. If a Contractor installs his work before coordination with other trades, he shall make necessary changes in his work to correct the conditions without additional compensation.
- D. Flag the location of all sprinklers in accordance with the approved design and submittals. In the event of a discrepancy, immediately notify the Engineer. Do not proceed until such discrepancies have been resolved.

### **3.02 WATER METER(S)**

- A. Immediately after Contract award, conduct tests at the beginning tap or meter and note as such on the written results provided to the Engineer of the following:
  - 1. Static Water Pressure
  - 2. Dynamic Water Pressure
  - 3. Gallons per minute
- B. The Contractor shall be responsible for coordinating the application the water meter with the city and for providing the permit fees. All materials, operations, installed conditions

and personnel shall be in strict accordance with all applicable codes, ordinances and restrictions.

- C. Install a temporary meter off a fire hydrant if necessary for water access due to site work, phasing schedule and/or landscape installation. Verify location and obtain approval from the Engineer prior to installing temporary meter.

### **3.03 BACKFLOW PREVENTER(S)**

- A. The Contractor shall comply with the requirements and codes of the local governing authority regarding backflow prevention. In addition, the Contractor will provide the necessary materials, insulation/winterization capabilities and acceptable concealment to satisfy the requirements and codes of the local authority and aesthetic needs of the Engineer.
- B. Concealment techniques may range from providing a plant material or fence screen to conceal the assembly with an insulated cover. Basis of design for enclosure is DekoRRA, Class I enclosure or approved equal. Contractor shall coordinate with electrical contractor for outdoor GFCI electrical outlet to enclosure. Heat tape required where backflow preventer is not anticipated to be insulated and/or removed from the enclosure from the beginning of November through the beginning of March.

### **3.04 SLEEVING**

- A. Sleeving shall be polyvinyl chloride (PVC) Sch 40 pipe and fittings, buried at a 24 inch depth.
- B. Upon completion of site filling and compaction operations, and prior to the construction of foundations, roadways, walks or other pavements or obstructions, install sleeves in sufficient sizes to accommodate future irrigation piping and/or control wiring. Ends of sleeves shall extend 12 inches past the edges of all paving and curbs. Clearly mark for future use by the Contractor.

### **3.05 TRENCHING AND BACKFILLING**

- A. Excavate trenches to a depth of minimum pipe coverage plus six inches. Remove all lumber, rubbish and large rocks from the trenches. Provide a uniform bearing for the entire length of each pipe line to prevent uneven settlement. Make the width of the trench a minimum of 1-1/2 times the diameter of the piping.
- B. Upon completion of pipe installation and system testing, backfill the trenches with clean soil. Backfilling shall be done in six inch layers and tamped down after each layer is put back to prevent excessive settling.
- C. If settling occurs within the warranted period, the Contractor shall be responsible for bringing the trenches up to finish grade and repairing plant damage without additional compensation.

### **3.06 PIPE INSTALLATION**

- A. Never lay PVC pipe when there is water in the trench. Never lay PVC pipe when the temperature is 32 degrees Fahrenheit or below.
- B. Install the mainline at a bury depth of 18 inches and the lateral lines at a bury depth of 12 inches below finished grade. Maintain a 4 inch clearance between pipes that cross at an intersection and a 2 inch clearance between pipes that are buried in the same trench.
- C. Remove all foreign matter or dirt from the inside of the pipe before joining. Cap or plug all lines after installation and prior to testing to minimize infiltration of foreign matter or dirt.
- D. Snake pipe from side to side of trench bottom to allow for expansion and contraction. Install main lines and lateral lines in common trenches wherever possible.

### **3.07 PIPE AND FITTING CONNECTIONS**

- A. Use only the solvent supplied by or recommended by the manufacturer to make solvent welded joints. Thoroughly clean pipe and fittings of dirt, dust and moisture before applying solvent.
- B. Make solvent welds with a nonsynthetic bristle brush in the following sequence: Apply an even coat of solvent to the outside of the pipe. Then apply solvent to the inside of the fittings and then re-apply a light coat of solvent to the outside of the pipe, making sure that coated area of the pipe is equal to the depth of the fitting socket. Insert pipe quickly into the fitting and turn the pipe approximately 1/4 turn to distribute the solvent and remove air bubbles. Check all tees and ells for correct position, then hold joint for approximately 15 seconds so that pipe does not push out from the fitting. Allow at least 15 minutes drying time for each weld joint before moving.
- C. Allow all joints to set a minimum of 24 hours prior to pressurization of system.

### **3.08 WIRE INSTALLATION**

- A. Verify that the work of this section is installed in strict accordance with the latest edition of the National Electric Code and local electrical codes.
- B. Install common and control wires in the same trenches as the main and lateral lines. The wires shall be bundled together and taped every 10 feet. Provide expansion loops at every splice, change of direction, at the valves and where the wire enters the conduit for the automatic controller. The expansion loops shall be created by wrapping 3 feet of wire around a 1/2 inch diameter pipe to form a coil.
- C. Connect each solenoid to the controller with a "control wire" which is typically red in color. Connect a "common neutral wire" to all solenoids which is typically white in color.

- D. Solder or join all wire connections by positive mechanical connectors. Splices must be properly insulated and waterproofed. Control wire splices will be allowed only in runs more than 500 feet.

### **3.09 CONTROLLER AND SENSOR INSTALLATION**

- A. Coordinate the exact location where the automatic controller(s) will be located with the Engineer. Connect all master valve and zone valve wiring in accordance with the manufacturer's instructions. Provide separate, secured to the wall, conduits for both power supply and control wiring. Provide electrical grounding for the controller(s) in accordance with the manufacturer's instructions.
- B. The General Contractor shall be responsible for a 117 VAC +/- 10 percent power supply to the location where the automatic controller(s) will be located.
- C. Install the rain and freeze sensors in an open area where the devices are exposed to rain water but not sprinkler water. Mount away from overhanging objects that may interfere with rainfall. Connect wiring in accordance with manufacturer's instructions.

### **3.10 VALVE INSTALLATION**

- A. The remote control valves shall be installed in accordance with manufacturer's instructions. Valves shall be installed in Ametek valve boxes or approved equal. Boxes shall be installed to a height that will not cause them to interfere with maintenance machinery and which is sufficient to prevent soil or mulch from washing into the box. Provide a 3-inch layer of washed gravel in the bottom of the valve box.
- B. The automatic drain valves shall be installed in the low points of the lateral lines. Dig a minimum one (1) cubic foot hole where the drain valve is to be located. Install the drain valve in a PVC tee pointing downward at a 45 degree angle. Surround the drain valve with a minimum one (1) cubic foot of gravel. Place an 18" x 18" piece of weed cloth or burlap on top of the gravel. Finish to grade with top soil.

### **3.11 FLUSHING AND PRESSURE TESTING**

- A. Prior to backfilling and installation of sprinkler heads, open all control valves and use full line pressure to completely flush lines of foreign matter and dirt.
- B. With zone valves closed, test pressure of mainlines by supplying and maintaining full static pressure continuously for one full hour. Observe for evidence of leakage by monitoring flow meter and by visual inspection of the exposed lines. Repair all leaks and retest until no water flow is observed.

### **3.12 SPRINKLER HEAD INSTALLATION**

- A. Sprinkler heads to be spaced so as not to throw water on the buildings, walks, or driveways. Install the sprinkler heads so they are flush with finished grade and not a hazard to pedestrians and/or maintenance machinery. Set sprinkler heads to plumb within 1/16 inch and a minimum of 4 inches and a maximum of 6 inches from walls, walks and curbs.

- B. Provide connection to the PVC lateral lines, for spray heads with barbed fittings and swing pipe. Do not use more than 18 inches of swing pipe for each sprinkler head.

### **3.13 DRIP IRRIGATION**

- A. Install drip irrigation valve, filter and pressure regulator apparatus per manufacturers recommendations.
- B. Drip line with inline emitters shall be installed above weed barrier fabric at finish landscape grade. Spacing of drip tubing shall be determined by manufacturer recommendation, plant spacing and landscape bed constraints.
- C. Provide full mulch depth above dip line once installed and tested.

### **3.14 OPERATION AND BALANCING**

- A. Upon completion of the irrigation system the entire system shall be tested for proper operation. Observe that all zones function properly and in the correct sequence.
- B. The Contractor shall balance and adjust the various components of the system so that the overall operation is most efficient. This work shall include adjustment to all sprinkler heads and individual station adjustments on the controller.
- C. When the Contractor is satisfied that the entire system is operating properly, that it is balanced and adjusted so that all work and clean up is completed, he shall issue a written notice of completion to the Engineer to request inspection for initial acceptance of the irrigation system.

### **3.15 INSPECTION AND ACCEPTANCE**

- A. The Engineer shall inspect the total work for acceptance upon written request from the Contractor. The request shall be received at least seven (7) days before the anticipated date of inspection. During the inspection, a list of items which need completion or correction will be compiled by the Engineer. The Contractor shall have two (2) weeks to complete and/or correct all items listed. Under unusual circumstances a longer time period may be granted to the Contractor. If such work is not completed within the specified time, the Contractor may be considered to have defaulted on the contract and the Owner may use the contract retainage and/or pursue other Contractors to finish the work.
- B. Upon completion and/or correction of all items on the list, the Engineer shall certify in writing to the Owner as to the total acceptance of the work.

### **3.16 RECORD DRAWINGS AND OWNER ORIENTATION**

- A. Upon acceptance of the system, prepare two copies of as-built drawings, product manuals, specifications and operating and maintenance instructions which fully and accurately describe the irrigation system and its components. Bind all information in a hard-cover, labeled binder and furnish to the Owner.

- B. Upon acceptance of the system, the Contractor shall orient the Owner in the operation and adjustments of the controller according to local seasonal requirements. The Contractor shall also familiarize the Owner with sprinkler and valve adjustments. The Owner is, in general, to be totally familiarized with the overall operation, adjustments, maintenance and intent of the irrigation system, including the measures that should be taken to provide winterization of the system. Such instructions should be in written form and presented to the party responsible for the care and maintenance of the irrigation system and its components.
  
- C. Upon acceptance of the system, the Contractor shall furnish a certificate of warranty registration and a written guarantee of work and materials, excluding vandalism, occupancy of the project, owner neglect, and acts of God, for a one-year period from the date of final acceptance of the project by the Owner.

**END OF SECTION**

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**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. This item shall consist of furnishing and applying lime, fertilizer, seed, mulch cover, and water according to these specifications at locations shown on the plans or as directed.
- B. The work under this item shall be accomplished as soon as practicable after the grading in an area has been completed in order to deter erosion.

**PART 2 - MATERIALS**

**2.01 TOPSOIL**

- A. Existing topsoil shall be reused where practical.
- B. Imported Topsoil:
  - 1. Furnished at sole expense of Contractor.
  - 2. Friable loam free from subsoil, roots, grass, excessive amounts of weeds, stone, and foreign matter; acidity range (pH) of 5.5 to 7.5; and containing a minimum of 4 percent and a maximum of 50 percent organic matter.

**2.02 LIME**

- A. Lime shall be agricultural grade ground limestone or equivalent as approved by the Engineer.

**2.03 FERTILIZER**

- A. Fertilizer shall be a commercial grade, uniform in composition, free flowing, and suitable for application with mechanical equipment.
- B. Fertilizer shall be delivered to the site in labeled containers conform to current Arkansas fertilizer laws and bearing the name, trademark, and warranty of the producer.

**2.04 SEED**

- A. Seed shall have a minimum of 98% pure seed and 85% germination by weight, and shall contain no more than 1% weed seeds.

- B. A combined total of 110 noxious weed seeds shall be the maximum amount per 50 pounds of seed with the following exceptions: Johnson grass seed, wild onion seed, wild garlic seed, field bindweed seed, nut grass seed, sickle pod seed, sesbania seed, indigo seed, morning-glory seed, and cocklebur seed will not be allowed in any amount.
- C. Seed shall be furnished in sealed, standard containers. Seed that has become wet, moldy, or otherwise damaged in transit or in storage will not be acceptable.
- D. Legumes shall be inoculated with an approved culture as recommended by the manufacturer, just prior to seeding.
- E. Seeds shall be composed of the varieties and amounts by weight as shown below.

**2.05 SEED MIX**

- A. Seed shall be Common Bermuda Grass, applied at the following rates:

	<b>lbs./acre</b>
<b>March 1 - August 31</b>	
Bermuda Grass (Common) unhulled - husk in tact	10
Bermuda Grass (Common) hulled - husk removed	5
<b>September 1 - February 28/29</b>	
Bermuda Grass (Common) unhulled - husk in tact	20

**2.06 MULCH COVER**

- A. Mulch cover shall consist of straw from threshed rice, oats, wheat, barley, or rye; of wood excelsior; or of hay obtained from various legumes or grasses, such as lespedeza, clover, vetch, soybeans, bermuda, carpet sledge, bahia, fescue, or other legumes or grasses; or a combination thereof. Mulch shall be dry and reasonably free from Johnson grass or other noxious weeds, and shall not be excessively brittle or in an advanced state of decomposition. All material will be inspected and approved prior to use.

**2.07 TACKIFIERS**

- A. Tackifiers used in mulch anchoring shall be of such quality that the mulch cover will be bound together to form a cover mat that will stay intact under normal climatic conditions.

**2.08 WATER**

- A. Water shall be of irrigation quality and free of impurities that would be detrimental to plant growth.



