D+P Architects, PLLC
P.O. Box 703
Meridian, MS 39302
www.davispurdyarchitects.com

Meridian Airport Authority, Dean Aircraft Services
Hangar Additions & Alterations

ADDENDUM NO. 2

TO: All Bidders on the Above Referenced Product
FROM: Davis Purdy Architects, PLLC
DATE: March 29, 2021
SUBJECT: **ADDENDUM NO. 2**

ACKNOWLEDGEMENT OF RECEIPT OF ADDENDUM IS REQUIRED ON BID FORM.

Clarifications and revisions to Contract Documents for the referenced project are as follows:

1. **CLARIFICATION:** Sealed bids will be received in the Meridian Regional Airport Terminal Building located at 2811 Highway 11 South, Meridian, MS 39307 until 2:00 PM, Local Time, Friday April 2, 2021. This building is a different location than the building where the Pre-Bid was held.

2. **DELETE:** Delete ALL **Factory Mutual (FM) Global** requirements. There are no FM Global requirements for this project.

3. **CLARIFICATION:** Awarded bidder shall provide Builder's Risk policy that includes "Business Interruption".

4. **CLARIFICATION:** Davis Bacon and DBE requirements DO NOT APPLY to this project.

5. **CLARIFICATION:** Provided 5/8" minimum thickness for plywood ceilings as indicated on the drawings.

6. **ADD:** Add Geotechnical Investigation dated 10/21/20 prepared by Engineering Plus, Inc to the bid documents. Geotechnical Investigation is attached.

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7. **CLARIFICATION:** If the fire protection engineer, required by the contract documents, confirms with their stamped calculates that the existing fire pump and storage tanks are sufficient for the new hanger, then no additional tank is needed nor does the fire pump need to be replaced. Ensure that the design meets as NFPA requirements for both hangers to run simultaneously.

8. **CLARIFICATION:** Variable Frequency Drive (VFD-1) to be provide by Air Turnover Unit (ATO-1) manufacturer. VFD to be NEMA 1 enclosure with two contactor bypass, circuit breaker and disconnect, BACnet Comm Card and EMI-RFI Filter.

SPECIFICATIONS

9. **CLARIFICATION:** Specification section **00 21 13 – Instructions to Bidders** dated 3/3/21 indicates that a copy of **AIA Document A701, "Instructions to Bidders"** is bound in the Project Manual. A copy of AIA Document A701 2018 was not originally included. A sample copy of AIA Document A701 2018 is attached.

10. **CHANGE:** Specification section **00 41 13 – Bid Form – General Trades Bid Package** dated 3/1/21 states TIME OF COMPLETION to be 365 days. **Change TIME OF COMPLETION** to be **450 days**.

11. **DELETE:** Specification section **00 26 00 – PROCUREMENT SUBSTITUTION PROCEDURES** dated 2/28/21.

12. **CLARIFICATION:** Specification section **00 43 22 – Unit Prices** dated 3/3/21 only pertains to Aircraft Concrete Apron as shown on Civil sheet C-103 dated 3/3/21.

13. **CLARIFICATION:** Specification section **00 43 22 – Unit Prices, 1.3 Unit Prices, A. Unit-Price No. 1: Removal of Obstructions** refers to required material to be removed for HDPE Drainage Pipe Construction.

14. **CLARIFICATION**: **Liquidated Damages** are referenced on the Bid Form and in Specification Section 01 29 00 – Payment Procedures with no amount indicated.

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Liquidated Damages shall be in the amount of **Five Hundred Dollars ($500.00) per day** for every day beyond the allotted project as described in Specification Section 00 44 13 – Bid Form dated 3/1/21.

15. **REPLACE:** Replace the Specification section **01 25 00 – Substitution Procedures** dated 2/28/21 with specification section **01 25 00 – Substitution Procedures Systems** dated 3/26/21. Specification section 01 25 00 is attached.

16. **CLARIFICATION:** Specification section **06 41 16 – Plastic Laminate-Faced Architectural Cabinets** indicates requirements for AWI/QCP certifications. Waive all AWI/QCP certification requirements.

17. **ADD:** Add specification section **07 41 13.16 – Standing Seam Metal Roof Panels**. Specification section 07 41 13.16 is attached.

18. **CHANGE:** Specification section **08 11 13 – Hollow Metal Doors and Frames** indicates construction to be full profile welded. Frame construction needs to change to knock down construction in lieu of welded profiles.

19. **REPLACE:** Replace the Specification section **13 34 10 – Pre-Engineered Metal Building Systems** dated 3/3/21 with specification section **13 34 10 – Pre-Engineered Metal Building Systems** dated 3/26/21. Specification section 13 34 10 is attached.

DRAWINGS

20. **REPLACE:** Replace Mechanical sheet M502 dated 3/2/21 with the same sheet dated 3/26/21. Mechanical sheet M502 is attached.

21. **REPLACE:** Replace the following Electrical sheets dated 3/2/21 with the same sheets dated 3/18/21. Minor changes are indicated with clouds on sheets. Electrical sheets are attached:

    a. **E-000**

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b. **E-001**
c. **E-002**
d. **E-003**
e. **E-005**
f. **E-006**
g. **E-100**
h. **E-200**
i. **E-201**
j. **E-300**
k. **E-301**
l. **E-302**
m. **E-401**
n. **ED-100**

Submitted By

John L. Purdy, AIA
Davis Purdy Architects, PLLC
March 29, 2021

ACKNOWLEDGEMENT OF RECEIPT OF THIS ADDENDUM IS REQUIRED AND SHALL BE INDICATED ON BID FORM

1724-B 23rd Avenue
Meridian, Mississippi 39301
www.engineeringplus.com

Phone (601)-693-4234
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engplus@engineeringplus.com

Engineering Plus

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October 21, 2019

Mr. John L. Purdy, AIA, NCARB
D+P Architects, PLLC
2011 23rd Avenue
Meridian, MS 39305

RE: GEOTECHNICAL INVESTIGATION
Dean Maintenance Hangar Expansion – Key Field, Meridian, Mississippi
EP Project No. 17-278

Dear Mr. Purdy:

Engineering Plus appreciates the opportunity to serve as consultant for the above referenced project. The attached report presents field and laboratory methods utilized in assembling data for the assessment of subsurface soils and ground water encountered for the proposed aircraft hangar expansion at Key Field Dean Maintenance Hangar in Meridian, MS. All field and laboratory procedures have been accomplished in general accordance with applicable ASTM standard specifications.

We believe the information presented herein is sufficient for continued planning and development. We appreciate the opportunity to work with you and look forward to assisting you in a successful project. Please contact us should you have questions regarding the information provided or if we may be of additional service.

Sincerely yours,

ENGINEERING PLUS, INC.

Richmond L. Alexander, P.E.
Project Engineer

GEOTECHNICAL INVESTIGATION

DEAN MAINTENANCE HANGAR EXPANSION
Key Field - Meridian, MS

FOR

D+P Architects, PLLC
Meridian, Mississippi

October 2019

Prepared by:

ENGINEERING PLUS, INC.

MERIDIAN, MISSISSIPPI

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PURPOSE AND WORK PERFORMED

The purpose of this geotechnical investigation is to determine the general characteristics of surface and subsurface soils within the area of proposed expansion. Using the information gathered during the investigation, recommendations for earthwork and foundation construction will be made. The work performed during this investigation consisted of the following:

- Six (6) soil borings in the footprint of the proposed expansion construction to depths of 30 feet;
- Natural moisture content tests on selected samples;
- Atterberg Limit determinations on selected samples;
- Grain size analyses on selected samples;
- Field observations related to site topography, and geology for the subject property and adjacent properties;
- Preparation of this report presenting our conclusions and recommendations relative to geotechnical aspects of the proposed construction.

Included in our report are discussions of site preparation considerations, including available material types and their suitability for use as foundation materials or engineered fill and design criteria for building foundations.

DESCRIPTION OF SITE CONDITIONS

The project site investigated is situated in part of the E ½ of Section 27, Township 6 North, Range 15 East, Lauderdale County, Mississippi. Specifically, the site is located on the south side of the existing Dean Maintenance Hangar site within Key Field at Meridian Regional Airport. The airport is located along US Highway 11 South (Airport Blvd.) in Meridian, Mississippi. The project site is currently a recently graded building pad adjacent to the existing hangar facility.

Proposed site improvements include a new multi-story office building and aircraft hangar to supplement the existing hangar and serve as an expansion to the existing facility.

FIELD INVESTIGATION

Six (6) borings were drilled by an Engineering Plus drill crew utilizing a Mobile B-47 truck-mounted continuous flight auger in the footprint of the proposed expansion to depths of thirty (30) feet below ground surface. The approximate boring locations were staked by an Engineering Plus drill crew and plotted on the Boring Location Plan in Appendix B. Preliminary site plan information and proposed boring locations for the expansion was provided by D+P Architects, PLLC prior to drilling at the project location.

Representative samples were collected from auger cuttings or a 2-inch outside diameter split barrel sampler. Samples were collected continuously for the first 6 to 10 ½ feet and at 5-foot to 10-foot intervals to boring termination. Additionally, Standard Penetration Resistance values (See ASTM D-1586) were determined and recorded on the boring logs for the various soils encountered. The Standard Penetration Resistance, or "N" value, is the number of blows required to drive an 18-inch standard split barrel sampler the final 12 inches utilizing a 140-pound hammer

and a free fall height of 30 inches. A rope and cathead drop system was utilized during Standard Penetration Testing. As the samples were collected, they were field classified and immediately placed in airtight containers for future testing and classification.

Groundwater was encountered during our investigation. Additional comments regarding groundwater are located in the section titled Subsurface Conditions.

LABORATORY TESTING

Laboratory analysis of selected samples included visual classification, moisture content determination, Atterberg limits and grain size analysis. A professional engineer prepared the final boring logs from field logs, collected samples and laboratory test results.

To aid in the general interpretation of the soil conditions at the project site, in-situ moisture contents (See ASTM D-4643) were determined within the various soil strata. This determination was made possible by placing extracted samples in sealed containers immediately upon removal from the sub-surface. Results of moisture content testing are depicted on the attached boring logs (See Appendix C).

Atterberg limit tests were conducted to determine the susceptibility of the cohesive soils encountered to shrink and swell with changes in moisture content. Liquid and plastic limit tests (See ASTM D-4318) were performed for selected representative samples taken from the various soil strata encountered. The liquid limit (LL) is the moisture content above which a soil behaves as a viscous fluid, whereas the plastic limit (PL) is the moisture content below which the soil behaves as a solid. The plasticity index (PI) is the numerical difference between the liquid and plastic limit and is indicative of the relative activity of a cohesive soil.

Soils exhibiting a low plasticity index are relatively inactive and are ordinarily suitable as a foundation material. Conversely, soils having a high plasticity index are susceptible to varying degrees of volume change (i.e. shrinkage and swelling) with fluctuations in moisture content.

Atterberg limit testing for representative samples taken from the project area indicate the near surface soils have plasticity indices ranging from 4 to 20. Based on this information, the near-surface soils encountered are considered to have a low to moderate potential for moisture induced volume change. Results of Atterberg limit testing are depicted on the attached boring logs (See Appendix C).

Grain size analyses were conducted on representative samples of the various soils encountered to determine the particle size distribution of materials comprising the strata. Results of these tests can be utilized in classifying the soils in accordance with the Unified Soil Classification System (See ASTM D-2487).

For your convenience, a listing of the symbols recognized by the Unified Soil Classification System and their meaning is provided with the boring logs (See Appendix C).

SUBSURFACE CONDITIONS

Details of subsurface conditions encountered by the soil borings are shown on the boring logs located in Appendix C. The boring logs represent our interpretation of the subsurface conditions based upon examination of the collected samples and laboratory testing of selected samples. Stratification lines on the boring logs represent approximate boundaries between soil types; however, the actual transition between soil types may be gradual. The general soil conditions and

their pertinent characteristics are discussed below.

Boring No. 1 discovered 2.5 feet of dense clayey sand followed by 3.5 feet of stiff to very stiff silty clay. Silty sand was then discovered to boring termination due to auger refusal at 7.5 feet below ground surface. The drilling crew encountered a hard surface at approximately 7.5 feet and could not advance the auger to deeper depths. Groundwater was not encountered during drilling activities.

Boring No. 2 encountered 4.5 feet of clayey sand underlain 3.5 feet of silty clay. Fat clay was then encountered for 4 feet followed by elastic silt and saturated silty sand to boring termination at 30 feet below ground surface. Groundwater was encountered during drilling activities at 18 feet below ground surface.

Boring No. 3 encountered 1.5 feet of medium dense clayey sand underlain by 1.5 feet of stiff silty clay. Medium dense silty sand was then encountered for 3 feet above 3 feet of loose silty sand. A layer of fat clay was then discovered for 7 feet above saturated silty sand to boring termination at 30 feet below ground surface. Groundwater was encountered during drilling activities at 18.5 feet below ground surface.

Boring No. 4 discovered 3 feet of clayey sand above 2 feet of slightly silty, sandy clay. Silty clay and clayey silt were then encountered for 3 feet above 10 feet of wet clayey and elastic silt. Saturated silty sand was then discovered to boring termination at 30 feet below ground surface. Groundwater was encountered during drilling activities at 18 feet below ground surface.

Boring No. 5 encountered 4.5 feet of clayey sand underlain by 3 feet of silty clay. Elastic silt was then encountered for 10.5 feet above saturated silty sand to boring termination at 30 feet below ground surface. Groundwater was encountered during drilling activities at 18 feet below ground surface.

Boring No. 6 discovered 4 feet of clayey sand followed by 3 feet of soft, moist slightly clayey silty sand. Wet elastic silt was then discovered for 6 feet underlain by 5 feet of fat clay. Saturated silty sand was then discovered to boring termination at 30 feet below ground surface. Groundwater was encountered during drilling activities at 18 feet below ground surface.

The borings are representative of subsurface conditions at each particular boring location and for their vertical reach only. Should materials not described in this report be encountered during construction, we respectfully request the opportunity to evaluate those materials and, if warranted, make changes and/or additions to our recommendations.

Groundwater was encountered during our drilling activities at approximately 18 feet below ground surface. It should be noted that groundwater levels may fluctuate seasonally and can be affected by changes in site development. Based on past experience at Key Field, groundwater may greatly influence foundation or sitework construction depending on the time of year in which construction occurs.

EARTHWORK AND SITE GRADING

We understand site improvements include new multi-story building and hangar construction to expand the existing Dean Maintenance Hangar Facility. The site has previously been graded for building construction. Based on existing topography and site conditions earthwork will consist of excavations for foundation construction.

Our borings indicate mostly clayey and silty sands as well as silty clays within the near-surface strata. Theses soils encountered are largely considered acceptable for foundation construction. At depths down to approximately 4-5 feet within the boring locations, these soils exhibited a medium dense to dense consistency in the clayey sands and a stiff consistency in the silty clays. As such, earthwork activities should involve excavations for foundation construction, preparation, compaction as necessary, and foundation construction in accordance with the following criteria:

Prior to foundation construction, any debris, organics and humus matter encountered during excavations should be removed from structural areas. With this particular site being a newly constructed pad for this project, it is not anticipated that any debris will be encountered. It is recommended that the existing pad compaction be verified with project specifications prior to any excavations for foundation construction. Compaction verification will also provide opportunity to confirm stability or locate any unstable areas. "Proof-rolling" may be utilized to confirm stability of the in-place soils. Proof-rolling is conducted by traversing the site with a loaded tandem-axle dump truck to identify ruts or signs of in-stability. Remediation of soft or unstable areas may consist of re-mixing, moisture conditioning, over-excavation, and/or geotextile reinforcement, and should be determined on a case-by-case basis by the engineer.

As noted above, soils encountered in **Boring No. 6** at anticipated foundation bearing elevations had a soft and moist consistency. This area should be inspected upon excavation to verify soil stability. It should be noted that during construction, remediation may be required to stabilize the foundation soils

In areas which will support structures, the soil subgrade and any necessary fill placement should be compacted to a minimum of 98% of maximum dry density per Modified Proctor (ASTM-D 1557). Compaction should be achieved in maximum loose lifts of 12 inches at a moisture content comparable (± 2.0%) to the optimum moisture content established in the laboratory and compaction verified with each lift. It is recommended minimum of one density test be performed every 2,000 square feet per lift.

Materials suitable for borrow material used as fill placement should consist of a debris-free material, non-organic and classified as a lean clay, sandy clay, silty or clayey sand (CL, SM or SC) with a plasticity index (PI) within the range of 4 to 20 and a liquid limit less than 40.

It appears the existing soils on-site have maintained stability since construction however, they may be prone to instability during inclement weather and when subjected to repetitive construction traffic. As such, we recommend any earthwork be performed during the dry summer or fall season, if the schedule permits. **Final grading, as well as any grading during construction, should be such that surface water and storm water is expediently removed from the proximity of any structures.** Further, construction traffic across the site should be limited to prevent subgrade materials, which initially may demonstrate adequate stability, from becoming unstable.

Should significant revisions be made prior to the final design, we respectfully request the opportunity to re-evaluate these recommendations with the final design documents.

FOUNDATION RECOMMENDATIONS

Based upon our analysis and adherence to recommendations outlined above, the proposed structure can be supported by a shallow foundation system consisting of a monolithically cast reinforced slab-on-grade with perimeter grade beams or turned-down footings, stiffened grade beams below any load bearing walls and column footings. Any columns should be supported by widened portions of the grade beams.

The maximum allowable soil pressure beneath foundation members should not exceed 2,000 psf (pounds per square foot of contact area). Bearing capacities have been determined utilizing a factor of safety of 3.0. We recommend that perimeter grade beams or turned-down footings around the perimeter of the building bear a minimum of 2.5 feet below the finish grade elevation and have a minimum width of 24 inches. It is recommended that any interior grade beams bear a minimum of 2 feet below the bottom of the slab. Final footing size and required reinforcing steel and details should be determined by the structural consultant.

Based on the soils encountered during drilling activities, the anticipated loads imposed by the structure and foundation installation, we estimate the range for maximum total and differential settlement to be ¾ inch to 1 ¼ inch. Previous construction and fill placement on the site has exposed a certain level of preloading on in-situ soils which should assist in minimizing post-construction settlements.

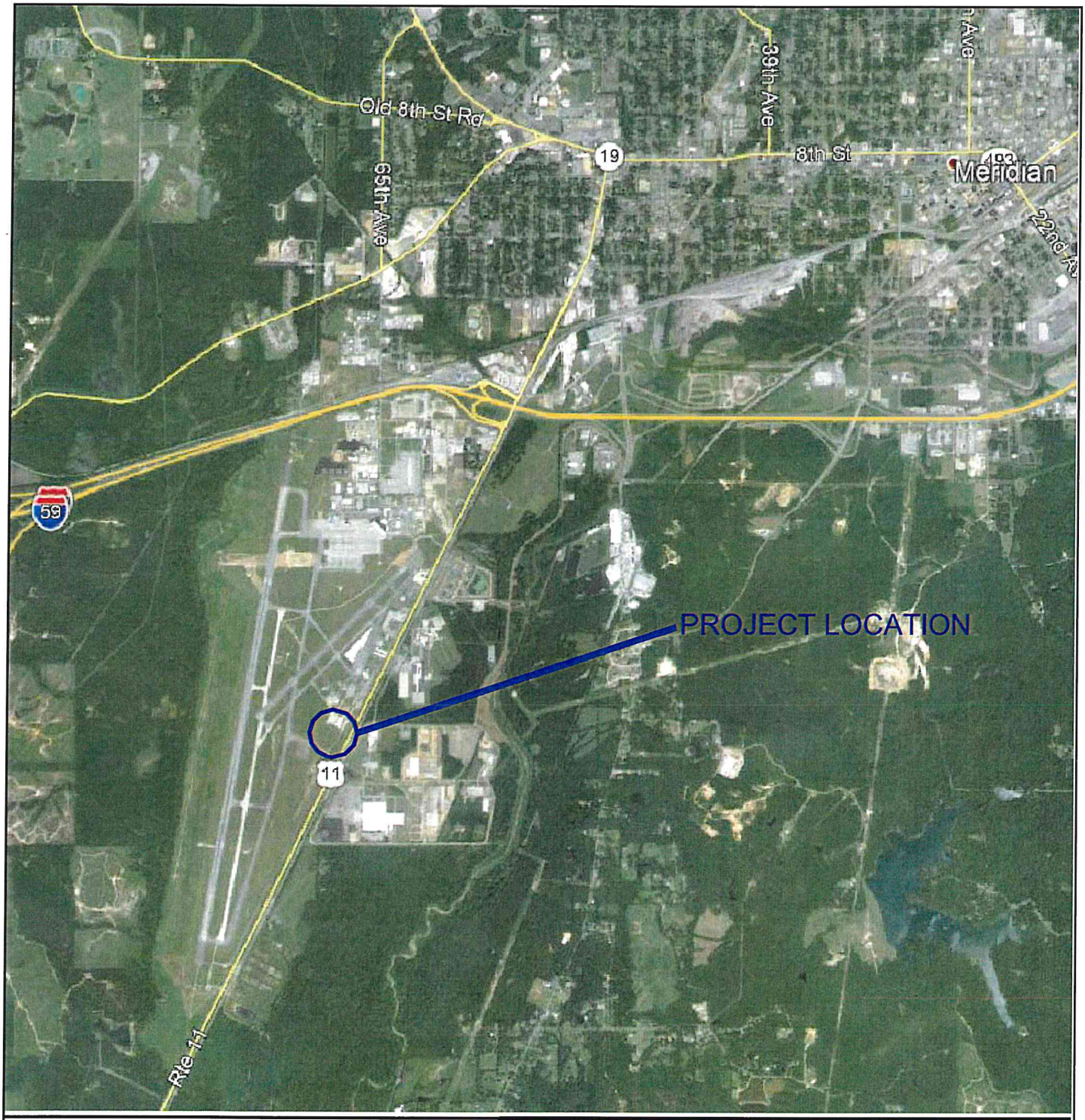
Floor slabs can be designed utilizing a modulus of subgrade reaction of 100 pci (pounds per square inch of contact area per inch of deflection). If a granular leveling material is not used as a capillary break beneath the floor slab, a 6-mil vapor barrier should be used. Typically, frost heave is not a problem in this area due to the climate and the anticipated bearing elevations provide more than adequate depth.

We recommend that foundation excavations be left open for the shortest amount of time possible to minimize the chance of bearing soils being exposed to moisture.

The bearing capacities recommended are applicable for structural fill provided the fill material meets the requirements described under **EARTHWORK AND SITE GRADING.**

APPENDIX A

SITE VICINITY MAP



Source: GOOGLE EARTH

NORTH

Not to Scale

SITE VICINITY MAP
DEAN HANGAR EXPANSION
KEY FIELD - MERIDIAN, MS

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DWG FILE: M:\wpwin60\2017\Geotech\17-278 Dean Maintenance Hangar

JOB NO. 17-278

DRAWING NO.

DATE: 10-15-19

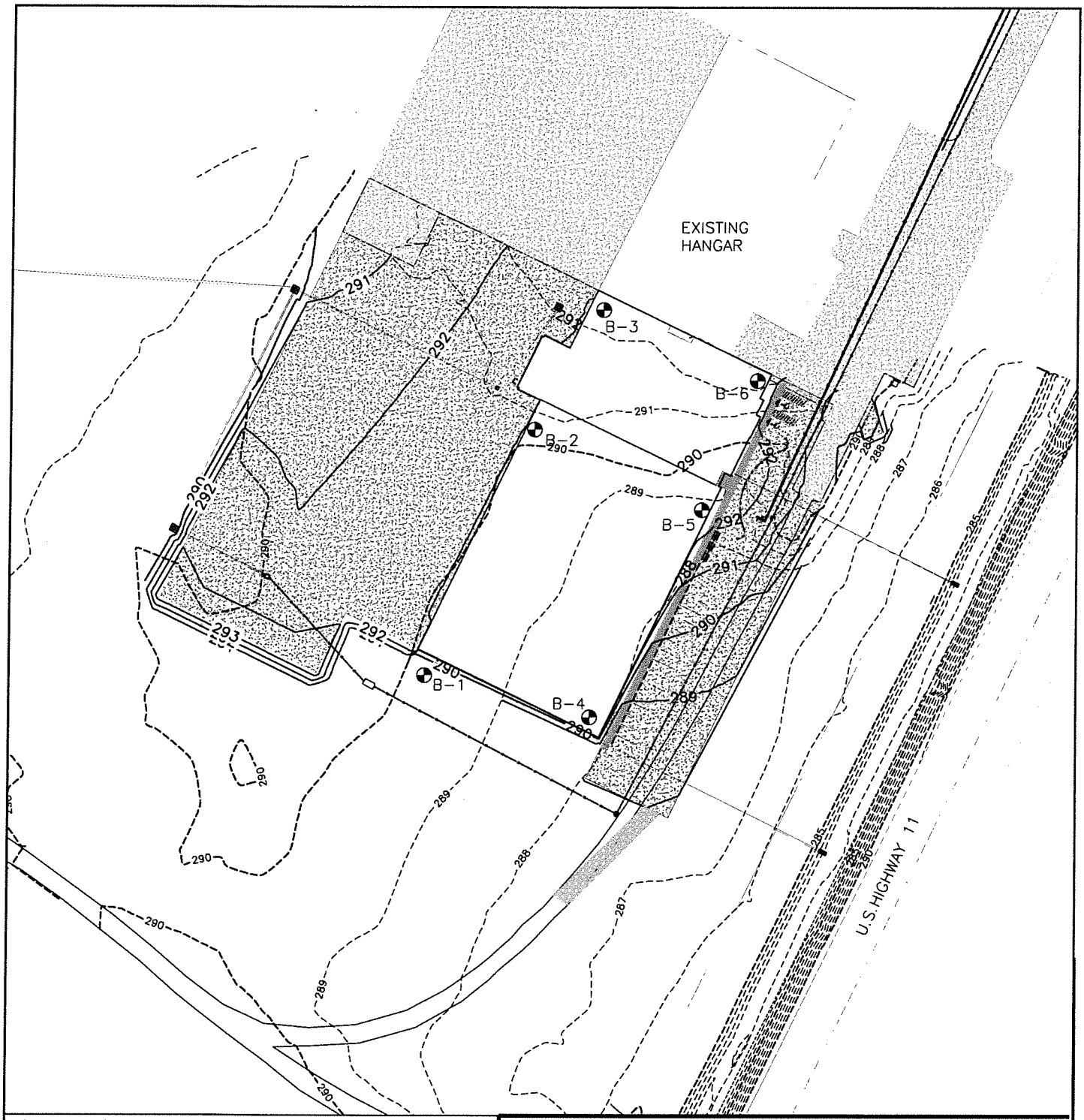
DRAWN BY: RLA

CHECKED BY: KT

SHEET: 1 OF 1

APPENDIX B

BORING LOCATION PLAN



Source: Site Plan

Approximate Boring Location

NORTH

Not to Scale

BORING LOCATION PLAN
DEAN HANGAR EXPANSION
KEY FIELD - MERIDIAN, MS

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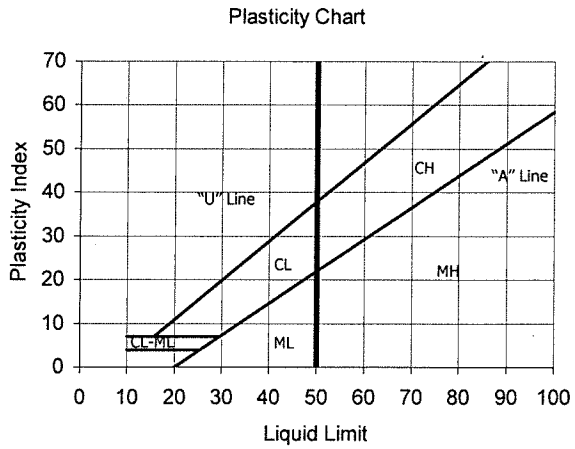
DWG FILE: M:\wpwin60\2017\Geotech\17-278 Dean Maintenance Hangar	DATE: 10-15-19	SHEET:
JOB NO. 17-278	DRAWN BY: RLA	
DRAWING NO.	CHECKED BY: KT	1 OF 1

APPENDIX C

USCS CHART & BORING LOGS

Major Divisions			Group Symbols	Typical Names	Laboratory Classification Criteria			
Coarse-grained soils (More than half of material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (Little or no fines)	GW	Well-graded gravels, gravel sand mixtures, little or no fines	Determine percentages of gravel and sand from grain-size curve. Depending of percentage of fines (fraction smaller than No. 200 sieve size), coarse-Grained soils are classified as follows:	GW, GP, SW, SP GM, GC, SM, SC Borderline cases requiring dual symbols**	$C_u=D_{60}/D_{10}>4$; $C_c=D_{30}^2/(D_{10}xD_{60})$ between 1 and 3	
			GP	Poorly graded gravels, gravel-sand mixtures, little or no fines			Not meeting all gradation requirements for GW	
		Gravels with fines (Appreciable amount of fines)	GM* d / u	Silty gravels, gravel-sand-silt mixtures			Atterberg limits below "A" line with P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
			GC	Clayey gravels, gravel-sand-clay mixtures			Atterberg limits above "A" line with P.I. greater than 7	
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fiines		Less than 5 percent More than 12 percent 5 to 12 percent	$C_u=D_{60}/D_{10}>6$, $C_c=D_{30}^2/(D_{10}xD_{60})$ between 1 and 3	
			SP	Poorly graded sands, gravelly sands, little or no fines			Not meeting all gradation requirements for SW	
		Sands with fines (Appreciable amount of fines)	SM* d / u	Silty sands, sand-silt mixtures			Atterberg limits below "A" line with P.I. less than 4	Limits plotting in hatched zone with P.I. between 4 and 7 are borderline requiring use of dual symbols
			SC	Clayey sands, sand-clay mixtures			Attergerg limits Above "A" line with P.I. greater than 7	
Fine-grained soils (More than half of material is smaller than No. 200 sieve size)	Silts and Clays (Liquid limit less than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity				
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays lean clays				
			OL	Organic silts and organic silty clays of low plasticity				
	Silts and clays (Liquid limit greater than 50)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty, elastic silts				
			CH	Inorganic clays of high plasticity, fat clays				
			OH	Organic clays of medium to high plasticity, organic silts				
	Highly organic soils		Pt	Peat and other highly organic soils				



*Division of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivision is based on Atterberg limits; suffix d used when L.L. is 28 or less and the P.I. is 6 or less; the suffix u used when L.L. is greater than 28.

**Borderline classifications, used for possessing characteristics of two groups, are designated by combinations of group symbols. For example: GW-GC, well-graded gravel-sand mixture with clay binder.

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SOIL BORING LOG

PROJECT: Dean Maintenance Hangar Expansion — PROJECT NO: 17-278

CLIENT: D+P Architects, PLLC — BORING NO: B-1

LOGGER: R. Alexander — DATE: 10/3/2019

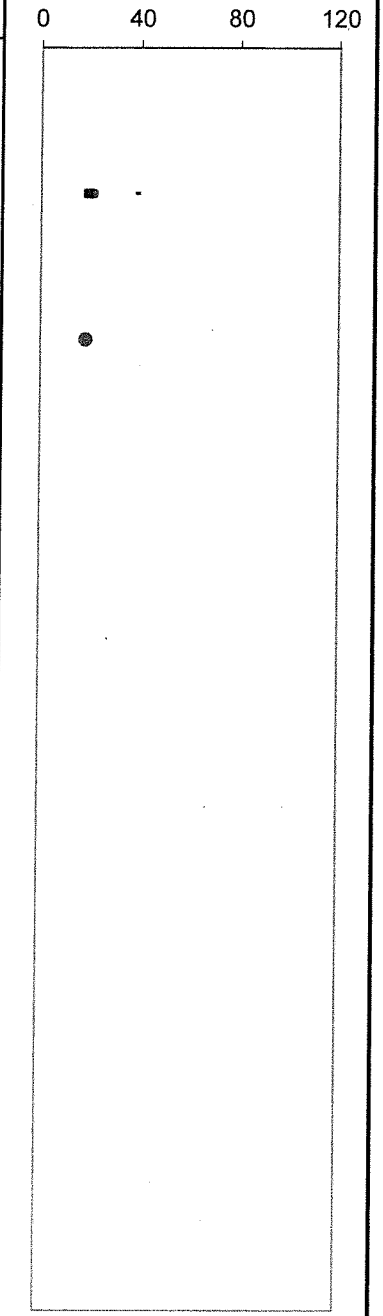
DRILLER: B. Lowery — SURFACE ELEVATION: ±292.3

Rig: Mobile B-47
Drilling Method: 2 1/4 SSA w/ SPT
Backfill Method: Cuttings
Boring Depth: 30 Feet

Water Level	Depth (ft)	Sample	SPT	N - Value	DCP (blows/.75")	Classification	Visual Classification - Remarks	Moisture Content-(%)	Liquid Limit	Plasticity Index	- 200 %
	0					SC	Light reddish brown clayey sand w/ gravel				
						SC	Brownish red clayey sand				
						CL	Light brown silty clay	19	38	20	67
	5	X	2 6 12	18		CL	Grayish brown silty clay				
						SM	Grayish brown silty sand				
							Auger Refusal @ 7.5 ft.				
	10										
	15										
	20										
	25										

Hammer: Rope and Cathead

Plastic Limit / Moisture
Liquid Limit / N - Value



Auger (ASTM D 1452)

Standard Penetration Test (ASTM D 1586)

Shelby Tube (ASTM D 1587)

Initial Water Level

Delayed Water Level

Notes: Boring terminated @ -30 ft.
Groundwater was not encountered during drilling activities.

N - Value ■ Moisture

Liquid Limit • Plastic Index

Engineering Plus, Inc.

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SOIL BORING LOG

PROJECT: Dean Maintenance Hangar Expansion — PROJECT NO: 17-278

CLIENT: D+P Architects, PLLC — BORING NO: B-2

LOGGER: R. Alexander — DATE: 10/3/2019

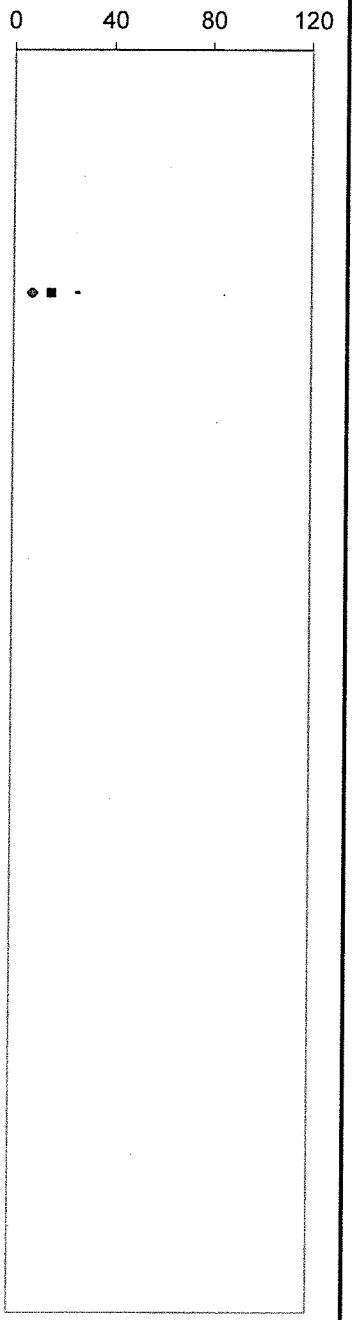
DRILLER: B. Lowery — SURFACE ELEVATION: ±292.3

Rig: Mobile B-47
Drilling Method: 2 1/4 SSA w/ SPT
Backfill Method: Cuttings
Boring Depth: 30 Feet

Hammer: Rope and Cathead

Water Level	Depth (ft)	Sample	SPT	N - Value	DCP (blows/.75")	Classification	Visual Classification - Remarks	Moisture Content-(%)	Liquid Limit	Plasticity Index	- 200 %
	0					SC	Reddish brown clayey sand w/ gravel				
						SC	Brownish red clayey sand				
						SC	Brownish red clayey sand				
	5					CL	Brownish gray silty clay	15	25	7	54
						CH	Light brown fat clay				
	10					MH	Light brown elastic silt				
	15					MH	Light brown elastic silt wet				
▽						SM	Light brown silty sand saturated				
	20										
	25						*See Next Page*				

Plastic Limit / Moisture
Liquid Limit / N - Value



Auger (ASTM D 1452)
Shelby Tube (ASTM D 1587)
Standard Penetration Test (ASTM D 1586)
▽ Initial Water Level
▼ Delayed Water Level

Notes: Boring terminated @ -30 ft.
Groundwater was encountered during drilling activities @ 18 ft. below ground surface

N - Value
Moisture
Liquid Limit
Plastic Index

Engineering Plus, Inc.

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SOIL BORING LOG

PROJECT: Dean Maintenance Hangar Expansion — PROJECT NO: 17-278

CLIENT: D+P Architects, PLLC — BORING NO: B-2 (Cont'd)

LOGGER: R. Alexander — DATE: 10/3/2019

DRILLER: B. Lowery — SURFACE ELEVATION: ±292.3

Rig: Mobile B-47

Drilling Method: 2 1/4 SSA w/ SPT

Backfill Method: Cuttings

Boring Depth: 30 Feet

Hammer: Rope and Cathead

Plastic Limit / Moisture

Liquid Limit / N - Value

Water Level	Depth (ft)	Sample	SPT	N - Value	DCP (blows/.75")	Classification	Visual Classification - Remarks	Moisture Content-(%)	Liquid Limit	Plasticity Index	- 200 %
	25					SM	Light brown silty sand saturated				
	30						*Boring Terminated @ -30 ft.*				
	35										
	40										
	45										
	50										

0 40 80 120

Auger (ASTM D 1452)

Standard Penetration Test (ASTM D 1586)

Shelby Tube (ASTM D 1587)

Initial Water Level

Delayed Water Level

Notes: Boring terminated @ -30 ft.
Groundwater was encountered during drilling activities @ -18 ft.

N - Value ■ Moisture

- Liquid Limit • Plastic Index

Engineering Plus, Inc.

Planning - Surveying - Testing - Landscape Design

1724 B 23rd Avenue Meridian, Mississippi 39301 (601) 693-4234

SOIL BORING LOG

PROJECT: Dean Maintenance Hangar Expansion — PROJECT NO: 17-278

CLIENT: D+P Architects, PLLC — BORING NO: B-3

LOGGER: R. Alexander — DATE: 10/3/2019

DRILLER: B. Lowery — SURFACE ELEVATION: ±292.2

Rig: Mobile B-47
Drilling Method: 2 1/4 SSA w/ SPT
Backfill Method: Cuttings
Boring Depth: 30 Feet

Hammer: Rope and Cathead
Plastic Limit / Moisture
Liquid Limit / N - Value

Water Level	Depth (ft)	Sample	SPT	N - Value	DCP (blows/.75")	Classification	Visual Classification - Remarks	Moisture Content-(%)	Liquid Limit	Plasticity Index	- 200 %
	0	X	11			SC	Brownish red clayey sand (Import Fill)				
		X	6								
		X	6	12		CL	Reddish brown silty clay				
		X	5								
		X	4								
		X	12	16		SM	Brownish gray silty sand				
		X	12								
		X	7								
		X	10	17		SM	Brownish gray silty sand	16	37	15	39
	5	X	3								
		X	4								
		X	5	9		SM	Brownish gray silty sand				
						SM	Brownish black silty sand				
						CH	Brownish gray fat clay				
	10										
	15					CH	Dark brown fat clay				
▽						SM	Dark gray silty sand saturated				
	20										
	25						*See Next Page*				

0 40 80 120

Auger (ASTM D 1452)
Standard Penetration Test (ASTM D 1586)
Shelby Tube (ASTM D 1587)
Initial Water Level
Delayed Water Level

Notes: Boring terminated @ -30 ft.
Groundwater was encountered during drilling activities @ 18.5 ft.

