ADDENDUM NO. 2

ARCHITECT'S SUPPLEMENTAL INSTRUCTIONS
20 PAGES PLUS ATTACHMENTS

February 10, 2025

ANG# MDVL239100 / DD# 2403
Key Field Fire Crash Rescue Station
Mississippi Air National Guard, 186th Air Refueling Wing
Meridian, Mississippi

PRE-BID MEETING, REVISIONS TO BID DOCUMENTS, RFI RESPONSES, AND RFIs RECEIVED

Provided below is an itemized list of all changes to the Construction Documents covering the supplemental instruction described above:

PRE-BID CONFERENCE ATTACHMENTS:

ITEM NO. 1 PRE-BID CONFERENCE SIGN-IN SHEET (4 pages)

ITEM NO. 2 PRE-BID CONFERENCE AGENDA – STATE CONTRACT OFFICER (5 pages)

ITEM NO. 3 PRE-BID CONFERENCE AGENDA – DUVALL DECKER, ARCHITECT (5 pages)

CHANGES TO SPECIFICATIONS:

ITEM NO. 4 SECTION 00 01 10 – INDEX TO SPECIFICATIONS

REPLACE this specification section with the **ATTACHED** revised section (7 pages).

ITEM NO. 5 SECTION 01 10 00 – SUMMARY

1. **ADD** Paragraph to 1.03 RELATED DOCUMENTS as follows:
   "B. See Section 00 73 01 Special Conditions."
2. **REVISE** the text in Subparagraph A., 1., c. in Paragraph in 1.07 CONTRACTOR'S DUTIES as follows:
   "c. ~~Water,~~ heat ~~and utilities~~ required for construction."

ITEM NO. 6 SECTION 01 22 00 – UNIT PRICES

1. **ADD** the following text to the end of Subparagraph A. in Paragraph 1.06 SCHEDULE OF UNIT PRICES as follows:

"Loose Vehicular Measure (LVM) shall be utilized to measure this unit."

2. **ADD** the following text to the end of Subparagraph B. in Paragraph 1.06 SCHEDULE OF UNIT PRICES as follows:

"Loose Vehicular Measure (LVM) shall be utilized to measure this unit."

ITEM NO. 7 SECTION 01 51 00 – TEMPORARY UTILITIES

1. **ADD** the following text at the end of Paragraph 1.01 SECTION INCLUDES as follows:

"See Section 00 73 01 Special Conditions for additional information."

2. **REVISE** Paragraph in 1.02 TEMPORARY ELECTRICITY as follows:

"A. Cost: by ~~Contractor~~ Owner."

3. **REVISE** Paragraph in 1.07 TEMPORARY WATER SERVICES as follows:

"A. Cost OF Water Used: by ~~Contractor~~ Owner."

ITEM NO. 8 SECTION 04 72 00 – CAST STONE MASONRY

ADD the following text to the end of Subparagraph A. in Paragraph 1.01 SECTION INCLUDES as follows:

"Any reference to precast stone cap or precast cap is cast stone masonry as described in this section."

ITEM NO. 9 SECTION 07 42 13 – METAL WALL PANELS

REVISE the text in Subparagraphs C. and D in Paragraph 2.02 METAL PANEL SYSTEM as follows:

"C. Internal and External Corners: Same material, thickness, and finish as exterior sheets; ~~profile to suit system; shop cut and factory mitered to required angles~~ and as described on Drawings.

D. Trim: Same material, thickness and finish as exterior sheets; brake formed to required profiles as described on the Drawings. Unless otherwise shown on Drawings, typical outside corner shall be manufacturer's standard continuous outside corner trim with maximum and equal face dimensions of 2 1/2 inches."

ITEM NO. 10 SECTION 08 11 13 – HOLLOW METAL DOORS AND FRAMES

REVISE the text in Subparagraph B. in Paragraph 1.05 PERFORMANCE REQUIREMENTS as follows:

"B. Explosive Weight for analysis: 5 lbs net explosive weight (NEW) at 0 feet."

ITEM NO. 11 SECTION 08 43 13 – ALUMINUM-FRAMED STOREFRONTS

REVISE the text in Subparagraph I. in Paragraph 1.09 PERFORMANCE REQUIREMENTS as follows:

"I. Explosive Weight for analysis: 5 lbs net explosive weight (NEW) at 0 feet."

ITEM NO. 12 SECTION 08 44 13 – GLAZED ALUMINUM CURTAIN WALLS

REVISE the text in Subparagraph H. in Paragraph 1.11 PERFORMANCE REQUIREMENTS as follows:

"H. Explosive Weight for analysis: 5 lbs net explosive weight (NEW) at 0 feet."

ITEM NO. 13 SECTION 08 71 00 – DOOR HARDWARE

REVISE the text in Hardware Set #21 as follows:

"Hardware Set #21 – All Site Man Gates shown on ~~Civil~~ Drawings, (3) Total

(3 ea.) D&D SureClose 75108214M Flush Mnt Hinge/Closer-108AT90W-Steel, Final Snap Action, Weld-On Attachment, Hold-Open, Self-Closing Speed Adjustable, Dark Gray

(1 ea.) Gate Stop; Stl. Plate Cont. Welded to Frame by Gate Manuf., Grind All Welds Smooth & Finish to Match Gate

(1 ea.) Lockey SUMO GL2 Surface Mount Keypad Gate Lock by Lockey (Only Required at Two (2) Gates: Near G-2 and D.5-4.1)

NOTE: Balance of Hardware by Gate Manufacturer"

ITEM NO. 14 SECTION 08 80 00 – GLAZING

REVISE the text in Subparagraph E. in Paragraph 2.02 PERFORMANCE REQUIREMENTS as follows:

"E. Explosive Weight for analysis: 5 lbs net explosive weight (NEW) at 0 feet."

ITEM NO. 15 SECTION 09 65 66 – RESILIENT ATHLETIC FLOORING

REVISE the text in Subparagraph B. in Paragraph 1.01 SECTION INCLUDES as follows:

"B. ~~Turf flooring with rubber sheet backing, adhesively installed~~ Outdoor Turf System at outdoor turf area shown on plan."

ITEM NO. 16 SECTION 12 61 00 – FIXED AUDIENCE SEATING

ADD this **ATTACHED** new specification section (3 pages).

ITEM NO. 17 SECTION 26 05 48 – VIBRATION AND SEISMIC CONTROLS FOR ELECTRICAL SYSTEMS

REVISE the text in Subparagraph A., in Paragraph 2.01 PERFORMANCE REQUIREMENTS as follows:

"5. Seismic Design Category: ~~B~~ See Structural Drawings."

ITEM NO. 18 SECTION 26 32 13 – EMERGENCY GENERATOR

REVISE the text in Subparagraph A., 5 in Paragraph 1.04 GENERATOR SET as follows:

After "The generator set" text, **ADD** "basis of design".

Basis of Design is manufactured by Taylor. Other equal manufacturers/models are acceptable.

ITEM NO. 19 SECTION 26 35 53 – SURGE SUPPRESSION DEVICES

ADD this **ATTACHED** new specification section (6 pages).

ITEM NO. 20 SECTION 26 50 10 – LED LIGHTING

REVISE the text in Subparagraph I., in Paragraph 2.02 LED LAMP AND DRIVERS as follows:

"I. Luminaire Manufacturer must provide ~~offer five (5)~~ ten (10) year limited warranty backed by that manufacturer on the LEDs and Drivers."

ITEM NO. 21 SECTION 27 05 36 – CABLE TRAYS FOR COMMUNICATIONS SYSTEMS

ADD this **ATTACHED** new specification section (5 pages).

ITEM NO. 22 SECTION 28 46 20 – ADDRESSABLE IN BUILDING FIRE ALARM AND MASS NOTIFICATION SYSTEMS

DELETE all requirements for and references to "graphic annunciators" in this Section.

ITEM NO. 23 SECTION 31 66 00 – ~~RAMMED~~ AGGREGATE PIER SOIL REINFORCEMENT

REPLACE this specification section with the **ATTACHED** revised section (9 pages).

The term "rammed" has been removed along with any reference to specific aggregate pier providers.

ITEM NO. 24 SECTION 33 71 73.33 – SECONDARY SERVICE METERING FOR KILOWATT HOURS

REPLACE Subparagraph C. at the end of Paragraph 2.03 METERS with the following text:

"C. Secondary Meter: Provide Power/Energy Meter, VERIS MODEL E50CC3A or equal WITH E683D502 CT'S. Connect to existing base wide metering system via building automation system. Coordinate communications connections with mechanical contractor. Include factory start up."

ITEM NO. 25 SECTION 33 71 73.33 – PAVEMENT MARKINGS

ADD "NOT USED" at the end of heading 2.02 THERMOPASTIC TRAFFIC STRIPING.

ITEM NO. 26 APPENDIX B – BASE COMMUNICATIONS STANDARDS (BCS)

ADD this **ATTACHED** document to the Appendix (111 pages).

CHANGES TO DRAWINGS:

ITEM NO. 27 COVER

REPLACE this Drawing Sheet with the **ATTACHED** sheet revised per **Mark 1**.

ITEM NO. 28 SHEET R4.0 – ABAAS PLAN

ADD the following note text pointing to the public restroom and bubble revision with **Mark 1**:

"EXCLUSION PER OWNER MSANG: DO NOT PROVIDE ABA SHOWERS IN RESTROOM 111, 115 OR 123B."

This revision does not change any other drawings or specifications. The change has already been incorporated elsewhere.

ITEM NO. 29 SHEET C0.0 – CIVIL NOTES

ADD the following text above the QUANTITY TABLE and bubble revision with **Mark 1**:

"THE QUANTITIES SHOWN IN THIS TABLE ARE APPROXIMATE. IT IS THE CONTRACTOR'S RESPONSIBILITY TO VERIFY ALL QUANTITIES PRIOR TO BID."

ITEM NO. 30 SHEET C0.2 – BORROW AREA AND STAGING PLAN

1. **REPLACE** this Drawing Sheet with the **ATTACHED** sheet revised per **Mark 1**.
2. **Then ADD** the following text at the end of the note regarding BORROW AREA and bubble revision with **Mark 2**:

   "THIS BORROW AREA IS AVAILABLE FOR CONTRACTOR'S USE, BUT THE SOURCE OF THE IMPORTED MATERIAL IS CONTRACTOR'S CHOICE"

ITEM NO. 31 C1.0 – EXISTING CONDITIONS, DEMOLITION AND EROSION CONTROL PLAN

REPLACE the EXISTING BLAST FENCING NOTE with the following and bubble revision with **Mark 2**:

"EXISTING BLAST FENCING (2X 60 FOOT LONG BY 12-15 FOOT TALL SHEET METAL SURFACES MOUNTED ON 7-8 FOOT WIDE METAL FRAMING) TO BE REMOVED AND RELOCATED TO A STORAGE LOCATION ON BASE TO BE COORDINATED WITH ANG. NO REINSTALLATION WILL BE REQUIRED."

ITEM NO. 32 C2.0 – SITE LAYOUT

REPLACE this Drawing Sheet with the **ATTACHED** sheet revised per **Mark 1**.

ITEM NO. 33 C3.0 – GRADING AND DRAINAGE PLAN

1. **ADD** the following text at the end of and as part of Note 1 above the LEGEND and bubble revision with **Mark 1.**

   "ALL SUITABLE CUT MATERIAL SHALL BE REPURPOSED ON SITE WHERE NEEDED. ANY UNSUITABLE OR EXCESS MATERIAL SHALL BE REMOVED FROM SITE AND DISPOSED OF PER U.S. EPA GUIDELINES. ALL ON-SITE MATERIAL HAS BEEN DEEMED TO BE HAZARDOUS SO NO ADDITIONAL TESTING IS REQUIRED UNLESS REQUIRED BY THE DISPOSAL SITE. CONTRACTOR SHALL BE REQUIRED TO PROVIDE MANIFESTS FOR ALL DISPOSED HAZARDOUS MATERIALS."
2. **ADD** the following Note 2. at the end of the NOTES above the LEGEND and bubble revision with **Mark 1**.

   "2. EXISTING STORM DRAINAGE PIPE MATERIALS ARE NOTED WHERE KNOWN. WHERE NOT INDICATED, THEY ARE CONCRETE OR PVC."

ITEM NO. 34 C4.0 – TYPICAL DETAILS

At **Detail 2, ADD** the following text at the end of and as part the note pointing to the TRENCH GRATE and bubble revision with **Mark 1.**

"BASIS OF DESIGN FRAME NOTED IS BY EJ GROUP (FORMERLY EAST JORDAN IRON WORKS). PROVIDE TRAFFIC GRATE THAT FITS THE FRAME SYSTEM PROVIDED."

ITEM NO. 35 C4.1 – PAVING DETAILS

1. At **Detail 1, ADD** the following NOTE and bubble revision with **Mark 1.**
   "CURB, GUTTER, AND CONCRETE PAVING MAY BE POURED MONOLITHICALLY."
2. At **Detail 3A HEAVY DUTY PAVEMENT, ADD** the following text at the end of NOTE 1 and bubble revision with **Mark 1**:
   "REINFORCE WITH #4 BARS @ 8" O.C. E.W."
3. At **Detail 3B STANDARD DUTY PAVEMENT, REVISE** NOTE 1 as follows and bubble revision with **Mark 1**:
   "6" 3,500 PSI CONCRETE SURFACE WITH 10" THICKENED EDGE (REINFORCEMENT: ~~FIBER-REINFORCED PORTLAND CEMENT OR~~ 10 GA. 6"x6" – W1.4 x W1.4 WELDED WIRE FABRIC ~~MAY BE USED IN LIEU OF STRUCTURAL FIBER~~."

ITEM NO. 36 AS3.0 – ARCHITECTURAL SITE DETAILS

ADD the **ATTACHED** Drawing Sheet.

ITEM NO. 37 A1.1 – FIRST FLOOR PLAN

1. At **Detail 1,** at the OVERHEAD LIFT note, **REVISE** the text as follows and bubble revision with **Mark 1.**
   "OVERHEAD LIFT ~~– SEE SPEC~~. N.I.C."
2. At **Detail 1,** at note pointing to seating in Dayroom, **REVISE** the text as follows and bubble revision with **Mark 1.**
   "FIXED ~~THEATER CHAIRS~~ AUDIENCE SEATING – SEE SPEC."
3. At **Detail 1,** at the TURF note at the southeast corner of the building, **REVISE** the text as follows and bubble revision with **Mark 1.**
   "OUTDOOR TURF SYSTEM – SEE SPEC. 09 65 66."
4. At **Detail 1,** at the LADDER TO THE MECHANICAL PLATFORM, **ADD** the following note and bubble revision with **Mark 1.**
   "ALTERNATING TREAD DEVICE – SEE SPEC. 05 51 33."
5. At **Detail 1,** at the NOTE just upsheet of the mechanical screen wall on the east side of the building, **REVISE** the note as follows and bubble revision as **Mark 1.**
   "PROVIDE 9'-4" x 8'-0" NOMINAL MTL SCREEN AND 9'-4" x 3'-0" NOMINAL METAL SWING GATE – SEE HDWR SCHED. CONSTRUCT ALL SITE SCREENS AND GATES SIMILAR TO DETAIL 2/A8.6."

ITEM NO. 38 A1.2 – MECHANICAL PLATFORM/ATTIC/LOW CANOPY ROOF PLAN

At **Detail 1,** at the UTILITY RACK note, **REVISE** the text as follows and bubble revision with **Mark 1.**

"UTILITY RACK ~~– SEE SPEC~~. SEE TYP. DETAIL"

ITEM NO. 39 A5.0 – TYP. WALL SECTIONS/ELEVATIONS

1. At **Detail 2,** at TYPICAL METAL WALL PANEL METAL STUD WITH STEEL PLATE ASSEMBLY title, **ADD** "RAINSCREEN" after "STEEL PLATE".
2. At **Detail 2, ADD** the following note below the above assembly notes:
   "NOTE: THIS ASSEMBLY OCCURS BETWEEN APPARATUS BAY DOORS, AROUND BOTH M LOUVERS, AROUND DOORS 131.1 AND 131.2 AND AS SHOWN IN THE PLAN DETAILS REFERENCED FOR THESE AREAS."
3. Bubble the above revisions as **Mark 1.**

ITEM NO. 40 6.0 – ENLARGED PLANS

1. At **Detail 5,** at the vanity area in MEN'S RESTROOM 115, **REVISE** three accessory tags from "~~E~~" to "**F**" and bubble revision with **Mark 1**.
2. At **Detail 5,** at note pointing to seating in DAYROOM, **REVISE** the text as follows and bubble revision with **Mark 1.**
   "FIXED ~~THEATER CHAIRS~~ AUDIENCE SEATING – SEE SPEC."

ITEM NO. 41 6.1 – ENLARGED PLANS

1. At **Detail 1, ADD** accessory tag "**M**" above the MOP SINK and bubble revision with **Mark 1**.
2. At **Detail 3, ADD** accessory tags "**M**" above the MOP SINK and bubble revision with **Mark 1**.

ITEM NO. 42 A8.0 – SECTION DETAILS

At **Detail 4,** at the NOTE pointing to Unistruts, **DELETE** the following text as shown and bubble revision with **Mark 1**. Keep the remainder of the note as written.

"~~ENSURE STRUT MEETS LOAD REQUIREMENTS PER DRAWINGS~~"

ITEM NO. 43 A8.6 – SECTION DETAILS

At **Detail 2, ADD** the following NOTE and bubble revision with **Mark 1**.

"NOTE: OMIT STAINLESS STEEL CAP AT MECHANICAL PLATFORM GUARDRAIL AND METAL SCREEN AND GATE AT THE MECHANICAL YARD EAST OF THE BUILDING"

ITEM NO. 44 A10.0 - DOOR SCHEDULE

1. At **DOOR SCHEDULE, DOORS 131.3 & 131.4, ADD** the following bubble revision with **Mark 1**.
   FRAME TYPE: **"8"**
   FRAME MATERIAL: **"HM"**
   FRAME FINISH: **"PTD"**
2. At **DOOR SCHEDULE, DOORS 106.2 & 201, REVISE** as follows and bubble revision with Mark 1.
   BLAST RESISTANCE "~~**YES**~~**".** *Roof hatches are not required to be blast resistant.*
3. At **Detail 2, HOLLOW METAL FRAME LEGEND, REMOVE** FRAME 9. *It is not used.*

ITEM NO. 45 F1.1 – FURNITURE PLAN

At **Detail 1 Title, REVISE** text as follows and bubble revision with **Mark 1**.

"FIRST FLOOR FURNITURE PLAN – ~~BID OPTION #3~~ NOT IN CONTRACT"

ITEM NO. 46 S101 – FOUNDATION FRAMING PLAN

REPLACE this Drawing Sheet with the **ATTACHED** sheet revised per **Mark 1**.

ITEM NO. 47 S201 – FOUNDATION DETAILS

REPLACE this Drawing Sheet with the **ATTACHED** sheet revised per **Mark 1**.

ITEM NO. 48 S203 – TOWER FRAMING DETAILS

REPLACE this Drawing Sheet with the **ATTACHED** sheet revised per **Mark 1**.

ITEM NO. 49 P601 – PLUMBING SCHEDULES

At **PLUMBING FIXTURE SCHEDULE, SH-2 1, ADD** the following at the end of the REMARKS and bubble revision with **Mark 1**.

"PROVIDE SHOWER UNIT WITH FULLY CONFIGURED FOLD-UP SEAT, SOAP DISH, AND CURTAIN ROD."

ITEM NO. 50 ES1.2 – ELECTRICAL SITE PLAN

REPLACE this Drawing Sheet with the **ATTACHED** sheet revised per **Mark 1**.
The power to the man gates and vehicle gates has been moved to the Emergency Generator power source.
Keynote 9 addressing boring between boxes has been modified.

ITEM NO. 51 ES1.4 – SITE PLAN OSP

REPLACE this Drawing Sheet with the **ATTACHED** sheet revised per **Mark 1**.
The routing from CMH-01 to Building 603 has been modified. Copper count changed from 50 pair to 100.

ITEM NO. 52 E0.2 – ONE LINE DIAGRAM

REPLACE this Drawing Sheet with the **ATTACHED** sheet revised per **Mark 1**.

ITEM NO. 53 E0.3 – SCHEDULES

REPLACE this Drawing Sheet with the **ATTACHED** sheet revised per **Mark 1**.
Panel LE1, Transformer TXE1 and associated breakers and feeders have increased in size.
The SPD types have changed from Types 1,2, & 3 to Types A, B, & C to match specifications.
Breakers and Feeders to SPD's have been modified.

ITEM NO. 54 E0.4 – SCHEDULES

REPLACE this Drawing Sheet with the **ATTACHED** sheet revised per **Mark 1**.
Panels HE1, HM1, LE1, L1, L2 and LM1 have been modified.
Panel HM2 has been added.

ITEM NO. 55 E1.1 – FLOOR PLAN - LIGHTING

REPLACE this Drawing Sheet with the **ATTACHED** sheet revised per **Mark 1**.
The fixture designation for two wall packs on the east side of the building have been changed from Type S fixtures to Type W1 fixtures.

Fixture Type H in the shower in Restroom 123B has been changed to a Type SH Fixture.
Keynote 5 has been added to the plan to show a catalog number for the under cabinet light Kitchen/Dining/Dayroom 118.

ITEM NO. 56 E2.1 – FLOOR PLAN - POWER

REPLACE this Drawing Sheet with the **ATTACHED** sheet revised per **Mark 1**.
Keynotes 12 and 13 have been added to the plan clarifying requirements for floor boxes in Training/Testing/Conf. 129, and Kitchen/Dining/Dayroom 118.
Receptacles have been modified and added in Dispatch Dorm 123C.

ITEM NO. 57 E3.1 – FLOOR PLAN - SYSTEMS

REPLACE this Drawing Sheet with the **ATTACHED** sheet revised per **Mark 1**.
Cable Tray size has been modified in Keynote 4.
A keynote has been added to address installation of the Fire Alarm/Mass Notification and Fire Department antennas on the roof over Apparatus Bay 131.
Telecom outlets have been added in Dispatch Dorm 123C.
Telecom outlets have been added in Fitness 127.

ITEM NO. 58 E5.1 – DETAILS

REPLACE this Drawing Sheet with the **ATTACHED** sheet revised per **Mark 1**.
The communications pull box detail has been modified.

ITEM NO. 59 E5.2 – DETAILS

ADD the **ATTACHED** Drawing Sheet.

ITEM NO. 60 E5.3 – DETAILS

ADD the **ATTACHED** Drawing Sheet.

RESPONSES TO REQUESTS FOR INFORMATION: See next section for text of RFIs received.

RFI NO. 1 RE POWER AT SITE GATES

Gates will be on emergency power circuit.
See Revised C2.0 and ES1.2

RFI NO. 2 RE PEDESTRIAN SITE GATES

Hardware for Site Gates is included in Section 08 71 00. Hardware for gates has been clarified in this addendum.
See revision to Section 08 71 00 described herein.

RFI NO. 3 RE UTILITY COSTS

Owner will provide utilities as described in 00 73 01.
Sections 01 10 00 and 01 51 00 have been revised as described herein to correct conflicts with Section 00 73 01.

RFI NO. 4 RE RFI DEADLINE

RFI Deadline is noted in Section 00 20 00, Paragraph 9 and was reviewed in the Pre Bid Conference.

RFI NO. 5 RE DAVIS-BACON WAGES

This project and the documents do not require a David-Bacon Wage Determination. This was reviewed in the Pre Bid Conference.

RFI NO. 6 RE FURNITURE

All tagged Furniture on F Sheets is N.I.C. Please reference Note 1 on sheets F1.1, F2.0, and F6.1. Reference sheet R1.0 for abbreviations. All furniture listed in the furniture schedule on Sheet F2.0 is not in contract per furniture note 1.
See revision to F1.1 described herein.

RFI NO. 7 RE BLAST REQUIREMENTS

Blast requirements have been clarified in revisions described herein.
See revisions to Sections 08 11 13, 08 43 13, 08 44 13, and 08 80 00 described herein.
See revisions to Sheet A10.0 described herein.

RFI NO. 8 RE PIER/PILE TYPES

Pier types in drawings shall be followed (auger cast piles are required where noted). All notes in the plans and specifications regarding "Rammed Aggregate Piers" shall be noted to include vibrated stone piers. However, the design of these piers shall meet the minimum load requirements given in the Drawings.
See revisions to Section 31 66 00 described herein.
See revisions to S101 described herein.

RFI NO. 9 RE FURNITURE

All tagged Furniture on F Sheets is N.I.C. Please reference Note 1 on sheets F1.1, F2.0, and F6.1. Reference sheet R1.0 for abbreviations. All furniture listed in the furniture schedule on Sheet F2.0 is not in contract per furniture note 1.
See revision to F1.1 described herein.

RFI NO. 10 RE BID OPTION 2

All items listed in the SPECIALTY FIREHOUSE EQUIPMENT LEGEND on Sheets A6.0 and A6.1 shall be included in Bid Option #2. Utilize tags provided on Sheets A6.0 and A6.1 and the Plumbing Drawings to establish quantities.

RFI NO. 11 RE FOODSERVICE EQUIPMENT

Foodservice equipment described in Section 11 40 00 and in the APPLIANCE/EQUIPMENT LEGEND – BASE BID on enlarged plan A6.0 are included in the base bid.

RFI NO. 12 RE RESIDENTIAL APPLIANCES

Section 11 30 13 clearly distinguishes which appliances will be provided or only roughed in. The APPLIANCE/EQUIPMENT LEGEND – BASE BID on and the APPLIANCE LEGEND – FOR ROUGH-IN INFORMATION ONLY – APPLIANCES N.I.C. shown on Sheet A6.0 also makes this distinction.

RFI NO. 13 RE TAGS IN DIVISION 10 & 11 SPECS

Tags referenced in Division 10 and 11 specifications are shown on enlarged plans and legends on Sheets A6.0 and A6.1.

RFI NO. 14 RE SITE FENCING

No construction fence is required around the borrow/staging area shown on C0.2.
See revisions to C0.2 described herein with fence line removed.

RFI NO. 15 RE EXISTING ASPHALT REMOVAL

There is no pavement to be removed at the borrow/staging area shown on C0.2. This hatch is to represent that staging is allowed on the existing pavement. See legend on C0.2.

RFI NO. 16 RE EXISTING BLAST DEFLECTORS

Existing blast deflectors/fencing have been described in this addendum.
See revision to C1.0 described herein.

RFI NO. 17 RE EXISTING BLAST DEFLECTOR RELOCATION

The existing blast deflectors/fencing do not have to be reinstalled, just moved and stored.
See revision to C1.0 described herein.

RFI NO. 18 RE SOIL CEMENT

The note in Paragraph B.1 on C0.1 was included to cover dust control during any potential soil treatment operations. No soil cement treatment is required by the documents.

RFI NO. 19 RE STANDARD OR HEAVY DUTY PAVEMENT

Heavy duty pavement is required for the equipment yard as shown on C2.2.

RFI NO. 20 RE SITE WALL CONSTRUCTION

Wall section references on the architectural plans indicate the typical site wall section on 2/A5.6. Detail references on structural plans indicate site wall structure on 3 & 5/S202.

RFI NO. 21 RE BADGING & ESCORT PRIVILEGES

Review Addendum 01 and Pre Bid Conference Meeting Minutes.

RFI NO. 22 RE PIER UPLIFT

All exterior footings and bracing footings shall resist at least 10 kips of uplift.
See revisions to Section 31 66 00 and Sheet S101 described herein.

RFI NO. 23 RE PIERS AT OUTER WALLS

All notes in the plans and specifications regarding "Rammed Aggregate Piers" shall be noted to include vibrated stone pier. However, the design of these piers shall meet the minimum load requirements given in the plans
See revisions to Section 31 66 00.
See revisions to Sheet S101 described herein.

RFI NO. 24 RE PIERS AT TOWER

Provide auger cast piles at the tower as described in the documents.

RFI NO. 25 RE EXISTING BLAST DEFLECTORS

Existing blast deflectors/fencing were visible during the site visit at the pre bid conference. Description has also been added to the documents.
See revision to C1.0 described herein.

RFI NO. 26 RE CONTAMINATED SOILS

As described on C3.0, any excess or unsuitable soil not repurposed on the construction site is expected to be disposed of as hazardous material. For example, if during deep foundation installation some unsuitable soil is encountered it will need to be disposed of as described in the documents. Requirements, standards and sampling have been clarified in this addendum.
See revisions to Sheet C3.0 described herein.

RFI NO. 27 RE OVERHEAD LIFT

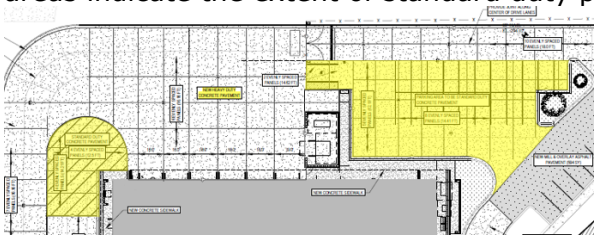
Overhead lift is not in contract.
See revision to A1.1 described herein.

RFI NO. 28 RE SEATING IN KITCHEN/DINING/DAYROOM 118

Specification has been provided in this addendum.
See new Section 12 61 00.
See revisions to Sheet A1.1 and A6.0 described herein.

RFI NO. 29 RE LIGHT DUTY PAVING

As described on C2.2, the yellow (gray if printed black and white) shaded areas indicate the extent of standard duty pavement.



RFI NO. 30 RE MONACO RECEIVING EQUIPMENT

Yes, Monaco compatible system is required as described in 28 46 20. See updated drawing for antenna locations.
See revisions to Section 28 46 20 described herein.
See revisions to Sheet E3.1 described herein.

RFI NO. 31 RE GRAPHIC FIRE ANNUNCIATOR

Graphic annunciator is not required.
See revisions to Section 28 46 20 described herein.

RFI NO. 32 RE MEASUREMENT FOR UNIT PRICES FOR SOIL EXCAVATION & FILL

Loose Vehicular Measure (LVM) shall be utilized to measure any excess soil material to be removed from the site and any additional imported fill required.
See revisions to Section 01 22 00 described herein.

RFI NO. 33 RE SELECT FILL SOURCE

The borrow area on C0.2 is available, but the source of imported material is Contractor's option.
See revisions to Sheet C0.2 described herein.

RFI NO. 34 RE STORM DRAINAGE

See C4.3 for inlets, JB structures and materials. See Specification Section 33 40 01 for Storm Drain Pipe material requirements. Existing storm drain pipe materials have been clarified in this addendum.
See revisions to Sheet C3.0 described herein.

RFI NO. 35 RE CONCENTRIC NEUTRAL CABLES

Concentric neutral is required.

RFI NO. 36 RE SECONDARY SERVICE METER

Yes, meter is required. Meter has been clarified in this addendum.
See revisions to Section 33 71 73.33 described herein.

RFI NO. 37 RE SURGE SUPPRESSION DEVICES

A new specification is provided in this addendum.
See new Section 26 35 53 provided herein.

RFI NO. 38 RE CONTAMINATED SOIL STANDARDS & SAMPLING

Requirements, standards and sampling have been clarified in this addendum.
See revisions to Sheet C3.0 described herein.

RFI NO. 39 RE EXISTING AIRFIELD CONCRETE

As described in the boring logs in the geotechnical report in the specifications, existing concrete thickness ranges from 10 to 12 inches.

RFI NO. 40 RE DRILL TOWER WALLS

Walls are concrete.
See revisions to Sheet S203 described herein.

RFI NO. 41 RE CONTRACT TIME

No.

RFI NO. 42 RE BLAST REQUIREMENTS

Blast requirements have been clarified in revisions described herein.
See revisions to Sections 08 11 13, 08 43 13, 08 44 13, and 08 80 00 described herein.
See revisions to Sheet A10.0 described herein.

RFI NO. 43 RE FOUNDATION VOIDS

Per the drawings, no voids are required on this project.

RFI NO. 44 RE ARCHITECTURAL CONCRETE

The scope of architectural concrete is described in Section 03 33 10. Details for architectural concrete have been provided in this addendum.
See new Sheet AS3.0 provided with this addendum.

RFI NO. 45 RE OUTDOOR TURF

The terminology for outdoor turf has been clarified to coordinate with the specifications.
See revisions to Section 09 65 66 described herein.
See revisions to Sheet A1.1 described herein.

RFI NO. 46 RE OVERHEAD LIFT

Overhead lift is not in contract.
See revision to A1.1 described herein.

RFI NO. 47 RE RAMMED AGGREGATE PIERS

All notes in the plans and specifications regarding "Rammed Aggregate Piers" shall be noted to include vibrated stone pier. However, the design of these piers shall meet the minimum load requirements given in the plans
See revisions to Section 31 66 00 described herein.
See revisions to S101 described herein.

RFI NO. 48 RE PAVEMENT MARKINGS

Utilized painted traffic markings.
See revisions to Section 32 17 23 described herein.

RFI NO. 49 RE TYPE B METAL DECKING AT WALLS

No, follow the requirements for this decking in specifications, architectural drawings and structural drawings.

RFI NO. 50 RE METAL PANEL CORNERS

Specifications have been clarified in this addendum.
See revisions to Section 07 42 13 described herein.

RFI NO. 51 RE UTILITIES

Owner will provide utilities as described in 00 73 01.
Sections 01 10 00 and 01 51 00 have been revised as described herein to correct conflicts with Section 00 73 01.

RFI NO. 52 RE HEAVY DUTY PAVEMENT & PAVEMENT MARKINGS

As shown on C2.0 the Bid Option #3 area is an avg. 113.5' by 90' area = 10,215 SF = 1,135 SY. The markings associated with this option are to be covered in the Bid Option #3 price. The marking allowance is limited to the Apparatus Bay as described in Specification Section 01 21 00.

RFI NO. 53 RE BLAST REQUIREMENTS

Blast requirements have been clarified in revisions described herein.
See revisions to Sections 08 11 13, 08 43 13, 08 44 13, and 08 80 00 described herein.
See revisions to Sheet A10.0 described herein.

RFI NO. 54 RE LOW VOLTAGE CABLING

The contractor is responsible for low voltage communications cabling as outlined in the Drawings and Specifications, but access control/security is rough-in only where noted on plans. Reference E3.1 and specification section 27 10 05 along with the base communications standards.
See Base Communications Standards added as appendix to specifications herein.

RFI NO. 55 RE PRECAST STONE

Specifications have been revised to clarify that Precast Stone is Cast Stone masonry.
See revisions to 04 72 00 described herein.

RFI NO. 56 RE CIVIL QUANTITY TABLE

Quantities shown in this table are approximate. It is the Contractor's responsibility to verify all quantities.
See revisions to C0.0 described herein.

RFI NO. 57 RE EXISTING BLAST DEFLECTORS

Existing blast deflectors/fencing have been described in this addendum. The existing blast deflectors/fencing do not have to be reinstalled, just moved and stored.
See revision to C1.0 described herein.

RFI NO. 58 RE UTILITY RACK

Provide unistruts as described in the detail. Reference to loading requirements has been removed from the detail.
See revisions to Sheet A1.2 and Sheet A8.0 described herein.

RFI NO. 59 RE LANDSCAPING

The landscape drawing covers all requirements for landscaping.

RFI NO. 60 RE FOOTING F3

Footing F3 was added to the footing schedule.
See revised Sheet S201 described herein.

RFI NO. 61 RE BIM MODEL

Section 01 10 00 describes reliance on BIM data as it is utilized on the project. The Contractor is not required to provide a BIM model.

RFI NO. 62 RE BUILDING PERMIT

A Building Permit is not required for this project.

REQUESTS FOR INFORMATION RECEIVED: See previous section for responses.

RFI NO. 1 Do they want straight A/C power or a battery backup?
If straight A/C power and no backup they will have to manually open the gate if power goes out.
If the battery backup is chosen then it comes as a 1/2 horsepower unit which is more than enough for operating these gate sizes and will still function if the power goes out.

RFI NO. 2 Pedestrian gates - says on drawings with mechanical code locks.
Do they want a lock with key access and just a knob on the inside?
Do they want a push bar exit or just use knob handle from inside to exit?

RFI NO. 3 Please clarify whether the Contractor or the Government is responsible for covering utility costs for jobsite power and the temporary trailer, as there is conflicting information in the RFP. If the responsibility lies with the General Contractor, are they also required to pay for power once the permanent power is activated in the building before turnover? This could be a significant cost that the contractor would need to include in their proposal that may have not been included in the original budget of construction costs.
00 73 01 para 4 Utilities
The Director, State Purchasing and Contracting and/or Contracting Officer shall make all possible arrangements to allow the use of government facilities in connection with water and electrical power used during the construction period. The Contractor will be required to make all connections to existing service lines made available by the Director, State Purchasing and Contracting and/or Contracting Officer. The Contractor is expected to practice all applicable conservation measures and restrict utility usage to that associated with completion of the contract. Should, in the opinion of the Director, State Purchasing and Contracting and/or Contracting Officer, utility usage become excessive, the Director, State Purchasing and Contracting and/or Contracting Officer may terminate any previous arrangements for same.
01 10 00, 1.07 Contractor's Duty
A. Contractor's duties consist of the following:
c. Water, heat and utilities required for construction
01 51 00 para 1.02 Temporary Electricity
A. Cost: By Contractor

Section 00 73 01 Special Conditions, item 4 seems to indicate that utility consumption costs will be paid for by the owner, and the GC will be required to make connections; however, section 01 51 00 – Temporary Utilities, seems to indicate that all consumption costs are to be borne by the Contractor.
Please clarify which is correct.

RFI NO. 4 Please provide RFI deadline for this project.

RFI NO. 5 Will this project require a Davis-Bacon Wage Determination? If so, please provide Wage Determination Number to be used for this project.

RFI NO. 6 Drawings F1.1, F2.0 and F6.1 provide furniture and equipment schedules/plan. Note 1 on each sheet states the following: 'Furniture sheets are for information only. Furniture is NIC'. Please confirm/clarify if furniture listed on these sheets is to be included in bid package.

RFI NO. 7 Per the storefront subcontractor:
Sent my takeoff to YKK for curtain wall. Their architect sent back the response below. Generally the blast rating for military base the last few years has been UFC 4-010-01 (12 Dec 2018). Please have architect confirm the blast rating in specs. Please give him/her YKK's engineering review below.
Good Afternoon. This is the response that I got from our Tech Center.
Hello Cyrus,
I am currently reviewing the information provided for E10-0808-25 Key Field. I noticed that the blast load requirement is 5lb weight at 0 ft standoff distance. We don't have the option of calculating a 0 ft standoff distance (I have never seen 0 ft being used for any blast project before). I used 1 ft to see the values we get and they are far from our system's capabilities. The

peak pressure is 2,075.7 psi and the impulse is 56.1 psi-ms at 90 degrees of incidence or 21,389.4 psi and 1,549.5 psi-ms at 0 degrees of incidence.
For your reference, we tested the YHC 300 OG system to 4 psi peak pressure and 20 psi-ms impulse; we have used calculations to evaluate higher blast loads for other projects but nothing close to the values I get for this project. Unless we receive confirmation that the blast load is different, we do not have a system that will meet this blast load. Additionally, the level of protection needs to be provided if the blast load is reduced (we don't meet any level with the current blast load).

RFI NO. 8 The drawings require multiple types of piers/piles, including rammed aggregate and alugar cast. Is it acceptable to use only rammed aggregate piers?

RFI NO. 9 The plans state the furniture is NIC (Not In Contract). However, the plans are noted "Option 3" and Furniture Note states: "Furniture sheets are for information only. Furniture is NIC." F1.1 & F2.0. Please confirm that the Furniture is not to be included in the base bid nor any bid options.

RFI NO. 10 Bid Option 2: Specially Firehouse Equipment. Please advise if everything listed in 11 90 00 is all that is to be included for this option. Please provide quantities.

RFI NO. 11 Please advise if 11 40 00 Foodservice Equipment is to be provided in Base Bid. If so, please provide quantities for items listed in 11 40 00.

RFI NO. 12 Please confirm that 11 30 13 Residential Appliances are included for informational purposes only and are not to be provided with the bid.

RFI NO. 13 Specification Sections 10 and 11 have Tag #'s associated with certain items. Please advise what these Tag #'s represent/reference.

RFI NO. 14 Please provide fencing requirements for construction fence shown on C0.2.

RFI NO. 15 Please provide the pavement section for the existing asphalt to be removed. (C0.2)

RFI NO. 16 Please provide dimensions for the existing blast deflectors to be relocated such as height, frame spacing, and distance from front anchor to rear anchor. (C0.2)

RFI NO. 17 Please provide details on where the blast deflectors will be relocated and what supporting appurtenances will be needed such as foundation sizes, anchor bolt layout, etc. for accurate estimating. (C0.2)

RFI NO. 18 Paragraph B.1 under Contractor Storage, Staging, Dust, and Haul Roads makes reference to soil cement mixing for this project. However, there is not a specification section for soil cement and we see no reference in the pavement section details or geotech report. Please clarify if soil cement is a requirement for this project. (C0.1)

RFI NO. 19 Please clarify if the standard duty pavement section is to be used for the equipment yard. (C2.2)

RFI NO. 20 Please clarify if the structure adjacent to N1034111.10/E1010324.00 is to use the detail for "New Site Wall". (C2.0)

RFI NO. 21 Will badges come with escort privileges? (C0.1)

RFI NO. 22 The plans say that rammed aggregate piers below lateral bracing should be designed for uplift. Could you please provide the required uplift capacity? (Geotech Report)

RFI NO. 23 Are piers required to support the outer walls shown on the foundation plan? (Geotech Report)

RFI NO. 24 We believe we could provide support for the training tower with rammed aggregate piers rather than alugar cast piles. Would VE bids for that portion of the work be accepted? If so, is there any additional loading or structural information available for the tower?

Rammed Aggregate Piers which is a proprietary system that is only used by licensed Geopier installers. There is only one licensed Geopier installer that works in MS. (No competition). Other designs use vibratory probes to compact the stone instead of the rammed process.

Subsurface Constructors has completed roughly 1,500 projects using this technique as a competitive system to Geopier.

I have attached a specification that allows for both installation techniques and a list of completed aggregate pier projects for your review.

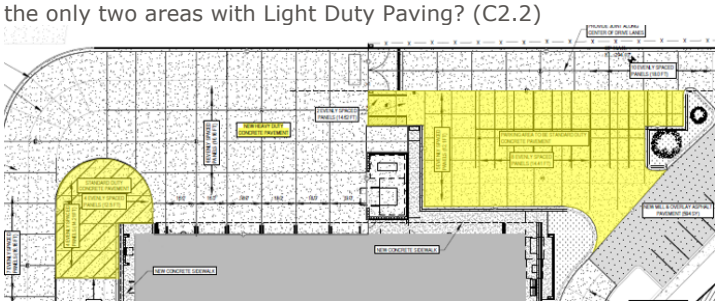
RFI NO. 25 Please provide pictures of the existing blast deflectors from all angles.

RFI NO. 26 Is there any anticipation of existing contaminated soils on-site that will need to be removed?

RFI NO. 27 Apparatus Bay 131: Note indicates "Overhead Lift - See Spec" (A1.1). Please provide the spec.

RFI NO. 28 Kitchen/Dining 118: Note indicates "Fixed Theater Chairs - See Spec" (A1.1). Please provide the spec.

RFI NO. 29 We are struggling to determine the separation in Light Duty and Heavy Duty paving. Are these the only two areas with Light Duty Paving? (C2.2)



RFI NO. 30 Will new Monaco receiving equipment be required for this project?

RFI NO. 31 The specs are calling for a graphic fire annunciator. Is this necessary?

RFI NO. 32 Unit prices for soil excavation and select fill - LVM or FM?

RFI NO. 33 Can select material come from a source which is not on the project site or area identified on drawing sheet R1.1 for borrow material?

RFI NO. 34 Sheet C3.0 does not clarify the following:

a. Type of proposed storm drain pipe.
b. Type of existing storm drain pipe at some of the tie-in locations and under drain pipe.
c. Type of inlets and JB structures.?

RFI NO. 35 General Note #1 on sheet ES1.3 reads "1. New 15 KVA cables shall be copper type, size as indicated, 133% insulation, MV-105, copper tape shield, concentric neutral." Does the cable need to be tape shield or concentric neutral?

RFI NO. 36 Section 33 71 73.33 of the Project Manual references a secondary service meter for kilowatt hours. This meter is not shown on the drawings. Is a meter required for this project?

RFI NO. 37 Provide a spec for the SPDs.

RFI NO. 38 Note 1 on C3.0 states, "Any excess material removed from the project site has the potential to be contaminated with polyfluoroalkyl substances (pfas) and shall be disposed of as hazardous waste per ANG standards."

a. Do the standards referenced in the sheet note deviate from the requirements by the U.S. EPA?
b. Will the contractor be responsible for providing a Sampling and Analysis Plan?
c. Will the contractor be responsible for the cost of soil sampling of excess material?

RFI NO. 39 Please provide the thickness of the existing airfield concrete paving.

RFI NO. 40 For the Drill Tower, drawing S-105, Detail 4 and 5, indicates 8" concrete wall. On drawing S-203, Detail 2, it indicates 8" CMU wall. Please confirm that the walls should be 8" concrete walls.

RFI NO. 41 The current duration of the project is listed as 420 calendar days. We respectfully ask that this duration be extended to a minimum of 540 calendar days.

RFI NO. 42 Glass, Inc. is requesting information be given on the following items:
1. Applicable design load.
A contact explosive charge as listed in the spec is not reasonable (5lb @ 0 ft). Either this was never filled in when they completed the spec document or maybe it shouldn't even be in the spec. Please request clarification. For context, calculation wise, 5 lbs at 1 ft is 21,400 psi! Below is information that they are needing clarification on.
I. Explosive Weight for analysis: 5lb at 0 feet from window.Blast vendor said the following:
"I am currently reviewing the information provided for E10-0808-25 Key Field. I noticed that the blast load requirement is 5lb weight at 0 ft standoff distance. We don't have the option of calculating a 0 ft standoff distance (I have never seen 0 ft being used for any blast project before). I used 1 ft to see the values we get and they are far from our system's capabilities. The peak pressure is 2,075.7 psi and the impulse is 56.1 psi-ms at 90 degrees of incidence or 21,389.4 psi and 1,549.5 psi-ms at 0 degrees of incidence.
For your reference, we tested the YHC 300 OG system to 4 psi peak pressure and 20 psims impulse; we have used calculations to evaluate higher blast loads for other projects but nothing close to the values I get for this project. Unless we receive confirmation that the blast load is different, we do not have a system that will meet this blast load.
Additionally, the level of protection needs to be provided if the blast load is reduced (we don't meet any level with the current blast load)."

RFI NO. 43 Section 03 10 00 para 2.04 references the use of cardboard voids and retainers, however the drawings do not indicate that voids will be needed beneath the slab on grade. Please confirm that cardboard voids/forms are not applicable to this project.

RFI NO. 44 Section 03 33 10 para 1.02.b states CIP architectural concrete shall be used at the concrete "site" wall on the south side of the building. Is this the "seat" wall as shown on 8/C4.0?

RFI NO. 45 Please provide details of the "Turf Yard" located on the southeast side of the building. The civil drawings state to reference the architectural. The cross section of this area labeled 2/A5.2, does not provide any detail other than the exterior wall of the building.

RFI NO. 46 A1.1 calls for a "OVERHEAD LIFT-SEE SPEC." There is no spec section for Overhead lifts. Can the Architect provide the spec section?

RFI NO. 47 Rammed Aggregate Piers which is a proprietary system that is only used by licensed Geopier installers. There is only one licensed Geopier installer that works in MS. (No competition). Other designs use vibratory probes to compact the stone instead of the rammed process.
Subsurface Constructors has completed roughly 1,500 projects using this technique as a competitive system to Geopier.
I have attached a specification that allows for both installation techniques and a list of completed aggregate pier projects for your review.

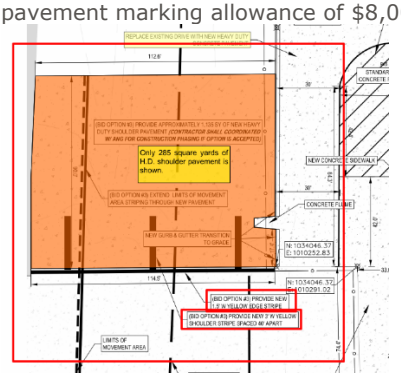
RFI NO. 48 We seek clarification on the following as pertains to Section 321723 – Pavement Markings includes two products: 2-02 Thermoplastic Traffic Striping 2-03 Painted Traffic Striping
We do not see on the drawings where each application is where. Please clarify.?

RFI NO. 49 In section 074213 2.01.B, its calls for Primed "Type B" Metal decking to be installed inside the Apparatus Bay and Mechanical platform walls. Would it be acceptable to use one of the prefinished metal wall panels listed under section 2.01A, in lieu of, Type B decking?

RFI NO. 50 In section 074213 2.02.C, it calls to install factory mitered corners. Detail 1 on A7.3 does not show inside or outside factory mitered corners. Please advise which trim type is to be installed.

RFI NO. 51 Section 00 73 01 Special Conditions, item 4 seems to indicate that utility consumption costs will be paid for by the owner, and the GC will be required to make connections; however section 01 51 00 – Temporary Utilities, seems to indicate that all consumption costs are to be borne by the Contractor. Please clarify which is correct.

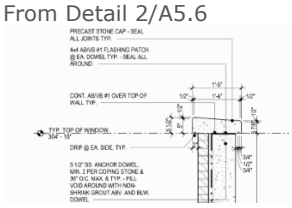
RFI NO. 52 C2.0 seems to only show a partial area where the new H.D. pavement shoulder included in bid option 3 occurs. The note in this area tells us to include 1,135 square yards of H.D. pavement. However, the area illustrated only shows 285 square yards. Can you provide us with the full limits of where this additional H.D. pavement will be?
Also…are the pavement markings associated with this bid option to be paid for under the pavement marking allowance of $8,000?



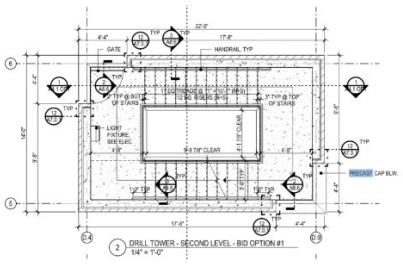
RFI NO. 53 Please provide the blast standoff distance and force rating for Division 8 Doors.

RFI NO. 54 Is the General Contractor responsible for all low voltage wiring and cabling, and for providing access control hardware (excluding what is assembled on the doors) to the Owner's security contractor?

RFI NO. 55 There are details scattered throughout the drawings calling for precast stone. Is it correct to assume that this is "Cast Stone" as identified in spec section 04 72 00 Cast Stone Masonry?
Below are a few examples where "precast" is shown in the drawings. Just making sure this isn't precast concrete.
From Detail 2/A5.6



From Detail 2/A6.2 OPT



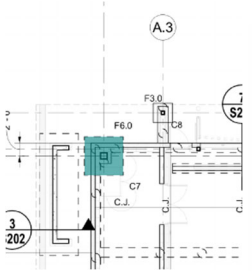
RFI NO. 56 (Sheet C0.0: Quantity Table) Is this table of quantities to be used for estimating?

RFI NO. 57 (Sheet C1.0) Note indicates "existing blast fencing to be removed and relocated on base. Location to be coordinated w/ANG".
Is the fencing to relocate to storage or reinstalled? If reinstalled, is there a minimum foundation requirement for the reinstalled fence?

RFI NO. 58 (Sheet A1.2) Utility Rack "See Spec" Also, cut section 4/A8.0 shows a system of unitstrut and angles.
Is there a specific design specification for this product?

RFI NO. 59 I don't see a specification for landscaping. Doesn't look like much more than sod and two Nuttall Oaks but…no spec. Should we simply follow the drawings?

RFI NO. 60 Footing F3 does not appear to be listed in the footing schedule. The schedule begins with Footing F4.



FOOTING SCHEDULE

MARK	THICKNESS	SIZE		REINFORCING EACH WAY	REMARK
		LENGTH	WIDTH		
F4.0	16"	4'-0"	4'-0"	5 #4	
F5.0	16"	5'-0"	5'-0"	6 #5	
F6.0	20"	6'-0"	6'-0"	7 #6	
F7.0	24"	7'-0"	7'-0"	8 #6	
F8.0	24"	8'-0"	8'-0"	9 #7	
F9.0	24"	9'-0"	9'-0"	10 #8	
F10.0	24"	10'-0"	10'-0"	12 #8	
F7x4	16"	7'-0"	4'-0"	9#7 SH., 5#6 LG.	

RFI NO. 61 Duvall Decker's "Basis of Collaboration" document tells us to utilize BIM template provided by Duvall Decker. Does this mean that BIM modeling is required of the GC?

RFI NO. 62 Since the project is partially federally funded, is a building permit required for this project, and if so, is the cost of this permit waived?

No other items.

Anne Marie Duvall Decker, FAIA, Principal

Encs.: see above
c: All Planholders via online planroom
2304.1 Addenda
John "Phillip" Garrett, Maj., MSANG, Base Civil Engineer / Commander, 186 Civil Engineering Squadron, Key Field ANGB, Meridian MS
Matt Lorance, MSL, MSgt (Ret) USAF, CMPA, State Contract Officer, Mississippi Military Department
Kenneth McGrath, Spencer-Engineers, Inc.
Ryan Reef, Engineering Resource Group, Inc.
Sean McDavid, Engineering Resource Group, Inc.
Sonya Pace, Jon D. Rice & Associates, LLC
Michael Layman, Jon D. Rice & Associates, LLC
Shane Armour, Jon D. Rice & Associates, LLC
Will Pentecost, Allen Engineering and Science

Duvall Decker Architects P.A.
Architecture . Planning . Interiors (design)

SIGN-IN SHEET
KEY FIELD FIRE CRASH RESCUE STATION
PRE-BID CONFERENCE

10:00 AM – JANUARY 30, 2025

Name	Organization	Phone	Email
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Jeremiah Mikell	186 MSG/CD	(601)484-9489	jeremiah.mikell@us.af.mil
James Heathcock	186 SFS	(601) 484-9696	james.heathcock@us.af.mil
Noah Heathcock	Glass Inc.	601-274-2657	nheathcock@glassincorporated.net

File: 2304.9 Pre-Construction

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Curtis Boddy	MMD	601-709-6561	Cboddy@ms.mil.gov
Sean McDavid	ERG	601-503-7496	smcdavid@ergms.com
Joey Sullivan	Sullivan Enterprises Inc	601-849-2441	office@sullivanent.net
Garrett Boykin	CLR Construction	601 421 6907	
Scott Ross	Woodall Electric	601-480-2030	scott@woodallelectric.com
Jason Smith	Drace Construction	228-234-4086	jsmith@dracecorp.com
Neil Forest	186 CS	484-9611	ronald.forest@us.af.mil
Tony Grice	186 CS	484-9733	tony.grice@us.af.mil
Jakeem Triplett	186 SFS	769-286-8198	jakeem.triplett@us.af.mil
Dustin Eaves	186 SFS	484-9916	dustin.eaves@us.af.mil

File: 2304.9 Pre-Construction

Name	Organization	Phone	Email
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SEAN A. SUMRALL	LJS, INC	601.649.4490	sean@ljsumrall.com

File: 2304.9 Pre-Construction

PRE-BID CONFERENCE
For
Key Field Crash Fire Rescue Station, Meridian, MS

If you haven't signed in, please do so at this time.

Introductions: Contract Officer: Matt Lorance
PM: Major Garrett
A&E: Duvall Decker
Military Personnel:

ADDENDUM REQUIREMENTS

Make sure you read specifications as they have been updated. If clarification is needed, it will be covered by a written addendum. Such clarification will only be in the form of a response to a written request and received not less than six (6) working days prior to the bid opening. No clarification will be offered as a response to a telephone request. The A&E and Project Manager are the Contracting Officer's technical support. They can give you guidance and clarification on any technical matter.

Amendments shall be distributed in a reasonable time for consideration of prospective bidders in preparing their bids. By law, no addendum will be issued within 2 working days of the time established for receipt of bids. Failure to do so may result in delay of bid opening. (See ITB Section 00 20 00 - 4/7)

All questions for addendums should be turned in to A&E no later than 02/05/25 and A&E should turn in addendums to CO for approval prior to distribution no later than 5:00 PM Feb 10, 2025.

BID OPENING DATE

1:30 p.m. February 13, 2025 at Joint Forces Headquarters 1410 Riverside Drive, Jackson, MS.

Rules for Bid opening

1. Don't be late getting to the bid room. Bids cannot be accepted once the door is closed at 1:30 P.M.

2. Bring your Driver License for identification purposes.

3. Bidder assumes all risk of delivery by required time whether hand delivered, mailed, or submitted electronically.

4. Bidder may modifiy the bid PRIOR to the scheduled closing time indicated in the Advertisement of Bids on the outside of the sealed envelope containing the bid.

5. All prices must be printed in ink or typewritten. No erasures permitted. Errors may be crossed out and corrections printed in ink or typewritten adjacent, and must be **initialed in ink.**

6. SUBMIT ONLY 1 BID FORM. If there is more than one bid form submitted and there is an error on any of the forms, your bid will be rejected.

PREFERRED METHOD

Hand Delivery: Bidder hand delivering his/her bid is encouraged to arrive 45 mins early to preclude any delays due to heightened security at our facility.

Mailing Bid: Bidder mailing his /her bid via USPS, FedEx, USP, etc. must ensure that the mailing envelope is marked the same as described in the direction Mailing Bids-DMB Section 00 21 13 -1/1 with the **word "BID" written** largely on the outside of the carrier's mailing envelope. The symbols NGMS-SRC must be on envelope with the name of Contracting Officer to follow. Example: **NGMS-SRC, Matt Lorance.**

Bidder is required to call the Contracting Officer to inform how bid was mailed and was it received. The inside envelope with bid enclosed is to be filled out according to DMB Section 002 21 13 1/1.

SECOND METHOD

Electronic: See Front End Specifications Section 00 20 00 – 3/7.

ATTENTION: THE OFFICIAL STATE OF MS RFx IS ATTACHED

BID ENVELOPE - must be properly filled out or risk rejection

Bid Forms (found on ITB Section 00 20 00 - 3/7)
Bid Security (found on ITB Section 00 20 00 - 1/7)
Bid envelope (sample found pg. DMB Section 00 21 13 - 1/1)
Certificate of Responsibility Number (ITB Section 00 20 00 - 5/7)

FEDERAL CLAUSES

This is a State Contract with Federal Funds therefore, Federal Clauses such as the Buy American Act will apply (found on pg. GC Section 00 70 00 – 29/33).

The Davis-Bacon **Wage Rate does not apply**. The Davis-Bacon **Overtime does apply**. (anything over 40 hrs a week is time and a half) **(NO CERTIFIED PAYROLL REQUIRED FOR THE MILITARY DEPT)**

OTHER INFORMATION

a. No Asbestos material used in construction. (found on pg. GC Section 00 70 00 - 15/33, Hazardous Waste Materials).

b. Out of State Bidders – read pg. ITB Section 00 20 00 - 6/7 for Non Resident Contractors.

c. C&D (Construction & Debris) Must be completed accurately and legibly. See example for instructions. Report can be found on pg. GC Section 00 70 00 – 3/33.

d. Insurance and Bonds, Article 11, page AIASC Section 00 73 03 12/17-14/17.

Bid the project as you see it. Change Orders are intended for unforeseen conditions. Frivolous or non-essential change orders will not be tolerated.

We plan to award the entire project, but it will be determined based on funds availability. Bidders are to hold bids for a period of **60** days.

Liquidated Damages are in the amount of **$1614.08** with calendar days of **420** to complete the project. Liquidated Damages WILL BE ASSESSED if project is not completed within the allotted days without justifiable time extension requested and approved.

Calendar days include construction time, time needed for processing of close out documents and time for final pay applications to be processed.

The Low Bidder will be required to have a State of Mississippi Vendor Number. (instructions attached). Follow the New Supplier Registration instructions and make sure to notify our office when it is completed. **CONTRACTS CANNOT BE EXECUTED WITHOUT A VENDOR NUMBER. MUST HAVE AN EMAIL, PHONE NUMBER AND CONTACT NAME IN FIELDS.**

Any questions regarding bid opening requirements? Turn conference over to project officer and architect for technical portion discussions.

STATE OF MISSISSIPPI
MS DEPT OF MILITARY
Invitation for Bid

RESPONSES REQUIRED BY:
Submission Date : 02/13/2025
Submission Time : 13:30:00 CST

RESPONSES OPENED ON:
Opening Date : 02/13/2025
Opening Time : 13:30:00 CST

VENDOR NO:
VENDOR NAME & ADDRESS:
(To be completed by Vendor)

DELIVERY POINT

SUBMIT NON-ELECTRONIC RESPONSE:
TO :
1410 RIVERSIDE DRIVE
JACKSON MS 39296
US

RFx number : 3160007109
Smart number : 1701-25-R-IFBD-00022
Buyer : Regina Arnold
Buyer Phone : (601) 961-5557
Email : RARNOLD@MIL.MS.GOV

QUESTIONS TO BE COMPLETED BY VENDOR	REQUIRED
Is completed and signed Bid Form attached?	
Is Bid Bond and Power of Attorney, Cashier's Check, or copy of Certified Check in the amount of 5% of bid attached? (NOTE: Physical Cashier's orCertified Check must be received by MMD/State P&C Div on or before date and time set for the receipt of bids.)	
Enter COR Number or a statement that bid does not exceed $50K	
Is copy of current Resident Bidder Preference Law or statement that no such Resident Bidder Preference Law exists attached? (Attachment required for Non-Resident Bidders Only)	

NOTICE TO VENDOR:
Matt Lorance / Contracting

Vendor Telephone Number	Title	Date

(Typed or printed) Name of Bidder	Signature of Authorized Bidder

RFx number : 3160007109				Submission Date : 02/13/2025 Time : 13:30:00 CST		
Smart number : 1701-25-R-IFBD-00022				Opening Date : 02/13/2025 Time : 13:30:00 CST		
Item	**Change Indicator**	**Product No. / Mfg. Part No.**	**Description**	**Delivery / Req.date**	**Qty**	**Unit**
# 1			Product Category : 90922 Construct a new facility Key Field Crash Rescue Station, Meridian, MS. Project consist of Constructing a new 19,400SF facility capable of housing twelve fire rescue vehicles. Living quarters, latrines, shower areas, classrooms, and kitchen facilities. Dispatch center and alarm room. This project is located at an active airport.		1.000	AU

Pre-Bid Meeting Minutes

January 30, 2025, 10:00 AM

Key Field Air National Guard Base
Building 600
6225 M Street, Meridian MS

A. PROJECT INTRODUCTION:

KEY FIELD FIRE CRASH RESCUE STATION

PN# MDVL239100 | DD# 2304

Attendees were encouraged to Sign-in. Sign-in sheets attached.

B. PERSONAL INTRODUCTIONS

Matt Lorance, MSL, MSgt (Ret) USAF, CMPA, State Contract Officer,
Mississippi Military Department

John "Phillip" Garrett, Maj, MSANG, Base Civil Engineer / Commander
186 Civil Engineer Squadron, Key Field ANGB, Meridian, MS

Anne Marie Duvall Decker, FAIA, Architect, Duvall Decker
Roy Decker, FAIA, Architect, Duvall Decker
Daniel Barker, Assoc AIA, Duvall Decker
Engineers Listed on Documents

C. PROJECT DESCRIPTION 00 43 00 was reviewed.

THIS IS A NEW 19,400 SF CRITICAL FACILITY SUPPORTING KEY FIELD AND THE 186TH AIR REFUELING WING. ON THE WEST SIDE OF THE BUILDING IS A TWELVE- VEHICLE APPARATUS BAY OUTFITTED WITH ARFF HEAVY-DUTY EMERGENCY RESPONSE VEHICLES IN ADDITION TO OTHER MEDIUM AND LIGHT-DUTY EMERGENCY RESPONSE VEHICLES AND TRAILERS. THE APPARATUS BAY IS FLANKED BY GEAR CLEANING AND STORAGE SPACES WITH SPECIALTY EQUIPMENT AND RESOURCES. ON THE EAST SIDE OF THE SITE IS THE INHABITED PROGRAMMING, INCLUDING FIFTEEN OFFICE AND DORM UNITS, SHARED LIVING AND DINING SPACES, A TRAINING CLASSROOM, AND MEN'S AND WOMEN'S LOCKER ROOMS THAT CO-SERVE AS A TORNADO SHELTER. A DISPATCH AND ALARM ROOM PROJECTS FROM THE SOUTH WALL, PROVIDING A PANORAMIC VIEW ACROSS BOTH RUNWAYS.

THIS PROJECT IS LOCATED WITHIN A SECURED MISSISSIPPI AIR NATIONAL GUARD BASE AND A SECURED AIRPORT. THE PROJECT SITE IS IMMEDIATELY ADJACENT TO AN ACTIVE RUNWAY AND APRON. ALL SITE ACCESS MUST BE COORDINATED WITH THE 186TH AIR REFUELING WING. DUE TO THE CLOSE PROXIMITY OF AN ACTIVE RUNWAY, FEDERAL AVIATION ADMINISTRATION REQUIREMENTS, INCLUDING HEIGHT LIMITATIONS AND SITE ACCESS RESTRICTIONS ARE APPLICABLE AND DESCRIBED HEREIN.

D. BIDDING/CONTRACT REQUIREMENTS

The Contractor shall submit their bid in the manner specified in the Project Manual. See Section 00 20 00 – Instructions to Bidders

Bids will be received by the means described in Instructions to Bidders, no later than ~~1:30~~ 5:00 PM (local prevailing time) on February 13, 2025. Two Methods.

Last time to receive **Requests for Information** – within working days 6 days of the Bid date/time. (2/5/24 – 1:30 PM)

Last time to issue an **Addendum** - 48 hours of Bid (2/11/25 – ~~1:30~~ 5:00 PM)

Contract Documents – Plans and Specifications Dated January 6, 2025, plus any addendums issued during bidding. Please review all documents and requirements. Please verify that all subcontractors and suppliers review the full documents to ensure they understand how their work fits into and functions with other work. It is the General Contracture ultimate responsibly to coordinate and be responsible to complete all work within the Contract Documents for their bid proposal.

If items, equipment or work is added, or required but not included, change events will be evaluated for price and time potential awards. No work shall be completed without signed authorization by the Contracting Officer.

E. INSTRUCTIONS TO BIDDERS:

Review Instruction to Bidders 00 20 00 - Addendum 1

Bid Bond – 5%

Site Familiarity is required. This is a secure base and project site is adjacent to active air field.

Base Access During Construction was clarified in Addendum 1 and as noted herein.

Performance and Payments Bonds Required

Follow all of the Formal Requirements to Bid – Sign the bid form.

Submission of Bids -two methods as described in the documents.

Bid Proposal Form – fill it out completely.

Time – days – schedule as described in the documents.

Documents described the scope to be included in the Stipulated Contract Sum – Documents and Stipulated Sum shall be inclusive of all RFI responses and Addenda.

Reasons for Disqualification were reviewed.

Certificate of Responsibly in Good Standing required. – MS State Board of Contractors

Non-Resident Contractor must follow requirements in documents.

Protests must be made in writing within 48 hours of Bid Opening.

Contract Award is based upon lowest and best bid.

Method of Payment – 30 days from receipt of approved Application for Payment.

E- Verify Program is required for all employees.

Bid Form 00 40 00. Follow all instructions including those reviewed below.

Base Bid – Words and Numbers

Bid Options – 01 23 00

1. **Add** Drill Tower
2. **Add** Specialty Firehouse Equipment
3. **Add** Engine Blast Paved Shoulder

Allowance 01 21 00

Pavement Markings in the Apparatus Bay – Include in Bid – Note this is the Net Cost

Unit Prices 01 22 00

Soil Excavation and Disposal
Select Fill – Placement and Compaction

Sign – Fill in all Required Information
Be sure to acknowledge accept each Addendum

Base Access Procedures were reviewed by Major Garrett.