## **PART 3 - EXECUTION**

### **3.01 PROJECT SCHEDULE**

- A. Project Schedule shall show an anticipated time for grading and seeding to take place, so that seasonal consideration can be given attention.

### **3.02 SITE GRADING**

- A. Shape, trim, and finish slopes to conform with lines and grades shown.
- B. Make slopes free of loose exposed roots and stones exceeding 2 inches in diameter.
- C. Ensure that site drains properly and there are no areas where water may pond.
- D. Finished site grading will be reviewed by Engineer.

### **3.03 PREPARATION OF SEEDBED**

- A. Areas to be seeded shall be dressed to the shape and section shown on the plans.
- B. If the plans call for replacing topsoil, this shall be done before any preparations for seeding.
- C. Before beginning the seedbed preparation, soil samples shall be obtained from each major soil area for lime requirement analysis.
- D. Lime at the rate determined by the lime requirement test, shall be uniformly spread on areas to be seeded prior to their being roughened or scarified. The seedbed shall be thoroughly pulverized by means of disk harrows or other approved methods, thoroughly mixing lime and soil to a depth of not less than 4 inches (2 inches for slopes 4:1 or steeper) below finish slope elevations. Regardless of the pulverizing method used, the soil shall be broken with the contour of the slope.
- E. Objectionable foreign matter shall be removed and the soil left in a suitable horticultural condition to receive fertilizer and seed. Water may be applied before, during, and after seedbed preparation in order to maintain the desired moisture content in the soil.
- F. When no lime is required, seedbed preparation shall be accomplished as specified above, regardless of the method used in the distribution of fertilizer, seed, and mulch cover.
- G. Rake the area to a uniform grade so that areas drain in the same manner as at the start of the Project.
- H. Lightly compact before planting grass.
- I. Remove trash and stones exceeding 2 inches in diameter from area to a depth of 2 inches prior to preparation and planting grass.

### **3.04 FERTILIZATION**

- A. Fertilizer shall be applied at the rate of 800 pounds per acre of 10-20-10. Fertilizer shall be uniformly incorporated into the soil alone, or in conjunction with the required lime. If the Contractor so elects, the fertilizer may be drilled into the soil or combined with the seed in the hydro-seeding operation.

### **3.05 TIME OF SEEDING**

- A. Conduct seeding under favorable weather conditions during seasons which are normal for work as determined by accepted practice in locality of Project.

### **3.06 MECHANICAL SEEDING**

- A. Sow grassed areas evenly with a mechanical spreader, or as otherwise instructed by the Engineer. Roll with cultipacker to cover seed. Method of seeding may be varied at discretion of Contractor on his own responsibility to establish a smooth, uniformly grassed area.

### **3.07 HYDRO-SEEDING**

- A. If hydro-seeder is used for seeding, fertilizer and seed may be incorporated into one operation but a maximum of 800 pounds of fertilizer shall be permitted for each 1500 gallons of water. If the Contractor so elects, the fertilizer may be applied during preparation of the seedbed. The area shall be lightly firmed with a cultipacker immediately before hydro-seeding.

### **3.08 WINTER PROTECTIVE SEEDING**

- A. Winter barley or annual rye grass applied at a rate of 30 pounds/acre shall be used between September 1 and March 1.
- B. Areas receiving temporary winter protective seeding shall be re-seeded when weather conditions become favorable.

### **3.09 MULCH COVER**

- A. Mulch cover shall be applied at the rate of 4,000 pounds per acre immediately after seeding and shall be spread uniformly over the entire area by approved power mulching equipment. When approved by the Engineer, the Contractor may use hand methods to apply mulch cover too small or inaccessible areas.

### **3.10 MULCH ANCHORING**

- A. The mulch shall be effectively pressed into the soil using steel cleated track or cleated roller equipment. The anchoring shall be performed so that the grooves formed are perpendicular to the flow of water down backslopes and foreslopes. The equipment and method used shall produce acceptable results.

### **3.11 WATER**

- A. After application of the mulch cover, water shall be applied in sufficient quantity, as Directed by the Engineer, to thoroughly moisten the soil to the depth of pulverization and then as necessary to germinate the seed.
- B. When directed by the Engineer, the Contractor shall apply water in an amount such that, in conjunction with any rainfall, the seeded and mulched area will receive an amount equivalent to a minimum of 1 inch of water each week beginning the week after seeding and continuing for a minimum of 3 weeks.

### **3.12 MAINTENANCE**

- A. Begin maintenance immediately after each portion of grass is planted and continue until a reasonable stand of grass has been obtained. Repair washed out areas by filling with topsoil, fertilizing, and seeding.

### **3.13 GUARANTEE**

- A. If, at the end of a 180-day period, a satisfactory stand of grass has not been produced, the Contractor shall renovate and reseed the grass or unsatisfactory portions thereof immediately, or, if after the usual planting season, during the next planting season. If a satisfactory stand of grass develops by July 1 of the following year, it will be accepted. If it is not accepted, a complete replanting will be required during the planting season.
- B. A satisfactory stand is defined as grass or section of grass that has:
  - 1. No bare spots larger than 1 square foot.
  - 2. Not more than 15 percent of total area with bare spots larger than 6 inches square.

**END OF SECTION**

**TEMPORARY SEEDING AND MULCHING****PART 1 - GENERAL****1.01 SUMMARY**

- A. The work under this item shall be accomplished as soon as practicable after clearing and grubbing in an area has been completed in order to deter erosion of the site.

**PART 2 - PRODUCTS****2.01 MATERIALS**

- A. Nonvegetative Soil Stabilization:
1. Utilize temporary nonvegetative soil stabilization to provide protection against excessive soil erosion over a short-term period (less than one year).
  2. Nonvegetative methods shall be required in areas that experience high water flows and high runoff velocities (disturbed slopes steeper than 2:1).
  3. Methods employed include mulching, chemical soil stabilizers (binders), brush and slash, and netting and matting.
  4. Mulch shall consist of straw, hay, or salt hay applied at an appropriate rate 70-115 pounds per 1000 square feet (1.5 to 2.5 tons/acre). Mulch anchoring shall be implemented promptly where applicable and achieved by one of the following methods:
    - a) Peg and twine.
    - b) Mulch netting.
    - c) Erosion control.
    - d) Jute matting, as indicated on Drawings.
    - e) Mulch anchoring tool.
- B. Temporary Seeding and Revegetation:
1. Soil that is stockpiled for more than 30 days or disturbed areas where there will be no construction for 12 months shall be stabilized to prevent erosion.
  2. If natural vegetation does not occur, area shall be temporarily seeded.
  3. Temporary revegetation shall occur during the spring and summer period.
  4. If required to temporary revegetate an area during the fall or winter period, a mixture of Austrian winter pea, rye, oats, and wheat shall be used.
  5. Provide a combination of milo, millets, and the Arkansas mix for temporary revegetation to control erosion. The use of a broadcast seeder after the last frost through July is acceptable.
  6. Alternative to Temporary Seeding: Mulching using the methods and rates give in this Section.
- C. Seed:
1. Certified, blue tag, clean, delivered in original, unopened packages and bearing an analysis of the contents, guaranteed 95 percent pure and to have a minimum germination rate of 85 percent, within 1 year of test.

## **2.02 SEED MIX**

- A. Mix for areas: Common Bermuda Grass. Follow the recommendations of the local Agricultural Extension Agent for requirements on coverage, fertilization, and seasons.

## **PART 3 - EXECUTION**

### **3.01 PROJECT SCHEDULE**

- A. Project Schedule will dictate when seeding needs to take place.

### **3.02 SITE GRADING**

- A. Shape, trim, and finish slopes to conform with lines, grades, and cross sections shown.
- B. Make slopes free of loose exposed roots and stones exceeding 3-inch diameter.
- C. Ensure that site drains properly and there are no areas where water may pond.
- D. Grading will be reviewed by Engineer.

### **3.03 GRADING OF TOPSOIL**

- A. Shape the topsoil over the area to the desired shape and contour.
- B. Apply commercial fertilizer at the Agricultural Extension Agent's recommended rate, distributing it uniformly with a mechanical spreader.

### **3.04 FINISH GRADING**

- A. Thoroughly mix the topsoil and fertilizer.
- B. Rake the area to a uniform grade so that areas drain in the same manner as at the start of the Project.
- C. Lightly compact before planting grass.
- D. Remove trash and stones exceeding 2 inches in diameter from area to a depth of 2 inches prior to preparation and planting grass.

### **3.05 TIME OF SEEDING**

- A. Conduct seeding under favorable weather conditions during seasons which are normal for work as determined by accepted practice in locality of project.

### **3.06 MECHANICAL SEEDING**

- A. Sow grassed areas evenly with a mechanical spreader at rate of 100 pounds per acre, minimum, or as otherwise recommended by the Agricultural Extension Agent. Roll with

cultipacker to cover seed, and water with fine spray. Method of seeding may be varied at discretion of Contractor on his own responsibility to establish a smooth, uniformly grassed area.

### **3.07 HYDROSEEDING**

- A. Seed may be applied by hydroseeding method. Seeding shall be done within 10 days following soil preparation. Hydroseed areas at rate of 100 pounds seed and 500 pounds ammonium phosphate per acre, minimum, or as otherwise recommended by the Agricultural Extension Agent.
- B. Proceed with seeding operation on moist soil, but only after free surface water has drained away.
- C. Exercise care to prevent drift and displacement of mixture into other areas.

### **3.08 WINTER PROTECTIVE SEEDING**

- A. Winter barley or annual rye grass applied at a rate of 120 pounds/acre shall be used after September 15 or as recommended by the Agricultural Extension Agent.
- B. Areas receiving temporary winter protective seeding shall be re-seeded when weather conditions become favorable.

### **3.09 MULCH COVER**

- A. Mulch cover shall be applied, at the rate of 4,000 pounds per acre, immediately after seeding and shall be spread uniformly over the entire area by approved power mulching equipment. When approved by the Engineer, the Contractor may use hand methods to apply mulch cover too small or inaccessible areas. If the Contractor so elects, an approved mulching machine may be used whereby the application of mulch cover and tackifier may be combined into one operation. If this method is used, no change in application rates will be allowed.
- B. In its final position, the anchored mulch shall be loose enough to allow air to circulate, but compact enough to partially shade the ground and reduce the impact of rainfall on the surface of the soil.

### **3.10 MULCH ANCHORING**

- A. Immediately following or during the application of the mulch cover on seeded areas, the mulch shall be anchored by one of the following methods:
  - 1. Tracking or Roller Method - The mulch shall be effectively pressed into the soil using steel cleated track or cleated roller equipment. The anchoring shall be performed so that the grooves formed are perpendicular to the flow of water down backslopes and foreslopes. The equipment and method used shall produce acceptable results.

2. Asphalt Tackifier - Asphalt shall be applied at the rate of approximately 0.05 gallon per square yard. Application shall be made using a pressure distributor to ensure constant and uniform distribution. The use of asphalt may be reduced or eliminated by the Engineer at selected locations.

### **3.11 MAINTENANCE**

- A. Begin maintenance immediately after each portion of grass is planted and continue until a reasonable stand of grass has been obtained.
- B. The Contractor shall apply water in an amount such that, in conjunction with any rainfall, the seeded and mulched areas will receive an amount equivalent to a minimum of 1-inch of water each week beginning the week after seeding and continuing for a minimum of three (3) weeks.
- C. Actual work and materials required due to the Contractor's negligence in maintaining completed work or failure to water grass as directed shall be accomplished at no cost to the Owner. If payments are withheld and subsequently a stand of grass satisfactory to the Engineer develops, payments will be released.

**END OF SECTION**

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**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Provide slab sod, fertilizer, and water to establish and maintain grass. Owner shall provide access to water at no cost.
- B. Planting Period: As recommended by sod producer for time of year, subject to Engineer's approval.

**1.02 REFERENCES**

- A. Federal Specifications.
  - 1. FS O-F-241 - Fertilizers, Mixed, Commercial.

**1.03 DEFINITIONS**

- A. Weeds: Includes Dandelion, Jimsonweed, Quackgrass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

**1.04 REGULATORY REQUIREMENTS**

- A. Comply with regulatory agencies for herbicide composition.

**1.05 QUALITY CONTROL**

- A. Grass that has been cut more than 48 hours before placing shall not be used.
- B. Sod shall not be loaded in bulk on vehicles and dumped in bulk on planting site.

**1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Deliver to site, store, and protect products at site.
- B. Sod:
  - 1. Cut sod with approved sod cutters to minimum depth of 2-1/2 inches in satisfactory and uniform widths and convenient lengths for handling.
  - 2. Place cut sod flat, grass side up, on boards and haul to site with soil intact.
  - 3. Sod shall not hang over the edges of the boards.
- C. Fertilizer: Deliver in waterproof bags showing weight, chemical analysis, and name of manufacturer.



## **PART 2 - PRODUCTS**

### **2.01 TOPSOIL**

- A. Topsoil: ASTM D 5268, Friable loam free from subsoil, roots, grass, excessive amounts of weeds, stone, and foreign matter; acidity range (pH) of 5.5 to 7.5; and containing a minimum of 4 percent and a maximum of 50 percent organic matter.
  - 1. Existing topsoil shall be reused where practical.
  - 2. Imported Topsoil: Furnished at sole expense of Contractor.
  - 3. Amended Topsoil Source: From topsoil stockpile, amend as necessary to produce topsoil.

