Addendum Number Two (2)

to the Construction Documents for

New Baseball Stadium Athletic Complex Facility – Phase 2

Louisiana State University Eunice
Eunice, LA

State of Louisiana
Office of Facility Planning and Control
Project No.: 19-605-22-02, F.19002637
Site Code: 4-01-006

Issue Date: April 17, 2026

This Addendum modifies the Contract Documents as originally issued, and shall become a part of the Contract Documents, as if originally included therein. Receipt and acknowledgement of this Addendum shall be noted on the Bid Form. Failure to do so shall result in disqualification of the Contractor's Bid.

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GENERAL CLARIFICATIONS

1. Refer to the attached structural addenda items for clarity on deep foundations.
2. The attached Geotechnical Report shall be used for the construction of the Phase 2 building. Refer to borings B3, B4, B5, B6 and B7.
3. At the high metal roof, 4" polyiso insulation is required over conditioned spaces. Over the unconditioned spaces, 2x sleepers are required at 2'-0" o.c. for support of the roofing. Refer to detail 7/A2.31.
4. Roller shades to be provided in all Suites and Club spaces.
5. Locker manufacturer shall provide all components shown in the details and specifications, unless otherwise noted.
6. Refer to the attached MEP and structural addenda items for clarifications in those scopes.
7. The bid date will remain as indicated in the Advertisement.

RFI

8. How are we to handle drill shafts which need casing if needed? Can you provide a bid form with unit prices?.
    a. No unit prices on this job. See attached structural addenda items.
9. There are laundry chutes shown on A2.21 but no details or specs. Please specify.

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a. Laundry chutes shall be stainless steel, 45-min rated, 18”x18” with self closing door and turn handle

10. There are some toilet accessories not identified on drawings or specs such as: shower seat, shower grab bars, shower curtains. Do these need to be provided by contractor?
    a. See attached revised Toilet Accessories specification
11. Toilet accessories notes electric hand dryers and soap dispensers (owner furnished) but not shown on drawings. Please verify and specify quantity.
    a. No electric hand dryers on job. See revised spec for quantities. Locations to be verified in field with Owner/Architect
12. Prefinished drink rails noted on interior elevations. Are these stainless or painted steel? Please specify
    a. Per detail 14/A8.11, powder coated
13. Can tubelite be provided for aluminum storefront? TU14000 2"x4.5" ultra thermal storefront comparable to Kawneer 451UT; TU24650 2"x6.5" ultra thermal flush front storefront comparable to Kawneer 601UT; Tubelite Monumental doors comparable to Kawneer Tuffline
    a. Tubelite prior approval information has not been submitted for review of compliance. However, generally the requested Tubelite products above are acceptable substitutes if they meet the specifications.
14. Can you provide more information for the Trackman V3 Game Tracker? Do we need to provide the protective shield for the system? Do we need to provide a subscription for this service?
    a. No protective shield needed as this sits behind the backstop netting. No subscription service required. The University will handle the subscription service.
15. On Addendum #1 it calls for (4) ADA back benches. Can you please verify where the two benches will be located in the Home Dressing Room?
    a. These will be located in the field by the Owner and Architect.
16. Door 123.1 does not have a door mark next to it on A3.01.
    a. Door 123.1 is door mark E.
17. Spec Section 092916 item 3 (2.02>C>3) calls for abuse resistant gyp board up to 8ft. Advise if required.
    a. This is not required.
18. Doors 110.1, 129.1, 130.1, 131.1 are listed as ASF in the specified hardware sets but the door schedule lists as FRP. Please clarify.
    a. Door 110.1 is FRP. Hardware set 21.0 has been added and shall be used.
    b. Door 129.1, 130.1 and 131.1 are FRP. Hardware set 4.0 has been modified.
19. Door 303 is listed as existing in Hardware Set 20, but not shown on the door schedule. Is there work required at this door?
    a. As per detail 1/A2.22, this is an existing door to have new hardware as scheduled.
20. Door 201.5 is shown on the door schedule but not shown in the specified hardware sets. Please clarify.
    a. Door 201.5 serves the Media 201D space. Hardware set shall be Set 14.0
21. Please provide a schedule where the Owner provided special items are to be installed.
    a. To be located in the field
22. Please provide detail about millwork in rooms 201A, 201B, 201C and 201D.
    a. Refer to detail 2/A6.01 for cut section of the millwork countertop
23. Is the client providing temporary stairs and rails or are the contractor providing and installing?
    a. There is no such scope in this job.
24. Will the client be providing the artwork graphics for the locker room vinyl as well as the specification for the vinyl?
    a. General intent for custom graphic display wall, specifics to be designed and coordinated with Owner and Architect, as per specs.

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25. **See the attached MEP Addendum for MEP clarifications.*

CLARIFICATIONS / REVISIONS TO THE DRAWINGS

Architectural:

26. A2.41 – All stair landings shall be precast concrete to match stair risers/treads.
    a. Riser/tread profile is the design intent for stairs. Alternate profile, such as Stepstone LLC Closed Riser – Modern Profile, shall be acceptable. See attached for example.
    b. Support details for stair components shall be concealed.
27. A3.01 – The following changes shall be applied to the Finish legend and Finish schedule
    a. PT-2 PORCELAIN TILE (ACCENT) – AMERICAN OLEAN COLOR STORY WALL, DEVOTION 0086 GLOSSY
    b. PT-4 PORCELAIN TILE (WOOD LOOK) - AMERICAN OLEAN, CREEKWOOD, WALNUT BROOK CW98 MATTE
    c. The flooring shall be changed to PT-4 in the following rooms: Team Lobby 100, Reception 100A, Corridor 101

Structural:

28. S1.01 – Sheet has been revised to add clarity on probe and test piles

Mechanical, Electrical, Plumbing:

**See the attached MEP Addendum for MEP revisions and clarifications to the drawings.*

CLARIFICATIONS / REVISIONS TO THE SPECIFICATIONS

29. Section 01 20 00 – Price and Payment Procedures; Revisions to list the alternates
30. 07 42 43 - Composite Metal Wall Panel Systems; add the attached spec section
31. Section 07 41 13 – Prefinished Metal Roofing; Part 2.1.A.1 – Pac Clad 238T shall be changed to T-250
32. Section 07 62 00 – Sheet Metal Flashing and Trim; Replace section with the attached
33. Section 08 33 13 – Coiling Counter Doors; Section 2.2.G.1: Finish shall be Dark Bronze Anodized Aluminum, to match storefront
34. Section 08 41 13 – Aluminum Entrances and Storefront; Section 2.10 Finishes .A and B: Finish shall be Dark Bronze Anodized Aluminum
35. Section 08 71 00 – Door Hardware; schedule has been modified per RFI responses above.
36. Section 09 65 19 – Resilient Tile Flooring, Replace with the attached spec.

37. Section 09 96 20 – Decorative Epoxy Flooring, Replace with the attached spec. Product has changed to Resinous MMA Flooring

38. Section 10 14 00 – Signage; Item f under F1 – Digitally Printed Wall Wraps shall read "Level 5 finish for wall surface required."

39. Section 10 80 00 – Toilet Accessories; Revisions to quantities and contents.

ADDENDUM DRAWING SHEET INDEX:

The following sheets shall be replaced in their entirety or added if not previously issued

STRUCTURAL
S1.01

ELECTRICAL
E2.01, E3.01, E3.02, E5.00

ADDENDUM SPECIFICATION INDEX:

The following specification sections shall be replaced in their entirety or added if not previously issued

01 20 00	Price and Payment Procedures
07 42 43	Composite Metal Wall Panel Systems
07 62 00	Sheet Metal Flashing and Trim
08 71 00	Door Hardware
09 65 19	Resilient Tile Flooring
09 96 20	Resinous (MMA) Floowing
10 80 00	Toilet Accessories
27 41 16	Integrated AV System & Equipment
31 63 29	Drilled Concrete Piers and Shafts

PRIOR APPROVALS:

Note: Acceptance of a particular manufacturer does not excuse that manufacturer from meeting the plans and specification. Compliance with specifications is the responsibility of the prior approval manufacturer. Neither the full effects of using them nor the compatibility with the entire project have been evaluated. Any required changes or modifications to the project resulting from substitution(s) will be the responsibility of the contractor.

Division	Item	Manufacturer	Product Description
08 41 13	Aluminum Storefront/Windows	YKK AP	Aluminum Storefront/Windows
10 14 00	Signage	CSI / Rebel Graphix	290 Sign Systems – Essentials
10 14 00	Signage	Gemini Made	Exterior and Specialty Signage
10 51 33	Phenolic-Core Lockers	Summit Lockers	Phenolic Athletic Locker

****See the attached MEP Addendum for MEP prior approvals.*

FOX:NESBIT

New Baseball Stadium Athletic Complex Facility- Phase 2

Addendum No. 2
April 14, 2026

Changes to Drawings

a. Drawing S1.01 Foundation Plan – Replace previously issued sheet S1.01 in its entirety with the attached. Sheet added Probe Pile and Test Pile size, length, and location.

Changes to Specifications

a. Section 31 63 29, Drilled Concrete Piers and Shafts – Replace previously issued specification section in its entirety with the attached. Changes are highlighted in grey.
    - Clarification: Steel Casing is not required to install the shafts.
    - Clarification: The use of Slurry to install the shafts is required.
    - Information for the Probe Shaft and/or Static Test Shaft has been included.

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Lafayette, LA 70506
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April 16, 2026

Michael Olivier
RHH Architects, APAC
200 Government St, Ste 100
Baton Rouge, LA 70802

RE: LSUE New Baseball Stadium Athletic Facility Phase 2
MEP Addendum
ADG #25166

Dear Michael:

Please include the following mechanical, plumbing and electrical items in your next addendum:

PLUMBING ITEMS:

1. Drawing P1.01:
   a. The underground 2" gas line from the regulator to where the pipe enters the building to serve the gas dryer shall be HDPE (High-Density Polyethylene) in lieu of trac pipe as indicated.

2. Drawing P2.22:
   a. The elevator sump pump that is called out in keynote 6 shall be a Liberty Pump Oil-Tector Model ELV280 (1/2 HP, 120V, 1PH) or a Stancor Oil-Minder SE50 (1/2 HP, 120V, 1PH) Pump shall be capable of doing a minimum of 50 GPM @ 7ft of head.

1. General/Clarifications:
   a. The Expansion tanks ET-1 & ET-2 are specified in the Plumbing Fixture Schedule on Sheet P3.01. The following sizes apply to the water heater locations:

      - Water Heater WH-1 (50 gallon) gets expansion tank ET-1 (12 gallon).
      - Water Heater WH-2 (50 gallon) gets expansion tank ET-1 (12 gallon).
      - Water Heater WH-3 (20 gallon) gets expansion tank ET-2 (2 gallon).
      - Water Heater WH-4 (50 gallon) gets expansion tank ET-1 (12 gallon).

ELECTRICAL ITEMS:

2. Prior Approvals: Subject to compliance with the provisions of the Contract Documents, Specifications, the following manufacturers may be substituted.

MANUFACTURER	PRODUCT
Q-SYS	Amplifiers
Q-SYS	Audio Control
QSC	Audio Control
QSC	DSP
Yamaha	Speakers
Nexo	Speakers
Gotham IVO	Lighting
Nulite	Lighting
G-Lighting	Lighting
A-Light	Lighting
Metalux	Lighting
Portfolio	Lighting
Startek Lighting	Lighting
Neoray Lighting	Lighting
Selux Lighting	Lighting
Lumenwerx	Lighting
Diode LED	Lighting
Trace-Lite	Lighting
Ligman Lighting	Lighting
Lumenpulse	Lighting
Exitronix	Lighting
Day-Brite	Lighting
Lightolier	Lighting
Finelite	Lighting
Metalumen	Lighting
Birchwood	Lighting
Kelvix	Lighting
Archlit	Lighting
Techoled	Lighting
Gardco	Lighting
FC Lighting	Lighting
SSL	Lighting
Chloride	Lighting
Wattstopper	Lighting Controls

Contractor shall note that prior approval is by manufacturer's name only. Contractor shall ensure that the products used in preparation of his proposal and proposed to be used on this project is equivalent to that specified in appearance, performance, size, installation type, and shape. Any material found to not be equivalent to that specified will be rejected. Prior approval of one manufacturer does not automatically prior approve any subsidiary company, parent company and/or sister company and their associated products.

3. Ref Drawing E2.01R1 (attached):
   a. Replace previously issued sheet E2.01 in its entirety with the attached E2.01R1.

4. Ref Drawing E3.01R2 (attached):
   a. Replace previously issued sheet E3.01R1 in its entirety with the attached E3.01R2.

5. Ref Drawing E3.02R2 (attached):
   a. Replace previously issued sheet E3.02R1 in its entirety with the attached E3.02R2.

6. Ref Drawing E5.00R2 (attached):
   a. Replace previously issued sheet E5.00R1 in its entirety with the attached E5.00R2.

7. Specification 27 41 16 Integrated Audio System and Equipment (attached):
   a. Replace previously issued spec section 27 41 16 in its entirety with the attached revised specification.

8. General/Clarifications:
   a. The existing fire alarm system is a Honeywell Silent Knight 6820 with a Sigcom VECP-50 Voice Evac Panel.
   b. Lightning protection shall be included as part of the base bid.
   c. Contractor shall be responsible for providing all systems, equipment, cabling and accessories that will allow users to fully utilize the functionality described in specification 27 41 16 of each space and entire facility regarding the stadium audio system. It is the bidder's responsibility to provide the system functionally described in the specification for bid. Equipment required to provide described functions in the specification may not be explicitly stated/listed however must be included in bid with the necessary support devices and accessories. See equipment list attached to this addendum.
   d. General contractor shall be responsible for providing and installing blocking for speaker installation. The AV contractor shall provide and install the speaker mounting hardware.
   e. Contractor shall provide all necessary cabling/devices to integrate owner-provided equipment (TVs, monitors, projectors, etc.) into new sound system.
   f. Press box equipment (computers, live stream gear, cameras, microphones, etc.) shall be owner provided.
   g. Contractor shall provide floor box furniture feed for Conference Room 103 meeting table.
   h. There is an existing fiber run from the scoreboard to the data closet; contractor shall verify fiber type and match for re-routing.
   i. There is an existing fiber run from the data closet to the practice building; contractor shall verify fiber type and match for re-routing. See sheet E3.01R1 keynotes 10 and 27.
   j. Contractor shall provide and install one (1) 3/4"x10' ground rod at new service entrance disconnect at transformer pad. Connect to ground bar with a #3/0 stranded copper wire. Connection to ground rod shall be by exothermic weld and installed within inspection well. Existing ground rods at panel MD shall be reconnected to panel MD ground bar.
   k. Contractor shall provide and install multimode OM3 fiber from data closet network switch to AV rack network switch. Install in 2" conduit and us LC connectors for terminations. Contractor shall coordinate with owner IT department for creation of VLAN to isolate audio network from campus general network.

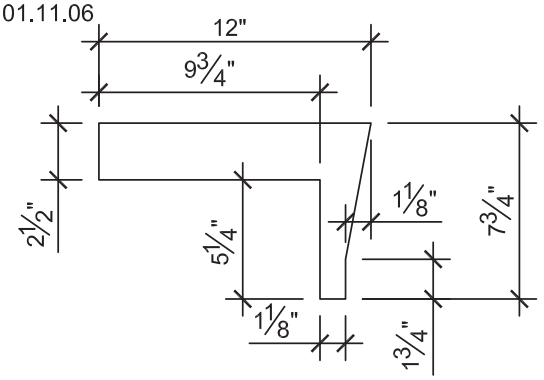
If you have any questions, please contact our office.

Thanks,

Connor J Martin, EI
Electrical Project Manager
ADG Engineering

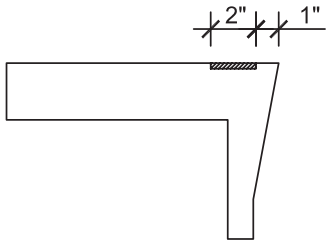
RHH: Acceptable detail

FILE: STP-0.1-06
REV: 01.11.06



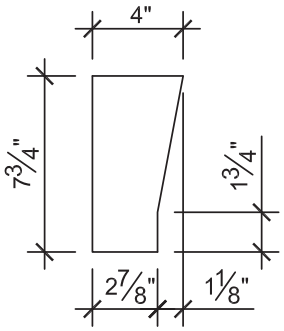
MODERN PROFILE

A



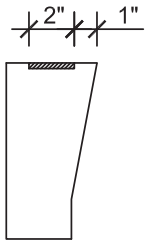
MODERN PROFILE WITH INTEGRAL AGGREGATE WARNING DETAIL

B



MODERN PROFILE STARTER NOSING

C



MODERN PROFILE STARTER NOSING WITH INTEGRAL AGGREGATE WARNING DETAIL

D

TREAD DETAILS-MODERN

SCALE: N.T.S.
FILE: STP-0.1-06

PRECAST CONCRETE TREADS, LANDINGS, AND BALCONIES SHOWN ON PLANS SHALL BE FROM THE "STEPTREAD" SYSTEM BY "STEPSTONE, INC." OF GARDENA, CA. FOR STEEL OR WOOD CONSTRUCTION. THE MANUFACTURER IS TO SUPPLY ALL PRECAST CONCRETE PARTS WITH EACH "STEPTREAD" AND FEATURING EITHER CAST IN THREADED INSERTS FOR BOLTING OR AN EMBEDDED BOTTOM WELD PLATE FOR WELDING. ALL REINFORCING AND CONNECTIONS WILL BE ZINC PLATED. ONLY ITEMS NOTED BY "STEPSTONE, INC." SHALL BE FURNISHED BY "STEPSTONE, INC." SUCH ITEMS SHALL BE INSTALLED BY OTHERS.

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GRADE BEAM SCHEDULE

Mark	Width	Depth	Top Bars	Bottom Bars	Ties
GB-A	1' - 6"	2' - 6"	(2)-#7 CONTINUOUS	(2)-#7 CONTINUOUS	#3 TIES AT 12" O.C.
GB-B	1' - 6"	2' - 0"	(2)-#7 CONTINUOUS	(2)-#7 CONTINUOUS	#3 TIES AT 12" O.C.
GB-C	4' - 0"	2' - 6"	(9)-#7 CONTINUOUS **	(7)-#7 CONTINUOUS	#4 TIES AT 12" O.C. *
GB-D	4' - 0"	3' - 6"	(9)-#9 CONTINUOUS **	(7)-#7 CONTINUOUS	#4 TIES AT 12" O.C. *

* #4 TIES AT 4" C/C FROM SHAFT CENTER LINE TO BEAM CANTILEVER END.
** BEND TOP BARS DOWN AT BEAM ENDS WITH CANTILEVER.

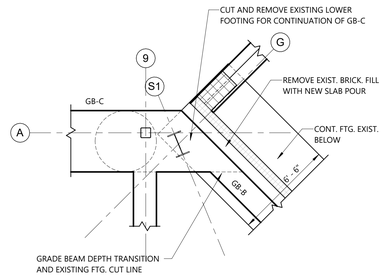
DRILLED SHAFT SCHEDULE

Mark	Diameter	Length	El. at Top	Reinforcement	Remarks
A	1' - 6"	35'-0"	-3'-2"	(1)-#9 FULL HEIGHT	
A.1	1' - 6"	20'-0"	Per Video Board	(1)-#9 FULL HEIGHT	
B	2' - 0"	40'-0"	-3'-2"	(6)-#7 FULL HEIGHT	ALTERNATE NO. 1
C	2' - 6"	40'-0"	-3'-2"	(6)-#7 FULL HEIGHT	
D	3' - 0"	40'-0"	-4'-2"	(8)-#7 FULL HEIGHT	
D.1	3' - 0"	40'-0"	-6'-10"	(8)-#7 FULL HEIGHT	
E	3' - 6"	40'-0"	-3'-2"	(8)-#7 FULL HEIGHT	
F	4' - 0"	40'-0"	-3'-2"	(10)-#7 FULL HEIGHT	

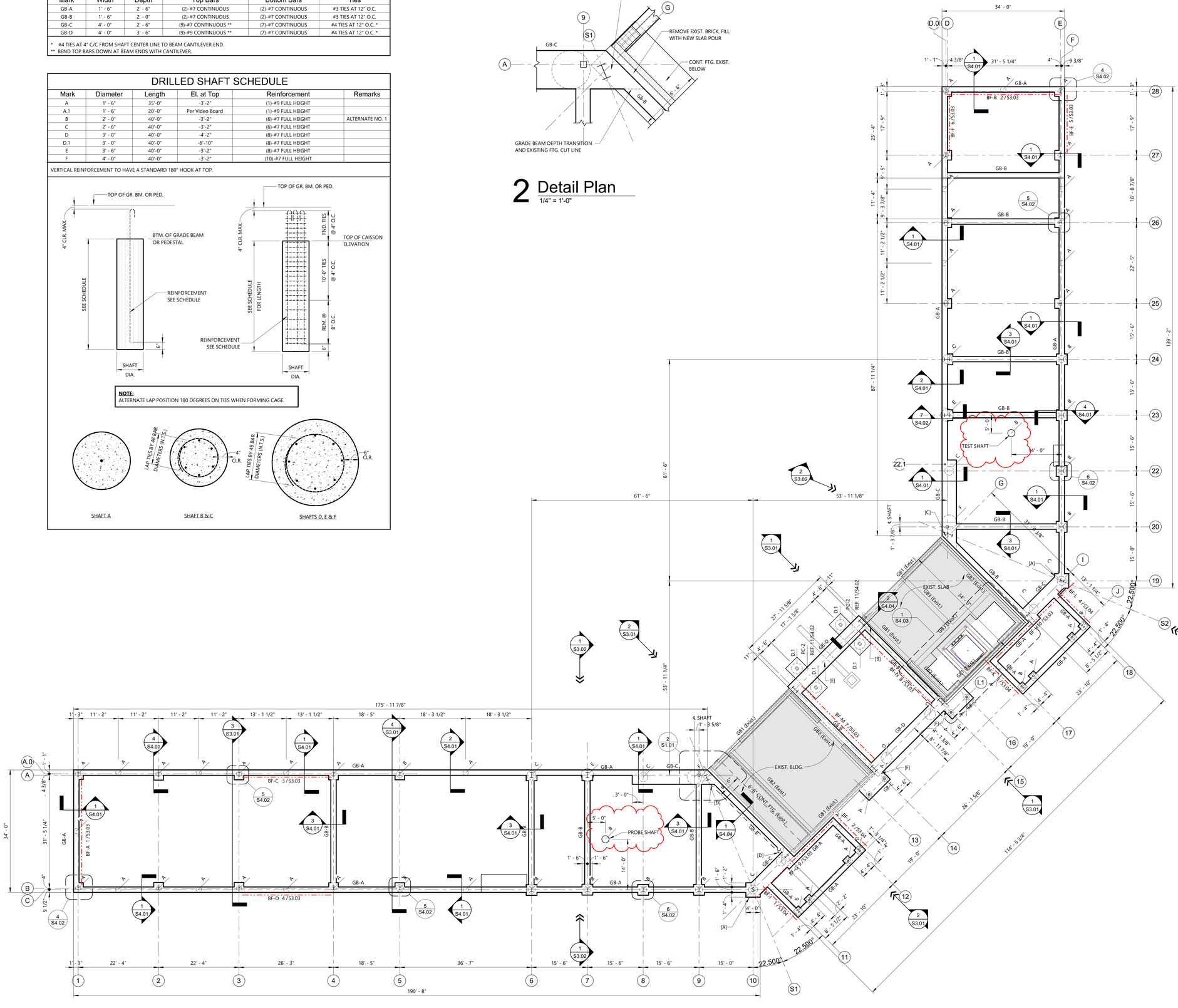
VERTICAL REINFORCEMENT TO HAVE A STANDARD 180° HOOK AT TOP.

NOTE:
ALTERNATE LAP POSITION 180 DEGREES ON TIES WHEN FORMING CAGE.

SHAFT A | SHAFT B & C | SHAFTS D, E & F



2 Detail Plan
1/4" = 1'-0"



1 FOUNDATION PLAN
3/32" = 1'-0"

FOUNDATION PLAN NOTES AND LEGEND:

THE TOP OF ALL GRADE BEAMS AND PEDESTALS SHALL BE AT EL. -0'-8", UNLESS NOTED OTHERWISE.

THE TOP OF ALL DRILL SHAFTS SHOWN UNDERNEATH GRADE BEAMS OR PEDESTALS SHALL BE AT EL. -3'-2", UNLESS NOTED OTHERWISE.

THE CENTER OF GRAVITY OF DRILL SHAFTS IS AT THE INTERSECTION OF COLUMN GRIDLINES OR CENTERED ON GRADE BEAM IF NO COLUMN IS PRESENT, UNLESS NOTED OTHERWISE.

ALL SHAFTS UNDERNEATH GRADE BEAM SHALL BE CENTERED ON GRADE BEAMS, UNLESS NOTED OTHERWISE.

PROVIDE #5 L-BAR (a=10", b= 26") DOWELS AT 24" O.C. ALONG TOP OF ALL GRADE BEAMS. SEE FOUNDATIONS DETAILS. FOR SEGMENTS OF GRADE BEAM BETWEEN BRACED FRAME COLUMNS, DECREASE DOWEL SPACING TO 12" O.C. SET TOP OF DOWEL BAR AT BOTTOM OF SLAB REINF.

ALL GRADE BEAMS SHALL BE PLACED OVER A 2" THICK CONCRETE DRY BOTTOM AS DEEMED APPROPRIATE BY THE CONTRACTOR IF A PRECIPITATION EVENT IS ANTICIPATED BEFORE CONCRETE PLACEMENT. EXPOSED FOOTING AND GRADE BEAM BOTTOMS THAT DO NOT CONTAIN DRY BOTTOMS SHALL NOT BE SUBJECTED TO A PRECIPITATION EVENT PRIOR TO PLACING CONCRETE. THE GRADE BEAM AND SPREAD FOOTING SUBGRADE SHALL BE APPROVED BY THE TESTING AGENCY FOR ADEQUATE BEARING CAPACITY PRIOR TO PLACEMENT OF DRY BOTTOMS/CONCRETE. DRY BOTTOMS/CONCRETE FOOTING SHALL BE PLACED AS SOON AS POSSIBLE AFTER APPROVAL AND NO PRECIPITATION EVENT SHALL OCCUR IN THE TIME BETWEEN APPROVAL AND PLACEMENT. DO NOT PLACE DRY BOTTOM CONCRETE OVER PILES/DRILLED SHAFTS.

SEE GENERAL NOTES FOR FORMING REQUIREMENTS OF FOUNDATION ELEMENTS.

SEE SPECIFICATION 31 2100 FOR EARTH MOVING AT BUILDING PAD REQUIREMENTS.

[A] = 4'-0" x 4'-0" PEDESTAL WITH (12) #6 AND (4) # 3 TIES EQUALLY SPACED.

[B] = EXISTING FOOTING INTERFERENCE. CUT AND REMOVE EXISTING FOOTING FLUSH WITH NEW GRADE BEAM AS REQUIRED TO PLACE NEW CONCRETE GRADE BEAM. DRILL AND DOWEL (4) #6 (2) TOP AND (2) BOTTOM INTO EXISTING. SET DOWELS INTO EXISTING 8" MINIMUM EMBED WITH EPOXY LISTED IN GENERAL NOTES SHEET S6.01. SEE DETAIL 2/S4.04.

[C] = FIBER IN THIS AREA. COORDINATE RELOCATION. SEE MECHANICAL AND ARCHITECTURAL DRAWINGS.

[D] = EXISTING CONTINUOUS FOOTING INTERFERENCE. CUT AND REMOVE EXISTING FOOTING AS REQUIRED TO PLACE NEW GRADE BEAM.

[E] = PROVIDE 1" THICK DECK-O-FOAM WRAP OVER TOP HALF OF EXISTING DRAIN PIPE WITHIN EXTENT OF NEW GRADE BEAM, GB-D. PLACE BETWEEN DRAIN PIPE AND GRADE BEAM GB-D INTERSECTION.

[F] = DOWEL BEAMS WITH (2) #7 T. & B. EXTEND THE WIDTH OF THE BEAM AND BEND ENDS 15" INTO GB-C AND GB-D.

PROBE SHAFT / TEST SHAFT: SEE SPECIFICATION 31 6329 FOR MORE INFORMATION.

RH ARCHITECTS

CONSULTANTS:
SELLERS & ASSOCIATES, INC.
CIVIL ENGINEER
FOX NESBIT ENGINEERING
STRUCTURAL ENGINEER
ASSOCIATED DESIGN GROUP
MECH./ELEC. ENGINEER

Project No. 19-605-22-02; State Building I.D.: New; WBS No. F.19002837 Site Code:

CONSTRUCTION DOCUMENTS for
NEW BASEBALL STADIUM ATHLETIC COMPLEX FACILITY - PHASE 2
LOUISIANA STATE UNIVERSITY EUNICE
LSUE Campus Drive, Eunice, LA 70535

PROJECT #: 25-72-25
DATE: 02/13/2026
FOR: CONSTRUCTION

REVISION	DATE
1 Addendum 2	4/14/26

STATE OF LOUISIANA
GLEN A. LANDRY
REG. No. 29356
2/13/26

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BATON ROUGE NEW ORLEANS
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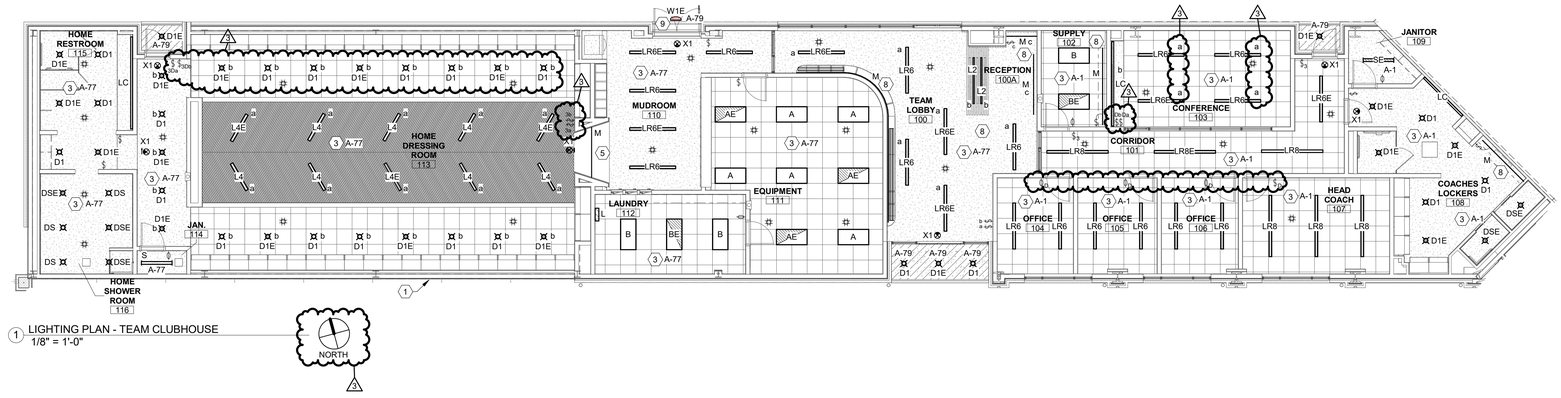
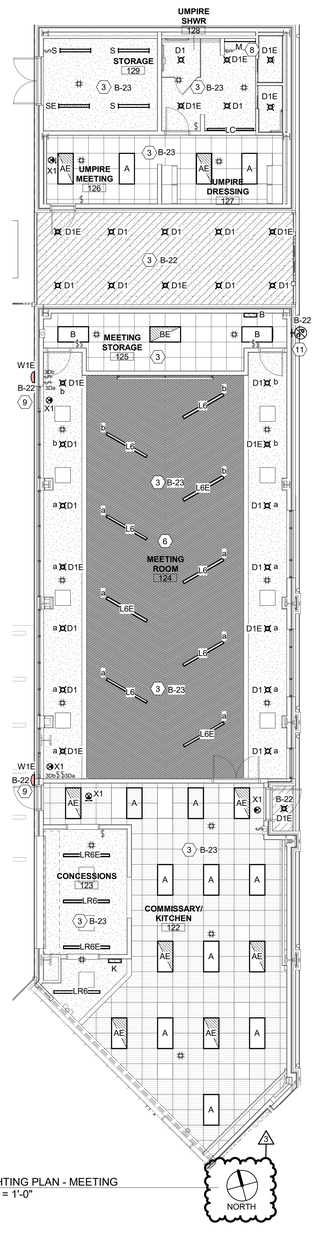
FOUNDATION PLAN

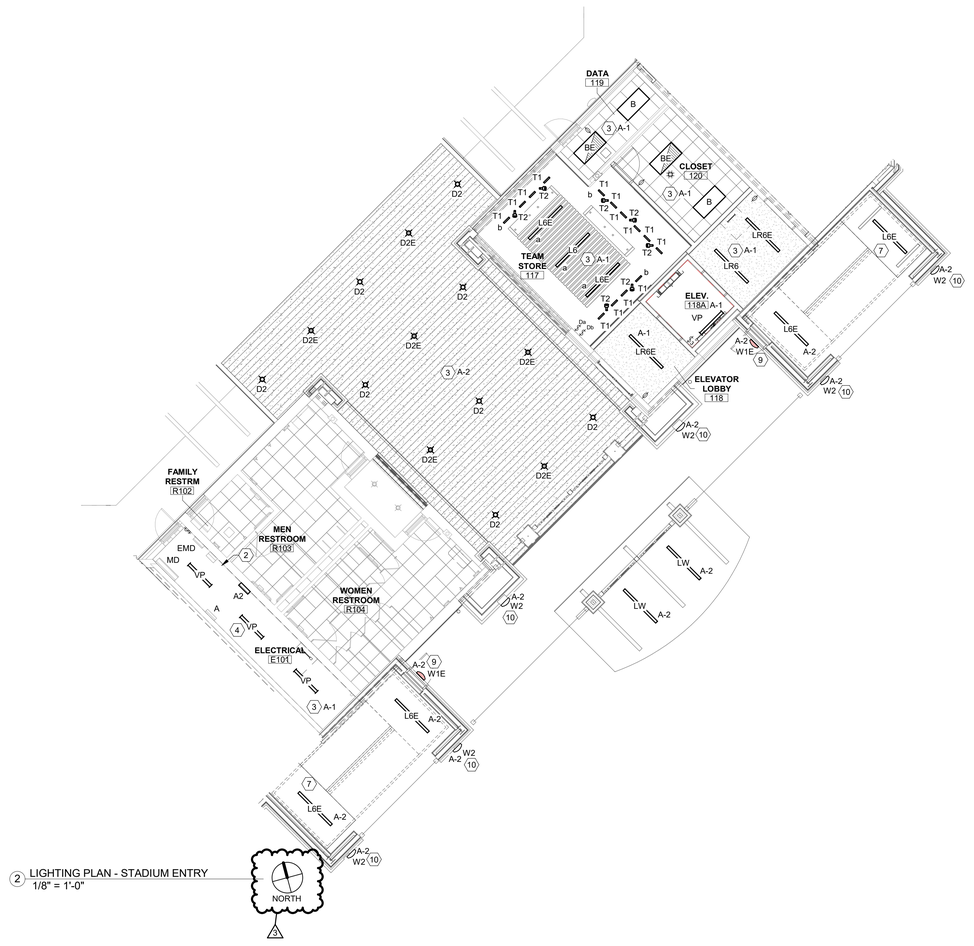
S1.01



1 LIGHTING PLAN - TEAM CLUBHOUSE
1/8" = 1'-0"



3 LIGHTING PLAN - MEETING
1/8" = 1'-0"



2 LIGHTING PLAN - STADIUM ENTRY
1/8" = 1'-0"

ELECTRICAL GENERAL NOTES:

A. CONTRACTOR SHALL REFER TO ALL OTHER PORTIONS OF THE CONTRACT DOCUMENTS (PLANS, SPECIFICATIONS, ADDENDA, ARCHITECTURAL SUPPLEMENTAL INSTRUCTIONS AND ANY APPROVED CHANGE ORDERS) AND PROVIDE ALL LIGHT FIXTURES, OUTLETS, TELE/DATA OUTLETS, SPEAKERS, AND ASSOCIATED CIRCUITRY AS IF ORIGINALLY INCLUDED ON THE ELECTRICAL PLANS. IF THERE ARE ANY DISCREPANCIES, CONTRACTOR SHALL NOTIFY ARCHITECT/ENGINEER IN WRITING PRIOR TO ORDERING EQUIPMENT, ROUGH-IN FOR EQUIPMENT AND/OR INSTALLATION OF EQUIPMENT. PRIOR TO ROUGH-IN OF EQUIPMENT, CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING COPIES OF APPROVED SHOP DRAWINGS OF SUCH EQUIPMENT AND REVIEWING SAID SUBMITTALS TO ENSURE COMPATIBILITY WITH THE ELECTRICAL SYSTEM. CONTRACTOR SHALL IMMEDIATELY NOTIFY ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BETWEEN THE REQUIRED ROUGH-IN REQUIREMENTS AND THE ELECTRICAL SYSTEM.

B. VERIFY EXACT MOUNTING HEIGHT OF ALL WALL MOUNTED FIXTURES W/ARCHITECT/OWNER PRIOR TO ROUGH-IN.

C. REFER TO ARCHITECTURAL REFLECTED CEILING FOR ALL CEILING MOUNTED DEVICES.

D. CONTRACTOR SHALL PROPERLY SEAL PENETRATIONS TO RATED ASSEMBLIES AND ALL EXTERIOR WALLS TO PROPERLY MAINTAIN RATING & ASSEMBLIES AND BUILDING ENVELOPE.

E. CIRCUITS SHALL HAVE DEDICATED NEUTRALS. NEUTRALS SHALL NOT BE SHARED.

F. AS A MINIMUM ALL ELECTRICAL WORK SHALL COMPLY WITH THE 2020 EDITION OF THE NATIONAL ELECTRICAL CODE.

G. REFER TO ELECTRICAL DIVISION SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

H. VERIFY REQUIREMENTS FOR ALL OWNER FURNISHED EQUIPMENT PRIOR TO ROUGH-IN.

I. ALL EXIT SIGNS SHALL BE 'UNSWITCHED'.

J. EXTERIOR LIGHTING CONTROLLED VIA PHOTOCELL AND TIMECLOCK COMBINATION.

K. SUBSCRIPTS AT LIGHT FIXTURE DESIGNATIONS DENOTE SWITCHING SCHEME.

L. CONTRACTOR SHALL COMPLY WITH ALL REQUIREMENTS OF THE INTERNATIONAL ENERGY CODE (IECC) 2021 RESIDENTIAL AND COMMERCIAL BUILDING ENERGY CODE FOR LIGHTING AND CONTROLS.

ELECTRICAL KEYNOTES:

1. CONTRACTOR SHALL PROVIDE POWER TO BACKLIT LSUE SIGNAGE AT APPROXIMATE LOCATION. REFER TO ARCHITECTURAL ELEVATIONS FOR EXACT MOUNTING HEIGHT. COORDINATE WITH SIGNAGE MANUFACTURER FOR EXACT ROUGH-IN LOCATION PRIOR TO ANY WORK. CIRCUIT TO A-79. SIGNAGE SHALL BE CONTROLLED VIA PHOTOCELL AND TIME CLOCK COMBINATION.
2. CONTRACTOR SHALL PROVIDE AND INSTALL DMX LIGHTING CONTROLLER (INSIGHT LIGHTING PHAROS-P2T OR APPROVED EQUIVALENT) AT APPROXIMATE LOCATION. CONTRACTOR SHALL INCLUDE ALL REQUIRED CABLING ACCESSORIES AND ROUGH-IN MATERIALS TO PROVIDE OWNER WITH A COMPLETE AND OPERATIONAL LIGHTING CONTROL SYSTEM. REFER TO LIGHTING PLANS FOR EXTERIOR LIGHTING TO BE CONTROLLED VIA DMX CONTROLLER.
3. CONTRACTOR SHALL CONNECT LIGHT FIXTURES IN THIS SPACE TO CIRCUIT INDICATED.
4. FIXTURE 'VP' SHALL BE SUSPENDED AT 15' AFF TO BOTTOM OF FIXTURE. CONTRACTOR SHALL COORDINATE FINAL HEIGHT WITH ARCHITECT AND OTHER TRADES TO AVOID ANY CONFLICTS. PROVIDE ALL NECESSARY ACCESSORIES TO SUSPENDED FIXTURES.
5. CONTRACTOR SHALL INSTALL RECESSED LED TAPE LIGHT IN LOCKER ROOM ENTRY WAY. REFER TO ARCHITECTURAL DETAILS FOR ADDITIONAL INFORMATION.
6. CONTRACTOR SHALL PROVIDE DAYLIGHT HARVESTING LIGHTING CONTROL FOR THIS SPACE.
7. FIXTURE SHALL BE INSTALLED UNDER SECOND FLOOR LANDING PLATFORM.
8. CONTRACTOR SHALL PROVIDE ALL REQUIRED ACCESSORIES, DRIVERS, MOUNTING EQUIPMENT NECESSARY TO PROPERLY INSTALL FIXTURE TYPE M. CONTRACTOR SHALL MOUNT ANY REQUIRED DRIVERS ABOVE ACCESSIBLE LAY-IN CEILING. IF NOT POSSIBLE, CONTRACTOR SHALL PROVIDE ACCESS PANEL IN CEILING FOR READY ACCESS TO DRIVER.
9. FIXTURE 'W1' SHALL BE MOUNTED 10' AFF TO BOTTOM OF FIXTURE. VERIFY FINAL MOUNTING HEIGHT WITH ARCHITECT PRIOR TO ROUGH-IN.
10. FIXTURE 'W2' SHALL BE MOUNTED 12' AFF TO CENTER OF FIXTURE. VERIFY FINAL MOUNTING HEIGHT WITH ARCHITECT PRIOR TO ROUGH-IN. LIGHTING SHALL BE CONTROLLED VIA DMX CONTROLLER. RUN CONTROL CABLING FROM FIXTURES TO LIGHTING CONTROLLER ON GROUND FLOOR IN ELECTRICAL E101.
11. PHOTOCELL. CONTRACTOR SHALL MOUNT 12' AFF. VERIFY FINAL MOUNTING HEIGHT WITH ARCHITECT PRIOR TO ROUGH-IN.

RHH ARCHITECTS

CONSULTANTS:
SELLERS & ASSOCIATES, INC. - CIVIL ENGINEER
FOX NESBIT ENGINEERING - STRUCTURAL ENGINEER
ASSOCIATED DESIGN GROUP - MECH./ELEC. ENGINEER
ASSOCIATED DESIGN GROUP - MECH./ELEC. ENGINEER

CONSTRUCTION DOCUMENTS for

NEW BASEBALL STADIUM ATHLETIC COMPLEX
FACILITY - PHASE 2

LOUISIANA STATE UNIVERSITY EUNICE
LSUE Campus Drive, Eunice, LA 70535

PROJECT #: 25-72-25
DATE: 02/13/2026
FOR: CONSTRUCTION

REVISION	DATE
3 ADDENDA #2	04/15/26
1 B.V. REVISIONS	02/13/26

STATE OF LOUISIANA
DAVID B. STELLY
License No. 26070
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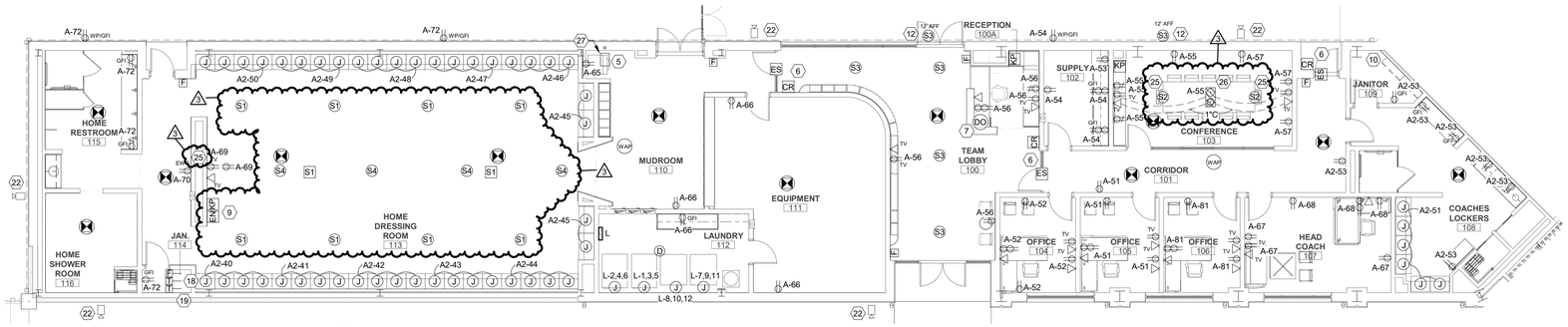
Project No. 25166

LIGHTING PLAN - GROUND LEVEL

E2.01R1



1 POWER & SPECIAL SYSTEMS PLAN - TEAM CLUBHOUSE
1/8" = 1'-0"

NORTH

ELECTRICAL KEYNOTES:

1. PULL BOX. CONTRACTOR TO INSTALL NEW PULL BOX AT APPROXIMATE LOCATION. REROUTE EXISTING CONDUIT AND CABLING FROM REMOVED PULL BOX PER E1.01 INTO NEW LOCATION.
2. EXISTING WIREWAY TO REMAIN.
3. CONTRACTOR SHALL INSTALL JUNCTION BOX FLUSH WITH CEILING FOR PROJECTOR. COORDINATE WITH MANUFACTURER INSTALL REQUIREMENTS PRIOR TO ROUGH-IN. CIRCUIT AS INDICATED.
4. CONTRACTOR SHALL INSTALL JUNCTION BOX ABOVE CEILING FOR MOTORIZED PROJECTOR SCREEN. COORDINATE WITH MANUFACTURER INSTALL REQUIREMENTS PRIOR TO ROUGH-IN. CIRCUIT AS INDICATED.
5. EXISTING PULL BOX TO REMAIN. CONTRACTOR SHALL BRING PULL BOX FLUSH WITH NEW BUILDING FOUNDATION PAD.
6. ELECTRIC STRIKE (DEVICE BY OWNER) ROUGH-IN SHALL CONSIST OF 1" CONDUIT EMT RUN WITHIN DOOR FRAME FROM LATCHING MECHANISM AND STUBBED UP ABOVE NEAREST ACCESSIBLE CEILING. CARD READER STATION AND EMERGENCY ASSEMBLY STATION (BY OWNER) ROUGH-IN SHALL CONSIST OF SINGLE GANG BACKBOX (COORDINATE HEIGHT/LOCATION WITH OWNER/ARCHITECT) WITH 1" CONDUIT EMT STUBBED UP ABOVE NEAREST ACCESSIBLE CEILING. PROVIDE PULLSTRING AND NYLON BUSHING AT END OF ALL CONDUIT STUB UPS FOR ACCESS CONTROL DEVICES. VERIFY DEVICE LOCATIONS WITH OWNER/ARCHITECT PRIOR TO ROUGH-IN. OWNER VENDOR SHALL PROVIDE ALL NECESSARY MATERIALS AND LABOR TO COMPLETE AN OPERATIONAL SYSTEM.
7. CONTRACTOR SHALL PROVIDE RECEPTION DESK WITH ROUGH-IN FOR REMOTE RELEASE FOR DOORS IDENTIFIED BY OWNER.
8. TRANSFORMERS ARE STACKED IN THIS LOCATION. REFER TO RISER AND ELECTRICAL DETAILS FOR FURTHER INFORMATION.
9. CONTRACTOR SHALL INSTALL SOUND SYSTEM CONTROL TOUCH PAD FOR LOCKER ROOM. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION. MOUNT TOUCH PAD AT 48" AFF. COORDINATE WITH ARCHITECT/OWNER FOR FINAL HEIGHT AND LOCATION PRIOR TO ROUGH-IN.
10. CONTRACTOR SHALL EXTEND EXISTING FIBER GOING TO PRACTICE BUILDING, AT APPROXIMATE STARTING LOCATION INDICATED, ABOVE CEILING TO EXISTING PULL BOX LOCATION SEE KEYNOTE #5. FIBER SHALL BE SUSPENDED IN FREE AIR AND J-HOOKS ABOVE ACCESSIBLE CEILING. CABLE SHALL TRANSITION TO CONDUIT IN WALL AND INTERCEPT EXISTING PULL BOX; NO CONDUIT SHALL BE VISIBLE.
11. CONTRACTOR SHALL INCLUDE AND INTEGRATE FIREMAN CALL WITH ELEVATOR CONTROL PANEL AND BUILDING FIRE ALARM. COORDINATE WITH ELEVATOR CONTRACTOR AND ELEVATOR SHOP DRAWINGS PRIOR TO ROUGH-IN.
12. CONTRACTOR SHALL INSTALL 1" SLEEVE FOR SPEAKER CABLING.
13. CONTRACTOR SHALL INCLUDE HDMI INPUT WITH DATA INPUT AT LOCATION INDICATED. CONTRACTOR SHALL INSTALL 1" CONDUIT FOR HDMI CABLING IN WALL TO PROJECTOR CEILING LOCATION.
14. CONTRACTOR SHALL INCLUDE PROJECT SCREEN SWITCH AND INSTALL AT LOCATION INDICATED. VERIFY FINAL LOCATION WITH ARCH/OWNER PRIOR TO ROUGH-IN.
15. CONTRACTOR SHALL INTEGRATE HOOD CONTROL PANEL AND FIRE SUPPRESSION SYSTEM WITH FACILITY FIRE ALARM SYSTEM; PROVIDE ALL REQUIRED RACEWAYS AND CABLING. CONTRACTOR SHALL PROVIDE ALL NECESSARY AUXILIARY CONTACTS TO PROVIDE SHUNT TRIP CONTROL FOR ALL KITCHEN EQUIPMENT GAS VALVES UNDERNEATH HOOD AND INLINE MAKE UP AIR FAN. REFER TO FOOD SERVICE SHEETS FOR ALL LOW-VOLTAGE CONNECTIONS.
16. MANUAL ACTIVATION FOR HOOD FIRE SUPPRESSION SYSTEM. REFER TO FOOD SERVICE PLANS FOR REQUIREMENTS. COORDINATE FINAL LOCATION WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.
17. CONTRACTOR SHALL DISCONNECT AND REMOVE PANEL MD FEEDERS BACK TO TRANSFORMER. PANEL MD SHALL BE INCREASED IN CAPACITY TO 1000A IN LIEU OF EXISTING 800A. CONTRACTOR SHALL PROVIDE AND INSTALL NEW MLO NEMA 1 PANELBOARD WITHIN CONFINES OF EXISTING SPACE AND SEPARATE NEUTRAL AND GROUNDING CONDUCTORS. CONTRACTOR SHALL REFER TO ELECTRICAL RISER DIAGRAM FOR NEW MAIN FEEDERS. CONTRACTOR SHALL COORDINATE WITH CLECO TO DE-ENERGIZE TRANSFORMER FOR WORK ABOVE. CONTRACTOR SHALL PROVIDE AND INSTALL HYDRAULICALLY CRIMPED 90°C COMPRESSIVE PINS ON EACH END OF THE FEEDERS AT THE TRANSFORMER AND PANEL MD TERMINATIONS.
18. CONTRACTOR SHALL INTEGRATE TAMPER AND FLOW SWITCHES TO FACILITY FIRE ALARM SYSTEM. PROVIDE 120V POWER TO SWITCHES FROM NEAREST AVAILABLE CIRCUIT AS NEEDED.
19. CONTRACTOR SHALL PROVIDE 2p30A FDS AND INSTALL INSIDE BFP (BACKFLOW PREVENTER) HOT BOX; CIRCUIT HOT BOX TO A2-46. INCLUDE TWO (2) TAMPER SWITCHES AND INTEGRATE WITH FACILITY FIRE ALARM SYSTEM. CONTRACTOR SHALL REFER TO CIVIL SITE UTILITIES PLAN FOR EXACT LOCATION FOR BACKFLOW HOT BOX.
20. ELEVATOR MAIN POWER DISCONNECT SHALL BE LOCATED AT TOP OF ELEVATOR HOISTWAY NEAR ELEVATOR EQUIPMENT. CONTRACTOR SHALL REFER TO APPROVED ELEVATOR SHOP DRAWINGS FOR ALL REQUIRED ROUGH-INS AND EQUIPMENT LOCATIONS PRIOR TO ROUGH-IN.
21. CONTRACTOR SHALL PROVIDE AND INSTALL A NEW UPS (APC SMX3000RMLV2UNC OR APPROVED EQUIVALENT) AND 24-PORT PoE SWITCH (CISCO C9200L-24P-4G OR APPROVED EQUIVALENT) IN THE EXISTING NETWORK RACK.
22. CAMERA BACK BOX SHALL BE WALL MOUNTED 12'-0" AFF. PROVIDE AND INSTALL PULLSTRING FOR FUTURE CABLING. VERIFY FINAL MOUNTING AND LOCATION WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN. 3/4" CONDUIT SHALL BE INSTALLED IN INACCESSIBLE SPACES AND IN/THROUGH WALLS
23. CAMERA BACK BOX TO BE CEILING MOUNTED. PROVIDE AND INSTALL PULLSTRING FOR FUTURE CABLING. VERIFY FINAL LOCATION WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN. 3/4" CONDUIT SHALL BE INSTALLED IN INACCESSIBLE SPACES AND IN/THROUGH WALLS.
24. CONTRACTOR SHALL INSTALL TWO (2) 3" SLEEVES IN CMU WALL ABOVE CEILING FOR NETWORK AND FIRE ALARM CABLING.
25. CONTRACTOR SHALL MOUNT AV DECODER BEHIND MONITOR OR ABOVE PROJECTOR. VERIFY MONITOR FINAL MOUNTING HEIGHT/LOCATION WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.
26. CONTRACTOR SHALL INSTALL AUDIO ENCODER (REFER TO SYMBOL 'EN' IN LEGEND FOR DEVICE) IN PULL BOX.
27. FIBER SHALL BE RERUN TO PRACTICE BUILDING FROM PULL BOX.