1. All contractor, subcontractor, vendor, and supplier personnel must undergo proper vetting prior to receiving base access. Employers will complete a spreadsheet with personal information in order for Security to conduct a proper background check. Spreadsheets are to be submitted in excel format to the base (POC provided after contract award) at least 5 business days in advance of requiring access. Exemptions to vetting may include one-time access requirements such as delivery truck drivers but must be coordinated well in advance so the Government can provide an escort. All other personnel should anticipate vetting procedures as described above.

2. Base access requires a current and valid form of Government Identification (State driver's license or State identification) along with a valid social security number. Personnel with only a State identification card may be allowed base access but will not be allowed to drive on Key Field ANGB.

3. The General Contractor is responsible to inform the government when access is no longer needed for a company or individual personnel (when work is complete or if an employee is no longer employed).

4. All vetted personnel will register their Government Identification with Security Forces Squadron, and must present this ID at the gate each morning.

5. Unless approved otherwise in advance, all access to the project site will occur through the Key Field Air National Guard Base Main Gate located at 6225 M Street, Meridian, MS 39307. The main gate is located just west of Highway 11 on the northern end of Meridian Regional Airport. All contractor vehicles will undergo a vehicle search when they enter the base. Weapons and any illegal items are not allowed on Key Field and personnel possessing these items will not be allowed on-base.

6. Key Field Air National Guard Base follows posted speed limits ranging from 5 to 25 MPH, and follows a "No Cell Phone Usage" policy to include texting and talking. Contractor personnel who are unable to follow base instructions will be removed from access.

7. Normal business hours for Contractor personnel are Monday through Friday 0715 – 1630. Work beyond 1630 and on weekends can be accommodated with prior notice. Arrival before 0715 must be approved in advance on a case-by-case basis for extreme circumstances (concrete pours, significant deliveries, etc) but should not be the norm.

8. Government work hours are Tuesday through Friday 0700-1630 and every other Monday (compressed work schedule) 0700-1530. Government personnel must be on-site for any escort requirements such as one-time deliveries. If an escort is required on a non-duty day, the Contractor must notify the Government in advance to arrange for escort.
9. Major Garrett is the Project Manager and Government contact for base access.

F. BASIS OF COLLABORATION 01 10 10 was reviewed.

- **Review Communication** Section 2.0 / 2.5

- **Use of Utilities:** See Section 00 73 00 – for correct instructions.

G. CONDITIONS OF THE CONTRACT – Note all Provisions

Buy American Act
Liquidated Damages 1,614.08 per day

H. SCHEDULE 01 32 16

Critical Path Schedule – hold baseline

Update monthly

Produce recovery schedule if work falls behind

Include adequate time for start-up – coordinate with submittals, closeout

I. SUMMARY OF WORK/DRAWINGS:

Review project plans and specifications

J. QUESTIONS AND ANSWERS

All questions should be directed to Duvall Decker. Duvall Decker to issue meeting minutes, sign in sheet for this meeting, any RFI's received to date/Questions submitted or raised today in a forthcoming addendum.

K. PROJECT SITE VISIT WAS OPENT TO ALL ATTENDEES. NO PHOTOS ALLOWED ON AIR FIELD.

INDEX AMENDED WITH ADDENDUM 02

INVITATION TO BID AND
TECHNICAL SPECIFICATIONS
FOR
KEY FIELD FIRE CRASH RESCUE STATION
ANG PN# MDVL239100

INDEX TO SPECIFICATIONS

DIVISION 0 – PROCUREMENT AND CONTRACTING REQUIREMENTS

BIDDING REQUIREMENTS

CONDITIONS OF THE CONTRACT

CONTRACT FORMS

DIVISION 01 – PROCUREMENT, CONTRACTING AND GENERAL REQUIREMENTS

DIVISION 02 - EXISTING CONDITIONS

DIVISION 03 - CONCRETE

DIVISION 08 - OPENINGS

DIVISION 09 - FINISHES

DIVISION 10 - SPECIALTIES

DIVISION 11 - EQUIPMENT

DIVISION 12 - FURNISHINGS

VOLUME 2

DIVISION 21 – FIRE SUPPRESSION

DIVISION 22 – PLUMBING

DIVISION 23 – HEATING, VENTILATING, AND AIR-CONDITIONING (HVAC)

NEW SECTION ISSUED WITH ADDENDUM 02

PART 1 GENERAL

1.01 SECTION INCLUDES

A. Fixed, upholstered audience seating.

1.02 RELATED REQUIREMENTS

A. Division 26 - Electrical. Connect motorized seating to building electrical.

1.03 REFERENCE STANDARDS

A. ASTM D3597 - Standard Performance Specification for Woven Upholstery Fabrics—Plain, Tufted, or Flocked; 2002, with Editorial Revision (2018).

B. ASTM E1537 - Standard Test Method for Fire Testing of Upholstered Furniture; 2022.

C. BIFMA X5.4 - Public and Lounge Seating; 2020.

D. CTB-117 - Requirements, Test Procedure and Apparatus for Testing the Smolder Resistance of Materials Used in Upholstered Furniture; 2013.

1.04 ADMINISTRATIVE REQUIREMENTS

A. Coordination with Electrical Work: Coordinate installation of wiring to ensure that floor-mounted junction boxes are completely beneath seats and free of aisle spaces.

1.05 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Manufacturer's printed data sheets for products specified.

C. Shop Drawings: Fabrication and installation details, chair layouts and dimensions.

D. Selection Samples: Manufacturer's color charts and swatches for fabric upholstery, indicating full range of materials, colors, and patterns available.

E. Installer's qualification statement.

F. Warranty: Submit manufacturer warranty and ensure that forms have been completed in Owner's name and registered with manufacturer.

1.06 DELIVERY, STORAGE, AND HANDLING

A. Deliver seats to project site in unopened containers clearly labeled with manufacturer's name and identification of contents.

B. Store seating units in dry and clean location until needed for installation. During installation, handle in a manner that will prevent marring and soiling of finished surfaces.

1.07 FIELD CONDITIONS

A. Ambient Conditions: Do not install seating until space is enclosed and weatherproof, wet-work in space is complete and nominally dry, installation of finishes including painting is complete, and ceilings are complete.

1.08 WARRANTY

A. See Section 01 78 00 - Closeout Submittals for additional warranty requirements.

B. Manufacturer Warranty: Provide 5-year manufacturer warranty for interior fixed audience seating. Complete forms in Owner's name and register with manufacturer.

PART 2 PRODUCTS

2.01 MANUFACTURERS

A. Fixed Audience Seating:
   1. Basis of Design: Bass Industries; Premium Series Loungers, Motorized Executive Lounger: www.bassind.com.

B. Substitutions: See Section 01 60 00 - Product Requirements.

2.02 UPHOLSTERED SEATING

A. Description: Fixed, ganged, motorized power recliners aligned as indicated on Drawings. Center-of-armrest to center-of-armrest width of typical seat shall be 29 inches, nominal. Full chaise-lounge when extended. Metal frame with sinuous springs.

B. Backs: Fully upholstered, recliner type with headrests constructed with fabric covering over padding, with installed height of 42 inches, nominal (headrest may add to this height).
   1. Padding: Premium high-density foam padding. 2.2 density.
   2. Tilting-adjustable and removable headrest.

C. Seats: Fully upholstered, reclining type with extending footrest. 22 inch nominal width, 21 inch nominal depth, 19 inch nominal height.

D. Arm Rests: Locate at aisles and between chairs; mount to support standard with concealed fasteners; exposed surfaces upholstered over foam padding to match seats.
   1. 7 inch nominal width, 25 inch nominal height.
   2. Two feet, color chosen from manufacturer's full spectrum of standard and premium colors and materials.
   3. Integrated cup holders at each armrest, color chosen from manufacturer's full spectrum of standard and premium colors.

E. End Panels: One piece panels fastened securely to aisle standards with concealed fasteners, configured as follows:
   1. Shape: Rectangular. Similar to Basis of Design.
   2. Finish: Upholstered over thin foam padding with fabric to match chairs.

F. Motorized Electrical Operation: Coordinate

2.03 FINISHES

A. Finish:
   1. Material: Premium full top grain leather, Dacron-wrapped.
   2. Color: Chosen from manufacturer's full spectrum of standard and premium colors.

PART 3 EXECUTION

3.01 EXAMINATION

A. Examine substrates for conditions detrimental to installation of fixed audience seating. Proceed with installation only after unsatisfactory conditions have been corrected.

3.02 INSTALLATION

A. Comply with manufacturer's installation instructions and approved shop drawings.

B. Anchor support standards securely to substrate with at least two anchoring devices recommended by manufacturer.

C. Each chair shall be securely fastened to the slab.

D. Install continuously ganged together in quantities shown on the Drawings.

E. Leather shall be free of cracks, damage, and imperfections.

F. Coordinate electrical connections with building electrical systems and components.

END OF SECTION

PART 1 GENERAL

1.01 SECTION INCLUDES:

A. Surge Suppression Devices for switchboard, distribution, and branch panel protection.

1.02 SUBMITTALS:

A. Submit under provisions of Division 26 product data for each type of SPD.
B. Submit shop drawings of catalog data with complete description of materials and performance data for each type of SPD.
C. Submit copy of UL Category Code VZCA certification, as a minimum, listing the tested values for VPRs, I nominal ratings, MCOVs, type designations, OCPD requirements, model numbers, system voltages, and modes of protection.
D. Submit a copy of test reports from a recognized independent testing laboratory, capable of producing 200kA surge current waveforms, verifying the suppressor components can survive published surge current rating on a per mode basis using the ANSI/IEEE C62.41 impulse waveform C3 (8 x 20 microsecond, 20kV/10kA). Test data on an individual module is not acceptable.
E. Submit a single impulse surge current test report issued by a nationally recognized testing facility & an ANSI/IEEE Category C3 (20KV, 10KA) life cycle test report. The test reports should demonstrate that each CAPS unit can withstand, in its installed configuration, the specified values (up to 200K transient amps per mode) without failure of any internal component (MOVs, wiring, printed circuit board, fusing and disconnect).
F. The Engineer will not grant "prior approval" on equipment not specified within. Substitutions are permitted if they meet the specification requirements.

1.03 GENERAL SPD REQUIREMENTS

A. SPD with Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
B. Comply with NFPA 70.
C. Comply with UL 1449.
D. MCOV of the SPD shall be the nominal system voltage. MCOV shall be a tested value per section 37.7.3 of UL1449 4th Edition.

1.04 RELATED WORK SPECIFIED ELSEWHERE:

A. Section 26 00 10 – Electrical General Provisions
B. Section 26 05 26 – Grounding
C. Section 26 05 33 – Raceways
D. Section 26 25 00 - Busways
E. Section 26 27 16 – Panelboards
F. Section 26 27 26 – Switches and Receptacles
G. Section 26 41 00 – Lightning Protection System

PART 2 PRODUCTS

2.01 MATERIALS AND EQUIPMENT:

A. Raceway and Fittings: Refer to Section 26 05 33 - Raceways.
B. Wire and Cable: Manufacturer shall provide 15' shielded cable type THHN, standard copper, for remote mounting of devices where space limitation prevents adjacent mounting to protected equipment.

2.02 SERVICE ENTRANCE AND TRANSFER SWITCH SUPPRESSOR (TYPE A)

A. Basis of Design: Subject to compliance with requirements. Provide comparable product to the following:
   1. Current Technology "TG3" Series
B. SPDs: Listed as Type 1 SPD per UL1449 4th Edition.
   1. SPDs with the following features and accessories:
      a. An Integral disconnect switch.
      b. Internal thermal protection that disconnects the SPD before damaging internal suppressor components.
      c. Indicator light display for protection status.
      d. Form-C contacts: one normally open and one normally closed, for remote monitoring of protection status, and Advanced monitoring with status, surge counter and history log of events.
C. Comply with UL 1283 with a maximum attenuation of 54dB based on 50ohm insertion loss test per MIL-STD-220B.
D. Peak Surge Current Rating: The minimum single-pulse surge current withstand rating per mode shall not be less than 200 kA. The peak surge current rating shall NOT be the arithmetic sum of the ratings of the individual MOVs in a given mode. SPD manufacturer shall provide independent 3rd party testing validating unit is capable of surviving a single surge at the specified rating or up to and not to exceed 200,000 kA.
E. Protection modes and UL 1449 VPR for grounded wye circuits with 480Y/277V or 208Y/120V, three-phase, four-wire circuits shall not exceed the following:
   1. Line to Neutral: [1200 V for 480Y/277 V] [700 V for 208Y/120 V].
   2. Line to Ground: [1200 V for 480Y/277 V] [700 V for 208Y/120 V].
   3. Line to Line: [1800 V for 480Y/277 V] [1200 V for 208Y/120 V].
F. Protection modes and UL 1449 VPR for 240/120 V, single-phase, three-wire circuits shall not exceed the following:
   1. Line to Neutral: 700 V.
   2. Line to Ground: [700 V] [1000 V].
   3. Line to Line: 1200 V.
G. SCCR: Equal or exceed 200 kA.
H. I nominal Rating: 20 kA and compliance to all UL96A requirements for ac surge protection.
I. Repetitive Surge: SPD shall survive a minimum of 14,000 repetitive category C3 (20kV/10kA) surges with no more than 10% deterioration. Calculated repetitive surge values will not be accepted. SPD manufacturer shall provide repetitive surge test report.
J. Temporary Over Voltages: SPD shall be able to prevent common temporary over voltages from damaging the MOVs, increasing longevity and ability of SPD unit to protect the critical load. SPD shall limit the voltage per the following chart.

K. Temporary Over Voltages: SPD shall be able to withstand a minimum of 100 temporary over voltage events, as defined by: 30A available fault current, 30 cycles of duration, with 10 seconds between events.

2.03 PANEL SUPPRESSORS (Type B and C)

A. Basis of Design: Subject to compliance with requirements. Provide comparable product by the following:
   1. Current Technology "TG3" Series.
B. SPDs: Listed as Type 1 SPD per UL1449 4th Edition.
   1. Include LED indicator lights for power and protection status.
   2. Internal thermal protection that disconnects the SPD before damaging internal suppressor components.
   3. Include Form-C contacts rated at 5 A and 250-V ac, one normally open and one normally closed, for remote monitoring of protection status.
C. Peak Surge Current Rating: The minimum single-pulse surge current withstand rating per mode shall not be less than 150 kA (Type B) and 50 kA (Type C). The peak surge current rating shall NOT be the arithmetic sum of the ratings of the individual MOVs in each mode. SPD manufacturer shall provide independent 3rd party testing validating unit can survive a single surge at the specified rating.
D. Comply with UL 1283 with a maximum attenuation of 34dB based on 50ohm insertion loss test per MIL-STD-220B.
E. Protection modes and UL 1449 VPR for grounded wye circuits with 480Y/277V or 208Y/120V, three-phase, four-wire circuits shall not exceed the following:
   1. Line to Neutral: [1200 V for 480Y/277 V] [700 V for 208Y/120 V].
   2. Line to Ground: [1200 V for 480Y/277 V] [700 V for 208Y/120 V].
   3. Neutral to Ground: [1000 V for 480Y/277 V] [700 V for 208Y/120 V].
   4. Line to Line: [2000 V for 480Y/277 V] [1200 V for 208Y/120 V]
F. Protection modes and UL 1449 VPR for 240/120-V, single-phase, three-wire circuits shall not exceed the following:
   1. Line to Neutral: 700 V.
   2. Line to Ground: 700 V.
   3. Neutral to Ground: 700 V.
   4. Line to Line: 1200 V.
G. SCCR: Equal or exceed 200 kA.
H. Nominal Rating: 20 kA

2.04 ENCLOSURES

A. Indoor Enclosures: NEMA 250, Type 1.
B. Outdoor Enclosures: NEMA 250, Type 3R.

2.05 CONDUCTORS AND CABLES

A. Power Wiring (where total wire length is >10”: SPD shall be equipped with mechanical lugs that can accept up to #2 AWG wire. Conductors between SPD and switchgear shall be “High Performance Interconnect” (HPI) cables with Ultra Low impedance characteristics at 10kHz and above.
B. Class 2 Control Cables: Multi-conductor cable with copper conductors not smaller than No. 18 AWG, complying with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
C. Class 1 Control Cables: Multi-conductor cable with copper conductors not smaller than No. 14 AWG, complying with Section 260519 "Low-Voltage Electrical Power Conductors and Cables."

PART 3 EXECUTION

A. INSTALLATION
   1. Comply with NECA 1.
   2. Install an OCPD or disconnect as required to comply with the UL listing of the SPD.
   3. Install SPDs with conductors between suppressor and points of attachment as short and straight as possible and adjust circuit-breaker positions to achieve shortest and straightest leads. Do not splice and extend SPD leads unless specifically permitted by manufacturer. Do not exceed manufacturer's recommended lead length. Do not bond neutral and ground. If installed lead length must exceed 10’, SPD manufacturer shall provide a low impedance cable that improves the installed performance.
   4. Use crimped connectors and splices only. Wire nuts are unacceptable.
   5. Wiring:
      a. Power Wiring: Comply with wiring methods in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
      b. Controls: Comply with wiring methods in Section 260519 "Low-Voltage Electrical Power Conductors and Cables."
B. FIELD QUALITY CONTROL
   1. Perform the following tests and inspections with the assistance of a factory-authorized service representative.
      a. Compare equipment nameplate data for compliance with Drawings and Specifications.
      b. Inspect anchorage, alignment, grounding, and clearances.
      c. Verify that electrical wiring installation complies with manufacturer's written installation requirements.
      d. An SPD will be considered defective if it does not pass tests and inspections.
      e. Prepare test and inspection reports.

3.02 POWERLINE CORD/DIRECT-WIRED (120 VAC) SUPPRESSORS:

A. Suppressors shall consist of a three-stage hybrid design. First stage M.O.V., second stage air-core 300 uh inductor, and third stage silicon avalanche diode.
B. The suppressor shall provide certified test data confirming a fail short failure mode.
C. Suppressors shall provide three suppression modes. Line to neutral, line to ground, and neutral to ground.

D. Suppressor shall provide a maximum single impulse current rating of 10,000 amperes (8 x 20 us – waveform) per mode.
E. Suppressor shall provide a pulse life rating of 3,000 amperes (8 x 20 us – waveform) every thirty (30) seconds for 2,000 occurrences.
F. Suppressors maximum clamping voltage when subjected to the ANSI/IEEE C62.41 – 1980, Cat. B (6 kV – 1.2 x 50 us, 3kA impulse) shall not exceed 450 volts peak.

3.03 PAIRED CABLE DATALINE SUPPRESSORS:

A. Maximum single impulse current withstands, conductor to ground or conductor to conductor: 10,000 amperes (8 x 20 us – waveform).
B. Pulse life rating: 3,000 amperes (8 x 20 us – waveform): 2,000 occurrences.
C. Maximum clamping voltage at 10,000 amperes, 8 x 20 us current waveform, shall not exceed the peak of the normal applied signal voltage by 200%.
D. Suppressors shall be a hybrid design with a minimum of three (3) stages utilizing solid-state componentry and shall operate bi-directionally.
E. The suppressor manufacturer shall provide certified test data confirming a fail short failure mode.
F. Suppressors shall be housed in an enclosure that is compatible with the system being protected.

3.04 WARRANTY:

A. The Surge Suppressor system shall have fifteen (15) years limited product warranty from date of shipment against transient failure, when installed in compliance with applicable national/local electrical codes and manufacturer's installation manual.

PART 4 EXECUTION

4.01 INSTALLATION:

A. Install in strict accordance with the manufacturer's printed instructions.
B. Have a factory authorized representative inspect installation and verify that the complete system is working to factory specifications before final inspection. Provide affidavit of inspection in close out documents.
C. The contractor shall fire seal all raceway openings between each SPD and the electrical gear it is protecting to prevent any air born particles from migrating to the electrical gear.

4.02 SERVICE ENTRANCE:

A. Provide Type A service-entrance suppressor at each utility service entrance to the facility.
B. Suppressors shall be installed on the load side of the first disconnecting point of the service.
C. Conductors between suppressor and point of attachment to the service-entrance equipment shall be kept as short and straight as possible, preferably close-nipple to the device being protected. The mounting position of the suppressor shall permit a straight and short lead length connection between the suppressor and the point of connection to the device.

D. Suppressor's ground shall be bonded to the service entrance grounding conductor and grounded conductor.

4.03 DISTRIBUTION PANELS:

A. Install a secondary suppressor at each panelboard location as indicated on the drawings.
B. Conductors between suppressor and point of attachment to the panelboard shall be kept as short and straight as possible.
C. Separately mounted Suppressors shall be installed with separate grounding and grounded conductors. The grounding and grounded conductor shall have no contact at this point unless the service panel is a "separately derived system" according to NEC 250-5(d).

4.04 ELECTRONIC POWER SUPPLY:

A. Install one each power line cord or direct-wired branch circuit suppressor between each equipment item and its power supply conductors as follows:
   1. Fire Alarm master panel.
   2. Building Management System head end.
   3. Security System head end.
   4. Telephone switch.
B. Install suppressor according to manufacturer's recommendations.

4.05 ELECTRONIC EQUIPMENT PAIRED CABLE CONDUCTORS:

A. Install paired cable suppressors on each low voltage communication conductor according to C.1.a-g that exits the confines of the structure.
B. Suppressors shall be installed as close as possible, in a neat and skillful manner to the equipment requiring protection.
C. Where space permits suppressors may be installed within the equipment cabinet of the protected equipment.
D. The suppressor's ground conductor shall be bonded to the AC power supply green grounding conductor. This bond shall additionally be bonded to the equipment metallic enclosure.

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 01 Specification Sections, apply to this Section.

1.02 SUMMARY

A. Section Includes:
   1. Wire-mesh cable trays.
B. Related Requirements:
   1. Section 260536 "Cable Trays for Electrical Systems" for cable trays and accessories serving electrical systems.

1.03 ACTION SUBMITTALS

A. Product Data: For each type of cable tray.
   1. Include data indicating dimensions and finishes for each type of cable tray indicated.
B. Shop Drawings: For each type of cable tray.
   1. Show fabrication and installation details of cable trays, including plans, elevations, and sections of components and attachments to other construction elements. Designate components and accessories, including clamps, brackets, hanger rods, splice-plate connectors, expansion-joint assemblies, straight lengths, and fittings.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS FOR CABLE TRAYS

A. Cable Trays and Accessories: Identified as defined in NFPA 70 and marked for intended location, application, and grounding.
   1. Source Limitations: Obtain cable trays and components from single manufacturer.
B. Sizes and Configurations: See the Drawings for specific requirements for types, materials, sizes, and configurations.
C. Structural Performance: See articles for individual cable tray types for specific values for the following parameters:
   1. Uniform Load Distribution: Capable of supporting a uniformly distributed load on the indicated support span when supported as a simple span and tested according to NEMA VE 1.
   2. Concentrated Load: A load applied at midpoint of span and centerline of tray.
   3. Load and Safety Factors: Applicable to both side rails and rung capacities.

2.02 WIRE-MESH CABLE TRAYS

A. Basis-of-Design Product: Subject to compliance with requirements, provide Legrand/Cablofil; Wire Mesh Cable Trays or comparable product by one of the following:
   1. Allied Tube & Conduit; a Tyco International Ltd. Co.
   2. Chalfant Manufacturing Company.
   3. Cooper B-Line, Inc.

B. Description:
   1. Configuration: Wires are formed into a standard 2-by-4-inch (50-by-100-mm) wire mesh pattern with intersecting wires welded together. Mesh sections must have at least one bottom longitudinal wire along entire length of section.
   2. Materials: High-strength-steel longitudinal wires with no bends.
   3. Safety Provisions: "T" weld wire ends along wire-basket sides (flanges) during manufacturing to maintain integrity of cables and installer safety.
   4. Sizes:
      a. Straight sections shall be furnished in standard 118-inch (3000-mm) lengths.
   5. Connector Assemblies: Listed snap-in couplers or factory assembled bolted couplers that mechanically join adjacent tray wires to splice sections together or to create horizontal fittings.

2.03 MATERIALS AND FINISHES

A. Steel:
   1. Wire Mesh Tray: Steel complies with the minimum mechanical properties of ASTM A 510/A 510M, Grade 1008.
   2. Finish: Powder-coat paint.
      a. Powder-Coat: Factory-applied powder-coat paint with factory provided UL classified grounding strip.
      b. Hardware: Galvanized, ASTM B 633.

2.04 CABLE TRAY ACCESSORIES

A. Fittings: Tees, crosses, risers, elbows, and other fittings as indicated, of same materials and finishes as cable tray.
B. Barrier Strips: Same materials and finishes as for cable tray.
C. Cable tray supports and connectors, including bonding jumpers, as recommended by cable tray manufacturers.

2.05 WARNING SIGNS

A. Lettering: Black letters on yellow background with legend "Warning! Not To Be Used as Walkway, Ladder, or Support for Ladders or Personnel."
B. Comply with requirements for fasteners in Section 26 00 10 "Electrical General Provisions."

2.06 SOURCE QUALITY CONTROL

A. Testing: Test and inspect cable trays according to NEMA VE 1.

PART 3 EXECUTION

3.01 CABLE TRAY INSTALLATION

A. Install cable trays according to NEMA VE 2.
B. Install cable trays as a complete system, including fasteners, hold-down clips, support systems, barrier strips, adjustable horizontal and vertical splice plates, elbows, reducers, tees, crosses, cable dropouts, adapters, covers, and bonding.
C. Install cable trays so that the tray is accessible for cable installation and all splices are accessible for inspection and adjustment.
D. Remove burrs and sharp edges from cable trays.
E. Fasten cable tray supports to building structure and install seismic restraints.
F. Design fasteners and supports to carry cable tray, the cables, and a concentrated load of 200 lb (90 kg). Comply with requirements in Section 260529 "Hangers and Supports for Electrical Systems".
G. Place supports so that spans do not exceed maximum spans on schedules and provide clearances shown on Drawings. Install intermediate supports when cable weight exceeds the load-carrying capacity of the tray rungs.
H. Construct supports from channel members, threaded rods, and other appurtenances furnished by cable tray manufacturer. Arrange supports in trapeze or wall-bracket form as required by application.
I. Locate and install supports according to NEMA VE 2. Do not install more than one cable tray splice between supports.
J. Make connections to equipment with flanged fittings fastened to cable trays and to equipment. Support cable trays independent of fittings. Do not carry the weight of cable trays on equipment enclosure.
K. Install expansion connectors where cable trays cross building expansion joints and in cable tray runs that exceed dimensions recommended in NEMA VE 2. Space connectors and set gaps according to applicable standard.
L. Make changes in direction and elevation using manufacturer's recommended fittings.
M. Make cable tray connections using manufacturer's recommended fittings.
N. Install capped metal sleeves for future cables through firestop-sealed cable tray penetrations of fire and smoke barriers.
O. Install cable trays with enough workspace to permit access for installing cables.
P. Install permanent covers, on vertical tray runs as required by NFPA 70, after installing cable. Install cover clamps according to NEMA VE 2.
Q. Clamp covers on cable trays installed outdoors with heavy-duty clamps.
R. Install warning signs in visible locations on or near cable trays after cable tray installation.

3.02 CABLE TRAY GROUNDING

A. Ground cable trays according to NFPA 70 unless additional grounding is specified. Comply with requirements in Section 260526 "Grounding and Bonding for Electrical Systems."
B. Cable trays with communications cables shall be bonded together with splice plates listed for grounding purposes or with listed bonding jumpers.

C. Cable trays with control conductors shall be bonded together with splice plates listed for grounding purposes or with listed bonding jumpers.
D. Cable trays with powder-coat paint should have coating masks completely removed at factory supplied grounding location and splice with listed connectors as recommended by manufacturer.
E. Bond cable trays to power source for cables contained within with bonding conductors sized according to NFPA 70, Article 250.122, "Size of Equipment Grounding Conductors."

3.03 CABLE INSTALLATION

A. Install cables only when each cable tray run has been completed and inspected.
B. Fasten cables on horizontal runs with cable clamps or cable ties according to NEMA VE 2. Tighten clamps only enough to secure the cable, without indenting the cable jacket. Install cable ties with a tool that includes an automatic pressure-limiting device.
C. Fasten cables on vertical runs to cable trays every 18 inches (450 mm).
D. Fasten and support cables that pass from one cable tray to another or drop from cable trays to equipment enclosures. Fasten cables to the cable tray at the point of exit and support cables independent of the enclosure. The cable length between cable trays or between cable trays and enclosure shall be no more than 72 inches (1800 mm).
E. In existing construction, remove inactive or dead cables from cable trays.

3.04 CONNECTIONS

A. Connect pathways to cable trays according to requirements in NEMA VE 2.

3.05 FIELD QUALITY CONTROL

A. Perform the following tests and inspections:
    1. After installing cable trays and after electrical circuitry has been energized, survey for compliance with requirements.
    2. Visually inspect cable insulation for damage. Correct sharp corners, protuberances in cable trays, vibrations, and thermal expansion and contraction conditions, which may cause or have caused damage.
    3. Verify that the number, size, and voltage of cables in cable trays do not exceed that permitted by NFPA 70. Verify that communications or data-processing circuits are separated from power circuits by barriers or are installed in separate cable trays.
    4. Verify that there are no intruding items such as pipes, hangers, or other equipment in the cable tray.
    5. Remove dust deposits, industrial process materials, trash of any description, and any blockage of tray ventilation.
    6. Visually inspect each cable tray joint and each ground connection for mechanical continuity. Check bolted connections between sections for corrosion. Clean and retorque in suspect areas.
    7. Check for improperly sized or installed bonding jumpers.
    8. Check for missing, incorrect, or damaged bolts, bolt heads, or nuts. When found, replace it with specified hardware.

9. Perform visual and mechanical checks for adequacy of cable tray grounding; verify that all takeoff raceways are bonded to cable trays. Test entire cable tray system for continuity. Maximum allowable resistance is 1 ohm.

B. Prepare test and inspection reports.

3.06 PROTECTION

A. Protect installed cable trays and cables.
1. Install temporary protection for cables in open trays to safeguard exposed cables against falling objects or debris during construction. Temporary protection for cables and cable trays can be constructed of wood or metal materials and shall remain in place until the risk of damage is over.
2. Repair damage to galvanized finishes with zinc-rich paint recommended by cable tray manufacturer.
3. Repair damage to paint finishes with matching touchup coating recommended by cable tray manufacturer.

END OF SECTION

PART 1 – GENERAL REQUIREMENTS

1.01 DESCRIPTION

A. Work shall consist of designing, furnishing and installing Aggregate Pier elements to the lines and grades designated on the project foundation plan and as specified herein. The aggregate pier elements shall be constructed by compacting aggregate in an excavated hole using special high-energy impact densification equipment. The aggregate pier elements shall be in a columnar-type configuration and shall be used to reinforce soils for the support of high bearing pressure spread footings.

1.02 WORK INCLUDED

A. Provision of all equipment, material, labor, and supervision to design and install aggregate pier elements. Design shall rely on subsurface information presented in the project geotechnical report. Layout of aggregate pier elements, removal of spoils from the site (which result from aggregate pier construction), removal of spoils off the working pad, footing excavation, and subgrade preparation following aggregate pier installation is not included.

1.03 APPROVED INSTALLERS

A. Installers of Aggregate Pier Foundation Systems shall have a minimum of 5 years of experience with the installation of aggregate piers and shall have completed installations for at least 50 buildings or structures.
B. Installers shall be licensed by the aggregate pier designer and supplier and shall have demonstrated experience in the construction of similar size and types of projects. The aggregate pier Installer shall be approved by the Owner's Engineer. The Installer shall adhere to all methods and standards described in this Specification.

1.04 RELATED WORK

A. Section 03 30 00 - Cast-in-Place Concrete

1.05 REFERENCE STANDARDS

A. Design
   1. Lawton, E.C., N.S. Fox, and R.L. Handy. "Control of Settlement and Uplift of Structures Using Short Aggregate Piers." ASCE. Proceedings of In-Situ Deep Soil Improvement. ASCE National Convention, Atlanta, Georgia. October 9-13, 1994.
   2. Lawton, E.C. and N.S. Fox. "Settlement of Structures Supported on Marginal or Inadequate Soils Stiffened with Short Aggregate Piers." ASCE. Geotechnical Special Publication No. 40: Vertical and Horizontal Deformations of Foundations and Embankments, ASCE 2, 962-974.
   3. Fox, N.S. and M. Cowell. 1998. Geopier Reference Manual. Published by Geopier Foundation Company, Inc., Scottsdale, AZ.

4. Wissmann, K.J., E.C. Lawton, and T.M. Farrell. 1999. "Behavior of Geopier-Supported Foundation Systems During Seismic Events." Technical Bulletin No. 1. Geopier Foundation Company, Inc., Scottsdale, AZ.
5. Wissmann, K.J. 1999. "Bearing Capacity of Geopier-Supported Foundation Systems." Technical Bulletin No. 2. Geopier® Foundation Company, Inc., Scottsdale, AZ.
6. Wissmann, K.J., J.M. Caskey, and B.T. Fitzpatrick. 2001. "Geopier® Uplift Resistance." Technical Bulletin No. 3. Geopier® Foundation Company, Inc., Scottsdale, AZ.
7. Wissmann, K.J., B.T. Fitzpatrick, and E.C. Lawton. 2001. "Geopier® Lateral Resistance." Technical Bulletin No. 4. Geopier® Foundation Company, Inc., Scottsdale, AZ.
8. Fitzpatrick, B.T. and K.J. Wissmann. 2002. "Geopier® Shear Reinforcement for Global Stability and Slope Stability." Technical Bulletin No. 5. Geopier® Foundation Company, Inc., Scottsdale, AZ.

B. Modulus and Uplift Testing
   1. ASTM D-1143 – Pile Load Test Procedures
   2. ASTM D-1194 – Spread Footing Load Test
   3. ASTM-D-3689 – Uplift Load Test
C. Materials and Inspection
   1. ASTM D-1241 – Aggregate Quality
   2. ASTM STP 399 – Dynamic Penetrometer Testing
   3. ASTM D-422 – Gradation Soils

1.06 CONFLICTS IN SPECIFICATIONS/REFERENCES

A. Where specifications and reference documents conflict, the Architect/Engineer shall make the final determination of the applicable document.

1.07 CERTIFICATIONS AND SUBMITTALS

A. The installer shall submit detailed design calculations and construction drawings prepared by the Aggregate Pier Designer (the Designer) to the Owner or Owner's Engineer for approval at least 2 weeks prior to the start of construction. All plans shall be sealed by a Professional Engineer in the State in which the project is constructed.
B. The Aggregate Pier Designer shall have Errors and Omissions design insurance for the work. The insurance policy should provide a minimum coverage of $2 million per occurrence.
C. Modulus and uplift test data - The Installer shall furnish the General Contractor a description of the installation equipment, installation records, complete test data, analysis of the test data and recommended design parameter values based on the modulus test results. The report shall be prepared under supervision of a registered professional engineer.
D. Daily Aggregate Pier Progress Reports – The Installer shall furnish a complete and accurate record of aggregate pier installation to the General Contractor. The record shall indicate the pier location, length, average lift thickness and final elevations of the base and top of piers. The record shall also indicate the type and size of the densification equipment used. The Installer shall immediately report any unusual conditions encountered during installation to the General Contractor, to the Designer and to the Testing Agency.

1.08 BASIS OF PAYMENT

A. The design/construction shall be lump sum.

PART 2 – PRODUCTS

2.01 MATERIALS

A. Aggregate used for piers constructed above the water table shall be Type I Grade B in accordance with ASTM D-1241-68, or shall be other graded aggregate selected by the Installer and successfully used in the modulus test. It shall be compacted to a densification and strength, which provides resistance to the dynamic penetration test (ASTM STP 399) of a minimum average of 15 blows per 1.75-inch vertical movement.
B. For aggregate used for piers constructed below the water table, the gradation shall be the same as Type I Gradation B, except that particles passing the No. 40 sieve shall be eliminated. Alternatively, No.57 stone or other stone selected by the Aggregate Pier Installer may be used. Dynamic penetration resistance testing is inappropriate for this material.
C. Potable water or other suitable source shall be used to increase aggregate moisture content where required. The General Contractor shall provide such water to the Installer.
D. The General Contractor will provide adequate and suitable marshalling areas on the project site for the use of the Installer for the storage of aggregate and equipment.

PART 3 – DESIGN REQUIREMENTS

3.01 AGGREGATE PIER DESIGN

A. The Aggregate Pier elements shall be designed for an appropriate Aggregate Pier stiffness modulus per designer. The stiffness modulus value shall be verified by the results of the Aggregate Pier modulus test, described in this specification.
B. Aggregate piers shall be designed in accordance with generally-accepted engineering practice and the methods described in Section 1 of these Specifications. The design shall meet the following criteria.

Estimated Total Long-Term Settlement for Footings:	≤1-inch
Estimated Long-Term Differential Settlement of Adjacent Footings:	≤ ½-inch

C. The design submitted by the Installer shall consider the bearing capacity and settlement of all footings supported by aggregate piers, and shall be in accordance with acceptable engineering practice and these specifications. Total and differential settlement shall be considered.
D. The Aggregate Pier system shall be designed to preclude plastic bulging deformations at the top-of–pier design stress and to preclude significant tip stresses as determined from the shape of the telltale test curve from telltales installed in modulus test piers.

3.02 DESIGN SUBMITTAL

A. The Installer shall submit 4 sets of detailed design calculations, construction drawings, and shop drawings, (the Design Submittal), for approval at least 2 weeks prior to the beginning of construction. A detailed explanation of the design parameters for settlement calculations shall be included in the Design Submittal. Additionally, the quality control test program for aggregate piers, meeting these design requirements, shall be submitted. All computer-generated calculations and drawings shall be prepared and sealed by a Professional Engineer, licensed in the State where the piers are to be built.

3.03 BUILDING CODE ACCEPTANCE

A. The Aggregate Pier Installer shall demonstrate that the Aggregate Pier system has been ICBO certified.

PART 4 – CONSTRUCTION

4.01 EXCAVATION

A. All Aggregate Pier elements shall be pre-augered using mechanical drilling or excavation equipment. Installation of piers without pre-augering shall not be allowed because this technique results in significant disturbance and remolding of the matrix soils surrounding the piers.
B. If cave-ins occur during excavation such that the sidewalls of the hole are deemed to be unstable, steel casing or a drilling slurry shall be used to stabilize the excavation.
C. If cave-ins occur on top of a lift of aggregate such that the volume of the caved soils is greater than 10 percent of the volume of the aggregate in the lift, then the aggregate shall be considered contaminated and shall be removed and replaced with uncontaminated aggregate.

4.02 DENSIFICATION

A. Special high-energy impact densification apparatus shall be employed to densify the Aggregate Pier elements during installation. The apparatus shall apply direct downward impact energy to each lift of aggregate.
B. The bottom of the excavation shall be densified prior to the placement of the aggregate. If wet, soft or sensitive soils are present, open-graded aggregate, such as ASTM No.57 stone or other, shall be placed at the bottom of the excavation and compacted to stabilize the element bottom and may serve as the initial lift.
C. Densification shall be performed using a beveled tamper. The beveled tamper foot is required to adequately increase the lateral earth pressure in the matrix soil during installation.
D. Downward pressure shall be applied to the tamper shaft during tamping.
E. Each lift of aggregate shall be tamped for a minimum of 10 seconds.

4.03 PLAN LOCATION AND ELEVATION OF AGGREGATE PIER ELEMENTS

A. The center of each pier shall be within six inches of the plan locations indicated. The final measurement of the top of piers shall be the lowest point on the aggregate in the last compacted lift. Piers installed outside of the above tolerances and deemed not acceptable shall be rebuilt at no additional expense to the Owner, unless mislocated by the General Contractor.

4.04 REJECTED AGGREGATE PIER ELEMENTS

A. Aggregate pier elements improperly located or installed beyond the maximum allowable tolerances shall be abandoned and replaced with new piers, unless the Designer approves other remedial measures. All material and labor required to replace rejected piers shall be provided at no additional cost to the Owner, unless the cause of the rejection is due to an obstruction or mislocation.

PART 5 – QUALITY CONTROL

5.01 QUALITY CONTROL REPRESENTATIVE

The Installer shall have a full-time Quality Control (QC) representative to verify and report all QC installation procedures. The Installer shall immediately report any unusual conditions encountered during installation to the Design Engineer, the General Contractor, and to the Testing Agency. The QC procedures shall include the preparation of Aggregate Pier Progress Reports completed during each day of installation and containing the following information:

A. Footing and Aggregate Pier location.
B. Aggregate Pier length and drilled diameter.
C. Planned and actual Aggregate Pier elevations at the top and bottom of the element.
D. Average lift thickness for each Aggregate Pier.
E. Soil types encountered at the bottom of the Aggregate Pier and along the length of the element.
F. Depth to groundwater, if encountered.
G. Documentation of any unusual conditions encountered.
H. Type and size of densification equipment used.

5.02 MODULUS TEST

A modulus test shall be performed to verify the parameter values selected for design. The modulus tests shall be of the type and installed in a manner specified herein.

A. A telltale shall be installed at the bottom of the test pier so that bottom-of-pier deflections may be determined. Acceptable performance is indicated when the bottom of the pier deflection is no more than 20% of the top of pier deflection at the design stress level.
B. ASTM D-1143 general test procedures shall be used as a guide to establishing load increments, load increment duration, and load decrements.
C. With the exception of the load increment representing approximately 115% of the design maximum top of Aggregate Pier stress, all load increments shall be held for a minimum of 15 minutes, a maximum of 1 hour, and until the rate of deflection reduces to 0.01 inch per hour, or less.
D. The load increment that represents approximately 115% of the design maximum stress on the Aggregate Pier shall be held for a minimum of 15 minutes, a maximum of 4 hours and until the rate of deflection reduces to 0.01 inches per hour or less.
E. A seating load equal to 5 percent of the total load shall be applied to the loaded steel plate prior to application of load increments and prior to measurement of deflections to compensate for surficial disturbance.
F. Aggregate Pier modulus testing shall be performed in accordance with the requirements outlined in the Design Submittal.

G. The location of the aggregate pier modulus test should be coordinated with the project Geotechnical Engineer of record.

5.03 BOTTOM STABILIZATION VERIFICATION TEST

A. After completion of the bottom pier bulb, or at anytime during the process of constructing the pier, the energy source may be turned off, and bottom stabilization verification test may be performed. These tests shall be performed when a new soil formation is encountered, or at the beginning of a project to provide quantitative information on pier stabilization.
B. Bottom Stabilization Tests are performed by placing a reference bar over the cavity, marking the tamper shaft, applying energy to the tamper for an additional 15 seconds, and observing the downward deflection of the tamper shaft by observing the deflection of the mark on the tamper shaft.
C. Acceptable performance is indicated if the vertical movement of the shaft is less than 150% of the vertical movement measured for the modulus test pier.
D. If the measured vertical movement exceeds 150% of the value achieved during the modulus test, added energy is applied to re-densify the bulb. The procedure for measure is then repeated. If there is still movement greater than 150% of that achieved during the modulus test and greater than ½ inch, a lift of loose aggregate may be placed on top of the compacted aggregate, and the verification test may be performed on this next lift after it is densified. If there is excessive movement on this lift, another lift may be placed and tested. Movement must be limited to below 150% of the values achieved for the modulus test before completion of 2/3 of the pier depth.

5.04 DYNAMIC CONE PETROMETER TEST

A. The Aggregate Pier elements shall be tested by the Dynamic Cone Penetrometer method (ASTM STP 399) at locations within the upper 1/3 of the pier shaft length.
B. The minimum acceptable criteria as an indicator of acceptable densification shall be at least 15 blows per 1-3/4 inch penetration.
C. Dynamic Cone Penetrometer testing shall be performed in each Aggregate Pier until such time as five consecutive tests indicate that the minimum criterion is met. Thereafter, such tests need not be performed on every pier, provided that the aggregate used in the elements is representative of that previously tested. If average penetration resistances measured exceed 15 blows, and less than 10% of tests fall below 15 blows, then testing may be reduced to spot checks. A pattern of successful tests is sufficient to reduce testing to several tests per day.
D. Observation of questionable aggregate moisture content or questionable aggregate gradation appearance may determine the need for additional dynamic penetration testing to verify that the proper densification is being achieved.
E. Use of Dynamic Cone Penetrometer is not appropriate for use on open-graded aggregate such as No. 57 stone.

PART 6 – QUALITY ASSURANCE

6.01 INDEPENDENT ENGINEERING TESTING AGENCY

A. The General Contractor is responsible for retaining an independent engineering testing firm to provide Quality Assurance services.

6.02 RESPONSIBILITIES OF INDEPENDENT ENGINEERING TESTING AGENCY

A. The Testing Agency shall monitor the modulus and uplift test(s) when modulus or uplift test(s) are to be performed. The Installer shall provide and install all dial indicators and other measuring devices.
B. The Testing Agency shall monitor the installation of aggregate pier elements to verify that the production installation practices are similar to those used during the installation of the modulus test elements.
C. The Testing Agency shall perform Dynamic Cone Penetrometer tests as described herein.
D. The Testing Agency shall report any discrepancies to the Installer and General Contractor immediately.

PART 7 – RESPONSIBILITIES OF GENERAL CONTRACTOR

7.01 PREPARATION

A. The General Contractor shall locate and protect underground and aboveground utilities and other structures from damage during installation of the Aggregate Pier elements.
B. The General Contractor will provide the site to the Installer, after earthwork in the area has been completed.
C. Site subgrade shall be established by the General Contractor within 6 inches of final design subgrade, as approved by the Design Engineer.
D. A working surface will be established and maintained by the General Contractor to provide wet weather protection of the subgrade and to provide access for efficient operation of the Aggregate Pier installation.

7.02 LAYOUT OF THE AGGREGATE PIER ELEMENTS

A. The General Contractor shall provide layout (construction staking) of the Aggregate Piers. The General Contractor shall provide ground elevations in sufficient detail to estimate drilling depth elevations to within 2 inches.

7.03 AGGREGATE PIER EXCAVATION

A. Should any obstruction be encountered during drilling or excavation for aggregate piers, the General Contractor shall be responsible for removing such obstruction, or the pier shall be relocated or abandoned. Obstructions include, but are not limited to, boulders, timbers, concrete, bricks, utility lines, etc., that prevent installing the aggregate piers to the required depth, or cause the aggregate pier to drift from the required locations. Dense natural rock or weathered rock shall not be deemed obstructions, and piers may be terminated short of design lengths on such materials. If the General Contractor cannot or does not remove such obstructions within one hour from the time the Installer reports the obstruction to the General Contractor, the Installer may remove such obstructions with his own means. Should this occur, the Installer shall receive an extra to the contract to account for their additional expenses, including delay time involved to crew and equipment.

7.04 EXCAVATIONS

The General Contractor shall coordinate all excavations made subsequent to Aggregate Pier installations so that at least five feet of horizontal distance remains between the

edge of any installed Aggregate Pier and the excavation. Protection of completed Aggregate Pier elements is the responsibility of the General Contractor. In the event that utility excavations are required at horizontal distances of less than five feet from installed Aggregate Piers, the General Contractor shall contact the Aggregate Pier Designer to develop construction solutions to minimize impacts on the installed Aggregate Piers.

Recommended procedures may include:

A. Using cement-treated base to construct portions of the Aggregate Piers subject to future excavations.
B. Replacing excavated soil with compacted crushed stone in the portions of excavations the where Aggregate Piers have been disturbed. The placement and compaction of the crushed stone shall meet the following requirements.
   1. The crushed stone shall meet the gradation specified by the Designer.
   2. The crushed stone shall be placed in a controlled manner using motorized impact compaction equipment.
   3. The aggregate should be compacted to 95% of the maximum dry density as determined by the modified Proctor method (ASTM D-1557).
   4. The Testing Agency shall be on site to observe placement, compaction, and provide density testing. The test results shall be submitted to the Designer and the General Contractor. The General Contractor shall provide notification to the Testing Agency and the Designer when excavation, placement, and compaction will occur and arrange for construction observation and testing.

7.05 PROTECTION OF THE WORK

A. Upon completion of aggregate pier installations, the General Contractor is responsible for protection of the work. This includes, but is not limited to, proper site drainage to prevent the collection or ponding of water on or near completed aggregate piers and appropriate control and coordination of earthwork activities and/or subsequent drilling activities in order to prevent damage to completed aggregate piers.

7.06 FOOTING BOTTOMS

A. Excavation and surface compaction of all footings shall be the responsibility of the General Contractor.
B. Foundation excavations to expose the tops of Aggregate Pier elements shall be made in a workmanlike manner, and shall be protected until concrete placement, with procedures and equipment best suited to (1) prevent softening of the matrix soil between and around the Aggregate Pier elements before pouring structural concrete, and (2) achieving direct and firm contact between the dense, undisturbed Aggregate Pier elements and the concrete footing.
C. Recommended procedures for achieving these goals are to:
   1. Limit over-excavation below the bottom of the footing to 3-inches (including disturbance from the teeth of the excavation equipment.
   2. Compaction of surface soil and top of Aggregate Pier elements shall be prepared using a motorized impact compactor ("Wacker Packer," "Jumping Jack," or similar). Sled-type tamping devices shall not be used. Compaction shall be performed over the entire footing bottom to compact any loose surface soil and loose surface pier aggregate.

3. Place footing concrete immediately after footing excavation is made and approved, preferably the same day as the excavation. Footing concrete must be placed on the same day if the footing is bearing on expansive or sensitive soils.
4. If same day placement of footing concrete is not possible, place a minimum 3-inch thick lean concrete seal (‘mud mat”) immediately after the footing is excavated and approved.

D. The following criteria shall apply, and a written inspection report sealed by the project Geotechnical Engineer shall be furnished to the Installer to confirm:
1. That water (which may soften the unconfined matrix soil between and around the Aggregate Pier elements, and may have detrimental effects on the supporting capability of the Aggregate Pier reinforced subgrade) has not been allowed to pond in the footing excavation at any time.
2. That all Aggregate Pier elements designed for each footing have been exposed in the footing excavation.
3. That immediately before footing construction, the tops of all the Aggregate Pier elements exposed in each footing excavation have been inspected and recompacted as necessary with mechanical compaction equipment, and that the tops of any Aggregate Pier elements which may have been disturbed by footing excavation and related activity have been recompacted to a dry density equivalent to at least 95% of the maximum dry density obtainable by the modified Proctor method (ASTM D-1557).
4. That no excavations or drilled shafts have been made after installation of Aggregate Pier elements within horizontal distance of five feet from the edge of any pier, without the written approval of the Installer or Designer.

E. Failure to provide the above inspection and certification by the project Geotechnical Engineer, which are beyond the responsibility of the Aggregate Pier Installer, may void any written or implied warranty on the performance of the Aggregate Pier system.

END OF SECTION

Attachment H

Base Communications Standards (BCS)

2/7/2025 Updated Version

186 ARW Communications Flight
6225 M Street, Meridian MS, 39307

Table of Contents

List of Acronyms

ANGETL	Air National Guard Engineering Technical Letter
ANSI	American National Standards Institute
APC	American Power Conversion
APC	Angled Polished Connector (Fiber Optic)
ATI	Acoustic Technology Inc.
BCS	Base Communications Standards
BCTF	Base Central Test Facility
BICSI	Building Industry Consulting Service International
CATV	Base Cable Television
Cat6A	Augmented Category 6
CCTV	Closed Circuit Television
CCU	Central Control Unit
CER	Communications Equipment Room
EIA	Electronic Industries Alliance
ICU	Indoor Control Unit
LAN	Local Area Network
LOC	Local Operating Console
NAC	Notification Appliance Circuit
NEMA	National Electrical Manufacturers Association
RJ-45	Registered Jack - 45
PA	Public Address
SP	Standard Process
TMGB	Telecommunications Main Grounding Busbar
TIA	Telecommunications Industry Association
TPOC	Technical Point of Contact
UFC	Unified Facilities Criteria
UPS	Uninterruptable Power Supply
UTP	Unshielded Twisted Pair
WAN	Wide Area Network

1. Document Overview

1.1. Description

This document provides technical direction for planning engineers on available intra-building communications wiring technologies, guidelines, and policies. This will assist the planning engineer in determining technology solutions for specific situations. This volume recommends general standards for new facilities and reconstruction. As with any project, use actual requirements when they are available.

1.2. Purpose

Commercial and government installation and performance standards are broad and while they assure technical performance is achieved, they do not ensure interoperability between facilities and equipment, nor do they provide continuity for service technicians. For this reason, additional base standards were created and detailed within this document.

1.3. Applicable Standards

The following references were used in compiling this architecture and may provide additional information for the communications-planning engineer.

- EIA/TIA 568-C: Commercial Building Telecommunications Wiring Standard.
- EIA/TIA 569A: Commercial Building Standard for Telecommunications pathways and Spaces.
- EIA/TIA 606: Administration standard for the Telecommunications Infrastructure of Commercial buildings.
- ANSI J-STD-607-A: Grounding Bonding and Electrical Protection (BICSI Telecommunications Distribution Methods Manual 10th edition, chapter 10)
- Building industry Consulting Service International (BICSI) Telecommunications Distribution Methods Manual (TDMM).
- Standard Process (SP) -2840: Commercial Building Telecommunications Cabling Standard.
- ANG ETL 2015-01-05: Air National Guard Engineering Technical Letter (ANGETL) 15-01-05: “Electrical and Communications Engineering”
- Unified Facilities Criteria (UFC) 4-021-01 9 April 2008 Change 1, January 2010
- Design and O&M: Mass Notification Systems
- United States Department of Agriculture Rural Utilities Service Bulletin 17S3F-201 (PC-4)
- Building Industry Consulting Service international (BICSI) Telecommunications Distribution Methods Manual

2. Scope

It is important to remember both present and future communications requirements when installing a standardized building wiring/infrastructure system. This will minimize or eliminate building defacement due to future distribution system expansion or retrofit.

2.1. Systems Covered in this Document.

- Voice/Local Area Network
- Public Address (PA)

- Base Cable Television (CATV)
- Energy Monitoring and Control
- Security Alarm Systems
- Mass Notifications Systems
- Klaxon, Aircrew Alerting System

3. Voice / Local Area Network Cabling

3.1. Unshielded Twisted Pair Copper Cable:

3.1.1. Cable Type & Rating

- All network cabling used on Key Field shall be non-bonded, Plenum Rated, and Blue in color.
- There is no distinction between Voice and Data Cabling; all cabling shall be Blue Cat6A or higher rated.

3.1.2. Installation Standards

- All network cabling shall be installed in strict adherence to industry standards to maintain performance integrity.
- Cables must meet or exceed the specifications outlined in Table 3.1 (Page 6).

3.1.3. Termination Guidelines

- A common issue in network cable installations is the untwisting of cable pairs at termination points or when attaching RJ-45 connectors.
- The maximum allowable cable pair untwist is ½ inch. Any excess untwisting may introduce Near-End Crosstalk (NEXT), leading to performance degradation.
- Cables must not be bent more than six (6) times their outside diameter to prevent Near-End Crosstalk (NEXT) and signal interference.

3.1.4. Termination & Mounting Requirements

- Unshielded Twisted Pair (UTP) copper cable shall terminate at ivory-colored terminal blocks that comply with current industry standards.
- Terminal blocks shall be Leviton #41089-6IP or an approved equivalent (see Attachment A).
- Wall-mounted connections shall utilize 6-port, ivory-colored, surface-mounted boxes that:
  - Provide cable connections parallel to the wall surface.
  - Include a clear label window for identification.
  - Be Leviton #41089-6IP or an approved equivalent (see Attachment B).
- Communications Equipment Room (CER) terminations shall utilize 48-port patch panels designed for installation in a standard 19-inch equipment cabinet.

  Note CER patch panels and 19” cabinet are discussed in-depth later in this document.

Table 3.1.
UTP Performance Requirements

Parameter	Augmented Category 6 Cat6A (Performance at 600 MHz shown in parentheses)	Augmented Category 7 Cat7A (Performance at 1250 MHz shown in parentheses)
Specified frequency range	1-600 MHz	1-1250 MHz
Attenuation	2.1 dB (47.1 dB)	2.1 db (69.9 dB)
NEXT	78 dB (63.7 dB)	78 dB (58.9 dB)
Power-sum NEXT	75 dB (60.7 dB)	75 dB (55.9 dB)
ACR	75.9 dB (16.6 dB)	75.9 dB (16.6 dB)
Power-sum ACR	72.9 dB (13.6 dB)	72.9 dB (13.6 dB)
ELFEXT	78 dB (39.7 dB)	78 dB (33.4 dB)
Power-sum ELFEXT	75 dB (36.7 dB)	75 dB (30.4 dB)
Return loss	20 dB (17.3 dB)	20 dB (14.1 dB)
Delay Skew	25ns	25ns

Configuration management of twisted pair copper cable is the most flexible of all the technologies considered in this section. Wiring practices are unique to every installation and installer. To standardize the installations at Key Field we have set the following guidelines.

3.1.1. Building Service / Entrance Equipment and Cable:

Services to the facility will include Copper and Single Mode Fiber Optic Cable.

3.1.1.1. Copper:

3.1.1.1.1. General Overview

- Telephone service to the facility shall be supplied using 24-gauge service cable, tested in accordance with United States Department of Agriculture Rural Utilities Service Bulletin 17S3F-201 (PC-4) upon installation.
- A minimum of 100 cable pairs shall be installed as the standard.
- The number of cable pairs may be increased or decreased based on building-specific and mission requirements.
- Any modifications to the standard must be documented in writing during the engineering phase of the project.

3.1.1.1.2. Termination & Equipment Requirements

- All cables shall terminate in the Communications Equipment Room (CER).
- A 100-pair Building Entrance Terminal (BET), model Circa RMP100BET25/25 or an approved equivalent (see Attachment C), shall be installed in a standard 19-inch network equipment cabinet.
- The distant end of the cable shall terminate within the Base Central Test Facility (BCTF), located in Building 603, unless an alternative location is specified in writing prior to construction.
- At the BCTF or specified termination point, the cable shall be terminated using a 100-pair BET, model Circa 4486: 622002L30 or an approved equivalent (see Attachment D).

3.1.1.1.3. Installation Standards & Grounding

- All BET installations shall conform to EIA/TIA standards.
- Grounding shall be performed in accordance with ANSI J-STD-607-A.

3.1.1.2. Fiber Optic:

3.1.1.2.1. General Overview

- The base fiber optic infrastructure supports Local Area Network (LAN), Wide Area Network (WAN), energy monitoring and control services, alarm systems, Closed-Circuit Television (CCTV), and CATV.
- A minimum of 24 strands of single-mode fiber shall be installed as the standard.
- Higher fiber counts may be installed based on building-specific and mission requirements.
- Any modifications to the standard must be detailed in writing during the engineering phase of the project.

3.1.1.2.2. Fiber Type & Termination

- All facilities shall be served by single-mode fiber.
- Fiber shall be terminated with Lucent Connectors (LC) / Angle Polished Connectors (APC) in fiber cassettes.
- The standard cassette shall be Corning CCH-CS24-B3-P00RE or an approved equivalent (see Attachment E).
- Cassettes shall be installed in a Corning PCH-01U fiber shelf or an approved equivalent (see Attachment F).
- If space constraints exist, one or both ends may be terminated into existing fiber shelves (PCH-04Us) within the Base Communications and Technology Facility (BCTF) or an approved Information Transfer Node (ITN) facility.
    - In such cases, PCH-01Us may not be required, but this must be approved prior to facility construction.

3.1.1.2.3. Installation & Termination Guidelines

- All fiber optic cables shall terminate within the BCTF or an approved ITN facility, using the same type of equipment at both ends of the circuit.
- All fiber optic cable shall be home-run with no splices.
- Terminations shall be performed using fusion splicing technology to ensure optimal performance and minimal signal loss.
- All fiber optic installations must comply with EIA/TIA and BICSI standards.

3.2. Communications Equipment Room

- Humidity Control will be provided by proper heating and cooling as directed by ANGETL 15-01-05, paragraph 7.4.1.
- The CER should be in a location within the facility, which will prevent any UTP cabling from exceeding the maximum of 295 feet (ft) in length and CATV cabling from exceeding 250ft in length. If distances exceed these maximums an additional CER must be provided and equipped.
- Adequate space shall be allotted for the network equipment cabinet or cabinets and ladder/cable rack per BICSI Telecommunications Distribution Methods Manual Chapter 7.
- Adequate electrical service outlets are required along wall surfaces. A minimum of one 20A 120Volt, National Electrical Manufacturers Association (NEMA) 5-20R connection is required in network equipment cabinet; all electrical connections will be connected to backup power if a generator or generator connections are present to supply power to the facility.
- Consideration should be given to having a minimum 10 ft high ceiling in CER.

3.2.1. Network Equipment Cabinet

The BET, telephone patch panels, fiber optic splice tray/patch panel, network switches, UTP patch panels for facility communications outlets, paging telephone interface, PA Amplifier, CATV Fiber Optic Receiver, CATV Splitters, CATV patch panels, and Uninterruptible Power Supply (UPS) will be located within the network/equipment cabinet or cabinets. The cabinet will be a 19-inch lockable cabinet, not to exceed 80 inches in height, (Chatsworth ZA32A221071 or approved equivalent (see attachment H) with vertical and horizontal cable management [Vertical: Chatsworth 38646-722 times 2 (see attachment I) for left and right sides, Horizontal: Chatsworth 30139-719 for 1 Rack Unit (U) and 30130-719 for 2U or approved equivalent (see attachment J)]. The number of horizontal cable management devices will vary depending on the amount of equipment installed within the network/equipment cabinet. Each 48-port patch panel requires the addition of a 1U horizontal cable management device. A 2U unit shall be installed between the CATV patch panel and UPS. There shall be a horizontal cable management device above and below each equipment item installed within the cabinet that requires connections to the front panel. Each network/equipment cabinet will require appropriate hardware for mounting equipment and cable management hardware, 2 each Chatsworth 76543-001 or approved equivalent (see attachment H). The network/equipment cabinet will be installed in the building CER centered in the room, if multiple cabinets are required cabinets will be centered in the room with adequate ventilation and workspace on all sides of the cabinets (as discussed in paragraph 3.2. above) with communications raceway/cable basket providing a pathway for network cables from the floor, wall, and/or ceiling to the cabinet or cabinets. All raceways shall be installed according to EIA/TIA and BICSI standards.

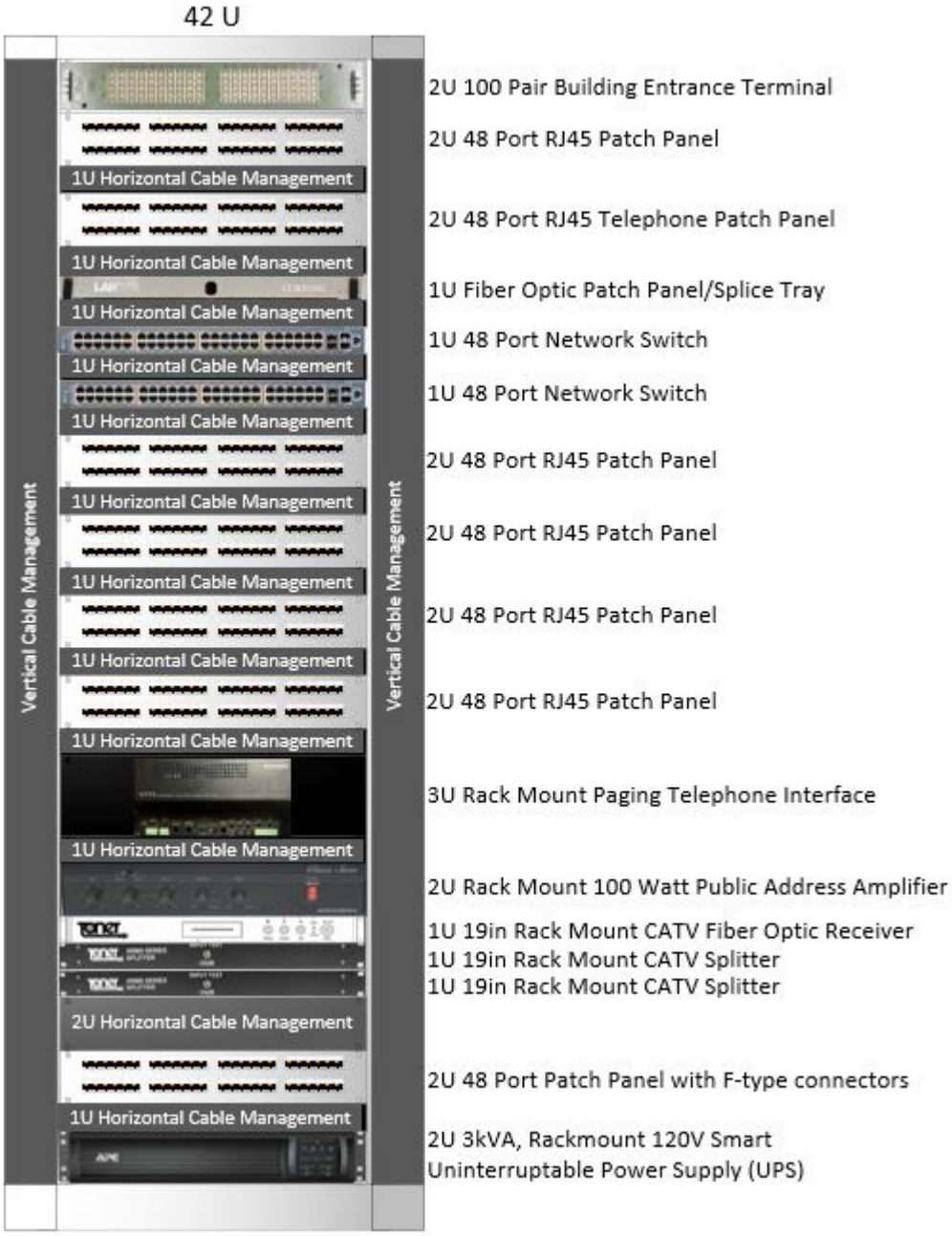
Note: depending on the size of the facility and the number of communications outlets within the facility an additional cabinet or cabinets may be required to accommodate the number of network switches and 48-port patch panels required. If additional cabinets are required, it shall be noted within the plans for the specific project and/or facility.

3.2.1.1. Network Equipment Cabinet Layout

Equipment will be installed in the network equipment cabinet top to bottom (see drawing 3.2.1.1.1.) in the following order:

1. BET or BETs (installed as discussed previously in this document)
2. Horizontal cable management (a horizontal cable management device will be installed above and below each network device installed in network equipment cabinet, exceptions are noted below)
3. 48-port patch panels for telephone cross connection (2 panels are required to terminate 96 pair of the incoming 100 pair.
4. Fiber optic termination shelf/patch panel or panels
5. Network switch or switches
6. 48-port patch panels for communications outlets throughout the facility
7. Paging telephone interface
8. PA amplifier
9. CATV rack mount fiber optic receiver
10. CATV splitters.
11. CATV patch panel for connections throughout the facility.
12. Uninterruptable Power Supply

Drawing 3.2.1.1.
Main Network Equipment Cabinet Example



3.2.1.2. 48-Port Patch Panels for Telephone

The BET specified above has 4 25 pair cables on the facility side of the terminal. Each of these cables will terminate to a 48-port patch panel, Leviton 69586-C48 or approved equivalent (see attachment K), 1 cable pair per jack terminated on pins 4 (secondary color)

and 5 (primary color). Each of the 4 25 pair cables will have one pair that will be unused. This is due to each cable being 25 pair and each patch panel having only 48-ports. Pair 25 and 50 will be left unused on the first 48-port patch panel and pair 75 and 100 on the second patch panel. Horizontal cable management will be installed above and below each patch panel.

