ELLISON - AUXIER
ARCHITECTS

Addendum No. 2

Date: 05.19.2023

Project: **Missouri Western State University – CTAC Building**

All Prospective Bidders:

All bidders furnishing necessary materials and/or labor, this addendum is hereby part of the Contract Documents as though it were originally therein. Refer to Proposal Form for acknowledgement of Addenda.

Clarification:

1. As noted by Addendum #1, all work shown on sheets M100-M300 and specified in all Division 23 sections, in the project manual, shall be provided by a separate procurement process. TMI/Daiken shall provide all work listed above, inclusive of all equipment, ductwork, temperature controls. The building contractor shall contact TMI/Daiken for the value of all mechanical work to be included in their bid. Contact information for TMI/Daiken; Chad Wunsch, 636-484-6533 The building contractor shall be responsible for providing all electrical and gas piping to equipment locations and final connections for power and gas piping. Disconnects noted at equipment locations shall be provided by the Division 23 contractor. The building contractor shall be responsible for rough-ins and pathways for temperature control wiring.

2. Omit reference to any work for a pre-engineered metal building. Pre-engineered building shell; inclusive of concrete floor, foundations, electrical, mechanical, and plumbing; shall be provided outside of the contract. The building contractor shall include rough grading, final grading and exterior paving in this area as shown in the drawings.

3. All excess soil shall be hauled to an onsite location as directed by the owner.

4. All millwork called out to be plywood for cabinets and counters shall be birch plywood to with clear finish. All edges of cabinet fronts, door and drawer edges shall receive edge banding to match plywood faces.

Bidding Requirements

1. See attached pre-bid attendance sheet for Mandatory Pre-Bid meeting. Attendance was mandatory for general contractors.

Changes to Project Manual:

1. ***Section 00 3100 – AVAILABLE PROJECT INFORMATION***
    1. See added section.

2. ***Section 07 2100 – THERMAL INSULATION***
    1. 2.04.C. Continuous Insulation System
        1. Depth of Girts: as indicated on the drawings.

3. ***Section 07 2500 – WEATHER BARRIERS***
    1. 2.01.7 PRODUCTS:
        1. ADD: Sto Guard System – Gold Coat as an approved product.

4. ***Section 07 4113 – METAL ROOF PANELS***
    1. See revised section.

5. ***Section 07 4213 – METAL WALL PANELS***
    1. 2.02.B Exterior Wall Panels:
        1. ADD: Elevate Delta CFP-16F as an approved product.
    2. Soffit Panels:
        1. ADD: Elevate UC-500 as an approved product.

6. ***Section 07 5400 – THERMOPLASTIC ROOFING MEMBRANE***
    1. 2.01.A Thermoplastic Polyeflin (TPO) Membrane Roofing Materials:
        1. ADD: Elevate UltrPly TPO as an approved product.
    2. Insulation:
        1. ADD: Elevate ISOGARD GL as an approved product.

7. ***Section 09 6900 – ACCESS FLOORING***
    1. See added section.

8. ***Section 10 2310 – GLAZED INTERIOR WALL AND DOOR ASSEMBLIES***
    1. See added section.

9. ***Section 32 9219 – SEEDING***
    1. See added section.

Changes to Drawings:

CIVIL

1. ***No Revisions***

ARCHITECTURAL

1. ***Sheet G200 – CODE ANALYSIS PLAN***
    1. See revised sheet.

2. ***Sheet A221 – LEVEL 2 CLERESTORY PLAN***
    1. See revised sheet.

3. ***Sheet A521 – EXTERIOR ELEVATIONS***
    1. See revised sheet.

STRUCTURAL

1. ***Sheet S110 – PEMB FOUNDATION PLAN***
    1. OMIT this sheet in its entirety.

MECHANICAL

1. ***No Revisions***

ELECTRICAL

1. ***No Revisions***

PLUMBING

1. ***No Revisions***

FIRE PROTECTION

1. ***No Revisions***

END OF ADDENDUM

ATTENDANCE SHEET FOR FB24-001 **MAY 10, 2023 10:00 A.M.**

MANDATORY PRE- BID CONFERENCE

CTAC BUILDING

NAME AND ADDRESS	COMPANY	PHONE	E-MAIL ADDRESS
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Jeff Gray St. Joe, MO. 64507	Al J. Mueller Construction	816-233-6055	jgray@aljmueller.com
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RICK AKERS 519 MAIN ST. ST JOSEPH, MO 64501	LAWHON CONST. CO	816 279 6368	rick.akers@lawhonconst.com
Jeremy Proctor 924 Francis St. Joseph, MO 64501	Ellison-Auxier Architects,	816-233-8003	jeremy@ellison-auxier.com
Matt Dempsey 9606 Eby St. Overland Park. KS. 66212	Riteway Maintenance & Supply	816-474-3950	t.hturner@hotmail.com

ATTENDANCE SHEET FOR FB24-001 **MAY 10, 2023 10:00 A.M.**

MANDATORY PRE- BID CONFERENCE

CTAC BUILDING

NAME AND ADDRESS	COMPANY	PHONE	E-MAIL ADDRESS
JAMIE SISK 19420S STATE ROUTE 7 PLEASANT HILL MO 64080	FINE CUT GRINDING & POLISHING	816-865-1127	JAMIG@FINECUTUSA.COM
Bill Jackson 2115 Frederick Avenue St. Joseph MO	Lehr Construction	816-232-4431	billjackson@lehrconstruction.com
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Lacey Bravard/Jason Falldorf 15955 NW 120th Street Platte city, MO 64079	HB Construction, Inc.	816-380-3600	jfalldorf@hilldirt.com lacey@hilldirt.com
Tim Hermon 302 Mossanic St St Joe, MO 64501	RS Electric	816-233-7751	timh@rselectriccorp.com

P72065

ATTENDANCE SHEET FOR FB24-001 **MAY 10, 2023 10:00 A.M.**

MANDATORY PRE- BID CONFERENCE

CTAC BUILDING

NAME AND ADDRESS	COMPANY	PHONE	E-MAIL ADDRESS
Casey Lance	ELCC	816 233- 2596	Casey @ elcrawford. com
Danny Young 1701 South 6th street St. Joseph, MO 64503	IHP Industrial Inc.	816-236-2576	danny@ihpindustrial.com
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Kelly owens	Seaman & Schuske Metal Works	816-261-7206	Kowens@seamanschuske.COM
Wade Harms	E.L. Crawford	816 233-2596	Wade@elcrawford.com
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Brandon Miller	WALDINGER	816-262-6025	Brandon.Miller@ waldinger.com
Austin Kafer	Waldinger	816-387-3317	austin.Kafer@Waldinger.com

P93605

ATTENDANCE SHEET FOR FB24-001 **MAY 10, 2023 10:00 A.M.**

MANDATORY PRE- BID CONFERENCE

CTAC BUILDING

NAME AND ADDRESS	COMPANY	PHONE	E-MAIL ADDRESS
Joseph Buelt 5825 S 14th St Lincoln, NE 68525	Sampson Construction	402-306-2454	joe.buelt@sampson-construction.com
Roy Kelsey 802 S 5th St. St Joseph MO 64501	Brooner Construction + Crane	816-232-5418	brooner@brooner construction.com
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~~Edwards~~ Jeff Hantaten 2011 agency Rd. St Joe MO 64507	Edwards	816-752-0920	JEFFECKARDFLOORING.com
Bryan Adkins	MWSU		
Corey Stewart	MWSU		

Brian Harrah MWSU

ATTENDANCE SHEET FOR FB24-001 BID OPENING		MAY 31, 2023 2:00 P.M.	
CTAC BUILDING			
NAME AND ADDRESS	COMPANY	PHONE	E-MAIL ADDRESS
Kelly Brown	MWSU	4465	purchase@...,
Kim Shenwood	MWSU	4527	shenwood@missouriwestern.edu
[signature]	MWSU	4226	V.P.

p5 of 5

SECTION 00 3100
AVAILABLE PROJECT INFORMATION

PART 1 GENERAL

1.01 EXISTING CONDITIONS

A. Certain information relating to existing surface and subsurface conditions and structures is available to bidders but will not be part of Contract Documents, as follows:

B. Geotechnical Report: Entitled CFS Report 22-5824, dated December 15,2022.

PART 2 PRODUCTS (NOT USED)

PART 3 EXECUTION (NOT USED)

END OF SECTION

GEOTECHNICAL EXPLORATION AND SUBGRADE RECOMMENDATIONS

MWSU CTAC BUILDING
St. Joseph, Missouri
CFS Project No. 22-5824

Prepared For
Ellison-Auxier Architects
924 Francis Street
St. Joseph, Missouri 64501

December 15, 2022

Prepared by:
Cook, Flatt & Strobel Engineers, P.A.
1100 W. Cambridge Circle Drive, Suite 700
Kansas City, Kansas 66103
913.627.9040

One Vision. One Team. One Call.

SYNOPSIS

A subsurface exploration and an evaluation were performed at the planned Missouri Western State University CTAC Building project site located in St. Joseph, Missouri to provide geotechnical engineering related recommendations for design and construction of the proposed project.

Exploratory soil borings have been drilled and a laboratory testing program was conducted on selected soil samples. The data has been analyzed based upon the project information provided by Ellison-Auxier Architects.

The results of the exploration and analysis indicate that conventional spread and continuous wall footings appear to be a suitable foundation system for support of the proposed structure. Please note, a soft zone of material was encountered in Boring B5 during this exploration. Footings in this area may needs to be over excavated to reach a suitable material.

Detailed analysis of subsurface conditions, any alternate foundation types, and pertinent design recommendations are included, herein. Groundwater conditions are not expected to cause any major difficulties. These conditions will be further discussed in the report. Please note, groundwater levels should be expected to fluctuate based on seasonal changes and precipitation events.

TABLE OF CONTENTS

1 Introduction 1
1.1 Purpose 1
1.2 Scope of Services 1
1.3 General 1
2 Project Description 2
2.1 Site Location & Surface Conditions 2
2.2 Site Geology 2
3 Subsurface Exploration 2
3.1 Scope of Work 3
3.2 Drilling and Sampling Procedures 3
3.3 Field Tests and Measurements 3
3.4 Subsurface Conditions 4
3.5 Groundwater Conditions 4
4 Laboratory Testing 4
5 Geotechnical Concerns 5
6 Earthwork & Site Development 5
6.1 Site Preparation 5
6.2 Fill Materials 6
6.3 Engineered Fill Placement 6
6.4 Excavations & Trenches 7
6.5 Drainage and Dewatering 8
6.6 Landscaping 8
***7* Geotechnical Engineering Recommendations 9**
7.1 Foundations Recommendations 9
7.2 Seismic Analysis 10
7.3 Slab on Grade Recommendations 10
7.4 Lateral Earth Pressures 11
7.5 Pavement Recommendations 12
8 General Comments 15

Appendix A: Figures

Figure 1 – Project Location

Figure 2 – Boring Location Plan

Appendix B: Boring Logs

Geotechnical Exploration
and Foundation Recommendations

MWSU CTAC BUILDING
DECEMBER 14, 2022

Project Number: 22-5824
December 15, 2022

1 INTRODUCTION

1.1 PURPOSE

The purpose of this geotechnical exploration was to evaluate the underlying materials at the proposed Missouri Western State University (MWSU) CTAC Building project site, and based upon this information, provide geotechnical engineering related recommendations for design and construction of the planned project. This exploration was performed in accordance with Cook Flatt & Strobel Engineers', P.A. (CFS) proposal number 22-189 dated November 7, 2022, and authorized by Ellison-Auxier Architects.

This report includes geotechnical recommendations and considerations pertaining to site development, foundation support, concrete slab on grade and pavement construction. Also, included in this report are earthwork, construction and drainage considerations associated with the proposed project.

1.2 SCOPE OF SERVICES

This exploration and analysis included an engineering reconnaissance of the planned site, a subsurface exploration as outlined below, a field and laboratory testing program, and an engineering analysis and evaluation of the subsurface materials.

The scope of services did not include any environmental assessment for wetlands or hazardous materials in the soil, surface water, groundwater, air or surrounding area. Any statement in this report or on the boring logs regarding odors, colors or unusual or suspicious items is strictly for the information of the client.

1.3 GENERAL

The general subsurface conditions used in this analysis are based upon an interpolation of the subsurface data between the borings; varying conditions may be encountered between boring locations. If deviations from the noted subsurface conditions are encountered during construction, they should be brought to the attention of the Geotechnical Engineer.

The recommendations submitted for the proposed structure are based on the available soil information and the preliminary design details. Any revision in the plans for the proposed structure from those described in this report should be brought to the attention of the Geotechnical Engineer to determine if changes in the foundation recommendations are required.

The Geotechnical Engineer warrants that the findings, recommendations, specifications, and professional advice contained, herein, have been presented after being prepared in accordance with generally accepted professional engineering practice in the fields of foundation engineering, soil mechanics and engineering geology. No other warranties are implied or expressed.