FIRE ALARM SYSTEM REQUIREMENTS:

IT IS THE INTENT OF THESE CONTRACT DOCUMENTS THE EXISTING FIRE ALARM SYSTEM BE EXTENDED/EXPANDED TO PROVIDE PROPER NFPA 101/72 COVERAGE FOR NEW STADIUM ADDITIONS (CLUB HOUSE WING, MEETING/UMPIRE WING AND UPPER SUITE/PRESS BOX LEVEL). ALL AUDIBLE DEVICES SHALL BE VOICE-EVAC/STROBE. THE BIDDER SHALL INCLUDE ALL LASFM REQUIRED SUBMITTAL INFORMATION AND FEES IN BID. BIDDER SHALL BE LOCAL FACTORY AUTHORIZED DEALER OF EXISTING SYSTEM AND INCLUDE CERTIFICATION OF SUCH IN SUBMITTALS.

IT IS THE BIDDER'S RESPONSIBILITY TO VERIFY SPECIFIC EQUIPMENT NEEDS AND COORDINATE WITH THE ELECTRICAL CONTRACTOR TO OBTAIN DESIRED 120 VOLT POWER FOR EQUIPMENT AND COMMUNICATION. FIRE ALARM SHALL BE INTERCONNECTED WITH STADIUM SOUND SYSTEM FOR OVERRIDE FOR VOICE EVACUATION AUDIBLE NOTIFICATION.

ALL CABLING THRU CORRIDOR OR NEW CONSTRUCTION WALLS SHALL BE SLEEVED (UTILIZE EMT - 2"C MIN.) ALL WIRING SHALL BE RUN IN NEW RACEWAYS - CONCEALED UNLESS RUNNING ABOVE ACCESSIBLE SUSPENDED ACOUSTICAL CEILINGS - J HOOKS REQUIRED THESE SPACES.

ELECTRICAL GENERAL NOTES:

A. CONTRACTOR SHALL REFER TO ALL OTHER PORTIONS OF THE CONTRACT DOCUMENTS (PLANS, SPECIFICATIONS, ADDENDA, ARCHITECTURAL SUPPLEMENTAL INSTRUCTIONS AND ANY APPROVED CHANGE ORDERS) AND PROVIDE ALL LIGHT FIXTURES, OUTLETS, TELE/DATA OUTLETS, SPEAKERS, AND ASSOCIATED CIRCUITRY AS IF ORIGINALLY INCLUDED ON THE ELECTRICAL PLANS. IF THERE ARE ANY DISCREPANCIES, CONTRACTOR SHALL NOTIFY ARCHITECT/ENGINEER IN WRITING PRIOR TO ORDERING EQUIPMENT, ROUGH-IN FOR EQUIPMENT AND/OR INSTALLATION OF EQUIPMENT. PRIOR TO ROUGH-IN OF EQUIPMENT, CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING COPIES OF APPROVED SHOP DRAWINGS OF SUCH EQUIPMENT AND REVIEWING SAID SUBMITTALS TO ENSURE COMPATIBILITY WITH THE ELECTRICAL SYSTEM. CONTRACTOR SHALL IMMEDIATELY NOTIFY ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BETWEEN THE REQUIRED ROUGH-IN REQUIREMENTS AND THE ELECTRICAL SYSTEM.

B. COORDINATE INSTALLATION OF ALL CEILING MOUNTED DEVICES WITH ARCHITECT PRIOR TO ROUGH-IN.

C. COORDINATE EXACT PLACEMENT FOR ALL DEVICES WHERE MILLWORK IS PRESENT PRIOR TO ROUGH-IN. DO NOT ROUGH-IN BEHIND CABINETS, DRAWERS, ETC RENDERING DEVICE UNUSABLE.

D. CONTRACTOR SHALL PROPERLY SEAL PENETRATIONS TO RATED ASSEMBLIES AND ALL EXTERIOR WALLS TO PROPERLY MAINTAIN RATING & ASSEMBLIES AND BUILDING ENVELOPE.

E. CONTRACTOR SHALL VISIT THE SITE AND FIELD VERIFY EXISTING CONDITIONS PRIOR TO BIDDING ANY WORK TO BE DONE.

F. AS A MINIMUM ALL ELECTRICAL WORK SHALL COMPLY WITH THE 2020 EDITION OF THE NATIONAL ELECTRICAL CODE.

G. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

H. RECEPTACLES WITHIN 6' OF A SINK OR LAVATORY SHALL HAVE GFCI PROTECTION.

I. ALL 120V 15A & 20 RECEPTACLES IN FOOD PREP AREAS SHALL BE GFCI PROTECTED AS REQUIRED BY NEC.

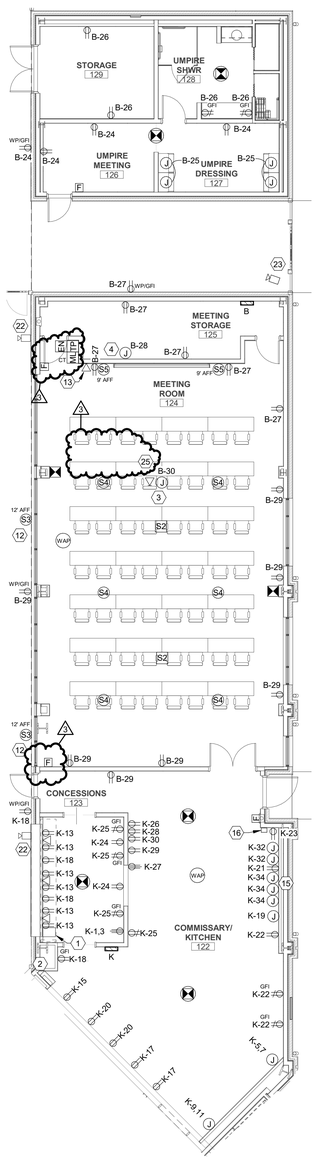
J. ALL NEW CIRCUIT BREAKERS WITHIN EACH EXISTING PANELBOARD SHALL BE THE SAME MANUFACTURER TYPE, STYLE AND A.I.C. RATING OF EXISTING PANELBOARD.

K. VERIFY REQUIREMENTS FOR ALL OWNER FURNISHED EQUIPMENT PRIOR TO ROUGH-IN.

L. REFER TO ARCHITECTURAL REFLECTED CEILING FOR ALL CEILING MOUNTED DEVICES.

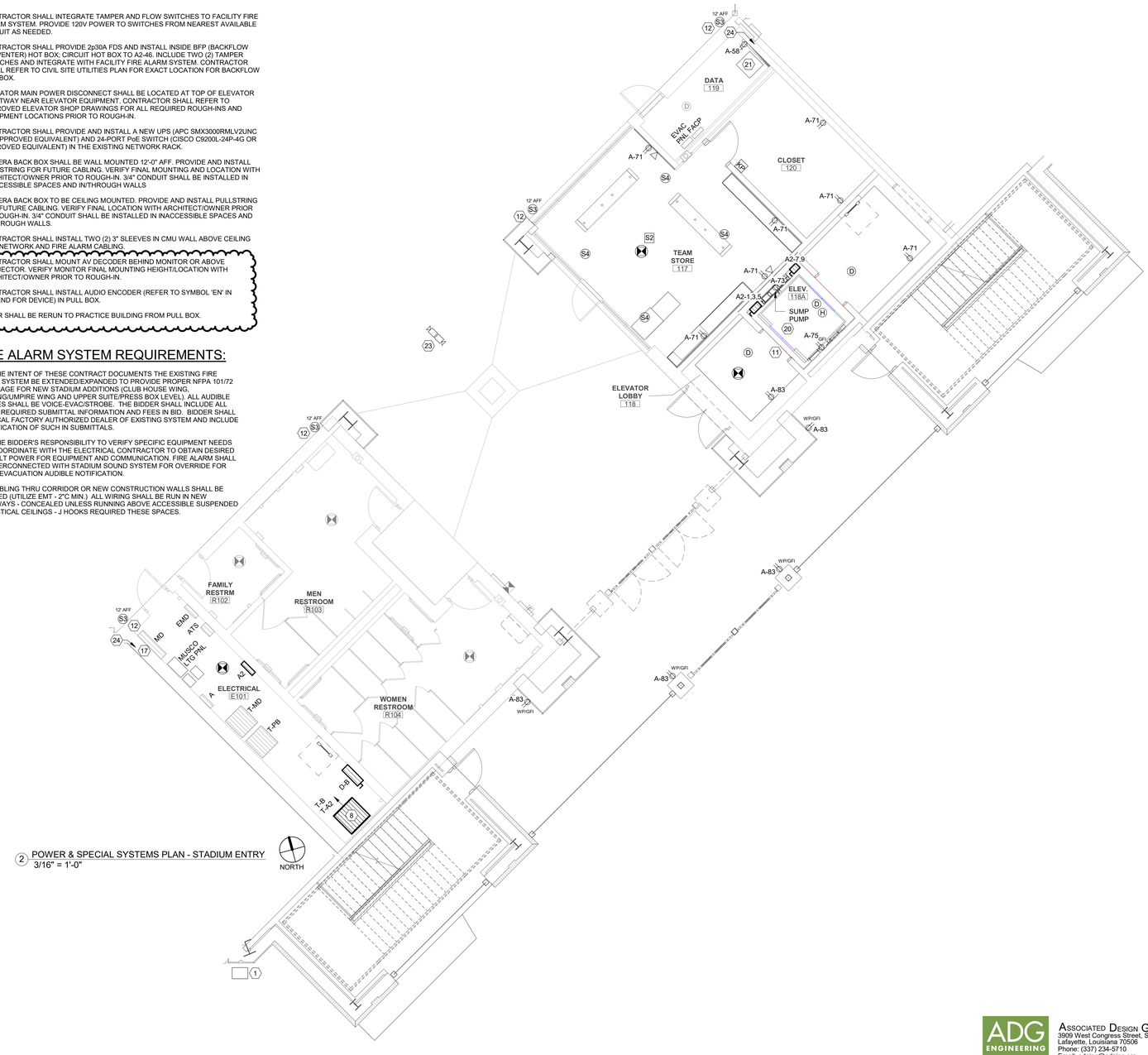
M. CIRCUITS SHALL HAVE DEDICATED NEUTRALS. NEUTRALS SHALL NOT BE SHARED.

N. WIRELESS ACCESS POINT (WAP) LOCATION(S) SHALL BE COORDINATED WITH ARCHITECTURAL RCP AND ALL OTHER TRADES. COORDINATE LOCATIONS WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN. CONTRACTOR SHALL PROVIDE HPE ARUBA635 OR APPROVED EQUIVALENT.



3 POWER & SPECIAL SYSTEMS PLAN - MEETING
1/8" = 1'-0"

NORTH



2 POWER & SPECIAL SYSTEMS PLAN - STADIUM ENTRY
3/16" = 1'-0"

NORTH

CONSULTANTS:
SELLERS & ASSOCIATES, INC. — CIVIL ENGINEER
FOX NESBIT ENGINEERING — STRUCTURAL ENGINEER
ASSOCIATED DESIGN GROUP — MECH/ELEC. ENGINEER
ASSOCIATED DESIGN GROUP — MECH/ELEC. ENGINEER

CONSTRUCTION DOCUMENTS for

NEW BASEBALL STADIUM COMPLEX
FACILITY - PHASE 2

LOUISIANA STATE UNIVERSITY EUNICE
LSUE Campus Drive, Eunice, LA 70535

PROJECT #: 25-72-25
DATE: 02/13/2026
FOR: CONSTRUCTION

REVISION	DATE
3 ADDENDA #2	04/15/26
2 ADDENDA #1	04/08/26
1 B.V. REVISIONS	02/13/26

STATE OF LOUISIANA
DAVID B. STELLY
License No. 26070
04/15/2026
PROFESSIONAL ENGINEER

POWER & SPECIAL SYSTEMS PLAN - GROUND LEVEL

E3.01R2

ASSOCIATED DESIGN GROUP, INC.
3909 West Congress Street, Suite 201
Lafayette, Louisiana 70506
Phone: (337) 234-5710
Email: adginc@adginc.org

Project No. 25166

ELECTRICAL GENERAL NOTES:

A. CONTRACTOR SHALL REFER TO ALL OTHER PORTIONS OF THE CONTRACT DOCUMENTS (PLANS, SPECIFICATIONS, ADDENDA, ARCHITECTURAL SUPPLEMENTAL INSTRUCTIONS AND ANY APPROVED CHANGE ORDERS) AND PROVIDE ALL LIGHT FIXTURES, OUTLETS, TELE/DATA OUTLETS, SPEAKERS, AND ASSOCIATED CIRCUITRY AS IF ORIGINALLY INCLUDED ON THE ELECTRICAL PLANS. IF THERE ARE ANY DISCREPANCIES, CONTRACTOR SHALL NOTIFY ARCHITECT/ENGINEER IN WRITING PRIOR TO ORDERING EQUIPMENT, ROUGH-IN FOR EQUIPMENT AND/OR INSTALLATION OF EQUIPMENT. PRIOR TO ROUGH-IN OF EQUIPMENT, CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING COPIES OF APPROVED SHOP DRAWINGS OF SUCH EQUIPMENT AND REVIEWING SAID SUBMITTALS TO ENSURE COMPATIBILITY WITH THE ELECTRICAL SYSTEM. CONTRACTOR SHALL IMMEDIATELY NOTIFY ARCHITECT/ENGINEER IN WRITING OF ANY DISCREPANCIES BETWEEN THE REQUIRED ROUGH-IN REQUIREMENTS AND THE ELECTRICAL SYSTEM.

B. COORDINATE INSTALLATION OF ALL CEILING MOUNTED DEVICES WITH ARCHITECT PRIOR TO ROUGH-IN.

C. COORDINATE EXACT PLACEMENT FOR ALL DEVICES WHERE MILLWORK IS PRESENT PRIOR TO ROUGH-IN. DO NOT ROUGH-IN BEHIND CABINETS, DRAWERS, ETC RENDERING DEVICE UNUSABLE.

D. CONTRACTOR SHALL PROPERLY SEAL PENETRATIONS TO RATED ASSEMBLIES AND ALL EXTERIOR WALLS TO PROPERLY MAINTAIN RATING & ASSEMBLIES AND BUILDING ENVELOPE.

E. CONTRACTOR SHALL VISIT THE SITE AND FIELD VERIFY EXISTING CONDITIONS PRIOR TO BIDDING ANY WORK TO BE DONE.

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G. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

H. RECEPTACLES WITHIN 6' OF A SINK OR LAVATORY SHALL HAVE GFCI PROTECTION.

I. ALL 120V 15A & 20 RECEPTACLES IN FOOD PREP AREAS SHALL BE GFCI PROTECTED AS REQUIRED BY NEC.

J. ALL NEW CIRCUIT BREAKERS WITHIN EACH EXISTING PANELBOARD SHALL BE THE SAME MANUFACTURER TYPE, STYLE AND A.I.C. RATING OF EXISTING PANELBOARD.

K. VERIFY REQUIREMENTS FOR ALL OWNER FURNISHED EQUIPMENT PRIOR TO ROUGH-IN.

L. REFER TO ARCHITECTURAL REFLECTED CEILING FOR ALL CEILING MOUNTED DEVICES.

M. CIRCUITS SHALL HAVE DEDICATED NEUTRALS. NEUTRALS SHALL NOT BE SHARED.

N. SPEAKER CABLING SHALL BE RUN FREE AIR ABOVE ACCESSIBLE CEILING WITH J-HOOKS AND IN CONDUIT IN UNACCESSIBLE SPACES AND EXTERIOR LOCATIONS.

O. WIRELESS ACCESS POINT (WAP) LOCATION(S) SHALL BE COORDINATED WITH ARCHITECTURAL RCP AND ALL OTHER TRADES. COORDINATE LOCATIONS WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN. CONTRACTOR SHALL PROVIDE HPE ARUBA635 OR APPROVED EQUIVALENT.

ELECTRICAL KEYNOTES:

1. CONTRACTOR SHALL INSTALL WALL SLEEVES FOR CABLE PASS THROUGH.
2. CONTRACTOR SHALL RELOCATE SCOREBOARD EQUIPMENT RACK FROM DATA CLOSET TO PRESS BOX AT APPROXIMATE LOCATION INDICATED. VERIFY FINAL LOCATION WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN. CONTRACTOR SHALL RE-PULL FIBER LINE FROM SCOREBOARD TO NEW RACK LOCATION.
3. EACH DUPLEX RECEPTACLE SHALL BE A DEDICATED CIRCUIT FOR THE INDICATED DOUBLE DUPLEX. CIRCUIT AS INDICATED.
4. EACH SOCKET SHALL BE A DEDICATED CIRCUIT FOR THE INDICATED DUPLEX RECEPTACLE. CIRCUIT AS INDICATED.
5. CONTRACTOR SHALL RUN 1" CONDUIT FOR SPEAKER CABLING FROM SOUND RACK TO SPEAKER LOCATION INDICATED.
6. CONTRACTOR SHALL INTEGRATE TAMPER AND FLOW SWITCHES TO FACILITY FIRE ALARM SYSTEM. PROVIDE 120V POWER TO SWITCHES FROM NEAREST AVAILABLE CIRCUIT AS NEEDED.
7. CAMERA BACK BOX SHALL BE WALL MOUNTED 12'-0" AFF. PROVIDE AND INSTALL PULLSTRING FOR FUTURE CABLING. VERIFY FINAL MOUNTING AND LOCATION WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN. 3/4" CONDUIT SHALL BE INSTALLED IN INACCESSIBLE SPACES AND INTHROUGH WALLS
8. TRACKMAN V3 CAMERA (PROVIDED BY CONTRACTOR) SHALL BE MOUNTED 11'-3" AFF. VERIFY FINAL MOUNTING HEIGHT WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN. CONTRACTOR SHALL PROVIDE 120V POWER FROM C-58. PROVIDE AND INSTALL CAT6 CABLE FROM CAMERA TO NETWORK SWITCH IN DATA CLOSET.
9. CONTRACTOR SHALL MOUNT AV DECODER (REFER TO SYMBOL LEGEND 'DN') BEHIND MONITOR OR ABOVE PROJECTOR. VERIFY MONITOR FINAL MOUNTING HEIGHT/LOCATION WITH ARCHITECT/OWNER PRIOR TO ROUGH-IN.
10. APPROXIMATE LOCATION OF STADIUM SOUND SYSTEM. ALL EQUIPMENT (DSPs, AMPLIFIERS, NETWORK SWITCHES, POWER SUPPLIES, UPSs, SEQUENCERS, ETC.) SHALL BE LOCATED AT THIS LOCATION IN RACK.
11. CONTRACTOR SHALL INCLUDE A WIRELESS MICROPHONE ANTENNA AND MICROPHONE. MICROPHONE ANTENNA SHALL BE LOCATED ON FRONT OF PRESS BOX JUST ABOVE WINDOW. WIRE ANTENNA INTO AUDIO SYSTEM RACK USE 1/2" CONDUIT.

FIRE ALARM SYSTEM REQUIREMENTS:

IT IS THE INTENT OF THESE CONTRACT DOCUMENTS THE EXISTING FIRE ALARM SYSTEM BE EXTENDED/EXPANDED TO PROVIDE PROPER NFPA 101/72 COVERAGE FOR NEW STADIUM ADDITIONS (CLUB HOUSE WING, MEETING/UMPIRE WING AND UPPER SUITE/PRESS BOX LEVEL). ALL AUDIBLE DEVICES SHALL BE VOICE-EVAC/STROBE. THE BIDDER SHALL INCLUDE ALL LASFM REQUIRED SUBMITTAL INFORMATION AND FEES IN BID. BIDDER SHALL BE LOCAL FACTORY AUTHORIZED DEALER OF EXISTING SYSTEM AND INCLUDE CERTIFICATION OF SUCH IN SUBMITTALS.

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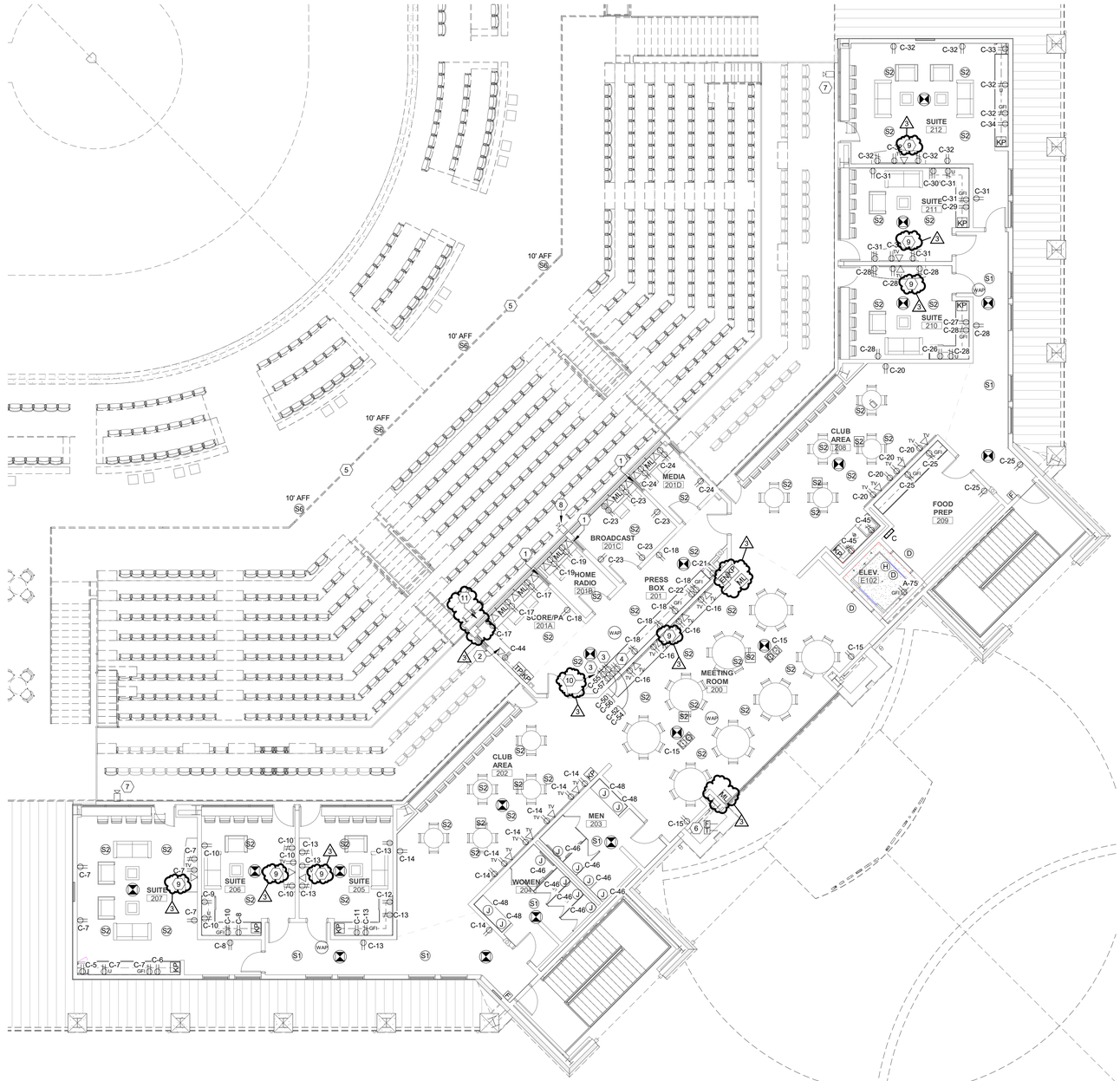

1 POWER & SPECIAL SYSTEMS PLAN - SUITE LEVEL
1/8" = 1'-0"

RH ARCHITECTS

CONSULTANTS:
SELLERS & ASSOCIATES, INC. — CIVIL ENGINEER
FOX NESBIT ENGINEERING — STRUCTURAL ENGINEER
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04/15/2026
PROFESSIONAL ENGINEER

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Project No. 25166

POWER & SPECIAL SYSTEMS PLAN - SUITE LEVEL

E3.02R2

ELECTRICAL ABBREVIATION

Ø	PHASE
A	AMPERE
AC	ARMOR CLAD CABLE
AF	ABOVE FLOOR / AMPERE FRAME
AFCI	ARC-FAULT CIRCUIT INTERRUPTING
AFF	ABOVE FINISHED FLOOR
AFI	ARC FAULT INTERRUPTING
AHU	AIR HANDLING UNIT
AIC	AMPERE INTERRUPTING CAPACITY
AL	ALUMINUM
AM	AMMETER
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ATS	AUTOMATIC TRANSFER SWITCH
AV	AUDIO VISUAL
AWG	AMERICAN WIRE GAUGE
BAS	BUILDING AUTOMATION SYSTEM
BKBD	BACKBOARD
BKR	CIRCUIT BREAKER
C	CONDUIT
CAT	CATALOG
CATV	CABLE ANTENNA TELEVISION
C/B	CIRCUIT BREAKER
CBA	CODE BLUE ANNUNCIATOR PANEL
CCTV	CLOSED CIRCUIT TELEVISION
CKT	CIRCUIT
CLG	CEILING
CM	CONSTRUCTION MANAGER
CO	COMPANY
CT	COUNTER TOP MOUNTED
CTTS	CLOSED TRANSITION TRANSFER SWITCH
CU	COPPER
C.U.	CONDENSING UNIT
DIA	DIAMETER
DIV	DIVISION
DN	DOWN
DWG	DRAWING
E	DENOTES EMERGENCY DEVICE
EA	EACH
EF	EXHAUST FAN
EGS	ENGINE-GENERATOR SET
ELEV	ELEVATOR
EMT	ELECTRICAL METALLIC TUBING
EO	EQUIPMENT BY OWNER
EQUIP	EQUIPMENT
EWC	ELECTRICAL WATER COOLER
EXH	EXHAUST
EXP	EXPLOSION PROOF
FACP	FIRE ALARM CONTROL PANEL
FACU	FIRE ALARM CONTROL UNIT
FCU	FIN COIL UNIT
FDS	FUSED DISCONNECT SWITCH
FI	FILM ILLUMINATOR
FLR	FLOOR
FPU	FIELD PROCESSING UNIT
FTL	FEED THRU LUGS
GA	GAUGE
GE	GROUNDING EQUALIZER CONDUCTOR
GEN	GENERATOR
GFCI	GROUND FAULT CIRCUIT INTERRUPTING
CFI	GROUND FAULT INTERRUPTING
GND	GROUND
HC	HARMONIC CONDITIONING TRANSFORMER
HF	HARMONIC FILTER
HFT	HARMONIC FILTER WITH INTEGRAL TRANSFORMER
HID	HIGH INTENSITY DISCHARGE
HOA	HAND OFF AUTO
HP	HORSEPOWER
HS	HARMONIC SUPPRESSION TRANSFORMER
HSKPG	HOUSEKEEPING
HTR	HEATER
ID	INSIDE DIAMETER
IG	ISOLATED GROUND
IMC	INTERMEDIATE METAL CONDUIT
JB	JUNCTION BOX
KV	KILOVOLT
KVA	KILOVOLT AMPERE
KW	KILOWATT
KWH	KILOWATT HOUR
LA	LIGHTNING ARRESTOR
LP	LIGHT POLE
LS	LIFE SAFETY
LTD	LONG TIME DELAY
LTG	LIGHTING
MAX	MAXIMUM
MATV	MASTER ANTENNA TELEVISION
MC	METAL CLAD CABLE
MCB	MAIN CIRCUIT BREAKER
MCC	MOTOR CONTROL CENTER
MCP	MOTOR CIRCUIT PROTECTOR
MDP	MAIN DISTRIBUTION PANELBOARD
MECH	MECHANICAL
MFS	MAIN FUSED SWITCH
MGP	MEDICAL GAS PANEL
MI	MINERAL INSULATED CABLE
MIN	MINIMUM
MLO	MAIN LUGS ONLY
MTD	MOUNTED
MTS	MANUAL TRANSFER SWITCH
MV	MEDIUM VOLTAGE
NA	NOT APPLICABLE
NC	NORMALLY CLOSED
NEC	NATIONAL ELECTRICAL CODE
NEMA	NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION
NFPA	NATIONAL FIRE PROTECTION ASSOCIATION
NIC	NOT IN CONTRACT
NO	NORMALLY OPEN
NOC	NETWORK OPERATIONS CENTER
NTS	NOT TO SCALE
OA	OUTSIDE AIR
OC	ON CENTER
OCPD	OVERCURRENT PROTECTIVE DEVICE
OD	OUTSIDE DIAMETER
OH	OVERHEAD
P	POLE
PB	PULLBOX/PUSHBUTTON
PC	PERSONAL COMPUTER
PIE	PNEUMATIC - ELECTRIC
PH/*	PHASE
PNL	PANEL BOARD
PLC	PROGRAMMABLE LOGIC CONTROLLER
PP	POWER POLE
PSU	PATIENT SERVING UNIT
PT	POTENTIAL TRANSFORMER
PTZ	PAN/TILT/ZOOM
PVC	POLYVINYL CHLORIDE
PWR	POWER
RCP	REFLECTED CEILING PLANS
RE	REFER TO
REC	RECEPTACLE
REF	REFRIGERATOR
RF	RETURN FAN
RGS	RIGID GALVANIZED STEEL
RM	ROOM
RUPS	ROTARY HYBRID UNINTERRUPTIBLE POWER SUPPORT
SCHED	SCHEDULE
SF	SUPPLY FAN
SFL	SUB FEED LUGS
SFP	SURGICAL FACILITY PANEL
SH	SHEET
S/N	SOLID NEUTRAL
SPC	SPACE
SPD	SURGE PROTECTION DEVICE
SPEC	SPECIFICATION
SPR	SPARE
SS	STAINLESS STEEL
STD	SHORT TIME DELAY
STP	SHIELDED TWISTED PAIR
STR	STARTER
SWBD	SWITCHBOARD
SWGR	SWITCHGEAR
TBB	TELECOMMUNICATIONS BONDING BACKBONE
TC	TERMINAL CABINET
TERM	TERMINAL
TEL	TELEPHONE
TGB	TELECOMMUNICATIONS GROUNDING BUS BAR
THD	TOTAL HARMONIC DISTORTION
TMGB	TELECOMMUNICATIONS MAIN GROUNDING BUS BAR
TR	TELECOMMUNICATIONS ROOM
TRANS	TRANSITION
XFMR	TRANSFORMER
TSER	TELECOMMUNICATIONS SERVICE ENTRANCE ROOM
TV	TELEVISION
TYP	TYPICAL
UC	UNDERCOUNTER
UG	UNDERGROUND
UGP	UNDERGROUND PRIMARY
UGS	UNDERGROUND SERVICE
UPS	UNINTERRUPTIBLE POWER SUPPLY
USS	UNIT SUBSTATION
UTP	UNSHIELDED TWISTED PAIR
V	VOLT
VA	VOLT-AMPS
VFD	VARIABLE FREQUENCY DRIVE
VM	VOLTMETER
VSD	VARIABLE SPEED DRIVE
W	WATT
W/	WITH
WP	WEATHERPROOF

SAFETY SWITCH SCHEDULE

EQ. SERVED	AMPERAGE RATING	VOLTAGE RATING	POLES	DUTY LIST	NEMA RATING	FUSE SIZE
ELEVATOR CAB	30	240 V	2	HEAVY	1	EQ NAMEPLATE
INLINE FAN	30	240 V	3	HEAVY	1	EQ NAMEPLATE
WH-3	60	240 V	2	HEAVY	1	EQ NAMEPLATE
WH-2	60	240 V	3	HEAVY	1	EQ NAMEPLATE
DOAS-CU-2	60	240 V	3	HEAVY	3R	EQ NAMEPLATE
DOAS-CU-4	60	240 V	3	HEAVY	3R	EQ NAMEPLATE
HRCU-1	60	240 V	3	HEAVY	3R	EQ NAMEPLATE
DOAS-CU-1	60	240 V	3	HEAVY	3R	EQ NAMEPLATE
DOAS-CU-3	60	240 V	3	HEAVY	3R	EQ NAMEPLATE
HRCU-1	60	240 V	3	HEAVY	3R	EQ NAMEPLATE
ELEVATOR CAB	100	240 V	3	HEAVY	1	EQ NAMEPLATE
WH-1	100	240 V	3	HEAVY	1	EQ NAMEPLATE
WH-4	100	240 V	3	HEAVY	1	EQ NAMEPLATE
HRCU-2	100	240 V	3	HEAVY	3R	EQ NAMEPLATE
HRCU-4	100	240 V	3	HEAVY	3R	EQ NAMEPLATE
HRCU-3	100	240 V	3	HEAVY	3R	EQ NAMEPLATE
D-B	400	240 V	3	HEAVY	1	400

LIGHTING SYMBOL LEGEND

SYMBOL	DESCRIPTION
	LIGHTING FIXTURE - SEE FIXTURE SCHEDULE
	EMERGENCY LIGHTING FIXTURE - SEE FIXTURE SCHEDULE
	LIGHTING FIXTURE - SEE FIXTURE SCHEDULE
	LIGHTING FIXTURE - SEE FIXTURE SCHEDULE
	EMERGENCY LIGHTING FIXTURE - SEE FIXTURE SCHEDULE
	LIGHTING FIXTURE - SEE FIXTURE SCHEDULE
	LIGHTING FIXTURE - SEE FIXTURE SCHEDULE
	LIGHTING FIXTURE - SEE FIXTURE SCHEDULE
	EMERGENCY LIGHTING FIXTURE - SEE FIXTURE SCHEDULE
	PHOTOELECTRIC CONTROL
	EXIT SIGN - SEE FIXTURE SCHEDULE
	EXIT SIGN WALL MOUNTED - SEE FIXTURE SCHEDULE
	EXIT SIGN - SEE FIXTURE SCHEDULE
	EXIT SIGN - SEE FIXTURE SCHEDULE
	EXIT SIGN - SEE FIXTURE SCHEDULE

COMMUNICATION SYMBOL LEGEND

SYMBOL	DESCRIPTION
	DATA/COMMUNICATIONS OUTLET (18 A.F.F. OR AS NOTED). SEE SPECIFICATIONS
S@	SPEAKER (CEILING MOUNTED)
S@	SPEAKER (WALL MOUNTED)
	TELEPHONE BACKBOARD
CR	CARD READER
DC	DOOR CONTACT
MS	MOTION SENSOR
KP	KEYPAD
ML	MAGNETIC LOCK
AMP	AMPLIFIER
TIC	TELEPHONE TERMINAL CABINET
PP	PUSH PLATE STATION

FIRE ALARM SYMBOL LEGEND

SYMBOL	DESCRIPTION
	DUCT MOUNTED SMOKE DETECTOR
	FIRE ALARM CONTROL PANEL
	FIRE ALARM AUDIBLE/STROBE UNIT (60" A.F.F. OR 6" BELOW CEILING-LOWEST)
	FIRE ALARM STROBE UNIT (80" A.F.F. OR 6" BELOW CEILING -LOWEST)
	FIRE ALARM AUDIBLE/STROBE UNIT (CEILING MOUNT)
	FIRE ALARM STROBE UNIT (CEILING MOUNT)
M	DOOR MAGNET/FIRE ALARM SYSTEM
F	FIRE ALARM PULL STATION (48" A.F.F.)
H	HEAT DETECTOR
D	SMOKE DETECTOR (CEILING MOUNTED)
F	FLOW SWITCH
T	TAMPER SWITCH
FAAP	FIRE ALARM ANNUNCIATOR PANEL
ESRP	ELEVATOR SUPERVISION RECALL PANEL
FF	FIRE FIGHTERS TELEPHONE JACK STATION

GENERAL SYMBOL LEGEND

SYMBOL	DESCRIPTION
#	KEYED NOTE
#	KEYED NOTE
#	KEYED NOTE
#	KEYED NOTE
	END CAP
~	BREAK

POWER SYMBOL LEGEND

SYMBOL	DESCRIPTION
	DUPLEX CONVENIENCE OUTLET (18" A.F.F. OR AS NOTED)
	COUNTER TOP MOUNTING HEIGHT (CLEAR BACK SPLASH)
	SPECIAL OUTLET (18" A.F.F. OR AS NOTED)
	DOUBLE-DUPLEX CONVENIENCE OUTLET (18" A.F.F. OR AS NOTED)
	DOUBLE-DUPLEX COUNTER TOP MOUNTING (CLEAR BACK SPLASH)
	CEILING MOUNTED OCCUPANCY SENSOR
	FLOOR MOUNTED DUPLEX CONVENIENCE OUTLET
	DISCONNECT SWITCH
	DISCONNECT SWITCH (EXISTING)
J	JUNCTION BOX
	ELECTRICAL PANELBOARD (SURFACE MOUNTED)
	ELECTRICAL PANELBOARD (RECESSED)
	ELECTRICAL PANELBOARD (EXISTING)
	FLOOR BOX WITH COMBINATION DUPLEX POWER OUTLET AND DATA OUTLET
T	TRANSFORMER

AUDIO SYMBOL LEGEND

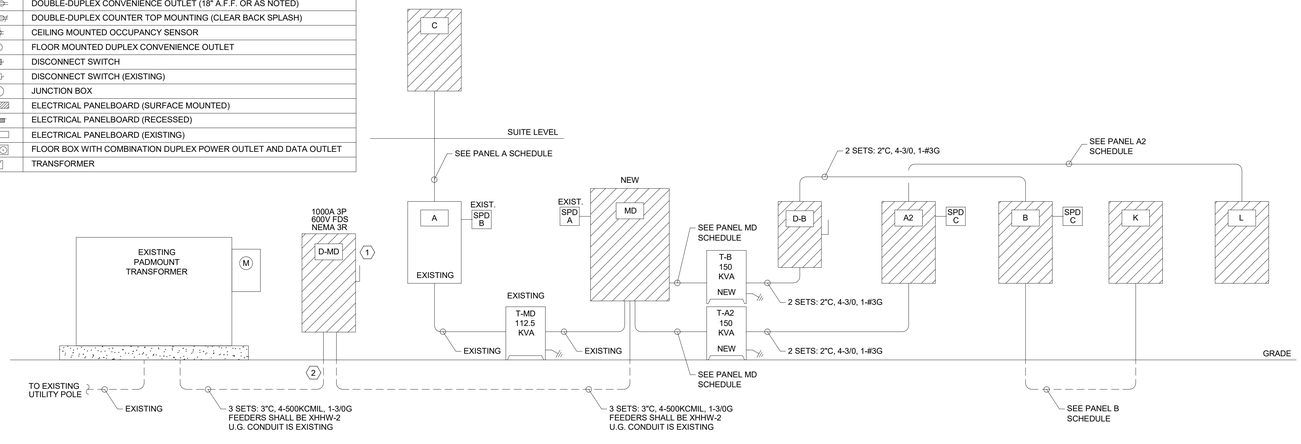
SYMBOL	DESCRIPTION
S1	SPEAKER (CEILING MOUNTED) (ELECTRO-VOICE EVID-C4.2-G2)
S2	SPEAKER (CEILING MOUNTED) (ELECTRO-VOICE EVID-C6.2-G2)
S3	SPEAKER (WALL MOUNTED) (ELECTRO-VOICE EVID-6.2)
S4	SPEAKER (PENDANT MOUNTED) (ELECTRO-VOICE EVID-P6.2)
S5	SPEAKER (WALL MOUNTED) (ELECTRO-VOICE LRC-2100)
S6	SPEAKER (BRACKET MOUNTED) (ELECTRO-VOICE EVF-1152D/94-FGB)
S7	SPEAKER (BRACKET MOUNTED) (ELECTRO-VOICE EVF-1122D/126-FGB)
S8	SPEAKER (BRACKET MOUNTED) (ELECTRO-VOICE EVH-1152D/64-FGB)
S1	SUBWOOFER (ELECTRO-VOICE EVID-C8.1S-G2)
S2	SUBWOOFER (ELECTRO-VOICE S10.1DB)
S3	SUBWOOFER (ELECTRO-VOICE X12L128-FGB)
ML	AUDIO INPUT INTERFACE PLATE (WALL MOUNTED) (SYMETRIX XIN-XLR-2)
KP	USER INTERFACE KEY PAD (WALL MOUNTED 48" AFF) (SYMETRIX W2)
TP	USER INTERFACE TOUCH PAD (WALL MOUNTED 48" AFF) (SYMETRIX T7)
EN	USER INTERFACE PLATE (WALL MOUNTED 48" AFF) (VISIONARY DUETE5-WP-BT)
DN	MONITOR INTERFACE (WALL MOUNTED BEHIND MONITOR) (VISIONARY DUETD-5)

CIRCUITRY SYMBOL

SYMBOL	DESCRIPTION
	FLEXIBLE CONDUIT
	CONDUIT RUN CONCEALED IN WALL OR ABOVE CEILING
	HOMERUN TO ELECTRICAL PANELBOARD
	CONDUIT RUN CONCEALED BELOW FLOOR OF IN SLAB
$	SINGLE POLE TOGGLE SWITCH (48" A.F.F. OR AS NOTED)
$3	THREE-WAY TOGGLE SWITCH (48" A.F.F. OR AS NOTED)
$a	SUBSCRIPT DENOTES FIXTURE BEING CONTROLLED
$D	SINGLE POLE DIMMER SWITCH
$m	MOTOR RATED TOGGLE SWITCH (48" A.F.F. OR AS NOTED)
$	OCCUPANCY SENSOR SWITCH

SECURITY SYMBOL

SYMBOL	DESCRIPTION
	VIDEO CAMERA



1 ELECTRICAL RISER
N.T.S.

LIGHTING FIXTURE SCHEDULE

TYPE	DESCRIPTION	VOLTAGE	LOAD	LAMPS	MOUNTING	MANUFACTURER	CATALOG
A	2X4 TROFFER	120 V	23	3000	LAY-IN	LITHONIA	2BLT4 30LHE ADSM GZ1 LP840
AE	2X4 TROFFER w/ EMERGENCY BATTERY	120 V	23	3000	LAY-IN	LITHONIA	2BLT4 30LHE ADSM GZ1 LP840 E10W
B	2X4 FLAT PANEL	120 V	28	3000	LAY-IN	LITHONIA	CPX 2X4 3000LM 80CRI 40K SWL MIN10 ZT MVOLT
BE	2X4 FLAT PANEL w/ EMERGENCY BATTERY	120 V	28	3000	LAY-IN	LITHONIA	CPX 2X4 3000LM 80CRI 40K SWL MIN10 ZT MVOLT E10W
D1	6" DOWNLIGHT (LO LUMEN)	120 V	8	750	RECESSED	GOTHAM	EVO6 40/07 WR LD MWD MVOLT GZ10
D1E	6" DOWNLIGHT (LO LUMEN) w/ EMERGENCY BATTERY	120 V	8	750	RECESSED	GOTHAM	EVO6 40/07 WR LD MWD MVOLT GZ10 E10W
D2	6" DOWNLIGHT (HI LUMEN)	120 V	25	2500	RECESSED	GOTHAM	EVO6 40/25 WR LD MWD MVOLT GZ10
D2E	6" DOWNLIGHT (HI LUMEN) w/ EMERGENCY BATTERY	120 V	25	2500	RECESSED	GOTHAM	EVO6 40/25 WR LD MWD MVOLT GZ10 E10W
DS	6" DOWNLIGHT (SHOWER)	120 V	15	1000	RECESSED	GOTHAM	EVO6SH 40/10 DFR SOL MVOLT
DSE	6" DOWNLIGHT (SHOWER) w/ EMERGENCY BATTERY	120 V	15	1000	RECESSED	GOTHAM	EVO6SH 40/10 DFR SOL MVOLT E10WR
L2	LINEAR 4FT (2" W)	120 V	24	750LMF	SURFACE	ALW	LPX 2 D SM F N S04 07 40 80 SL V01 * 1C UNV
L4	4" LINEAR 4FT	120 V	20	750LMF	SURFACE	ALW	LPX 4 D SM F N S04 07 40 80 SL V01 * N 1C UNV
L4E	4" LINEAR 4FT w/ EMERGENCY BATTERY	120 V	20	750LMF	SURFACE	ALW	LPX 4 D SM F N S04 07 40 80 SL V01 * N 1C UNV EMB/1
L6	4" LINEAR 6FT	120 V	31	750LMF	SURFACE	ALW	LPX 4 D SM F N S06 07 40 80 SL V01 * N 1C UNV
L6E	4" LINEAR 6FT w/ EMERGENCY BATTERY	120 V	31	750LMF	SURFACE	ALW	LPX 4 D SM F N S06 07 40 80 SL V01 * N 1C UNV EMB/1
LC	COVE LIGHT	120 V	4	500LMF	RECESSED	ALW	LPX 2 P T5 RN S** 05 40 80 SL V01 * N UNV N
LG	5" LINEAR 4FT (GRAND STAND)	120 V	76	1500LMF	RECESSED	PAL	ML5WL65-D CO(1500LIF) K40 80 4' J LOH * TF UNV DIM1
LGE	5" LINEAR 4FT (GRAND STAND) w/ EMERGENCY BATTERY	120 V	76	1500LMF	SURFACE	PAL	ML5WL65-D CO(1500LIF) K40 80 4' J LOH * TF UNV DIM1 EBPHST
LR4	4" RECESSED LINEAR 4FT	120 V	20	750LMF	RECESSED	ALW	LPX 4 R T5 FN S04 07 40 80 SL V01 * UNV
LR4E	4" RECESSED LINEAR 4FT w/ EMERGENCY BATTERY	120 V	20	750LMF	RECESSED	ALW	LPX 4 R T5 FN S04 07 40 80 SL V01 * UNV EMB/1
LR6	4" RECESSED LINEAR 6FT	120 V	31	750LMF	RECESSED	ALW	LPX 4 R T5 FN S06 07 40 80 SL V01 * UNV
LR6E	4" RECESSED LINEAR 6FT w/ EMERGENCY BATTERY	120 V	31	750LMF	RECESSED	ALW	LPX 4 R T5 FN S06 07 40 80 SL V01 * UNV EMB/1
LR8	4" RECESSED LINEAR 8FT	120 V	41	750LMF	RECESSED	ALW	LPX 4 R T5 FN S08 07 40 80 SL V01 * UNV
LR8E	4" RECESSED LINEAR 8FT w/ EMERGENCY BATTERY	120 V	41	750LMF	RECESSED	ALW	LPX 4 R T5 FN S08 07 40 80 SL V01 * UNV EMB/2
LS	5" RECESSED LINEAR 8FT w/ EMERGENCY BATTERY	120 V	58	825LMF	RECESSED	ALW	LP5RT DRY S8 MED 80 4000K V01 * UNV EMB/2
LW	LINEAR 4FT	120 V	26	450LMF	SURFACE	PAL	MLS3WL54 D MO K40 80 6 J LOH * UNV DIM1 EBPHST
M	UNDER CABINET STRIP TAPE	120 V	12	200LMF	SURFACE	JUNO	JFX 24V 200LM ** RGBW 90CRI DL
P	RECTANGULAR PENDANT	120 V	132	11500	SUSPENDED	LUMENWERX	ELISP 72INX72IN ULO SW 90CRI 11500 40K UNV D1 1C SCD * POC MC 36IN *
S	4' STRIP LIGHT	120 V	32	4000	SURFACE	LITHONIA	CLX L48 4000LM HEF FDL MVOLT GZ1 40K 80CRI
SE	4' STRIP LIGHT w/ EMERGENCY BATTERY	120 V	32	4000	SURFACE	LITHONIA	CLX L48 4000LM HEF FDL MVOLT GZ1 40K 80CRI E10W
T1	LINEAR TRACK LIGHT	120 V	6	600	TRACK	BASO	RLINS LOUVER 1 * * 40K-C90 48V 010V TW 100LL 4C
T2	SPOT LIGHT	120 V	6	700	TRACK	BASO	MIPIV1DT 2.65IN SW 35DEG 90CRI 40K SDB * *
VP	4' WAPOR TIGHT	120 V	34	4000	SURFACE	LITHONIA	CSVT L48 4000LM MVOLT 40K 80CRI IE7WCP
W1	WALLPACK	120 V	11	1500	SURFACE	LITHONIA	WPX1 LED P1 40K MVOLT *
W1E	WALLPACK w/ EMERGENCY BATTERY	120 V	11	1500	SURFACE	LITHONIA	WPX1 LED P1 40K MVOLT * E4WH
W2	UP/DOWN WALLPACK	120 V	64	1700	SURFACE	INSIGHT LIGHTING	SSL UD MO RGB40 40 RGB40 40 WM 120V DMXDS * CRF
W3	EXTERIOR WALL WASH	120 V	30	2000	SURFACE	INSIGHT LIGHTING	AP MO RGB40 ASU*** 36 120 DMXFX * IHL
X1	SINGLE-SIDED EXIT SIGN w/ EMERGENCY BATTERY	120 V	4	LED	UNIVERSAL	LITHONIA	EDGR 1 RMR EL N SD

* ARCHITECT SHALL SELECT FIXTURE COLORS/FINISHES
** CONTRACTOR SHALL MATCH MEASURED WIDTH OF OPENING OR BOTTOM OF UPPER CABINET FOR FIXTURE LENGTH
*** CONTRACTOR SHALL PROVIDE POWER FEED DIRECTION PER WIRING METHOD
**** ALL PRIOR APPROVAL SUBMISSIONS SHALL INCLUDE PHOTOMETRICS TO BE CONSIDERED FOR APPROVAL.

ELECTRICAL RISER KEYNOTES:

1. NEW SERVICE ENTRANCE DISCONNECT. DISCONNECT SHALL BE LOCATED NEAR UTILITY TRANSFORMER. CONTRACTOR SHALL PROVIDE HOUSE KEEPING PAD AND EQUIPMENT RACK AS NEEDED. GROUND AND NEUTRAL CONDUCTORS SHALL BE BONDED AT NEW SERVICE DISCONNECT.
2. CONTRACTOR SHALL INTERCEPT EXISTING SECONDARY FEEDERS FROM TRANSFORMER WITH PULL BOX OR BY OTHER MEANS AND CONNECT TO NEW SERVICE ENTRANCE DISCONNECT. EXTEND EXISTING 3" CONDUIT AS NEEDED.