3.2.1.3. Fiber Optic Termination Shelf / Patch Panel

The fiber optic termination shelf/patch panel, described in paragraph 3.1.1.2 above will be installed under the telephone patch panels. Horizontal cable management will be installed above and below the fiber optic termination shelf/patch panel.

3.2.1.4. Network Switches

Network switches are Government Furnished Equipment (GFE). The number of switches required for the facility will be noted in the project plans and appropriate space will be left in the cabinet to allow for installation of the network switches. This will affect the number of horizontal cable management devices required in the cabinet. Horizontal cable management will be installed above and below each network switch.

3.2.1.5. 48-Port Patch Panels for Facility Communications Outlets

48-port patch panels will be installed in the network equipment cabinet or cabinets to provide connectivity to customer workspaces throughout the facility. These patch panels will be Leviton 6910G-U48, or approved equivalent (see attachment L). Patch panels will be numbered to match the outlets within the rooms. Horizontal cable management will be installed above and below each patch panel.

Note: Space must be left in the 1st network equipment cabinet, the cabinet containing the GFE network switches for fiber optic termination shelf/patch panel, CATV equipment, PA equipment, and UPS. All equipment that requires 120-volt alternating current will be installed within the first cabinet; the cabinet located farthest to the left when facing the front of the cabinets. If multiple cabinets are required, additional 48-port patch panels for facility communications outlets will be installed in additional cabinets installed to the right of the first cabinet.

3.2.1.6. Paging Telephone Interface

Key Field utilizes a station mode type interface for building paging. This configuration requires a telephone interface module, Bogen UTI1 or approved equivalent (see attachment M). This interface shall be mounted in the first network equipment cabinet immediately underneath the horizontal cable management underneath the 48 port patch panels for facility communications outlets. The Bogen unit described above requires a RPKUTI1 (see attachment N) to mount the unit into the network equipment cabinet. Horizontal cable management will be installed above and below the paging telephone interface.

3.2.1.7. Paging Amplifier

A 100-watt 70-volt PA amplifier shall be installed immediately under the paging telephone interface, Bogen C100 or approved equivalent (see attachment O). All cable connections on the 100-watt amplifier are on the rear of the unit. The Bogen unit described above requires

RPK50 - rack mount kit to allow it to be mounted correctly within the network equipment cabinet. There is not a requirement for horizontal cable management beneath the paging amplifier.

3.2.1.8. Input-Matching Transformer

An input-matching transformer, Bogen model WMT1A or approved equivalent (see attachment P) shall be utilized to connect a 600-ohm telephone line to the paging amplifier for base page. This transformer will be installed with double sided tape to the top of the paging amplifier behind the paging telephone interface.

3.2.1.9. CATV Rack Mount Fiber Optic Receiver and Fiber Optic Coupler

A rack mount fiber optic receiver will be installed below the paging amplifier. This receiver shall be a Toner RMOR1220-40 or approved equivalent (see attachment Q). The fiber optic receiver will be paired with a fiber optic coupler. The fiber optic coupler will be a 19-inch rack mount with LC/APC connectors. This coupler will be configured for the actual facility it is serving and will be installed in another facility. Plans for the facility will specify the required coupler parameters (see attachment R for coupler information)

Note: an SC/APC to LC/APC 6ft fiber patch cord will be required to connect the fiber optic receiver to the fiber optic termination shelf/patch panel. An additional 6ft LC/APC will be required for the fiber optic coupler.

3.2.1.10. CATV Splitters and 19-Inch Rack Mount Splitter(s)

Cable management is not required between the fiber optic receiver and CATV splitter due to the connections between the units being on the rear of each unit. Each work area, break room, and conference room within the facility will have a minimum of 1 CATV drop. CATV drops shall not exceed 250ft in length. Contractor will supply Toner XRMS-24 or approved equivalent (see attachment S) 19-inch rack mount CATV Splitter(s) to facilitate connections to CATV system for each drop. If multiple 19-inch rack mount splitters are required, an inline 1.2 GHz horizontal drop splitter, Toner SGHS Series, or approved equivalent (see attachment T) may be used to parallel multiple 19-inch rack mount splitter inputs. These splitters may be installed with a short piece of RG6 cable and not attached directly to any mounting point within the cabinet. Unused outputs on the 19-inch rack mount splitters shall be terminated with a 75-Ohm F type port terminator, Toner F59-THRL or approved equivalent (see attachment U).

Note: contractor will supply 75-Ohm F type port terminators on all CATV outlets within work areas.

3.2.1.11. CATV Terminations in Network Equipment Cabinet

CATV cable shall be RG6 quadshield, plenum rated, white, Toner RG6-QSPWR-M or approved equivalent (see attachment V). CATV cables shall be terminated with compression connectors specifically designed for quadshield plenum rated cable, PPC EX6XLPLUS or approved equivalent (see attachment W). Cables shall be home runs, splitters are only permitted within the CER, as specified in this document. CATV cable and their connectors

routed from work areas within the facility shall be connected to feedthrough F-connectors, black in color, Leviton 41084-FEF or approved equivalent (see attachment X). Feedthrough connectors shall be installed into a 48-port flat patch panel, Leviton 49255-H48 or approved equivalent (see attachment Y), that accepts the feedthrough F-connectors specified above. Patch panel will be installed below the CATV 24 port splitters specified in 3.2.1.10 above. Cable management will be installed above and below CATV patch panel(s). The number of patch panels will be determined by the number of CATV drops specified in the project plans/drawings. If there are unused port positions within the 48-port patch panel, vacant positions shall be filled with blank inserts, Leviton 41084-BB or approved equivalent (see attachment Z).

3.2.1.12. Uninterruptable Power Supply

UPS shall be minimum 3kVA, 19-inch rackmount units, 2U in height, with a minimum of 8 120-volt outlets, American Power Conversion (APC) / Schneider Smart-UPS SMT3000RM2UC or approved equivalent (see attachment A1). Due to long term use, UPS systems must utilize the same size 12V 5Ah battery packs as existing units at Key Field to allow for lifecycle management and compatibility with the in-place battery management plan. UPS unit shall be installed at the lowest level of the first network equipment cabinet.

3.3. Room/Workspace UTP Network Cabinet and Room Labeling Plan

When you enter a room by the main doorway (usually door with room number attached, on, beside or above the door) communications boxes will be labeled numerically from left to right around the room. Each jack throughout the entire building will have a unique number with no numbers repeated. The numbering will start with 1 and rise throughout the facility. Each jack in every box will be numbered bottom to top 1, 2, 3, 4, 5, 6. Numbering will be, for example, 1.1, 1.2, 1.3, 1.4, 1.1, 2.2…… where the number to the left of the decimal is the box number and the number to the right is the port number. Two ports, 5 and 6 in each box, will not be used for UTP Cable, they are reserved for Fiber to the desktop, and F-type CATV connections. During construction, unless otherwise specified within the project plans, vacant ports will be filled with blank inserts, Leviton #41084-BI, or approved equivalent (see attachment B1), blank inserts or proper blank insert for approved equivalent box. Wall boxes will have the box number affixed to the top and the label window on the front of the box. CER terminations of UTP cabling will be to 48 port patch panels detailed in paragraph 3.2.1.5. The cabling from each room will be installed, beginning with the lowest room number containing box 1 and rising in number throughout the facility. Care must be taken when installing the 48-port patch panels in equipment cabinet 1. Space must be considered for all the powered equipment as well as the BET and associated items required for telephone services. If a communications outlet contains more or less than 4 jacks, i.e.: A wall phone would only require one jack. Label the jack as you would any other box in the facility (the number in this plan represented by an X) X.1 and continue with the next box and jack number do not skip jacks on the patch panel. If the boxes and patch panels are numbered correctly and consecutively, there should be no confusion on the location of work area connections.

3.4. Grounding

As a minimum, provide a single-point ground for all Communications-Electronics equipment for the building within the CER. This single point of ground is referred to as the Telecommunications Main Grounding Busbar (TMGB). This must be a copper ground plate minimum of .25 inches thick X 6 inches Wide X 24 in length. The Telecommunications Bonding Backbone (TBB) shall be a minimum 1 AWG or larger copper wire (See Table 3.4.1 below for additional sizing information) directly connected to the TMGB. The resistance of the ground riser must be 5 ohms or less measured from the electrical entrance facility service equipment main building ground point. All, equipment, frames, cable baskets, and cabinets will be properly connected to this central ground. All connections of wire–to-wire and/or wire-to-ground rod must be cad welded. All grounds will be installed to EIA/TIA and ANSI J-STD-607-A standards.

Table 3.4.
TBB Conductor Size VS Length

TBB linear length m (ft)	TBB size (AWG)
Less than 13 (41)	1
13 – 16 (42 – 52)	1/0
16 – 20 (53 – 66)	2/0
20 – 26 (67 – 84)	3/0
26 – 32 (85 – 105)	4/0
32 – 38 (106 – 125)	250 kcmil
38 – 46 (126 – 150)	300 kcmil
46 – 53 (151 – 175)	350 kcmil
53 – 76 (176 – 250)	500 kcmil
76 – 91 (251 – 300)	600 kcmil
Greater than 91 (301)	750 mil

4. Communications Ducting/Handholes and Manholes:

Provide a minimum of three (3) 4-inch underground ducts, encased in concrete, to the new facility. Ducting shall extend to the nearest manhole/handhole and into the communications equipment room (CER).

Each 4-inch duct shall contain:

- Two (2) packs of MaxCell Edge Detectable innerduct with 18 AWG solid green tracer wire (see Attachment C1) or an approved equivalent fabric 3” 3-cell innerduct.

Copper and fiber cabling to the new facility shall be installed within the same 4-inch duct but in separate cells within one of the innerduct packs.

Installation Requirements:

- Innerduct:
  - Must be tagged and anchored with a non-conductive connector at both ends.
- Duct Routing:

- The duct route shall not exceed two (2) 90-degree turns using long sweeps, including the turn from under the slab into the CER.
  - If more than two (2) 90-degree sweeps are required, additional underground handholes shall be installed to prevent excessive cable pull strain.
- Handholes & Manholes:
  - Handholes shall be a minimum of 48” W × 72” L × 48” H.
  - Larger Manholes may be required in areas with heavy cable convergence.
  - The distance between handholes/manholes should not exceed 500 feet and shall not exceed 600 feet under any circumstances.

Covers & Security Features:

- Handhole and manhole covers shall conform to Neenah Foundry specification NF-1750061 (see Attachment G1) or an approved equivalent. Covers shall be milled with the word "Communications."
- Cover rings shall conform to Neenah Foundry NF-17502234 (see Attachment H1) or an approved equivalent.
- Covers shall be milled for and include a pentahead security bolt with an accompanying wrench.

5. Public Address System

PA includes necessary cabling, amplifiers, paging telephone interface, volume controls, ceiling mounted acoustic buckets, tile bridges, interior speakers, exterior speakers and speaker mounting plates.

5.1. Cabling

Cabling shall be a minimum 18 gauge shielded plenum rated. The facility shall have two PA cabling loops one connecting all interior speakers and one connecting all exterior speakers.

5.2. Amplifier

The PA amplifier shall be Bogen C100 (see attachment O), or approved equivalent, with a full power rating of at least 100 watts.

- ✓ Frequency response (transformer) shall be 70 Hz to 16 kHz ±2 dB†, with less than 1% distortion.
- ✓ Input sensitivity shall be 600µV for low-impedance balanced microphones, 85mV for auxiliary inputs, and 75mV for TEL input.
- ✓ Hum and noise shall be 55 dB below rated output for the MIC inputs and 70 dB below rated output for the AUX and TEL inputs.
- ✓ The amplifier shall provide at least one dedicated low-impedance balanced microphone input, one dedicated Hi-Z auxiliary input, and one dedicated telephone line input, as well as a fourth input that is switch selectable to be either a microphone or auxiliary input.
- ✓ The microphone inputs shall be equipped with filters to protect against RF interference. Independent volume controls for each input as well as Treble control (±11 dB @ 10 kHz) and Bass control (±11 dB @ 100 Hz) shall be incorporated.
- ✓ The amplifier shall provide output impedances for 25V and 70V constant voltage systems.

- ✓ The amplifiers shall contain a resettable thermostat in the power transformer to protect against heat buildup and short-circuited or overloaded connections.
- ✓ Provision shall be included to mount the amplifier in 19-inch equipment rack, using an optional rack panel kit (Bogen Model RPK50 or appropriate brackets for the amplifiers used).

5.3. Speakers

System speakers will be distributed throughout the facility spaced to provide occupants quality sound and the ability to hear announcements throughout the facility without having to set volume levels so high as to exceed comfortable listening levels when someone is close to a speaker. Speakers shall be installed in all break rooms, bathrooms, and conference/meeting rooms. Speakers in conference/meeting rooms shall be equipped with a volume attenuator, Bogen AT35A (See Attachment D1), or approved equivalent. Speakers that are not controlled by the volume attenuator shall be wired in parallel with volume attenuators input. Exterior speakers shall have a minimum of 5 tap settings (15, 7.5, 3.8, 1.8, and 0.9 watt). Interior speakers shall have a minimum of 6 power taps available (4, 2, 1, 1/2, 1/4, and 1/8 watt). If speakers are to be installed into a standard 2' X 2' or 2' X 4' ceiling tile, ceiling tile bridges, Bogen TB8, or approved equivalent (see attachment E1) and ceiling speaker enclosures, Bogen ER84 or approved equivalent (see attachment E1) shall be used. As a minimum, provide four outside weatherproof speakers. Preferred exterior locations are corners of facility. Additional speakers shall be added to provide minimum coverage of 100-foot radius of entire exterior of the facility.

5.4. PA Operational Configuration

PA is activated by two systems:

- ✓ **Building paging System:** Building page is distributed to each facility with an analog telephone line unique to each facility. The analog telephone line is connected to the station port on a telephone interface module. The output of the telephone interface module is then connected to the Telephone (TEL) input on the amplifier.
- ✓ **The Base Paging System:** One copper pair is connected to an input-matching transformer, Bogen model WMT1A (see attachment P), or approved equivalent. The output of the line matching transformer is connected to the paging amplifier's AUX 2 input.

Base communications personnel will assist the contractor with connections at the time of install.

5.5. Base Cable Television

5.5.1. Radio Frequency (RF) Coax

Provide a CATV distribution system throughout the facility. Building plans will specify the locations. Distribution system will consist of home runs from the service drop to the CER. CATV drops shall not exceed 250ft in cable length.

5.5.2. CATV Distribution

Intra-building CATV distribution at Key Field is transmitted over fiber optic infrastructure. Each building will be equipped with a fiber optic receiver, see paragraph 3.2.1.9. for more detailed information. Appropriate LC/APC to SC/APC patch cables shall be furnished by the contractor.

5.5.3. Operational Configuration

Appropriate patch cords, splitters, amplifiers, and pads, Toner FAM Series 1220 MHz attenuator pads or approved equivalent (see attachment F1), shall be installed in CER to produce a usable signal level to each drop (0db +/- 5db) in work area. Only a working, completed system will be accepted.

6. Energy Monitoring and Heat, Ventilation, and Air Conditioning (HVAC) Control

These systems are Civil Engineering owned systems; however, they communicate via communications infrastructure. One UTP (Cat6A or higher rated) cable will be run from the CER to the Automated Logic Control Cabinet location to provide network connectivity to the system. Both ends will be terminated, 1 RJ-45 within the Automated Logic equipment cabinet, labeled on the actual cable, and as any other UTP connection in the building, numbered and labeled appropriately in the CER.

7. Security Alarm Systems

Security alarm systems, if required, will be Advantor systems compatible with the current central station system installed in the 186 Security Forces Base Defense Operations Center (BDOC). Planning and Engineering of the system will be coordinated with the 186 Security Forces, and the 186 Communications Flight to assure all security and communications standards and requirements are met.

Wiring inside the new facility will be installed and maintained by the alarm system contractor with one exception. One UTP (Cat6A or higher rated) cable will be run from the alarm panel to the communications frame and terminated with a RJ-45 within the Advantor alarm panel and labeled on the actual cable. The other end will be terminated as any other UTP connection in the building and labeled appropriately within the CER.

8. Mass Notification Systems (MNS)

Mass Notifications Systems (MNS) are required on all Federal installations and facilities including Key Field ANGB.

- ✓ Systems must comply with UFC 4-021-01.
- ✓ MNS equipment shall utilize Ultra High Frequency (UHF) 413.275 MHz.
- ✓ Each facility will have at least one Local Operating Console (LOC), Indoor Control Unit (ICU)/Indoor Speaker Unit (ISU), strobes and speakers as required in furnished drawings.
- ✓ There will be multiple speaker and strobe configurations used throughout facilities.
  - ✓ All interior speakers will be 2-watt speakers with white bodies.
  - ✓ All strobes will be marked “ALERT” with white body, amber lens, and have selectable candela settings between 15 and 185 and will be set per UFC-4-021-01 standards for the area in which the strobe is installed.
  - ✓ This standard is applicable whether the speaker and strobe are separate or a combined speaker strobe.
  - ✓ Horn type, white in color, indoor 15-watt speakers can be used in high bay areas.
  - ✓ Outdoor speakers will be horn type 15 watt weatherproof.
- ✓ All speakers will be 70 volt.

- ✓ Recordings for notifications/announcements will be provided by project Technical Point of Contact (TPOC).

All functions, notifications/announcements will be tested and approved before acceptance of any piece or part of the MNS.

9. Klaxon Systems

Klaxon systems are part of the base MNS. Specific Audio messages/notifications will be provided to the contractor providing the MNS for this purpose. Contractor will work with the systems supplier to assure proper tones, messages, and notifications are programmed and operational before system acceptance. See the TPOC for additional information.

10. Final Testing

Each Telephone/Data connection copper and fiber will be tested and must pass acceptable loss, EIA/TIA, BICSI and Cat6A standards. The contractor will provide testing results of all copper and fiber installed within the project. Test results are required in Adobe (.pdf) digital format prior to systems acceptance by TPOC. The contractor will be responsible to correct any communications deficiencies. Telephone/data cabling, PA, mass notification, and CATV/CCTV systems will be tested by 186 Communications Flight personnel before the systems are accepted from the contractor.

11. Drawings

As built drawings will be provided by contractor for all installed systems to identify locations of all equipment and circuit paths. These drawings must note all deviations from any planning documents, pre-construction, or proposal drawings.

6110G-RI6

eXtreme Cat 6A QuickPort Jack, Channel-Rated, Ivory

The eXtreme Cat 6A Channel-Rated QuickPort jack is designed to be used with all QuickPort compatible products and features patented injection-molded Cone of Silence™ covers to eliminate alien crosstalk (AXT). The jack includes patented Retention Force Technology™ to promote consistent network performance over the life of the system. Unique Pair Separation Towers facilitate quick, easy terminations. The jack is configured in a 180-degree configuration such that the punch down field is in the back, allowing for rear termination.

UPC Code : 078477262108

Country Of Origin : United States

Technical Information

Product Features

Brand : eXtreme

Category Rating : Cat 6A

Color : Ivory

Performance : Channel-Rated

Shielding : UTP

Features and Benefits

- Terminates 26 to 22 AWG solid conductors and 24 to 22 AWG stranded conductors
- Terminates 26 AWG stranded conductors up to 5 times
- Cat 6A/Class EA Channel Performance
- Patented RFT protects against tine damage from 4- or 6-pin plugs
- Alien crosstalk suppressed by Cone of Silence, metalized body, and new printed circuit board
- Pair Separation Tower (PST) design facilitates separation of Cat 6A conductors
- Patented, dual-layer wiring label simplifies punchdown and reduces rework
- Will exceed IEEE 802.3bt standard up to 0.5 amps per conductor (100 watts) continuously
- ETL verified to meet the IEC 60512-99-002 standard for support of IEEE 802.3bt Type 4 PoE (90-watt) applications

Patents*

AU157767	MX295578
CA2611991	MX297837
CA2715824	TWI285985
DE60344739.2	US6641443
DE60351172.4	US6786776
ECD147723-0001	US7273396
EP2315317	US7547227
GB2315317	US7967645
GB2562884	US7980890
HK0410472.5	USD511325
MX249737	USRE41699

*This list is provided for patent marking purposes only. A good faith effort is made to maintain the accuracy and completeness of this list. No legal inference should be drawn from the omission of a patent from this list.

SPECIFICATION SUBMITTAL

JOB NAME:	CATALOG NUMBERS:	
JOB NUMBER:		

Leviton Manufacturing Co., Inc.
201 North Service Road, Melville, NY 11747
Telephone: +1-800-323-8920 · FAX: +1-800-832-9538 · Tech Line (8:30AM-7:30PM E.S.T. Monday-Friday): +1-800-824-3005

Leviton Manufacturing of Canada, Ltd.
165 Hymus Boulevard, Pointe Claire, Quebec H9R 1E9 · Telephone: +1-800-469-7890 · FAX: +1-800-824-3005 · www.leviton.com/canada

Leviton S. de R.L. de C.V.
Lago Tana 43, Mexico DF, Mexico CP 11290 · Tel.: (+52)55-5082-1040 · FAX: (+52)5386-1797 · www.leviton.com.mx

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If you would like to know where your local Leviton office is located please go to:
www.leviton.com/international/contacts/

41089-6IP

Surface-Mount QuickPort Box, 6-Port, Ivory

The compact surface-mount box accepts two QuickPort snap-in connector modules. The box supports voice/data applications in office, retrofit, or other surface-mount environments. It includes an ID window, mounting screws, and adhesive, and is available in four colors: white, ivory, gray, and black.

Features and Benefits

- User-provided cover screw can be installed for additional security
- Compatible with all individual QuickPort modules
- Box base functions as a punchdown platform stabilizing connector modules during termination
- Connector module can be pre-terminated prior to snapping into housing port
- Designation label provided for identification purposes
- Includes two self-tapping screws and pressure-sensitive adhesive

UPC Code : 078477821329

Country Of Origin : Mexico

RoHS Compliant : Yes

SPECIFICATION SUBMITTAL

JOB NAME:	CATALOG NUMBERS:	
JOB NUMBER:		

Leviton Manufacturing Co., Inc.
201 North Service Road, Melville, NY 11747
Telephone: +1-800-323-8920 · FAX: +1-800-832-9538 · Tech Line (8:30AM-7:30PM E.S.T. Monday-Friday): +1-800-824-3005

Leviton Manufacturing of Canada, Ltd.
165 Hymus Boulevard, Pointe Claire, Quebec H9R 1E9 · Telephone: +1-800-469-7890 · FAX: +1-800-824-3005 · www.leviton.com/canada

Leviton S. de R.L. de C.V.
Lago Tana 43, Mexico DF, Mexico CP 11290 · Tel.: (+52)55-5082-1040 · FAX: (+52)5386-1797 · www.leviton.com.mx

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Circa TELECOM

Building Entrance Terminals

RACK MOUNT PROTECTOR SERIES - RMP

RMP50BET - RMP100BET - RMP200BET

50 - 200 PAIR - INDOOR BET - 19" RACK MOUNT

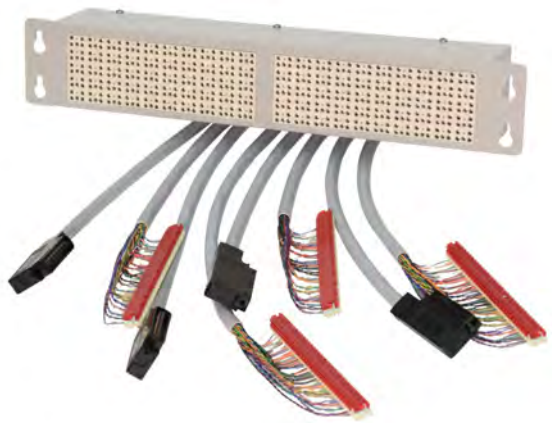
Underwriters Laboratories

Product Specifications

UL 497 Primary Protector for Communication Circuits

NAFTA Country of Origin: CANADA - All Loaded and Unloaded Models are "Buy America Act" Approved.

- High-Density Rack Mount Configuration
- Accepts Industry Standard 5 PIN Protection Modules
- External Ground Connectors Accept 6 - 14 AWG Wire
- Exceeds UL497 Primary Protection Standards
- Built in 26AWG Fuse Link
- Accommodates up to 2000 Pair Per Rack



Ordering Information

RMP100BET

Model Number	Stock Code	Pair Count	Input	Output	Dimensions (H" x W" x D")	Weight (lbs)
RMP50BET-RJ/RJ [1]	999054D6D1	50	6' 24AWG RJ21 Male	8" 24AWG RJ21 Female	3.32 x 19.5 x 3.06	15
RMP100BET-RJ/RJ [1]	999041D6D1	100	6' 24AWG RJ21 Male	8" 24AWG RJ21 Female	3.32 x 19.5 x 3.06	17
RMP100BET-MS2/RJ	999041T3T8	100	3' MS2	8' RJ21 Male	3.32 x 19.5 x 3.06	19
RMP100BET-710/RJ	999041T3T8	100	3' 710	8' RJ21 Male	3.32 x 19.5 x 3.06	19
RMP100BET-25/25	999041T25T25	100	25' 24AWG	25' 24AWG	3.32 x 19.5 x 3.06	43
RMP200BET	999040B	200	RJ21Male	RJ21Male	7.50 x 19.50 x 3.57	21

Notes

Cable Type: CAT5e 25 Pair 24AWG 0.57 dia o.d.

Installation: 19" RACK MOUNT

Custom cable lengths available in 25' increments

[1] Units equipped with 25 pair 24AWG CAT3 unshielded cable

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Building Entrance Terminals

RACK MOUNT PROTECTOR SERIES - RMP

RMP100BET

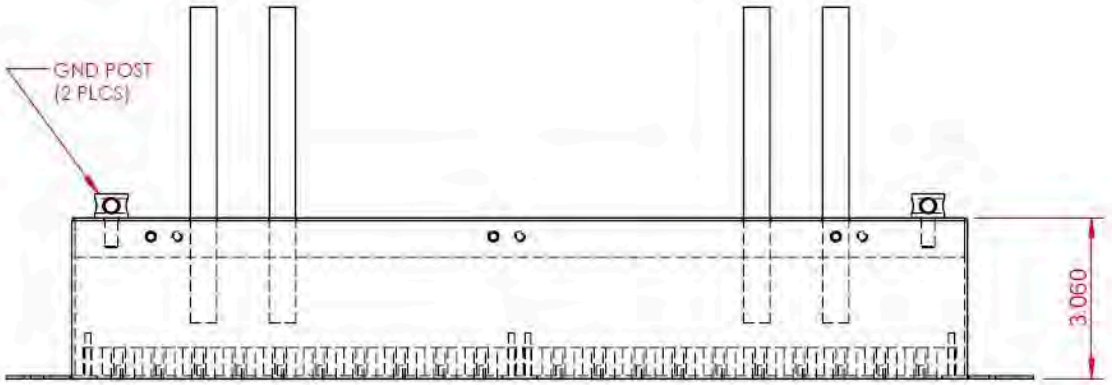
100 PAIR - INDOOR BET - 19" RACK MOUNT

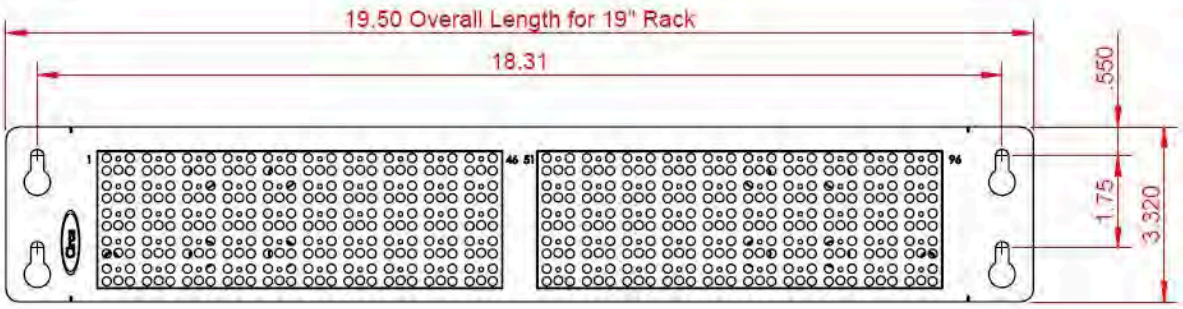
Underwriters Laboratories

Physical Dimensions

UL 497 Primary Protector for Communication Circuits

3.32 x 19.50 x 3.06
(H" x W" x D")





Notes

Cable Type: (4) CAT5e 25 Pair 24AWG 0.57 dia o.d.

Installation: 19" RACK MOUNT

Custom cable lengths available in 25' increments

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Building Entrance Terminals

RACK MOUNT PROTECTOR SERIES - RMP

RMP50BET

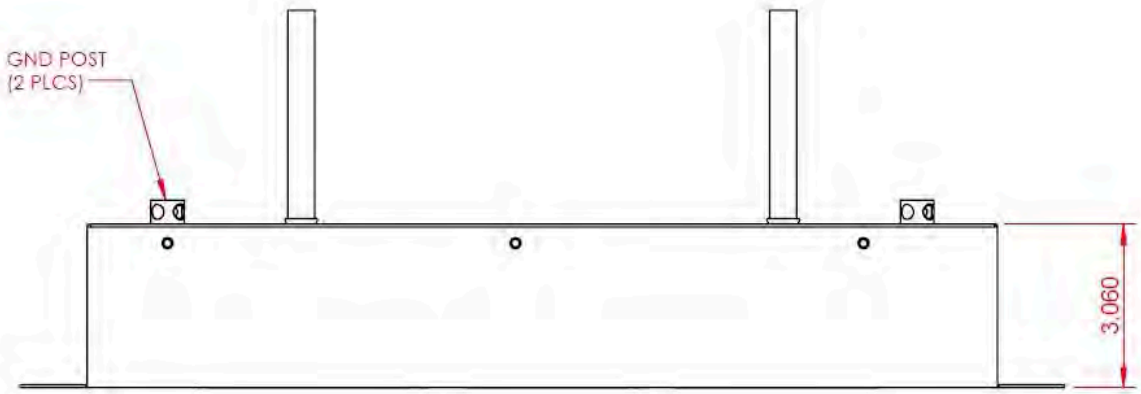
50 PAIR - INDOOR BET - 19" RACK MOUNT

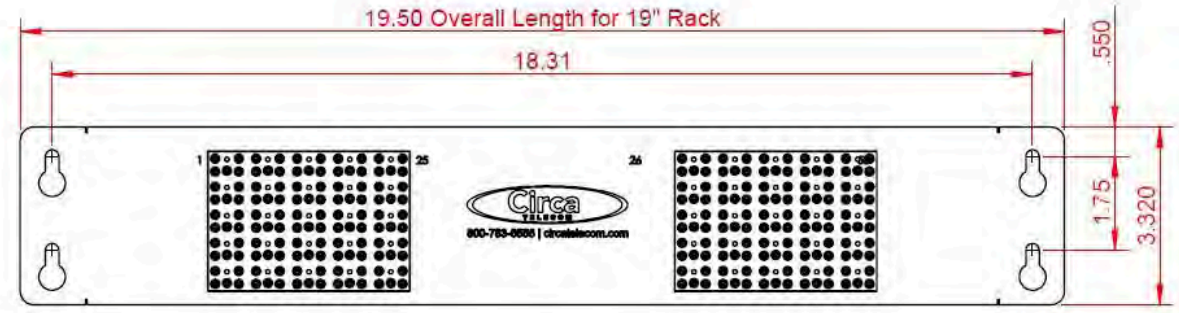
Underwriters Laboratories

Physical Dimensions

UL 497 Primary Protector for Communication Circuits

3.32 x 19.50 x 3.06
(H" x W" x D")





Notes

Cable Type: Units equipped with 25 pair 24AWG CAT3 unshielded cable

Installation: 19" RACK MOUNT

Custom cable lengths available in 25' increments

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Building Entrance Terminals

RACK MOUNT PROTECTOR SERIES - RMP

RMP200BET

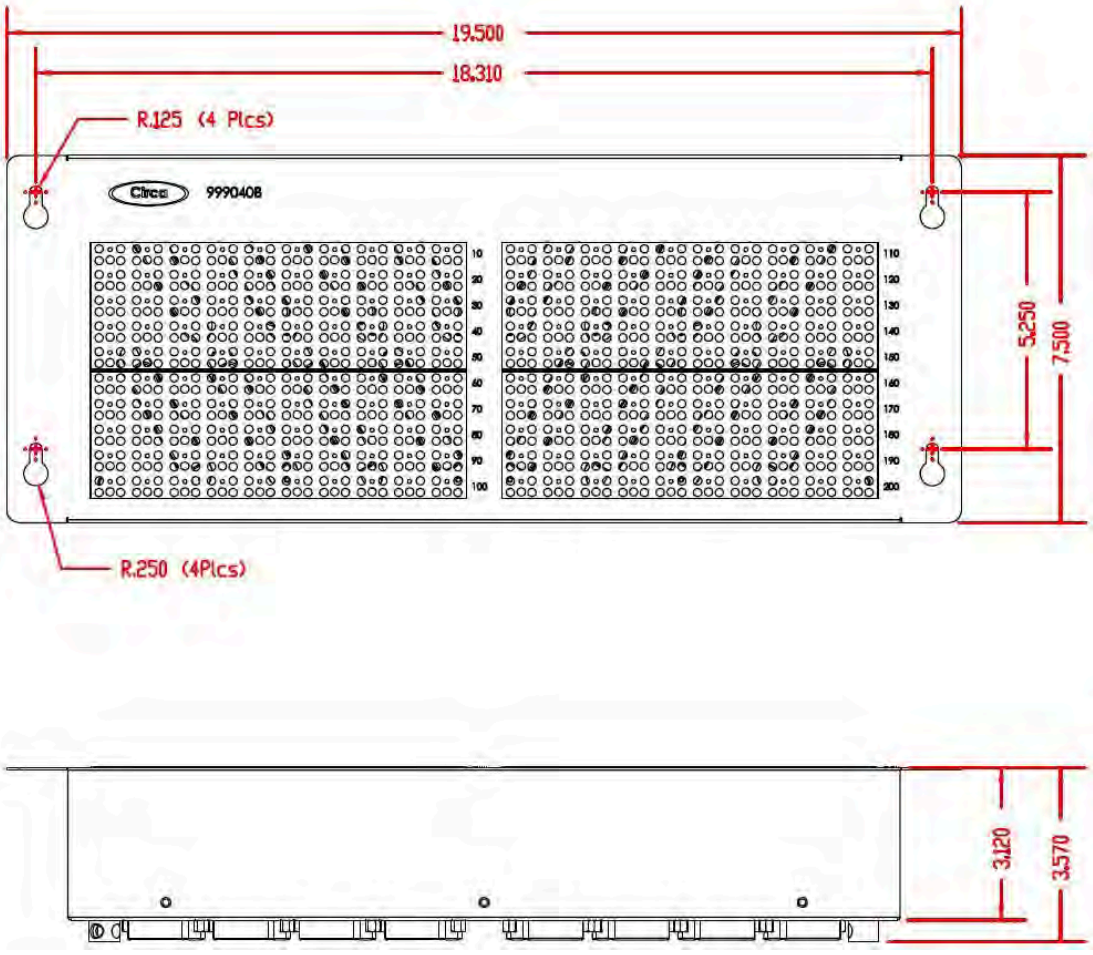
200 PAIR - INDOOR BET - 19" RACK MOUNT

Underwriters Laboratories

Physical Dimensions

UL 497 Primary Protector for Communication Circuits

7.50 x 19.50 x 3.57
(H" x W" x D")



Notes

Installation: 19" RACK MOUNT

RJ21 Male Input/RJ21 Male Output

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CircaMax

Building Entrance Terminals

CENTRAL OFFICE PROTECTOR SERIES

4486

100 PAIR CENTRAL OFFICE CONNECTOR

Underwriters Laboratories

Product Specifications

UL 497 Primary Protector for Communication Circuits

NAFTA Country of Origin: CANADA - All Loaded and Unloaded Models are "Buy America Act" Approved.

- 100 Pair Maximum Density Space Saving Unit
- Accepts Industry Standard 5 PIN Protection Modules
- User-Friendly Front Facing Cross Connect Field and Test Blocks
- Gold Plated Protector Sockets Provide Superior Contact to Eliminate Noise Problems
- Exceeds UL497 Primary Protection Standards
- Large Fanning Strips Allows for Clean Jumper Wire Management
- Quick Release Cover Allows for Access to Panel Field

Ordering Information

4486

Model Number	Stock Code	Pair Count	Cable Direction	Input	Output	Dimensions (H" x W" x D")	Weight (lbs)
4486	611001	100	N/A	Wire-Wrap	IDC Connector	8.52 x 9.96 x 4.39	7
4486	622001	100	N/A	Wire-Wrap	Wire-Wrap	8.52 x 9.96 x 4.39	7
4486	611012L30	100	Bottom	30' 24AWG	IDC Connector	8.52 x 9.96 x 4.39	19
4486	622012L30	100	Bottom	30' 24AWG	Wire-Wrap	8.52 x 9.96 x 4.39	19
4486	611002L30	100	Top	30' 24AWG	IDC Connector	8.52 x 9.96 x 4.39	19
4486	622002L30	100	Top	30' 24AWG	Wire-Wrap	8.52 x 9.96 x 4.39	19

Notes

Cable Type: 24AWG 30' OSP Rated Air Core Input 0.906 dia o.d.

Installation: Central Office Frame Mount

Custom cable lengths available in 25' increments

RUS Approved Material - 2011 Edition RUS Publication 344-2 (Section 4.1.2 and 4.2)

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Building Entrance Terminals

CENTRAL OFFICE PROTECTOR SERIES

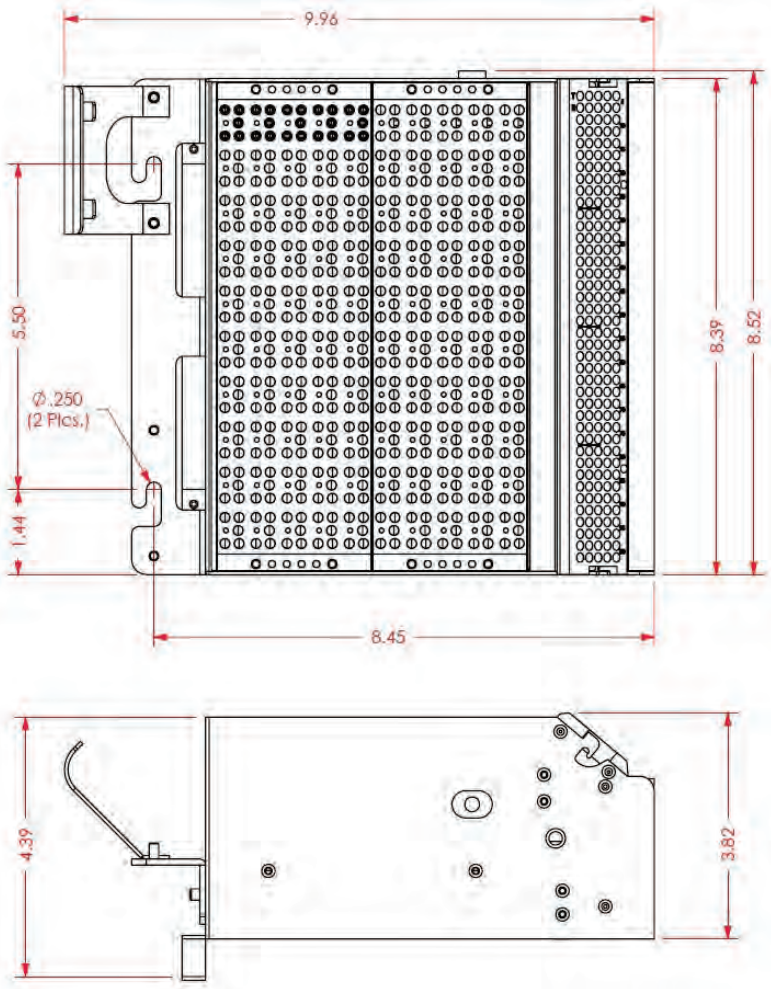
4486

100 PAIR CENTRAL OFFICE CONNECTOR

Physical Dimensions

UL 497 Primary Protector for Communication Circuits

8.52 x 9.96 x 4.39
(H" x W" x D")



Notes

Cable Type: 24AWG 30' OSP Rated Air Core Input 0.906 dia o.d.

Installation: Central Office Frame Mount

Custom cable lengths available in 25' increments

RUS Approved Material - 2011 Edition RUS Publication 344-2 (Section 4.1.2 and 4.2)

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Phone 800.783.6556 - Fax 813.676.2060 - Email circatech@circatelecom.com - www.circatelecom

CCH Pigtailed Splice Cassette 24 F, LC APC duplex, Single-mode (OS2), single-fiber (250 µm)

Part Number:
CCH-CS24-B3-P00RE

Closet Connector Housing (CCH) pigtailed splice cassettes enable faster field splicing and easy modular management of connectorization within the housing. They are preloaded and prerouted for quick fusion splicing of either individual or ribbon fiber pigtails, using the same space-saving platform as the standard CCH splice cassette.

The prerouted pigtailed cassettes reduce field labor by streamlining features and components to allow for efficiencies in the field. They are prepped with a 2-m pigtail assembly with all pre-existing CCH panel connector options. The pigtailed cassettes have colored 250 µm for ease of splicing. They also enable strain relief to be pre-applied to the assemblies from the manufacturing facility. With the pigtailed cassette, individual splice tray or separate splice housings are eliminated, allowing splicing to be done away from the rack housing in more convenient workspaces. The modular design makes it easy to access the fiber in an individual cassette without disturbing the other fibers in the housing. Each cassette is shipped with the pigtailed CCH adapter panel of the customer's choice, one rail for use with CCH-01U/2U/3U housings, and two rails used with CCH-04U housings. Grommets and cable ties for additional strain relief and protective braided tubing for incoming cable are also included. Splicing cassettes ship with the appropriate quantity and type of heat-shrink splice protectors.

CCH Pigtailed Splice Cassette, 24 F, LC APC duplex, Single-mode (OS2), single-fiber (250 µm)

Features and Benefits

Manage cable slack for a CCH panel in a modular footprint

Fast, easy and reliable initial routing, and quick, simple reaccess for moves, adds and changes (MACs)

Includes everything needed to convert a CCH housing for modular routing and/or splicing

Easy ordering and field installation

Modular splice capability

Manage all splices inside the housing

Colored 250 µm at splice point

Easy to identify and prep colored 250 µm for fast and easy splicing

Pre-prepped splice cassette

Saves time in the field with a ready to splice product

Broad operating temperature range (-40°C to +65°C)

Utility and flexibility

CCH Pigtailed Splice Cassette 24 F, LC APC duplex, Single-mode (OS2), single-fiber (250 µm)

Specifications

General Specifications	
Product Type	Rack-Mountable Hardware
Fiber Category	Single-mode (OS2)
Cable Type	250 µm
Technology	Fusion Splice
Mounting Type	Wall-Mountable, CCH Housings
Application	Data Center, Enterprise Networks

Standards	
RoHS	Free of hazardous substances according to RoHS 2011/65/EU
Approvals and Listings	Meets ANSI/TIA/EIA-568A and 606, Tested in accordance with Telecordia GR-3125, UL1863 - Communication Circuit Accessories

Environmental Conditions	
Temperature Range, Operation	-40 °C to 65 °C (-40 °F to 149 °F)

Design	
Fiber Count	24
Connector Configuration	LC Duplex
Panel or Module Type	CCH
Splice Protectors Type	Heat Shrink, single fiber
Number of Splice Protectors	24

Design - Adapter	
Adapter Type	LC Duplex

CCH Pigtailed Splice Cassette 24 F, LC APC duplex, Single-mode (OS2), single-fiber (250 µm)

Connector Specs	
Polish	APC

Dimensions	
Height	35 mm (1.38 in)

Ordering Information	
Product Number	CCH-CS24-B3-P00RE
EAN Code	4056418151366
Width	162 mm (6.38 in)
Depth	200 mm (7.87 in)
Units per Delivery	1/1

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Closet Connector Housing (CCH) One rack unit, holds two CCH connector panels

Part Number:
CCH-01U

Closet connector housings (CCHs) provide interconnect or cross-connect capabilities between outside plant, riser or distribution cables and opto-electronics. Like other LANscape solutions hardware, the housings accept CCH connector panels. In addition, the housings accept CCH cassettes and CCH modules.

From fiber and cable routing and strain relief, to port labeling and termination, these housings reduce the risk of error that can disrupt networks. The units are designed for rack mounting in 19-in (48 cm) racks or optional 23-in (58 cm) equipment racks (1.75-in EIA hole spacing). They are available in rack space options of 1U (two panels, cassettes or modules), 2U (four panels, cassettes or modules), 3U (six panels, cassettes or modules) and 4U (12 panels, cassettes or modules). The 1U, 2U and 3U options feature a slide-out tray and see-through, removable top covers. The CCH-04U features a clear door, removable front and rear enclosures and a platinum-colored interior for maximum visibility and access.

Every CCH housing is shipped complete with strain relief brackets, routing clips and guides, and mounting brackets for proper installation. Documentation labels are provided and components can be added as needed to construct a fiber distribution frame for any application. All housings include a removable tinted polycarbonate front door.

Closet Connector Housing (CCH), one rack unit, holds two CCH connector panels

Features and Benefits

Durable, polycarbonate-tinted front door for viewing jumpers
Ideal for pigtail splicing

Removable, translucent top covers (1U, 2U, 3U), removable rear cover (4U)
Visibility and ease of access for installation, testing, and troubleshooting

Internal and external strain-relief options
Flexibility for installation and moves, adds, and changes (MACs)

Accepts panels, modules, and cassettes
Variety of field-termination options

Adaptable to use as a modular splice housing
Splices are stored and protected in same footprint

Closet Connector Housing (CCH) One rack unit, holds two CCH connector panels

Specifications

General Specifications	
Product Type	Fiber Optic Hardware
Environment	Indoor
Access Type	Front and rear access slidable
Lockable	Yes
Mounting Type	Rack 19-in, Rack 23-in, Cabinet-mount
Application	Carrier Networks, Data Center, Enterprise Networks

Standards	
RoHS	Free of hazardous substances according to RoHS 2011/65/EU
Approvals and Listings	Meets ANSI/TIA/EIA-568A and 606, Tested in accordance with Telecordia GR-63-CORE, UL1863 - Communication Circuit Accessories
UL-Listed	United States and Canadian safety standards

Environmental Conditions	
Temperature Range, Operation	-40 °C to 70 °C (-40 °F to 158 °F)

Design	
Fiber Count	48
Housing Material	Powder-coated metal and polycarbonate tray
Cable entry type	External and Internal strain-relief bracket
Pigtail Length	2.25 m (7.38 ft)
Housing Type	CCH
Locking Availability	Front or rear
Panel or Module Type	CCH
Splice Tray Options	CCH Splice Cassette (CCH-CS)

Closet Connector Housing (CCH) One rack unit, holds two CCH connector panels

Design	
Number of Ports	24

Shipping Dimensions	
Height	54.61 cm
Width	57.15 cm
Depth	19.05 cm

Ordering Information	
Product Number	CCH-01U
EAN Code	4056418169491
Weight	3.9 kg
Shipping Weight	4.5 kg
Units per Delivery	1/1

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Closet Connector Housing (CCH) Four rack units, holds 12 CCH connector panels

Part Number:
CCH-04U

Closet connector housings (CCHs) provide interconnect or cross-connect capabilities between outside plant, riser or distribution cables and opto-electronics. Like other LANscape solutions hardware, the housings accept CCH connector panels. In addition, the housings accept CCH cassettes and CCH modules.

From fiber and cable routing and strain relief, to port labeling and termination, these housings reduce the risk of error that can disrupt networks. The units are designed for rack mounting in 19-in (48 cm) racks or optional 23-in (58 cm) equipment racks (1.75-in EIA hole spacing). They are available in rack space options of 1U (two panels, cassettes or modules), 2U (four panels, cassettes or modules), 3U (six panels, cassettes or modules) and 4U (12 panels, cassettes or modules). The 1U, 2U and 3U options feature a slide-out tray and see-through, removable top covers. The CCH-04U features a clear door, removable front and rear enclosures and a platinum-colored interior for maximum visibility and access.

Every CCH housing is shipped complete with strain relief brackets, routing clips and guides, and mounting brackets for proper installation. Documentation labels are provided and components can be added as needed to construct a fiber distribution frame for any application. All housings include a removable tinted polycarbonate front door.

Closet Connector Housing (CCH), four rack units, holds 12 CCH connector panels

Features and Benefits

Durable, polycarbonate-tinted front door for viewing jumpers
Ideal for pigtail splicing

Removable, translucent top covers (1U, 2U, 3U), removable rear cover (4U)
Visibility and ease of access for installation, testing, and troubleshooting

Internal and external strain-relief options
Flexibility for installation and moves, adds, and changes (MACs)

Accepts panels, modules, and cassettes
Variety of field-termination options

Adaptable to use as a modular splice housing
Splices are stored and protected in same footprint

Closet Connector Housing (CCH) Four rack units, holds 12 CCH connector panels

Specifications

General Specifications	
Product Type	Fiber Optic Hardware
Environment	Indoor
Access Type	Front and rear access slidable
Lockable	Yes
Mounting Type	Rack 19-in, Rack 23-in, Cabinet-mount
Application	Carrier Networks, Data Center, Enterprise Networks

Standards	
RoHS	Free of hazardous substances according to RoHS 2011/65/EU
Approvals and Listings	Meets ANSI/TIA/EIA-568A and 606, Tested in accordance with Telecordia GR-63-CORE, UL1863 - Communication Circuit Accessories
UL-Listed	United States and Canadian safety standards

Environmental Conditions	
Temperature Range, Operation	-40 °C to 70 °C (-40 °F to 158 °F)

Design	
Housing Type	CCH
Locking Availability	Front or rear
Number of Panels per Housing	12
Panel or Module Type	CCH
Splice Tray Options	CCH Splice Cassette (CCH-CS)

Shipping Dimensions	
Height	58.42 cm

Closet Connector Housing (CCH) Four rack units, holds 12 CCH connector panels

Shipping Dimensions	
Width	58.42 cm
Depth	30.48 cm

Ordering Information	
Product Number	CCH-04U
EAN Code	4056418169439
Shipping Weight	7.5 kg
Units per Delivery	1/1

RoHS COMPLIANT

Corning Optical Communications LLC • 4200 Corning Place • Charlotte, NC • 28216 • United States
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ZetaFrame™ Cabinet

A highly engineered data center cabinet solution that delivers fast built-to-order configurability, industry-leading strength and scalability, regardless of the application. ZetaFrame Cabinet is a total, turnkey solution that integrates with power, cable and thermal management accessories to support next-generation compute.

Speedy Deployment
- Customer-specified, factory-assembled solution reduces component count, packaging and on-site assembly, saving time and delivery cost
- Order a cabinet integrated with power, cable and thermal management preinstalled under a unique, project-specific part number
- Easy attachment and positioning of accessories allow for faster deployment and maintenance
- Optional shock pallet ensures safe delivery of racked ICT equipment

Fast Selection and Customization – Wide range of standard configurations and one-on-one consultation services allow customers to create a unique solution that meets their exact requirements

Future-Proof Strength – Roll-formed, tubular and fully welded steel frame architecture supports 5,000 lb (2268 kg) static and 4,000 lb (1814 kg) dynamic loads

Integrated Bonding – Doors and panels automatically bond to the frame through door hinges and contact points, eliminating the need for attaching separate grounding straps to cabinet components

Enhanced Cable Management – ZetaFrame's simple and versatile cable management accessories can be used independently or in combinations to accommodate a wide variety of applications

Integrated Airflow Management – Seamless integration with optional airflow management accessories ensures effective conditioned/exhaust air separation and maximum equipment cooling

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PROUDLY MADE IN AMERICA with Globally Sourced Components

Global Availability:
Please note that some optional features and accessories may require region-specific provisions. Consult your local representative for details.

United States
Simi Valley, CA
800-834-4969

Canada
Toronto, Ontario, Canada
+905-850-7770

Europe
Buckinghamshire, UK
+441628 524834

Middle East & Africa
Dubai, UAE
+971-4-2602125

Doha, Qatar
+974-4-267422

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Mexico City
+52-55-5203-7525
Toll Free within Mexico
800-201-7592
chatsworth.com.co

Asia Pacific
Shanghai
+86 21 6880-0266
chatsworth.com.cn

CHATSWORTH PRODUCTS

chatsworth.com • techsupport@chatsworth.com

SPECIFICATIONS

Description:	• Roll-formed, tubular and fully welded steel four-post frame • For indoor use only, in environmentally controlled areas
Frame Includes:	• Integrated track at the top of the frame supports attachment of cable pathway and airflow containment accessories • Equipment mounting rails, (2) pairs • Leveling feet and load-bearing casters • Floor attachment brackets • Baying kit • PDU bracket, (1) pair, for mounting (2) vertical CPI PDUs side-by-side in one corner of the cabinet • Equipment mounting hardware, (50) M6 Clik-Nut® cage nuts and screws • T25 Torx Bit to secure ground block and other accessories to cabinet frame
Equipment Space:	See Height, Width and Depth matrices under Ordering Information/Dimensions
Equipment Support:	• (2) pairs of square-punched mounting rails bolt to frame • Front-to-back adjustable depth • 1-3/4"H (44.5 mm) U spacing, marked and numbered on all rails • 19"W, EIA-310 Universal 5/8"-5/8"-1/2" (15.9 mm – 15.9 mm – 12.7 mm) vertical hole spacing • Rails for cabinets 27.6"W (700 mm) and wider include (4) cable openings per rail. Front rail openings are sealed with grommets. • Cable openings on 27.6"W (700 mm) and 29.5"W (750 mm) cabinets are 5.7"H (145 mm) x 1.9"W (48 mm) • Cable openings on 31.5"W (800 mm) cabinets are 5.7"H (145 mm) x 3.1"W (79 mm) • Optional upgrade to brush-sealed cable openings
Load Capacity	• 5000 lb (2268 kg), static load on leveling feet per UL 2416 • 4000 lb (1814 kg), rolling load on casters per UL 2416 for depths 1000 mm or greater • 4000 lb (1814 kg), shipping load on shock pallet
Certifications:	• EIA-310 compliant • UL Listed 2416, NWIN, File #E227626
Transportation Tests:	• Transportation tests apply to Shock Pallet option • Meets requirements per the International Safe Transit Association (ISTA) 2B • ASTM D4169 Truck Assurance Levels: low, medium and high • ASTM D4169 Air Assurance Levels: I, II and III
Materials:	• Steel frame, rails and panels • Plastic grommets/seals
Finish:	• Powder coat paint on frame, rails and panels in Black or Glacier White • Brushes/seals, door handles/hinges are black
Doors/Lock Kits:	• Hinge pins allow easy removal of doors during maintenance • Reversible to open from the right or left, must move hinges/latch • Interchangeable front or rear, must move hinges/latch • Swing handle • Keyed lock • Front door: - 78% perforation - Single-point latch mechanism - Opens to 120° when bayed, 140° when not bayed • Rear doors: - Choice of single solid or double 78% perforated doors - Three-point latch mechanism - Solid door includes a perimeter seal; use with Vertical Exhaust Duct configurations - Single and Double doors open to 180° when bayed or not bayed - Compatible with RFID Electronic Lock Kit
Side Panels:	• Solid, two-piece panels (half height, full depth). Individual top/bottom panels • Recessed spring-loaded latches with locks, keyed to match doors • Bay cabinets with panels installed or removed • Panels with grommet-sealed cable openings are available as accessories
Top Panel:	• Choice of standard panel or Vertical Exhaust Duct • Standard panel: - One-piece solid panel with (4) 3.9"W x 8.8"D (99 mm x 224 mm) grommet- or brush-sealed cable openings, (1) per corner - Unsealed openings are 4.5"W x 9"D (114 mm x 228 mm), large enough to pass large PDU plugs • Vertical Exhaust Duct: - Includes the duct and a solid front panel with (2) 3.9"W x 8.8"D (99 mm x 224 mm) brush-sealed cable openings, (1) per corner. A half brush seal is included at the lower rear of the duct - For use with cabinets 41.3" D (1050 mm) or deeper - Select duct size to match the distance between the top of the cabinet and the overhead drop ceiling; the duct features easy height adjustment and a flexible top seal
Bottom Panel:	• Bottom panel is a single-piece solid panel with (2) grommet- or brush-sealed cable openings in the back corners • Unsealed cable openings are 4.5"W x 9"D (114 mm x 228 mm), large enough to pass large PDU plugs • Only available as factory-installed option
Airflow Management:	• Air Dam: - Configure with cabinet or available separately as an accessory - Air Dam blocks airflow around the sides and top of the equipment mounting space, so conditioned air passes through equipment, preventing exhaust air from recirculating - Requires a minimum rail setback of 1.4" (36 mm) from the front of the cabinet frame; maximum rail setback is 13.7" (348 mm) • Air Director: - Configure with cabinet or available separately as an accessory - For use in higher heat load applications - Air Director is an angled panel used at the back of cabinets with Vertical Exhaust Duct configurations to guide exhaust air toward the top of the cabinet - Attaches to the bottom slide on the cabinet, adjusts in depth
Cable Management:	• Vertical Cable Manager, Cable Lashing Panel and Front-to-Rear Cable Manager are available as accessories. • Go to the Ordering Information for details
Bonding and Grounding:	• Mounting rails, top panel, side panels, doors and frame feature integral electrical bonding; no additional ground straps are required • (1) grounding block for 6 AWG conductor is included to attach the frame to ground in four possible locations: top/bottom, front/rear
PDU Brackets:	• (1) pair of brackets and installation hardware for use with CPI eConnect® PDUs or vertical Power Strips • Supports (2) 2.2"W (56 mm) or narrower PDUs side-by-side or one PDU up to 4"W (101.6 mm) • Attaches to the frame in any corner • Provides tool-less attachment points spaced 61-1/4" (1556 mm) apart on all cabinets • Provides alternate tool-less attachment points spaced 64-3/4" (1645 mm) on cabinets 45U or taller • Full-height brackets are available as accessories

Powered by Intelligence

Configure a cabinet with intelligent PDUs, RFID electronic locks and environmental sensors preinstalled.
Contact Technical Support.

ZETAFRAME CABINET DETAIL FEATURES:

Roll-formed, tubular and fully welded steel frame

PATENT PENDING

Optional brush seals for cable openings in equipment mounting rails

PATENT PENDING

Fast attachment and adjustment of accessories

Door hinge and side panel design with integrated bonding

PATENT PENDING

Unique ground block attachment requires no additional bonding preparation

Simple and efficient cable management

Easy access to cabling, lift cover to swing open or pull to remove

Load-bearing casters and easily adjustable leveling feet

PATENT PENDING

ORDERING INFORMATION

Use the part number configurator below to select a standard ZetaFrame Cabinet.

Choose the Height, Width, Depth, Panels, Thermal Configuration and Color. Example part number: ZB45-A120A-E1

Please note that some optional features and accessories may require region-specific provisions. Consult your local representative for details.

Ships on Standard Pallet or Shock Pallet

Z	1	2	3	-	4	5	6	7	8	-	9	10

1. Height

U	in	mm	
42	79.4	2017	A
45	84.6	2149	B
48	89.9	2283	C
52	96.9	2461	D

Height includes casters.

2. Width

in	mm	
23.6	600	1
27.6	700	2
29.5	750	3
31.5	800	4

3. Depth

in	mm	
31.5	800	1
39.4	1000	2
41.3	1050	3
43.3	1100	4
47.2	1200	5

Frame depth does not include doors. See detailed dimensions on page 6.

4. Doors

None	0
Single Perforated Front/ Double Perforated Rear	A
No Front/ Double Perforated Rear	B

5. Top Panel

0	None
1	Grommet-Sealed
2	Brush-Sealed

6. Side Panel

0	None
1	1 Side
2	2 Sides

7. Bottom Panel

0	None
1	Grommet-Sealed
2	Brush-Sealed

8. Thermal Management

0	None
A	Air Dam
B	Air Dam, Brushed-Sealed Rail

Brush-Sealed Front Rails are not available for 23.6"W (600 mm) cabinets.

9. Color

7	Black
E	Glacier White

10. Shipping

1	Standard Pallet
2	Shock Pallet

Shock Pallet is available for 42U, 45U, 48U cabinet heights and 43.3"D (1100 mm) and 47.2"D (1200 mm) cabinet depths.

Notes: All cabinets ship with two pairs of square-punched equipment mounting rails. Rails for 27.6"W (700 mm) and wider cabinets include four grommet-sealed cable openings (per rail). See page 8 for detailed dimensions.

Other sizes and configurations are available. Contact Technical support at techsupport@chatsworth.com for more information.

Shock pallet option allows integrators to reship up to 4000 lb (1814 kg) of installed equipment.

Configure It!

Take advantage of CPI's expertise and configure a complete solution, including eConnect® PDUs, RFID Electronic Locks and environmental sensors under a single part number. Custom solutions are also available through CPI's design engineering services. Email us at: techsupport@chatsworth.com

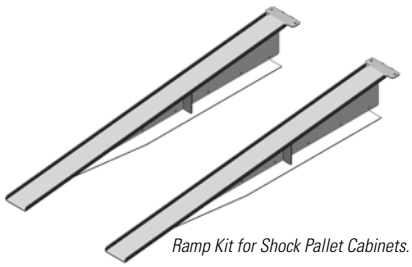
INSTALLATION PRODUCTS

Part Number	Description	Shipping Weight lb (kg)
39150-001	Leveling Feet Height Adjustment Tool, 5 mm Hex Ball Driver,12"L (300 mm)	1 (0.5)
39207-701	Ramp Kit for Shock Pallet Cabinets, Black	26 (11.8)
76543-001*	Clik-Nut Hardware Kit, Cage Nuts, Screws, M6, 25 Pack, Zinc	1 (0.5)

Note: Baying Kits and Floor Mounting Brackets are included with each cabinet.
** Additional thread size and quantities available.*

Clik-Nut Hardware Kit

Leveling Feet Height Adjustment Tool



Ramp Kit for Shock Pallet Cabinets.

ORDERING INFORMATION

Use the part number configurator below to create a standard ZetaFrame Cabinet with a Vertical Exhaust Duct.

Choose the Height, Width, Depth, Panels, Thermal Configuration and Color. Example part number: ZB45-DB22B-71

Please note that some optional features and accessories may require region-specific provisions. Consult your local representative for details.

Vertical Exhaust Duct Configuration for Front-to-Top Airflow

Z	1	2	3	-	4	5	6	7	8	-	9	10

1. Height

U	in	mm	
42	79.4	2017	A
45	84.6	2149	B
48	89.9	2283	C
52	96.9	2461	D

Height includes casters.

2. Width

in	mm	
23.6	600	1
27.6	700	2
29.5	750	3
31.5	800	4

3. Depth

in	mm	
41.3	1050	3
43.3	1100	4
47.2	1200	5

Frame depth does not include doors. See detailed dimensions on page 6.

4. Doors

Single Perforated Front/ Single Solid Rear	D
No Front/ Single Solid Rear	E

5. Top Panel

A	15-20" H (381 - 508 mm) Vertical Exhaust Duct
B	20-34" H (508 - 863 mm) Vertical Exhaust Duct
C	34-60" H (863 - 1524 mm) Vertical Exhaust Duct
D	15-20" H (381 - 508 mm) Vertical Exhaust Duct, Air Director
E	20-34" H (508 - 863 mm) Vertical Exhaust Duct, Air Director
F	34-60" H (863 - 1524 mm) Vertical Exhaust Duct, Air Director

A half brush seal is included at the lower rear of the duct.

6. Side Panel

0	None
1	1 Side
2	2 Sides

At least one side panel between adjacent cabinets and bottom panel are recommended for optimal thermal performance.

7. Bottom Panel

0	None
1	Grommet-Sealed
2	Brush-Sealed

8. Thermal Management

A	Air Dam
B	Air Dam, Brushed-Sealed Front Rail

Brush-Sealed Front Rails are not available for 23.6"W (600 mm) cabinets.

9. Color

7	Black
E	Glacier White

10. Shipping

1	Standard Pallet

Notes: All cabinets ship with two pairs of square-punched equipment mounting rails. Rails for 27.6"W (700 mm) and wider cabinets include four grommet-sealed cable openings (per rail). See page 8 for detailed dimensions.

Other sizes and configurations are available. Contact Technical support at techsupport@chatsworth.com for more information.

Configure It!

Take advantage of CPI's expertise and configure a complete solution, including eConnect® PDUs, RFID Electronic Locks and environmental sensors under a single part number. Custom solutions are also available through CPI's design engineering services. Email us at: techsupport@chatsworth.com

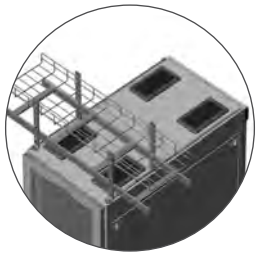
SUPPORT PRODUCTS

Cable Pathway Elevation Kits			
Part Number		Description	Shipping Weight lb (kg)
1 Tier	2 Tier		
60508-X02	60508-X22	2", 2.5", 3"H (50 mm, 64 mm, 75 mm)	3.1
60508-X06	60508-X26	4", 5", 6"H (100, 127, 150 mm)	3.8
60508-X08	N/A	10", 11", 12"H (250 mm, 280 mm, 300 mm)	5.5

Note: X=color: 7=Black, E=Glacier White. Shipping weight is for 1 Tier Elevation Kit.

1 Tier

2 Tier



Supports CPI Cable Runway or Pemsa® Rejiband® Wire Mesh Cable Tray above a continuous row of ZetaFrame Cabinets, providing additional space between the tops of the cabinets and the cable runway and trays.

DIMENSION TABLES

Height Dimensions - in (mm)			
Rack Mount Spaces (U)	Overall with Casters	Frame Only No Casters	Front Opening
42	79.4 (2016)	77.4 (1965)	73.7 (1873)
45	84.6 (2149)	82.6 (2099)	79.0 (2006)
48	89.9 (2282)	87.9 (2232)	84.2 (2139)
52	96.9 (2460)	94.9 (2410)	91.2 (2317)

Casters add approximately 2" (51 mm) to frame and are factory-installed on the cabinet. Brush-sealed grommets in the top panel add approximately 3/8" (9 mm) to the height of the cabinet.

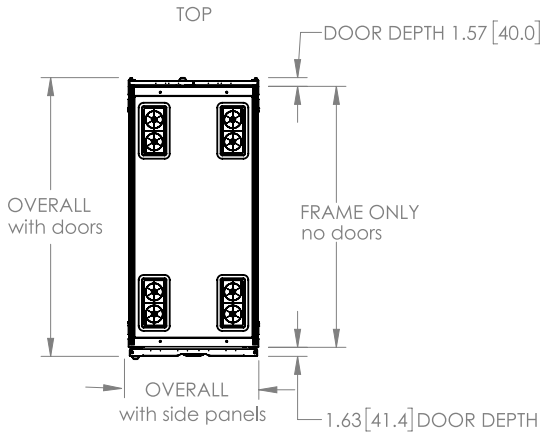
Width Dimensions - in (mm)			
Nominal Width	Overall with Side Panels	Front Opening	Rack-Mount Width
23.6 (600)	23.6 (600)	19.9 (506)	19 (482.6)
27.6 (700)	27.6 (700)	23.9 (607)	19 (482.6)
29.5 (750)	29.5 (750)	25.8 (655)	19 (482.6)
31.5 (800)	31.5 (800)	27.8 (707)	19 (482.6)

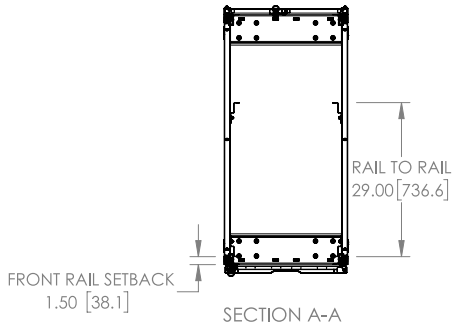
Mounting Rail clearance is 17.8" (452 mm), mounting hole spacing is 18.3" (465 mm).