N - Value Moisture
Liquid Limit Plastic Index

Engineering Plus, Inc.

Planning - Surveying - Testing - Landscape Design

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SOIL BORING LOG

PROJECT: Dean Maintenance Hangar Expansion — PROJECT NO: 17-278

CLIENT: D+P Architects, PLLC — BORING NO: B-3 (Cont'd)

LOGGER: R. Alexander — DATE: 10/3/2019

DRILLER: B. Lowery — SURFACE ELEVATION: ±292.2

Rig: Mobile B-47

Drilling Method: 2 1/4 SSA w/ SPT

Backfill Method: Cuttings

Boring Depth: 30 Feet

Hammer: Rope and Cathead

Plastic Limit / Moisture

Liquid Limit / N - Value

Water Level	Depth (ft)	Sample	SPT	N - Value	DCP (blows/.75")	Classification	Visual Classification - Remarks	Moisture Content-(%)	Liquid Limit	Plasticity Index	- 200 %
	25					SM	Dark gray silty sand saturated				
	30						*Boring Terminated @ -30 ft.*				
	35										
	40										
	45										
	50										

0 40 80 120

Auger (ASTM D 1452)

Standard Penetration Test (ASTM D 1586)

Shelby Tube (ASTM D 1587)

Initial Water Level

Delayed Water Level

Notes: Boring terminated @ -30 ft.
Groundwater was encountered during drilling activities @ -18.5 ft.

N - Value ■Moisture

-Liquid Limit •Plastic Index

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SOIL BORING LOG

PROJECT: Dean Maintenance Hangar Expansion — PROJECT NO: 17-278

CLIENT: D+P Architects, PLLC — BORING NO: B-4

LOGGER: R. Alexander — DATE: 10/3/2019

DRILLER: B. Lowery — SURFACE ELEVATION: ±292.5

Rig: Mobile B-47

Drilling Method: 2 1/4 SSA w/ SPT

Backfill Method: Cuttings

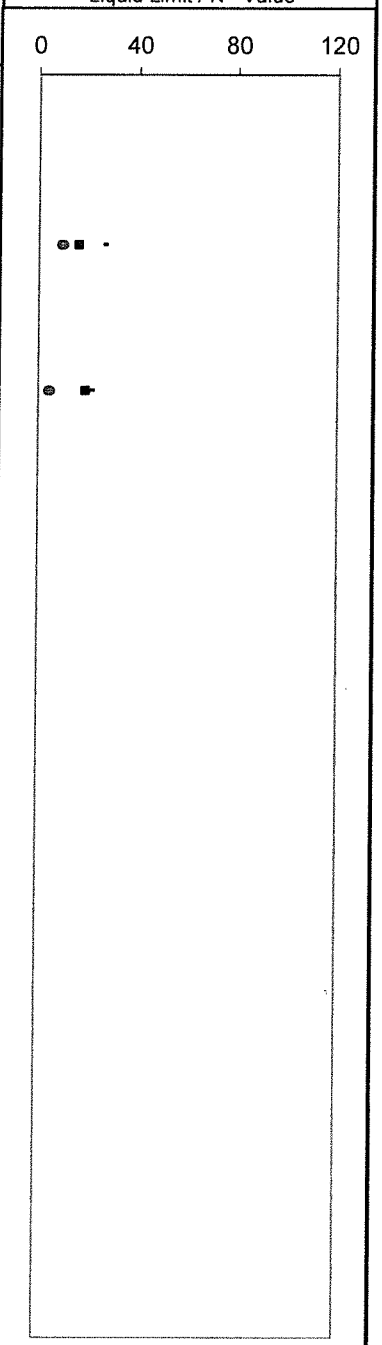
Boring Depth: 30 Feet

Hammer: Rope and Cathead

Plastic Limit / Moisture

Liquid Limit / N - Value

Water Level	Depth (ft)	Sample	SPT	N - Value	DCP (blows/.75")	Classification	Visual Classification - Remarks	Moisture Content-(%)	Liquid Limit	Plasticity Index	- 200 %
	0					SC	Red clayey sand (Import Fill)				
						CL	Brownish red sandy clay	16	26	9	57
	5					CL	Brownish red silty clay				
						CL ML	Light brown clayey silt	19	21	4	51
						ML	Dark brown clayey silt to elastic silt wet				
▽	15					SM	Light brown silty sand saturated				
	20										
	25						*See Next Page*				



Auger (ASTM D 1452)

Standard Penetration Test (ASTM D 1586)

Shelby Tube (ASTM D 1587)

Initial Water Level

Delayed Water Level

Notes: Boring terminated @ -30 ft.
Groundwater was encountered during drilling activities @ 18 ft.

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Planning - Surveying - Testing - Landscape Design

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SOIL BORING LOG

PROJECT: Dean Maintenance Hangar Expansion — PROJECT NO: 17-278

CLIENT: D+P Architects, PLLC — BORING NO: B-4 (Cont'd)

LOGGER: R. Alexander — DATE: 10/3/2019

DRILLER: B. Lowery — SURFACE ELEVATION: ±292.5

Rig: Mobile B-47

Drilling Method: 2 1/4 SSA w/ SPT

Backfill Method: Cuttings

Boring Depth: 30 Feet

Hammer: Rope and Cathead

Plastic Limit / Moisture

Liquid Limit / N - Value

Water Level	Depth (ft)	Sample	SPT	N - Value	DCP (blows/.75")	Classification	Visual Classification - Remarks	Moisture Content-(%)	Liquid Limit	Plasticity Index	- 200 %
	25					SM	Light brown silty sand saturated				
	30						*Boring Terminated @ -30 ft.*				
	35										
	40										
	45										
	50										

0 40 80 120

Auger (ASTM D 1452)

Standard Penetration Test (ASTM D 1586)

Shelby Tube (ASTM D 1587)

Initial Water Level

Delayed Water Level

Notes: Boring terminated @ -30 ft.
Groundwater was encountered during drilling activities @ -18 ft.

N - Value ■ Moisture

• Liquid Limit ⊕ Plastic Index

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Planning - Surveying - Testing - Landscape Design

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SOIL BORING LOG

PROJECT: Dean Maintenance Hangar Expansion — PROJECT NO: 17-278

CLIENT: D+P Architects, PLLC — BORING NO: B-5

LOGGER: R. Alexander — DATE: 10/3/2019

DRILLER: B. Lowery — SURFACE ELEVATION: ±292.2

Rig: Mobile B-47
Drilling Method: 2 1/4 SSA w/ SPT
Backfill Method: Cuttings
Boring Depth: 30 Feet

Hammer: Rope and Cathead
Plastic Limit / Moisture
Liquid Limit / N - Value

Water Level	Depth (ft)	Sample	SPT	N - Value	DCP (blows/.75")	Classification	Visual Classification - Remarks	Moisture Content-(%)	Liquid Limit	Plasticity Index	- 200 %
	0					SC	Red clayey sand (Import Fill)				
						SC	Reddish brown clayey sand				
	5					CL	Gray silty clay	16	28	11	55
						CL	Gray silty clay				
						MH	Brown elasitic silt				
	10										
	15										
▽						SM	Brown silty sand saturated				
	20										
	25						*See Next Page*				

0 40 80 120

Auger (ASTM D 1452)
Standard Penetration Test (ASTM D 1586)
Shelby Tube (ASTM D 1587)
▽ Initial Water Level
▼ Delayed Water Level

Notes: Boring terminated @ -30 ft.
Groundwater was encountered during drilling activities @ 18 ft.

N - Value ■ Moisture
- Liquid Limit ● Plastic Index

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Planning - Surveying - Testing - Landscape Design

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SOIL BORING LOG

PROJECT: Dean Maintenance Hangar Expansion — PROJECT NO: 17-278

CLIENT: D+P Architects, PLLC — BORING NO: B-5 (Cont'd)

LOGGER: R. Alexander — DATE: 10/3/2019

DRILLER: B. Lowery — SURFACE ELEVATION: ±292.2

Rig: Mobile B-47

Drilling Method: 2 1/4 SSA w/ SPT

Backfill Method: Cuttings

Boring Depth: 30 Feet

Hammer: Rope and Cathead

Plastic Limit / Moisture

Liquid Limit / N - Value

Water Level	Depth (ft)	Sample	SPT	N - Value	DCP (blows/.75")	Classification	Visual Classification - Remarks	Moisture Content-(%)	Liquid Limit	Plasticity Index	- 200 %
	25					SM	Brown silty sand saturated				
	30						*Boring Terminated @ -30 ft.*				
	35										
	40										
	45										
	50										

0 40 80 120

Auger (ASTM D 1452)

Standard Penetration Test (ASTM D 1586)

Shelby Tube (ASTM D 1587)

Initial Water Level

Delayed Water Level

Notes: Boring terminated @ -30 ft.
Groundwater was encountered during drilling activities @ -18 ft.

N - Value ■ Moisture

Liquid Limit • Plastic Index

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Planning - Surveying - Testing - Landscape Design

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SOIL BORING LOG

PROJECT: Dean Maintenance Hangar Expansion — PROJECT NO: 17-278

CLIENT: D+P Architects, PLLC — BORING NO: B-6

LOGGER: R. Alexander — DATE: 10/3/2019

DRILLER: B. Lowery — SURFACE ELEVATION: ±291.8

Rig: Mobile B-47

Drilling Method: 2 1/4 SSA w/ SPT

Backfill Method: Cuttings

Boring Depth: 30 Feet

Hammer: Rope and Cathead

Plastic Limit / Moisture

Liquid Limit / N - Value

Water Level	Depth (ft)	Sample	SPT	N - Value	DCP (blows/.75")	Classification	Visual Classification - Remarks	Moisture Content-(%)	Liquid Limit	Plasticity Index	- 200 %
	0					SC	Red clayey sand				
	5					SC SM	Gray slightly clayey silty sand soft, moist	18	22	4	43
						MH	Brown elastic silt wet				
	10										
						CH	Dark brown fat clay				
	15										
▽						SM	Dark brownish gray silty sand saturated				
	20										
	25						*See Next Page*				

0 40 80 120

Auger (ASTM D 1452)

Shelby Tube (ASTM D 1587)

Standard Penetration Test (ASTM D 1586)

▽ Initial Water Level

▼ Delayed Water Level

Notes: Boring terminated @ -30 ft.
Groundwater was encountered during drilling activities @ 18 ft.

● N - Value ■ Moisture

▪ Liquid Limit ▪ Plastic Index

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Planning - Surveying - Testing - Landscape Design

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SOIL BORING LOG

PROJECT: Dean Maintenance Hangar Expansion — PROJECT NO: 17-278

CLIENT: D+P Architects, PLLC — BORING NO: B-6 (Cont'd)

LOGGER: R. Alexander — DATE: 10/3/2019

DRILLER: B. Lowery — SURFACE ELEVATION: ±291.8

Rig: Mobile B-47

Drilling Method: 2 1/4 SSA w/ SPT

Backfill Method: Cuttings

Boring Depth: 30 Feet

Hammer: Rope and Cathead

Plastic Limit / Moisture

Liquid Limit / N - Value

Water Level	Depth (ft)	Sample	SPT	N - Value	DCP (blows/.75")	Classification	Visual Classification - Remarks	Moisture Content-(%)	Liquid Limit	Plasticity Index	- 200 %
	25					SM	Dark brownish gray silty sand saturated				
	30						*Boring Terminated @ -30 ft.*				
	35										
	40										
	45										
	50										

0 40 80 120

Auger (ASTM D 1452)

Standard Penetration Test (ASTM D 1586)

Shelby Tube (ASTM D 1587)

Initial Water Level

Delayed Water Level

Notes: Boring terminated @ -30 ft.
Groundwater was encountered during drilling activities @ -18 ft.

N - Value ■ Moisture

Liquid Limit • Plastic Index

APPENDIX D

SOIL TEST RESULTS

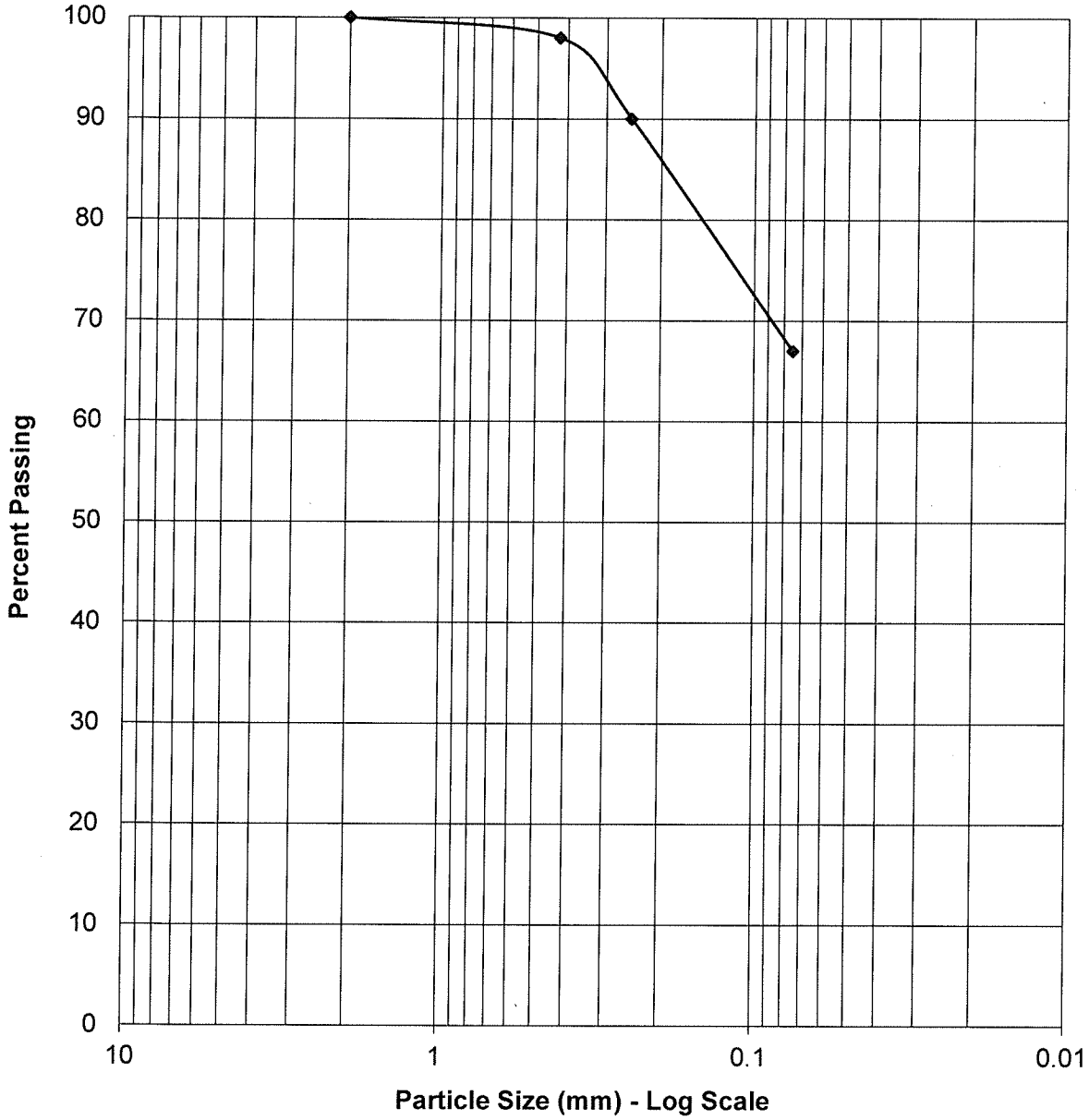
Engineering Plus, Inc.

Planning - Surveying - Testing - Landscape Design
1724 B 23rd Avenue Meridian, Mississippi 39301 (601) 693-4234

Sieve Analysis

PROJECT: Dean Maintenance Hangar Expansion PROJECT NO: 17-278
CLIENT: D+P Architects,PLLC DATE: 10/9/2019

Sieve Analysis



Description: Light brown silty clay

Boring No:	B-1	Moisture	Atterberg Limits			Volume	Classification	
Depth:	3.5-4.5	Content	LL	PL	PI	Change	Unified	AASHTO
		19	38	18	20	32%	CL	

Sieve	Sieve Size (mm)	% Passing
No. 10	2	100
No. 40	0.425	98
No. 60	0.25	90
No. 200	0.075	67

Engineering Plus, Inc.

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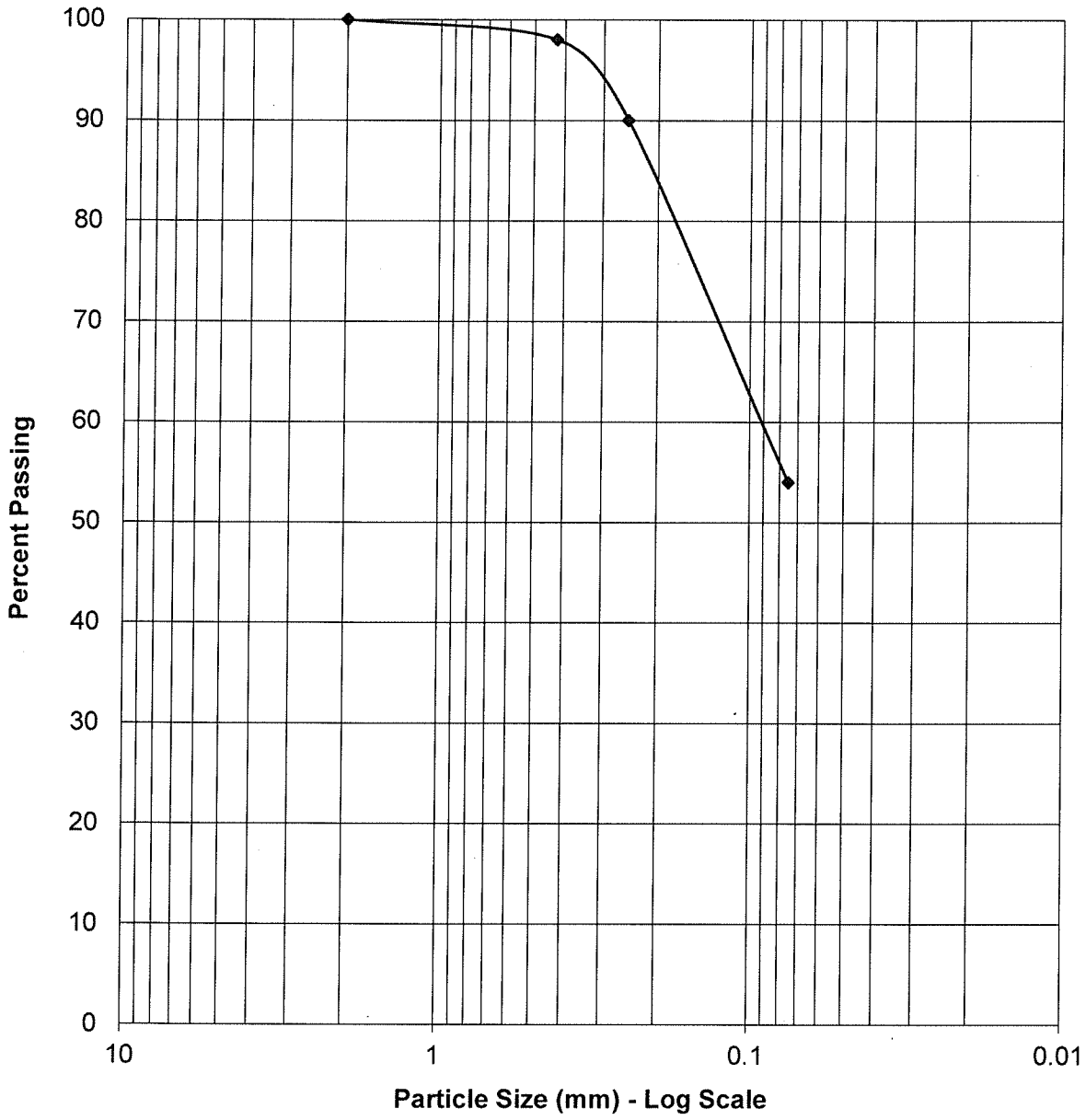
Sieve Analysis

PROJECT: Dean Maintenance Hangar Expansion PROJECT NO: 17-278
CLIENT: D+P Architects,PLLC DATE: 10/9/2019

Sieve Analysis



Description: Brownish gray silty clay

Boring No:	B-2	Moisture	Atterberg Limits			Volume	Classification	
Depth:	4.5-8	Content	LL	PL	PI	Change	Unified	AASHTO
		15	25	18	7	13%	CL	

Sieve	Sieve Size (mm)	% Passing
No. 10	2	100
No. 40	0.425	98
No. 60	0.25	90
No. 200	0.075	54

Engineering Plus, Inc.

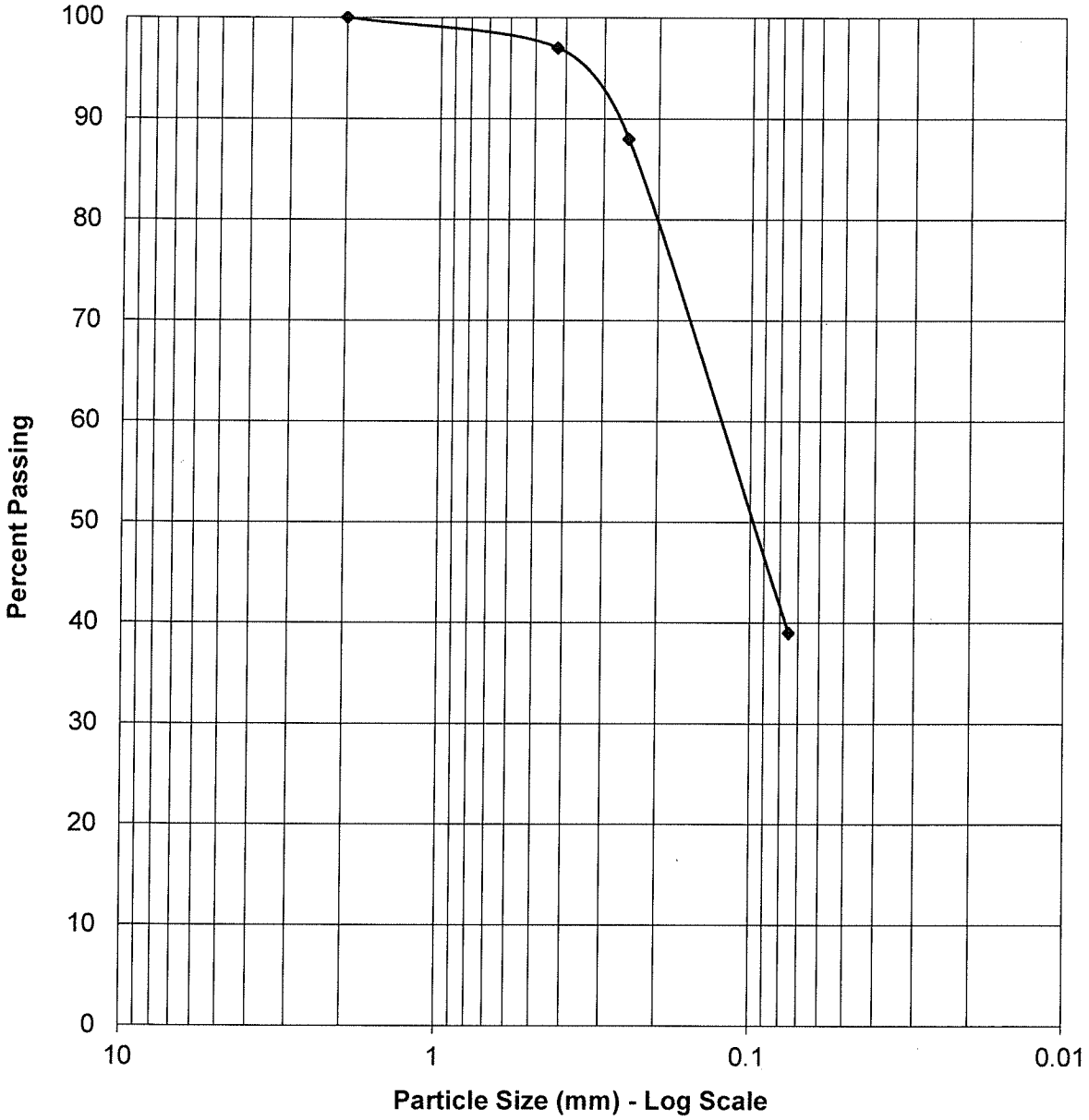
Planning - Surveying - Testing - Landscape Design

1724 B 23rd Avenue Meridian, Mississippi 39301 (601) 693-4234

Sieve Analysis

PROJECT:	Dean Maintenance Hangar Expansion	PROJECT NO:	17-278
CLIENT:	D+P Architects,PLLC	DATE:	10/9/2019

Sieve Analysis



Description: Brownish gray silty sand

Boring No:	B-3	Moisture	Atterberg Limits			Volume	Classification	
Depth:	4.5-6	Content	LL	PL	PI	Change	Unified	AASHTO
		16	37	22	15	14%	SC	

Sieve	Sieve Size (mm)	% Passing
No. 10	2	100
No. 40	0.425	97
No. 60	0.25	88
No. 200	0.075	39

Engineering Plus, Inc.

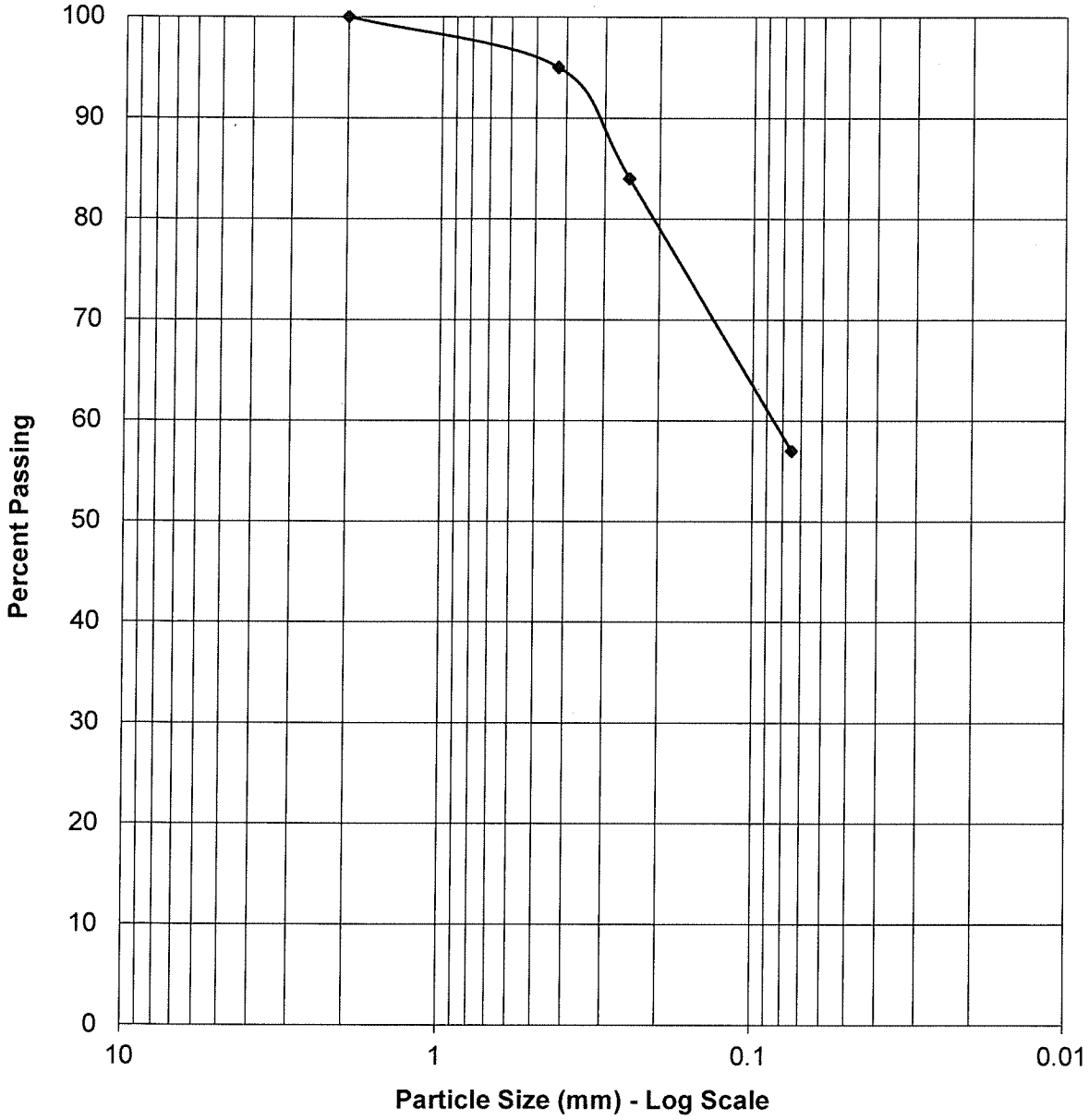
Planning - Surveying - Testing - Landscape Design

1724 B 23rd Avenue Meridian, Mississippi 39301 (601) 693-4234

Sieve Analysis

PROJECT:	Dean Maintenance Hangar Expansion	PROJECT NO:	17-278
CLIENT:	D+P Architects,PLLC	DATE:	10/9/2019

Sieve Analysis



Description: Brownish red sandy clay

Boring No:	B-4	Moisture	Atterberg Limits			Volume	Classification	
Depth:	3-5	Content	LL	PL	PI	Change	Unified	AASHTO
		16	26	17	9	24%	CL	

Sieve	Sieve Size (mm)	% Passing
No. 10	2	100
No. 40	0.425	95
No. 60	0.25	84
No. 200	0.075	57

Engineering Plus, Inc.

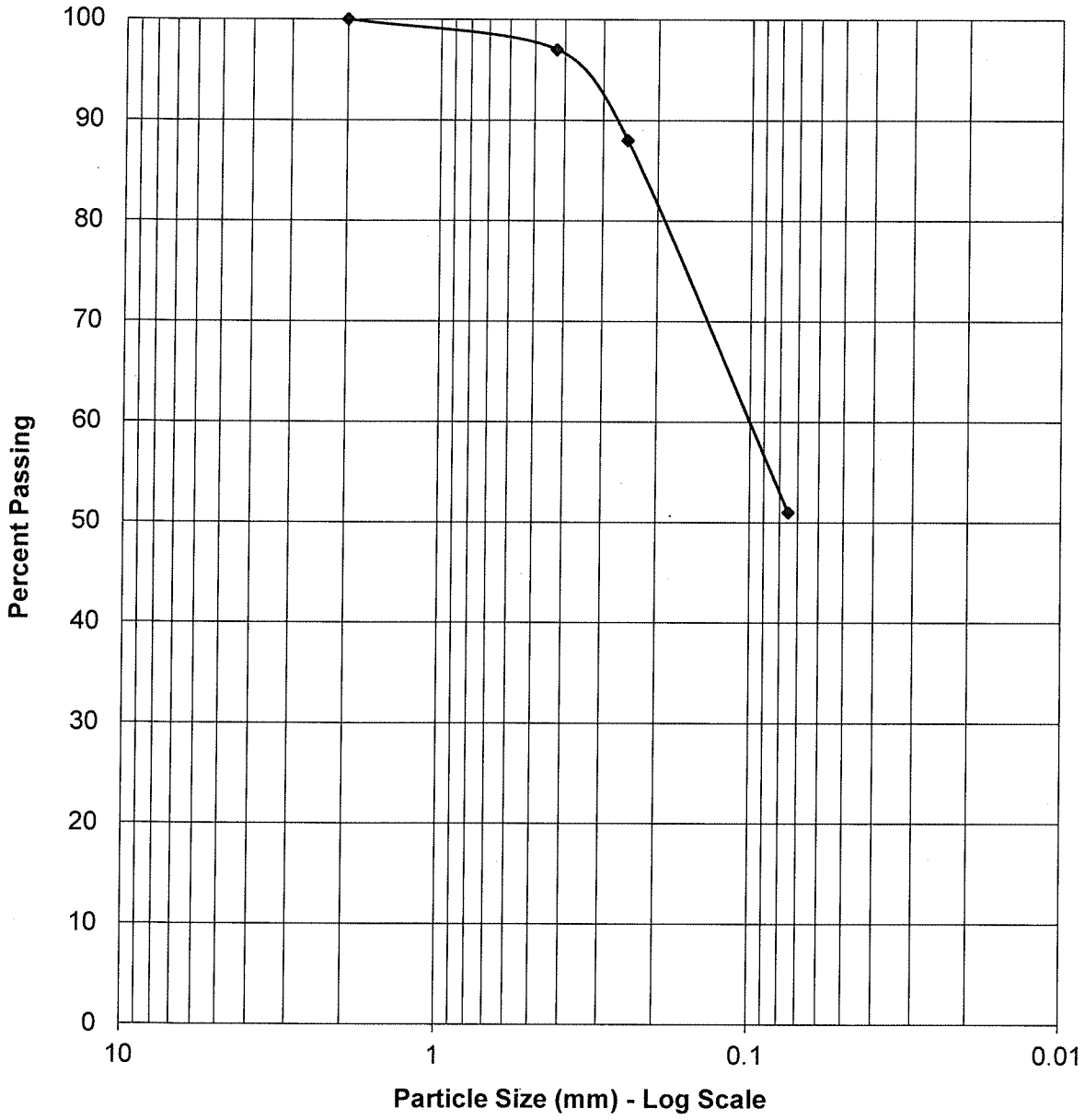
Planning - Surveying - Testing - Landscape Design

1724 B 23rd Avenue Meridian, Mississippi 39301 (601) 693-4234

Sieve Analysis

PROJECT:	Dean Maintenance Hangar Expansion	PROJECT NO:	17-278
CLIENT:	D+P Architects,PLLC	DATE:	10/9/2019

Sieve Analysis



Description: Light brown clayey silt

Boring No:	B-4	Moisture	Atterberg Limits			Volume	Classification	
Depth:	6-8	Content	LL	PL	PI	Change	Unified	AASHTO
		19	21	17	4	15%	CL-ML	

Sieve	Sieve Size (mm)	% Passing
No. 10	2	100
No. 40	0.425	97
No. 60	0.25	88
No. 200	0.075	51

Engineering Plus, Inc.

Planning - Surveying - Testing - Landscape Design

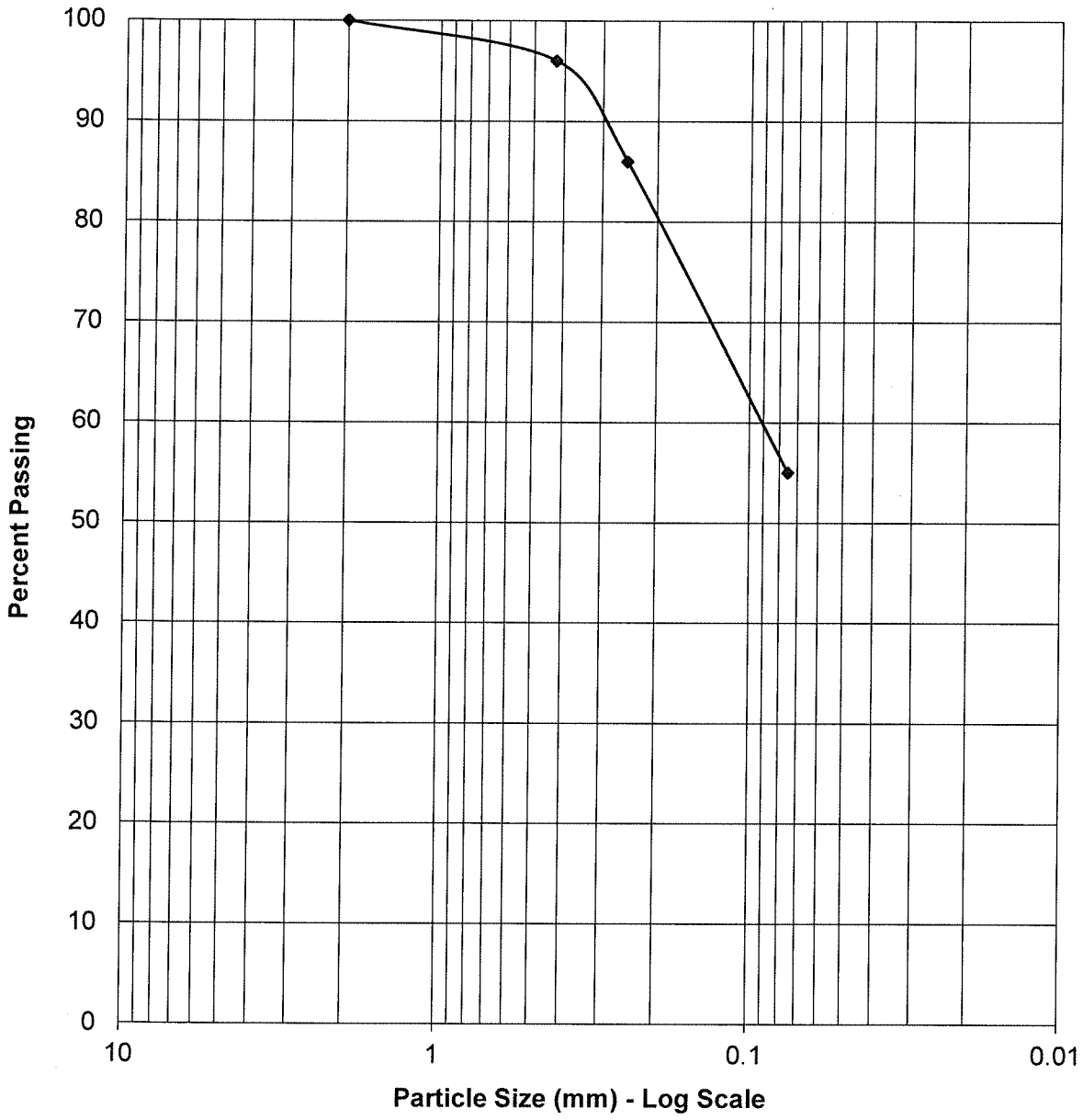
1724 B 23rd Avenue Meridian, Mississippi 39301 (601) 693-4234

Sieve Analysis

PROJECT: Dean Maintenance Hangar Expansion — PROJECT NO: 17-278

CLIENT: D+P Architects,PLLC — DATE: 10/9/2019

Sieve Analysis



Description: Gray silty clay

Boring No:	B-5	Moisture	Atterberg Limits			Volume	Classification	
Depth:	4.5-6	Content	LL	PL	PI	Change	Unified	AASHTO
		16	28	17	11	20%	CL	

Sieve	Sieve Size (mm)	% Passing
No. 10	2	100
No. 40	0.425	96
No. 60	0.25	86
No. 200	0.075	55

Engineering Plus, Inc.