RHH ARCHITECTS

CONSULTANTS:
SELLERS & ASSOCIATES, INC.
CIVIL ENGINEER
FOX NESBIT ENGINEERING
STRUCTURAL ENGINEER
ASSOCIATED DESIGN GROUP
MECHANICAL ENGINEER
ASSOCIATED DESIGN GROUP
ELECTRICAL ENGINEER

CONSTRUCTION DOCUMENTS for

NEW BASEBALL STADIUM ATHLETIC COMPLEX
FACILITY - PHASE 2

LOUISIANA STATE UNIVERSITY EUNICE
LSUE Campus Drive, Eunice, LA 70535

PROJECT #: 25-72-25
DATE: 02/13/2026
FOR: CONSTRUCTION

REVISION	DATE
3 ADDENDA #2	04/15/26
2 ADDENDA #1	04/08/26
1 B.V. REVISIONS	02/13/26

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Project No. 25166

ELECTRICAL LEGEND, RISER & SCHEDULES

E5.00R2

LSUE BASEBALL - AUDIO EQUIPMENT LIST

QTY	SAP #	Model #	Description	Notes	DATA SHEET	WEB LINK
UPPER LEVEL SEATING						
	F.01U.272.955	EVF-1152D/94-FGB	EVF-1152D 90 X 40 FIBERGLASS WEATHERIZED	**(ships with eyebolts)**	https://products.electrovoice.com/download/969997 REFER TO DATA SHEET	https://products.electrovoice.com/na/en/evf-d-15
	F.01U.283.510	EVF-UB-BLK	EVF-UB-BLK, U-BRACKET FOR EVF SERIES LOUDSPEAKERS, BLACK			
LOWER LEVEL SEATING (SPEAKERS ON BALCONY FACE)						
	F.01U.272.955	EVF-1152D/94-FGB	EVF-1152D 90 X 40 FIBERGLASS WEATHERIZED	**(ships with eyebolts)**	https://products.electrovoice.com/download/969997 REFER TO DATA SHEET	https://products.electrovoice.com/na/en/evf-d-15
	F.01U.283.510	EVF-UB-BLK	EVF-UB-BLK, U-BRACKET FOR EVF SERIES LOUDSPEAKERS, BLACK			
CONCOURSE						
	F.01U.117.534	EVID 6.2T	Two-way twin 6" woofer and 1" horn loaded 100 x 90 tweeter. Internal 70/100-volt line transformer. Black cabinet. Includes mounting system. (sold and priced per pair)		https://products.electrovoice.com/download/3369	https://products.electrovoice.com/na/en/evid-62
CANOPY FIELD EVH						
	F.01U.272.975	EVH-1152D/64-FGB	60° X 40°, FIBERGLASS, BLACK	**(ships with eyebolts)**	https://products.electrovoice.com/download/970016	https://products.electrovoice.com/na/en/evh-1152d64
AMPLIFIERS						
5	F.01U.329.709	IPX5:4	DSP power amplifier 4x1250W with OMNEO/Dante & FIR drive, install. Ships with 32A powerCON power connector.	**(1) SPEAKER PER CH** **Upper Level Seating:** **•10) EVF1152D-94 (ships with eyebolts)** **•10) EVF U-brackets** **Lower Level, Speakers on Balcony Face:** **•4) EVF1152D-94 (ships with eyebolts)** **•4) EVF U-Brackets** **Concourse:** **•2) EVF1122D-126 (ships with eyebolts)** **•2) EVF U-brackets** **Canopy Field EVH:** **•3) EVH1152D-64** **Total of 19 amplifier channels for a total of 5-IPX5:4 amplifiers.**	https://products.dynacord.com/download/978184	https://products.dynacord.com/na/en/ipx5:4
FIELD SOUND DSP AND BASIC CONTROL						
1	F.01U.424.586	Prism16x16 80-0117	DSP Matrix Mix Engine, 76 x 72 performance audio matrix and system controller with intuitive zone mixing, Dante network and AES70 control. 12 analog inputs, 8 analog outputs, 64 x 64 Dante.	**DSP (Symetrix)**	ma.cloudfront.net/products/dsp/Prism-16x16-DATA-SHEET.pdf	https://www.symetrix.co/prism-ip-dsp
1	F.01U.384.715	Symetrix T7	Full HD TFT touch panel 5.7", POE, for control panels created in sound system software	**Optional Wall Mounted Audio Controller (Touch Panel) Located in Pressbox**	ma.cloudfront.net/products/control/T-7-DATA-SHEET.pdf	https://www.symetrix.co/t-series-touchscreen-controllers
OPTIONAL SUBS						

LSUE BASEBALL - AUDIO EQUIPMENT LIST

	F.01U.360.967	X12I-128-FGB	2x18" Install sub black fiberglass. Sold only with Dynacord IPX 20:4. Will not be sold with other amplifiers.		https://products.electrovoice.com/download/978405	https://products.electrovoice.com/na/en/x12i-128
1	F.01U.329.718	IPX20:4	DSP power amplifier 4x5000W with OMNEO/Dante & FIR drive, install. Ships with 32A powerCON power connector.	**30 AMP CKT REQUIRED**	https://products.dynacord.com/download/978187	https://products.dynacord.com/na/en/ipx20:4
SYSTEM ONSITE SUPPORT						
	F.01U.250.227		Pro Sound system programming and remote technical support are available. All on-site support must be scheduled in advance; Bosch Technical Support cannot guarantee that they will be available for specific dates, or on short notice.	**OPTIONAL**		
SYSTEM NETWORK SWITCH						
		GSM4230P	PoE Switch 30-port			https://www.netgear.com/business/wired/switches/fully-managed/gsm4230p/
POWER SEQUENCER						
		SEQ-1U	Power sequencer (Symetrix)		p.com/-/media/ametekesp/downloads/data-	https://www.ametekesp.com/surgex/sequencers/sequencers-120-208v
POWER BACKUP						
		UPS-1000-OL	UPS (Symetrix)		https://www.ametekesp	https://www.ametekesp.com/surgex/ups-standalone/ups-standalone-120-208v

LSUE BASEBALL - AUDIO EQUIPMENT LIST

QTY	SAP #	Model #	Description	Notes	DATA SHEET	WEB LINK
2ND LEVEL						
SUITE 207						
	F.01U.417.781	EVID-C6.2-G2	High-quality two-way 6.5" coaxial ceiling speaker with white bezel-less magnetic grille, complete with back can enclosure, SwiftLock installation system, tile rails, and mounting ring. 30W transformer for 70/100V or 8-ohm bypass. UL1480A, UL2043 and CSA 22.2 205 certified. (priced individually, packaged in pairs)		https://products.electrovoice.com/download/979816https://products.electrovoice.com/download/979816	https://products.electrovoice.com/na/en/evid-c62-g2
	F.01U.394.578	Symetrix W2	Wall panel controller with 1.8" display and encoder for use with SONICUE Control Server devices, POE, ships with white and black front covers	**Basic Audio Control (Keypad)**	https://www.symetrix.co/w-series-controllers	https://d3b79pswu7f4ma.cloudfront.net/products/control/W-Series-DATA-SHEET.pdf
SUITE 206						
	F.01U.417.781	EVID-C6.2-G2	High-quality two-way 6.5" coaxial ceiling speaker with white bezel-less magnetic grille, complete with back can enclosure, SwiftLock installation system, tile rails, and mounting ring. 30W transformer for 70/100V or 8-ohm bypass. UL1480A, UL2043 and CSA 22.2 205 certified. (priced individually, packaged in pairs)		https://products.electrovoice.com/download/979816https://products.electrovoice.com/download/979816	https://products.electrovoice.com/na/en/evid-c62-g2
	F.01U.394.578	Symetrix W2	Wall panel controller with 1.8" display and encoder for use with SONICUE Control Server devices, POE, ships with white and black front covers	**Basic Audio Control (Keypad)**	https://www.symetrix.co/w-series-controllers	https://d3b79pswu7f4ma.cloudfront.net/products/control/W-Series-DATA-SHEET.pdf
SUITE 205						
	F.01U.417.781	EVID-C6.2-G2	High-quality two-way 6.5" coaxial ceiling speaker with white bezel-less magnetic grille, complete with back can enclosure, SwiftLock installation system, tile rails, and mounting ring. 30W transformer for 70/100V or 8-ohm bypass. UL1480A, UL2043 and CSA 22.2 205 certified. (priced individually, packaged in pairs)		https://products.electrovoice.com/download/979816https://products.electrovoice.com/download/979816	https://products.electrovoice.com/na/en/evid-c62-g2
	F.01U.394.578	Symetrix W2	Wall panel controller with 1.8" display and encoder for use with SONICUE Control Server devices, POE, ships with white and black front covers	**Basic Audio Control (Keypad)**	https://www.symetrix.co/w-series-controllers	https://d3b79pswu7f4ma.cloudfront.net/products/control/W-Series-DATA-SHEET.pdf
CLUB 202						
	F.01U.417.781	EVID-C6.2-G2	High-quality two-way 6.5" coaxial ceiling speaker with white bezel-less magnetic grille, complete with back can enclosure, SwiftLock installation system, tile rails, and mounting ring. 30W transformer for 70/100V or 8-ohm bypass. UL1480A, UL2043 and CSA 22.2 205 certified. (priced individually, packaged in pairs)		https://products.electrovoice.com/download/979816https://products.electrovoice.com/download/979816	https://products.electrovoice.com/na/en/evid-c62-g2

LSUE BASEBALL - AUDIO EQUIPMENT LIST

	F.01U.417.779	EVID-C4.2-G2	High-quality two-way 4" coaxial ceiling speaker with white bezel-less magnetic grille, complete with back can enclosure, SwiftLock installation system, tile rails, and mounting ring. 30W transformer for 70/100V or 8-ohm bypass. UL1480A, UL2043 and CSA 22.2 205 certified. (priced individually, packaged in pairs)	**In Suite corridor**	https://products.electrovoice.com/download/979814	https://products.electrovoice.com/na/en/evid-c42-g2
	F.01U.332.744	EVID-S10.1DB	Subwoofer 2x10" cabinet black		https://products.electrovoice.com/download/974932	https://products.electrovoice.com/na/en/evid-s101d
	F.01U.344.851	UB-10DB	U-bracket for 10" subwoofer black		REFER TO DATA SHEET	
	F.01U.394.578	Symetrix W2	Wall panel controller with 1.8" display and encoder for use with SONICUE Control Server devices, POE, ships with white and black front covers	**Basic Audio Control (Keypad)**	https://www.symetrix.co/w-series-controllers	https://d3b79pswu7f4ma.cloudfront.net/products/control/W-Series-DATA-SHEET.pdf
WOMEN 204						
	F.01U.417.779	EVID-C4.2-G2	High-quality two-way 4" coaxial ceiling speaker with white bezel-less magnetic grille, complete with back can enclosure, SwiftLock installation system, tile rails, and mounting ring. 30W transformer for 70/100V or 8-ohm bypass. UL1480A, UL2043 and CSA 22.2 205 certified. (priced individually, packaged in pairs)		https://products.electrovoice.com/download/979814	https://products.electrovoice.com/na/en/evid-c42-g2
MEN 203						
	F.01U.417.779	EVID-C4.2-G2	High-quality two-way 4" coaxial ceiling speaker with white bezel-less magnetic grille, complete with back can enclosure, SwiftLock installation system, tile rails, and mounting ring. 30W transformer for 70/100V or 8-ohm bypass. UL1480A, UL2043 and CSA 22.2 205 certified. (priced individually, packaged in pairs)		https://products.electrovoice.com/download/979814	https://products.electrovoice.com/na/en/evid-c42-g2
MEETING ROOM 200						
	F.01U.417.781	EVID-C6.2-G2	High-quality two-way 6.5" coaxial ceiling speaker with white bezel-less magnetic grille, complete with back can enclosure, SwiftLock installation system, tile rails, and mounting ring. 30W transformer for 70/100V or 8-ohm bypass. UL1480A, UL2043 and CSA 22.2 205 certified. (priced individually, packaged in pairs)		https://products.electrovoice.com/download/979816https://products.electrovoice.com/download/979816	https://products.electrovoice.com/na/en/evid-c62-g2
	F.01U.332.744	EVID-S10.1DB	Subwoofer 2x10" cabinet black		https://products.electrovoice.com/download/974932	https://products.electrovoice.com/na/en/evid-s101d
	F.01U.344.851	UB-10DB	U-bracket for 10" subwoofer black		REFER TO DATA SHEET	
	F.01U.394.578	Symetrix W2	Wall panel controller with 1.8" display and encoder for use with SONICUE Control Server devices, POE, ships with white and black front covers	**Basic Audio Control (Keypad)**	https://www.symetrix.co/w-series-controllers	https://d3b79pswu7f4ma.cloudfront.net/products/control/W-Series-DATA-SHEET.pdf
DSP / AMPS FOR ABOVE SPACES / ZONES						

LSUE BASEBALL - AUDIO EQUIPMENT LIST

1	F.01U.425.387	IX60:8-US	8-channel networked DSP amplifier with 6 kW powerTANK for Hi-Z and Lo-Z operation, 8 x 8 Dante with OCA/AES70 remote control, 8 mic/line inputs usable as Dante break-in, 96 kHz fully featured DSP matrix mixer and TaskEngine for system logic, automation, scheduling and integration, ghostPOWER via PoE to maintain DSP, Dante network and mic/line inputs, High efficiency ecoRAIL technology for lower operating costs, 1RU, US power cord.	**AMPS FOR THE FOLLOWING SPACES - CH1 CLUB AREA 202 (1) S10.0D ea.@ 4ohm, CH2 (1) S10.0D ea.@ 4ohm, CH3 (8) C6.2 @70v, CH4 (3) C4.2 @70v, CH5 MEETING ROOM 200 (1) S10.0D ea.@ 4ohm, CH6 (1) S10.0D ea.@ 4ohm, CH7 (8) C6.2 @70v,**	https://products.dynacord.com/download/979994	https://products.dynacord.com/na/en/ix60:8
1	F.01U.425.391	IX15:4-US	4-channel networked DSP amplifier with 1.5 kW powerTANK for Hi-Z and Lo-Z operation, 8 x 8 Dante with OCA/AES70 remote control, 4 mic/line inputs usable as Dante break-in, 96 kHz fully featured DSP matrix mixer and TaskEngine for system logic, automation, scheduling and integration, ghostPOWER via PoE to maintain DSP, Dante network and mic/line inputs, High efficiency ecoRAIL technology for lower operating costs, 1RU, US power cord.	**AMPS FOR THE FOLLOWING SPACES - CH1 SUITE 207 (4) C6.2 @70v, CH2 SUITE 206 (2) C6.2 @70v, CH3 SUITE 205 (2) C6.2 @70v, CH4 MENS RESTROOM 203 (1) C4.2 @70v & CH8 WOMENS RESTROOM 204 (1) C4.2 @70v**	https://products.dynacord.com/download/979990	https://products.dynacord.com/na/en/ix15:4
CLUB 208						
	F.01U.417.781	EVID-C6.2-G2	High-quality two-way 6.5" coaxial ceiling speaker with white bezel-less magnetic grille, complete with back can enclosure, SwiftLock installation system, tile rails, and mounting ring. 30W transformer for 70/100V or 8-ohm bypass. UL1480A, UL2043 and CSA 22.2 205 certified. (priced individually, packaged in pairs)		https://products.electrovoice.com/download/979816https://products.electrovoice.com/download/979816	https://products.electrovoice.com/na/en/evid-c62-g2
	F.01U.417.779	EVID-C4.2-G2	High-quality two-way 4" coaxial ceiling speaker with white bezel-less magnetic grille, complete with back can enclosure, SwiftLock installation system, tile rails, and mounting ring. 30W transformer for 70/100V or 8-ohm bypass. UL1480A, UL2043 and CSA 22.2 205 certified. (priced individually, packaged in pairs)	**In Suite corridor**	https://products.electrovoice.com/download/979814	https://products.electrovoice.com/na/en/evid-c42-g2
	F.01U.332.744	EVID-S10.1DB	Subwoofer 2x10" cabinet black		https://products.electrovoice.com/download/974932	https://products.electrovoice.com/na/en/evid-s101d
	F.01U.344.851	UB-10DB	U-bracket for 10" subwoofer black		REFER TO DATA SHEET	
SUITE 210						
	F.01U.417.781	EVID-C6.2-G2	High-quality two-way 6.5" coaxial ceiling speaker with white bezel-less magnetic grille, complete with back can enclosure, SwiftLock installation system, tile rails, and mounting ring. 30W transformer for 70/100V or 8-ohm bypass. UL1480A, UL2043 and CSA 22.2 205 certified. (priced individually, packaged in pairs)		https://products.electrovoice.com/download/979816https://products.electrovoice.com/download/979816	https://products.electrovoice.com/na/en/evid-c62-g2

LSUE BASEBALL - AUDIO EQUIPMENT LIST

	F.01U.394.578	Symetrix W2	Wall panel controller with 1.8" display and encoder for use with SONICUE Control Server devices, POE, ships with white and black front covers	**Basic Audio Control (Keypad)**	https://www.symetrix.co/w-series-controllers	https://d3b79pswu7f4ma.cloudfront.net/products/control/W-Series-DATA-SHEET.pdf
SUITE 211						
	F.01U.417.781	EVID-C6.2-G2	High-quality two-way 6.5" coaxial ceiling speaker with white bezel-less magnetic grille, complete with back can enclosure, SwiftLock installation system, tile rails, and mounting ring. 30W transformer for 70/100V or 8-ohm bypass. UL1480A, UL2043 and CSA 22.2 205 certified. (priced individually, packaged in pairs)		https://products.electrovoice.com/download/979816https://products.electrovoice.com/download/979816	https://products.electrovoice.com/na/en/evid-c62-g2
	F.01U.394.578	Symetrix W2	Wall panel controller with 1.8" display and encoder for use with SONICUE Control Server devices, POE, ships with white and black front covers	**Basic Audio Control (Keypad)**	https://www.symetrix.co/w-series-controllers	https://d3b79pswu7f4ma.cloudfront.net/products/control/W-Series-DATA-SHEET.pdf
SUITE 212						
	F.01U.417.781	EVID-C6.2-G2	High-quality two-way 6.5" coaxial ceiling speaker with white bezel-less magnetic grille, complete with back can enclosure, SwiftLock installation system, tile rails, and mounting ring. 30W transformer for 70/100V or 8-ohm bypass. UL1480A, UL2043 and CSA 22.2 205 certified. (priced individually, packaged in pairs)		https://products.electrovoice.com/download/979816https://products.electrovoice.com/download/979816	https://products.electrovoice.com/na/en/evid-c62-g2
	F.01U.394.578	Symetrix W2	Wall panel controller with 1.8" display and encoder for use with SONICUE Control Server devices, POE, ships with white and black front covers	**Basic Audio Control (Keypad)**	https://www.symetrix.co/w-series-controllers	https://d3b79pswu7f4ma.cloudfront.net/products/control/W-Series-DATA-SHEET.pdf
1	F.01U.425.389	IX30:8-US	8-channel networked DSP amplifier with 3 kW powerTANK for Hi-Z and Lo-Z operation, 8 x 8 Dante with OCA/AES70 remote control, 8 mic/line inputs usable as Dante break-in, 96 kHz fully featured DSP matrix mixer and TaskEngine for system logic, automation, scheduling and integration, ghostPOWER via PoE to maintain DSP, Dante network and mic/line inputs, High efficiency ecoRAIL technology for lower operating costs, 1RU, US power cord.	**AMPS FOR THE FOLLOWING SPACES - AMP1-CH1 PRESS BOX 201 (3) C6.2 @70v, AMP1-CH2 SCORE/PA 201A (1) C6.2 @70v, AMP1-CH3 , HOME RADIO 201B (1) C6.2 @70v, AMP1-CH4 BROADCAST 201C (1) C6.2 @70v, AMP1-CH5 MEDIA 201D (1) C6.2 @70v, AMP1-CH6 SUITE 210 (2) C6.2 @70v, AMP1-CH7 SUITE 211 (2) C6.2 @70v, AMP1-CH8 SUITE 212 (4) C6.2 @70v**	https://products.dynacord.com/download/979992	https://products.dynacord.com/na/en/ix30:8
1	F.01U.425.390	IX30:4-US	4-channel networked DSP amplifier with 3 kW powerTANK for Hi-Z and Lo-Z operation, 8 x 8 Dante with OCA/AES70 remote control, 4 mic/line inputs usable as Dante break-in, 96 kHz fully featured DSP matrix mixer and TaskEngine for system logic, automation, scheduling and integration, ghostPOWER via PoE to maintain DSP, Dante network and mic/line inputs, High efficiency ecoRAIL technology for lower operating costs, 1RU, US power cord.	**AMPS FOR THE FOLLOWING SPACES - CH1 CLUB AREA 208 (1) S10.0D ea.@ 4ohm, CH2 (1) S10.0D ea.@ 4ohm, CH3 (8) C6.2 @70v, CH4 (3) C4.2 @70v**	https://products.dynacord.com/download/979992	https://products.dynacord.com/na/en/ix30:8

LSUE BASEBALL - AUDIO EQUIPMENT LIST

QTY	SAP #	Model #	Description	Notes	DATA SHEET	WEB LINK
GROUNG LEVEL						
HOME DRESSING ROOM 113						
	F.01U.417.781	EVID-C6.2-G2	High-quality two-way 6.5" coaxial ceiling speaker with white bezel-less magnetic grille, complete with back can enclosure, SwiftLock installation system, tile rails, and mounting ring. 30W transformer for 70/100V or 8-ohm bypass. UL1480A, UL2043 and CSA 22.2 205 certified. (priced individually, packaged in pairs)		https://products.electrovoice.com/download/979816https://products.electrovoice.com/download/979816	https://products.electrovoice.com/na/en/evid-c62-g2
	F.01U.351.202	EVID-P6.2B	6.5" Coaxial pendant speaker with horn loaded Ti coated tweeter - for 70v/100v or 8-ohm operation. Taps at 30, 15, 7.5, 3.75, and 1.88 watts. Black		https://products.electrovoice.com/download/975836	https://products.electrovoice.com/na/en/evid-p62
	F.01U.332.744	EVID-S10.1DB	Subwoofer 2x10" cabinet black		https://products.electrovoice.com/download/974932	https://products.electrovoice.com/na/en/evid-s101d
	F.01U.344.851	UB-10DB	U-bracket for 10" subwoofer black		REFER TO DATA SHEET	
	F.01U.425.390	IX30:4-US	4-channel networked DSP amplifier with 3 kW powerTANK for Hi-Z and Lo-Z operation, 8 x 8 Dante with OCA/AES70 remote control, 4 mic/line inputs usable as Dante break-in, 96 kHz fully featured DSP matrix mixer and TaskEngine for system logic, automation, scheduling and integration, ghostPOWER via PoE to maintain DSP, Dante network and mic/line inputs, High efficiency ecoRAIL technology for lower operating costs, 1RU, US power cord.	**AMP FOR HOME DRESSING ROOM 113 - CH 1 (8) C6.2 30w ea. @70v, CH 2 (4) P6.2 30w ea. @70v, CH 3 (1) S10.0D ea.@4ohm & CH4 (1) S10.0D ea.@4ohm**	https://products.dynacord.com/download/979991	https://products.dynacord.com/download/979990
	F.01U.394.578	Symetrix W2	Wall panel controller with 1.8" display and encoder for use with SONICUE Control Server devices, POE, ships with white and black front covers	**Basic Audio Control (Keypad)**	https://www.symetrix.co/w-series-controllers	https://d3b79pswu7f4ma.cloudfront.net/products/control/W-Series-DATA-SHEET.pdf
TEAM LOBBY 100						
	F.01U.417.779	EVID-C4.2-G2	High-quality two-way 4" coaxial ceiling speaker with white bezel-less magnetic grille, complete with back can enclosure, SwiftLock installation system, tile rails, and mounting ring. 30W transformer for 70/100V or 8-ohm bypass. UL1480A, UL2043 and CSA 22.2 205 certified. (priced individually, packaged in pairs)		https://products.electrovoice.com/download/979814	https://products.electrovoice.com/na/en/evid-c42-g2
	F.01U.394.578	Symetrix W2	Wall panel controller with 1.8" display and encoder for use with SONICUE Control Server devices, POE, ships with white and black front covers	**Basic Audio Control (Keypad)**	https://www.symetrix.co/w-series-controllers	https://d3b79pswu7f4ma.cloudfront.net/products/control/W-Series-DATA-SHEET.pdf
CONFERENCE 103						

LSUE BASEBALL - AUDIO EQUIPMENT LIST

	F.01U.417.781	EVID-C6.2-G2	High-quality two-way 6.5" coaxial ceiling speaker with white bezel-less magnetic grille, complete with back can enclosure, SwiftLock installation system, tile rails, and mounting ring. 30W transformer for 70/100V or 8-ohm bypass. UL1480A, UL2043 and CSA 22.2 205 certified. (priced individually, packaged in pairs)		https://products.electrovoice.com/download/979816https://products.electrovoice.com/download/979816	https://products.electrovoice.com/na/en/evid-c62-g2
	F.01U.394.578	Symetrix W2	Wall panel controller with 1.8" display and encoder for use with SONICUE Control Server devices, POE, ships with white and black front covers	**Basic Audio Control (Keypad)**	https://www.symetrix.co/w-series-controllers	https://d3b79pswu7f4ma.cloudfront.net/products/control/W-Series-DATA-SHEET.pdf
			TEAM STORE 117			
	F.01U.351.202	EVID-P6.2B	6.5" Coaxial pendant speaker with horn loaded Ti coated tweeter - for 70v/100v or 8-ohm operation. Taps at 30, 15, 7.5, 3.75, and 1.88 watts. Black		https://products.electrovoice.com/download/975836	https://products.electrovoice.com/na/en/evid-p62
	F.01U.332.744	EVID-S10.1DB	Subwoofer 2x10" cabinet black		https://products.electrovoice.com/download/974932	https://products.electrovoice.com/na/en/evid-s101d
	F.01U.344.851	UB-10DB	U-bracket for 10" subwoofer black		REFER TO DATA SHEET	
	F.01U.394.578	Symetrix W2	Wall panel controller with 1.8" display and encoder for use with SONICUE Control Server devices, POE, ships with white and black front covers	**Basic Audio Control (Keypad)**	https://www.symetrix.co/w-series-controllers	https://d3b79pswu7f4ma.cloudfront.net/products/control/W-Series-DATA-SHEET.pdf
			DSP / AMPS FOR ABOVE SPACES / ZONES			
1	F.01U.425.390	IX30:4-US	4-channel networked DSP amplifier with 3 kW powerTANK for Hi-Z and Lo-Z operation, 8 x 8 Dante with OCA/AES70 remote control, 4 mic/line inputs usable as Dante break-in, 96 kHz fully featured DSP matrix mixer and TaskEngine for system logic, automation, scheduling and integration, ghostPOWER via PoE to maintain DSP, Dante network and mic/line inputs, High efficiency ecoRAIL technology for lower operating costs, 1RU, US power cord.	**AMPS FOR THE FOLLOWING SPACES - AMP1-CH1 TEAM LOBBY 100 (4) C4.2 @70v, AMP1-CH2 CONFERENCE 103 (2) C6.2 @70v, AMP1- CH3 TEAM STORE 117 (4) P6.2 @70v, AMP1-CH4 (1) S10.0D ea.@ 4ohm**	https://products.dynacord.com/download/979992	https://products.dynacord.com/na/en/ix30:8
			MEETING ROOM 124			
	F.01U.417.802	LRC-2100-B	Column speaker, 37.4" (1m) tall. 12x 2.5" mid-high drivers with proprietary PaSS dispersion control, and 2x 6.5" band-pass woofers. 140° horizontal coverage, switchable 25°/45° vertical coverage with 7.5° Acoustic Down-tilt. SwifTilt Pan-Tilt bracket included. Outdoor rated IP55, black.		https://products.electrovoice.com/download/980023	https://products.electrovoice.com/na/en/lrc-2100
	F.01U.351.202	EVID-P6.2B	6.5" Coaxial pendant speaker with horn loaded Ti coated tweeter - for 70v/100v or 8-ohm operation. Taps at 30, 15, 7.5, 3.75, and 1.88 watts. Black		https://products.electrovoice.com/download/975836	https://products.electrovoice.com/na/en/evid-p62
	F.01U.332.744	EVID-S10.1DB	Subwoofer 2x10" cabinet black		https://products.electrovoice.com/download/974932	https://products.electrovoice.com/na/en/evid-s101d
	F.01U.344.851	UB-10DB	U-bracket for 10" subwoofer black		REFER TO DATA SHEET	

LSUE BASEBALL - AUDIO EQUIPMENT LIST

1	F.01U.425.387	IX60:8-US	8-channel networked DSP amplifier with 6 kW powerTANK for Hi-Z and Lo-Z operation, 8 x 8 Dante with OCA/AES70 remote control, 8 mic/line inputs usable as Dante break-in, 96 kHz fully featured DSP matrix mixer and TaskEngine for system logic, automation, scheduling and integration, ghostPOWER via PoE to maintain DSP, Dante network and mic/line inputs, High efficiency ecoRAIL technology for lower operating costs, 1RU, US power cord.	**AMP FOR MEETING ROOM 124 - CH 1 (1) LRC 2100 @ 8ohm, CH 2 (1) LRC 2100 @ 8ohm, CH 3 (3) P6.2 @2.7ohm, CH 4 (3) P6.2 @2.7ohm, CH 5 (1) S10.0D ea.@ 4ohm & CH6 (1) S10.0D ea.@ 4ohm**	https://products.dynacord.com/download/979994	https://products.dynacord.com/na/en/ix60:8
	F.01U.384.715	Symetrix T7	Full HD TFT touch panel 5.7", POE, for control panels created in SONICUE sound system software	**Optional Wall Mounted Audio Controller (Touch Panel)**	https://d3b79pswu7f4ma.cloudfront.net/products/control/T-7-DATA-SHEET.pdf	https://www.symetrix.co/t-series-touchscreen-controllers
DSP / AMPS FOR ABOVE SPACES / ZONES						

Section 01 20 00
Price and Payment Procedures

ALTERNATES

PART ONE-GENERAL

1.01 DESCRIPTION:

A. An alternate is an amount proposed by bidders and stated on the Bid Form for certain work defined in the Bidding Requirements that may be added to the Base Bid amount if the Owner decides to accept a corresponding change in either the amount of construction to be completed, or in the products, materials, equipment, systems, or installation methods described in the Contract Documents.

B. The cost for each alternate is the net addition to the Contract Sum to incorporate the Alternate into the Work. No other adjustments are made to the Contract Sum.

C. Related Work Described Elsewhere:
1. Materials and methods to be used in the Base Bid and in the Alternates have been described on the Drawings and in pertinent Sections of these Specifications.
2. Method for stating the proposed Contract Sum is described in the bid form.

1.02 All alternates described in this Section are required to be reflected on the Bid Form as submitted by Bidders. Do not submit Alternates other than as described in this Section.

1.03 If Owner elects to proceed on the basis of one or more of the Alternates, make all modifications to the work required in furnishing and installing the selected Alternates to the approval of the Architect and at no additional cost to the Owner other than as proposed on the Bid Form.

1.04 All Alternates must be executed with an appropriate response. A "blank space” or a "No Bid" statement is inappropriate. The space must include a "Specific Sum" or a "No Change in Price" statement. Failure to provide this information may be cause for rejection of the bid.

1.05 ALTERNATE SCHEDULE:

A. Alternate No. 1: Add Brick Pilaster Columns at Existing Video Board
B. Alternate No. 2: Add Field Level Drink Rail Seating

END OF SECTION

Section 07 42 43
Composite Metal Wall Panel Systems

PART 1 GENERAL

1.01 SUMMARY

A. Section Includes
   1. The extent of panel system work is indicated on the drawings and in these specifications.
   2. Panel system requirements include the following components:
      a. Aluminum faced composite panels with mounting system and wet-sealed joints. Panel mounting system including anchorages, shims, furring, fasteners, for exterior application.

B. Related Sections:
   1. Section 05 12 00 - Structural Steel Framing: Structural steel building frame.
   2. Section 07 21 00 – Building Insulation.
   3. Section 07 27 26 – Fluid Applied Membrane.
   4. Section 07 60 00 - Sheet Metal Flashing and Trim
   5. Section 07 84 00 - Firestopping.
   6. Section 07 92 00 - Joint Sealers.
   7. Section 08 41 13 – Aluminum Storefront
   8. Section 09 29 16 – Gypsum Board Assemblies: Metal stud framing at exterior walls.

1.02 REFERENCES

A. Aluminum Association:
   1. AA ADM 1 - Aluminum Design Manual.
   2. AA ASM 35 - Aluminum Sheet Metal Work in Building Construction.

B. American Society of Civil Engineers:
   1. ASCE 7 - Minimum Design Loads for Buildings and Other Structures.

C. ASTM International:
   1. ASTM B209 - Standard Specification for Aluminum and Aluminum-Alloy Sheet and Plate.

1.03 SYSTEM DESCRIPTION

A. System: Preformed and prefinished composite metal building panel system of horizontal profile; site assembled; with all panel manufacturer’s extruded clips, stiffeners, concealed fasteners and attachment assembly as necessary and required to provide and install a complete, code-compliant installation; with manufacturer’s standard core; and wet-sealed joints.

1.04 PERFORMANCE REQUIREMENTS

A. Components: Design and size components to withstand dead and live loads

B. Maximum Allowable Deflection of Panel: 1/90

C. Movement: Accommodate movement within system without damage to system, components; movement between system and perimeter components when subject to interior normal conditioned temperature cycling; dynamic loading and release of loads; deflection of structural support framing, and mid-span slab edge deflection.

D. Tolerances: Accommodate tolerances of building structural framing.

1.05 SUBMITTALS

A. Section 01 33 00 - Submittal Procedures: Submittal procedures.

B. Shop Drawings: Signed and sealed by professional engineer.
   1. Indicate dimensions, panel profile and layout, spans, joints, expansion joints, construction details, extrusions/attachment components, methods of anchorage, method of installation and interface with adjacent materials.
   2. Include design calculations.

C. Product Data:
   1. Submit panel profile characteristics and dimensions, and structural properties.
   2. Submit data on assembled panel structural capabilities.
   3. Sealants to be used for installation.

D. Samples: Submit two samples of panel 8 x 8 inch in size illustrating finish color, sheen, and texture.

E. Installer’s qualifications in compliance with this Section.

F. Manufacturer's Installation Instructions: Submit special handling criteria, installation sequence, and cleaning procedures.

1.06 QUALITY ASSURANCE

A. Perform Work in accordance with AA ASM-35

1.07 QUALIFICATIONS
- A. Manufacturer: Company specializing in manufacturing products specified in this section with minimum five years documented experience.
- B. Installer: Company specializing in performing Work of this section with minimum three years documented experience.
- C. Design metal panels under direct supervision of Professional Engineer experienced in design of Work

1.08 MOCKUP
- A. Section 01 40 00 - Quality Requirements: Requirements for mockup.
- B. Construct mockup, including siding, attachments to substrate, associated accessory components.
- C. Demonstrate component assembly including panel and glazing materials, weep drainage system, attachments, anchors, and perimeter sealant.
- D. Locate where directed by Architect
- E. Remove mockup when directed by Architect

1.09 DELIVERY, STORAGE, AND HANDLING
- A. Section 01 60 00 - Product Requirements: Product storage and handling requirements.
- B. Protect panels from accelerated weathering by removing or venting sheet plastic shipping wrap.
- C. Store pre-finished material off ground with weather protection to prevent twisting, bending, or abrasion, and to provide ventilation. Slope metal sheets to ensure drainage.
- D. Prevent contact with materials capable of causing discoloration or staining.

1.10 COORDINATION
- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Coordinate Work with placement of anchors and installation of adjacent components and materials

1.11 WARRANTY
- A. Manufacturer’s standard warranty against defective materials.

PART 2 PRODUCTS

2.01 COMPOSITE PANELS
- A. Manufacturers
  1. Peterson Aluminum
  2. Alucobond: Basis of Design: 4MM Alucobond Plus
  3. Alpolic
  4. Substitutions: 01 63 00
- B. Thickness: 4mm (0.157")
- C. Finishes
  1. As indicated in Drawings.
- D. Composition:
  1. Two sheets of aluminum sandwiching a solid core of extruded thermoplastic material formed in a continuous process with no glues or adhesives between dissimilar materials. The core material shall be free of voids and/or air spaces and not contain foamed insulation material. Products laminated sheet by sheet in a batch process using glues or adhesives between materials shall not be acceptable.
- E. Aluminum Face Sheets:
  1. Thickness: 0.50mm (0.0197") (nominal)
  2. Alloy: AA5000 Series (Anodized material)
  3. Panel Weight: 1.12 lbs./ft²
- F. Non-Insulated Core: Manufacturer’s standard thermoplastic.
- G. Subgirts: manufacturer’s standard profile as necessary to attach panel system to substrate indicated in drawings. Thickness as required to support specified loads within specified deflection limitations.
- H. Internal and External Corners: Same material, thickness, and finish; profile to suit system; shop cut and factory mitered to required angles. Mitered internal corners to be back braced with pre-coated sheet stock to maintain continuity of profile.
- I. Expansion Joints: Same material, thickness and finish as exterior sheets
- J. Trim, Closure Pieces, Caps, Infills: Same material, thickness and finish; brake formed as required.
- K. Anchors: Stainless steel.

2.02 ACCESSORIES
- A. Sealants: As may be recommended and manufactured by panel or system manufacturer, or as specified in Section 07 90 00 suitable for use with installation of panel system; non-staining color as selected by Architect.
- B. Fasteners: Manufacturer's standard type to suit application; with soft neoprene washers, stainless steel; fastener cap same color as exterior panel.
- C. Field Touch-up Paint: ONLY as recommended by panel manufacturer.
- D. Bituminous Paint: Asphalt base, use at dissimilar metals to prevent corrosion.

2.03 FABRICATION
- A. Fabrication of component profiles on site is not permitted.
- B. Form sections to shape indicated on Drawings, accurate in size, square, free from distortion or defects.
- C. Form pieces in longest practicable lengths.
- D. Panel Profile: as indicated on Drawings.
- E. Fabricate corners in one continuous piece with minimum 18 inch returns, or as indicated in drawings.

2.04 SYSTEM TYPE
- A. For exterior application, as indicated on architectural drawings.

PART 3 EXECUTION

3.01 EXAMINATION
- A. Section 01 30 00 - Administrative Requirements: Coordination and project conditions.
- B. Verify framing members are ready to receive panel system.

3.02 INSTALLATION
- A. Protect panel surfaces in contact with cementitious materials and dissimilar metals with bituminous paint. Allow to dry prior to installation.
- B. Install in compliance with system manufacturer’s requirements; Installer must have manufacturer’s installation manual on-site while installation is on-going. Permanently fasten panel system to structural supports; aligned, level, and plumb, within specified tolerances.
- C. Locate panel joints over supports.
- D. Install joints where indicated.
- E. Use concealed fasteners.
- F. Maintain neat appearance.

3.03 ERECTION TOLERANCES
- A. Section 01 40 00 - Quality Requirements: Tolerances.
- B. Maximum Offset From Indicated Alignment Between Adjacent Members Butting or In Line: 1/16 inch.
- C. Maximum Variation from Plane or Location Indicated on Drawings: 1/8 inch.

3.04 CLEANING
- A. Section 01 70 00 - Execution and Closeout Requirements: Final cleaning.
- B. Remove site cuttings from finish surfaces.
- C. Clean and wipe prefinished surfaces with mild soap and water; rinse with clean water.

END OF SECTION

Section 07 62 00
Sheet Metal Flashing and Trim

PART 1 GENERAL

1.01 SUMMARY
- A. Fabricated sheet metal items for roof work, including flashings, coping/fascia, joints, vents.
- B. Roof manufacturer's requirements for flashing and sheet metal work shall be met in order to comply with and maintain the roof warranty.
- C. Any conflicting requirements of this Section with the roof manufacturer's warranty requirements shall necessitate the Contractor to provide a higher quality product, installation, and/or quantity to satisfy warranty requirements.
- D. Manufactured coping systems at parapets and other locations detailed in drawings.

1.02 SUBMITTALS
- A. Fabrication Drawings: Submit sheet metal fabrication shop drawings, drawn to scale, sheet metal components showing details of jointing and attachments, sizes, dimensions and shape of various members.
- B. Manufactured Items: Submit manufacturer's product data of required coping and flashing systems including related accessories.
- C. Submit manufacturer's standard color selection.
- D. All flashing and sheet metal materials, systems, and shop drawings shall be reviewed and approved by the roofing system manufacturer. Provide written endorsement from roof system manufacturer of all submitted proposed flashing details.

1.03 JOB CONDITIONS
- A. Coordinate sheet metal with roofing, interfacing adjoining work for proper sequencing of each installation.
- B. Ensure weather resistance, durability of work and protection of material and finishes.

1.04 WARRANTIES
- A. Flashing & coping systems: 2-year material and labor covering all defects in materials and workmanship within warranty period. To be combined with roofing warranty
- B. Fluoropolymer coatings: 5-years against cracking, fading, crazing, peeling, loss of cohesion and/ or adhesion, and chalking.
- C. Walk-through inspection: Required at 11 month and 23 months prior to the end of the warranty periods.

PART 2 PRODUCTS

2.01 SHEET METAL MATERIALS
- A. Precoated Aluminum, with Kynar 500 paint finish to match Class 1 Dark Bronze Anodized Storefront framing; minimum 0.063 inch thick, unless otherwise indicated in drawings and elsewhere in this specification. 3003 alloy, meeting ASTM B-209. Use 2-coat fluoropolymer finish meeting AAMA 605.2-90 criteria or anodized finishes on all exposed-to-view items. Use mill finish on all concealed items.
  1. Manufacturers
     - a. Petersen Aluminum
     - b. Ryerson Building Products
     - c. Unaclad
     - d. Substitutions: Section 01 63 00
- B. Lead: 4 lb. per sq.ft. (20 kg/m^2), common desilverized pig lead.
- C. Counterflashing: .040 Aluminum (color clad type). minimum 16 oz./ s.f.
- D. Copper: Minimum 16 oz./sf.

2.02 MISCELLANEOUS MATERIALS AND ACCESSORIES
- A. Welding: Perform welding of aluminum sheet metal to applicable ASTM standards.
- B. Fasteners: Provide only corrosion resistant treated or stainless steel.
  1. Screws: best type for the application. Include neoprene washers at exposed screw fasteners.
  2. Nails: Hot-dipped galvanized, minimum 12 gauge (2.5 mm) with large flat head annular or spiral thread type shank of sufficient length to penetrate substrate a minimum of 7/8 inch.
  3. Rivets: Compatible with aluminum

C. Bituminous Coating: SSPC-Paint 12, solvent type bituminous mastic, nominally free of sulfur, compounded for 15-mil (0.38 mm) dry film thickness per coat.
E. Roofing Cement: See Section 07 55 20.
F. Metal Accessories: Clips, straps, anchoring devices and similar accessory units as required for installation of work, matching or compatible with material being installed, non-corrosive, size and gage required for performance.
G. Sealant: type specified in Section 07 92 00.

2.03 FABRICATED UNITS

A. Metal Fabrication: Shop-fabricate work to greatest extent possible; manufactured systems may be used, field fabricated shall be uses only upon receiving Architect's specific approval per location. Comply with details, with applicable requirements of SMACNA "Architectural Sheet Metal Manual" and other recognized industry practices. Fabricate for waterproof and weather-resistant performance with expansion provisions for running work, sufficient to permanently prevent leakage, damage or deterioration of the work. Form work to fit substrates. Comply with material manufacturer instructions and recommendations. Form exposed sheet metal work without excessive oil-canning, buckling and tool marks, true to line and levels with exposed edges folded back to form hems.
B. Expansion Joint Covers: Same as roofing manufacturer; equal to Johns Manville "Expand-O-Flash; use factory prefabricated corners, tees, crossovers, and transition items.
C. Seams: Fabricate nonmoving seams in sheet metal with flat-lock seams. Tin edges to be seamed, form seams, and weld. Solder seams continuously at exposed side for waterproof performance. Smooth for visual appearance and, to provide even surface for application of overlaying roof membranes.
D. Expansion Provisions: Fabricate as indicated. Include back-up and cover plates. Provide "hug" edges for cover plates.
E. Corners and Intersections: Fabricate one-piece formed metal units at corners and intersections.
    1. Miter at each corner condition.
    2. Aluminum:
        a. Double lap seam and solder both sides continuously.
        b. At the outside corner of the drip, provide folded metal bridge to span the open corner. Weld bridge piece to each side of the within hem of drip.
    3. Extend each leg of the formed metal component up to 24 inches, unless indicated otherwise, and provide an expansion joint before continuation of the flashing.
F. Sealant Joints: Where movable, non-expansion type joints are indicated or required for proper performance of work, form metal to provide for proper installation of elastomeric sealant, in compliance with industry standards.
G. Separations: Separate metal from non-compatible metal or corrosive substrates by coating concealed surfaces at locations of contact, with bituminous coating or other permanent separation as recommended by manufacturer/fabricator.
H. Copings: Minimum 0.063" thickness aluminum; use shop (or factory) prefabricated corners, tees, crossovers, and transitions for minimum 24" distances in each respective dimension from intercepts. Apply finish coatings after fabrication.
    1. Provide movement joints at maximum spacing of 10 feet.
    2. Provide for thermal expansion of exposed work exceeding 15 feet running length.
    3. No joints allowed within 2 feet of corner or intersection.
I. Mastic: type recommended by roof system manufacturer for roof conditions and flashing materials used

PART 3 EXECUTION

3.01 SHEET METAL INSTALLATION REQUIREMENTS

A. General: Except as otherwise noted, comply with manufacturer's installation instructions and recommendations, and SMACNA "Architectural Sheet Metal Manual".
    1. Anchor units of work to substrates securely.
    2. Conceal fasteners as much as possible.
    3. Set units true to line and level as indicated.
    4. Install work with laps, joints and seams which will be permanently watertight and waterproof.
    5. Bed flanges of work in a thickened coat of bituminous roofing cement where required for waterproof performance.

6. End laps: minimum 6 inches , sealed with flashing adhesive.

B. Workmanship: Form sheet metal accurately to the dimensions and shapes required. Finish molded and broken surfaces with true, sharp and straight lines and angles. Where intercepting other members, cope to an accurate fit and weld securely. Unless otherwise specifically permitted by the Architect, turn exposed edges back ½ inch.

C. Expansion: Form, fabricate and install sheet metal so as to adequately provide for expansion and contraction in the finished work.

D. Weatherproofing: Finish watertight and weathertight. Make lock seam work flat and true to line and sweated full of solder. Make lock seams and lap seams, when welded at least ½ inch (13 mm) wide, except that aluminum is to be welded. Where lap seams are not welded, lap according to pitch but in no case less than 3 inches (76 mm). Make flat and lap seams in direction of flow.

E. Joints: Join parts with rivets or sheet metal screws where necessary for strength of stiffness. Provide suitable watertight expansion joints as indicated on the Drawings or required for proper installation.

F. Nailing: Wherever possible, secure metal by means of clips or cleats without nailing through the metal. Unless indicated otherwise, space nails, rivets and screws not more than 8 inch (203 mm) apart and, where exposed to the weather, use lead washers. Nail into wood with barbed roofing nails 1-1/4 inch long by 11 gauge through flat tin discs. Fasten in masonry with expansion type anchors.

G. Welding: Thoroughly clean and tin joint materials prior to welding. Weld slowly in order to heat the seams thoroughly and to completely fill them with the weld. Make exposed welding on finished surfaces neat, full flowing and smooth.

3.02 METAL FLASHING AND COUNTERFLASHINGS

A. Unless otherwise shown, all flashings shall be counterflashed.

B. Flashings and counterflashings generally shall not exceed 10 feet (3 m) in length. Flashings shall be free from longitudinal joints.

C. Extend flashing minimum of 8” beyond each side of opening; form end dams by turning-up material minimum 2” each end.

D. Counterflashings shall have both edges folded or returned upon themselves at least ½ inch and the lower edge shall overlap the flashing at least 4 inches with the lower edge parallel to the roof line. Counterflashing must be bent to the required shape before being placed.

E. Make joints between the units shall with a ½ inch (13 mm) expansion joint between sheets with 8 inches (203 mm) wide backup plates and 6 inches (152 mm) cover plates formed to exact profile of units. Fill space between copings and plates with 2 continuous beads of sealant.

F. Provide continuous cleats unless indicated otherwise.

3.03 VENT THROUGH ROOF FLASHING

A. Provide sheet lead roof vent flashing where indicated.

B. Cement metal flange to surface of the roofing ply with hot bitumen or flashing cement. Over the flange apply strip flashing as described in Section 07 55 00 and as detailed.

3.04 CLEATS

A. Provide continuous cleats where indicated or specified to secure loose edges of the sheet metalwork

B. Space butt joints approximately 1/8 inch (3 mm) apart.

C. Fasten cleats to the supporting construction with nails evenly spaced not over 12 inches on centers. Fasten to concrete or masonry with screws driven in expansion shields set in concrete or masonry. The cleat shall be of sufficient width to provide adequate bearing area to insure a rigid installation.

3.05 COPING/FASCIA

A. Fabricate to profile shown without longitudinal joints. Provide continuous cleat at bottom of fascia section. No exposed fasteners permitted unless noted otherwise. Provide clips at cant edge at roof side. Installation shall be commensurate with fabrication requirements required elsewhere in this Section.

B. Provide ice-and-water shield over the cleat and mechanical fasteners as a substrate to the coping.

C. Provide expansion-contraction joints with backup and cover plates as indicated.

D. Fabricate internal, external corner units with mitered and continuously welded joints.

3.06 ROOF JOINTS

A. Fabricate to profile shown without longitudinal joints. Provide continuous cleat at bottom of fascia. No exposed fasteners are permitted unless noted otherwise. Provide clips at cant edge at roof side.
B. Provide expansion-contraction joints with backup and cover plates as indicated.
C. Fabricate one-piece formed termination/connection units with mitered and continuously welded joints.

3.07 GRAVITY VENTS

A. Fabricate as indicated.
B. At Contractor's option, provide manufactured units made of aluminum, similar in design and size as that indicated and appropriate for use in each condition.

3.08 SHEET METAL MATERIAL SCHEDULE

A. General: Provide the following types of sheet metal at the locations indicated.
B. Lead:
    1. Plumbing piping roof vent flashings.
    2. Sheet lead pan under flashing membranes at roof drains w/clamping rings.
C. Aluminum:
    1. Roof edge perimeter coping/fascia, .063" thickness minimum.
    2. Flashings and counterflashings at roof-wall juncture
    3. Flashings at roof curbs and penetrations
    4. Pipe collar flashings. .032, minimum
    5. Curbs and Gravity vents. (Or manufactured units at Contractor's option as described above.)
    6. Concealed sleeves for piping, other roof penetrations. .032, minimum

END OF SECTION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes commercial door hardware for the following:

1. Swinging doors.
2. Other doors to the extent indicated.

B. Door hardware includes, but is not necessarily limited to, the following:

1. Mechanical door hardware.
2. Electromechanical door hardware.
3. Cylinders specified for doors in other sections.

C. Related Sections:

1. Division 08 Section “Hollow Metal Doors and Frames”.
2. Division 08 Section “Flush Wood Doors”.
3. Division 08 Section “Aluminum-Framed Entrances and Storefronts”.
4. Division 08 Section “Fire-Rated Steel Framed Entrances”.

D. Codes and References: Comply with the version year adopted by the Authority Having Jurisdiction.

1. ANSI A117.1 - Accessible and Usable Buildings and Facilities.
2. ICC/IBC - International Building Code.
3. NFPA 70 - National Electrical Code.
4. NFPA 80 - Fire Doors and Windows.
5. NFPA 101 - Life Safety Code.
6. NFPA 105 - Installation of Smoke Door Assemblies.
7. State Building Codes, Local Amendments.

E. Standards: All hardware specified herein shall comply with the following industry standards as applicable. Any undated reference to a standard shall be interpreted as referring to the latest edition of that standard:

1. ANSI/BHMA Certified Product Standards - A156 Series.
2. UL10C - Positive Pressure Fire Tests of Door Assemblies.
3. ANSI/UL 294 - Access Control System Units.
4. UL 305 - Panic Hardware.
5. ANSI/UL 437- Key Locks.

1.3 SUBMITTALS

A. Product Data: Manufacturer's product data sheets including installation details, material descriptions, dimensions of individual components and profiles, operational descriptions and finishes.

B. Door Hardware Schedule: Prepared by or under the supervision of supplier, detailing, fabrication and assembly of door hardware, as well as procedures and diagrams. Coordinate the final Door Hardware Schedule with doors, frames, and related work to ensure proper size, thickness, hand, function, and finish of door hardware.

1. Format: Comply with scheduling sequence and vertical format in DHI's "Sequence and Format for the Hardware Schedule."
2. Organization: Organize the Door Hardware Schedule into door hardware sets indicating complete designations of every item required for each door or opening. Organize door hardware sets in same order as in the Door Hardware Sets at the end of Part 3. Submittals that do not follow the same format and order as the Door Hardware Sets will be rejected and subject to resubmission.
3. Content: Include the following information:

    a. Type, style, function, size, label, hand, and finish of each door hardware item.
    b. Manufacturer of each item.
    c. Fastenings and other pertinent information.
    d. Location of door hardware set, cross-referenced to Drawings, both on floor plans and in door and frame schedule.
    e. Explanation of abbreviations, symbols, and codes contained in schedule.
    f. Mounting locations for door hardware.
    g. Door and frame sizes and materials.
    h. Warranty information for each product.

4. Submittal Sequence: Submit the final Door Hardware Schedule at earliest possible date, particularly where approval of the Door Hardware Schedule must precede fabrication of other work that is critical in the Project construction schedule. Include Product Data, Samples, Shop Drawings of other work affected by door hardware, and other information essential to the coordinated review of the Door Hardware Schedule.

C. Shop Drawings: Details of electrified access control hardware indicating the following:

1. Wiring Diagrams: Upon receipt of approved schedules, submit detailed system wiring diagrams for power, signaling, monitoring, communication, and control of the access control system electrified hardware. Differentiate between manufacturer-installed and field-installed wiring. Include the following:

    a. Elevation diagram of each unique access controlled opening showing location and interconnection of major system components with respect to their placement in the respective door openings.
    b. Complete (risers, point-to-point) access control system block wiring diagrams.
    c. Wiring instructions for each electronic component scheduled herein.