### **2.02 SLAB SODDING**

- A. Type: Bermuda or Bermuda 419 as shown on plans.
- B. Certified nursery grade cultivated grass sod; 95 percent weed free.
- C. Sod shall be live, fresh, and uninjured at time of placing.

### **2.03 FERTILIZER**

- A. FS O-F-241, Type and Grade as recommended for grass, with fifty percent of the elements derived from organic sources; of proportion necessary to eliminate any deficiencies of topsoil to the proportions of nitrogen, phosphoric acid, and soluble potash as recommended by County Extension Agent and/or seed manufacturer, subject to Engineer's approval.

### **2.04 WATER**

- A. Clean, fresh, and free of substances or matter which could inhibit vigorous growth of grass.

### **2.05 HERBICIDES**

- A. As recommended by sod producer and as approved by Engineer.

## **PART 3 - EXECUTION**

### **3.01 PREPARATION**

- A. Fine grade to eliminate uneven areas and low spots. Allow for thickness of topsoil and sod.
- B. Spread topsoil to minimum 4-inch depth and rake smooth.

### **3.02 FERTILIZING**

- A. Apply approximately 90 percent over entire area to receive slab sodding.
- B. Apply remaining 10 percent over sod after placing and rolling.

### **3.03 SODDING**

- A. Upon delivery to site transfer sod from boards to soil surface.
- B. Place slabs closely, leaving a minimum amount of space between slabs.
- C. Use appropriate tools to pull together slabs that do not fit closely.
- D. Do not handle sod by hand except when filling small cracks or at locations where it would be impractical to use boards.

### **3.04 ROLLING**

- A. Roll slab sod as soon after planting as practicable with plain rollers or cultipackers.
- B. Tamp sod with approved hand methods where rolling is impractical.

### **3.05 MAINTENANCE**

- A. Water to prevent grass and soil from drying out.
- B. Control growth of weeds.
- C. Apply herbicides in accordance with manufacturer's instructions.
- D. Remedy damage resulting from improper use of herbicides.
- E. Immediately re-sod areas which show bare spots.
- F. Protect sodded areas with warning signs during maintenance period.

**END OF SECTION**

**PART 1 - GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. Section Includes:
  - 1. Trees.
  - 2. Shrubs.
  - 3. Ornamental Grasses and Sedges.
  - 4. Steel header.
  - 5. Topsoil's, Fertilizers, Soil Amendments and Mulches

**1.03 DEFINITIONS**

- A. Backfill Mix: Soil excavated from plant pits and mixed with amendments and placed in plant pit backfill. 12" deep minimum at planting area/shrub beds.
- B. Container-Grown Stock: Healthy, vigorous, well-rooted exterior plants grown in a container with well-established root system reaching sides of container and maintaining a firm ball when removed from container. Container shall be rigid enough to hold ball shape and protect root mass during shipping and be sized according to ANSI Z60.1 for type and size of exterior plant required.
- C. Finish Grade: Elevation of finished surface of planting soil and exterior pavements.
- D. Manufactured Topsoil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.
- E. Planting Soil: Native, imported or manufactured topsoil, or site soil modified to become topsoil; mixed with soil amendments.
- F. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill, before placing planting soil.
- G. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.
- H. Top Soil: Organic material and amendments mixed with site soil that is stockpiled and is spread on the site for a general planting medium.
- I. Weed Barrier/Fabric: Fabric used to mitigate spread of non-desirable weeds and grasses.

## 1.04 SUBMITTALS

- A. Product Data: For each type of product indicated including pictures or live samples of all plant material.
- B. Samples for each of the following:
  - 1. 20 lb (8.8 kg) of stone mulch and rock mulch including each color and texture of stone required, in labeled plastic bags.
  - 2. Steel header materials and accessories, of manufacturer's standard size, to verify color selected.
- C. Tree Staking Mock-Up:
  - 1. Preparation on one tree.
  - 2. Use specified materials for mock-up.
  - 3. Accepted mock-up shall be project standard for all tree staking on the project.
- D. Qualification Data: For qualified landscape Installer.
- E. Product Certificates: For each type of manufactured product, from manufacturer, and complying with the following:
  - 1. Manufacturer's certified analysis for standard products.
  - 2. Analysis of other materials by a recognized laboratory made according to methods established by the Association of Official Analytical Chemists, where applicable.
- F. Material Test Reports: Soil fertility tests for existing surface soil and soil fertility tests for imported topsoil to determine final backfill mixes. Send plant list to soils lab with soil samples. Provide Landscape Architect with results.
- G. Landscape Schedule: Indicating anticipated planting dates for exterior plants.
- H. Maintenance Instructions: Recommended procedures to be established by Owner for maintenance of exterior plants during a calendar year. Submit before expiration of required maintenance periods.
- I. Warranty: See 1.8 below.

## 1.05 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified landscape installer whose work has resulted in successful establishment of exterior plants.
  - 1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when planting is in progress.
- B. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed. Cooperative Extension Service is an acceptable soil testing lab.
- C. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange

capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of topsoil.

1. Report suitability of topsoil for plant growth. State-recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory topsoil.
  2. The Landscape Architect will determine the final planting soil mix, backfill and topsoil based on the soil test report(s) which may differ from the test report recommendations.
- D. Obtain the Soils Report comments on the Plant List and review with the Landscape Architect before finalizing Plant List.
- E. Provide quality, size, genus, species, and variety of exterior plants indicated, complying with applicable requirements in ANSI Z60.1, "American Standard for Nursery Stock."
1. Selection of exterior plants purchased under allowances will be made by Landscape Architect, who will tag plants at their place of growth before they are prepared for transplanting.
- F. Tree and Shrub Measurements: Measure according to ANSI Z60.1 with branches and trunks or canes in their normal position. Do not prune to obtain required sizes. Take caliper measurements 6 inches (150 mm) above the ground for trees up to 4-inch (100-mm) caliper size, and 12 inches (300 mm) above the ground for larger sizes. Measure main body of tree or shrub for height and spread; do not measure branches or roots tip-to-tip.
- G. Observation: Landscape Architect may observe trees and shrubs either at place of growth or at site before planting for compliance with requirements for genus, species, variety, size, and quality. Landscape Architect retains right to observe trees and shrubs further for size and condition of balls and root systems, insects, injuries, and latent defects and to reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.
1. Notify Landscape Architect of sources of planting materials 10 working days in advance of delivery to site.
- H. Pre-installation Conference: Coordinate with Landscape Architect for conference location, time and date.

## **1.06 DELIVERY, STORAGE, AND HANDLING**

- A. Do not prune trees and shrubs before delivery except as approved by Landscape Architect. Protect bark, branches, and root systems from sun scald, drying, sweating, whipping, and other handling and tying damage. Do not bend or bind-tie trees or shrubs in such a manner as to destroy their natural shape. Provide protective covering of exterior plants during delivery. Do not drop exterior plants during delivery and handling.
- B. Handle planting stock by root ball.

- C. Deliver exterior plants after preparations for planting have been completed and install immediately. If planting is delayed more than six hours after delivery, set exterior plants and trees in shade, protect from weather and mechanical damage, and keep roots moist.
  - 1. Heel-in bare-root stock. Soak roots that are in dry condition in water for two hours. Reject dried-out plants.
  - 2. Set balled stock on ground and cover ball with soil, peat moss, sawdust, or other acceptable material.
  - 3. Do not remove container-grown stock from containers before time of planting.
  - 4. Water root systems of exterior plants stored on-site with a fine-mist spray. Water as often as necessary to maintain root systems in a moist condition throughout root mass.

## **1.07 PROJECT CONDITIONS**

- A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.
  - 1. Spring Planting: February to end of March
  - 2. Fall Planting: October and November
- B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed according to manufacturer's written instructions and warranty requirements.
- C. Coordination with Lawns: Plant trees and shrubs after finish grades are established and before planting lawns unless otherwise acceptable to Landscape Architect.
  - 1. When planting trees and shrubs after lawns, protect lawn areas and promptly repair damage caused by planting operations.

## **1.08 WARRANTY**

- A. Special Warranty: Installer's standard form in which Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.
  - 1. Failures include, but are not limited to, the following:
    - a. Death and unsatisfactory growth, except for defects resulting from lack of adequate maintenance, neglect, abuse by Owner.
    - b. Structural failures including plantings falling or blowing over.
    - c. Faulty operation of other activities and trades on site.
    - d. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
  - 2. Warranty Periods from Date of Substantial Completion:
    - a. Trees and Shrubs: One year.
    - b. Ground Cover and Plants: One year.
  - 3. Include the following remedial actions as a minimum:
    - a. Remove dead exterior plants immediately. Replace immediately with specified species, and size unless required to plant in the succeeding planting season.

- b. Replace exterior plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
- c. A limit of one replacement of each exterior plant will be required except for losses or replacements due to failure to comply with requirements.
- d. Provide extended warranty for replaced plant materials; warranty period equal to original warranty period.

## **1.09 MAINTENANCE SERVICE**

- A. Initial Maintenance Service for Trees and Shrubs: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until plantings are acceptably healthy and well established, but for not less than maintenance period below.
  - 1. Maintenance Period: From planting installation to final acceptance of completed work.
- B. Initial Maintenance Service for Ground Cover and Plants: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until plantings are acceptably healthy and well established, but for not less than maintenance period below.
  - 1. Maintenance Period: From planting installation to final acceptance of completed work.

## **PART 2 - PRODUCTS**

### **2.01 TREE AND SHRUB MATERIAL**

- A. General: Furnish nursery-grown trees and shrubs complying with ANSI Z60.1, with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock free of disease, insects, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, circling roots and disfigurement.
- B. Provide trees and shrubs of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of trees and shrubs required. Trees and shrubs of a larger size may be used if acceptable to Landscape Architect, with a proportionate increase in size of roots or balls.
- C. Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which shall begin at root flare according to ANSI Z60.1. Root flare shall be visible before planting.
- D. Label at least one tree and one shrub of each variety and caliper with a securely attached, waterproof tag bearing legible designation of botanical and common name.
- E. If formal arrangements or consecutive order of trees or shrubs is shown, select stock for uniform height and spread, and number label to assure symmetry in planting.

## **2.02 SHADE AND FLOWERING TREES**

- A. Shade Trees: Single-stem trees with straight trunk, well-balanced crown, and intact leader, of height and caliper indicated, complying with ANSI Z60.1 for type of trees required.
  - 1. Provide container-grown trees.
  - 2. Branching Height: One-third to one-half of tree height.
- B. Small Spreading Trees: Branched or pruned naturally according to species and type, with relationship of caliper, height, and branching according to ANSI Z60.1; stem form as follows:
  - 1. Stem Form: Single trunk.
  - 2. Provide balled and burlapped or container-grown trees.

## **2.03 BROADLEAF EVERGREENS**

- A. Form and Size: Normal-quality, well-balanced, broadleaf evergreens, of type, height, spread, and shape required, complying with ANSI Z60.1.
- B. Form and Size: Specimen quality as symmetrically shaped broadleaf evergreens.
  - 1. Shearing Designation: Natural, never sheared.
  - 2. Provide container-grown trees.

## **2.04 ORNAMENTAL GRASSES AND SEDGES**

- A. Provide species as indicated, established and well rooted in pots or similar containers, and complying with ANSI Z60.1 and the Landscape Planting Schedule.

## **2.05 TOPSOIL**

- A. Topsoil: ASTM D 5268, pH range of 5.5 to 7, a minimum of 30 percent organic material content; free of stones 1 inch (25 mm) or larger in any dimension and other extraneous materials harmful to plant growth.
  - 1. Topsoil Source: Reuse surface soil stockpiled on-site. Verify suitability of stockpiled surface soil to produce topsoil based on soil tests (see Article 1.5, Paragraph B above). Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.
    - a. Supplement with imported or manufactured topsoil from off-site sources when quantities are insufficient. Obtain topsoil displaced from naturally well-drained construction or mining sites where topsoil occurs at least 4 inches (100 mm) deep; do not obtain from agricultural land, bogs or marshes.
  - 2. Topsoil Source: Import topsoil or manufactured topsoil from off-site commercial sources.
  - 3. Amended Topsoil Source: From topsoil stockpile, amend as necessary to produce topsoil. Verify suitability of surface soil to produce topsoil with soil test (see Article 1.5, Paragraph B above). Clean surface soil of roots, plants, sod, stones, clay lumps, and other extraneous materials harmful to plant growth.



## 2.06 INORGANIC SOIL AMENDMENTS

- A. Lime: ASTM C 602, agricultural limestone containing a minimum of 80 percent calcium carbonate equivalent and as follows:
  - 1. Class: T, with a minimum of 99 percent passing through No. 8 (2.36-mm) sieve and a minimum of 75 percent passing through No. 60 (0.25-mm) sieve.
  - 2. Class: O, with a minimum of 95 percent passing through No. 8 (2.36-mm) sieve and a minimum of 55 percent passing through No. 60 (0.25-mm) sieve.
  - 3. Provide lime in form of dolomitic limestone.
- B. Sulfur: Granular, biodegradable, containing a minimum of 90 percent sulfur, with a minimum of 99 percent passing through No. 6 (3.35-mm) sieve and a maximum of 10 percent passing through No. 40 (0.425-mm) sieve.
- C. Iron Sulfate: Granulated ferrous sulfate containing a minimum of 20 percent iron and 10 percent sulfur.
- D. Aluminum Sulfate: Commercial grade, unadulterated.
- E. Perlite: Horticultural perlite, soil amendment grade.
- F. Agricultural Gypsum: Finely ground, containing a minimum of 90 percent calcium sulfate.
- G. Sand: Clean, washed, natural or manufactured, free of toxic materials.
- H. Diatomaceous Earth: Calcined, diatomaceous earth, 90 percent silica, with approximately 140 percent water absorption capacity by weight.
- I. Zeolites: Mineral clinoptilolite with at least 60 percent water absorption by weight.