After the plans and specifications are complete, it is recommended that the Geotechnical Engineer be provided the opportunity to review the final design and specifications, in order to verify that the earthwork and foundation recommendations are properly interpreted and implemented.

2 PROJECT DESCRIPTION

It is understood that the planned project comprises the new construction of a multi-story building on the Missouri Western State University campus. Please note, the building type and finish floor elevation was not available at the time of this report, however, CFS anticipates the structure will include a concrete slab on grade floor with structural steel frame construction. CFS anticipates the finish floor elevation will be similar to that of the existing grade. Foundation loads are expected to be on the order of 150 kips for column footings and two (2) to three (3) kips per linear foot for continuous wall footings.

CFS anticipates minimal cut and fill, less than four (4) feet plus or minus, will be necessary to achieve the desired construction grade. If any changes to the project occur, please notify CFS to allow for review of these changes and, if necessary, amend this report.

2.1 SITE LOCATION & SURFACE CONDITIONS

The project site is located on the north side of Michell Avenue in St. Joseph, Missorui. The site is bound by the University of Missouri Buchanan building to the north, an access road to the east, Mitchell Avenue to the south, and South Woodbine Road to the west.

Currently, the project site is grass covered and appears to have had some grading performed at it. The site sloped downward from the north to south and east to west.

2.2 SITE GEOLOGY

According to the geologic survey map of Missouri, Buchanan County lies over the Pennsylvanian system which formed during the Paleozoic Erathem era. The Pennsylvanian system is located in western Missouri and eastern Kansas. Generally, the western half of Buchanan County comprises rock formations from the Shawnee group, while the eastern half comprises rock formations from the Wabaunsee Group. Additionally, the Wilcox Group from the Paleogene System is found along the Missouri River in Buchanan County. The Paleogene System was formed during the Phanerozoic Eonothem era.

3 SUBSURFACE EXPLORATION

Based on the project information as outlined above, CFS Engineers conducted a field exploration to determine the underlying materials at the proposed project site and to establish their engineering characteristics.

3.1 SCOPE OF WORK

This geotechnical exploration consisted of drilling five (5) borings within the footprint of the planned structure and four (4) borings in the associated pavement areas. The structure and pavement borings had planned depths of 20 and 10 feet beneath existing site grade, respectively. The borings were drilled to their planned depth or auger refusal, whichever occurred first. The boring locations can be seen on the Boring Location Plan which is included in Appendix A.

The boring locations were determined in the field using measurements from existing landmarks and should be considered accurate only to the degree implied. The locations were established by Cook, Flatt & Strobel Engineers.

The elevation of the ground surface shown on each test boring log was taken from Google Earth and should be considered accurate only to the extent implied.

Boring logs representing the materials encountered in the borings are included in Appendix B. The boring logs represent CFS Engineers' interpretation of the field logs combined with laboratory observations and testing of the samples. The stratification boundaries indicated on the boring logs were based on field observations, an extrapolation of information obtained by examining samples from the borings, and comparisons of soils and/or bedrock types with similar engineering characteristic. As such, the boundaries between subsurface strata should be expected to vary from the logs to some extent.

The depth to groundwater, if encountered, was recorded in each test boring during drilling and can be seen in Section 3.5, Groundwater Conditions. After completion of drilling, sampling, and field testing, the excavations were backfilled with auger cuttings.

3.2 DRILLING AND SAMPLING PROCEDURES

The auger borings were drilled using a truck mounted SIMCO 2400 drill rig equipped with a rotary head. 3.25-inch solid-stem augers were used to drill the holes. During drilling, field logs were created and maintained by CFS personnel to catalog the materials encountered.

Representative samples were obtained during drilling using split-barrel sampling procedures in general accordance with the procedures for "Standard Test Methods for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils" (ASTM D 1586).

Upon completion of drilling, the samples were then sealed and returned to CFS's laboratory for further examination, classification, and testing. The samples recovered were identified, classified, and evaluated by a Geotechnical Engineer.

3.3 FIELD TESTS AND MEASUREMENTS

During the soil boring procedure, Standard Penetration Tests (SPT) were performed at pre-determined intervals to obtain the standard penetration value of the soil as outlined in the ASTM D1586 test method. The standard penetration value (N) is defined as the number of blows of a 140-pound hammer falling 30 inches, required to advance the split-barrel sampler one foot into the soil. The sampler is lowered to the bottom of the previously cleaned drill hole and advanced by blows from the hammer.

The number of blows is recorded for each of three successive increments of six inches penetration. The "N" value is then obtained by adding the second and third incremental numbers. The results of the standard penetration test are shown on the Boring Logs and indicate the relative density of cohesionless soils and comparative consistency of cohesive soils, and thereby provide a basis for estimating the relative strength and compressibility of the soil profile components.

The Standard Penetration Test (SPT) was also used to evaluate the consistency of the in-situ materials. The N-values for the site's materials were found to range from two (2) to 13 blows/foot.

3.4 SUBSURFACE CONDITIONS

The materials encountered in the test borings have been visually classified according to the Unified Soil Classification System (USCS). Specific subsurface conditions encountered—including field tests, lab tests, and water level observations—at the boring locations are also presented on the individual boring logs found in Appendix B of this report. The following table presents a general summary of the major strata encountered during this subsurface exploration.

T*able 1: General Subsurface Conditions*

STRATUM	MATERIAL	DEPTH TO TOP OF STRATUM (FT)	DEPTH TO BOTTOM OF STRATUM (FT)	MEASURED N-VALUES	COMMENTS
1	TOPSOIL	0.0	0.5	NA	Dark brown with roots
2	SILT LEAN CLAY	1.0	8ish to 13ish	2 to 9	Gray and brown, moist to wet. Soft to stiff.
3	TILL	8ish to 13ish	20+	7 to 13	Gray and reddish brown with fine to coarse sand and pea gravel. TILL. Lean clay.

Note: the boundaries between subsurface strata should be expected to vary from this table and the logs to some extent.

3.5 GROUNDWATER CONDITIONS

Groundwater was not encountered in the borings at the time of the investigation. Please note, the reported groundwater levels reflect the conditions observed at the time the borings were drilled. Groundwater levels should be expected to fluctuate with changes in grading, precipitation changes and seasonal changes. The water levels included in this report do not indicate a permanent groundwater condition. Additionally, the materials encountered during this exploration are, generally, low permeable soils.

4 LABORATORY TESTING

Upon completion of drilling, the samples were returned to CFS's laboratory located in Kansas City, Kansas for laboratory testing. A supplemental laboratory testing program was conducted to evaluate additional engineering characteristics of the in-situ soils necessary in analyzing the behavior of the support systems for the proposed building.

The laboratory testing program included the following tests:

- Supplementary visual classification (ASTM D2488) of all samples,
- Water content (ASTM D2216) of all samples, and
- Atterberg limit tests (ASTM D4318) on a selected sample.

The results of the laboratory testing program can be seen in on the boring logs in Appendix B. The Atterberg limits can be seen in the following table.

Table 2: Atterberg Limits Results

BORING ID	SAMPLE #	MOISTURE CONTENT (%)	ATTERBERG LIMITS			USCS CLASSIFICATION
			LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX	
B5	SPT-1	18.4	41	25	16	LEAN CLAY (CL)

Based on the Atterberg limits, the overburden material classifies as Lean Clay (CL) and is considered minimally to moderately expansive. To limit the risk of differential slab movements, all concrete slabs on grade should be constructed in accordance with Section 7.3, “Slab On Grade Recommendations” of this report.

5 GEOTECHNICAL CONCERNS

The following geotechnical concerns are based upon the subsurface materials encountered during this exploration and CFS’s understanding of the project as described in Section 2, “Project Description” of this report. If any changes to the planned structure’s location, loading or elevations occur, CFS must be allowed to review these changes, and if necessary, issue amendments to this report and its recommendations.

- *Moisture Sensitive Subgrade Materials*: The materials encountered during this exploration were silty lean clays, sands, and silts. These materials tend to be moisture sensitive and unstable, loosing strength quickly with the addition of water. Depending on the seasonal weather conditions during construction, mud mats may be necessary to preserve excavated bearing materials that are left open for extended periods of time. Additionally, shoring and other precautions may be necessary during any utility and/or trenching operations.

6 EARTHWORK & SITE DEVELOPMENT

6.1 SITE PREPARATION

Prior to filling, the grass and topsoil should be stripped from all structural areas and be stockpiled for later use in landscape areas, or it should be wasted. Any trees and shrubs should be properly removed including the entirety of the root ball and root systems. The upper 12-inches of the subgrade should be moisture conditioned and recompacted, as necessary, to provide a stable subgrade upon which to begin placement of engineered fill.

Upon completion of stripping and prior to filling, the newly exposed subgrade should be evaluated by a qualified professional for stability by means of proof rolling. The proof roll should be conducted using a fully loaded, tandem axle dump truck weighing in excess of 25 tons. Any soft or unsuitable areas identified during the proof roll should be corrected by means of additional moisture conditioning and recompacting, or removal and replacement with an acceptable material.

Additionally, any undocumented fill encountered during construction should be completely removed from beneath the planned foundations. Undocumented fill is any foreign material that was placed or dumped in an uncontrolled manner (i.e. no records of testing exist from the time of placement). Undocumented fill is inconsistent and unpredictable in nature, and it should not be used in support of any foundation systems. Undocumented fill is permitted beneath non load bearing floor slabs given it is thoroughly evaluated by CFS during construction by means of a proof roll outlined above.

6.2 FILL MATERIALS

All general and structural fill should be free of debris and defined by ASTM 2487 as CH, CL, ML, GW, GP, SM, SW, SC, and SP. The onsite soils tend to meet this requirement; however, please note that CH (fat clay) classification materials should NOT be used as structural fill within two (2) feet of the finished grade supporting the building slab and within ten (10) feet laterally outside of the building footprint. Fat clays (CH) with Liquid Limits of greater than 55 should not be used in the upper one (1) foot beneath the pavement without being treated with cement as outlined later in this report.

The on-site topsoil contains organic material and is unsuitable for use as structural fill. Unsuitable materials are those defined by ASTM 2487 as MH, OL, OH, and PT.

6.3 ENGINEERED FILL PLACEMENT

For the purpose of this report, engineered fill means fill placed in controlled layers and compacted and tested according to accepted geotechnical engineering practices to ensure that it meets the required specifications. Structural fill refers to any engineered fill placed within the footprint of the planned structures or pavements. Engineered fill materials should be free of organic matter. During placement, engineered fill materials should be within the specified moisture contents and compacted to the specified densities given below in Tables two (2) and three (3). Maximum dry density and optimum moisture content should be determined by the Standard Proctor test (ASTM D 698).

Fill should be placed in six (6) inch lifts (compacted thickness) in mass fill areas, and as needed to obtain the proper compaction in utility trenches and behind walls. Structural fill should extend a minimum of two (2) feet beyond any structure lines. *Additionally, where slopes exist, engineered fill must be properly benched into the existing materials.*

Table 3: Recommended Moisture Ranges

ENGINEERED FILL MATERIAL	MAXIMUM BELOW OPTIMUM	MAXIMUM ABOVE OPTIMUM
Lean Clay (CL)	-2%	+3%
Fat Clay (CH)	0%	+4%
Compacted Base Rock (i.e. MODOT Type 5, AB3 or equivalent)	NA	NA

Table 4: Compaction Requirements & Testing Frequency

LOCATION OR AREA	REQUIED COMPACTION (%) (ASTM D 698, DRY DENSITY)	TESTING FREQUENCY 3 PER LIFT PER …
Building Walkways	95%	20,000 sf
Retaining Walls	95%	1,000 sf
Trenches	95%	150 lf
Lawn or Unimproved Areas	92%	20,000 sf
Structural Fill (i.e., building and pavement subgrades)	95%	10,000 sf
Out-Parcels	95%	20,000 sf

A representative of the Geotechnical Engineer should monitor filling operations on a full-time basis. A sufficient number of density tests should be taken to verify that the specified compaction is obtained. See Table 3 above for required testing frequency.

6.4 EXCAVATIONS & TRENCHES

All temporary slopes and excavations should conform to Occupational Safety and Health Administration (OSHA) Standards for the Construction Industry (29 CFR Part 1926, Subpart P). Excavations at this site are *expected* to be made in "Type C" clayey soil. Soil types should be verified in the field by a competent individual.

All excavations should be kept dry during subgrade preparation. Storm water runoff should be controlled and removed to prevent severe erosion of the subgrade and eliminate free standing water. Subgrade that has been rendered unsuitable from erosion or excessive wetting should be removed and replaced with controlled fill.

Trenches should be excavated so that pipes and culverts can be laid straight at uniform grade between the terminal elevations. Trench width should provide adequate working space and sidewall clearances. Trench subgrade should be removed and replaced with controlled fill if found to be wet, soft, loose, or frozen. Trench sub-grades should be compacted above 95% of the maximum dry density in accordance with ASTM D 698 at moisture contents between -3% to +3% of the optimum moisture content.