2. Electrical Coordination: Coordinate with related sections the voltages and wiring details required at electrically controlled and operated hardware openings.

D. Keying Schedule: After a keying meeting with the owner has taken place prepare a separate keying schedule detailing final instructions. Submit the keying schedule in electronic format. Include keying system explanation, door numbers, key set symbols, hardware set numbers and special instructions. Owner must approve submitted keying schedule prior to the ordering of permanent cylinders/cores.

E. Informational Submittals:

1. Product Test Reports: Indicating compliance with cycle testing requirements, based on evaluation of comprehensive tests performed by manufacturer and witnessed by a qualified independent testing agency.

1.4 CLOSEOUT SUBMITTALS

A. Operating and Maintenance Manuals: Provide manufacturers operating and maintenance manuals for each item comprising the complete door hardware installation in quantity as required in Division 01, Closeout Procedures.

B. Project Record Documents: Provide record documentation of as-built door hardware sets in digital format (.pdf, .docx, .xlsx, .csv) and as required in Division 01, Project Record Documents.

1.5 QUALITY ASSURANCE

A. Hardware Supplier and Hardware Installer must obtain a license with the Louisiana Office of State Fire Marshall in accordance to RS 40:1464 and RS 40:1664.

B. Manufacturers Qualifications: Engage qualified manufacturers with a minimum 5 years of documented experience in producing hardware and equipment similar to that indicated for this Project and that have a proven record of successful in-service performance.

C. Certified Products: Where specified, products must maintain a current listing in the Builders Hardware Manufacturers Association (BHMA) Certified Products Directory (CPD).

D. Installer Qualifications: A minimum 3 years documented experience installing both standard and electrified door hardware similar in material, design, and extent to that indicated for this Project and whose work has resulted in construction with a record of successful in-service performance.

E. Door Hardware Supplier Qualifications: Experienced commercial door hardware distributors with a minimum 5 years documented experience supplying both mechanical and electromechanical hardware installations comparable in material, design, and extent to that indicated for this Project. Supplier recognized as a factory direct distributor by the manufacturers of the primary materials with a warehousing facility in Project's vicinity.

F. Source Limitations: Obtain each type and variety of door hardware specified in this section from a single source unless otherwise indicated.

1. Electrified modifications or enhancements made to a source manufacturer's product line by a secondary or third party source will not be accepted.
2. Provide electromechanical door hardware from the same manufacturer as mechanical door hardware, unless otherwise indicated.

G. Each unit to bear third party permanent label indicating compliance with the referenced testing standards.

H. Keying Conference: Conduct conference to comply with requirements in Division 01 Section "Project Meetings." Keying conference to incorporate the following criteria into the final keying schedule document:

1. Function of building, purpose of each area and degree of security required.
2. Plans for existing and future key system expansion.
3. Requirements for key control storage and software.
4. Installation of permanent keys, cylinder cores and software.
5. Address and requirements for delivery of keys.

I. Pre-Submittal Conference: Conduct coordination conference in compliance with requirements in Division 01 Section "Project Meetings" with attendance by representatives of Supplier(s), Installer(s), and Contractor(s) to review proper methods and the procedures for receiving, handling, and installing door hardware.

1. Prior to installation of door hardware, conduct a project specific training meeting to instruct the installing contractors' personnel on the proper installation and adjustment of their respective products. Product training to be attended by installers of door hardware (including electromechanical hardware) for aluminum, hollow metal and wood doors. Training will include the use of installation manuals, hardware schedules, templates and physical product samples as required.
2. Inspect and discuss electrical roughing-in, power supply connections, and other preparatory work performed by other trades.
3. Review sequence of operation narratives for each unique access controlled opening.
4. Review and finalize construction schedule and verify availability of materials.
5. Review the required inspecting, testing, commissioning, and demonstration procedures

J. At completion of installation, provide written documentation that components were applied according to manufacturer's instructions and recommendations and according to approved schedule.

1.6 DELIVERY, STORAGE AND HANDLING

A. Inventory door hardware on receipt and provide secure lock-up and shelving for door hardware delivered to Project site. Do not store electronic access control hardware, software or accessories at Project site without prior authorization.

B. Tag each item or package separately with identification related to the final Door Hardware Schedule, and include basic installation instructions with each item or package.

C. Deliver, as applicable, permanent keys, cylinders, cores, access control credentials, software and related accessories directly to Owner via registered mail or overnight package service. Instructions for delivery to the Owner shall be established at the "Keying Conference".

1.7 COORDINATION

A. Templates: Obtain and distribute to the parties involved templates for doors, frames, and other work specified to be factory prepared for installing standard and electrified hardware. Check Shop Drawings of other work to confirm that adequate provisions are made for locating and installing hardware to comply with indicated requirements.

B. Door and Frame Preparation: Doors and corresponding frames are to be prepared, reinforced and pre-wired (if applicable) to receive the installation of the specified electrified, monitoring, signaling and access control system hardware without additional in-field modifications.

1.8 WARRANTY

A. General Warranty: Reference Division 01, General Requirements. Special warranties specified in this Article shall not deprive Owner of other rights Owner may have under other provisions of the Contract Documents and shall be in addition to, and run concurrent with, other warranties made by Contractor under requirements of the Contract Documents.

B. Warranty Period: Written warranty, executed by manufacturer(s), agreeing to repair or replace components of standard and electrified door hardware that fails in materials or workmanship within specified warranty period after final acceptance by the Owner. Failures include, but are not limited to, the following:

1. Structural failures including excessive deflection, cracking, or breakage.
2. Faulty operation of the hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
4. Electrical component defects and failures within the systems operation.

C. Warranty Period: Unless otherwise indicated, warranty shall be one year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MATERIALS

2.2 BUTT HINGES

A. Hinges: ANSI/BHMA A156.1 butt hinges with number of hinge knuckles and other options as specified in the Door Hardware Sets.

1. Quantity: Provide the following hinge quantity:

   a. Two Hinges: For doors with heights up to 60 inches.
   b. Three Hinges: For doors with heights 61 to 90 inches.
   c. Four Hinges: For doors with heights 91 to 120 inches.
   d. For doors with heights more than 120 inches, provide 4 hinges, plus 1 hinge for every 30 inches of door height greater than 120 inches.

2. Hinge Size: Provide the following, unless otherwise indicated, with hinge widths sized for door thickness and clearances required:

   a. Widths up to 3'0": 4-1/2" standard or heavy weight as specified.
   b. Sizes from 3'1" to 4'0": 5" standard or heavy weight as specified.

3. Hinge Weight and Base Material: Unless otherwise indicated, provide the following:

   a. Exterior Doors: Heavy weight, non-ferrous, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate standard weight.
   b. Interior Doors: Standard weight, steel, ball bearing or oil impregnated bearing hinges unless Hardware Sets indicate heavy weight.

4. Hinge Options: Comply with the following:

   a. Non-removable Pins: With the exception of electric through wire hinges, provide set screw in hinge barrel that, when tightened into a groove in hinge pin, prevents removal of pin while door is closed; for all out-swinging lockable doors.

5. Manufacturers:

   a. Hager Companies (HA) - BB Series, 5-knuckle.
   b. McKinney (MK) - TA/T4A Series, 5-knuckle.
   c. dormakaba BEST (ST) - F/FBB Series, 5-knuckle.

2.3 CONTINUOUS HINGES

A. Continuous Geared Hinges: ANSI/BHMA A156.26 Grade 1-600 continuous geared hinge. with minimum 0.120-inch thick extruded 6063-T6 aluminum alloy hinge leaves and a minimum overall width of 4 inches. Hinges are non-handed, reversible and fabricated to template screw locations. Factory trim hinges to suit door height and prepare for electrical cut-outs.

1. Manufacturers:.

    a. Hager Companies (HA).
    b. Pemko (PE).
    c. dormakaba BEST (ST).

2.4 DOOR OPERATING TRIM

A. Flush Bolts and Surface Bolts: Provide products conforming to ANSI/BHMA A156.3 and A156.16, Grade 1.

1. Flush bolts to be furnished with top rod of sufficient length to allow bolt retraction device location approximately six feet from the floor.
2. Furnish dust proof strikes for bottom bolts.
3. Surface bolts to be minimum 8” in length and U.L. listed for labeled fire doors and U.L. listed for windstorm components where applicable.
4. Provide related accessories (mounting brackets, strikes, coordinators, etc.) as required for appropriate installation and operation.
5. Manufacturers:

    a. Burns Manufacturing (BU).
    b. Rockwood (RO).
    c. Trimco (TC).

B. Door Push Plates and Pulls: ANSI/BHMA A156.6 door pushes and pull units of type and design specified in the Hardware Sets. Coordinate and provide proper width and height as required where conflicting hardware dictates.

1. Push/Pull Plates: Minimum .050 inch thick, size as indicated in hardware sets, with beveled edges, secured with exposed screws unless otherwise indicated.
2. Door Pull and Push Bar Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door unless otherwise indicated.
3. Offset Pull Design: Size, shape, and material as indicated in the hardware sets. Minimum clearance of 2 1/2-inches from face of door and offset of 90 degrees unless otherwise indicated.
4. Pulls shall be provided with a 10” clearance from the finished floor on the push side to accommodate wheelchair accessibility.
5. Fasteners: Provide manufacturer's designated fastener type as indicated in Hardware Sets. When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.
6. Manufacturers:

    a. Burns Manufacturing (BU).
    b. Rockwood (RO).
    c. Trimco (TC).

2.5 CYLINDERS AND KEYING

A. General: Cylinder manufacturer to have minimum (10) years experience designing secured master key systems and have on record a published security keying system policy.

B. Cylinder Types: Original manufacturer cylinders able to supply the following cylinder formats and types:

1. Threaded mortise cylinders with rings and cams to suit hardware application.
2. Rim cylinders with back plate, flat-type vertical or horizontal tailpiece, and raised trim ring.
3. Bored or cylindrical lock cylinders with tailpieces as required to suit locks.

4. Tubular deadlocks and other auxiliary locks.
5. Mortise and rim cylinder collars to be solid and recessed to allow the cylinder face to be flush and be free spinning with matching finishes.
6. Keyway: Match Facility Standard.

C. Large Format Interchangeable Cores: Provide removable cores (LFIC) as specified, core insert, removable by use of a special key, and for use with only the core manufacturer's cylinder and door hardware.

D. Keying System: Each type of lock and cylinders to be factory keyed.

1. Supplier shall conduct a "Keying Conference" to define and document keying system instructions and requirements.
2. Furnish factory cut, nickel-silver large bow permanently inscribed with a visual key control number as directed by Owner.
3. Existing System: Field verify and key cylinders to match Owner's existing system.

E. Key Quantity: Provide the following minimum number of keys:

1. Change Keys per Cylinder: Two (2)
2. Master Keys (per Master Key Level/Group): Five (5).
3. Construction Keys (where required): Ten (10).
4. Construction Control Keys (where required): Two (2).
5. Permanent Control Keys (where required): Two (2).

F. Construction Keying: Provide temporary keyed construction cores.

G. Key Registration List (Bitting List):

1. Provide keying transcript list to Owner's representative in the proper format for importing into key control software.
2. Provide transcript list in writing or electronic file as directed by the Owner.

2.6 KEY CONTROL

A. Key Control Cabinet: Provide a key control system including envelopes, labels, and tags with self-locking key clips, receipt forms, 3-way visible card index, temporary markers, permanent markers, and standard metal cabinet. Key control cabinet shall have expansion capacity of 150% of the number of locks required for the project.

1. Manufacturers:

a. Lund Equipment (LU).
b. MMF Industries (MM).
c. Telkee (TK).

2.7 MORTISE LOCKS AND LATCHING DEVICES

A. Mortise Locksets, Grade 1 (Heavy Duty): Provide ANSI/BHMA A156.13, Series 1000, Operational Grade 1 Certified Products Directory (CPD) listed mortise locksets. Listed manufacturers shall meet all functions and features as specified herein.

1. Manufacturers:

a. Corbin Russwin Hardware (RU) - ML2000 Series.

b. Sargent Manufacturing (SA) - 8200 Series.
c. Schlage (SC) - L9000 Series.

2.8 MULTI-POINT LOCKS AND LATCHING DEVICES

A. Multi-Point Locksets: Vertical rod locking devices designed for openings requiring multiple latching points within one locking mechanism. Listed manufacturers shall meet all functions and features as specified herein.

1. Provide locksets with functions and features as follows:

a. Where required by code, provide knurling or abrasive coating on all levers leading to hazardous areas.
b. Meets UL and CUL Standard 10C Positive Pressure, Fire Test of Door Assemblies with levers that meet A117.1 Accessibility Code.
c. Meets Florida Building Code FL2998 and UL Certification Directory ZHEM.R21744 for latching hardware for hurricane requirements.
d. Five-year limited warranty for mechanical functions.

2. Electromechanical locksets shall have the following functions and features:

a. Motor driven electric latch retraction that supports electrified dogging.
b. Universal Molex plug-in connectors that have standardized color-coded wiring and are field configurable to fail safe or fail secure and operate from 12vdc to 24vdc regulated.
c. Uses standard electric hinge; no special power transfer required.
d. EcoFlex or equivalent technology that reduces energy consumption up to 92% as certified by GreenCircle.

3. Manufacturers:

a. Corbin Russwin Hardware (RU) - MP9800 Series.
b. Sargent Manufacturing (SA) - 7000 Series.
c. Schlage (SC) - LM9200 Series.

2.9 DEADLOCKS AND LATCHES

A. Mortise Deadlocks, Small Case: ANSI/BHMA A156.36, Grade 1, small case mortise type deadlocks constructed of heavy gauge wrought corrosion resistant steel. Steel or stainless steel bolts with a 1" throw and hardened steel roller pins. Deadlocks to be products of the same source manufacturer and keyway as other specified locksets.

1. Manufacturers:

a. Corbin Russwin Hardware (RU) - DL4000 Series.
b. Sargent Manufacturing (SA) - 4870 Series.
c. Schlage (SC) - L460 Series.

B. Narrow Case Deadlocks and Deadlatches: ANSI/BHMA 156.13 Series 1000 Grade 1 narrow case deadlocks and deadlatches for swinging or sliding door applications. All functions shall be manufactured in a single sized case formed from 12 gauge minimum, corrosion resistant steel (option for fully stainless steel case and components). Provide minimum 2 7/8" throw laminated stainless steel bolt. Bottom rail deadlocks to have 3/8” diameter bolts.

1. Manufacturers:

    a. Adams Rite Manufacturing (AD) - MS1850S / MS1950 Series.
    b. Adams Rite Manufacturing (AD) - 4900 Series.

2.10 LOCK AND LATCH STRIKES

A. Strikes: Provide manufacturer's standard strike with strike box for each latch or lock bolt, with curved lip extended to protect frame, finished to match door hardware set, unless otherwise indicated, and as follows:

1. Flat-Lip Strikes: For locks with three-piece antifriction latchbolts, as recommended by manufacturer.
2. Extra-Long-Lip Strikes: For locks used on frames with applied wood casing trim.
3. Aluminum-Frame Strike Box: Provide manufacturer's special strike box fabricated for aluminum framing.
4. Double-lipped strikes: For locks at double acting doors. Furnish with retractable stop for rescue hardware applications.

B. Standards: Comply with the following:

1. Strikes for Mortise Locks and Latches: BHMA A156.13.
2. Strikes for Bored Locks and Latches: BHMA A156.2.
3. Strikes for Auxiliary Deadlocks: BHMA A156.36.
4. Dustproof Strikes: BHMA A156.16.

2.11 CONVENTIONAL EXIT DEVICES

A. General Requirements: All exit devices specified herein shall meet or exceed the following criteria:

1. Exit devices shall have a five-year warranty.
2. At doors not requiring a fire rating, provide devices complying with NFPA 101 and listed and labeled for "Panic Hardware" according to UL305. Provide proper fasteners as required by manufacturer including sex nuts and bolts at openings specified in the Hardware Sets.
3. Where exit devices are required on fire rated doors, provide devices complying with NFPA 80 and with UL labeling indicating "Fire Exit Hardware". Provide devices with the proper fasteners for installation as tested and listed by UL. Consult manufacturer’s catalog and template book for specific requirements.
4. Except on fire rated doors, provide exit devices with hex key dogging device to hold the pushbar and latch in a retracted position. Provide optional keyed cylinder dogging on devices where specified in Hardware Sets.
5. Devices must fit flat against the door face with no gap that permits unauthorized dogging of the push bar. The addition of filler strips is required in any case where the door light extends behind the device as in a full glass configuration.
6. Lever Operating Trim: Where exit devices require lever trim, furnish manufacturer's heavy duty escutcheon trim with threaded studs for thru-bolts.

    a. Lock Trim Design: As indicated in Hardware Sets, provide finishes and designs to match that of the specified locksets.
    b. Where function of exit device requires a cylinder, provide a cylinder (Rim or Mortise) as specified in Hardware Sets.

7. Vertical Rod Exit Devices: Where surface or concealed vertical rod exit devices are used at interior openings, provide as less bottom rod (LBR) unless otherwise indicated. Provide dust proof strikes where thermal pins are required to project into the floor.

8. Narrow Stile Applications: At doors constructed with narrow stiles, or as specified in Hardware Sets, provide devices designed for maximum 2” wide stiles.
9. Dummy Push Bar: Nonfunctioning push bar matching functional push bar.
10. Rail Sizing: Provide exit device rails factory sized for proper door width application.
11. Through Bolt Installation: For exit devices and trim as indicated in Door Hardware Sets.

B. Conventional Push Rail Exit Devices (Heavy Duty): ANSI/BHMA A156.3, Grade 1 Certified Products Directory (CPD) listed exit devices. Listed manufacturers shall meet all functions and features as specified herein.

1. Manufacturers:

a. Corbin Russwin Hardware (RU) - ED4000 / ED5000 Series.
b. Sargent Manufacturing (SA) - 80 Series.
c. Von Duprin (VD) - 35A/98 XP Series.

2.12 SURFACE DOOR CLOSERS

A. All door closers specified herein shall meet or exceed the following criteria:

1. General: Door closers to be from one manufacturer, matching in design and style, with the same type door preparations and templates regardless of application or spring size. Closers to be non-handed with full sized covers.
2. Standards: Closers to comply with UL-10C for Positive Pressure Fire Test and be U.L. listed for use of fire rated doors.
3. Size of Units: Comply with manufacturer's written recommendations for sizing of door closers depending on size of door, exposure to weather, and anticipated frequency of use. Where closers are indicated for doors required to be accessible to the Americans with Disabilities Act, provide units complying with ANSI ICC/A117.1.
4. Closer Arms: Provide heavy duty, forged steel closer arms unless otherwise indicated in Hardware Sets.
5. Closers shall not be installed on exterior or corridor side of doors; where possible install closers on door for optimum aesthetics.
6. Closer Accessories: Provide door closer accessories including custom templates, special mounting brackets, spacers and drop plates as required for proper installation. Provide through-bolt and security type fasteners as specified in the hardware sets.

B. Door Closers, Surface Mounted (Heavy Duty): ANSI/BHMA A156.4, Grade 1 Certified Products Directory (CPD) listed surface mounted, heavy duty door closers with complete spring power adjustment, sizes 1 thru 6; and fully operational adjustable according to door size, frequency of use, and opening force. Closers to be rack and pinion type, one piece cast iron or aluminum alloy body construction, with adjustable backcheck and separate non-critical valves for closing sweep and latch speed control. Provide non-handed units standard..

1. Manufacturers:

a. Corbin Russwin Hardware (RU) - DC8000 Series.
b. LCN Closers (LC) – 4040XP Series.
c. Norton Rixson (NO) - 7500 Series.
d. Sargent Manufacturing (SA) - 351 Series.

2.13 ARCHITECTURAL TRIM AND ACCESSORIES

A. Door Protective Trim:

1. General: Door protective trim units to be of type and design as specified below or in the Hardware Sets.
2. Size: Fabricate protection plates (kick, armor, or mop) not more than 2" less than door width (LDW) on stop side of single doors and 1" LDW on stop side of pairs of doors, and not more than 1" less than door width on pull side. Coordinate and provide proper width and height as required where conflicting hardware dictates. Height to be as specified in the Hardware Sets.
3. Where plates are applied to fire rated doors with the top of the plate more than 16" above the bottom of the door, provide plates complying with NFPA 80. Consult manufacturer's catalog and template book for specific requirements for size and applications.
4. Protection Plates: ANSI/BHMA A156.6 protection plates (kick, armor, or mop), fabricated from the following:

    a. Stainless Steel: 300 grade, 050-inch thick.

5. Options and fasteners: Provide manufacturer's designated fastener type as specified in the Hardware Sets. Provide countersunk screw holes.
6. Manufacturers:

    a. Burns Manufacturing (BU).
    b. Rockwood (RO).
    c. Trimco (TC).

2.14 DOOR STOPS AND HOLDERS

A. General: Door stops and holders to be of type and design as specified below or in the Hardware Sets.

B. Door Stops and Bumpers: ANSI/BHMA A156.16, Grade 1 door stops and wall bumpers. Provide wall bumpers, either convex or concave types with anchorage as indicated, unless floor or other types of door stops are specified in Hardware Sets. Do not mount floor stops where they will impede traffic. Where floor or wall bumpers are not appropriate, provide overhead type stops and holders.

1. Manufacturers:

    a. Burns Manufacturing (BU).
    b. Rockwood (RO).
    c. Trimco (TC).

2.15 ARCHITECTURAL SEALS

A. General: Thresholds, weatherstripping, and gasket seals to be of type and design as specified below or in the Hardware Sets. Provide continuous weatherstrip gasketing on exterior doors and provide smoke, light, or sound gasketing on interior doors where indicated. At exterior applications provide non-corrosive fasteners and elsewhere where indicated.

B. Smoke Labeled Gasketing: Assemblies complying with NFPA 105 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for smoke control ratings indicated, based on testing according to UL 1784.

1. Provide smoke labeled perimeter gasketing at all smoke labeled openings.

C. Fire Labeled Gasketing: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire ratings indicated, based on testing according to UL-10C.

1. Provide intumescent seals as indicated to meet UL10C Standard for Positive Pressure Fire Tests of Door Assemblies, and NFPA 252, Standard Methods of Fire Tests of Door Assemblies.

D. Sound-Rated Gasketing: Assemblies that are listed and labeled by a testing and inspecting agency, for sound ratings indicated.

E. Replaceable Seal Strips: Provide only those units where resilient or flexible seal strips are easily replaceable and readily available from stocks maintained by manufacturer.

F. Manufacturers:

1. National Guard Products (NG).
2. Pemko (PE).
3. Reese Enterprises, Inc. (RE).

2.16 ELECTRONIC ACCESSORIES

A. Door Position Switches: Door position magnetic reed contact switches specifically designed for use in commercial door applications. On recessed models the contact and magnetic housing snap-lock into a 1" diameter hole. Surface mounted models include wide gap distance design complete with armored flex cabling. Provide SPDT, N/O switches with optional Rare Earth Magnet installation on steel doors with flush top channels.

1. Manufacturers:

a. Alarm Controls (AK) - CP1-1026 Series.
b. Security Door Controls (SD) - DPS Series.
c. Securitron (SU) - DPS Series.

2.17 FABRICATION

A. Fasteners: Provide door hardware manufactured to comply with published templates generally prepared for machine, wood, and sheet metal screws. Provide screws according to manufacturers recognized installation standards for application intended.

2.18 FINISHES

A. Standard: Designations used in the Hardware Sets and elsewhere indicate hardware finishes complying with ANSI/BHMA A156.18, including coordination with traditional U.S. finishes indicated by certain manufacturers for their products.

B. Provide quality of finish, including thickness of plating or coating (if any), composition, hardness, and other qualities complying with manufacturer's standards, but in no case less than specified by referenced standards for the applicable units of hardware

C. Protect mechanical finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine scheduled openings, with Installer present, for compliance with requirements for installation tolerances, labeled fire door assembly construction, wall and floor construction, and other conditions affecting performance.

B. Notify architect of any discrepancies or conflicts between the door schedule, door types, drawings and scheduled hardware. Proceed only after such discrepancies or conflicts have been resolved in writing.

3.2 PREPARATION

A. Hollow Metal Doors and Frames: Comply with ANSI/DHI A115 series.

B. Wood Doors: Comply with ANSI/DHI A115-W series.

3.3 INSTALLATION

A. Install each item of mechanical and electromechanical hardware and access control equipment to comply with manufacturer's written instructions and according to specifications.

1. Installers are to be trained and certified by the manufacturer on the proper installation and adjustment of fire, life safety, and security products including: hanging devices; locking devices; closing devices; and seals.

B. Mounting Heights: Mount door hardware units at heights indicated in following applicable publications, unless specifically indicated or required to comply with governing regulations:

1. Standard Steel Doors and Frames: DHI's "Recommended Locations for Architectural Hardware for Standard Steel Doors and Frames."
2. DHI TDH-007-20: Installation Guide for Doors and Hardware.
3. Where indicated to comply with accessibility requirements, comply with ANSI A117.1 "Accessibility Guidelines for Buildings and Facilities."
4. Provide blocking in drywall partitions where wall stops or other wall mounted hardware is located.

C. Retrofitting: Install door hardware to comply with manufacturer's published templates and written instructions. Where cutting and fitting are required to install door hardware onto or into surfaces that are later to be painted or finished in another way, coordinate removal, storage, and reinstallation of surface protective trim units with finishing work specified in Division 9 Sections. Do not install surface-mounted items until finishes have been completed on substrates involved.

D. Push Plates and Door Pulls: When through-bolt fasteners are in the same location as a push plate, countersink the fasteners flush with the door face allowing the push plate to sit flat against the door.

E. Thresholds: Set thresholds for exterior and acoustical doors in full bed of sealant complying with requirements specified in Division 7 Section "Joint Sealants."

F. Storage: Provide a secure lock up for hardware delivered to the project but not yet installed. Control the handling and installation of hardware items so that the completion of the work will not be delayed by hardware losses before and after installation.

3.4 FIELD QUALITY CONTROL

A. Field Inspection (Punch Report): Reference Division 01 Sections “Closeout Procedures”. Produce project punch report for each installed door opening indicating compliance with approved submittals and verification hardware is properly installed, operating and adjusted. Include list of items to be completed and corrected, indicating the reasons or deficiencies causing the Work to be incomplete or rejected.

1. Organization of List: Include separate Door Opening and Deficiencies and Corrective Action Lists organized by Mark, Opening Remarks and Comments, and related Opening Images and Video Recordings.

3.5 ADJUSTING

A. Initial Adjustment: Adjust and check each operating item of door hardware and each door to ensure proper operation or function of every unit. Replace units that cannot be adjusted to operate as intended. Adjust door control devices to compensate for final operation of heating and ventilating equipment and to comply with referenced accessibility requirements.

3.6 CLEANING AND PROTECTION

A. Protect all hardware stored on construction site in a covered and dry place. Protect exposed hardware installed on doors during the construction phase. Install any and all hardware at the latest possible time frame.

B. Clean adjacent surfaces soiled by door hardware installation.

C. Clean operating items as necessary to restore proper finish. Provide final protection and maintain conditions that ensure door hardware is without damage or deterioration at time of owner occupancy.

3.7 DEMONSTRATION

A. Instruct Owner's maintenance personnel to adjust, operate, and maintain mechanical and electromechanical door hardware.

3.8 DOOR HARDWARE SETS

A. The hardware sets represent the design intent and direction of the owner and architect. They are a guideline only and should not be considered a detailed hardware schedule. Discrepancies, conflicting hardware and missing items should be brought to the attention of the architect with corrections made prior to the bidding process. Omitted items not included in a hardware set should be scheduled with the appropriate additional hardware required for proper application and functionality.

1. Quantities listed are for each pair of doors, or for each single door.
2. The supplier is responsible for handing and sizing all products.
3. Where multiple options for a piece of hardware are given in a single line item, the supplier shall provide the appropriate application for the opening.
4. At existing openings with new hardware the supplier shall field inspect existing conditions prior to the submittal stage to verify the specified hardware will work as required. Provide alternate solutions and proposals as needed.

B. Manufacturer’s Abbreviations:

1. MK - McKinney

2. PE - Pemko
3. RO - Rockwood
4. RU - Corbin Russwin
5. AD - Adams Rite
6. OT - Other
7. SU - Securitron

Hardware Sets based on plans dated 09/26/2025

Set: 1.0
Doors: 100.1, 100.2
Description: Pair - Exterior - ASF - NL/DT - Closer w/Stop Arm

2	Continuous Hinge	CFM SLF-HD1 x Dr. Ht.		PE
1	Concealed Vert Rod Exit, Storeroom	ED4800 O859ET M110 CT*R	630	RU
1	Concealed Vert Rod Exit, Exit Only	ED4800 EO	630	RU
1	Interchangeable Core	LFIC 59A1	626	RU
2	Door Pull	BF157 Mtg-Type 12HD	US32D-MS	RO
2	Surface Closer	DC8210 A11 M54	689	RU
1	Perimeter Seals	By the frame manufacturer		OT
2	Sweep	18061CNB x Dr. Width		PE
1	Panic Threshold	2005AT MSES25SS x Opening Width		PE
2	Position Switch	DPS-M/W-BK (as req'd per app)		SU
1	Astragal	By the door manufacturer		OT

Notes: Confirm hardware compatibility with aluminum door manufacturer.

Set: 2.0
Doors: 205.2, 206.2, 207.2, 210.2, 211.2, 212.2
Description: Sgl - Ext ASF - AR Deadlatch - Terrace Inswing

1	Continuous Hinge	CFM SLF-HD1 x Dr. Ht.		PE
1	Deadlatch	4900	628	AD
1	Lever Operator	4600 (deadlatches) 02-Round	US32D	AD
1	Deadlatch Lever	3080 02-Round	US32D	AD
1	Interchangeable Core	LFIC 59A1	626	RU
1	Cylinder	Confirm Type - CT*R	630	RU
1	Surface Closer	DC8200/DC8210 M54 (as req'd)	689	RU
1	Drop Plate	754F25	689	RU
1	Door Stop	406 / 441H (as req'd per app)	US32D	RO
1	Perimeter Seals	By the frame manufacturer		OT
1	Sweep	18061CNB x Dr. Width		PE
1	Panic Threshold	2005AT MSES25SS x Opening Width		PE

Notes: Confirm hardware compatibility with aluminum door manufacturer.

Set: 3.0
Doors: 118.1
Description: Pr - Ext ASF - AR Deadlock

2	Continuous Hinge	CFM SLF-HD1 x Dr. Ht.		PE
1	Dust Proof Strike	570	US26D	RO
2	Flush Bolt	555 / 557 12" / 72" AFF	US26D	RO
1	Strike	MS4002 1 - Radius for pairs of doors	628	AD
1	Mortise Deadlock	MS1850S	628	AD
1	Interchangeable Core	LFIC 59A1	626	RU
1	Thumbturn Cylinder	4066		AD
1	Cylinder	Confirm Type - CT*R	630	RU

2	Push Bar & Pull	BF15747	US32D	RO
2	Drop Plate	754F25	689	RU
2	Surface Closer	DC8210 A11 M77	689	RU
1	Perimeter Seals	By the frame manufacturer		OT
2	Sweep	18061CNB x Dr. Width		PE
1	Panic Threshold	2005AT MSES25SS x Opening Width		PE
1	Status Indicator	4089		AD

Notes: Confirm hardware compatibility with aluminum door manufacturer.
**Confirm locking arrangement with local authorities.
Doors to remain unlocked during business hours.

Set: 4.0
Doors: 129.1, 130.1, 131.1
Description: Pr - Ext - FRP - Multipoint CR X DT

2	Continuous Hinge	CFM SLF-HD1 x Dr. Ht.		PE
1	Multi-Point Lock (Storeroom)	MP9800xE59xN10 L MPAD CT*R	626	RU
1	Multi-Point Lock (Dummy Trim)	MP9800xE40xN10 L MPAD	605	RU
1	Interchangeable Core	LFIC 59A1	626	RU
2	Kick Plate	K1050 10" CSK BEV	US32D	RO
1	Cylinder	Confirm Type - CT*R	630	RU
2	Drop Plate	754F25	689	RU
1	Gasketing	2891AS (head & jambs)		PE
1	Rain Guard	346C x Frame Width		PE
1	Sweep	345ANB x Dr. Width		PE
1	Panic Threshold	2005AT MSES25SS x Opening Width		PE

Notes: Confirm hardware compatibility with door manufacturer.

Set: 5.0
Doors: 124.2, 124.3
Description: Sgl - Exterior - ASF - Exit Device-NL- Closer w/Stop Arm

1	Continuous Hinge	CFM SLF-HD1 x Dr. Ht.		PE
1	Rim Exit Device, Nightlatch	ED4200 K157ET CT*R M110	630C	RU
1	Interchangeable Core	LFIC 59A1	626	RU
1	Door Pull	BF157 Mtg-Type 12HD	US32D-MS	RO
1	Drop Plate	754F25	689	RU
1	Surface Closer	DC8210 A11 M77	689	RU
1	Perimeter Seals	By the frame manufacturer		OT
1	Sweep	18061CNB x Dr. Width		PE
1	Panic Threshold	2005AT MSES25SS x Opening Width		PE

Set: 6.0
Doors: 101.2, 113.1, 122.1, 122.2, S101.1, S102.1
Description: Sgl Exterior - FRP - Rim Exit - Closer w/Stop Arm

1	Continuous Hinge	CFM HD1 x Dr. Ht.		PE
1	Rim Exit Device, Nightlatch	ED5200S L957ET M54 CT*R	630	RU
1	Interchangeable Core	LFIC 59A1	626	RU
1	Surface Closer	DC8210 A11 M54	689	RU
1	Kick Plate	K1050 10" CSK BEV	US32D	RO
1	Gasketing	2891AS (head & jambs)		PE
1	Rain Guard	346C x Frame Width		PE
1	Sweep	345ANB x Dr. Width		PE
1	Panic Threshold	2005AT MSES25SS x Opening Width		PE

Notes: Confirm hardware compatibility with door manufacturer.

Set: 7.0
Doors: 126.1
Description: Sgl Exterior - HM - Storeroom Lock - Closer w/Stop Arm

1	Continuous Hinge	CFM HD1 x Dr. Ht.		PE
1	Storeroom Lock	ML2057 LSM x CT*R	630	RU
1	Interchangeable Core	LFIC 59A1	626	RU
1	Surface Closer	DC8210 A11 M54	689	RU
1	Kick Plate	K1050 10" CSK BEV	US32D	RO
1	Gasketing	2891AS (head & jambs)		PE
1	Rain Guard	346C x Frame Width		PE
1	Sweep	345ANB x Dr. Width		PE
1	Panic Threshold	2005AT MSES25SS x Opening Width		PE

Set: 8.0
Doors: 202.1, 208.1
Description: Sgl - ASF - Terrace Exit Device-Classroom

1	Continuous Hinge	CFM SLF-HD1 x Dr. Ht.		PE
1	Rim Exit Device, Classroom	ED4200 L855ET CT*R	630	RU
1	Interchangeable Core	LFIC 59A1	626	RU
1	Surface Closer	DC8200/DC8210 M54 (as req'd)	689	RU
1	Drop Plate	754F25	689	RU
1	Door Stop	406 / 441H (as req'd per app)	US32D	RO
1	Perimeter Seals	By the frame manufacturer		OT
1	Sweep	18061CNB x Dr. Width		PE
1	Panic Threshold	2005AT MSES25SS x Opening Width		PE

Set: 9.0
Doors: 101.1, 101.3
Description: Sgl - Int ASF - AR Deadlatch

1	Continuous Hinge	CFM SLF-HD1 x Dr. Ht.		PE
1	Deadlatch	4900	628	AD
1	Lever Operator	4600 (deadlatches) 02-Round	US32D	AD
1	Deadlatch Lever	3080 02-Round	US32D	AD
1	Interchangeable Core	LFIC 59A1	626	RU
1	Cylinder	Confirm Type - CT*R	630	RU
1	Drop Plate	754F25	689	RU
1	Surface Closer	DC8210 A11 M77	689	RU
1	Perimeter Seals	By the frame manufacturer		OT

Notes: Confirm hardware compatibility with aluminum door manufacturer.

Set: 10.0
Doors: S201.1, S202.1
Description: Single -Open Air Stair - Classroom Exit - Closer - Gasket

1	Continuous Hinge	CFM HD1 x Dr. Ht.		PE
1	Rim Exit, Classroom	ED5200S (A) L955ET M54 CT*R	630	RU
1	Interchangeable Core	LFIC 59A1	626	RU
1	Surface Closer	DC8200/DC8210 M54 (as req'd)	689	RU
1	Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1	Door Stop	406 / 441H (as req'd per app)	US32D	RO
1	Gasketing	2891AS (head & jambs)		PE

1	Sweep	345ANB x Dr. Width		PE
1	Panic Threshold	2005AT MSES25SS x Opening Width		PE

Set: 11.0
Doors: 109.1, 114.1
Description: Single - Storeroom Lock - Closer - Gasket

4	Hinge, Full Mortise	TA2714	US26D	MK
1	Storeroom Lock	ML2057 LSM x CT*R	630	RU
1	Interchangeable Core	LFIC 59A1	626	RU
1	Surface Closer	DC8200/DC8210 M54 (as req'd)	689	RU
1	Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1	Door Stop	406 / 441H (as req'd per app)	US32D	RO
1	Gasketing	S88BL (head & jambs)		PE

Set: 12.0
Doors: 111.1
Description: Single - Storeroom Lock - Closer

4	Hinge, Full Mortise	TA2714	US26D	MK
1	Storeroom Lock	ML2057 LSM x CT*R	630	RU
1	Interchangeable Core	LFIC 59A1	626	RU
1	Surface Closer	DC8200/DC8210 M54 (as req'd)	689	RU
1	Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1	Door Stop	406 / 441H (as req'd per app)	US32D	RO
3	Silencer	608-RKW		RO

Set: 13.0
Doors: 102.1, 120.1, 125.1, 125.2
Description: Single - Storeroom Lock

4	Hinge, Full Mortise	TA2714	US26D	MK
1	Storeroom Lock	ML2057 LSM x CT*R	630	RU
1	Interchangeable Core	LFIC 59A1	626	RU
1	Door Stop	406 / 441H (as req'd per app)	US32D	RO
3	Silencer	608-RKW		RO

Set: 14.0
Doors: 103.1, 104.1, 105.1, 106.1, 107.1, 201.3, 201.4, 201.5
Description: Single - Office

4	Hinge, Full Mortise	TA2714	US26D	MK
1	Entrance Lock	ML2053 LSM CT*R	630	RU
1	Interchangeable Core	LFIC 59A1	626	RU
1	Door Stop	406 / 441H (as req'd per app)	US32D	RO
3	Silencer	608-RKW		RO

Set: 15.0
Doors: 112.1, 201.1, 201.2, 207.1, 209.1, 212.1
Description: Single -Classroom Lock - Closer - Gasket

4	Hinge, Full Mortise	TA2714	US26D	MK
1	Classroom Lock	ML2055 LSM CT*R	630	RU
1	Interchangeable Core	LFIC 59A1	626	RU
1	Surface Closer	DC8200/DC8210 M54 (as req'd)	689	RU
1	Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1	Door Stop	406 / 441H (as req'd per app)	US32D	RO
1	Gasketing	S88BL (head & jambs)		PE

Notes: 4 1/2" hinge at 3' doors.

Set: 16.0
Doors: 205.1, 206.1, 210.1, 211.1
Description: Single -Classroom Lock - Closer/stop - Gasket

4	Hinge, Full Mortise	TA2714	US26D	MK
1	Classroom Lock	ML2055 LSM CT*R	630	RU
1	Interchangeable Core	LFIC 59A1	626	RU
1	Surface Closer	DC8210 A11 M54	689	RU
1	Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1	Gasketing	S88BL (head & jambs)		PE

Set: 17.0
Doors: 108.1, 128.1, 203.1, 204.1
Description: Single -Interior - Gang RR/Locker - Inswing

4	Hinge, Full Mortise, Hvy Wt	T4A3786	US26D	MK
1	Deadbolt	DL4117 CT*R	626	RU
1	Interchangeable Core	LFIC 59A1	626	RU
1	Pull Plate	BF 107x70C	US32D-MS	RO
1	Push Plate	70E	US32D-MS	RO
1	Surface Closer	DC8200/DC8210 M54 (as req'd)	689	RU
1	Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO
1	Door Stop	406 / 441H (as req'd per app)	US32D	RO
1	Gasketing	2891AS (head & jambs)		PE

Set: 18.0
Doors: 124.1
Description: Pr -Interior - Push Pull

8	Hinge, Full Mortise, Hvy Wt	T4A3786	US26D	MK
2	Pull Plate	BF 107x70C	US32D-MS	RO
2	Push Plate	70E	US32D-MS	RO
2	Surface Closer	DC8200/DC8210 M54 (as req'd)	689	RU
2	Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO
2	Door Stop	406 / 441H (as req'd per app)	US32D	RO
2	Silencer	608-RKW		RO

Set: 19.0
Doors: 123.1
Description: Overhead door

1	Interchangeable Core	LFIC 59A1	626	RU
1	Cylinder	Confirm Type - CT*R	630	RU
1	Balance hardware	By the door manufacturer		OT

Notes: Confirm cylinder type required by door manufacturer.

Set: 20.0
Door: 303 (Existing)
Description: Single -Classroom Lock

1	Classroom Lock	ML2004 LSVN V20 CT6R	630	RU
1	Interchangeable Core	LFIC 59A1	626	RU

Set: 21.0
Doors: 110.1
Description: Pair Exterior - SVR Exit Device-NL/DT - Closer w/Stop Arm

2	Continuous Hinge	CFM HD1 x Dr. Ht.		PE
1	SVR NL Pull LBR	ED5470 TH957ET M54 M55 CT*R M110	630	RU
1	SVR DT Pull LBR	ED5470 TH950ET M54 M55 M110	630	RU
1	Interchangeable Core	LFIC 59A1	626	RU
2	Surface Closer	DC8210 A11 M54	689	RU
2	Kick Plate	K1050 10" x 2" LDW 4BE CSK	US32D	RO
2	Astragal	18041CNB x Dr. Ht.		PE
1	Gasketing	2891AS (head & jambs)		PE
2	Sweep	345ANB x Dr. Width		PE
1	Panic Threshold	2005AT MSES25SS x Opening Width		PE

END OF SECTION

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following, as is applicable to the project:

1. Luxury Vinyl Tile (LVT)
2. Rubber Flooring (RF)
3. Standard Rubber Base (RB)
4. Transition Strips

1.2 SUBMITTALS

A. Product Data: For each product indicated.

B. Samples: Units of each color and pattern of resilient floor tile offered.

1.3 PROJECT CONDITIONS

A. Maintain temperatures within range recommended by manufacturer.

B. Environmental Limitations: Do not install carpet until wet work in spaces is complete and dry, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

C. Close spaces to traffic during floor covering installation.

D. Close spaces to traffic for 48 hours after floor covering installation.

PART 2 - PRODUCTS

2.1 LUXURY VINYL TILE

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following. Basis of design is listed in the Drawings.

1. Tarkett
2. Mannington
3. Armstrong
4. Approved Equal

B. Fire-Test-Response Characteristics: For resilient tile flooring, as determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.

C. Warranty: 20-year commercial limited warranty.

D. Slip Resistance: ADA compliant for slip resistance.

E. Size: As selected by architect from full range.

F. Colors and Patterns: As selected by architect from full range.

2.2 RUBBER FLOORING

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following. Basis of design is listed in the Drawings.

1. Tarkett
2. Mannington
3. Armstrong
4. Nora
5. Approved Equal

B. Fire-Test-Response Characteristics: For resilient tile flooring, as determined by testing identical products according to ASTM E 648 or NFPA 253 by a qualified testing agency.

C. Slip Resistance: ADA compliant for slip resistance.

D. Size: As selected by architect from full range.

E. Colors and Patterns: As selected by architect from full range.

F.

2.3 STANDARD RUBBER BASE

A. Thermoplastic rubber wall base with standard cove profile.

B. Manufacturers: Subject to compliance with requirements, provide products by one of the following. Basis of design is listed in the Drawings.

1. Flexco
2. Roppe
3. Johnsonite

C. Color: to be selected by architect from manufacturer’s standard offerings.

D. Size: as scheduled

2.4 TRANSITION STRIPS

A. Provide rubber transition strips at all changes in flooring materials.

1. VCT tile to porcelain tile. (Reference porcelain tile specification.)
2. LVT tile to carpet.
3. Other transitions may be applicable to the project.

B. Transition strips shall be ADA compliant.

C. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

1. Flexco

2. Roppe

3. Johnsonite

2.5 INSTALLATION MATERIALS

A. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 PREPARATION

A. Prepare substrates according to manufacturer's written recommendations to ensure adhesion of resilient products.

B. Level and patch flooring surfaces as required and with appropriate material / substance for professional installation.

3.2 INSTALLATION

A. HVAC units shall be running, and the building shall be climatized, prior to installation of products included in this Section.

B. Prior to installation of vinyl flooring products, the Owner shall engage a 3rd Party Construction Materials Testing Agency to perform Calcium Chloride Moisture tests, to verify that the moisture in the slab is at or below the manufacturer's recommended limit(s) for installation.

1. Allow adequate time for the HVAC system(s) to provide drying of materials within the building, prior to scheduling or performing Calcium Chloride Tests, however, in no case shall Calcium Chloride Tests be performed within 10 days of starting 100% of the HVAC units within the building.

2. Calcium Chloride Moisture Tests shall be performed at a rate of not less than (1) test per 2,000 square feet, however, in no case, shall less than (3) tests be made, per building.

3. Notify the Architect and Owner if moisture tests reflect levels higher than recommended by the flooring material manufacturer.

C. Lay out tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half tile at perimeter.

D. Scribe, cut, and fit tiles to butt neatly and tightly to vertical surfaces and permanent fixtures including built-in furniture, cabinets, pipes, outlets, edgings, door frames, thresholds, and nosings.

E. Adhere tiles to flooring substrates using a full spread of adhesive applied to substrate to produce a completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.

F. Perform the following operations immediately after completing resilient product installation:

1. Remove adhesive and other blemishes from exposed surfaces.

2. Sweep and vacuum surfaces thoroughly.

3. Damp-mop surfaces to remove marks and soil.

G. Protect resilient products from mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during remainder of construction period. Use protection methods recommended in writing by manufacturer.

H. Allow materials to reach ambient temperature prior to installation.

I. Verify conditions of substrate are suitable for installation per manufacturer's requirements.

J. Final installation shall be cleaned, waxed (if applicable) and buffed per manufacturer's recommendations, prior to occupancy**.**

K. Install (2) coats of wax and/or sealer, (if applicable) immediately prior to Owner's Acceptance of the building.

L. Verify acceptability of wax and/or sealer manufacturer & product with the Owner, prior to installation.

END OF SECTION

PART 1 - GENERAL

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.02 SUMMARY

A. This section includes the following:
   1. Resinous flooring system as shown on the drawings and in schedules.
B. Related sections include the following:
   1. Cast-in-Place Concrete, Section 033000.

1.03 SYSTEM DESCRIPTION

A. The work shall consist of preparation of the substrate, the furnishing and application of a cementitious urethane based self-leveling seamless flooring system with Macro or Micro decorative colored chips broadcast and methyl methacrylate (MMA) broadcast and topcoats.
B. The system shall have the color and texture as specified by the Owner with a nominal thickness of 3/16 inch. It shall be applied to the prepared area(s) as defined in the plans strictly in accordance with the Manufacturer's recommendations.
C. Cove base to be applied where noted on plans and per manufacturers standard details unless otherwise noted.

1.04 SUBMITTALS

A. Product Data: Latest edition of Manufacturer's literature including performance data and installation procedures.
B. Manufacturer's Material Safety Data Sheet (MSDS) for each product being use.
C. Samples: A 3 x 3 inch square sample of the proposed system. Color, texture, and thickness shall be representative of overall appearance of finished system subject to normal tolerances.

1.05 QUALITY ASSURANCE

A. The Manufacturer shall have a minimum of 10 years experience in the production, sales, and technical support of epoxy and urethane industrial flooring and related materials.
B. The Applicator shall have experience in installation of the flooring system as confirmed by the manufacturer in all phases of surface preparation and application of the product specified.
C. No requests for substitutions shall be considered that would change the generic type of the specified System.
D. System shall be in compliance with requirements of United States Department of Agriculture (USDA), Food, Drug, Administration (FDA), and local Health Department.
E. System shall be in compliance with the Indoor Air Quality requirements of Louisiana, Section 01400, as verified by a qualified independent testing laboratory.
F. A pre-installation conference shall be held between Applicator, General Contractor and the Owner to review and clarification of this specification, application procedure, quality control, inspection and acceptance criteria and production schedule.

1.06 PRODUCT DELIVER, STORAGE, AND HANDLING

A. Packing and Shipping: All components of the system shall be delivered to the site in the Manufacturer's packaging, clearly identified with the product type and batch number.
B. Storage and Protection:
   1. The Applicator shall be provided with a dry storage area for all components. The area shall be between 60°F and 85°F, dry, out of direct sunlight and in accordance with the Manufacturer's recommendations and relevant health and safety regulations.
   2. Copies of Material Safety Data Sheets (MSDS) for all components shall be kept on site for review by the Engineer or other personnel.
C. Waste Disposal: The Applicator shall be provided with adequate disposal facilities for non-hazardous waste generated during installation of the system.

1.07 PROJECT CONDITIONS

A. Site Requirements:
   1. Application may proceed while air, material and substrate temperatures are between 60°F and 85°F provided the substrate temperature is above the dew point. Outside of this range, the Manufacturer shall be consulted.
   2. The relative humidity in the specific location of the application shall be less than 85% and the surface temperature shall be at least 5°F above the dew point.
   3. The Applicator shall ensure that adequate ventilation is available for the work area. This shall include the use of manufacturer's approved fans, smooth bore tubing and closure of the work area.
   4. The Applicator shall be supplied with adequate lighting equal to the final lighting level during the preparation and installation of the system.

B. Conditions of new concrete to be coated with cementitious urethane material:
   Concrete shall be moisture cured for a minimum of 3 days and have fully cured a minimum of 5 days in accordance with ACI-308 prior to the application of the coating system pending moisture tests.
   1. Concrete shall have a flat rubbed finish, float or light steel trowel finish (a hard steel trowel finish is neither necessary nor desirable).
   2. Sealers and curing agents should not to be used.
   3. Concrete shall have a minimum design strength of 3.500 psi and a maximum water/cement ratio of 0.45.
   4. Concrete surfaces on grade shall have been constructed with a vapor barrier to protect against the effects of vapor transmission and possible delamination of the system.

C. Safety Requirements:
   1. All open flames and spark-producing equipment shall be removed from the work area prior to commencement of application.
   2. "No Smoking" signs shall be posted at the entrances to the work area.
   3. The Owner shall be responsible for the removal of food stuffs from the work area.
   4. Non-related personnel in the work area shall be kept to a minimum.

1.08 WARRANTY

A. Dur-A-Flex, Inc. warrants that material shipped to buyers at the time of shipment substantially free from material defects and will perform substantially to Dur-A-Flex, Inc. published literature if used in accordance with the latest prescribed procedures and prior to the expiration date.

B. Dur-A-Flex, Inc. liability with respect to this warranty is strictly limited to the value of the material purchase.

PART 2 - PRODUCTS

2.01 FLOORING

A. BASIS OF DESIGN: Dur-A-Flex, Inc. Hybri-Flex MC (self leveling colored chips broadcast), MMA topcoat seamless flooring system.
   1. System Materials:
      Topping: Dur-A-Flex, Inc., Poly-Crete MD resin, hardener and SL aggregate.
      The colored chips shall be Dur-A-Flex, Inc. Macro or Micro decorative colored chips.
      Broadcast: Dur-A-Flex, Inc. Cryl-A-Glaze G-201, MMA based non-component resin.
      Topcoats: Dur-A-Flex, Inc. Cryl-A-Top T-301, MMA-based, two-component resin.

   2. Patch Materials:
      Shallow Fill and Patching: Use Dur-A-Flex, Inc. Poly-Crete MD (up to 1/4 inch).
      Deep Fill and Sloping Material (over 1/4 inch): Use Dur-A-Flex, Inc. Poly-Crete WR.