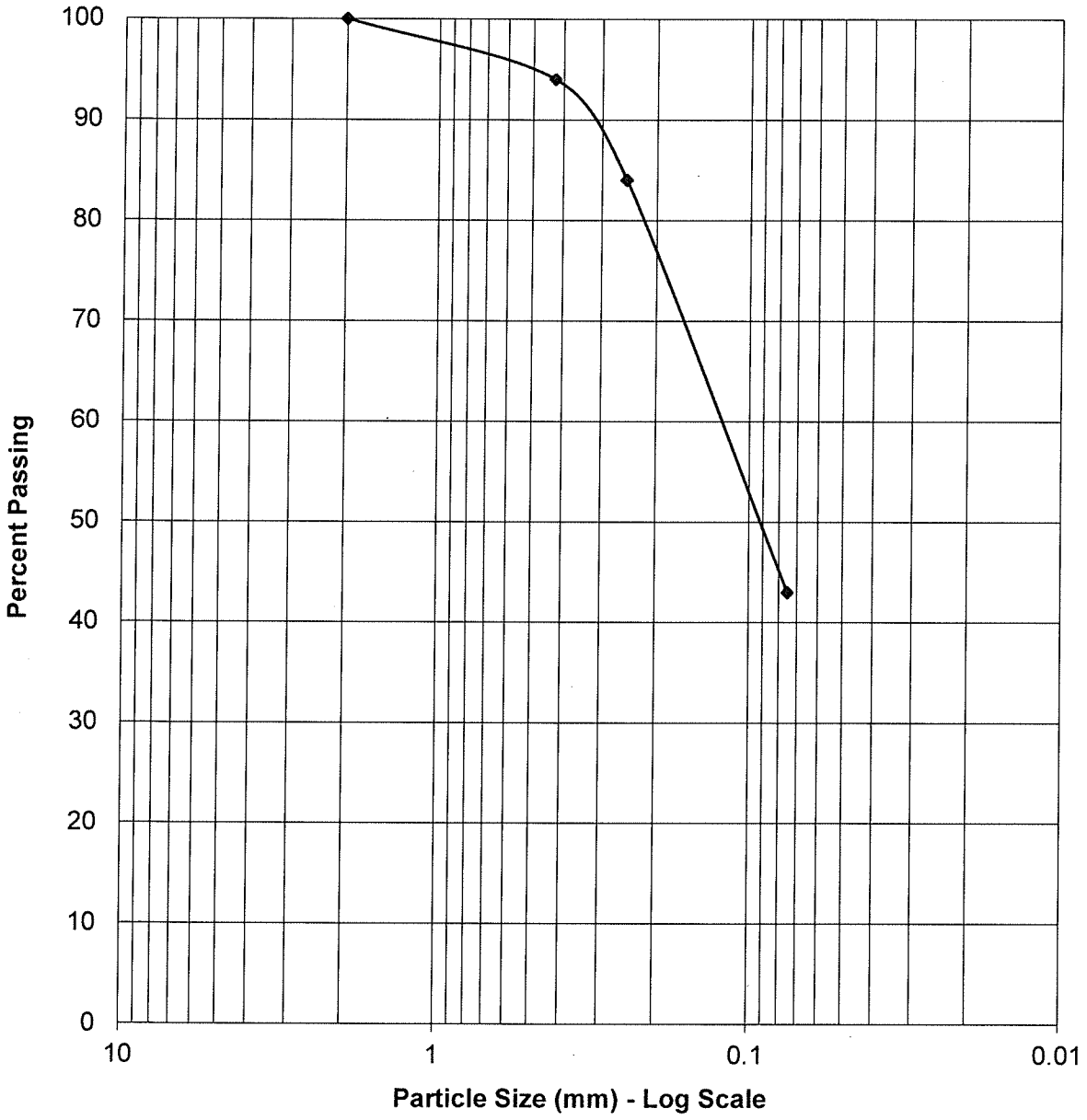
Planning - Surveying - Testing - Landscape Design

1724 B 23rd Avenue Meridian, Mississippi 39301 (601) 693-4234

Sieve Analysis

PROJECT:	Dean Maintenance Hangar Expansion	PROJECT NO:	17-278
CLIENT:	D+P Architects,PLLC	DATE:	10/9/2019

Sieve Analysis



Description: Gray slightly clayey silty sand

Boring No:	B-6	Moisture	Atterberg Limits			Volume	Classification	
Depth:	4-7	Content	LL	PL	PI	Change	Unified	AASHTO
		18	22	18	4	16%	SC-SM	

Sieve	Sieve Size (mm)	% Passing
No. 10	2	100
No. 40	0.425	94
No. 60	0.25	84
No. 200	0.075	43

APPENDIX E

GENERAL REMARKS/REPORT LIMITATIONS

GENERAL REMARKS/REPORT LIMITATIONS

- This report has been prepared for the exclusive use of the owner for specific application to the subject property.

- This publication is intended for the use of professional personnel competent to evaluate the significance and limitations of its contents and responsible for the applications of the information and recommendations presented.

- All recommendations contained in this report have been made in accordance with generally accepted soil and foundation engineering practices. No other warranties are implied or expressed.

- Assessment of site environmental conditions or the presence of contaminants in the soil, or in groundwater at the site is beyond the scope of this investigation, unless otherwise noted.

- The analysis and recommendations are based upon the data obtained from the soil borings. The nature and extent of variations between the soil test borings may not become evident until construction. If variations then appear evident, it may be necessary to re-evaluate the recommendations of this report.

- This report was prepared for design purposes only and is not intended to be utilized as an earthwork specification for construction. Contractors reviewing this report should acknowledge that discussions and recommendations contained herein are for design purposes.

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

- The geotechnical engineer should be retained to review the final plans and specifications to verify that recommendations in this report are properly interpreted and incorporated in the design. If the geotechnical engineer is not accorded the privilege of making this review, then he can assume no responsibility for misinterpretation of recommendations.

AIA® Document A701™ – 2018

Instructions to Bidders

for the following Project**:**
(Name, location, and detailed description)

THE OWNER:
(Name, legal status, address, and other information)

THE ARCHITECT:
(Name, legal status, address, and other information)

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

FEDERAL, STATE, AND LOCAL LAWS MAY IMPOSE REQUIREMENTS ON PUBLIC PROCUREMENT CONTRACTS. CONSULT LOCAL AUTHORITIES OR AN ATTORNEY TO VERIFY REQUIREMENTS APPLICABLE TO THIS PROCUREMENT BEFORE COMPLETING THIS FORM.

It is intended that AIA Document G612™–2017, Owner's Instructions to the Architect, Parts A and B will be completed prior to using this document.

TABLE OF ARTICLES

1 DEFINITIONS

2 BIDDER'S REPRESENTATIONS

3 BIDDING DOCUMENTS

4 BIDDING PROCEDURES

5 CONSIDERATION OF BIDS

6 POST-BID INFORMATION

7 PERFORMANCE BOND AND PAYMENT BOND

8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

Init.

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ARTICLE 1 DEFINITIONS

§ 1.1 Bidding Documents include the Bidding Requirements and the Proposed Contract Documents. The Bidding Requirements consist of the advertisement or invitation to bid, Instructions to Bidders, supplementary instructions to bidders, the bid form, and any other bidding forms. The Proposed Contract Documents consist of the unexecuted form of Agreement between the Owner and Contractor and that Agreement's Exhibits, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, all Addenda, and all other documents enumerated in Article 8 of these Instructions.

§ 1.2 Definitions set forth in the General Conditions of the Contract for Construction, or in other Proposed Contract Documents apply to the Bidding Documents.

§ 1.3 Addenda are written or graphic instruments issued by the Architect, which, by additions, deletions, clarifications, or corrections, modify or interpret the Bidding Documents.

§ 1.4 A Bid is a complete and properly executed proposal to do the Work for the sums stipulated therein, submitted in accordance with the Bidding Documents.

§ 1.5 The Base Bid is the sum stated in the Bid for which the Bidder offers to perform the Work described in the Bidding Documents, to which Work may be added or deleted by sums stated in Alternate Bids.

§ 1.6 An Alternate Bid (or Alternate) is an amount stated in the Bid to be added to or deducted from, or that does not change, the Base Bid if the corresponding change in the Work, as described in the Bidding Documents, is accepted.

§ 1.7 A Unit Price is an amount stated in the Bid as a price per unit of measurement for materials, equipment, or services, or a portion of the Work, as described in the Bidding Documents.

§ 1.8 A Bidder is a person or entity who submits a Bid and who meets the requirements set forth in the Bidding Documents.

§ 1.9 A Sub-bidder is a person or entity who submits a bid to a Bidder for materials, equipment, or labor for a portion of the Work.

ARTICLE 2 BIDDER'S REPRESENTATIONS

§ 2.1 By submitting a Bid, the Bidder represents that:

.1 the Bidder has read and understands the Bidding Documents;

.2 the Bidder understands how the Bidding Documents relate to other portions of the Project, if any, being bid concurrently or presently under construction;

.3 the Bid complies with the Bidding Documents;

.4 the Bidder has visited the site, become familiar with local conditions under which the Work is to be performed, and has correlated the Bidder's observations with the requirements of the Proposed Contract Documents;

.5 the Bid is based upon the materials, equipment, and systems required by the Bidding Documents without exception; and

.6 the Bidder has read and understands the provisions for liquidated damages, if any, set forth in the form of Agreement between the Owner and Contractor.

ARTICLE 3 BIDDING DOCUMENTS

§ 3.1 Distribution

§ 3.1.1 Bidders shall obtain complete Bidding Documents, as indicated below, from the issuing office designated in the advertisement or invitation to bid, for the deposit sum, if any, stated therein.

(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall obtain Bidding Documents.)

§ 3.1.2 Any required deposit shall be refunded to Bidders who submit a bona fide Bid and return the paper Bidding Documents in good condition within ten days after receipt of Bids. The cost to replace missing or damaged paper documents will be deducted from the deposit. A Bidder receiving a Contract award may retain the paper Bidding Documents, and the Bidder's deposit will be refunded.

§ 3.1.3 Bidding Documents will not be issued directly to Sub-bidders unless specifically offered in the advertisement or invitation to bid, or in supplementary instructions to bidders.

§ 3.1.4 Bidders shall use complete Bidding Documents in preparing Bids. Neither the Owner nor Architect assumes responsibility for errors or misinterpretations resulting from the use of incomplete Bidding Documents.

§ 3.1.5 The Bidding Documents will be available for the sole purpose of obtaining Bids on the Work. No license or grant of use is conferred by distribution of the Bidding Documents.

§ 3.2 Modification or Interpretation of Bidding Documents

§ 3.2.1 The Bidder shall carefully study the Bidding Documents, shall examine the site and local conditions, and shall notify the Architect of errors, inconsistencies, or ambiguities discovered and request clarification or interpretation pursuant to Section 3.2.2.

§ 3.2.2 Requests for clarification or interpretation of the Bidding Documents shall be submitted by the Bidder in writing and shall be received by the Architect at least seven days prior to the date for receipt of Bids.
(Indicate how, such as by email, website, host site/platform, paper copy, or other method Bidders shall submit requests for clarification and interpretation.)

§ 3.2.3 Modifications and interpretations of the Bidding Documents shall be made by Addendum. Modifications and interpretations of the Bidding Documents made in any other manner shall not be binding, and Bidders shall not rely upon them.

§ 3.3 Substitutions

§ 3.3.1 The materials, products, and equipment described in the Bidding Documents establish a standard of required function, dimension, appearance, and quality to be met by any proposed substitution.

§ 3.3.2 Substitution Process

§ 3.3.2.1 Written requests for substitutions shall be received by the Architect at least ten days prior to the date for receipt of Bids. Requests shall be submitted in the same manner as that established for submitting clarifications and interpretations in Section 3.2.2.

§ 3.3.2.2 Bidders shall submit substitution requests on a Substitution Request Form if one is provided in the Bidding Documents.

§ 3.3.2.3 If a Substitution Request Form is not provided, requests shall include (1) the name of the material or equipment specified in the Bidding Documents; (2) the reason for the requested substitution; (3) a complete description of the proposed substitution including the name of the material or equipment proposed as the substitute, performance and test data, and relevant drawings; and (4) any other information necessary for an evaluation. The request shall include a statement setting forth changes in other materials, equipment, or other portions of the Work, including changes in the work of other contracts or the impact on any Project Certifications (such as LEED), that will result from incorporation of the proposed substitution.

§ 3.3.3 The burden of proof of the merit of the proposed substitution is upon the proposer. The Architect's decision of approval or disapproval of a proposed substitution shall be final.

§ 3.3.4 If the Architect approves a proposed substitution prior to receipt of Bids, such approval shall be set forth in an Addendum. Approvals made in any other manner shall not be binding, and Bidders shall not rely upon them.

§ 3.3.5 No substitutions will be considered after the Contract award unless specifically provided for in the Contract Documents.

§ 3.4 Addenda

§ 3.4.1 Addenda will be transmitted to Bidders known by the issuing office to have received complete Bidding Documents.

(Indicate how, such as by email, website, host site/platform, paper copy, or other method Addenda will be transmitted.)

§ 3.4.2 Addenda will be available where Bidding Documents are on file.

§ 3.4.3 Addenda will be issued no later than four days prior to the date for receipt of Bids, except an Addendum withdrawing the request for Bids or one which includes postponement of the date for receipt of Bids.

§ 3.4.4 Prior to submitting a Bid, each Bidder shall ascertain that the Bidder has received all Addenda issued, and the Bidder shall acknowledge their receipt in the Bid.

ARTICLE 4 BIDDING PROCEDURES

§ 4.1 Preparation of Bids

§ 4.1.1 Bids shall be submitted on the forms included with or identified in the Bidding Documents.

§ 4.1.2 All blanks on the bid form shall be legibly executed. Paper bid forms shall be executed in a non-erasable medium.

§ 4.1.3 Sums shall be expressed in both words and numbers, unless noted otherwise on the bid form. In case of discrepancy, the amount entered in words shall govern.

§ 4.1.4 Edits to entries made on paper bid forms must be initialed by the signer of the Bid.

§ 4.1.5 All requested Alternates shall be bid. If no change in the Base Bid is required, enter "No Change" or as required by the bid form.

§ 4.1.6 Where two or more Bids for designated portions of the Work have been requested, the Bidder may, without forfeiture of the bid security, state the Bidder's refusal to accept award of less than the combination of Bids stipulated by the Bidder. The Bidder shall neither make additional stipulations on the bid form nor qualify the Bid in any other manner.

§ 4.1.7 Each copy of the Bid shall state the legal name and legal status of the Bidder. As part of the documentation submitted with the Bid, the Bidder shall provide evidence of its legal authority to perform the Work in the jurisdiction where the Project is located. Each copy of the Bid shall be signed by the person or persons legally authorized to bind the Bidder to a contract. A Bid by a corporation shall further name the state of incorporation and have the corporate seal affixed. A Bid submitted by an agent shall have a current power of attorney attached, certifying the agent's authority to bind the Bidder.

§ 4.1.8 A Bidder shall incur all costs associated with the preparation of its Bid.

§ 4.2 Bid Security

§ 4.2.1 Each Bid shall be accompanied by the following bid security:

(Insert the form and amount of bid security.)

§ 4.2.2 The Bidder pledges to enter into a Contract with the Owner on the terms stated in the Bid and shall, if required, furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder. Should the Bidder refuse to enter into such Contract or fail to furnish such bonds if required, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as a penalty. In the event the Owner fails to comply with Section 6.2, the amount of the bid security shall not be forfeited to the Owner.

§ 4.2.3 If a surety bond is required as bid security, it shall be written on AIA Document A310™, Bid Bond, unless otherwise provided in the Bidding Documents. The attorney-in-fact who executes the bond on behalf of the surety shall affix to the bond a certified and current copy of an acceptable power of attorney. The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 4.2.4 The Owner will have the right to retain the bid security of Bidders to whom an award is being considered until (a) the Contract has been executed and bonds, if required, have been furnished; (b) the specified time has elapsed so that Bids may be withdrawn; or (c) all Bids have been rejected. However, if no Contract has been awarded or a Bidder has not been notified of the acceptance of its Bid, a Bidder may, beginning _____ days after the opening of Bids, withdraw its Bid and request the return of its bid security.

§ 4.3 Submission of Bids

§ 4.3.1 A Bidder shall submit its Bid as indicated below:
(Indicate how, such as by website, host site/platform, paper copy, or other method Bidders shall submit their Bid.)

§ 4.3.2 Paper copies of the Bid, the bid security, and any other documents required to be submitted with the Bid shall be enclosed in a sealed opaque envelope. The envelope shall be addressed to the party receiving the Bids and shall be identified with the Project name, the Bidder's name and address, and, if applicable, the designated portion of the Work for which the Bid is submitted. If the Bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "SEALED BID ENCLOSED" on the face thereof.

§ 4.3.3 Bids shall be submitted by the date and time and at the place indicated in the invitation to bid. Bids submitted after the date and time for receipt of Bids, or at an incorrect place, will not be accepted.

§ 4.3.4 The Bidder shall assume full responsibility for timely delivery at the location designated for receipt of Bids.

§ 4.3.5 A Bid submitted by any method other than as provided in this Section 4.3 will not be accepted.

§ 4.4 Modification or Withdrawal of Bid

§ 4.4.1 Prior to the date and time designated for receipt of Bids, a Bidder may submit a new Bid to replace a Bid previously submitted, or withdraw its Bid entirely, by notice to the party designated to receive the Bids. Such notice shall be received and duly recorded by the receiving party on or before the date and time set for receipt of Bids. The receiving party shall verify that replaced or withdrawn Bids are removed from the other submitted Bids and not considered. Notice of submission of a replacement Bid or withdrawal of a Bid shall be worded so as not to reveal the amount of the original Bid.

§ 4.4.2 Withdrawn Bids may be resubmitted up to the date and time designated for the receipt of Bids in the same format as that established in Section 4.3, provided they fully conform with these Instructions to Bidders. Bid security shall be in an amount sufficient for the Bid as resubmitted.

§ 4.4.3 After the date and time designated for receipt of Bids, a Bidder who discovers that it made a clerical error in its Bid shall notify the Architect of such error within two days, or pursuant to a timeframe specified by the law of the jurisdiction where the Project is located, requesting withdrawal of its Bid. Upon providing evidence of such error to the reasonable satisfaction of the Architect, the Bid shall be withdrawn and not resubmitted. If a Bid is withdrawn pursuant to this Section 4.4.3, the bid security will be attended to as follows:
(State the terms and conditions, such as Bid rank, for returning or retaining the bid security.)

ARTICLE 5 CONSIDERATION OF BIDS

§ 5.1 Opening of Bids

If stipulated in an advertisement or invitation to bid, or when otherwise required by law, Bids properly identified and received within the specified time limits will be publicly opened and read aloud. A summary of the Bids may be made available to Bidders.

§ 5.2 Rejection of Bids

Unless otherwise prohibited by law, the Owner shall have the right to reject any or all Bids.

§ 5.3 Acceptance of Bid (Award)

§ 5.3.1 It is the intent of the Owner to award a Contract to the lowest responsive and responsible Bidder, provided the Bid has been submitted in accordance with the requirements of the Bidding Documents. Unless otherwise prohibited by law, the Owner shall have the right to waive informalities and irregularities in a Bid received and to accept the Bid which, in the Owner's judgment, is in the Owner's best interests.

§ 5.3.2 Unless otherwise prohibited by law, the Owner shall have the right to accept Alternates in any order or combination, unless otherwise specifically provided in the Bidding Documents, and to determine the lowest responsive and responsible Bidder on the basis of the sum of the Base Bid and Alternates accepted.

ARTICLE 6 POST-BID INFORMATION

§ 6.1 Contractor's Qualification Statement

Bidders to whom award of a Contract is under consideration shall submit to the Architect, upon request and within the timeframe specified by the Architect, a properly executed AIA Document A305™, Contractor's Qualification Statement, unless such a Statement has been previously required and submitted for this Bid.

§ 6.2 Owner's Financial Capability

A Bidder to whom award of a Contract is under consideration may request in writing, fourteen days prior to the expiration of the time for withdrawal of Bids, that the Owner furnish to the Bidder reasonable evidence that financial arrangements have been made to fulfill the Owner's obligations under the Contract. The Owner shall then furnish such reasonable evidence to the Bidder no later than seven days prior to the expiration of the time for withdrawal of Bids. Unless such reasonable evidence is furnished within the allotted time, the Bidder will not be required to execute the Agreement between the Owner and Contractor.

§ 6.3 Submittals

§ 6.3.1 After notification of selection for the award of the Contract, the Bidder shall, as soon as practicable or as stipulated in the Bidding Documents, submit in writing to the Owner through the Architect:

.1 a designation of the Work to be performed with the Bidder's own forces;

.2 names of the principal products and systems proposed for the Work and the manufacturers and suppliers of each; and

.3 names of persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the Work.

§ 6.3.2 The Bidder will be required to establish to the satisfaction of the Architect and Owner the reliability and responsibility of the persons or entities proposed to furnish and perform the Work described in the Bidding Documents.

§ 6.3.3 Prior to the execution of the Contract, the Architect will notify the Bidder if either the Owner or Architect, after due investigation, has reasonable objection to a person or entity proposed by the Bidder. If the Owner or Architect has reasonable objection to a proposed person or entity, the Bidder may, at the Bidder's option, withdraw the Bid or submit an acceptable substitute person or entity. The Bidder may also submit any required adjustment in the Base Bid or Alternate Bid to account for the difference in cost occasioned by such substitution. The Owner may accept the adjusted bid price or disqualify the Bidder. In the event of either withdrawal or disqualification, bid security will not be forfeited.

§ 6.3.4 Persons and entities proposed by the Bidder and to whom the Owner and Architect have made no reasonable objection must be used on the Work for which they were proposed and shall not be changed except with the written consent of the Owner and Architect.

ARTICLE 7 PERFORMANCE BOND AND PAYMENT BOND

§ 7.1 Bond Requirements

§ 7.1.1 If stipulated in the Bidding Documents, the Bidder shall furnish bonds covering the faithful performance of the Contract and payment of all obligations arising thereunder.

§ 7.1.2 If the furnishing of such bonds is stipulated in the Bidding Documents, the cost shall be included in the Bid. If the furnishing of such bonds is required after receipt of bids and before execution of the Contract, the cost of such bonds shall be added to the Bid in determining the Contract Sum.

§ 7.1.3 The Bidder shall provide surety bonds from a company or companies lawfully authorized to issue surety bonds in the jurisdiction where the Project is located.

§ 7.1.4 Unless otherwise indicated below, the Penal Sum of the Payment and Performance Bonds shall be the amount of the Contract Sum.
(If Payment or Performance Bonds are to be in an amount other than 100% of the Contract Sum, indicate the dollar amount or percentage of the Contract Sum.)

§ 7.2 Time of Delivery and Form of Bonds

§ 7.2.1 The Bidder shall deliver the required bonds to the Owner not later than three days following the date of execution of the Contract. If the Work is to commence sooner in response to a letter of intent, the Bidder shall, prior to commencement of the Work, submit evidence satisfactory to the Owner that such bonds will be furnished and delivered in accordance with this Section 7.2.1.

§ 7.2.2 Unless otherwise provided, the bonds shall be written on AIA Document A312, Performance Bond and Payment Bond.

§ 7.2.3 The bonds shall be dated on or after the date of the Contract.

§ 7.2.4 The Bidder shall require the attorney-in-fact who executes the required bonds on behalf of the surety to affix to the bond a certified and current copy of the power of attorney.

ARTICLE 8 ENUMERATION OF THE PROPOSED CONTRACT DOCUMENTS

§ 8.1 Copies of the proposed Contract Documents have been made available to the Bidder and consist of the following documents:

.1 AIA Document A101™–2017, Standard Form of Agreement Between Owner and Contractor, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)

.2 AIA Document A101™–2017, Exhibit A, Insurance and Bonds, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)

.3 AIA Document A201™–2017, General Conditions of the Contract for Construction, unless otherwise stated below.
(Insert the complete AIA Document number, including year, and Document title.)

.4 AIA Document E203™–2013, Building Information Modeling and Digital Data Exhibit, dated as indicated below:
(Insert the date of the E203-2013.)

.5 Drawings

Number	Title	Date

.6 Specifications

Section	Title	Date	Pages

.7 Addenda:

Number	Date	Pages

.8 Other Exhibits:
(Check all boxes that apply and include appropriate information identifying the exhibit where required.)

☐ AIA Document E204™–2017, Sustainable Projects Exhibit, dated as indicated below:
(Insert the date of the E204-2017.)

☐ The Sustainability Plan:

Title	Date	Pages

☐ Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

.9 Other documents listed below:
(List here any additional documents that are intended to form part of the Proposed Contract Documents.)

SECTION 01 25 00 - SUBSTITUTION PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes administrative and procedural requirements for substitutions.

B. Related Requirements:

1. Section 01 60 00 "Product Requirements" for requirements for submitting comparable product submittals for products by listed manufacturers.

1.2 DEFINITIONS

A. Substitutions: Changes in products, materials, equipment, and methods of construction from those required by the Contract Documents and proposed by Contractor.

1.3 ACTION SUBMITTALS

A. Substitution Requests: Submit three copies of each request for consideration. Identify product or fabrication or installation method to be replaced. Include Specification Section number and title and Drawing numbers and titles.

1. Substitution Request Form: Use CSI Form 13.1A.
2. Documentation: Show compliance with requirements for substitutions and the following, as applicable:

a. Statement indicating why specified product or fabrication or installation cannot be provided, if applicable.
b. Coordination information, including a list of changes or revisions needed to other parts of the Work and to construction performed by Owner and separate contractors, that will be necessary to accommodate proposed substitution.
c. Detailed comparison of significant qualities of proposed substitution with those of the Work specified. Include annotated copy of applicable Specification Section. Significant qualities may include attributes such as performance, weight, size, durability, visual effect, sustainable design characteristics, warranties, and specific features and requirements indicated. Indicate deviations, if any, from the Work specified.
d. Product Data, including drawings and descriptions of products and fabrication and installation procedures.
e. Samples, where applicable or requested.

f. Certificates and qualification data, where applicable or requested.
g. List of similar installations for completed projects with project names and addresses and names and addresses of architects and owners.
h. Material test reports from a qualified testing agency indicating and interpreting test results for compliance with requirements indicated.
i. Research reports evidencing compliance with building code in effect for Project.
j. Detailed comparison of Contractor's construction schedule using proposed substitution with products specified for the Work, including effect on the overall Contract Time. If specified product or method of construction cannot be provided within the Contract Time, include letter from manufacturer, on manufacturer's letterhead, stating date of receipt of purchase order, lack of availability, or delays in delivery.
k. Cost information, including a proposal of change, if any, in the Contract Sum.
l. Contractor's certification that proposed substitution complies with requirements in the Contract Documents except as indicated in substitution request, is compatible with related materials, and is appropriate for applications indicated.
m. Contractor's waiver of rights to additional payment or time that may subsequently become necessary because of failure of proposed substitution to produce indicated results.

3. Architect's Action: If necessary, Architect will request additional information or documentation for evaluation within (3) three business days of receipt of a request for substitution. Architect will notify Contractor through Construction Manager of acceptance or rejection of proposed substitution within (5) five business days of receipt of additional information or documentation, whichever is later.

a. Forms of Acceptance: Change Order, Construction Change Directive, or Architect's Supplemental Instructions for minor changes in the Work.
b. Use product specified if Architect does not issue a decision on use of a proposed substitution within time allocated.

1.4 QUALITY ASSURANCE

A. Compatibility of Substitutions: Investigate and document compatibility of proposed substitution with related products and materials. Engage a qualified testing agency to perform compatibility tests recommended by manufacturers.

SECTION 01 25 00
SUBSTITUTION PROCEDURES

PART 2 - PRODUCTS

2.1 SUBSTITUTIONS

A. Substitutions for Cause: Submit requests for substitution immediately on discovery of need for change, but no later than 30 days after the Notice of Award.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied:

a. Requested substitution is consistent with the Contract Documents and will produce indicated results.
b. Requested substitution will not adversely affect Contractor's construction schedule.
c. Requested substitution has received necessary approvals of authorities having jurisdiction.
d. Requested substitution is compatible with other portions of the Work.
e. Requested substitution has been coordinated with other portions of the Work.
f. Requested substitution provides specified warranty.
g. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

B. Substitutions for Convenience: Not allowed unless otherwise indicated.

C. Substitutions for Convenience: Architect will consider requests for substitution if received within 60 days after the Notice of Award.

1. Conditions: Architect will consider Contractor's request for substitution when the following conditions are satisfied:

a. Requested substitution offers Owner a substantial advantage in cost, time, energy conservation, or other considerations, after deducting additional responsibilities Owner must assume. Owner's additional responsibilities may include compensation to Architect for redesign and evaluation services, increased cost of other construction by Owner, and similar considerations.
b. Requested substitution does not require extensive revisions to the Contract Documents.
c. Requested substitution is consistent with the Contract Documents and will produce indicated results.
d. Requested substitution will not adversely affect Contractor's construction schedule.
e. Requested substitution has received necessary approvals of authorities having jurisdiction.

f. Requested substitution is compatible with other portions of the Work.
g. Requested substitution has been coordinated with other portions of the Work.
h. Requested substitution provides specified warranty.
i. If requested substitution involves more than one contractor, requested substitution has been coordinated with other portions of the Work, is uniform and consistent, is compatible with other products, and is acceptable to all contractors involved.

PART 3 - EXECUTION (Not Used)

END OF SECTION 01 25 00

SECTION 07 41 13.16 - STANDING-SEAM METAL ROOF PANELS

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes standing-seam metal roof panels.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.3 ACTION SUBMITTALS

A. Product Data: For each type of product.

B. Shop Drawings: Include fabrication and installation layouts of metal panels; details of edge conditions, joints, panel profiles, corners, anchorages, attachment system, trim, flashings, closures, and accessories; and special details.

C. Samples: For each type of metal panel indicated.

1.4 INFORMATIONAL SUBMITTALS

A. Product test reports.

B. Warranties: Sample of special warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

1.6 QUALITY ASSURANCE

A. Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

B. UL-Certified, Portable Roll-Forming Equipment: UL-certified, portable roll-forming equipment capable of producing metal panels warranted by manufacturer to be the same as factory-formed products. Maintain UL certification of portable roll-forming equipment for duration of work.

SECTION 07 41 13.16
STANDING-SEAM METAL ROOF PANELS

1.7 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of metal panel systems that fail in materials or workmanship within specified warranty period.

1. Warranty Period: Two years from date of Substantial Completion.

B. Special Warranty on Panel Finishes: Manufacturer's standard form in which manufacturer agrees to repair finish or replace metal panels that show evidence of deterioration of factory-applied finishes within specified warranty period.

1. Finish Warranty Period: 20 years from date of Substantial Completion.

C. Special Weathertightness Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace standing-seam metal roof panel assemblies that fail to remain weathertight, including leaks, within specified warranty period.

1. Warranty Period: 20 years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Energy Performance: Provide roof panels that are listed on the EPA/DOE's ENERGY STAR "Roof Product List" for low-slope roof products.

B. Energy Performance: Provide roof panels according to one of the following when tested according to CRRC-1:

1. Three-year, aged solar reflectance of not less than 0.55 and emissivity of not less than 0.75.
2. Three-year, aged Solar Reflectance Index of not less than 64 when calculated according to ASTM E 1980.

C. Structural Performance: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 1592:

1. Wind Loads: As indicated on Drawings.
2. Other Design Loads: As indicated on Drawings.
3. Deflection Limits: For wind loads, no greater than 1/180 of the span.

D. Air Infiltration: Air leakage of not more than 0.0028 cfm/sq. ft. when tested according to ASTM E 1680 or ASTM E 283 at the following test-pressure difference:

1. Test-Pressure Difference: +/-20 lbs/sq ft.

E. Water Penetration under Static Pressure: No water penetration when tested according to ASTM E 1646 or ASTM E 331 at the following test-pressure difference:
1. Test-Pressure Difference: +/-20 lbs/sq ft.

F. Hydrostatic-Head Resistance: No water penetration when tested according to ASTM E 2140.

G. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.

1. Uplift Rating: UL 90.

H. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

2.2 STANDING-SEAM METAL ROOF PANELS

A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.

1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E 1514.
2. Aluminum Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E 1637.

B. Vertical-Rib, Seamed-Joint, Standing-Seam Metal Roof Panels: Formed with vertical ribs at panel edges and plank & pencil ribs between panel edge vertical ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels, engaging opposite edge of adjacent panels, and mechanically seaming panels together.

1. Basis-of-Design Product: Subject to compliance with requirements, provide MBCI; LokSeam® Metal Roof Panels (LSMSMBCI) or comparable product by one of the following, but not limited to:

   a. CENTRIA Architectural Systems.
   b. Exceptional Metals.
   c. Metl-Span.
   d. McElroy Metal

2.

3. Metallic-Coated Steel Sheet: Zinc-coated (galvanized) steel sheet complying with ASTM A 653/A 653M, G90 (Z275) coating designation, or aluminum-zinc alloy-coated steel sheet complying with ASTM A 792/A 792M, Class AZ50 (Class AZM150) coating designation; structural quality. Pre-painted by the coil-coating process to comply with ASTM A 755/A 755M.

   a. Nominal Thickness: 22ga.

b. Exterior Finish: Two-coat fluoropolymer
c. Color: As selected by Architect from manufacturer's full range.

4. Clips: Two-piece floating to accommodate thermal movement.

a. Material: 0.064-inch- (1.63-mm-) nominal thickness, zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet.
b. Material: 0.062-inch- (1.59-mm-) thick, stainless-steel sheet.

5. Joint Type: As standard with manufacturer.
6. Panel Coverage**:** 24 inches (610 mm)
7. Panel Height: 2 3/8 inches

2.3 UNDERLAYMENT MATERIALS

A. Self-Adhering, High-Temperature Underlayment: Provide self-adhering, cold-applied, sheet underlayment, a minimum of 30 mils (0.76 mm) thick, consisting of slip-resistant, polyethylene-film top surface laminated to a layer of butyl or SBS-modified asphalt adhesive, with release-paper backing. Provide primer when recommended by underlayment manufacturer.

1. Thermal Stability: Stable after testing at 240 deg F (116 deg C); ASTM D 1970.

2. Low-Temperature Flexibility: Passes after testing at minus 20 deg F (29 deg C); ASTM D 1970.

3. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

a. Carlisle Residential; a division of Carlisle Construction Materials.
b. Drexel Metals.
c. Grace Construction Products; W.R. Grace & Co. -- Conn.
d. Henry Company.
e. Kirsch Building Products, LLC.
f. Owens Corning.

B. Felt Underlayment: ASTM D 226/D 22M, Type II (No. 30), asphalt-saturated organic felts.

C. Slip Sheet: Manufacturer's recommended slip sheet, of type required for application.

2.4 MISCELLANEOUS MATERIALS

A. Miscellaneous Metal Subframing and Furring: ASTM C 645; cold-formed, metallic-coated steel sheet, ASTM A 653/A 653M, G90 (Z275 hot-dip galvanized) coating designation or ASTM A 792/A 792M, Class AZ50 (Class AZM150) coating designation unless otherwise indicated. Provide manufacturer's standard sections as required for support and alignment of metal panel system.

B. Panel Accessories: Provide components required for a complete, weathertight panel system including trim, copings, fasciae, mullions, sills, corner units, clips, flashings, sealants, gaskets,

fillers, closure strips, and similar items. Match material and finish of metal panels unless otherwise indicated.

1. Closures: Provide closures at eaves and ridges, fabricated of same metal as metal panels.
2. Backing Plates: Provide metal backing plates at panel end splices, fabricated from material recommended by manufacturer.
3. Closure Strips: Closed-cell, expanded, cellular, rubber or crosslinked, polyolefin-foam or closed-cell laminated polyethylene; minimum 1-inch- (25-mm-) thick, flexible closure strips; cut or premolded to match metal panel profile. Provide closure strips where indicated or necessary to ensure weathertight construction.

C. Flashing and Trim: Provide flashing and trim formed from same material as metal panels as required to seal against weather and to provide finished appearance. Locations include, but are not limited to, eaves, rakes, corners, bases, framed openings, ridges, fasciae, and fillers. Finish flashing and trim with same finish system as adjacent metal panels.

D. Gutters and Downspouts: Formed from same material as roof panels according to SMACNA's "Architectural Sheet Metal Manual." Finish to match roof fascia and rake trim.

E. Roof Curbs: Fabricated from same material as roof panels, 0.048-inch (1.2-mm) nominal thickness; with bottom of skirt profiled to match roof panel profiles and with welded top box and integral full-length cricket. Fabricate curb subframing of 0.060-inch- (1.52-mm-) nominal thickness, angle-, C-, or Z-shaped steel sheet. Fabricate curb and subframing to withstand indicated loads of size and height indicated. Finish roof curbs to match metal roof panels.

F. Panel Fasteners: Self-tapping screws designed to withstand design loads.

G. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.

1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing; 1/2 inch (13 mm) wide and 1/8 inch (3 mm) thick.
2. Joint Sealant: ASTM C 920; as recommended in writing by metal panel manufacturer.
3. Butyl-Rubber-Based, Solvent-Release Sealant: ASTM C 1311.

2.5 FABRICATION

A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using UL-certified, portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.

C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

D. Fabricate metal panel joints with factory-installed captive gaskets or separator strips that provide a weathertight seal and prevent metal-to-metal contact, and that minimize noise from movements.

E. Sheet Metal Flashing and Trim: Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.

2.6 FINISHES

A. Panels and Accessories:

1. Two-Coat Fluoropolymer: AAMA 621 Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat.
2. Concealed Finish: White or light-colored acrylic or polyester backer finish.

PART 3 - EXECUTION

3.1 PREPARATION

A. Miscellaneous Supports: Install subframing, furring, and other miscellaneous panel support members and anchorages according to ASTM C 754 and metal panel manufacturer's written recommendations.

3.2 UNDERLAYMENT INSTALLATION

A. Self-Adhering Sheet Underlayment: Apply primer if required by manufacturer. Comply with temperature restrictions of underlayment manufacturer for installation. Apply at locations indicated below, wrinkle free, in shingle fashion to shed water, and with end laps of not less than 6 inches (152 mm) staggered 24 inches (610 mm) between courses. Overlap side edges not less than 3-1/2 inches (90 mm). Extend underlayment into gutter trough. Roll laps with roller. Cover underlayment within 14 days.

1. Apply over the entire roof surface.

B. Slip Sheet: Apply slip sheet over underlayment before installing metal roof panels.

C. Flashings: Install flashings to cover underlayment to comply with requirements specified in Section 076200 "Sheet Metal Flashing and Trim."

3.3 METAL PANEL INSTALLATION

A. Standing-Seam Metal Roof Panel Installation: Fasten metal roof panels to supports with concealed clips at each standing-seam joint at location, spacing, and with fasteners recommended in writing by manufacturer.