## 2.07 ORGANIC SOIL AMENDMENTS

- A. Compost: Well-composted, stable, and weed-free organic matter, pH range of 5.5 to 8; moisture content 35 to 55 percent by weight; 100 percent passing through 3/4-inch (19-mm) sieve; soluble salt content of 5% decisiemens/m; not exceeding 0.5 percent inert contaminants and free of substances toxic to plantings; and as follows:
  - 1. Organic Matter Content: 50 to 60 percent of dry weight.
  - 2. Feedstock: Agricultural, food, or industrial residuals; biosolids; yard trimmings; or source-separated or compostable mixed solid waste.
- B. Peat: Sphagnum peat moss, partially decomposed, finely divided or granular texture, with a pH range of 3.4 to 4.8.
- C. Peat: Finely divided or granular texture, with a pH range of 6 to 7.5, containing partially decomposed moss peat, native peat, or reed-sedge peat and having a water-absorbing capacity of 1100 to 2000 percent.
- D. Wood Derivatives: Decomposed, nitrogen-treated sawdust, ground bark, or wood waste; of uniform texture, free of chips, stones, sticks, soil, or toxic materials.

- E. Manure: Well-rotted, unleached, stable or cattle manure containing not more than 25 percent by volume of straw, sawdust, or other bedding materials; free of toxic substances, stones, sticks, soil, weed seed, and material harmful to plant growth.

## **2.08 FERTILIZER**

- A. Bonemeal: Commercial, raw or steamed, finely ground; a minimum of 4 percent nitrogen and 20 percent phosphoric acid.
- B. Superphosphate: Commercial, phosphate mixture, soluble; a minimum of 20 percent available phosphoric acid.
- C. Commercial Fertilizer: Commercial-grade complete fertilizer of neutral character, consisting of fast- and slow-release nitrogen, 50 percent derived from natural organic sources of urea formaldehyde, phosphorous, and potassium in the following composition:
  - 1. Composition: 1 lb/1000 sq. ft. (0.45 kg/92.9 sq. m) of actual nitrogen, 4 percent phosphorous, and 2 percent potassium, by weight.
  - 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.
- D. Slow-Release Fertilizer: Granular or pelleted fertilizer consisting of 50 percent water-insoluble nitrogen, phosphorus, and potassium in the following composition:
  - 1. Composition: 20 percent nitrogen, 10 percent phosphorous, and 10 percent potassium, by weight.
  - 2. Composition: Nitrogen, phosphorous, and potassium in amounts recommended in soil reports from a qualified soil-testing agency.

## **2.09 MULCHES**

- A. Organic Mulch: Free from deleterious materials and suitable as a top dressing of trees and shrubs, consisting of one of the following:
  - 1. Type: Ground or shredded hardwood (double hammered).
- B. Stone Mulch: As indicated on plans. Hard, durable stone, washed free of loam, sand, clay, and other foreign substances, of following type, size range, and color:
  - 1. Stone Mulch I: Angular, crushed limestone or granite rock 2 inch to 6 inch.  
Stone Mulch II: Angular, crushed rock 1”-minus
  - 2. Stone Mulch III: Rounded Rainbow River Rock:
    - 10% 6 inch nominal diameter.
    - 20% 4 inch nominal diameter.
    - 50% 2 inch – 3 inch nominal diameter.
    - 20% 3/4 inch < 1 inch nominal diameter.
  - 3. Stone Mulch IV: Rounded Rainbow River Rock
    - 1 inch to 1/2 inch nominal diameter.

## 2.10 TREE STABILIZATION MATERIALS

- A. Stakes and Guys:
1. Upright and Guy Stakes: Rough-sawn, sound, new hardwood, redwood, or pressure-preservative-treated softwood, free of knots, holes, cross grain, and other defects, 2-by-2-inch nominal (38-by-38-mm actual) by length indicated, pointed at one end.
  2. Flexible Ties: Wide rubber or elastic bands or straps of length required to reach stakes or turnbuckles.
  3. Guys and Tie Wires: ASTM A 641/A 641M, Class 1, galvanized-steel wire, 2-strand, twisted, 0.106 inch (2.7 mm) in diameter.
  4. Hose Chafing Guards: Reinforced rubber or plastic hose at least 1/2 inch (13 mm) in diameter, black, cut to lengths required to protect tree trunks from damage.
  5. Guy Cables: 5-strand, 3/16-inch- (4.8-mm-) diameter, galvanized-steel cable, with zinc-coated turnbuckles, a minimum of 3 inches (75 mm) long, with two 3/8-inch (10-mm) galvanized eyebolts.
  6. Flags: Standard surveyor's plastic flagging tape, white, 6 inches (150 mm) long.

## 2.11 LANDSCAPE EDGINGS

- A. Steel Header: Flexible carbon steel 14 gage by 125-mm by minimum 10-20 foot minimum length pieces, black factory paint finish, double staked overlap joints and designed to receive tapered steel stakes at 5 feet on center. Steel Header Stakes: Steel, tapered, 400-mm minimum length, with black paint finish, designed specifically to anchor steel header in place, manufactured by manufacturer or the steel header for which they will be used.
1. Basis-of-Design Manufacturer:
    - a. Ryerson or approved equal.

## 2.12 MISCELLANEOUS PRODUCTS

- A. Antidesiccant: Water-insoluble emulsion, permeable moisture retarder, film forming, for trees and shrubs. Deliver in original, sealed, and fully labeled containers and mix according to manufacturer's written instructions.

## 2.13 PLANTING SOIL MIX

- A. Planting Soil Mix: Based on soil reports, mix topsoil with the following soil amendments and additives in the following quantities:
1. Ratio of Organic Material to Topsoil by Volume: 50/50%.
  2. 20 Pounds of Lime per 1000 Sq. Ft.
  3. 5 Pounds of Potassium Sulfate per 1000 Sq. Ft.
  4. 100 Pounds of Agricultural Gypsum per 1000 Sq. Ft.
  5. 200 Pounds of Sand Plus 20 Percent per 1000 Sq. Ft.
  6. 2 Pounds of Superphosphate per 1000 Sq. Ft.
  7. 15 Pounds of Commercial Fertilizer per 1000 Sq. Ft.
- B. Backfill Mix: Based on soil reports, organic amendments and well composted humus with the following properties:
1. 30% planting soil mix; 70% backfill from planting pit excavation.

- C. Topsoil: Based on the recommendations of the soils reports, topsoil for shrub and lawn areas in the following quantities:
  - 1. 6 Cubic Yards Organic Amendment per 1000 Sq. Ft.
  - 2. 20 Pounds Polymeric Soil Conditioner per 1000 Sq. Ft.
  - 3. 3 Pounds Ammonium Nitrate (34-0-0) per 1000 Sq. Ft.
  - 4. 5 Pounds of Potassium Sulfate (0-0-50) per 1000 Sq. Ft.
  - 5. 4 Pounds of Single Superphosphate per 1000 Sq. Ft.
  - 6. 100 Pounds of Agricultural Gypsum per 1000 Sq. Ft.

## **2.14 WEED BARRIER**

- A. Fabric consisting of polypropylene fibers woven into geotextile project.
  - 1. Permeability 15 gpm/ft<sup>2</sup>
  - 2. 4 oz. fabric weight minimum
- B. Place fabric in all landscape beds where shrubs and perennial grasses are installed. Do not install at locations of ground covers and vines.

## **PART 3 - EXECUTION**

### **3.01 EXAMINATION**

- A. Examine areas to receive exterior plants for compliance with requirements, rough grading and conditions affecting installation and performance.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

### **3.02 PREPARATION**

- A. Protect structures, utilities, sidewalks, pavements, and other facilities, and lawns and existing exterior plants from damage caused by planting operations.
- B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- C. Lay out individual tree and shrub locations and areas for multiple plantings. Stake locations, outline areas, adjust locations when requested, and obtain Landscape Architect's acceptance of layout before planting. Make minor adjustments as required.
- D. Lay out exterior plants at locations directed by Landscape Architect. Stake locations of individual trees and shrubs and outline areas for multiple plantings.
- E. Wrap trees and shrubs with burlap fabric over trunks, branches, stems, twigs, and foliage to protect from wind and other damage during digging, handling, and transportation.

### **3.03 PLANTING BED ESTABLISHMENT**

- A. Loosen rough grade of planting beds to a minimum depth of 8 inches (200 mm). Remove stones larger than 1 inch (25 mm) in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

1. Apply superphosphate fertilizer directly to subgrade before loosening.
  2. Thoroughly blend planting soil mix off-site before spreading or spread topsoil, apply soil amendments and fertilizer on surface, and thoroughly blend planting soil mix.
    - a. Delay mixing fertilizer with planting soil if planting will not proceed within two working days.
    - b. Mix lime with dry soil before mixing fertilizer.
  3. Spread planting soil mix to the finished grade elevations 8 inches (200 mm) but not less than required to meet finish grades after natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.
- B. Finish Grading: Grade planting beds to a smooth, uniform surface plane with loose, uniformly fine texture. Roll and rake, remove ridges, and fill depressions to meet finish grades.
- C. Before planting, restore planting beds if eroded or otherwise disturbed after finish grading.

### **3.04 EXCAVATION FOR TREES AND SHRUBS**

- A. Pits and Trenches: Excavate circular pits with sides sloped inward to a diameter and depth shown on the Drawings. Trim base leaving center area raised slightly to support root ball and assist in drainage. Do not further disturb base. Scarify sides of plant pit smeared or smoothed during excavation.
1. Excavate approximately two times as wide as ball diameter for container-grown stock.
- B. Subsoil removed from excavations may not be used as backfill.
- C. Obstructions: Notify Landscape Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.
- D. Drainage: Notify Landscape Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub pits.
- E. Fill excavations with water and allow to percolate away before positioning trees and shrubs.

### **3.05 TREE AND SHRUB PLANTING**

- A. Before planting, verify that root flare is visible at top of root ball according to ANSI Z60.1.
- B. Stake location of every tree where indicated on Drawings. Contact the Landscape Architect to review locations prior to excavating plant pits or installing irrigation.
- C. Set container-grown stock plumb and in center of pit or trench with top of root ball 2 inch (50 mm) above adjacent finish grades.
1. Carefully remove root ball from container without damaging root ball or plant.
  2. Place planting soil mix around root ball in layers, tamping to settle mix and eliminate voids and air pockets. When pit is approximately one-half backfilled,

water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed. Water again after placing and tamping final layer of planting soil mix.

- D. Weed Fabric: Install in all landscape beds excluding ground cover and vines.

### **3.06 TREE AND SHRUB PRUNING**

- A. Remove only dead, dying, or broken branches. Do not prune for shape.
- B. Prune, thin, and shape trees and shrubs as directed by Landscape Architect.
- C. Prune, thin, and shape trees and shrubs according to standard horticultural practice. Prune trees to retain required height and spread. Unless otherwise indicated by Landscape Architect, do not cut tree leaders; remove only injured or dead branches from flowering trees. Prune shrubs to retain natural character.

### **3.07 SOIL WATERING SAUCER**

- A. Install and configure soil watering saucer as shown on the drawings.

### **3.08 TREE STABILIZATION**

- A. Guying and Staking: Guy and stake trees unless otherwise indicated. Securely attach no fewer than 2 guys to stakes 1/2 tree height long, driven to grade.
  - 1. Support trees with chain lock tree ties at contact points with tree trunk and stakes. Allow enough slack to avoid rigid restraint of tree.
- B. Rootball Anchoring: Basis for design shall be root anchor – underground tree support.

### **3.09 EDGING INSTALLATION**

- A. Steel Header: Install steel edging where indicated according to manufacturer's written instructions. Anchor with steel stakes spaced per manufacturer's requirements

### **3.10 PLANT MAINTENANCE**

- A. Tree and Shrub Maintenance: Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, restoring planting saucers, adjusting and repairing stakes and guy supports, and resetting to proper grades or vertical position, as required to establish healthy, viable plantings. Spray or treat as required to keep trees and shrubs free of insects and disease. Restore or replace damaged tree wrappings.
- B. Ground Cover and Plant Maintenance: Maintain and establish plantings by watering, weeding, fertilizing, mulching, and other operations as required to establish healthy, viable plantings.

### **3.11 CLEANUP AND PROTECTION**

- A. During planting, keep adjacent paving and construction clean and work area in an orderly condition.

- B. Protect exterior plants from damage due to landscape operations, operations by other contractors and trades, and others. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.

### **3.12 DISPOSAL**

- A. Disposal: Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

**END OF SECTION**

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**DISINFECTION OF WATER UTILITY PIPING SYSTEM**

**PART 1. GENERAL**

**1.1 WORK INCLUDED**

- A. Disinfection of potable water distribution system.
- B. Test and report results.

**1.2 RELATED WORK**

- A. Section 33 05 31.15 Polyvinyl Chloride pressure Pipe and Fittings.