Granular bedding materials for pipes, such as well-graded sand or gravel, may be used provided that the bottom of the trench is graded so that water flows away from the structure.

Bedding material should be graded to provide a continuous support beneath all points of the pipe and joints. Embedment material should be deposited and compacted uniformly and simultaneous on each side of the pipe to prevent lateral displacement. Compacted control fill material will be required for the full depth of the trench above the embedment material except in area landscape area with the compaction may be reduced to 90% Standard Proctor ASTM D 698. No backfill should be deposited or compacted in standing water.

Precautions should be taken by the contractor to avoid undermining the newly constructed foundations/ RAP. Shoring and excavations supports may need to be designed to account for the existing building loads.

Permanent slopes greater than 3 horizontals to 1 vertical should not be used unless additional testing and slope analysis is performed.

6.5 DRAINAGE AND DEWATERING

Normal seasonal weather conditions should be anticipated and planned for during earthwork. It is recommended that the Contractor determine the actual groundwater levels at the site at the time of the construction activities to assess the impact groundwater may have on construction. Water should not be allowed to collect in the foundation excavations, on floor slab areas, or on prepared subgrades of the construction area either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of collected rainwater, groundwater, or surface runoff. Positive site drainage should be provided to reduce infiltration of surface water around the perimeter of the building and beneath the floor slabs. The grades should be sloped away from the building and surface drainage should be collected and discharged such that water is not permitted to infiltrate the backfill and floor slab areas of the building.

The site should be graded such that positive drainage (normally 2% minimum) is provided away from any structures. Where sidewalks or paving do not immediately adjoin the building, protective slopes of at least 5% for a minimum of 10 feet from the perimeter walls are recommended. Roof drains and downpours should also be directed away from the building. Open-graded stone is not recommended for use under sidewalks unless the stone is adequately drained to prevent collection of water under the walks.

The site should also be graded to avoid water flows, concentrations, or pools behind retaining walls, curbs or similar structures. When swales are designed at the top of the walls, proper line and slope should be considered to avoid any flow down behind walls. Special attention is needed for sources of storm water from slopes, building roofs, gutter downspouts and paved areas draining to one point.

Perforated plastic pipes should be placed on the backfilled side of the walls near the bottom and day-lighted. Six inches of open graded crushed rock wrapped with geo-textile fabric should be placed behind the walls up to a depth of two feet below the finished grade. As an alternative to the open graded crushed rock, a manufactured geo-composite sheet drain such as Mirafi G100N, Contech C-Drain, or equivalent, may be used in conjunction with the perforated pipe.

6.6 LANDSCAPING

Landscaping and irrigation should be limited adjacent to buildings and pavements to reduce the potential for large moisture changes. Trees and large bushes can develop intricate root systems that can draw moisture from the subgrade, resulting in shrinkage of the bearing material during dry periods of the year. Desiccation of bearing material below foundations may result in foundation settlement.

Landscaped areas near pavements and sidewalks should include a drainage system that prevents over saturation of the subgrade beneath asphalt and concrete surfaces. Drainage systems in irrigation areas should be incorporated into the storm drain system.

7 GEOTECHNICAL ENGINEERING RECOMMENDATIONS

7.1 FOUNDATIONS RECOMMENDATIONS

Conventional spread and continuous wall footings are, generally, most economical when the existing soil conditions allow them to be founded at shallow depths on existing materials. Based on the materials encountered during this exploration, it is CFS Engineers' opinion that the planned structure can be supported by a shallow foundation system, such as spread and/or trench footings bearing in native clay soils. Please reference the following table for recommended design parameters.

Table 5: Shallow Foundation Design Parameters

DESIGN PARAMETER	RECOMMENDED VALUE	COMMENTS
Allowable Bearing Capacity (1) (shallow foundations)	1,500 psf	Evaluated based on field and laboratory testing results (1).
Recommended Bearing Material (2)	LEAN CLAY	Suitable bearing material required beneath entirety of foundation system (2). CFS anticipates over excavations of up to three (3) feet may be necessary to achieve a suitable bearing condition.
Anticipated Total Settlement	< 1-inch	Maximum
Anticipated Differential Settlement	< ¾ -inch	Maximum per 100 feet of linear footing
Minimum Recommended width	24 and 16 inches	Spread and trench, respectively
Minimum Recommended Depth	36-inches	Based on seasonal freeze-thaw cycles

(1) If over excavation of any footing is required to reach design bearing capacity, backfill of the footing should be done with lean concrete.
(2) A uniform bearing condition should exist beneath the entirety of the foundation system for a given structure. A representative of the Geotechnical Engineer should test the materials in the footing excavations to verify the material and design bearing pressure.

If over excavation of footings becomes necessary to achieve the desired bearing pressure or a uniform bearing condition, backfill of the footing should be done with lean concrete. Footings should be suitably reinforced to reduce the effects of differential movement that may occur due to variations in the properties of the supporting soils. Top and bottom reinforcing steel is recommended for continuous wall footings to reduce differential settlement due to possible varying bearing capacities of the existing fill soils.

Every effort should be made to keep the footing excavations dry as the soils will tend to soften when exposed to free water. Footing bottoms should be free of loose soil and concrete should be placed as soon as possible to prevent drying of the foundation soils.

7.2 SEISMIC ANALYSIS

The determination of the seismic class is based on ASCE Standard 7: Minimum Design Loads for Building and Other Structures. Based upon this information, the seismic properties of the soil were interpolated from the standard penetration test values. A Seismic Site Class "E" was determined for this site. In addition, there is no significant risk of liquefaction or mass movement of the on-site soils due to a seismic event.

7.3 SLAB ON GRADE RECOMMENDATIONS

the materials encountered are considered moisture sensitive and lose strength quickly under typical construction traffic and with precipitation events. For this reason, it is recommended that a minimum 12-inch-thick granular construction pad consisting of KDOT AB3, crushed limestone screenings or equivalent be constructed to cap and protect the subgrade soils. This pad is in addition to the recommended 4-inch-thick layer of open graded listed below. The subgrade can be constructed as outlined below.

1. Cut the subgrade to a minimum depth of 16-inches beneath the planned bottom of slab elevation. The exposed material at this depth should be moisture conditioned and re-compacted, as necessary, to pass a proof roll as specified in Section 6.1, "Site Preparation" of this report.

2. Twelve (12) inches of a compacted granular LVC material (i.e. KDOT AB3, crushed limestone screenings, or equivalent) should be placed atop the exposed subgrade. The granular LVC layer can be placed in two (2), 6-inch-thick lifts and should be compacted to 95% of the material's maximum dry density as determined by ASTM D698. Limestone based LVC material should be compacted at a moisture content sufficient to achieve the desired compaction.

3. A 4-inch-thick layer of open graded stone (ASTM C33 or equivalent material) should be placed atop the 8-inches of compacted LVC material to return the subgrade to the original bottom of slab elevation. The open-graded stone will ease construction and provide a capillary break between the LVC and concrete slab.

Every floor slab should be evaluated to determine if a vapor retarder under the concrete floor is required. The slab designer should refer to ACI 302 and/or ACI 360 for procedures regarding the use and placement of a vapor retarder.

To reduce the effects of differential movement, slabs-on-grade should not be rigidly connected to columns, walls, or foundations unless it is designed to withstand the additional resultant forces. Floor slabs should not extend beneath exterior doors or over foundation grade beams, unless saw cut at the beam after construction. Expansion joints may be used to allow unrestrained vertical movement of the slabs. The floor slabs should be designed to have an adequate number of joints to reduce cracking resulting from differential movement and shrinkage. CFS suggests joints be provided on a minimum spacing of twelve (12) feet on center. For additional recommendations refer to the ACI Design Manual. The requirements for the slab reinforcement should be established by the designer based on experience and the intended slab use.

7.4 LATERAL EARTH PRESSURES

Lateral earth pressures are determined by multiplying the vertical applied pressure by the appropriate lateral earth pressure coefficient. If the foundation walls are rigidly attached to the building and not free to rotate or deflect at the top, CFS recommends designing the walls for the *at-rest* earth pressure coefficient. Walls that are permitted to rotate and deflect at the top can be designed for the *active* lateral earth pressure condition. Horizontal loads acting on shallow foundations are resisted by friction along the foundation base and by *passive* pressure against the footing face that is perpendicular to the line of applied force.

It is recommended that all walls be backfilled with open graded stone (such as No. 57 as referenced in ASTM C33) extending to two (2) feet behind the wall for the entire height of the wall to within 12-inches of the surface to allow for proper drainage and relief of any hydrostatic pressure build-ups that may occur in the native clay. The use of stone to backfill behind the walls will expedite construction, reduce potential settlement between the wall and the floor slab and lower the pressure induced on the wall from the backfill thus potentially reducing the thickness of the walls.

Table 6: Earth Pressure and Friction Coefficients

MATERIAL	ACTIVE (K_a)	PASSIVE (K_p)	AT-REST (K_o)	ALLOWABLE BASE FRICTION	UNIT WEIGHT (pcf)
Open-graded crushed limestone	0.27	3.69	0.43	0.47	130-140
In-situ lean clay soils	0.40	2.5	0.68	0.32	120-125
In-situ fat clay soils	0.49	2.04	0.66	0.24	120-125
Lean clay – conditioned and compacted	0.32	3.12	0.48	0.35	120-125
Fat clay/Weathered Shale – conditioned and compacted	0.45	2.2	0.63	0.27	120-130
Limestone Bedrock	-	-	-	0.55	140-150

These earth pressure coefficients do not include the effect of surcharge loads, hydrostatic loading, or a sloping backfill. Nor do they incorporate a factor of safety. Also, these earth pressure coefficients do not account for high lateral pressures that may result from volume changes when expansive clay soils are used as backfill behind walls with unbalanced fill depths. In addition, any disturbed soils that are relied upon to provide some level of passive resistance should be placed in lifts not exceeding six (6) inches in thickness and compacted to a minimum density of 95% of the Standard Proctor (ASTM D698) maximum dry density at a moisture content within +- 3% of the optimum moisture content. It is recommended that a representative of CFS should verify the compaction of any such materials relied upon to provide passive pressure.

The actual earth pressure on the walls will vary according to material types and backfill materials used and how the backfill is compacted. If the backfill conditions are different than the ones used above, CFS should be notified so the recommendations can be modified. The buildup of water behind a wall will increase the lateral pressure imposed on below-grade walls. Adequate drainage should be provided

behind any below grade walls as described in this report. The walls should also be designed for appropriate surcharge pressures such as adjacent traffic, interior building floor slab loads, and construction equipment.

7.5 PAVEMENT RECOMMENDATIONS

The pavement sections presented below are considered typical and minimum for the report basis parameters. The client should be aware that thinner pavement sections might result in increased maintenance costs and lower than anticipated pavement life. The pavement area subgrade consists of moisture sensitive soils.

The soils expected beneath the pavement are clay based. Please note clays tend to expand and contract with changes in moisture and weather conditions, and they are considered very moisture susceptible, losing strength quickly. If moisture becomes an issue during construction, or stability of the subgrade soils does not meet the requirements of this report (i.e. pass a proof roll as outline in Section 6.1), the on-site soils can be stabilized with Portland Cement mixed at a concentration of 5% by dry unit weight to a depth of 9-inches. See Section 7.5.1 for more information on cement stabilization requirements. Additionally, If the client prefers to use Portland cement stabilized soils, the pavement sections below can be re-evaluated and possibly reduced.

Table 7: Recommended Light Duty Pavement Sections (Parking lots)

RECOMMENDED THICKNESSES (INCHES) – LIGHT DUTY			
Asphalt		**Concrete**	
APWA Type 3-01 AC Surface	2	Concrete	6
APWA Type 1-01 AC Base (2)	3	Aggregate Base Course (open graded)	4
Aggregate Base Course (1)	6	Moisture Conditioned & Recompacted Subgrade (LL<55, PI<30, See Section 7.5.1)	12
Moisture Conditioned & Recompacted Subgrade (LL<55, PI<30, See Section 7.5.1)	12		

(1) 9-inches of cement stabilization can be used in lieu of the aggregate base course beneath asphalt unless LL>55 condition exists. If LL>55, both cement stabilization and aggregate base course should be utilized.

(2) When base is to be placed in the fall and surface in the spring, APWA Type 2-01 is recommended to improve performance of base due to lower permeability.

Table 8: Heavy Duty Pavement Thicknesses (Truck areas and drives)

RECOMMENDED THICKNESSES (INCHES) – HEAVY DUTY			
Asphalt		**Concrete**	
APWA Type 3-01 AC Surface	2	Concrete (3)	8
APWA Type 1-01 AC Base (2)	6	Aggregate Base Course (open graded)	6
Aggregate Base Course (1)	6	Moisture Conditioned & Recompacted Subgrade (LL<55, PI<30, See Section 7.5.1)	12
Moisture Conditioned & Recompacted Subgrade (LL<55, PI<30, See Section 7.5.1)	12		

(1) 9-inches of cement stabilization can be used in lieu of the aggregate base course beneath asphalt unless LL>55 condition exists. If LL>55, both cement stabilization and aggregate base course should be utilized.
(2) When base is to be placed in the fall and surface in the spring, APWA Type 2-01 is recommended to improve performance of base due to lower permeability.
(3) 8-inches of concrete is recommended for trash and/or recycling dumpster areas.