1. Install clips to supports with self-tapping fasteners.

2. Install pressure plates at locations indicated in manufacturer's written installation instructions.
3. Snap Joint: Nest standing seams and fasten together by interlocking and completely engaging factory-applied sealant.
4. Seamed Joint: Crimp standing seams with manufacturer-approved, motorized seamer tool so clip, metal roof panel, and factory-applied sealant are completely engaged.
5. Watertight Installation:

    a. Apply a continuous ribbon of sealant or tape to seal joints of metal panels, using sealant or tape as recommend in writing by manufacturer as needed to make panels watertight.
    b. Provide sealant or tape between panels and protruding equipment, vents, and accessories.
    c. At panel splices, nest panels with minimum 6-inch (152-mm) end lap, sealed with sealant and fastened together by interlocking clamping plates.

B. Accessory Installation: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

C. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level as indicated. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

3.4 CLEANING AND PROTECTION

A. Remove temporary protective coverings and strippable films, if any, as metal panels are installed, unless otherwise indicated in manufacturer's written installation instructions. On completion of metal panel installation, clean finished surfaces as recommended by metal panel manufacturer. Maintain in a clean condition during construction.

END OF SECTION 07 41 13.16

SECTION 13 34 10 - PRE-ENGINEERED METAL BUILDING SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:

1. Structural-steel framing.
2. Metal roof panels.
3. Metal wall panels.
4. Metal soffit panels.
5. Thermal insulation.

1.2 PREINSTALLATION MEETINGS

A. Pre-installation Conference: Conduct conference at Project site.

1.3 REFERENCE STANDARDS

A. American Institute of Steel Construction (AISC):
1. AISC 360 - Specification for Structural Steel Buildings.
2. AISC 341 – Seismic Provisions for Structural Steel Buildings (when appropriate).
3. AISC Design Guide 3 – Serviceability for Steel Buildings

B. American Iron and Steel Institute (AISI):
1. AISI S100 - North American Specification for the Design of Cold-Formed Steel Structural Members.

C. American Welding Society (AWS):
1. AWS D1.1 / D1.1M – Structural Welding Code – Steel.
2. AWS D1.3 / D1.3M – Structural Welding Code – Sheet Steel.

D. Association for Iron & Steel Technology (AISE):
1. AISE 13 – Specifications for Design and Construction of Mill Buildings.

E. ASTM International (ASTM):
1. ASTM A 325 – Standard Specification for Structural Bolts, Steel, Heat Treated, 120/105 ksi Minimum Tensile Strength.
2. ASTM A 653 / A 653M – Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot-Dip Process.
3. ASTM A 792 / A 792M – Standard Specification for Steel Sheet, 55 % Aluminum-Zinc Alloy-Coated by the Hot-Dip Process.

4. ASTM B 117 – Standard Practice for Operating Salt Spray (Fog) Apparatus.
5. ASTM C 518 – Standard Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus.
6. ASTM C 1363 – Standard Test Method for Thermal Performance of Building Materials and Envelope Assemblies by Means of a Hot Box Apparatus.
7. ASTM D 522 – Standard Test Methods for Mandrel Bend Test of Attached Organic Coatings.
8. ASTM D 523 – Standard Test Method for Specular Gloss.
9. ASTM D 968 – Standard Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive.
10. ASTM D 1308 – Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes.
11. ASTM D 2244 – Standard Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates.
12. ASTM D 2247 – Standard Practice for Testing Water Resistance of Coatings in 100% Relative Humidity.
13. ASTM D 2794 – Standard Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
14. ASTM D 3361 – Standard Practice for Unfiltered Open-Flame Carbon-Arc Exposures of Paint and Related Coatings.
15. ASTM D 4214 – Standard Test Methods for Evaluating the Degree of Chalking of Exterior Paint Films.
16. ASTM E 84 – Standard Test Method for Surface Burning Characteristics of Building Materials.
17. ASTM E 96 / E 96M – Standard Test Methods for Water Vapor Transmission of Materials.
18. ASTM E 1592 – Standard Test Method for Structural Performance of Sheet Metal Roof and Siding Systems by Uniform Static Air Pressure Difference.
19. ASTM G 87 – Standard Practice for Conducting Moist SO2 Tests.

F. Metal Building Manufacturers Association (MBMA):
1. MBMA Metal Building Systems Manual.
2. Seismic Design Guide for Metal Building Systems.

G. North American Insulation Manufacturers Association (NAIMA):
1. NAIMA 202 – Standard For Flexible Fiber Glass Insulation to be Laminated for Use in Metal Buildings.

H. The Society for Protective Coatings (SSPC):
1. SSPC-Paint 15 - Primer for Use Over Hand Cleaned Steel performs to SSPC-Paint 15 standards.
2. SSPC-SP2 – Hand Tool Cleaning.

I. Underwriters Laboratories (UL):
1. UL 580 – Standard for Tests for Uplift Resistance of Roof Assemblies.
2. UL 723 – Standard for Test for Surface Burning Characteristics of Building Materials.

SECTION 13 34 10
PRE-ENGINEERED METAL BUILDING SYSTEMS

1.4 SUBMITTALS

A. See Section 01 30 00 “Submittal Procedures”.

B. Product Data: For each type of metal building system component.

C. Shop Drawings: Indicate components by others. Include full building plan, elevations, sections, details and attachments to other work.

D. Samples: For units with factory-applied finishes.

E. Welding certificates.

F. Letter of Design Certification: Signed and sealed by a qualified professional engineer. Include the following:

1. Name and location of Project.
2. Order number.
3. Name of manufacturer.
4. Name of Contractor.
5. Building dimensions including width, length, height, and roof slope.
6. Indicate compliance with AISC standards for hot-rolled steel and AISI standards for cold-rolled steel, including edition dates of each standard.
7. Governing building code and year of edition.
8. Design Loads: Include dead load, roof live load, collateral loads, roof snow load, deflection, wind loads/speeds and exposure, seismic design category or effective peak velocity-related acceleration/peak acceleration, and auxiliary loads (cranes).
9. Load Combinations: Indicate that loads were applied acting simultaneously with concentrated loads, according to governing building code.
10. Building-Use Category: Indicate category of building use and its effect on load importance factors.

G. Material test reports.

H. Source quality-control reports.

I. Field quality-control reports.

J. Sample warranties.

1.5 CLOSEOUT SUBMITTALS

A. Maintenance data.

SECTION 13 34 10
PRE-ENGINEERED METAL BUILDING SYSTEMS

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: A qualified manufacturer.

1. Accreditation: Manufacturer's facility accredited according to the International Accreditation Service's AC472, "Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems."
2. Engineering Responsibility: Preparation of comprehensive engineering analysis and Shop Drawings by a professional engineer who is legally qualified to practice in jurisdiction where Project is located.

B. Erector Qualifications: An experienced erector who specializes in erecting and installing work similar in material, design, and extent to that indicated for this Project and who is acceptable to manufacturer.

C. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
2. AWS D1.3, "Structural Welding Code - Sheet Steel."

D. Material Testing:
1. In addition to material certifications of structural steel, metal building system manufacturer shall provide, upon request at time of order, evidence of compliance with specifications through testing.
2. This quality assurance testing shall include testing of structural bolts, nuts, screw fasteners, mastics, and metal coatings (primers, metallic coated products, and painted coil products).

1.7 DELIVERY, STORAGE, AND HANDLING

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

B. Storage and Handling Requirements:
1. Store and handle materials in accordance with manufacturer’s instructions.
2. Keep materials in manufacturer’s original, unopened containers and packaging until installation.
3. Do not store materials directly on ground.
4. Store materials on flat, level surface, raised above ground, with adequate support to prevent sagging.
5. Protect materials and finish during storage, handling, and installation to prevent damage.

SECTION 13 34 10
PRE-ENGINEERED METAL BUILDING SYSTEMS

1.8 WARRANTY

A. Building System Warranty – Only applicable per contract documents.
   1. Furnish manufacturer's standard warranty for the metal building system, excluding primer.
   2. The manufacturer shall warranty the metal building system against failure due to defective material or workmanship for a period of one (1) year from date of shipment.
   3. The liability under this warranty shall be limited to furnishing, but not dismantling or installing, necessary replacement material F.O.B. manufacturer's plant. In no consequential, or special damages.
   4. Building must be installed by a qualified erector to be covered under manufacturer's warranty.

B. Roof and Wall Panel Finish Warranty – Only applicable per contract documents
   1. Paint Systems
      a. Furnish manufacturer's standard warranty for the metal panel paint system against chipping, peeling, blistering, fading in excess of 5 NBS Hunter units, and chalking in excess of 8 units as set forth in ASTM D4214.
      b. The warranty shall be for a period of 35 years from the date of shipment for fluoropolymer (PVDF) paint systems.
      c. The warranty shall be for a period of 25 years from the date of shipment for silicone-polyester (SP) paint systems.
   2. Zinc-Aluminum systems
      a. Furnish manufacturer's standard warranty for the zinc-aluminum hot dipped alloy-coated panels against roof and rupture, structural failure, or perforation due to normal atmospheric conditions.
      b. The warranty shall be for a period of 20 years from the date of shipment for zinc-aluminum systems.
   3. The liability under this warranty shall be limited to furnishing, but not dismantling or installing, necessary replacement material F.O.B. manufacturer's plant. In no event shall the manufacturer be liable for loss of profits, or other incidental, consequential, or special damages.

C. Roof System Weather-tightness Warranty – Only applicable per contract documents
   1. Furnish manufacturer's warranty for the metal building roof system. The warranty period of 20 years from the final inspection (if applicable) and acceptance from the manufacturer. See contract documents for more information.

SECTION 13 34 10
PRE-ENGINEERED METAL BUILDING SYSTEMS

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Must be current member of MBMA

B. The metal building systems manufacturer shall be accredited under the International Accreditation Service, Accreditation Criteria for Inspection Programs for Manufacturers of Metal Building Systems (AC472)

2.2 PERFORMANCE REQUIREMENTS

A. Structural Performance: Metal building systems shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated according to procedures in MBMA's "Metal Building Systems Manual", and as indicated in the Structural Drawings.

B. Design Loads:
1. Roof Live Load: 20 PSF
2. Roof Dead Load: See Structural Drawings
3. Collateral Load: 8 PSF
4. Roof Snow Load: 5 PSF
5. Wind: 115 MPH (Vult)
6. Wind Importance Factor, Iw: 1.0
7. Exposure: C
8. Seismic: Ss:0.161, S1:0.083
    a. Site Class - D
    b. Seismic Importance Factor Ie: 1.0
    c. Seismic Design Category: B

9. Design Loads: See Structural Drawings for Additional Notes.
10. Deflection and Drift Limits: Design metal building system assemblies to withstand serviceability design loads without exceeding deflections and drift limits recommended in AISC Steel Design Guide No. 3 "Serviceability Design Considerations for Steel Buildings." See Structural Drawings.
11. Deflection and Drift Limits: See Structural Drawings for limitations.

C. Seismic Performance: See Structural Drawings

D. Thermal Movements: Allow for thermal movements from ambient and surface temperature changes by preventing buckling, opening of joints, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Base calculations on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change: 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

E. Fire-Resistance Ratings: Where assemblies are indicated to have a fire-resistance rating, provide metal panel assemblies identical to those of assemblies tested for fire resistance per ASTM E 119 or ASTM E 108 by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Indicate design designations from UL's "Fire Resistance Directory," FM Global's "Approval Guide," or from the listings of another qualified testing agency.

F. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a qualified testing agency, for fire-protection ratings indicated, based on testing at positive pressure according to NFPA 252 or UL 10C.

1. Oversize Fire-Rated Door Assemblies: For units exceeding sizes of tested assemblies, provide certification by a qualified testing agency that doors comply with standard construction requirements for tested and labeled fire-rated door assemblies except for size.

G. Structural Performance for Metal Roof [and Wall Panels: Provide metal panel systems capable of withstanding the effects of the following loads, based on testing according to ASTM E 1592:

1. Wind Loads: See component & cladding pressures specified in the Structural Drawings.

H. Wind-Uplift Resistance: Provide metal roof panel assemblies that comply with UL 580 for wind-uplift-resistance class indicated.

1. Uplift Rating: Class 90.

I. FM Global Listing: Provide metal roof panels and component materials that comply with requirements in FM Global 4471 as part of a panel roofing system and that are listed in FM Global's "Approval Guide" for Class 1 or noncombustible construction, as applicable. Identify materials with FM Global markings.

2.3 STRUCTURAL-STEEL FRAMING

A. Structural Steel: Comply with AISC 360, "Specification for Structural Steel Buildings."

B. Bolted Connections: Comply with RCSC's "Specification for Structural Joints Using High-Strength Bolts."

C. Cold-Formed Steel: Comply with AISI's "North American Specification for the Design of Cold-Formed Steel Structural Members" for design requirements and allowable stresses.

D. Primary Framing: Manufacturer's standard primary-framing system, designed to withstand required loads and specified requirements. Primary framing includes transverse and lean-to frames; rafters and rake beams; sidewall, intermediate, end-wall, and corner columns; and wind bracing.

1. General: Provide frames with attachment plates, bearing plates, and splice members. Factory drill for field-bolted assembly. Provide frame span and spacing indicated.

a. Slight variations in span and spacing may be acceptable if necessary to comply with manufacturer's standard, as approved by Architect.

2. Frame Configuration: Single gable and Lean-to, with high side connected to and supported by main structure.
3. Exterior Column: As recommended by manufacturer.
4. Rafter: As recommended by manufacturer.

E. End-Wall Framing: Manufacturer's standard primary end-wall framing fabricated for field-bolted assembly to comply with the following:

F. Secondary Framing: Manufacturer's standard secondary framing, including purlins, girts, eave struts, flange bracing, base members, gable angles, clips, headers, jambs, and other miscellaneous structural members. Unless otherwise indicated, fabricate framing from either cold-formed, structural-steel sheet or roll-formed, metallic-coated steel sheet, pre-painted with coil coating, to comply with the following:

G. Anchor Rods: Headed anchor rods as indicated in Anchor Rod Plan for attachment of metal building to foundation. See Structural Drawings for minimum anchor rod lengths required.

2.4 METAL ROOF PANELS

A. General: Provide factory-formed metal roof panels designed to be installed by lapping and interconnecting raised side edges of adjacent panels with joint type indicated and mechanically attaching panels to supports using concealed clips in side laps. Include clips, cleats, pressure plates, and accessories required for weathertight installation.

1. Steel Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E 1514.
2. Aluminum Panel Systems: Unless more stringent requirements are indicated, comply with ASTM E 1637.

B. Standing-Seam Metal Roof Panels: Formed with vertical ribs at panel edges and plank & pencil ribs between panel edge vertical ribs; designed for sequential installation by mechanically attaching panels to supports using concealed clips located under one side of panels, engaging opposite edge of adjacent panels, and mechanically seaming panels together.
   1. Type: Single skin panels with concealed clips.
   2. Panel Strength: Determine and certify panel strength as follows:

      a. Positive Loading (Toward Panel Supports): Determine in accordance with AISI S100.
      b. Negative Loading (Away from Panel Supports): Determine in accordance with ASTM E 1592.

   3. Panel profile Basis of Design: Double-Lok:

      a. Panel Type: Trapezoidal machine seamed, 1/4:12 minimum roof slope.
      b. Panel width: 18 inches wide x 3 inches
      c. Thickness: 24 gauge.
      d. Finish: PVDF Metallic.
      e. Color: Selected from manufacturer standard colors.
      f. Air Infiltration: Maximum air infiltration of 0.04 cubic feet per minute per square foot of specimen area when tested to ASTM E 1680 at a pressure differential of +/- 1.57 psf (75 Pa).
      g. Water Infiltration: No uncontrollable water leakage when tested to ASTM E 1646 at a 20 psf (955 Pa) pressure differential when sprayed with 5 gallons of water per hour per square foot (203 liters per square meter) of specimen area.

2.5 THERMAL INSULATION

A. Faced Metal Building Insulation: ASTM C 991, Type II, glass-fiber-blanket insulation; 0.5-lb/cu. ft. density; 2-inch-wide, continuous, vapor-tight edge tabs; with a flame-spread index of 25 or less.

B. Unfaced Metal Building Insulation: ASTM C 991, Type I, or NAIMA 202, glass-fiber-blanket insulation; 0.5-lb/cu. ft.; density; 2-inch-wide, continuous, vapor-tight edge tabs; with a flame-spread index of 25 or less.

C. Retainer Strips: For securing insulation between supports, 0.025-inch (0.64-mm) nominal-thickness, formed, metallic-coated steel or PVC retainer clips colored to match insulation facing.

D. Vapor-Retarder Facing: ASTM C 1136, with permeance not greater than 0.02 perm when tested according to ASTM E 96/E 96M, Desiccant Method.

E. Wall and Roof insulation shall have a minimum R-Value of R-19.

2.6 PERSONNEL DOORS AND FRAMES

A. Swinging Personnel Doors and Frames: Metal building system manufacturer's standard doors and frames; prepared and reinforced at strike and at hinges to receive factory- and field-applied hardware according to BHMA A156 Series.

1. Hardware:

a. Provide hardware for each door leaf, as follows:

1) Hinges: BHMA A156.1. Three plain-bearing, standard-weight, full-mortise, stainless-steel or bronze, template-type hinges; 4-1/2 by 4-1/2 inches (114 by 114 mm), with nonremovable pin.
2) Lockset: BHMA A156.2. Mortise, with lever handle type.
3) Exit Device: BHMA A156.3. Touch- or push-bar type.
4) Threshold: BHMA A156.21. Extruded aluminum.
5) Silencers: Pneumatic rubber; three silencers on strike jambs of single door frames and two silencers on heads of double door frames.
6) Closer: BHMA A156.4. Surface-applied, standard-duty hydraulic type.
7) Weather Stripping: Vinyl applied to head and jambs, with vinyl sweep at sill.

B. Finishes for Personnel Doors and Frames:

1. Prime Finish: Factory-apply manufacturer's standard primer immediately after cleaning and pretreating.
2. Factory-Applied Paint Finish: Manufacturer's standard, complying with SDI A250.3 for performance and acceptance criteria.

a. Color and Gloss: As selected by the County Engineer from manufacturer's full range.

2.7 ACCESSORIES

A. General: Provide accessories as standard with metal building system manufacturer and as specified. Fabricate and finish accessories at the factory to greatest extent possible, by manufacturer's standard procedures and processes. Comply with indicated profiles and with dimensional and structural requirements.

1. Form exposed sheet metal accessories that are without excessive oil-canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.

B. Roof Panel Accessories: Provide components required for a complete metal roof panel assembly including copings, fasciae, corner units, ridge closures, clips, sealants,

gaskets, fillers, closure strips, and similar items. Match material and finish of metal roof panels unless otherwise indicated.

C. Wall Panel Accessories: Provide components required for a complete metal wall panel assembly including copings, fasciae, mullions, sills, corner units, clips, sealants, gaskets, fillers, closure strips, and similar items. Match material and finish of metal wall panels unless otherwise indicated.

D. Flashing and Trim: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch (0.46-mm) nominal uncoated steel thickness, prepainted with coil coating; finished to match adjacent metal panels.

E. Gutters: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch (0.46-mm) nominal uncoated steel thickness, prepainted with coil coating; finished to match roof fascia and rake trim. Match profile of gable trim, complete with end pieces, outlet tubes, and other special pieces as required. Fabricate in minimum 96-inch- (2438-mm-) long sections, sized according to SMACNA's "Architectural Sheet Metal Manual."

1. Gutter Supports: Fabricated from same material and finish as gutters.
2. Strainers: Bronze, copper, or aluminum wire ball type at outlets.

F. Downspouts: Zinc-coated (galvanized) or aluminum-zinc alloy-coated steel sheet, 0.018-inch (0.46-mm) nominal uncoated steel thickness, prepainted with coil coating; finished to match metal wall panels. Fabricate in minimum 10-foot- (3-m-) long sections, complete with formed elbows and offsets.

1. Mounting Straps: Fabricated from same material and finish as gutters.

G. Pipe Flashing: Premolded, EPDM pipe collar with flexible aluminum ring bonded to base.

2.8 FABRICATION

A. General: Design components and field connections required for erection to permit easy assembly.

1. Mark each piece and part of the assembly to correspond with previously prepared erection drawings, diagrams, and instruction manuals.
2. Fabricate structural framing to produce clean, smooth cuts and bends. Punch holes of proper size, shape, and location. Members shall be free of cracks, tears, and ruptures.

B. Tolerances: Comply with MBMA's "Metal Building Systems Manual" for fabrication and erection tolerances.

C. Primary Framing: Shop fabricate framing components to indicated size and section, with baseplates, bearing plates, stiffeners, and other items required for erection welded into place. Cut, form, punch, drill, and weld framing for bolted field assembly.

D. Secondary Framing: Shop fabricate framing components to indicated size and section by roll forming or break forming, with baseplates, bearing plates, stiffeners, and other plates required for erection welded into place. Cut, form, punch, drill, and weld secondary framing for bolted field connections to primary framing.

E. Metal Panels: Fabricate and finish metal panels at the factory to greatest extent possible, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements. Comply with indicated profiles and with dimensional and structural requirements.

1. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of metal panel.

2.9 SOURCE QUALITY CONTROL

A. Special Inspection: Owner will engage a qualified special inspector to perform source quality control inspections and to submit reports.

1. Accredited Manufacturers: Special inspections will not be required if fabrication is performed by an IAS AC472-accredited manufacturer approved by authorities having jurisdiction to perform such Work without special inspection.

B. Product will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

PART 3 - EXECUTION

3.1 ERECTION OF STRUCTURAL FRAMING

A. Erect metal building system according to manufacturer's written instructions and drawings.

B. Do not field cut, drill, or alter structural members without written approval from metal building system manufacturer's professional engineer.

C. Set structural framing accurately in locations and to elevations indicated, according to AISC specifications referenced in this Section. Maintain structural stability of frame during erection.

D. Base and Bearing Plates: Clean concrete- and masonry-bearing surfaces of bond-reducing materials, and roughen surfaces prior to setting plates. Clean bottom surface of plates.

1. Set plates for structural members on wedges, shims, or setting nuts as required.
2. Tighten anchor rods after supported members have been positioned and plumbed. Do not remove wedges or shims but, if protruding, cut off flush with edge of plate before packing with grout.
3. Promptly pack grout solidly between bearing surfaces and plates so no voids remain. Neatly finish exposed surfaces; protect grout and allow to cure. Comply with manufacturer's written installation instructions for shrinkage-resistant grouts.

E. Align and adjust structural framing before permanently fastening. Before assembly, clean bearing surfaces and other surfaces that will be in permanent contact with framing. Perform necessary adjustments to compensate for discrepancies in elevations and alignment.

1. Level and plumb individual members of structure.
2. Make allowances for difference between temperature at time of erection and mean temperature when structure will be completed and in service.

F. Primary Framing and End Walls: Erect framing level, plumb, rigid, secure, and true to line. Level baseplates to a true even plane with full bearing to supporting structures, set with double-nutted anchor bolts. Use grout to obtain uniform bearing and to maintain a level base-line elevation. Moist-cure grout for not less than seven days after placement.

1. Make field connections using high-strength bolts installed according to RCSC's "Specification for Structural Joints Using High-Strength Bolts" for bolt type and joint type specified.

    a. Joint Type: Snug tightened or pretensioned as required by manufacturer.

G. Secondary Framing: Erect framing level, plumb, rigid, secure, and true to line. Field bolt secondary framing to clips attached to primary framing.

1. Provide rake or gable purlins with tight-fitting closure channels and fasciae.
2. Locate and space wall girts to suit openings such as doors and windows.
3. Provide supplemental framing at entire perimeter of openings, including doors, windows, ventilators, and other penetrations of roof and walls.

H. Steel Joists: Install joists and accessories plumb, square, and true to line; securely fasten to supporting construction according to SJI's "Standard Specifications and Load Tables for Steel Joists and Joist Girders," joist manufacturer's written instructions, and requirements in this Section.

1. Before installation, splice joists delivered to Project site in more than one piece.

2. Space, adjust, and align joists accurately in location before permanently fastening.
3. Install temporary bracing and erection bridging, connections, and anchors to ensure that joists are stabilized during construction.
4. Joist Installation: Bolt joists to supporting steel framework using carbon-steel bolts unless otherwise indicated.
5. Joist Installation: Bolt joists to supporting steel framework using high-strength structural bolts unless otherwise indicated. Comply with RCSC's "Specification for Structural Joints Using High-Strength Bolts" for high-strength structural bolt installation and tightening requirements.
6. Joist Installation: Weld joist seats to supporting steel framework.
7. Install and connect bridging concurrently with joist erection, before construction loads are applied. Anchor ends of bridging lines at top and bottom chords if terminating at walls or beams.

I. Bracing: Install bracing in roof and sidewalls where indicated on erection drawings.

1. Tighten rod and cable bracing to avoid sag.
2. Locate interior end-bay bracing only where indicated.

J. Framing for Openings: Provide shapes of proper design and size to reinforce openings and to carry loads and vibrations imposed, including equipment furnished under mechanical and electrical work. Securely attach to structural framing.

K. Erection Tolerances: Maintain erection tolerances of structural framing within AISC 303.

3.2 METAL PANEL INSTALLATION, GENERAL

A. General: Anchor metal panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Field cut metal panels as required for doors, windows, and other openings. Cut openings as small as possible, neatly to size required, and without damage to adjacent metal panel finishes.

a. Field cutting of metal panels by torch is not permitted unless approved in writing by manufacturer.

2. Install metal panels perpendicular to structural supports unless otherwise indicated.
3. Flash and seal metal panels with weather closures at perimeter of openings and similar elements. Fasten with self-tapping screws.
4. Locate and space fastenings in uniform vertical and horizontal alignment.
5. Locate metal panel splices over structural supports with end laps in alignment.

6. Lap metal flashing over metal panels to allow moisture to run over and off the material.

B. Lap-Seam Metal Panels: Install screw fasteners using power tools with controlled torque adjusted to compress EPDM washers tightly without damage to washers, screw threads, or metal panels. Install screws in predrilled holes.

1. Arrange and nest side-lap joints so prevailing winds blow over, not into, lapped joints. Lap ribbed or fluted sheets one full rib corrugation. Apply metal panels and associated items for neat and weathertight enclosure. Avoid "panel creep" or application not true to line.

C. Metal Protection: Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by metal roof panel manufacturer.

D. Joint Sealers: Install gaskets, joint fillers, and sealants where indicated and where required for weatherproof performance of metal panel assemblies. Provide types of gaskets, fillers, and sealants indicated; or, if not indicated, provide types recommended by metal panel manufacturer.

1. Seal metal panel end laps with double beads of tape or sealant the full width of panel. Seal side joints where recommended by metal panel manufacturer.
2. Prepare joints and apply sealants to comply with requirements in Section 079200 "Joint Sealants."

3.3 METAL ROOF PANEL INSTALLATION

A. General: Provide metal roof panels of full length from eave to ridge unless otherwise indicated or restricted by shipping limitations.

1. Install ridge caps as metal roof panel work proceeds.
2. Flash and seal metal roof panels with weather closures at eaves and rakes. Fasten with self-tapping screws.

B. Standing-Seam Metal Roof Panels: Refer to Specification Section 07 41 13.16 “Standing-Seam Metal Roof Panels”.

C. Lap-Seam Metal Roof Panels: Fasten metal roof panels to supports with exposed fasteners at each lapped joint, at location and spacing recommended by manufacturer.

1. Provide metal-backed sealing washers under heads of exposed fasteners bearing on weather side of metal roof panels.
2. Provide sealant tape at lapped joints of metal roof panels and between panels and protruding equipment, vents, and accessories.

3. Apply a continuous ribbon of sealant tape to weather-side surface of fastenings on end laps and on side laps of nesting-type metal panels, on side laps of ribbed or fluted metal panels, and elsewhere as needed to make metal panels weatherproof to driving rains.
4. At metal panel splices, nest panels with minimum 6-inch (152-mm) end lap, sealed with butyl-rubber sealant and fastened together by interlocking clamping plates.

D. Metal Fascia Panels: Align bottom of metal panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws. Flash and seal metal panels with weather closures where fasciae meet soffits, along lower panel edges, and at perimeter of all openings.

3.4 METAL WALL PANEL INSTALLATION

A. General: Install metal wall panels in orientation, sizes, and locations indicated on Drawings. Install panels perpendicular to girts, extending full height of building, unless otherwise indicated. Anchor metal wall panels and other components of the Work securely in place, with provisions for thermal and structural movement.

1. Unless otherwise indicated, begin metal panel installation at corners with center of rib lined up with line of framing.
2. Shim or otherwise plumb substrates receiving metal wall panels.
3. When two rows of metal panels are required, lap panels 4 inches (102 mm) minimum.
4. When building height requires two rows of metal panels at gable ends, align lap of gable panels over metal wall panels at eave height.
5. Rigidly fasten base end of metal wall panels and allow eave end free movement for thermal expansion and contraction. Predrill panels.
6. Flash and seal metal wall panels with weather closures at eaves and rakes, and at perimeter of all openings. Fasten with self-tapping screws.
7. Install screw fasteners in predrilled holes.
8. Install flashing and trim as metal wall panel work proceeds.
9. Apply elastomeric sealant continuously between metal base channel (sill angle) and concrete, and elsewhere as indicated on Drawings; if not indicated, as necessary for waterproofing.
10. Align bottom of metal wall panels and fasten with blind rivets, bolts, or self-drilling or self-tapping screws.
11. Provide weatherproof escutcheons for pipe and conduit penetrating exterior walls.

B. Metal Wall Panels: Install metal wall panels on exterior side of girts. Attach metal wall panels to supports with fasteners as recommended by manufacturer.

3.5 METAL SOFFIT PANEL INSTALLATION

A. Provide metal soffit panels the full width of soffits. Install panels perpendicular to support framing.

B. Flash and seal metal soffit panels with weather closures where panels meet walls and at perimeter of all openings.

3.6 THERMAL INSULATION INSTALLATION

A. General: Install insulation concurrently with metal panel installation, in thickness indicated to cover entire surface, according to manufacturer's written instructions.

1. Set vapor-retarder-faced units with vapor retarder toward warm side of construction unless otherwise indicated. Do not obstruct ventilation spaces except for firestopping.
2. Tape joints and ruptures in vapor retarder, and seal each continuous area of insulation to the surrounding construction to ensure airtight installation.
3. Install factory-laminated, vapor-retarder-faced blankets straight and true in one-piece lengths, with both sets of facing tabs sealed, to provide a complete vapor retarder.
4. Install blankets straight and true in one-piece lengths. Install vapor retarder over insulation, with both sets of facing tabs sealed, to provide a complete vapor retarder.

B. Blanket Roof Insulation: Comply with the following installation method:

1. Over-Framing Installation: Extend insulation and vapor retarder over and perpendicular to top flange of secondary framing. Hold in place by metal roof panels fastened to secondary framing.
2. Between-Purlin Installation: Extend insulation and vapor retarder between purlins. Carry vapor-retarder-facing tabs up and over purlin, overlapping adjoining facing of next insulation course and maintaining continuity of retarder. Hold in place with bands and crossbands below insulation.
3. Over-Purlin-with-Spacer-Block Installation: Extend insulation and vapor retarder over and perpendicular to top flange of secondary framing. Install layer of filler insulation over first layer to fill space formed by metal roof panel standoffs. Hold in place by panels fastened to standoffs.

    a. Thermal Spacer Blocks: Where metal roof panels attach directly to purlins, install thermal spacer blocks.

4. Two-Layers-between-Purlin-with-Spacer-Block Installation: Extend insulation and vapor retarder between purlins. Carry vapor-retarder-facing tabs up and over purlin, overlapping adjoining facing of next insulation course and maintaining continuity of retarder. Install layer of filler insulation over first layer to fill space

between purlins formed by thermal spacer blocks. Hold in place with bands and crossbands below insulation.

a. Thermal Spacer Blocks: Where metal roof panels attach directly to purlins, install thermal spacer blocks.

5. Retainer Strips: Install retainer strips at each longitudinal insulation joint, straight and taut, nesting with secondary framing to hold insulation in place.

C. Blanket Wall Insulation: Extend insulation and vapor retarder over and perpendicular to top flange of secondary framing. Hold in place by metal wall panels fastened to secondary framing.

1. Retainer Strips: Install retainer strips at each longitudinal insulation joint, straight and taut, nesting with secondary framing to hold insulation in place.

3.7 DOOR AND FRAME INSTALLATION

A. General: Install doors and frames plumb, rigid, properly aligned, and securely fastened in place according to manufacturers' written instructions. Coordinate installation with wall flashings and other components. Seal perimeter of each door frame with elastomeric sealant used for metal wall panels.

B. Personnel Doors and Frames: Install doors and frames according to NAAMM-HMMA 840.

1. At fire-rated openings, install frames according to, and doors with clearances specified in, NFPA 80.

C. Field Glazing: Comply with installation requirements in Section 088000 "Glazing."

D. Door Hardware:

1. Install surface-mounted items after finishes have been completed at heights indicated in DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. Set units level, plumb, and true to line and location. Adjust and reinforce attachment substrates as necessary for proper installation and operation.
3. Drill and countersink units that are not factory prepared for anchorage fasteners. Space fasteners and anchors according to industry standards.
4. Set thresholds for exterior doors in full bed of sealant complying with requirements for concealed mastics specified in Section 079200 "Joint Sealants."

3.8 WINDOW INSTALLATION

A. General: Install windows plumb, rigid, properly aligned, without warp or rack of frames or sash, and securely fasten in place according to manufacturer's written instructions. Coordinate installation with wall flashings and other components. Seal perimeter of each window frame with elastomeric sealant used for metal wall panels.

1. Separate dissimilar materials from sources of corrosion or electrolytic action at points of contact with other materials by complying with requirements specified in AAMA/WDMA/CSA 101/I.S.2/A440.

B. Set sill members in bed of sealant or with gaskets, for weathertight construction.

C. Install windows and components to drain condensation, water penetrating joints, and moisture migrating within windows to the exterior.

D. Mount screens directly to frames with tapped screw clips.

3.9 ACCESSORY INSTALLATION

A. General: Install accessories with positive anchorage to building and weathertight mounting, and provide for thermal expansion. Coordinate installation with flashings and other components.

1. Install components required for a complete metal roof panel assembly, including trim, copings, ridge closures, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
2. Install components for a complete metal wall panel assembly, including trim, copings, corners, seam covers, flashings, sealants, gaskets, fillers, closure strips, and similar items.
3. Where dissimilar metals contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with corrosion-resistant coating, by applying rubberized-asphalt underlayment to each contact surface, or by other permanent separation as recommended by manufacturer.

B. Flashing and Trim: Comply with performance requirements, manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, and set units true to line and level. Install work with laps, joints, and seams that will be permanently watertight and weather resistant.

1. Install exposed flashing and trim that is without excessive oil-canning, buckling, and tool marks and that is true to line and levels indicated, with exposed edges folded back to form hems. Install sheet metal flashing and trim to fit substrates and to result in waterproof and weather-resistant performance.
2. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed

within 24 inches (600 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently weather resistant and waterproof, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with mastic sealant (concealed within joints).

C. Gutters: Join sections with riveted-and-soldered or lapped-and-sealed joints. Attach gutters to eave with gutter hangers spaced as required for gutter size, but not more than 36 inches (914 mm) o.c. using manufacturer's standard fasteners. Provide end closures and seal watertight with sealant. Provide for thermal expansion.

D. Downspouts: Join sections with 1-1/2-inch (38-mm) telescoping joints. Provide fasteners designed to hold downspouts securely 1 inch (25 mm) away from walls; locate fasteners at top and bottom and at approximately 60 inches (1524 mm) o.c. in between.

1. Provide elbows at base of downspouts to direct water away from building.
2. Tie downspouts to underground drainage system indicated.

E. Circular Roof Ventilators: Set ventilators complete with necessary hardware, anchors, dampers, weather guards, rain caps, and equipment supports. Mount ventilators on flat level base. Install preformed filler strips at base to seal ventilator to metal roof panels.

F. Continuous Roof Ventilators: Set ventilators complete with necessary hardware, anchors, dampers, weather guards, rain caps, and equipment supports. Join sections with splice plates and end-cap skirt assemblies where required to achieve indicated length. Install preformed filler strips at base to seal ventilator to metal roof panels.

G. Roof Curbs: Install curbs at locations indicated on Drawings. Install flashing around bases where they meet metal roof panels.

H. Pipe Flashing: Form flashing around pipe penetration and metal roof panels. Fasten and seal to panel as recommended by manufacturer.

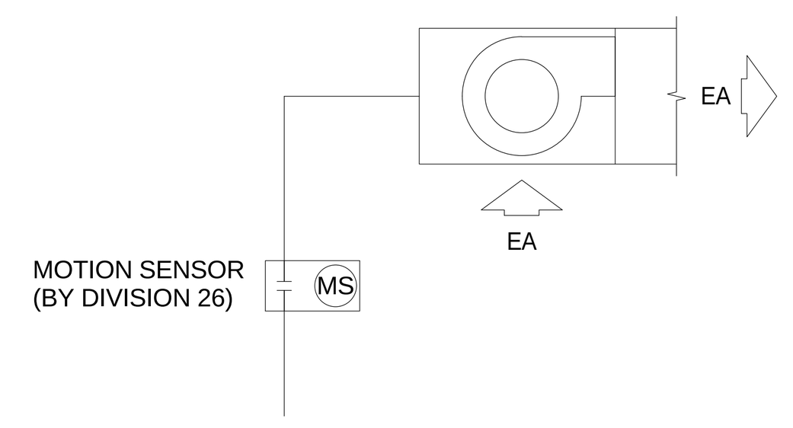
3.10 FIELD QUALITY CONTROL

A. Special Inspections: See Structural Drawings and Specification Section 01 40 15 – “Special Inspections and Testing”.

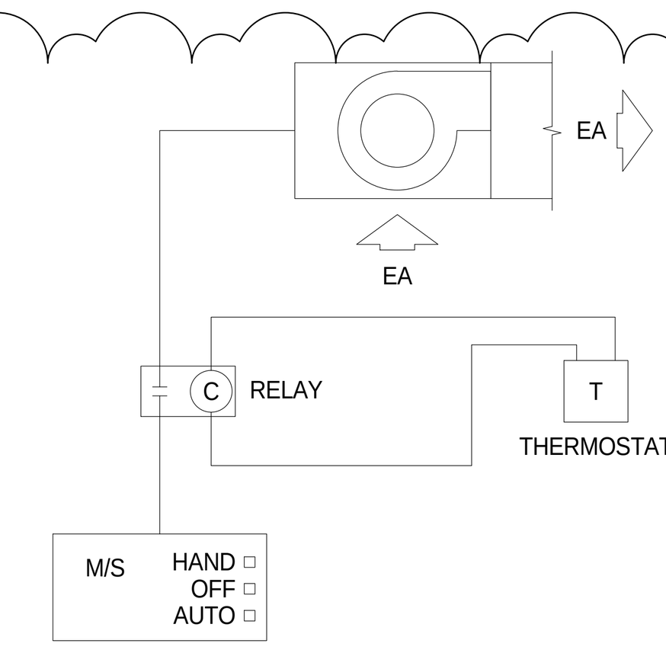
B. Product will be considered defective if it does not pass tests and inspections.