**1.3 REFERENCES**

- A. American Water Works Association, 6666 West Quincy Avenue, Denver, Colorado 80235.
  - 1. AWWA C651-14- Standard for Disinfecting Water Mains (or latest edition).
- B. The Ten States Standards for Water, 2018 Edition or latest version, Minnesota's Bookstore Communications Media Division, 660 Olive Street, St. Paul, Minnesota 55155.

**1.4 QUALITY ASSURANCE**

- A. Testing Laboratory: Arkansas Department of Health.

**1.5 REGULATORY REQUIREMENTS**

- A. Conform to Arkansas Department of Health regulations for Work of this Section.

**1.6 PROJECT RECORD DOCUMENTS**

- A. Submit 3 copies of reports in accordance with Section 01 00 10.
- B. Disinfection report; accurately record:
  - 1. Type and quantity of disinfectant used.
  - 2. Date and time of start and completion of disinfectant injection.
  - 3. Test locations.
  - 4. Initial, 24-hour, and 48-hour disinfectant residuals (quantity in treated water) in ppm for each outlet tested.
  - 5. Date and time of start and completion of flushing.
  - 6. Disinfectant residual after flushing in ppm for each outlet tested.



- C. Bacteriological report; accurately record:
  - 1. Date issued, project name, and testing laboratory name, address, and telephone number.
  - 2. Time and date of water sample collection.
  - 3. Name of person collecting samples.
  - 4. Test locations.
  - 5. Initial and 24 hour disinfectant residuals in ppm for each outlet tested.
  - 6. Coliform bacteria test results for each outlet tested.
  - 7. Certification that water conforms, or fails to conform, to bacterial standards of Arkansas Department of Health.
  - 8. Bacteriologist's signature.
  - 9. *Searcy's* PWS ID Number is 590.

## 1.7 STORAGE AND HANDLING

- A. The Contractor is reminded that chlorine is a powerful oxidant and reacts readily with foreign substances.
- B. Chlorine compounds shall be handled and stored in accordance with manufacturer's recommendations.

## PART 2. PRODUCTS

### 2.1 CALCIUM HYPOCHLORITE

- A. Granular form or tablets containing 65 percent available chlorine by weight.
- B. Calcium hypochlorite intended for swimming pool disinfection is **not allowed**.

### 2.2 SODIUM HYPOCHLORITE

- A. Liquid form containing approximately 5 to 15 percent available chlorine.

## PART 3. EXECUTION

### 3.1 PREPARATION

- A. Verify that piping system has been cleaned, inspected, and pressure tested.
- B. Perform scheduling and disinfection activity with startup, testing, adjusting, and balancing, and demonstration procedures, including coordination with related systems.

### 3.2 EXECUTION

- A. Provide and attach equipment required to execute Work of this Section.
- B. Utilize fire hydrants as blow-off points when possible.
- C. Fire hydrants shall not be used for sample points.
- D. Sample points constructed shall be a 3/4 inch or 1 inch copper riser pipe that shall extend adequately above the ground surface.
- E. During application of chlorine solution, prevent solution from flowing back into the distribution system.
- F. Disinfect piping system by one of the three following methods in accordance with ANSI/AWWA C651 (latest version):
  - 1. Tablet Method.
  - 2. Continuous Feed Method.
  - 3. Slug Method.
- G. Tablet Method:
  - 1. This method may only be used if pipes and appurtenances are kept clean and dry during construction.
  - 2. This procedure must not be used on solvent welded plastic or on screw joint steel pipe.
  - 3. If using granules:
    - a. Placement of calcium hypochlorite granules during construction: Calcium hypochlorite granules shall be placed at the upstream end of the first section of pipe, at the upstream end of each branch main, and at 500-ft (150-m) intervals. The quantity of granules at each location shall be as shown in Table 1.

**Weight of calcium hypochlorite granules to be placed at beginning of main and at each 500-ft (150-m) interval**

Pipe Diameter ( <i>d</i> )			Calcium Hypochlorite Granules ( <i>g</i> )
	<i>in</i>	<i>(mm)</i>	
4	(100)	1.7	(48)
6	(150)	3.8	(108)
8	(200)	6.7	(190)
10	(250)	10.5	(298)
12	(300)	15.1	(428)
14 and larger	(350 and larger)	D <sup>2</sup> x 15.1	D <sup>2</sup> x 428

Where D is the inside pipe diameter, in feet  $D = d/12$

4. If using tablets:
  - a. Placement of calcium hypochlorite tablets during construction: Calcium hypochlorite tablets (5-grams) shall be placed in the upstream end of each section of pipe to be disinfected, including branch lines. Also, at least one tablet shall be placed in each hydrant branch and in other appurtenances. The number of 5-g tablets required for each pipe section shall be  $0.0012 d^2L$  rounded to the next higher integer, where  $d$  is the inside pipe diameter, in inches, and  $L$  is the length of the pipe section, in feet. Table 2 shows the number of tablets required for commonly used sizes of pipe. Calcium hypochlorite tablets shall be attached by an adhesive meeting the requirements of NSF/ANSI 61. There shall be adhesive only on the broadside of the tablet attached to the surface of the pipe. Attach tablets inside and at the top of the main. If the tablets are attached before the pipe section is placed in the trench, their positions shall be marked on the pipe exterior to indicate that the pipe has been installed with the tablets at the top.

**Number of 5-g calcium hypochlorite tablets required for dose of 25 mg/L\***

Pipe Diameter		Length of Pipe Section, ft (m)				
		13 (4.0) or less	18 (5.5)	20 (6.1)	30 (9.1)	40 (12.2)
in	(mm)	Number of 5-g Calcium Hypochlorite Tablets				
4	(100)	1	1	1	1	1
6	(150)	1	1	1	2	2
8	(200)	1	2	2	3	4
10	(250)	2	3	3	4	5
12	(300)	3	4	4	6	7
16	(400)	4	6	7	10	13

\*Based on 3.25-g available chlorine per tablet

5. Filling and contact time: When installation has been completed, the main shall be filled with water such that the full pipe velocity is no greater than 1 ft/sec (0.3 m/sec). Fill rate must be carefully controlled to ensure tablets do not come loose from pipe. Precautions shall be taken to ensure that air pockets are eliminated. As an optional procedure, if required by the purchaser, water used to fill the new main shall be supplied through a temporary connection that shall include an appropriate cross-connection control device, consistent with the degree of hazard, for backflow protection of the active distribution system.  
 The chlorinated water shall remain in the pipe for at least 24 hr. If the water temperature is less than 41°F (5°C), the water shall remain in the pipe for at least 48 hr. A detectable free chlorine residual ( $\geq 0.2$  mg/L) shall be found at each sampling point after the 24- or 48-hr period.

6. Refer to ANSI/AWWA C651 (latest version) for additional detail.
- H. Continuous Feed Method:
1. After installation flush water line to remove particulates. Velocity in the water line shall not be less than 3 ft./sec.
  2. Fill water line with water dosed with chlorine. Chlorine concentration shall not be less than 25 mg/l free chlorine.
  3. Retain chlorinated water in water line for 24 hours. Operate valves and hydrants during this time to disinfect.
  4. Chlorine residual in water shall not be less than 10 mg/l at the end of the 24 hour period.
  5. Refer to ANSI/AWWA C651 (latest version) for additional detail.
- I. Slug Method:
1. After flushing water line to remove particulates, slowly fill water line with water dosed with a 100 mg/l concentration of chlorine.
  2. Retain chlorinated water in water line for 3 hours.
  3. Measure the free chlorine residual in the water line as it is filled. If dosage drops below 50 mg/l during this time, stop flow and relocate chlorination equipment to the reduced level of where chlorine was detected. As flow is resumed, apply chlorine to restore the free chlorine in the water to not less than 100 mg/l.
  4. Operate valves and hydrants during this time to disinfect.
  5. Refer to ANSI/AWWA C651 (latest version) for additional detail.
- J. Final Flushing:
1. Flush water from water line until chlorine measurements are no higher than the chlorine residual that are found in the existing distribution system.
  2. Inspect environment where the chlorinated water is to be discharged. Add a neutralizing chemical as the chlorinated water is being discharged if area is in threat of environmental damage from the chlorinated water.
- K. Bacteriological Tests:
1. After final flushing and prior to the new water line being connected to the existing distribution system, two sets of acceptable water samples collected from the new water line and taken on consecutive days shall be submitted by the Contractor to the bacteriological laboratory at the Arkansas Department of Health in Little Rock, Arkansas.
  2. Samples shall be tested for bacteriological quality in accordance with Standard Methods for the Examination of Water and Wastewater per the American Public Health Association, AWWA, and Water Environment Association (latest edition) and shall show the absence of coliform organisms.
  3. If samples collected are positive, the disinfecting procedures and samples shall be repeated until two consecutive day samples are tested safe.

**END OF SECTION**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. This Section covers test for water appurtenances and piping.

**1.02 RELATED SECTIONS**

- A. Section 33 14 01 - Polyvinyl Chloride Pipe and Fittings.

**1.03 SUBMITTALS**

- A. Submit testing procedures in accordance with Specifications.

**PART 2 - MATERIALS**

**2.01 WATER FOR HYDROSTATIC TESTING OF PRESSURE LINES**

- A. Furnish water from the nearest hydrant or other suitable source for testing purposes.

**PART 3 - EXECUTION**

**3.01 HYDROSTATIC AND LEAK TESTING OF PRESSURE LINES**

- A. Upon completion of installation, thoroughly clean new pipe:
  - 1. Flush with water to remove dirt, stones, pieces of wood, or other obstructions that may have entered pipe during construction.
  - 2. Flush pipelines at a minimum rate of 2.5 feet per second for a duration suitable to Engineer.
- B. Upon completion of installation, pressure test water pipelines:
  - 1. Conduct test in presence of Engineer and Owner.
  - 2. Minimum Pressure: 100 psig measured at the lowest elevation of the line.
  - 3. Duration: 2 hours.
  - 4. Repair visible leaks regardless of the amount of leakage.
- C. Provide water into pipeline for testing and flushing, including necessary:
  - 1. Pumps, gages (increment at 10 psi or less), and meters.
  - 2. Plugs and caps.
  - 3. Temporary blowoff piping to discharge water.
  - 4. Reaction blocking to prevent pipe movement during testing.
- D. Water source for the pump suction shall be potable water from the Owner's distribution system; vessel used shall be approved by the Engineer.
- E. Prevent contamination of the Owner's water distribution system.

- F. After pipelines or isolated sections of pipelines have been filled with water, increase the pressure to test pressure by means of a pump.
- G. Test pressure shall be 100 psi or 50 percent above normal operating pressure, whichever is greater for two (2) hours, except at the lowest elevation of the line, where the test pressure shall be 125 psig or 50 percent above normal operating pressure, whichever is greater.
- H. Duration of hydrostatic leakage test shall be 2 hours, or as specified by Engineer.
- I. Open interior valves, including fire hydrants and other appurtenances, open during tests.
- J. After the specified test pressure has been applied, the entire pipeline shall be checked in the presence of the Engineer giving particular attention to parts of the pipeline and the appurtenances that are exposed.
- K. If leaks are apparent, perform corrective work and replace material that is required to remedy the defect and stop the leaks at no extra cost to the Owner.
- L. If no leaks were apparent or after corrective work has been completed, the pipelines shall be subjected to a leakage test at the pressure specified with a meter inserted in the test pump discharge line.
- M. AWWA C600-17 leak test for Ductile Iron.
  - 1. Hydrostatic Testing shall comply with Section 5.2 of AWWA C600-17.
  - 2. Leakage Criteria to follow AWWA C600-17 Section 5.5.1.4 "Test Allowance."

$$L = \frac{S \times D \times (P^{0.5})}{148,000}$$

L = Quantity of makeup water in gallons per hour

S = Length of pipe section being tested, in feet

D = Nominal diameter of the pipe, in inches

P = Average test pressure during the hydrostatic test, in pounds per square inch (gauge)

N. AWWA C605-21 leak test for PVC.

1. Hydrostatic Testing shall comply with Section 10.3 of AWWA C605-21.
2. Leakage Criteria to follow allowable criteria found in AWWA C605-21 Section 10.3.6 "Test Allowance."

$$Q = \frac{L \times D \times (P^{0.5})}{148,000}$$

Q = Quantity of makeup water in gallons per hour

L = Length of pipe section being tested, in feet

D = Nominal diameter of the pipe, in inches

P = Average test pressure during the hydrostatic test, in pounds per square inch (gauge)

This formula is based on a testing allowance of 10.5 GPD/mile/inch of nominal pipe diameter at a test pressure of 150 psi.

- O. If test of pipe laid discloses leakage greater than the allowable leakage as calculated from the above formula, locate the leak or leaks and perform corrective work and replace material that is required in order to remedy the defect and stop the leak.
- P. Corrective work shall be approved by Engineer.

**END OF SECTION**

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**DUCTILE IRON UTILITY WATER PIPE AND FITTINGS****PART 1 - GENERAL****1.01 SUMMARY**

- A. Provide cement-lined ductile iron pipe and gray cast iron or ductile iron fittings specified.
- B. Pipe and fittings shall be manufactured in the United States. Foreign made products shall be unacceptable.
- C. Service shall include potable waterline.

**1.02 RELATED SECTIONS**

- A. Section 31 23 33 - Trenching and Backfilling.
- B. Section 33 14 01 - Polyvinyl Chloride Pipe and Fittings.