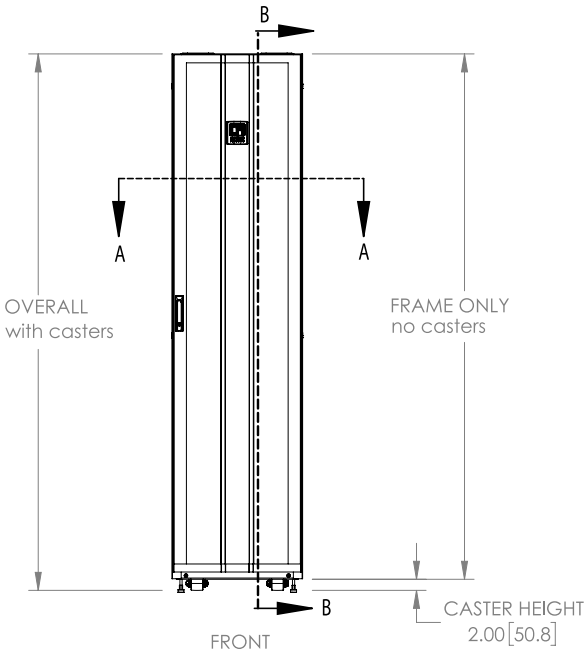
Depth Dimensions - in (mm)			
Nominal Depth	Overall with Doors	Frame Only No Doors	Maximum Rail Depth
31.5 (800)	34.6 (879)	31.5 (800)	28.5 (723)
39.4 (1000)	42.5 (1080)	39.4 (1000)	36.4 (923)
41.3 (1050)	44.4 (1128)	41.3 (1050)	38.3 (973)
43.3 (1100)	46.4 (1179)	43.3 (1100)	40.3 (1023)
47.2 (1200)	50.3 (1278)	47.2 (1200)	44.2 (1123)

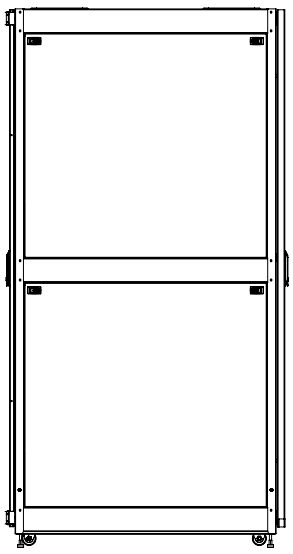
Front Door is approximately 1.6"D (41 mm) and Rear Door is approximately 1.5"D (38 mm). Minimum rail depth is 7" (178 mm), each rail is 3.5"D (89 mm). Rail depth is reduced when vertical accessories are placed in corners.

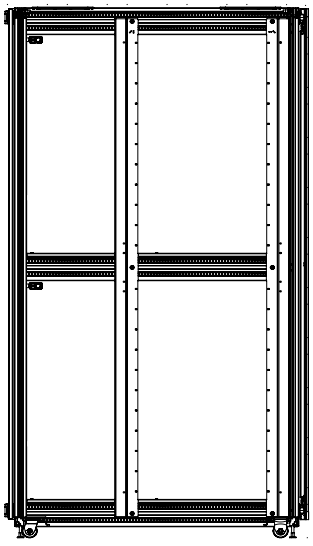
DIMENSION DRAWINGS











THERMAL MANAGEMENT ACCESSORIES

To optimize cooling performance in your facility, you must isolate conditioned and exhaust air, guide conditioned air to equipment and remove exhaust air from equipment. Thermal management accessories play a critical role in overall performance by controlling airflow inside the cabinet.

39763-XXX

39774-XXX

Side Panels

- Available in Solid or with Grommets; Configure solid side panels with cabinet or available separately as an accessory.
- Includes: Side panel (two halves, solid or with grommets), set of keys
- Two-piece design with top and bottom halves for easier handling
- Tool-less removal, drop-in design with integrated locking spring latch secures the side panel to the cabinet frame
- Features integral bonding, no bonding strap required
- Side Panel with Grommets feature multiple grommet-sealed cable openings, allowing cables to enter the side of the cabinet while containing exhaust air within each cabinet
- Side Panel with Grommets feature (8) cable openings per side, (4) per half-height panel, (1) per corner; Cable opening size without grommet is 4.5"W x 9"D (114 mm x 228 mm), sized for large power plugs
- Grommets are plastic, snap-on and can be cut to pass cables

Side Panels for ZetaFrame Cabinet							
Part Number						Cabinet Frame Depth in (mm)	Shipping Weight lb (kg)
Solid	Grommet	Height (U)					
		42	45	48	52		
39763	39774	-X00	-X51	-XAC	-XDL	31.5 (800)	34 (15.5)
		-X08	-X59	-XAL	-XDW	39.4 (1000)	41 (18.6)
		-X10	-X61	-XAN	-XEA	41.3 (1050)	43 (19.1)
		-X12	-X63	-XAR	-XEC	43.3 (1100)	45 (20.2)
		-X16	-X67	-XAW	-XEG	47.2 (1200)	48 (21.7)

Note: X=color: 7=Black, E=Glacier White. Shipping weights are for 52U configurations

Cable Port Brush Kit

- Use to replace grommets in top, bottom, or side panels
- Cable opening is 3.9"W x 8.8"D (99 mm x 224 mm)

Part Number	Description	Shipping Weight lb (kg)
25190-001	Cable Port Brush Kit, Pack of 2, Black	2 (0.9)

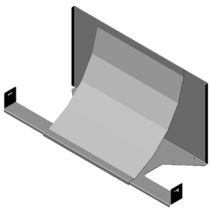
Air Dam Kit

Air Dam blocks airflow around the sides and top of the equipment mounting space, so conditioned air passes through equipment and exhaust air does not recirculate around equipment. Configure with cabinet or available separately as an accessory.

- Use with Equipment Mounting Rail Grommet Brush Kit and Bottom Panel
- Includes: Top, bottom and side baffles; installation hardware
- 600 mm attaches by wrapping around flange, 700, 750 & 800 mm attaches by snapping onto half lance
- Requires a minimum rail setback of 1.4" (36 mm) from the front of the cabinet frame; maximum rail setback is 13.7" (348 mm)
- Flexible seal against top and side panels
- Select part number to match the frame style, width, usable height and color of the cabinet
- Material: Steel, sheet metal, plastic seals
- Finish: Black or Glacier White; seals are black

Air Dam Kit for ZetaFrame Cabinet					
Part Number - Cabinet Width				Height (U)	Shipping Weight lb (kg)
23.6"W (600 mm)	27.6"W (700 mm)	29.5"W (750 mm)	31.5"W (800 mm)		
38649-X44	38649-X55	38649-X77	38649-X66	42	11 (5.0)
38649-X47	38649-X58	38649-X80	38649-X69	45	11 (5.0)
38649-X50	38649-X61	38649-X83	38649-X72	48	11 (5.0)
38649-X54	38649-X65	38649-X87	38649-X76	52	12 (5.1)

Note: X=color: 7=Black, E=Glacier White. Shipping weights are for 800 mm configurations



Air Director

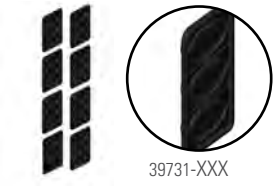
Air Director is an angled panel used at the back of cabinets for higher heat load applications with Vertical Exhaust Duct top panels to guide exhaust air toward the top of the cabinet. Configure with cabinet or available separately as an accessory

- Attaches to the bottom slide on the cabinet, adjusts in depth
- Select part number to match width and color of the cabinet
- Material: Steel
- Finish: Black or Glacier White

Air Director for ZetaFrame Cabinet		
Part Number	Description	Shipping Weight lb (kg)
39802-X00	For 23.6"W (600 mm) Cabinets	12 (5.2)
39802-X01	For 27.6"W (700 mm) Cabinets	13 (5.9)
39802-X02	For 29.5"W (750 mm) Cabinets	14 (6.2)
39802-X03	For 31.5"W (800 mm) Cabinets	15 (6.5)

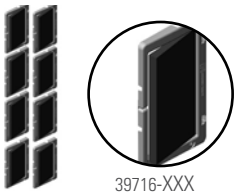
Note: X=color: 7=Black, E=Glacier White.

THERMAL MANAGEMENT ACCESSORIES



39731-XXX

Equipment Mounting Rail Grommet Kit
Set of (8) flexible plastic grommets that cover cable openings in the equipment mounting rails to block airflow around equipment. Configure with cabinet or available separately as an accessory.
- Grommets are plastic. Trim as needed to form seal around cables
- Not compatible with 23.6"W (600 mm) cabinet
- UL 94-V0 flammability rating



39716-XXX

Equipment Mounting Rail Brush Kit (Patent Pending)
Set of (8) brush covers that conceal cable openings in the equipment mounting rails to block airflow around equipment. Configure with cabinet or available separately as an accessory.
- Allows for quick cable installation through mounting rails while maintaining a seal
- Suited for high cable density applications
- Split bezel design does not capture cables and allows for retrofitting around existing cables
- Not compatible with 23.6"W (600 mm) cabinets
- UL 94-V0 flammability rating
- Material: Plastic housing, nylon brushes

Equipment Mounting Rail Kits for ZetaFrame		
Part Number	**Description**	**Shipping Weight lb (kg)**
39731-001	Grommet Kit, for 27.6"W (700 mm) and 29.5"W (750 mm) Cabinets; Pack of 8; Black	2 (0.9)
39731-002	Grommet Kit, for 31.5"W (800 mm) Cabinet; Pack of 8; Black	2 (0.9))
39716-001	Brush Kit, for 27.6"W (700 mm) and 29.5"W (750 mm) Cabinets; Pack of 8; Black	2 (0.9)
39716-002	Brush Kit, for 31.5"W (800 mm) Cabinet; Pack of 8; Black	3 (1.4)

Seal Kit Installation

Cabinet To Floor Seal Kits
Place at the bottom of cabinets to seal the space between the bottom of the cabinet and the floor when leveling feet or casters are in use. Ideal for aisle containment applications.

Snap-In Filler Panel
Snap-In Filler Panel blocks airflow in between equipment by sealing unused rack-mount spaces (U) in the cabinet. Use with Air Dam Kit and Bottom Panel to separate cold and hot air within the cabinet.

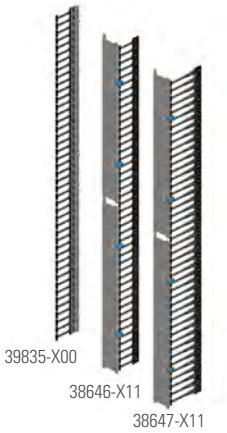
Raised Floor Grommets
Raised Floor Grommets provide a reliable seal around cable bundles. Split design allows for retrofitting over existing cable bundles in access floor tiles.

Additional Thermal Management Accessories		
Part Number	**Description**	**Shipping Weight lb (kg)**
Floor Seal Kit, Front amd Rear		
39996-X00	For 23.6"W (600 mm) Cabinet	4.0 (1.8)
39996-X01	For 27.6"W (700 mm) Cabinet	4.2 (1.9)
39996-X02	For 29.5"W (750 mm) Cabinet	4.3 (2.0)
39996-X03	For 31.5"W (800 mm) Cabinet	4.4 (2.0)
Floor Seal Kit, Sides		
39997-X00	For 31.5"D (800 mm) Cabinet	4.4 (2.0)
39997-X08	For 39.4"D (1000 mm) Cabinet	5.8 (2.6)
39997-X10	For 41.3"D (1050 mm) Cabinet	6.3 (2.9)
39997-X12	For 43.3"D (1100 mm) Cabinet	6.9 (3.1)
39997-X16	For 47.2"D (1200 mm) Cabinet	7.9 (3.6)
Snap-In FIller Panels		
34537-X00	1U x 19"W (482.6 mm), Single	14 (6.4)
34537-X01	1U x 19"W (482.6 mm), 6 Pack	14 (6.4)
34537-X02	1U x 19"W (482.6 mm), 50 Pack	14 (6.4)
34538-X00	2U x 19"W (482.6 mm), Single	21 (9.5)
34538-X01	2U x 19"W (482.6 mm), 6 Pack	21 (9.5)
34538-X02	2U x 19"W (482.6 mm), 50 Pack	21 (9.5)
Raised Floor Grommet		
13671-001	Floor Grommet, with Hardware, Single, Black	2 (1.4)
13671-002	Floor Grommet, with Hardware, 10 Pack, Black	18 (8.2)

Note: Seal Kits: X=color: 7=Black, E=Glacier White.
Filler Panels: X=color: 0=Black, E=Glacier White.

CABLE MANAGEMENT ACCESSORIES

Keep network cables separate and organized using the following cable management accessories.



Vertical Cable Manager

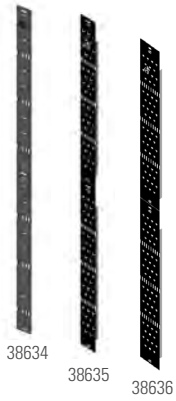
- Fully compatible with Air Dam Kit and Cable Lashing Panel
- Openings between fingers align with each U on the mounting rail
- Short or long plastic T-shaped finger options
- Rail setback:
  - 7-1/4" (184 mm) for Managers with long fingers
  - 4-3/4" (121 mm) for Managers with short fingers
- Long fingers pass up to (48) cables per U space through openings
- Short fingers pass up to (24) cables per U space through openings
- Hinged cover included with managers in cabinets wider than 600 mm
- Material: aluminum panels, fingers and latches are plastic
- Finish: Black or Glacier White; fingers are black, hinges/latches are blue
- Select part number to match cabinet usable height, width and color of the cabinet

Vertical Cable Manager for ZetaFrame Cabinet					
Part Number - Cabinet Width				Height (U)	Shipping Weight lb (kg)
23.6"W (600 mm)	27.6"W (700 mm)	29.5"W (750 mm)	31.5"W (800 mm)		
Vertical Cable Manager with Long Fingers					
N/A	38647-X11	38647-X22	38647-X33	42	9 (4.1)
N/A	38647-X14	38647-X25	38647-X36	45	10 (4.5)
N/A	38647-X17	38647-X28	38647-X39	48	10 (4.5)
N/A	38647-X21	38647-X32	38647-X43	52	10 (4.5)
Vertical Cable Manager with Short Fingers					
39835-X00	38646-X11	38646-X22	38646-X33	42	9 (4.1)
39835-X03	38646-X14	38646-X25	38646-X36	45	10 (4.5)
39835-X06	38646-X17	38646-X28	38646-X39	48	10 (4.5)
39835-X10	38646-X21	38646-X32	38646-X43	52	10 (4.5)

Note: X=color: 7=Black, E=Glacier White. Shipping weights are for 800 mm configurations.

Inside Dimensions, Usable Internal Area, Rail Setback, U Opening					
Cabinet Width	Width in (mm)	Depth in (mm)	Cable Area in^2 (mm^2)	Rail Setback in (mm)	U Opening in^2 (mm^2)
Vertical Cable Manager with Long Fingers					
27.6 (700)	2.2 (56)	7.5 (191)	17.0 (10 967)	10.1 (257)	6.6 (460)
29.5 (750)	3.2 (81)	7.5 (191)	24.5 (15 806)	10.1 (257)	6.6 (460)
31.5 (800)	4.2 (107)	7.5 (191)	31.9 (20 580)	10.1 (257)	6.6 (460)
Vertical Cable Manager with Short Fingers					
23.6 (600)	0.4 (10)	5 (127)	1.8 (1161)	7.6 (193)	3.5 (2260)
27.6 (700)	2.2 (56)	5 (127)	11.2 (7225)	7.6 (193)	3.5 (2260)
29.5 (750)	3.2 (81)	5 (127)	16.2 (10 451)	7.6 (193)	3.5 (2260)
31.5 (800)	4.2 (107)	5 (127)	21.2 (13 677)	7.6 (193)	3.5 (2260)

Rail setback is the minimum distance required between the front edge of the cabinet frame and the front edge of the equipment mounting rail. U opening is the size of the side opening at each U space between T-shaped fingers.



Cable Lashing Panel

- Creates simple, vertical pathways for small cable bundles
- Attaches to cabinet frame, adjusts in depth independent of the mounting rails; Can be installed adjacent to Vertical Cable Manager
- Includes: Brackets, Cable Bundle Swivels and installation hardware
- Available in 3 widths: 2-3/4 "W (70 mm), 4.5"W (115 mm) and 7"W (178 mm)
- 2-3/4"W (70 mm) includes (6) Cable Bundle Swivels, 4.5"W (115 mm) and 7"W (178 mm) include (12) Cable Bundle Swivels
- Patented Cable Bundle Swivels provide quick attachment, removal and adjustment of cable bundles
- Select part number per cabinet height and color
- Material: Steel; Cable Bundle Swivels are plastic
- Finish: Black or Glacier White; Cable Bundle Swivels are blue

Cable Bundle Swivel, installed

Cable Lashing Panel for ZetaFrame Cabinet				
Part Number - Panel Width			Height (U)	Shipping Weight lb (kg)
2-3/4 (70 mm)	4.5"W (115 mm)	7.0"W (178 mm)		
38634-X00	38635-X00	38636-X00	42	13 (5.9)
38634-X03	38635-X03	38636-X03	45	14 (6.4)
38634-X06	38635-X06	38636-X06	48	15 (6.8)
38634-X10	38635-X10	38636-X10	52	16 (7.3)
32657-001	Cable Bundle Swivel, Pack of 12			1 (0.5)

Note: X=color: 7=Black, E=Glacier White. Shipping weights are for 7"W (178 mm) Lashing Panels.

CABLE MANAGEMENT ACCESSORIES

Front-to-Rear Cable Manager

Front-to-Rear Cable Manager attaches to the back of equipment mounting rails wherever there are cable openings, creating a cable pathway between front and rear rails.

- Hooks into front and rear mounting rails, and secures to cabinet frame using supplied hardware
- Adjustable to match various front-to-rear rail depths ranging from 20" (508 mm) to 32" (812 mm)
- Sold each, order to match cabinet width and color
- Material: Steel
- Finish: Black or Glacier White

Front-to-Rear Cable Manager for ZetaFrame Cabinet					
Part Number - Cabinet Width				Rail Depth Range in (mm)	Shipping Weight lb (kg)
23.6"W (600 mm)	27.6"W (700 mm)	29.5"W (750 mm)	31.5"W (800 mm)		
N/A	38648-X01	38648-X02	38648-X03	20-32 (508 - 812)	7 (3.2)

Note: X=color: 7=Black, E=Glacier White. Shipping weight is for 800 mm configuration

POWER MANAGEMENT ACCESSORIES

Attach eConnect® PDUs to the cabinet.

38637-XXX

38638-XXX

Full Height PDU Bracket

- Available in Single or Dual options
- Order per PDU chassis width and PDU bracket capacity (1 or 2 PDUs)
- Bracket attaches to cabinet frame and is adjustable along the cabinet depth
- Use Dual bracket to mount (2) PDUs side-by-side or (1) PDU high outlet density 4" (102 mm) PDU chassis
- Tool-less mounting features at 12-1/4" increments up to 61-1/4" and 64-3/4"
- Select Brackets to match PDU width
- Consider a full height PDU bracket for cabinets 48U and taller for optimum PDU outlet placement

Note: Brackets 38637-X00 to -X10 are 2.48"W (63 mm)
Brackets 38637-X11 to -X21 are 3.03"W (77 mm)
Brackets 38638-X00 to -X10 are 4.78"W (121.4 mm)
Brackets 38638-X11 to -X21 are 5.88"W (149.4 mm)

Full Height PDU Bracket for ZetaFrame Cabinet				
Part Number - PDU Chassis Width			Cabinet Height (U)	PDU Bracket Capacity
2.2" (56 mm)	2.4-2.7" (51 - 69 mm)	4.0" (102 mm)		
38637-X00	38637-X11	38638-X00	42	Single
38637-X03	38637-X14	38638-X03	45	Single
38637-X06	38637-X17	38638-X06	48	Single
38637-X10	38637-X21	38638-X10	52	Single
38638-X00	38638-X11	N/A	42	Double
38638-X03	38638-X14	N/A	45	Double
38638-X06	38638-X17	N/A	48	Double
38638-X10	38638-X21	N/A	52	Double

Note: X=color: 7=Black, E=Glacier White. Shipping weights are for Dual PDU Brackets

Standard PDU Bracket

- Includes (1) pair of brackets and installation hardware for use with CPI eConnect PDUs or vertical Power Strips. Configure with cabinet or available separately as an accessory.
- Supports (2) 2.7"W (69 mm) or narrower PDUs side-by-side or one PDU up to 4"W (101.6 mm)
- Attaches to the frame in either back corner
- Provides tool-less attachment points spaced 61-1/4" (1556 mm) apart on all cabinets
- Provides alternate tool-less attachment points spaced 64-3/4" (1645 mm) on cabinets 45U or taller

Standard PDU Bracket for ZetaFrame Cabinet		
Part Number	Description	Shipping Weight lb (kg)
38645-700	2-Piece, Black	2 (0.9)

Service Parts

Service parts include mounting rails, top panels, side panels, doors and door lock kits and are used as replacement parts or to upgrade cabinets as applications change.

The ZetaFrame Service Parts Cut Sheet is available for download at chatsworth.com or contact CPI Technical Support at 800-834-4969 or techsupport@chatsworth.com for assistance.

For complete ZetaFrame information, visit chatsworth.com.

CPI now offers Extended Limited Warranties on CPI-Branded Electronic products, available for two additional years beyond the expiration of the Original Warranty Period (3 years).

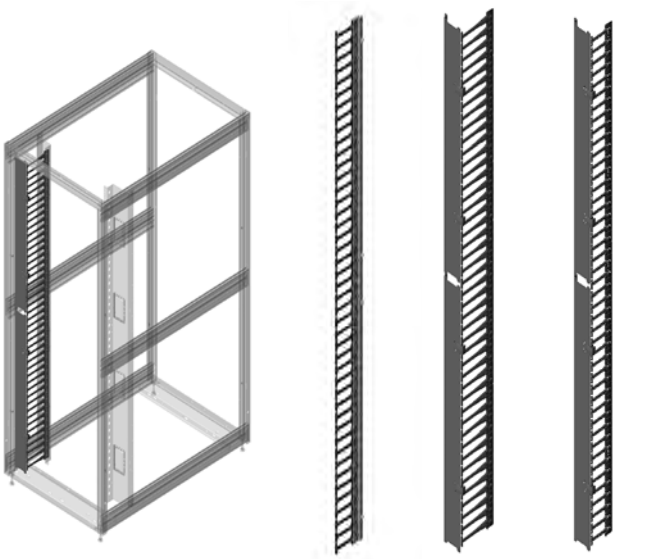
Contact CPI Customer Service, or visit chatsworth.com/warranty for more information.

CHATSWORTH PRODUCTS

Vertical Cable Manager for ZetaFrame™ Cabinet

Vertical Cable Manager

- Fully compatible with Air Dam Kit and Cable Lashing Panel
- Openings between fingers align with each U on the mounting rail
- Short or long plastic T-shaped finger options
- Rail setback:
  - 7-1/4 (184 mm) for Managers with long fingers
  - 4-3/4 (121 mm) for Managers with short fingers
- Long fingers pass up to (48) cables per U space through openings
- Short fingers pass up to (24) cables per U space through openings
- Hinged cover included with managers in cabinets wider than 600 mm
- Material: aluminum panels, fingers are black, hinges/latches are blue
- Finish: Black or Glacier White; fingers are black, hinges/latches are blue
- Select part number to match cabinet usable height, width and color of the cabinet



39835-XXX 38647-XXX 38646-XXX

Part Number - Cabinet Width				Height (U)	Shipping Weight lb (kg)
23.6"W (600 mm)	27.6"W (700 mm)	29.5"W (750 mm)	31.5"W (800 mm)		
Vertical Cable Manager with Long Fingers					
N/A	38647-X11	38647-X22	38647-X33	42	9 (4.1)
N/A	38647-X14	38647-X25	38647-X36	45	10 (4.5)
N/A	38647-X17	38647-X28	38647-X39	48	10 (4.5)
N/A	38647-X21	38647-X32	38647-X43	52	10 (4.5)
Vertical Cable Manager with Short Fingers					
39835-X00	38646-X11	38646-X22	38646-X33	42	9 (4.1)
39835-X03	38646-X14	38646-X25	38646-X36	45	10 (4.5)
39835-X06	38646-X17	38646-X28	38646-X39	48	10 (4.5)
39835-X10	38646-X21	38646-X32	38646-X43	52	10 (4.5)

Note: X=color: 7=Black, E=Glacier White. Shipping weights are for 800 mm Cabinets.

Inside Dimensions, Usable Internal Area, Rail Setback, U Opening					
Cabinet Width	Width in (mm)	Depth in (mm)	Cable Area in^2 (mm^2)	Rail Setback in (mm)	U Opening in^2 (mm^2)
Vertical Cable Manager with Long Fingers					
27.6 (700)	2.2 (56)	7.5 (191)	17.0 (10 967)	10.1 (257)	6.6 (460)
29.5 (750)	3.2 (81)	7.5 (191)	24.5 (15 806)	10.1 (257)	6.6 (460)
31.5 (800)	4.2 (107)	7.5 (191)	31.9 (20 580)	10.1 (257)	6.6 (460)
Vertical Cable Manager with Short Fingers					
23.6 (600)	0.4 (10)	5 (127)	1.8 (1161)	7.6 (193)	3.5 (2260)
27.6 (700)	2.2 (56)	5 (127)	11.2 (7225)	7.6 (193)	3.5 (2260)
29.5 (750)	3.2 (81)	5 (127)	16.2 (10 451)	7.6 (193)	3.5 (2260)
31.5 (800)	4.2 (107)	5 (127)	21.2 (13 677)	7.6 (193)	3.5 (2260)

Rail setback is the minimum distance required between the front edge of the cabinet frame and the front edge of the equipment mounting rail. U opening is the size of the side opening at each U space between T-shaped fingers.

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+52-55-5203-7525
Toll Free within Mexico
800-201-7592
chatsworth.com.co

Asia Pacific
+86 21 6880-0266
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CHATSWORTH PRODUCTS

chatsworth.com • techsupport@chatsworth.com

Product Cut Sheet

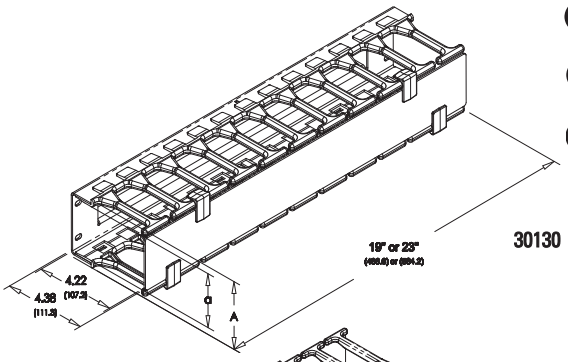
UNIVERSAL HORIZONTAL CABLE MANAGER

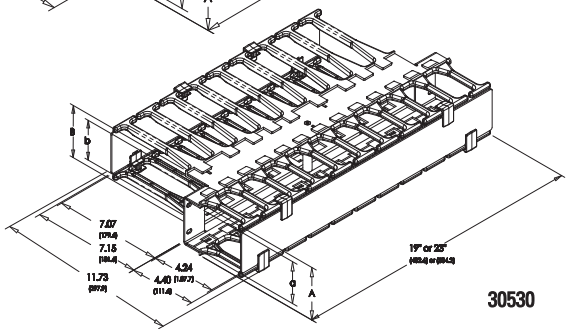
Create an attractive and highly functional horizontal pathway for patch cords and multimedia applications using coax, copper and fiber optic cables. After routing the cables or cords, simply snap on the cover for a clean, professional appearance.

- Extra-wide and contoured cable guide fingers, spaced 1.75" (44.5 mm) apart, separate and organize patch cords for quick and easy moves, adds and changes.
- The cable guides are offset to ensure proper bending radii of patch cables, even hooded patch cables
- Patented fingers meet the requirements of UL 94V-0 flammability rating
- Snap-on covers are easy to use and open 180° up or down with adjacent installation
- Covers and panel have a black powder-coat textured finish, reducing fingerprints and smudges

Estimated cable capacities:
See the cable fill table at www.chatsworth.com/cablefill

1U
2U
3U





Double-Sided Cable Manager		
Part Number	**Description H x W x D in (mm)**	**Shipping Weight lb (kg)**
30529-X19	1U x 19 x 11.73 (297.9)	5 (2.3)
30529-X23	1U x 23 x 11.73 (297.9)	6 (2.7)
30530-X19	2U x 19 x 11.73 (297.9)	6 (2.7)
30530-X23	2U x 23 x 11.73 (297.9)	7 (3.2)
30531-X19	3U x 19 x 11.73 (297.9)	6 (2.7)
30531-X23	3U x 23 x 11.73 (297.9)	7 (3.2)

Single-Sided Cable Manager		
Part Number	**Description H x W x D in (mm)**	**Shipping Weight lb (kg)**
30139-X19	1U x 19 x 4.96 (126.0)	2 (0.9)
30139-X23	1U x 23 x 4.96 (126.0)	3 (1.4)
30130-X19	2U x 19 x 5.14 (130.6)	3 (1.4)
30130-X23	2U x 23 x 5.14 (130.6)	4 (1.8)
30131-X19	3U x 19 x 5.14 (130.6)	4 (1.8)
30131-X23	3U x 23 x 5.14 (130.6)	5 (2.3)
30339-X19*	1U x 19 x 6.26 (159.0)	3 (1.4)
30339-X23*	1U x 23 x 6.26 (159.0)	3 (1.4)
30330-X19*	2U x 19 x 6.44 (163.6)	4 (1.8)
30330-X23*	2U x 23 x 6.44 (163.6)	5 (2.3)
30331-X19*	3U x 19 x 6.44 (163.6)	5 (2.3)
30331-X23*	3U x 23 x 6.44 (163.6)	6 (2.7)

*X=color: 7=Black, E=Glacier White. *Note: Deep Panel is used when Double-Sided MCS Master Cabling Sections are center-mounted on 3"D racks.*

Part Number		Dimensions			
19"	**23"**	**A**	**a**	**B**	**b**
30139-719	30139-723	1.73 (43.9)	1.02 (25.9)		
30130-719	30130-723	3.48 (88.4)	2.77 (70.4)		
30131-719	30131-723	5.23 (132.8)	4.52 (114.8)		
30339-719	30339-723	1.73 (43.9)	1.02 (25.9)		
30330-719	30330-723	3.48 (88.4)	2.77 (70.4)		
30331-719	30331-723	5.23 (132.8)	4.52 (114.8)		
30529-719	30529-723	1.73 (43.9)	1.00 (25.4)	1.67 (42.4)	0.85 (21.6)
30530-719	30530-723	3.46 (87.9)	2.75 (69.9)	3.42 (86.9)	2.60 (66.0)
30531-719	30531-723	5.23 (132.8)	4.50 (114.3)	5.17 (131.3)	4.44 (112.8)

Use Universal Horizontal Cable Manager in conjunction with the CPI Patch Panel Wire Management Bar (P/N 12176-X01) and any of CPI's vertical cabling sections for clean, organized cable management.

CHATSWORTH PRODUCTS

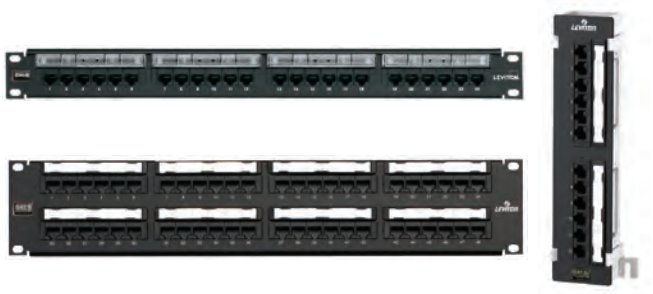
PRODUCT SPECIFICATIONS
69586-xxx

LEVITON®

Cat 6 UTP Flat 110-Style Patch Panels

APPLICATION

Leviton Cat 6 UTP Flat 110-Style Patch Panels are designed for use on 19-inch standard racks and cabinets. The patch panels include patented Retention Force Technology, which promotes consistent performance over the life of the system. An installer-friendly design allows for quick installation due to standard 110 terminations on the rear of the panels which follows the normal installation color sequence (blue, orange, green, brown) from left to right. The Cat 6 system is designed for use in high-megabit applications such as Gigabit Ethernet.



SPECIFICATION

Patch panels shall meet or exceed the requirements for channel- and component-level performance as described in ANSI/TIA-568.2-D Category 6 standards, as well as the Class E requirements described in ISO/IEC 11808-1 and EN 50713-1. Panels shall feature both T568A and T568B wiring configurations, white IDC 110-punchdown modules, mounting standoffs for cable management bars, and color-coded front window labeling. Panels shall have universal T568A and T568B wiring card for terminations. Panels shall be made of 14-gauge steel, and shall have a black finish with white silk-screening. The plastic elements shall be fire retardant with a UL flammability rating of 94V-0. Panels shall be offered in 12-, 24, 48-, and 96-port configurations as well as an 89D 12-port configuration. Patch panels shall be configured with six port modules. The 110 termination on the rear of the panels shall follow normal installation color sequence (blue, orange, green, brown) from left to right. The panels shall exceed IEEE 802.3bt standard up to 0.5 amps per conductor (100 watts) continuously.

FEATURES

- Patented Retention Force Technology protects tines from damage and increases system longevity
- Craft-friendly installation
- Universal T568A and T568B wiring cards for 110-style IDC terminations
- Color-coded front labeling for easy port identification (ANSI/TIA-606-C compliant)
- Terminates 26-22 AWG solid conductors
- Centralized labeling (available on 48-Port) promotes greater visibility of labels when patch cords are routed into horizontal cable management above and below the patch panel
- Capable of multiple re-terminations
- Panel available with patented magnifying lens label holder for easy reading
- Will exceed IEEE 802.3bt standard up to 0.5 amps per conductor (100 watts) continuously
- ETL verified to meet the IEC 60512-99-002 standard for support of IEEE 802.3bt Type 4 PoE (90-watt) applications

DESIGN CONSIDERATIONS

- Mounts on 19-inch equipment racks
- Panel offered in 12-, 24-, 48-, 96-port configurations and 12-port U89 Block for wall-mount applications
- Connector modules are in groups of six
- Includes rear cable management bars
- Use star washers for grounding in rack-mount installations

STANDARDS & REGULATIONS

- ANSI/TIA-568.2-D (Cat 6)
- ISO/IEC 11801-1 (Class E)
- EN 50713-1 (Class E)
- ANSI/TIA-1096-A (formerly FCC Part 68)
- IEC 60512-99-002
- cULus Listed
- IEEE 802.3bt PoE Type 1 (15.4 Watts) formerly 802.3af, Type 2 (30 Watts) formerly 802.3at, Type 3 (60 Watts), Type 4 (90 Watts)
- Cisco UPoE (60 Watts), UPoE+ (90 Watts)
- Power over HDBaseT™ PoH (95 Watts)

COUNTRY OF ORIGIN

USA

WARRANTY INFORMATION

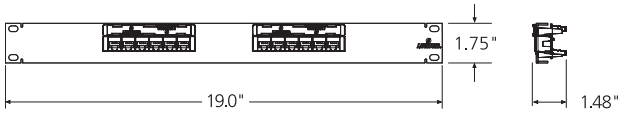
For Leviton product warranties, go to leviton.com/warranty

G21 SS1086ENv2
Revised July 2021

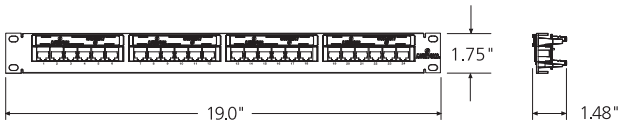
PRODUCT SPECIFICATIONS
69586-xxx

MECHANICAL SPECIFICATIONS

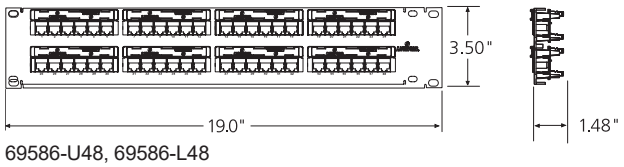
Dimensions: See below
Capacity: 12, 24, 48, 96-port,
U-89 Universal 12-port block
Materials: 14-gauge steel, black powder coat; PCB and plastic components are rated per UL94V-0



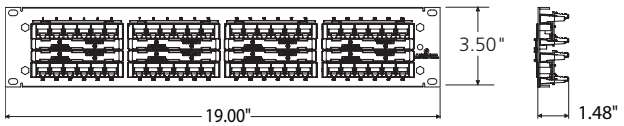
69586-U12



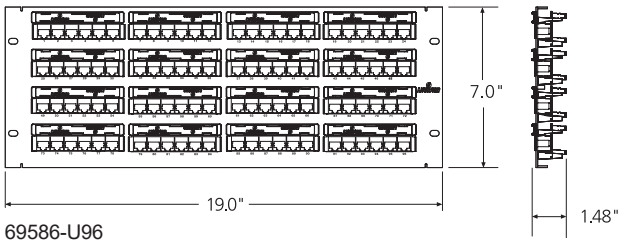
69586-U24, 69586-L24



69586-U48, 69586-L48



69586-C48



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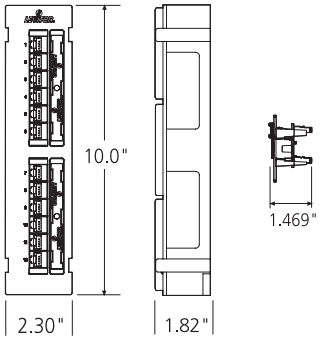

69586-U89

PART NUMBERS	
Description	**Part No.**
Cat 6 UTP Flat 110-Style Patch Panel, 12-Port, 1RU, black	69586-U12
Cat 6 UTP Flat 110-Style Patch Panel, 24-Port, 1RU, black	69586-U24
Cat 6 UTP Flat 110-Style Patch Panel with magnifying lens label holder, 24-Port, 1RU, black	69586-L24
Cat 6 UTP Flat 110-Style Patch Panel, 48-Port, 2RU, black	69586-U48
Cat 6 UTP Flat 110-Style Patch Panel with magnifying lens label holder, 48-Port, 2RU, black	69586-L48
Cat 6 UTP Flat 110-Style Patch Panel, 48-Port, 2RU, centralized labeling	69586-C48
Cat 6 UTP 110-Style Patch Panel, 96-Port, 4RU, black	69586-U96
Cat 6 UTP 110-Style Patch Block, 12-Port, black	69586-U89

ANSI/TIA-568.2-D CAT 6 PARAMETERS	Connecting Hardware Requirements*	
	@ 100MHz	**@ 250MHz**
Insertion Loss (IL)	0.20	0.32
Near-end Crosstalk (NEXT)	54.0	46.0
Far-end Crosstalk (FEXT)	43.1	35.1
Return Loss (RL)	24.0	16.0
Transverse Conversion Loss (TCL)	28.0	20.0
Transverse Conversion Transfer Loss (TCTL)	28.0	20.0

*All requirements are minimum allowable except IL requirements are maximum allowable. Connecting hardware shall meet requirements of all parameters from 1-250 MHz. Values in above table are only at specific frequencies and are for references only.

For further support information, visit leviton.com/ns/support

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Leviton is dedicated to designing, developing and manufacturing sustainable high-performance structured cabling and speciality cabling solutions. Network Solutions products are available worldwide in over 100 countries. Visit us online to learn more.

G21 SS1086ENv2
Revised July 2021

PRODUCT SPECIFICATIONS
6910G-U24, 6910G-U48

Cat 6A Flat QuickPort® Patch Panels

APPLICATION

Cat 6A Flat QuickPort Patch Panels exceed all channel performance requirements in ANSI/TIA-568.2-D and ISO 11801 Class E_A from 1 MHz to 500 MHz to support the IEEE 802.3an standard for 10 Gigabit Ethernet over UTP cable. Patch panels are designed for use on standard 19-inch racks and cabinets. Panels include patented Retention Force Technology to promote consistent performance over the life of the system and the patented Cone of Silence, which eliminates alien crosstalk (AXT) from adjacent connectors. The unique configurable panel design allows for combining multiple QuickPort connectors to mix media (copper, fiber, coax) to meet specific customer requirements, and is designed for use in high-megabit applications such as 10 Gigabit Ethernet.

SPECIFICATION

Patch panels shall meet or exceed the channel requirements for Cat 6A described in ANSI/TIA-568.2-D and ISO 11801, and shall be packed with the appropriate number of Cat 6A connectors. Connectors shall feature both T568A and T568B wiring configurations, mounting standoffs for cable management bars, and front write-on labeling. Panels shall be made of 16-gauge steel and shall have a black painted finish with white silk-screening. The plastic elements shall be fire retardant with a UL flammability rating of 94V-0. Panels shall be offered in 24- and 48-port configurations. Panel shall have the ability to allow for single port replacement of inoperative ports.

FEATURES

- Cone of Silence helps suppress alien crosstalk (AXT)
- Retention Force Technology provides durability for demanding applications
- Pair Separation Towers facilitate separation of Cat 6A conductors
- Universal T568A and T568B wiring labels for 110-style IDC terminations
- Kitted with eXtreme® Cat 6A connectors (black)
- Write-on labeling areas adjacent to connectors

DESIGN CONSIDERATIONS

- Mounts on 19-inch equipment racks
- Panel offered in 24- and 48-port configurations

STANDARDS COMPLIANCE

- ANSI/TIA-568.2-D
- ISO 11801 Class E_A
- cULus Listed
- ANSI/TIA-1096-A (formerly FCC Part 68)
- IEEE 802.3at (Type 1) Power over Ethernet (PoE) applications up to 15.4 watts
- IEEE 802.3at (Type 2) Power over Ethernet (PoE+) applications up to 30 watts
- IEEE Draft 802.3bt (Type 3) Power over Ethernet (PoE+) applications up to 60 watts
- IEEE Draft 802.3bt (Type 4) Power over Ethernet (PoE+) applications up to 100 watts

PHYSICAL SPECIFICATIONS

Dimensions:	See page two
Capacity:	24 and 48 ports
Materials:	16-gauge steel, painted black; PCB and plastic components are rated per UL 94V-0

COUNTRY OF ORIGIN

USA

WARRANTY INFORMATION

For a copy of Leviton product warranties, visit www.leviton.com/warranty.

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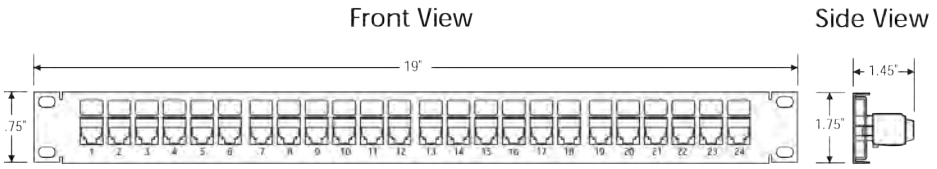
Released November 2018

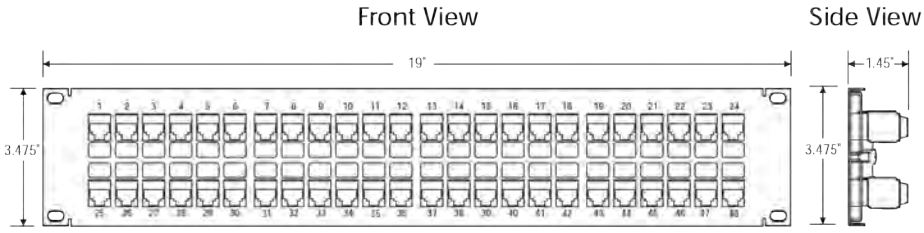
PRODUCT SPECIFICATIONS
6910G-U24, 6910G-U48

ELECTRONIC FILES

For CAD files, typical specs, or technical drawings (.DXF, .DWG), visit www.leviton.com.



6910G-U24



6910G-U48

PART NUMBERS

Description	Part No.
Cat 6A Flat QuickPort® Patch Panel, 24 ports, 1RU	6910G-U24
Cat 6A Flat QuickPort Patch Panel, 48 ports, 2RU	6910G-U48

K18 7443

ISO 9001 REGISTERED Quality Manufacturer

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Released November 2018

Universal Telephone Interface
UTI1 Model

Addendum to the Installation and Use Manual

The following corrections to the UTI1 manual, part number 54-2095-01A, are highlighted in bold and underlined.

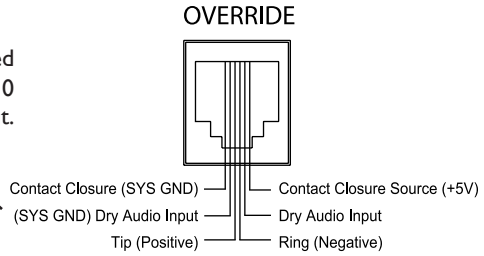
Trunk Disconnect (page 7)

The trunk disconnect feature is **disabled** by default and can be **enabled**. (Refer to *System Programming*.)

Override Input (page 10)

Maximum contact closure resistance is 1000 ohms. Open collector type outputs for controlling a page may also be used. The Override feature includes a quad beep pre-announce tone that can be enabled or **disabled**. (The default is ***enabled***.)

NOTE: SYS GND has been added to the line drawing on page 10 next to Dry Audio Input.



Override Tone (page 13)

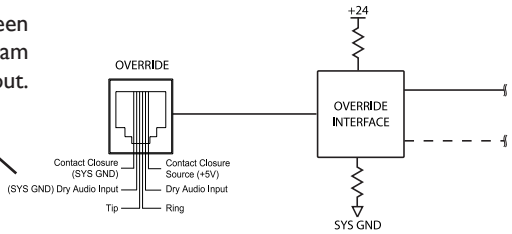
This tone is produced when override is activated. It produces a quad beep pre-announce tone that can be enabled or **disabled**. (The default is **enabled**). See *System Programming* to **disable** the tone.

Feature Codes & Defaults

	Feature	Feature Code	Data	Default
Override Tone	Disable Enable	08 09		**09**
Trunk Disconnect	Disable Enable	14 15		**14**

Block Diagram

NOTE: SYS GND has been added to the block diagram next to Dry Audio Input.



54-6707-01A 0408

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BOGEN®

Universal Telephone Interface
UTI1 Model

Installation and Use Manual

Specifications subject to change without notice.
54-2095-01A 0406

Notice

Every effort was made to ensure that the information in this manual was complete and accurate at the time of printing. However, information is subject to change.

FCC Statement (Part 15) - Radio Frequency Interference

The Universal Telephone Interface (UTI1) generates and uses radio frequency energy and if not installed and used in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. Testing is being conducted for compliance with the limits for a Class B device in accordance with the specifications in Part 15 of the FCC Rules and Canadian D.O.C. regulations. This testing is designed to provide reasonable protection against such interference. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the UTI1 unit off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the radio or TV receiving antenna.

- Relocate the UTI1 unit with respect to the radio or TV receiver or vice versa.

- Plug the UTI1 unit into a different outlet so that it and the radio or TV receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet, "How To Identify and Resolve Radio-TV Interference Problems," helpful. This booklet was prepared by the Federal Communications Commission (FCC) and is available from the U.S. Government Printing Office, Washington, DC 20402. Stock order No. 004-000-00345-4.

Federal Communications Commission (FCC) Statement (Part 68)

This equipment is component registered with the Federal Communications Commission (FCC) in accordance with Part 68 of its rules. In compliance with the rules, be advised of the following:

Registered equipment may not be used with Coin Telephone Lines. Equipment may be used with Party Lines in areas where state tariffs permit such connections and when equipment is adaptable for such service.

This equipment is registered as follows:
Registration Number - CD2PA14BUT11
Ringer Equivalence - 1.4B

If trouble is experienced, the equipment should be disconnected from the interface to determine if this equipment, or the telephone line, is the trouble source. If the equipment is determined to be malfunctioning, it should not be reconnected until repairs are effected.

Repairs to this equipment, other than routine repairs, can be made only by the manufacturer or its authorized agents.

If the equipment causes harm to the telephone network, the local telephone company may temporarily discontinue your service and, if possible, notify you in advance. If advance notice is not practical, you will be notified as soon as possible. You will be given the opportunity to correct the problem and informed of your right to file a complaint with the FCC.

The local telephone company may make changes in its facilities, operations, or procedures that could affect the proper functioning of your equipment. If they do, you will be given adequate notice in writing to allow you an opportunity to maintain uninterrupted telephone service.

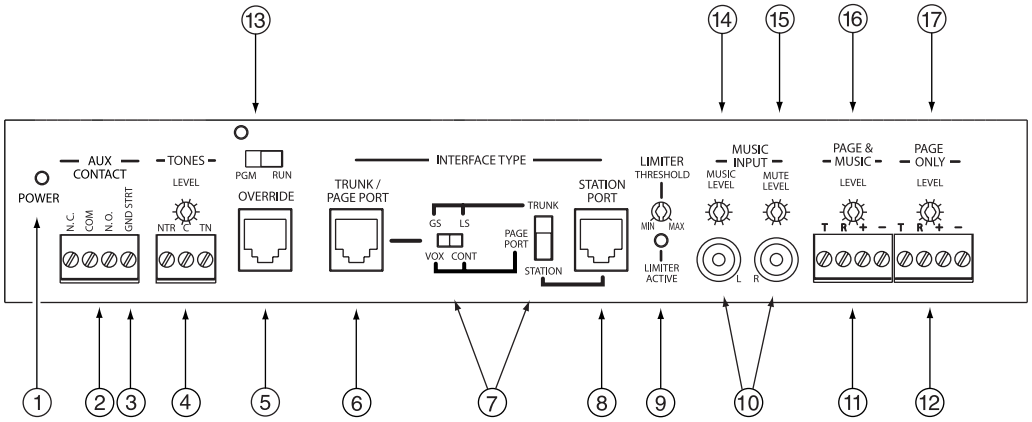
Important Safety Information

Always follow these basic safety precautions when installing and using the system:

1. Read and understand all instructions.
2. Follow all warnings and instructions marked on the product.
3. DO NOT block or cover the ventilation slots and openings. They prevent the product from overheating. DO NOT place the product in a separate enclosure or cabinet, unless proper ventilation is provided.
4. Never spill liquid on the product or drop objects into the ventilation slots and openings. Doing so may result in serious damage to the components.
5. Repair or service must be performed by a factory authorized repair facility.
6. The product is provided with a UL-CSA approved, 3-wire ground type plug. This is a safety feature. DO NOT defeat the safety purpose of the grounding type plug. DO NOT staple or otherwise attach the AC power supply cord to building surfaces.
7. DO NOT use the product near water or in a wet or damp place (such as a wet basement).
8. DO NOT use extension cords. The product must be installed within 6 feet of a grounded outlet receptacle.
9. DO NOT install telephone wiring during a lightning storm.
10. DO NOT install telephone jacks in a wet location unless the jack is specifically designed for wet locations.
11. Never touch uninsulated wires or terminals, unless the line has been disconnected at the paging or controller interface.
12. Use caution when installing or modifying paging or control lines.

Contents

UTI1 Feature Callouts



1. **Power Indicator** - Illuminates when AC power has been applied to the unit.
2. **AUX Contact Terminals** - Provide connections for normally open and normally closed contact closures. The contact closure can be programmed to activate during paging, night ring, tone, override, or any combination (refer to *System Programming*).
3. **Ground Start Terminal** - Connection for PBX ground. Used only when the ground start interface is selected.
4. **Tone Terminals / Tone Level Control** - Terminals provide connections to night ring and tone trigger inputs. Tone Level Control sets the level of all tones produced by the system.
5. **Override** - Secondary paging input with higher priority than TRUNK/PAGE PORT or STATION mode inputs. Connects to either loop start trunk or dry audio signal with contact closure.
6. **Trunk/Page Port** - Primary paging interface to telephone system when UTI1 is set to trunk or page port mode type interface.
7. **Interface Type Slide Switches** - Sets telephone interface type for the UTI1.
8. **Station Port** - Primary paging interface to telephone switch when UTI1 is set to station mode type interface.
9. **Limiter Threshold / Limiter Active LED** - Control and indicator for output limiter function.
10. **Music Input Jacks** - Stereo summing input for background music source.
11. **Page & Music Terminals** - Provides connections to the paging system (background music and voice paging) and the 24V DC power supply.
12. **Page Only Terminals** - Provides connections to the paging system (voice page only - no music) and the 24V DC power supply.
13. **Program/Run Switch & LED** - Used to switch unit to program mode. The LED will light when unit is in PROGRAM mode.
14. **Music Level Control** - Music Level sets background music level.
15. **Music Mute Control** - Music Mute sets music mute level during paging.
16. **Page & Music Level Control** - Page & Music Level controls the level of page & music output.
17. **Page Only Level Control** - Page Only Level controls the level of page only output.

Introduction

The UTI1 Paging System is a paging and signaling system. The system provides the following features and functions:

Voice Channel

- Single-zone paging
- Telephone interfaces:
    - loop start trunk
    - ground start trunk
    - station access (analog ring-up)
    - page port contact closure activation
    - page port voice activation
- Override paging (using loop start trunk or page port contact closure activation)
- Two audio outputs (both with level controls):
    - paging and background music
    - paging only
- Each output can provide audio for 150 Bogen one-way amplified speakers, also compatible with 70V amp inputs
- Pre-Announce/Confirmation Tone
- Adjustable Automatic Level Control with threshold and active indicator

Background Music

- High impedance transformer isolated BGM input with volume control
- Variable music mute

Signaling Tones

- Night Ringer (contact closure activation)
- Tone Trigger (tone and duration selectable, closure-activated)

Other Features

- C-form contact set with programmable activation events
- Non-volatile memory for setup data (no backup battery required)
- Setup Tone to assist in volume setting, etc.
- Pluggable terminal strips
- Microcontroller-based operation
- DTMF setting of operating parameters

Package Contents

- (1) UTI1
- (1) Installation and Use Manual

Installation

Wall Mounting

Mounting to a plywood backboard or studs:

1. Hold the unit level against the surface to which it will be mounted.
2. Mark where the mounting screws should be positioned.
3. Set the unit aside and install the screws leaving about ¼" of the screws sticking out of the surface.
4. Slip the unit over the screws and tighten them snugly.

Telephone Interface Wiring Connections & Setup

Telephone System Connections

The UTI1 connects to virtually any telephone system: PBX station lines and CO lines, PBX loop start trunk ports, PBX ground start trunk ports, and page ports.

Interface installation consists of setting the slide switches and connecting with modular (RJ11) telephone plugs. Refer to the appropriate procedure in this section to connect the UTI1 to the telephone system.

Note: In all cases, make sure that power to the UTI1 is disconnected before performing the installation.

Trunk Disconnect

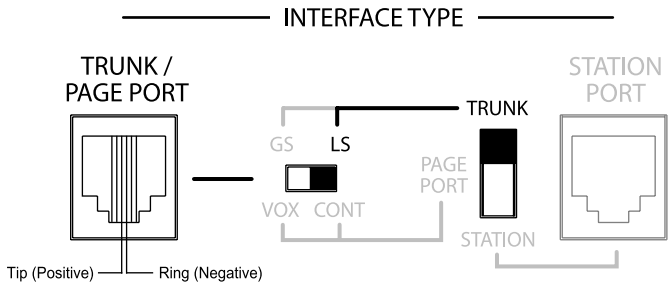
The UTI1 includes a trunk disconnect feature. The purpose of the trunk disconnect feature is to release the UTI1 from the trunk port in the event a user does not hang up the phone properly after making a page. If the UTI1 does not detect voice for the interface VOX time-out period, or if the interface default timer expires, the UTI1 will attempt to release from the trunk. When using the trunk disconnect feature with a trunk interface, the PBX must have disconnect supervision available on the trunk port connected to the UTI1. The trunk disconnect feature is enabled by default and can be disabled. (Refer to *System Programming*.) To set the VOX and default timers refer to *System Programming*.

PBX Loop Start Trunk Port

In this configuration, the unit supplies a 24V talk battery and loop current detection. When the unit detects a loop resistance between Tip and Ring, it activates. When the loop opens, the page ends. The unit follows the status of the trunk port.

Before configuring the UTI1 for a loop start trunk port, make sure that the power is disconnected and all other connections are completed. Move the slide switches on the UTI1 to the positions shown below. Use a modular telephone cord to connect the module to the phone system.

The center two conductors are Tip and Ring (24V DC) and have a specific polarity as shown in the figure to the right. If the polarity that the trunk requires is opposite, you can use a reversing modular cord to make the connection or reverse the connection through a modular block. The trunk disconnect feature is available in this mode.

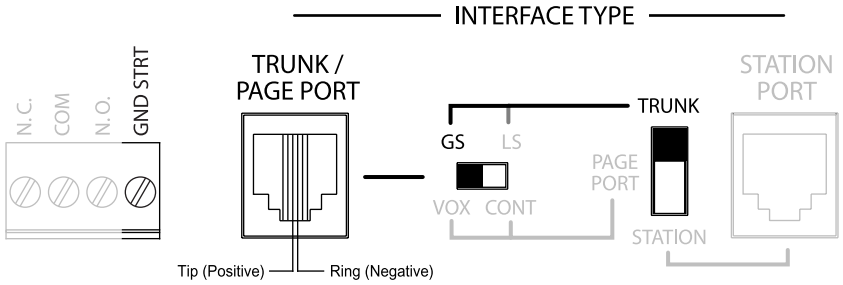


PBX Ground Start Trunk Port

In this configuration, the unit supplies 24V talk battery, a contact in the Tip circuit, and loop current detector in the ring line. When the ground start trunk grounds Ring, the unit responds by closing the connection to Tip, which completes the access procedure. When the loop is opened, the page ends. The unit follows the status of the trunk.

Before proceeding, make sure that the power is disconnected and all other connections are completed. Move the slide switches on the UTI1 to the positions shown below. Use a modular telephone cord to connect the module to the phone system. Connect the GND STRT terminal on the module to the PBX ground. This is typically the AC ground for the PBX system.

The center two conductors are Tip and Ring (24V DC) and have a specific polarity as shown. If the polarity that the trunk requires is opposite, you can use a reversing modular cord to make the connection or reverse the connection through a modular block. The trunk disconnect feature is available in this mode.



IMPORTANT:

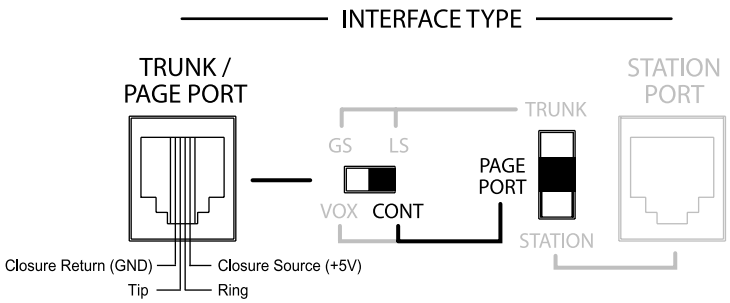
When the GND STRT terminal is connected to earth ground, it is important that none of the UTI1 system ground terminals are connected to earth ground. These terminals may accidentally be connected to earth ground when external equipment, such as a CD player, tuner, announcement device, etc., is connected to the UTI1. The closure return terminals for the Trunk/Page Port jack, the contact closure (GND), the left-most Dry Audio input terminal of the Override jack, the C terminal of the Night Ring, and the Tone Trigger input are system ground. The background music input and page outputs are transformer-isolated and are unaffected by earth ground. If the UTI1 system ground is tied to earth ground, then the UTI1 talk battery voltage will be shorted to ground and the unit will not function properly.

PBX Page Port Contact

In this configuration, the unit responds to a contact shorting the closure source to its return. When the short is removed, the page ends. Audio is provided to the system through a separate pair of dry audio input leads.

Make sure that the power is disconnected and all other connections are completed before proceeding. Move the slide switches on the UTI1 to the positions shown below. Use a modular telephone cord to connect the module to the phone system.

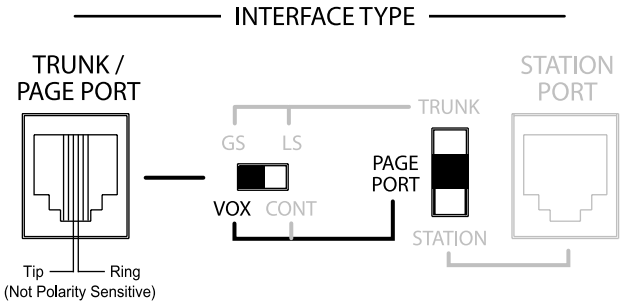
The center two conductors are used for dry audio (no DC voltage) and the connectors on either side are connected to the page port contact closure. The maximum resistance of the page port contact closure loop resistance is 1000 ohms. Open collector type outputs for controlling a page may also be used. The trunk disconnect feature is not available in this mode.



PBX Page Port VOX

In this configuration, the unit activates when audio on the page input is detected. Loss of audio allows the VOX timer to expire and ends the page.

Make sure that the power is disconnected and all other connections are completed before proceeding. Move the slide switches on the UTI1 to the positions shown below. Use a modular telephone cord to connect the module to the phone system. The center two conductors are used for dry audio and are not polarity sensitive. The Trunk disconnect feature is not available in this mode.

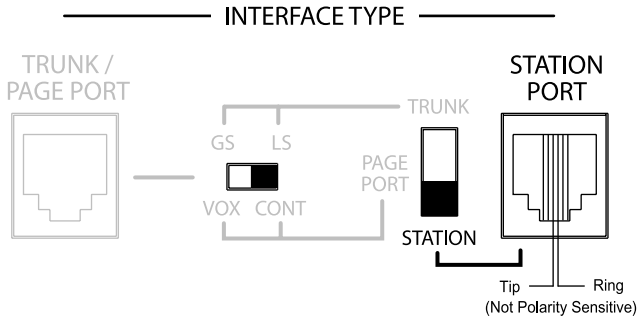


PBX Analog Station Port

In this configuration, the unit answers after detecting ring. As soon as it answers, the default timer and VOX timer are started. The default timer determines the maximum length of any page. The VOX timer repeatedly resets as long as audio is detected on the line. If no audio is detected within the VOX time period, then the page will end. If audio continues to be detected, then the default timer will control page length. The unit will disconnect if a loss of loop current is detected.

Make sure that the power is off and all connections are completed before proceeding. Move the interface slide switch on the UTI1 to STATION. The other interface slide switch is not used and can be in any position. Use a modular telephone cord (minimum 2-conductor) to connect the UTI1 Station Port RJ11 to the phone system. The center two conductors are Tip and Ring and are not polarity sensitive (see below). Set Default and VOX timers (see *System Programming*). The timers can be independently inhibited.

Note: The default timeout is factory set to 30 seconds, and the VOX timeout is set to 6 seconds. If both the default and VOX timers are inhibited, the only way to release the system from the station line is through the use of a Calling Party Control (CPC) pulse.



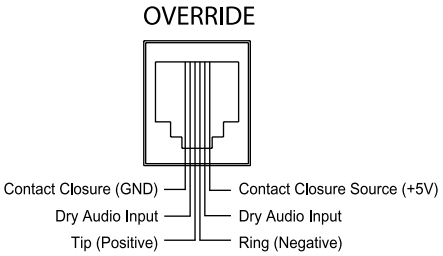
Override Input

The Override is a non-programmable feature that lets the caller take priority over all paging functions and make a page to all speakers. The feature can be activated using a loop start trunk or dedicated telephone.

The center two conductors interface directly to a Loop Start Trunk or a dedicated phone. When the trunk becomes active, the UTI1 goes into Override mode. A contact closure and dry audio source can also be used for the Override Input. The two conductors flanking the talk battery conductors provide a dry audio gateway into the system override. Override is activated by shorting the outermost conductors.

Maximum contact closure resistance is 1000 ohms. Open collector type outputs for controlling a page may also be used. The Override feature includes a quad beep pre-announce tone that can be enabled or inhibited. (The default is inhibited.)

Make sure that the power is disconnected and all other connections are completed before proceeding. Plug modular cord into OVERRIDE (RJ11) jack.



Other Connections

Night Ringer

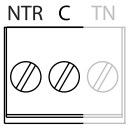
The UTI1 night ringer signaling feature is designed to alert personnel to incoming calls after normal business hours. The feature is activated by a contact closure from the PBX.

The night ringer normally sounds a simulated ring tone, but can be programmed to sound a chime tone.

To physically connect the night ringer wiring:

1. Make sure that the power is disconnected.
2. Wire the contact closure used for night ring to the NTR (+5V) and C terminals on the UTI1. Maximum contact resistance for contact closure activation is 1000 ohms. Open collector type outputs for controlling a page may also be used.

Note: The Night Ring feature has priority just above background music. There is a 5-second delay after the night ring stops before background music is restored (bridges inter-ring pause).

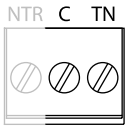


Tone Trigger

The UTI1 tone trigger input is typically used to signal shift changes using a contact closure pair from an external master clock or as a doorbell annunciator. The tone type is programmable. This is set in programming. Refer to *System Programming* section.

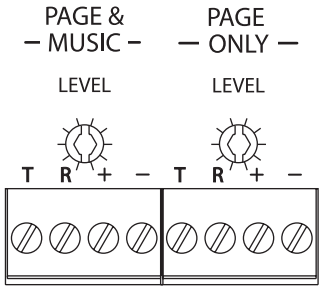
To physically connect the tone trigger wiring:

1. Make sure that the power is disconnected.
2. Wire the contact closure used for tone trigger to the TN (+5V) and C terminals on the UTI1. Maximum contact resistance for contact closure activation is 1000 ohms. Open collector type outputs for controlling a page may also be used.



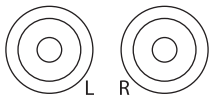
Paging Output Connections

There are two paging outputs on the UTI1. One output supplies both paging and background music, while the other supplies only paging. The paging outputs are intended to connect to amplified speakers, but are also compatible with amplifier inputs as well. The Tip (T) and Ring (R) connections are transformer-isolated audio outputs with an output impedance of 8 ohms. Connect these to the audio inputs of the amplified speakers for driving up to 150 speaker inputs. The + and - terminals provide 24V DC for powering the amplified speakers. The UTI1 can supply a total of 1A @ 24V DC.



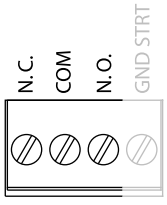
Background Music Input

The UTI1 system provides a high-impedance, transformer-isolated summed stereo background music input. Mono sources can be connected to either RCA.



AUX Contacts

The UTI1 system provides a dual form contact rated at 2A @ 30V DC and 0.6A @ 125V AC, which can be used to activate external equipment. The relay can be programmed to change state when specific events or combination of events (time tone, override, night ring, paging) occur. Refer to the *System Programming* section.



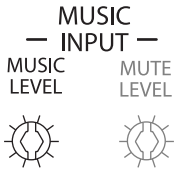
Controls

Paging Level

The UTI1 has controls for adjusting the audio level of each output independently. These serve as master level controls that allow for overall system control. Setting the initial volume to half is a good starting point. If the speakers have their own level control, then the installer will have to determine the proper setting for each speaker depending on the application. Clockwise increases level, counterclockwise decreases level.

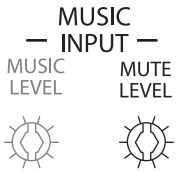
Music Level

The UTI1 has a background music input level control. Once the page level has been adjusted set the music level control to the desired background music level. Clockwise increases level, counterclockwise decreases level.



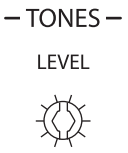
Music Mute Level

The music mute level sets the level to which the background music is muted during paging. Once all paging levels and music levels have been set, make a page and adjust the mute level as desired. Clockwise increases mute level, counterclockwise decreases mute level. Fully clockwise fully mutes background music.