7.5.1 Pavement Subgrade Preparation

The upper 12-inches of exposed subgrade, extended a minimum of two (2) feet laterally beyond all pavement lines, should be moisture conditioned and recompacted, as necessary, to pass a proof roll evaluation as described in Section 6.1, "Site preparation" of this report.

Any localized soft, wet, or loose areas identified during the proof rolling should be repaired prior to paving. Fill material should be placed in loose lifts up to a maximum of eight (8) inches in thickness and compacted to at least 95% of the maximum dry density in accordance with ASTM D698 at moisture contents outlined in the Earthwork section. Construction traffic should be minimized to prevent unnecessary disturbance of the pavement subgrade. Disturbed areas, as verified by CFS's geotechnical engineer, should be removed, and replaced with properly compacted material.

Fat clays (CH) with Liquid Limits of greater than 55 should not be used in the upper one (1) foot beneath the pavement section without being treated with Type 1/2 Portland cement to a minimum depth of 9-inches at a concentration of 5% by dry unit weight as determined by ASTM D698. When used for this purpose, this treatment is considered in addition to the recommended granular base included in the pavement sections above. However, Consideration should be given to treating all non-LVC clays so as to extend the life of the pavement, improve performance and reduce maintenance costs. Any cement stabilization should be compacted to 95% of the material's dry unit weight at a moisture content between 0 and +4% of the materials optimum moisture content as determined by ASTM D698. The materials should be compacted in loose lifts not exceeding twelve (12) inches in thickness. Compaction and moisture requirements should be achieved within two (2) hours of mixing. Cement treated subgrades should be protected from construction traffic, freezing, and drying for a minimum of 5 days after mixing.

7.5.2 Aggregate Base Course

The aggregate base recommended in the pavement sections above should be placed in loose lifts not exceeding six (6) inches in thickness and should extend a minimum lateral distance of two (2) feet beyond the pavement lines. This extra width is structurally beneficial for wheel loads applied at pavement

edge. The granular based should be compacted to at least 95% of the maximum dry density in accordance with ASTM D698.

If open graded stone is used under the pavement, the pavement subgrade should be graded to provide positive drainage of the granular base section. Please note, open graded stone is recommended beneath concrete pavements. Provision should be made to provide drainage into the storm water system. The use of a granular blanket drain near storm water inlets that provides weep holes from the drain to the inlets is recommended.

7.5.3 Asphalt Pavement Construction

Asphalt cement (bitumen) used in the manufacture of asphalt pavement should conform to the Performance Grading system. In the project area, the provincial grade asphalt binder course is PG 64-22. The asphaltic mix for conventional roadway should be designed for 4% air voids. During production, the voids can be expected to vary ±1% of the design value of 4%. Under these conditions, the minimum allowable VMA for base and surface course shall be 12% and 14%, respectively.

Immediately after spreading, each course of the pavement mixture should be compacted by rolling. The initial or "breakdown" rolling shall be accomplished with a steel-wheeled vibratory roller. The motion of the roller should be slow enough at all times to avoid displacement of the hot mixture. The surface of the mixture after compaction should be smooth and true to established section and grade. The completed asphalt concrete paving should have a density equal to or greater than 95% for the base and 96% for the surface of theoretical density.

All asphaltic concrete mix designs and Marshall Characteristics should be submitted to CFS and reviewed in order to determine if they are consistent with the recommendations given in this report. All materials to be employed and field operations required in connection with the pavement reconstruction should follow requirements and procedural details as per APWA 2001. In addition, representative of CFS should observe and monitor the pavement construction to assure satisfactory compliance with these engineering recommendations.

Please note, regular maintenance inclusive of chip and crack sealing should be anticipated with all asphaltic pavement designs.

7.5.4 Concrete Pavement Construction

The pavement on this site will be subjected to freeze-thaw cycles. Sufficient air entrainment in the range of 6% to 8% is required to provide freeze-thaw durability in the concrete. Concrete with a 28-day specified compressive strength of 4,000 psi is recommended. The concrete mix should contain at least 564 pounds of concrete per cubic yard. A mixture with a maximum slump of 4 inch +/- 1 inch is acceptable. If a water-reducing admixture is specified, slump can be higher. For better performance and crack control, synthetic fiber reinforcement such as Fibermesh® 300 is recommended for the concrete instead of welded wire mesh. Add synthetic fiber reinforcement to concrete mixture in accordance with manufacturer's instructions.

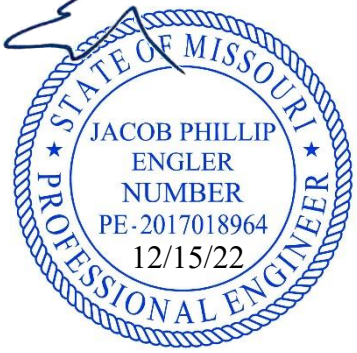
8 GENERAL COMMENTS

When the plans and specifications are complete, or if significant changes are made in the character or location of the proposed building, a consultation should be arranged to review the changes with respect to the prevailing soil conditions. At that time, it may be necessary to submit supplementary recommendations.

It is recommended that the services of Cook, Flatt & Strobel Engineers be engaged to test and evaluate the compaction of any additional fill materials and to test and evaluate the bearing value of the soils in the footing excavations.

Respectfully submitted,

COOK, FLATT & STROBEL ENGINEERS, P.A.



Jacob Engler, P.E.
Geotechnical Engineer

Reviewed by: Adam McEachron, P.E.
Senior Geotechnical Engineer

Appendix A: Figures

CFS ENGINEERS

1100 W. Cambridge Circle Dr, Ste 700
Kansas City, Kansas 66103

Project: **MWSU CTAC BUILDING**		Project #: 22-5824	Figure 1: **SITE LOCATION PLAN**
Project Location:	St. Joseph	Comments:	
Client:	Ellison-Auxier Architects		
Date:	12/15/2022		

CFS ENGINEERS

1100 W. Cambridge Circle Dr, Ste 700
Kansas City, Kansas 66103

Project: **MWSU CTAC BUILDING**		Project #: 22-5824	Figure 2: **BORING LOCATION PLAN**
Project Location:	St. Joseph	Comments:	
Client:	Ellison-Auxier Architects		
Date:	12/15/2022		

Appendix B: Boring Logs

CFS Engineers, Inc
1100 W. Cambridge Circle Drive, Suite 700
Kansas City, Kansas 66103

BORING NUMBER B1

CLIENT Ellison - Auxier Architect Inc.
PROJECT NAME MWSU - CTAC
PROJECT NUMBER 22-5824
PROJECT LOCATION St. Joseph, MO
DATE STARTED 11/18/22 **COMPLETED** 11/18/22
GROUND ELEVATION 1021 ft **HOLE SIZE** 3.25 inches
DRILLING CONTRACTOR CFS Engineers
GROUND WATER LEVELS:
DRILLING METHOD 3.25-inch Continuous Flight
AT TIME OF DRILLING --- No Free Water Encountered
LOGGED BY BB **CHECKED BY** JE
AT END OF DRILLING --- No Free Water Encountered
NOTES
AFTER DRILLING --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	UNCONFINED COMP (PSF)
0		LEAN CLAY, (CL) dark brown, with vegetation (TOPSOIL)										
		LEAN CLAY, (CL) grayish brown and dark brown, dry, with roots (FILL)	SPT 1	28	3-5-4 (9)	3.25		19.0				
		LEAN CLAY, SILTY, (CL-ML) gray and brown, moist, medium stiff	SPT 2	83	3-3-4 (7)	1.5		25.4				
5		(CL-ML) wet, soft, mottled reddish brown below 6'	SPT 3	78	2-2-2 (4)	2		20.3				
		(CL-ML) stiff below 8'	SPT 4	100	3-4-5 (9)	.25		28.7				
10												
		LEAN CLAY, (CL) gray and brown, moist, medium stiff, with fine to coarse sand and calcium carbonates (TILL)	SPT 5	100	3-3-4 (7)	1.5		22.4				
15												
		(CL) stiff below 18'	SPT 6	100	5-6-7 (13)	.75		23.8				
20												

Bottom of borehole at 20.0 feet.

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BORING NUMBER B2

CLIENT Ellison - Auxier Architect Inc.
PROJECT NAME MWSU - CTAC
PROJECT NUMBER 22-5824
PROJECT LOCATION St. Joseph, MO
DATE STARTED 11/18/22 **COMPLETED** 11/18/22
GROUND ELEVATION 1026 ft **HOLE SIZE** 3.25 inches
DRILLING CONTRACTOR CFS Engineers
GROUND WATER LEVELS:
DRILLING METHOD 3.25-inch Continuous Flight
AT TIME OF DRILLING --- No Free Water Encountered
LOGGED BY BB **CHECKED BY** JE
AT END OF DRILLING --- No Free Water Encountered
NOTES
AFTER DRILLING --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	UNCONFINED COMP (PSF)
0		LEAN CLAY, (CL) dark brown, with vegetation (TOPSOIL)										
		LEAN CLAY, (CL) brown and dark brown, dry, with roots (FILL)										
		LEAN CLAY, SILTY, (CL-ML) gray and brown, moist, medium stiff	SPT 1	33	2-3-4 (7)	4.5		20.9				
			SPT 2	72	3-3-3 (6)	3.5		20.5				
5			SPT 3	100	3-3-3 (6)	.75		25.8				
		(CL-ML) wet below 8'	SPT 4	100	2-2-3 (5)	.25		28.6				
10												
			SPT 5	67	2-2-2 (4)	0		30.6				
15												
		LEAN CLAY, (CL) reddish brown and gray, moist, stiff, with trace of fine sand (possible TILL)	SPT 6	100	4-6-5 (11)	.5		25.6				
20												

Bottom of borehole at 20.0 feet.

CFS ENGINEERS

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BORING NUMBER B3

CLIENT Ellison - Auxier Architect Inc.
PROJECT NAME MWSU - CTAC
PROJECT NUMBER 22-5824
PROJECT LOCATION St. Joseph, MO
DATE STARTED 11/18/22 **COMPLETED** 11/18/22
GROUND ELEVATION 1009 ft **HOLE SIZE** 3.25 inches
DRILLING CONTRACTOR CFS Engineers
GROUND WATER LEVELS:
DRILLING METHOD 3.25-inch Continuous Flight
AT TIME OF DRILLING --- No Free Water Encountered
LOGGED BY BB **CHECKED BY** JE
AT END OF DRILLING --- No Free Water Encountered
NOTES
AFTER DRILLING --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	UNCONFINED COMP (PSF)
0		LEAN CLAY, (CL) dark brown, with vegetation (TOPSOIL)										
		LEAN CLAY, (CL) grayish brown and dark brown, dry, with roots (FILL)	SPT 1	50	3-3-3 (6)	4.5+		18.5				
		LEAN CLAY, SILTY, (CL-ML) gray and brown, moist, stiff, mottled reddish brown	SPT 2	83	3-4-4 (8)	4		19.6				
5			SPT 3	94	3-4-5 (9)	2		20.1				
		LEAN CLAY, (CL) brown and gray, moist, stiff, with fine to coarse sand and calcium carbonates (TILL)	SPT 4	100	2-4-5 (9)	3.25		22.5				
10		(CL) sandy below 13'	SPT 5	94	3-4-5 (9)	1.25		23.4				
15												
			SPT 6	100	3-4-4 (8)	1.5		24.1				
20												

Bottom of borehole at 20.0 feet.

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BORING NUMBER B4

CLIENT Ellison - Auxier Architect Inc.
PROJECT NAME MWSU - CTAC
PROJECT NUMBER 22-5824
PROJECT LOCATION St. Joseph, MO
DATE STARTED 11/18/22 **COMPLETED** 11/18/22
GROUND ELEVATION 1015 ft **HOLE SIZE** 3.25 inches
DRILLING CONTRACTOR CFS Engineers
GROUND WATER LEVELS:
DRILLING METHOD 3.25-inch Continuous Flight
AT TIME OF DRILLING --- No Free Water Encountered
LOGGED BY BB **CHECKED BY** JE
AT END OF DRILLING --- No Free Water Encountered
NOTES
AFTER DRILLING --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	UNCONFINED COMP (PSF)
0		LEAN CLAY, (CL) dark brown, with vegetation (TOPSOIL)										
		LEAN CLAY, SILTY, (CL-ML) gray and brown, dry, stiff	SPT 1	44	3-4-4 (8)	4.5+		16.4				
			SPT 2	56	3-4-5 (9)	4		21.6				
5		(CL-ML) moist, medium dense, mottled reddish brown below 6'	SPT 3	100	3-3-3 (6)	1		28.2				
			SPT 4	100	2-2-3 (5)	.75		24.5				
10												
		LEAN CLAY, (CL) gray and reddish brown, medium stiff, with fine to coarse sand and calcium carbonates (TILL)	SPT 5	100	3-3-3 (6)	3		20.0				
15												
		(CL) stiff below 18'	SPT 6	100	4-4-4 (8)	2.75		20.3				
20												

Bottom of borehole at 20.0 feet.