C. Prepare test and inspection reports.

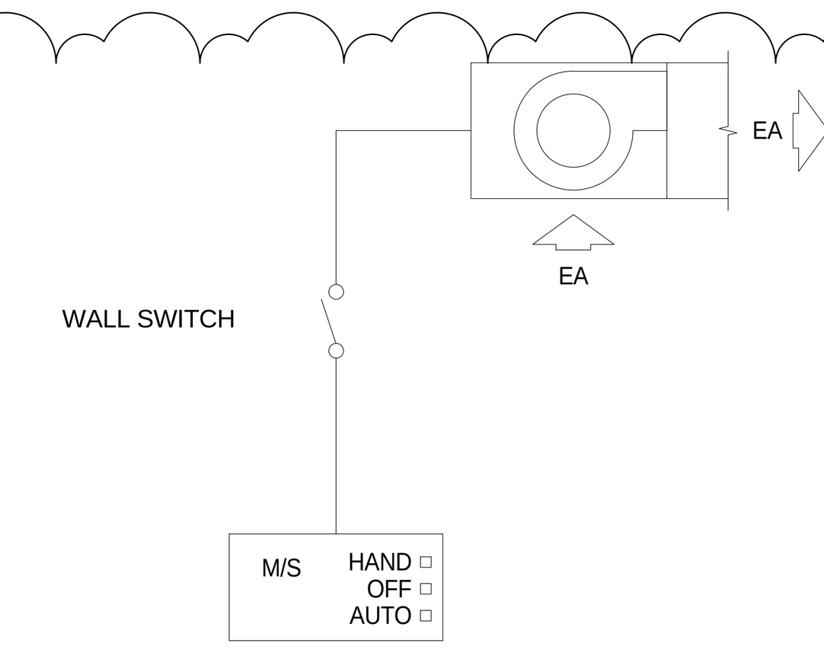
END OF SECTION 13 34 10



1
M502
EXHAUST FAN CONTROL SCHEMATIC WITH MOTION SENSOR
NO SCALE



2
M502
EXHAUST FAN CONTROL SCHEMATIC WITH THERMOSTAT
NO SCALE



3
M502
EXHAUST FAN CONTROL SCHEMATIC
NO SCALE

NOTES

1. VRF SYSTEM WIRING DIAGRAM AND CONTROL SCHEMATIC IS PROVIDED FOR REFERENCE ONLY. DIVISION 23 HVAC CONTRACTOR SHALL VERIFY AND COORDINATE ACTUAL SYSTEM WIRING WITH FINAL EQUIPMENT SUBMITTAL AND SYSTEM LAYOUT.

VRF SYSTEM SEQUENCE OF OPERATION

General: The Variable Refrigerant Flow (VRF) system shall operate subject to its own internal controls and safeties.

1. See Sequence of Operation - General for setpoints, loops, control modes, alarms, etc.
2. VRF touch screen controller shall schedule system modes, monitor system parameters, and change setpoints for the VRF system.
3. Division 23 HVAC Contractor is responsible to program all setpoints, schedules, etc. All setpoints to be coordinated with end user. All schedules and setpoints to be verified by test and balance contractor.
4. Division 23 HVAC Contractor and VRF system vendor shall be responsible for initial VRF system setup, programming, point naming, schedules, setpoints, etc (system configuration).
5. Zone Temperature Control: Zone temperature shall be controlled via each indoor unit's remote controller within the temperature limits specified.
6. Alarms:
   6.1. All alarms to be coordinated with end user. All alarms to email/text end user.

EXHAUST FAN SEQUENCE OF OPERATION

GENERAL: CONSTANT VOLUME EXHAUST FAN(S) FOR OCCUPANCY SENSORS.

1. SEE SEQUENCE OF OPERATION - GENERAL FOR SETPOINTS, LOOPS, CONTROL MODES, ALARMS, ETC.
2. EXHAUST FANS SHALL OPERATE IF RESTROOM IS OCCUPIED AS INDICATED BY THE MOTION SENSOR. FAN SHALL RUN UNTIL THE TIME DELAY DURATION HAS BEEN EXCEEDED. TIME DELAY SETTING SHALL BE INITIALLY SET FOR 20 MINUTES.

EXHAUST FAN SEQUENCE OF OPERATION

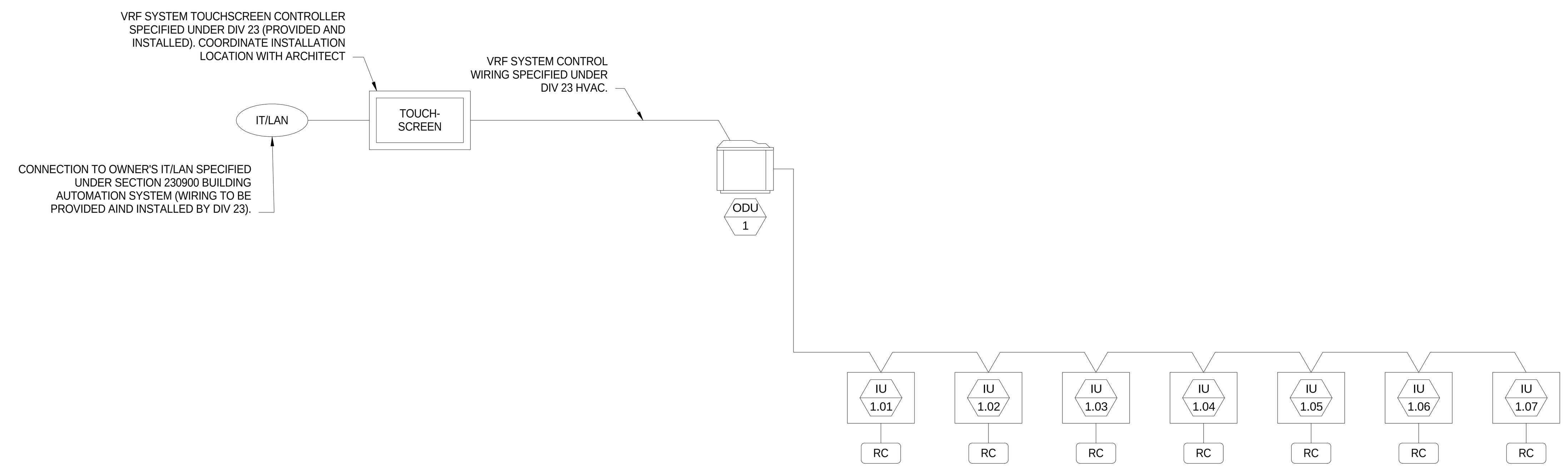
GENERAL: CONSTANT VOLUME EXHAUST FAN(S) WITH THERMOSTAT.

1. EXHAUST FAN SHALL BE ENABLED WHEN THE SPACE TEMPERATURE RISES ABOVE SETPOINT (77°F ADJUSTABLE).
2. EXHAUST FAN SHALL BE DISABLED WHEN THE SPACE TEMPERATURE IS BELOW SETPOINT.

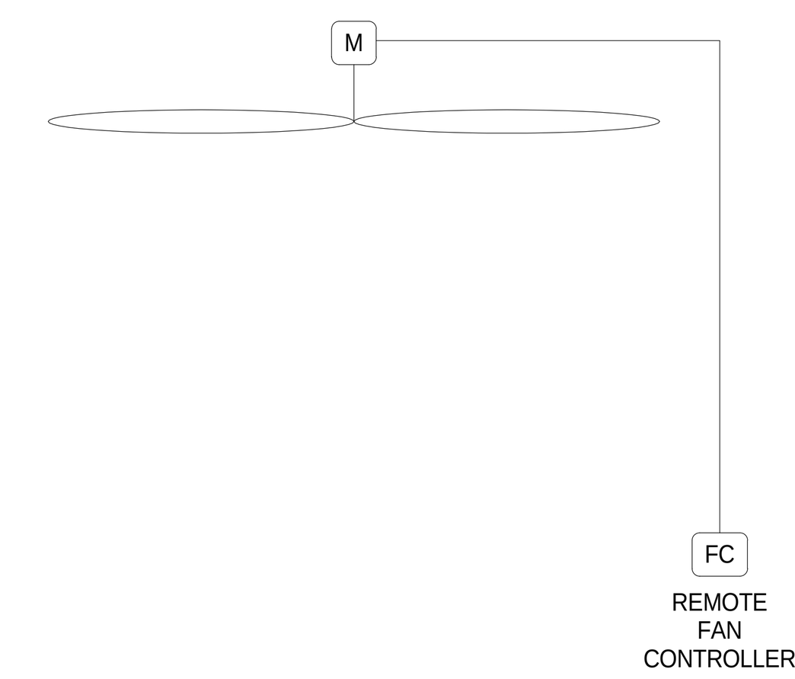
EXHAUST FAN SEQUENCE OF OPERATION

GENERAL: CONSTANT VOLUME EXHAUST FAN(S) WITH SWITCH.

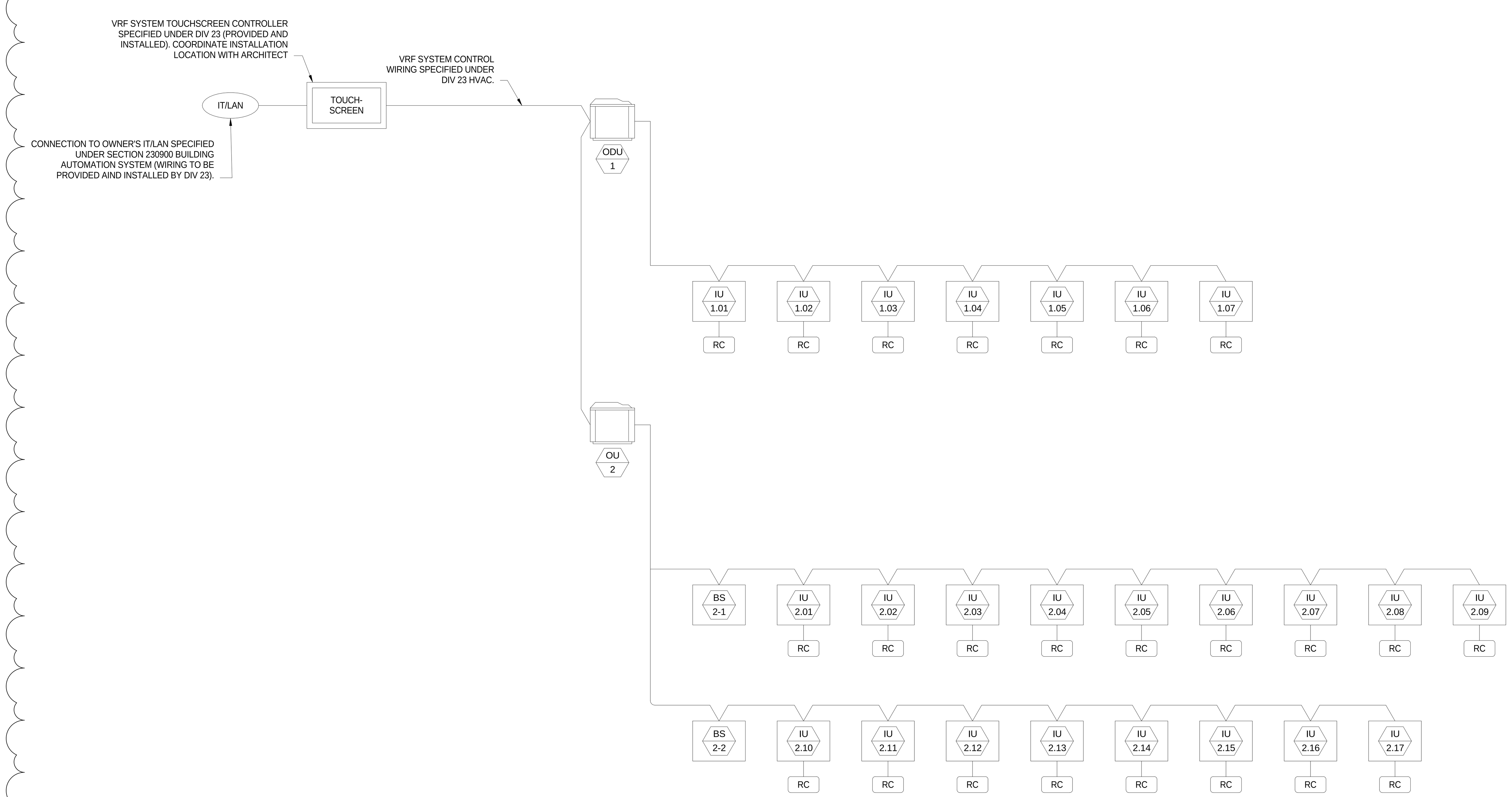
1. EXHAUST FAN SHALL BE ENABLED WHEN THE SWITCH IS TURNED ON. THREE PHASE FANS TO HAVE STARTERS.
2. EXHAUST FAN SHALL TURN OFF WHEN THE SWITCH IS TURNED OFF.



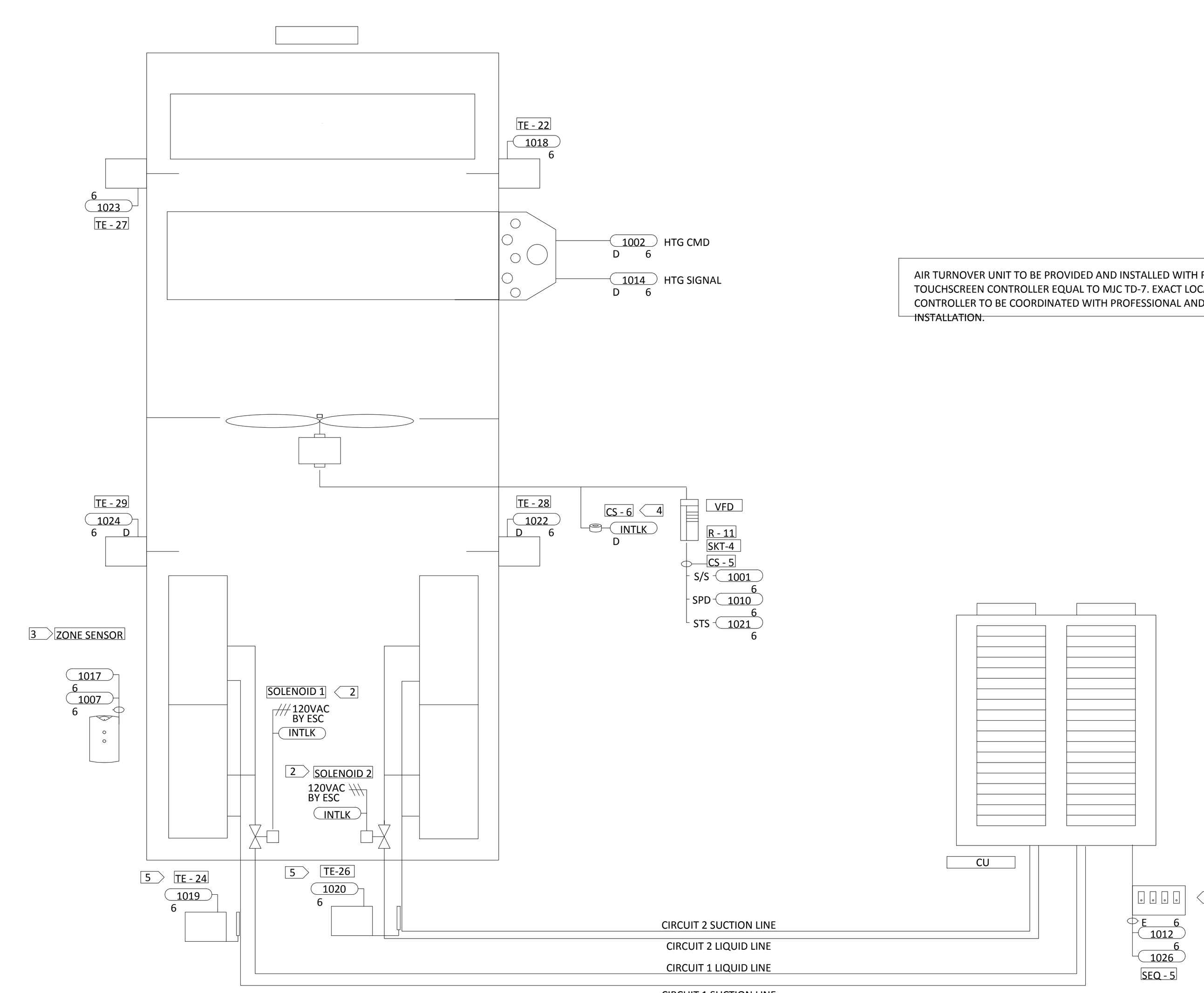
4
M502
VARIABLE REFRIGERANT FLOW (VRF) SYSTEM CONTROL SCHEMATIC (ALTERNATE 2 AND 3)
NO SCALE



5
M502
HIGH VELOCITY LOW SPEED FAN CONTROL SCHEMATIC
NO SCALE



6
M502
VARIABLE REFRIGERANT FLOW (VRF) SYSTEM CONTROL SCHEMATIC (ALTERNATE 4)
NO SCALE



AIR TURNOVER UNIT TO BE PROVIDED AND INSTALLED WITH REMOTE TOUCHSCREEN CONTROLLER EQUAL TO MJC TD-7. EXACT LOCATION OF CONTROLLER TO BE COORDINATED WITH PROFESSIONAL AND END USER BEFORE INSTALLATION.

1 4 STAGE SEQUENCER MOUNTED IN CONDENSING UNIT CONTROL CABINET
2 WIRE LIQUID LINE SOLENOID VALVE ON EACH CIRCUIT TO CONDENSING UNIT USING 16 GA WIRE
3 MOUNT ZONE SENSOR ON FRONT RETURN AIR GRILLE OF AIR TURNOVER UNIT.
4 WIRE FAN CT SWITCH IN LINE WITH FAN PROVING TERMINALS ON CONDENSING UNIT USING 16 GA WIRE; NOTE THIS CT IS IN ADDITION TO THE ONE WIRED TO UC600
5 INSTALL BULLET THERMISTOR ON SUCTION LINE OF EACH CIRCUIT.

7
M502
AIR TURNOVER UNIT
NO SCALE

1

ERG# 20.120
ENGINEERING RESOURCE GROUP Inc.
350 EDGEWOOD TERRACE DR.
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PHONE: (601) 362-3552
FAX: (601) 366-6418
2030 PASS RD., SUITE A
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w: www.davispurdyarchitects.com

KEY PLAN

PROJECT NORTH
TRUE NORTH

Seal

No.	Description	Date
1	ADDENDUM 2	03.18.21
1	100% Schematic Design	8/7/19

MERIDIAN AIRPORT AUTHORITY
DEAN AIRCRAFT SERVICE

HANGAR ADDITIONS & ALTERATIONS

2913 Airport Blvd, South St.
Meridian, MS 39307

Sheet Title
HVAC DETAILS

Project No. 19-006
Date 3/2/21

M502

ELECTRICAL LEGEND

GENERAL NOTES

1. ALL EQUIPMENT AND DEVICES ARE TO BE FLUSH MOUNTED UNLESS OTHERWISE NOTED.
2. DEVICES NOTED AS "GFI" SHALL BE GROUND FAULT CIRCUIT INTERRUPTING DEVICES.
3. DEVICES NOTED AS "WP" SHALL BE WEATHERPROOF WHILE-IN-USE.
4. DEVICES NOTED AS "DL" SHALL BE RATED FOR DAMP LOCATION.
5. DEVICES NOTED AS "NL" SHALL BE NIGHT LIGHTS. PROVIDE UNSWITCHED POWER TO FIXTURE.
6. DEVICES NOTED AS "WG" SHALL BE PROVIDED AND INSTALLED WITH A WIRE GUARD.
7. DEVICES NOTED AS "TR" SHALL BE TAMPER RESISTANT.
8. PROVIDE UNSWITCHED POWER TO EMERGENCY BATTERY PACKS.

LUMINAIRES (See Light Fixture Schedule)

NOTE: THE NUMBER INSIDE THE CIRCLE IS THE CIRCUIT NUMBER. THE LETTER BESIDE THE SYMBOL IS THE FIXTURE TYPE DESCRIBED IN THE LIGHT FIXTURE SCHEDULE.

- 2'X4' RECESSED FIXTURE.
- 1'X4' RECESSED FIXTURE.
- 2'X4' RECESSED EMERGENCY FIXTURE.
- 1'X4' RECESSED EMERGENCY FIXTURE.
- SURFACE MOUNTED OR SUSPENDED FIXTURE.
- SURFACE MOUNTED OR SUSPENDED EMERGENCY FIXTURE.
- RECESSED CEILING FIXTURE.
- RECESSED EMERGENCY CEILING FIXTURE.
- CEILING MOUNTED EXIT SIGN. PROVIDE CHEVRONS AS INDICATED BY ARROWS.
- EXIT SIGN WITH EMERGENCY LIGHTING.
- WALL MOUNTED EXIT SIGN. PROVIDE CHEVRONS AS INDICATED BY ARROWS.
- WALL MOUNTED FIXTURE.
- WALL MOUNTED LINEAR FIXTURE.
- WALL MOUNTED EMERGENCY LINEAR FIXTURE.
- SITE ARM MOUNT POLE LIGHT FIXTURE.
- SURFACE MOUNTED TRACK AND TRACK LIGHTING FIXTURE.

MISCELLANEOUS

- CONTACTOR.
- PE — PHOTOCELL.
- CEILING MOUNTED JUNCTION BOX.
- WALL MOUNTED JUNCTION BOX.
- FLEXIBLE CONNECTION TO EQUIPMENT.

SWITCHES

- $ — SINGLE-POLE, SINGLE-THROW SWITCH. MOUNT CENTERLINE OF BOX AT 45"A.F.F. UNLESS NOTED OTHERWISE.
- 2P $ — DOUBLE-POLE, SINGLE-THROW, 30 AMP SWITCH. MOUNT CENTERLINE OF BOX AT 45"A.F.F. UNLESS NOTED OTHERWISE.
- 3 $ — THREE-WAY SWITCH. MOUNT CENTERLINE OF BOX AT 45"A.F.F. UNLESS NOTED OTHERWISE.
- 4 $ — FOUR-WAY SWITCH. MOUNT CENTERLINE OF BOX AT 45"A.F.F. UNLESS NOTED OTHERWISE.
- D — LED DIMMER EQUAL TO LEVITON #IP710-LFZ MOUNT CENTERLINE OF BOX AT 45"A.F.F. UNLESS NOTED OTHERWISE.
- M $ — AUTOMATIC WALL SWITCH. SENSORSWITCH #WSD-PDT OR APPROVED EQUAL. MOUNT CENTERLINE OF BOX AT 45" A.F.F. UNLESS NOTED OTHERWISE.
- M D — AUTOMATIC WALL SWITCH WITH INTEGRAL 0-10V DIMMER. SENSORSWITCH #WSX-PDT-D-VA OR APPROVED EQUAL. MOUNT CENTERLINE OF BOX AT 45"A.F.F. UNLESS NOTED OTHERWISE.
- $T — HORSEPOWER RATED SWITCH WITH THERMAL OVERLOADS (MANUAL MOTOR STARTER).
- MOT — PASSIVE INFRARED AND ULTRASONIC DUAL TECHNOLOGY OCCUPANCY SENSOR WITH A 12' RADIAL COVERAGE. CEILING MOUNTED. SENSORSWITCH #CM-PDT-9 OR APPROVED EQUAL.
- MOD — PASSIVE INFRARED AND ULTRASONIC DUAL TECHNOLOGY OCCUPANCY SENSOR WITH A 28' RADIAL COVERAGE. CEILING MOUNTED. SENSORSWITCH #CM-PDT-10 OR APPROVED EQUAL.
- MOC — PASSIVE INFRARED AND ULTRASONIC DUAL TECHNOLOGY OCCUPANCY SENSOR WITH A 2000 SQ. FT. COVERAGE. MOUNT IMMEDIATELY BELOW CEILING. SENSORSWITCH #WV-PDT-16 OR APPROVED EQUAL.
- PP — POWER PACK MOUNTED ABOVE CEILING. SENSORSWITCH #PP20 OR APPROVED EQUAL.

INTRUSION DETECTION SYSTEM

- DC — DOOR CONTACT.

CCTV SYSTEM

- CEILING MOUNTED CAMERA.
- WALL MOUNTED CAMERA.
- INSIDE CORNER MOUNTED CAMERA.
- OUTSIDE CORNER MOUNTED CAMERA.

GEAR

- ?/?/? F-? — FUSED DISCONNECT SWITCH. TEXT INDICATES AMPACITY/NUMBER OF POLES/ENCLOSURE TYPE; F-(RATING OF FUSES).
- ?/?/? — NON-FUSED DISCONNECT SWITCH. TEXT INDICATES AMPACITY/NUMBER OF POLES/ENCLOSURE TYPE.
- MAGNETIC MOTOR STARTER.
- ?/?/? F-? NEMA SIZE ? — COMBINATION FUSED DISCONNECT AND MAGNETIC MOTOR STARTER.
- COMBINATION CIRCUIT BREAKER AND MAGNETIC MOTOR STARTER.
- ? — PANELBOARD.

DOOR BELL SYSTEM

- DB — DOOR BELL WEATHERPROOF INDUSTRIAL PUSHBUTTON.
- DT — TRANSFORMER MOUNTED ABOVE CEILING.
- IC — INDUSTRIAL CHIME.

FIRE ALARM SYSTEM

- F — MANUAL PULL STATION. MOUNT 48"A.F.F. TO CENTERLINE OF BOX.
- STROBE. MOUNT 80"A.F.F. TO BOTTOM OF BOX.
- COMBINATION HORN AND STROBE. MOUNT 80"A.F.F. TO BOTTOM OF BOX.
- SMOKE DETECTOR.
- T — THERMAL DETECTOR.
- D R — DUCT SMOKE DETECTOR IN RETURN DUCT.
- D S — DUCT SMOKE DETECTOR IN SUPPLY DUCT.
- E — ELEVATOR RECALL SMOKE DETECTOR.
- FACP — FIRE ALARM CONTROL PANEL.
- FAAN — FIRE ALARM ANNUNCIATOR PANEL.
- FS — FLOW SWITCH.
- TS — TAMPER SWITCH.
- FAHS — FIRE ALARM HORN AND STROBE MOUNTED ON THE CEILING TO A FLUSH MOUNTED BOX.
- FIRE ALARM STROBE MOUNTED ON THE CEILING TO A FLUSH MOUNTED BOX.

RECEPTACLES

- DUPLEX RECEPTACLE, NEMA 5-20R, MOUNTED 18" A.F.F. TO CENTERLINE OF BOX UNLESS NOTED OTHERWISE.
- DOUBLE DUPLEX RECEPTACLE, NEMA 5-20R, ONE COVER PLATE, MOUNTED 18" A.F.F. TO CENTERLINE OF BOX UNLESS NOTED OTHERWISE.
- DOUBLE DUPLEX RECEPTACLE, NEMA 5-20R, ONE COVER PLATE, MOUNTED WITH BOTTOM OF BOX 2" ABOVE COUNTER BACKSPLASH. WHERE THERE IS NO BACKSPLASH MOUNT 6" ABOVE COUNTER. WHERE RECEPTACLE IS SHOWN IN AN AREA WITH NO COUNTER, MOUNT 45"A.F.F. TO CENTERLINE OF BOX.
- DUPLEX RECEPTACLE, NEMA 5-20R, MOUNTED WITH BOTTOM OF BOX 2" ABOVE COUNTER BACKSPLASH. WHERE THERE IS NO BACKSPLASH MOUNT 6" ABOVE COUNTER. WHERE RECEPTACLE IS SHOWN IN AN AREA WITH NO COUNTER, MOUNT 45"A.F.F. TO CENTERLINE OF BOX.
- DF — DUPLEX RECEPTACLE, NEMA 5-20R, FOR DRINKING FOUNTAIN FED FROM GFCI BREAKER. MOUNTED IN ACCORDANCE WITH MANUFACTURER'S ROUGH-IN REQUIREMENTS. VERIFY CONNECTION TYPE PRIOR TO BID. PROVIDE PROPER EQUIPMENT FOR CONNECTION TYPE REQUIRED.
- DUPLEX RECEPTACLE, NEMA 5-20R, MOUNTED IN A FLOOR BOX.
- DOUBLE DUPLEX RECEPTACLE, NEMA 5-20R, MOUNTED IN A FLOOR BOX.
- SINGLE RECEPTACLE, NEMA 14-50R. PROVIDE 6' CORD AND MATCHING PLUG WHERE REQUIRED. MOUNTING DETERMINED BY NEC FOR TYPE OF EQUIPMENT BEING CONNECTED.
- SINGLE RECEPTACLE, NEMA 6-30R, MOUNTED 18" A.F.F. TO CENTERLINE OF BOX UNLESS NOTED OTHERWISE.
- SINGLE RECEPTACLE, NEMA 6-20R, MOUNTED 36" A.F.F. TO CENTERLINE OF BOX UNLESS NOTED OTHERWISE
- DUPLEX RECEPTACLE, NEMA 5-20R, MOUNTED FLUSH IN THE CEILING UNLESS NOTED OTHERWISE.
- APPLETON 009391 RECEPTACLE. 208 3ø, 60A, 4W

ACCESS CONTROL

- CR — CARD READER. 4" GANG BOX WITH SINGLE GANG EXTENSION RING.
- ACP — ACCESS CONTROL PANEL.
- PS — POWER SUPPLY

COMMUNICATIONS

- E — TELEPHONE CONNECTION FOR ELEVATOR CONTROLLER. INCLUDE ALL CABLING AND ACTIVATION OF TELEPHONE SERVICE. ROUTE CABLE INTO THE ELEVATOR CONTROLLER.
- DATA OUTLET MOUNTED 18" A.F.F. TO CENTERLINE OF BOX UNLESS NOTED OTHERWISE. 4" GANG BOX WITH SINGLE GANG EXTENSION RING.
- DATA OUTLET MOUNTED WITH BOTTOM OF BOX 2" ABOVE COUNTER BACKSPLASH. WHERE THERE IS NO BACKSPLASH MOUNT 6" ABOVE COUNTER. WHERE TELEPHONE/DATA OUTLET IS SHOWN IN AN AREA WITH NO COUNTER, MOUNT 45" A.F.F. TO CENTERLINE OF BOX. 4" GANG BOX WITH SINGLE GANG EXTENSION RING.
- COMBINATION TELEPHONE/DATA OUTLET MOUNTED IN A FLOOR BOX.
- DUPLEX RECEPTACLE, NEMA 5-20R AND A COMBINATION TELEPHONE/DATA OUTLET MOUNTED IN A FLOOR BOX.
- DOUBLE DUPLEX RECEPTACLE, NEMA 5-20R AND A COMBINATION TELEPHONE/DATA OUTLET MOUNTED IN A FLOOR BOX.
- TELEVISION CABLE OUTLET MOUNTED 18" A.F.F. TO CENTERLINE OF BOX UNLESS NOTED OTHERWISE.
- DATA OUTLET MOUNTED IN THE CEILING.
- WAP — WIRELESS ACCESS POINT.

CONDUIT AND WIRING

- CONDUCTORS IN CONDUIT CONCEALED WITHIN WALL OR CEILING. TIC MARKS INDICATE NUMBER OF CONDUCTORS. THE EQUIPMENT GROUNDING CONDUCTOR IS NOT SHOWN, BUT SHALL BE PROVIDED. SIZE THE EQUIPMENT GROUNDING CONDUCTOR AND THE CONDUIT PER THE NEC. THE ABSENCE OF TIC MARKS SIGNIFIES THAT TWO CONDUCTORS PLUS AN EQUIPMENT GROUNDING CONDUCTOR SHOULD BE PROVIDED. FOR EXAMPLE, THE MARKINGS TO THE LEFT SIGNIFY THAT THREE CONDUCTORS PLUS AN EQUIPMENT GROUNDING CONDUCTOR SHOULD BE PROVIDED.
- #10 — THE TEXT INSIDE THE ARC INDICATES THE AWG SIZE OF THE CONDUCTORS THAT SHALL BE RUN IN THE CONDUIT. THE ABSENCE OF TEXT SIGNIFIES THAT THE CONDUCTORS SHOULD BE #12 AWG.
- CIRCUITRY RUN IN STRAIGHT LINE SEGMENTS SIGNIFIES EXPOSED SURFACE-MOUNTED RACEWAY (SEE SPECIFICATIONS).
- CONDUCTORS IN CONDUIT CONCEALED BELOW GRADE OR FLOOR. TIC MARKS INDICATE NUMBER OF CONDUCTORS. THE EQUIPMENT GROUNDING CONDUCTOR IS NOT SHOWN, BUT SHALL BE PROVIDED. SIZE THE EQUIPMENT GROUNDING CONDUCTOR AND THE CONDUIT PER THE NEC. THE ABSENCE OF TIC MARKS SIGNIFIES THAT TWO CONDUCTORS PLUS AN EQUIPMENT GROUNDING CONDUCTOR SHOULD BE PROVIDED. THE MARKINGS TO THE LEFT SIGNIFY THAT THREE CONDUCTORS PLUS AN EQUIPMENT GROUNDING CONDUCTOR SHOULD BE PROVIDED.
- LA-1 — HOMERUN TO PANELBOARD. ARC DENOTES CONCEALED CIRCUITRY. TEXT DENOTES PANELBOARD NAME WITH CIRCUIT NUMBER. DEVICES HAVING CIRCUIT NUMBERS LOCATED BESIDE THEM MAY NOT SHOW THE CIRCUIT NUMBERS AT THE HOMERUN ARROWS.
- LA-1 — PARTIAL HOMERUN TO PANELBOARD. COMBINE ALL PARTIAL HOMERUNS THAT ARE ON THE SAME CIRCUIT IN A JUNCTION BOX PRIOR TO ENTERING THE PANELBOARD.
- LOW VOLTAGE CONDUCTORS USED FOR MOTION DETECTOR CIRCUITRY. SEE MANUFACTURER'S RECOMMENDATIONS FOR CONDUCTOR REQUIREMENTS.

VOLTAGE DROP CHART FOR 20A, 1Ø CIRCUITS

Voltage	Circuit Length	Conductor Size (AWG)
120	< 50'	#12
120	> 50'	#10
120	> 90'	#8
120	> 140'	#6
277	< 130'	#12
277	> 130'	#10
277	> 200'	#8
277	> 330'	#6

VOLTAGE DROP CHART NOTES:
1) CIRCUIT SIZES INDICATED ON THE DRAWINGS ARE MINIMUM REQUIREMENTS. REFER TO THIS CHART FOR UPSIZING CONDUCTORS AS NEEDED.

2) DO NOT CONNECT CONDUCTORS LARGER THAN #10 DIRECTLY TO A RECEPTACLE OR A SWITCH. PROVIDE A JUNCTION BOX TO DOWNSIZE THE CONDUCTOR TO #12 AT THE DEVICE.

3) FOR CIRCUITS LONGER THAN THOSE LISTED ABOVE, CONSULT WITH THE ENGINEER FOR CONDUCTOR SIZES.