Tone Level

The tone level control sets the level for all tones. Clockwise increases level, counterclockwise decreases level.

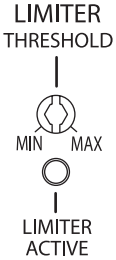


Limiter Threshold

Because not everyone speaks at the same level, the UTI1 includes a limiter threshold control that prevents loud voices from booming out of the paging system's speakers. The limiter restricts the input signal to a preset level regardless of the input level. To set the limiter, follow the directions below.

1. Turn off the limiter by rotating the control fully clockwise.
2. Hold the telephone handset in a normal position and speak in a normal voice distinctly into the mouthpiece. Adjust the limiter control until the limiter active LED starts to come on.

Volume can be adjusted without disturbing the limiter adjustment by using the Page & Music or Page Only level controls.



Tones

Pre-Announce/Confirmation Tone

This tone can be set to be heard at the speakers being paged or the calling telephone or both. It is either a chime or beep (default). The pre-announce/confirmation tone can also be inhibited. See *System Programming* to change or inhibit this tone.

Tone Trigger

This tone is activated when the TN and C terminals are shorted together. This tone has the second highest priority after override. Several tone options are available.

2 - 7 Second Tone Burst - This is a tone burst that, once a momentary closure is detected at the tone trigger input, will sound for the set duration one time. The UTI1 will not respond to the tone trigger input while the tone is in progress. If the closure is still present at the tone trigger input upon completion of the tone, then the UTI1 will not sound the tone again until the closure is removed and applied again.

Tone Follow Contact -This is a tone burst that will sound continuously as long as a contact closure is present at the tone trigger input.

Double Chime Tone - This is a chime tone that will sound twice when a closure is detected at the tone trigger input. The UTI1 will not respond to the tone trigger input while the tone is in progress. If the closure is still present at the tone trigger input upon completion of the tone, the UTI1 will not sound the tone again until the closure is removed and applied again.

Chime Tone Follow Contact - This is a chime tone that will sound continuously as long as a contact closure is present at the tone trigger input.

Slow Whoop Follow Contact - This is a slow whoop tone that will sound continuously as long as a contact closure is present at the tone trigger input.

Override Tone

This tone is produced when override is activated. It produces a quad beep pre-announce tone that can be enabled or inhibited. (The default is inhibited). See *System Programming* to enable the tone.

Setup Tone

This tone can be activated only when the system is in Program mode (set with Run/Program switch). It is an interrupted tone which can be used by the installer to check speaker operation, set operational level of speakers. See *System Programming* to enable the tone.

Note: The volume level of all of the above tones are controlled by the TONE VOLUME control. All tones play at the same level. Clockwise rotation of the control increases the level. Counterclockwise rotation of the control decreases the level.

Reference

How To Page

1. Dial the paging access number for your telephone system.
2. Listen for the confirmation tone if enabled.
3. Make the page and hang up when finished.

Priority Levels

The following is a list of the priority operation of the UTI1.

Highest	Override
↑	Tone Trigger
	Voice Page
	Night Ring
Lowest	Background Music

System Programming

System programming lets you set certain UTI1 options and tone features using the DTMF keys of a telephone. All programming is accomplished through the Override jack on the UTI1.

To program the UTI1 system, follow these instructions:

1. Place the PROGRAM/RUN switch to the PROGRAM position. The green LED will illuminate.
2. Access the UTI1 override port (either use a single 2500-type telephone or Test Set.
3. You will hear 3 beep tones indicating access to the programming mode.
4. Dial the Feature Code and any required input data for the option you wish to program.
5. Press the [#] key to store the programming data. If you don't dial the [#], then the data is not stored. A double beep will sound to confirm the entry.

Note: After you have entered a Feature Code (and any other data), you must press the [#] key to enter it into the system. If the system accepts the code (and data), you will hear a short double beep confirming that the data has been stored in the system. Continue with the next Feature Code immediately after the confirming double beep. If the information is not accepted, you will hear a busy tone. In this case, you should hang up, check the code and the data, then re-access the system and try again.

6. Once you have finished all programming, you must first hang up the programming phone and then place the Program/Run switch in the Run position. The green LED will go out.

Default Timer

If the UTI1 is connected to a PBX station port, or a trunk port with the trunk disconnect feature enabled, you can set the maximum page duration (default timer). The factory setting for this timer is 30 seconds. To change the time, enter the Feature Code and the new 2-digit number corresponding to the time desired. The 2-digit number represents default time in multiples of 10 seconds. (Example: 03 = 30 seconds; 12 = 120 seconds.) If you wish to inhibit the default timer, enter "00" for the time data.

VOX Timer

If the UTI1 is connected to a station port, page port VOX, or trunk port with the trunk disconnect feature enabled, you can set the time duration for the VOX time out. The factory setting is 6 seconds. To change the time, enter the Feature Code "51" followed by a single digit from 1 to 9, corresponding to 1 to 9 seconds. To inhibit the timer, enter the Feature Code followed by "0".

DTMF Block

DTMF Block can be enabled or disabled (Feature Codes 40 and 41). If enabled, DTMF Block suppresses DTMF tones issued to the UTI1 so that only a small portion of the tone will be heard over the paging system. If external DTMF controlled devices are connected to the output T/R terminals of the UTI1, the DTMF Block feature will have to be disabled in order for these devices to receive DTMF tones. In this configuration the DTMF tones will be heard over the paging system.

Setup Tone

The setup tone is a beeping tone available to assist in the adjustment of speaker volume and testing the system. The setup tone is only available in the programming mode. To activate the setup tone, dial "00" and leave the phone off hook. To deactivate the setup tone, hang up the phone.

Reset Default Values

A Feature Code is available to reset the UTI1 system to the original factory default values. Wait for a confirmation tone before hanging up.

Warning!

Erased data cannot be recovered.

AUX Relay Contact

The UTI1 allows the installer to program a number of different parameters to control the way in which the AUX relay contacts activate. The UTI1 allows programming of which input events (Override, Tone Trigger, Page, and Night Ring) it will respond to, whether it will respond to the event only (Event Driven Mode) or to a combination of the event and its place in the priority structure (Priority Driven Mode), and if the contact will respond during the event (No Delay) or after the event ends (Delay).

Event Enable/Disable

The UTI1 monitors for 4 types of input events: Override, Tone Trigger, Page, and Night Ring. When one of these inputs is activated, the UTI1 detects that as a particular event. Through programming, the installer can decide which of these 4 events the UTI1 will allow to activate the AUX relay. Setting the event to Enable allows the AUX contact to respond to that event.

For example, if the application requires that the AUX relay contacts respond only when the night ring input is active, the installer would enable the night ring event and disable all other events (override, tone trigger and page).

It is possible to enable multiple events. In this case the events are "OR'd" together. For example, if the override and tone trigger events are both enabled, the AUX contacts will activate when the override input "OR" the tone trigger input "OR" both of them become active. If all 4 events were enabled, the contacts would activate any time the UTI1 was doing anything but sitting idle (this is the factory default condition).

Event Driven/Priority Driven Mode

There are applications where the AUX relay contacts should activate regardless of what else may be going on in the UTI1 (Event-Driven Mode) and other times when it should activate so long as there is not another higher priority input active (Priority-Driven Mode).

For example, an application requires that a strobe flash for as long as the night ring line rings. This is accomplished by selecting the Event-Driven Mode and disabling all the events except night ring. In this configuration, the AUX relay contacts will activate whenever the night ring line becomes active. This action is independent of whatever else may be going on in the UTI1. Therefore, even though a page may be occurring that suppresses the night ring audio tone, the AUX relay will still cause the strobe to flash.

Likewise, there may be applications where it is desirable to have a higher priority event deactivate the AUX relay operation even though a lower priority event is still on going. For example, suppose the strobe above was specified to flash only when the night ring audio is produced. This is accomplished by selecting the Priority-Driven Mode instead of the Event-Driven Mode. In this case any other higher priority event will deactivate the AUX relay for the duration of that event. The AUX relay will become active again if the lower priority event is still active when the higher priority event finishes.

Delay/No Delay

It is sometimes desirable for the AUX relay to activate immediately after an event rather than during an event. By selecting the Delay programming option, the contacts activate immediately after the enabled events occur. The contacts will activate for 1 second and then deactivate.

For example, a specification requires that after a tone has been produced an audio message is to be played that is triggered by a momentary contact closure. To accomplish this, the tone trigger event is enabled and the Delay option is selected. In this configuration the AUX relay contacts trigger the message playback device at the end of the tone.

What about the Event- or Priority-Driven setting? Only the override input is a higher priority setting than the tone trigger and thus could interrupt the tone. Setting it to Event-Driven Mode will cause the audio message to trigger at the end of the tone duration, even if the override is suppressing the tone itself. However, setting it to Priority-Driven Mode may lead to multiple pulses being produced since the UTI1 will consider the tone trigger completed when the override suppresses it and will produce the pulse. If the tone is still in progress when the override is removed, then a second pulse will be produced at the actual end of the tone duration.

Example 1

	Enabled/ Disabled	Code
Event		
Override	Enabled	61
Tone Trigger	Enabled	63
Page	Disabled	64
Night Ring	Disabled	66
Mode		
Event	Enabled	71
Priority	Disabled	-
Delay		
Delay	Enabled	68
No Delay	Disabled	-

Example 2

	Enabled/ Disabled	Code
Event		
Override	Disabled	60
Tone Trigger	Disabled	62
Page	Disabled	64
Night Ring	Enabled	67
Mode		
Event	Enabled	71
Priority	Disabled	-
Delay		
Delay	Enabled	-
No Delay	Disabled	69

Example 3

	Enabled/ Disabled	Code
Event		
Override	Disabled	60
Tone Trigger	Enabled	63
Page	Disabled	64
Night Ring	Disabled	66
Mode		
Event	Enabled	71
Priority	Disabled	-
Delay		
Delay	Enabled	68
No Delay	Disabled	-

Example 1: Emergency Tone/Emergency Announcement Bypass

The tone trigger and override inputs are used to provide emergency tones and live emergency announcements and when this happens any local attenuators are to be bypassed to ensure that emergency announcements can be heard.

The AUX relay contacts will signal the attenuators to go into the bypass mode. Program the UTI1 with the override and tone trigger events enabled and all other events disabled. In this case the UTI1 can be in Event-Driven or Priority-Driven Mode since the application only involves the two highest priority inputs. Nevertheless, set the operation for Priority-Driven with the No Delay option since the AUX relay contacts need to activate during the event. Now, when either the tone trigger OR override input becomes active, the AUX relay will signal the attenuators to bypass. During normal paging or night ring, the attenuators still control the audio level of their associated speakers.

Example 2: Strobes Flash to Announce Night Ring

Strobes throughout a facility are to flash whenever a night line rings to provide a visual alert of the ringing line. An audible alert is optional.

Program the UTI1 with the night ring event enabled and all other events disabled. Select the Event-Driven Mode since the strobes are to flash when the night ring line is ringing independent of whatever other events are taking place with the UTI1. No Delay should be selected so that the AUX relay contacts activate during the event. The strobes will flash for as long as the night line rings. If a page, tone trigger or override page occurs during this event, the night ring tone will stop, but the strobe will continue to flash. The strobes stop only when the night line stops ringing.

Example 3: Message Playback Following Tone

A message is to be played immediately after a chime tone is produced.

In this application the tone trigger input will be activated to cause the chime tone (one of the UTI1's selectable tones). After the tone finishes the AUX relay contacts will trigger an audio playback device with a 1-second contact closure pulse. Program the UTI1 with the tone trigger event enabled and all other events disabled. Select the Event-Driven Mode (see below about using Priority-Driven Mode in this case). Select the Delay option so that the contact will pulse immediately after the event finishes. Now, whenever the tone trigger is activated a message will play immediately after the tone stops. Typically the audio gets into the paging system through the override input.

Priority-Driven Mode Issues

Using the Priority-Driven Mode can cause some unexpected results. When the event selected to control the AUX relay is interrupted by a higher priority event that is not enabled, the UTI1 will consider that the AUX relay event has finished even if it hasn't, and the relay will change states. If the Delay option is selected, then the UTI1 will pulse the AUX relay contacts. If the AUX relay event is still active after the high priority event is completed, the AUX relay will again activate. This operation can lead to multiple changes in the relay state (when No Delay is selected) or multiple pulsations of the AUX relay (if the Delay option is selected). Care should be taken in using the Priority-Driven Mode, especially when low priority events are enabled.

Feature Codes & Defaults

	Feature	Feature Code	Data	Default
Pre-Announce / Confirmation Tone	Destination: Handset & Outputs	01		01
	Destination: Handset only	02		
	Destination: Outputs only	03		
	Tone: Inhibit	04		
	Tone: Beep	05		05
	Tone: Chime	06		
Override Tone	Disable	08		08
	Enable	09		
Trunk Disconnect	Disable	14		
	Enable	15		15
Tone Trigger	Slow Whoop Follow Contact	20		
	Tone Follow Contact	21		
	2 Sec Burst	22		
	3 Sec Burst	23		23
	4 Sec Burst	24		
	5 Sec Burst	25		
	6 Sec Burst	26		
	7 Sec Burst	27		
	Double Chime	28		
	Double Chime Follow Contact	29		
Night Ring	Simulated Ring	31		31
	Chime	32		
DTMF Block	Disabled	40		
	Enabled	41		41
Timers	Default Timer	50	00 - 99	03
	VOX Timer	51	0 - 9	6
Aux Relay Response	Override Disabled	60		
	Override Enabled	61		61
	Tone Trigger Disabled	62		
	Tone Trigger Enabled	63		63
	Page Disabled	64		
	Page Enabled	65		65
	Night Ring Disabled	66		
	Night Ring Enabled	67		67
	Delay	68		
	No Delay	69		69
	Priority-Driven	70		
	Event-Driven	71		71
Setup Tone	Turn On	00		
	Turn Off	Hang Up		
Reset	Reset Default	99		

Notes to Feature Codes

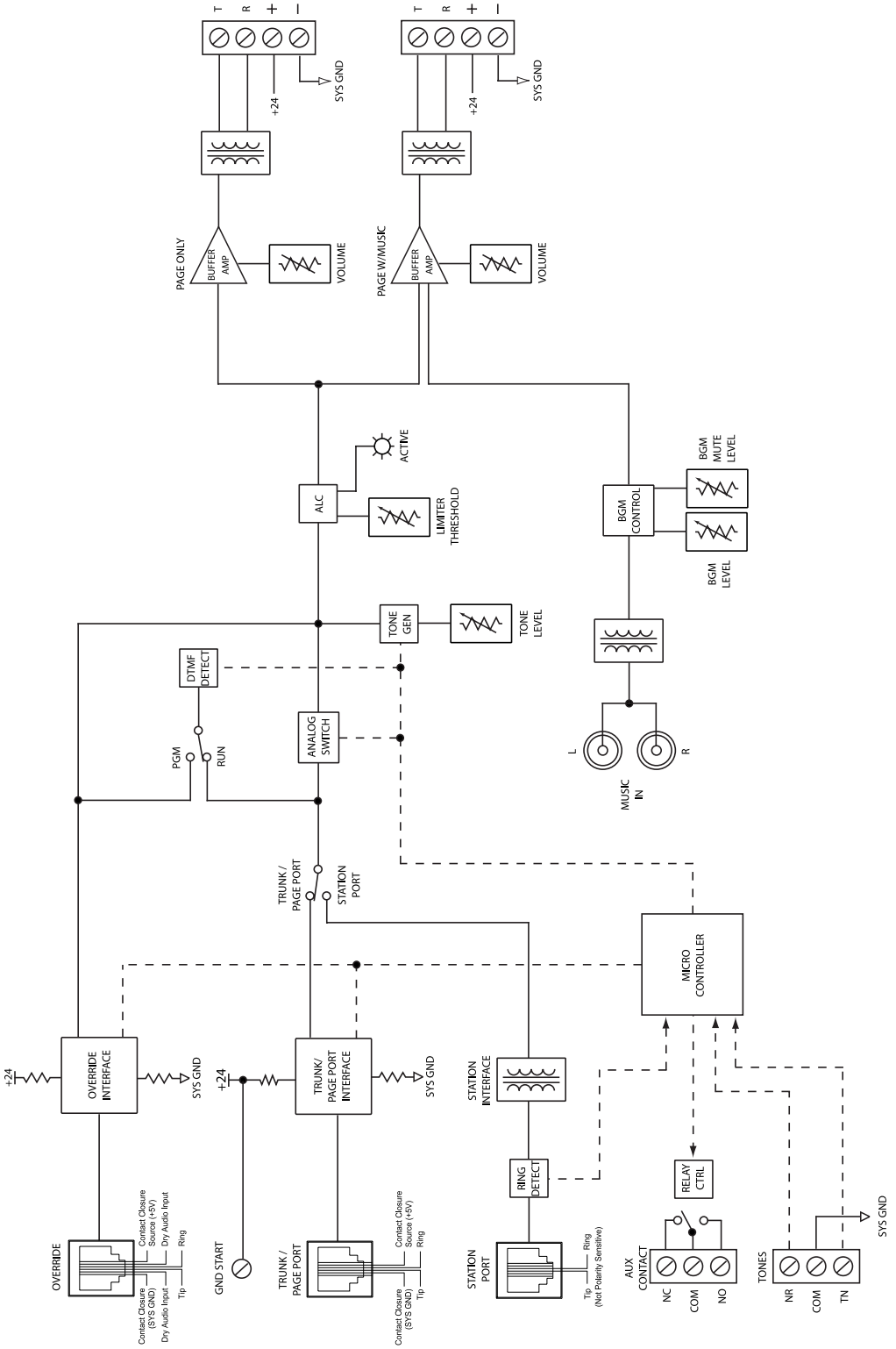
Note 1 - The data digits represent time in 10's of seconds, i.e. "01" = 10 seconds. Entering "00" will disable the timer.

Note 2 - This single data digit indicates VOX delay time in seconds. Entering "0" will disable the timer.

Specifications

Input Impedance:	600 ohms
Input Level:	-10 dBm nominal
VOX Sensitivity:	-30 dBm
Music Source Input Impedance:	8 to 600 ohms
Music Input Level:	-10 dBm
Output Impedance:	8 ohms
Output Level:	-10 dBm nominal
Contact Closure:	2A @ 30V DC 0.6A @ 125V AC
DC Output:	1A @ 24V DC
Voltage:	120V AC
Current:	0.5A
Temperature:	0 to 104° F
Humidity:	0 to 85% non-precipitating
Dimensions/Weight:	$12\frac{3}{16}$" W x $5\frac{1}{4}$" H x $2\frac{1}{2}$" D
Weight:	5 lb.

Block Diagram



Limited Warranty

The UTI1 is warranted to be free from defects in material or workmanship for two (2) years from the date of sale to the original purchaser. Any part of the product covered by this warranty that, with normal installation and use, becomes defective will be repaired or replaced by Bogen, at our option, provided the product is shipped insured and prepaid to: Bogen Factory Service Department, 50 Spring Street, Ramsey, NJ 07446, USA. The product will be returned to you freight prepaid. This warranty does not extend to any of our products that have been subjected to abuse, misuse, improper storage, neglect, accident, improper installation or have been modified or repaired or altered in any manner whatsoever, or where the serial number or date code has been removed or defaced.

THE FOREGOING LIMITED WARRANTY IS BOGEN'S SOLE AND EXCLUSIVE WARRANTY AND THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY. BOGEN MAKES NO OTHER WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED AND EXCLUDED TO THE MAXIMUM EXTENT ALLOWABLE BY LAW. Bogen's liability arising out of the manufacture, sale or supplying of products or their use or disposition, whether based upon warranty, contract, tort or otherwise, shall be limited to the price of the product. In no event shall Bogen be liable for special, incidental or consequential damages (including, but not limited to, loss of profits, loss of data or loss of use damages) arising out of the manufacture, sale or supplying of products, even if Bogen has been advised of the possibility of such damages or losses. Some States do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from State to State.

Products that are out of warranty will also be repaired by the Bogen Factory Service Department -- same address as above or call 201-934-8500. The parts and labor involved in these repairs are warranted for 90 days when repaired by the Bogen Factory Service Department. All shipping charges in addition to parts and labor charges will be at the owner's expense. All returns require a Return Authorization number.

BOGEN®
COMMUNICATIONS, INC.

50 Spring Street, Ramsey, NJ 07446, U.S.A.
Tel. 201-934-8500, Fax: 201-934-9832, www.bogen.com

RPKUTI1

Rack Mount & Security Cover for UTI1

Description

The RPKUTI1 Rack Mount and Security Cover provides protection against tampering of the UTI1 settings and connections and offers the option of rack mounting the UTI1. Knockout sections on both the cover and the rack ears are provided to facilitate wire entry and exit.

Package Contents

- Security Cover
- Rack Ears (2)
- Security Cover Screws (2)
- Rack Ear Screws (2)

Security Cover Screws (2)

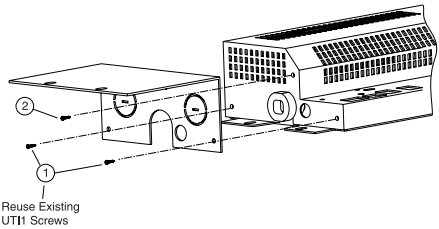
Rack Ear Screws (2)

Installation

Rack Ears

Knockouts are located on the sides of the rack ears for wire access. Remove these knockouts as needed prior to attaching the rack ears to the UTI1.

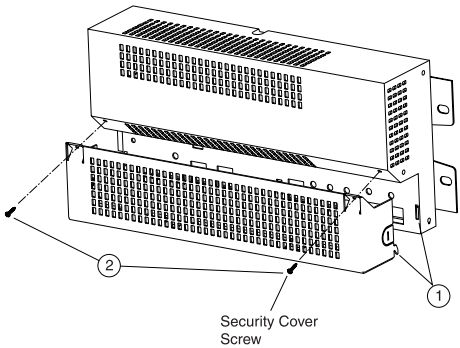
1. Attach each rack ear to the UTI1 using the screws already installed in the UTI1.
2. Install one of the provided rack ear screws in the remaining mounting hole of each RPKUTI1 rack ear.



Security Cover

Knockouts are located underneath and on both sides of the security cover for wire access. Remove these knockouts as needed prior to attaching the security cover to the UTI1.

1. Hook the security cover to the UTI1.
2. Screw the security cover to the UTI1 using the two security cover screws provided.



54-2119-01A
Specifications subject to change without notice.
0408

Limited Warranty

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THE FOREGOING LIMITED WARRANTY IS BOGEN'S SOLE AND EXCLUSIVE WARRANTY AND THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY. BOGEN MAKES NO OTHER WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED AND EXCLUDED TO THE MAXIMUM EXTENT ALLOWABLE BY LAW. Bogen's liability arising out of the manufacture, sale or supplying of products or their use or disposition, whether based upon warranty, contract, tort or otherwise, shall be limited to the price of the product. In no event shall Bogen be liable for special, incidental or consequential damages (including, but not limited to, loss of profits, loss of data or loss of use damages) arising out of the manufacture, sale or supplying of products, even if Bogen has been advised of the possibility of such damages or losses. Some States do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from State to State.

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07/20/2004

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50 Spring Street, Ramsey, NJ 07446, U.S.A.
201-934-8500; Fax: 201-934-9832
www.bogen.com

Classic Series Public Address Amplifiers

Models C35, C60 & C100

Description

The Bogen Classic Series Models C35, C60, and C100 are public address mixer amplifiers that provide mixing of microphones, telephone, and auxiliary sources.

Output screw terminals are provided for 4-ohm (direct) and 8-ohm (C35 & C60 models only), 16-ohm, 25V and 70V (transformer-coupled) speaker systems. Output jacks let you connect to a tape recorder or an additional booster amplifier, or feed a 600-ohm telephone line when an accessory transformer (Model WMT1A) is used.

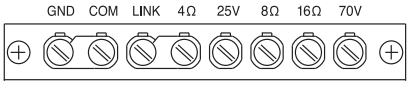
Features

- 3 models: 35, 60, and 100 watts
- 4 inputs: 1 MIC (Lo-Z), 1 AUX (Hi-Z), 1 TEL, plus 1 selectable MIC or AUX
- Each input controlled by an independent volume control
- Treble and bass controls
- AUX muting by external contact closure for push-to-talk microphones
- TEL input for telephone paging applications
- TEL input voice-activated (VOX) mute over AUX input
- Variable threshold for TEL input voice-activated AUX mute
- Outputs for 4-ohm (direct), 8-ohm (C35 & C60 models only), and 16-ohm, 25V and 70V speaker systems (transformer coupled)
- Output jack to connect a recording device or booster amplifier
- Output jack to connect a general-purpose 600-ohm matching transformer (model WMT1A)
- Thermal protection and electronic shutdown
- Rack mountable with accessory mounting kit (model RPK50)
- Listed to UL Standard 60065 for U.S. and Canada

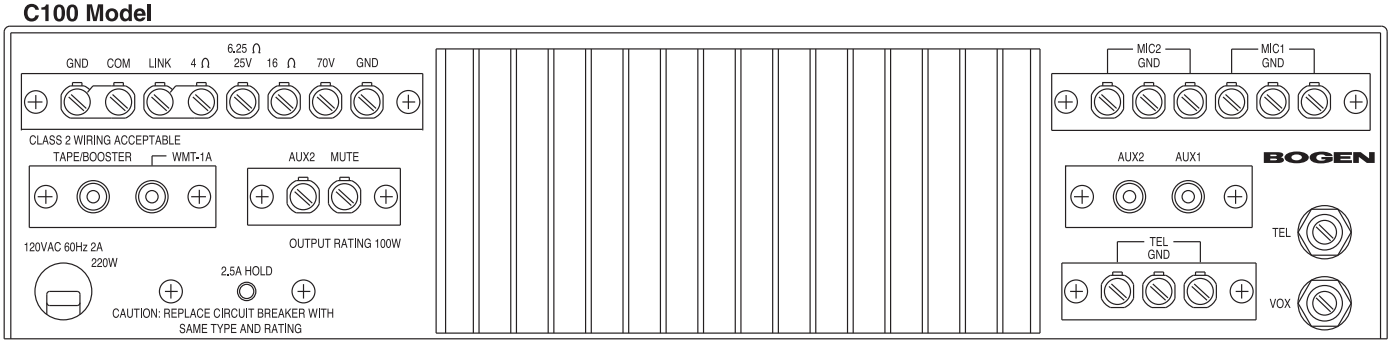
BOGEN®

54-7853-01D 1109

C35 & C60 Models



C100 Model



Technical Specifications

	C35	C60	C100
Power Output (RMS):			
Rated	35W	60W	100W
Frequency Response & Distortion:			
Transformer†	70 Hz - 16 kHz (± 2 dB) @ 1% max.		
4-Ohm Direct Output	20 Hz - 20 kHz (± 1 dB) @ 0.5% max.		
Hum and Noise:			
MIC	55 dB below rated output		
AUX	70 dB below rated output		
TEL	70 dB below rated output		
Input Sensitivity:			
MIC Lo-Z Balanced	600μV		
AUX	85mV		
TEL	75mV		
Outputs:	8 ohms (C35 & C60 models only), 16 ohms, 25V, 70V transformer-isolated balanced or unbalanced; 4 ohms direct unbalanced		

Output Connections:	Screw terminal strip, TAPE/BOOSTER jack; WMT1A jack (requires accessory transformer)
Input Connections:	Screw terminals for MIC and TEL, two AUX Hi-Z jacks
Controls:	MIC1, MIC2/AUX (switch selected), AUX 2, BASS, TREBLE, TEL, VOX
Thermal Emissions:	C35: 119.5 BTU/hr.; C60: 228.8 BTU/hr.; C100: 399.6 BTU/hr.
Tone Control:	Treble, ±11 dB @ 10 kHz; Bass ±11 dB @ 100 Hz
Power Requirements:	120V AC, 60 Hz C35: 85W; C60: 148W; C100: 220W
Dimensions:	14-1/2" W x 3-3/4" H x 11" D
Product Weight:	C35: 15 lb; C60: 17 lb; C100: 19 lb.

Architect and Engineer Specifications

The public address amplifier shall be a Bogen Model _____, or approved equivalent, with a full power rating of _____watts. (Specify: C35/35 watts, C60/60 watts or C100/100 watts.) The frequency response (transformer) shall be 70 Hz to 16 kHz ±2 dB†, with less than 1% distortion†. Input sensitivity shall be 600μV for low-impedance balanced microphones, 85mV for auxiliary inputs, and 75mV for TEL input. Hum and noise shall be 55 dB below rated output for the MIC inputs and 70 dB below rated output for the AUX and TEL inputs.

The amplifier shall provide one dedicated low-impedance balanced microphone input, one dedicated Hi-Z auxiliary input, and one dedicated telephone line input, as well as a fourth input that is switch selectable to be either a microphone or auxiliary input.

The microphone inputs shall be equipped with filters to protect against RF interference. Independent volume controls for each input as well as TREBLE control (±11 dB @ 10 kHz) and BASS control (±11 dB @ 100 Hz) shall be incorporated. A precedence circuit shall mute the AUX 2 input when a customer-supplied external switch is actuated.

The amplifier shall include a TEL volume control to adjust the telephone paging level and a VOX volume control to adjust the TEL input signal level trigger point for automatic muting of the AUX inputs.

The amplifier shall provide output impedances of 4-ohm (direct), 8-ohm (C35 & C60 models only), and 16-ohm speaker systems as well as for 25V and 70V constant voltage systems. Two high-impedance outputs shall be provided to drive a tape recorder or booster amplifier and, when used with an accessory transformer (WMT1A), to feed a 600-ohm telephone line.

The amplifier shall contain a resettable thermostat in the power transformer to protect against heat build-up and short-circuited or overloaded connections.

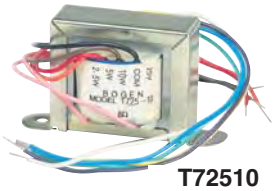
Provision shall be included to mount the amplifier in 19-inch equipment racks, using an optional rack panel kit (Model RPK50). Dimensions shall be 14-1/2" W x 3-3/4" H x 11" D. Product weight shall be _____lb. (Insert 15 lb. for C35, 17 lb. for C60 or 19 lb. for C100.)

† *Measured @ 2 dB below FRP*

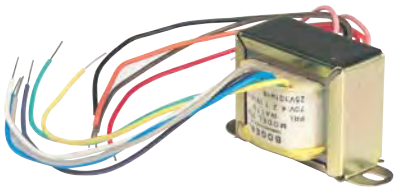
Transformers

Speaker Impedance Matching Models: T725 & T72510

Line Impedance Matching Models: TL100, TL600, WMT1A, & WMT1AS



T72510



T725

TL100/TL600

WMT1A, WMT1AS

Description

T725, T72510

The Bogen Models T725 and T72510 transformers are speaker-matching transformers that allow an 8-ohm speaker to be connected to 70V or 25V amplifier outputs. An 8-ohm secondary connects to the speaker and the multi-tap primary connects to the 70V or 25V amplifier output.

The T725 can be tapped at 4, 2, 1, 1/2, 1/4, and 1/8 watts, while the T72510 can be tapped at 10, 5, 2-1/2, 1-1/4, and 5/8 watts. All wires are easily accessible.

TL100, TL600

The Bogen Models TL100 and TL600 line impedance-matching transformers are compact, plug-in units specially designed for use with power amplifiers.

The TL100 provides a balanced 1:1 input match and isolation; its primary impedance will be the same value as total termination of the input impedance to the amplifier(s).

Model TL600 impedance matches the output of a 600-ohm telephone line to a Bogen power amplifier input.

WMT1A

The Bogen WMT1A transformer is designed especially for impedance-matching inputs from, or outputs to, a 600-ohm line. It has a Hi-Z, 10k-ohm primary impedance and a Lo-Z, 600-ohm secondary impedance balanced with a center tap.

As an input-matching transformer, it may be used to connect telephone systems to most Bogen public address amplifiers for telephone paging. It also functions as an output-matching transformer in feeding program material over a 600-ohm telephone line (typically for "music-on-hold" applications). It is compatible with any amplifier having a 25V output terminal.

WMT1AS

The WMT1AS has all the features and functions of the WMT1A, but can also adapt speaker-level signals (25V/70V systems) to a level suitable for the AUX input of an amplifier.

Features

T725 and T72510

- Allows an 8-ohm speaker to connect to 70V or 25V amplifier outputs
- T725 Power Taps: 4, 2, 1, 1/2, 1/4, 1/8 watts
- T72510 Power Taps: 10, 5, 2-1/2, 1-1/4, 5/8 watts
- Easily-accessed, stripped and tinned wire terminations
- Small, compact, and cost-effective

TL100 and TL600

- Provides balanced, isolated, 1:1 or 600-ohm input for power amplifiers
- Transformer connections terminated in a keyed nine-pin miniature plug
- Compact, plug-in design
- Internal mumetal shielding

WMT1A

- Hi-Z, 10k-ohm primary impedance
- Lo-Z, 600-ohm secondary impedance, balanced with center tap
- Matches high-to-low impedance or low-to-high impedance
- Adapts line-level signals to microphone inputs
- RCA connector for Hi-Z side
- Screw terminals for Lo-Z side
- Small steel enclosure with mounting ears allows easy mounting
- No wiring or soldering required
- May be used to provide a 600-ohm output from a Bogen mixer/pre-amplifier

WMT1AS

- All features and functions of the WMT1A, but can also adapt speaker-level signals to the AUX input level of an amplifier

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Specifications subject to change without notice.

54-7775-02E 1107

Technical Specifications

T725, T72510

Function: Allows 8-ohm speaker to connect to 70V or 25V amplifier outputs

Frequency Response: *T725* – 70 Hz to 10 kHz

T72510 – 50 Hz to 20 kHz

Taps: *T725* – 4, 2, 1, 1/2, 1/4, and 1/8 watts

T72510 – 10, 5, 2-1/2, 1-1/4, and 5/8 watts

Dimensions: *T725* – 2-1/2" W × 1-1/4" H × 1-3/8" D

T72510 – 3" W × 1-1/2" H × 1-1/2" D

Product Weight: *T725* – 6 oz.

T72510 – 10 oz.

TL100, TL600

Function: *TL100* – Provides balanced 1:1 input impedance match and isolation

TL600 – Provides balanced 600-ohm input impedance match and isolation

Frequency Response: *TL100* – 20 Hz to 15 kHz, ±2 dB;

TL600 – 20 Hz to 20 kHz, ±1 dB

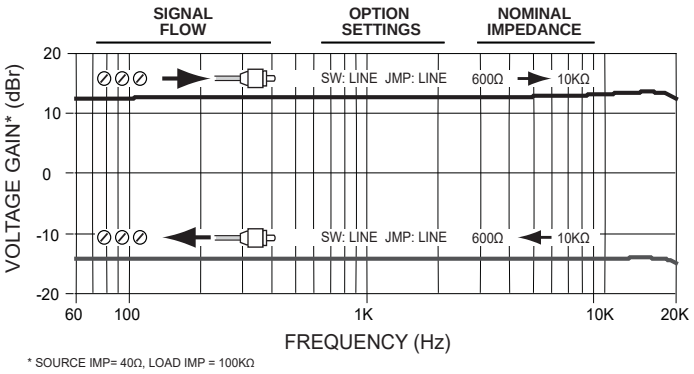
Hum Reduction: Mumetal shielding

Construction: Cylindrical shape, keyed nine-pin miniature plug

Dimensions: 1" Dia. × 1-1/4" D

Product Weight: 1 oz.

WMT1A

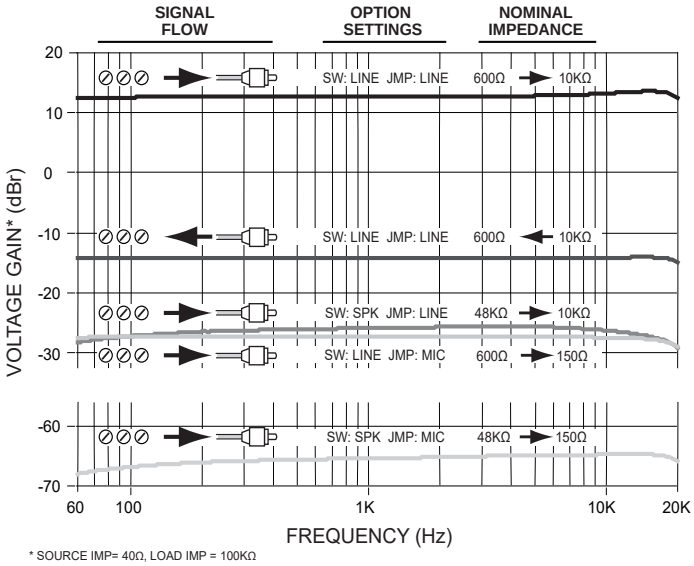


* SOURCE IMP= 40Ω, LOAD IMP = 100KΩ

Dimensions: 2" W × 2-3/8" H × 1-1/4" D

Product Weight: 4 oz.

WMT1AS



* SOURCE IMP= 40Ω, LOAD IMP = 100KΩ

Dimensions: 2" W × 2-3/8" H × 1-1/4" D

Product Weight: 4 oz.

Architect and Engineer Specifications

T725

The impedance-matching transformer shall be a Bogen Model T725, or equivalent, capable of matching the 70V or 25V output of an amplifier. An 8-ohm secondary shall connect to a speaker, and a multi-tap primary shall connect to the 70V or 25V amplifier output. Available power taps shall be 4, 2, 1, 1/2, 1/4, and 1/8 watts. The unit shall measure 2-1/2" W × 1-1/4" H × 1-3/8" D. The unit shall weigh approx. 6 oz.

T72510

The impedance-matching transformer shall be a Bogen Model T72510, or equivalent, capable of matching the 70V or 25V output of an amplifier. An 8-ohm secondary shall connect to a speaker, and a multi-tap primary shall connect to the 70V or 25V amplifier output. Available power taps shall be 10, 5, 2-1/2, 1-1/4, and 5/8 watts. The unit shall measure 3" W × 1-1/2" H × 1-1/2" D. The unit shall weigh approx. 10 oz.

TL100

The line-matching transformer shall be a Bogen Model TL100, or equivalent, and shall provide a balanced 1:1 input and isolation. The primary impedance shall be the same value as the total termination of the input impedance to the amplifier(s). The frequency response shall be within ±2 dB from 20 Hz to 15 kHz. The unit shall incorporate mumetal shielding for hum reduction. The transformer connections shall terminate in a keyed nine-pin miniature plug, which shall fit into a matching nine-pin receptacle. The transformer shall be cylindrical in shape with a 1" diameter and the overall length (including pins) shall not exceed 1-1/4".

TL600

The line-matching transformer shall be a Bogen Model TL600, or equivalent, and shall match a balanced 600-ohm zero level transmission line, or provide a 600-ohm output from a pre-amplifier. The secondary impedance shall be 10k ohms. The frequency response shall be within ±1 dB from 20 Hz to 20 kHz. The unit shall incorporate mumetal shielding for hum reduction. The transformer connections shall terminate in a keyed nine-pin miniature plug, which shall fit into a matching nine-pin female receptacle. The transformer shall be cylindrical in shape, with a 1" diameter and the overall length (including pins) shall not exceed 1-1/4".

WMT1A

The line-matching transformer shall be a Bogen Model WMT1A, or equivalent, capable of matching either inputs from, or outputs to, a 600-ohm line. It shall provide a perfect impedance match between a 600-ohm balanced line and the high-impedance input of an amplifier, or the 25V output of an amplifier. Frequency response shall be ±2 dB from 50 Hz to 20 kHz. Less than 0.1 volt across a 600-ohm line shall be required for full output power from an average amplifier (maximum level, +20 dBm). Output shall be approximately 1.73 volts when connected across the 25V output tap or WMT1A Hi-Z output connection of a Bogen amplifier.

Line input or output connections from the 600-ohm line shall be made via a three-screw terminal strip. Connection to the auxiliary input of an amplifier shall be by means of a shielded cable terminated in an RCA plug. Provisions shall be included to connect the unit to a microphone input. The mounting bracket shall allow the transformer to be mounted by means of two steel screws. The unit shall measure 2" W x 2-3/8" H x 1-1/4" D and the product weight shall be 4 oz.

WMT1AS

The line-matching transformer shall be a Bogen Model WMT1AS, or equivalent, capable of matching either inputs from, or outputs to, a 600-ohm line. It shall provide a perfect impedance match between a 600-ohm balanced line and the high-impedance input of an amplifier, or the 25V output of an amplifier. Frequency response shall be ±2 dB from 50 Hz to 20 kHz. Less than 0.1 volt across a 600-ohm line shall be required for full output power from an average amplifier (maximum level, +20 dBm). Output shall be approximately 1.73 volts when connected across the 25V output tap or WMT1AS Hi-Z output connection of a Bogen amplifier.

Line input or output connections from the 600-ohm line shall be made via a three-screw terminal strip. Connection to the auxiliary input of an amplifier shall be by means of a shielded cable terminated in an RCA plug. Provisions shall be included to connect the unit to a microphone input. The WMT1AS can also adapt speaker-level signals (25V/70V systems) to a level suitable for the AUX input of an amplifier. The mounting bracket shall allow the transformer to be mounted by means of two steel screws. The unit shall measure 2" W x 2-3/8" H x 1-1/4" D and the product weight shall be 4 oz.

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RMOR1220-40 Rack Mount Fiber Optic Receiver

The RMOR1220-40 is a rackmount fiber optic receiver for receiving optical RF signals and distributing them in an RF system such as a CATV system or a PON network. This one-way node receives optical signals at 1310 – 1550 nm with a wide window of -8 to +2 dBm. The node has an output level of 40 dBmV while maintaining excellent distortion characters.

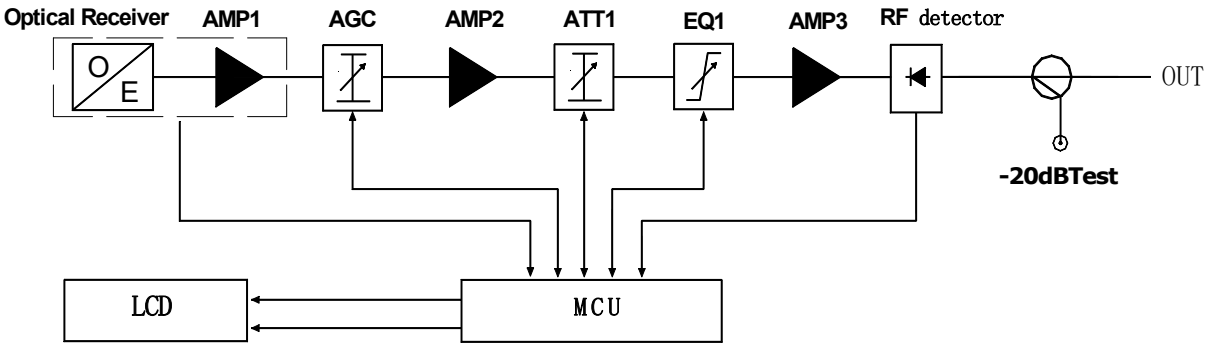
The RMOR1220-40 is built in a 1RU rackmount chassis that is only 9" deep and weighs less than 5 pounds.

Setup and control of the receiver can be accomplished via a front panel display.

The RMOR1220-40 is ideal for FTTX applications as well as anywhere a rack mount optical receiver is needed.

FEATURES

- 1RU Rackmount
- Receive Only Optical Node
- 45-1220 MHz Bandwidth
- 40 dBmV Output
- SC/APC Optical Connector
- 1100-1600 nm Optical Input
- -8 to +2 dBm Input Window
- AGC Range -6 to +2 dBm
- 90-240 VAC Powering
- Field Replaceable Cooling Fan



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RMOR1000-45 Rack Mount Fiber Optic Receiver

SPECIFICATIONS

Parameter	Notes	Fiber Optic Receiver	Units
Optical Performance			
Wavelength		1290-1600	nm
Input range		-8 to +2	dBm
Input AGC range		-6 to +2	dBm
RF Performance			
Bandwidth		45-1220	MHz
Gain Flatness		± 1,5	dB
Gain Control	Display	0 to 20 dB in 1 dB steps	dB
Slope Control	Display	0 to 20 dB in 1 dB steps	dB
Output Return Loss		Typ. ≤ -14	dB
Test Points		-30 ± 1,5	dB
Link Performance	0 dBm optical input power, NTSC 74 analog channels, 109.25 to 547.25 MHz, +75 SC-QAM-256 digital channels, 555 to 999 MHz -6 dB offset relative to the analog carrier.		
Output Level		min. 40 dBmV (stable from -6 to +2 dBm optical level due to AGC)	dBmV
CTB		-60	dBc
CSO		-60	dBc
C/N		52	dB
Xmod		57	dBc
MER	0dBm optical input power, Full digital 120 channels, (257 MHz -1209 MHz SC-256-QAM)	38 (min 35 at optical input power -6 dBm)	dB
Electrical & Physical Performance			
Surge Withstand		IEEEC62.41-Cat.A3 (6kV, 200A)	
Power Consumption		4,5	Watts
Input/Output Connections		SC-APC / F Type	
Operating Temperature Range		20° to 114° F (-7° to 45° C)	° F (° C)
Enclosure		RACK TYPE	
Power Requirement		Input 90-240VAC, 50-60Hz, 1A	
Powering		12-24 VDC external via F type connector	VDC
Weight		4.2 lbs (1.9 kgs)	lbs (kgs)
Dimensions		19”x8.5”x1.75” (484x214x45)	in (mm)

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Fiber Optic Couplers

Optical Couplers (Splitters)

We stock a wide selection of optical couplers in several different packaging options. All couplers are precision dual window (1310/1550 nm) couplers.

Light Duty

Heavy Duty

LG Style

Rack Mount

Optical Couplers Part Number Matrix

FC	XXX	XXXXX	XXXXX	XXX	XXX

FC = Fiber Coupler

Package Type
LD = Light Duty 250 µm
MD = Medium Duty 900 µm
RM = Rack Mount
LGX = 3 RU LG Module
SA = Stand Alone

Port Configuration
1x2
1x3
1x4
1x5
1x6
1x7
1x8
1x10
1x12
1x16
1x24
1x32

Coupling Ratio
60/40
90/10
Even
Almost any ratio is available

Termination Type
1M = 1 meter 900 µm
SC = SC/UPC
SCA = SC/APC
FC = FC/UPC
FCA = FC/APC
ST = ST/UPC
LC = LC/UPC
LCA = LC/APC
E2000A = E2000/APC

Example: FC/LGX/1x4/EVEN/SCA/SCA
is a fiber coupler in an LG style module, 1x4 port configuration, even split (25%), SC/APC input and output

Optical Couplers Even Split Loss @ 1310 nm

1 x 2	3.55 typ / 3.70 max	1x7	9.80 typ / 10.00 max	1x16	13.60 typ / 13.80 max
1 x 3	5.40 typ / 5.60 max	1x8	10.00 typ / 10.30 max	1x24	15.30 typ/ 15.70 max
1 x 4	7.10 typ / 7.40 max	1x10	12.00 typ / 12.30 max	1x32	16.60 typ / 17.00 max
1 x 5	8.00 typ / 8.20 max	1x12	12.80 typ / 13.10 max	1x64	19.50 typ / 19.70 max
1 x 6	9.20 typ / 9.50 max				

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cable equipment, inc.

XRMS Series Rackmount 1 GHz Splitter

The XRMS series splitters are the latest addition to the expanding line of Toner products.

The series has two models; the XRMS-24 and the XRMS-32 which are 24 and 32 way splitters. Each splitter is a 1RU rackmount with either 24 or 32 outputs on the rear of the chassis. They feature 5 MHz to 1000 MHz bandwidth with excellent port to port isolation and return loss. Each model has a -20 dB Test port on the front panel.

Specifications:	**XRMS-24**	
Bandwidth	5MHz – 1000 MHz	
Insertion Loss	5-40 MHz	-16 dB Typ. -17.2 dB Maximum
	40-450 MHz	-16.5 dB Typ. -17.5 dB Maximum
	450-750 MHz	-17.5 dB Typ. -19.0 dB Maximum
	750-1000 MHz	-18.5 dB Typ. -20.0 dB Maximum
Return Loss		
In & Out	5-1000 MHz	18 dB Minimum
Isolation (Minimum)	5-40 MHz	28 dB
	40-450 MHz	25 dB
	450-750 MHz	25 dB
	750-1000 MHz	25 dB
Test point	-20 dB	
Size	1 RU: 19” x 1.75” x 8.25”	
Weight	5.2#	
Connectors	F- Female 10-32 UNEF	

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XRMS Series Rackmount 1 GHz Splitter

Specifications:	**XRMS-32**	
Bandwidth	5MHz – 1000 MHz	
Insertion Loss	5-40 MHz	-16.8 dB Typ. -17.3 dB Maximum
	40-450 MHz	-17.8 dB Typ. -18.2 dB Maximum
	450-750 MHz	-18.6 dB Typ. -19.3 dB Maximum
	750-1000 MHz	-19.5 dB Typ. -20.4 dB Maximum
Return Loss		
In & Out	5-1000 MHz	18 dB Minimum
Isolation (Minimum)	5-40 MHz	28 dB
	40-450 MHz	25 dB
	450-750 MHz	25 dB
	750-1000 MHz	25 dB
Test point	-20 dB	
Size	1 RU: 19” x 1.75” x 8.25”	
Weight	5.2#	
Connectors	F- Female 10-32 UNEF	

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XGHS Series

DOCSIS 3.1 Compatible 1.2 GHz Digital Horizontal Splitters

2, 3 and 4 Way 1.2 GHz Horizontal Drop Splitters

Features:

- Solder Back
- DOCSIS 3.1 Compatible
- 5 MHz to 1.2 GHz Bandwidth
- 5-85 MHz Upstream
- 105-1220 MHz Downstream
- Minimum 120 dB RFI Shielding
- Low Intermod Distortions < 100 dB
- Nickel Plated Zinc Alloy Housing
- 15 PSI Waterproofed F Ports
- 200 G Center Conductor Retention
- 75 Ohm Impedance
- Machined F Connectors On 1" Spacir
- Blocking Capacitor On All Ports
- Integral Ground Block
- 6 kV Ring Wave Surge Protection

This new series of drop splitters from Toner are designed to work in digital systems deploying DOCSIS 3.1 that utilizes the 5-85 MHz spectrum for upstream, and the 105 to 1220 MHz spectrum for downstream. By using the latest in ferrite core and winding technology along with premium PC boards and components we have been able to increase bandwidth without any sacrifice in performance.

These splitters feature a diecast zinc alloy housing with a nickel plating for superior corrosion resistance. Each F port is machined with 3/8-32 UNEF threads to meet SCTE and ANSI specifications and incorporates a patented seal that is waterproof to 15 PSI. The seizure mechanism for the center conductor is also patented and contacts the center conductor on 4 sides and provides more than 200g of retention force which ensures correct electrical contact. The F ports are on 1" spacing which meets SCTE & ANSI specifications.

All of these splitters feature DC blocking capacitors on all ports for power isolation protection and for induced spikes protection. These splitters feature superior performance, low intermediation distortions and meet or exceed all current industry standards.

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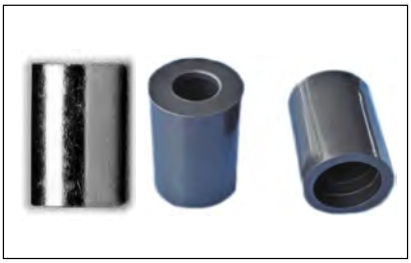
"F" Adapters & Accessories

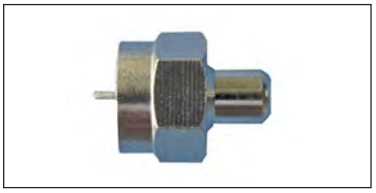


SS-1D (Zinc Plated) / SS-NY (Nylon)
Security Sleeve
Prevents the Unauthorized Removal/Connection of F Connectors
- Die Cast Construction
- 1" Length
- Zinc Plated or Nylon
- Uses Standard ST-1 Tool

FF-R
F Female to RCA Male Adapter
- Solid Brass Body
- Machined 3/8-32 Threads
- Bright Acid Tin Plating

VBC
Voltage Blocking Coupler
- Blocks DC Voltage from Input to Output
- Female to Male F Fittings
- Solid Brass Body
- Bright Acid Tin Plating

F59-T
75W F Port Male Terminator
- Integral Rubber "O" Ring to Help Seal the F Port
- Solid Brass Body
- Bright Acid Tin Plating
- Machined 3/8-32 UNEF Threads
- 1/4 Watt Resistor
- 20 dB Return Loss

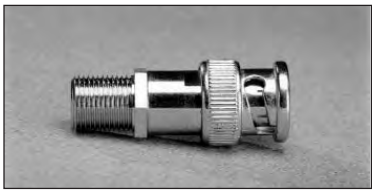


F59-THRL
75W F Port Male Terminator
- Return Loss IN/OUT

5-1000 MHz	35 dB
1000-2000 MHz	30 dB
2000-3000 MHz	25 dB

F-90
Right Angle F Female to F Male Adapter
- Die Cast Construction
- Machined 3/8-32 Threads
- Bright Acid Tin Plating

BFA
BNC Male to F Female Adapter
- Adapts 75 Ohm F to 75 Ohm BNC
- Solid Brass Body
- Bright Acid Tin Plating



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www.tonercable.com

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XGHS Series

DOCSIS 3.1 Compatible 1.2 GHz Digital Horizontal Splitters

	XGHS-2D31 2-Way	XGHS-3D31 3-Way	XGHS-3BD31 3-Way Balanced	XGHS-4D31 4-Way
Insertion Loss				
5-85 MHz	3.3	3.3 | 6.5	5.2	6.5
85-550 MHz	3.5	3.5 | 6.8	5.8	6.8
550-1002 MHz	3.7	3.7 | 7.7	6.2	7.7
1002-1200 MHz	4.0	4.0 | 7.9	6.5	7.9
Isolation				
5-15 MHz	35	35	35	35
15-85 MHz	38	38	38	38
85-300 MHz	35	35	35	35
300-1002 MHz	30	30	30	30
1002-1200 MHz	27	27	27	27
Return Loss Input				
5-85 MHz	25	25	25	25
85-1002 MHz	20	20	20	20
1002-1200 MHz	20	20	20	20
Return Loss Output				
5-85 MHz	25	25	25	25
85-1002 MHz	22	22	22	22
1002-1200 MHz	20	20	20	20
Intermod Distortion	-60 dBmV			
RFI	-120 dB			

Ordering Information

XGHS-2D31	2 Way 1.2 GHz Horizontal Splitter
XGHS-3D31	3 Way 1.2 GHz Horizontal Splitter
XGHS-3BD31	3 Way Balanced 1.2 GHz Horizontal Splitter
XGHS-4D31	4 Way 1.2 GHz Horizontal Splitter

969 Horsham Road • Horsham, Pennsylvania 19044 USA • Phone: 215-675-2053 Fax: 215-675-7543 • info@tonercable.com

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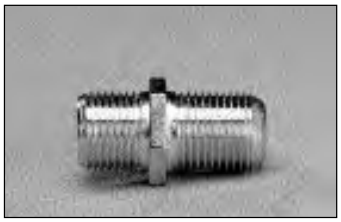
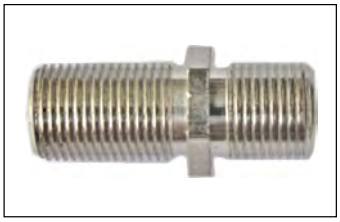
"F" Adapters & Accessories



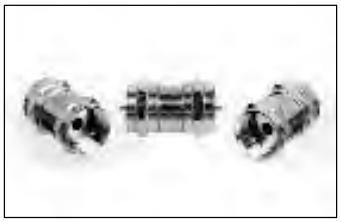
F-81
Female F Type Splice Connector (Barrel)
- 7/16" hex
- Bright Acid Tin Plating

F-81NW
Female F Type Splice with Nut and Washer
- For installation in Wall Plates or panels
- 7/16" hex
- Bright Acid Tin Plating



F-81HRL
Female F Type Splice Connector
- Return Loss IN/OUT

5-1000 MHz	40 dB
1000-2000 MHz	35 dB
2000-3000 MHz	30 dB



F-71
Male F Type Splice
- 3/8-32 UNEF Threads
- Bright Acid Tin Plating

F81-RS
Weather Seal
- Rubber Material
- 1/2" Length

NW-81
Nut and Washer for F-81 or any Female F Connector
- Plated Mild Steel
- Machined 3/8-32 Threads

TLT-59
Locking F Port Terminator
- Machined Aluminum swivel body with internal 75 terminator
- Uses Standard GTP tool

PF-59
Push-On F Adapter
Female F Fitting to Male F Push-On Adapter
- Solid Brass Body
- Bright Acid Tin Plating
- Machined 3/8-32 UNEF Threads

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THOR DIGITAL

RG6 Plenum Series

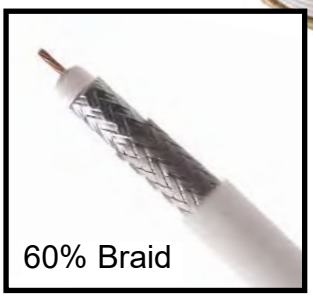
RG-6 Plenum Coaxial Cable 60% Braid & Quadshield, UL Listed, 3 GHz

The Thor Digital RG-6 cable is for distribution of both analog and digital television signals. It is ideally suited for Direct TV or Dishnet installations, Antenna installations, Cable TV, and other high frequency applications.

As a plenum rated cable, the Thor Digital RG-6 cable is ideal for installation in HVAC return air plenums or anywhere a plenum rated cable is specified,

Available in both a 60% braid and a quadshield version for installation where necessary.

The cable features an 18 gauge copper clad steel center conductor, a gas expanded foamed FEP dielectric (plenum rated), a 60% braid or 60/40% quadshield shield and a protective white PVC (plenum rated) outer jacket.



Braid Coverage	**60%**	**Quadshield**
Center Conductor	0.040” 18 AWG Copper Clad Steel	
Dielectric	0.170” Foamed FEP (Plenum Rated)	
Shield 1	Bonded Aluminum-Polypropylene Tape	
Shield 2	Aluminum Braid 60% Coverage	
Shield 3	N/A	Aluminum-Polypropylene Tape
Shield 4	N/A	Aluminum Braid 40% Coverage
Jacket PVC, Plenum Rated	0.232”	0.260”
Jacket Thickness	0.015”	0.015”
DC Resistance Center Conductor	28.6 Ω / 1000’	
Nominal Capacitance	17.2 ± 1.0 pF/Ft	
Impedance	75 ± 3 Ohms	
Velocity of Propagation	85% nominal	
Reel Size (Diameter x Width)	14.5 x 8.6”	14.5 x 10.2”
Weight	32 lbs	38.8 lbs

Maximum Attenuation per 100 Ft	
Frequency MHz	**dB / 100 ft**
5	0.70
55	1.60
187	3.20
211	3.40
400	4.80
500	5.30
750	6.80
860	7.40
1000	8.10
1200	9.00
1450	9.90
1750	11.20
2150	13.20
3000	15.30

Ordering Information

RG-6 60% Braid Plenum	1000 ft	Reel, White	**RG6-60PWR-M**
RG-6 Quadshield Plenum	1000 ft	Reel, Black	**RG6-QSPWR-M**

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SignalTight®

Premium EX® Universal Connector

Series 59, 6

Attachment W

PPC®

A BELDEN BRAND

Features & Benefits

- Unique 7/16 in nut profile allows hand tightening while discouraging wrench-tightening on CPEs
- Maintains ground continuity even when very loose
- Reduces QAM errors/packet loss
- Prevents service issues from loose connections
- Ideal for customer self-install kits
- Premium metal compression ring results in industry-leading cable retention values
- Compatible with standard through quad-shield cable
- Plastic body seals the back end of the connector from environmental factors

XL *Standard*

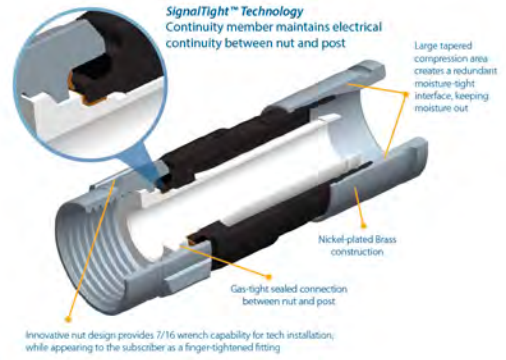
Overview

Premium EX® Series SignalTight® connectors minimize the number of self-installs that become truck rolls. SignalTight technology means it achieves signal transmission approaching that of a fully-tightened connector, even if left loose. PPC's EX connectors boast the largest dynamic range of any connector in the market, making it compatible with standard through quad shield cables. EX also doesn't rely on an o-ring to seal the back end of the connector environmentally, it uses the dynamic range of the tough yet versatile plastic body to seal in the most effective way possible. The metal compression ring also allows us industry leading cable retention values through all cable sizes in the field.

Technical Data

Electrical Specifications		
Bandwidth		0 MHz to 3 GHz
Impedance		75 Ohms (nominal)
Return Loss (Gated)	5 to 1,000 MHz	-30 dB Minimum
	1,000 to 2000 MHz	-30 dB Minimum
	2,000 to 3,000 MHz	-20 dB Minimum
Insertion Loss	5 to 3,000 MHz	Less than .20 dB
Operating Temperature		-40 °F to 140 °F (-40 °C to 60 °C)
Cable Retention		45 lbs (20.41 kg) minimum

Meets or Exceeds all SCTE Specifications



Preparation & Installation Tools			
Compression Tool	CATAS, VT-200 (for use w/ XL series), VT-300 (for use with standard series)		
1/4 in-1/4 in Universal Drop Cable Preparation Tool	LDT596-250		DDT59611
7/16 in Snap Torque Wrench	TW207	TW307	TW307 AH

Ordering Information

PPC Part Number	Description
EX6PLUS	SignalTight, Standard Series, 6 Series
EX59PLUS	SignalTight, Standard Series, 59 Series
EX6XLPLUS	SignalTight, XL Series, 6 Series
EX59XLPLUS	SignalTight, XL Series, 59 Series
VT-200	Compression Tool, XL Series
VT-300	Compression Tool, Standard Series

rev5_09202022

PRODUCT SPECIFICATIONS
41084-FxF, 40831-FxG

LEVITON

Feedthrough QuickPort® F-Connectors

APPLICATION

Nickel or gold-plated female-to-female 75 Ω connectors feature screw-on front and rear connections. Pass through design applications: TV, VCR, DVD, satellite, and home theater. Cable: coaxial cable terminated with "F" plugs. QuickPort F-Type Adapters snap into any QuickPort housing, including flush- and surface-mount outlets, Multimedia Outlet System (with adapter), Decora® Inserts, patch panels, and patch blocks.

40831-FxG 41084-FxF

SPECIFICATION

The modules for coaxial cable shall be individual QuickPort snap-in style female-to-female bulkhead adapters, and shall fit all other installed telecommunications wallplates, outlets, and field-configurable patch panels and patch blocks. Bulkhead modules shall be available in multiple colors to match the housings or provide unique color-coding for port ID. Modules shall be UL listed. All plastics used in construction of the module bodies shall be fire retardant. Module with nickel-plated connector body shall have a tin-plated center conductor contact. Module with gold-plated connector body shall have a gold-plated center conductor contact.

FEATURES

- Compatible with all QuickPort wallplates and housings
- Frequency range equals DC-3.0 GHz
- Female-female adapter for quick screw-on connections
- 41084-FxF features a nickel-plated connector body with tin-plated center conductor contact
- 40831-FxG features a gold-plated connector body with a gold-plated center conductor contact

DESIGN CONSIDERATIONS

- F-type connector works for all coax applications
- QuickPort bulkhead modules snap into any QuickPort housing, including flush- and surface-mount outlets, Multimedia Outlet System (with adapter), patch panel, and patch blocks
- Check clearance behind proposed location of bulkhead module to ensure space for proper bend-radius

STANDARDS COMPLIANCE

- cULus Listed (UL 1863, CAN/CSA-C22.2 No. 182.4-1990)
- Society of Cable Telecommunications Engineers (SCTE) Compliant

PHYSICAL SPECIFICATIONS

Dimensions:	See page two
Materials:	Zinc die-cast body with machined threads
Insulation:	Polypropylene

COUNTRY OF ORIGIN

China, Taiwan, or Vietnam

WARRANTY INFORMATION

For a copy of Leviton product warranties, visit www.leviton.com/warranty.

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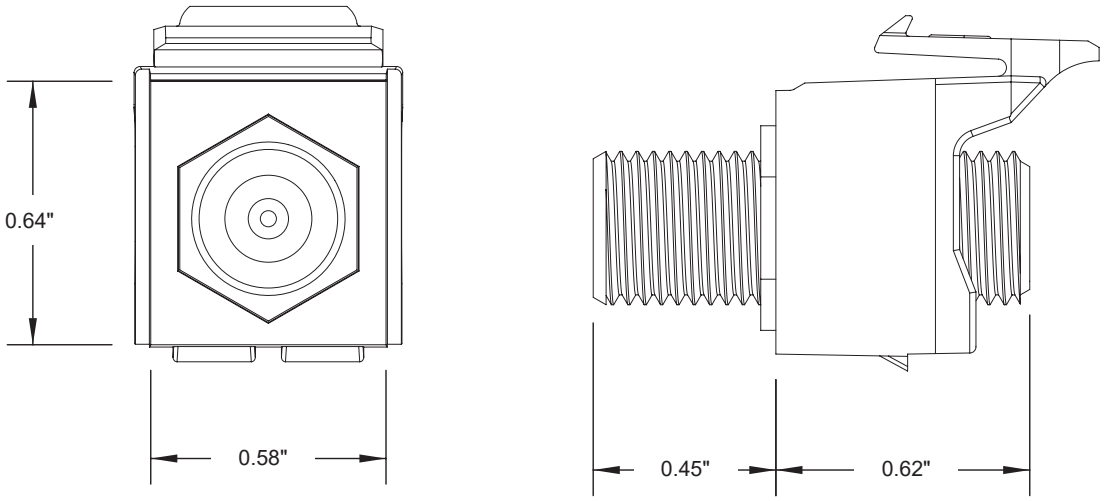
Revised September 2018

PRODUCT SPECIFICATIONS
41084-FxF, 40831-FxG

ELECTRONIC FILES

For CAD files, typical specs, or technical drawings (.DXF, .DWG), visit www.leviton.com.



PERFORMANCE SPECIFICATIONS

Frequency Range	DC - 3.0 GHz (Nickel) DC - 3.0 GHz (Gold)
Insertion Loss	≤ 0.2 dB @ 3.0 GHz (Nickel) ≤ 0.2 dB @ 3.0 GHz (Gold)
Return Loss	≥ 26 dB @ 3.0 GHz (Nickel) ≥ 26 dB @ 3.0 GHz (Gold)
Electrical Impedance	75 Ω
Contact Resistance	< 4 Milliohms
Holding Force	> 160 Grams Initial > 120 Grams after Insertion

PART NUMBERS

Description	IVORY	WHITE	LT. ALMOND	GREY	BLACK	BROWN
Feedthrough QuickPort® F-Connectors, nickel plated	41084-FIF	41084-FWF	41084-FTF	41084-FGF	41084-FEF	41084-FBF
Feedthrough QuickPort F-Connectors, gold plated	40831-FIG	40831-FWG	40831-FTG	—	—	—

I18 7397

ISO 9001 REGISTERED Quality Manufacturer

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Revised September 2018

PRODUCT SPECIFICATIONS
49x55-Hxx, 49255-48N, 49255-Lxx

LEVITON® Network Solutions

Flat QUICKPORT™ Patch Panels

APPLICATION

QUICKPORT Patch Panels are compatible with all QUICKPORT modular connectors to maximize versatility with a variety of media applications and enable easy upgrades. The panel fits all industry-standard 19-inch racks and cabinets.