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Kansas City, Kansas 66103

BORING NUMBER B5

CLIENT Ellison - Auxier Architect Inc.
PROJECT NAME MWSU - CTAC
PROJECT NUMBER 22-5824
PROJECT LOCATION St. Joseph, MO
DATE STARTED 11/18/22 **COMPLETED** 11/18/22
GROUND ELEVATION 1018 ft **HOLE SIZE** 3.25 inches
DRILLING CONTRACTOR CFS Engineers
GROUND WATER LEVELS:
DRILLING METHOD 3.25-inch Continuous Flight
AT TIME OF DRILLING --- No Free Water Encountered
LOGGED BY BB **CHECKED BY** JE
AT END OF DRILLING --- No Free Water Encountered
NOTES
AFTER DRILLING --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	UNCONFINED COMP (PSF)
0		LEAN CLAY, (CL) dark brown, with vegetation (TOPSOIL)										
		LEAN CLAY, (CL) dark brown, dry, with roots (FILL)	SPT 1	67	2-3-3 (6)	4.5+		18.4	41	25	16	
			SPT 2	33	3-4-4 (8)	4		20.8				
5		LEAN CLAY, SILTY, (CL-ML) gray, moist, stiff, mottled reddish brown										
		(CL-ML) soft and wet below 6'	SPT 3	100	1-1-1 (2)	.5		26.4				
			SPT 4	100	1-1-1 (2)	1		25.2				
10												
		LEAN CLAY, (CL) reddish brown, moist, stiff, with fine to coarse sand and calcium carbonates (TILL)	SPT 5	100	4-5-5 (10)	3.5		23.0				
15												
			SPT 6	100	4-5-5 (10)	1.5		20.5				
20												

Bottom of borehole at 20.0 feet.

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Kansas City, Kansas 66103

BORING NUMBER B6

CLIENT Ellison - Auxier Architect Inc.
PROJECT NAME MWSU - CTAC
PROJECT NUMBER 22-5824
PROJECT LOCATION St. Joseph, MO
DATE STARTED 11/18/22 **COMPLETED** 11/18/22
GROUND ELEVATION 1008 ft **HOLE SIZE** 3.25 inches
DRILLING CONTRACTOR CFS Engineers
GROUND WATER LEVELS:
DRILLING METHOD 3.25-inch Continuous Flight
AT TIME OF DRILLING --- No Free Water Encountered
LOGGED BY BB **CHECKED BY** JE
AT END OF DRILLING --- No Free Water Encountered
NOTES
AFTER DRILLING --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	UNCONFINED COMP (PSF)
0		LEAN CLAY, (CL) dark brown, with vegetation (TOPSOIL)										
		LEAN CLAY, (CL) brown and grayish brown, moist, medium stiff	SPT 1	39	4-3-3 (6)	4.5		14.9				
5			SPT 2	50	3-3-3 (6)	4.5		18.7				
		LEAN CLAY, SILTY, (CL-ML) gray, moist, stiff, mottled reddish brown	SPT 3	100	3-5-6 (11)	.25		27.0				
		(CL-ML) medium stiff below 8'										
10			SPT 4	89	3-3-3 (6)	1		22.2				

Bottom of borehole at 10.0 feet.

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1100 W. Cambridge Circle Drive, Suite 700
Kansas City, Kansas 66103

BORING NUMBER B7

CLIENT Ellison - Auxier Architect Inc.
PROJECT NAME MWSU - CTAC
PROJECT NUMBER 22-5824
PROJECT LOCATION St. Joseph, MO
DATE STARTED 11/18/22 **COMPLETED** 11/18/22
GROUND ELEVATION 1008 ft **HOLE SIZE** 3.25 inches
DRILLING CONTRACTOR CFS Engineers
GROUND WATER LEVELS:
DRILLING METHOD 3.25-inch Continuous Flight
AT TIME OF DRILLING --- No Free Water Encountered
LOGGED BY BB **CHECKED BY** JE
AT END OF DRILLING --- No Free Water Encountered
NOTES
AFTER DRILLING --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	UNCONFINED COMP (PSF)
0		LEAN CLAY, (CL) dark brown, with vegetation (TOPSOIL)										
		LEAN CLAY, (CL) dark brown and brown, moist, stiff	SPT 1	33	3-4-5 (9)	NA		21.0				
		(CL) medium stiff below 3'	SPT 2	44	3-3-3 (6)	4.25		22.5				
5			SPT 3	56	3-2-2 (4)	1		24.2				
		(CL) stiff below 8'	SPT 4	100	3-5-5 (10)	3		23.3				
10		Bottom of borehole at 10.0 feet.										

CFS Engineers, Inc
1100 W. Cambridge Circle Drive, Suite 700
Kansas City, Kansas 66103

BORING NUMBER B8

CLIENT Ellison - Auxier Architect Inc.
PROJECT NAME MWSU - CTAC
PROJECT NUMBER 22-5824
PROJECT LOCATION St. Joseph, MO
DATE STARTED 11/18/22 **COMPLETED** 11/18/22
GROUND ELEVATION 1017 ft **HOLE SIZE** 3.25 inches
DRILLING CONTRACTOR CFS Engineers
GROUND WATER LEVELS:
DRILLING METHOD 3.25-inch Continuous Flight
AT TIME OF DRILLING --- No Free Water Encountered
LOGGED BY BB **CHECKED BY** JE
AT END OF DRILLING --- No Free Water Encountered
NOTES
AFTER DRILLING --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	UNCONFINED COMP (PSF)
0		LEAN CLAY, (CL) dark brown, with vegetation (TOPSOIL)										
		LEAN CLAY, (CL) dark brown and brown, moist, stiff to medium stiff	SPT 1	33	3-4-5 (9)	4.5+		21.4				
			SPT 2	50	3-3-3 (6)	4.25		20.2				
5		LEAN CLAY, SILTY, (CL-ML) gray and brown, moist, stiff, mottled reddish brown	SPT 3	89	4-4-4 (8)	2		22.1				
			SPT 4	100	3-5-5 (10)	2.5		19.1				
10		Bottom of borehole at 10.0 feet.										

CFS Engineers, Inc
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Kansas City, Kansas 66103

BORING NUMBER B9

CLIENT Ellison - Auxier Architect Inc.
PROJECT NAME MWSU - CTAC
PROJECT NUMBER 22-5824
PROJECT LOCATION St. Joseph, MO
DATE STARTED 11/18/22 **COMPLETED** 11/18/22
GROUND ELEVATION 1022 ft **HOLE SIZE** 3.25 inches
DRILLING CONTRACTOR CFS Engineers
GROUND WATER LEVELS:
DRILLING METHOD 3.25-inch Continuous Flight
AT TIME OF DRILLING --- No Free Water Encountered
LOGGED BY BB **CHECKED BY** JE
AT END OF DRILLING --- No Free Water Encountered
NOTES
AFTER DRILLING --- No Free Water Encountered

DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	POCKET PEN. (tsf)	DRY UNIT WT. (pcf)	MOISTURE CONTENT (%)	ATTERBERG LIMITS: LIQUID LIMIT	ATTERBERG LIMITS: PLASTIC LIMIT	ATTERBERG LIMITS: PLASTICITY INDEX	UNCONFINED COMP (PSF)
0		LEAN CLAY, (CL) dark brown, with vegetation (TOPSOIL)										
		LEAN CLAY, SILTY, (CL-ML) gray and brown, moist, stiff	SPT 1	33	4-5-5 (10)	4.5+		17.4				
			SPT 2	72	4-4-4 (8)	4.5		21.0				
5			SPT 3	83	4-4-5 (9)	.75		25.9				
		(CL-ML) medium stiff below 8'	SPT 4	100	3-3-3 (6)	.75		26.6				
10		Bottom of borehole at 10.0 feet.										

SECTION 07 4113
METAL ROOF PANELS

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Metal roof panel system of preformed steel panels.

1.02 RELATED REQUIREMENTS

A. Section 05 1200 - Structural Steel Framing: Roof framing and purlins.

B. Section 06 1000 - Rough Carpentry: Roof sheathing.

C. Section 07 2100 - Thermal Insulation: Rigid roof insulation.

D. Section 07 9200 - Joint Sealants: Sealing joints between metal roof panel system and adjacent construction.

1.03 REFERENCE STANDARDS

A. AAMA 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels (with Coil Coating Appendix) 2022.

B. ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process 2022.

C. ASTM E1592 - Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference 2005 (Reapproved 2017).

1.04 DELIVERY, STORAGE, AND HANDLING

A. Provide strippable plastic protection on prefinished roofing panels for removal after installation.

B. Store roofing panels on project site as recommended by manufacturer to minimize damage to panels prior to installation.

1.05 FIELD CONDITIONS

A. Do not install metal roof panels, eave protection membrane or underlayment when surface, ambient air, or wind chill temperatures are below 45 degrees F.

1.06 WARRANTY

A. See Section 01 7800 - Closeout Submittals for additional warranty requirements.

B. Finish Warranty: Provide 5-year manufacturer warranty against excessive degradation of exterior finish. Include provision for replacement of units with excessive fading, chalking, or flaking. Complete forms in Owner's name and register with warrantor.

C. Special Warranty: Provide 2-year warranty for weathertightness of roofing system, including agreement to repair or replace metal roof panels that fail to keep out water commencing on the Date of Substantial Completion. Complete forms in Owner's name and register with warrantor.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Architectural Metal Roof Panel Manufacturers:
   1. Berridge Manufacturing Company; Double-Lock Zee-Lock Panel
   2. Elevate; Warranted Una-Clad UC- 3 Standing Seam Metal Roofing Panel
   3. Petersen Aluminum Corporation; PAC-150 180 Degree Double Lock
   4. MBCI SuperLok.
   5. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS

A. Metal Roof Panels: Provide complete roofing assemblies, including roof panels, clips, fasteners, connectors, and miscellaneous accessories, tested for compliance with the following minimum standards:

1. Structural Design Criteria: Provide panel assemblies designed to safely support design loads at support spacing indicated, with deflection not to exceed L/180 of span length(L) when tested in accordance with ASTM E1592.
2. Overall: Complete weathertight system tested and approved in accordance with ASTM E1592.
3. Thermal Movement: Design system to accommodate without deformation anticipated thermal movement over ambient temperature range of 100 degrees F.

2.03 METAL ROOF PANELS

A. Metal Roof Panels: Provide complete engineered system complying with specified requirements and capable of remaining weathertight while withstanding anticipated movement of substrate and thermally induced movement of roofing system.

B. Metal Panels: Factory-formed panels with factory-applied finish.
   1. Steel Panels:
      a. Zinc-coated steel complying with ASTM A653/A653M; minimum G60 galvanizing.
      b. Steel Thickness: Minimum 24 gauge, 0.024 inch.
   2. Texture: Smooth.
   3. Width: Maximum panel coverage of 16 inches.

2.04 ATTACHMENT SYSTEM

A. Concealed System: Provide manufacturer's standard stainless steel or nylon-coated aluminum concealed anchor clips designed for specific roofing system and engineered to meet performance requirements, including anticipated thermal movement.

2.05 FINISHES

A. Fluoropolymer Coil Coating System: Polyvinylidene fluoride (PVDF) multi-coat superior performing organic coatings system complying with AAMA 2605, including at least 70 percent PVDF resin, and at least 80 percent of coil coated metal surfaces having minimum total dry film thickness (DFT) of 0.9 mil, 0.0009 inch; color and gloss as selected by Architect from manufacturer’s standard line.

2.06 ACCESSORIES

A. Miscellaneous Sheet Metal Items: Provide flashings, gutters, downspouts, trim, moldings, closure strips, preformed crickets, caps, and equipment curbs of the same material, thickness, and finish as used for the roofing panels. Items completely concealed after installation may optionally be made of stainless steel.

B. Rib and Ridge Closures: Provide prefabricated, close-fitting components of steel with corrosion resistant finish or combination steel and closed-cell foam.

C. Sealants:
   1. Exposed Sealant: Elastomeric; silicone, polyurethane, or silyl-terminated polyether/polyurethane.
   2. Concealed Sealant: Non-curing butyl sealant or tape sealant.

END OF SECTION

SECTION 09 6900
ACCESS FLOORING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Adjustable height access flooring systems.