ELECTRICAL SHEET INDEX

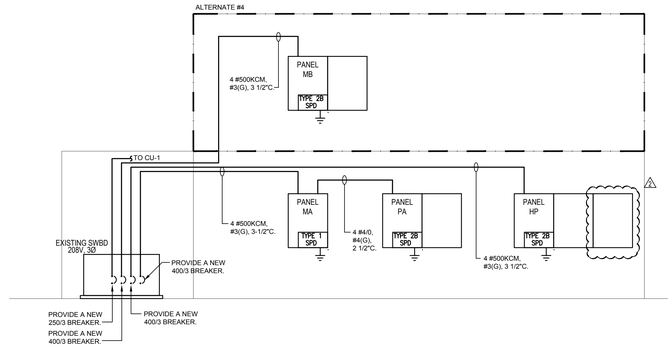
Mark	Description
E-000	ELECTRICAL LEGEND & DETAILS
E-001	ELECTRICAL DETAILS
E-002	ELECTRICAL RENOVATION SITE PLAN
E-003	PUMP HOUSE ELECTRICAL PLAN & DETAILS
E-004	LIGHTING PROTECTION PLAN & DETAILS
E-005	TELEPHONE RISER DIAGRAM
E-006	PANEL SCHEDULES
E-100	LIGHTING PLAN - HANGAR/SHOP - BASE BID
E-101	LIGHTING PLAN - HANGAR/SHOP - ALTERNATE #1,#2,#3
E-102	LIGHTING PLAN - MEZZANINE/OFFICE - ALTERNATE #1,#3,#4
E-200	POWER PLAN - HANGAR/SHOP - BASE BID
E-201	POWER PLAN - HAGAR/SHOP - ALTERNATE #1,#2,#3
E-202	POWER PLAN - MEZZANINE/OFFICE - ALTERNATE #1,#3,#4
E-300	AUXILIARY PLAN - HANGAR/SHOP - BASE BID
E-301	AUXILIARY PLAN - HANGAR/SHOP - ALTERNATE #2,#3
E-302	AUXILIARY PLAN - MEZZANINE/OFFICE - ALTERNATE #1,#3,#4
E-303	PARTIAL AUXILIARY PLAN – 1ST FLOOR – PART C
E-304	ELEVATOR DETAILS
E-400	OVERALL MECHANICAL PLAN
E-401	PARTIAL MECHANICAL PLAN – 1ST FLOOR – PART A
E-402	PARTIAL MECHANICAL PLAN – 1ST FLOOR – PART B
E-403	PARTIAL MECHANICAL PLAN – 2ND FLOOR – PART D
E-404	PARTIAL MECHANICAL PLAN – 2ND & 3RD FLOOR – PART D & E

LIGHTING FIXTURE SCHEDULE

TYPE	MANUFACTURER	PART NUMBER	LAMPS	MOUNTING	REMARKS
A	LITHONIA	EPANL-2X4-5400LM-80CRI-(50K)-ZT-MVOLT (1)	LED - 49W 5,679.41 LUMENS	RECESSED	
AE	LITHONIA	EPANL-2X4-5400LM-80CRI-(50K)-ZT-MVOLT-E10WCP (1)	LED - 49W 5,679.41 LUMENS	RECESSED	WITH 120V EMERGENCY BATTERY PACK
B	LITHONIA	EPANL-2X4-4000LM-80CRI-(50K)-ZT-MVOLT (1)	LED - 38W 4,240 LUMENS	RECESSED	
BE	LITHONIA	EPANL-2X4-4000LM-80CRI-(50K)-ZT-MVOLT-E10WCP (1)	LED - 38W 4,240 LUMENS	RECESSED	WITH 120V EMERGENCY BATTERY PACK
C	LITHONIA	EPANL-2X4-3000LM-80CRI-(50K)-ZT-MVOLT (1)	LED - 29W 3,267 LUMENS	RECESSED	
CE	LITHONIA	EPANL-2X4-3000LM-80CRI-(50K)-ZT-MVOLT-E10WCP (1)	LED - 29W 3,267 LUMENS	RECESSED	WITH 120V EMERGENCY BATTERY PACK
D	LITHONIA	LDN6(50/10-LO6/AR-LS-MVOLT-GZ10 (1)	LED - 10.4W 950.1 LUMENS	RECESSED	
DE	LITHONIA	LDN6(50/10-LO6/AR-LS-MVOLT-GZ10-ELR (1)	LED - 10.4W 950.1 LUMENS	RECESSED	WITH 120V EMERGENCY BATTERY PACK
EP	LITHONIA	FEW-L48-4000LM-LPPFL-WD-MVOLT-GZ10-(50K)-80CRI-E10WMCP-CNP164CWWL	LED - 23.6W 3,595 LUMENS	WALL	WITH 120V EMERGENCY BATTERY PACK
F	LITHONIA	LDN6(50/15-LO6/AR-LS-MVOLT-GZ10 (1)	LED - 17.5W 1,514 LUMENS	RECESSED	
FE	LITHONIA	LDN6(50/15-LO6/AR-LS-MVOLT-GZ10-ELR (1)	LED - 17.5W 1,514 LUMENS	RECESSED	WITH 120V EMERGENCY BATTERY PACK
G	LITHONIA	(1) ZLNN-L48-5000LM-FST-MVOLT-(50K)-80CRI-* (1)	LED - 34W 4585 LUMENS	SURFACE/ SUSPENDED	* – FINISH BY ARCHITECT
GE	LITHONIA	(1) ZLNN-L48-5000LM-FST-MVOLT-(50K)-80CRI-E10WLCP-*	LED - 34W 4585 LUMENS	SURFACE/ SUSPENDED	WITH 120V EMERGENCY BATTERY PACK * – FINISH BY ARCHITECT
H	LITHONIA	IBG-6000LM-SEF-PCL-GND-MVOLT-GZ10-(50K)-80CRI-*	LED - 365W 57,621LUMENS	SURFACE/ SUSPENDED	* – FINISH BY ARCHITECT
HE	LITHONIA	IBG-6000LM-SEF-PCL-GND-MVOLT-GZ10-(50K)-80CRI-IE30WCPHE-*	LED - 365W 57,621LUMENS	SURFACE/ SUSPENDED	WITH 120V EMERGENCY BATTERY PACK * – FINISH BY ARCHITECT
H2	LITHONIA	IBGN-24000LM-SEF-AFL-WD-MVOLT-MVOLT-GZ10-(50K)-80CRI-*	LED - 146W 25,035 LUMENS	SURFACE/ SUSPENDED	* – FINISH BY ARCHITECT
H2E	LITHONIA	IBGN-24000LM-SEF-AFL-WD-MVOLT-MVOLT-GZ10-(50K)-80CRI-IE30WCPHE-*	LED - 146W 25,035 LUMENS	SURFACE/ SUSPENDED	WITH 120V EMERGENCY BATTERY PACK * – FINISH BY ARCHITECT
J	LITHONIA	WST LED-P1-(50K)-VW-120-PE-* (1)	LED - 12W 1659 LUMENS	WALL	*COLOR BY ARCHITECT.
JE	LITHONIA	WST LED-P1-(50K)-VW-120-PE-* E7WH (1)	LED - 12W 1659 LUMENS	WALL	*COLOR BY ARCHITECT. WITH EMERGENCY BATTERY PACK.
K	ALW	SP4SMB-S5-MED/80/5000K/0/10/0%-CR/S-N-N-N-N-N-N-N-C-UNV	LED - 21.6W 2,800 LUMENS	SURFACE/ WALL	* – FINISH BY ARCHITECT
KE	ALW	SP4SMB-S5-MED/80/5000K/0/10/0%-CR/S-N-N-N-N-N-N-N-C-UNV-EMB/1	LED - 21.6W 2,800 LUMENS	SURFACE/ WALL	* – FINISH BY ARCHITECT WITH 120V EMERGENCY BATTERY APACK
L	LITHONIA	LIL LED-(50K)-MVOLT-PE-* (1)	LED - 8.4W 800 LUMENS	WALL	* – FINISH BY ARCHITECT
SA	NLS LIGHTING	VUE-1-T4-64L-1-(50K)-UNV-WM-*-PC (1)	LED - 205W 20,705 LUMENS	WALL	*COLOR BY ARCHITECT.
SB	NLS LIGHTING	VUE-3-T4-192L-1-(50K)-UNV-KM-* (1)	LED - 594W 61,182 LUMENS	WALL	*COLOR BY ARCHITECT.
X	LITHONIA	LQM-S-3-R-120/277-EL N	LED	UNIVERSAL	
XEM	LITHONIA	LHQM-LED-R	LED	UNIVERSAL	

GENERAL NOTES

Mark	Description
1.	REFER TO ARCHITECTURAL DRAWINGS FOR BASE BID AND ALL ALTERNATE DESCRIPTIONS.



1 E-000 SINGLE LINE DIAGRAM
Scale: NONE

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KEY PLAN

PROJECT NORTH / TRUE NORTH

Seal

No.	Description	Date
1	ADDENDUM #2	03/18/21
1	100% Construction Doc.	03/03/21

MERIDIAN AIRPORT AUTHORITY

DEAN AIRCRAFT SERVICE

HANGAR ADDITIONS & ALTERATIONS

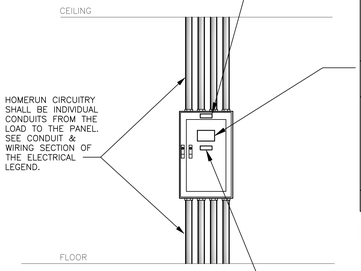
2913 Airport Blvd, South St.
Meridian, MS 39307

Sheet Title

ELECTRICAL LEGEND

Project No.	Date
19-006	3/03/2021

E-000



PROVIDE WARNING SIGNS AS SHOWN ON ALL SWITCHBOARDS, PANELBOARDS, MOTOR CONTROL CENTERS, DISCONNECTS, LOADCENTERS, ENCLOSED CIRCUIT BREAKERS, MOTOR STARTERS, & CONTACTORS. THIS REQUIREMENT REQUIRES THAT THE CALCULATIONS BE PERFORMED ON EQUIPMENT THAT IS SPECIFICALLY EXCLUDED FROM NFPA 70E.

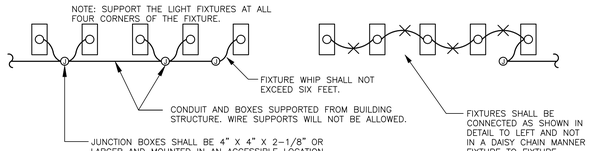
THE GEAR MANUFACTURER SHALL PERFORM ALL CALCULATIONS NECESSARY TO COMPLETE WARNING SIGNS ACCURATELY.

SEE SINGLE-LINE DIAGRAM AND SPECIFICATIONS FOR MORE INFORMATION.

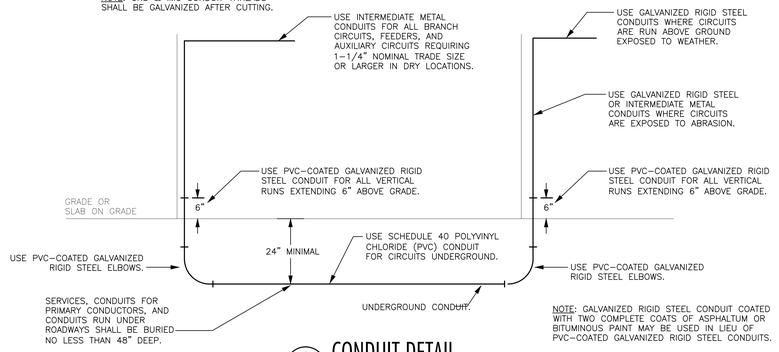
1 E-001 WARNING LABEL DETAIL
Scale: NONE

NOTES:

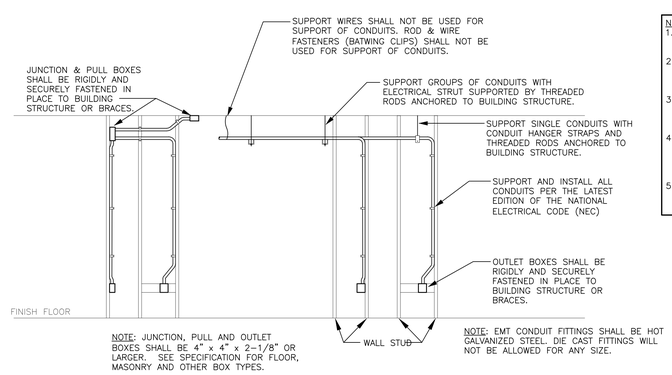
1. HOMERUN CONDUITS SHALL BE SIZE 3/4" OR LARGER.
2. CONDUITS SHALL BE LIMITED TO THREE CURRENT CARRYING CONDUCTORS.
3. PROVIDE TYPEWRITTEN CIRCUIT DIRECTORIES INSIDE DOOR OF EACH PANELBOARD. EACH CIRCUIT SHALL BE DISTINGUISHED FROM ALL OTHERS.
4. PROVIDE A LABEL FOR ALL SWITCHGEAR, SWITCHBOARDS, MOTOR CONTROL CENTERS, PANELBOARDS, AND OTHER SERVICE EQUIPMENT THAT LEGIBLY DISPLAYS THE MAXIMUM AVAILABLE FAULT CURRENT. THE MAXIMUM FAULT CURRENT INFORMATION SHALL BE TAKEN FROM THE ARC FLASH/PROTECTIVE DEVICE COORDINATION STUDY PERFORMED BY THE GEAR MANUFACTURER. THE LABEL SHALL INCLUDE THE DATE THAT THE FAULT CURRENT CALCULATION WAS PERFORMED AND BE OF SUFFICIENT DURABILITY TO WITHSTAND THE ENVIRONMENT OF THE EQUIPMENT.



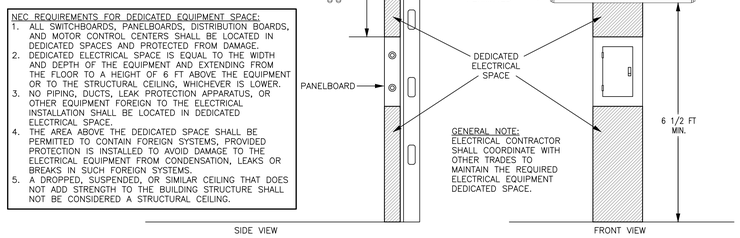
2 F-001 FIXTURE CONNECTION DETAIL
Scale: NONE



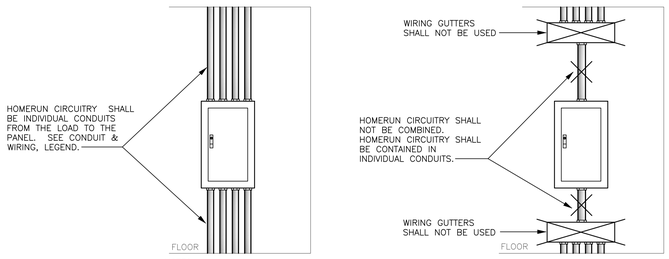
5 E-001 CONDUIT DETAIL
Scale: NONE



4 E-001 JUNCTION & OUTLET BOX DETAIL
Scale: NONE



8 E-001 DEDICATED SPACE DETAIL
Scale: NONE



NOTES:

1. HOMERUN CONDUITS SHALL BE SIZE 3/4" OR LARGER.
2. CONDUITS SHALL BE LIMITED TO THREE CURRENT CARRYING CONDUCTORS

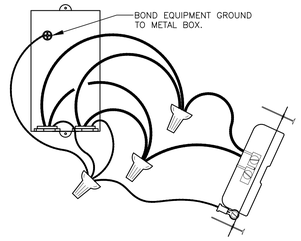
7 E-001 HOMERUN DETAIL
Scale: NONE

RECEPTACLE DETAIL NOTES:

A. THESE DRAWINGS ARE BASED ON THE BEST INFORMATION AVAILABLE AT THE TIME OF DESIGN. COORDINATE WITH THE MILLWORK CONTRACTOR TO DETERMINE THE EXACT LOCATION OF OUTLETS BEING PLACED IN AND AROUND MILLWORK.

B. RECEPTACLES SHOWN AS GFI MAY BE NON GFI TYPE RECEPTACLES IF FED FROM A 20/1 GFI BREAKER OR THE LOAD SIDE OF A GFI RECEPTACLE IN THE SAME ROOM, ON THE SAME CIRCUIT AND RATED 20 AMP FEED-THRU CAPACITY. COVER PLATES SHALL BE CLEARLY MARKED GFI.

C. NON GFI RECEPTACLES SHALL NOT BE CONNECTED IN A FEED-THRU MANNER. WIRE CONNECTIONS IN RECEPTACLE BOXES SHALL BE MADE IN A PIGTAIL MANNER AS SHOWN IN RECEPTACLE DETAIL.



3 E-001 RECEPTACLE DETAIL
Scale: NONE

⚠

GENERAL NOTES	
Mark	**Description**
1.	REFER TO ARCHITECTURAL DRAWINGS FOR BASE BID AND ALL ALTERNATE DESCRIPTIONS.

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KEY PLAN

PROJECT NORTH

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No.	Description	Date
⚠	ADDENDUM #2	03/18/21
1	100% Construction Doc.	03/03/21

MERIDIAN AIRPORT AUTHORITY

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HANGAR ADDITIONS & ALTERATIONS

2913 Airport Blvd. South St.
Meridian, MS 39307

Sheet Title

ELECTRICAL DETAILS

Project No. 19-006

Date 3/3/2021

E-001

GENERAL NOTES

Mark	Description
1.	REFER TO ARCHITECTURAL DRAWINGS FOR BASE BID AND ALL ALTERNATE DESCRIPTIONS.

1 E-002 ELECTRICAL RENOVATION SITE PLAN
Scale: 1" = 60'- 0"

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CHRISTOPHER L. GREEN ENGINEER 16778 STATE OF MISSISSIPPI 03/03/21

KEY PLAN

PROJECT NORTH
TRUE NORTH

Seal

No.	Description	Date
2	ADDENDUM #2	03/18/21
1	100% Construction Doc.	03/03/21

MERIDIAN AIRPORT AUTHORITY

DEAN AIRCRAFT SERVICE

HANGAR ADDITIONS & ALTERATIONS

2913 Airport Blvd. South St.
Meridian, MS 39307

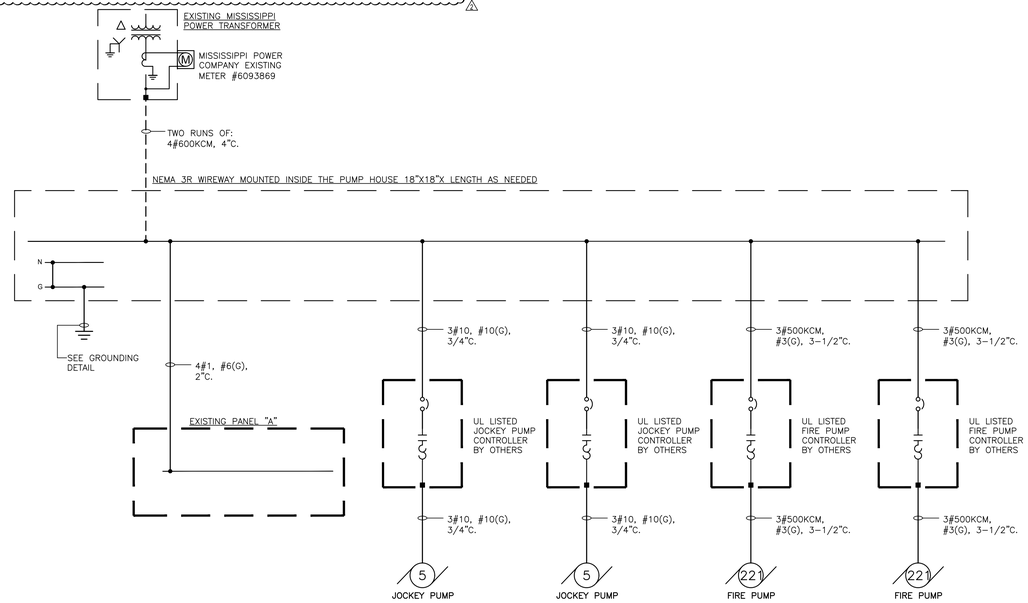
Sheet Title
ELECTRICAL RENOVATION SITE PLAN

Project No. 19-006
Date 3/03/2021

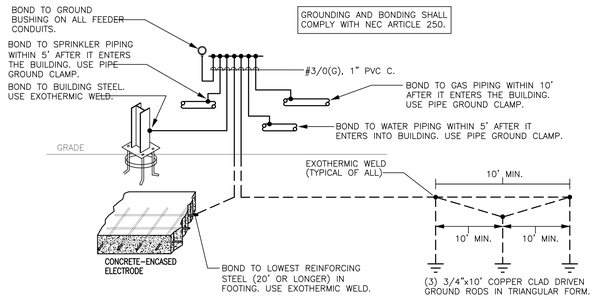
E-002

GENERAL NOTES

Mark	Description
1.	REFER TO ARCHITECTURAL DRAWINGS FOR BASE BID AND ALL ALTERNATE DESCRIPTIONS.



2 E-003 PUMP HOUSE ONE LINE DIAGRAM
Scale: NONE



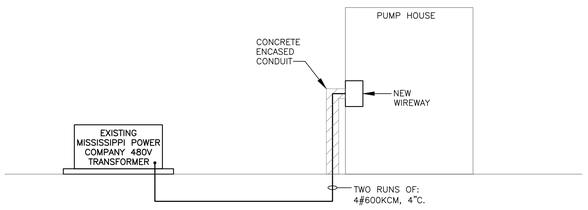
4 E-003 PUMP HOUSE GROUNDING DETAIL
Scale: NONE

KEYED NOTES

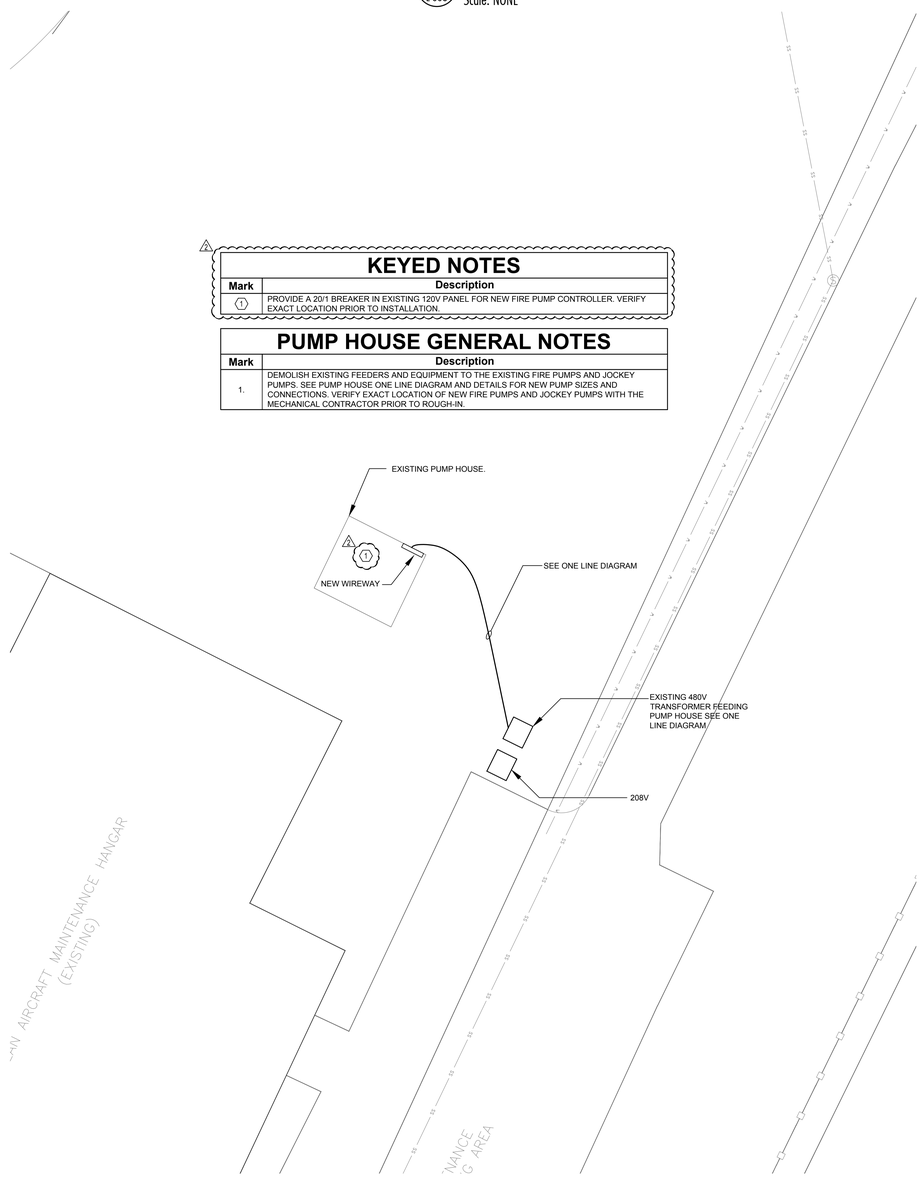
Mark	Description
1	PROVIDE A 20/1 BREAKER IN EXISTING 120V PANEL FOR NEW FIRE PUMP CONTROLLER. VERIFY EXACT LOCATION PRIOR TO INSTALLATION.

PUMP HOUSE GENERAL NOTES

Mark	Description
1.	DEMOLISH EXISTING FEEDERS AND EQUIPMENT TO THE EXISTING FIRE PUMPS AND JOCKEY PUMPS. SEE PUMP HOUSE ONE LINE DIAGRAM AND DETAILS FOR NEW PUMP SIZES AND CONNECTIONS. VERIFY EXACT LOCATION OF NEW FIRE PUMPS AND JOCKEY PUMPS WITH THE MECHANICAL CONTRACTOR PRIOR TO ROUGH-IN.



3 E-003 PUMP HOUSE CONDUIT DETAIL
Scale: NONE



1 E-003 PUMP HOUSE SITE PLAN
Scale: 1" = 20'-0"

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KEY PLAN

PROJECT NORTH

TRUE NORTH

Seal

No.	Description	Date
2	ADDENDUM #2	03/18/21
1	100% Construction Doc.	03/03/21

MERIDIAN AIRPORT AUTHORITY

DEAN AIRCRAFT SERVICE

HANGAR ADDITIONS & ALTERATIONS

2913 Airport Blvd, South St.
Meridian, MS 39307

Sheet Title

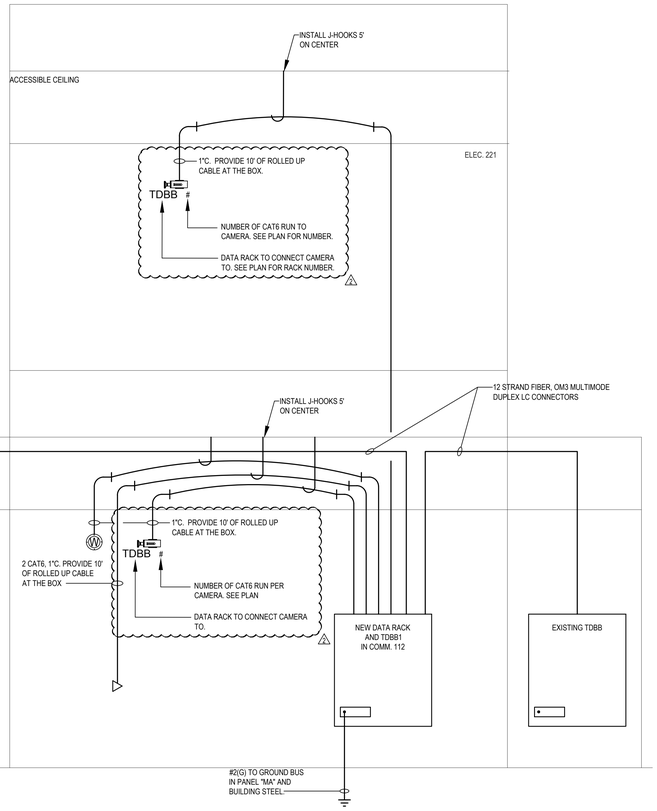
PUMP HOUSE ELECTRICAL PLAN & DETAILS

Project No.	Date
19-006	3/03/2021

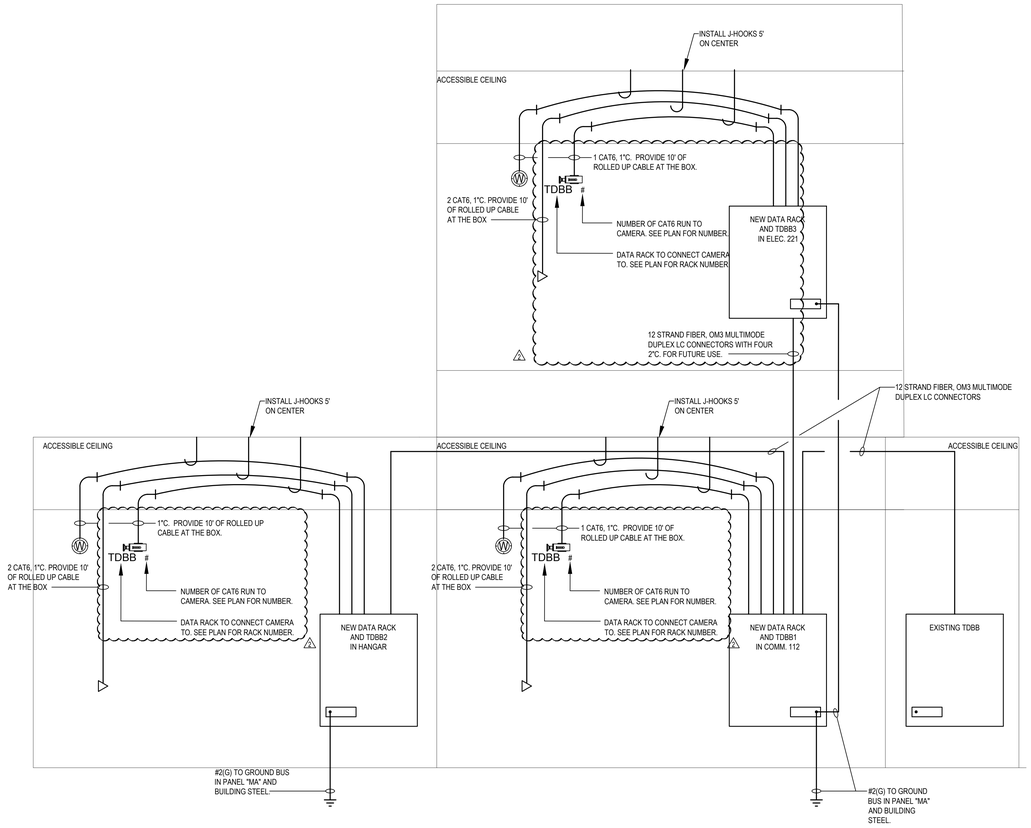
E-003

GENERAL NOTES

Mark	Description
1.	REFER TO ARCHITECTURAL DRAWINGS FOR BASE BID AND ALL ALTERNATE DESCRIPTIONS.



1 / E-005 TELEPHONE / DATA RISER DIAGRAM - BASE BID
Scale: NONE



2 / E-005 TELEPHONE / DATA RISER DIAGRAM - ALTERNATE #4
Scale: NONE

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CHRISTOPHER J. GREEN — 16778 — ENGINEER — 03/03/21 — STATE OF MISSISSIPPI

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KEY PLAN

PROJECT NORTH

TRUE NORTH

Seal

No.	Description	Date
2	ADDENDUM #2	03/18/21
1	100% Construction Doc.	03/03/21

MERIDIAN AIRPORT AUTHORITY

DEAN AIRCRAFT SERVICE

HANGAR ADDITIONS & ALTERATIONS

2913 Airport Blvd, South St.
Meridian, MS 39307

Sheet Title

TELEPHONE RISER DIAGRAM

Project No. 19-006

Date 3/3/2021

E-005

PANEL **MA**

LOCATION: **ELECTRICAL ROOM**
VOLT: **208Y/120V, 3Ø, 4W**
BUS: **400A**
LUG LOCATION: **BOTTOM FEED**
MAIN BUS: **MAIN LUGS ONLY**
MOUNTING: **SURFACE**
PANELBOARD AIC RATING (A): **22,000**

CIRCUIT NO.	BREAKER		DESCRIPTION	PHASE LOAD (KVA)						DESCRIPTION	BREAKER		CIRCUIT NO.
	AMPS	POLES		A		B		C			AMPS	POLES	
1	80	3	SPARE	0.0	3.4					ATO	60	3	2
3	-	-	-			0.0	3.4			-	-	-	4
5	-	-	-					0.0	3.4	-	-	-	6
7	80	3	ODU-1 (ALT #2)	4.7	1.7					EUH-5 (ALT #2)	20	3	8
9	-	-	-			4.7	1.7			-	-	-	10
11	-	-	-					4.7	1.7	-	-	-	12
13	20	2	IDU-1.01 THRU IDU-1.07 (ALT #2)	1.0	1.7					EUH-6 (ALT #2)	20	3	14
15	-	-	-			1.0	1.7			-	-	-	16
17	25	3	EWH-1 (ALT #2)					2.0	1.7	-	-	-	18
19	-	-	-	2.0	5.0					ODU-02a (ALT #4)	80	3	20
21	-	-	-			2.0	5.0			-	-	-	22
23	20	3	EUH-1 (ALT #2)					1.7	5.0	-	-	-	24
25	-	-	-	1.7	5.0					ODU-02b (ALT #4)	80	3	26
27	-	-	-			1.7	5.0			-	-	-	28
29	20	3	EUH-2 (ALT #2)					1.7	5.0	-	-	-	30
31	-	-	-	1.7	2.1					PROVISIONS FOR DUST COLLECTION (ALT #1)	35	3	32
33	-	-	-			1.7	2.1			-	-	-	34
35	20	3	EUH-3 (ALT #2)					1.7	2.1	-	-	-	36
37	-	-	-	1.7	0.0					SPARE	20	1	38
39	-	-	-			1.7	0.0			SPARE	20	1	40
41	20	3	EUH-4 (ALT #2)					1.7	0.0	SPARE	20	1	42
43	-	-	-	1.7	0.0					SPARE	20	1	44
45	-	-	-			1.7	0.0			SPARE	20	1	46
47	20	1	SPARE					0.0	0.0	SPARE	20	1	48
49	225	3	PANEL 'PA'	12.7	0.0					SPARE	20	1	50
51	-	-	-			12.3	0.0			SPARE	20	1	52
53	-	-	-					13.9	0.0	SPARE	20	1	54
TOTAL				45.8		45.5		46.1		* WITH AUXILIARY CONTACTS			

PANEL **PA - SEC. 2**

LOCATION: **ELECTRICAL ROOM**
VOLT: **208Y/120V, 3Ø, 4W**
BUS: **225A**
LUG LOCATION: **TOP FEED**
MAIN: **MAIN LUGS ONLY**
MOUNTING: **SURFACE**
PANELBOARD AIC RATING (A): **22,000**

CIRCUIT NO.	BREAKER		DESCRIPTION	PHASE LOAD (KVA)						DESCRIPTION	BREAKER		CIRCUIT NO.
	AMPS	POLES		A		B		C			AMPS	POLES	
55	20	1	LTS. - (EMPTY SHOP SPACE 101 ALT #1)	1.2	0.0					POWER FOR ACCESS CONTROLS	20	1	56
57	20	1	LTS. - (EMPTY SHOP SPACE 101 ALT #1)			0.9	0.5			LTS. - (EXTERIOR LIGHTING)	20	1	58
59	20	1	CONTACTOR C3 ALT #1					0.5	0.5	LTS. - (EXTERIOR LIGHTING ALT#3)	20	1	60
61	20	1	LTS. - (STORAGE 200 - ALT #1)	0.9	0.5					LTS. - (EXTERIOR LIGHTING ALT#3)	20	1	62
63	20	1	LTS. - (STORAGE 200 - ALT #1)			0.9	0.5			LTS. - (EXTERIOR LIGHTING ALT#3)	20	1	64
65	20	1	LTS. - (STORAGE 200 - ALT #1)					0.9	0.0	SPARE	20	1	66
67	20	1	PROVISIONS FOR VRF TOUCHSCREEN - ALT #3	0.5	0.0					SPARE	20	1	68
69	20	1	SPARE			0.0	0.0			SPARE	20	1	70
71	20	1	SPARE					0.0	0.0	SPARE	20	1	72
73	20	1	SPARE	0.0	0.0					SPARE	20	1	74
75	20	1	SPARE			0.0	0.0			SPARE	20	1	76
77	20	1	SPARE					0.0	0.0	SPARE	20	1	78
79	20	1	SPARE	0.0	0.0					SPARE	20	1	80
81	20	1	SPARE			0.0	0.0			SPARE	20	1	82
83	20	1	SPARE					0.0	0.0	SPARE	20	1	84
85	20	1	SPARE	0.0	0.0					SPARE	20	1	86
87	20	1	SPARE			0.0	0.0			SPARE	20	1	88
89	20	1	SPARE					0.0	0.0	SPARE	20	1	90
91	20	1	SPARE	0.0	0.0					SPARE	20	1	92
93	20	1	SPARE			0.0	0.0			SPARE	20	1	94
95	20	1	SPARE					0.0	0.0	SPARE	20	1	96
97	20	1	SPARE	0.0	0.0					SPARE	20	1	98
99	20	1	SPARE			0.0	0.0			SPARE	20	1	100
101	20	1	SPARE					0.0	0.0	SPARE	20	1	102
103	20	1	SPARE	0.0	0.0					SPARE	20	1	104
105	20	1	SPARE			0.0	0.0			SPARE	20	1	106
107	20	1	SPARE					0.0	0.0	SPARE	20	1	108
TOTAL				3.1		2.8		1.9					

PANEL **MB - SEC. 1**

LOCATION: **ELECTRICAL ROOM**
VOLT: **208Y/120V, 3Ø, 4W**
BUS: **400A**
LUG LOCATION: **BOTTOM FEED**
MAIN BUS: **MAIN LUGS ONLY W/FEED THRU LUGS**
MOUNTING: **SURFACE**
PANELBOARD AIC RATING (A): **22,000**

CIRCUIT NO.	BREAKER		DESCRIPTION	PHASE LOAD (KVA)						DESCRIPTION	BREAKER		CIRCUIT NO.
	AMPS	POLES		A		B		C			AMPS	POLES	
1	20	1	REC. - RECEPTION (ALT #4)	0.9	1.1					REC. - STORAGE (ALT #1)	20	1	2
3	20	1	REC. - OFFICE 4 (ALT#4)			1.1	0.0			SPARE	20	1	4
5	20	1	REC. - OFFICE 3 (ALT#4)					1.1	1.3	REC. - MEN&WOMEN RTR, ELEC, MECH (ALT#4)	20	1	6
7	20	1	REC. - OFFICE 2 (ALT #4)	1.1	0.5					DRINKING FOUNTAIN (ALT#4)	20*	1	8
9	20	1	REC. - OFFICE 1 (ALT#4)			1.1	0.5			DRINKING FOUNTAIN (ALT#4)	20*	1	10
11	20	1	REC. - HALL, CONFERENCE (ALT#4)					0.9	0.5	TDBB (ALT #4)	20	1	12
13	20	1	REC. - CONFERENCE (ALT#4)	0.4	0.5					TDBB (ALT #4)	20	1	14
15	20	1	REC. - CONFERENCE (ALT#4)			0.2	1.1			REC. - LENS OFFICE (ALT #4)	20	1	16
17	20	1	RP-2 (ALT #4)					1.2	1.1	REC. - HALL, STOR, LEN RTR, KITCHEN (ALT#4)	20	1	18
19	20	1	EF-14 (ALT #4)	0.5	4.0					REC. - KITCHEN RANGE (ALT#4)	50	2	20
21	20	2	IDU-2.01 THRU IDU-2.010 (ALT #4)			1.1	4.0			-	-	-	22
23	-	-	-					1.1	0.2	REC. - KITCHEN(ALT #4)	20	1	24
25	20	3	EWH-02 (ALT #4)	2.0	0.4					REC. - KITCHEN (ALT#4)	20	1	26
27	-	-	-			2.0	0.8			REC. - KITCHEN REF. (ALT #4)	20	1	28
29	-	-	-					2.0	0.4	REC. - CREW LOUNGE (ALT#4)	20	1	30
31	20	2	IDU-2.11 THRU IDU-2.17 (ALT #4)	1.1	0.5					REC. - CREW LOUNGE (ALT#4)	20	1	32
33	-	-	-			1.1	0.5			REC. - CREW LOUNGE (ALT#4)	20	1	34
35	20	1	MOTORIZED DAMPERS (ALT #4)					0.5	0.2	REC. - CREW LOUNGE (ALT#4)	20	1	36
37	20	1	MOTORIZED DAMPERS (ALT #4)	0.5	0.4					REC. - CREW LOUNGE (ALT#4)	20	1	38
39	15	2	BS 2.1 & BS2.2 (ALT #4)			0.2	0.7			REC. - FLIGHT PLAN (ALT #4)	20	1	40
41	-	-	-					0.2	0.7	REC. - LOG ROOM (ALT#4)	20	1	42
43	20	1	LTS. - (ELEC. 221, MECH 220 ETC. ALT #4)	1.2	0.7					REC. - LOG ROOM (ALT#4)	20	1	44
45	20	1	LTS. - (CORR 217, MENS RR 219 ETC. ALT #4)			1.2	0.7			REC. - WORKROOM (ALT#4)	20	1	46
47	20	1	LTS. - (WAITING 200, CONF 1 202, ETC ALT #4)					0.7	0.7	REC. - WORKROOM (ALT#4)	20	1	48
49	20	1	POWER FOR ACCESS CONTROLS	0.5	0.7					REC. - WORKROOM (ALT#4)	20	1	50
51	20	1	POWER FOR ACCESS CONTROLS			0.5	0.2			REC. - WORKROOM (ALT#4)	20	1	52
53	20	1	PROVISIONS FOR VRF TOUCHSCREEN - ALT #4					0.5	0.7	REC. - WORKROOM (ALT#4)	20	1	54
TOTAL				16.9		17.0		13.9		* GFCI BREAKER			

PANEL **HP - SEC. 1**

LOCATION: **ELECTRICAL ROOM**
VOLT: **208Y/120V, 3Ø, 4W**
BUS: **400A**
LUG LOCATION: **BOTTOM FEED**
MAIN BUS: **MAIN LUGS ONLY W/FEED THRU LUGS**
MOUNTING: **SURFACE**
PANELBOARD AIC RATING (A): **22,000**