2.02 MANUFACTURER

A. BASIS OF DESIGN: Dur-A-Flex, Inc., 95 Goodwin Street, East Hartford, CT 06108, Phone 860-528-9838, Fax 860-528-2802.
B. Equal products by one of the following:
   1. Sika
   2. Florock
   3. Reesinwerks
   4. Dex-O-Tex
C. Manufacturer of approved system shall be single source

2.03 PRODUCT REQUIREMENTS

Topping	Poly-Crete SL
Percent Reactive	100 %
VOC	0 g/L
Bond Strength to Concrete ASTM D 4541	400 psi, substrates fails
Compressive Strength, ASTM C 579	9,000 psi
Tensile Strength, ASTM D 638	2,175 psi
Flexural Strength, ASTM D 790	5,076 psi
Impact Resistance @ 125 mils, MIL D-3134, No visible damage or deterioration	160 inch lbs

Broadcast Coat	Cryl-A-Glaze G-201
Percent Reactive,	100 %
VOC	<100 g/L
Water Absorption, ASTM D 570	0.04 %
Tensile Strength, ASTM D 638	2,175 psi
Coefficient of thermal expansion ASTM D 696,	0.000035 in/in/F
Electrical Resistivity, ASTM D 257	
Volume resistance.	10^{15} ohm-cm
Surface resistance,	10^{12} ohm
Pot Life @ 68 F	10-20 minutes
Cure Time @ 68 F	40-60 minutes
Recoat Time @ 68 F	60 minutes
Multi-coat Application, solution weld	yes

Topcoat	Cryl-A-Top T-301
Percent reactive resin	100 %
VOC	<100 g/L
Water absorption ASTM D 570	0.4 %
Tensile strength, ASTM D 638	3,550 psi
Tensile modulus, ASTM D 638	300,000 psi
Coefficient of thermal expansion ASTM D 638	0.000035 in/in/F
Electrical resistance ASTM D 257	
Volume resistance	10^{15} ohm-cm
Surface resistance	10^{12} ohm
Water vapor transmission DIN 53122	0.9 g/cm-hr-mm HG x 10^{-9}
Potlife @ 68 F	10-15 minutes
Cure time @ 68 F	30-45 minutes
Recoat time @ 68 F	30-45 minutes
Multi-coat application, solution weld	yes

PART 3 - EXECUTION

3.01 EXAMINATION

A. Examine substrates, areas and conditions, with Applicator present, for compliance with requirements for maximum moisture content, installation tolerances and other condition affecting flooring performance.
   1. Verify that substrates and conditions are satisfactory for flooring installation and comply with requirements specified.

3.02 PREPARATION

A. General:
   1. New and existing concrete surfaces shall be free of oil, grease, curing compounds, loose particles, moss, algae growth, laitance, friable matter, dirt, and bituminous product.
   2. Moisture Testing: Perform tests recommended by manufacturer and as follows:
      Perform anhydrous calcium chloride test ASTM F 1869-98. Application will proceed only when the vapor/moisture emission rates from the slab is less than and not higher than 20 lbs/1,000 sf/24 hours.
      Perform relative humidity test using in situ probes, ASTM F 2170. Proceed with installation only after substrates have a maximum 99% relative humidity level measurement.
      If the vapor drive exceeds 99% relative humidity or 20 lbs/1,000 sf/24 hours then the Owner and/or Engineer shall be notified and advised of additional cost for the possible installation of a vapor mitigation system that has been approved by the manufacturer or other means to lower the value of the acceptable limit.
   3. Mechanical Surface Preparation:
      Shot blast all surfaces to receive flooring system with a mobile steel shot, dust recycling machine (Blastrac or equal). All surface and embedded accumulations of paint, toppings hardened concrete layers, laitance, power trowel finishes and other similar surface characteristics shall be completely removed leaving a bare concrete surface having a minimum profile of CSP 4-5 as described by the International Concrete Repair Institute.
      Floor areas inaccessible to the mobile blast machines shall be mechanically abraded to the same degree of cleanliness, soundness and profile using diamond grinders, needle guns, bush hammers, or other suitable equipment.
      Where the perimeter of the substrate to be coated is not adjacent to a wall or curb, a minimum 1/4 inch key cut shall be made to properly seat the system, providing a smooth transition between areas. The detail cut shall also supply to drain perimeters and expansion joint edges.
      Cracks and joints (non-moving) greater than 1/8 inch wide are to be chiseled or chipped-out and repaired per manufacturer’s recommendations.
   4. At spalled or worn areas, mechanically remove loose or delaminated concrete to a sound concrete and patch per manufacturer’s recommendations.

3.03 APPLICATION

A. General:
   1. The system shall be applied in five distinct steps as listed below:
      Substrate preparation.
      Topping/overlay application with colored chip broadcast.
      Resin application with colored chip broadcast.
      Topcoat application.
      Second topcoat application.
   2. Immediately prior to the application of any component of the system, the surface shall be dry and any remaining dust or loose particles shall be removed using a vacuum or clean, dry, oil free compressed air.

3. The handling, mixing and addition of components shall be performed in a safe manner to achieve the desired results in accordance with the Manufacturer's recommendations.
4. The system shall follow the contour of the substrate unless pitching or other leveling work has been specified by the Architect.
5. A neat finish with well-defined boundaries and straight edges shall be provided by the Applicator.

B. Topping:
1. The topping shall be applied as a self-leveling system as specified by the Architect. The topping shall be applied in one lift with a nominal thickness of 1/8 inch.
2. The topping shall be comprised of three components, a resin, hardener and filler as supplied by the Manufacturer.
3. The hardener shall be added to the resin and thoroughly dispersed by suitably approved mechanical means. SL Aggregate shall then be added to the catalyzed mixture and mixed in a manner to achieve a homogenous blend.
4. The topping shall be applied over horizontal surfaces using ½ inch "v" notched squeegee, trowels or other systems approved by the Manufacturer.
5. Immediately upon placing, the topping shall be degassed with a loop roller.
6. Colored chips shall be broadcast to excess into the wet material, Macro chips at the rate of 0.1 lbs/sf and Micro chips at the rate of 0.15 lbs/sf.
7. Allow material to fully cure. Vacuum, sweep and/or blow to remove all loose chips.

C. Broadcast:
1. The broadcast coat resin shall be applied at the rate of 100 sf/gal.
2. The broadcast coat shall be comprised of a liquid component and a hardener powder which is added at the rate in accordance with the Manufacturers recommendations and thoroughly dispersed by mechanical means such as a high speed paddle mixer.
3. Colored chips shall be broadcast into the wet resin, Macro chips at the rate of 0.1 lbs/sf and Micro chips at the rate of 0.15 lbs/sf.
4. Allow materials to fully cure. Vacuum, sweep and/or blow to remove all loose chips.

D Topcoat:
1. The first topcoat shall be roller applied with a coverage rate of 100 sf/gal.
2. The topcoat shall be comprised of a liquid component and a hardener powder which is to be added at a rate in accordance with the Manufacturer's recommendations and thoroughly dispersed by suitably approved mechanical means such as a high speed paddle mixer.
3. The first topcoat will be allowed to cure then can be sanded or scraped to give desired finish texture.
4. The second topcoat shall be roller applied with a coverage rate of 100 sf/gal.
5. The finish floor will have a nominal thickness of 1/4 inch.

3.04 FIELD QUALITY CONTROL

A. Tests, Inspection: The following tests shall be conducted by the Applicator:
1. Temperature: Air, substrate temperatures and, if applicable, dew point.
2. Coverage Rates: Rates for all layers shall be monitored by checking quantity of material used against the area covered.

3.05 CLEANING AND PROTECTION

A. Cure flooring material in compliance with manufacturer's directions, taking care to prevent their contamination during stages of application and prior to completion of the curing process.
B. Remove masking. Perform detail cleaning at floor termination , to leave cleanable surface for subsequent work of other sections.

END OF SECTION

Section 10 80 00
Toilet and Bath Accessories

PART 1 GENERAL

1.01 SECTION INCLUDES
- A. Stainless steel mirrors, grab bars, and /waste receptacles, toilet paper holders, Sanitary Napkin disposal, shower curtain/rod, ADA shower seat, paper towel dispensers, soap dispensers
- B. Attachment hardware.

1.02 REFERENCES
- A. ADAAG - American with Disabilities Act Accessibility Guidelines.

1.03 SUBMITTALS
- A. Submit under provisions of Section 01 30 00.
- B. Product Data: Provide data on accessories describing size, finish, details of function, attachment methods.
- C. Manufacturer's Installation Instructions: Indicate special procedures, perimeter conditions requiring special attention.
- D. Conform to ADAAG code for access for the handicapped.

1.04 COORDINATION
- A. Coordinate the work with the placement of internal wall reinforcement to receive anchor attachments.

PART 2 PRODUCTS

2.01 MANUFACTURERS
- A. Bradley Corporation
- B. Other acceptable manufacturers offering equivalent products.
  1. Bobrick Washroom Equipment, Inc.
  2. ASI.
- C. Substitutions: Under provisions of Section 01 60 00.

2.02 MATERIALS
- A. Sheet Steel: ASTM A366.
- B. Stainless Steel Sheet: ASTM A167 Type 304.
- C. Tubing: ASTM A269 stainless steel.
- D. Fasteners, Screws, and Bolts: Hot dip galvanized steel, tamper-proof.
- E. Expansion Shields: Fiber, lead or rubber as recommended by accessory manufacturer for component and substrate.

2.03 FABRICATION
- A. Weld and grind joints of fabricated components smooth.
- B. Form exposed surfaces from single sheet of stock, free of joints. Form surfaces flat without distortion. Maintain surfaces without scratches or dents.
- C. Fabricate grab bars of tubing, free of visible joints, return to wall with end attachment flanges. Form bar with 1 1/2 inches clear of wall surface.
- D. Shop assemble components and package with anchors and fittings.
- E. Provide steel anchor plates, adapters, and anchor components for installation.

2.04 FINISHES
- A. Stainless Steel: Brushed finish at grab bars.
- B. Back paint components where contact is made with building finishes to prevent electrolysis.
- C. Grab bars to have peened grip, with concealed fasteners.
- D. Mirrors to have channel-framed perimeter with 14 gauge, 304 satin finish with concealed mounting hardware. Mirror face to be 20 gauge type 304 stainless steel with no. 8 mirror polish finish.

2.05 SIZES/PRODUCT STYLES

A. Mirrors: Re: drawings for sizes
B. Grab Bars: Re: drawings for lengths.
C. Double Toilet Paper Holders: locations and quantity indicated in drawings
D. Shower Curtain Rod:
   1. Basis-of-Design Product: Bradley 9539.
E. Shower Curtain:
   1. Size: Minimum 12 inches wider than opening by 72 inches high.
   2. Material: Nylon-reinforced vinyl, minimum 10 oz. or 0.008-inch-thick vinyl, with integral antibacterial agent.
   3. Color: As selected from manufacturer's full range.
   4. Grommets: Corrosion resistant at minimum 6 inches o.c. through top hem.
   5. Shower Curtain Hooks: Chrome-plated or stainless-steel, spring wire curtain hooks with snap fasteners, sized to accommodate specified curtain rod. Provide one hook per curtain grommet.
F. Folding Shower Seat:
   1. Basis-of-Design Product: Bradley 9569.
   2. Configuration: L-shaped seat, designed for wheelchair access.
   3. Seat: Phenolic or polymeric composite of slat-type or one-piece construction in color as selected by Architect.
   4. Mounting Mechanism: Stainless steel, No. 4 finish (satin).
   5. Dimensions: As indicated on Drawings.

PART 3 EXECUTION

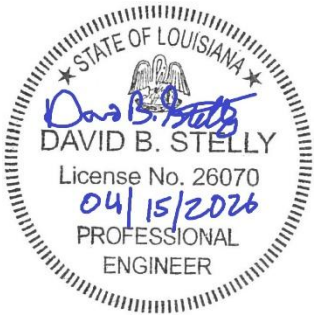
3.01 EXAMINATION
A. Verify that site conditions are ready to receive work and dimensions are as indicated on shop drawings.
B. Verify exact location of accessories for installation.

3.02 PREPARATION
A. Deliver inserts and rough-in frames to site for timely installation.
B. Provide templates and rough-in measurements as required.

3.03 INSTALLATION
A. Install accessories in accordance with manufacturers' instructions and ADAAG.
B. Install plumb and level, securely and rigidly anchored to substrate.
C. See drawings for product numbers and locations.
D. Installation of Surface Mounted Paper Twl. Disp./Recept. shall be mounted for ADAAG compliance; top of wall opening at 4’-11” aff.

3.04 SCHEDULE
A. Mirrors: (1) at each restroom lavatory
B. Grab Bars: (1) 36” and 42” at each HC stall and each toilet room
C. Toilet Paper Holders: (1) at each toilet
D. Sanitary Napkin Dispenser: (1) at each toilet in Women 204
E. Surface Mtd. Paper Towel Dispenser: (1) in Coaches Lockers 108; (2) in Home Restrooms 115; (1) in Umpire Shower 128; (1) in Men 203; (1) in Women 204
F. Surface Mtd. Soap Dispenser: (1) in Coaches Lockers 108; (2) in Home Restrooms 115; (1) in Umpire Shower 128; (1) in Men 203; (1) in Women 204
G. Shower curtain/rod: at each shower compartment (5)
H. Shower seat: at each ADA shower compartment (3)

END OF SECTION



SECTION 27 41 16 - INTEGRATED AUDIO SYSTEMS AND EQUIPMENT

PART 1 - GENERAL

1.1 SUMMARY

A. Integrated Audio Systems and Equipment as part of the Work.

1.2 RELATED DOCUMENTS

A. General provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections apply to this section.

B. Reference the Project Manual for related specification sections.

C. Reference the Project Drawings for additional information.

1.3 SECTION INCLUDES

A. Project instructions for the Contractor and System description details

B. System product description

C. Project completion instructions for the Contractor

1.4 RESPONSIBILITY

A. Responsibilities include, but are not limited to, the following items:

1. Provide materials, equipment, transportation, and labor necessary for a fully working, tested, and calibrated system. Supply accessories and minor equipment items (such as, but not limited to, power strips, adapters, connectors, mounting hardware, etc.) needed for a complete system, even if not specifically mentioned in these Specifications. Notify the Architect of any discrepancies in part numbers or quantities before bid. Failing to provide such notification, supply items and quantities according to the intent of the Specification and Drawings, without claim for additional payment.
2. Specifications and drawings are complementary. Work called for by one is binding as if called for by both. Any discrepancies between specifications and drawings shall be brought to the attention of the Architect for clarification during the bidding period. No allowance shall subsequently be made to the Contractor by reason of his failure to have brought said discrepancies to the attention of the Architect.
3. Execute work in accordance with the National Electrical Code (NEC), the National Electrical Safety Code, the Occupational Safety and Health Act (OSHA), applicable State and Local codes, ordinances, regulations, authority having jurisdiction (AHJ), and manufacturer’s recommendations. If a conflict develops between the contract documents and the appropriate codes and is reported to the Architect prior to bid opening, the Architect will prepare the necessary clarification. Where a conflict is reported after contract award, propose a resolution of the conflict and, upon approval, perform Work.
4. Required licenses, insurance and permits including payment of charges and fees
5. Verification of dimensions and conditions at the job site.
6. Coordinate location and installation of equipment with other building elements.
7. Preparation of submittal information
8. Pick-up of Owner Furnished Equipment (OFE) and incorporation into project if applicable.

9. Development and implementation of control system software code and control panel layouts, which will become the property of the Owner
10. Final tests and adjustments, written report, and documentation
11. Instruction of operating personnel
12. Provision of manuals
13. Maintenance services and warranty.

B. Contractor shall be responsible for providing all systems, equipment, cabling and accessories that will allow users to fully utilize the functionality described below in Section 1.7 of this specification for each space and entire facility.

1.5 REFERENCES

A. Published specification standards, tests or recommended methods of trade, industry or governmental organizations apply to Work in this section where cited below:

1. American National Safety Institute (ANSI)
2. American Society of Testing and Materials (ASTM)
3. Electronics Industries Association (EIA)
4. Federal Communications Commission (FCC)
5. National Electrical Manufacturer's Association (NEMA)
6. National Electrical Code (NEC)
7. Underwriters Laboratories (UL)
8. Occupational Safety and Health Administration (OSHA)
9. Society of Motion Picture and Television Engineers (SMPTE)
10. Building Industry Consulting Service International (BICSI)
11. Davis and Davis, Sound System Engineering (3rd Edition) (SSE), Howard W. Sams, 2006
12. Giddings, Audio System Design and Installation (ASDI), Howard W. Sams, 2013
13. AV Installation Handbook Second Edition: The Best Practices for Quality Audiovisual Systems, Infocomm (AVIH), 2009

1.6 DEFINITIONS

A. In addition to those Definitions of Division1, the following list of terms as used in this specification shall be defined as follows:

1. Furnish - To purchase, procure, acquire, and deliver complete with related accessories.
2. Install – To set in place, join, attach, link, set up or otherwise connect together and test until complete before turning over to the Owner, all parts, items, or equipment supplied by Contractor.
3. Provide – To furnish and install.

1.7 DESCRIPTIONS & REQUIREMENTS

A. The following is intended to further describe the Work and clarify design intent and is not an exhaustive description of the systems.

1. Audio Network
    a. All sound systems throughout the stadium and support buildings will operate as a distributed, networked audio system. DSP matrix processors, input/output endpoints, and power amplifiers are located in dedicated IT/AV rooms around the complex. Typical audio controls located in the larger spaces that are expected to have local independent control will be in the form of a touch panel and/or keypads.
2. Stadium (Field and Stands)

a. The stadium's sound reinforcement system is designed to deliver high-intelligibility event audio, announcements, and music evenly across the entire field and spectator seating. Loudspeakers are positioned and oriented to maximize coverage and maintain clarity for both crowd and participant zones. System zoning ensures focus of energy and speech in target areas, minimizing unwanted spill or echo. Signal routing and processing are managed via a central digital backbone, allowing for instant recall of presets for sporting events, ceremonies, or public address.

3. Public Spaces – Concourses
   a. Concourse zones are equipped with distributed speakers for background music, paging, and emergency notifications. System zoning allows source selection and level control for each area, ensuring clear audio presence without overpowering the environment. Concourse audio may be synchronized with public event messages or adjusted locally for crowd management and operational flexibility.
4. Home Dressing 113
   a. The Home Dressing Room utilizes ceiling-integrated audio coverage for clear team communication, announcements, and motivational playback. Local level and program source control enables flexible use for meetings, briefings, or relaxation between events. System integration allows paging overrides and privacy where required.
5. Team Lobby 100
   a. Team lobbies feature ambient sound reinforcement for announcements, pre-game music, and informational broadcasts. Audio zoning allows seamless transition between sources as events change, supporting team arrivals and operational messaging.
6. Conference 103
   a. Conference spaces are reinforced with discreet speakers and digital signal processing for presentation clarity and audience participation. Acoustic system design supports speech and multimedia needs, with flexible connectivity for microphones, laptops, or conferencing devices. Room modes and presets allow fast changeover between meeting types.
7. Team Store 117
   a. Meeting rooms employ sound reinforcement for speech intelligibility, presentation support. Input and output points are managed via the central audio matrix, with room presets selectable for focused or general audience use.
8. Meeting Room 124
   a. Meeting rooms employ sound reinforcement for speech intelligibility, presentation support, and teleconferencing events. Input and output points are managed via the central audio matrix, with room presets selectable for focused or general audience use.
9. Suites 205, 206, 207, 210, 211, 212
   a. Suites are equipped for private audio delivery of television sound and in-suite announcements. Local volume and source control ensure optimal guest experience for sporting events, meetings, or hospitality functions.
10. Restrooms
    a. Restrooms feature zoned sound coverage for ambient audio. System design prioritizes audibility and compliance with accessibility and safety standards.
11. Club Area 202, 208
    a. Club areas are covered by overhead audio for high-quality background music, announcements, and entertainment feeds. System zoning and user control support multipurpose uses, from social events to broadcast audio distribution.
12. Meeting Room 200

a. Meeting rooms provide distributed sound reinforcement for speech enhancement and multimedia presentations. Flexible connectivity and input management enable rapid setup for various group functions.

13. Press Box 201
    a. The press box features dedicated sound reinforcement for event operations, commentary, and media broadcasts, with priority routing for real-time audio feeds to stadium management, staff, and broadcast partners.

1.8 SUBMITTALS

A. Provide submittals in accordance with Conditions of the Contract and Division 1, Submittal Procedures section unless otherwise indicated.

B. Submittals shall contain sufficient information to describe the Work to be performed. Reviewed shop drawings are to be used for final coordination and construction. Shop drawings must be original work produced by the Contractor responsible for performing the work defined in this specification. Scanning, photographic copying, materially copying, or any other reproducing the contents of the drawings or specifications contained within the Contract Documents will be marked as unacceptable and not reviewed for any content. No claim shall be made for delay, undue burden, or additional costs for the effort to produce shop drawings, schedules, and equipment lists addressing this specification or the overall project manual.

C. Supplementary submittal requirements:

1. Provide the following in one electronic submission for review within thirty days of issuance of Notice to Proceed (NTP) and prior to commencement of Work:
    a. Complete schedule of submittals.
    b. Chronological schedule of Work in bar chart form.
    c. Product Data Sheets:
        i. Provide a complete table of contents with the following information:
        ii. Project title.
        iii. Submittal number. In the case of a resubmittal, use the original submittal number immediately followed by the suffix “R” immediately followed by a unique number and be numbered in consecutive order.
        iv. Date of submission.
        v. Provide a list of and Manufacturer's data sheets on products to be incorporated with the Work. Arrange data sheets in the same order they appear in this specification. Where a data sheet shows more than one product, indicate the model being proposed with an arrow or other appropriate symbol.
        vi. Submit manufacturer’s product literature for each type of firestop material to be used. Literature shall include documentation of UL classifications or approved third party testing. Manufacturer’s name and number for each part shall be included. Submit drawings of through penetrations, which include the system to be utilized for the firestopping application. Drawing shall indicate construction of wall or floor assembly; size, number and material of penetrating items; firestop system designation; required F-rating, T-rating and remarks.
        vii. Upon Owners and/or Consultant’s request provide (3) three copies of the submittals. Bind submittal in titled three ring D style binders sized for 150 per cent of the material. Maximum size:

three-inch spine. Use multiple volumes as required. Separate major grouping with labeled binder tabs.

viii. Submissions that do not follow the format and configuration described above will be returned without review.

d. Shop Drawings:

i. Functional Diagrams/Schematics:

1) Detailed wiring diagrams showing interconnection of components and products, wiring and cabling diagrams depicting cable types and designators, and device designators for each system. Provide connector designations and terminal strip identification, along with color codes for cables connecting to these devices. Give each component a unique designator and use this designator consistently throughout the project.

ii. Coordination Drawings:

1) Prepare and submit a set of coordination drawings showing major elements, components, and devices of the audio and video system in relationship with other building components. Prepare drawings to an accurate scale of 1/8”=1’-0” or larger on suitable sized media.

2) Prepare floor plans, reflected ceiling plans, elevations, sections, and details to conclusively coordinate and integrate all equipment. Indicate locations where space is limited, and where sequencing and coordination of installations is of importance to the efficient flow of the Work including but not necessarily limited to the following:

a) Equipment housings
b) Ceiling and wall mounted devices
c) Raceways
d) Cabling

e. Equipment: Location of equipment within racks, consoles, or on tables, with dimensions; wire routing and cabling within housings; AC power outlet and terminal strip locations.

f. Patch panel(s): Layouts and designation (labeling) strips, including color schemes.

g. Full fabrication details of any custom enclosures and millwork indicating size, material, finish and openings for equipment.

h. Structural rigging and mounting details:

i. Loudspeaker rigging, suspension, and mounting detail drawings shall be signed and sealed by a professional engineer licensed to practice in the state in which the project is located. The signed and sealed drawings noted above to include the following:

1) Analysis of all components in the load path and attachment method to building structure for suspended loudspeakers.

2) Attachment method for mounting brackets at ceilings, walls, or other building features.

3) Detail the product manufacturer, part numbers, and load capacity of the hardware fittings and materials selected for suspended or mounted loudspeakers.

4) A copy of the design calculations.

5) Secondary steel required for attachment to the building structure.

6) Custom brackets, mounts, suspension grids or trusses, loudspeaker cabinet frames, or loudspeaker brackets.

7) Loudspeaker brackets or mounts provided by the specific loudspeaker manufacturer being installed that do not include traceability data.

ii. Risk analysis data as referenced in Part 3.2, F

iii. Stamping Engineer post-installation sign-off as described in Part 3.2, F

iv. Proof of ETCP certification for on-site rigging crew.

i. Projector, loudspeaker, camera mounting details, include hardware types and load capacity.

j. Fabricated Plates and Panels

i. Provide complete drawings on custom fabricated plates or panels. Drawings shall include dimensioned locations of components, component types, engraving information, plate material and color, and bill of material.

k. Labeling

i. Equipment and cabling labeling scheme. Include font sizes and styles, explanation of scheme, and designator schedule.

l. Schedules

i. Wiring schedule showing source and destination of wiring and indicating which wiring is in conduit. Junction box schedule showing type of box, size, mounting and location. Include this information with remainder of wiring diagrams.

m. Control System Software

i. Provide electronic copies of proposed control system user interfaces within sixty (60) days of issuance of Notice to Proceed (NTP).

n. IP Addresses

i. Coordinated with the venue IT Administrator, provide a list of IP addresses, by device, used in the project.

o. Consultant's project documents in electronic format will not be supplied to the Contractor for their use as part of submittals.

p. Detail drawings executed at an appropriate scale, but not smaller than 1/8 inch = 1'–0".

q. Submissions that do not follow the format and configuration described above will be returned without review.

r. Any other pertinent data which is necessary to provide the Work.

2. Control System Software:

a. Provide electronic copies of proposed control system user interfaces within sixty (60) days of issuance of Notice to Proceed (NTP).

D. Resubmission requirements:

1. Make all requested corrections or change in submittals required. Resubmit for review until no exceptions are taken.
2. Indicate all changes that have been made other than those requested.

1.9 CONTRACT CLOSE-OUT DOCUMENTS:

A. Provide submittals in accordance with Conditions of the Contract and Division 1, Submittal Procedures section unless otherwise indicated, after substantial completion but prior to final observation:

B. Supplementary submittal requirements:

1. Provide the following in one electronic submission for review.
   a. Equipment Manuals:

i. Manufacturer's owner/instruction manual for each type of Product by manufacturer and model or part number unless specified otherwise herein.
ii. Supply manufacturer’s serial numbers for each Product
iii. For custom circuits or modifications, a description of the purpose, capabilities, and operation of each item
iv. Separately bind list by manufacturer and model or part number of Products incorporated within the Work, arranged in alpha numeric order. When applicable, bind Manufacturer's warranty statements separately.

b. Test Reports: Recorded findings of Commissioning.
c. Signed copy of turn over equipment to Owner including quantity, make and model.
d. Copy of any program or hardware setup files.
e. System Operation and Instructions: Prepare a complete and typical procedure for the operation of the equipment as a system, organized by subsystem or activity.
i. This procedure should describe the operation of system capabilities.
ii. Assume the intended reader of the manual to be technically inexperienced but unfamiliar with the components and the facility.
f. Provide Consultant with copy of Owner training video.
g. Service Information, including service phone number(s) and hours; service schedule; description of products recommended or provided for maintenance purposes, and instructions for the proper use of these products.
h. Any other pertinent data generated during the Project or required for future service.
i. Within three (3) weeks of final observation, submit the following in one electronic submission for review. Upon Owners and/or Consultant’s request provide (3) three copies of the following:
i. Record drawings: Final rendition of Shop Drawings depicting what is actually incorporated within the Work.
ii. Hardcopy full size set of Record drawings.
iii. Three (3) compact disc or DVD’s containing Record drawings in AutoCAD editable DWG format and Adobe PDF format. Resolution to be sufficient to permit Owner’s technicians to be able to clearly read all notes and text on screen.
iv. One set of signed proof-of-training documents.

2. Submittal Format:
a. Record Drawings: Drawings executed at an appropriate scale, but not smaller than 1/8 inch = 1’–0”.
b. Segregate documents into separate binders containing data relevant to operational, maintenance, and warranty issues. Appropriately duplicate data within the separate bindings when it will reasonably clarify procedures, e.g., operational data in maintenance binding.
c. Bind Project Record Manual in titled three ring D style binders sized for 150 per cent of the material. Maximum size: three inch spine. Use multiple volumes as required. Separate major grouping with labeled binder tabs.

C. Resubmission requirements:

1. Make all requested corrections or change in submittals required. Resubmit for review until no exceptions are taken.
2. Indicate all changes that have been made other than those requested.

1.10 CUSTOM SOFTWARE

A. Introduction:

1. Proprietary software provided for the Technical Systems shall be subject to this software license between the Contractor and the Owner as an essential element of the system as defined in the system specification and associated documents, drawings and agreement.
2. Contractor shall agree that 3rd party proprietary software provided with the system shall be subject to this agreement.
3. Contractor and Owner agree that this software license is deemed to be part of, and subject to, the terms of the Agreement applicable to both parties; and shall supersede any standard manufacturer or Contractor's standard license agreement.
4. Proprietary software shall be defined to include, but not be limited to, device and system specific software and firmware designed to run on conventional computer based operating platforms as well as all micro-processor based hardware used to program, setup, or operate the system or its components.
5. For sake of this agreement, MS Windows® shall not be considered "proprietary" software, unless a non-public version of Windows® or any of its components are critical to the operation of the system in which case it shall be deemed proprietary.

B. License Grant and Ownership:

1. Contractor hereby grants to Owner a perpetual, non-exclusive, site license to all software for Customer's use in connection with the establishment, use, maintenance and modification of the system implemented by Contractor. Software shall mean executable object code of software programs and the patches, scripts, modifications, enhancements, designs, concepts or other materials that constitute the software programs necessary for the proper function and operation of the system as delivered by the Contractor and accepted by the Owner.
2. Except as expressly set forth in this agreement, Contractor shall at all times own all intellectual property rights in the software. Any and all licenses, product warranties or service contracts provided by third parties in connection with any software, hardware or other software or services provided in the system shall be delivered to Owner for the sole benefit of Owner.
3. Owner may supply to Contractor or allow the Contractor to use certain proprietary information, including service marks, logos, graphics, software, documents and business information and plans that have been authored or pre-owned by Contractor. All such intellectual property shall remain the exclusive property of Owner and shall not be used by Contractor for any purposes other than those associated with delivery of the system.

C. Copies, Modifications, and Use:

1. Source code shall be available to Owner for a period of not less than 10 years.
2. Owner may make copies of the software for archival purposes and as required for modifications to the system. All copies and distribution of the software shall remain within the direct control of Owner and its representatives.
3. Owner may make modifications to the source code version of the software, if and only if the results of all such modifications are applied solely to the system. In no way does this Software License confer any right for Owner to license, sublicense, sell, or otherwise authorize the use of the software, whether in executable form, source code or otherwise, by any third parties.
4. All express or implied warranties relating to the software shall be deemed null and void in case of any modification to the software made by any party other than Contractor.

D. Warranties and Representations:

1. Contractor represents and warrants to Owner that:
   a. It has all necessary rights and authority to execute and deliver this Software License and perform its obligations hereunder and to grant the rights granted under this Software License to Owner;
   b. The goods and services provided by contractor under this Software License, including the software and all intellectual property provided hereunder, are original to Contractor or its subcontractors or partners; and
   c. The software, as delivered as part of the system, will not infringe or otherwise violate the rights of any third party, or violate any applicable law, rule or regulation.
2. Contractor further represents and warrants that, throughout the System Warranty Period, the executable object code of software and the system will perform substantially in accordance with the System Specifications and Agreement. If the software fails to perform as specified and accepted all remedies are pursuant to the policies set forth in the Specification and in the Agreement. No warranty of any type or nature is provided for the source code version of the software which is delivered as is.
3. Except as expressly stated in this Agreement, there are no warranties, express or implied, including, but not limited to, the implied warranties of fitness for a particular purpose, of merchantability, or warranty of no infringement of third party intellectual property rights.

1.11 QUALITY ASSURANCE

A. Qualifications: Contractor to be experienced in the provision of systems similar in complexity to those required for this project, and meet the requirements listed below. Provide documentation at the time of bid to support these qualifications:

1. Form of corporation.
2. No less than three years' experience with equipment and systems of the specified types.
3. Experience with at least three comparable scale projects within the last three years.
4. Be a franchised dealer and service facility for the manufacturer's products furnished.
5. Maintain a fully staffed and equipped service facility with full-time field technicians.
6. Have at least one supervisory on-site employee who has completed and has been certified CTS-I by Infocomm.
7. Supervision of all rigging by an ETCP certified rigger for all work associated with suspension or mounting of overhead equipment.
8. Adequate plant capacity and equipment to complete the Work.
9. Adequate staff with commensurate technical experience.
10. Suitable financial status (i.e., bonding and materials purchase capacity) to meet the obligations of the Work.
11. Adequate regional service organization to meet warranty response requirements of the Project.
12. Provide listing with appropriate explanation regarding the status of Contractor's resolved or unresolved legal disputes within the last six calendar years.
13. Provide listing with appropriate explanation regarding any projects within the last 3 years where the Contractor has failed to meet construction schedules due to Contractor's cause.
14. Completed current version of the AIA Contractor's Qualification Form.

B. Subcontractors: at the time of bid, the Contractor shall provide a list of structural, electrical, sound, or any other subcontractors intended to do the Work, or are being retained as local service providers throughout the warranty period. Subcontractors shall be appropriately state licensed in their specialty and must provide the same qualification documents as the Contractor.

C. Work: Perform Work in compliance with the applicable standards listed herein and governing codes and regulations of the authorities having jurisdiction and the Contract Documents.

1. Drawings and specification requirements govern where they exceed Code and Regulation requirements.
2. Where requirements between governing Codes and Regulations vary, the more restrictive provision applies.
3. Nothing in the Contract Documents grants authority or permission to disregard or violate any legal requirements.

D. Coordinate exact location and installation of equipment, power, grounding, and raceway requirements with the Architect.

1.12 DELIVERY, STORAGE & HANDLING

A. Ship Products in its original container, to prevent damaging or entrance of foreign matter.

B. Handling and shipping in accordance with Manufacturer's recommendation.

C. Provide protective covering during construction of all installed devices, to prevent damaging or entrance of foreign matter.

D. Replace at no expense to Owner, Products damaged during storage, handling or the course of construction.

1.13 PROJECT CONDITIONS

A. Verify conditions on the job site applicable to this work. Notify Architect in writing of discrepancies, conflicts, or omissions promptly upon discovery.

B. The Drawings diagrammatically show cabling and arrangements of equipment fitting the space available without interference. If conditions exist which make it impossible to install work as shown, recommend solutions and/or submit drawings to Architect for approval, showing how the work may be installed.

1.14 WARRANTY

A. Warrant labor and equipment for one year following the date of substantial completion to be free of defects and deficiencies, and to conform to the drawings and specifications as to kind, quality, function, and characteristics. Repair or replace defects occurring in labor or equipment within the Warranty period without charge.

B. This warranty is in addition to any specific warranties issued by manufacturers for greater periods of time.

C. Within the warranty period, answer service calls within twenty four (24) hours during normal working hours and correct the deficiency within forty eight (48) hours.

D. Provide Owner with the name and telephone number of the person to call for service. This information to be part of Project Closeout Documents.

E. Thirty days prior to the end of the warranty period provide a complete checkout of all system components. Repair or replace any defective equipment discovered during the testing. Correct any defects in wiring or other functional problems reported by Owner. Warranty replacement and service of equipment shall not apply to Owner furnished equipment (OFE). Coordinate observation visit with the Owner.

PART 2 - PRODUCTS

2.1 GENERAL

A. Products quantity is as required. If a quantity is given, provide at least the given amount. Some product listed may not be required to fulfill the obligations of the Work.

B. Equipment and materials shall be new and conform to applicable UL or ANSI provisions.

C. Regardless of the length or completeness of the descriptive paragraph herein, provide Products complying with the specified manufacturer's published specifications.

D. Remove or blank out all manufacturers' names, logos, or other symbols from loudspeakers or other objects placed in view of the public. If logos are removable, remove and repaint to the color of the adjacent surface and reattach.

E. Take care during installation to prevent scratches, dents, chips, etc.

2.2 ACCEPTABLE MANUFACTURERS

A. Model numbers and manufacturers included in this specification are listed as a standard of function, performance, and quality.

B. Refer to General and Supplementary Conditions and Division 1 Specification Sections for equipment substitution procedure.

C. If a specified product has been discontinued by a manufacturer, provide the replacement model (as certified by the manufacturer) at no additional cost.

D. Where required provide manufacturer's rack mount adapter or one manufactured by Middle Atlantic or Winstead unless specified elsewhere.

2.3 DIGITAL SIGNAL PROCESSORS AND CONTROL PROCESSORS

A. Signal processing shall be executed by a network-based DSP matrix mix engine supporting open architecture, ensuring all programmed features, signal paths, and graphical user interfaces (GUI) are retained and fully operational throughout the life of the system.

B. The system shall provide freely configurable internal signal flow and routing, with matrix cross-points and DSP blocks defined through dedicated control software, enabling the creation of customized audio processing topologies based on application needs.

C. A software-based interface shall allow for full customization and integration of graphical control panels, scene logic, monitoring, and automation. All DSP units shall be managed and supervised in a common user interface platform—Sound System Software—for unified system operation regardless of physical signal processing configuration.

D. The DSP matrix mix engine shall be fully installed, programmed, integrated, and tested, with all functional capabilities demonstrated and operational at least Thirty (30) days prior to the scheduled first use of the installed AV system.

E. Digital Signal Processing Unit for audio (DSP Type 1):

1. DSP matrix mix engine with open architecture, supporting flexible routing and mixing for large-scale audio systems.
2. Supports 76 inputs × 72 outputs total, including 12 analog mic/line inputs with 48V phantom power and 8 analog line outputs.
3. Provides 64 × 64 Dante network channels at 96kHz/48kHz sampling, allowing integration with AV-over-IP networked audio.
4. Integrated system controller functionality, with full AES70 protocol support for scalable system supervision and third-party integration.
5. Advanced zone mixing, parametric EQ, FIR drive, compression, room tuning, delay, noise gate, auto mixer, and ducker capabilities—all configurable via Sound System Software.
6. Built-in TaskEngine for event automation, scene recall, scheduling, and logic operations.
7. Allows third party plugins Crestron / QSYS
8. Signal to Noise Ratio (A-weighted): greater than 118 dB; THD+N less than 0.002%.
9. Latency: less than 0.22 ms (analog in/out, 96 kHz)
10. Acceptable Product:
    a. Symetrix Prism16x16 80-0117
    b. Or Approved Equivalent

2.4 AUDIO INTERFACES

A. Balanced Input and Output Plate (ML):

1. XLR Inputs and XLR OutputsDante/AES67 connectivity
2. 2-gang Decora style
3. Acceptable Product:
    a. Atterotech unDX2IO+
    b. RDL DD-BN22
    c. Symetrix XIN-XLR-2
    d. Or Approved Equivalent

2.5 AUDIO SIGNAL PROCESSING

A. Analog to Digital Audio Converter (ADC):

1. Two channel analog audio input
2. Networked digital audio
3. Acceptable Product:
    a. Audinate ADP-DAI-AU-2X0
    b. Or Approved Equivalent

B. USB to Digital Audio Converter (UDC):

1. USB audio input
2. Networked digital audio
3. Acceptable Product:
    a. Audinate ADP-USB-2X2

C. Digital to Analog Audio Converter (DAC):

1. Two channel analog audio output
2. Networked digital audio
3. Acceptable Product:
    a. Audinate ADP-DAO-AU-0X2

2.6 AUDIO/VIDEO ENCODER

A. HDMI to Ethernet wall plate encoder
1. HDMI input
2. Dante compatible
3. Bluetooth
4. Acceptable product
    a. Visionary DuetE5-WP-BT
    b. Or approved equivalent

2.7 AUDIO/VIDEO DECODER

A. Dante/AES67 Compatible
B. Networked audio
C. Acceptable product
1. Visionary DuetD-5
2. Or approved equivalent

2.8 POWER AMPLIFIERS

A. Four or eight channel networked DSP power amplifiers with EIA RS-490 power rating at 1% Total Harmonic Distortion (THD) into 8-ohm loads or 70/100-volt constant voltage loads, as applicable.

B. Advanced on-board supervision and protection, including monitoring of circuitry against input over-drive, short circuits, thermal overload, and over-voltage conditions.

C. Frequency response: ±0.25dB, 20 Hz to 20 kHz with less than one percent Total Harmonic Distortion (THD) at rated output.

D. Analog Input impedance: 10,000 Ohm balanced.

E. Signal to Noise Ratio (A-weighted): Amplifier shall achieve greater than 118 dB at rated output power, ensuring exceptional clarity even in demanding audio environments.

F. Output regulation: 2 dB from no load to full load conditions.

G. Noise generation: at least 85 dB below rated output with input shorted.

H. Each channel independently configurable for low-impedance (Lo-Z) or high-impedance (Hi-Z) applications and capable of direct drive operation on each output.

I. Networked architecture supporting remote monitoring, control, and DSP configuration over Ethernet. Native compatibility with Dante and OCA/AES70 (OMNEO) protocols, fully integrated with sound system software and compatible with Crestron/Q-SYS plugins.

J. Amplifier includes high-resolution 96 kHz DSP, channel matrix mixing, FIR-Drive processing, onboard effects, and system logic automation via TaskEngine.

K. ghostPOWER feature maintains DSP and Dante network connectivity as well as signal routing independent of mains power, supporting continued operation in critical applications.

L. Acceptable products:

1. Type 1 (4-channel DSP network amplifier, 1.5kW powerTANK, Hi-Z/Lo-Z, 8x8 Dante, OCA/AES70 remote, PoE ghostPOWER, ecoRAIL, 1RU):
   a. Dynacord – IX15:4-US
   b. Or Approved Equivalent
2. Type 2 (4-channel DSP network amplifier, 3kW powerTANK, Hi-Z/Lo-Z, 8x8 Dante, OCA/AES70 remote, PoE ghostPOWER, ecoRAIL, 1RU):
   a. Dynacord – IX30:4-US
   b. Or Approved Equivalent
3. Type 3 (8-channel DSP network amplifier, 6kW powerTANK, Hi-Z/Lo-Z, 8x8 Dante, OCA/AES70 remote, PoE ghostPOWER, ecoRAIL, 1RU)
   a. Dynacord – IX60:8-US
   b. Or Approved Equivalent
4. Type 4 (DSP power amplifier, 4x1250W, OMNEO/Dante, FIR drive, install-only, 32A powerCON)
   a. Dynacord – IPX5:4
   b. Or Approved Equivalent

2.9 LOUDSPEAKERS

A. Paint all loudspeakers to match surroundings. Confirm color selection with Owner during the submittal phase.

B. Provide with necessary brackets, tile rails, supports, and other mounting accessories.

C. Provide custom rigging and mounting as needed.

D. Exterior loudspeaker cabinets shall be constructed of premium-grade fiberglass or composite materials engineered for permanent outdoor installation, providing consistent performance in harsh environments. Cabinets shall meet or exceed a minimum IP54 rating for ingress protection, offering a documented expected service life of at least 10 years. All exterior and interior surfaces shall receive multi-layer weather-resistant coatings to protect against water, moisture, humidity, and salt exposure. The outer surface finish shall incorporate UV-resistant materials to prevent fading, color shift, or deterioration due to sunlight over time. Enclosure shapes and port orientations shall be designed to minimize the risk of water pooling and allow for rapid drainage, with all seams and joints sealed against the elements. All mounting, rigging, and suspension hardware shall be constructed from corrosion-resistant stainless steel, meeting or exceeding the standards of 304-grade or higher for maximum strength and durability in outdoor environments.

E. Type 1 Loudspeaker:

1. 4-inch coaxial in-ceiling loudspeaker, two-way driver configuration.
2. 130-degree conical coverage pattern.
3. Selectable 8 Ohm or 70V/100V operation, tap points at 30W, 15W, 7.5W, 3.8W, and 1.9W.
4. 87dB 1Watt/1meter Sensitivity
5. 111dB Peak SPL
6. 65Hz to 20kHz (-10dB)
7. Bezel-less white magnetic grille, back can enclosure, SwiftLock installation system, tile rails, and mounting ring included.
8. Acceptable Product:

a. Electro-Voice – EVID-C4.2-G2.
b. Or Approved Equivalent

F. Type 2 Loudspeaker:

1. 6.5-inch coaxial in-ceiling loudspeaker, two-way design.
2. 120-degree conical coverage pattern.
3. Selectable 8 Ohm or 70V/100V operation, tap points at 30W, 15W, 7.5W, 3.8W, and 1.8W.
4. 93dB 1Watt/1meter Sensitivity
5. 118dB Peak SPL
6. 55Hz to 17kHz (-10dB)
7. Bezel-less white magnetic grille, back can enclosure, SwiftLock installation system, tile rails, and mounting ring included.
8. Acceptable Product:
   a. Electro-Voice – EVID-C6.2-G2.
   b. Or Approved Equivalent

G. Type 3 Loudspeaker:

1. 6.5-inch dual coaxial two-way loudspeaker design (two 6.5" LF drivers, one 1" titanium tweeter).
2. 100 H X 80 V coverage pattern.
3. Selectable 8 Ohm or 70V/100V operation, tap points at 60W, 30W, 15W, 7.5W, 3.8W.
4. 94dB 1Watt/1meter Sensitivity
5. 122dB Peak SPL
6. 62Hz to 20kHz (-10dB)
7. Weather-resistant ABS enclosure, paintable grille, black or white available, Strong-Arm Mount bracket system for versatile installation.
8. Acceptable Product:
   a. Electro-Voice – EVID-6.2.
   b. Or Approved Equivalent

H. Type 4 Loudspeaker:

1. 8-inch ceiling subwoofer.
2. 120-degree conical coverage pattern.
3. 8 Ohm or 70V/100V selectable operation, 60W transformer.
4. 93dB 1Watt/1meter Sensitivity
5. 60Hz – 180Hz (-10dB)
6. Bezel-less white magnetic grille, back can enclosure, SwiftLock installation system, tile rails, and mounting ring included.
7. Acceptable Product:
   a. Electro-Voice – EVID-C8.1S-G2.
   b. Or Approved Equivalent

I. Type 5 Loudspeaker:

1. 6.5-inch coaxial pendant speaker, horn-loaded Ti-coated tweeter.
2. 115-degree conical coverage pattern.
3. Selectable 8 Ohm or 70V/100V operation, tap points at 30W, 15W, 7.5W, 3.8W, and 1.8W.
4. 87dB 1Watt/1meter Sensitivity
5. 60Hz to 20kHz (-10dB)
6. Bezel-less grille, back can enclosure,

7. Acceptable Product:
    a. Electro-Voice – EVID-P6.2.
    b. Or Approved Equivalent

J. Type 6 Loudspeaker

1. Dual 10-inch subwoofer cabinet for installed applications
2. Black enclosure, ultra-low frequency extension
3. Power Rating (Program): 800W
4. Impedance: Stereo Mode: (2) 8ohm; Mono Mode: (1) 4ohm
5. Frequency Range: 33Hz-500Hz
6. Maximum Peak SPL: 120dB
7. Enclosure Material: Medium Impact Polystyrene
8. 8 Ohm or 70V selectable with tap points at 60W, 30W, 15W, 7.5W, 3.75W
9. Acceptable Product:
    a. Electro-Voice – S10.1DB
    b. Provide UB-10DB U-bracket for mounting per.
    c. Or Approved Equivalent

K. Type 7 Loudspeaker

1. Column speaker, 1m (37.4") tall, 12 × 2.5" mid-high drivers.
2. PaSS dispersion control, dual 6.5" woofers
3. Frequency Range: 45 Hz – 16000 Hz (-10dB)
4. 8 ohms nominal impedance
5. 91 dB sensitivity 1w/1m
6. Max SPL: 128 dB
7. Power Rating (Program): 600W
8. 140° horizontal, switchable 25°/45° vertical coverage, 7.5° acoustic down-tilt
9. Impedance: 8 Ohm
10. Acceptable Product:
    a. Electro-Voice – LRC-2100
    b. Or Approved Equivalent

L. Type 8 Loudspeaker:

1. High-output 15-inch low-frequency driver and 3-inch titanium diaphragm compression driver on a rotatable 90° x 40° Constant Directivity waveguide.
2. Front-loaded transducers in a weatherized, vented rectangular birch/fiberglass enclosure.
3. Nominal coverage: 90° horizontal × 40° vertical (rotatable).
4. Impedance: 8 Ohm
5. 100dB 1Watt/1meter Sensitivity
6. 137dB Peak SPL
7. 49Hz to 20kHz (-10dB)
8. Weather-resistance: Full fiberglass enclosure, marine-grade hardware, certified for outdoor direct exposure (IP55/IP54 per EV documentation).
9. Acceptable Product:
    a. Electro-Voice – EVF-1152D/94-FGB
    b. Provide EVF-UB-BLK U-bracket for mounting per.
    c. Or Approved Equivalent

M. Type 9 Loudspeaker:

1. High-output 12-inch LF driver and 3-inch titanium compression driver, rotatable 120° x 60° Constant Directivity horn.

2. Nominal coverage: 120° horizontal × 60° vertical (rotatable).
3. Impedance: 8 Ohm
4. 100dB 1Watt/1meter Sensitivity
5. 134dB Peak SPL
6. 55Hz to 20kHz (-10dB)
7. Weather-resistance: Full fiberglass enclosure, marine-grade hardware, certified for outdoor direct exposure (IP55/IP54 per EV documentation).
8. Acceptable Product:
   a. Electro-Voice – EVF-1122D/126-FGB
   b. Provide EVF-UB-BLK U-bracket for mounting per.
   c. Or Approved Equivalent

N. Type 10 Loudspeaker:

1. 15-inch low-frequency driver and 3-inch titanium compression driver, Constant Directivity 60° x 40° horn.
2. Front-loaded, horn mouth includes fiberglass protection, marine-grade network, and hardware.
3. Nominal coverage: 60° horizontal × 40° vertical (rotatable).
4. Impedance: 8 Ohm
5. 102dB 1Watt/1meter Sensitivity
6. 139dB Peak SPL
7. 60Hz to 20Hz (-10dB)
8. Weather-resistance: Full fiberglass enclosure, IP55/IP54, outdoor direct exposure certified.
9. Acceptable Product:
   a. Electro-Voice – EVH-1152D/64-FGB
   b. Or Approved Equivalent

O. Type 11 Loudspeaker:

1. Dual 18-inch (2 x 18") front-loaded, high-output subwoofer system.
2. Front-loaded components in a rugged weatherized black fiberglass enclosure for permanent install applications.
3. Nominal coverage: Omnidirectional, suitable for supplementing low-frequency support in high-output systems; typically paired with controlled-coverage main speakers.
4. Impedance: Stereo Mode: (2) 8ohm; Mono Mode: (1) 4ohm (for use with Dynacord IPX 20:4)
5. 105dB 1Watt/1meter Sensitivity
6. 147dB Peak SPL
7. 28 Hz to 200 Hz (-10dB)
8. Weather-resistance: Outdoor direct exposure rated, fiberglass construction, recommended for permanently installed environments
9. Acceptable Product:
   a. Electro-Voice – X12I-128-FGB
   b. Or Approved Equivalent

2.10 USER INTERFACES

A. Touch Panel (TP, Type 1):

1. 5.7” IPS flush-mount touch panel display for wall installation.
2. 720 x 1440 pixel resolution, 16.7 million colors, 450 nits brightness.
3. EEE 802.3af Power over Ethernet (PoE) via RJ45 LAN, ultra-slim profile for US, EU, UK boxes

4. Secure mounting plate, designed for theft protection. Operating range 0°C to +45°C, max 95% humidity.
5. Fully customizable graphical interface, local language support, proximity sensor activation, universal mounting.
6. Acceptable Product:
    a. Dynacord TPC-1
    b. Symetrix T7
    c. Or Approved Equivalent

B. Wall Controller Keypad (KP, Type 1)

1. Networked audio wall controller with 1.8” color display, rotary encoder for parameter selection and preset recall.
2. IEEE 802.3af Power over Ethernet (PoE) connectivity for streamlined installation.
3. Fully customizable compatibility – supports programmable layouts for volume, source selection, and preset functions.
4. Acceptable Product:
    a. Dynacord WPN1-US
    b. Symetrix W2
    c. Or Approved Equivalent

2.11 NETWORK SWITCHES

A. Contractor shall provide network switches in sound system rack dedicated to system. Coordination shall be done with owner IT department to provide sound system with dedicated VLAN isolated from owner network.
B. Acceptable products:
    1. Netgear GSM4230P
    2. Or approved equivalent

2.12 POWER SYSTEMS

A. Remote Power Sequencing Systems

1. Remote Power Sequencing (RPS) system to be operated via low voltage button contact closures from either push buttons located on panels local to the event space or via a contact closure from a relative control system (DSP, Control Processor, etc.)
2. Devices to be sequenced “ON” in order of signal flow. Devices and equipment to be shut down in reverse order from “ON” sequence. Example “ON” order starting with:
    a. Source devices. (Media Players, Pre-amplifiers, etc.)
    b. Processing devices (DSP, Mixers, Video Switchers, etc.)
    c. Output devices (Amplifiers, Powered Speakers, etc.)
3. Devices not to be sequenced and to remain on for status and monitoring purposes to include but not limited to:
    a. Network switches and components.
    b. Equipment housing ventilation systems.
    c. Control system equipment responsible for providing control of Remote Power Sequencing system.
4. Coordinate wiring of high voltage components with electrical contractor.
5. Acceptable products:
    a. Surgex SEQ1U
    b. Or approved equivalent

B. Power Protection (SURGE):

1. Provide surge protection device to maintain clean power to the following equipment:
   a. DSP devices
   b. Computer CPU's, Monitors and KVM switch, DSP analog to digital converters
   c. Fiber Transport system components
   d. All UPS backup power supplies
   e. Acceptable products:
      i. Surge-X SX-1120RT
      ii. Middle Atlantic PD-920R-SP

C. Backup Power (UPS):

1. Provide UPS systems to maintain power to all computer CPU's, associated video monitors and KVM switch components.
2. Provide UPS system for all Digital Signal Processing (DSP) units.
3. UPS's shall be on-line style with sufficient battery reserve to operate for 15 minutes. Size each UPS unit for 25% additional capacity.
4. 2-RU Rack mountable.
5. Acceptable product:
   a. APC Smart-UPS 2200 Series SUA2200RM2U.
   b. Surgex UPS-1000-OL
   c. Or approved equivalent

D. Horizontal Rack Power Strip (POWER DIST):

1. 20 Amp/2400-Watt rating
2. Front panel AC voltmeter.
3. Spike and surge suppression with over-voltage shutdown
4. 1-U Rack Mountable
5. Acceptable product:
   a. Furman PM-Pro Series II
   b. Juice Goose RP-200
   c. Middle Atlantic PD-920R

E. Rack Lighting and Power Strip (PWR-LIGHT):

1. Nema 20A plug
2. 20 Amp/2400-Watt rating
3. Front panel AC voltmeter
4. Dual front panel pullout dimmable lights
5. Spike and surge suppression with over-voltage shutdown
6. Rack Mountable
7. Acceptable Product:
   a. Furman PL-Pro C
   b. Middle Atlantic PDLT-815RVA
   c. Juice Goose JG 8LED

2.13 EQUIPMENT HOUSING AND ACCESSORIES

A. Free Standing Gangable Equipment Racks (ER, Type 1):

1. Type: Frame and panel with locking rear door.
2. Size: 32-inches deep with 45 units of vertical space.

3. Construction: Factory assembled 16-gauge cold-rolled steel frames with all corners welded.
4. Black enameled finish.
5. Provide all necessary side panels, trim pieces, tops, and blank panels.
6. Provide Middle Atlantic VBK-BGR Vent Blocker kit(s) and configure for proper airflow and cooling of rack.
7. Acceptable product:
    a. Middle Atlantic Products BGR series
    b. Or approved equivalent

2.14 CABLES & WIRING

A. All electrical conductors installed under this contract, except where otherwise specified, shall be soft drawn annealed stranded copper having a conductivity of not less than 98% of pure copper, and meet appropriate ratings (e.g. CMR, CMP, etc.)