49x55-H24

49x55-H48

49255-48N

49255-L24

49255-L48

SPECIFICATION

Patch panels shall be made of 16 AWG steel, and shall have a black powder coat finish with port numbers silk screened above or below each port. The panel shall be offered in 24- and 48-port configurations. The panel shall have the ability to allow for single port replacement of inoperative ports. Panels with label holders shall magnify the label printing.

DESIGN CONSIDERATIONS

- Mounts on 19-inch equipment racks
- Accepts all QUICKPORT-style connectors
- Includes port numbers
- 49255-H24, 49255-H48, 49255-48N, and 49355-Hxx include write-on blocks
- Includes mounting location for rear cable management bar (49005-CMB)
- Magnifying lens ensures visibility of port labels (49255-L24, 49255-L48)

STANDARDS & REGULATIONS

- ANSI/TIA-568
- cULus Listed

MECHANICAL SPECIFICATIONS

Capacity:	24- and 48-port
Materials:	16 AWG steel; black powder coat finish
Dimensions:	See page two
Mounting:	19-inch rack mount
Color:	Black
Temperature (Storage):	-40 ºC to +70 ºC
Temperature (Operating):	-10 ºC to +60 ºC

Humidity (Maximum): 95% relative humidity, non-condensing

COUNTRY OF ORIGIN

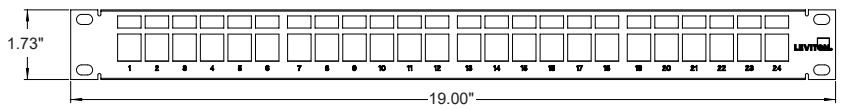
49x255-H24:	Taiwan
49x255-H48:	Taiwan
49255-48N:	Taiwan
49255-Lxx:	Please Contact Customer Service

WARRANTY INFORMATION

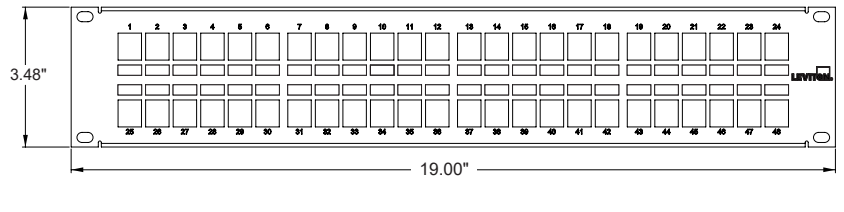
For Leviton product warranties, go to leviton.com/ns/warranty

C23 SS1051-GL ENv4
Revised March 2023

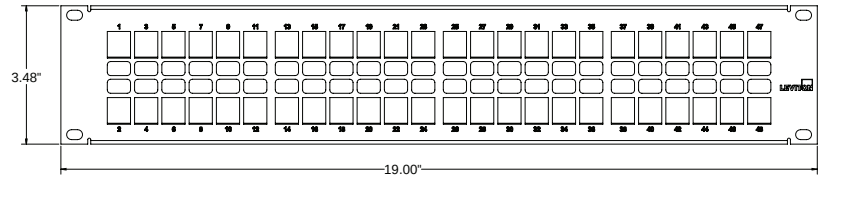
PRODUCT SPECIFICATIONS
49x55-Hxx, 49255-48N, 49255-Lxx



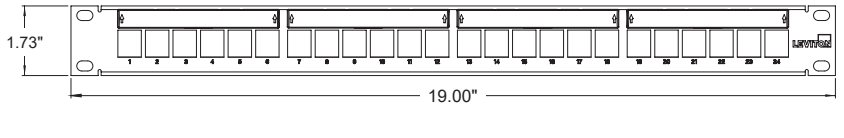
49x55-H24



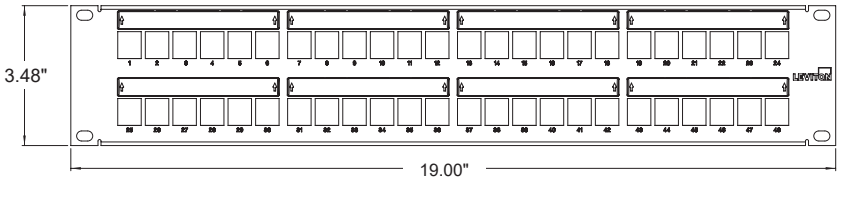
49x55-H48



49255-48N



49255-L24



49255-L48

PART NUMBERS

Description	Part No.
QUICKPORT™ Patch Panel, 1RU, 24-port, cable management bar included, black	49255-H24
QUICKPORT Patch Panel, 2RU, 48-port, cable management bar included, black	49255-H48
QUICKPORT Patch Panel with vertical numbering, 2RU, 48-port, cable management bar included, black	49255-48N
QUICKPORT Patch Panel with Magnifying Lens Label Holder, 1RU, 24-port, cable management bar included, black	49255-L24
QUICKPORT Patch Panel with Magnifying Lens Label Holder, 2RU, 48-port, cable management bar included, black	49255-L48
QUICKPORT Patch Panel, 1RU, 24-Port, without cable management bar, black	49355-H24
QUICKPORT Patch Panel, 2RU, 48-Port, without cable management bar, black	49355-H48

For further support information, visit leviton.com/ns/support

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C23 SS1051-GL ENv4
Revised March 2023

41084-BB

Blank QUICKPORT™ Insert, Brown (pack of 10)

Blank QUICKPORT Inserts are designed to secure unused QUICKPORT openings, and provide protection from dust and debris.

UPC Code : 078477749319

Country Of Origin : United States

RoHS Compliant : Yes

SPECIFICATION SUBMITTAL

JOB NAME:		CATALOG NUMBERS:	
JOB NUMBER:			

Leviton Manufacturing Co., Inc.
201 North Service Road, Melville, NY 11747
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Visit our Website at: www.leviton.com

Leviton has a global presence.
If you would like to know where your local Leviton office is located please go to:
www.leviton.com/international/contacts/

Product data sheet

Specifications

APC Smart-UPS, Line Interactive, 3kVA, Rackmount 2U, 120V, 6x NEMA 5-15R+2x NEMA 5-20R outlets, SmartConnect Port +SmartSlot, AVR, LCD

SMT3000RM2UC

Overview

Presentation	Intelligent and efficient network power protection from entry level to scalable runtime. Ideal UPS for servers, point-of-sale, routers, switches, hubs and other network devices.
Lead time	Usually Ships within 3 Weeks

Main

Main Input Voltage	120 V
Other Input Voltage	110 V 125 V
Main Output Voltage	120 V
Other Output Voltage	110 V 125 V
Rated power in W	2700 W
Rated power in VA	2880 VA
Input Connection Type	NEMA L5-30P
Output connection type	6 NEMA 5-15R 2 NEMA 5-20R
Number of rack unit	2U
Cable length	8 ft (2.44 m)
Number of cables	1
Battery Type	Lead-Acid battery
Provided equipment	Documentation CD Installation guide Rack mounting hardware Rack Mounting support rails Smart UPS signalling RS-232 cable USB cable

General

Number of power module filled slots	0
Number of power module free slots	0
Product web sub-family	Cloud-enabled monitoring
Redundant	No

Physical

Color	Black
Height	3.39 in (8.6 cm)
Width	17.01 in (43.2 cm)
Depth	26.89 in (68.3 cm)
Net Weight	97.62 lb(US) (44.28 kg)
Mounting Location	Front
Mounting preference	Lower
Mounting Mode	Rack-mounted
Two post mountable	0
USB compatible	Yes

Input

Efficiency at full load	75...154 V adjustable 82...144 V
Input Frequency	50/60 Hz +/- 3 Hz auto-sensing

Output

Harmonic distortion	Less than 5%
Maximum configurable power in VA	2880 VA
Max Configurable Power (Watts)	2700 W
Transfer Time	6ms typical : 10ms maximum
Topology	Line Interactive
Waveform Type	Sine wave
Output Frequency (sync to mains)	50/60 Hz +/- 3 Hz sync to mains

Conformance

Product Certifications	cULus ENERGY STAR V2.0 (USA)
Equipment protection policy	Lifetime : $150000

Environmental

Acoustic level	55 dBA
Heat dissipation	348 Btu/h
Operating altitude	0...10000 ft
Ambient Air Temperature for Operation	32…104 °F (0…40 °C)
Ambient Air Temperature for Storage	5…113 °F (-15…45 °C)
Storage altitude	0…50000 ft (0.00…15240.00 m)
Relative Humidity	0…95 %
Storage Relative Humidity	0…95 %

Batteries & Runtime

Extendable Run Time	0

Included Battery Modules	0
Battery Slots Empty	0
Typical recharge time	3 h
RBC Quantity	1
Battery Life	3…5 year(s)
Replacement battery	RBC43
Battery power in VAH	518 VAh capacity 518 VAh runtime
Battery Charge Power (Watts)	172 W rated

Communications & Management

Control panel	Multi-function LCD status and control console
Free slots	1
Control panel	LED status display with on line : on battery : replace battery and overload indicators
Alarm	Alarm when on battery : distinctive low battery alarm : overload continuous tone alarm

Surge Protection and Filtering

Surge energy rating	459 J

Ordering and shipping details

Category	11309 - APC RESALE PRODUCTS
GTIN	731304331070
Returnability	No

Packing Units

Unit Type of Package 1	PCE
Number of Units in Package 1	1
Package 1 Height	10.00 in (25.4 cm)
Package 1 Width	38.58 in (98 cm)
Package 1 Length	23.62 in (60 cm)
Package 1 Weight	113.98 lb(US) (51.7 kg)

Offer Sustainability

Sustainable offer status	Green Premium product
California proposition 65	WARNING: This product can expose you to chemicals including: Lead and lead compounds, which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov
ENERGY STAR®	ENERGY STAR UPS V2.0 (USA)
REACh Regulation	REACh Declaration
EU RoHS Directive	Compliant EU RoHS Declaration
Mercury free	Yes
RoHS exemption information	Yes
Environmental Disclosure	Product Environmental Profile
Circularity Profile	End of Life Information
Optimized Energy Efficiency	Energy efficient product

Take-back	Take-back program available

Contractual warranty

Warranty	3 years repair or replace (excluding battery) and 2 years for battery

Product data sheet
Technical Illustration

SMT3000RM2UC

Dimensions

SMT3000RM2UC

Recommended replacement(s)

41084-BI

Blank QuickPort Insert, Ivory (pack of 10)

Blank QuickPort Inserts are designed to secure unused QuickPort openings, and provide protection from dust and debris.

UPC Code : 078477749302

Country Of Origin : United States

RoHS Compliant : Yes

SPECIFICATION SUBMITTAL

JOB NAME:		CATALOG NUMBERS:	
JOB NUMBER:			

Leviton Manufacturing Co., Inc.
201 North Service Road, Melville, NY 11747
Telephone: +1-800-323-8920 · FAX: +1-800-832-9538 · Tech Line (8:30AM-7:30PM E.S.T. Monday-Friday): +1-800-824-3005

Leviton Manufacturing of Canada, Ltd.
165 Hymus Boulevard, Pointe Claire, Quebec H9R 1E9 · Telephone: +1-800-469-7890 · FAX: +1-800-824-3005 · www.leviton.com/canada

Leviton S. de R.L. de C.V.
Lago Tana 43, Mexico DF, Mexico CP 11290 · Tel.: (+52)55-5082-1040 · FAX: (+52)5386-1797 · www.leviton.com.mx

Visit our Website at: www.leviton.com

Leviton has a global presence.
If you would like to know where your local Leviton office is located please go to:
www.leviton.com/international/contacts/

Attachment C1

MAXCELL EDGE DETECTABLE 3.00”

MaxCell® Edge Detectable fabric innerduct is designed to maximize the capacity of conduits in network infrastructure while preserving space for future network deployments. MaxCell Edge Detectable is designed to create additional pathways in greenfield or occupied conduit specifically for outside plant applications, including long lines; under bridges; road, river and rail borings under streets; and, curb to building entrances.

- Designed for 3” and larger conduit applications
- Sewn-in 18AWG TFN solid copper wire suitable for direct wired toning equipment and above ground handheld locators
- Solves cabling issues for conduits, allowing a range of cable sizes
- Enables overlay of cables in occupied conduits
- Reduces or eliminates number of conduits required in new construction
- Melting point of 419°F (215°C) (almost twice that of HDPE)
- Resistant to ground chemicals and petroleum products
- Constructed of PET (Polyethylene Terephthalate) and Nylon 6
- Patented fabric design may reduce pulling tension by up to 20% over previous MaxCell versions
- Features color coded, pre-installed 1250LB pull tape in each cell*
- Pre-lubed for lower friction during MaxCell and cable installation**
- Manufactured in the U.S.A.

PRODUCT #	MIN CONDUIT ID	CELLS	REPLACES	MAX CABLE DIAMETER PER CELL
MXED6428: 3”				
MXED64283	3.00”	3 Cell	MXD3456	1.05” (28mm)

MXED64283 APPLICATION GUIDE

CONDUIT TRADE SIZE	MAX. # OF PACKS	MAX. # OF CABLES
3”	2	6
4”	3	9
5”	4	12
6”	5	15

IMPORTANT INSTALLATION TIPS

- Swivels must be used when pulling MaxCell
- The factory installed pull tapes in each cell must free-float during installation
- Contact customer service for installation assistance

View installation video online:
www.maxcell.us/installation.aspx

MaxCell Edge Standard and Detectable products are available in multiple sizes and configurations. Contact customer service on applications requiring MaxCell ISP (Plenum or Riser ratings). MaxCell ISP is designed as a UL2024 certified compliment to the MaxCell Edge product line.

Use of OFNR or OFNP cable may result in reduced pulling lengths as the cable jacket compositions may result in a higher coefficient of friction over traditional OSP (outside plant) cabling. Designers should make every effort to conform to industry standards (BICSI best practices and ANSI standards) with regard to distances between any two pull points, number of bends and adhere to the cable manufacturer's maximum pulling tension specifications. Do not exceed two 90° bends or a total of 180° in a single pull. Consult a MaxCell representative if unavoidable. Proofing (mandreling) of conduit pathways is advised prior to MaxCell installation (normally 1/4” to 1/2” less than the diameter of the conduit).

Design and fabrication of MaxCell is patent protected.
** Higher tensile strength pull tape and rope options are available for difficult cable installations.*
*** Additional lubrication is recommended to further decrease friction during cable installation.*

PHONE: 888.387.3828 MAIL: INFO@MAXCELL.US WEB: WWW.MAXCELL.US

3.00" DETECTABLE ORDERING GUIDELINE

MaxCell®
Future Network Flexibility

How do MaxCell part numbers work?

MXED6428 3GR1000

MX:	Standard prefix to identify the product as a MaxCell item
ED:	Product Line Code: E-Edge; ED-Edge Detectable
64:	Product Width (Millimeters)
28:	Maximum Outside Diameter of Cable (Millimeters)
3:	Number of Cells
GR:	Thread Identification Color (Varies Per Product): GR-Green (Standard); BK-Black
1000:	Standard Length (Feet)†: 250 ft; 500 ft; 1,000 ft; 2,650 ft; 5,300 ft; 10,000 ft

†Contact customer service regarding custom lengths of MaxCell (available in 5' increments).
Reel sizes may vary. Contact customer service for MaxCell ISP (Plenum and Riser) part numbers.

PROJECT WORKSHEET Project Name:

BASE PRODUCT #	# OF CELLS	THREAD COLOR	LENGTH (FT)
EXAMPLE: *MXED6428*	*3*	*GR*	*1000*

PHONE: 888.387.3828 MAIL: INFO@MAXCELL.US WEB: WWW.MAXCELL.US

BOGEN®

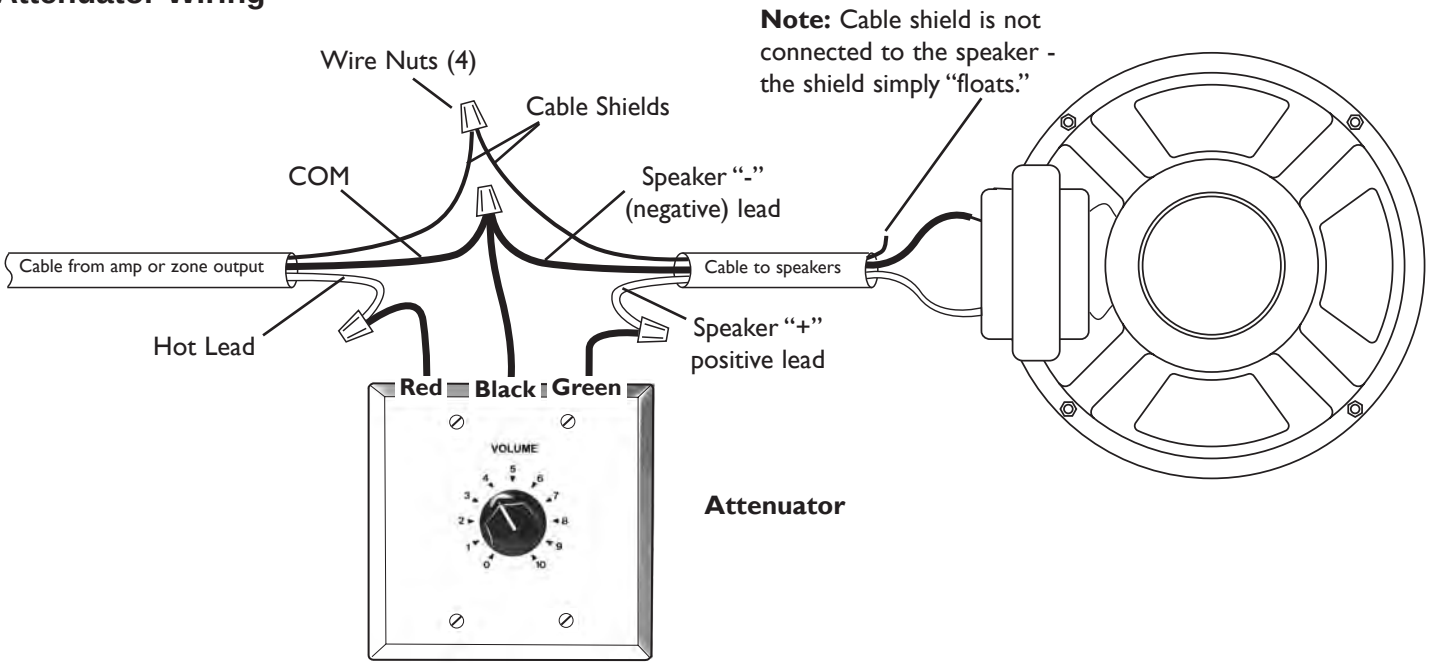
Attenuators For 25V/70V Speaker Line Models AT10A and AT35A

Installation and Use Manual

Speaker Installation

These 10-step plus “off” speaker attenuators allow the volume of a network of 25V or 70V speakers to be controlled from a remote location. The AT10A attenuator can handle speaker loads of up to 10W (max.) and the AT35A attenuator can handle speaker loads of up to 35W (max.). The AT10A fits into a single gang electrical box and the AT35A into a double gang electrical box. Volume reduction takes place in 3 dB increments except for the 2 lowest settings, which provide 6 dB reduction increments. A speaker “off” (“0”) position is also provided.

Attenuator Wiring



Attenuator

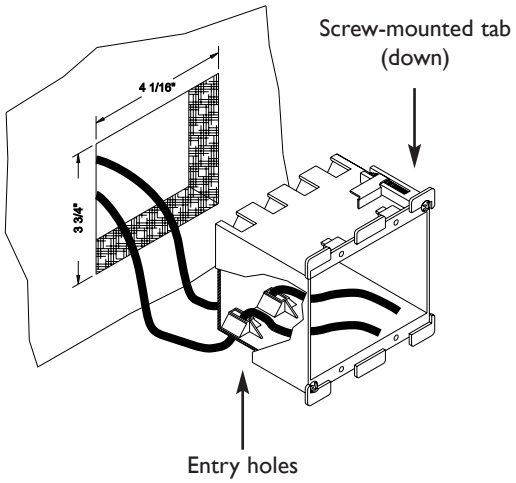
Attenuator Settings

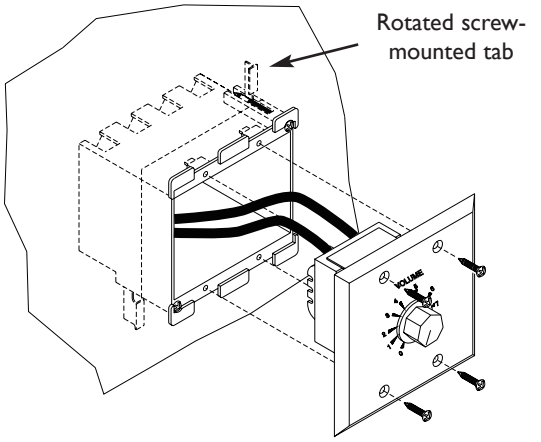
STEP	ATTENUATION
10	0 dB (Full Volume)
9	-3 dB
8	-6 dB
7	-9 dB
6	-12 dB
5	-15 dB
4	-18 dB
3	-21 dB
2	-27 dB
1	-33 dB
0	Speaker Off

54-2126-01A 0501

Attenuator Installation

1) Cut a rectangular hole 4-1/16" wide and 3-3/4" high in the sheetrock where the attenuator is to be mounted.
2) Pull approximately 12" of the amplifier and speaker cables through the hole.
3) Push each of the separate cables through the electrical box entry holes and pull about 6" of cable out of the front of the box.
4) Rotate the two screw-mounted tabs down against the box and slide the electrical box into the opening until it stops against the wall.
5) Begin to tighten both of the electrical box screws until the box is held firmly in the wall. Rotate the clips on the screws into place and clamp the box against the wall.
6) Make all the necessary electrical connections as shown in the “Attenuator Wiring” section on the front of this sheet.
7) Remove the protective plastic film covering from the attenuator face plate.
8) Mount the attenuator to the electrical box using the 4 screws provided. Using a Phillips head screwdriver, screw the attenuator into place.





Limited Warranty

The AT10A and AT35A are warranted to be free from defects in material or workmanship for two (2) years from the date of sale to the original purchaser. Any part of the product covered by this warranty that, with normal installation and use, becomes defective will be repaired or replaced by Bogen, at our option, provided the product is shipped insured and prepaid to: Bogen Factory Service Department, 50 Spring Street, Ramsey, NJ 07446, USA. The product will be returned to you freight prepaid. This warranty does not extend to any of our products that have been subjected to abuse, misuse, improper storage, neglect, accident, improper installation or have been modified or repaired or altered in any manner whatsoever, or where the serial number or date code has been removed or defaced.

THE FOREGOING LIMITED WARRANTY IS BOGEN'S SOLE AND EXCLUSIVE WARRANTY AND THE PURCHASER'S SOLE AND EXCLUSIVE REMEDY. BOGEN MAKES NO OTHER WARRANTIES OF ANY KIND, EITHER EXPRESS OR IMPLIED, AND ALL IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ARE HEREBY DISCLAIMED AND EXCLUDED TO THE MAXIMUM EXTENT ALLOWABLE BY LAW. Bogen's liability arising out of the manufacture, sale or supplying of products or their use or disposition, whether based upon warranty, contract, tort or otherwise, shall be limited to the price of the product. In no event shall Bogen be liable for special, incidental or consequential damages (including, but not limited to, loss of profits, loss of data or loss of use damages) arising out of the manufacture, sale or supplying of products, even if Bogen has been advised of the possibility of such damages or losses. Some States do not allow the exclusion or limitation of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific legal rights, and you may also have other rights which vary from State to State.

Products that are out of warranty will also be repaired by the Bogen Factory Service Department -- same address as above or call 201-934-8500. The parts and labor involved in these repairs are warranted for 90 days when repaired by the Bogen Factory Service Department. All shipping charges in addition to parts and labor charges will be at the owner's expense. All returns require a Return Authorization number.

08/10/2004

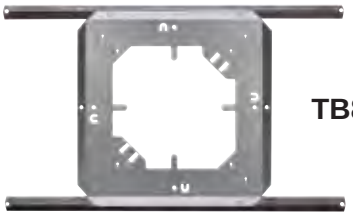
BOGEN®
COMMUNICATIONS, INC.
www.bogen.com

Mounting Accessories for Ceiling Speaker Grille Assemblies*

Models RE84, MR8, TB8

RE84

MR8



TB8

Description

The RE84 Ceiling Speaker Enclosure is a protective enclosure for an 8" speaker, designed for recessed installations, and for use with any of the Bogen ceiling grilles. One-piece steel construction includes a mounting ring and a foam insert to reduce metallic resonance. The RE84 is finished in rust-resistant primer and is tapered for easy stacking. UL approved.

The MR8 Mounting Ring is a cold-rolled steel unit which will mount any of the Bogen ceiling grilles, for installations where the RE84 is not used.

The TB8 Tile Bridge is a load-bearing T-bar support designed to sustain the weight of an 8" speaker, grille and protective enclosure in suspended ceiling construction. Use of the TB8 improves environmental safety and eliminates unsightly sag in 2'-by-2' and 2'-by-4' acoustic ceiling tiles.

Features

RE84 - Ceiling Speaker Enclosure
- Protective enclosure for 8" speaker in recessed installations
- One-piece steel construction includes mounting ring and foam insert to reduce metallic resonance
- Finished in rust-resistant primer
- For use with any Bogen ceiling grille or assembly
- UL approved

MR8 - Mounting Ring
- Constructed of cold-rolled steel
- Finished in rust-resistant primer
- For use with any Bogen ceiling grille or assembly

TB8 - Tile Bridge
- Load-bearing T-support
- Capable of sustaining weight of any Bogen 8" ceiling speaker, grille, and enclosure in suspended ceiling installations
- Steel construction
- Finished in rust-resistant coating

Architect and Engineer Specifications

RE84 - Ceiling Speaker Enclosure The protective enclosure for the 8" cone-type loudspeakers shall be a Bogen model RE84, or equivalent, designed for recessed installations. It shall be constructed of one-piece heavy-gauge steel, and shall include a speaker mounting ring. A foam insert shall be permanently attached to the inner surface, to prevent metallic resonance. Four combination 1/2" – 3/4" conduit knockouts shall be provided at 90 degree intervals, and the unit shall be finished in a rust-resistant primer coating. The dimensions shall be: 12-1/4" dia. x 4-1/2" D.

MR8 - Mounting Ring The plaster ring shall be a Bogen model MR8, or equivalent, circular cold-rolled steel unit that will mount any Bogen ceiling grille. It shall be finished in a rust-resistant primer coating, and the dimensions shall be: 12" dia. x 3/4" D.

TB8 - Tile Bridge The load-bearing T-bar support shall be a Bogen model TB8, or equivalent, capable of sustaining the weight of an 8" speaker, grille and protective enclosure in suspended ceiling construction. It shall be manufactured of steel and shall be finished with a rust-resistant galvanized coating. The unit shall measure: 23-3/4" W x 3/4" H x 14-1/2" D.

** For speakers mounted to CG8AW, PG8A, PG8U, PG8W, and SG8W*

BOGEN®

54-7777-10B 1108

www.tonercable.com

cable equipment, inc.

FAM Series 1220 MHz Attenuator Pads

FAM 1.2 GHz Attenuators

FEATURES

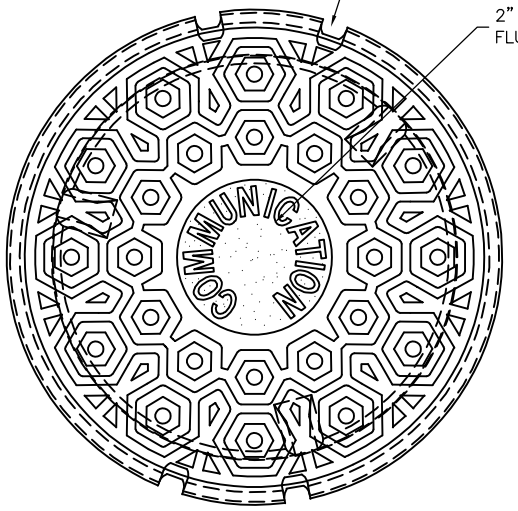
- 5-1220 MHz
- Tin/Nickel Plated Solid Brass
- 100 dB RFI Minimum
- Female to Male Fittings
- 22 Gauge Steel Center Pin
- 9 Different Values

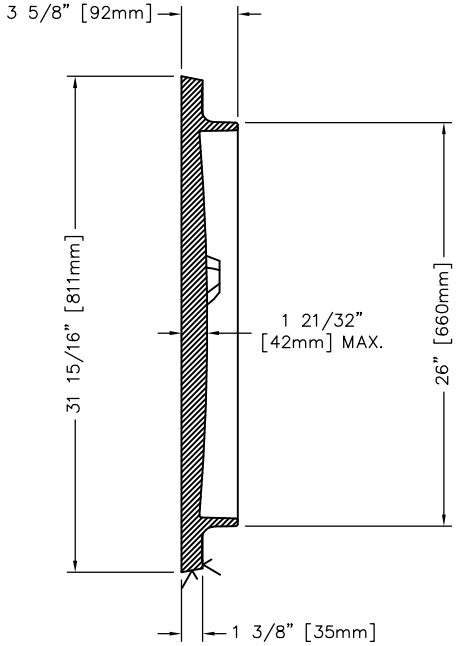
FREQUENCY RANGE: 5-1220 MHz
IMPEDANCE: 75 ohms IN and OUT
ACCURACY: 6% or ± .5 dB

SPECIFICATIONS

MODEL	FAM-1D	FAM-2D	FAM-3D	FAM-6	FAM-8	FAM-10	FAM-12	FAM-16	FAM-20
ATTENUATION (dB)									
5-600 MHz	0.9	2.2	2.7	5.6	7.9	10	12	16	20.1
600-750 MHz	1	2.1	3.4	6.3	8	10.1	12.1	16.1	20.2
750-900 MHz	1.1	2.2	3.4	6.3	8	10.1	12.1	16.2	20.2
900-1000 MHz	1.1	2.3	2.5	5.5	8.1	10.2	12.2	16.2	20.3
1000-1220 MHz	1.1	2.3	2.5	5.7	8.1	10.2	12.2	16.3	20.4
RETURN LOSS (dB) minimum									
5-600 MHz	24	23	23	26	26	22	22	26	22
600-750 MHz	22	21	21	24	22	21	21	22	22
750-900 MHz	22	22	22	22	22	22	22	22	22
900-1000 MHz	22	22	22	22	22	22	22	22	22
1000-1220 MHz	20	20	20	20	20	20	20	20	20

969 Horsham Road • Horsham, Pennsylvania 19044 USA • Phone: 215-675-2053 Fax: 215-675-7543 • info@tonercable.com

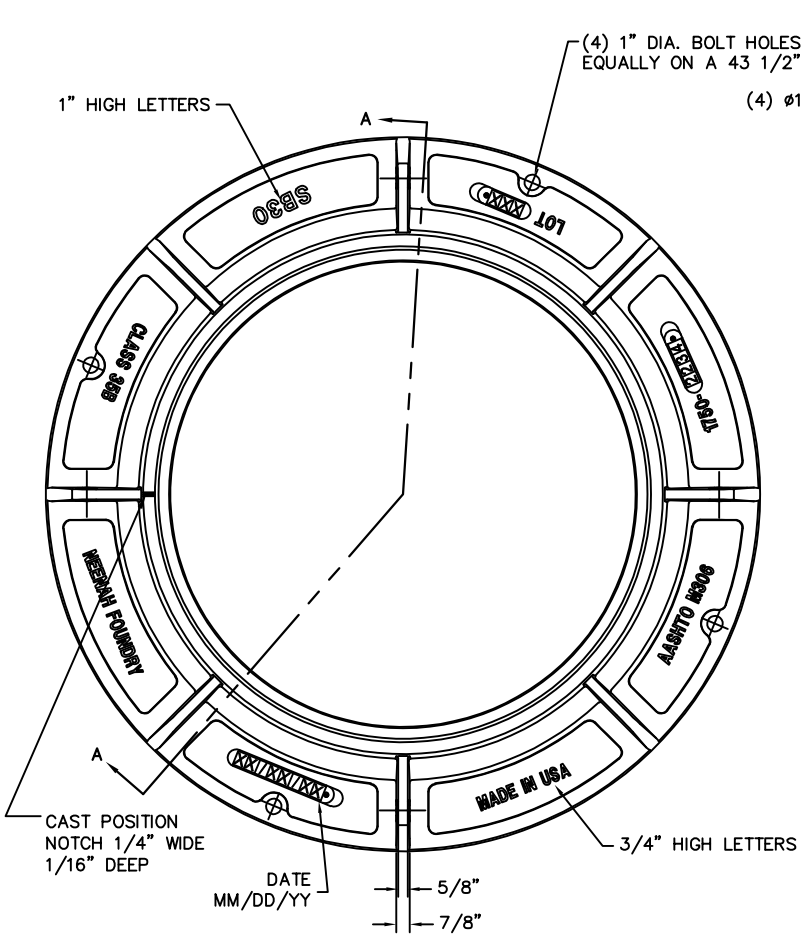


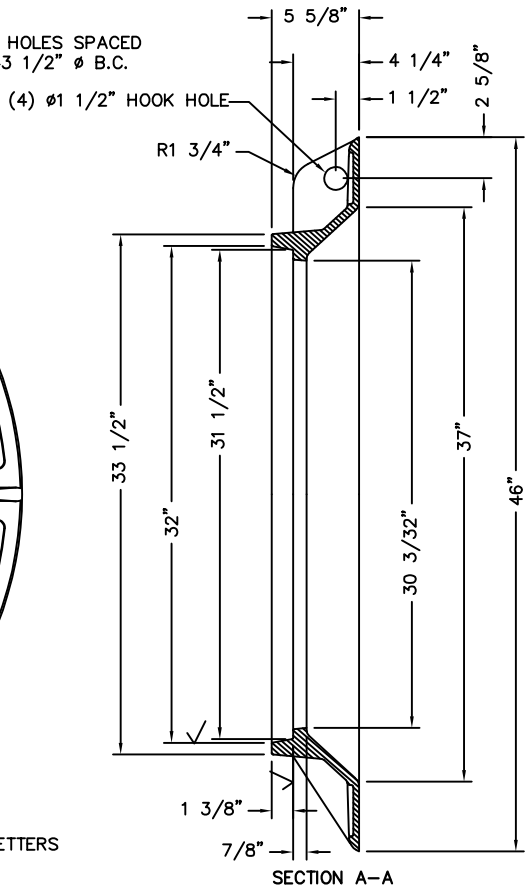


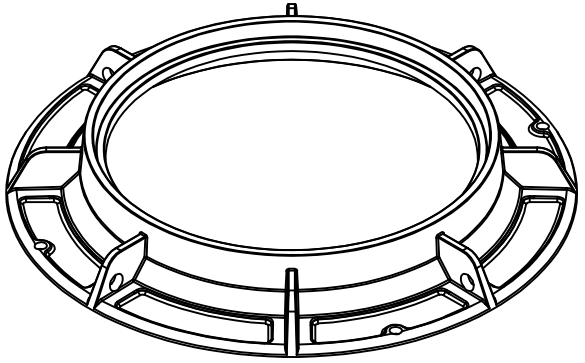
NOTE: ALL DIMENSIONS SHOWN ARE IN ENGLISH AND [METRIC]
MATERIAL: CAST GRAY IRON ASTM A-48, CLASS 35B
FINISH: NO PAINT
WEIGHT: 270#

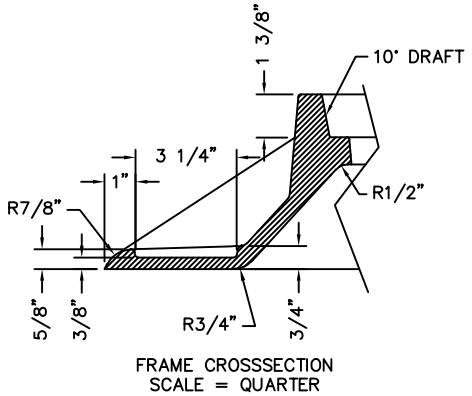
DR. KMH	SCALE 1 : 8	TITLE: R-1750-C LID LETTERED "COMMUNICATION"		
CH.				
APP.	DIM CHK.	NEENAH FOUNDRY COMPANY NEENAH WISCONSIN 54956	NF-17500061	B
DATE 03-12-2002				

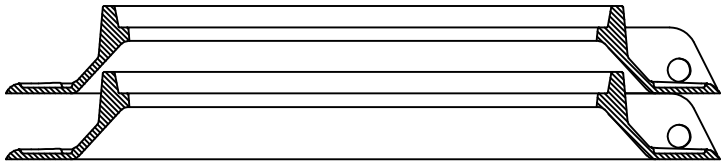
CAD DWG. REF: 17500061.DWG- 1











MATERIAL: CAST GRAY IRON ASTM A–48, CLASS 35B
FINISH: NO PAINT
WEIGHT: 228#

DR.	RKB	SCALE	TITLE:	R–1750–C1SW FRAME	
CH.	JDB	1/8"=1"			
APP.	SPT		NEENAH FOUNDRY		
DATE	01–15–2014		NEENAH WISCONSIN 54956 PHONE 800–558–5075	NF–17502234	B
	www.nfco.com		LINCOLN, NEBRASKA 68529 PHONE 800–234–7466		

DATE	REVISION	DR	CH	APP
02–23–2015	ADDED AASHTO M306 LETTERING	RKB	ELN	SPT

CAD DWG. REF: 17502234.DWG– 2

KEY FIELD FIRE CRASH RESCUE STATION

MDVL239100

186TH AIR REFUELING WING

6225 M. STREET, MERIDIAN MISSISSIPPI 39307

CONSTRUCTION DOCUMENTS

JANUARY 6, 2025

REGISTERED ARCHITECT
ANNE MARIE DECKER
3044
JACKSON, MS
STATE OF MISSISSIPPI
JANUARY 6, 2025

REGISTERED ARCHITECT
ROY T. DECKER
#879
MISSISSIPPI
JANUARY 6, 2025

ARCHITECT

Duvall Decker Architects P.A.
Architecture . Planning . Interiors (design)

STRUCTURAL ENGINEER

SPENCER-ENGINEERS, INC.

MECHANICAL, PLUMBING, FIRE PROTECTION

ENGINEERING RESOURCE GROUP, INC.

ELECTRICAL ENGINEER

JON D. RICE & ASSOCIATES, LLC

CIVIL ENGINEER

ALLEN ENGINEERING AND SCIENCE

INDEX TO DRAWINGS

KEY FIELD FIRE CRASH RESCUE STATION
ANG PN# MDVL239100| DD# 2304
186TH AIR REFUELING WING
6225 M. STREET, MERIDIAN
MISSISSIPPI 39307

REVISIONS

NO.	ISSUED BY	DATE
1	ADDENDUM 02	02-10-25

Duvall Decker Architects P.A.
Architecture . Planning . Interiors (design)
2915 NORTH STATE STREET . JACKSON, MS 39216 . WWW.DUVALLDECKER.COM . 601-713-1128
DUVALL DECKER (an Extended Practice)

PROJECT: 2304

INDEX TO DRAWINGS
COVER

JANUARY 6, 2025

1 EXISTING CONDITIONS, DEMOLITION, AND EROSION CONROL PLAN
1"=30'-0"

LEGEND

Symbol	Description
Ⓢ	SANITARY SEWER MANHOLE
— UGE —	EXISTING UNDERGROUND ELECTRIC
— COM —	EXISTING COMMUNICATION LINE
— OHE —	EXISTING OVERHEAD ELECTRIC
— GAS —	EXIST NATURAL GAS LINE
— SS —	EXIST SANITARY SEWER LINE
— W —	EXIST WATER LINE
====	EXISTING STORM DRAIN
— OHE —	OVERHEAD ELECTRICAL
—o—	EXISTING FENCE
	POWER POLE
	LIGHT POLE
TP	TELEPHONE PEDESTAL
	TRANSFORMER
Ⓢ	SANITARY SEWER MANHOLE
WV	WATER VALVE
	DROP INLET
	GAS VALVE
	FIRE HYDRANT
	SEWER CLEANOUT
	BORROW AREA
	STAGING AREAS
— SF —	SILT FENCE
	EROSION CONTROL MATERIAL
	TEMPORARY BENCHMARK LOCATION

True North
Plan North

ALLEN ENGINEERING AND SCIENCE

0' 5' 15' 30' 60' 120'

KEY FIELD FIRE CRASH RESCUE STATION

ANG PN# MDVL239100 | DD# 2304
186TH AIR REFUELING WING
6255 M. STREET, MERIDIAN
MISSISSIPPI 39307

REVISIONS

NO.	ISSUED BY	DATE
1	ADDENDUM 2	2/10/25

Duvall Decker Architects P.A. (design)
Architecture . Planning . Interiors

BEN WILLS PENTECOST, JR. LICENSED PROFESSIONAL ENGINEER 21268 STATE OF MISSISSIPPI

2915 NORTH STATE STREET . JACKSON, MS 39216 . WWW.DUVALLDECKER.COM . 601-713-1128

DUVALL DECKER (an expanded practice)

PROJECT: 2304
DRAWN: WP
SCALE: 1"=30'

BORROW AREA AND STAGING PLAN
C0.2

JANUARY 6, 2025

KEY FIELD FIRE CRASH RESCUE STATION

ANG PN# MDVL239100 | DD# 2304
186TH AIR REFUELING WING
6255 M. STREET, MERIDIAN
MISSISSIPPI 39307

REVISIONS

NO.	ISSUED BY	DATE
1	ADDENDUM 2	2/10/25

LIMITS OF TAXIWAY SAFETY AREA
NEW SERVICE DRIVE
N: 1034193.45
E: 1010267.77
N: 1034208.10
E: 1010303.12
208 VOLT SINGLE PHASE GATE OPERATOR (TYP.)
PROVIDE NEW 22' WIDE DOUBLE SWING ACCESS GATE. (GATE 1)
CONSTRUCTION FENCE
PROVIDE NEW FENCE
18" W WHITE HOLDING STRIPE (16' FROM GATE)
CP-NAIL EL. 294.07' N: 1034202.0530' E: 1010583.6490'
CP-NAIL EL.:294.07'
NEW GURB & GUTTER TRANSITION TO GRADE
CONNECT NEW FENCE TO EXISTING FENCE CORNER
N: 1034218.19
E: 1010638.76
N: 1034212.19
E: 1010638.85
N: 1034208.13
E: 1010634.85
CHAINLINK FENCE
AWNING
8" CYPRESS
FIRE MAIN INDICATOR POST
DETECTION LOOP
ACCESS GATE CONTROL (24' FROM GATE)
ALL STRIPING TO BE WHITE 4" STRIPES
PROVIDE DETECTABLE WARNING
NEW SITE WALL (TO COORDINATE W/ STRUCTURAL & ARCHITECT)
PARKING AREA TO BE STANDARD DUTY CONCRETE PAVEMENT
TOTAL PARKING AREA 20 SPACE PLUS 1 ADA SPACE
TRANSITION CURB TO GRADE
N: 1034166.10
E: 1010592.00
18"x36" INLET TOP: 293.00' INV: 285.28
STORM MH INLET TOP: 294.25 INV: 289.80
18"x36" INLET TOP: 294.00 INV: 286.20
18" GREASE TRAP TOP: 296.09 INV: 295.43
POWER BOX
LIFTSTATION
PUMP STATION
N: 1034158.10
E: 1010253.12
PROVIDE WHITE 4" CROSS-STRIPES ON STANDARD DUTY PAVEMENT
PROVIDE WHITE 6" EDGE STRIPE
NEW HEAVY DUTY CONCRETE PAVEMENT
NEW BOLLARDS (TYP.)
ADA COMPLIANT SIDEWALK RAMP
REPLACE EXISTING DRIVE WITH NEW HEAVY DUTY CONCRETE PAVEMENT
STANDARD DUTY CONCRETE PAVEMENT
NEW EQUIPMENT YARD (TO COORDINATE W/ STRUCTURAL & ARCHITECT)
NEW MONITORING WELL
NEW CONCRETE SIDEWALK
NEW CURB & GUTTER
NEW MILL & OVERLAY ASPHALT PAVEMENT (440 SY)
(BID OPTION #3) PROVIDE APPROXIMATELY 1,135 SY OF NEW HEAVY DUTY SHOULDER PAVEMENT *(CONTRACTOR SHALL COORDINATED W/ ANG FOR CONSTRUCTION PHASING IF OPTION IS ACCEPTED)*
NEW BOLLARDS (TYP.)
PROVIDE NEW 48" MAN GATE W/ MANUAL KEYPAD
N: 1034111.10
E: 1010324.00
N: 1034111.05
E: 1010527.99
NEW CONCRETE SIDEWALK
NEW CURB & GUTTER
NEW SITE WALL (TO COORDINATE W/ STRUCTURAL & ARCHITECT)
ALL STRIPING TO BE WHITE 4" STRIPES
ACCESS GATE CONTROL (24' FROM GATE)
(BID OPTION #3) EXTEND LIMITS OF MOVEMENT AREA STRIPING THROUGH NEW PAVEMENT
CONCRETE FLUME
NEW HEAVY DUTY CONCRETE PAVEMENT
NEW TRENCH DRAIN 106 LF (TO COORDINATE W/ ARCHITECT)
NEW STATION
NEW TRENCH DRAIN 112.5 LF (TO COORDINATE W/ ARCHITECT)
PROVIDE NEW 48" MAN GATE W/ MANUAL KEYPAD
18" W WHITE HOLDING STRIPE (16' FROM GATE)
NEW HEAVY DUTY CONCRETE PAVEMENT
208 VOLT SINGLE PHASE GATE OPERATOR (TYP.)
GAS METER
BUILDING FF=296.60'
PROVIDE NEW 24' WIDE DOUBLE SWING ACCESS GATE. (GATE 2)
DETECTION LOOP
N: 1034046.37
E: 1010252.83
N: 1034046.37
E: 1010291.02
(BID OPTION #3) PROVIDE NEW 1.5' W YELLOW EDGE STRIPE
(BID OPTION #3) PROVIDE NEW 3' W YELLOW SHOULDER STRIPE SPACED 40' APART
N: 1034017.05
E: 1010323.99
N: 1034017.10
E: 1010527.99
LIMITS OF MOVEMENT AREA
LIMITS OF TAXIWAY SAFETY AREA
NEW BOLLARDS (TYP.)
NEW 1'-10" TALL SEAT/BENCH WALL (TO COORDINATE W/ ARCHITECT)
TURF YARD
N: 1033975.07
E: 1010566.30
NEW CONCRETE PAVEMENT TO TRANSITION BACK TO GRADE
N: 1033971.91
E: 1010292.53
CONSTRUCTION FENCE
NEW RUNUP MARKING
NEW PARKING MARKING
CP-MAG NAIL EL. 294.68' N: 1033887.9000' E: 1010581.4790'
CP-MAG N EL.:294.68'
NEW EQUIPMENT YARD
NEW DRILL TOWER
COORDINATE AREA W/ STRUCTURAL & ARCHITECT

1 SITE LAYOUT
1"=20'-0"

2 SITE LAYOUT BID OPTION #1
1"=20'-0"

LEGEND

- SANITARY SEWER
- EXISTING FENCE
- CONSTRUCTION FENCE
- NEW FENCE
- WATER VALVE
- SEWER CLEANOUT
- FIRE HYDRANT
- LIGHT POLE
- EXISTING CONCRETE
- EXISTING ASPHALT
- MILL AND OVERLAY
- NEW SIDEWALK
- NEW STANDARD DUTY CONCRETE
- NEW HEAVY DUTY CONCRETE
- TEMPORARY BENCHMARK LOCATION

NOTES:
1. UTILITY LINES ARE NOT SHOWN FOR CLARITY.
2. REFERENCE ELECTRICAL FOR ALL GATE POWER & CONTROLS.
3. REFERENCE 087100 DOOR HARDWARE SPEC. FOR MAN GATE HARDWARE.

True North
Plan North

0 5' 10' 20' 40' 80'

ALLEN ENGINEERING AND SCIENCE

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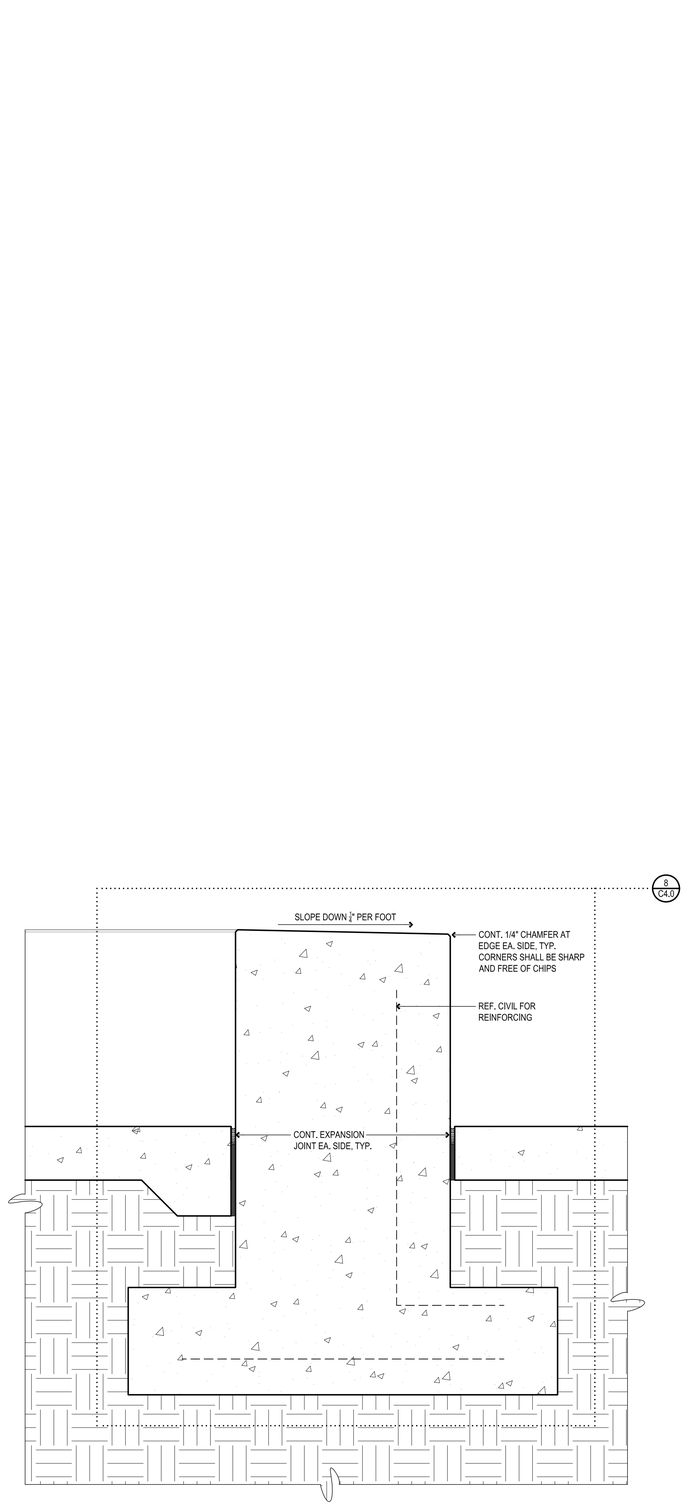
BEN WILLS PENTECOST JR. LICENSED PROFESSIONAL ENGINEER 21266 STATE OF MISSISSIPPI

DUVALL DECKER ARCHITECTS P.A. (architect of record)

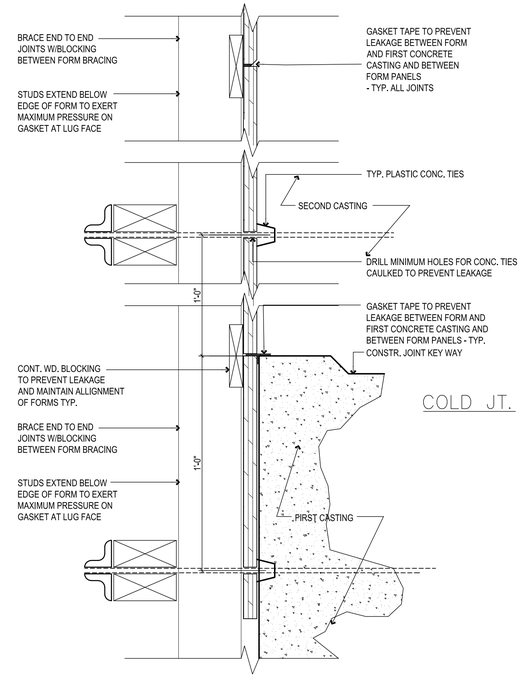
PROJECT: 2304
DRAWN: WP
SCALE: 1"=20'

SITE LAYOUT
C2.0

JANUARY 6, 2025



1 TYP. SECTION DETAIL @ SITE BENCH
1-1/2"=1'-0"



2 TYP. ARCHITECTURAL CONC. FORMWORK DETAIL - FOR ALL EXPOSED CONCRETE WALLS
3"=1'-0"

KEY FIELD FIRE CRASH RESCUE STATION

ANG PN# MDVIL239100 | DD# 2304
186TH AIR REFUELING WING
6255 M. STREET, MERIDIAN
MISSISSIPPI 39307

REVISIONS

NO.	ISSUED BY	DATE
1	ADDENDUM 02	02-10-25

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ROY T. DECKER
REGISTERED ARCHITECT
2879
MISSISSIPPI
JAN 6, 2025

ANNE MARIE DECKER
REGISTERED ARCHITECT
3044
JACKSON, MS
STATE OF MISSISSIPPI
JAN 6, 2025

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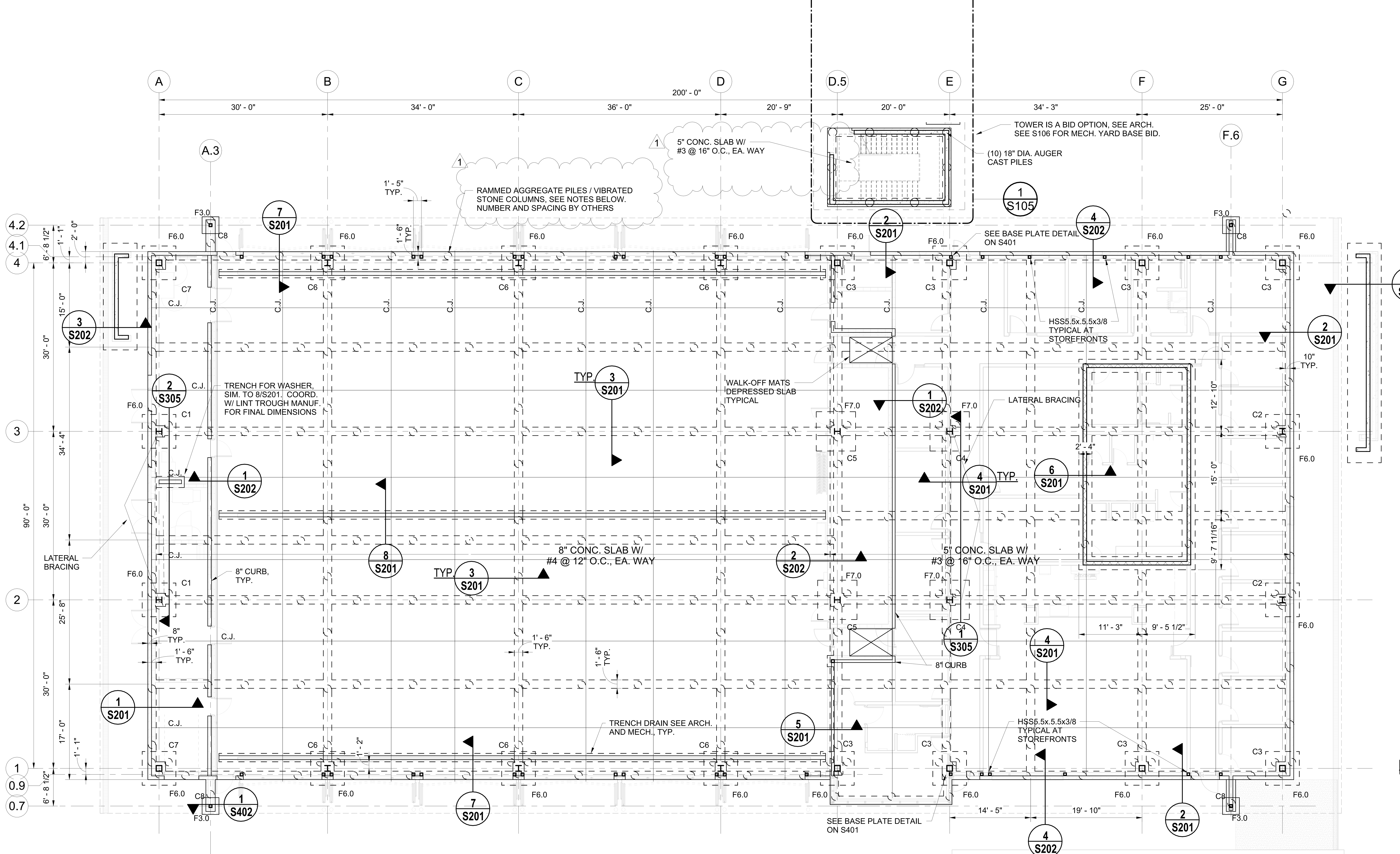
DUVALL DECKER H
(an expanded practice)

PROJECT: 2304
DRAWN: DB
SCALE: AS INDICATED

SITE DETAILS
AS3.0

JANUARY 6, 2025



RAMMED AGGREGATE PILE / VIBRATED STONE PIER NOTES

1. LAYOUT SHOWN IS REPRESENTATIVE ONLY. THE FINAL DESIGN & SPACING IS TO BE PROVIDED BY THE PIER PROVIDER.
2. CONTRACTOR SHALL PROVIDE DESIGN OF RAMMED AGGREGATE PILES IN ORDER TO SUPPORT THE GIVEN LOADS ON THE PLAN. ALL LOADS SHOWN ARE SERVICE LOADS AND THE APPROPIATE SAFETY FACTORS SHOULD BE USED. PIERS SHALL PROVIDE A MINIMUM OF 4,000 PSF UNDER ALL FOOTINGS U.N.O.
3. ALL PIERS UNDER LATERAL BRACING AND EXTERIOR FOOTINGS SHALL BE DESIGNED FOR UPLIFT (10 KIPS).
4. SEE S001 FOR ADDITIONAL INFORMATION.

FOUNDATION AND FLOOR FRAMING PLAN

1/8" = 1'-0"

NOTES:
1. VERIFY ALL DIMENSIONS W/ ARCHITECT.

SE# 24005

Spencer-Engineers, Inc.
Consultants
P.O. BOX 4328 JACKSON, MS 39296
(601) 982-7766

KEY FIELD FIRE CRASH RESCUE STATION
ANG PN# MDVL239100 | DD# 2304
186TH AIR REFUELING WING
6255 M. STREET, MERIDIAN
MISSISSIPPI 39307

REVISIONS

NO.	ISSUED BY	DATE
1	Addendum 2	2-10-25

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DUVALL DECKER (an expanded practice)

True North
Plan North

PROJECT: 2304
DRAWN: KSM
SCALE: 1/8" = 1'-0"

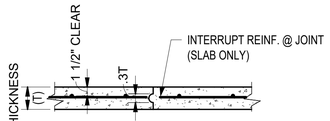
FOUNDATION FRAMING PLAN

S101

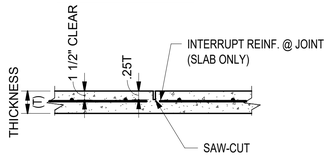
JANUARY 6, 2025

FOOTING SCHEDULE

MARK	THICKNESS	SIZE		REINFORCING	REMARK
		LENGTH	WIDTH	EACH WAY	
F3.0	16"	3'-0"	3'-0"	4 #5	
F4.0	16"	4'-0"	4'-0"	5 #4	
F5.0	16"	5'-0"	5'-0"	6 #5	
F6.0	20"	6'-0"	6'-0"	7 #6	
F7.0	24"	7'-0"	7'-0"	8 #6	
F8.0	24"	8'-0"	8'-0"	9 #7	
F9.0	24"	9'-0"	9'-0"	10 #8	
F10.0	24"	10'-0"	10'-0"	12 #8	
F7x4	16"	7'-0"	4'-0"	9#7 SH., 5#6 LG.	



CONSTRUCTION JOINT

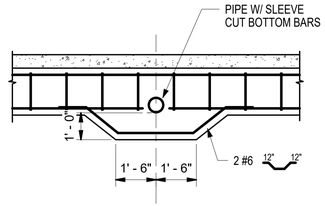


SAW JOINTS

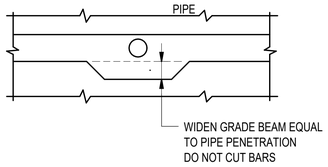
CONTRACTION JOINTS (C.J.)

NO SCALE

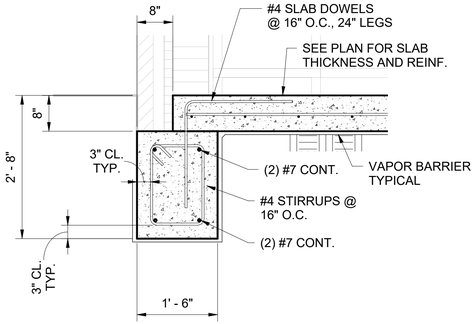
1. CONTRACTION JOINT MAY BE EITHER JOINT SHOWN ABOVE. IF SLAB IS SAW CUT, SLAB SHALL BE SAWED IMMEDIATELY AFTER FINISHED TROWELING WITH AN EARLY-ENTRY TYPE SAW WITH A SHARP BLADE. SAW CUTTING SHALL BE COMPLETED WITHIN 4 HOURS OF PLACING CONCRETE.
2. IF NO CONTRACTION JOINSTS ARE SHOWN, PROVIDE JOINTS @ 25'-0" MAX.



