



ADDENDUM NO. 1
February 18, 2022

PROJECT: Horizon Elementary School Addition
Jerome School District
Jerome, Idaho

The following addenda apply to the Drawings and/or Specifications for this project and shall be a part of the Contract Documents.

PROJECT MANUAL

GENERAL INFORMATION:

1. Where Fire Alarm demolition or any other electrical demolition has occurred per Electrical Demolition Plans, patch, repair and paint all holes and other damage to walls and ceilings caused by demolition to match adjacent surfaces.

SPECIFICATION SECTION – 051200 STRUCTURAL STEEL FRAMING

1. Paragraph 2.1: Add the following section 2.1.G:

2.1.G. Loose Steel Lintels

1. Fabricate loose steel lintels from steel angles and shapes of size indicated for openings and recesses in masonry walls and partitions at locations indicated. Fabricate in single lengths for each opening unless otherwise indicated. Weld adjoining members together to form a single unit where indicated. Retain first paragraph below if bearing lengths are not indicated on Drawings or in schedules.
2. Size loose lintels to provide bearing length at each side of openings equal to 1/12 of clear span, but not less than eight (8) inches (200 mm) unless otherwise indicated.
3. Prime and finish loose steel lintels located in exterior walls as specified in Section 099113 "Exterior Painting."

SPECIFICATION SECTION – 087100

1. Refer to Hardware Set 1.0, delete the specified automatic opener. There will be no ADA operator at this location. The wall mounted card reader and associated hardware will remain part of this hardware set.

SPECIFICATION SECTION – 096566 RESILIENT ATHLETIC FLOORING

1. Paragraph 2.1, A, 1: Delete “OmniSports 7.1 mm flooring” Add “OmniSports+ 8.1 flooring.

Note: Portions of Existing Gymnasium concrete floor slab will be newly placed concrete as patch backs for new footing work. (See S2.0 Partial Foundation plan). Ensure smooth, flat, and level surface to comply with mfr’s. recommended installation. Machine grind floor if required.

SPECIFICATION SECTION – 099123 INTERIOR PAINTING

1. Paragraph 3.6.D shall be revised as follows:

D. Steel Substrates, General:

1. Water Based Light Industrial Coating System:
 - a. Prime Coat: Primer, anti-corrosive, for metal, MPI #79.
 - b. Intermediate Coat: Light industrial coating, water-based, interior, matching topcoat.
 - c. Topcoat: Light industrial coating, water-based, interior, semi-gloss (Gloss Level 5) MPI #163.

SPECIFICATION SECTION – 101100 VISUAL DISPLAY SURFACES

1. Delete Paragraph 2.3.
2. Delete Paragraph 2.4.B.2

SPECIFICATION SECTION – 275118 GYM SOUND SYSTEM

1. Add this Specification Section. Refer to Attachments.

SPECIFICATION SECTION – 275200 CLASSROOM AUDIO SYSTEM

1. Add this Specification Section. Refer to Attachments.

DRAWINGS

SHEET A2.0 ARCHITECTURAL PARTIAL SITE PLAN

1. Add to General Notes:
 3. Restore all lawn areas disturbed by new construction to original condition.
2. At Keyed Note 055000.G1 in the northwest corner of new building, add also Reference Note 22.01 at same location. Delete indication of dashed square.

SHEET A3.0 DEMOLITION FLOOR PLAN

1. Add to General Notes:
 3. See Foundation Plan Sheet S2.0 for concrete floor slab demolition in Existing Gymnasium E101 for new footings.
2. Remove and modify (2) existing steel downspouts on the north face of Existing Gymnasium E101 per Sketch SKA 5.0 (attached).
3. In Existing Gymnasium E101, remove existing loose laid interlocking plastic flooring, existing slip sheet below, and existing adhered Vinyl Composition Tile and rubber base. Prepare existing concrete floor slab as required for new Resilient Athletic Flooring in accordance with Specification 096566.