**1.03 REFERENCES**

- A. American National Standards Institute, 25 West 43rd Street, 4 floor, New York, NY, 10036.
  - 1. ANSI/AWWA C104/A21.4 - Cement-Mortar Lining for Ductile-Iron Pipe and Fittings.
  - 2. ANSI/AWWA C110/A21.10 - Ductile-Iron and Gray-Iron Fittings, 3 in Through 48 in, for Water and other Liquids.
  - 3. ANSI/AWWA C111/A21.11 - Rubber Gasket Joints for Ductile-Iron and Gray-Iron Fittings Pressure Pipe and Fittings.
  - 4. ANSI/AWWA C115/A21.15 - Flanged Ductile-Iron Pipe with Threaded Flanges.
  - 5. ANSI/AWWA C150/A21.50 - Thickness Design of Ductile-Iron Pipe.
  - 6. NSF/ANSI 61 - Drinking Water System Components - Health Effects.
- B. ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA, 19428-2959.
  - 1. ASTM A307 - Specifications for Carbon Steel Externally Threaded Standard Fasteners.
  - 2. ASTM A563 - Specification for Carbon and Alloy Steel Nuts.
  - 3. ASTM D1248 - Specification for Polyethylene Plastic Molding and Extrusion Materials.
- C. American Water Works Association, 6666 West Quincy Avenue, Denver, Colorado 80235.
  - 1. AWWA C110 - Ductile-Iron and Gray-Iron Fittings, 3 in. Through 48 in., for Water and Other Liquids.
  - 2. AWWA C111 - Rubber-Gasket Joints for Ductile-Iron and Gray-Iron Pressure Pipe and Fittings.
  - 3. AWWA C115 - Standard for Flanged Ductile-Iron Pipe with Threaded Flanges.



4. AWWA C207 - Standard for Steel Pipe Flanges for Waterworks Service, Sizes 4 in. Through 144 in.

## **PART 2 - PRODUCTS**

### **2.01 PIPE**

- A. Buried Pipe: Pressure Class 250 or 300, as shown on Drawings and in compliance with applicable requirements of ANSI A21.50. Flanged pipe shall meet or exceed ANSI/AWWA C115/A21.15.
- B. Pipe shall be jointed with push-on, mechanical, flanged, restrained, or flexible joints meeting applicable requirements of ANSI A21.11 and ANSI 21.15.
- C. Ductile iron pipe shall receive standard thickness cement lining and bituminous seal coat in conformance with ANSI/AWWA C104/A21.4.
- D. Ductile iron pipe shall be coated on the exterior with either coal tar or asphalt base material approximately 1 mil thick.
- E. Flexible Joint (Ball and Socket) Pipe: Class 58.

### **2.02 FITTINGS**

- A. Ductile iron, Pressure Class 250 or 300 Class as shown on Drawings, cement-lined and seal-coated. Where taps are shown on fittings, tapping bosses shall be provided.
  1. Flanged Joint: ANSI/AWWA C115/A21.15, faced and drilled. 125-pound ANSI standard.
  2. Mechanical Joint: ANSI/AWWA C110/A21.10 and ANSI/AWWA C111/A21.11.
  3. Flexible Joint: American Flex-Lox pipe or equal.
- B. Cement Linings:
  1. In accordance with ANSI/AWWA C104/A21.4
  2. Certified to be in compliance with NSF/ANSI 61.
- C. Fittings shall receive an exterior coating of 1 mil thick bituminous material in accordance with ANSI/AWWA C104/A21.4.
- D. Fittings shall have distinctly cast on them the manufacturer's identification, pressure rating, nominal diameter of openings, and the number of degrees or fraction of the circle on bends.

### **2.03 FLANGES**

- A. ANSI/AWWA C115/A21.15, threaded, 250 psi working pressure, ANSI 125-pound drilling.

## **2.04 BOLTS**

- A. For Class 125 FF flanges use carbon steel, ASTM A307, Grade A hex head bolts and ASTM A563, Grade A hex head nuts.
- B. For Class 250 RF flanges use carbon steel, ASTM A307, Grade B hex head bolts and ASTM A563, Grade A heavy hex head nuts.
- C. For mechanical joint use manufacturer's standard.

## **2.05 GASKETS**

- A. Gaskets for mechanical joints shall be rubber, conforming to ANSI/AWWA C111/A21.11.
- B. Gaskets for flanged joints shall be 1/8-inch thick, cloth-inserted rubber conforming to applicable parts of ANSI/AWWA C115/A21.15 and AWWA C207.
- C. Gasket Material: Free from corrosive alkali or acid ingredients and suitable for use in potable waterlines.
- D. Gaskets shall be full-face type for 125-pound FF flanges.

## **2.06 LUBRICANT**

- A. Lubricant for push-on or mechanical joint end piping shall be manufacturer's standard.

## **PART 3 - EXECUTION**

### **3.01 HANDLING PIPE**

- A. Do not damage the cement lining when handling the pipe.

### **3.02 RELATION TO SEWER LINE**

- A. Laying water main, follow Health Department requirements. Every precaution must be taken against the possibility of sewage contamination of the water in the distribution system. Water mains and sanitary sewers shall be constructed as far apart as practicable, and shall be separated by undisturbed and compacted earth. A minimum horizontal distance of ten feet should be maintained between water lines and sewer lines or other sources of contamination. Water lines and sewers shall not be laid in the same trench except on the written approval of the Arkansas Department of Health. Water mains necessarily in close proximity to sewers must be placed so that the bottom of the water line will be at least 18 inches above the top of the sewer line at its highest point. If this distance must unavoidably be reduced, the water line or the sewer line must be encased in watertight pipe with sealed watertight ends extending at least ten feet either side of the crossing. Any joint in the encasement pipe is to be mechanically restrained. The encasement pipe may be vented to the surface if carrying water or sewer under pressure.

Where a water line must unavoidably pass beneath the sewer line, at least 18 inches of separation must be maintained between the outside of the two pipes in addition to the preceding encasement requirement. Exceptions to this must be approved in writing by the Arkansas Department of Health

### **3.03 CUTTING PIPE**

- A. Cut pipe with milling type cutter, rolling pipe cutter, or abrasive saw cutter. Do not flame cut.

### **3.04 DRESSING CUT ENDS**

- A. Dress cut ends of pipe in accordance with the type of joint to be made.
- B. Dress cut ends of mechanical joint pipe to remove sharp edges or projections which may damage the rubber gasket.
- C. Dress cut ends of pipe for flexible couplings and flanged coupling adapters as recommended by the coupling or adapter manufacturer.

### **3.05 MECHANICAL JOINT**

- A. Join pipe with mechanical joints in accordance with the manufacturer's recommendations. Provide special tools and devices, special jacks, chokers, and similar items required for proper installation. Pipe manufacturer shall provide lubricant for the pipe gaskets, no substitutes shall be permitted.

### **3.06 FABRICATION OF FLANGED PIPE AND FITTINGS**

- A. Flanged pipe and fittings shall be fabricated in the shop, not in the field, and delivered to the job site with flanges in place and properly faced.
- B. Threaded flanges shall be individually fitted and machine tightened on the threaded pipe by the manufacturer.
- C. Flanges shall be faced after fabrication in accordance with ANSI/AWWA C115/A21.15.

### **3.07 JOINTING FLANGED PIPE**

- A. Prior to connecting flanged pipe, the faces of the flanges shall be thoroughly cleaned of oil, grease, and foreign material.
- B. The rubber gaskets shall be checked for proper fit and thoroughly cleaned.
- C. Care shall be taken to assure proper seating of the flanged gasket.
- D. Bolts shall be tightened so that the pressure on the gasket is uniform.
- E. Torque-limiting wrenches shall be used to ensure uniform bearing insofar.

- F. If joints leak when the hydrostatic test is applied, the gaskets shall be removed and reset and bolts retightened.

**3.08 THRUST BLOCKS**

- A. Install 2,500 psi concrete thrust blocks at bends, wyes, or other thrust points on pressure piping.
- B. Block to bear against undisturbed soil and shall be of size and with bearing area as shown on Drawings.

**3.09 TESTING**

- A. Lines shall be hydrostatically or pneumatically tested. Test procedures shall be as specified in Section 33 05 05.31.

**3.10 POLYETHYLENE MATERIAL FOR DUCTILE IRON PIPE PROTECTION**

- A. Polyethylene material, either in tubing form or flat sheets or rolls, as specified herein, shall be placed around all Ductile Iron pipe and fitting joints and all valves and fire hydrants with mechanical joint ends, and all saddles, sleeves, couplings, tapping saddles and any other appurtenances with exposed bolts, as directed by the Owner. Ductile iron pipe and appurtenances shall be completely encased in polyethylene tubing material.

Specific requirements for the polyethylene material are:

The material shall conform to ANSI A21.5 (AWWA C-105). The tubing material shall be made from virgin polyethylene extended in the form of a tube and shall have the following characteristics:

Minimum thickness	8 mils
ASTM D1248, Type I, Class C (black)	Grade E-1
Maximum flow index	0.4
Minimum tensile strength	1,200 p.s.i.
Minimum elongation	300%
Dielectric strength (raw material)	Volume resistivity minimum
Dielectric strength (sheet material)	800 V/mil

Tape for field application shall be Polyken #900 or Scotchwrap #50 or equal, at least two (2) inches wide.

**END OF SECTION**

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**POLYVINYL CHLORIDE GRAVITY SEWER PIPE**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. All work to comply with City or Sewer District Standards and Specifications as well as Ten States Standards. In case of a conflict, the more stringent standards shall apply.
- B. Provide polyvinyl chloride (PVC) pipe and fittings for sewer lines.

**1.02 RELATED SECTIONS**

- A. Section 33 30 00 - Sewage Collection System.

**1.03 SUBMITTALS**

- A. Comply with Specifications.

**1.04 REFERENCES**

- A. American Society for Testing and Materials, 1916 Race Street, Philadelphia, Pennsylvania 19103.
  - 1. ASTM D1784 - Specification for Rigid Poly (Vinyl Chloride)(PVC) Compounds and Chlorinated Poly(Vinyl Chloride)(CPVC) Compounds.
  - 2. ASTM F477 - Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

**1.05 STANDARDS, SPECIFICATIONS, AND CODES**

- A. All sewer materials, systems and installations shall comply with City or Sewer District Standards and Specifications as well as the Ten States Standards for Waste Water Systems.

**PART 2 - PRODUCTS**

**2.01 PIPE**

- A. PVC gravity sewer pipe, SDR-26 for 6” and larger and SDR-21 for 4” size in compliance with ASTM D1784 and manufactured from virgin PVC compound with a cell classification of 12454-B with gasket joints and integral bell.
- B. Pipe and fittings shall be manufactured in the United States. Foreign made products shall be unacceptable.

- C. Pipe shall be permanently marked at 5-foot intervals with the following information:
  - 1. Nominal size.
  - 2. Material code designation.
  - 3. Manufacturer's name or trademark and production record code.
  - 4. ASTM or AWWA certification.
  - 5. SDR designation.
  
- D. Warranty:
  - 1. Manufacturer of the pipe shall warrant product for a period of not less than one (1) year.
  - 2. Forward copies of warranty to the Owner.
  - 3. Replace defective materials at no extra cost to the Owner.

## **2.02 JOINTS**

- A. Buried Pipe: Gasketed slip joint.
  
- B. Comply with ASTM D3139.

## **2.03 GASKETS**

- A. As recommended by pipe manufacturer to conform to pipe.
  
- B. Comply with ASTM F477.

## **PART 3 - EXECUTION**

### **3.01 GENERAL**

- A. Any connection to sewer main for the purpose of connecting any sewer line or field line to the sewer main, shall use a minimum of Schedule 40, Polyvinyl chloride (PVC) pipe.
  
- B. Rigid PVC pipe shall be cut, made up, and installed in accordance with the pipe manufacturer's recommendations.
  
- C. Offset shall be as recommended by the manufacturer for the maximum temperature variation between time of installation and final use.

### **3.02 TESTING**

- A. Gravity sewer line shall be tested in accordance with Section 33 30 00.
  
- B. Engineer shall observe tests.

**END OF SECTION**

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**CORRUGATED-WALL, SMOOTH INTERIOR HDPE PIPE**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Provide smooth interior Corrugated High Density Polyethylene (HDPE) Pipe with silt tight and leak resistant joint.

**1.02 RELATED SECTIONS**

- A. Section 31 23 33 - Trenching and Backfilling.
- B. Section 33 42 10 - Storm Utility Drainage Piping.

**1.03 REFERENCES**

- A. American Association of State Highway and Transportation Officials, 444 North Capitol Street, N.W., Suite 225, Washington, DC 20001.
  - 1. AASHTO M252 - Standard Specification for Corrugated Polyethylene Pipe, 4-inch to 10" diameter.
  - 2. AASHTO M294 - Standard Specification for Corrugated Polyethylene Pipe, 12-inch to 48-inch diameter.
  - 3. AASHTO MP7-97 - Standard Specification for Corrugated Polyethylene Pipe, 54-inch to 60-inch diameter.
- B. American Society for Testing and Materials, 1961 Race Street, Philadelphia, Pennsylvania 19103.
  - 1. ASTM D2321 - Recommended Practice for Underground Installation of Thermoplastic Pipe for Sewers and Other Gravity-Flow Applications.
  - 2. ASTM D3350 - Standard Specification for Polyethylene Pipe and Fittings Materials.
  - 3. ASTM F477 - Standard Specifications for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.

**1.04 SUBMITTALS**

- A. Submit in accordance with Specifications.
- B. Submit manufacturer's certificate of compliance.