CIRCUIT NO.	BREAKER		DESCRIPTION	PHASE LOAD (KVA)						DESCRIPTION	BREAKER		CIRCUIT NO.
	AMPS	POLES		A		B		C			AMPS	POLES	
1	60	3	REC. - HANGAR	0.5	1.0					HANGAR DOOR	30	3	2
3	-	-	-			0.5	1.0			-	-	-	4
5	-	-	-					0.5	1.0	-	-	-	6
7	60	3	REC. - HANGAR	0.5	1.0					HANGAR DOOR	30	3	8
9	-	-	-			0.5	1.0			-	-	-	10
11	-	-	-					0.5	1.0	-	-	-	12
13	60	3	REC. - HANGAR	0.5	0.5					REC. - HANGAR	60	3	14
15	-	-	-			0.5	0.5			-	-	-	16
17	-	-	-					0.5	0.5	-	-	-	18
19	20	2	REC. - HANGAR	0.5	0.5					REC. - HANGAR	60	3	20
21	-	-	-			0.5	0.5			-	-	-	22
23	20	2	REC. - HANGAR					0.5	0.5	-	-	-	24
25	-	-	-	0.5	0.5					REC. - HANGAR	60	3	26
27	20	2	REC. - HANGAR			0.5	0.5			-	-	-	28
29	-	-	-					0.5	0.5	-	-	-	30
31	20	2	REC. - HANGAR	0.5	0.5					REC. - HANGAR	60	3	32
33	-	-	-			0.5	0.5			-	-	-	34
35	20	1	REC. - HANGAR					0.7	0.5	-	-	-	36
37	20	1	REC. - HANGAR	0.4	0.5					REC. - HANGAR	60	3	38
39	20	1	REC. - HANGAR			0.2	0.5			-	-	-	40
41	20	1	REC. - HANGAR					0.4	0.5	-	-	-	42
43	20	1	REC. - HANGAR	0.4	0.5					REC. - HANGAR	60	3	44
45	20	1	REC. - HANGAR			0.2	0.5			-	-	-	46
47	20	1	REC. - HANGAR					0.2	0.5	-	-	-	48
49	20	1	REC. - HANGAR	0.4	0.5					REC. - HANGAR	60	3	50
51	20	2	REC. - HANGAR (ALT #2)			0.5	0.5			-	-	-	52
53	-	-	-					0.5	0.5	-	-	-	54
TOTAL				9.6		9.4		9.8		* GFCI BREAKER			

PANEL **MB - SEC. 2**

LOCATION: **ELECTRICAL ROOM**
VOLT: **208Y/120V, 3Ø, 4W**
BUS: **400A**
LUG LOCATION: **TOP FEED**
MAIN: **MAIN LUGS ONLY**
MOUNTING: **SURFACE**
PANELBOARD AIC RATING (A): **22,000**

CIRCUIT NO.	BREAKER		DESCRIPTION	PHASE LOAD (KVA)						DESCRIPTION	BREAKER		CIRCUIT NO.
	AMPS	POLES		A		B		C			AMPS	POLES	
55	20	1	SPARE	0.0	0.0					SPARE	20	1	56
57	20	1	SPARE			0.0	0.0			SPARE	20	1	58
59	20	1	SPARE					0.0	0.0	SPARE	20	1	60
61	20	1	SPARE	0.0	0.0					SPARE	20	1	62
63	20	1	SPARE			0.0	0.0			SPARE	20	1	64
65	20	1	SPARE					0.0	0.0	SPARE	20	1	66
67	20	1	SPARE	0.0	0.0					SPARE	20	1	68
69	20	1	SPARE			0.0	0.0			SPARE	20	1	70
71	20	1	SPARE					0.0	0.0	SPARE	20	1	72
73	20	1	SPARE	0.0	0.0					SPARE	20	1	74
75	20	1	SPARE			0.0	0.0			SPARE	20	1	76
77	20	1	SPARE					0.0	0.0	SPARE	20	1	78
79	20	1	SPARE	0.0	0.0					SPARE	20	1	80
81	20	1	SPARE			0.0	0.0			SPARE	20	1	82
83	20	1	SPARE					0.0	0.0	SPARE	20	1	84
85	20	1	SPARE	0.0	0.0					SPARE	20	1	86
87	20	1	SPARE			0.0	0.0			SPARE	20	1	88
89	20	1	SPARE					0.0	0.0	SPARE	20	1	90
91	20	1	SPARE	0.0	0.0					SPARE	20	1	92
93	20	1	SPARE			0.0	0.0			SPARE	20	1	94
95	20	1	SPARE					0.0	0.0	SPARE	20	1	96
97	20	1	SPARE	0.0	0.0					SPARE	20	1	98
99	20	1	SPARE			0.0	0.0			SPARE	20	1	100
101	110*	3	WEST ELEVATOR (ALT #1)					9.4	11.0	EAST ELEVATOR	125*	3	102
103	-	-	-	9.4	11.0					-	-	-	104
105	-	-	-			9.4	11.0			-	-	-	106
107			SHUNT TRIP COIL					0.0	0.0	SHUNT TRIP COIL			108
TOTAL				20.4		20.4		20.4		* WITH AUXILIARY CONTACTS			

PANEL **HP - SEC. 2**

LOCATION: **ELECTRICAL ROOM**
VOLT: **208Y/120V, 3Ø, 4W**
BUS: **400A**
LUG LOCATION: **TOP FEED**
MAIN: **MAIN LUGS ONLY W/FEED THRU LUGS**
MOUNTING: **SURFACE**
PANELBOARD AIC RATING (A): **22,000**

CIRCUIT NO.	BREAKER		DESCRIPTION	PHASE LOAD (KVA)						DESCRIPTION	BREAKER		CIRCUIT NO.
	AMPS	POLES		A		B		C			AMPS	POLES	
55	20	2	REC. - HANGAR (ALT #2)	0.5	0.5					REC. - HANGAR (ALT #2)	60	3	56
57	-	-	-			0.5	0.5			-	-	-	58
59	20	1	REC. - HANGAR (ALT #2)					0.2	0.5	-	-	-	60
61	20*	1	REC. - HANGAR DRINK FOUNTIAN (ALT #2)	0.5	0.5					REC. - HANGAR (ALT #2)	60	3	62
63	20*	1	REC. - HANGAR DRINK FOUNTIAN (ALT #2)			0.5	0.5			-	-	-	64
65	20	1	REC. - HANGAR (ALT #2)					0.2	0.5	-	-	-	66
67	20	1	EXTERIOR HANGAR LIGHTS	1.2	1.6					HVLS-1	20	2	68
69	20	1	EXTERIOR HANGAR LIGHTS			1.2	1.6			-	-	-	70
71	20	1	EXTERIOR HANGAR LIGHTS					1.2	1.6	HVLS-2	20	2	72
73	60	3	WASH STATION RECEPTACLE	0.5	1.6					-	-	-	74
75	-	-	-			0.5	0.0			FIRE ALARM BELL	20	1	76
77	-	-	-					0.5	0.5	REC. - TDBB2	20	1	78
79	20	1	WASH STATION RECEPTACLE	0.2	0.5					REC. - TDBB2	20	1	80
81	20	1	LTS. - (HANGAR 100)			1.1	1.1			LTS. - (HANGAR 100)	20	1	82
83	20	1	LTS. - (HANGAR 100)					1.1	1.1	LTS. - (HANGAR 100)	20	1	84
85	20	1	LTS. - (HANGAR 100)	1.1	1.1					LTS. - (HANGAR 100)	20	1	86
87	20	1	LTS. - (HANGAR 100)			1.1	1.1			LTS. - (HANGAR 100)	20	1	88
89	20	1	LTS. - (HANGAR 100)					1.1	0.5	REC. - HANGAR	60	3	90
91	20	1	LTS. - (HANGAR 100)	1.1	0.5					-	-	-	92
93	20	1	LTS. - (HANGAR 100)			1.1	0.5			-	-	-	94
95	20	1	LTS. - (HANGAR 100)					1.1	0.5	REC. - HANGAR	20	2	96
97	20	1	LTS. - (HANGAR 100)	1.1	0.5					-	-	-	98
99	20	1	LTS. - (HANGAR 100)			1.1	1.7			AIR DRYER	30	2	100
101	20	1	CONTACTOR C1					0.5	1.7	-	-	-	102
103	150	3	SPARE	0.0	11.1					AIR COMPRESSOR	150	3	104
105	-	-	-			0.0	11.1			-	-	-	106
107	-	-	-					0.0	11.1	-	-	-	108
TOTAL				24.0		25.0		23.7		* GFCI BREAKER			

PANEL **PA - SEC. 1**

LOCATION: **ELECTRICAL ROOM**
VOLT: **208Y/120V, 3Ø, 4W**
BUS: **225A**
LUG LOCATION: **BOTTOM FEED**
MAIN BUS: **MAIN LUGS ONLY W/FEED THRU LUGS**
MOUNTING: **SURFACE**
PANELBOARD AIC RATING (A): **22,000**

CIRCUIT NO.	BREAKER		DESCRIPTION	PHASE LOAD (KVA)						DESCRIPTION	BREAKER		CIRCUIT NO.
	AMPS	POLES		A		B		C			AMPS	POLES	
1	20	1	REC. - LAUNDRY (ALT#2)	0.2	0.4					REC. - EMPTY SHOP	20	1	2
3	20	1	NORTH ELEVATOR - SUMP PUMP (ALT #1)			0.5	0.2			REC. - EMPTY SHOP	20	1	4
5	20	1	NORTH ELEVATOR - PIT AND HOISTWAY LIGHTS (ALT #4)					0.5	0.2	REC. - EMPTY SHOP	20	1	6
7	20	1	NORTH ELEVATOR - CONTROL PANEL (ALT #4)	0.5	0.2					REC. - EMPTY SHOP	20	1	8
9	20	1	NORTH ELEVATOR - CAB LIGHTS (ALT #4)			0.5	1.5			DOOR MOTOR - EQUIPMENT (ALT #2)	20	1	10
11	20	1	SOUTH ELEVATOR - SUMP PUMP (ALT #1)					0.5	1.5	DOOR MOTOR - EQUIPMENT (ALT #2)	20	1	12
13	20	1	SOUTH ELEVATOR - PIT AND HOISTWAY LIGHTS (ALT #4)	0.5	0.4					REC. - EQUIPMENT (ALT #2)	20	1	14
15	20	1	SOUTH ELEVATOR - CONTROL PANEL (ALT #4)			0.5	0.4			REC. - EQUIPMENT (ALT #2)	20	1	16
17	20	1	SOUTH ELEVATOR - CAB LIGHTS (ALT #4)					0.5	0.5	REC. - MENS RTR, UNISEX 1&2 (ALT #2)	20	1	18
19	20	1	EF-1 & EF-2	0.5	0.2					REC. - SANDING ROOM (ALT #2)	20	1	20
21	20	1	EF-3 (ALT #2)			0.5	0.2			REC. - WASH ROOM (ALT #2)	20	1	22
23	20	1	EF-7 & SF-1(ALT #2)					1.0	0.4	REC. - MACHINE SHOP (ALT #2)	20	1	24
25	20	1	EF-8 (ALT #2)	0.5	0.4					REC. - MACHINE SHOP (ALT #2)	20	1	26
27	20	1	PROVISIONS FOR BAS			0.5	0.4			REC. - MACHINE SHOP (ALT #2)	20	1	28
29	20	1	RP-1 (ALT #2)					1.2	0.2	REC. - MACHINE SHOP (ALT #2)	20	1	30
31	20	1	MOTORIZED DAMPERS (ALT #2)	0.5	1.5					DOOR MOTOR - MACHINE SHOP (ALT #2)	20	1	32
33	20	1	REC. - EMPTY SHOP			0.4	0.7			REC. - PARTS (ALT #2)	20	1	34
35	20	1	REC. - EMPTY SHOP					0.4	1.1	REC. - PARTS (ALT #2)	20	1	36
37	20	1	REC. - EMPTY SHOP	0.4	0.4					REC. - PARTS (ALT #2)	20	1	38
39	20	1	LTS. - (ELEC 110, LAUNDRY 109, ETC. ALT #2)			1.3	0.4			REC. - PARTS (ALT #2)	20	1	40
41	20	1	LTS. - (MACHINE SHOP 107, ETC. ALT #2)					0.9	0.4	REC. - PARTS (ALT #2)	20	1	42
43	20	1	LTS. - (EQUIPMENT 101, ETC. ALT #2)	1.4	0.2					REC. - PARTS (ALT #2)	20	1	44
45	20	1	CONTACTOR C2			0.5	0.2			DOOR MOTOR - PARTS (ALT #2)	20	1	46
47	20	1	LTS. - (EMPTY SHOP SPACE 101)					1.5	0.5	REC. - ELECTRICAL (ALT #2)	20	1	48
49	20	1	LTS. - (EMPTY SHOP SPACE 101)	1.1	0.5					REC. - ELECTRICAL (ALT #2)	20	1	50
51	20	1	LTS. - (EMPTY SHOP SPACE 101)			1.1	0.0			REC. - LAUNDRY (ALT #2)	30	2	52
53	20	1	LTS. - (EMPTY SHOP SPACE 101 ALT #1)					0.9	0.0	-	-	-	54
TOTAL				9.6		9.6		12.0					

PANEL **HP - SEC. 3**

LOCATION: **ELECTRICAL ROOM**
VOLT: **208Y/120V, 3Ø, 4W**
BUS: **400A**
LUG LOCATION: **BOTTOM FEED**
MAIN: **MAIN LUGS ONLY**
MOUNTING: **SURFACE**
PANELBOARD AIC RATING (A): **22,000**

CIRCUIT NO.	BREAKER		DESCRIPTION	PHASE LOAD (KVA)						DESCRIPTION	BREAKER		CIRCUIT NO.
	AMPS	POLES		A		B		C			AMPS	POLES	
109	60	3	REC. - HANGAR	0.5	0.5					REC. - HANGAR	60	3	110
111	-	-	-			0.5	0.5			-	-	-	112
113	-	-	-					0.5	0.5	-	-	-	114
115	60	3	REC. - HANGAR	0.5	0.5					REC. - HANGAR	60	3	116
117	-	-	-			0.5	0.5			-	-	-	118
119	-	-	-					0.5	0.5	-	-	-	120
121	60	3	REC. - HANGAR	0.5	0.5					REC. - HANGAR	20	2	122
123	-	-	-			0.5	0.5			-	-	-	124
125	-	-	-					0.5	0.0	SPARE	20	1	126
127	20	2	REC. - HANGAR	0.5	0.0					SPARE	20	1	128
129	-	-	-			0.5	0.0			SPARE	20	1	130
131	20	1	SPARE					0.0	0.0	SPARE	20	1	132
133	20	1	SPARE	0.0	0.0					SPARE	20	1	134
135	20	1	SPARE			0.0	0.0			SPARE	20	1	136
137	20	1	SPARE					0.0	0.0	SPARE	20	1	138
139	20	1	SPARE	0.0	0.0					SPARE	20	1	140
141	20	1	SPARE			0.0	0.0			SPARE	20	1	142
143	20	1	SPARE					0.0	0.0	SPARE	20	1	144
145	20	1	SPARE	0.0	0.0					SPARE	20	1	146
147	20	1	SPARE			0.0	0.0			SPARE	20	1	148
149	20	1	SPARE					0.0	0.0	SPARE	20	1	150
151	20	1	SPARE	0.0	0.0					SPARE	20	1	152
153	20	1	SPARE			0.0	0.0			SPARE	20	1	154
155	20	1	SPARE					0.0	0.0	SPARE	20	1	156
157	20	1	SPARE	0.0	0.0					SPARE	20	1	158
159	20	1	SPARE			0.0	0.0			SPARE	20	1	160
161	20	1	SPARE					0.0	0.0	SPARE	20	1	162
TOTAL				3.5		3.5		2.5		* GFCI BREAKER			

GENERAL NOTES

Mark	Description
1.	REFER TO ARCHITECTURAL DRAWINGS FOR BASE BID AND ALL ALTERNATE DESCRIPTIONS.

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KEY PLAN

PROJECT NORTH
TRUE NORTH

Seal

No.	Description	Date
2	ADDENDUM #2	03/18/21
1	100% Construction Doc.	03/03/21

MERIDIAN AIRPORT AUTHORITY

DEAN AIRCRAFT SERVICE

HANGAR ADDITIONS & ALTERATIONS

2913 Airport Blvd, South St.
Meridian, MS 39307

Sheet Title

TELEPHONE RISER DIAGRAM

Project No.
19-006

Date
3/03/2021

E-006

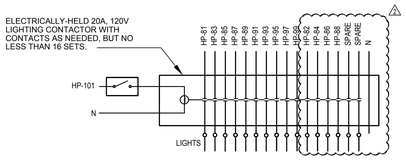
GENERAL NOTES

Mark	Description
1.	REFER TO ARCHITECTURAL DRAWINGS FOR BASE BID AND ALL ALTERNATE DESCRIPTIONS.

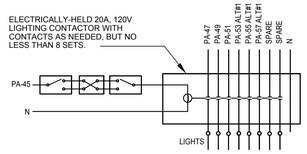
LIGHTING - MASTER KEYED NOTES

Mark	Description
1	SEE CONTACTOR C1 2/E-100.
2	SEE CONTACTOR C2 3/E-100.
3	SEE CONTACTOR C3 4/E-102.
4	BOTTOM OF LIGHTING FIXTURES SHALL BE MOUNTED THE SAME HEIGHT AS FANS.
5	LIGHTING FIXTURE SHALL BE SURFACE MOUNTED TO THE STRUCTURE.

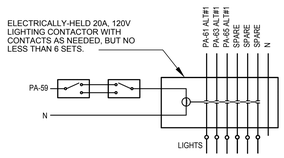
NOTE:
IF A KEYED NOTE IS NOT SHOWN ON A DRAWING, THEN THE KEYED NOTE SHALL BE IGNORED FOR THAT PARTICULAR DRAWING. THIS SHALL DIFFER FROM DRAWING TO DRAWING.



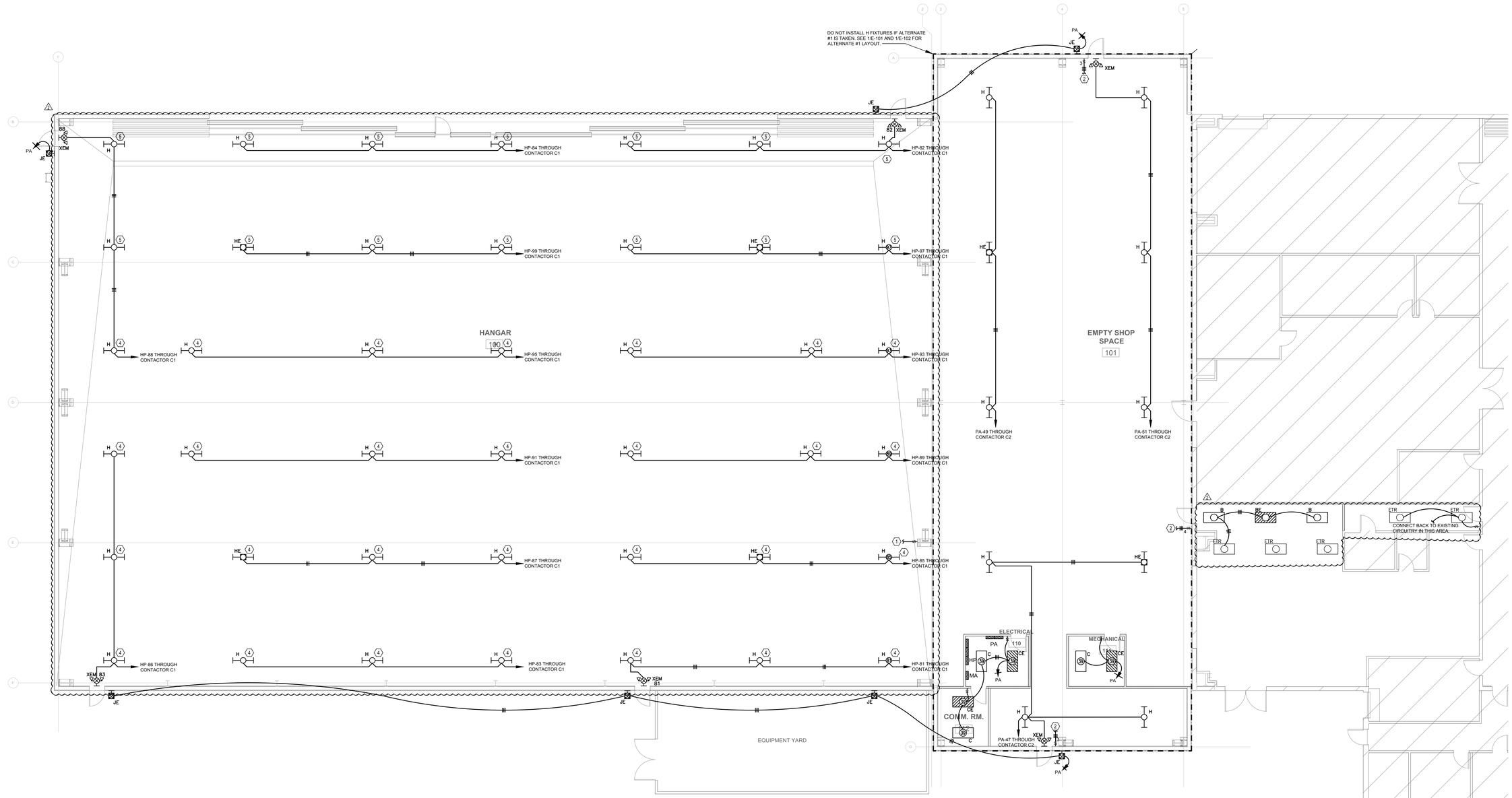
2 E-100 CONTACTOR C1 - BASE BID
Scale: 1/8" = 1'- 0"



3 E-100 CONTACTOR C2 - BASE BID
Scale: 1/8" = 1'- 0"



4 E-100 CONTACTOR C3 - ALT #1
Scale: 1/8" = 1'- 0"



1 E-100 LIGHTING PLAN - HANGAR/SHOP - BASE BID
Scale: 1/8" = 1'- 0"

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KEY PLAN

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No.	Description	Date
2	ADDENDUM #2	03/18/21
1	100% Construction Doc.	03/03/21

MERIDIAN AIRPORT AUTHORITY

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HANGAR ADDITIONS & ALTERATIONS

2913 Airport Blvd, South St.
Meridian, MS 39307

Sheet Title

LIGHTING PLAN HANGAR/SHOP - BASEBID

Project No.	Date
19-006	3/03/2021

E-100

GENERAL NOTES

Mark	Description
1.	REFER TO ARCHITECTURAL DRAWINGS FOR BASE BID AND ALL ALTERNATE DESCRIPTIONS.

LIGHTING - MASTER KEYED NOTES

Mark	Description
1	SEE CONTACTOR C1 2/E-100.
2	SEE CONTACTOR C2 3/E-100.
3	SEE CONTACTOR C3 4/E-102.
4	BOTTOM OF LIGHTING FIXTURES SHALL BE MOUNTED THE SAME HEIGHT AS FANS.
5	LIGHTING FIXTURE SHALL BE SURFACE MOUNTED TO THE STRUCTURE.

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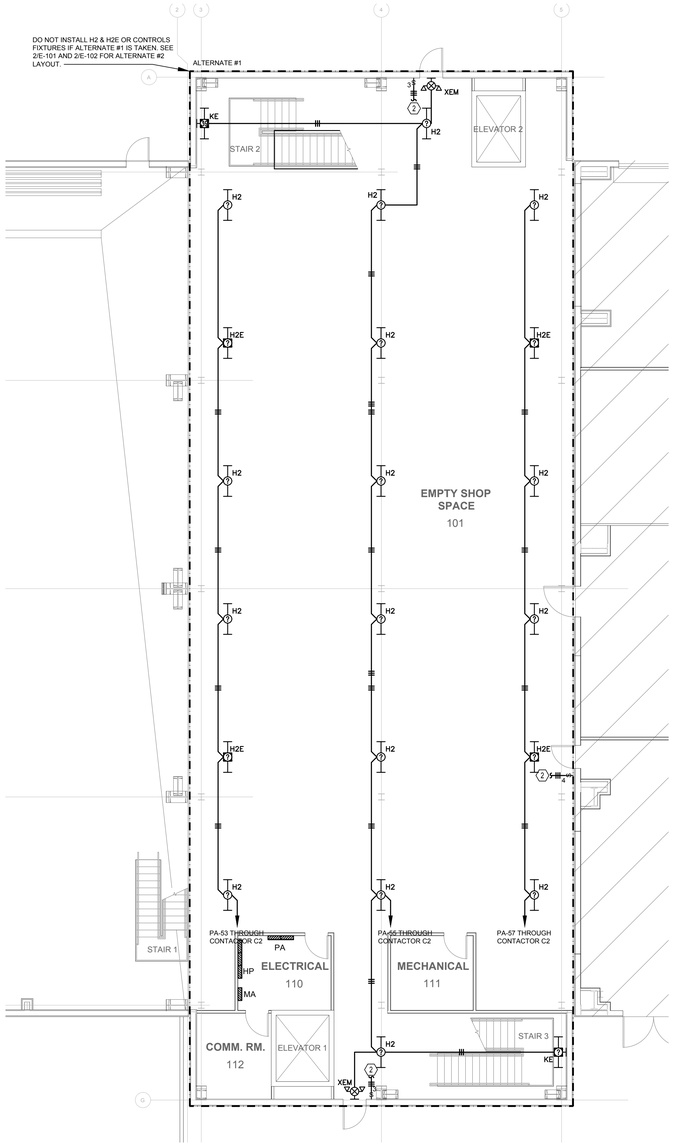
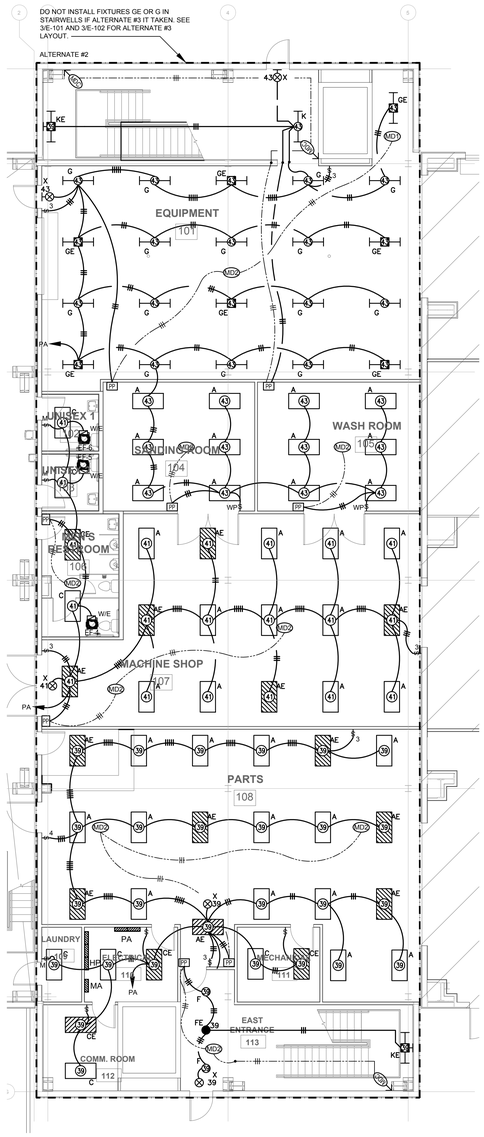
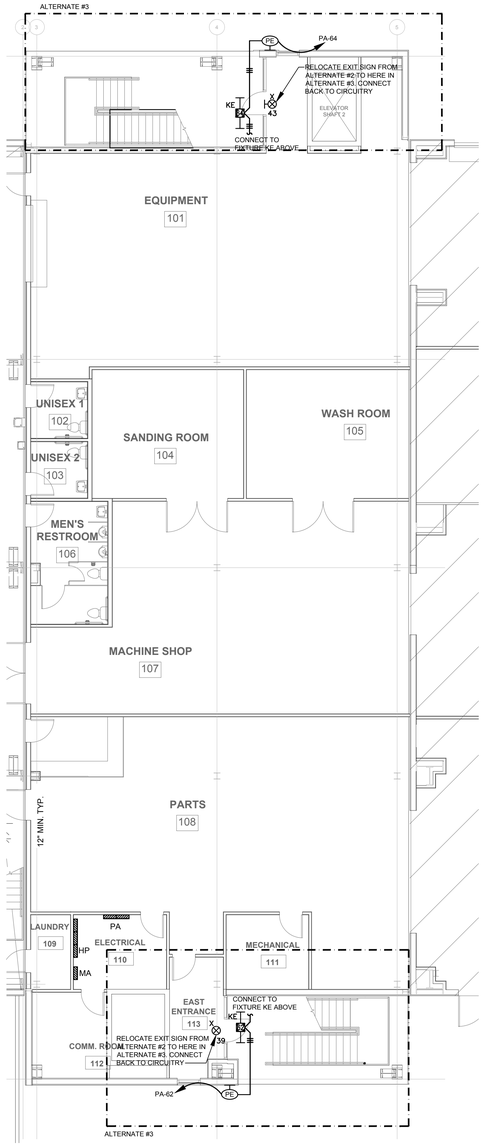


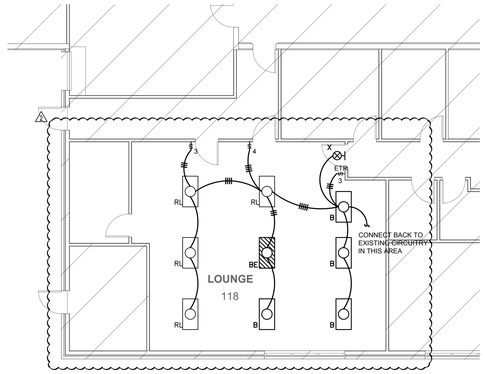
1 E-101 LIGHTING PLAN - HANGAR/SHOP - ALTERNATE #1
Scale: 1/8" = 1'- 0"



2 E-101 LIGHTING PLAN - HANGAR/SHOP - ALTERNATE #2
Scale: 1/8" = 1'- 0"



3 E-101 LIGHTING PLAN - HANGAR/SHOP - ALTERNATE #3
Scale: 1/8" = 1'- 0"



4 E-101 LIGHTING PLAN - HANGAR/SHOP - ALTERNATE #4
Scale: 1/8" = 1'- 0"

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No.	Description	Date
2	ADDENDUM #2	03/18/21
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HANGAR ADDITIONS & ALTERATIONS

2913 Airport Blvd, South St.
Meridian, MS 39307

Sheet Title

LIGHTING PLAN
LEVEL 01 - ALTERNATE #1

Project No.	Date
19-006	3/03/2021

E-101

MASTER KEYED NOTES

Mark	Description
1	MOUNT RECEPTACLE 36"A.F.F.
2	PROVISIONS FOR TELEVISION. VERIFY EXACT MOUNTING HEIGHT WITH ARCHITECT PRIOR TO ROUGH-IN.
3	MOUNT RECEPTACLE 36" A.F.F. IF ALTERNATE #2 IS TAKEN THESE WILL NOT BE INSTALLED.

NOTE:
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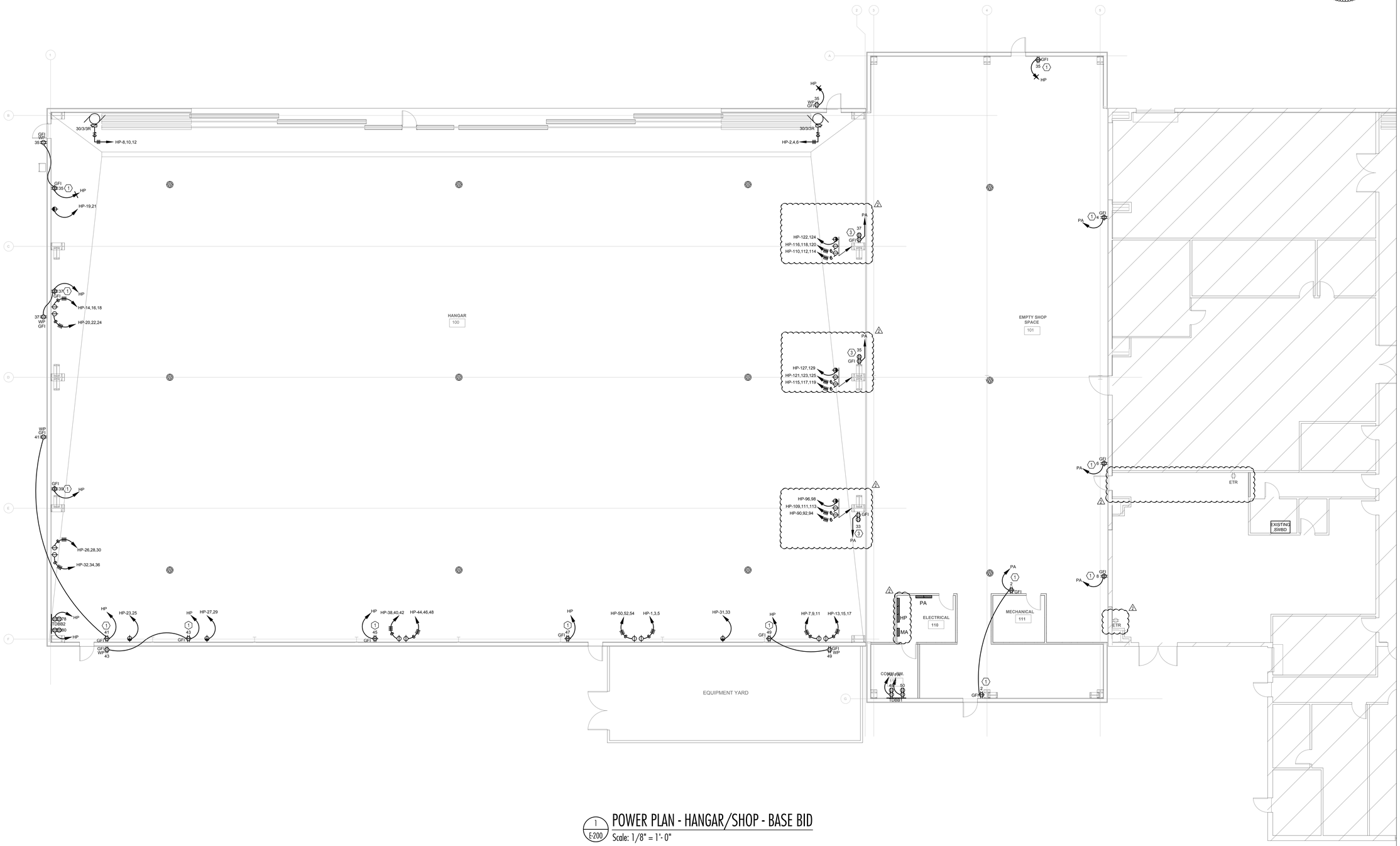
GENERAL NOTES

Mark	Description
1.	REFER TO ARCHITECTURAL DRAWINGS FOR BASE BID AND ALL ALTERNATE DESCRIPTIONS.



1 / E-200 POWER PLAN - HANGAR/SHOP - BASE BID

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

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No.	Description	Date
2	ADDENDUM #2	03/18/21
1	100% Construction Doc.	03/03/21

MERIDIAN AIRPORT AUTHORITY

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HANGAR ADDITIONS & ALTERATIONS

2913 Airport Blvd. South St.
Meridian, MS 39307

Sheet Title

POWER PLAN HANGAR/SHOP - BASEBID

Project No.	Date
19-006	3/3/2021

E-200

MASTER KEYED NOTES

Mark	Description
1	MOUNT RECEPTACLE 36"A.F.F.
2	PROVISIONS FOR TELEVISION. VERIFY EXACT MOUNTING HEIGHT WITH ARCHITECT PRIOR TO ROUGH-IN.
3	MOUNT RECEPTACLE 36" A.F.F. IF ALTERNATE #2 IS TAKEN THESE WILL NOT BE INSTALLED.

NOTE:
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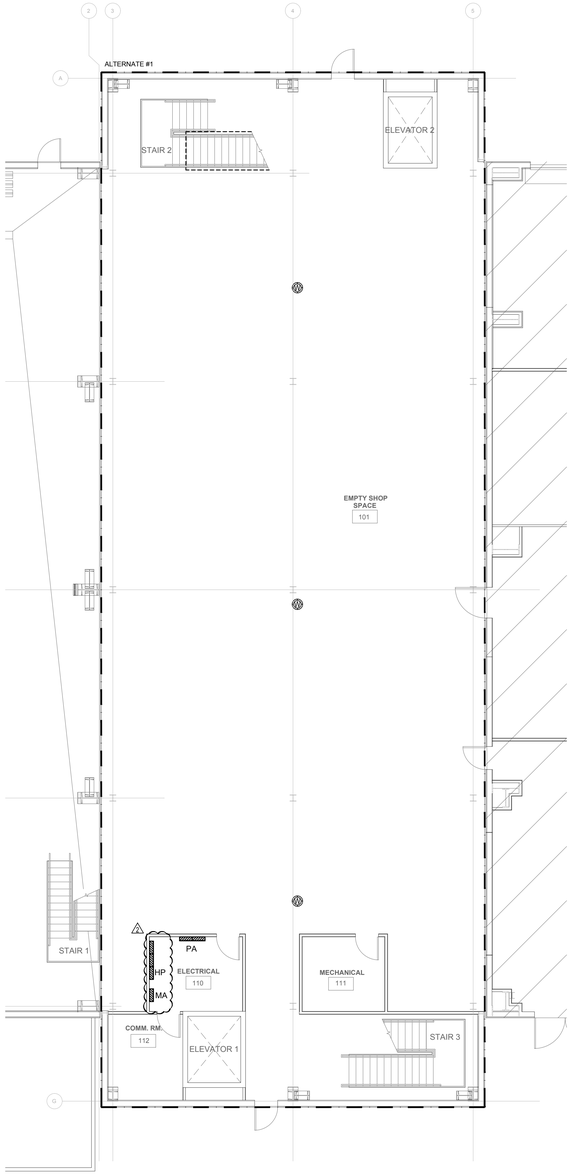
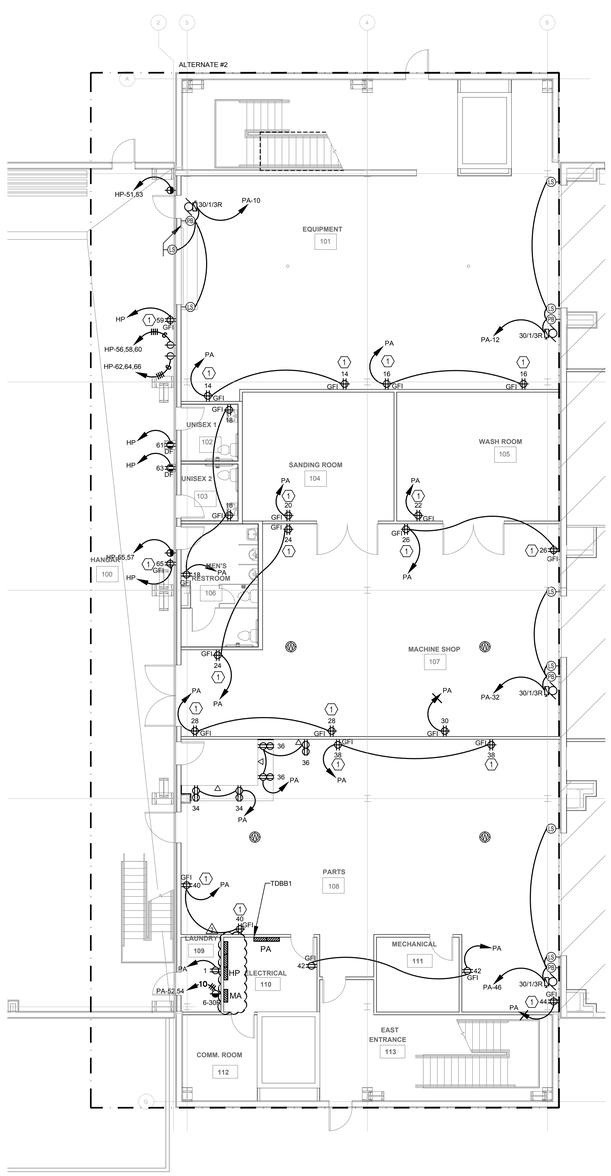
GENERAL NOTES

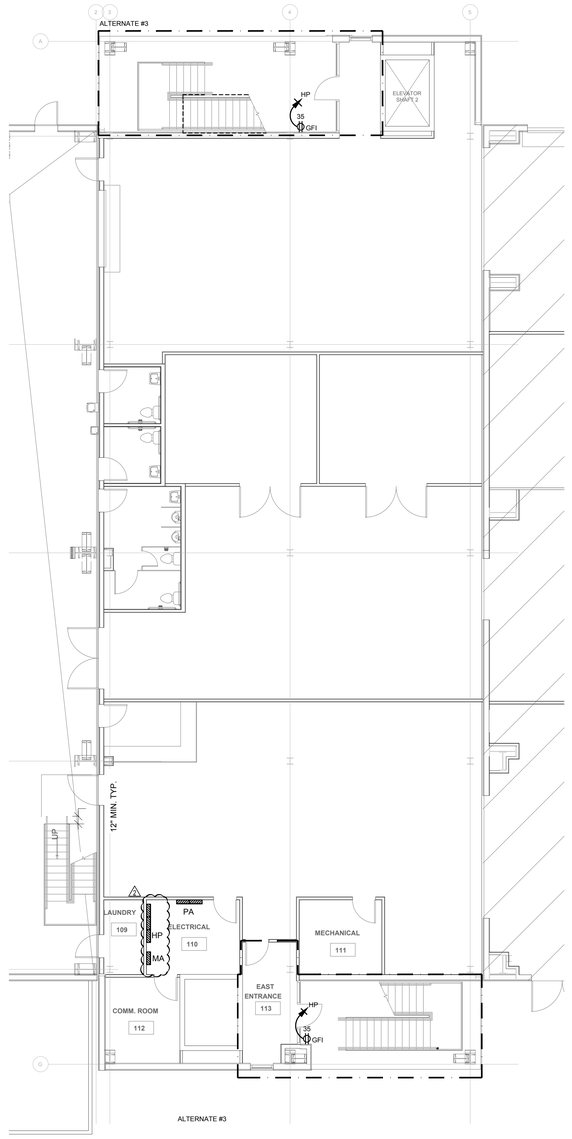
Mark	Description
1.	REFER TO ARCHITECTURAL DRAWINGS FOR BASE BID AND ALL ALTERNATE DESCRIPTIONS.