1.02 RELATED REQUIREMENTS

A. Section 03 3000 - Cast-in-Place Concrete: Requirements for floor flatness and levelness.

B. Section 09 6500 - Resilient Flooring: Finish for access flooring panels and resilient wall base.

1.03 REFERENCE STANDARDS

A. ADA Standards - 2010 ADA Standards for Accessible Design 2010.

B. CISCA (AF) - Recommended Test Procedures for Access Floors 2016.

C. ICC A117.1 - Accessible and Usable Buildings and Facilities 2017.

D. NFPA 75 - Standard for the Fire Protection of Information Technology Equipment 2020.

1.04 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide manufacturer's data sheets including loading capacities, materials, finishes, dimensions of components, profiles, and accessories.

C. Shop Drawings: Indicate floor layout, appurtenances or interruptions, edge details, ramps.

D. Designer's Qualification Statement.

E. Manufacturer's Qualification Statement.

F. Installer's Qualification Statement.

G. Manufacturer's Qualification Statement.

H. Maintenance Materials: Furnish the following for Owner's use in maintenance of project.
   1. See Section 01 6000 - Product Requirements, for additional provisions.
   2. Extra Materials: Supply an additional 5 (five) percent of access flooring system components.
   3. Panel Lifting Devices: One, of manufacturer's standard type.

1.05 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the types of products specified in this section, with minimum three years of documented experience.

B. Installer Qualifications: Company specializing in performing the type of work required in this section and approved by access flooring manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Access Flooring - Adjustable Height:
   1. Global IFS; TC 1250
   2. Tate Access Floors, Inc; ConCore 1250
   3. Substitutions: See Section 01 6000 - Product Requirements.

2.02 PERFORMANCE REQUIREMENTS

A. General: Comply with the following system requirements and as indicated for specified components.
   1. Test in accordance with CISCA (AF).
   2. Comply with requirements of NFPA 75.
   3. Accessibility: Comply with ICC A117.1 and ADA Standards.

2.03 ACCESS FLOORING - ADJUSTABLE HEIGHT

A. Factory-fabricated system consisting of removable floor panels and supporting understructure that allows access to space below floor without requiring removal of panels other than the one directly above the space to which access is needed; provide components and accessories required for complete installation.

B. Configuration:
   1. Bolted panels on stringerless understructure.

C. Components:
   1. Pedestal Assembly:
      a. Material: Steel.
      b. Base: Manufacturer's standard shape and size in accordance with system performance requirements.
      c. Column: Threaded supporting rod to permit 1-1/2 inch adjustment.
      d. Maximum Pedestal Axial Load: 5000 pounds without permanent deformation, when tested in accordance with CISCA (AF).
   2. Floor Panels:
      a. Construction:
         1) Steel pan with exposed lightweight concrete fill.
   3. Floor Covering: Field applied, as indicated.
      a. Resilient Tile: As specified in Section 09 6500.

2.04 ACCESSORIES - ADJUSTABLE HEIGHT

A. Fascia Panels: Laminated construction as follows:
   1. Front and Back Face Sheets: Aluminum sheet, ____ inch thick.
   2. Core: Plywood.
   3. Accessories: Include corner pieces, trim, reinforcing, and clip angles.

B. Electrostatic Grounding Connectors: Solid copper.

C. Cable Cutout Protection: Manufacturer's standard type, self-extinguishing.

2.05 FABRICATION

A. Fabrication Tolerances:
   1. Floor Panel Flatness: Plus or minus 0.02 inch in any direction.
   2. Floor Panel Width or Length From Specified Size: Plus or minus 0.02 inch.
   3. Floor Panel Squareness: Plus or minus 0.03 inch difference between opposite diagonal dimensions.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify field measurements are as indicated on shop drawings.

B. Verify that substrates comply with tolerances, dimensioned clearances, and other requirements specified in other sections, and that substrates are clean, dry, and free of conditions and deleterious substances that might interfere with system installation.

C. Verify substrates comply with minimum subfloor flatness (FF) and subfloor levelness (FL) as specified in Section 03 3000.

D. Verify that required utilities are available, in proper location, and are ready for use.

E. Start of installation constitutes acceptance of project conditions.

3.02 PREPARATION

A. Vacuum clean substrate surfaces.

3.03 INSTALLATION - ADJUSTABLE HEIGHT ACCESS FLOORING

A. Install components in accordance with manufacturer's instructions.

B. Secure pedestal base plate to subfloor with adhesive.

C. Install additional base units where grid pattern is interrupted by room appurtenances or at cut-outs.

D. Close field cut floor panels with edge trim.

E. Provide positive electrical earth grounding of entire floor assembly in accordance with NFPA 75.

F. Fascia Panels:
   1. Install fascia panels at exposed sides.
   2. Secure panels to clip angles attached to structural floor and edge of floor panels.
   3. Install metal trim at intersection of fascia panels and access floor and at abutting walls and columns.

3.04 TOLERANCES

3.05 ADJUSTING

A. Adjust pedestals to achieve a level floor and to assure adjacent floor panel surfaces are flush.

3.06 PROTECTION

A. Do not permit traffic over unprotected floor surface.

END OF SECTION

SECTION 10 2310
GLAZED INTERIOR WALL AND DOOR ASSEMBLIES

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Frameless glazed interior wall and door assemblies.

1.02 REFERENCE STANDARDS

A. AAMA 611 - Voluntary Specification for Anodized Architectural Aluminum 2020.

B. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes 2021.

C. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes (Metric) 2021.

D. ASTM C920 - Standard Specification for Elastomeric Joint Sealants 2018.

E. ASTM C1036 - Standard Specification for Flat Glass 2021.

F. ASTM C1048 - Standard Specification for Heat-Strengthened and Fully Tempered Flat Glass 2018.

1.03 SUBMITTALS

A. See Section 01 3000 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's descriptive literature for each component in partition assembly.

C. Shop Drawings: Drawings showing layout, dimensions, identification of components, and interface with adjacent construction.

D. Design Data: Design calculations, bearing seal and signature of structural engineer licensed to practice in the State in which the Project is located, showing loads at points of attachment to the building structure.

E. Certificates: Contractor to certify that installer of partition assemblies meets specified qualifications.

F. Operation and Maintenance Data: For manufacturer-supplied operating hardware.

G. Specimen Warranty.

H. Manufacturer's Installation Instructions: Include complete preparation, installation, and cleaning requirements.

I. Fabricator's Qualification Statement.

J. Manufacturer's Qualification Statement.

K. Installer's Qualification Statement.

1.04 QUALITY ASSURANCE

A. Fabricator Qualifications: Minimum three years of experience designing, assembling, and installing partition assemblies similar to those specified in this section.

B. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with not less than three years of documented experience.

C. Installer Qualifications: Company specializing in performing work of type specified and with at least three years of documented experience.

1.05 DELIVERY, STORAGE, AND HANDLING

A. Store products in manufacturer's unopened packaging until installation.

PART 2 PRODUCTS

2.01 FRAMELESS GLAZED INTERIOR WALL AND DOOR ASSEMBLIES

A. Frameless Glazed Interior Wall Assembly: Factory fabricated assemblies consisting of full-width and height glass panels fastened with low profile sidelite aluminum rail fittings on top and

bottom edge of glass wall.

1. Full Length Top and Bottom Sidelite Rails: 2-5/16 inch high by 1-1/2 inch deep with end caps.
2. Sidelite Fittings, Clad Finish: Satin anodized.
3. Glass Thickness: 3/8 inch, tempered.
4. Designed to withstand normal operation without damage, racking, sagging, or deflection.
5. Coordinate wall and door assembly preparation and provide hardware as necessary for fully operable installation.
6. Finished metal surfaces protected with strippable film.
7. Factory assembled to greatest extent practical; may be disassembled to accommodate shipping constraints.

2.02 MATERIALS

A. Glass: Flat glass meeting requirements of ASTM C1036, Type I - Transparent Flat Glass, Class 2 - Tinted, Quality Q3, fully tempered in accordance with ASTM C1048, Kind FT, and as follows:
   1. Thickness: 3/8 inch.
   2. Glazing Gaskets: Provide flexible vinyl for non-fire rated and elastomeric silicone for fire rated frames.
   3. Polish edges that will be exposed in finished work to bright flat polish.
   4. Temper glass materials horizontally; visible tong marks or tong mark distortions are not permitted.

B. Aluminum Components: Complying with ASTM B221 (ASTM B221M), alloy 6063, T5 temper.

C. Sealant: One-part silicone sealant, complying with ASTM C920, clear.

2.03 FINISHES

A. Class I Natural Anodized Finish: AAMA 611 AA-M12C22A41 Clear anodic coating not less than 0.7 mils thick.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that field measurements are as indicated.

B. Verify that track supports are properly braced, level within 1/4 inch of required position and parallel to the floor surface.

C. Verify floor flatness of 1/8 inch in 10 feet, non-cumulative.

D. Do not begin installation until supports and adjacent substrates have been properly prepared.

E. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.02 PREPARATION

A. Clean substrates thoroughly prior to installation.

B. Prepare substrates using the methods recommended by the manufacturer for achieving acceptable result for the substrate under the project conditions.

3.03 INSTALLATION

A. Install in accordance with glazed interior wall and door assembly manufacturer's instructions.

B. Fit and align glazed interior wall and door assembly level and plumb.

3.04 ADJUSTING

A. Adjust glazed interior wall and door assembly to operate smoothly from sliding or pivoting positions.

3.05 CLEANING

A. Remove protective film from exposed metal surfaces.

B. Metal: Clean exposed metal finishes with potable water and mild detergent, in accordance with manufacturer recommendations; do not use abrasive materials or chemicals, detergents or other substances that may damage the material or finish.

C. Glass and Glazing: Clean glazing surfaces; remove excess glazing sealant compounds, dirt, and other substances.

3.06 PROTECTION

A. Protect installed products until Date of Substantial Completion.

B. Touch-up, repair or replace damaged products before Date of Substantial Completion.

END OF SECTION

SECTION 32 9219
SEEDING

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Preparation of subsoil.

B. Placing topsoil.

C. Seeding, mulching and fertilizer.

1.02 RELATED REQUIREMENTS

A. Section 31 2200 - Grading: Topsoil material.

B. Section 31 2200 - Grading: Preparation of subsoil and placement of topsoil in preparation for the work of this section.

1.03 DELIVERY, STORAGE, AND HANDLING

A. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable. Deliver seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.

B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

PART 2 PRODUCTS

2.01 SEED MIXTURE

A. Seed Mixture:
   1. Kentucky Blue Grass: 10 percent.
   2. Red Fescue Grass: 90 percent.

2.02 SOIL MATERIALS

A. Topsoil: as specified in Section 31 2200.

2.03 ACCESSORIES

A. Mulching Material: Oat or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.

B. Fertilizer: Recommended for grass, with 50 percent of the elements derived from organic sources; of proportion necessary to eliminate deficiencies of topsoil, to the following proportions:

C. Water: Clean, fresh and free of substances or matter that could inhibit vigorous growth of grass.

PART 3 EXECUTION

3.01 EXAMINATION

A. Verify that prepared soil base is ready to receive the work of this Section.

3.02 PREPARATION

A. Prepare subgrade in accordance with Section 31 2200.

B. Place topsoil in accordance with Section 31 2200.

3.03 FERTILIZING

A. Apply fertilizer in accordance with manufacturer's instructions.

B. Apply after smooth raking of topsoil and prior to roller compaction.

C. Do not apply fertilizer at same time or with same machine as will be used to apply seed.

D. Mix thoroughly into upper 2 inches of topsoil.

E. Lightly water to aid the dissipation of fertilizer.

3.04 SEEDING

A. Apply seed at a rate of 12 lbs per 1000 sq ft evenly in two intersecting directions. Rake in lightly.

B. Do not seed areas in excess of that which can be mulched on same day.

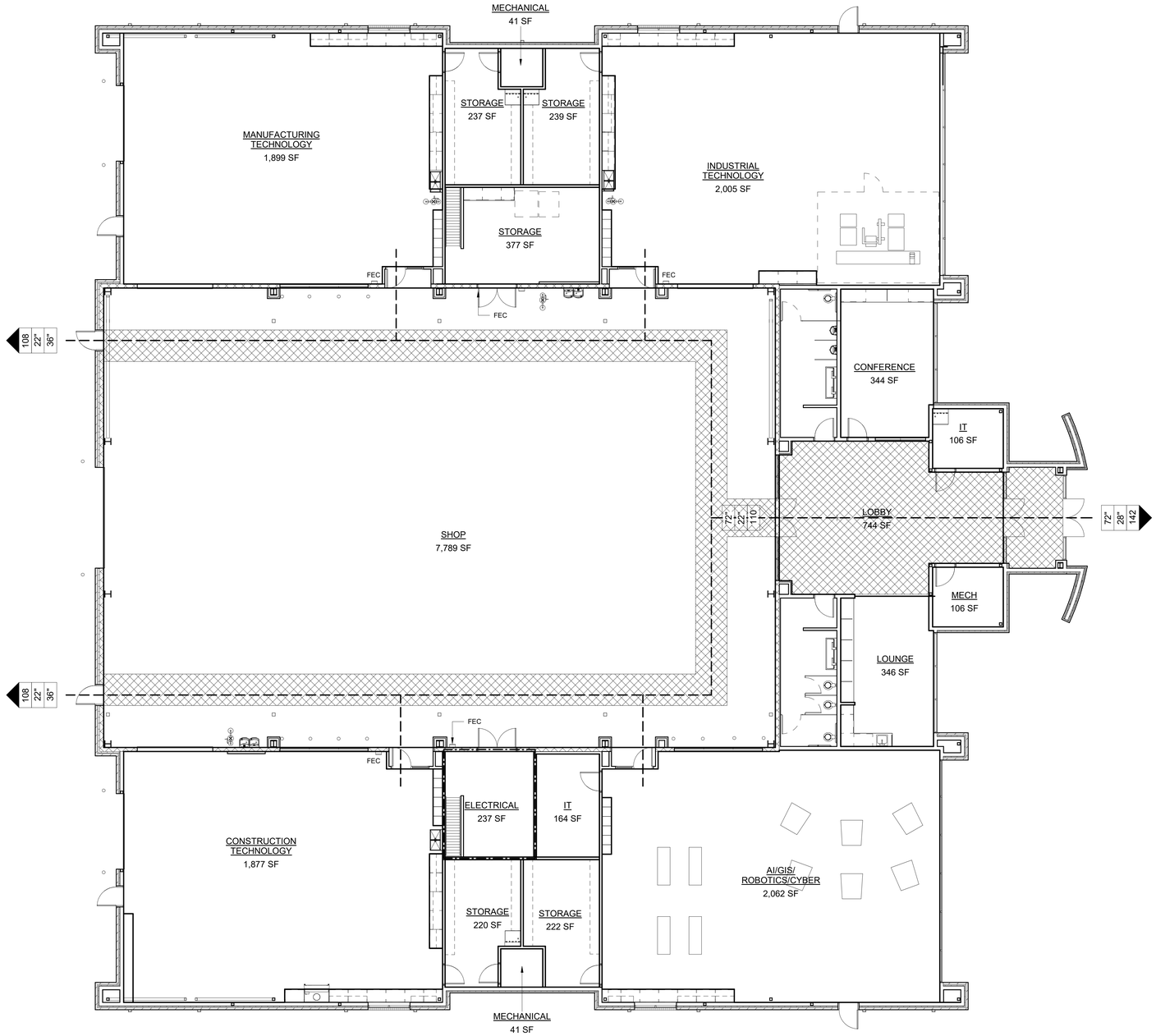
C. Do not sow immediately following rain, when ground is too dry, or during windy periods.

D. Immediately following seeding and compacting, apply mulch to a thickness of 1/8 inches. Maintain clear of shrubs and trees.

E. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4 inches of soil.

F. Following germination, immediately re-seed areas without germinated seeds that are larger than 4 by 4 inches.

END OF SECTION



1 CODE ANALYSIS FLOOR PLAN

SCALE: 1/8" = 1'-0"

GENERAL CODE INFORMATION

CODE: INTERNATIONAL BUILDING CODE (IBC) 2018; UNIFORM PLUMBING CODE (UPC) 2015; NATIONAL ELECTRIC CODE (NEC) 2017; INTERNATIONAL MECHANICAL CODE (IMC) 2018; INTERNATIONAL CODE COUNCIL (ICC)/AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI) A117.1 2017

USE GROUP:
B - BUSINESS (EDUCATION ABOVE THE 12TH GRADE)

CONSTRUCTION TYPE: 2B

ALLOWABLE BUILDING HEIGHT AND BUILDING AREA (TABLE 504.3 & 504.4)

USE GROUP B:
MAXIMUM STORIES ALLOWED: 4; PROVIDED: 1
MAXIMUM 75'-0" HEIGHT ALLOWED, 38'-0" PROVIDED

MAXIMUM AREA/STORY:	92,000 SF/STORY (PER 2018 IBC TABLE 506.2)
FRONTAGE INCREASE:	NOT REQUIRED
TOTAL ALLOWABLE SF/STORY:	92,000 SF/STORY
TOTAL PROVIDED SF/STORY:	22,135 SF/STORY

FIRE RESISTANT RATING (TABLE 601)

BUILDING ELEMENT	HOUR RATING
STRUCTURAL FRAME	0 HR
BEARING WALL	
EXTERIOR	0 HR
INTERIOR	0 HR
NON-BEARING WALLS	
EXTERIOR	0 HR (GRATED THAN 30')
INTERIOR	0 HR
FLOOR CONSTRUCTION	0 HR
ROOF CONSTRUCTION	0 HR

FIRE DOOR & SHUTTER RATINGS (TABLE 716.5)

TYPE OF ASSEMBLY RATING	REQUIRED ASSEMBLY RATING	MIN. OPENING
FIRE WALL & BARRIERS > 1 HR	2 HR	90 MIN.
FIRE BARRIER </= 1HR		
EXIT ENCLOSURE	1 HR	60 MIN.
OTHER FIRE BARRIERS	1 HR	45 MIN.

FIRE PROTECTION SYSTEMS (SECTION 903)

FULLY SUPPRESSED

OCCUPANCY LOAD (SECTION 1004)

NAME	FUNCTION OF SPACE	AREA	FLOOR AREA PER OCCUPANT	OCCUPANT LOAD
LOBBY	BUSINESS	744 SF	150 SF	5
MECH	MECHANICAL ROOM	106 SF	300 SF	1
LOUNGE	BUSINESS	346 SF	150 SF	3
SHOP	SHOP/VOCATIONAL ROOM	7,789 SF	50 SF	156
AI/GIS/ ROBOTICS/CYBER	SHOP/VOCATIONAL ROOM	2,062 SF	50 SF	42
STORAGE	STORAGE ROOM	222 SF	300 SF	1
IT	MECHANICAL ROOM	164 SF	300 SF	1
ELECTRICAL	MECHANICAL ROOM	237 SF	300 SF	1
CONSTRUCTION TECHNOLOGY	SHOP/VOCATIONAL ROOM	1,877 SF	50 SF	38
STORAGE	STORAGE ROOM	220 SF	300 SF	1
IT	MECHANICAL ROOM	106 SF	300 SF	1
MANUFACTURING TECHNOLOGY	SHOP/VOCATIONAL ROOM	1,899 SF	50 SF	38
MECHANICAL	MECHANICAL ROOM	41 SF	300 SF	1
STORAGE	STORAGE ROOM	237 SF	300 SF	1
MECHANICAL	MECHANICAL ROOM	41 SF	300 SF	1
STORAGE	STORAGE ROOM	377 SF	300 SF	2
INDUSTRIAL TECHNOLOGY	SHOP/VOCATIONAL ROOM	2,005 SF	50 SF	41
STORAGE	STORAGE ROOM	239 SF	300 SF	1
CONFERENCE	ASSEMBLY - UNCONCENTRATED	344 SF	15 SF	23
				358

EXIT WIDTH (SECTION 1005)

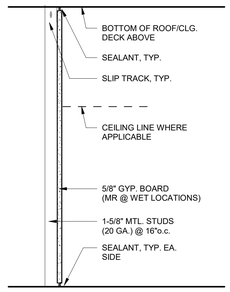
FIRST FLOOR: MINIMUM REQUIRED = 72"; PROVIDED = 144"

EXIT ACCESS TRAVEL DISTANCE (TABLE 1016.1)

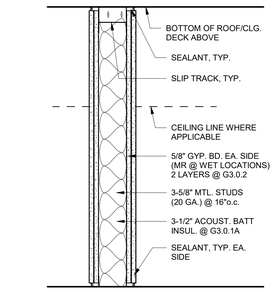
OCCUPANCY "B" = 250'-0" WITH SPRINKLER SYSTEM

EXIT QUANTITY (SECTION 1021)

FIRST FLOOR: 2 REQUIRED, 3 PROVIDED



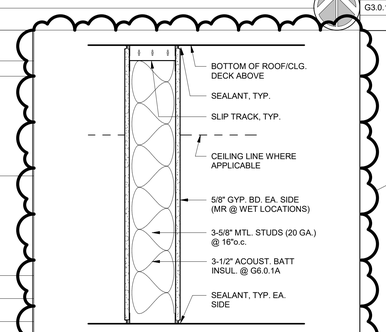
G2.0	FIRE RATING: 0 HR.	UL #: N/A
G2.0.1(1)	1-5/8" METAL STUDS w/ G.B. ONE SIDE	
G3.0.1(1)	3-5/8" METAL STUDS w/ G.B. ONE SIDE	



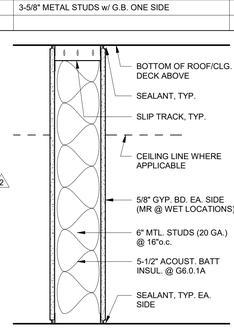
G3.0	FIRE RATING: 0 HR.	UL #: N/A
G3.0.1	3-5/8" METAL STUDS	
G3.0.1A	3-5/8" METAL STUDS w/ ACOUST. INSUL.	
G3.0.2	3-5/8" METAL STUDS w/ 2 LAYERS OF GYP.	

CODE LEGEND

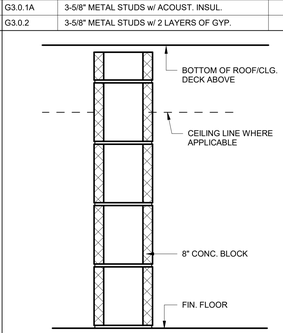
SYMBOL	DESCRIPTION
DOOR WIDTH PROVIDED / DOOR WIDTH REQUIRED / OCCUPANT LOAD	EXTERIOR POINT OF EGRESS
DOOR WIDTH PROVIDED / DOOR WIDTH REQUIRED / OCCUPANT LOAD	INTERIOR POINT OF EGRESS
	1HR. FIRE BARRIER
	2HR. FIRE BARRIER
FEC	FIRE EXTINGUISHER & CABINET
	FIRE ALARM PULL STATION
	CIRCULATION PATH



G3.1	FIRE RATING: 1 HR.	UL #: U423
G3.1.1	3-5/8" METAL STUDS	
G3.1.1A	3-5/8" METAL STUDS w/ ACOUST. INSUL.	



G6.0	FIRE RATING: 0 HR.	UL #: N/A
G6.0.1	6" METAL STUDS	
G6.0.1A	6" METAL STUDS w/ ACOUST. INSUL.	



M8.0	FIRE RATING: 0 HR.	UL #: N/A
M8.0	8" CONCRETE BLOCK	

3 WALL PARTITIONS

SCALE: 1 1/2" = 1'-0"