## **PART 2 - PRODUCTS**

### **2.01 PIPE MATERIAL**

- A. Pipe and fitting material shall be high-density polyethylene meeting ASTM D3350 minimum cell classification 324420C for 4-inch to 10-inch diameters, or 335420C for 12-inch through 60-inch diameters.

### **2.02 PIPE REQUIREMENTS**

- A. Pipe manufactured for this specification shall comply with the requirements for test methods, dimension, and markings found in AASHTO M252, AASHTO M294 and/or AASHTO MP7-97. The prescribed sizes of pipe are nominal inside diameters. Pipe sizes shall be no less than 99% of nominal inside diameter and have a nominal length of 20.0 feet.
- B. For 4-inch to 10-inch diameters, the pipe supplied shall be smooth Interior and Annular Exterior Corrugated High Density Polyethylene (HDPE) Pipe meeting the requirements of AASHTO M252, Type S.
- C. For 12-inch to 42-inch diameters, the pipe supplied shall be smooth Interior and Corrugated High Density Polyethylene (HDPE) Pipe meeting the requirements of AASHTO M294, Type S or D.
- D. For 48-inch to 60-inch diameters, the pipe supplied shall be smooth Interior and Corrugated High Density Polyethylene (HDPE) Pipe meeting the requirements of AASHTO MP7-97, Type S or D.
- E. Manning's "n" value for use in design shall not be less than 0.012.

### **2.03 FITTINGS**

- A. Fittings shall conform to AASHTO M252, M294 or MP7-97. Fabricated fittings shall be welded on the interior and exterior at all junctions.

### **2.04 JOINT PERFORMANCE**

- A. Pipe shall be joined with bell-and-spigot joints meeting ASHTO M252, M294 or MP7-97. Joints shall provide a silt-tight and leak resistant joint.
- B. Pipe joints shall incorporate a gasket meeting the requirements of ASTM F477 to form a silt tight and leak resistant connection. Joints shall exceed the soil tight joint performance criterial of AASHTO Standard Specifications for Highway Bridges, Division II, Section 26.
- C. Gaskets shall be installed by the pipe manufacturer and covered with a removable wrap to ensure the gasket is free from debris.



- D. A joint lubricant supplied by the manufacturer shall be used on the gasket and bell during assembly.

## **2.05 ACCEPTABLE MANUFACTURERS**

- A. Smooth Interior and Corrugated HDPE Pipe shall be as manufactured by:
  - 1. Hancor, Inc.
  - 2. Advanced Drainage Systems, Inc.
  - 3. Engineer approved equal.

## **PART 3 - EXECUTION**

### **3.01 INSTALLATION**

- A. Installation shall be in accordance with ASTM D2321 with the exception that minimum cover in trafficked areas shall be one foot for 4-inch to 48-inch pipe and 24-inches for 54-inch and 60-inch pipe.
- B. Backfill the pipe with material meeting the requirements of ASTM D2321 Class I, II or III subject to approval of the Engineer. Backfill shall be placed in six to 12 inch lifts compacted to a minimum 90% standard proctor or as designated by the Engineer.
- C. Trench width should be wide enough to place and compact backfill around the entire pipe. The trench width shall be outside diameter +24-inches for pipe sizes 12-inch to 30-inch, and outside diameter +36-inches for pipe sizes 36-inches to 60-inches.

**END OF SECTION**

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**WATER UTILITY DISTRIBUTION FIRE HYDRANTS**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. Furnish and install fire hydrants as shown on Drawings and as specified herein.

**1.02 RELATED SECTIONS**

- A. Section 33 14 01 - Polyvinyl Chloride Pipe and Fittings.

**PART 2 - MATERIALS**

**2.01 FIRE HYDRANTS**

- A. Acceptable Manufacturer:
  - 1. Mueller Company, Centurion Fire Hydrant.
  - 2. Or equal.
- B. Fire Hydrants:
  - 1. Meet or exceed AWWA C502-14.
  - 2. Rated Working Pressure: 150 psi.
  - 3. Test Pressure: 300 psi.
  - 4. Main valve opening shall not be less than 5-1/4 inches and designed so that working parts can be removed through the top of the hydrant.
  - 5. The operating nut, main stem, coupling, and main valve assembly shall be capable of withstanding input torque of 200 ft. lbs. in opening or closing direction.
  - 6. Nozzle section of hydrant shall be designed to permit field replacement of damaged threads without special tools, excavation, or disturbing ground line.
  - 7. Pump Nozzle Diameter Size: As shown on Drawings.
  - 8. Extensions when necessary to position fire hydrant per Drawings.

**PART 3 - EXECUTION**

**3.01 INSTALLATION**

- A. Install fire hydrants with nozzle facing as directed by Engineer.
- B. Install as shown on Drawings and per manufacturer's recommendations.

**3.02 TESTING**

- A. Test fire hydrant after installation. Repair or replace defective hydrant at no additional cost to the Owner.

**END OF SECTION**

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**POLYVINYL CHLORIDE PIPE AND FITTINGS****PART 1 - GENERAL****1.01 SUMMARY**

- A. Provide polyvinyl chloride (PVC) pipe and fittings.

**1.02 RELATED SECTIONS**

- A. Section 31 23 33 - Trenching and Backfilling.

**1.03 REFERENCES**

- A. Arkansas Department of Health.
1. ADH: *“Rules and Regulations Pertaining to Public Water Systems, latest Edition.”*
- B. ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA, 19428-2959.
1. ASTM D1784 - Specification for Rigid Poly (Vinyl Chloride) (PVC) Compounds and Chlorinated Poly (Vinyl Chloride) (CPVC) Compounds.
  2. ASTM D2241 - Specifications for Poly (Vinyl Chloride) (PVC) Pressure - Rated Pipe (SDR Series).
  3. ASTM D3139 - Specification for Joints for Plastic Pressure Pipes Using Flexible Elastomeric Seals.
  4. ASTM F477 - Specification for Elastomeric Seals (Gaskets) for Joining Plastic Pipe.
- C. American Water Works Association, 6666 West Quincy Avenue, Denver, Colorado 80235.
1. AWWA C110/A21.10 - American National Standard for Ductile-Iron and Gray-Iron Fittings, 3 In. Through 48 In. For Water and Other Liquids.
  2. AWWA C605 - Underground installation of Polyvinyl Chloride (PVC) Pressure Pipe and Fittings for Water.
  3. AWWA: *“The Ten States Standards for Water, 2007 Edition or latest version.”*

**PART 2 - PRODUCTS****2.01 PIPE**

- A. PVC pressure pipe, Class 200, SDR-21 in compliance with ASTM D1784 and manufactured from virgin PVC compound with a cell classification of 12454-B with gasket joints and integral bell for buried water piping.
- B. Pipe and fittings shall be manufactured in the United States. Foreign made products shall be unacceptable.

- C. Pipe shall be permanently marked at 5-foot intervals with the following information:
  - 1. Nominal size.
  - 2. Material code designation.
  - 3. Manufacturer's name or trademark and production record code.
  - 4. ASTM or AWWA certification.
  - 5. SDR designation.
  
- D. Warranty:
  - 1. Manufacturer of the pipe shall warrant product for a period of not less than one (1) year.
  - 2. Forward copies of warranty to the Owner.
  - 3. Replace defective materials at no extra cost to the Owner.

## **2.02 JOINTS**

- A. Buried Pipe: Gasketed slip joint.
  
- B. Comply with ASTM D3139.

## **2.03 FITTINGS**

- A. Fittings 4 Inches and Larger: Ductile iron, 350 psi pressure class, cement-lined and seal-coated. Where taps are shown on fittings, tapping bosses shall be provided.
  - 1. Flanged Joint: ANSI/AWWA C110/A21.10 and ANSI B16.1, faced and drilled 125-pound ANSI standard.
  - 2. Mechanical Joint: ANSI/AWWA C110/A21.10 and ANSI/AWWA C110/A21.11.
  - 3. Flexible Joint: American Flex-Lox pipe or equal.
  
- B. Cement Linings: In accordance with ANSI A21.4.
  
- C. Fittings shall receive an exterior coating of 1 mil thick bituminous material in accordance with ANSI A21.4.
  
- D. Fittings shall have distinctly cast on them the manufacturer's identification, pressure rating, nominal diameter of openings, and the number of degrees or fraction of the circle on bends.
  
- E. Fittings Smaller Than 4 Inches: PVC.

## **2.04 GASKETS**

- A. As recommended by pipe manufacturer to conform to pipe.
  
- B. Comply with ASTM F477.

## **2.05 MARKING TAPE**

- A. Install on pressure systems.
- B. Terra Tape "Extra Stretch."
- C. Or equal.

## **PART 3 - EXECUTION**

### **3.01 GENERAL**

- A. Any connection to water main for the purpose of connecting any water line to the water main, shall use a minimum of Schedule 40, Polyvinyl chloride (PVC) pipe.
- B. Rigid PVC pipe shall be cut, made up, and installed in accordance with the pipe manufacturer's recommendations.
- C. Offset shall be as recommended by the manufacturer for the maximum temperature variation between time of installation and final use.

### **3.02 TRACE WIRE**

- A. Furnish and install a 12-gage insulated copper trace wire with PVC pressure pipe.
- B. Run wire continuous from valve box to valve box, meter box, air release vault, cleanout, or other access points.
- C. Bring wire up inside boxes and vaults in an accessible method.
- D. Bring wire around or tape wire to each pipe section.
- E. Pipe testing shall include following trace wire.
- F. Wire breaks shall be repaired at no additional expense to the Owner.

### **3.03 MARKING TAPE**

- A. On pressure installations of non-metallic pipe, metallic marking tape, Terra Tape Extra Stretch or equal shall be installed 6 to 12 inches above the top of pipe or service line.
- B. The tape shall be in addition to the trace wire specified.

### **3.04 THRUST BLOCKS**

- A. Install 2,500 psi concrete thrust blocks at bends, wyes, or other thrust points on pressure piping.

- B. Block to bear against undisturbed soil and shall be of size and with bearing area as shown on Drawings.

**END OF SECTION**

**PART 1 - GENERAL**

**1.01 SUMMARY**

- A. All work to comply with Ten States Standards.
- B. Provide sewage collection system.
- C. Perform pressure and leakage testing of piping.

**1.02 SUBMITTALS**

- A. Comply with Specifications.

**1.03 SHOP DRAWINGS**

- A. Submit specific selection of pipe material and joint type for each pipeline in accordance with Specifications.

**1.04 STANDARDS, SPECIFICATIONS, AND CODES**

- A. All sewer materials, systems and installations shall comply with the Ten States Standards for Waste Water Systems.

**PART 2 - PRODUCTS**

**2.01 GENERAL**

- A. Unless otherwise specified or shown on Drawings, pipe used for wastewater conveyance shall be ductile iron.
- B. Like items of material provided shall be the end products of one manufacturer.
- C. To assure uniformity and compatibility of piping components in piping systems, fittings and couplings shall be furnished by the same manufacturer.

**2.02 PIPE ENDS FOR BURIED PIPING**

- A. Use mechanical joint or push-on joint pipe ends for buried pipe.
- B. Within limitations noted above, pipe materials and joints do not necessarily have to be the same for all lines in a specific service, except that materials and joints for any particular building, or between any two buildings, or for any particular buried line, shall be the same.

- C. No change in material or joint selection will be permitted after submittal of shop drawings and their final review by Engineer.

### **PART 3 - EXECUTION**

#### **3.01 PIPE PREPARATION AND HANDLING**

- A. Inspect exposed pipe and fittings prior to installing in trench.
- B. Inspect interior and exterior protective coating, repair damaged areas in the field with material similar to the original.
- C. Clean ends of pipe thoroughly.
- D. Remove foreign matter and dirt from inside of pipe and keep clean during and after laying.
- E. Use proper implements, tools, and facilities for the safe and proper protection of the pipe.
- F. Avoid any physical damage to the pipe.
- G. Do not drop or dump pipe into trenches.

#### **3.02 PREPARATION OF TRENCH - LINE AND GRADE**

- A. Do not deviate more than 1/2 inch from line or 1/2 inch from grade. Measure for grade at the pipe invert, not at the top of the pipe, because of permissible variation in pipe wall thickness.
- B. Grade the bottom of the trench by hand to the line and grade to which the pipe is to be laid, with proper allowance for pipe thickness and for pipe base when specified or indicated.
- C. Remove hard spots that prevent a uniform thickness of bedding.
- D. Before laying each section of the pipe, check the grade with a straightedge and correct irregularities found.
- E. The trench bottom shall form a continuous and uniform bearing and support for the pipe at every point between bell holes, grade may only be disturbed for the removal of lifting tackle.

#### **3.03 BELL (JOINT) HOLES**

- A. At the location of each joint, dig bell (joint) holes of ample dimensions in the bottom of the trench and at the sides where necessary to permit easy visual inspection of the entire joint.



### **3.04 REMOVAL OF WATER**

- A. Remove and dispose of water entering the trench during the process of pipe laying.
- B. Keep trench dry until pipe laying and jointing are completed.
- C. Removal of water shall be in conformance with specifications in Section 31 23 33.

### **3.05 PREVENT TRENCH WATER AND ANIMALS FROM ENTERING PIPE**

- A. When pipe laying is not in progress, including noon hours, open ends of pipe shall be closed; and no trench water, animals, or foreign material shall be permitted to enter the pipe.