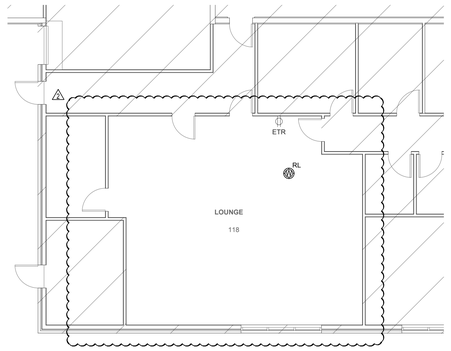
1 / E-201 POWER PLAN - HANGAR/SHOP - ALTERNATE #1
Scale: 1/8" = 1'- 0"



2 / E-201 POWER PLAN - HANGAR/SHOP - ALTERNATE #2
Scale: 1/8" = 1'- 0"



3 / E-201 POWER PLAN - HANGAR/SHOP - ALTERNATE #3
Scale: 1/8" = 1'- 0"



1 / E-201 POWER PLAN - HANGAR/SHOP - ALTERNATE #4
Scale: 1/8" = 1'- 0"

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No.	Description	Date
2	ADDENDUM #2	03/18/21
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MERIDIAN AIRPORT AUTHORITY

DEAN AIRCRAFT SERVICE

HANGAR ADDITIONS & ALTERATIONS

2913 Airport Blvd, South St.
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Sheet Title
POWER PLAN HANGAR/SHOP - ALTERNATE #1

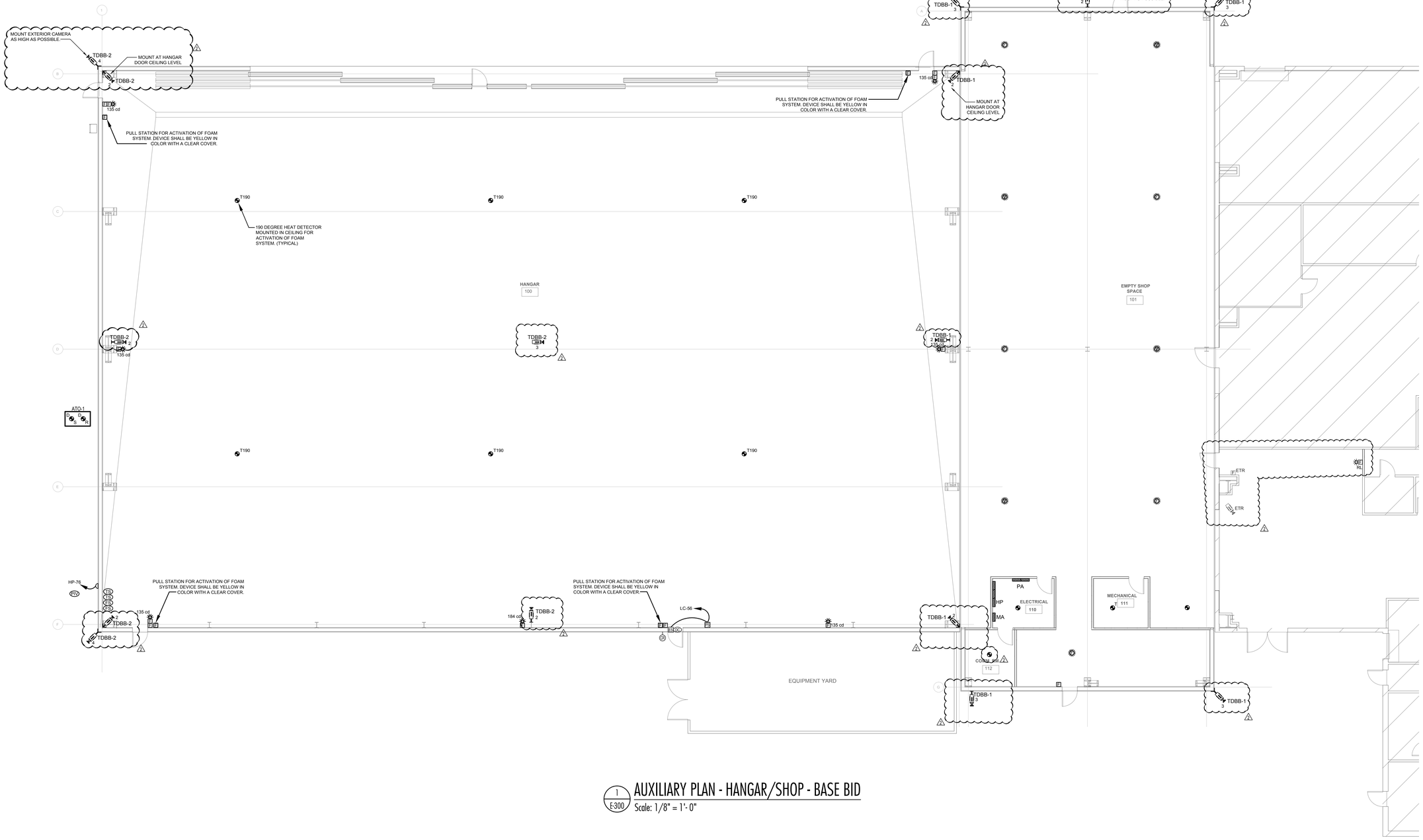
Project No. 19-006

Date 3/03/2021

E-201

GENERAL NOTES

Mark	Description
1.	REFER TO ARCHITECTURAL DRAWINGS FOR BASE BID AND ALL ALTERNATE DESCRIPTIONS.



1 AUXILIARY PLAN - HANGAR/SHOP - BASE BID

E-300

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

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MERIDIAN AIRPORT AUTHORITY

DEAN AIRCRAFT SERVICE

HANGAR ADDITIONS & ALTERATIONS

2913 Airport Blvd, South St.
Meridian, MS 39307

Sheet Title

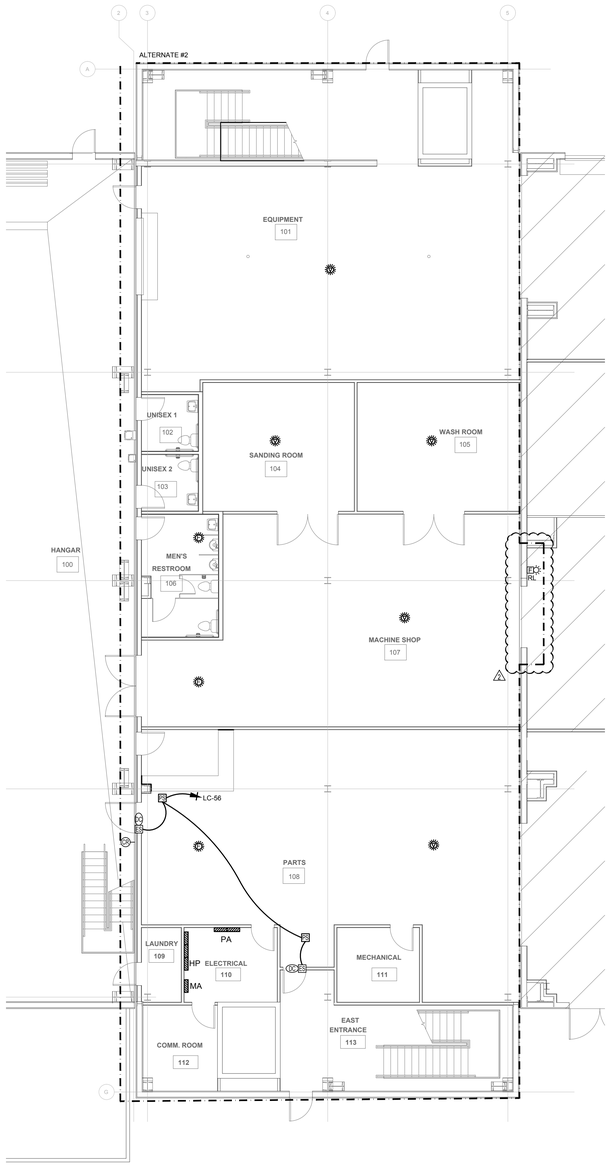
AUXILIARY PLAN HANGAR/SHOP - BASEBID

Project No.	Date
19-006	3/03/2021

E-300

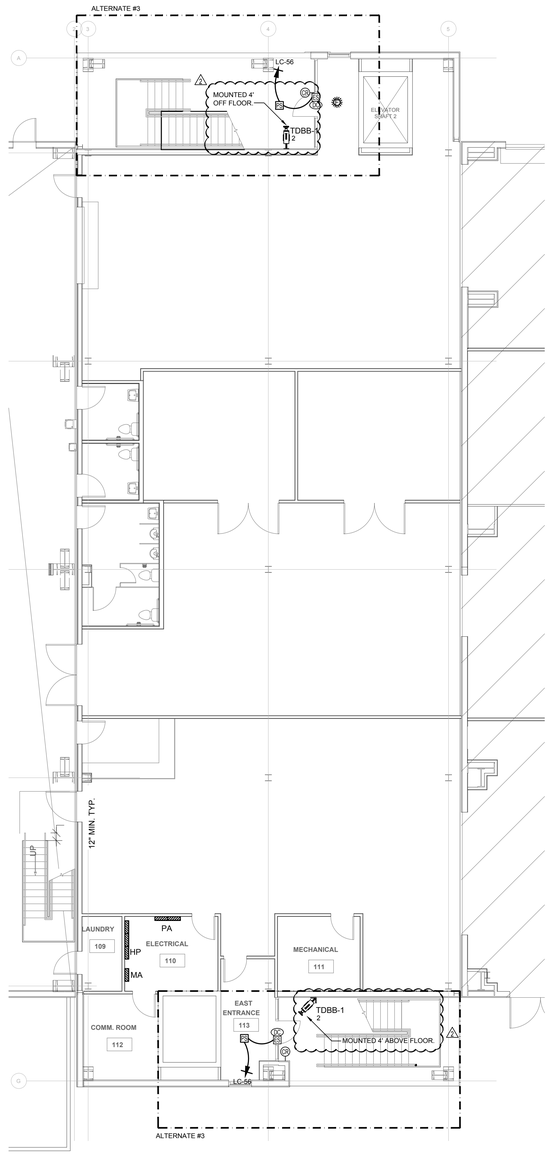
GENERAL NOTES

Mark	Description
1.	REFER TO ARCHITECTURAL DRAWINGS FOR BASE BID AND ALL ALTERNATE DESCRIPTIONS.



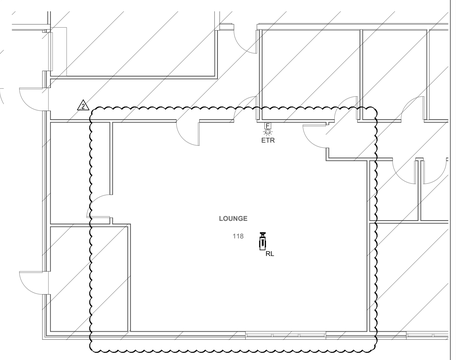
1 E-301 AUXILIARY PLAN - HANGAR/SHOP - ALTERNATE #2

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



2 E-301 AUXILIARY PLAN - HANGAR/SHOP - ALTERNATE #3

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



1 E-301 AUXILIARY PLAN - HANGAR/SHOP - ALTERNATE #4

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

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KEY PLAN

PROJECT NORTH

TRUE NORTH

Seal

No.	Description	Date
1	ADDENDUM #2	03/18/21
	100% Construction Doc.	03/03/21

MERIDIAN AIRPORT AUTHORITY

DEAN AIRCRAFT SERVICE

HANGAR ADDITIONS & ALTERATIONS

2913 Airport Blvd. South St.
Meridian, MS 39307

Sheet Title

AUXILIARY PLAN HANGAR/SHOP - ALTERNATE #2

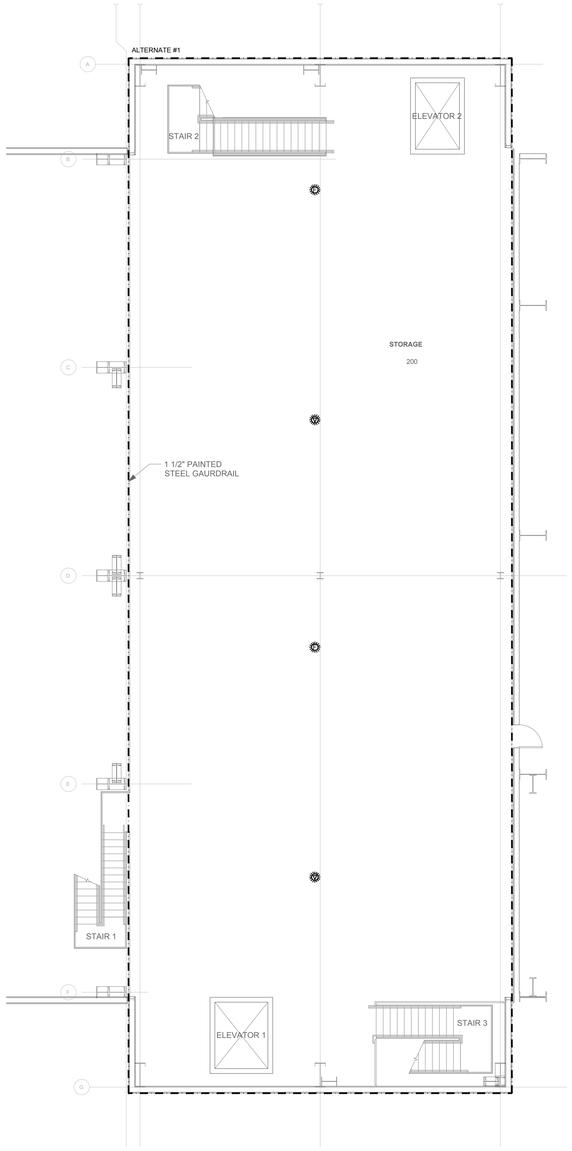
Project No. 19-006

Date 3/3/2021

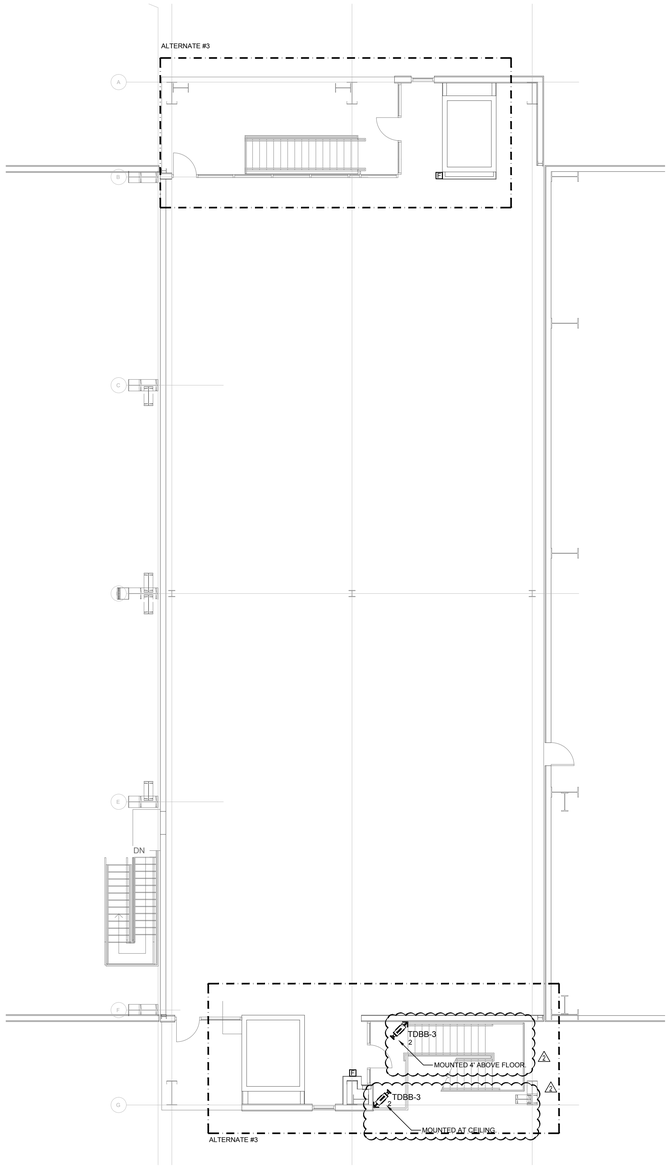
E-301

GENERAL NOTES

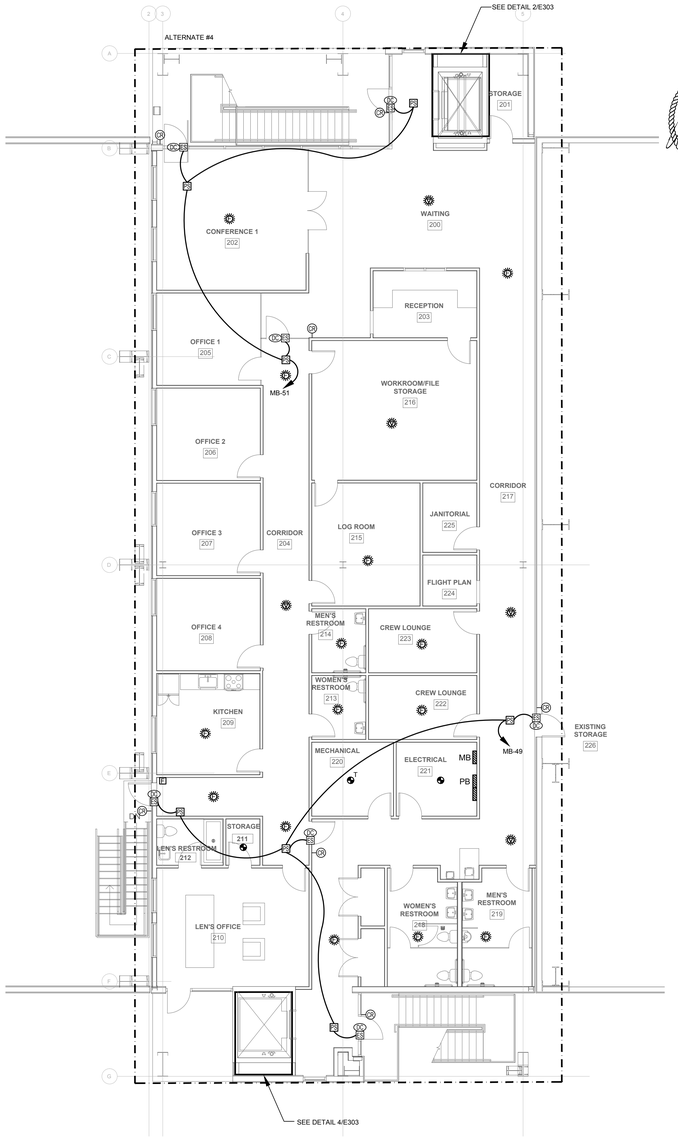
Mark	Description
1.	REFER TO ARCHITECTURAL DRAWINGS FOR BASE BID AND ALL ALTERNATE DESCRIPTIONS.



1 / E-302 AUXILIARY PLAN - MEZZANINE - ALTERNATE #1
Scale: 1/8" = 1'- 0"



3 / E-302 AUXILIARY PLAN - MEZZANINE - ALTERNATE #3
Scale: 1/8" = 1'- 0"



1 / E-302 AUXILIARY PLAN - OFFICE - ALTERNATE #4
Scale: 1/8" = 1'- 0"

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KEY PLAN

PROJECT NORTH

TRUE NORTH

Seal

No.	Description	Date
1	ADDENDUM #2	03/18/21
	100% Construction Doc.	03/03/21

MERIDIAN AIRPORT AUTHORITY

DEAN AIRCRAFT SERVICE

HANGAR ADDITIONS & ALTERATIONS

2913 Airport Blvd. South St.
Meridian, MS 39307

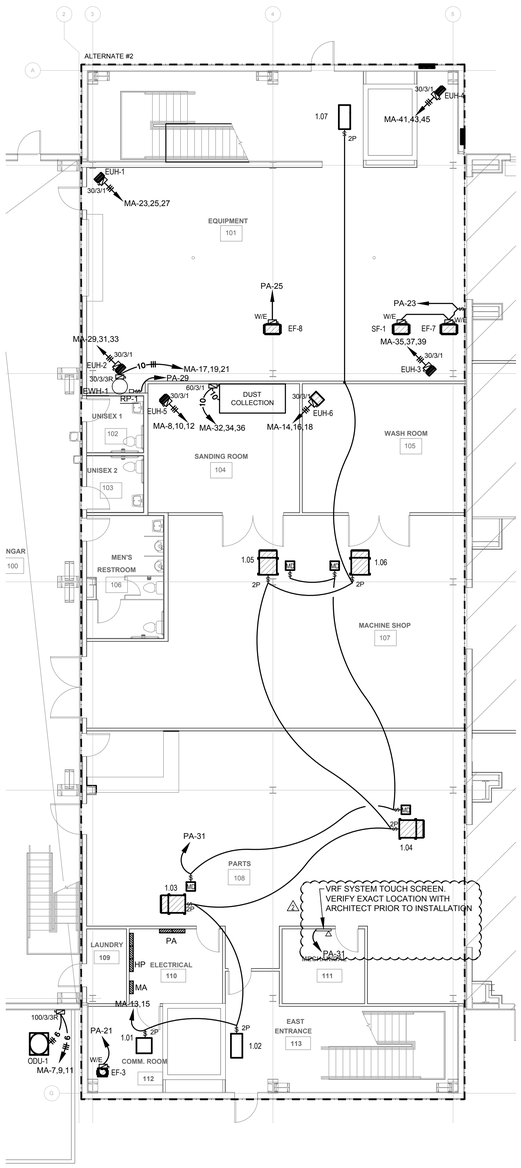
Sheet Title
AUXILIARY PLAN MEZZANINE - ALTERNATE #1,2,3 & 3

Project No.	Date
19-006	3/03/2021

E-302

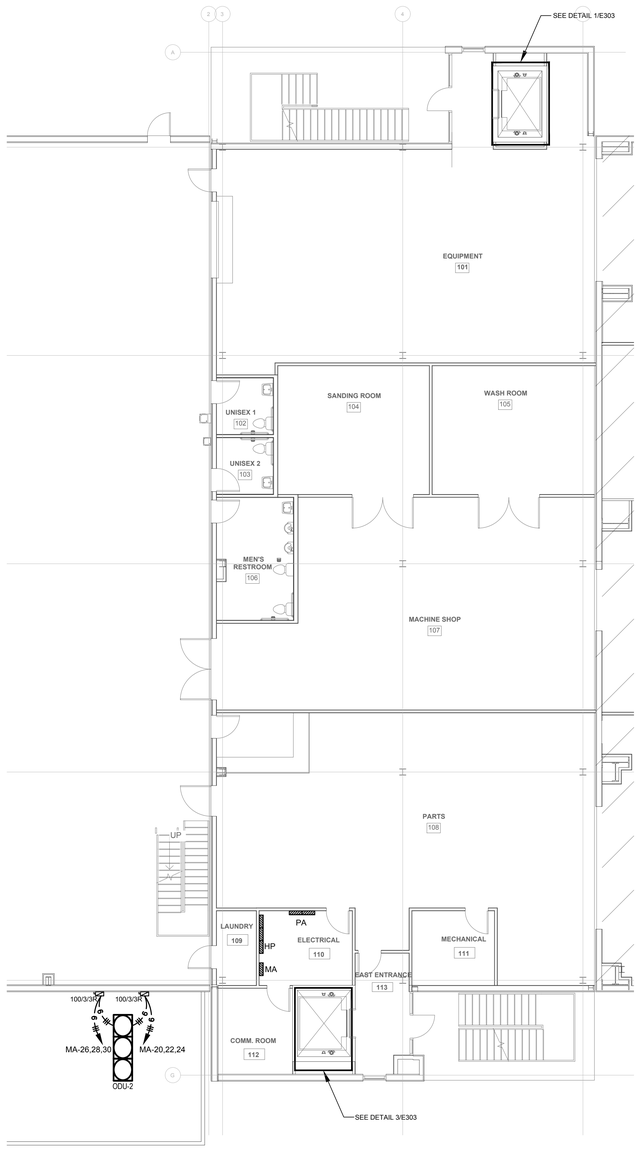
GENERAL NOTES

Mark	Description
1.	REFER TO ARCHITECTURAL DRAWINGS FOR BASE BID AND ALL ALTERNATE DESCRIPTIONS.



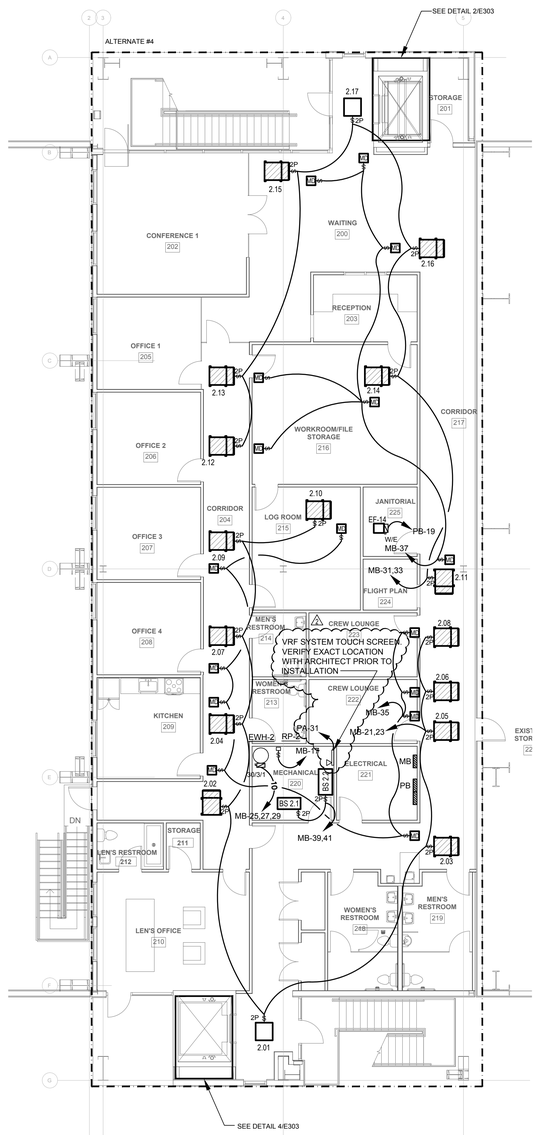
1 E-401 MECHANICAL PLAN - HANGAR/SHOP - ALTERNATE #2

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



2 E-401 MECHANICAL PLAN - HANGAR/SHOP - ALTERNATE #4

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



3 E-401 MECHANICAL PLAN - OFFICE - ALTERNATE #4

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

4 E-401 MECHANICAL PLAN - HANGAR/SHOP - ALTERNATE 4 - PART B

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

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HANGAR ADDITIONS & ALTERATIONS

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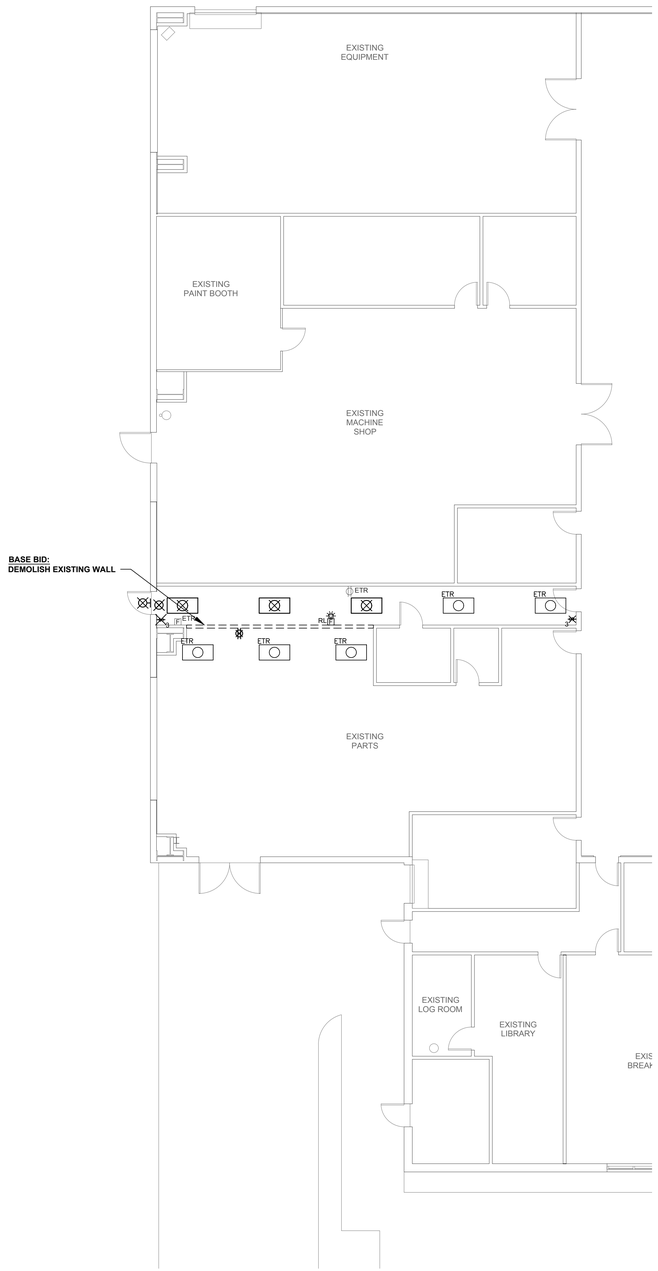
Meridian, MS 39307

Sheet Title

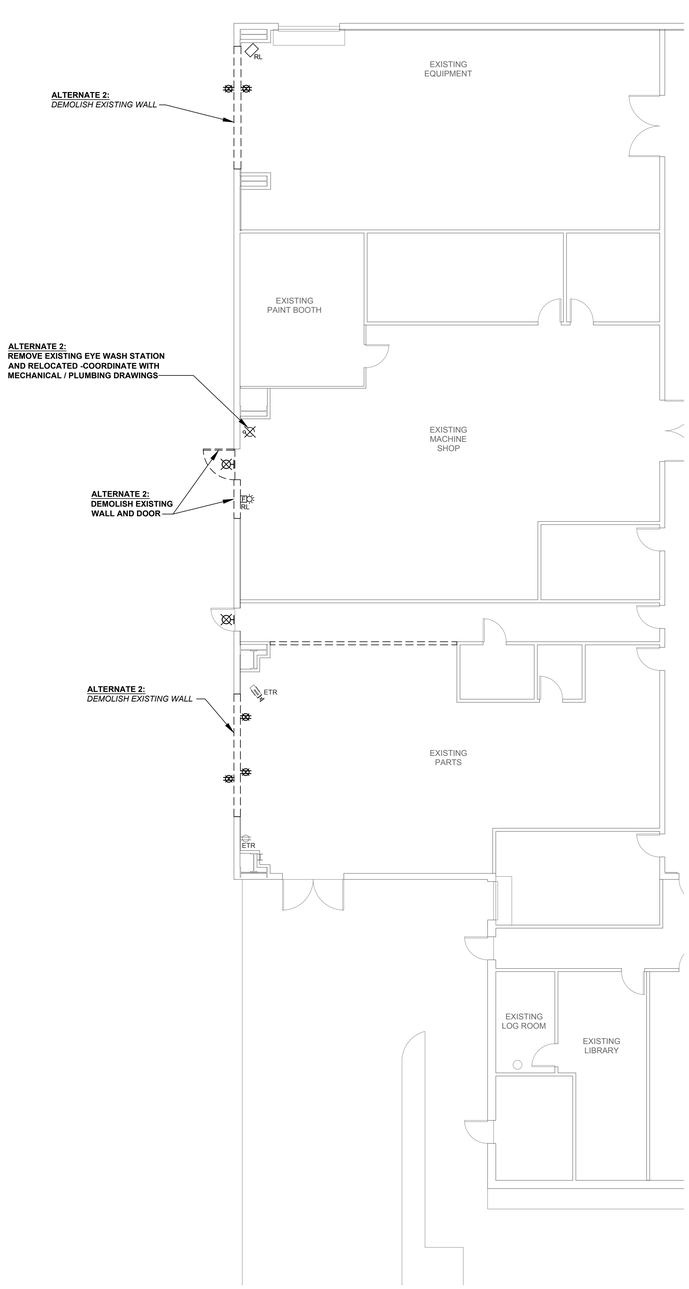
MECHANICAL PLAN HANGAR/SHOP - ALTERNATE #1

Project No.	Date
19-006	3/03/2021

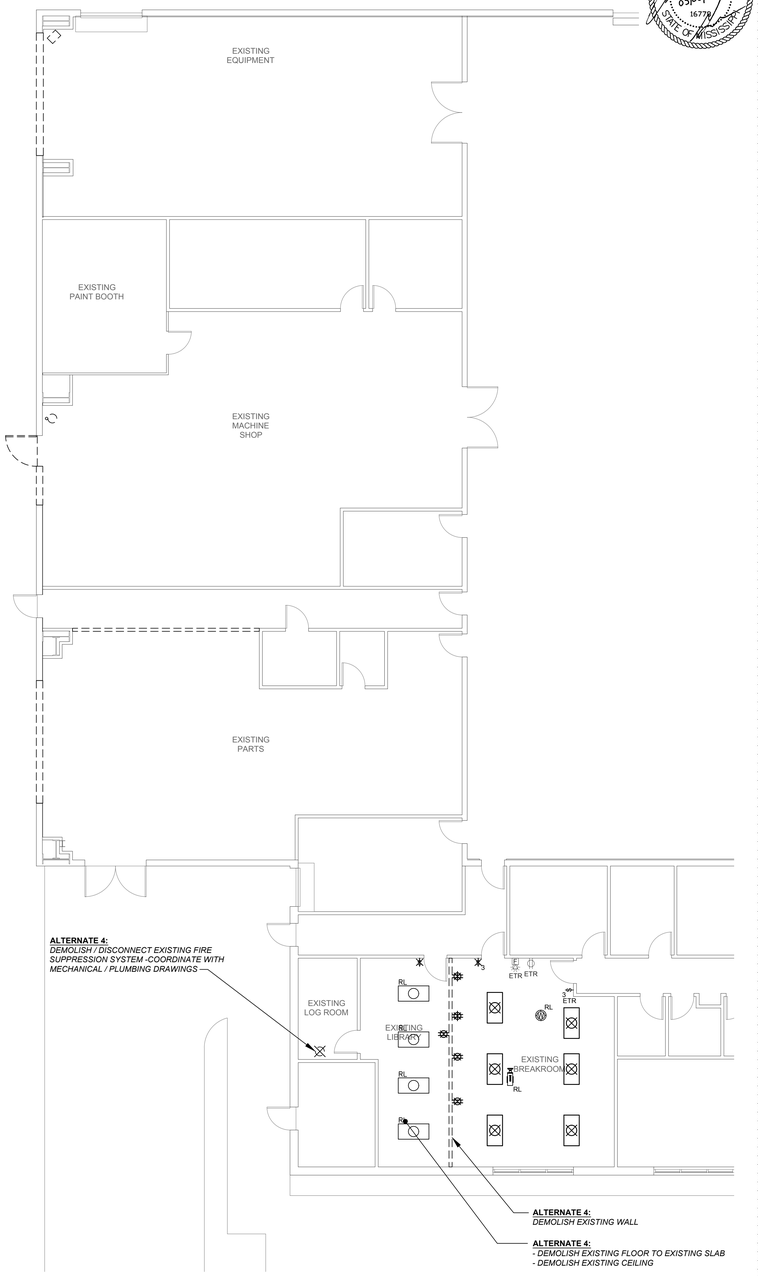
E-401



1 ED-100 DEMOLITION PLAN - BASE BID
Scale: 1/8" = 1'- 0"



2 ED-100 DEMOLITION PLAN - ALTERNATE #2
Scale: 1/8" = 1'- 0"



3 ED-100 DEMOLITION PLAN - ALTERNATE #4
Scale: 1/8" = 1'- 0"

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POWER PLAN
HANGAR/SHOP - BASEBID

Project No.	Date
19-006	3/03/2021

ED-100