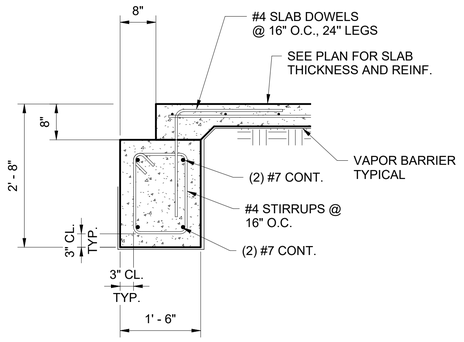
TYPICAL DETAIL AT PIPE PENETRATION THRU GRADE BEAM



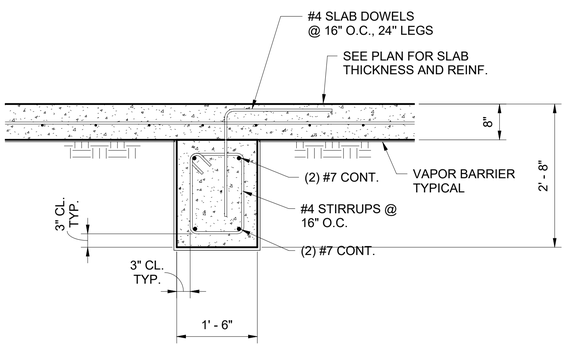
VERTICAL PENETRATION THRU INTERIOR GRADE BEAM



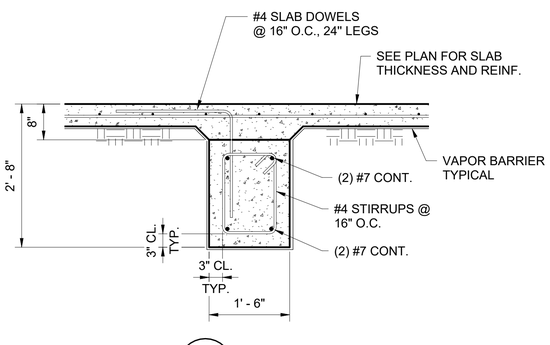
1 S201 3/4" = 1'-0"



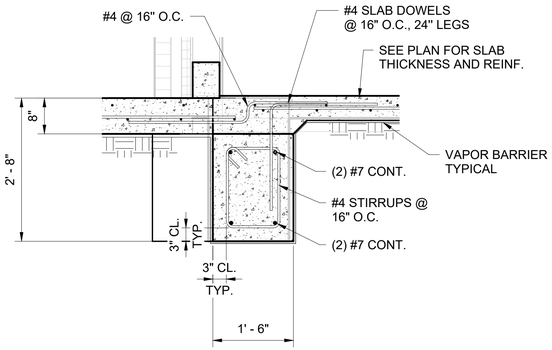
2 S201 3/4" = 1'-0"



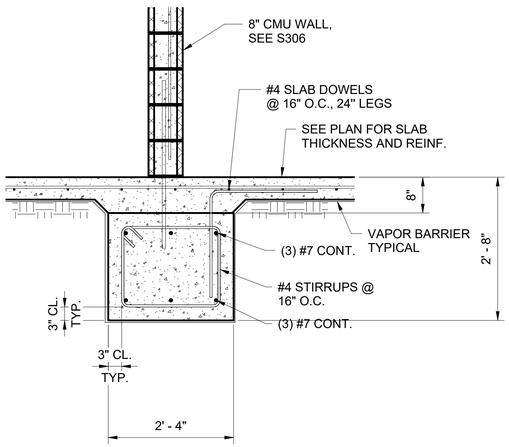
3 S201 3/4" = 1'-0"



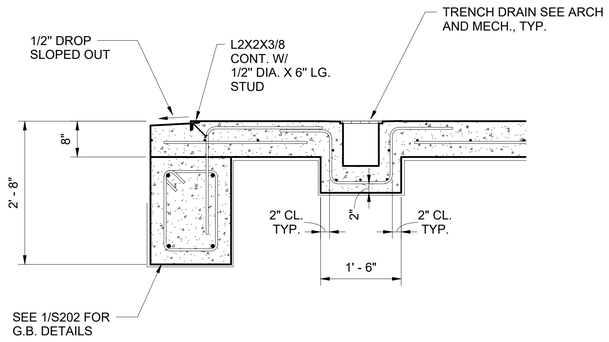
4 S201 3/4" = 1'-0"



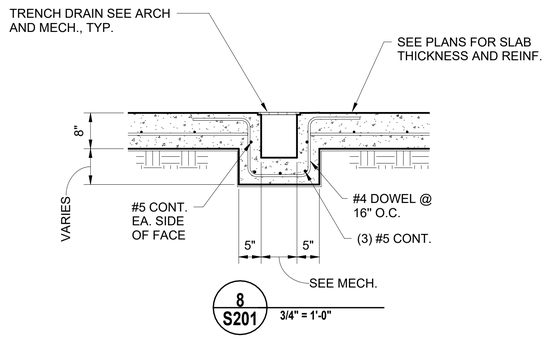
5 S201 3/4" = 1'-0"



6 S201 3/4" = 1'-0"



7 S201 3/4" = 1'-0"



8 S201 3/4" = 1'-0"

SE# 24005

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KEY FIELD FIRE CRASH RESCUE STATION
ANG PN# MDVL239100 | DD# 2304
186TH AIR REFUELING WING
6255 M. STREET, MERIDIAN
MISSISSIPPI 39307

REVISIONS

NO.	ISSUED BY	DATE
1	Addendum 2	2-10-25

Duvall Decker Architects P.A. (design)
Architecture . Planning . Interiors
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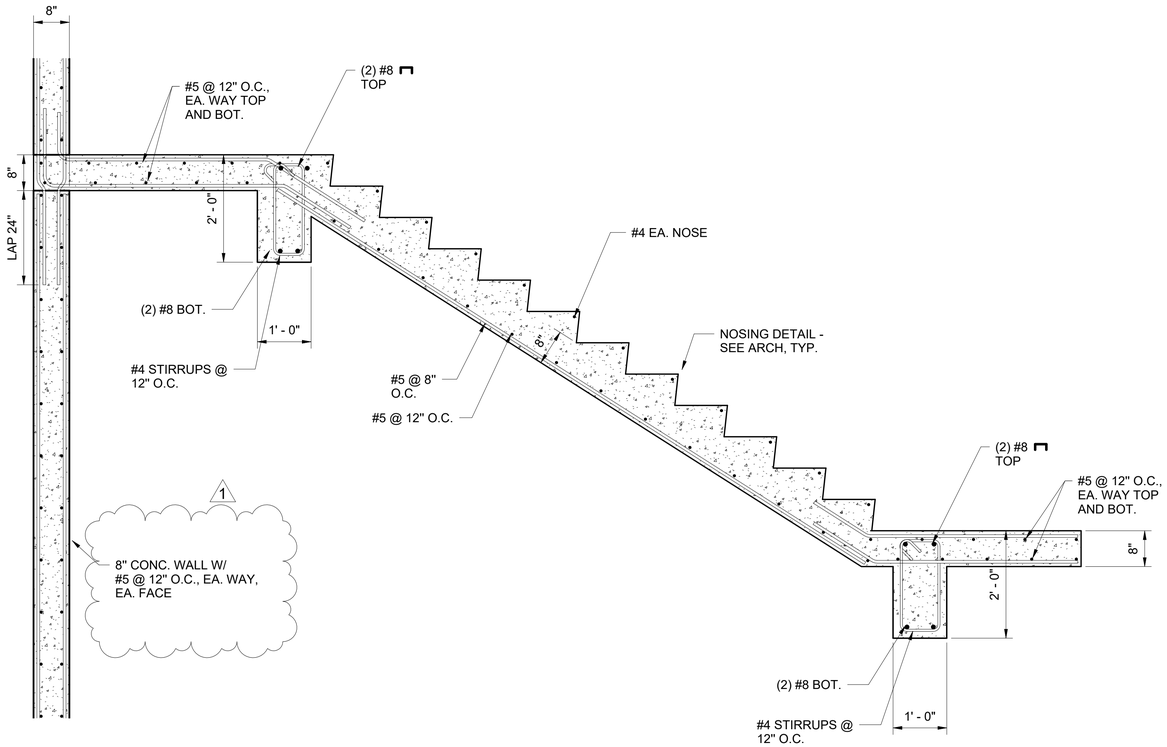
KENNETH SIMMONS MCCRAW III
LICENSED PROFESSIONAL ENGINEER
1-8-25
17092
STATE OF MISSISSIPPI

DUVALL DECKER (no associated practice)

PROJECT: 2304
DRAWN: KSM
SCALE: As indicated

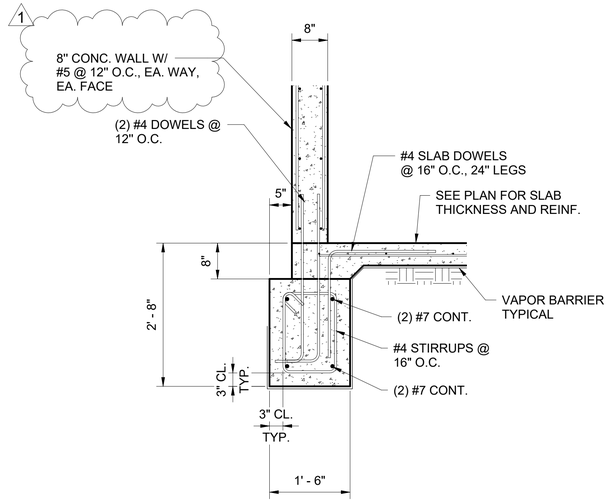
FOUNDATION DETAILS
S201

JANUARY 6, 2025



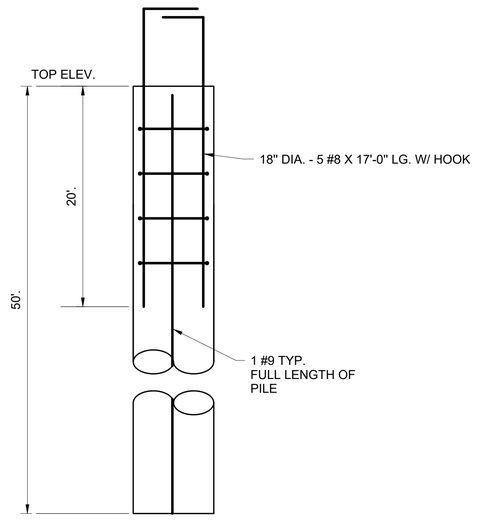
1 S203 3/4" = 1'-0"

BID OPTION 1



2 S203 3/4" = 1'-0"

BID OPTION 1



AUGER CAST PILE ELEVATION

BID OPTION 1

SE# 24005

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KEY FIELD FIRE CRASH RESCUE STATION

ANG PN# MDVL239100 | DD# 2304
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REVISIONS

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KENNETH SIMMONS MCCRARY III
LICENSED PROFESSIONAL ENGINEER
17092
1-8-25
STATE OF MISSISSIPPI

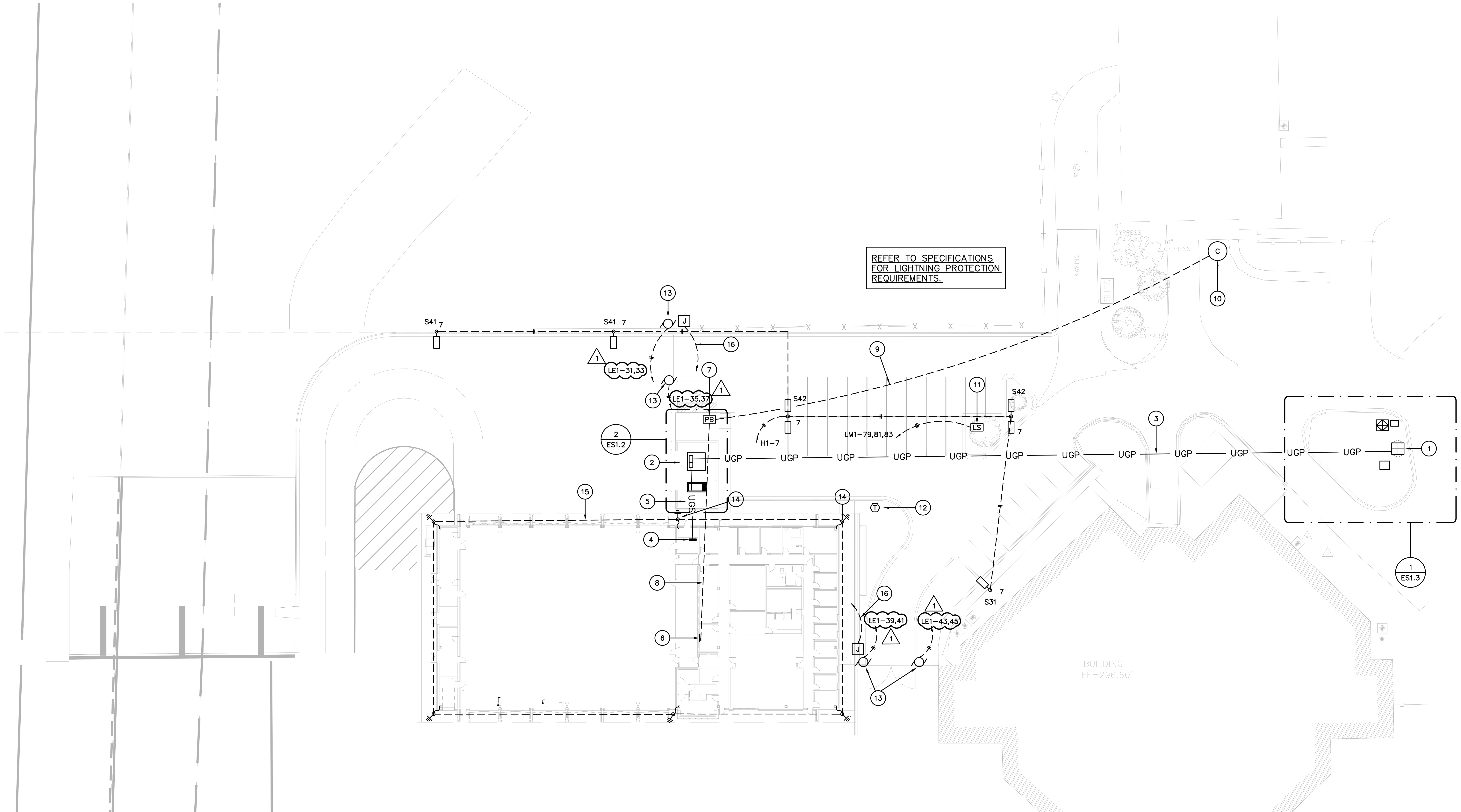
DUVALL DECKER M
(an associated practice)

PROJECT: 2304
DRAWN: KSM
SCALE: As indicated

TOWER FRAMING DETAILS

S203

JANUARY 6, 2025



1 SITE PLAN - ELECTRICAL
1" = 30'-0"

KEYNOTES

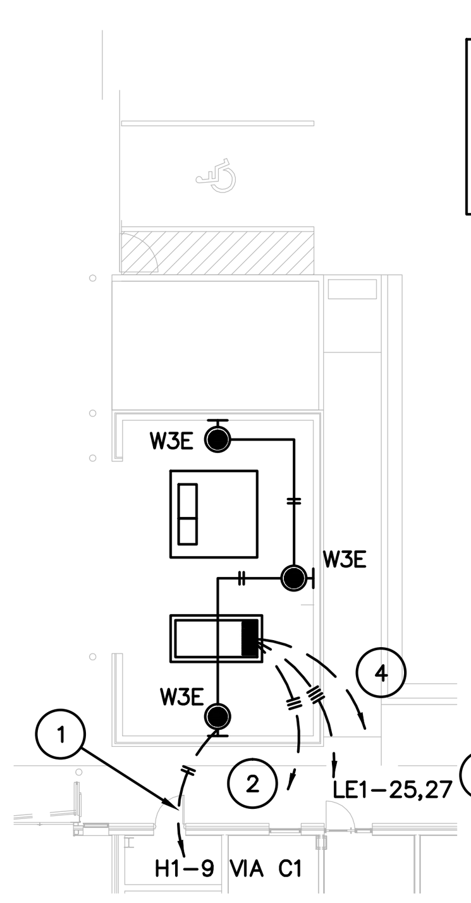
1. NEW SECTIONALIZING SWITCH.
2. NEW UTILITY TRANSFORMER.
3. UNDERGROUND PRIMARY. DIRECTIONAL BORE BETWEEN NEW SECTIONALIZING SWITCH AND NEW TRANSFORMER. SEE ONE LINE DIAGRAM FOR SIZE.
4. PANEL MDP.
5. UNDERGROUND SECONDARY. SEE ONE LINE DIAGRAM.
6. TELEPHONE BACKBOARD.
7. NEW 48"W X 72"L X 48" DEEP IN-GRADE JUNCTION BOX.
8. TRENCH BETWEEN NEW TELEPHONE BACKBOARD LOCATION AND NEW IN-GRADE PULL BOX AND INSTALL THREE 4" CONDUITS.
9. DIRECTIONAL BORE BETWEEN NEW IN-GRADE PULL BOX AND EXISTING TELECOM HANDHOLE AND INSTALL THREE 4" CONDUITS. PROVIDE ONE WITH INNERDUCT PER BASE COMMUNICATIONS STANDARD AND ROUTE FIBER AND COPPER THROUGH SEPARATE CELLS. REFER TO ES1.4 FOR CONTINUATION AND CABLE ROUTING. (1)
10. EXISTING TELECOM HANDHOLE.
11. PROVIDE CONNECTION TO LIFT STATION CONTROL PANEL. COORDINATE FINAL CONNECTIONS OF EQUIPMENT WITH GENERAL CONTRACTOR. HOMERUN TO PANEL WITH 3-6 AWG, 1-10 AWG(G), 3/4"C.
12. TAMPER SWITCH FOR POST INDICATOR VALVE.
13. GATE OPERATOR MOTOR. HOMERUN TO PANEL WITH 2-8 AWG, 1-10 AWG(G), 3/4"C.
14. GROUND ROD IN TEST WELL. (TYPICAL OF SIX)
15. #2/0 COPPER GROUND RING AROUND THE PERIMETER OF THE BUILDING PER SPECIFICATIONS.
16. PROVIDE 1" CONDUIT FROM GATE ACCESS CONTROL PEDESTAL TO THE NEW COMMUNICATIONS ROOM. COORDINATE FINAL CONNECTIONS OF ALL GATE OPERATOR GEAR WITH GENERAL CONTRACTOR.

GENERAL NOTE (BASE BID)

REFER TO DETAIL 3/THIS SHEET FOR PLAN OPTION #1 ALTERNATE WORK.

KEYNOTES (BASE BID)

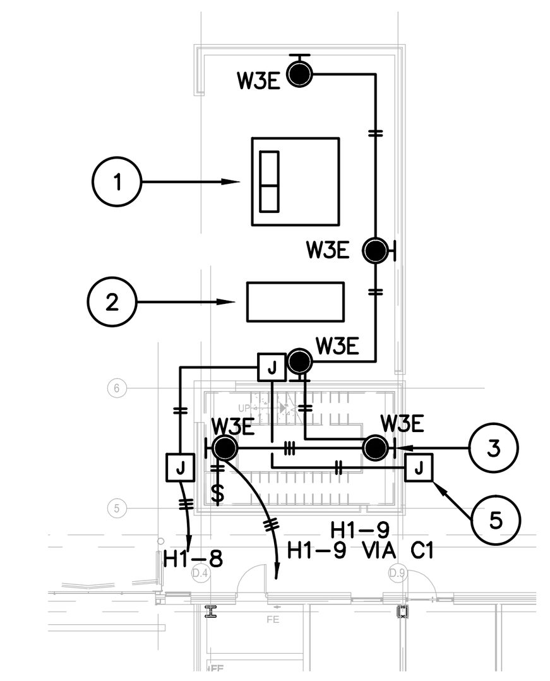
1. HOMERUN TO PANEL VIA EXTERIOR LIGHTING CONTACTOR C1.
2. GENERATOR FEEDER TO ATS. SEE ONE LINE DIAGRAM.
3. BATTERY CHARGER AND BLOCK HEATER CIRCUITS.
4. 1" CONDUIT FROM ATS FOR GENERATOR CRANK CIRCUITS.



2 SITE PLAN - ELECTRICAL (BASE BID)
1" = 20'-0"

KEYNOTES (PLAN OPTION #1)

1. ALTERNATE UTILITY TRANSFORMER LOCATION.
2. ALTERNATE GENERATOR LOCATION. SEE DETAIL 2/THIS SHEET FOR ADDITIONAL GENERATOR CONNECTIONS.
3. PROVIDE A TYPE W3E FIXTURE AT EACH LANDING INSIDE THE DRILL TOWER. TOTAL OF EIGHT FIXTURES.
4. PROVIDE AN UNSWITCHED LIGHTING CIRCUIT AND WEATHER PROOF SWITCH FOR CONTROL OF FIXTURES IN THE DRILL TOWER. CONNECT THE THREE W3 FIXTURES IN THE TRANSFORMER/GENERATOR YARD TO EXTERIOR LIGHTING CONTACTOR C1.
5. TYPICAL OF 3. PROVIDE CONNECTION FOR BACKLIT SIGNAGE. CONNECT TO UNSWITCHED DRILL TOWER LIGHTING CIRCUIT. COORDINATE EXACT LOCATIONS WITH ARCHITECTURAL.



3 SITE PLAN - ELECTRICAL (BID OPTION #1)
1" = 20'-0"

True North

Plan North

KEY FIELD FIRE CRASH RESCUE STATION
ANG PN# MDVL239100 | DD# 2304
186TH AIR REFUELING WING
6255 M. STREET, MERIDIAN
MISSISSIPPI 39307

REVISIONS

NO.	ISSUED BY	DATE
1	ADDENDUM 2	02-10-25

Duvall Decker Architects P.A.
Architecture . Planning . Interiors (design)

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DUVALL DECKER (an expanded practice)

PROJECT: 2304
DRAWN: SA
SCALE: AS NOTED

SITE PLAN - ELEC
ES1.2

JANUARY 6, 2025

KEY FIELD FIRE CRASH RESCUE STATION

ANG PN# MDVL239100 | DD# 2304
186TH AIR REFUELING WING
6255 M. STREET, MERIDIAN
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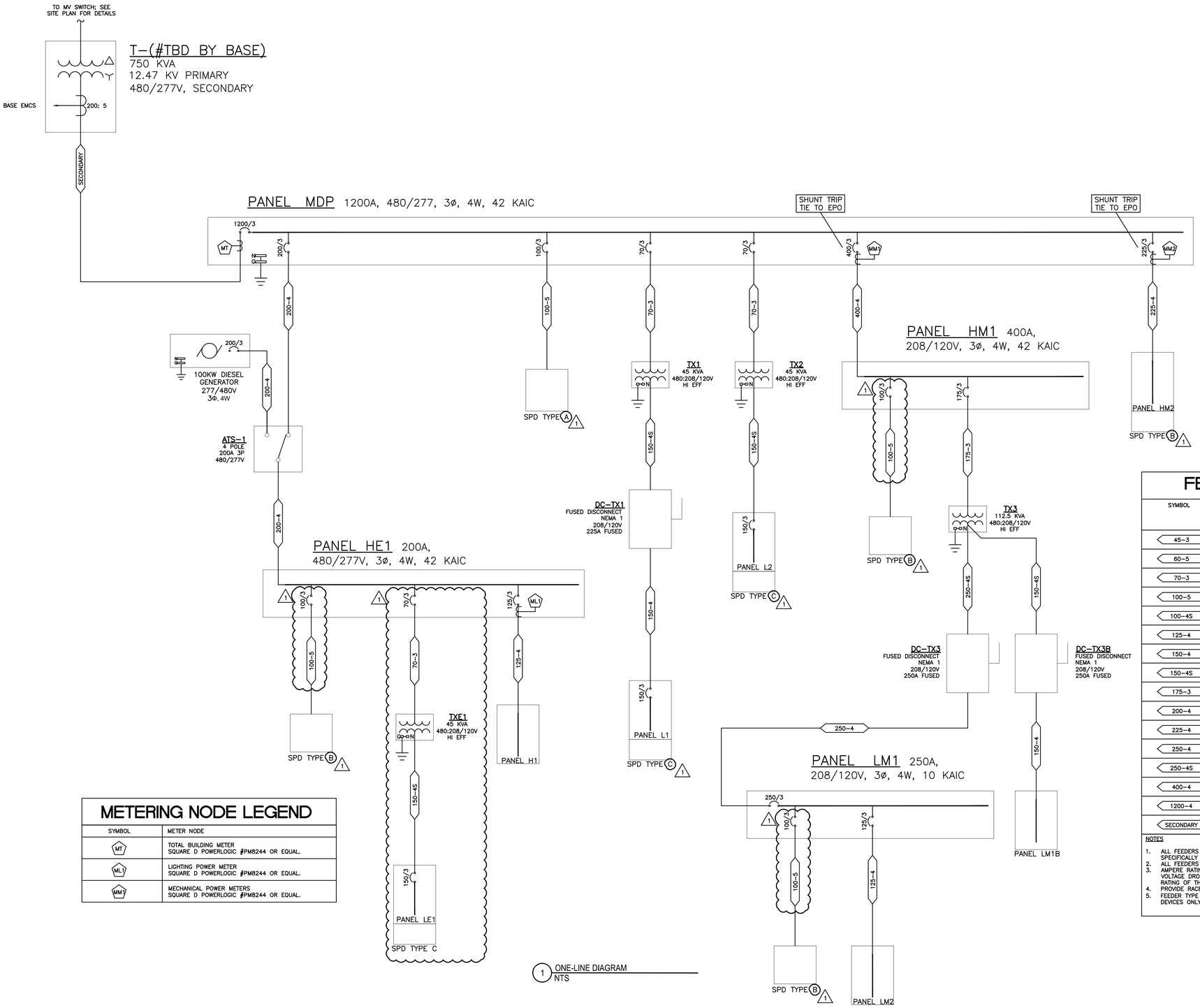
JON D. RICE REGISTERED PROFESSIONAL ENGINEER 14455 STATE OF MISSISSIPPI

DUVALL DECKER (an expanded practice)

PROJECT: 2304
DRAWN: SA
SCALE: AS NOTED

SITE PLAN - OSP
ES1.4

JANUARY 6, 2025



METERING NODE LEGEND

SYMBOL	METER NODE
MT	TOTAL BUILDING METER SQUARE D POWERLOGIC #PM8244 OR EQUAL.
ML1	LIGHTING POWER METER SQUARE D POWERLOGIC #PM8244 OR EQUAL.
MM1	MECHANICAL POWER METERS SQUARE D POWERLOGIC #PM8244 OR EQUAL.

FEEDER SCHEDULE

SYMBOL	FEEDER
45-3	3/4"C, 3-6 AWG, 10 AWG -G-
60-5	1-1/4"C, 5-4 AWG
70-3	1"C, 3-4 AWG, 8 AWG -G-
100-5	1-1/2"C, 5-1 AWG
100-4S	1-1/2"C, 4-1 AWG, 6 AWG -G-
125-4	2"C, 4-1/0 AWG, 6 AWG -G-
150-4	2"C, 4-1/0 AWG, 6 AWG -G-
150-4S	2"C, 4-1/0 AWG, 6 AWG -G-
175-3	2"C, 3-2/0 AWG, 6 AWG -G-
200-4	2"C, 4-3/0 AWG, 6 AWG -G-
225-4	2-1/2"C, 4-4/0 AWG, 4 AWG -G-
250-4	3"C, 4-250 KCMIL, 4 AWG -G-
250-4S	3"C, 4-250 KCMIL, 2 AWG -G-
400-4	4"C, 4-600 KCMIL, 3 AWG -G-
1200-4	(3) 4"C, EA. W/ 4-600 KCMIL, 3/0 AWG -G-
SECONDARY	(3) 4"C, EA. W/ 4-600 KCMIL, 250 KCMIL -G-

NOTES

1. ALL FEEDERS INDICATED ARE SHOWN FOR COPPER CONDUCTORS UNLESS SPECIFICALLY NOTED TO BE ALUMINUM.
2. ALL FEEDERS SCHEDULED ABOVE MAY NOT SHOW UP ON DRAWINGS.
3. AMPERE RATINGS OF FEEDERS SCHEDULED ABOVE DO NOT ACCOUNT FOR VOLTAGE DROP. PROVIDE FEEDER INDICATED ON DRAWINGS REGARDLESS OF RATING OF THE OVER CURRENT PROTECTION DEVICE.
4. PROVIDE RACEWAY TYPE PER SPECIFICATIONS UNLESS NOTED OTHERWISE
5. FEEDER TYPE INDICATED BY A (*) ARE TO BE USED FOR SURGE PROTECTION DEVICES ONLY. USE 5 WIRE SHIELDED CABLE PROVIDED BY MANUFACTURER.

KEY FIELD FIRE CRASH RESCUE STATION

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JON D. RACE
REGISTERED
No. 14455
STATE OF MISSISSIPPI

DUVALL DECKER H
(incorporated practice)

PROJECT: 2304
DRAWN: SA
SCALE: NTS

ONE-LINE DIAGRAM
E0.2

JANUARY 6, 2025

LIGHT FIXTURE SCHEDULE

SYMBOL	VOLTS	WATTS	DESCRIPTION	MANUFACTURER	CATALOG NUMBER/WATTS	MOUNTING
A1	277	16.4W/ LED –	2'X2' LED FLAT PANEL, 0–10V DIMMING 82 CRI, 4000K COLOR TEMPERATURE CURVED RIBBED, 2092 LUMENS	LITHONIA	2BLT2–RB–20L–ADP–277–EZ1– LP840 –	CEILING LAY–IN –
A1E	277	16.4W/ LED –	2'X2' LED FLAT PANEL, 0–10V DIMMING 82 CRI, 4000K COLOR TEMPERATURE CURVED RIBBED, 2092 LUMENS, EMERGENCY BATTERY	LITHONIA	2BLT2–RB–20L–ADP–277–EZ1– LP840–E10WLCP –	CEILING LAY–IN –
A2	277	26.5W/ LED –	2'X2' LED FLAT PANEL, 0–10V DIMMING 82 CRI, 4000K COLOR TEMPERATURE CURVED RIBBED, 3391 LUMENS	LITHONIA	2BLT2–RB–33L–ADP–277–EZ1– LP840 –	CEILING LAY–IN –
A2E	277	26.5W/ LED –	2'X2' LED FLAT PANEL, 0–10V DIMMING 82 CRI, 4000K COLOR TEMPERATURE CURVED RIBBED, 3391 LUMENS, EMERGENCY BATTERY	LITHONIA	2BLT2–RB–33L–ADP–277–EZ1– LP840–E10WLCP –	CEILING LAY–IN –
A3	277	31W/ LED –	2'X2' LED FLAT PANEL, 0–10V DIMMING 82 CRI, 4000K COLOR TEMPERATURE CURVED RIBBED, 4144 LUMENS	LITHONIA	2BLT2–RB–40L–ADP–277–EZ1– LP840 –	CEILING LAY–IN –
A3E	277	31W/ LED –	2'X2' LED FLAT PANEL, 0–10V DIMMING 82 CRI, 4000K COLOR TEMPERATURE CURVED RIBBED, 4144 LUMENS, EMERGENCY BATTERY	LITHONIA	2BLT2–RB–40L–ADP–277–EZ1– LP840–E10WLCP –	CEILING LAY–IN –
A4	277	43W/ LED –	2'X2' LED FLAT PANEL, 0–10V DIMMING 82 CRI, 4000K COLOR TEMPERATURE CURVED RIBBED, 5159 LUMENS	LITHONIA	2BLT2–RB–48L–ADP–277–EZ1– LP840 –	CEILING LAY–IN –
A4E	277	43W/ LED –	2'X2' LED FLAT PANEL, 0–10V DIMMING 82 CRI, 4000K COLOR TEMPERATURE CURVED RIBBED, 5159 LUMENS, EMERGENCY BATTERY	LITHONIA	2BLT2–RB–48L–ADP–277–EZ1– LP840–E10WLCP –	CEILING LAY–IN –
B	277	17.5W/ LED –	4" ROUND LED DOWNLIGHT, 80CRI. 4000K COLOR TEMPERATURE, 1045 LUMENS –	LITHONIA	LDN4–40–10–LO4–WR–LSS– TRW–277–GZ10 –	CEILING RECESSED –
BE	277	17.5W/ LED –	4" ROUND LED DOWNLIGHT, 80CRI. 4000K COLOR TEMPERATURE, 1045 LUMENS, EMERGENCY BATTERY –	LITHONIA	LDN4–40–10–LO4–WR–LSS– TRW–277–GZ10–E10WCP –	CEILING RECESSED –
C1	277	41W/ LED –	4' LED PENDANT, 80CRI, 4000K COLOR TEMPERATURE, 1200 LPF, MOUNTING F2–36A–WCRD –	MARK ARCH LTG	S4PD–LLP–MSL4–80CRI–40K– 1200LPF–SCT–MIN10–FLL–277– SLV	SUSPENDED – –
C1E	277	41W/ LED –	48" LED PENDANT, 80CRI, 4000K COLOR TEMPERATURE, 1200 LPF, EMERGENCY BATTERY MOUNTING F2–36A–WCRD	MARK ARCH LTG	S4PD–LLP–MSL4–80CRI–40K– 1200LPF–SCT–MIN10–FLL–277– SLV	SUSPENDED – –
C2	277	52W/ LED –	4' LED PENDANT, 80CRI, 4000K COLOR TEMPERATURE, 1500 LPF –	MARK ARCH LTG	S4PD–LLP–MSL4–80CRI–40K– 1500LPF–SCT–MIN10–FLL–277– SLV	SUSPENDED – –
C2E	277	52W/ LED –	48" LED PENDANT, 80CRI, 4000K COLOR TEMPERATURE, 1500 LPF, EMERGENCY BATTERY MOUNTING F2–36A–WCRD	MARK ARCH LTG	S4PD–LLP–MSL4–80CRI–40K– 1500LPF–SCT–MIN10–FLL–277– SLV	SUSPENDED – –
D	277	35W/ LED –	48" LED WRAPAROUND WALL, 80CRI. 4000K COLOR TEMPERATURE, 4263 LUMENS –	LITHONIA	BLWP4–48L–ADP–277–EZ1– LP840 –	WALL @ 8'AFF SURFACE –
F1	277	40W/ LED –	4' UNDERCANOPY LUMINAIRE WALL WASH, 80 CRI, 4000K COLOR TEMPERATURE, 6710 LUMENS –	LUMENPULSE	LFM–CR–UL–120_277–48–10W 0K–80–WW–CL–NO–VRN–FX– BR–NA	UNDER CANOPY CONTINUOUS –
F2	277	40W/ LED –	4' UNDERCANOPY LUMINAIRE DOWN ANGLE, 80 CRI, 4000K COLOR TEMPERATURE, 6710 LUMENS –	LUMENPULSE	LFM–CR–UL–120_277–48–10W 0K–80–30X30–CL–NO–VRN–FX BR–NA	UNDER CANOPY CONTINUOUS –
H	277	192W/ LED –	LED HIGH BAY 16"X45", 80CRI. 4000K COLOR TEMPERATURE, 24938 LUMENS –	LITHONIA	IBL–24L–WD–277–LP840 LP840 –	SURFACE – –
L1E	277	80W/ LED –	8' SLOT PENDANT, 80CRI. 4000K COLOR TEMPERATURE, 1200 LPF, EMERGENCY BATTERY MOUNTING #F2–36A–WCRD	MARK ARCH LTG	S4PD–LLP–MSL8–80CRI–40K– 1200LPF–SCT–MIN10–FLL–277– WHTT––E10WLCP	SUSPENDED – –
L2	277	40W/ LED –	4' SLOT PENDANT, 80CRI. 4000K COLOR TEMPERATURE, 1200 LPF MOUNTING #F2–36A–WCRD	MARK ARCH LTG	S4PD–LLP–MSL4–80CRI–40K– 1200LPF–SCT–MIN10–FLL–277– WHTT	SUSPENDED – –
L2E	277	40W/ LED –	4' SLOT PENDANT, 80CRI. 4000K COLOR TEMPERATURE, 1200 LPF, EMERGENCY BATTERY MOUNTING #F2–36A–WCRD	MARK ARCH LTG	S4PD–LLP–MSL4–80CRI–40K– 1200LPF–SCT–MIN10–FLL–277– WHTT––E10WLCP	SUSPENDED – –
L3	277	40W/ LED –	4' SLOT RECESSED, 80CRI. 4000K COLOR TEMPERATURE, 1100 LPF MOUNTING #F2–36A–WCRD	MARK ARCH LTG 1	SL4L–LLP–MSL4–80CRI–40K– 1100LPF–SCT–MIN10–FLL–277– WHTT	RECESSED – –
L3E	277	40W/ LED –	4' SLOT RECESSED, 80CRI. 4000K COLOR TEMPERATURE, 1100 LPF, EMERGENCY BATTERY MOUNTING #F2–36A–WCRD	MARK ARCH LTG 1	SL4L–LLP–MSL4–80CRI–40K– 1100LPF–SCT–MIN10–FLL–277– WHTT––E10WLCP	RECESSED – –
O	277	40W/ LED –	SLOT SURFACE MOUNT, 80CRI. 4000K COLOR TEMPERATURE, 1000 LPF, PROVIDE 2' AND 4' LENGTHS TO FIT; COORD WITH ARCH. FOR DETAILS	MARK ARCH LTG	S4PD–LLP–MSL*–80CRI–40K– 1000LPF–SCT–MIN10–FLL–277– WHTT	SURFACE – –
P	277	8W/ LED –	SMALL PENDANT, 80CRI. 4000K COLOR TEMPERATURE, 698 LUMENS –	LUMENCORE	LACYS–277–L07–40K–CR–80– N–WH –	SUSPENDED 7'–6" A.F.F. –
Q	277	40W/ LED –	SLOT SURFACE, 80CRI. 4000K COLOR TEMPERATURE, 1000 LPF, PROVIDE 2' AND 4' LENGTHS TO FIT	MARK ARCH LTG	S4SD–LLP–MSL*–80CRI–40K– 1000LPF–SCT–MIN10–FLL–277– WHTT	RECESSED – –
SH	277	8.8W/ LED –	4" SHOWER DOWNLIGHT, 80CRI. 4000K COLOR TEMPERATURE, 84.3 LUMENS –	GOTHAM	EVO4SH–40–10–DFR–SOL–277 – –	RECESSED CEILING –
S31	277	72W/ LED –	POLE MOUNTED AREA LUMINAIRE, 80CRI. 4000K COLOR TEMPERATURE, 9843LUMENS POLE # SSS–25'–5G–PT–DDBXD	LITHONIA	RSX1LED–P2–40K–R3–MVOLT– SPA–PE–DDBXD –	25' SQUARE POLE 3' CONCRETE BASE SINGLE SIDE
S41	277	72W/ LED –	POLE MOUNTED AREA LUMINAIRE, 80CRI. 4000K COLOR TEMPERATURE, 9972LUMENS POLE # SSS–25'–5G–PT–DDBXD	LITHONIA	RSX1LED–P2–40K–R4–MVOLT– SPA–PE–DDBXD –	25' SQUARE POLE 3' CONCRETE BASE SINGLE SIDE
S42	277	72W/ LED –	2 POLE MOUNTED AREA LIGHTS, 80CRI. 4000K COLOR TEMPERATURE, 9972LUMENS, POLE # SSS–25'–5G–T25–DM28–DDBXD	LITHONIA	RSX1LED–P2–40K–R4–MVOLT– SPA2–PE–DDBXD –	25' SQUARE POLE 3' CONCRETE BASE DUAL @ 180 DEGREE
T	120	– LED –	BAY DOOR WARNING LIGHT, TIE IN TO ADJACENT DOOR CONTROLLER, FEEDING CONDUIT SHALL BE RECESSED, COORDINATE WITH STEEL AND ARCH.	BRINK ALERT	CDLK15–4 – –	SURFACE – –
W1	277	19W/ LED –	EXTERIOR WALL MOUNTED LED, MEDIUM DISTRIBUTION, 4000K COLOR TEMPERATURE, DARK BRONZE	LITHONIA	WDGE2LED–P2–40K–80CRI–T3M MVOLT–SRM–DDBXD –	WALL MOIUNT CENTERLINE 10' A.F.G. (VERIFY)
W2	277	19W/ LED –	EXTERIOR WALL MOUNTED LED, MEDIUM DISTRIBUTION, 4000K COLOR TEMPERATURE, DARK BRONZE	LITHONIA	WDGE2LED–P2–40K–80CRI–T4M MVOLT–SRM–DDBXD –	WALL MOIUNT CENTERLINE 10' A.F.G. (VERIFY)
W3	277	11W/ LED –	EXTERIOR WALL MOUNTED LED, 4000K COLOR TEMPERATURE, DARK BRONZE, W/ EMERGENCY BATTERY	LITHONIA	WPX1–P1–40K–MVOLT–E4WH– DDBXD –	WALL MOIUNT CENTERLINE 8' A.F.G. (VERIFY)
X1	277	LED – –	EXIT SIGN, SINGLE FACE, GREEN LETTERS, ARROWS AS INDICATED, WITH EMERGENCY BATTERY PACK. EDGE LIT RECESSED DESIGN	LITHONIA	LRP – –	WALL MOUNTED
X2	277	LED – –	EXIT SIGN, DOUBLE FACE, GREEN LETTERS, ARROWS AS INDICATED, WITH EMERGENCY BATTERY PACK. EDGE LIT RECESSED DESIGN	LITHONIA	LRP – –	CEILING OR WALL MOUNTED – VERIFY HEIGHT
X3	277	LED – –	LED EMERGENCY EGRESS LIGHT, 1100 LUMENS – –	LITHONIA	ELM6L–UVOLT–LTP – –	WALL MOUNT 8' A.F.F. –

LIGHTING NOTES:
1) ALL COLORS SHALL BE SELECTED BY ARCHITECT UNLESS OTHERWISE NOTED.
2) COORDINATE ALL FIXTURE HEIGHTS AND LOCATIONS WITH ARCHITECT.

EQUIPMENT CONNECTION SCHEDULE

TAG	DESCRIPTION	VOLT/ PHASE	MCA	CIRCUIT	FEEDER	DISCONNECT	NOTES
M1	DOAS-1	480/3	66	HM1: 2,4,6	3-#4, 1-#8 -G- IN 1"C	100A/3P/70AF	1,2,4,6
M2	OAU-1	480/3	32	HM1: 7,9,11	3-#8, 1-#10 -G- IN 3/4"C	60A/3P/40AF	1,2,4,6
M3	DSI-1	208/1	0.54	*	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7,9
M4	DSI-2	208/1	0.54	*	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7,9
M5	IU-5A	208/1	0.54	*	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7,9
M6	CU-1	208/1	25	LM2: 1,3	2-#10, 1-#10 -G- IN 3/4"C	30A/3P/30AF	1,2,4,6
M7	CU-2	208/1	11	LE1: 35,37	2-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,4,6
M8	CU-3	208/1	25	LE1: 39,41	2-#10, 1-#10 -G- IN 3/4"C	30A/3P/30AF	1,2,4,6
M9	IU-1	208/1	4.25	LM1: 1,3	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M10	IU-2	208/1	2.88	LM1: 5,7	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M11	IU-3	208/1	2.94	LM1: 9,11	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M12	IU-4	208/1	0.39	LM1: 2,4	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M13	IU-5B	208/1	0.54	LM1: 6,8	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M14	IU-6	208/1	2.94	LM1: 10,12	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M15	IU-7	208/1	0.54	LM1: 13,15	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M16	IU-8	208/1	0.54	LM1: 17,19	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M17	IU-9	208/1	2.94	LM1: 21,23	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M18	IU-10	208/1	2.13	LM1: 14,16	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M19	IU-11	208/1	0.39	LM1: 18,20	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M20	OU-1	480/3	41	HM1: 8,10,12	3-#6, 1-#8 -G- IN 3/4"C	100A/3P/70AF	1,2,4,6
"	-	480/3	41	HM1: 14,16,18	3-#6, 1-#8 -G- IN 3/4"C	100A/3P/70AF	1,2,4,6
M21	BC-1	208/1	1.6	LM1: 22,24	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M22	HVLS-1	208/1	12.5	LM1: 25,27	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M23	HVLS-2	208/1	12.5	LM1: 29,31	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M24	HVLS-3	208/1	12.5	LM1: 33,35	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M25	HVLS-4	208/1	12.5	LM1: 26,28	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M26	HVLS-5	208/1	12.5	LM1: 30,32	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M27	HVLS-6	208/1	12.5	LM1: 34,36	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M28	HVLS-7	208/1	12.5	LM1: 37,39	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M29	HVLS-8	208/1	12.5	LM1: 41,43	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M30	IRH-1	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M31	IRH-2	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M32	IRH-3	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M33	IRH-4	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M34	IRH-5	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M35	IRH-6	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M36	IRH-7	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M37	IRH-8	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M38	IRH-9	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M39	IRH-10	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M40	IRH-11	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M41	IRH-12	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M42	IRH-13	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M43	IRH-14	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M44	IRH-15	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M45	IRH-16	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M46	IRH-17	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M47	IRH-18	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M48	IRH-19	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M49	IRH-20	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M50	IRH-21	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M51	EF-1	120/1	0.5	LE1: 30	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M52	EF-2	120/1	4.4	LE1: 32	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M53	EF-3	120/1	1.2	LE1: 34	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M54	EF-4	120/1	1.2	LE1: 36	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M55	EF-5	120/1	4.4	LM1: 49	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M56	EF-6	480/3	13.8	HM1: 13,15,17	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/20AF	1,2,3
M57	EF-7	480/3	13.8	HM1: 19,21,23	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/20AF	1,2,3
M58	EF-8	120/1	4.4	LM1: 51	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M59	EF-9	120/1	1.2	LE1: 36	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M60	ACS-1	120/1	17.3	LM1: 50	2-#12, 1-#10 -G- IN 3/4"C	TOGGLE	1,3,7
M61	ACS-2	120/1	17.3	LM1: 52	2-#12, 1-#10 -G- IN 3/4"C	TOGGLE	1,3,7
M62	ACS-3	120/1	17.3	LM1: 54	2-#12, 1-#10 -G- IN 3/4"C	TOGGLE	1,3,7
M63	ACS-4	120/1	17.3	LM1: 56	2-#12, 1-#10 -G- IN 3/4"C	TOGGLE	1,3,7
M64	ACS-5	120/1	17.3	LM1: 58	2-#12, 1-#10 -G- IN 3/4"C	TOGGLE	1,3,7
M65	ACS-6	120/1	17.3	LM1: 60	2-#12, 1-#10 -G- IN 3/4"C	TOGGLE	1,3,7
M66	ACS-7	120/1	17.3	LM1: 62	2-#12, 1-#10 -G- IN 3/4"C	TOGGLE	1,3,7
M67	ACS-8	120/1	17.3	LM1: 64	2-#12, 1-#10 -G- IN 3/4"C	TOGGLE	1,3,7
M68	ACS-9	120/1	17.3	LM1: 66	2-#12, 1-#10 -G- IN 3/4"C	TOGGLE	1,3,7
M69	ACS-10	120/1	17.3	LM1: 68	2-#12, 1-#10 -G- IN 3/4"C	TOGGLE	1,3,7
M70	ACS-11	120/1	17.3	LM1: 70	2-#12, 1-#10 -G- IN 3/4"C	TOGGLE	1,3,7
M71	ACS-12	120/1	17.3	LM1: 72	2-#12, 1-#10 -G- IN 3/4"C	TOGGLE	1,3,7
M72	ACS-13	120/1	17.3	LM1: 74	2-#12, 1-#10 -G- IN 3/4"C	TOGGLE	1,3,7
M73	ACS-14	120/1	17.3	LM1: 76	2-#12, 1-#10 -G- IN 3/4"C	TOGGLE	1,3,7
M74	DBF-1	120/1	0.54	LM1: 53	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M75	NOT USED						
M76	KH-1	120/1	16.8	LM1: 57	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
M77	IRH-22	480/3	9.1	-	3-#12, 1-#12 -G- IN 3/4"C	30A/3P/15AF	1,2,3,10
M78	IRH CP-1	480/3	99.4	HM2: 1,3,5	3-#1, 1-#8 -G- IN 1-1/2"C	100A/3P/100AF	1,3,7,10
M79	IRH CP-2	480/3	99.4	HM2: 2,4,6	3-#1, 1-#8 -G- IN 1-1/2"C	100A/3P/100AF	1,3,7,10
P1	EWH-1	208/1	67	LM1B: 1,3	2-#4, 1-#8 -G- IN 1"C	80A/2P/80AF	1,2,4
"	TIMER	120/1	1	LM1B: 2	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
"	AQUASTAT	120/1	1	LM1B: 4	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
"	VALVE	120/1	1	LM1B: 6	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7
P2	NOT USED						
P3	RP-1	120/1	17.25	LM1B: 8	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,4,7
P4	NOT USED						
P5	AC-1 (BID OPTION #2)	208/3	38.5	LM2: 2,4,6	3-#8, 1-#10 -G- IN 3/4"C	60A/3P/60AF	1,2,3
P6	AC-2 (BID OPTION #2)	208/3	38.5	LM2: 7,9,11	3-#8, 1-#10 -G- IN 3/4"C	60A/3P/60AF	1,2,3
P7	FS-1 (BID OPTION #2)	120/1	15	LM2: 5	2-#12, 1-#12 -G- IN 3/4"C	TOGGLE	1,3,7

Notes:
1) CIRCUIT TO INCLUDE ONE (1) GREEN GROUNDING CONDUCTOR (G) SIZED PER BRANCH CIRCUIT UNLESS SHOWN TO BE SIZED DIFFERENTLY. ALL CONDUCTORS TYPE THHN/THWN.
2) DUAL ELEMENT TYPE FUSE OF PROPER VOLTAGE. IF FUSE SIZE NOT SHOWN, UNIT TO BE UNFUSED.
3) FINAL CONNECTION USING FLEXIBLE CONDUIT. COORIDNATE FINAL CONNECTION TYPE WITH OWNER/EQUIPMENT PROVIDER PRIOR TO SUBMITTALS.
4) FINAL CONNECTION USING LIQUID TIGHT FLEXIBLE CONDUIT.
5) INSTALL DISCONNECT SWITCH ADJACENT TO AND CONNECT THROUGH STARTER OR VARIABLE FREQUENCY DRIVE (AS REQUIRED) FURNISHED UNDER MECHANCIAL SECTION.
6) RAINTIGHT NEMA 3R DISCONNECT SWITCH.
7) PROVIDE TOGGLE SWITCH IN NEMA 1 ENCLOSURE AS DISCONNECT.
8) DISCONNECT INTEGRAL WITH UNIT.
9) INDOOR UNIT IS SERVED BY OUTDOOR UNIT. PROVIDE CONDUIT AND BOXES AS REQUIRED FOR CABLING PROVIDED WITH UNIT. VERIFY REQUIREMENTS WITH MANUFACTURER AND PROVIDE WIRING REQUIRED IF NOT PROVIDED WITH UNIT.
10) IRH UNITS ARE FED FROM CP-1 AND CP-2. ELECTRICAL IS REPSONSIBLE FOR ROUTING POWER CABLING FROM IRH BACK TO CP AND FROM EACH CP BACK TO ELEC PANEL.

KEY FIELD FIRE CRASH RESCUE STATION
ANG PN# MDVL239100 | DD# 2304
186TH AIR REFUELING WING
6255 M. STREET, MERIDIAN
MISSISSIPPI 39307

REVISIONS

NO.	ISSUED BY	DATE
1	ADDENDUM 2	02-10-25

Duvall Decker Architects P.A.
Architecture . Planning . Interiors (design)
JON D. RICE REGISTERED PROFESSIONAL ENGINEER STATE OF MISSISSIPPI
2915 NORTH STATE STREET . JACKSON, MS 39216 . WWW.DUVALLDECKER.COM . 601-713-1128
DUVALL DECKER (an expanded practice)

PROJECT: 2304
DRAWN: SA
SCALE: NTS

SCHEDULES
E0.3
JANUARY 6, 2025

PANEL 'MDP' SCHEDULE

LOCATION: ELEC 131A RATING: 1200A AIC: 42K
VOLTAGE: 277 /480 V TYPE: MCB ENCLOSURE: NEMA 1
WIRING: 3Φ/4W

CKT	BKR	DESCRIPTION	CLASS	LOAD	A	B	C	LOAD	CLASS	DESCRIPTION	BKR	CKT
1	225A/3P	ATS-1	0.90	15803	15803				N	SPARE	125A/3P	2
3			0.92	16373		16373			N			4
5			0.93	13798			13798		N			6
7	70A/3P	TX1	0.71	13618	27730			14112	0.68	TX2	70A/3P	8
9			0.67	10758		23218		12460	0.68			10
11			0.72	11958			20090	8132	0.69			12
13	400A/3P	PANEL HM1	1.00	66845	110845			44000	1.00	PANEL HM2	225A/3P	14
15			1.00	67926		111926		44000	1.00			16
17			1.00	64037			108037	44000	1.00			18
19	100A/3P	SPARE	N		0				N	SPARE	60A/3P	20
21			N			0			N			22
23			N				0		N			24
25	125A/3P	SPARE	N		0				N	SPARE	225A/3P	26
27			N			0			N			28
29			N				0		N			30
31		SPACE	N		0				N	SPACE		32
33			N			0			N			34
35			N				0		N			36
37	100A/3P	SPD	N		0				N	SPACE		38
39			N			0			N			40
41			N				0		N			42
					154378 VA	151517 VA	141925 VA					
					557 A	547 A	512 A					

DEMAND FACTORS

		C. LOAD	DEMAND	D. LOAD
LIGHTING	L	0	100%	0
RECEPTACLE	R	0	*	0
HVAC	H	0	100%	0
KITCHEN	K	0	65%	0
MOTOR	M	0	100%	0
NON-CONTINUOUS	N	0	100%	0
CONTINUOUS	C	0	125%	0
PANEL	#	447820	94%	421871

LOAD SUMMARY
CONNECTED: 447820 VA : 539 A
DEMAND: 421871 VA : 508 A

PHASE BALANCE

A	34%
B	34%
C	32%

AVG. DMD 94.21%

PANEL 'HE1' SCHEDULE

LOCATION: ELEC 131A RATING: 225A AIC: 42K
VOLTAGE: 277 /480 V TYPE: MLO ENCLOSURE: NEMA 1
WIRING: 3Φ/4W

CKT	BKR	DESCRIPTION	CLASS	LOAD	A	B	C	LOAD	CLASS	DESCRIPTION	BKR	CKT
1	100A/3P	SPD	N		10987			10987	0.855	TXE1	70A/3P	2
3			N			11172		11172	0.877			4
5			N				8858	8858	0.885			6
7	125A/3P	PANEL H1	1	4816	4816				M	SPACE		8
9			1	5201		5201			M			10
11			1	4940			4940		M			12
13		SPACE	M		0				M	SPACE		14
15			M			0			M			16
17			M				0		M			18
19		SPACE	M		0				M	SPACE		20
21			M			0			M			22
23			M				0		M			24
25		SPACE	M		0				M	SPACE		26
27			M			0			M			28
29			M				0		M			30
31		SPACE	M		0				M	SPACE		32
33			M			0			M			34
35			M				0		M			36
37		SPACE	N		0				N	SPACE		38
39			N			0			N			40
41			N				0		N			42
					15803 VA	16373 VA	13798 VA					
					57 A	59 A	50 A					

DEMAND FACTORS

		C. LOAD	DEMAND	D. LOAD
LIGHTING	L	0	100%	0
RECEPTACLE	R	0	*	0
HVAC	H	0	100%	0
KITCHEN	K	0	65%	0
MOTOR	M	0	100%	0
NON-CONTINUOUS	N	0	100%	0
CONTINUOUS	C	0	125%	0
PANEL	#	45974	91%	41994

LOAD SUMMARY
CONNECTED: 45974 VA : 55 A
DEMAND: 41994 VA : 51 A

PHASE BALANCE

A	34%
B	36%
C	30%

AVG. DMD 91.34%

PANEL 'HM1' SCHEDULE

LOCATION: ELEC 131A RATING: 400A AIC: 42K
VOLTAGE: 277 /480 V TYPE: MLO ENCLOSURE: NEMA 1
WIRING: 3Φ/4W

CKT	BKR	DESCRIPTION	CLASS	LOAD	A	B	C	LOAD	CLASS	DESCRIPTION	BKR	CKT
1	110A/3P	TX3	1.00	18860	33475			14615	H	M1: DOAS-1	70A/3P	2
3			1.00	19941		34556		14615	H			4
5			1.00	16052			30667	14615	H			6
7	40A/3P	M2: OAU-1	H	7090	16170			9080	H	M20: OU-1 (FEED 1)	70A/3P	8
9			H	7090		16170		9080	H			10
11			H	7090			16170	9080	H			12
13	20A/3P	M56: EF-6	M	3060	12140			9080	H	M20: OU-1 (FEED 2)	70A/3P	14
15			M	3060		12140		9080	H			16
17			M	3060			12140	9080	H			18
19	20A/3P	M57: EF-7	M	3060	5060			2000	N	P6: EWH-2	15A/3P	20
21			M	3060		5060		2000	N			22
23			M	3060			5060	2000	N			24
25	30A/3P	SPARE	M		0				M	SPARE	45A/3P	26
27			M			0			M			28
29			M				0		M			30
31	20A/3P	SPARE	M		0				M	SPACE		32
33			M			0			M			34
35			M				0		M			36
37	100A/3P	SPD	N		0				M	SPACE		38
39			N			0			M			40
41			N				0		M			42
					66845 VA	67926 VA	64037 VA					
					241 A	245 A	231 A					

DEMAND FACTORS

		C. LOAD	DEMAND	D. LOAD
LIGHTING	L	0	100%	0
RECEPTACLE	R	0	*	0
HVAC	H	119595	100%	119595
KITCHEN	K	0	65%	0
MOTOR	M	18360	100%	18360
NON-CONTINUOUS	N	6000	100%	6000
CONTINUOUS	C	0	125%	0
PANEL	#	54853	100%	54853

LOAD SUMMARY
CONNECTED: 198808 VA : 239 A
DEMAND: 198808 VA : 239 A

PHASE BALANCE

A	34%
B	34%
C	32%

AVG. DMD 100.00%

PANEL 'H1' SCHEDULE

LOCATION: ELEC 131A RATING: 125A AIC: 42K
VOLTAGE: 277 /480 V TYPE: MLO ENCLOSURE: NEMA 1
WIRING: 3Φ/4W

CKT	BKR	DESCRIPTION	CLASS	LOAD	A	B	C	LOAD	CLASS	DESCRIPTION	BKR	CKT
1	20A/1P	LIGHTING	L	1440	4240			2800	L	LIGHTING	20A/1P	2
3	20A/1P	LIGHTING	L	2280		5080		2800	L	LIGHTING	20A/1P	4
5	20A/1P	LIGHTING	L	1840			4840	3000	L	LIGHTING	20A/1P	6
7	20A/1P	AREA LIGHTING	L	576	576				L	SPARE	20A/1P	8
9	20A/1P	XFMR/ DRILL TOWER LTS	L	121		121			L	SPARE	20A/1P	10
11	20A/1P	LTG CONTACTOR	L	100			100		L	SPARE	20A/1P	12
13	20A/1P	SPARE	L		0				L	SPARE	20A/1P	14
15	20A/1P	SPARE	L			0			L	SPARE	20A/1P	16
17	20A/1P	SPARE	L				0		L	SPARE	20A/1P	18
19	20A/1P	SPARE	L		0				L	SPARE	20A/1P	20
21	20A/1P	SPARE	L			0			L	SPARE	20A/1P	22
23	20A/1P	SPARE	L				0		L	SPARE	20A/1P	24
25	20A/1P	SPARE	L		0				L	SPARE	20A/1P	26
27	20A/1P	SPARE	L			0			L	SPARE	20A/1P	28
29	20A/1P	SPARE	L				0		L	SPARE	20A/1P	30
31	20A/1P	SPARE	L		0				L	SPARE	20A/1P	32
33	20A/1P	SPARE	L			0			L	SPARE	20A/1P	34
35	20A/1P	SPARE	L				0		L	SPARE	20A/1P	36
37	20A/1P	SPARE	L		0				L	SPARE	20A/1P	38
39	20A/1P	SPARE	L			0			L	SPARE	20A/1P	40
41	20A/1P	SPARE	L				0		L	SPARE	20A/1P	42
					4816 VA	5201 VA	4940 VA					
					17 A	19 A	18 A					

DEMAND FACTORS

		C. LOAD	DEMAND	D. LOAD
LIGHTING	L	14957	100%	14957
RECEPTACLE	R	0	*	0
HVAC	H	0	100%	0
KITCHEN	K	0	65%	0
MOTOR	M	0	100%	0
NON-CONTINUOUS	N	0	100%	0
CONTINUOUS	C	0	125%	0
PANEL	#	0	0%	0

LOAD SUMMARY
CONNECTED: 14957 VA : 18 A
DEMAND: 14957 VA : 18 A

PHASE BALANCE

A	32%
B	35%
C	33%

AVG. DMD 100.00%

PANEL 'LE1' SCHEDULE

LOCATION: CORR 123A RATING: 150A AIC: 10K
VOLTAGE: 120 /208 V TYPE: MCB ENCLOSURE: NEMA 1
WIRING: 3Φ/4W

CKT	BKR	DESCRIPTION	CLASS	LOAD	A	B	C	LOAD	CLASS	DESCRIPTION	BKR	CKT
1	20A/1P	REC 125	R	540	2240			1700	R	REC 125	30A/2P	2
3	20A/1P	REC 125	R	720		2420		1700	R			4
5	20A/1P	REC 125	R	540			2240	1700	R	REC 125	30A/2P	6
7	20A/1P	REC 123	R	720	2420			1700	R			8
9	20A/1P	REC 129	R	900		1620		720	R	REC MISC	20A/1P	10
11	20A/1P	OWS-1	N	500			1040	540	R	REC 123	20A/1P	12
13	20A/1P	REC 129 CTR	R	720	1220			500	N	ALARM FLOW BELL	20A/1P	14
15	20A/1P	REC 129 CTR	R	720		1440		720	R	REC 123	20A/1P	16
17	20A/1P	REC 129 CTR	R	540			1080	540	R	REC 123	20A/1P	18
19	20A/1P	REC 129	R	720	1220			500	N	REFRIGERATOR	20A/1P	20
21	20A/1P	REC 129	R	720		1220		500	N	REFRIGERATOR	20A/1P	22
23	20A/1P	REC 129	R	720			1220	500	N	REFRIGERATOR	20A/1P	24
25	20A/1P	BATTERY CHARGER	N	1000	2080			1080	R	REC 111 115	20A/1P	26
27	20A/1P	BLOCK HEATER	N	1500		1500			N	SPARE	20A/1P	28
29	15A/1P	M59: EF-9	M	115			163	48	M	M51: EF-1	15A/1P	30
31	20A/2P	GATE OPERATOR N1	M	832	1255			423	M	M52: EF-2	15A/1P	32
33			M	832		947		115	M	M53: EF-3	15A/1P	34
35	20A/2P	GATE OPERATOR N2	M	832			947	115	M	M54: EF-4	15A/1P	36
37			M	832	832				N	SPARE	20A/1P	38
39	20A/2P	GATE OPERATOR S1	M	832		832			N	SPARE	20A/1P	40
41			M	832			832		N	SPARE	20A/1P	42
43	20A/2P	GATE OPERATOR S2	M	832	832				N	SPARE	20A/1P	44
45			M	832		832			N	SPARE	20A/1P	46
47	15A/2P	M7/M4: CU-2	H	975			975		N	SPARE	20A/1P	48
49			H	975	975				N	SPD	60A/3P	50
51	30A/2P	M8/M5: CU-3	H	2140		2140			N			52
53			H	2140			2140		N			54
					13074 VA	12951 VA	10637 VA					
					109 A	108 A	89 A					

DEMAND FACTORS

		C. LOAD	DEMAND	D. LOAD
LIGHTING	L	0	100%	0
RECEPTACLE	R	17960	*	13980
HVAC	H	6230	100%	6230
KITCHEN	K	0	65%	0
MOTOR	M	7472	100%	7472
NON-CONTINUOUS	N	5000	100%	5000
CONTINUOUS	C	0	125%	0
PANEL	#	0	0%	0

LOAD SUMMARY
CONNECTED: 36662 VA : 102 A
DEMAND: 32682 VA : 91 A

PHASE BALANCE

A	36%
B	35%
C	29%

AVG. DMD 89.14%

PANEL 'L1' SCHEDULE

LOCATION: ELEC 131A RATING: 150A AIC: 10K
VOLTAGE: 120 /208 V TYPE: MCB ENCLOSURE: NEMA 1
WIRING: 3Φ/4W

CKT	BKR	DESCRIPTION	CLASS	LOAD	A	B	C	LOAD	CLASS	DESCRIPTION	BKR	CKT
1	20A/1P	REC 108	R	1260	2340			1080	R	REC 104	20A/1P	2
3	20A/1P	REC MISC	R	720		1260		540	R	REC MISC	20A/1P	4
5	20A/1P	REC 105	R	1080			2160	1080	R	REC 103	20A/1P	6
7	20A/1P	REC 131 CR	R	360	1080			720	R	REC 131B CTR	20A/1P	8
9	20A/1P	REC 131 CR	R	540		1260		720	R	REC 131B CTR	20A/1P	10
11	20A/1P	REC 131 CR	R	540			1040	500	L	DOCK WARNING	20A/1P	12
13	20A/1P	REC 131 CR	R	360	860			500	N	WASHER	20A/1P	14
15	20A/1P	REC 106	R	360		860		500	L	DOCK WARNING	20A/1P	16
17	20A/1P	REC 122	R	900			2500	1600	N	DRYER	30A/2P	18
19	20A/1P	REC 130	R	1080	2680			1600	N			20
21	20A/1P	REC 126	R	1080		1080			M	SPARE	20A/2P	22
23	20A/1P	COPIER 125	R	500			500		M			24
25	20A/1P	REC 125	R	720	1620			900	R	REC 131B	20A/1P	26
27	20A/1P	REC 131	R	900		1260		360	R	REC 131A 133	20A/1P	28
29	20A/1P	SPARE	R				900	900	R	REC 131	20A/1P	30
31	20A/1P	REC 131F	R	720	720				R	SPARE	20A/1P	32
33	20A/1P	REC 131E 132	R	720		720			M	SPARE	20A/2P	34
35	20A/1P	REC 131D	R	540			540		M			36
37	60A/3P	REC BAY	R	4318	4318				N	SPACE		38
39			R	4318		4318			N	SPACE		40
41			R	4318			4318		N	SPACE		42
43		SPACE	N		0				N	SPACE		44
45		SPACE	N			0			N	SPACE		46
47		SPACE	N				0		N	SPACE		48
49		SPACE	N		0				N	SPD	60A/3P	50
51		SPACE	N			0			N			52
53		SPACE	N				0		N			54
					13618 VA	10758 VA	11958 VA					
					113 A	90 A	100 A					

DEMAND FACTORS

		C. LOAD	DEMAND	D. LOAD
LIGHTING	L	1000	100%	1000
RECEPTACLE	R	31634	*	20817
HVAC	H	0	100%	0
KITCHEN	K	0	65%	0
MOTOR	M	0	100%	0
NON-CONTINUOUS	N	3700	100%	3700
CONTINUOUS	C	0	125%	0
PANEL	#	0	0%	0

LOAD SUMMARY
CONNECTED: 36334 VA : 101 A
DEMAND: 25517 VA : 71 A

PHASE BALANCE

A	37%
B	30%
C	33%

AVG. DMD 70.23%

PANEL 'L2' SCHEDULE

LOCATION: CORR 109 RATING: 150A AIC: 10K
VOLTAGE: 120 /208 V TYPE: MCB ENCLOSURE: NEMA 1
WIRING: 3Φ/4W

CKT	BKR	DESCRIPTION	CLASS	LOAD	A	B	C	LOAD	CLASS	DESCRIPTION	BKR	CKT
1	20A/1P	REC 121	R	900	1800			900	R	REC 117	20A/1P	2
3	20A/1P	REC 120	R	900		1800		900	R	REC 116	20A/1P	4
5	20A/1P	REC 119	R	900			1800	900	R	REC 114	20A/1P	6
7	20A/1P	SPARE	R		900			900	R	REC 118	20A/1P	8
9	20A/1P	SPARE	R			720		720	R	REC 118	20A/1P	10
11	20A/1P	SPARE	R				900	900	R	REC 118	20A/1P	12
13	20A/1P	REC 118 CTR	R	360	4360			4000	K	OVEN/STOVE	40A/2P	14
15	20A/1P	REC 118 CTR	R	360		4360		4000	K			16
17	20A/1P	REC 118 CTR	R	360			1440	1080	R	REC 109	20A/1P	18
19	20A/1P	REC 127 EQPT	R	500	1400			900	R	REC 127	20A/1P	20
21	20A/1P	REC 127 EQPT	R	500		1220		720	R	REC 115	20A/1P	22
23	20A/1P	REC 127 EQPT	R	500			500		M	SPARE	20A/2P	24
25	20A/1P	REC 113	R	900	900				M			26
27	20A/1P	REC 112	R	900		900			M	SPARE	20A/2P	28
29	20A/1P	REC 110	R	900			900		M			30
31	20A/1P	ICE MAKER	R	500	2160			1660	R	REC 118 CTR	20A/2P	32
33	20A/1P	REC 118 CTR	R	720		2380		1660	R			34
35	30A/2P	REC EXT	R	1872			2592	720	R	REC 118 CHAIRS	20A/1P	36
37			R	1872	2592			720	R	REC 118 CHAIRS	20A/1P	38
39		SPACE	N			1080		1080	R	REC 118 CHAIRS	20A/1P	40
41		SPACE	N				0		N	SPACE		42
43		SPACE	N		0				N	SPACE		44
45		SPACE	N			0			N	SPACE		46
47		SPACE	N				0		N	SPACE		48
49		SPACE	N		0				N	SPD	60A/3P	50
51		SPACE	N			0			N			52
53		SPACE	N				0		N			54
					14112 VA	12460 VA	8132 VA					
					118 A	104 A	68 A					

DEMAND FACTORS

		C. LOAD	DEMAND	D. LOAD
LIGHTING	L	0	100%	0
RECEPTACLE	R	26704	*	18352
HVAC	H	0	100%	0
KITCHEN	K	8000	65%	5200
MOTOR	M	0	100%	0
NON-CONTINUOUS	N	0	100%	0
CONTINUOUS	C	0	125%	0
PANEL	#	0	0%	0

LOAD SUMMARY
CONNECTED: 34704 VA : 96 A
DEMAND: 23552 VA : 65 A

PHASE BALANCE

A	41%
B	36%
C	23%

AVG. DMD 67.87%

PANEL 'LM1' SCHEDULE

LOCATION: ELEC 131A RATING: 250A AIC: 10K
VOLTAGE: 120 /208 V TYPE: MCB ENCLOSURE: NEMA 1
WIRING: 3Φ/4W

CKT	BKR	DESCRIPTION	CLASS	LOAD	A	B	C	LOAD	CLASS	DESCRIPTION	BKR	CKT
1	15A/2P	M9: IU-1	H	354	387			33	H	M12: IU-4	15A/2P	2
3			H	354		387		33	H			4
5	15A/2P	M10: IU-2	H	240			285	45	H	M13: IU-5B	15A/2P	6
7			H	240	285			45	H			8
9	15A/2P	M11: IU-3	H	245		490		245	H	M14: IU-6	15A/2P	10
11			H	245			490	245	H			12
13	15A/2P	M15: IU-7	H	45	223			178	H	M18: IU-10	15A/2P	14
15			H	45		223		178	H			16
17	15A/2P	M16: IU-8	H	45			78	33	H	M19: IU-11	15A/2P	18
19			H	45	78			33	H			20
21	15A/2P	M17: IU-9	H	245		379		134	H	M21: BC-1	15A/2P	22
23			H	245			379	134	H			24
25	20A/2P	M22: HVLS-1	M	1040	2080			1040	M	M25: HVLS-4	20A/2P	26
27			M	1040		2080		1040	M			28
29	20A/2P	M23: HVLS-2	M	1040			2080	1040	M	M25: HVLS-5	20A/2P	30
31			M	1040	2080			1040	M			32
33	20A/2P	M24: HVLS-3	M	1040		2080		1040	M	M25: HVLS-6	20A/2P	34
35			M	1040			2080	1040	M			36
37	20A/2P	M26: HVLS-7	M	1040	1190			150	M	CF-1,2,3	15A/2P	38
39			M	1040		1190		150	M			40
41	20A/2P	M27: HVLS-8	M	1040			1190	150	M	CF-4,5,6	15A/2P	42
43			M	1040	1190			150	M			44
45	15A/2P	SPARE	N			150		150	M	CF-7,8,9	15A/2P	46
47			N				150	150	M			48
49	15A/1P	M55: EF-5	M	423	2079			1656	M	M60: ACS-1	25A/1P	50
51	15A/1P	M58: EF-8	M	423		2079		1656	M	M61: ACS-2	25A/1P	52
53	15A/1P	M74: DBF-1	M	52			1708	1656	M	M62: ACS-3	25A/1P	54
55	15A/1P	SPARE	M		1656			1656	M	M63: ACS-4	25A/1P	56
57	20A/1P	M76: KH-1	M	1615		3271		1656	M	M64: ACS-5	25A/1P	58
59	20A/1P	SPARE	N				1656	1656	M	M65: ACS-6	25A/1P	60
61	20A/1P	SPARE	N		1656			1656	M	M66: ACS-7	25A/1P	62
63	20A/1P	SPARE	N			1656		1656	M	M67: ACS-8	25A/1P	64
65	20A/1P	SPARE	M				1656	1656	M	M68: ACS-9	25A/1P	66
67	50A/3P	SPARE	N		1656			1656	M	M69: ACS-10	25A/1P	68
69			N			1656		1656	M	M70: ACS-11	25A/1P	70
71			N				1656	1656	M	M71: ACS-12	25A/1P	72
73	20A/1P	MD-4	N	100	1756			1656	M	M72: ACS-13	25A/1P	74
75	20A/1P	MD-5	N	100		1756		1656	M	M73: ACS-14	25A/1P	76
77	20A/1P	MD-6	N	100			100		N	SPARE	15A/1P	78
79	30A/3P	LIFT STATION	M	2544	2544				N	SPD	100A/3P	80
81			M	2544		2544			N			82
83			M	2544			2544		N			84
					18860 VA	19941 VA	16052 VA					
					157 A	166 A	134 A					