### **3.06 PIPE COVER**

- A. Minimum Pipe Cover: 2-1/2 feet unless otherwise indicated.

### **3.07 LAYING BURIED PIPE**

- A. Buried pipe shall be prepared as specified and laid on the prepared base and bedded to ensure uniform bearing.
- B. No pipe shall be laid in water or when, in the opinion of the Engineer, trench conditions are unsuitable.
- C. Joints shall be made as specified for the respective types.
- D. Prevent uplift and floating of the pipe prior to backfilling.

### **3.08 TESTING - GENERAL**

- A. Conduct pressure and leakage tests on newly installed pipelines.
- B. Provide necessary equipment and material and make taps in the pipe, as required.
- C. The Engineer will monitor the tests.

### **3.09 TESTING NEW PIPE WHICH CONNECTS TO EXISTING PIPE**

- A. New pipelines that are to be connected to existing pipelines shall be tested by isolating the new pipe with grooved end pipe caps, spectacle blinds, or blind flanges.

### **3.10 GRAVITY SEWERS - ALIGNMENT**

- A. Prior to final acceptance of the Work, the Engineer will test lines for light.
- B. Provide assistance to Engineer and lanterns testing.

- C. Should any line deviate more than 1/2 inch from a straight line between manholes, the line may be rejected by Engineer.
- D. Remove and replace lines rejected by Engineer at no additional cost to Owner.

### **3.11 GRAVITY SEWERS LEAK TEST**

- A. Sewers shall pass leakage tests as specified.
- B. Leakage test shall be performed in the presence of Owner's representative.
- C. Leakage Test by Low Pressure Air Loss:
  - 1. Plug pipe outlets with suitable test plugs.
  - 2. Brace each plug securely.
  - 3. Pipe air supply to pipeline to be tested so that air supply may be shut off, pressure observed, and air pressure released from the pipe without entering the manhole.
  - 4. A valved branch should be left in the supply line past the shut-off valve terminating in a 1/4-inch female pipe thread for installation of the Owner's test gage.
  - 5. Add air slowly to portion of pipe under test until test gage reads at least 4 psig but less than 5 psig.
  - 6. Shut air supply valve and allow at least 2 minutes for internal pressure to stabilize.
  - 7. Determine time in seconds for pressure to fall .5 psig pressure drop from 3.5 psig to 3.0 psig.
  - 8. Compare observed time with minimum allowable times in the Test Chart for Air Testing at the end of this Section for pass or fail determination.
  - 9. Where ground water level is above the crown of the pipe being tested, test pressure should be increased by 0.4333 psi for each foot the ground water level is above the invert.
  - 10. Do not enter manhole while the line is pressurized.

### **3.12 MANDREL TEST**

- A. Perform deflection (reduction in vertical inside diameter) tests between successive manholes on PVC gravity sewer pipe at least 60 days after installation.
- B. Perform tests utilizing a sharp-edge Mandrel.
- C. Deflection shall not exceed 5 percent.
- D. Mandrel dimensions based on 5 percent deflection shall be as follows:
  - 1. 6-inch diameter pipe: 5.70-inch Mandrel OD.
  - 2. 8-inch diameter pipe: 7.60-inch Mandrel OD.
  - 3. 10-inch diameter pipe: 9.50-inch Mandrel OD.
  - 4. 12-inch diameter pipe: 11.40-inch Mandrel OD.

### 3.13 TEST RECORDS

- A. Records shall be made of each piping system installation during the test. These records shall include:
1. Date of test.
  2. Description and identification of piping tested.
  3. Test fluid.
  4. Test pressure.
  5. Remarks, to include such items as:
    - a. Leaks (type, location).
    - b. Repairs made on leaks.
  6. Certification by Contractor and written approval by Engineer.

### 3.14 INTERIM CLEANING

- A. During fabrication prevent the accumulation of weld rod, weld spatter, pipe cuttings and filings, gravel, cleaning rags, and other debris within piping sections.
- B. Examine pipe to assure removal foreign objects prior to assembly.
- C. Shop cleaning may employ using a conventional commercial cleaning method if it does not corrode, deform, swell, or alter the physical properties of the material being cleaned.

### 3.15 EXTERIOR PROTECTION FOR BURIED OR SUBMERGED PIPING ACCESSORIES

- A. Wrap buried, submerged, or embedded mechanical joint fittings and valves with 8 mil polywrap.

TEST CHART FOR AIR TESTING SEWERS  
LEAKAGE TESTING OF SEWERS BY LOW PRESSURE AIR LOSS--  
TIME PRESSURE DROP METHOD  
Minimum time in (min:sec) for 0.5 psig drop (3.5 psig to 3.0 psig)

Distance Between Manholes	Nominal Pipe Diameter								
	<u>6</u>	<u>8</u>	<u>10</u>	<u>12</u>	<u>15</u>	<u>18</u>	<u>21</u>	<u>24</u>	<u>36</u>
100	2:50	3:47	4:43	5:40	7:05	8:30	9:55	11:24	12:54
150	2:50	3:47	4:43	5:40	7:05	9:37	13:05	17:57	20:15
200	2:50	3:47	4:43	5:42	8:54	12:49	17:27	22:48	25:43
250	2:50	3:47	4:57	7:08	11:08	16:01	21:49	28:30	32:09
300	2:50	3:48	5:56	8:33	13:21	19:14	26:11	34:11	38:35
350	2:50	4:26	6:55	9:58	15:35	22:26	30:32	39:53	45:09
400	2:51	5:04	7:54	11:24	17:48	25:38	34:54	45:35	51:28
450	3:12	5:42	8:54	12:50	20:02	28:51	39:16	51:17	57:54

**END OF SECTION**

**PART 1 - GENERAL**

**1.01 SECTION INCLUDES**

- A. Pipe and Culverts.
- B. Pipe Joint Material.
- C. Inlets and Junction Boxes.
- D. Foundation Drain Pipe.

**1.02 RELATED SECTIONS**

- A. Section 03 47 00 - Site Cast-in-Place Concrete.
- B. Section 31 23 33 - Trenching and Backfilling.

**1.03 REFERENCES**

- A. American Association of State Highway and Transportation Officials, 444 North Capitol Street, N.W., Suite 249, Washington, DC 20001.
  - 1. AASHTO M36 - Corrugated Steel Pipe, Metallic Coated, for Sewers and Drains.
  - 2. AASHTO M176 - Porous Concrete Pipe.
  - 3. AASHTO M218 - Sheet Steel, Zinc-Coated (Galvanized) for Corrugated Steel Pipe.
  - 4. AASHTO M245 - Polymer Precoated Corrugated Steel Pipe.
  - 5. AASHTO M246 - Steel Sheet, Polymer Precoated for Corrugated Steel Pipe.
- B. American Concrete Institute, P. O. Box 9094, Farmington Hills, MI 48333-9094, 38800 Country Club Drive, Farmington Hills, MI 48331 Phone 248/484-3700, Fax 248/848-3701
  - 1. ACI 301 - Specification for Structural Concrete for Buildings.
- C. ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA, 19428-2959 USA Phone: (610) 832-9585 Fax: (610) 832-9555.
  - 1. ASTM C14 - Specification for Concrete Sewer, Storm Drain, and Culvert Pipe.
  - 2. ASTM C76 - Specification for Reinforced Concrete Culvert, Storm Drain, and Sewer Pipe.
  - 3. ASTM C412 - Specification for Concrete Drain Tile.
  - 4. ASTM C443 - Specification for Joints for Circular Concrete Sewer and Culvert Pipe, Using Rubber Gaskets.
  - 5. ASTM C444 - Specification for Preformed Concrete Pipe.
  - 6. ASTM C478 - Specification for Precast Reinforced and Nonreinforced Masonry.

7. ASTM C700 - Specification for Vitrified Clay Pipe, Extra Strength, Standard Strength, and Perforated.
8. ASTM D1785 - PVC Plastic Pipe, Schedules 40, 80, and 120.
9. ASTM D3034 - Specification for Type PSM Poly(Vinyl Chloride) (PVC) Sewer Pipe and Fittings.

## **PART 2 - PRODUCTS**

### **2.01 PIPE JOINT MATERIAL**

- A. Band Couplers:
  1. Manufacturers:
    - a. LUV band, with 2 annular corrugations, by Caldwell Culvert; or equal.
    - b. Smooth Cor band, with 2 annular corrugations by Caldwell Culvert; or equal.
  2. Minimum gage in accordance with AASHTO M36.
  3. Gaskets: Ramneck.
- B. Reinforcing End Collars:
  1. 12-gage.
  2. 6 inches wide.
  3. Annular corrugations same as pipe.

### **2.02 COATINGS FOR PIPE AND CULVERTS**

- A. Polymer:
  1. AASHTO M218, M245, and M246.
  2. Thickness: 10 mils, both sides.
  3. Equal to Dow Chemical Trenchcoat protective film as furnished by Caldwell Culvert Company, North Little Rock, Arkansas.
- B. Design mix to attain minimum 4,000 psi compressive strength at 28 days.

### **2.03 PRE-CAST CONCRETE STRUCTURES**

- A. Conform to local standards.
- B. Conform to ASTM C478.

### **2.04 FOUNDATION DRAIN PIPE**

- A. Open-joint Pipe: Extra-quality or heavy-duty extra quality concrete drain tile conforming to ASTM C412, or extra-strength vitrified clay pipe conforming to ASTM C700.
- B. Perforated Pipe: Type 1 or Type 2 perforated concrete pipe conforming to ASTM C444 and applicable requirements of ASTM C14, Class 2 or Class 3, or extras-strength, perforated, vitrified clay pipe conforming to ASTM D1785, or perforated SDR Standard PVC pipe conforming to ASTM D3034. Do not use bituminized fiber pipe or PE plastic pipe for perforated drain piping.

- C. Porous Wall Pipe: Standard-strength "Poroswall" concrete pipe by the Walker Poroswall Pipe Co., or equal. Straight, free from cracks and defects, meeting AASHTO Designation M176-631, Class II, and having infiltration rate of not less than 1 gallon per minute per inch of internal diameter per foot of pipe. Provide wye, tee, and related fittings required.

**2.05 METAL GRATES, COVERS, AND FRAMES (CAST IRON GRATES, COVERS, AND FRAMES SUBJECT TO VEHICLE TRAFFIC)**

- A. All frame, covers, grates, and other castings shall be heavy-duty cast iron and shall be non-rocking, machine surfaces bearing surfaces.
- B. Furnish frames with anchors for attachment to concrete work.
- C. Furnish covers with pry holes or flush type drop handles and non-slip surfaces.
- D. Cast iron castings to be size and type shown on Drawings.

**PART 3 - EXECUTION**

**3.01 INSTALLATION OF PIPE AND CULVERTS**

- A. Lay sections on properly compacted granular bedding (4-inch minimum) to lines and grades shown on Drawings.
- B. Backfill with approved imported granular materials as specified in Section 31 23 33.
- C. Band Couplers:
  - 1. Install band couplers in accordance with manufacturer's recommendations and AASHTO guidelines.
  - 2. Use Ram Neck gasket material in end corrugation of each pipe end.
- D. Reinforcing End Collars:
  - 1. Install reinforcing end collar where pipe terminates without protective end treatment, such as headwall, inlet box, or grouted rip rap.
- E. Storm drains shall have a minimum cover of 24 inches.
- F. Pipes (storm, sanitary, water) that cross each other with less than 1-1/2-foot clearance must have a concrete encased intersection.

**3.02 INSTALLATION OF INLETS AND JUNCTION BOXES**

- A. Conform to city standard construction details.
- B. Construction methods to conform to Section 03 47 00.

- C. Construct concrete drainage structures with exposed concrete surfaces rubbed to smooth finish and with metal frames for grates and covers securely anchored in place.
- D. Structures may be cast-in-place or pre-cast.
- E. Frame castings to be securely held in place to proper line and grade to make an integral part of the complete structure.
- F. Construct catch basin, weirs, headwalls and similar structures of reinforced concrete unless otherwise indicated; pre-cast concrete units as approved.
  - 1. Provide concrete foundations for manholes and other structures.
  - 2. Concrete structures shall be reinforced.
  - 3. All concrete construction shall receive a smooth finish in accordance with ACI 301 on all surfaces exposed to exterior or interior of structure; rough formed for all unexposed construction.
  - 4. Moist cure concrete for a minimum of seven days after placing.
- G. Where manholes occur in pavement, set tops of frames and covers flush with finish surface. Elsewhere, set tops 3 inches above finish surface, unless otherwise indicated.
- H. Backfill at structures and compact in accordance with Section 31 23 33.

### **3.03 INSTALLATION OF FOUNDATION DRAINS**

- A. Open-joint:
  - 1. Lay with joints opened 1/10-inch and with top half of joints covered with strips of roofing felt.
  - 2. Grade pipe lines to drain.
  - 3. Place drainage fill in accordance with Section 31 00 00.
- B. Laying Pipe:
  - 1. Carefully prepare bedding so pipe after installation will be true to line and grade.
  - 2. Surface grade drainage fill material beneath pipe to provide uniform and continuous support beneath pipe at all points. Densify fill material beneath pipe.
  - 3. After each pipe has been brought to grade, aligned, and placed in final position, deposit and densify sufficient bedding material under pipe haunches and on each side of pipe to hold pipe in proper position during subsequent pipe jointing, bedding, and backfilling operations. Deposit bedding material uniformly and simultaneously on each side of pipe to prevent lateral displacement.

**END OF SECTION**