B. Cable shall carry appropriate fire rating (e.g. CMR, CMP, OFNR, OFNP, etc.) on jacket of cable.

C. Where cables are routed through cable tray, provide tray rated cable of equal specification.

D. Where speaker cables are run exposed through a return air plenum, provide plenum rated cable of equal specification.

E. Shielded cables located in raceways shall have aluminum foil shield with drain wire.

F. The Belden cables listed below are approved for use on this project and are listed to set the acceptable standard of performance. If field conditions or actual cable pathway requires tray or plenum cable, provide version of cable that meets required rating. Cables from Liberty, Commscope, Gepco, and West Penn are also acceptable provided they meet the performance specifications of the approved listed cables.

G. Loudspeaker Cables - 70.7 Volt:

1. Homerun to Amp: 14 gauge twisted pair, jacketed. Belden 5100UP
2. Volume Control to Speaker: 16 gauge twisted pair, jacketed. Belden 5200UP
3. Speaker to Speaker: 16 gauge twisted pair, jacketed. Belden 5200UP
4. Acceptable Manufacturer:
    a. Belden (Model number listed above)

H. Loudspeaker Cable - 8 Ohm, 16 Ohm, 4 Ohm:

1. Provide 14 AWG cable
2. Cable to be CL3R or CL2P rated
3. Jacket color: gray
4. Acceptable Product:
    a. West Penn 226
    b. West Penn 25226 (where required)

I. Multi-pair Audio Cable:

1. 24 AWG, individually shielded, individually jacketed with overall jacket.
2. Can be used in lieu of Belden 9451 where multiple cable runs to the same location are needed.
3. Acceptable Product:
    a. Belden 15##C Series

J. XTP/DTP Twisted Pair Cable:

1. Shielded Twisted Pair:
   a. Meets HDBT requirements.
   b. 475 MHz up to 330 feet (100 m)
   c. 24 AW solid copper construction
   d. SF/UTP design
   e. Acceptable Product:
      i. Extron XTP DTP 24/1000 - 22-236-03
      ii. Extron XTP DTP 24P/1000 - 22-235-03 (where required)

2.15 CONNECTORS

A. Panel Mounted Connectors:

1. Accepted Product:
   a. Type XLR-3M:
      i. Neutrik NC3MD-L-B-1.
      ii. Switchcraft E3MSCBAU.
      iii. Amphenol AC3MMDZB-AU.
   b. Type XLR-3F:
      i. Neutrik NC3FD-L-B-1.
      ii. Switchcraft E3FBAU.
      iii. Amphenol AC3FDZB-AU.
   c. Type XLR-5M:
      i. Neutrik NC5MD-L-B-1.
      ii. Switchcraft E5MSCBAU.
      iii. Amphenol AC5MDZB-AU.
   d. Type 1/4” Phone:
      i. Neutrik NJ3FP6-C.
      ii. Switchcraft E111BL.
   e. Type SPEAKON:
      i. Neutrik NL4MP.
      ii. Switchcraft HPCP410F.
      iii. Amphenol SP-4-MD.
   f. Type 1/4” Speaker:
      i. Neutrik NJ3FP6-C.
      ii. Switchcraft E111L.
   g. Type BNC:
      i. Neutrik NBB75DFI.
      ii. Switchcraft EHBNC2RB.
      iii. Amphenol AC-BNC-PJ-75B.
   h. Type NCJ:
      i. Neutrik NCJ6FI-S.
      ii. Amphenol ACJC6S.
   i. Type RCA:
      i. Neutrik NF2D-2 (Right) and NF2D-9 (Left).
      ii. Switchcraft BPJJ02AUX (Right) and BPJJ04AUX (Left).
      iii. Amphenol ACJD-RED (Right) and ACJD-WHT (Left).

B. Cable Mounted Connectors:

1. Accepted product:
   a. Type XLR-3MP:
      i. Neutrik NC3MX-B.

ii. Switchcraft AAA3MBAUZ.
iii. Amphenol AX3MB-AU.

b. Type XLR-3FP:
i. Neutrik NC3FX-B.
ii. Switchcraft AAA3FBAUZ.
iii. Amphenol AX3FB-AU.

c. Type XLR-5MP:
i. Neutrik NC5MX-B.
ii. Switchcraft AAA5MBAUZ.
iii. Amphenol AX5MB-AU.

d. Type XLR-5FP:
i. Neutrik NC5FX-B.
ii. Switchcraft AAA5FBAUZ.
iii. Amphenol AX5FB-AU.

e. Type XLR-3MP Right Angle:
i. Neutrik NC3MRX-B.
ii. Switchcraft R3MBAUZ.
iii. Amphenol AC3MMR.

f. Type XLR-3FP Right Angle:
i. Neutrik NC3FRX-B.
ii. Switchcraft R3FBAUZ.
iii. Amphenol AC3FR.

g. Type TRS:
i. Neutrik NP3X-B.
ii. Amphenol TS3P.

h. Type 1/4”:
i. Neutrik NP2X-B.
ii. Amphenol TM2P.

i. Type RCA:
i. Neutrik NF2C-B/2.
ii. Switchcraft 3502ABAU.
iii. Amphenol ACPR-S(XX).

j. Type Speakon:
i. Neutrik NL4FC.
ii. Switchcraft HPCC4F.
iii. Amphenol SP-4-F.

k. Type BNC:
i. Provide correct impedance connector for circuit type.
ii. Kings. Verify part number with cable selected.
iii. Trompeter. Verify part number with cable selected.
iv. Amphenol. Verify part number with cable selected.
v. Type BNC for Word Clock using VHD2000M cable:
1) Kings 2065-2-9.
2) ADC BNC-1.
3) Gepco BNC-XL-2.
vi. Type BNC for Word Clock using VHD1100 cable:
1) Kings 2065-8-9.
2) ADC BNC-25.
vii. Type BNC for wireless microphone antenna cables:
1) Provide 50-ohm connectors.
2) Provide appropriate connector for cable type and diameter from these manufacturer’s:
a) Amphenol
b) RF Industries
c) Times Microwave

d) Belden
e) West Penn

viii. Type BNC for assisted listening antenna cables:
1) Provide 50-ohm connectors.
2) Provide appropriate connector for cable type and diameter from these manufacturer's:
a) Amphenol
b) RF Industries
c) Times Microwave
d) Belden
e) West Penn

2.16 SPEAKER HARDWARE AND SUPPORT STRUCTURE

A. Provide a custom engineered loudspeaker hardware system as required to mount and suspend speakers in the arrangement as shown on the Drawings.

B. Attachment system to be supplied by vendor whose primary specialty is fabricating support systems for loudspeakers or similar devices over an audience.

C. Provide safety cable on all bracket mounted loudspeakers.

D. Provide auxiliary support steel and hardware required to attach to building structure and design members to have a minimum safety factor of at least 7:1. Reference architectural and structural documentation for details on structural elements.

E. All wire rope used for loudspeaker suspension to have a minimum safety factor of 10:1.

F. Fabricate all components from powder coated aluminum for maximum resistance to corrosion.

G. Contractor is responsible for painting any welds associated with this Work. This includes bracket attachment points and welds required to attach bracketing to building structure, scoreboards, or poles.

H. Acceptable manufacturer:

1. ATM Flyware / Allen Products
2. Whirlwind Metal Fabrication (U-Brackets Only).
3. Custom Engineered by Contractor (reference submittal requirements for additional information).

I. Shoulder Type Machinery Eye Bolts:

1. Forged Steel – Shoulder, Quenched and Tempered.
2. Fatigue rated at 1-1/2 times the Working Load Limit at 20,000 cycles.
3. Product to meet or exceed all the requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements.
4. Select size of product-based working load limits required.
5. Acceptable product:
a. Crosby Group S-279 / M-279 Series.
b. Chicago Hardware Company 261 Series.

J. Forged Eye Nuts:

1. Forged Steel – Quenched and Tempered.

2. Tapped with standard UNC class 2 threads after galvanizing.
3. Product to meet or exceed all the requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements.
4. Select size of product-based working load limits required.
5. Acceptable product:
    a. Crosby Group G-400 Series.
    b. Chicago Hardware Company 167 Series.

K. Anchor Shackles:

1. Forged - Quenched and Tempered, with alloy pin.
2. Working Load Limit permanently shown on every shackle.
3. Hot Dip galvanized or Self-Colored.
4. Product to meet the performance requirements of Federal Specification RR-C-271D Type IVA, Grade A, Class1.
5. Select size of product-based working load limits required.
6. Provide all screw pin type shackles with mouse wire.
7. Acceptable product:
    a. Crosby Group G-209 / S-209 Series Screw Pin.
    b. Chicago Hardware Company 201 Series.

L. Turnbuckles:

1. Acceptable turnbuckle assembly combinations include Eye and Eye, Jaw and Jaw, Jaw, and Eye.
2. End fittings are Quenched and Tempered; bodies heat treated by normalizing.
3. Hot Dip galvanized.
4. Product to meet or exceed all the requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements.
5. Product to meet the performance requirements of Federal Specifications FF-T-791b, Type 1 Form 1 - CLASS 4, and ASTM F-1145.
6. Select size of product-based working load limits required.
7. All end fittings to be moused to the body with mousing cable.
8. Acceptable product:
    a. Eye and Eye:
        i. Crosby Group HG-226 Series.
        ii. Chicago Hardware Company 012/013 Series.
    b. Jaw and Eye:
        i. Crosby Group HG-227 Series.
        ii. Chicago Hardware Company 026 Series.
    c. Jaw and Jaw:
        i. Crosby Group HG-228 Series.
        ii. Chicago Hardware Company 030/031 Series.

M. Swivel Hoist Ring:

1. All components are Alloy Steel - Quenched and Tempered.
2. Rated at 100% of Working Load Limit at 90° angle.
3. 360 swivel and 180 pivot action.
4. Product to meet or exceed all the requirements of ASME B30.26 including identification, ductility, design factor, proof load and temperature requirements.
5. Bolt specification to be Grade 8 Alloy socket head cap screw to ASTM A 574.
6. Fatigue rated at 1-1/2 times the Working Load Limit at 20,000 cycles.
7. Zinc Plated (Yellow Chromate) finish for increased corrosion protection.
8. Select size of product-based working load limits required.

9. Acceptable product:
    a. Crosby Group HR-125.
    b. Chicago Hardware Company 860 Series.

N. Wire Rope Thimble:

1. Product to meet the performance requirements of Federal Specification FF-T-276b Type II.
2. Hot Dip galvanized.
3. Select size of product-based wire rope size required for suspended load.
4. Acceptable product:
    a. Crosby Group G-411 Series.
    b. Chicago Hardware Company 224/225 Series

O. Wire Rope:

1. Strands: 7 x 19 Utility Cable.
2. Type: Galvanized.
3. Select size of product-based working load limits required.
4. Acceptable product:
    a. WireCo Union
    b. McMaster-Carr
    c. Samson Rope Technologies

P. Wire Rope Sleeves:

1. Type: Copper Duplex.
2. Select size of product-based wire rope size required for suspended load.
3. Acceptable product:
    a. WireCo Union
    b. McMaster-Carr
    c. Samson Rope Technologies

PART 3 - EXECUTION

3.1 GENERAL

A. Coordinate incorporation of the Work specified herein with other project work so as to facilitate a cohesive final Products.

B. The installation recommendations contained within ASDI and Telecommunications Distribution Methods Manual are mandatory minimum standards and requirements.

C. Mount equipment and enclosures plumb and level.

D. Permanently installed equipment to be firmly and safely held in place. Design equipment supports to support loads imposed with a safety factor of at least five. Seismic bracing shall be installed on appropriate equipment where local codes require such installation.

E. Verify all locations of equipment in all rooms with Owner’s Representative, Owner, and Consultant.

3.2 INSTALLATION

A. Installation of cable and wiring

1. Cabling and Wiring:
   a. Install cable in a manner to adhere to manufacturer's specifications for maximum cable pulling tension, minimum bend radius, and restrictions.
   b. Provide appropriate support at all horizontal-to-vertical transitions in order to keep the weight of the cable from degrading at the point of transition.
   c. If a J-hook or trapeze system is used to support cable bundles, all horizontal cables shall be supported at a maximum of 48-inch (1.2 meter) intervals. At no point shall the cables rest on light fixtures, acoustic ceiling grids, panels, conduits, sprinkler pipe, water pipe and/or HVAC system ducting.
   d. Horizontal distribution cables shall be bundled in groups of no more than 50 cables when being supported by J-Hook or trapeze systems. Cable bundle quantities in excess of 50 cables may cause deformation of the bottom cables within the bundle and degrade cable performance. An exception to this rule is when cable is installed in cable tray systems.
   e. Cable shall be installed above fire-sprinkler systems and shall not be attached to the system or any ancillary equipment or hardware. The cable system and support hardware shall be installed so that it does not obscure any valves, fire alarm conduit, boxes, or other control devices
   f. Cables shall not be attached to ceiling grid or lighting fixture wires. Where support for horizontal cable is required, install appropriate carriers to support the cabling.
   g. Any cable damaged or exceeding recommended installation parameters during installation shall be replaced prior to final acceptance at no cost to the Owner.
   h. Cables shall be identified by a self-adhesive machine label in accordance with the System Documentation Section of this specification and ANSI/TIA/EIA-606-A. The cable label shall be applied to the cable behind the faceplate on a section of cable that can be accessed by removing the cover plate.
   i. Unshielded twisted pair cable shall be installed so that there are no bends smaller than four times the cable outside diameter at any point in the run and at the termination field.
   j. Provide splice free wiring and cabling from origination to destination. Cables shall be installed in continuous lengths from origin to destination (no splices). Properly designed transition points, or consolidation points are not considered 'splice' points.
   k. Make joints and connections with rosin-core 60/40 solder or with mechanical connectors specifically intended for the type and class of cable being used. Where spade lugs are used, crimp properly with ratchet type tool.
   l. Take precaution to prevent and guard against electromagnetic and electrostatic hum. For line-level audio signal, float cable shield at one end. Shield not connected to be folded back over cable jacket and covered with heat-shrink tubing. Do not cut off unused shield.
   m. Isolate cables and wires of different signals or different levels; and separate, organize, and route to restrict channel crosstalk or feedback oscillation in any amplifier section. Keep wiring separated into groups for microphone level circuits, line level circuits, loudspeaker circuits, and power circuits.
   n. Connect cable to active components through XLR connections whenever multiple formats are available. Make connections to speaker transformers with properly sized closed end connectors crimped with factory approved ratchet type tool. Wire nut or "Scotchlock" connectors are not acceptable. Do not wrap audio cable splices or connections with adhesive backed tape.

o. Cover edges of cable and wire pass-through holes in chassis, housings, boxes, etc., with rubber grommets or Brady GRNY nylon grommetting.

p. Execute wiring in strict adherence to:

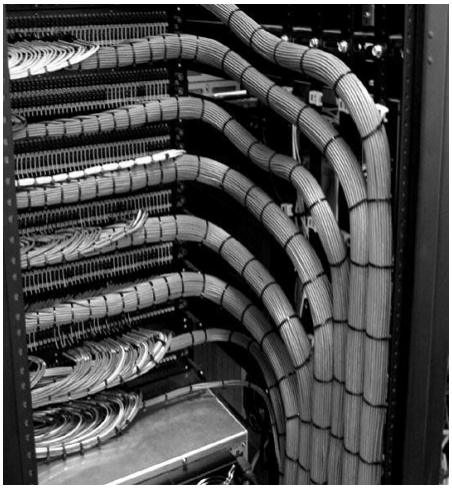
i. Phillip Giddings. Audio System Design and Installation. Indianapolis: Howard W. Sams & Co., 1990.

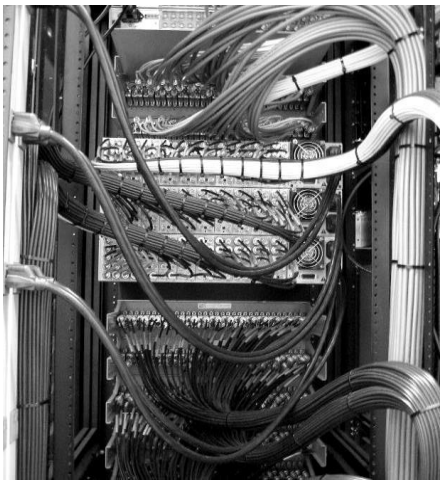
ii. Don Davis and Carolyn Davis. Appendix II, Recommended Wiring Practices. Sound System Engineering, 2nd Edition. Indianapolis: Howard W. Sams & Co., 1989.

iii. AV Installation Handbook Second Edition: The Best Practices for Quality Audiovisual Systems, Infocomm, 2009

2. Equipment Housing Cabling and Wiring:

a. Lace, tie, or harness wire or cable as required herein, and in accordance with accepted professional practice. Dress, lace or harness all wire or cable to prevent mechanical stress on electrical connections; no wire or cable shall be supported by a connection point. Install cable and wire neatly tied in manageable bundles with cable lengths cut to minimize excess cable slack but still allow for service and testing. Provide horizontal support bars if cable bundles sag. Reference photos below for standard of quality.





b. Provide adequate service loops so that equipment mounted on rack slides may be pulled fully out, to their locked position without straining cable.

c. Neatly bundle excess AC power cable from housing mounted equipment with plastic cable ties.

d. Provide plastic cable ties or Velcro straps to bundle cabling and wiring. Electrical tape and adhesive backed cable tie anchors are not acceptable.

e. Install with connections completely visible and labeled.

f. Provide termination resistors, if required, of 5 per cent tolerance; fully visible and not concealed.

B. Installation of connectors, plates & panels:

1. Install panel mounted connectors rigidly attached to panels, plumb and level.

2. Custom rack panels shall be 1/8 inch thick aluminum, standard EIA sizes, brushed black anodized finish (brushed in direction of aluminum grain only), unless otherwise noted.

3. Custom connector plates (speaker, microphone, etc.) are typically stainless steel, unless otherwise noted or specified. However, verify plate finish with Architect.

4. Install XLR type connectors in accordance with IEC-268 standard, with a wiring scheme of pin 2 hot (high), pin 3 (low), and pin 1 screen (shield).

5. Other Plates and Panels may be required to satisfy the requirements of the Work.

C. Installation power and grounding:

1. Coordinate final connection of power and ground wiring to housings.
2. Hardwire power wiring directly to internal AC receptacles to ensure uninterrupted operation.
3. Provide 3-conductor, isolated ground, 120 VAC outlets as required within each housing. Provide a minimum of two spare outlets in each rack.
4. Provide a copper ground buss top to bottom in each housing, insulated from the housing. Ground equipment chassis not having a three wire power cord to these busses using 6/32 nuts, bolts and lock-washers with No. 12 wire. Connect green ground wire from each AC outlet in housing to this buss bar.
5. Replace manufacturers supplied 18 gauge IEC power cords with UL listed 18 gauge pre- molded 6”, 12”, 18”, or 24”. Use minimum length required. No looped or cable tied IEC power cords will be permitted within the equipment rack.
6. Replace manufacturers supplied 14 gauge IEC power cords with UL listed 14 gauge pre- molded 18” or 36” for all equipment IEC capable. Use minimum length required and minimize looped or cable tied IEC power cords present in the equipment rack.

D. Installation of electronic equipment:

1. Take appropriate precautions against electrostatic discharge (ESD). Establish a personal ground before handling electronic equipment through the use of a grounded wrist wrap and/or an anti-static floor pad.
2. Take appropriate precautions to protect the equipment from damage during installation. Equipment to be installed free of damages, scratches, dents, etc.
3. Mount trim potentiometers, custom circuit cards, relays, and transformers (except large 70V units) in shielded enclosures, and mark their function and connections with engraved lamicoid labels.
4. Mount equipment plumb and level, firmly and safely held in place.

E. Installation of Equipment Housing:

1. Mount equipment in racks and consoles and fully wire and test before delivery to job site. If field conditions prevent prior assembly of racks, notify Owner in writing that racks will be fabricated on site and the reasons for the change.
2. Secure rack mounted devices utilizing all available fastener mounting positions on device.
3. Provide rear support for housing mounted equipment greater than 15 inches deep.
4. Provide blank panels to fill unused panel space within the equipment housing.
5. If Key door locks are required, key each housing type alike.
6. Looking at the rack from the rear, locate AC power and speaker wiring on the left; line level audio, video, and RF wiring on the right.
7. Provide shaft locks or security covers on non-user operated equipment having front panel controls. These panels are to be installed at the conclusion of testing.
8. If forced air active thermal management is used, provide ventilation blocking material on the front, sides, and rear of the equipment rack as needed. Reference Middle Atlantic Products “Controlling the Temperature Inside Equipment Racks”.
9. Panels or equipment mounted on the rear rack rails shall not block access to any front mounted components.
10. If equipment rack is not equipped with casters, provide two inch high wood base to isolate equipment rack from floor. Wood base should be capable of supporting the load.

F. Installation of Loudspeakers:

1. The Contractor is responsible for final design and engineering of loudspeaker rigging, attachments, brackets, and hoisting.
2. Loudspeakers shall be mounted at the operating position in a safe, secure, and permanent manner.
3. Provide custom rigging as needed.
4. Suspension and Mounting:
    a. Static and dynamic equipment loads shall be suspended or mounted in compliance with the following ANSI/ESTA standards, using the latest available versions of the standards:
        i. ANSI E1.4-2-2021 Statically Suspended Rigging Systems
        ii. ANSI E1.56-2018 Rigging Support Points
        iii. ANSI E1.6-1-2021 Powered Hoist Systems
        iv. ANSI E1.8-2012 Loudspeaker Enclosures Intended for Overhead Suspension
    b. Rigging, mounting, and support systems for overhead suspended loudspeakers shall be reviewed and certified by a registered Professional Engineer (PE), in the employ of the Contractor, licensed to practice in the State in which the project is located. Documentation shall be included as a submittal item. Once the systems are installed, the PE shall physically inspect, at the Contractor's cost, the methods and means used to verify compliance with the original design.
5. General Guidelines:
    a. Paint loudspeakers, supports, and related hardware color as directed by the Owner.
    b. The aiming direction of all loudspeakers shall be adjustable by no less than ±5 degrees horizontally and vertically.
    c. Loudspeakers are to be oriented parallel to their mounting surface unless otherwise noted.
    d. Provide a safety cable connected to a secondary location for each loudspeaker.
    e. All loudspeakers located in ceiling tiles shall be located in the center of the tile unless noted otherwise.
    f. Paint loudspeakers to match surroundings. Confirm color selection with the Architect during the submittal phase.
    g. Exterior loudspeaker cabinets shall be constructed of materials designed for permanent outdoor exposure conditions with a minimum IP 54 rating, and a minimum expected 10-year life span. Exterior and interior surfaces of the cabinets shall be protected from the effects of water, moisture, and humidity. The exterior surface shall also be protected from the effects of ultraviolet radiation to prevent fading and color change. The cabinets shall be shaped and oriented in a manner that minimizes the possibility of water pooling on any cabinet surface. Associated hardware shall be inherently non-corrosive, performing to the standards of 304 Stainless Steel or higher.

G. Installation of Projectors:

1. Confirm distance of specified projection lens before mounting projector.
2. Projectors shall be mounted plumb and level at the operating position in a safe, secure and permanent manner.
3. All hardware required to locate the mount and projector at the required location shall be provided.
4. Projectors shall be mounted using tamper proof secure hardware.

5. Contractor may be required to adjust projection screen and lift upper and lower limit switches for projection screens and lifts specified elsewhere and not installed as part of this Contract.

H. Installation of Flat Panel Monitors:

1. Confirm location before mounting.
2. Monitors shall be mounted plumb and level at the operating position in a safe, secure and permanent manner.
3. All hardware required to locate the mount and monitor at the required position shall be provided.
4. Locate monitor on the center line of the room unless noted otherwise.

I. Loose Equipment

1. Provide loose equipment as indicated on drawings.
2. Unpackage and assemble items.
3. Place items in designated storage or refer to Owner for direction on final location and storage of loose equipment.

3.3 FIRESTOP

A. A fire-stop system is comprised of the item or items penetrating the fire rated structure, the opening in the structure and the materials and assembly of the materials used to seal the penetrated structure. Fire-stop systems comprise an effective block for fire, smoke, heat, vapor and pressurized water stream.

B. All penetrations through fire-rated building structures (walls and floors) shall be sealed with an appropriate fire-stop system. This requirement applies to through penetrations (complete penetration) and membrane penetrations (through one side of a hollow fire rated structure). Any penetrating item i.e., riser slots and sleeves, cables, conduit, cable tray, and raceways, etc. shall be properly fire-stopped.

C. Fire-stop systems shall be reviewed by a Professional Engineer (PE) licensed to practice in the State in which the project is located. Stamped drawings showing the fire stop systems shall be included as a submittal item. Once the systems are installed, the engineer of record for the firestop system shall physically inspect the methods and means used to verify compliance with the original design.

D. A drawing showing the proposed fire-stop system, stamped/embossed by the PE shall be provided to the Owner’s Technical Representative prior to installing the fire-stop system(s).

E. All fire-stop systems shall be installed in accordance with the manufacturer’s recommendations and shall be completely installed and available for observation by the local authorities prior to cable system acceptance.

3.4 CONTROL SYSTEM PROGRAMMING

A. Transport Control

1. Provide standard Stop, Play, Pause, Fast Forward and Rewind for each playback device and menu control for DVD players. Buttons should be arranged in a conventional fashion that will be familiar to the normal user.
2. The selected control function should be displayed by showing the appropriate button “pressed”. It should remain this way until another function is selected.
3. For devices that will go into a standby mode after a period of time, the control system shall sense this mode and restore normal operating mode once a transport

function has been selected. This may require the use of current sensors to determine the state of the unit. No direct user action should be required at the playback device to restore the normal operating mode.

B. Screen/Shade Control

1. In addition to up-down functions, provide a Stop function to allow the movement to be halted. Once movement has been stopped, the up or down buttons should resume travel in the selected direction.
2. Control system shall not prevent screen/shade wall controls from being used as well.
3. Touch panel controls should be readily accessible to the user to permit direct control of shades or screen with having to navigate through multiple control pages.

C. Room Combining

1. Combining of adjacent areas shall be done through a graphical representation of the physical areas to be combined. Use of a floor plan metaphor is recommended with the graphic oriented correctly with respect to control panel location.
2. Use buttons or other appropriate objects placed along the common wall to enable the combining function.
3. When spaces are combined, the graphic appearance of those areas shall change to reflect this configuration. Once an area is separated from a combination, the color of its area should revert to the normal room color.
4. Common control functions between combined rooms shall be linked, allowing control of the combined area from any one of the touch panels. Examples of common functions include:
   a. Background music selection,
   b. Background music volume
   c. Background music muting
   d. Lighting preset recall
   e. Master volume (not individual channel volume)
5. When combining adjacent rooms, the control system shall force the common functions to a predetermined default configuration so all rooms have the same configuration.
6. To avoid unintentional changes, a control panel will not be able to operate a function in a remote location without also operating that same function in the room where the panel is located.

D. Level Control

1. Objects requiring level adjustment such as volume or tone controls shall be through Up/Down buttons with a graphical representation of the actual level.
2. Increment of level change to be adjusted for reasonable range without the need to push the Up or Down buttons needlessly.

E. Volume Mute

1. Where the ability to mute the sound is needed, the button shall use the label “Vol On” and “VOL OFF” instead of Mute and Unmute. When in a “VOL OFF” mode, pushing the “VOL UP” button shall restore the sound and bring the system out of the muted mode.
2. VOL ON/OFF buttons shall change color to indicate the status of the button.

F. Standard Colors

1. Control functions shall be color coded to add clarity and show relationships between different groups of controls.
2. The color Red shall be reserved to indicate a fault or abnormal condition.
3. Green may be used to indicate normal operation, but may be used for standard control colors as well.
4. Similar controls should maintain the same color scheme across all control pages.
5. When a function is selected, the graphical depiction of that button should appear to be pressed and its color change to a darker shade of the regular button color.
6. Color schemes used for background and foreground objects should be selected to be complimentary and provide a consistent theme throughout the control pages.

G. Minimum Button Size and Placement

1. Minimum visual size of a button is 3/8” wide by 1/4” high.
2. Spacing between buttons should be no less than 1/16”.
3. Where buttons are immediately adjacent, the active selection area of the button should be reduced to 80% of the visual area of the button.

H. Button Actions

1. When a function on a control page is selected, that button or visual object associated with that function should change to reflect what has been chosen.
2. For functions that are momentary selections (i.e., VOL UP), the change of state is visible for as long as the button is being pressed.
3. For function that are maintained selections (i.e., PLAY), the change of state remains visible until another function is selected and resets the previous function.
4. The state change of a button or visible object should depict real-world objects as much as possible including the appearance of the button be pressed inward, change in shade of the original color, but not a change in hue.

I. Labels

1. Use of simple words or titles are preferred to indicate functionality, navigation and system status.
2. Use of stylish symbols should be avoided unless their identity is commonly recognized by the general public. Standard symbols for transport functions are acceptable.
3. Labels should be presented in a clear, sans serif type face that will remain legible on lower resolution touch panels.
4. Where physical buttons are present along the side of a touch panel, these buttons should be engraved and filled with a contrasting color.

J. Power On/Off

1. For panels requiring an ON/OFF control, these functions should be linked through current sensors or other methods for the control system to detect the power on condition of the component being controlled.
2. Powering off a system should not interfere with the ability of a projector to complete its cool down cycle.

K. Look & Feel

1. Control pages should utilize a clean, elegant but stylish appearance.
2. Use a common graphical template across all control pages for a consistent look.

3. The touch screen layout should utilize graphical elements such as drop shadows, gradient fills and transparency to provide a pleasing overall appearance.
4. Utilize graphical representations of floor plans to convey location information.
5. Include company logos, icons or watermarks to portray the corporate identity.
6. Provide clear navigation tools for moving between control pages.
7. Each sub-page should have a “BACK” button to return to the previous page. This button should appear in the same location on each page.
8. Provide a “HELP” button or icon on each user page to provide clear, non-technical instructions on how to use the functions available to regular users.

L. Security

1. Provide password access to control pages not intended to be accessed by the general public.
2. Unless otherwise noted, provide a minimum of three levels of access
   a. General User
   b. Non-Technical Employee
   c. AV Technician
3. Segregate the control functions to only allow authorized individuals access to more sophisticated control pages.
4. Provide a timeout feature to automatically return the control panel back to the default opening screen after 30 seconds of inactivity. After this reset, passwords must be reentered to return to a previous control page.

M. Presets

1. For systems that have different operating modes or configurations, provide the ability to store and recall preset combinations of system settings.
2. Provide a “Preset” page that permits a minimum of five presets to be recalled. Each button to include a label describing the function or configuration associated with that button.
3. Provide the ability for new presets to be stored over previous settings. New preset to be able to change the label to reflect the new or revised configuration.
4. When a preset has been recalled, the control page should indicate the active configuration.

3.5 LABELING OF EQUIPMENT

A. Provide each terminal strip with a unique descriptor and a numerical designator for each terminal. Show terminal strip descriptor and designator on system schematic drawing.

B. Provide logical and legible cable and wiring label permanently affixed for easy identification.

1. Labels on cables to be adhesive strip type covered with clear heat-shrink tubing. Factory stamped heat shrink tubing may be used in lieu of the adhesive strip style.
2. Wiring designator to be an alpha-numeric code unique for each cable. Actual cable designation assignments to be determined by Contractor. Add cable designation codes to system schematic drawings.
3. Locate the cable designator at the origination and destination of each circuit within 3 inches of the point of termination or connection. Provide cable designator on circuits with intermediate splice points with an additional suffix to indicate each segment.

3.6 ENGRAVING

A. Text font: 1/8 inch block sans serif characters unless noted otherwise.

B. On dark materials, provide white characters; on stainless steel or brushed natural aluminum plates, or light-colored materials, provide black characters.

C. Provide at least two lines of text with first line listing the general device name, e.g., amplifier. Second line to include schematic reference of the device, e.g., AMP-1.

D. Equipment label: black with white characters except where indicated.

3.7 COMMISSIONING

A. Prior to energizing or testing the system, ensure the following:

1. All products are installed in proper and safe manner according to manufacturer's instructions.
2. Insulation and shrink tubing are present were required.
3. Dust, debris, solder splatter, etc. is removed.
4. Cable is dressed, routed, and labeled; connections are consistent with regard to polarity.
5. Labeling has been provided.
6. Temporary facilities and utilities have been properly disconnected, removed and disposed of off-site.
7. Products are neat, clean and unmarred and parts securely attached.
8. Broken work, including glass, raised flooring and supports, ceiling tiles and supports, walls, doors, etc. have been replaced or properly repaired, and debris cleaned up and discarded.

B. Prior to energizing the System verify and perform the following tests and adjustments in compliance with applicable EIA standards.

1. Electronic devices are properly grounded.
2. Test each AC power receptacle with a circuit checker for proper hot, neutral and ground connections.
3. Verify each individual component is operating properly.
4. Verify each individual component's performance meets the manufacturer's published performance for this unit.
5. Measure and record the DC resistance between the technical ground in any equipment rack or console and the main building ground. Resistance should be 0.15 ohms or less.

C. Speaker Circuit Verification Test

1. Measure the impedance of each speaker line leaving the equipment racks.
2. For constant voltage systems measure the impedance at 100 (or 250) Hz, 1 KHz and 8 (or 10) KHz of each line leaving the equipment rack with the line disconnected from the driving source. For band limited devices, use a frequency appropriate for the operating range of the transducer.
3. When documenting the results of these tests, include the calculated impedance based on number of units on a line and the size and distance of the run. Correct any field readings that differ more than 20% from the calculated impedance.
4. Include the results of the tests in the Project Record Manual.

D. Speaker Polarity Verification Test

1. Use an electronic polarity checker, TEF-20, SYSID, SIM II, Smaart, or other similar device to test each loudspeaker. All speakers should have the same relative polarity.
2. Follow manufacturer's recommendations in conducting the tests.
3. Include the results of the tests in the Project Record Manual.

E. Audio Signal Paths

1. Verify operation from each source device through all switching, amplification and distribution devices.

F. System Gain Adjustment

1. Adjust each active device to have proper gain structure from the mixer output to the input of the amplifier.
2. With all amplifiers turned off, connect a sine wave or pink noise generator to the input of the mixer. Using an RMS AC voltmeter with a dB scale, adjust the mixer to an output between -10 and 0 dBu. Once the level has been established, it should remain unchanged throughout the test. All equalizers should be set flat for this test.
3. Follow the signal flow from the mixer to each subsequent component. Measure the input level and output level of each device at the point of connection to the device. The input level reading should differ no more than 0.25 dB from the level recorded for the preceding device. Diagnose and correct the wiring or equipment when any readings exceed this range.
4. Adjust the output of each component to achieve the proper output level.
5. Record the output levels of each device in the Project Record Manual.

G. Signal Delay Adjustment

1. Adjust the delay to each subsystem to ensure proper synchronization between the main speakers and delayed speakers.
2. Using a TEF 20, SYSID, Smaart, SIM II, or other acceptable time based measurement system, measure the arrival time of the distant signal and then measure the arrival of the local signal.
3. Based on the arrival times measured, adjust the delay applied to the local speakers to synchronize them with the distant speakers. Repeat the test to verify the delay has been set to within 1 ms of the arrival of the distant signal. Once the precise delay time has been determined, provide an additional 10 ms of Haas effect delay to maintain directional orientation toward the original sound source.
4. Continue to test and adjust each separate subsystem with a dedicated delay channel.
5. Provide hard-copy printout of each delay adjustment showing first the arrival times with no delay set and then the result after the delay has been adjusted. Record the settings of each delay in the Project Record Manual.

H. Remote Input Verification Test

1. Using a microphone or portable signal generator, connect to each microphone/line level receptacle throughout the facility.
2. Verify that the receptacle under test appears at the correct input and is operating properly.
3. In a similar manner, check all remote tielines and media related lines for correct wiring and labeling.

I. System Equalization

1. Using a RTA, TEF 20, SYSID, or SMAART, equalize all loudspeaker systems to provide a suitable frequency response as follows:
    a. Speech Reinforcement Systems: flat response from 125 Hz to 2.5 KHz, with 2 dB roll off above.
    b. Program Reproduction Systems: flat response from 65 Hz to 8 KHz, with 2 dB roll off above.
2. Verify system gain and amplifier levels.
3. Provide program levels of at least 85 dB and speech reinforcement levels of at least 70 dB in the seating area without objectionable distortion, buzzes, or rattles.
4. Provide hard copy printouts of the spectral response with the test data.

J. RFI and Parasitic Oscillation

1. With systems operating check to ensure that all systems are free from spurious oscillation and radio frequency interference in the absence of audio signal.

K. Buzzes, Rattles and other Distortions

1. Adjust the system for normal operating level in the space. Apply a slow sine wave sweep from 60 Hz to 3 KHz and listen carefully for buzzes, rattles and other objectionable distortions.
2. Correct the cause of the defect. If the cause is not from the system. Bring the cause to the attention of the GC, indicating cause and suggestive corrective actions.

L. Video Systems Test

1. Projected images and screen must be plumb with respect to ceiling line.

M. Video System Tests. Verify performance of all video equipment, components and systems, as specified herein.

1. Video (signal):
    a. S/N (peak to RMS), unweighted DC to 4.2 MHz: 55 dB minimum.
    b. Crosstalk, unweighted DC to 4.2 MHz: 45 dB minimum.
    c. Frequency Response: Within plus to minus 0.5 dB to 4.2 MHz.
    d. Line and Field Tilt: 2% maximum.
    e. Differential Gain: 2% maximum.
    f. Differential Phase: 2 degrees maximum.
    g. Frequency Response: DC to 4.2 MHz within plus or minus 0.5 dB.

N. Video Signal Paths

1. Verify operation from each source device through all switching, amplification and distribution devices.

O. Video Test Report shall include the following:

1. Test Failures and Notices
    a. Sink Device EDID Test – Open items or failures shall not be accepted.
    b. Cable Length Test – Open items or failures shall not be accepted.
    c. HDCP KSV Limitations – Limitations shall not be accepted.
    d. Cable Limitations - Limitations shall not be accepted.
    e. EDID Limitations - Limitations shall not be accepted.
    f. Cable Length Limits exceeded – Failing cables shall not be accepted.
2. Device Model Number, Serial Number, and Firmware Version for main chassis and each input and output card.

3. Device Model Number, Serial Number, and Firmware Version for connected transmitter and receiver devices.
4. EDID – Input Resolution and 3D support status for each input.
5. EDID – Supported Output Resolution and 3D support status for devices connected to each output.
6. EDID – Supported Audio formats for each input.
7. EDID – Supported Audio formats for devices connected to each output.

P. Control Systems

1. Verify operational functions of the control system and all interfaced devices.
2. Verify operational functionality of any wireless user devices.

3.8 CAT5E/CAT6 CABLE CERTIFICATION

A. General Field Test Requirements

1. All CAT5E/CAT6 cabling links installed as part of this scope shall be tested for the following, in accordance with the field test specifications defines in ANSI/TIA-568-C.2 “Commercial Balanced Twisted-Pair Telecommunications Cabling and Components Standard.” This document will be referred to as the “Category 5e Standard”:
   a. Wire Map
   b. Length
   c. Insertion Loss
   d. NEXT loss
   e. PS NEXT Loss
   f. ACR-F Loss
   g. PS ACR-F Loss
   h. Return Loss
   i. Propagation Loss
   j. Delay Skew
2. The installed twisted-pair horizontal links shall be tested from terminated end point to terminated end point for compliance with the “Permanent Link” performance specification as defined in the Category 5e Standard.
3. One hundred percent of the installed cabling links must pass the requirements of the Category 5e standard mentioned above and as further detailed in Section B below. Any failing link must be diagnosed and corrected. The corrective action shall be followed with a new test to prove that the corrected link meets the performance requirements. The final and passing result of the tests for all links shall be provided in the test results documentation in accordance with Section C below.
4. The test equipment (tester) shall comply with the accuracy requirements for level IIe field testers as defined in ANSI/TIA-1152. The tester including the appropriate interface adapter must meet the specified accuracy requirements. The accuracy requirements for the permanent link test configuration (baseline accuracy plus adapter contribution) are specified in Table 2 of ANSI/TIA-1152 (Table 2 in this TIA document also specifies the accuracy requirements for the channel configuration).
5. The RJ45 test plug shall fall within the values specified in ANSI/TIA-568-C Annex C for NEXT, FEXT and Return Loss.
6. The tester shall be within the calibration period recommended by the vendor in order to achieve the vendor-specified measurement accuracy.
7. The tester interface adapters must be of high quality and the cable shall not show any twisting or kinking resulting from coiling and storing of the tester interface adapters. In order to deliver optimum accuracy, preference is given to a permanent link interface adapter for the tester that can be calibrated to extend the reference plane of the Return Loss measurement to the permanent link interface. To ensure

that normal handling on the job does not cause measurable Return Loss change, the adapter cord cable shall not be of twisted-pair construction.

8. The Pass or Fail condition of the link-under-test is determined by the results of the required individual tests (detailed in Section 4.2.2 of ANSI/TIA-1152). Any Fail result yields a Fail for the link-under-test. In order to achieve an overall Pass condition, the results for each individual test parameter must Pass.
9. A Pass or Fail result for each parameter is determined by comparing the measured values with the specifies test limits for that parameter.

B. Performance Test Parameters

1. The test parameters are defined by the Category 5e Standard. The test of each link shall contain all of the following parameters as detailed below. In order to pass the test, all measurements (at each frequency in the range from 1 MHz through 100 MHz) must meet or exceed the limit value determined in the above mentioned standard.
2. Wire Map - Shall report Pass if the wiring of each wire-pair from end to end is determined to be correct.
3. Length – The field tester shall be capable of measuring length of all pairs of a basic link or channel based on the propagation delay measurement and the average value for NVP. The physical length of the link shall be calculated using the pair with the shortest electrical delay. This length figure shall be reported and shall be used for making the Pass/Fail decision. The Pass/Fail criteria are based on the maximum length allowed for the Permanent Link configuration (90 meters – 295 feet) plus 10% to allow for the variation and uncertainty of NVP.
4. Insertion Loss (Attenuation) – Insertion Loss is a measure of signal loss in the permanent link or channel. The term “Attenuation” has been used to designate “Insertion Loss.” Insertion Loss shall be tested from 1 MHz through 100 MHz in maximum step size of 1 MHz. It is preferred to measure insertion loss at the same frequency intervals as NEXT loss in order to provide a more accurate calculation of the Attenuation-to-Crosstalk Ratio (ACR) parameter. Minimum test results documentation (summary results): Identify the worst wire pair (1 of 4 possible). The test results of the worst wire pair must show the highest attenuation value measured (worst case), the frequency at which the worst case value occurs, and the test limit value at this frequency.
5. NEXT Loss – Pair-to-pair near end crosstalk loss (abbreviated as NEXT loss) shall be tested for each wire pair combination from each end of the link (a total of 12 pair combinations).This parameter is to be measured from 1 through 100 MHz. NEXT Loss measures the crosstalk disturbance on a wire pair at the end from which the disturbance signal is transmitted (near-end) on the disturbing pair. The maximum step size for NEXT loss measurements shall not exceed the maximum step size defined in the Category 5e Standard as shown in Table 1. Minimum test results documentation (summary results): Identify the wire pair combination that exhibits the worst value of NEXT (worst case). NEXT is to be measured from each end of the link-under-test. These wire pair combinations must be identified for the tests performed from each end. Each reported case should include the frequency at which it occurs as well as the test limit value at this frequency.

Frequency Range (MHz)	Maximum Step size (MHz)
1 - 31.25	0.15
31.26 - 100	0.25

6. PS NEXT Loss – Power Sum NEXT Loss shall be evaluated and reported for each wire pair from both ends of the link under-test (a total of eight results). PS NEXT Loss captures the combined near-end crosstalk effect (statistical) on a wire pair when all other pairs actively transmit signals. Like NEXT this test parameter must

be evaluated from 1 through 100 MHz and the step size may not exceed the maximum step size defined in the Category 5e Standard as shown in Table 1. Maximum test results documentation (summary results): Identify the wire pair that exhibits the worst-case margin and the wire pair that exhibits the worst value for PS next. These wire pairs must be identified for the tests performed from each end. Each reported case should include the frequency at which it occurs as well as the test limit value at this frequency.

7. ACR-F Loss, pair to pair – Attenuation Crosstalk Ratio Far-end is calculated from the pair-to-pair FEXT Loss. It shall be measured for each wire-pair combination from both ends of the link under-test. FEXT Loss measures the crosstalk disturbance on a wire pair at the opposite end (far-end) from which the transmitter emits the disturbing signal on the disturbing pair. FEXT is measured to compute ACR-F Loss that must be evaluated and reported in the test results. ACR-F measures the relative strength of the far-end crosstalk disturbance relative to the attenuated signal that arrives at the end of the link. This test yields 24 wire pair combinations. ACR-F is to be measured 1 through 100 MHz and the maximum step size for FEXT loss measurements shall not exceed the maximum step size defined as the standard as in Table 1. Minimum test results documentation (summary results): Identify the wire pair combination that exhibits the worst value for ACR-F. There wire pairs must be identified for the tests performed from each end. Each reported case should include the frequency at which it occurs as well as the test limit value at this frequency.
8. PS ACR-F Loss – Power Sum Attenuation Crosstalk Ratio Far-end is a calculated parameter that combines the effect of the FEXT disturbance from three wire pairs of the fourth one. This test yields eight wire-pair combinations. Each wire-pair is evaluated from 1 through 100 MHz in frequency increments that do not exceed the maximum step size defined in the standard as shown in Table 1. Minimum test results documentation (summary results): Identify the wire pair that exhibits the worst pair combinations must be identified for the tests performed from each end. Each reported case should include the frequency at which it occurs as well as the test limit value at this frequency.
9. Return Loss – Return Loss (RL) measures the total energy reflected on each wire pair. Return Loss is to be measured from both ends of the link-under-test for each wire pair. This parameter is also to be measured from 1 through 100 MHz in frequency increments that do not exceed the maximum step size defined in the Category 5e Standard as shown in Table 1. Minimum test results documentation (summary results): Identify the wire pair that exhibits the worst value of Return Loss. These wire pairs must be identified for the tests performed from each end. Each reported case should include the frequency at which it occurs as well as the test limit value at this frequency.
10. Propagation Delay – Propagation delay is the time required for the signal to travel from one of the links to the other. This measurement is to be performed for each of the four wire pairs. Minimum test results documentation (summary results): Identify the wire pair with the worst propagation delay. The report shall include the propagation delay value measured as well as the test limit value.
11. Delay Skew – [as defined in the Category 5e Standard; Section 6.2.19] This parameter shows the difference in propagation delay between the four wire pairs. The pair with the shortest propagation delay between the four wire pairs. The pair with the shortest propagation delay is the reference pair with a delay skew value of zero. Minimum test results documentation (summary results): Identify the wire pair with the worst-case propagation delay (the longest propagation delay). The report shall include the delay skew value measured as well as the test limit value.

C. Test Result Documentation

1. The test results/measurements shall be transferred into a Windows based database utility that allows for the maintenance, inspection, and archiving of these test records. A guarantee must be made that the measurement results are transferred to the PC unaltered, i.e., “as saved in the tester” at the end of each test and that these results cannot be modified at a later time.
2. The database for the completed job shall be stored and delivered on CD-ROM or DVD including the software tools required to view, inspect, and print any selection of test reports.
3. A paper copy of the test results shall be provided that lists all the links that have been tested with the following summary information:
    a. The identification of the link in accordance with the naming convention defined in the overall system documentation.
    b. The overall Pass/Fail evaluation of the link-under-test including the NEXT Headroom (overall worst case) number.
    c. The date and time the test results were saved in the memory of the tester.
4. General information to be provided in the electronic data base with the test results information for each link:
    a. The identification of the customer site as specified by the end-user.
    b. The identification of the link in accordance with the naming convention defined in the overall system documentation.
    c. The overall Pass/Fail evaluation of the link-under-test
    d. The name of the test limit selected to execute the stored test results
    e. The cable type and value of NVP used for length calculations
    f. The date and time the test results were saved in the memory of the tester
    g. The brand name, model, and serial number of the tester.
    h. The identification of the tester interface
    i. The revision of the tester software and the revision of the test limits database in the tester
    j. The test results information must contain information on each of the required test parameters that are listed in Section B and as further detailed below under paragraph C5.
5. For each of the frequency-dependent test parameters, the value measured at every frequency during the test is stored. The PC-resident database program must be able to process the stored results to display and print a color graph of the measured parameters. The PC-resident software must also provide a summary numeric format in which some critical information is provided numerically as defined by the summary results (minimum numeric test results documentation) as outlined above for each of the test parameters.
6. The detailed test results data to be provided in the electronic database must contain the following information:
    a. Length: Identify the wire-pair with the shortest electrical length, the value of the length rounded to the nearest 0.1 m330 and test limit value.
    b. Propagation delay: Identify the pair with the shortest propagation delay, the value measured in nanoseconds (ns) and the test limit value.
    c. Delay Skew: Identify the pair with the largest value for delay skew, the value measured in nanoseconds (ns) and the test limit value.
    d. Insertion Loss (Attenuation): Minimum test results documentation as explained in Section B for the worst pair.
    e. Return Loss: Minimum test results documentation as explained in Section B for the worst pair as measured from each end of the link.
    f. NEXT, ACR-F: Minimum test results documentation as explained in Section B for the worst pair combination as measured from each end of the link.
    g. PS NEXT and PS ACR-F: Minimum test results documentation as explained in Section B for the worst pair combination as measured from each end of the link.