DEMAND FACTORS

		C. LOAD	DEMAND	D. LOAD
LIGHTING	L	0	100%	0
RECEPTACLE	R	0	*	0
HVAC	H	3684	100%	3684
KITCHEN	K	0	65%	0
MOTOR	M	50869	100%	50869
NON-CONTINUOUS	N	300	100%	300
CONTINUOUS	C	0	125%	0
PANEL	#	0	0%	0

LOAD SUMMARY
CONNECTED: 54853 VA : 152 A
DEMAND: 54853 VA : 152 A

PHASE BALANCE

A	34%
B	36%
C	29%

AVG. DMD 100.00%

PANEL 'LM2' SCHEDULE

LOCATION: MAINT 131E RATING: 125A AIC: 10K
VOLTAGE: 120 /208 V TYPE: MLO ENCLOSURE: NEMA 1
WIRING: 3Φ/4W

CKT	BKR	DESCRIPTION	CLASS	LOAD	A	B	C	LOAD	CLASS	DESCRIPTION	BKR	CKT
1	30A/2P	M6/M3: CU-1	H	2140	5840			3700	M	P3: AC-1	60A/3P	2
3			H	2140		5840		3700	M			4
5	20A/1P	P5: FS-1	M	1440			5140	3700	M			6
7	60A/3P	P4: AC-2	M	3700	3800			100	N	MD-1	20A/1P	8
9			M	3700		3800		100	N	MD-2	20A/1P	10
11			M	3700			4740	1040	M	PPE WASHER	20A/2P	12
13		SPACE	N		1040			1040	M			14
15		SPACE	N			2124		2124	N	PPE DRYER	30A/3P	16
17		SPACE	N				2124	2124	N			18
19		SPACE	N		2124			2124	N			20
21		SPACE	N			0			N	SPACE		22
23		SPACE	N				0		N	SPACE		24
					12804 VA	11764 VA	12004 VA					
					107 A	98 A	100 A					

DEMAND FACTORS

		C. LOAD	DEMAND	D. LOAD
LIGHTING	L	0	100%	0
RECEPTACLE	R	0	*	0
HVAC	H	4280	100%	4280
KITCHEN	K	0	65%	0
MOTOR	M	25720	100%	25720
NON-CONTINUOUS	N	6572	100%	6572
CONTINUOUS	C	0	125%	0
PANEL	#	0	0%	0

LOAD SUMMARY
CONNECTED: 36572 VA : 102 A
DEMAND: 36572 VA : 102 A

PHASE BALANCE

A	35%
B	32%
C	33%

AVG. DMD 100.00%

PANEL 'LM1B' SCHEDULE

LOCATION: MAINT 131E RATING: 150A AIC: 10K
VOLTAGE: 120 /208 V TYPE: MCB ENCLOSURE: NEMA 1
WIRING: 3Φ/4W

CKT	BKR	DESCRIPTION	CLASS	LOAD	A	B	C	LOAD	CLASS	DESCRIPTION	BKR	CKT
1	80A/2P	P1: EWH-1	N	5920	6040			120	N	P1: TIMER	15A/1P	2
3			N	5920		6040		120	N	P1: AQUASTAT	15A/1P	4
5	80A/2P	SPARE	N				120	120	N	P1: VALVE	15A/1P	6
7			N		1656			1656	M	P3: RP-1	20A/1P	8
9	15A/1P	SPARE	N			0			N	SPARE	20A/1P	10
11	15A/1P	SPARE	N				0		N	SPARE	20A/1P	12
13	15A/1P	SPARE	N		0				N	SPARE	20A/1P	14
15	20A/1P	SPARE	M			0			N	SPARE	20A/1P	16
17	20A/1P	SPARE	N				0		N	SPARE	20A/1P	18
19	20A/1P	SPARE	N		0				N	SPARE	20A/1P	20
21	20A/1P	SPARE	N			0			N	SPARE	20A/1P	22
23	20A/1P	SPARE	N				0		N	SPARE	20A/1P	24
					7696 VA	6040 VA	120 VA					
					64 A	50 A	1 A					

DEMAND FACTORS

		C. LOAD	DEMAND	D. LOAD
LIGHTING	L	0	100%	0
RECEPTACLE	R	0	*	0
HVAC	H	0	100%	0
KITCHEN	K	0	65%	0
MOTOR	M	1656	100%	1656
NON-CONTINUOUS	N	12200	100%	12200
CONTINUOUS	C	0	125%	0
PANEL	#	0	0%	0

LOAD SUMMARY
CONNECTED: 13856 VA : 38 A
DEMAND: 13856 VA : 38 A

PHASE BALANCE

A	56%
B	44%
C	1%

AVG. DMD 100.00%

PANEL 'HM2' SCHEDULE

LOCATION: MECH 201 RATING: 225A AIC: 42K
VOLTAGE: 277 /480 V TYPE: MLO ENCLOSURE: NEMA 1
WIRING: 3Φ/4W

CKT	BKR	DESCRIPTION	CLASS	LOAD	A	B	C	LOAD	CLASS	DESCRIPTION	BKR	CKT
1	100A/3P	M78: IRH CP-1	H	22000	44000			22000	H	M79: IRH CP-2	100A/3P	2
3			H	22000		44000		22000	H			4
5			H	22000			44000	22000	H			6
7	15A/3P	SPARE	H		0				H	SPARE	15A/3P	8
9			H			0			H			10
11			H				0		H			12
13	15A/3P	SPARE	H		0				H	SPARE	15A/3P	14
15			H			0			H			16
17			H				0		H			18
19	15A/3P	SPARE	H		0				H	SPARE	15A/3P	20
21			H			0			H			22
23			H				0		H			24
25	15A/3P	SPARE	H		0				H	SPARE	15A/3P	26
27			H			0			H			28
29			H				0		H			30
31	20A/3P	SPARE	H		0				H	SPARE	20A/3P	32
33			H			0			H			34
35			H				0		H			36
37	100A/3P	SPD	N		0				H	SPARE	15A/3P	38
39			N			0			H			40
41			N				0		H			42
					44000 VA	44000 VA	44000 VA					
					159 A	159 A	159 A					

DEMAND FACTORS

		C. LOAD	DEMAND	D. LOAD
LIGHTING	L	0	100%	0
RECEPTACLE	R	0	*	0
HVAC	H	132000	100%	132000
KITCHEN	K	0	65%	0
MOTOR	M	0	100%	0
NON-CONTINUOUS	N	0	100%	0
CONTINUOUS	C	0	125%	0
PANEL	#	0	0%	0

LOAD SUMMARY
CONNECTED: 132000 VA : 159 A
DEMAND: 132000 VA : 159 A

PHASE BALANCE

A	33%
B	33%
C	33%

AVG. DMD 100.00%

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KEY FIELD FIRE CRASH RESCUE STATION

ANG PN# MDVL239100 | DD# 2304
186TH AIR REFUELING WING
6255 M. STREET, MERIDIAN
MISSISSIPPI 39307

REVISIONS

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JON D. RICE
14455

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PROJECT: 2304
DRAWN: SA
SCALE: NTS

SCHEDULES
E0.4

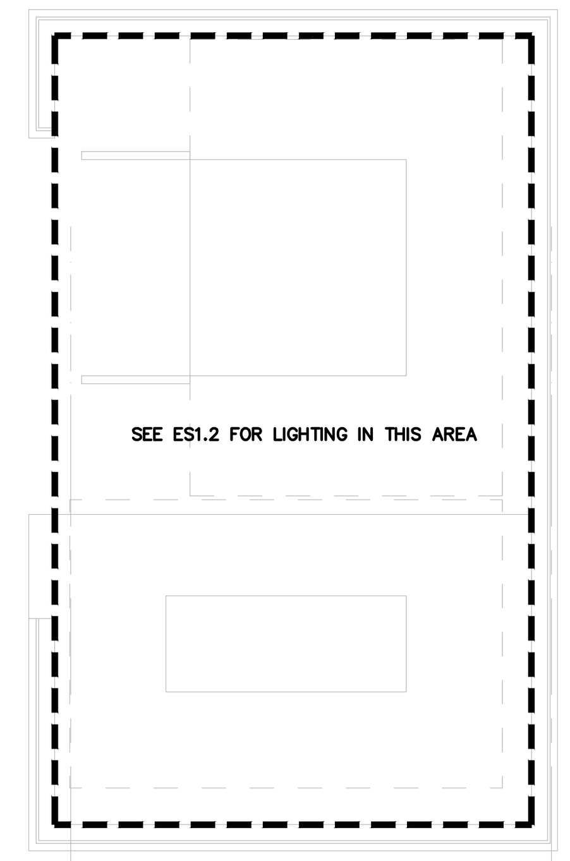
JANUARY 6, 2025

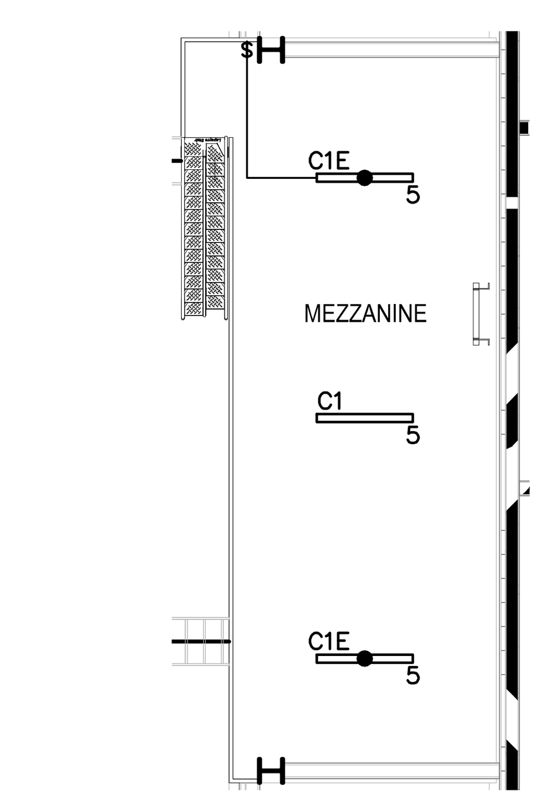
KEY FIELD FIRE CRASH RESCUE STATION

ANG PN# MDVL239100 | DD# 2304
186TH AIR REFUELING WING
6255 M. STREET, MERIDIAN
MISSISSIPPI 39307

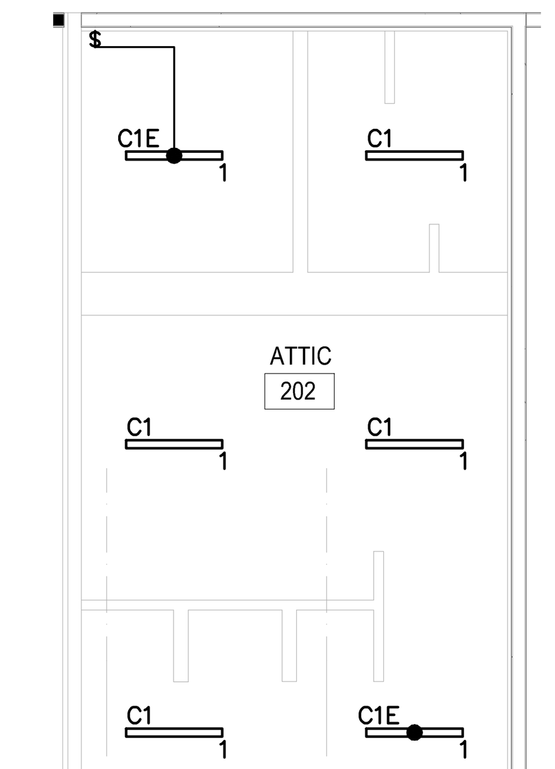
LIGHTING PLAN KEYNOTES

1. TYPICAL, PROVIDE LOW VOLTAGE WIRING AS REQUIRED TO FACILITATE 0–10 VOLT DIMMING.
2. TYPICAL, DASHED ARC INDICATES LOW VOLTAGE WIRING BETWEEN OCCUPANCY SENSOR AND POWER PACK.
3. EXTRA CONDUCTOR FOR EMERGENCY BACKUP BATTERY CHARGING.
4. REFER TO A8.1 FOR JUNCTION BOX AND CONTROLLER LOCATIONS AS WELL AS OTHER ADDITIONAL DETAILS.
5. UNDERCABINET LIGHT: JUNO UCES 36IN SWW6 90CRI WH M6 OR APPROVED EQUAL. FEED FROM NEARBY RECEPTACLE CIRCUIT AND PROVIDE SWITCH ON WALL. (1)

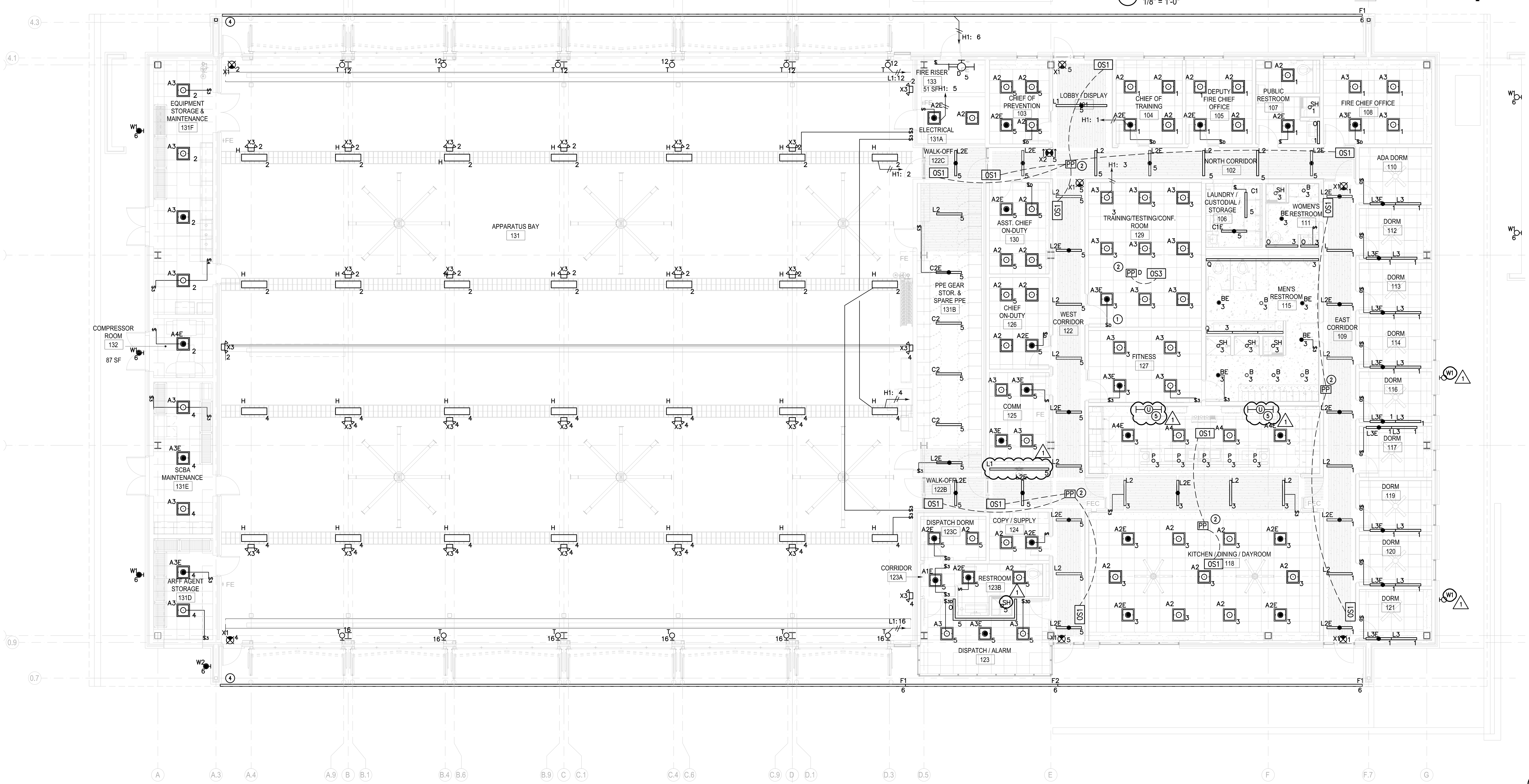




2 MEZZANINE PLAN - LIGHTING
1/8" = 1'-0"



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



1 FLOOR PLAN - LIGHTING
1/8" = 1'-0"

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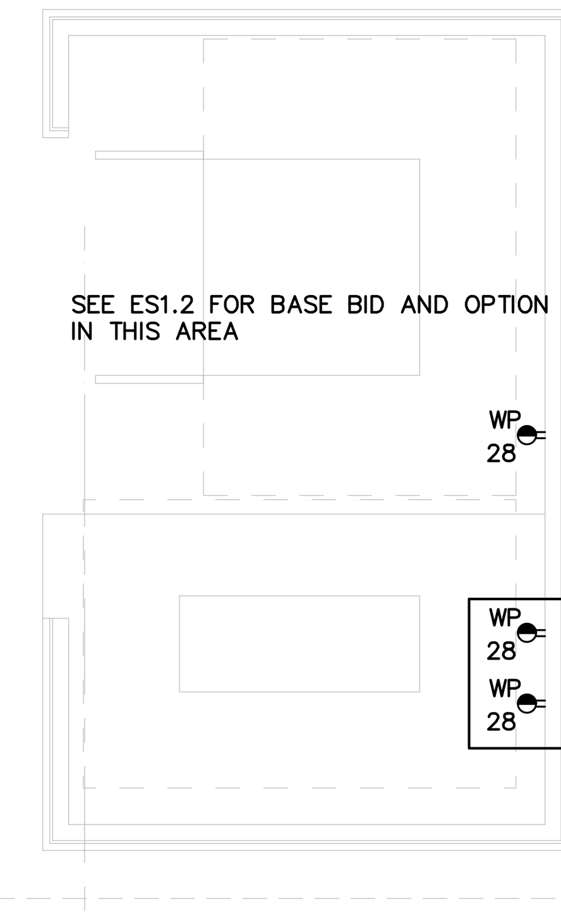
True North
Plan North

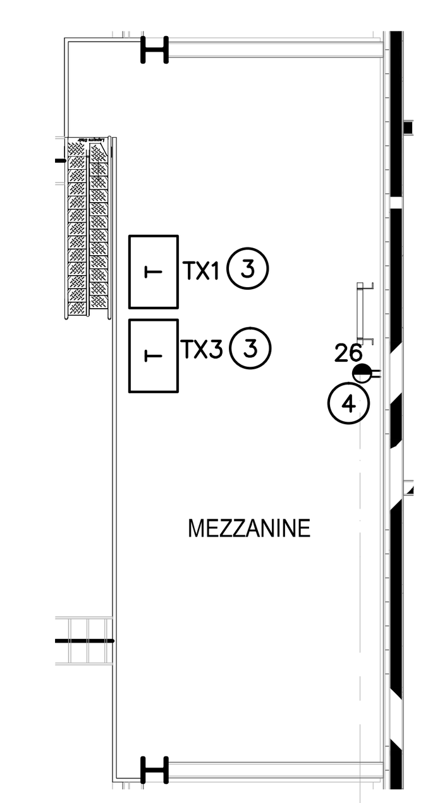
PROJECT: 2304
DRAWN: SA
SCALE: NTS

FLOOR PLAN - LTG
E1.1
JANUARY 6, 2025

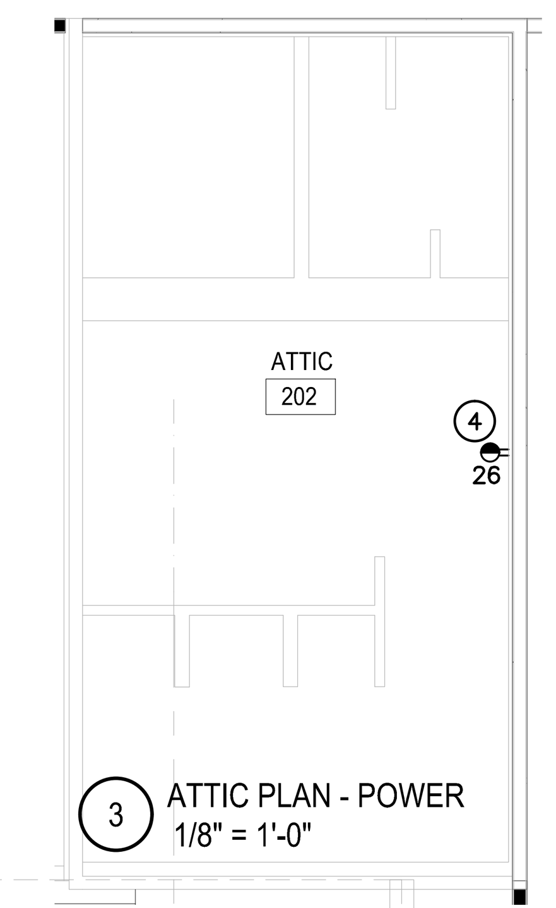
KEYED NOTES:

1. MOUNT ALL RECEPTACLES IN THE APPARATUS BAY AT 48" AFF UNLESS OTHERWISE NOTED. PROVIDE WP FLIP COVER FOR ALL RECEPTACLES IN BAY. COORDINATE ALL WALL MOUNTED RECEPTACLES WITH BUILDING STEEL PRIOR TO ROUGH-IN.
2. MOUNT TRANSFORMER ABOVE SUSPENDED CEILING.
3. MOUNT TRANSFORMER ON MECHANICAL PLATFORM. PROVIDE DISCONNECT ADJACENT TO UNIT PER ONE-LINE DIAGRAM.
4. MOUNT RECEPTACLE ON MECHANICAL PLATFORM/ATTIC FOR SERVICE TO HVAC UNITS.
5. CABLE REEL. SUPPORT FROM SUPPORT FRAME RUNNING ACROSS BAY. PROVIDE 50' EXTENSION CAPABILITY. (TYPICAL OF TEN)
6. FOR BID OPTIONS #1, ONE RECEPTACLE SHALL BE MOUNTED AT THE BASE OF THE DRILL TOWER; ONE AT THE TOP. EXACT LOCATION TO BE COORDINATED WITH THE OWNER.
7. 120V CONNECTION FOR ELECTRONIC MIXING VALVE. COORDINATE EXACT CONNECTION LOCATION WITH PLUMBING PRIOR TO ROUGH-IN.
8. 120V CONNECTION FOR OIL/WATER SEPARATOR HIGH LEVEL ALARM PANEL. COORDINATE EXACT LOCATION WITH PLUMBING PRIOR TO ROUGH-IN.
9. PPE WASHER. COORDINATE EXACT LOCATION AND CONNECTION TYPE PRIOR TO ROUGH-IN. FEED WITH 2-#12, 1-#12(G) IN 3/4"C FROM LM2-12,14.
10. PPE DRYER. COORDINATE EXACT LOCATION AND CONNECTION TYPE PRIOR TO ROUGH-IN. FEED WITH 4-#10, 1-#10(G) IN 3/4"C FROM LM2-16,18,20.
11. PROVIDE DUPLEX OUTLETS WITH USB-A CONNECITONS FOR ALL FOUR OUTLETS AT COUNTER
12. COORDINATE EXACT PLACEMENT OF RECEPTACLES WITH FURNITURE PLACEMENT PRIOR TO ROUGH-IN.
13. QUADRAPLEX FLOOR BOX. REFER TO COMMUNICATIONS PLANS FOR WHICH REQUIRE COMMUNICATIONS OUTLETS.

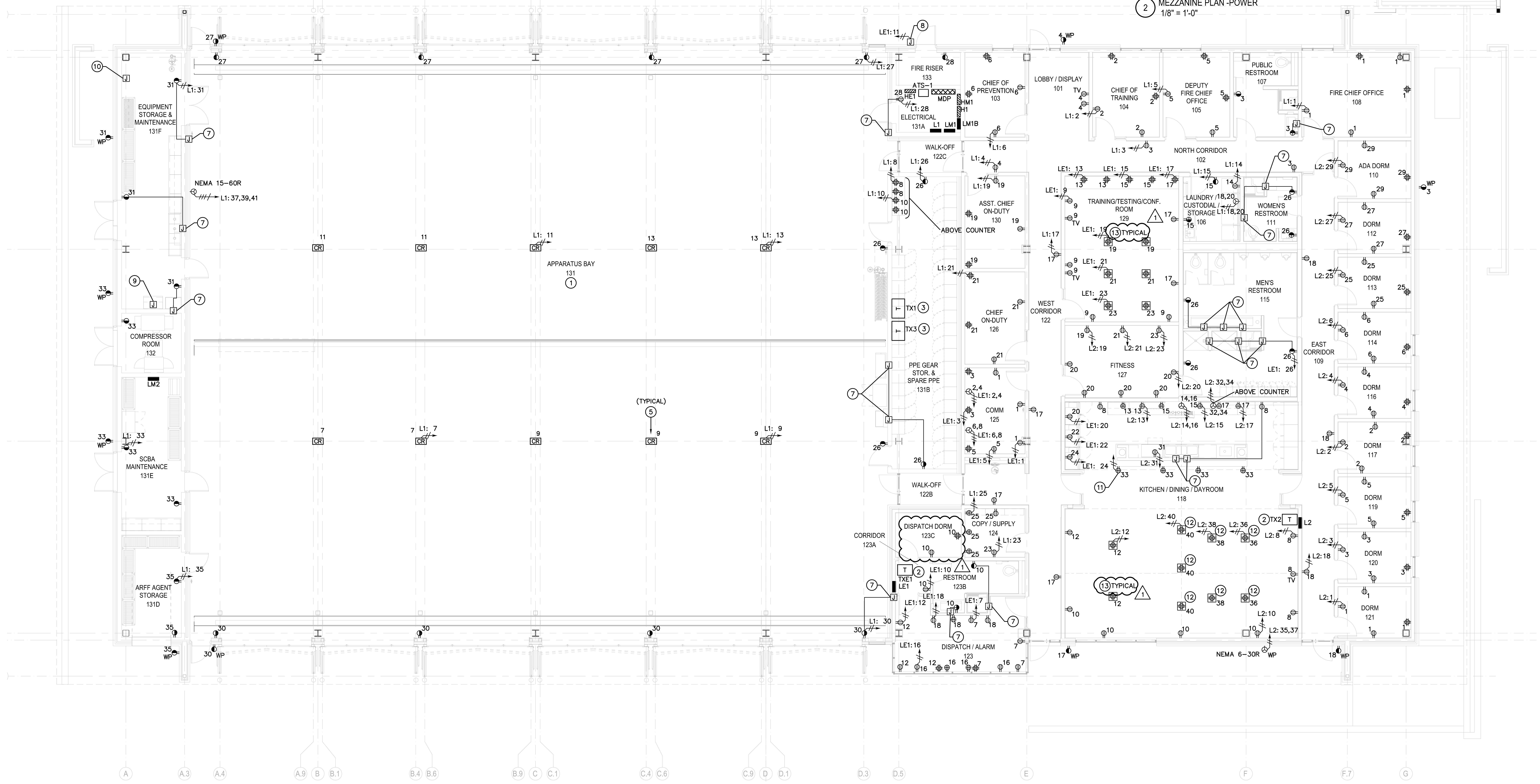




2 MEZZANINE PLAN -POWER
1/8" = 1'-0"



3 ATTIC PLAN - POWER
1/8" = 1'-0"



1 FLOOR PLAN - POWER
1/8" = 1'-0"

KEY FIELD FIRE CRASH RESCUE STATION
ANG PN# MDVL239100 | DD# 2304
186TH AIR REFUELING WING
6255 M. STREET, MERIDIAN
MISSISSIPPI 39307

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True North

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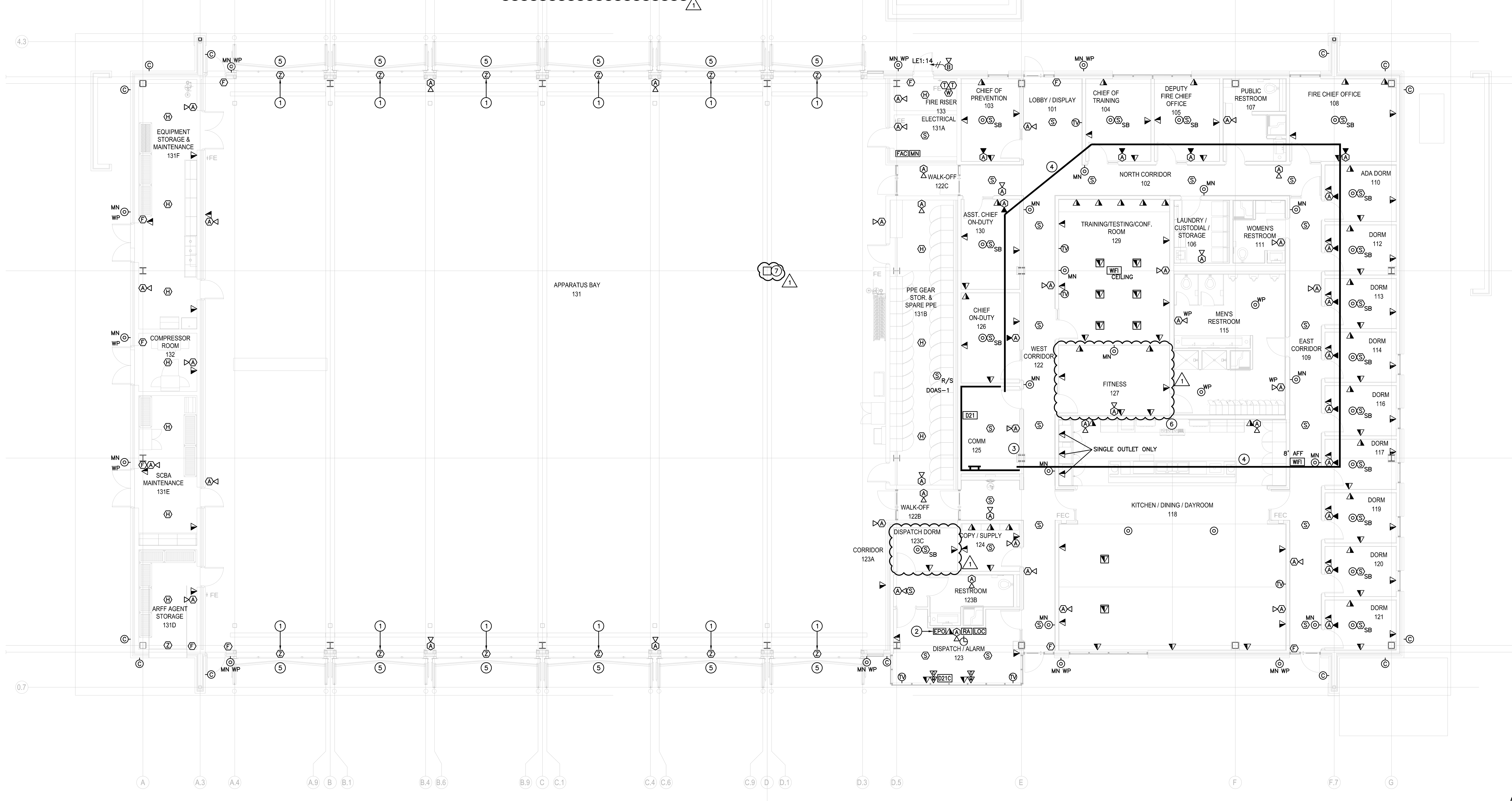
PROJECT: 2304
DRAWN: SA
SCALE: NTS

FLOOR PLAN - PWR
E2.1

JANUARY 6, 2025

KEYED NOTES:

1. PROVIDE ZONE ADDRESSABLE CONTROL MODULE FOR CLOSURE OF OVERHEAD DOOR UPON ACTIVATION OF MASS NOTIFICATION SYSTEM OR BY MANUAL SHUNT TRIP OF PANELS HM1/HM2.
2. EMERGENCY POWER OFF PUSH BUTTON FOR ACTIVATION OF SHUNT–TRIP BREAKERS SERVING PANELS HM1/HM2.
3. LOCATION FOR ADVANTOR CONTROL PANEL PROVIDED AND INSTALLED BY OTHERS.
4. PROVIDE 18"W 4"D BASKET TYPE CABLE TRAY WHERE INDICATED. TRANSITIONS ACROSS NON ACCESSIBLE CEILINGS SHALL BE MADE WITH (3) 4"C.
5. PROVIDE CONDUIT FROM DOOR MOTOR TO CONTROLS AND INDICATOR LIGHTS. COORDINATE WITH MANUFACTURER FOR EXACT ROUTING.
6. PROVIDE FIRE ALARM CONNECTION TO KITCHEN HOOD PROVIDED BY MECHANICAL. COORDINATE EXACT CONNECTIONS AND LOCATIONS WITH HOOD PROVIDER.
7. APPROXIMATE LOCATION OF ANTENAE MOUNTING ON ROOF. PROVIDE 2" CONDUIT THROUGH ROOF AND SEAL. PROVIDE WEATHERHEAD FOR ROUTING OF CABLE TO ROOF. PROVIDE MOUNTING AND INSTALL ANTENNAE FOR FA/MNS, TWO FOR FD RADIO, AND PROVIDE A MOUNT FOR FUTURE SATELLITE TV DISH. ROUTE 2" CONDUIT FROM ROOF MOUNT LOCATION BACK TO COMMUNICATIONS ROOM FOR CABLING. COORDINATE WITH MANUFACTURERS AND PROVIDE REQUIRED CABLING FROM ANTENNA TO COMMUNICATIONS ROOM. PROVIDE 2"C FOR TV DISH FROM ANTENNA LOCATION TO DAY ROOM. COORDINATE EXACT LOCATION WITH OWNER PRIOR TO ROUGH–IN.



FLOOR PLAN - SYSTEMS
1/8" = 1'-0"

KEY FIELD FIRE CRASH RESCUE STATION
ANG PN# MDVL239100 | DD# 2304
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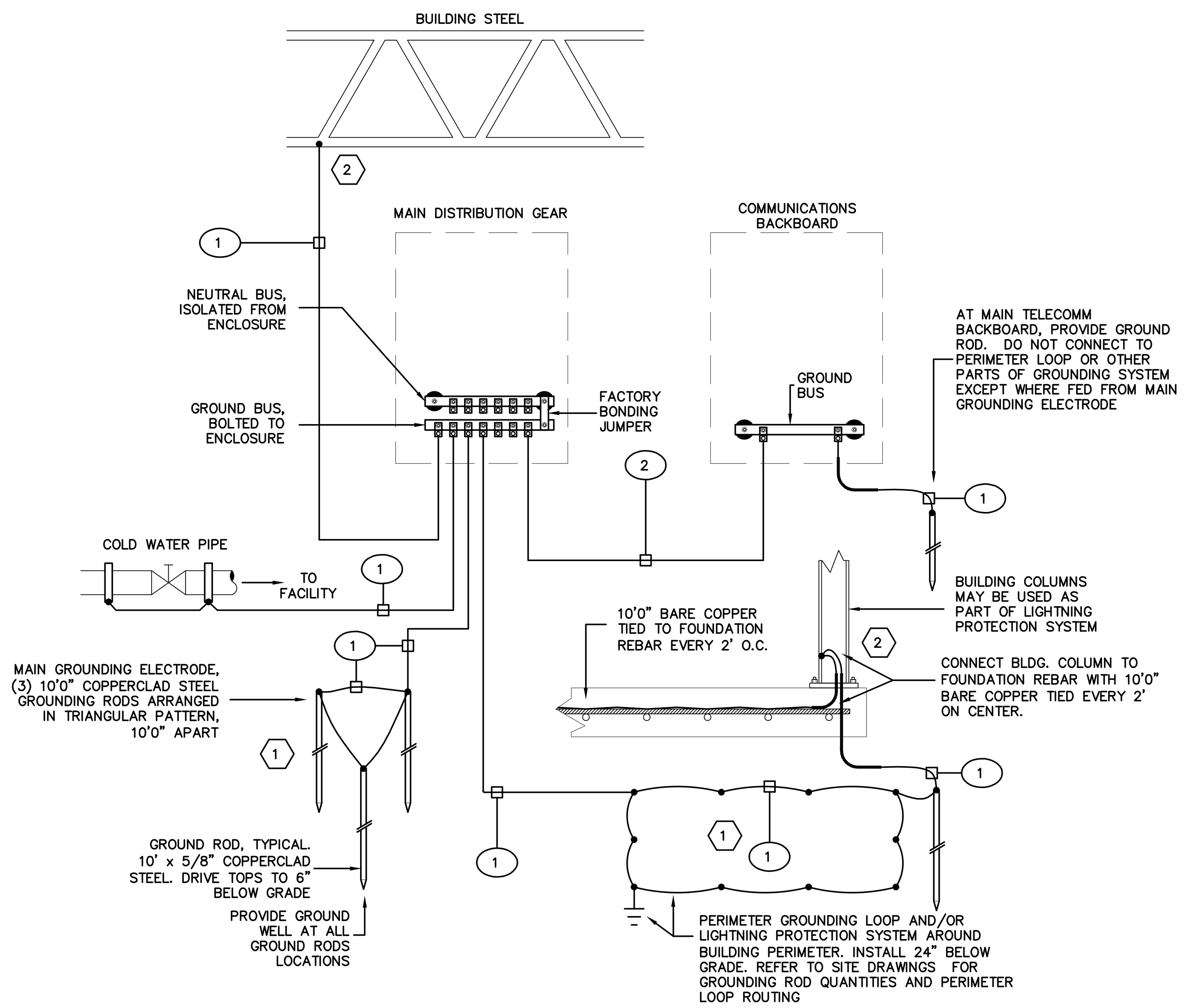
True North
Plan North

PROJECT: 2304
DRAWN: SA
SCALE: NTS

FLOOR PLAN - SYS
E3.1
JANUARY 6, 2025



1 E5.1 GROUNDING AND BONDING DETAIL
SCALE: NOT TO SCALE

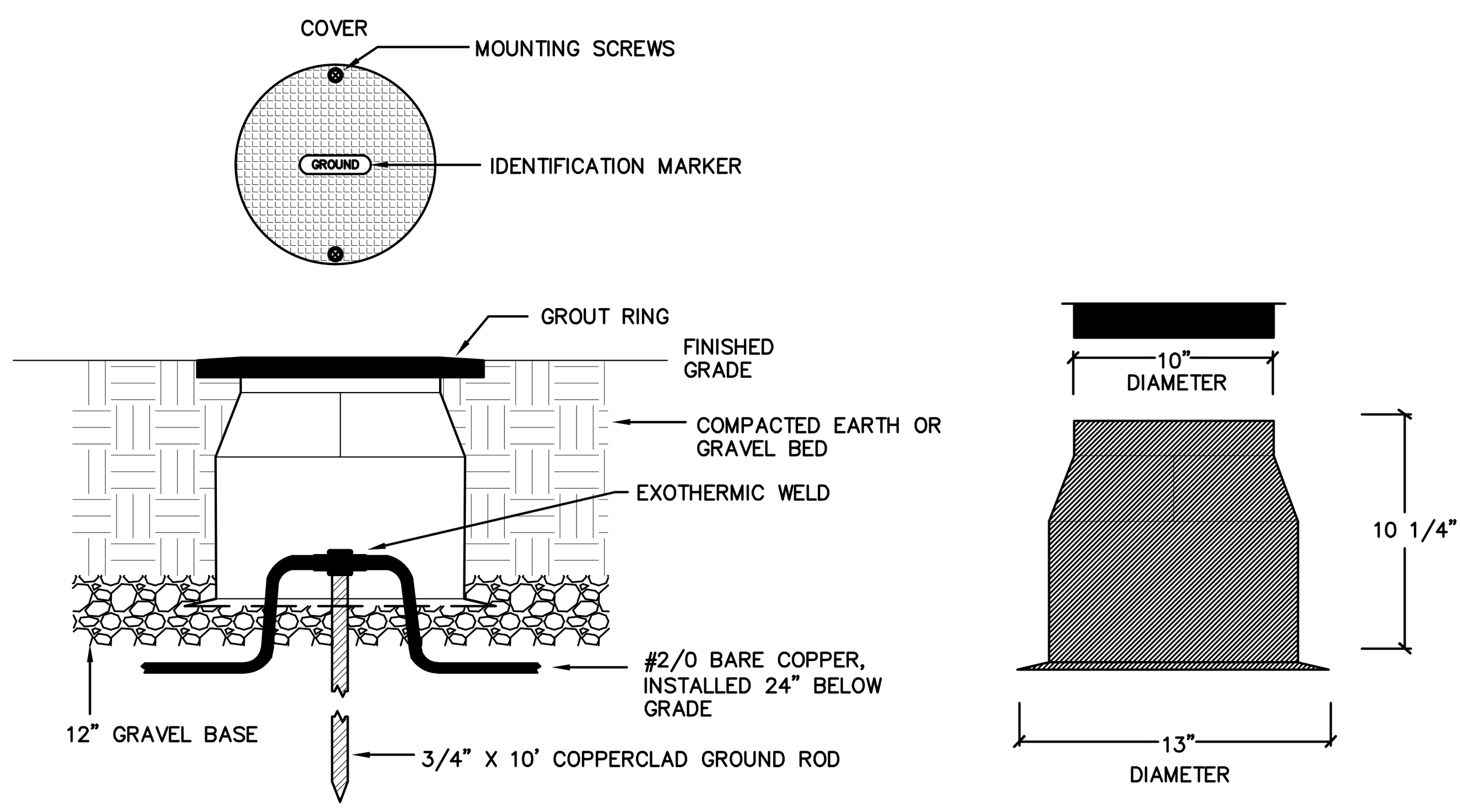
ELECTRODES NOT PERMITTED FOR GROUND
1. METAL UNDERGROUND GAS PIPING SYSTEM
2. ALUMINUM ELECTRODES

NOTES:

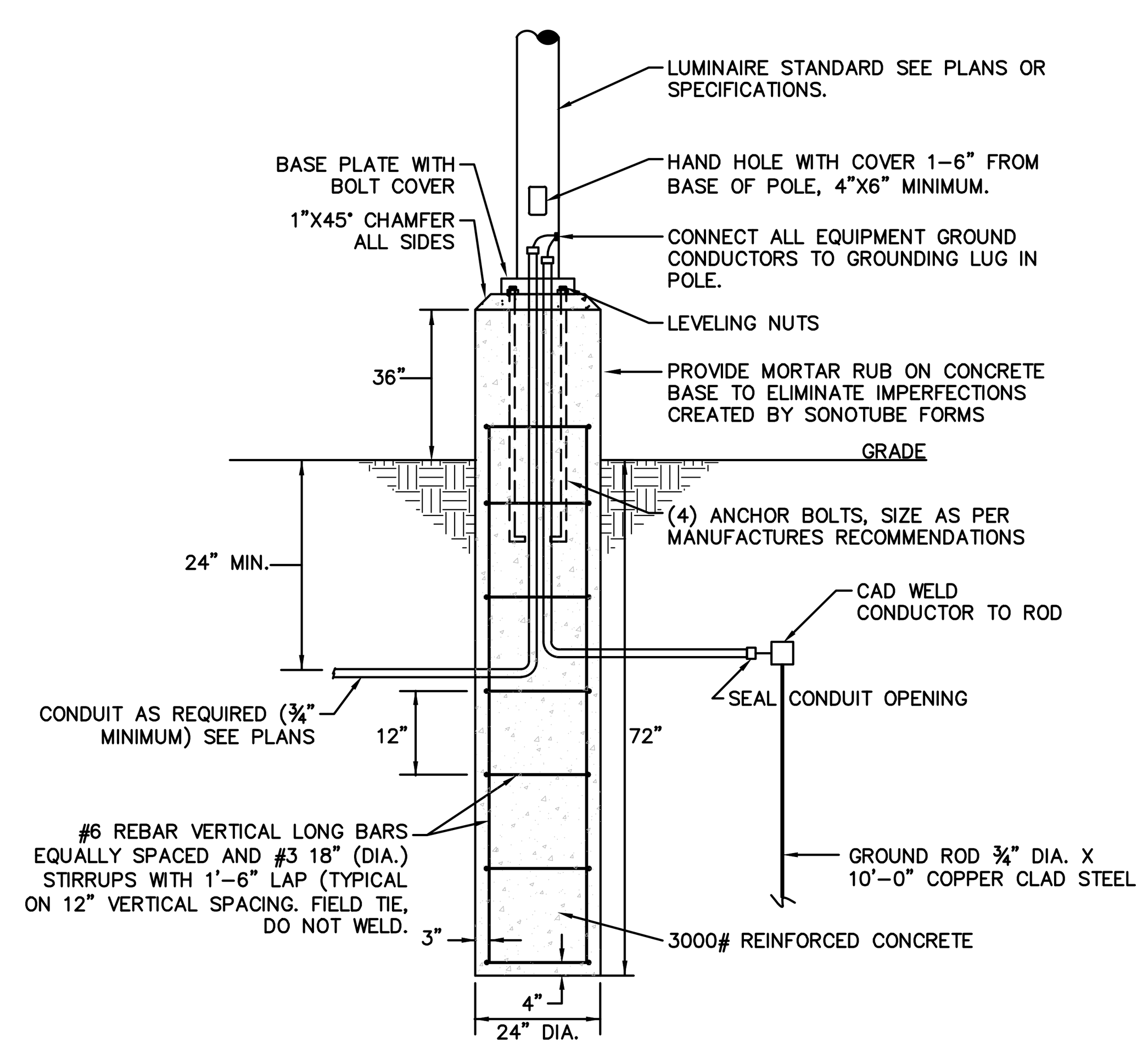
1. ALL CONNECTIONS TO GROUND RODS SHALL BE EXOTHERMIC WELD
2. ALL CONNECTIONS TO BLDG. STEEL SHALL BE MECHANICAL CONNECTIONS

GROUNDING CONDUCTOR SIZES:

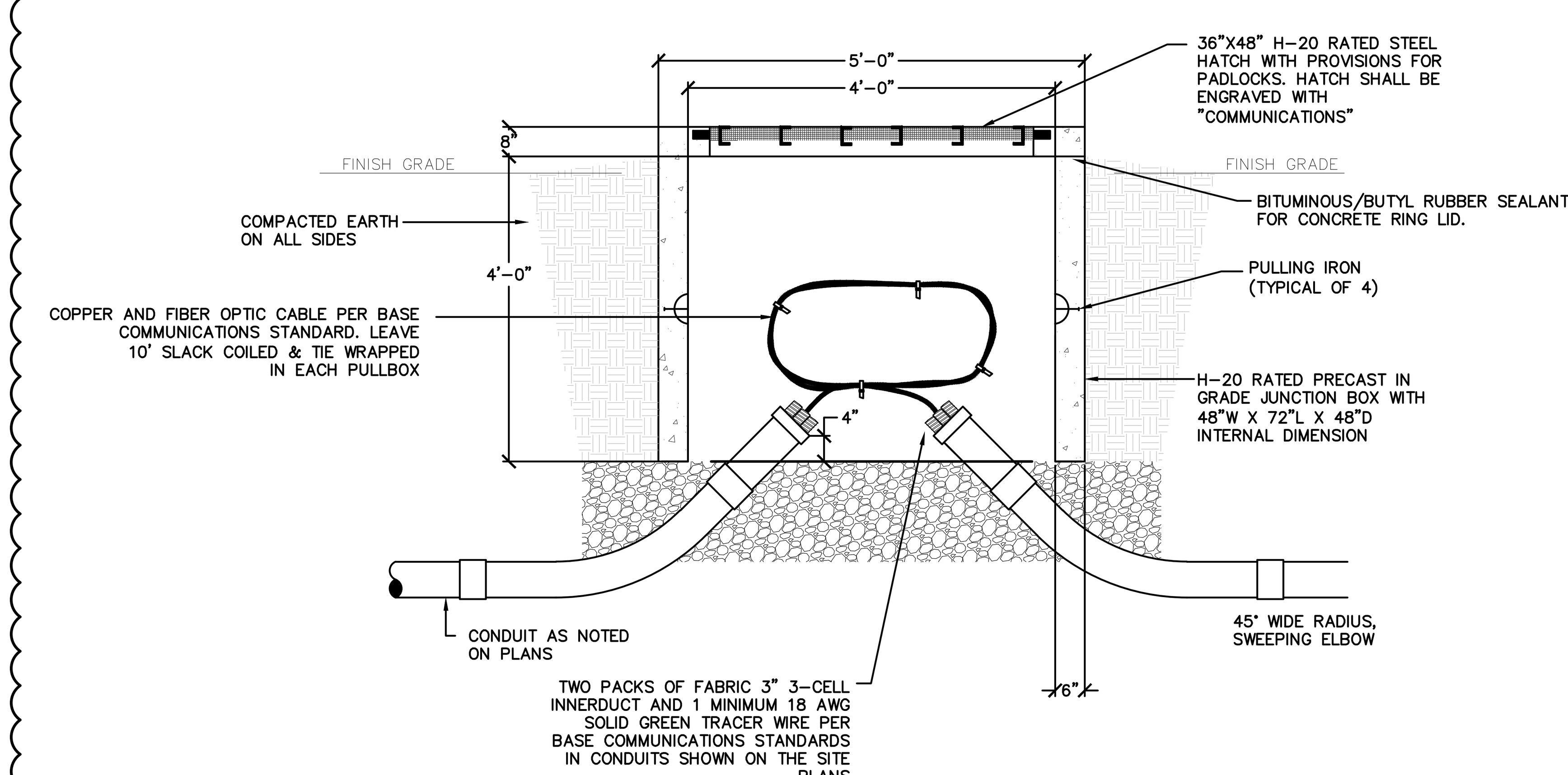
1. 2/0 AWG.
2. #4 AWG.



2 E5.1 TYPICAL GROUND TEST WELL
SCALE: NOT TO SCALE



3 E5.1 POLE BASE DETAIL
SCALE: NOT TO SCALE



3 E6.2 COMMUNICATIONS PULL BOX DETAIL
SCALE: NOT TO SCALE

KEY FIELD FIRE CRASH RESCUE STATION
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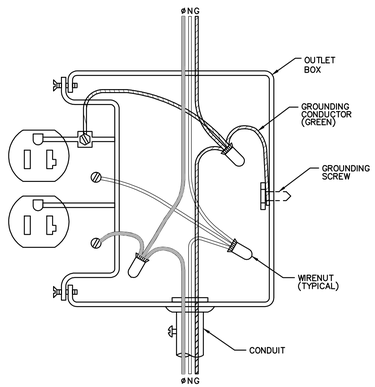
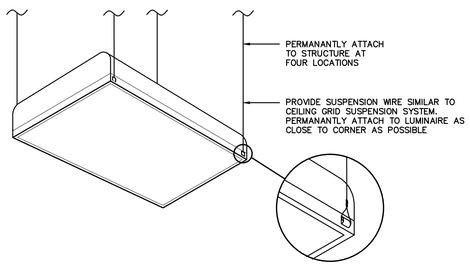
SCALE: NTS

DETAILS
E5.1
JANUARY 6, 2025



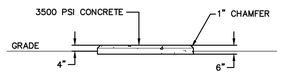
1 E5.2 TYPICAL INSTALLATION OF RECEPTACLE DETAIL
SCALE: NOT TO SCALE



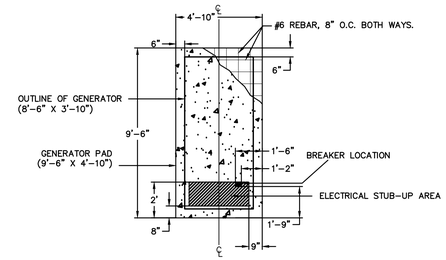
2 E5.2 TYPICAL INSTALLATION OF LAY-IN FIXTURE
SCALE: NOT TO SCALE

GENERAL NOTES

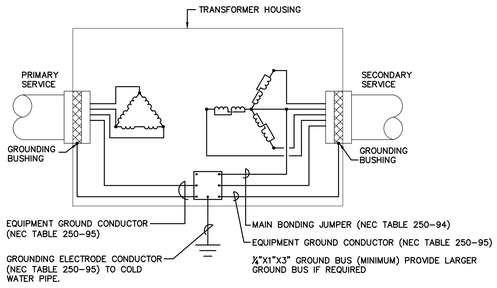
1. GENERATOR PADS ARE SHOWN FOR PRICING PURPOSES ONLY. COORDINATE EXACT DIMENSIONS AND PAD REQUIREMENTS WITH GENERATOR MANUFACTURERS REQUIREMENTS.



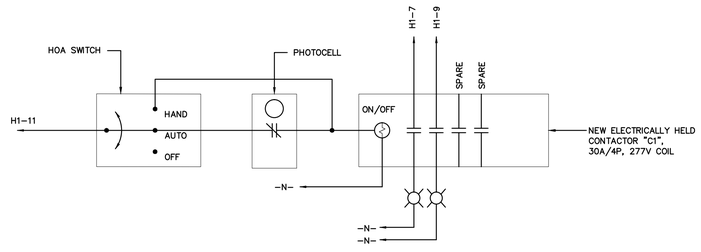
ELEVATION



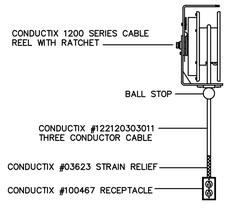
3 E5.2 GENERATOR PAD DETAIL
SCALE: 1/4"=1'-0"



4 E5.2 TRANSFORMER GROUNDING DETAIL
SCALE: NOT TO SCALE



5 E5.2 EXTERIOR LIGHTING CONTROL DETAIL
SCALE: NOT TO SCALE



6 E5.1 CABLE REEL DETAIL
SCALE: NOT TO SCALE

KEY FIELD FIRE CRASH RESCUE STATION

ANG PN# MDVL239100 | DD# 2304
186TH AIR REFUELING WING
6255 M. STREET, MERIDIAN
MISSISSIPPI 39307

REVISIONS

NO.	ISSUED BY	DATE
1	ADDENDUM 2	02-10-25

Duvall Decker Architects P.A.
Architecture . Planning . Interiors (design)
2915 NORTH STATE STREET . JACKSON, MS 39216 . WWW.DUVALLDECKER.COM . 601-713-1128

JOHN D. DUVALL
REGISTERED
ARCHITECT
14455
STATE OF MISSISSIPPI

DUVALL DECKER H
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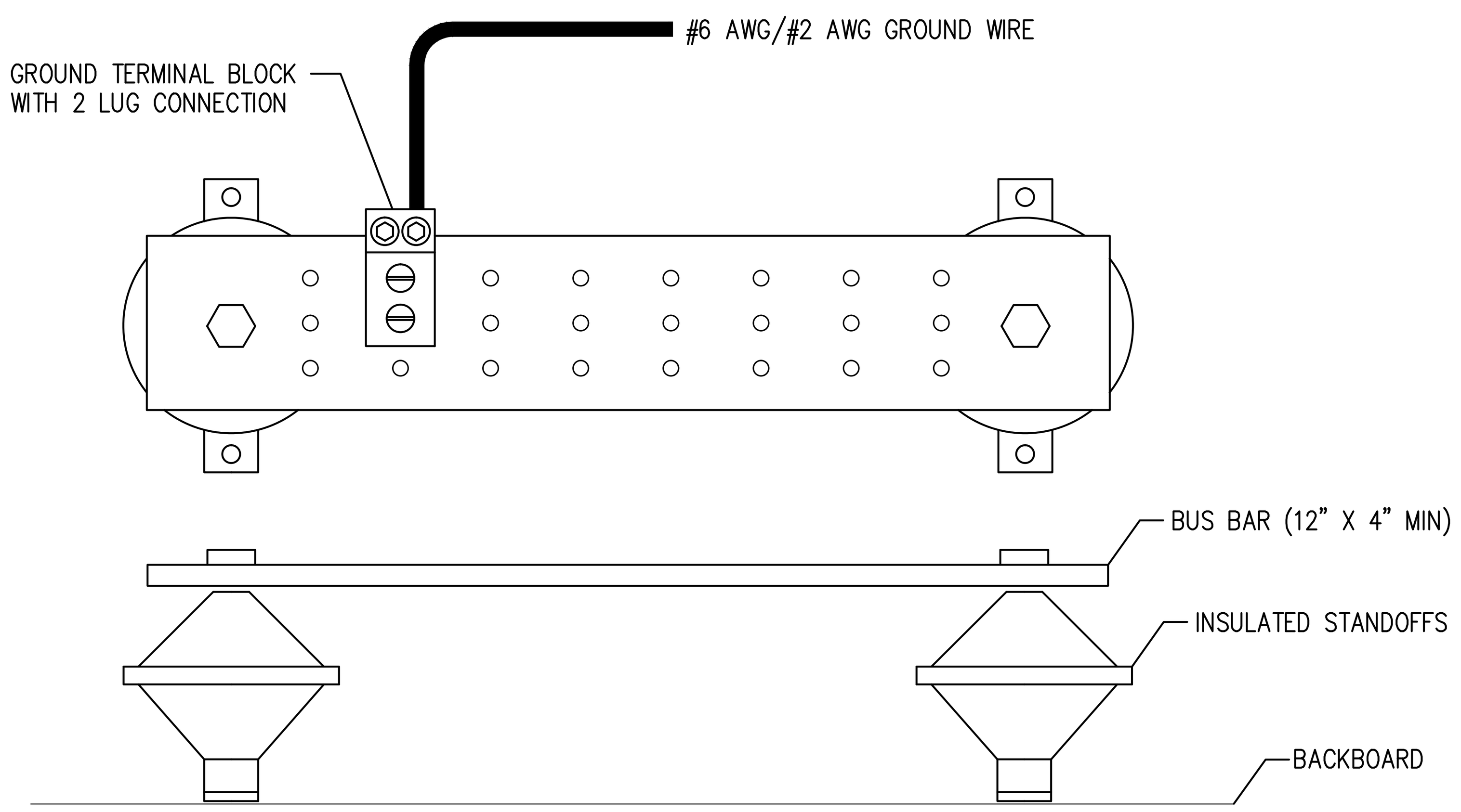
SCALE: NTS

DETAILS
E5.2

JANUARY 6, 2025

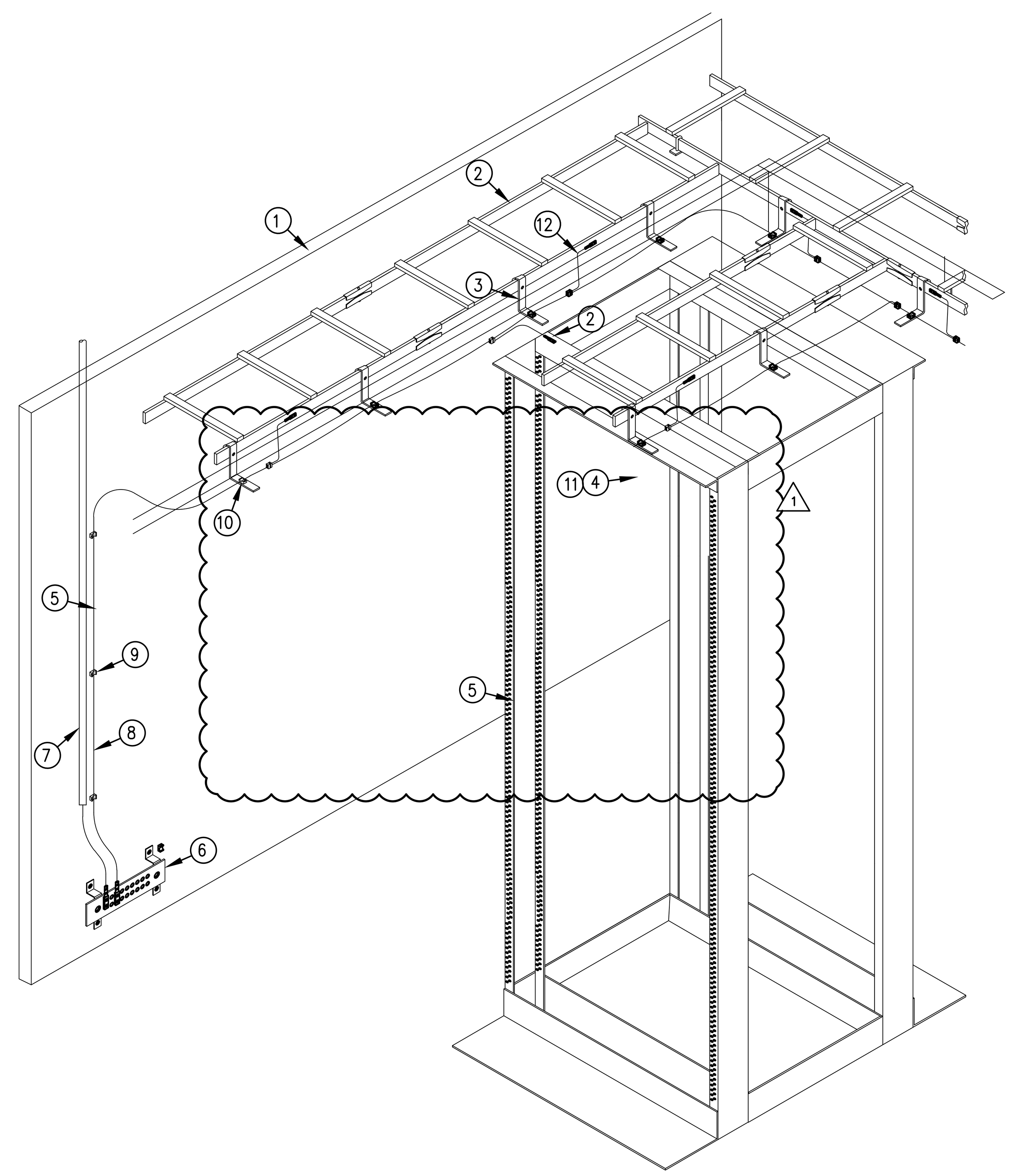


GROUND BUS BAR

NO SCALE

NOTES:

1. PROVIDE ONE PER CLOSET OR BACKBOARD LOCATION.
2. CONNECT GROUND BUS BARS WITH #6 AWG GROUND WIRE TO MAIN GROUND BUS BAR IN MAIN COMMUNICATIONS ROOM. CONNECT MAIN GROUND BUS BAR TO MAIN ELECTRICAL GROUND WITH #2 AWG.
3. CONNECT GROUND WIRES TO BUS BAR WITH TERMINAL BLOCKS.
4. EXISTING GROUNDING MATERIALS MAY BE REUSED IF APPLICABLE TO NEW WORK AND FOUND TO BE REUSEABLE.



1 / E5.3 COMMUNIICATIONS ROOM GROUNDING LAYOUT DETAIL

SCALE: NOT TO SCALE

GENERAL NOTES:

A. DETAIL PROVIDED TO SHOW INTENT OF GROUNDING DESIGN IN COMMUNICATIONS ROOM.
B. MANUFACTURER INFORMATION LISTED IS PROVIDED TO ESTABLISH MINIMUM LEVEL OF QUALITY. SEE FLOOR PLANS AND SPECIFICATIONS FOR ADDITIONAL INFORMATION REGARDING THE BUILDING GROUNDING SYSTEM. REFER TO BASE COMMUNICATIONS STANDARD FOR ADDITIONAL PART NUMBERS. WHEN PART NUMBERS DIFFER FROM THAT IN THE BASE COMMUNICATIONS STANDARD, THE BASE COMMUNICATIONS STANDARDS SHALL APPLY.
C. UL FIRE RATING STAMP SHALL REMAIN VISIBLE AT ALL TIMES. DO NOT INSTALL DEVICES OVER THE STAMP.

TYPICAL COMMUNICATIONS ROOM GROUNDING DETAIL NOTES:

(1) TYP. EXISTING COMMUNICATIONS PLYWOOD BACKBOARD.

(2) TYP. #6 THHN GREEN BONDING JUMPER FROM COMMON BONDING NETWORK (CBN) CONDUCTOR TO EQUIPMENT FRAME. ATTACH TO FRAME USING TWO HOLE (5/8" SPACING) LONG BARREL COMPRESSION LUGS WITH TWO INDENTS – PANDUIT #LCC6-14JAW-L MOUNTED TO EQUIPMENT FRAME USING 1/4-20 BOLTS. ATTACH TO "CBN" USING PANDUIT #HTAP" CABLE SPLICE #HTCT2-2-1 WITH CLEAR PLASTIC COVER #CLRCVR2-1

(3) TYP. CABLE RUNWAY "L" BRACKET, CHATSWORTH #11268-001, ATTACHED TO CABLE TRAY

1 (4) TYP. BUILDING ENTRANCE TERMINAL PROTECTOR PER BASE STANDARD AT TOP OF RACK. SEE DETAIL IN BASE STANDARDS.

(5) RACK SHOWN FOR GROUNDING INTENT ONLY. SEE BASE COMMUNICATION STANDARD FOR EQUIPMENT REQUIREMENTS

(6) TYP. TELECOMMUNICATIONS MAIN GROUNDING BUSBAR (TMGB) PANDUIT GB2B0306TPI-1

(7) TYP. 1" PVC CONDUIT WITH BONDING CONDUCTOR FOR TELECOMMUNICATIONS (BCT) FROM BUILDING MAIN ELECTRICAL SERVICE GROUND CONNECTION POINT. ATTACH TO "TMGB" USING TWO HOLE (5/8" SPACING) LONG BARREL COMPRESSION LUGS WITH TWO INDENTS.

(8) TYP. #2 THHN GREEN COMMON BONDING NETWORK CONDUCTOR (CBN). CONNECT TO "TMGB" USING TWO HOLE (5/8" SPACING) LONG BARREL COMPRESSION LUGS WITH TWO INDENTS – PANDUIT #LCC2-14AW-Q.

(9) TYP. ATTACH "CBN" TO TERMINAL BOARD USING NYLON CABLE TIE MOUNT, PANDUIT # TMEH-S10-QO WITH SCREW AND PANDUIT #PLT1.5S-C CABLE TIE.

(10) TYP. ATTACH "CBN" TO "L" BRACKETS USING NYLON CABLE TIE MOUNT, PANDUIT #TMEH-S10-QO WITH 10/24 BOLT AND PANDUIT #PLT1.5S-C CABLE TIE.

1 (11) TYP. #6 THHN GREEN BONDING JUMPER FROM RACK TO BUILDING ENTRANCE TERMINAL PRIMARY PROTECTOR.

(12) TYP. #6 THHN GREEN BONDING JUMPER FROM "CBN" TO CABLE TRAY. ATTACH TO CABLE TRAY USING TWO HOLE (5/8" SPACING) LONG BARREL COMPRESSION LUGS WITH TWO INDENTS – PANDUIT #LCC6-14JAW-L MOUNTED TO SIDE OF TRAY USING 1/4-20 BOLTS. SCRAPE PAINT FROM SIDE OF TRAY PRIOR TO INSTALLATION. ATTACH TO "CBN" USING PANDUIT "HTAP" CABLE SPLICE #HTCT2-1 WITH CLEAR PLASTIC COVERS #CLRCVR2-1.

(13) TYPICAL, EXISTING GROUNDING MATERIALS APPLICABLE TO NEW WORK MAY BE REUSED IF FOUND TO BE REUSABLE.

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DETAILS

E5.3

JANUARY 6, 2025