STATE OF MISSOURI
JEREMY T. PROCTOR
NUMBER 2016006772
ARCHITECT
JEREMY T. PROCTOR, ARCHITECT
MO # A-2016006772

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CONSULTANTS

NO.	ISSUE DESCRIPTION	DATE

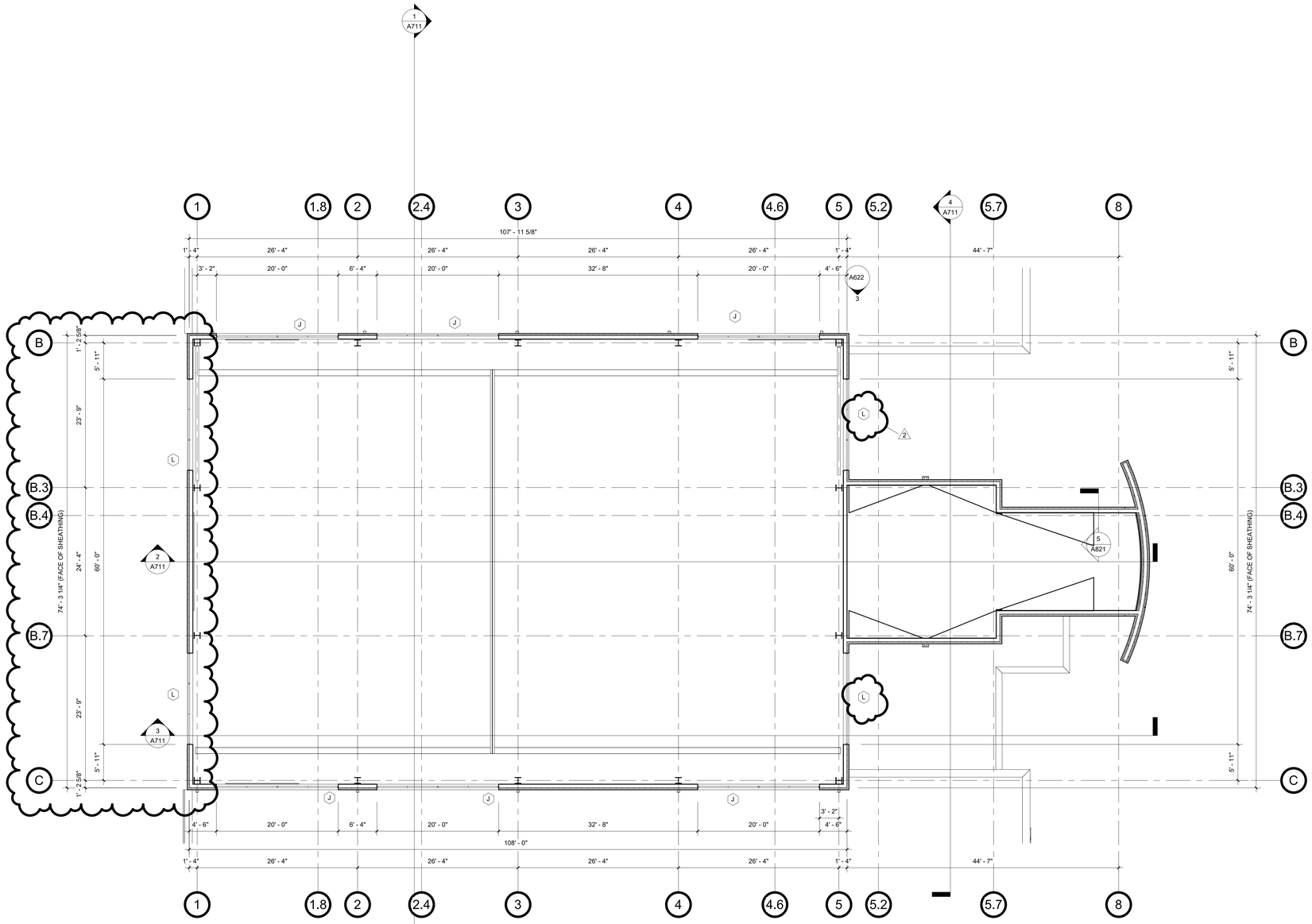
NO.	REVISION DESCRIPTION	DATE
2	ADDENDUM #2	05.18.2023

PROJECT:
MISSOURI WESTERN STATE UNIVERSITY
FB24-001 CTAC BUILDING
4525 DOWNS DRIVE
ST. JOSEPH, MO 64507

CODE ANALYSIS PLAN

SHEET:
G200

OF: **DATE:** 05-01-2023



1 LEVEL 3
SCALE: 1/8" = 1'-0"

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STATE OF MISSOURI
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PROJECT:
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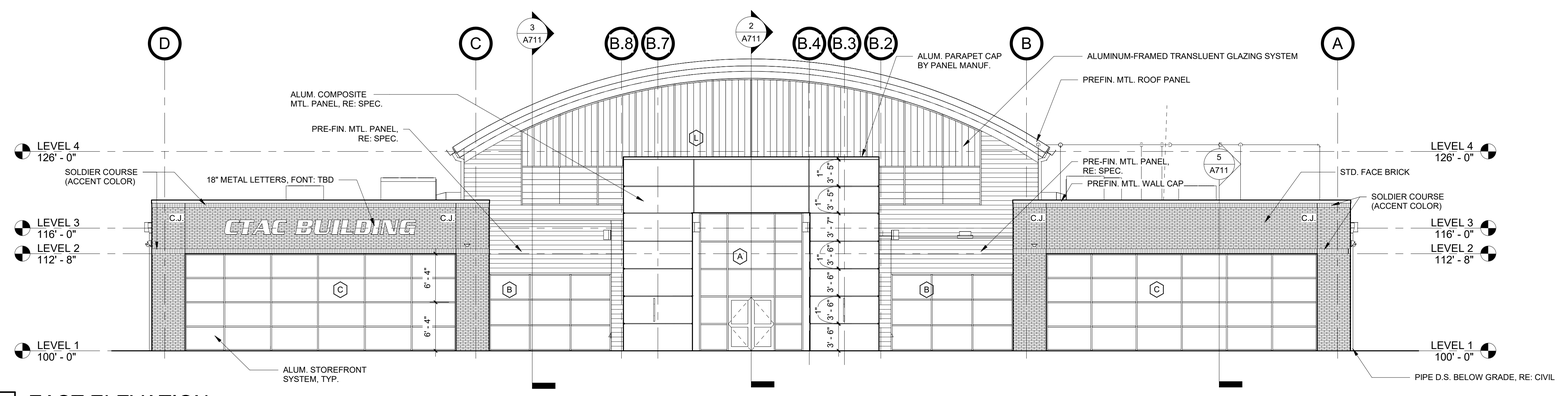
LEVEL 2 - CLERESTORY PLAN

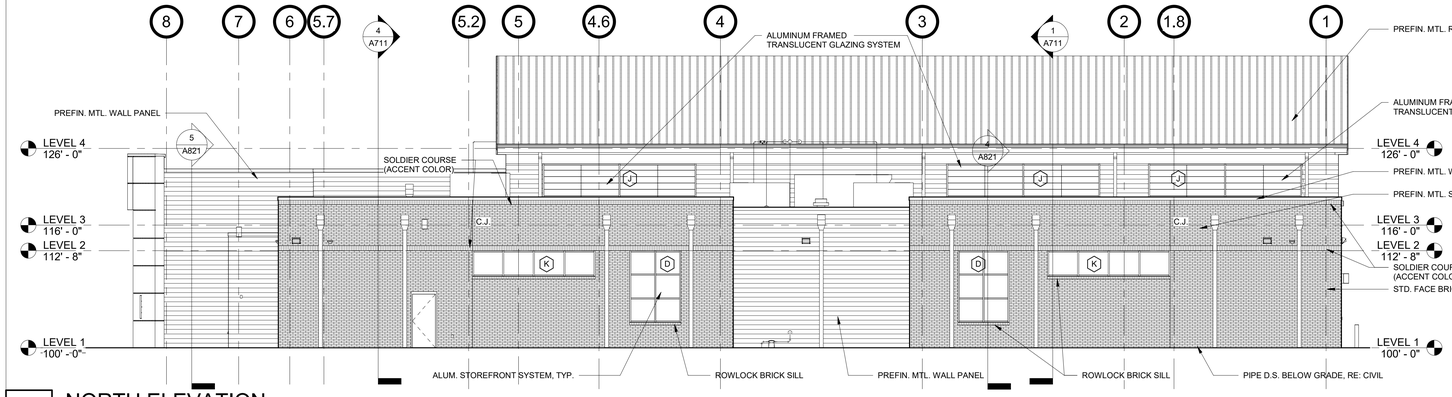
SHEET:
A221

OF: **DATE:** 05-01-2023



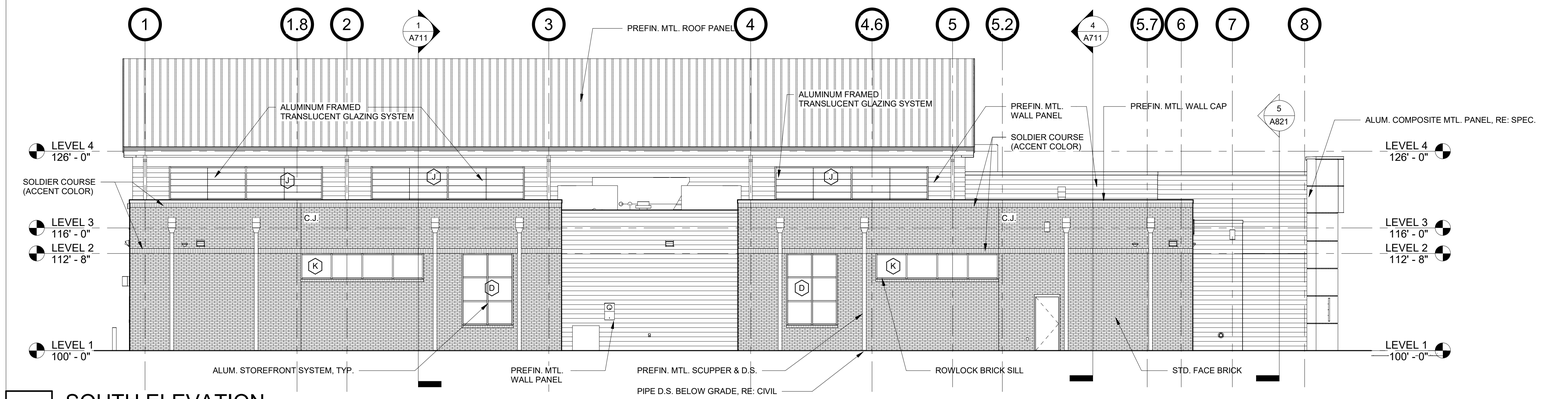
1 EAST ELEVATION

SCALE: 1/8" = 1'-0"



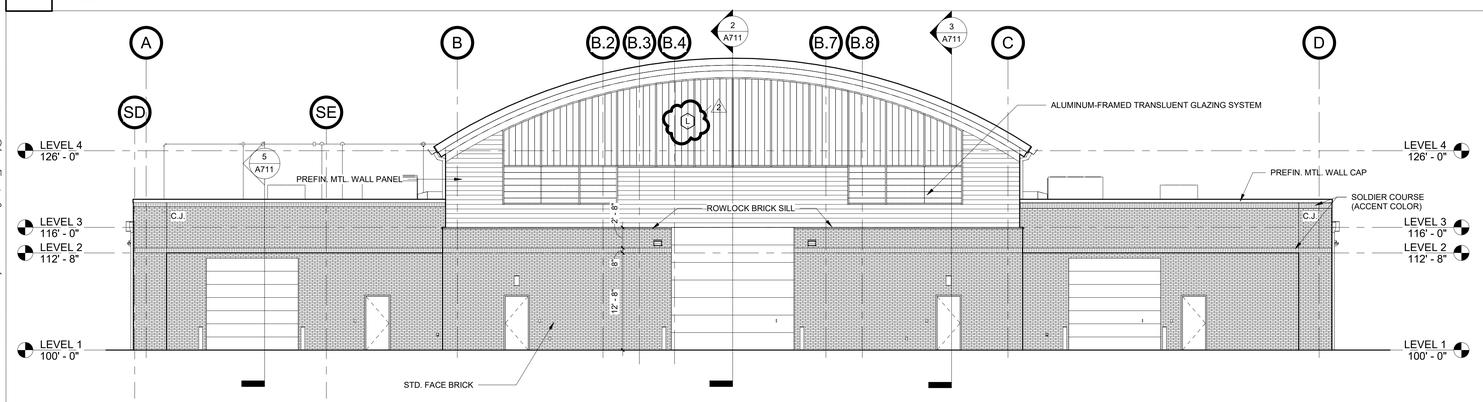
2 NORTH ELEVATION

SCALE: 1/8" = 1'-0"



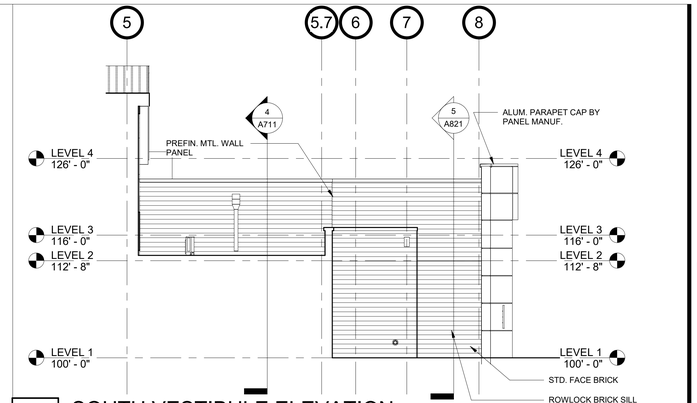
3 SOUTH ELEVATION

SCALE: 1/8" = 1'-0"



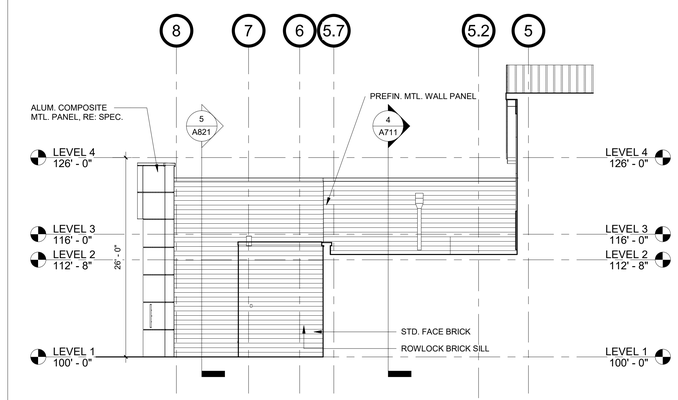
4 WEST ELEVATION

SCALE: 1/8" = 1'-0"



5 SOUTH VESTIBULE ELEVATION

SCALE: 1/8" = 1'-0"



6 NORTH VESTIBULE ELEVATION

SCALE: 1/8" = 1'-0"

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EXTERIOR ELEVATIONS

SHEET:
A521

OF: **DATE:** 05-01-2023

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