3.9 FINAL OBSERVATION & TESTING

A. Upon completion of installation, initial adjustments, tests and measurements specified in Part 3, and submission and review of the results, a final observation and test will be performed by the Owner or Owner's representative no earlier than two weeks after receipt of the written results.

B. Provide a minimum of one (1) person for observation and testing familiar with aspects of the System to assist the Owner.

C. The process of testing the System may necessitate moving and adjusting certain components.

D. Testing includes operation of each major system and any other components deemed necessary. Perform tests and provide required test equipment, tools and material required to make any necessary repairs, corrections, or adjustments.

E. The following procedures will be performed on each System:

1. Observation of the methods and means employed to incorporate the System within the facility.
2. Verification of proper operation, from controlling devices to controlled devices.
3. Verification of proper adjustment, balance, and alignment of equipment for optimum quality and to meet the manufacturer's published specifications. Establish and mark normal settings for each level control, and appropriately record these settings within the Record Documents.
4. Other tests on equipment or systems deemed appropriate.

F. In the event the need for further adjustment or work becomes evident during testing, the Contractor is to continue his work until the System is acceptable at no addition to the contract price. If approval is delayed because of defective equipment, or failure of equipment or installation to meet the requirements of these specifications and any extension of the observation and testing period is required, the Contractor shall pay for additional time and expenses of the Owner at the standard rate in effect at that time.

3.10 TEST EQUIPMENT

A. Thirty days prior to start of testing, provide a list to the Owner of test equipment make, model numbers and calibration dates that will be used.

B. The following equipment shall be available on site for the entire test period through final system testing.

1. Sound Level Meter : ANSI S1.4-1971 Type S1A with digital or analog display. Meter to provide ranges of 40 to 120 dBA.
2. Pink Noise Source - Equal energy per octave bandwidth 20 Hz to 20,000 Hz, ±1 dB (long-term average) at 0 dBm output. Stability: ±2 dB per day.
3. Dual-trace oscilloscope - 100 MHz bandwidth, 1 mV/cm sensitivity.
4. Impedance Meter - Capable of testing audio lines at three frequencies, minimum, between 250 Hz and 5k Hz. Measurement Range: 1 ohm to 100 kohms.
5. Audio Oscillator: bandwidth 20 Hz to 20k Hz ±.5 dB at 0 dBm output. Output to be balanced. Oscillator to include adjustable output level over the range from –30 dBu to +10 dBu.
6. Multimeter - Measurement range, DC to 20k Hz, 100 mV to 300 V, 10 ma to 10 A, dB.
7. NTSC Test generator

8. Real time analyzer with LED or CRT display. The unit shall meet the filter requirements of ANSI S1.11 Class III for one third octave filters.
9. Video (analog) test generator capable of generating signal up to 1920 x 1200 with audio.
10. Video (digital) test generator capable of generating signal up to 1920 x 1200 with audio.
11. Ladders and scaffolding necessary to inspect elevated equipment, junction boxes, etc.

C. Provide three portable VHF or UHF business band radios for use during acceptance testing with transmission range sufficient to cover entire project. Include rechargeable batteries and recharger along with holster for wearing on belt. Radios to be available for duration of testing process, including any follow-up visits required prior to final acceptance.

3.11 INSTRUCTION OF OWNER PERSONNEL

A. Provide instruction to Owner designated personnel focusing on the use, operation and maintenance of the systems, scheduled as a minimum of two separate sessions, by an instructor fully knowledgeable and qualified in system operation. The System Reference Manuals should be complete and on site at the time of this instruction. Coordinate schedule of demonstration with Owner's Representative.
1. Area
a. 8 hours of instruction

B. Video record all training sessions and compile a training video to be provided to the Owner on DVD.

C. Provide sign in sheet to document the attendee's presence.

D. If Contractor is not properly equipped to conduct Owner training on particular equipment, arrange for factory representatives of the equipment to be present to provide training at no additional cost to the Owner.

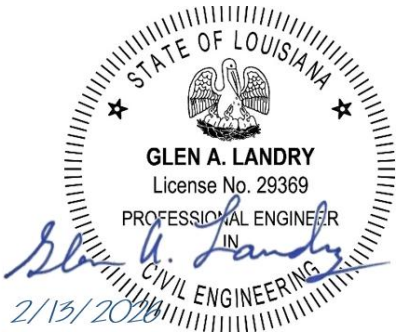
3.12 CLEANUP AND REPAIR

A. Upon completion of the work, remove refuse and rubbish from and about the premises. Leave areas and equipment clean and in an operational state. Repair any damage caused to the premises by the installation of systems at no cost to the Owner.

END OF SECTION 27 41 16

Section 31 63 29
Drilled Concrete Piers and Shafts

PART 1 GENERAL



1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions, apply to this Section.
B. Specification Section 03 30 00 - Cast-in-Place Concrete shall be applicable to the concrete material used in drilled concrete piers. For drilled concrete piers, Section 31 63 29 shall supersede section 03 30 00 where specific items are addressed in both specification sections.

1.02 SUMMARY

A. Section Includes:
   1. Dry-installed drilled piers (base bid)
   2. Installation requiring temporary steel casing (if required)
   3. Slurry displacement-installed drilled piers (if required)
B. Related Sections:
   1. Division 31 Section "Earth Moving At Building Pad" for preparation of subgrade for drilled-pier operations including removal of vegetation, topsoil, debris, obstructions, and deleterious materials from ground surface.
C. Terminology:
   1. The terms Pier, Shaft, Caisson, Drilled Pier, Drilled Shaft, and Drilled Caisson shall all be considered equivalent terms/elements and shall be covered by this specification and the associated contract drawings.

1.03 SUBMITTALS

A. Product Data: For each type of product indicated.
B. Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.
C. Qualification Data: For qualified Installer testing agency.
D. Material Certificates: For the following, from manufacturer:
   1. Cementitious materials.
   2. Admixtures.
   3. Steel reinforcement and accessories.
E. Material Test Reports: For the following, from a qualified testing agency, indicating compliance with requirements:
   1. Aggregates.
   2. Field quality-control reports.
F. Prepare test and inspection reports for each drilled pier as defined in Field Quality Control paragraph (Part 3) of this specification.
G. Static Shaft Test Program:
   1. One load tests shall be performed.
   2. Submit static test shaft loading scheme to the Structural Engineer and Project Architect for review prior to commencing shaft load test.
   3. Submit details of testing apparatus. These details shall be reviewed by the Structural Engineer and Project Architect prior to commencing load test.
   4. The testing agency shall record and provide to the Architect and General Contractor sufficient documentation of the shaft load test, such as graphs of loading versus shaft movement, to fully explain how the shaft reacted to applied loading. Submit report within three days of completing each test.

1.04 QUALITY ASSURANCE

A. Installer Qualifications: An experienced installer that has specialized in drilled-pier work that has completed at least three (3) successful projects.
B. Testing Agency Qualifications: Qualified according to ASTM C 1077, ASTM D 3740, and ASTM E 329 for testing indicated.

C. Testing and inspection services shall be conducted by the independent Testing Agency selected and paid for by the Owner. The Testing Agency employed by the Owner shall perform testing services required by Owner for shaft foundations including:
   1. Logging of all installed shafts.
   2. Conducting a shaft load test program as defined under the STATIC TEST SHAFT section of this specification and in conformance with the applicable requirements of the following standards and regulatory agencies.
      a. American Society for Testing and Materials (ASTM).
      b. International Building Code, 2012 Edition.

D. Welding Qualifications: Qualify procedures and personnel according to the following:
   1. AWS D1.1/D1.1M, "Structural Welding Code - Steel."
   2. AWS D1.4, "Structural Welding Code - Reinforcing Steel."

E. Drilled-Pier Standards: Comply with ACI 336.1 and FHWA-NHI-18-024/FHWA GEC 010, unless modified in this Section.

1.05 PROJECT CONDITIONS

A. Existing Utilities: Locate existing underground utilities before excavating drilled piers. If utilities are to remain in place, provide protection from damage during drilled-pier operations.
   1. Should uncharted or incorrectly charted piping or other utilities be encountered during excavation, adapt drilling procedure if necessary to prevent damage to utilities. Cooperate with Owner and utility companies in keeping services and facilities in operation without interruption. Repair damaged utilities to satisfaction of utility owner.

B. Interruption of Existing Utilities: Do not interrupt any utility to facilities occupied by Owner or others unless permitted under the following conditions and then only after arranging to provide temporary utility according to requirements indicated:
   1. Notify Owner no fewer than three days in advance of proposed interruption of utility.
   2. Do not proceed with interruption of utility without Owner's written permission.

C. Project-Site Information: A geotechnical report has been prepared for this Project and is available for information only. The opinions expressed in this report are those of geotechnical engineer and represent interpretations of subsoil conditions, tests, and results of analyses conducted by geotechnical engineer. Owner will not be responsible for interpretations or conclusions drawn from this data.
   1. Make additional test borings and conduct other exploratory operations necessary for drilled piers.
   2. The geotechnical report is referenced in the Division 31 Section "Earth Moving".

D. Survey Work: Engage a qualified land surveyor or professional engineer to perform surveys, layouts, and measurements for drilled piers. Before excavating, lay out each drilled pier to lines and levels required. Record actual measurements of each drilled pier's location, shaft diameter, bottom and top elevations, deviations from specified tolerances, and other specified data.
   1. Record and maintain information pertinent to each drilled pier and cooperate with Owner's testing and inspecting agency to provide data for required reports.

PART 2 PRODUCTS

2.01 STEEL REINFORCEMENT

A. Reinforcing Bars: ASTM A 615/A 615M, Grade 60, deformed.

B. Plain-Steel Wire: ASTM A 82, as drawn.

C. Deformed-Steel Wire: ASTM A 496.

D. Joint Dowel Bars: ASTM A 615/A 615M, Grade 60, plain. Cut bars true to length with ends square and free of burrs.

2.02 CONCRETE MATERIALS

A. Cementitious Material: Use the following cementitious materials, of same type, brand, and source, throughout Project:
   1. Portland Cement: ASTM C 150, Type I/II.
      a. Fly Ash: Not allowed in any concrete in this project.
      b. Slag: Not allowed in any concrete in this project.

B. Normal-Weight Aggregate: ASTM C 33, graded, 3/4-inch- nominal maximum coarse-aggregate size. Provide aggregate from a single source.

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

C. Water: ASTM C 94/C 94M and potable.
D. Chemical Admixtures: Provide admixtures certified by manufacturer to be compatible with other admixtures and that will not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.
   1. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
   2. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
   3. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
E. Sand-Cement Grout: Portland cement, ASTM C 150, Type II; clean natural sand, ASTM C 404; and water to result in grout with a minimum 28-day compressive strength of 1000 psi, of consistency required for application.

2.03 STEEL CASINGS (IF REQUIRED)
A. Temporary casing may be required due to conditions encountered at the site at the time of construction.
B. Steel Pipe Casings: ASTM A 283/A 283M, Grade C, or ASTM A 36/A 36M, carbon-steel plate, with joints full-penetration welded according to AWS D1.1/D1.1M.

2.04 SLURRY REQUIRED
A. Slurry: Pulverized bentonite or polymers mixed with water to form stable colloidal suspension; complying with ACI 336.1 for density, viscosity, sand content, and pH.

2.05 CONCRETE MIXTURES
A. Prepare design mixtures for each type and strength of concrete, proportioned on the basis of laboratory trial mixture or field test data, or both, according to ACI 301.
B. Cementitious Materials: Limit percentage, by weight, of cementitious materials other than portland cement according to ACI 301 limits as if concrete were exposed to deicing chemicals.
C. Limit water-soluble, chloride-ion content in hardened concrete to 0.15 percent by weight of cement.
D. Proportion normal-weight concrete mixture as indicated in the drawings:

2.06 FABRICATING REINFORCEMENT
A. Fabricate steel reinforcement according to CRSI's "Manual of Standard Practice."

2.07 CONCRETE MIXING
A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M, and furnish batch ticket information.
   1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

PART 3 EXECUTION

3.01 PREPARATION
A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, vibration, and other hazards created by drilled-pier operations.

3.02 PROBE SHAFT
A. General: Probe shafts will be provided to verify installation conditions.
B. Provide probe shafts at locations indicated on the structural drawings. Contract the Structural Engineer for alternate locations.
C. Probe shafts may also be used as a static test shaft if indicated on the structural drawings.
D. All probe shafts shall be filled with flowable fill, unless indicated as test shafts.

3.03 STATIC TEST SHAFT
A. General: Static test shafts will be used to confirm the allowable design load of shafts.
   1. Furnish test shafts for length indicated on plans.
   2. Test shafts shall be filled with concrete and reinforced the same as production shafts.
B. Shaft Test: Arrange and perform the following test(s):
   1. Axial Compressive Static Load Test: ASTM D 1143-20. Use Procedure A for Quick Test.

2. Shaft shall be loaded to 2.5 times the design load (Factor of Safety of 2 is used) and unloaded to zero loading. See the geotechnical investigation for design loads.
3. Submit a detailed loading scheme to the Structural Engineer and Architect for review prior to commencing the static load test.

C. Equip the test shaft with telltale rod(s), according to ASTM D 1143, for measuring deformation during load test. Coordinate installation with testing agency.
D. During the test loading, the shaft shall be free from any artificial bracing and the material around the shaft shall be removed from cut-off up to the existing ground surface.
E. The load shall be applied by means of an accurately calibrated hydraulic jack, and load cell acting concentrically with and directly on the head of the shaft. All materials required for testing, including the reaction shafts (also termed anchor shafts), frame, cap plate, etc., with the exception of the hydraulic jack, shall be furnished and installed by the Contractor. The furnishing and installing of the hydraulic jack and the actual load testing will be performed by the independent Testing Agency.
   1. The Contractor will be required to submit to the Architect for approval, detailed plans of the loading apparatus (including the reaction shaft, frame, cap plate, etc.). A civil engineer licensed in Louisiana shall provide the design of the loading apparatus. The engineer shall provide stamped drawings and calculations for the loading apparatus. The testing apparatus shall be designed to allow the various increments of load to be placed without causing vibration in the test shaft.
      a. Contractor shall coordinate the configuration of the loading apparatus with the Testing Agency to accommodate the hydraulic jack and load cell.
      b. The test load shall be applied by hydraulic jack(s) acting against an anchored reaction frame in a configuration similar to Figure 1of ASTM D 1143.
   2. The loading apparatus (including reaction shafts and frame) shall be capable of safely resisting the test load. The reaction shafts shall be no closer than twelve feet and six inches (12’-6”) to the test shaft.
   3. Allow a minimum of seven (7) days to elapse after driving test shafts before starting shaft testing.
   4. Verify concrete has reached a minimum compressive strength of 3000 psi prior testing shaft.
   5. Notify Architect at least 48 hours in advance of performing test(s).
   6. Number of Test Shafts: Two as indicated on plans.
   7. On completion of testing, Contractor shall remove testing structure, equipment, and instrumentation. Reaction shafts shall be left in place and shall be cut-off 2’-0” below the bottom of the structure directly above the shaft or 2’-0” below finish grade if located outside of the limits of the structure.
F. Test Shaft Installation Records: Prepare installation records for each test shaft, compiled and attested to by a qualified professional engineer.

3.04 EXCAVATION

A. Inspector from testing agency must be on site during excavation and concrete of all shafts. It is the Contractor’s responsibility to notify the testing agency at least 48 hours in advance of any excavation work being performed.
B. The Engineer must be on site for the excavation and concreting of the first three shafts to be excavated on the project. It is the Contractor’s responsibility to notify the engineer at least 48 hours in advance of any excavation work being performed.
C. special excavation, and obstruction removal and includes excavation to bearing elevations as follows:
   1. Standard excavation includes excavation accomplished with conventional augers fitted with soil or rock teeth or drilling buckets attached to drilling equipment of size, power, torque, and downthrust necessary for the Work.
D. Prevent surface water from entering excavated shafts. Conduct water to site drainage facilities.
E. Excavate shafts for drilled piers to indicated elevations. Remove loose material from bottom of excavation.
   1. Excavate bottom of drilled piers to level plane within 1:12 tolerance.
   2. Remove water from excavated shafts before concreting.
   3. Do not excavate shafts deeper than elevations indicated unless approved by Architect.

4. Payment for additional authorized excavation will be according to Contract provisions for changes in the Work.

F. Excavate shafts for closely spaced drilled piers and for drilled piers occurring in fragile or sand strata only after adjacent drilled piers are filled with concrete and allowed to set for 24 hours. This applies to all drilled piers with a clear spacing of 72 inches or less.

G. Slurry Displacement Method: Stabilize excavation with slurry maintained a minimum of 60 inches above ground-water level and above unstable soil strata to prevent caving or sloughing of shaft. Maintain slurry properties before concreting.
   1. Excavate and complete concreting of drilled pier on same day. If absolutely not possible, redrill, clean, and test slurry in excavation before concreting.

H. Temporary Casings: Install watertight steel casings of sufficient length and thickness to prevent water seepage into shaft; to withstand compressive, displacement, and withdrawal stresses; and to maintain stability of shaft walls.
   1. Remove temporary casings, maintained in plumb position, during concrete placement and before initial set of concrete.

I. Tolerances: Construct drilled piers to remain within ACI 336.1 tolerances.
   1. If location or out-of-plumb tolerances are exceeded, provide corrective construction. Submit design and construction proposals to Architect for review before proceeding.

3.05 STEEL REINFORCEMENT

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

B. Clean reinforcement of loose rust and mill scale, earth, and other materials that reduce or destroy bond with concrete.

C. Fabricate and install reinforcing cages symmetrically about axis of shafts in a single unit.

D. Accurately position, support, and secure reinforcement against displacement during concreting. Maintain minimum cover over reinforcement.

E. Use templates to set anchor bolts, leveling plates, and other accessories furnished in work of other Sections. Provide blocking and holding devices to maintain required position during final concrete placement.

F. Protect exposed ends of extended reinforcement, dowels, or anchor bolts from mechanical damage and exposure to weather.

G. The steel reinforcing cage, consisting of longitudinal and transverse bars, ties, and cage stiffener bars, shall be completely assembled and placed as a unit immediately after the shaft excavation is inspected and accepted, and prior to concrete placement. The reinforcing cage may be rigidly braced to retain its configuration during handling and construction.
   1. For shafts reinforced with a single longitudinal bar only, the reinforcement bar may be placed immediately after placement of concrete.

3.06 CONCRETE PLACEMENT

A. See notes in Excavation regarding inspector being present during concreting and Engineer being on-site for concreting of first three shafts installed.

B. Concrete must be placed within 30 minutes after excavation is drilled for each drilled pier.

C. Place concrete in continuous operation and without segregation immediately after inspection and approval of shaft by Owner's independent testing and inspecting agency.
   1. Construct a construction joint if concrete placement is delayed more than one hour. Level top surface of concrete. Before placing remainder of concrete, clean surface laitance, roughen, and slush concrete with commercial bonding agent or with sand-cement grout mixed at ratio of 1:1.

D. Dry Method: Place concrete to fall vertically down the center of drilled pier without striking sides of shaft or steel reinforcement.
   1. Where concrete cannot be directed down shaft without striking reinforcement, place concrete with chutes, tremies, or pumps. Free-fall concrete placement is not allowed for drilled shafts with lengths greater twenty-five (25) feet.
   2. Vibrate top 60 inches of concrete.

E. Slurry Displacement Method: Place concrete in slurry-filled shafts by tremie methods or pumping. Control placement operations to ensure that tremie or pump pipe is embedded no fewer than 60 inches into concrete and that flow of concrete is continuous from bottom to top of drilled pier.
   1. Shafts filled by use of slurry-displacement method shall be poured at least 12 inches above the necessary top elevation to ensure that all slurry has been displaced with uncontaminated concrete.
   2. After this required over-pour has been done, excess concrete may be removed without disturbing reinforcing steel.

F. Coordinate withdrawal of temporary casings with concrete placement to maintain at least a 60-inch head of concrete above bottom of casing.
   1. Vibrate top 60 inches of concrete after withdrawal of temporary casing.

G. Screed concrete at cutoff elevation level and apply scoured, rough finish. Where cutoff elevation is above the ground elevation, form top section above grade and extend shaft to required elevation.

H. Protect concrete work, according to ACI 301, from frost, freezing, or low temperatures that could cause physical damage or reduced strength.
   1. Do not use frozen materials or materials containing ice or snow. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.
   2. Do not use calcium chloride, salt, or other mineral-containing antifreeze agents or chemical accelerators.

I. If hot-weather conditions exist that would seriously impair quality and strength of concrete, place concrete according to ACI 301 to maintain delivered temperature of concrete at no more than 90 deg F.
   1. Place concrete immediately on delivery. Keep exposed concrete surfaces and formed shaft extensions moist by fog sprays, wet burlap, or other effective means for a minimum of seven days.

3.07 FIELD QUALITY CONTROL

A. Special Inspections: Owner shall engage a qualified special inspector to perform the following special inspections:
   1. Drilled piers.
   2. Excavation.
   3. Concrete.

B. Testing Agency: Owner shall engage a qualified testing agency to perform tests and inspections.

C. Concrete Tests and Inspections: ASTM C 172 except modified for slump to comply with ASTM C 94/C 94M.
   1. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 3 cu. yd., but less than 9 cu. yd., plus one set for each additional 27 cu. yd. or fraction thereof.
      a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
   2. Slump: ASTM C 143/C 143M; one test at point of discharge for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
   3. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
   4. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
   5. Unit Weight: ASTM C 567, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
   6. Compression Test Specimens: ASTM C 31/C 31M.
      a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
   7. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
      a. Test one set of two specimens at 7 days and one set of two specimens at 28 days.

b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

8. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
9. Test results shall be reported in writing to Architect, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.
10. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
11. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Architect. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Architect.
12. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
13. Correct deficiencies in the Work that test reports and inspections indicate dos not comply with the Contract Documents.

D. An excavation, concrete, or a drilled pier will be considered defective if it does not pass tests and inspections.

E. Prepare test and inspection reports for each drilled pier as follows:
1. Concrete testing results.
2. A numbered plan including all shafts.
   a. Note shafts where concrete samples were taken.
3. Actual excavated length and diameter of each shaft drilled.
4. Note if any shaft irregularities have been observed.
5. Note any problems with sloughing or collapsing of shaft walls.
6. The approximate maximum height of free water inside of the excavated shaft prior to concreting of shaft.
7. Note if water remained in shaft at commencement of concreting and provided estimated amount. Note if water was pumped from shaft excavation.
8. Verification of proper reinforcement placement.
9. Note any problems during excavating or concreting of shaft.
10. Remarks, unusual conditions encountered, and deviations from requirements.

3.08 DISPOSAL OF SURPLUS AND WASTE MATERIALS

A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off Owner's property.

END OF SECTION

SITE ENGINEERING, INC.
SELECTION ▪ INVESTIGATION ▪ TESTING ▪ ENGINEERING
650 ALBERTSON PARKWAY ▪ BROUSSARD, LA 70518
PHONE 337-981-1414
FAX 337-981-1402

November 8, 2023

State of Louisiana
Facility Planning & Control
c/o Mr. Michael Olivier
RHH Architects, APAC
200 Government Street, Suite 100
Baton Rouge, Louisiana 70802

RE: Geotechnical Engineering Services Report
Proposed New Baseball Facility
Louisiana State University Eunice
2048 Johnson Highway
Eunice, Louisiana
SITE Engineering Project: 23-G065-01

To Whom It May Concern:

SITE Engineering, Inc. is pleased to transmit our Geotechnical Engineering Services Report for the above referenced project. The subsurface investigation was performed in accordance with SITE Engineering Proposal Number 23-138G (Revision #1) dated June 7, 2023. Authorization to proceed with these services was provided by Mr. Michael Olivier of RHH Architects, APAC on August 9, 2023 by signing our proposal.

The purpose of this exploration was to investigate the existing surficial and subsurface conditions at the site and analyze these conditions for support of the proposed structures. This report includes the results of our field and laboratory testing and provides recommendations for site preparation, foundation and pavement design, and construction.

We appreciate the opportunity to provide our services to your project and look forward to working with you in the future. If you have any questions pertaining to this report, or if we may be of further service, please do not hesitate to contact our office.

Sincerely,
SITE ENGINEERING, INC.

Clint S. McDowell, P.E.
President

Distribution: 3 – Above

SITE ENGINEERING, INC.

GEOTECHNICAL ENGINEERING SERVICES REPORT

PROPOSED NEW BASEBALL FACILITY
LOUISIANA STATE UNIVERSITY EUNICE
2048 JOHNSON HIGHWAY
EUNICE, LOUISIANA

SITE ENGINEERING REPORT NUMBER: 23-G065-01

Prepared For

State of Louisiana
Facility Planning & Control
c/o Mr. Michael Olivier
RHH Architects, APAC
200 Government Street, Suite 100
Baton Rouge, Louisiana 70802

November 8, 2023

By

SITE ENGINEERING, INC.
650 Albertson Parkway
Broussard, Louisiana 70518
(337) 981-1414

Jarod J. Breaux, P.E. (#39061)
Project Engineer

Clint S. McDowell, P.E. (#27983)
President

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1.0 EXECUTIVE SUMMARY

SITE Engineering, Inc. has completed an exploration and evaluation of the subsurface conditions for the proposed new baseball facility to be constructed at the existing Louisiana State University Eunice located at 2048 Johnson Highway in Eunice, Louisiana. The project will consist of the construction of a new baseball facility, including a grandstand, a stadium building, an indoor practice building, two (2) dugouts, an outdoor cooking pavilion, a batting cage, and several other auxiliary structures. New pavement areas to serve as parking will also be constructed adjacent to the new baseball stadium.

The subsurface conditions at the subject site were explored by the performance of soil test borings. Our scope of services included drilling a total of nineteen (19) soil test borings to depths ranging from 5 to 60 feet below the existing ground surface. At the time of drilling, most of the subject site was occupied by the current baseball facility (fences, batting cages, dugouts, sidewalks, lighting, etc.). Other portions were generally grass/tree covered. Existing asphaltic concrete pavements were also present along the eastern perimeter of the subject construction area. It is assumed all existing infrastructure currently present within the proposed construction areas will be removed to facilitate construction.

The borings generally encountered 6 to 18 inches of highly organic, silty clay topsoil followed by hard to stiff lean clay and fat clay soils to the boring completion depth of 5 feet within the pavement borings (B-17 through B-19) and to depths ranging from 4 to 8 feet within the remaining borings. Below these depths, the building borings encountered stiff to soft lean clays, sandy lean clays, and clayey sands to depths ranging from 12 to 17 feet followed by stiff to soft fat clay and lean clay soils to the boring completion depths of 20 feet within borings B-13 through B-16, 25 feet within borings within borings B-6 through B-12, and to depths ranging from 47 to 52 feet within borings B-1 through B-5. Below these depths, borings B-1 through B-5 encountered stiff to firm fat clay, lean clay, and silty clay soils extending to a depth of at least 60 feet, the maximum depth explored. It should be noted that most of the soils encountered within the upper 4 to 17 feet of the borings performed at this site are considered highly desiccated.

Groundwater was initially encountered during the drilling operations at depths ranging from 17 to 33 feet below the existing ground surface within the borings performed at this site. Immediately after drilling, the boreholes were plugged and abandoned in accordance with state regulations for safety reasons. Therefore, delayed groundwater measurements were not feasible. The boring logs included in the appendix of this report should be reviewed for specific soil and groundwater information at each boring location.

The near surface clay soils encountered in the borings performed at this site are considered moderate in shrink/swell potential and good in strength and support capabilities. Provided the site preparation recommendations presented in this report are followed and assuming the allowable bearing capacities, limiting footing dimensions, and estimated settlements are considered tolerable, the proposed structures may be supported on relatively shallow foundation systems consisting of isolated spread footings and continuous footings. As an alternative, or should the recommendations for shallow foundations not be considered feasible, soil-related parameters with regards to drilled cast-in-place concrete shafts are being provided for support of the structural loads.

Recommendations for rigid and flexible pavement systems are also being presented. Details related to site development, foundation and pavement design, and construction considerations are included in subsequent sections of this report. The owner/designer should not rely solely on this Executive Summary and must read and evaluate the entire contents of this report prior to utilizing our engineering recommendations in preparation of design/construction documents.

2.0 PROJECT INFORMATION

2.1 Project Authorization

SITE Engineering, Inc. has completed a geotechnical exploration for the proposed new baseball facility to be constructed at Louisiana State University Eunice located at 2048 Johnson Highway in Eunice, Louisiana. The subsurface investigation was performed in accordance with SITE Engineering Proposal Number 23-138G (Revision #1) dated June 7, 2023. Authorization to proceed with these services was provided by Mr. Michael Olivier of RHH Architects, APAC on August 9, 2023 by signing our proposal.

2.2 Project Description

The project will consist of the construction of a new baseball facility, including a grandstand, a stadium building, an indoor practice building, two (2) dugouts, an outdoor cooking pavilion, a batting cage, and several other auxiliary structures. Based on the provided information, maximum column loads are anticipated to be on the order of 100 kips in compression and 10 kips in tension (uplift). Wall loads are anticipated to be on the order of 2.5 kips per linear foot. Floor slab loads are anticipated to be less than 125 pounds per square foot.

Pavement areas to provide parking and associated drives will also be constructed. Traffic loading information including the types of vehicles and frequencies has not been provided at this time. However, it is anticipated that traffic will consist mainly of passenger vehicles, light trucks, and buses with potentially weekly passes of larger vehicles such as garbage collection trucks.

Based on the provided topographic information, existing site elevations within the proposed construction area generally range from about +43.0 feet to +48.0 feet. Final elevations have not been provided at this time; however, it is assumed that the final elevation over most of the site will remain near its current elevation of approximately +45.0 feet. For purposes of this report, it is assumed that less than 2 feet of fill will be required to achieve final design grades for most of the building structures. The pavement areas are expected to be constructed at or very near existing site grades and, therefore, should require less than about 12 inches of cut and/or fill to reach design elevation.

The geotechnical recommendations presented in this report are based on the available project information, locations of the proposed structures, and the subsurface materials encountered in the borings and as described in this report. If any of the noted information is incorrect, please inform SITE Engineering in writing so that we may amend the recommendations presented in this report if appropriate and if desired by the client. SITE Engineering will not be responsible for the implementation of recommendations in this report if not notified of changes in the project.

2.3 Purpose and Scope of Services

The purpose of this geotechnical investigation was to explore the subsurface conditions at the site to enable an evaluation of acceptable foundation and pavement systems for the proposed project. As requested, our scope of services included drilling a total of nineteen (19) soil test borings to depths ranging from 5 to 60 feet below the existing ground surface, select laboratory testing of the sampled subsurface soils, and preparation of this geotechnical report. This report briefly outlines the testing procedures, presents available project information, describes the site and subsurface conditions, and presents general recommendations regarding the following:

- Guidelines for site preparation including organic and unstable soil removal and imported structural fill criteria and compaction requirements.
- Foundation design recommendations for shallow foundation elements;
- Foundation design recommendations for drilled cast-in-place concrete shafts and/or direct bury poles;
- Estimates of settlement for the recommended foundation types, and;
- General pavement design criteria and subgrade preparation for both rigid and flexible pavement systems.

Our services did not include an environmental assessment for determining the presence or absence of wetlands, or hazardous or toxic materials in the soil, surface water, groundwater, or air on or below, or around this site. Any statements in this report or on the boring logs regarding odors, colors, and unusual or suspicious items or conditions are strictly for informational purposes.

3.0 SITE AND SUBSURFACE CONDITIONS

3.1 Project Location and Site Description

The address of Louisiana State University Eunice is reported to be 2048 Johnson Highway in Eunice, Louisiana. The proposed new baseball facility will generally be constructed within the current baseball facility grounds and adjacent areas.

At the time of drilling, most of the subject site was occupied by the current baseball facility (fences, batting cages, sidewalks, lighting, etc.). Other portions were generally grass/tree covered. Existing asphaltic concrete pavements were also present along the eastern perimeter of the subject construction area. It is assumed all existing infrastructure currently present will be removed to facilitate construction. The surface of the site was generally dry and in a firm condition. Our all-terrain drilling rig and support pick-up truck experienced little to no difficulty in accessing the boring locations.

Based on the provided topographic information, existing site elevations within the proposed construction area generally range from about +43.0 feet to +48.0 feet. The highest portion of the site appears to exist in the infield portion of the existing baseball field.

3.2 Subsurface Conditions

The subsurface conditions were explored with a total of nineteen (19) soil test borings drilled to depths ranging from 5 to 60 feet below the existing ground surface. The number and location of the borings were determined by RHH Architects, APAC. The depth of the borings were determined by SITE Engineering, Inc. The borings were located on the subject site by a representative of SITE Engineering utilizing a measuring wheel and a preliminary site development plan provided by RHH Architects, APAC. The approximate location of each boring can be seen on the boring location diagram provided in the appendix of this report.

The borings were advanced utilizing hollow stem auger drilling techniques. Soil samples were obtained continuously in the upper ten feet of the borings and on five-foot centers thereafter to the boring completion depths. Drilling and sampling methods were accomplished in general accordance with ASTM procedures. Immediately upon completion of the drilling, the borings were plugged and abandoned in accordance with the requirements of the Louisiana Department of Natural Resources.

Undisturbed samples of cohesive soils were generally obtained using three-inch diameter thin-wall tube samplers (Shelby tube) in general accordance with the procedures for “Thin-Walled Tube Geotechnical Sampling of Soils” (ASTM D1587). These samples were extruded in the field with a hydraulic ram.

For cohesionless soils and soils that could not be sampled by the above procedure, Standard Penetration Tests (SPT) were performed in accordance with ASTM D-1586 (Penetration Test and Split-Barrel Sampling of Soils) to obtain standard penetration values of the soil. The standard penetration value (N-value) is defined as the number of blows of a 140-pound hammer falling 30 inches required to advance the split-barrel sampler one foot into the soil. To perform the test and obtain a sample, the sampler is lowered to the bottom of the previously cleaned drill hole and advanced by blows from the hammer.

The number of blows is recorded for each of three successive increments of six inches penetration. The “N” value is obtained by adding the second and third incremental numbers. The results of the standard penetration test indicate the relative density of cohesionless soils and thereby provide a basis for estimating the relative strength and compressibility of the soil profile components.

Undisturbed and representative disturbed samples were wrapped in foil, placed in polyethylene plastic bags to protect against moisture loss, identified according to boring number and depth, and transported to the laboratory in special containers to prevent disturbance. All samples obtained from the field exploration were identified and evaluated by experienced geotechnical personnel upon arrival at the laboratory.

In addition to the field exploration, a supplemental laboratory-testing program was conducted to evaluate additional pertinent engineering characteristics of the subsurface materials necessary in analyzing the behavior of the foundation system for the proposed project. The laboratory-testing program included supplementary visual classification and moisture content tests on all soil samples. In addition, selected samples were subjected to unconfined compressive strength testing, Atterberg Limits determinations, and percent passing a number 200 sieve analyses. Additional estimates of shear strength were also determined using a hand torvane and pocket penetrometer.

The borings generally encountered 6 to 18 inches of silty clay topsoil followed by hard to stiff lean clay and fat clay soils to the boring completion depth of 5 feet within the pavement borings (B-17 through B-19) and to depths ranging from 4 to 8 feet within the remaining, building borings. Below these depths, the building borings encountered stiff to soft lean clays, sandy lean clays, and clayey sands to depths ranging from 12 to 17 feet followed by stiff to soft fat clay and lean clay soils to the boring completion depths of 20 feet within borings B-13 through B-16, 25 feet within borings within borings B-6 through B-12, and to depths ranging from 47 to 52 feet within borings B-1 through B-5. Below these depths, borings B-1 through B-5 encountered stiff to firm fat clay, lean clay, and silty clay soils to a depth of 60 feet, the maximum depth explored.

It should be noted that most of the soils encountered within the upper 4 to 17 feet of the borings performed at this site are considered highly desiccated. This is a condition where the natural moisture content of the soil is less than its plastic limit. Desiccated soils are generally more susceptible to volume change or swelling than soils in a normalized (near optimum) moisture condition.

The above subsurface description is of a generalized nature to highlight the major subsurface stratification features and material characteristics. The boring logs included in the appendix should be reviewed for specific subsurface information at individual boring locations. These records include soil descriptions, stratifications, penetration resistances (where applicable), locations of the samples and laboratory test data. The stratifications shown on the boring logs represent the conditions only at the actual boring locations. Variations may occur and should be expected between boring locations and elsewhere on the site. The stratifications represent the approximate boundary between subsurface materials and the actual transition may be gradual. The samples which were not altered by laboratory testing will be retained for 60 days from the date of this report and then discarded.

3.3 Groundwater Information

Groundwater was initially encountered during the drilling operations at depths ranging from 17 to 33 feet below the existing ground surface within the borings performed at this site. Immediately after drilling, the boreholes were plugged and abandoned in accordance with state regulations for safety reasons. Therefore, delayed groundwater measurements were not feasible. The boring logs included in the appendix of this report should be reviewed for specific soil and groundwater information at each boring location.

The groundwater information provided above were the levels recorded at the time of our field investigation. In addition, it may take several days for the groundwater level to become static in an open borehole. Therefore, it should be noted, that it is possible for a groundwater table to fluctuate depending upon climatic and rainfall conditions. It is highly recommended that the Contractor determine the actual groundwater levels at the site at the time of the construction activities.

3.4 Site Specific Seismic Study

As provided in Section 1613 of the International Building Code (IBC) and in Chapter 20 of ASCE 7, a seismic site classification should be determined utilizing soil characteristics obtained within the upper 100 feet. However, the maximum depth explored during this specific investigation was only 60 feet. Nevertheless, these manuals also specify where site-specific data are not available to a depth of 100 feet, appropriate soil properties are permitted to be estimated. Therefore, based on the soil characteristics obtained within the upper 60 feet and our experience in the general vicinity, it appears that a Site Class of E could be assigned to the subject property. Other parameters for seismic design should be determined by the structural engineer based on IBC Section 1613 using a Site Class designation of E.

4.0 EVALUATION AND RECOMMENDATIONS

4.1 General

The near surface clay soils encountered in the borings performed at this site are considered moderate in swell potential and good in strength. Provided the site preparation recommendations presented in this report are followed and assuming the allowable bearing capacities, limiting footing dimensions, and estimated settlements are considered tolerable, the proposed structures may be supported on relatively shallow foundation systems consisting of isolated spread footings, continuous wall footings, and interior grade beams. As an alternative, or should the recommendations for shallow foundations not be considered feasible, soil-related parameters with regards to drilled cast-in-place concrete shafts. The shaft recommendations can also be used for support of the light standards or direct buried poles. Specific details related to foundation design and construction considerations will be presented in subsequent paragraphs.

4.2 Potential Vertical Rise

Field and laboratory test results indicate that soils which exhibit a moderated moderate swell potential were present near the surface in the borings performed at this site. Swelling of these near surface desiccated soils may occur with changes in moisture content. The estimated amount of vertical movement of a foundation or floor slab constructed on swelling clays or expansive soils is referred to as the Potential Vertical Rise (PVR). To reduce the potential for swelling of the site soils, it is important that consideration be given to reducing the potential for moisture changes of these soils. At a minimum, positive drainage away from any grade supported structure should be provided. If positive drainage is not provided, water will pond around or below the structure and excessive total and differential movements may occur.

The PVR of the site soils was calculated using the method developed by the American Association of State Highway Transportation Officials (AASHTO). This method assumes a linear variation of percent swell with depth where the percent swell is maximum at the ground surface and zero at the bottom of the active depth. The active depth in the project area is generally about six (6) to eight (8) feet. This method of estimating PVR is considered appropriate for normal soil moisture variations due to average weather conditions in this area. A computer program based on the Texas Department of Transportation Method TEX-124-E of analysis was also utilized to further model the site development characteristics and determine volume change potential after site remediation.

A PVR value of about 1¼ to 1½ inches was calculated for the soil conditions encountered in the borings. This magnitude of volume change is considered moderate but likely intolerable for grade supported structures at this site. Based on our analyses, it is recommended that at least 2 feet of low plasticity structural fill be placed beneath any proposed new at grade structure/slab. Providing 2 feet of low plasticity structural fill beneath the slab will decrease the estimated PVR values to approximately one inch or less. The 2 feet of low plasticity soil should extend a minimum of 5 feet beyond the perimeter of each new structure footprint.

The required thickness of low plasticity material can be achieved by undercutting and replacing the upper 2 feet of naturally occurring soils, by raising the site at least 2 feet above existing grade with low plasticity structural fill, or by a combination of these alternatives. Greater thicknesses of low plasticity soil placed beneath the floor slab will further reduce the potential volumetric change. However, SITE Engineering, Inc. should be contacted to determine the effects of the increase in fill thickness if more than two (2) feet of fill will be placed above current site grade as the weight of the fill may cause undesirable settlement or consolidation of the naturally occurring subgrade soils.

As previously mentioned, swelling or shrinkage occurs in soils due to changes in moisture content. Ponding of water around the slab may also result in reduction of soil strength, thereby causing foundation movements. It is important to minimize the possibility of moisture content changes by considering the following precautions:

1. Direct surface runoff away from the structure by sloping the subgrade away from the slab.

2. Extend paving or other impervious covering, such as sidewalks, to the slab edges.

3. Extend downspouts so that the discharge is at least 5 feet from the slab.

4. Further increase the thickness of low plasticity structural fill beneath the floor slab.

5. If shrubs or bushes are placed next to the structure, an impervious membrane should be used to separate the slab from the shrubs to limit any infiltration of water under the slab. The minimum distance between a tree and the building slab should be about one-half the expected height of the tree.

6. Provide adequate irrigation during periods of drought to minimize excessive drying of the subgrade soils around the perimeter of the building.

7. Extend perimeter footings deeper into the natural subgrade soils to provide a vertical barrier against moisture transferal.

4.3 Site Preparation

We recommend that all topsoil, organics, concrete, asphalt, base materials, utilities, and any soft, loose or deleterious soils in the areas intended for construction and for a distance of at least 5 feet beyond the perimeter of any new structure and 2 feet beyond the edges of new pavements be stripped from the site and either wasted or stockpiled for later use in landscaping. Based on the borings performed, the depth of stripping necessary to ensure removal of all excessively organic or otherwise deleterious surficial materials within the grass covered areas (not within the existing baseball field) will be on the order of about 10 to 18 inches.

It should be noted, however, that the borings performed within the existing baseball field (B-10, B-11, & B-13), encountered about 6 to 8 inches of topsoil followed by a clay/sand mixture containing varying amounts of organic matter. These organic materials should also be removed to facilitate construction. Therefore, stripping within the existing baseball field should be expected to be on the order of 24 inches.

It should be further noted that borings B-1 and B-6 encountered organic materials between the depths of 2 and 4 feet. These materials should also be removed to facilitate construction. Due to the limited quantity of organic material observed, it is assumed that these subsurface organics are isolated and not representative of the entire site. Therefore, isolated over-excavations should also be anticipated for the removal of excessive organic material. The actual stripping depth will likely vary and should be verified and monitored by the geotechnical engineer at the time of construction to ensure adequate removal of deleterious materials.

As previously mentioned, existing infrastructure (fences, batting cages, dugouts, sidewalks, lighting, pavements, etc.) were also present throughout the subject site. It is assumed that all infrastructure currently present within the proposed construction areas will be removed in their entirety to facilitate construction of the new structures. Based on our experience with reconstruction on existing building and pavement sites, soft, wet or disturbed soil conditions are often encountered under existing floor slabs and pavements due to leaking utility lines, improperly maintained pavement/joints, and disturbance of the surficial soils during demolition. Therefore, the depth of stripping required to adequately remove soft or disturbed soils should be determined in the field by the geotechnical engineer at the time of construction. The stripped soil should be wasted or stockpiled for later use in landscaping.

The upper soils encountered in the borings performed at this site are considered moisture sensitive and, if wet at the time of construction, may be soft and unstable. Therefore, it may be necessary to further undercut and replace the surficial soils or chemically dry these soils by the addition of lime, cement or fly ash prior to the placement of any required structural fill. The type and amount of chemical necessary for adequate stabilization of surficial soft or saturated soils will depend on the then current moisture condition and should be determined at the time of construction.

After stripping as described above and excavation to the proposed subgrade level, all areas intended for construction should be proof-rolled with a tandem axle dump truck or similar heavy rubber-tired vehicle weighing approximately 15 to 20 tons. Soils which are observed to rut or deflect excessively under the moving load should be further undercut and replaced with properly compacted structural fill. The proof-rolling, undercutting and filling activities should be witnessed by a representative of the geotechnical engineer and should be performed during a period of dry weather.

After subgrade preparation and observation have been completed and a stable subgrade is verified and/or provided, the placement of structural fill may begin. The first layer of fill should be placed in a relatively uniform horizontal lift and be adequately keyed into the stripped and scarified subgrade soils. Structural fill soils should be free of organic or other deleterious materials, have a maximum particle size less than 2 inches, a liquid limit of 42 or less, a plasticity index between 10 and 22, and classify as CL in accordance with the Unified Soil Classification System (ASTM D-2487). Soils which classify as ML (silts) or CL-ML (silty-clays) should not be used as structural fill due to their moisture sensitive nature. Sands and sandy soils (with less than 60 percent fines) should also not be used as structural fill on this site due to the permeable nature of these materials and the volume change potential of the naturally occurring site soils.

Structural fill should be placed in maximum lifts of 8 to 9 inches of loose material and should be compacted to a minimum of 95 percent of the maximum dry density as determined by ASTM D-698 (standard Proctor). Close moisture content control will be required to achieve the recommended degree of compaction. The moisture content at the time of compaction should be within the range of one percentage point below (-1%) to three percentage points above (+3%) the optimum moisture content value as determined by ASTM D698.

If water must be added to adjust the moisture content, it should be uniformly applied and thoroughly mixed into the soil by disking or scarifying. Each lift of compacted structural fill should be tested by a qualified geotechnical engineer or his representative prior to placement of subsequent lifts. The edges of compacted structural fill should extend at least 5 feet beyond the edges of the structures and 2 feet beyond the edges of new pavements prior to sloping. Care should be taken to apply compactive effort throughout the structural fill and structural fill slope areas.

We also recommend that water not be allowed to collect in the foundation excavations or on prepared subgrades of the construction areas either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected rainwater, groundwater or surface runoff. Positive site surface drainage should be provided to reduce infiltration of surface water around the perimeter of structures or pavements and beneath the floor slabs, foundation elements, and pavement supporting soils.

4.4 Shallow Foundation Recommendations

Provided the site preparation guidelines presented earlier in this report are followed and the estimated settlements, maximum allowable bearing capacities, and limiting footing dimensions are deemed tolerable, the proposed structures at this site may be supported on relatively shallow foundation systems bearing at a minimum depth of 2 feet below final grade, but no greater than 3 feet below existing grade. Foundation elements bearing on the existing, naturally occurring clay soils at the recommended depth can be proportioned utilizing a maximum net allowable soil bearing pressure of 3,000 pounds per square foot for relatively square isolated spread footings and 2,500 pounds per square foot for continuous footings. If the foundation elements are founded within newly placed structural fill, the bearing capacities should be reduced to 2,500 psf and 2,000 psf for the square footings and continuous footings, respectively.

The recommended bearing pressures include a factor of safety of 3.0 against bearing capacity failure. However, minimum dimensions of 18 inches for continuous footings and 24 inches for spread footings should be used for design, even if the resulting bearing pressure is less than the allowable bearing pressure, to minimize the possibility of a local bearing capacity failure.

The foundation excavations should be observed by a representative of SITE Engineering, Inc. prior to placement of reinforcing steel or concrete to assure that the foundation soils are consistent with the materials discussed in this report. Soft or loose soil zones encountered at the bottom of the footing excavations should be removed to the level of suitable bearing material and replaced with adequately compacted structural fill as directed by the Geotechnical Engineer.

After opening, the footing excavations should be observed and concrete placed as quickly as possible to avoid exposure of the footing bottoms to wetting and drying. Surface run-off water should be drained away from the excavations and not be allowed to pond. If it is required that footing excavations be left open for more than one day, they should be protected to reduce evaporation or entry of moisture.

4.5 Settlement of Shallow Foundation System

Consolidation of the soils resulting from the foundation loads will result in measurable but tolerable increments of soil settlements. Based on the results of field and laboratory tests, and considering the anticipated foundation loads, it is estimated that settlement of square footings up to 6½ feet by 6½ feet in plan dimension and continuous footings up to 3 feet in width will be on the order of one (1) inch or less. Differential settlement across the foundation areas will probably approximate 50 percent of the total realized settlement. The estimated settlements are based on a maximum of 2 feet of fill being placed above existing grade. If more fill is required to reach design elevation, settlement due to the weight of the fill may need to be considered as it may be excessive.

Settlements of the magnitude discussed above are generally considered moderate but tolerable for structures of the type proposed. However, it is highly recommended that the design of masonry walls, if planned, include provisions for liberally spaced, vertical control joints to minimize the effects of cosmetic "cracking." Furthermore, it is recommended that good rigidity of the structures foundations be provided. This could consist of stiffening the slab with grade beams and tying the individual foundation elements together to form a "waffle" pattern or by the use of post-tensioned reinforcement.

It should be noted that the settlement estimates provided above assume each new structure and/or element will be isolated from any existing structure and/or element. If a structure is constructed as an "addition" to any existing structure, differential settlement will likely be a concern. Differential settlement typically governs the design of foundation systems for additions. Differential settlement between additions and existing structures typically equal the total settlement experienced within the addition area. If any structure is anticipated to be constructed as a "structurally connected addition," SITE Engineering, Inc. should be contacted to provide additional recommendations.

4.6 Uplift and Lateral Resistance of Shallow Foundation Elements

Shallow foundations should also be designed to resist both uplift and horizontal forces. Horizontal forces can be resisted by the weight of the foundation system as well as the frictional sliding resistance. A coefficient of friction of 0.45 could be used for the clay soils encountered within the upper 4 feet of the borings. A factor of safety of at least 1.5 should be considered for the sliding resistance. The passive earth pressure of the adjacent soil should be neglected due to the potential soil shrinkage.

Vertical uplift forces can be resisted by the dead weight of the structure, its foundation, and any compacted overburden soils. The uplift resistance should be based on unit weights of 145 pounds per cubic foot (pcf) for the concrete in the footings and 110 pcf for any soils placed above the extensions of spread footings. As previously mentioned, groundwater levels were recorded in the borings at depths ranging from 17 to 33 feet below the existing ground surface. However, if submergence of any foundation element is expected, buoyant unit weights of 85 pcf for concrete and 48 pcf for the soil should be used in the uplift resistance calculation. It is recommended that a factor of safety of at least 2.0 be applied to the calculated vertical uplift resistance.

After opening, the foundation excavations should be inspected to document that soils loosened during the excavation process have been removed and that competent undisturbed soils are exposed on the bottom and sides of each excavation. Confirmation should be made during construction of the soil parameters assumed for the design of the foundation elements. After inspection, concrete should then be placed as quickly as possible to avoid exposure of the soils to wetting and drying and to reduce relaxation and/or instability of the sides of the excavation.

4.7 Direct Bury and Drilled Cast-In-Place Shafts

It is assumed that the proposed light standards will be either directly buried or supported on drilled cast-in-place concrete shafts. We have computed ultimate unit end bearing values for use by the design engineer in determining the required diameter and depth of installation for direct bury poles and/or drilled cast-in-place concrete shafts on this specific project. The values provided below could also be used for design of drilled shafts to support building structures associated with this project should the recommendations provided previously for shallow foundation elements not results in a feasible or economical foundation system.

We have computed ultimate unit end bearing values for use by the design engineer in determining the required diameter and depth of installation for drilled cast-in-place shafts and/or "direct bury" elements. Due to varying soft soil strata's, it is recommended that a bed of limestone be utilized at the invert of each "direct bury" excavation. The bedding will provide a bearing layer for each proposed "direct bury" element. It is recommended that a layer of limestone at least 12 inches in thickness be utilized to distribute the anticipated downward forces evenly. The required bedding layer is only required for "direct bury" elements. It is not required for drilled cast-in-place concrete shafts.

Ultimate unit skin friction values are also being provided. However, skin friction should only be utilized on drilled cast-in-pace concrete shafts supporting building structures or if the backfill material around the perimeter of the proposed "direct bury" poles consist of concrete which is structurally connected to each pole. If limestone or concrete that is not structurally connected to the pole(s) is utilized, the skin friction should be neglected for direct-bury elements.

The values of ultimate unit end bearing and ultimate skin friction were computed in general accordance with conventional static analysis methods. Ultimate axial capacity should be computed using the ultimate end bearing and ultimate skin friction values presented in the table below. Ultimate axial capacity, Q, at a given penetration is taken as the sum of the skin friction on the shaft wall, Q_s, and the end bearing at the shaft tip, Q_p, so that:

$$Q_c = Q_s + Q_p = fA_s + qA_p \text{ (compression)}$$

$$Q_t = Q_s = fA_s \text{ (tension or uplift)}$$

where A_s and A_p represent, respectively, the embedded surface area and the end area of the shaft; f and q represent, respectively, the ultimate unit skin friction and ultimate unit end bearing. A factor of safety of at least 2.0 for skin friction and 3.0 for end bearing is recommended to arrive at the allowable axial capacity.

DESIGN PARAMETERS		
Depth* (feet)	**Ultimate Unit Skin Friction (ksf)**	**Ultimate Unit End Bearing (ksf)**
0 – 6	Neglect	Neglect
6 – 12	0.78	3.90
12 – 17	0.57	3.90
17 – 22	0.78	3.25
22 – 37	0.50	3.25
37 – 60	0.68	5.20

*Below Existing Grade

The values presented above assume each light standard is isolated from any influence of nearby foundation loading. A factor of safety as discussed previously should be applied to the provided parameters.

Due to the potential for shrinkage of the surficial soils away from the standards and/or drilled shafts during dry conditions, it is recommended that the unit skin friction component, if utilized, be neglected in the upper 6 feet of the shaft or excavation. Skin friction resistance, if utilized, should also be neglected for the bottom one excavation diameter of the shaft length.

Uplift resistance provided by the "direct bury" poles will consist of the weight of the pole. A factor of safety of 1.3 should be applied to the weight of the pole in calculation of the uplift resistance. Again, it should be noted that the friction along the embedded length of any "direct bury" pole can also be utilized only if the backfill material around the perimeter of the proposed "direct bury" pole consist of structurally connected concrete. If limestone or concrete that is not structurally connected to the poles is utilized, the skin friction should be neglected. Again, where drilled cast-in-place concrete shafts are utilized for building support, the friction along the embedded length of the shaft can be utilized. A factor of safety of 2.5 should be applied to skin friction for uplift resistance.

Installation of drilled shafts and/or direct-bury poles at this site may require the use of a drilling slurry and/or casing during augering followed by placement of concrete with a closed tremie to keep the perimeter of the excavations from collapsing. If a drilling slurry is used, the slurry level in the shaft excavation during installation should be maintained even with the ground surface. As concrete is being placed, the tremie should be kept at least three feet below the top of the concrete in the shaft. Regardless of the installation method used, concrete for shaft construction should be placed with a slump range of six (6) to eight (8) inches and be designed to achieve the required strength at the recommended slump.

Installation of the shafts should be carried out in accordance with the National Highway Institute Course No. 132014 entitled "Drilled Shafts: Construction Procedures and Design Methods", Publication Number FHWA-NHI-18-024 published in September 2018. Care should be taken to ensure concrete is not allowed to strike the reinforcing steel or sides of the shaft excavation. We recommend that the geotechnical engineer or his representative observe the installation of the shafts to verify that, among other things: 1) the subsurface conditions are as anticipated from the borings, 2) the shafts are constructed to the proper diameter, penetration, plumbness, and with appropriate concrete slump, 3) reinforcing steel is properly placed and spaced in the open shaft, and 4) a tremie is properly used for concrete placement. These critical items are fundamental to proper performance of shafts in accordance with design recommendations.

4.8 Settlement of Deep Foundation Elements

A detailed analysis of axial load versus settlement was beyond the scope of this investigation. However, once detailed plans are derived dictating actual bearing depths, loads, and dimensions, SITE Engineering, Inc. should be contacted to provide settlement estimates.

4.9 Lateral Capacity of Deep Foundations

For deep foundations, the lateral loads are resisted by the soil as well as the rigidity of the foundation elements. Analyses can be performed by methods ranging from chart solutions to finite difference methods. The following are recommended design soil parameters to be used in a lateral load analysis once the size and length of the foundations are determined:

SOIL PARAMETERS FOR LATERAL LOAD ANALYSIS					
Depth (feet)*	**Shear Strength, c (psf)**	**Angle of Internal Friction, ϕ (degrees)**	**Design Unit Weight, (pcf)**	**Lateral Modulus, k (pci)**	**Strain Factor, E_{50}**
0 – 6	2,000	--	128	260	0.005
6 – 12	1,200	--	128	160	0.007
12 – 17	600	--	124	--	0.009
17 – 22	1,200	--	114	160	0.007
22 – 37	500	--	114	--	0.010
37 – 60	800	--	112	--	0.008

*Below Existing Grade

Groundwater was measured at depths ranging from 17 to 33 feet below the existing ground surface. However, it should be noted that groundwater levels at this site may fluctuate due to seasonal and climatic conditions causing a groundwater table to be closer to the surface a later time. Therefore, consideration should be given to using a buoyant unit weight for the soils in the upper 17 feet in the lateral load analysis.

The buoyant unit weight can be calculated by subtracting the unit weight of water (62 pounds per cubic foot) from the provided design unit weights in the above table. The lateral modulus (k) values provided above are for cyclic loading conditions. Should static loading condition values be required, SITE Engineering should be contacted to provide these parameters.

4.10 Other Foundation Types

It should be noted that foundation types other than those discussed in this report could be used for support of the structure at this site. These foundation systems include but are not limited to auger cast-in-place piles, driven piles, and screwed helical piles. Ground improvement techniques such as rigid inclusions or aggregate piers (stone columns) may also offer an increase in bearing capacity while minimizing settlements without the expense of a typical deep foundation system. Some of these foundation types and ground improvement systems are patented and should be designed by the manufacturer or distributor. SITE Engineering, Inc. can provide design recommendations for alternative foundation types or ground improvement methods at your request.

4.11 Floor Slab Recommendations

As previously discussed, due to the desiccated nature of the near surface clays encountered in the borings performed at this site, soil supported floor slabs are expected to experience movements associated with volume changes due to changes in moisture content. Therefore, it is recommended that floor slabs be supported on at least 24 inches of compacted low plasticity soil meeting the material and compaction guidelines provided in the "Site Preparation" section of this report. The 24 inches of low plasticity structural fill is required to reduce the potential for moisture content changes and subsequent volume changes within the underlying plastic clay soils.

Floor slab loads are commonly distributed to grade (either existing or finished soil grade) by slab-on-grade type construction. Otherwise, a structural floor is used to carry the floor loads independent of the grade. Where deep foundation elements are used for support of structures of the type proposed, a structural floor should be utilized to carry the floor loads independent of the grade. However, a soil supported slab may be used in conjunction with deep foundation elements if the floor slab is properly isolated from the foundation elements and/or shaft caps. This can be accomplished with the use of isolation joints and/or "pour-back" strips.

Common types of slabs-on-grade are reinforced slabs, which may or may not include interior ribs, and post-tensioned slabs. The ribbed slab and post-tensioned slab provide rigidity against differential movement and minimize slab cracking. Recommendations for a ribbed slab and post-tensioned slab are provided in the following paragraphs in the event they are preferred over a structural concrete slab.

Ribbed Floor Slab: The ribbed slab should be designed by a registered and qualified structural engineer. However, certain design criteria are suggested. Interior grade beams should be at least 18 inches deep from the top of the slab. The spacing of the ribs should be determined by the structural engineer based on the thickness of the slab but should in no case be greater than 15 feet. Where practical, these ribs should be arranged to coincide with non-load bearing interior walls. A minimum beam width of 12 inches is recommended to allow adequate bearing area. The floor slab and interior grade beams should be a monolithic unit with no joints. If concrete cannot be placed monolithically, it should be doweled to provide continuity and good rigidity.

Post-Tensioned Floor Slab: An alternative to a reinforced ribbed slab foundation is post-tensioned reinforcement. Post-tensioning involves providing tensile steel reinforcement in the slab system by stressing high strength steel tendons after the concrete has achieved sufficient strength. A post-tension ribbed slab is a specialized structural design and should be designed by a qualified structural engineer who is competent and familiar with this type of reinforcement.

In either case, the floor slab can be designed utilizing a short-term modulus of subgrade reaction (spring constant), k, of 75 pci for the required, adequately compacted low plasticity structural fill. If a higher modulus of subgrade reaction is required, a k value of 110 pci can be obtained by provided a minimum of 4 inches of clean sand (less than 10 percent fines) directly beneath the slab. A k value of 145 pci may be achieved by the placement of 4 inches of crushed limestone, crushed concrete or washed gravel.

It should be noted, depending on the loading conditions and loading areas, a long-term k value may be more appropriate to utilize for design purposes. The k value associated with long-term loading conditions is highly dependent on the actual loads and loaded areas, as well as the stiffness of the soil. Therefore, if long-term k values are required/requested from the designer, SITE Engineering, Inc. should be provided with additional, pertinent loading characteristics to derive a long-term modulus of subgrade reaction.

Furthermore, if moisture sensitive floor coverings are used, consideration should be given to the use of barriers (either polyethylene or a thin sand, graded gravel, or limestone) to minimize potential vapor rise through the slab. Other design and construction considerations, as outlined in the American Concrete Institute (ACI) Design manual (section 302.1R) are recommended.

5.0 PAVEMENT RECOMMENDATIONS

We have evaluated both rigid and flexible pavement systems for this project. Although specific traffic information was not provided to us, we have assumed that majority of the traffic will consist of passenger vehicles (cars and light trucks) with occasional passes of larger vehicles for garbage collection and deliveries.

The grading information for the pavement areas is also unknown at this time. However, for purposes of this report, we have assumed that less than 12 inches of cut and/or fill will be required to reach design grades in the pavement construction areas. We have further assumed that the site preparation criteria presented in this report will be followed and any isolated soft or loose soil areas encountered during proofrolling of the subgrade will be removed and replaced with compacted structural fill or be chemically treated as previously described. Therefore, it is estimated the subgrade soils will be prepared to achieve a minimum CBR of 3 or a modulus of subgrade reaction (k) of 75 pci.

The general pavement design information presented in this report is based on information published by AASHTO and the Portland Cement Association as well as past experience in this area. The published information was utilized in conjunction with the available field and laboratory test data to develop general pavement recommendations. Specific design parameters considered in the pavement analyses are as follows:

CBR	3.0
Modulus of Subgrade Reaction, k	75 pci
Reliability	85%
Modulus of Elasticity	3.4×10^6
Deviation	0.45 Asphalt, 0.35 Rigid
Initial Serviceability	4.2 Asphalt, 4.5 Rigid
Terminal Serviceability	2.5
Modulus of Rupture (concrete)	600 psi
Load Transfer	3.2 Dowels or Keys
Drainage Coefficient	1.0
Layer Coefficients	0.42 Asphalt
	0.14 Base Course

The recommended minimum pavement sections for the passenger vehicle parking areas (light-duty) and heavy-duty drives are as follows:

RIGID PAVEMENT		
Pavement Materials	**Minimum Thickness**	
	Parking Stalls	**Drives**
Portland Cement Concrete	5”	6”
Compacted Granular Base or Compacted Low Plasticity Structural Fill	4” granular base or 9” structural fill	4” granular base or 9” structural fill
Adequately Stripped and Proofrolled Subgrade	--	--

FLEXIBLE PAVEMENT		
Pavement Materials	**Minimum Thickness**	
	Parking Stalls	**Drives**
Asphaltic Concrete Wearing Course	2½"	3½"
Compacted Crushed Limestone Base OR Soil Cement Base	12"	12"
Adequately Stripped and Proofrolled Subgrade or Compacted Low Plasticity Structural Fill	--	--

Pavements and fill materials should meet the requirements of the *Louisiana Standard Specifications for Roads and Bridges* (LSSRB), 2016 Edition. Structural fill utilized in the pavement areas should be compacted to 95 percent of the maximum dry density as determined by ASTM D698 (standard Proctor) at a moisture content within 2 percent of the optimum value.

The compacted granular base for rigid concrete pavements should consist of crushed limestone or crushed concrete meeting LSSRB Section 1003.03.1 or 1003.03.2, or relatively clean sands with less than 15 percent fines (material passing a number 200 sieve). Granular base for rigid pavements should be compacted to at least 98 percent of the maximum dry density as determined by ASTM D-698 at moisture contents within 2 percent of optimum.

Asphaltic concrete pavement materials should meet the requirements of the LSSRB and should be compacted to a minimum of 95 percent of the density of the laboratory molded specimen. For flexible pavements, the compacted crushed limestone base should conform to the LSSRB Section 1003.03.1 and be compacted to at least 98 percent of the maximum dry density as determined by ASTM D-698.

The base for flexible pavements may also be a cement stabilized base course. The percentage of cement will vary depending on grading plans and the type of material to be stabilized and should be determined at the time of construction. However, it is estimated that a soil-cement layer 12 inches in thickness stabilized with 8 to 9 percent cement by volume should be sufficient.

Soils to be cement treated should have a plasticity index (PI) of 15 or less and meet the other material requirements set forth in LSSRB Section 302.02.1. If the pavement base soils have a PI greater than 15, then lime treatment may be employed to lower the plasticity index prior to cement stabilization. The thickness of lime treatment, if necessary, should be at least 12 inches. The amount of lime necessary to lower the PI of the fill soils will depend on the plasticity index of the soils to be treated and should be determined at the time of construction.

It should be noted that soil cement base tends to shrink similar to concrete causing tension cracks that can reflect up through the asphalt surface course. The surface cracks will require additional maintenance and sealing to maintain the design life of the pavement. Percentages of cement greater than recommended above will further increase the frequency and severity of the hydration/shrinkage cracks.

Research involving placement of a stone interlayer or asphaltic surface treatment (AST) between the cement stabilized base and the asphalt surfacing has provided better performance and longer life than only soil cement bases while resisting rutting and minimizing the occurrence of reflective cracking. Therefore, consideration should be given to providing a minimum 4-inch-thick stone layer or an AST (LSSRB Section 507 Type E) below the asphalt surface course if a soil cement base is used. If the 4-inch-thick stone interlayer is used, the light and heavy-duty soil cement base section for flexible pavements may be reduced from 12 inches to 8 inches. If an AST is used, the soil cement base should remain 12 inches.

A heavy-duty pavement section consisting of at least 8 inches of properly reinforced portland cement concrete on a minimum of 8 inches of compacted crushed limestone, crushed concrete, or cement stabilized soil is recommended where trash dumpsters or semi-trailers are to be parked on the pavement or where the front tires of trash collection trucks will be positioned during lifting of the dumpster. This should provide better distribution of surface loads to the subgrade without causing deformation of the surface.

Proper finishing of concrete pavement requires the use of appropriate construction joints to reduce the potential for cracking. Construction joints should be designed in accordance with current Portland Cement Association and the American Concrete Institute guidelines. Joints should be sealed to reduce the potential for water infiltration into pavement joints and subsequent infiltration into the supporting soils. Load transfer devices at the pavement joints should be designed in accordance with accepted codes. The concrete should have a minimum compressive strength of 3,500 psi at 28 days. The concrete should also be designed with 5±1 percent entrained air to improve workability and durability.

Prior to placement of a crushed limestone or crushed concrete base, a geotextile fabric separator should be placed on the compacted fill or proofrolled subgrade soils. The purpose of the separator is to limit migration of the crushed aggregate base into the fine grained soils below during periods of wet weather. If a sand base is utilized under concrete pavements, the geotextile fabric will not be required below the sand. However, placement of a strip of fabric separator approximately 18 to 24 inches in width above the sand and under each pavement joint is recommended to minimize migration of the sand into the pavement joints.

The geotextile which is sold in rolls of various sizes, should be installed per the manufacturer's recommendations and be overlapped a minimum of 2 feet. If a cement stabilized base with a stone interlayer is utilized as described earlier in this section, the geotextile fabric separator may be omitted. The geotextile fabric separator should meet the requirements of LSSRB Section 1019.

A geogrid soil reinforcement product may be utilized to minimize undercutting or chemical stabilization of soft soils, if encountered during proofrolling, in the pavement areas. The type and usability of a geogrid will depend on the severity of the unstable soils. If desirable, SITE Engineering should be contacted to provide alternative pavement sections which include the placement of geogrid reinforcement.

It is recommended that all utility pipe backfilling operations undertaken within the proposed pavement areas and for 2 feet within the perimeter of the pavement system be accomplished in accordance with LSSRB and/or governing municipality requirements. Where utility excavations traverse the pavement system, the upper 12 inches of utility trench backfill should consist of structural fill soils and/or the required pavement base materials meeting the classification requirements provided within this report.

In addition, water should not be allowed to pond behind curbs and saturate the pavement base. In down grade areas, granular base should extend through the slope to allow any water entering the base a path to exit. The subgrade or fill soils beneath the pavement or base course should be sloped to facilitate drainage.

Landscape areas placed within the pavement system or next to the buildings should not be allowed to drain under the pavement system or into the pavement base. If an aggregate or granular base is utilized, all storm water catch basins constructed within the pavement system should include a provision for permanent weep holes to allow drainage of the base course material. SITE Engineering can provide details for placement and construction of permanent weep holes at your request.

6.0 CONSTRUCTION CONSIDERATIONS

6.1 Construction Testing and Inspection

Many problems can be avoided or solved in the field if proper inspection and testing services are provided. It is recommended that the site preparation, foundation and floor slab construction, and pavement area construction be monitored by the geotechnical engineer or his representative.

Density tests should be performed to verify compaction and moisture content in the fill, and base material. Each lift of fill or base material should be tested and approved by the soils engineer prior to placement of subsequent lifts. As a guideline, it is recommended that field density tests be performed at a frequency of not less than one test per 2,500 and 5,000 square feet of surface area per lift in the building and pavement areas, respectively, with a minimum of three tests per lift.

Inspection should be performed prior to and during concrete placement. Foundation excavations should be observed by the soils engineer or his representative to verify that the exposed materials are suitable for support of the foundations. It is recommended that SITE Engineering, Inc. be retained to provide observation and testing of construction activities involved in the foundations, earthwork, and related activities of this project. SITE Engineering, Inc. cannot accept any responsibility for any conditions which deviated from those described in this report, nor for the performance of the foundations if not engaged to also provide construction observation and testing for this project.

6.2 Moisture Sensitive Soils/Weather Related Concerns

The near surface soils encountered in the borings performed at this site are considered somewhat sensitive to changes in moisture content and will likely lose strength and stability if allowed to become wet. During wet weather periods, increases in the moisture content of the soil will likely cause significant reduction in the soil strength and support capabilities. In addition, soils that become wet may be slow to dry and thus significantly retard the progress of grading and compaction activities. It will, therefore, be advantageous to perform earthwork and foundation construction activities during dry weather. If the upper soils are allowed to become saturated and the construction schedule does not allow for drying of the soils naturally, removal and replacement or chemical stabilization with lime, fly ash or cement will likely be required.

6.3 Drainage and Groundwater Concerns

Water should not be allowed to collect in the foundation excavations or on prepared subgrades of the construction area either during or after construction. Undercut or excavated areas should be sloped toward one corner to facilitate removal of any collected rainwater, groundwater, or surface runoff. Positive site surface drainage should be provided to reduce infiltration of surface water around the perimeter of the structures and beneath the floor slabs or pavement supporting soils.

Groundwater was initially encountered during the drilling operations at depths ranging from 17 to 33 feet below the existing ground surface within the borings performed at this site. It should be noted, however, that it is possible for a groundwater table to fluctuate depending upon climatic and rainfall conditions. Therefore, we recommend that the Contractor determine the actual groundwater levels at the site at the time of the construction activities.

It is recommended that the site be graded in anticipation of wet weather periods to help prevent water from “ponding” within the construction areas and/or flowing into excavations. Filtered sump pumps placed in the bottoms of excavations, or other conventional dewatering techniques, such as drainage swales or other methods approved by the geotechnical engineer, are expected to be suitable for control of surface or runoff water. However, if uncontrollable groundwater infiltration into the excavations is experienced during construction, SITE Engineering should be contacted.

6.4 Excavations

In Federal Register, Volume 54, No. 209 (October 1989), the United States Department of Labor, Occupational Safety and Health Administration (OSHA) amended its "Construction Standards for Excavations, 29 CFR, part 1926, Subpart P". This document was issued to better ensure the safety of workmen entering trenches or excavations. It is mandated by this federal regulation that excavations, whether they be utility trenches, basement excavation or footing excavations, be constructed in accordance with the new OSHA guidelines. It is our understanding that these regulations are being strictly enforced and if they are not closely followed, the owner and the contractor could be liable for substantial penalties.

The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person", as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations.

We are providing this information solely as a service to our client. SITE Engineering, Inc. does not assume responsibility for construction site safety or the contractor's or other parties’ compliance with local, state, and federal safety or other regulations.

7.0 REPORT LIMITATIONS

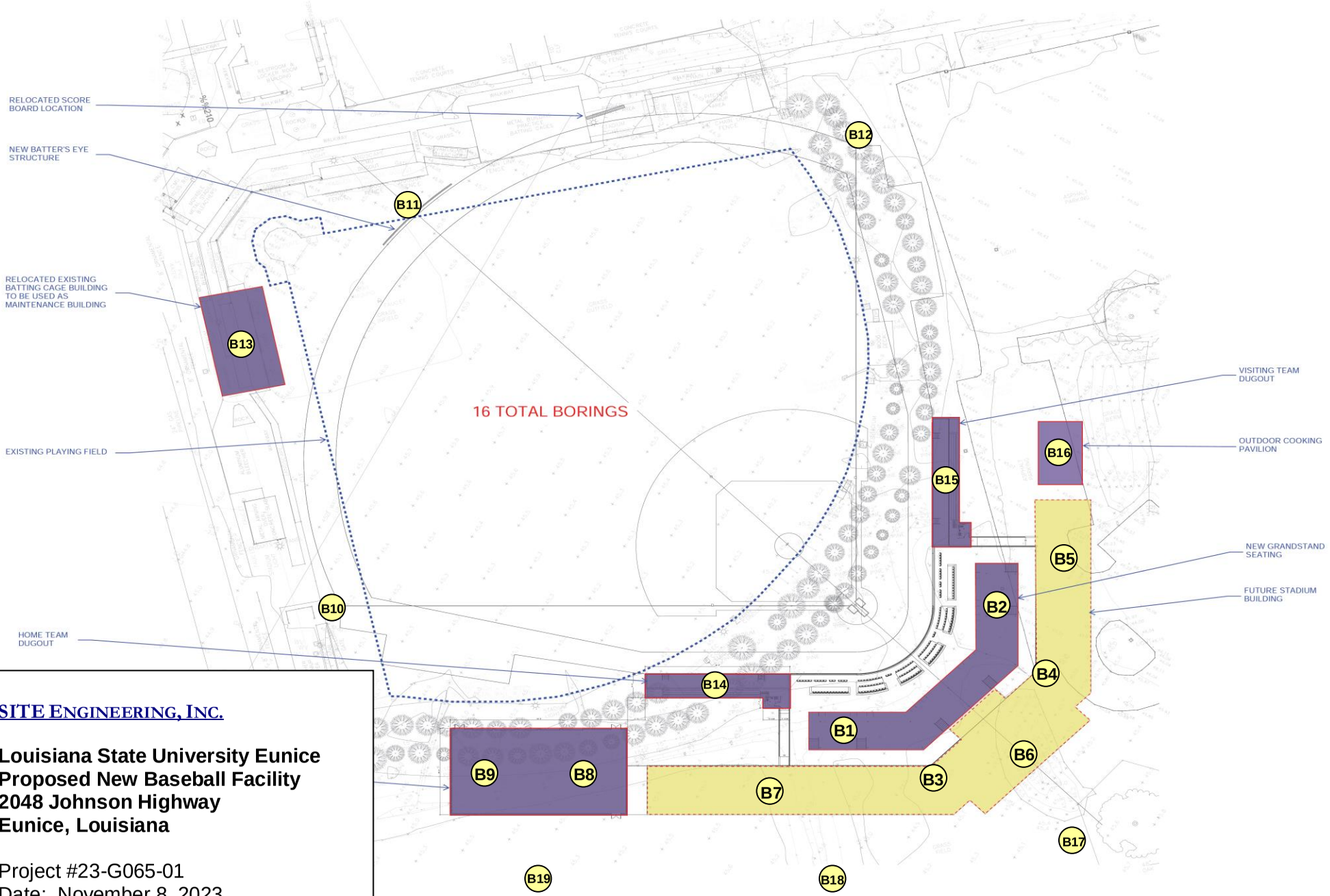
The recommendations submitted in this report are based on the available subsurface information obtained by SITE Engineering for the proposed project. If there are any revisions to the plans for this project, or if deviations from the subsurface conditions noted in this report are encountered during construction, SITE Engineering should be notified immediately to determine if changes in the foundation recommendations are required. If we are not notified of such changes, SITE Engineering will not be responsible for the impact of those changes on the project.

The geotechnical engineer warrants that the findings, recommendations, specifications, or professional advice contained herein have been made in accordance with generally accepted professional geotechnical engineering practices in the local area. No other warranties are implied or expressed.

After the plans and specifications are more complete, the geotechnical engineer should be retained and provided the opportunity to review the final design plans and specifications to check that our engineering recommendations have been properly incorporated into the design documents. At that time, it may be necessary to submit supplemental recommendations. This report has been prepared for the exclusive use of the State of Louisiana or their assigns for the specific application to the proposed new LSUE baseball facility to be constructed at the referenced location in Eunice, Louisiana.

APPENDIX

Boring Location Diagram



SITE ENGINEERING, INC.

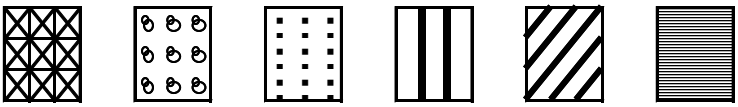
Louisiana State University Eunice
Proposed New Baseball Facility
2048 Johnson Highway
Eunice, Louisiana

Project #23-G065-01
Date: November 8, 2023

(#) = Approximate Boring Location

KEY TO TERMS AND SYMBOLS USED ON LOGS

SOIL TYPE

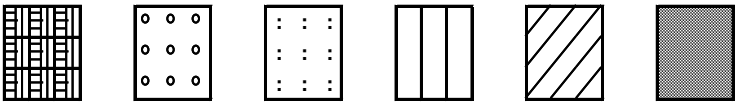


ROCK | GRAVEL | SAND | SILT | CLAY | PEAT

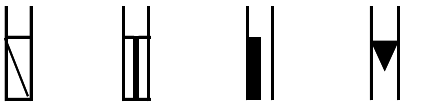
SAMPLE TYPE

NO SAMPLE | AUGER SAMPLE | SHELBY TUBE | SPLIT SPOON

MODIFIERS



STONE or CONCRETE | GRAVELY | SANDY | SILTY | CLAYEY | FILL or TOPSOIL



NO RECOVERY | ROCK CORE | 2" SHELBY TUBE | TXDOT CONE

UNIFIED SOIL CLASSIFICATION SYSTEM - ASTM D 2487-98

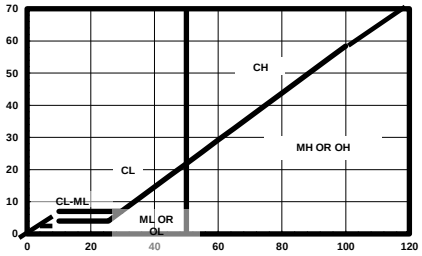
MAJOR DIVISIONS			LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS (LESS THAN 50% PASSING NO. 200 SIEVE)	GRAVEL & GRAVELY SOILS LESS THAN 50% PASSING NO. 4 SIEVE	CLEAN GRAVEL (LITTLE OR NO FINES	GW	WELL GRADED GRAVEL, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
			GP	POORLY GRADED GRAVEL, GRAVEL-SAND MIXTURES WITH LITTLE OR NO FINES
		W/ APPRECIA BLE FINES	GM	SILTY GRAVEL, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS MORE THAN 50% PASSING NO. 4 SIEVE	CLEAN SANDS LITTLE FINES	SW	WELL GRADED SAND, GRAVELY SAND (LITTLE FINES)
			SP	POORLY GRADED SANDS, GRAVELY SAND (L.FINES)
		SANDS WITH APPREA. FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
			SC	CLAYEY SANDS,SAND-CLAY MIXTURES
FINE GRAINED SOILS (MORE THAN 50% PASSING NO. 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS & VERY FINE SANDS,ROCK FLOUR SILTY OR CLAYEY FINE SANDS OR CLAYEY SILT W/ LOW PI
			CL	INORGANIC CLAY OF LOW TO MEDIUM PI LEAN CLAY GRAVELY CLAYS, SANDY CLAYS, SILTY CLAYS
			OL	ORGANIC SILTS & ORGANIC SILTY CLAYS OF LOW PI
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY FAT CLAYS
			OH	ORGANIC CLAYS OF MED TO HIGH PI, ORGANIC SILT
HIGHLY ORGANIC SOIL			PT	PEAT AND OTHER HIGHLY ORGANIC SOILS
UNCLASSIFIED FILL MATERIALS			ARTIFICIALLY DEPOSITED AND OTHER UNCLASSIFIED SOILS AND MAN-MADE SOIL MIXTURES	

CONSISTENCY OF COHESIVE SOILS

CONSISTENCY	UNCONFINED COMPRESSIVE STRENGTH IN TONS/FT^2
VERY SOFT	0.0 TO 0.25
SOFT	0.25 TO 0.50
FIRM	0.50 TO 1.0
STIFF	1.0 TO 2.0
VERY STIFF	2.0 TO 4.0
HARD	> 4.0 OR 4.0+

RELATIVE DENSITY - GRANULAR SOILS

CONSISTENCY	N-VALUE (BLOWS/FOOT)
VERY LOOSE	0-4
LOOSE	4-9
MEDIUM DENSE	10-29
DENSE	30-49
VERY DENSE	> 50 OR 50+



ABBREVIATIONS

Qp - HAND PENETROMETER
Qt - TORVANE
MV - MINIATURE VANE
Qu - UNCONFINED COMPRESSION TEST
UU - UNCONSOLIDATED UNDRAINED TRAIXIAL
CU - CONSOLIDATED UNDRAINED

▼ GROUNDWATER FIRST ENCOUNTERED

∇ (? HRS) DELAYED GROUNDWATER READING W/ ELAPSED TIME

CLASSIFICATION OF GRANULAR SOILS

U.S. STANDARD SIEVE SIZE(S)

6"	3"	3/4"	4	10	40	200

BOUL--DERS	COBBLES	GRAVEL		SAND			SILT OR CLAY	CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE		

152	76.2	19.1	4.76	2.0	0.42	0.074	0.002

GRAIN SIZE IN MM

LOG OF BORING B-1

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

TYPE OF BORING: Hollow Stem Auger — SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION **SURFACE ELEVATION:** Existing Grade	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			12" Silty Clay topsoil			4.5+			15			
			Hard gray lean CLAY (CL) with silt (desiccated)			4.5+			6	25	10	
			Hard brown and gray lean CLAY (CL) with silt and organics			4.5+			24			
5			Very stiff brown and gray lean CLAY (CL) with silt (desiccated)		3.34	4.5+		117	16	37	23	
			Stiff gray sandy lean CLAY (CL) with silt (desiccated)			3.0			17			70
10						2.5			17			
15						1.5			17			61
			Stiff to firm light brown and reddish brown fat CLAY (CH)									
20					1.42	2.5		84	38			
			- becoming firm at 22 feet									
25					0.95		0.50	84	33			
			▼									
30							0.40		37			
			Soft brown and gray lean CLAY (CL) with silt									
35							0.20		29			
			Firm gray and brown fat CLAY (CH)									
40					0.93	1.5		71	52			
45						1.5			31			
			Stiff reddish brown and gray fat CLAY (CH) with pockets of sandy silty clay									
50						1.5			25			68

Cont. on Page 2

DEPTH OF BORING: 60 Feet Below Existing Grade — **DEPTH TO GROUNDWATER:** 28 Feet Below Existing Grade

DATE OF BORING: October 12, 2023

LOG OF BORING B-1 (continued)

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			(continued from page 1)									
			Stiff reddish brown and gray fat CLAY (CH) with pockets of sandy silty clay									
55						1.5			27			
60					1.12	1.5		76	47			
			Boring Terminated at 60 Feet Below Existing Grade									
65												
70												
75												
80												
85												
90												
95												
100												

DEPTH OF BORING: 60 Feet Below Existing Grade

DATE OF BORING: October 12, 2023

LOG OF BORING B-2

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

TYPE OF BORING: Hollow Stem Auger — SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION **SURFACE ELEVATION:** Existing Grade	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			14" Silty Clay topsoil			3.5			13			
			Hard gray and brown lean CLAY (CL) with silt (desiccated)			4.5+			5			
						4.5+			13	49	32	
5			- with sand from 4 to 6 feet			4.5+			11			72
			Stiff reddish brown and gray sandy lean CLAY (CL) with silt		1.69	2.5		103	22			58
10						2.5			22			53
15						2.0			21			52
			Firm light brown and gray fat CLAY (CH) ▼									
20					0.85	1.5		77	43			
			- soft from 22 to 27 feet									
25							0.15		33			
30							0.30		35			
			Stiff to firm reddish brown and gray fat CLAY (CH)									
35					1.02	1.5		74	48			
40						1.5			48			
45						1.5			32			
			- becoming firm at 47 feet									
50					0.75		0.35	81	38			

Cont. on Page 2

DEPTH OF BORING: 60 Feet Below Existing Grade — **DEPTH TO GROUNDWATER:** 18 Feet Below Existing Grade

DATE OF BORING: October 14, 2023

LOG OF BORING B-2 (continued)

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			(continued from page 1)									
			Stiff to firm reddish brown and gray fat CLAY (CH)									
55			Stiff reddish brown and gray fat CLAY (CH) with pockets of sandy silty clay			2.0			30			69
60			Firm brown and gray lean CLAY (CL) with silt	7					44			
			Boring Terminated at 60 Feet Below Existing Grade									
65												
70												
75												
80												
85												
90												
95												
100												

DEPTH OF BORING: 60 Feet Below Existing Grade

DATE OF BORING: October 14, 2023

LOG OF BORING B-3

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

TYPE OF BORING: Hollow Stem Auger — SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION **SURFACE ELEVATION:** Existing Grade	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			12" Silty Clay topsoil						12			
			Hard gray and brown lean CLAY (CL) with silt and ferrous nodules (desiccated)			4.5+			9			
						4.5+			12	41	27	
5			Very stiff gray and light brown lean CLAY (CL) with silt and sand			4.0			17			81
						4.0			22			
10			Stiff reddish brown and gray lean CLAY (CL) with silt and sand		1.44	2.5		103	20			75
15						2.5			21			82
20			Stiff gray and brown fat CLAY (CH)		1.22	2.0		81	40			
25						2.0			31			
30						1.5			32			
35			Firm brown lean CLAY (CL) with silt ▼				0.30		35			
40			Firm to stiff brown and gray fat CLAY (CH) with		0.75	1.5		78	46			
45						1.5			40			
50						1.5			35			
			Cont. on Page 2									

DEPTH OF BORING: 60 Feet Below Existing Grade — **DEPTH TO GROUNDWATER:** 33 Feet Below Existing Grade

DATE OF BORING: October 13, 2023

LOG OF BORING B-3 (continued)

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			(continued from page 1)									
			Firm to stiff brown and gray fat CLAY (CH) with									
55			Firm to stiff reddish brown and gray fat CLAY (CH) with pockets of sandy silty clay		0.66		0.35	87	35			78
60			- becoming stiff at 57 feet			2.0			38			85
			Boring Terminated at 60 Feet Below Existing Grade									
65												
70												
75												
80												
85												
90												
95												
100												

DEPTH OF BORING: 60 Feet Below Existing Grade

DATE OF BORING: October 13, 2023

LOG OF BORING B-4

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

TYPE OF BORING: Hollow Stem Auger — SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION **SURFACE ELEVATION:** Existing Grade	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			14" Silty Clay topsoil			2.5			15			
			Very stiff brown and gray lean CLAY (CL) with silt and ferrous nodules (desiccated)			4.5+			13	37	17	
					2.33	3.5		103	17			
5			Very stiff reddish brown and gray fat CLAY (CH) with ferrous nodules (desiccated)		3.66	4.5+		106	17			
			Very stiff gray and brown sandy lean CLAY (CL)			3.5			18			52
10			Stiff gray and brown clayey SAND (SC)						19			34
15			Firm reddish brown lean CLAY (CL) with silt and sand		0.50		0.25	101	21			77
20			Stiff to firm light brown and gray fat CLAY (CH)			2.5			39			
			- becoming firm at 22 feet ▼									
25					0.51		0.25	73	46			
30					0.82		0.40	94	27			
35			Firm brown lean CLAY (CL) with silt				0.25		33			
40			Firm to stiff brown and gray fat CLAY (CH)		0.67		0.35	72	47			
45						1.5			32			
50					1.20	2.0		82	38			

Cont. on Page 2

DEPTH OF BORING: 60 Feet Below Existing Grade — **DEPTH TO GROUNDWATER:** 23 Feet Below Existing Grade

DATE OF BORING: October 13, 2023

LOG OF BORING B-4 (continued)

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			(continued from page 1)									
			Firm to stiff brown and gray fat CLAY (CH)									
55			Firm to soft reddish brown SILTY CLAY (CL-ML) with trace sand				0.30		24			97
60							0.15		30			92
			Boring Terminated at 60 Feet Below Existing Grade									
65												
70												
75												
80												
85												
90												
95												
100												

DEPTH OF BORING: 60 Feet Below Existing Grade

DATE OF BORING: October 13, 2023

LOG OF BORING B-5

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

TYPE OF BORING: Hollow Stem Auger — SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION **SURFACE ELEVATION:** Existing Grade	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			16" Silty Clay topsoil						7			
			Hard light brown and brown fat CLAY (CH) with ferrous nodules (desiccated)			4.5+			12			
						4.5+			11			
5			Very stiff to stiff reddish brown sandy lean CLAY (CL) with silt (desiccated)			3.5			11			54
						3.0			15	27	14	
10					1.42	2.0		109	20			
15			Soft reddish brown lean CLAY (CL) with silt and sand				0.20		26			84
20			Stiff gray and reddish brown fat CLAY (CH)		1.12	2.0		79	38			
25			▼			2.5			39			
30						2.0			40			
35			Stiff gray SILTY CLAY (CL-ML)			2.0			36			
40			Stiff brown and gray fat CLAY (CH)			1.5			42			
45						2.0			40			
50						2.0			49			

Cont. on Page 2

DEPTH OF BORING: 60 Feet Below Existing Grade — **DEPTH TO GROUNDWATER:** 23 Feet Below Existing Grade

DATE OF BORING: October 14, 2023

LOG OF BORING B-5 (continued)

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			(continued from page 1)									
			Stiff brown and gray fat CLAY (CH)									
55			Stiff brown and gray lean CLAY (CL) with silt and trace sand			3.0			25			90
60			Soft dark gray SILTY CLAY (CL-ML) with trace sand				0.20		27			98
			Boring Terminated at 60 Feet Below Existing Grade									
65												
70												
75												
80												
85												
90												
95												
100												

DEPTH OF BORING: 60 Feet Below Existing Grade

DATE OF BORING: October 14, 2023

LOG OF BORING B-6

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

TYPE OF BORING: Hollow Stem Auger — SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION **SURFACE ELEVATION:** Existing Grade	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			10" Silty Clay topsoil / Hard gray lean CLAY (CL) with silt (desiccated)			4.5+			9			
						4.5+			6			
			Stiff brown and gray lean CLAY (CL) with silt and organics (desiccated)			1.5			13			
5			Hard brown and gray lean CLAY (CL) with silt and sand (desiccated)			4.5+			13	38	24	85
			Very stiff to stiff gray and reddish brown sandy lean CLAY (CL) with silt		2.40	4.5+		107	18			52
10						2.5			21			70
15					1.30	2.5		101	27			
			Stiff light brown and gray fat CLAY (CH) ▼									
20						2.5			35			
25						2.0			39			
			Boring Terminated at 25 Feet Below Existing Grade									
30												
35												
40												
45												
50												

DEPTH OF BORING: 25 Feet Below Existing Grade — **DEPTH TO GROUNDWATER:** 18 Feet Below Existing Grade

DATE OF BORING: October 12, 2023

SITE Engineering, Inc.

LOG OF BORING B-7

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

TYPE OF BORING: Hollow Stem Auger

SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION **SURFACE ELEVATION:** Existing Grade	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			12" Silty Clay topsoil						11			
			Hard brown and gray lean CLAY (CL) with silt and ferrous nodules (desiccated)			4.5+			8			
						4.5+			13			
5					4.54	4.5+		113	14	39	24	
			Very stiff gray and reddish brown sandy lean CLAY (CL) with silt			3.5			18			
10						3.5			19			57
			Very stiff to stiff light brown and reddish brown fat CLAY (CH)									
15					2.52	4.0		100	24			
20						3.0			37			
			Firm gray and brown lean CLAY (CL) with silt									
25					0.85	1.5		89	36			
			Boring Terminated at 25 Feet Below Existing Grade									
30												
35												
40												
45												
50												

DEPTH OF BORING: 25 Feet Below Existing Grade

DEPTH TO GROUNDWATER: Not Encountered During Drilling

DATE OF BORING: October 12, 2023

SITE Engineering, Inc.

LOG OF BORING B-8

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

TYPE OF BORING: Hollow Stem Auger

SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION **SURFACE ELEVATION:** Existing Grade	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			14" Silty Clay topsoil			3.0			10			
			Hard to very stiff brown and gray lean CLAY (CL) with silt and ferrous nodules (desiccated)			4.5+			12	49	20	
						4.5+			10			
5					2.68	4.5+		116	13			
			Stiff brown and gray sandy lean CLAY (CL) with silt (desiccated)			2.5			16			52
			Reddish brown clayey SAND (SC)					109	20			22
10												
15								106	17			27
			Stiff gray fat CLAY (CH)									
20					1.63	2.5		82	39			
			Stiff brown and reddish brown lean CLAY (CL) with silt									
25						2.0			34			
			Boring Terminated at 25 Feet Below Existing Grade									
30												
35												
40												
45												
50												

DEPTH OF BORING: 25 Feet Below Existing Grade

DEPTH TO GROUNDWATER: Not Encountered During Drilling

DATE OF BORING: October 9, 2023

LOG OF BORING B-9

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

TYPE OF BORING: Hollow Stem Auger

SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION **SURFACE ELEVATION:** Existing Grade	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			8" Silty Clay topsoil / Stiff to very stiff brown and light brown lean CLAY (CL) with silt and ferrous nodules (desiccated)		1.70	2.5 3.0		98	19 14			
5						4.0			10			
						4.0			10			
			Very stiff brown and gray sandy lean CLAY (CL) with silt (desiccated)			4.0			10			55
10			Reddish brown clayey SAND (SC)					103	21	28	13	24
15									20			29
20			Stiff reddish brown and gray fat CLAY (CH)		1.32	2.0		82	40			
25						4.0			34			
			Boring Terminated at 25 Feet Below Existing Grade									
30												
35												
40												
45												
50												

DEPTH OF BORING: 25 Feet Below Existing Grade

DEPTH TO GROUNDWATER: Not Encountered During Drilling

DATE OF BORING: October 10, 2023

SITE Engineering, Inc.

LOG OF BORING B-10

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

TYPE OF BORING: Hollow Stem Auger — SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION **SURFACE ELEVATION:** Existing Grade	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			8" Sandy Lean Clay topsoil / Stiff to firm brown and gray lean CLAY (CL) with silt, sand, and organics		0.88	2.5	0.45	102	18 21	27	11	52
5			Very stiff to stiff brown and gray lean CLAY (CL) with silt			4.0 2.5			22 23	49	35	
			Stiff reddish brown sandy lean CLAY (CL) with silt		1.01	1.5		106	19			51
10			Stiff reddish brown and gray fat CLAY (CH) with trace sand			2.0			23			95
15					1.07	1.5		100	24			89
20			Firm to stiff light brown and gray fat CLAY (CH) ▼		0.76		0.40	78	22			81
25						1.5			43			90
			Boring Terminated at 25 Feet Below Existing Grade									
30												
35												
40												
45												
50												

DEPTH OF BORING: 25 Feet Below Existing Grade — **DEPTH TO GROUNDWATER:** 18 Feet Below Existing Grade

DATE OF BORING: October 10, 2023

SITE Engineering, Inc.

LOG OF BORING B-11

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

TYPE OF BORING: Hollow Stem Auger

SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION **SURFACE ELEVATION:** Existing Grade	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			6" Sandy Lean Clay topsoil / Stiff brown and gray lean CLAY (CL) with silt, sand, and organics			2.5 2.5			19 21	30	12	65
5			Firm to stiff brown and gray lean CLAY (CL) with silt		0.75	2.0	0.40	104	19 20			
			Very stiff gray and light brown lean CLAY (CL) with silt and sand			4.5			17			79
10			Stiff gray and reddish brown sandy lean CLAY (CL) with silt			3.0			19			64
15						2.0			23			69
20			Stiff light brown and reddish brown fat CLAY (CH)		1.17	2.0		76	42			
25					1.61	2.5		78	41			
			Boring Terminated at 25 Feet Below Existing Grade									
30												
35												
40												
45												
50												

DEPTH OF BORING: 25 Feet Below Existing Grade

DEPTH TO GROUNDWATER: Not Encountered During Drilling

DATE OF BORING: October 10, 2023

SITE Engineering, Inc.

LOG OF BORING B-12

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

TYPE OF BORING: Hollow Stem Auger

SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION **SURFACE ELEVATION:** Existing Grade	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			10" Silty Clay topsoil / Very stiff brown and gray lean CLAY (CL) with silt (desiccated)		2.02	4.5+ 4.5+		108	11 20	32	15	
5						4.5+ 4.0			16 15	41	28	
			Very stiff to stiff gray and brown sandy lean CLAY (CL) with silt		3.00	4.5+		112	18			69
10						2.5			19			70
15				9					23			66
			Stiff gray and reddish brown fat CLAY (CH)									
20						1.5			27			
25					1.50	2.5		85	35			
			Boring Terminated at 25 Feet Below Existing Grade									
30												
35												
40												
45												
50												

DEPTH OF BORING: 25 Feet Below Existing Grade

DEPTH TO GROUNDWATER: Not Encountered During Drilling

DATE OF BORING: October 9, 2023

SITE Engineering, Inc.

LOG OF BORING B-13

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

TYPE OF BORING: Hollow Stem Auger

SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION **SURFACE ELEVATION:** Existing Grade	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			8" Sandy Lean Clay topsoil / Stiff brown and gray sandy lean CLAY (CL) with silt and organics			2.5 1.5			16 17			58 66
5			Stiff to very stiff brown and gray lean CLAY (CL) with silt (desiccated)		2.72	2.5 4.0		107	14 17	27	11	
			Very stiff light brown and gray fat CLAY (CH) (desiccated)			3.5			19			
10			Stiff gray and light brown sandy lean CLAY (CL) with silt (desiccated)		1.30	2.0		104	17			53
15			Stiff reddish brown and gray lean CLAY (CL) with silt and sand		1.10	2.0		98	25			84
20			Stiff reddish brown fat CLAY (CH) ▼			2.5			30			
			Boring Terminated at 20 Feet Below Existing Grade									
25												
30												
35												
40												
45												
50												

DEPTH OF BORING: 20 Feet Below Existing Grade

DEPTH TO GROUNDWATER: 18 Feet Below Existing Grade

DATE OF BORING: October 10, 2023

SITE Engineering, Inc.

LOG OF BORING B-14

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

TYPE OF BORING: Hollow Stem Auger — SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION **SURFACE ELEVATION:** Existing Grade	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			12" Silty Clay topsoil			2.0			7			
			Very stiff to stiff brown and gray lean CLAY (CL) with silt (desiccated)			4.5+			5			
						4.5+			12			
5					3.95	4.5+		118	11	42	29	
			- becoming stiff at 6 feet		1.45	3.5		108	16			
			Gray clayey SAND (SC)						18			23
10												
15								111	18			30
			Stiff gray fat CLAY (CH) ▼									
20						2.0			41			
			Boring Terminated at 20 Feet Below Existing Grade									
25												
30												
35												
40												
45												
50												

DEPTH OF BORING: 20 Feet Below Existing Grade — **DEPTH TO GROUNDWATER:** 18 Feet Below Existing Grade

DATE OF BORING: October 9, 2023

SITE Engineering, Inc.

LOG OF BORING B-15

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

TYPE OF BORING: Hollow Stem Auger

SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION **SURFACE ELEVATION:** Existing Grade	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			18" Silty Clay topsoil						13			
			Hard gray and brown fat CLAY (CH) (desiccated)			4.5+			5			
			Hard to very stiff brown and gray lean CLAY (CL) with silt (desiccated)			3.0			15			
5						4.5+			12	36	21	
						4.5+			14			
			Very stiff reddish brown sandy lean CLAY (CL) with silt		2.38	4.0		108	18			68
10												
			Firm reddish brown lean CLAY (CL) with silt and sand		0.73	1.5		103	21			80
15												
			Stiff gray fat CLAY (CH)			2.0			43			
20			Boring Terminated at 20 Feet Below Existing Grade									
25												
30												
35												
40												
45												
50												

DEPTH OF BORING: 20 Feet Below Existing Grade

DEPTH TO GROUNDWATER: Not Encountered During Drilling

DATE OF BORING: October 9, 2023

SITE Engineering, Inc.

LOG OF BORING B-16

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

TYPE OF BORING: Hollow Stem Auger

SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION **SURFACE ELEVATION:** Existing Grade	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			12" Silty Clay topsoil			2.5			21			
			Very stiff brown and gray fat CLAY (CH) with ferrous nodules (desiccated)			3.5			13	65	45	
						3.5			9			
5			Very stiff to stiff reddish brown and gray lean CLAY (CL) with silt		3.76	4.5+		107	18	49	34	
			- with sand from 6 to 12 feet		1.54	2.5		106	19			74
10					1.54	2.5		106	21			83
			Firm to stiff reddish brown and gray sandy lean CLAY (CL) with silt									
15					0.51		0.25	104	20			65
			▼									
20				11					22			69
			Boring Terminated at 20 Feet Below Existing Grade									
25												
30												
35												
40												
45												
50												

DEPTH OF BORING: 20 Feet Below Existing Grade

DEPTH TO GROUNDWATER: 17 Feet Below Existing Grade

DATE OF BORING: October 9, 2023

SITE Engineering, Inc.

LOG OF BORING B-17

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

TYPE OF BORING: Hollow Stem Auger

SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION **SURFACE ELEVATION:** Existing Grade	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			16" Silty Clay topsoil			3.5			21			
			Hard light brown and gray fat CLAY (CH) with ferrous nodules (desiccated)			4.5+			10	57	39	
5			Hard light brown and gray lean CLAY (CL) with silt (desiccated)			4.5+			13			
			Boring Terminated at 5 Feet Below Existing Grade									
10												
15												
20												
25												
30												
35												
40												
45												
50												

DEPTH OF BORING: 5 Feet Below Existing Grade

DEPTH TO GROUNDWATER: Not Encountered During Drilling

DATE OF BORING: October 12, 2023

SITE Engineering, Inc.

LOG OF BORING B-18

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

TYPE OF BORING: Hollow Stem Auger

SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION **SURFACE ELEVATION:** Existing Grade	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			12" Silty Clay topsoil			3.0			11			
			Very stiff brown and gray lean CLAY (CL) with silt (desiccated)			4.5+			11	46	28	
			- with sand from 3 to 5 feet									
5						4.5+			15			72
			Boring Terminated at 5 Feet Below Existing Grade									
10												
15												
20												
25												
30												
35												
40												
45												
50												

DEPTH OF BORING: 5 Feet Below Existing Grade

DEPTH TO GROUNDWATER: Not Encountered During Drilling

DATE OF BORING: October 12, 2023

SITE Engineering, Inc.

LOG OF BORING B-19

Proposed LSUE New Baseball Facility

2048 Johnson Highway

Eunice, Louisiana

TYPE OF BORING: Hollow Stem Auger

SITE Project #: 23-G065

DEPTH, FT.	SOIL TYPE	SAMPLE TYPE	SOIL DESCRIPTION **SURFACE ELEVATION:** Existing Grade	N-VALUE, blows per foot	UNCONFINED COMPRESSIVE STRENGTH (Qu), tsf	HAND PENETROMETER (Qp), tsf	TORVANE (Qt), tsf	UNIT DRY WEIGHT pcf	MOISTURE CONTENT, %	LIQUID LIMIT	PLASTICITY INDEX	% PASSING #200 SIEVE
			12" Silty Clay topsoil			4.5+			18			
			Very stiff brown and gray lean CLAY (CL) with silt and sand (desiccated)			4.5+			10	33	19	76
5			Very stiff reddish brown and gray lean CLAY (CL) with silt		2.92	4.5+		106	24			
			Boring Terminated at 5 Feet Below Existing Grade									
10												
15												
20												
25												
30												
35												
40												
45												
50												

DEPTH OF BORING: 5 Feet Below Existing Grade

DEPTH TO GROUNDWATER: Not Encountered During Drilling

DATE OF BORING: October 12, 2023

SITE Engineering, Inc.