SHEET A3.1 FLOOR PLAN - NEW

1. In existing Classroom nearest the northeast corner of the Gymnasium E101 and across the corridor, remove and retain suspended acoustic ceiling and other items as necessary for installation of the new fresh air intake ductwork and exterior wall louvers. See Sketches SKA 1.0 and SKA 1.1 (attached).
2. For all stud walls separating adjacent spaces from Stage/Music 103, provide 1-Hour Fire Barrier construction per Sketch SKA 2.0. (attached). See Specification 078413 Penetration Firestopping and 078446 Fire Resistive Joint Systems. See Revised Mechanical Drawing M2.1 HVAC Plan (attached) for HVAC requirements.
3. In Chair Storage 104, at Wall Type indication WT-2 on north wall, change "BOT" to "B.O.C."

SHEET A3.2 ENLARGED STAGE PLAN and DETAILS

1. A/A3.2 Stage Floor Plan: Delete Keyed Note 096519.A2 Luxury Vinyl Tile indicated at the classroom sink cabinet and change to 096519.A1 Vinyl Composition Tile.

2. Detail 3 Proscenium Jamb – Stage Left: Delete Keyed Note 092900.A2 indicating the furring at steel column and change to 092216.A2 Steel Stud Framing....
3. Detail 6 Under Stage Doors – Section: See Sketch SKA 3.0 (attached) for clarifications to various Keyed Note arrow indications.

SHEET A3.3 ENLARGED PLANS & DETAILS

1. At Rampway 105, maintain minimum 48” clear horizontal dimension of landing from sidewall to center dividing half wall. See Sketch SKA 4.0 (attached).

SHEET A4.1 DOOR SCHEDULE & DOOR/WINDOW DETAILS

1. Door Schedule: Doors 103A and 105A shall have 1 hour fire door assembly rating.

SHEET A6.1 ROOF PLAN

1. Remove, modify, and re-install (2) existing steel downspouts on the north face of Existing Gymnasium E101 per Sketch SKA 5.0 (attached).
2. Detail 3/A6.1 Downspout Detail: Delete Reference Note 4.01 that points the pipe receiver at grade. Furnish & install PVC downspout adapter.
3. Keyed Note 055000.G1: Delete the sentence “Bevel cut outlet as indicated”

SHEET A6.2 ROOF DETAILS

1. Reference Note 7.15: Delete the sentence “Solder in gutter sleeve watertight” and add the sentence “Continuous Cut-off Mastic behind top edge of substrate board”.
2. Detail 6: Change name of Detail from “Parapet Coping” to “Eave Detail”.
3. Detail 9: Change name of Detail from “Parapet Coping” to “Valley Flashing”.

SHEET S3.1 FOUNDATION DETAILS

1. Detail L Footing & Pedestal: See Sketch SK1 for clarifications to footing construction (attached).

SHEET S5.0 PARTIAL ROOF FRAMING PLAN

1. Add Detail Sketch SK2 for roof hatch framing (attached).

SHEET S6.0 TYPICAL FRAMING DETAILS

1. Detail 6 Non-Load Bearing/Full Ht. Wall: See Sketch SK3 for modifications (attached).
2. Detail 7 Truss @ Non-Bearing Wall: See Sketch SK4 for modifications. (attached).
3. Detail 8 New Opening in Existing Wall: See Sketch SK5 for shoring information (attached).

SHEETS M1.0, M2.0, & M2.1 VARIOUS MECHANICAL

1. Provide new fresh air ducting system with related louvers in masonry wall openings and necessary demolition and ceiling work per Sketches SK-1.1, SK-1.2, & SK-1.3 (attached).

SHEETS E2.0DA-DD, E2.0P, E2.0S, & E3.1 VARIOUS ELECTRICAL

1. Refer to the attached Electrical Addendum No. 1, dated February 18, 2022 and referenced attachments.

Attachments:

1. Sketches SKA 1.0, SKA 1.1, SKA 2.0, SKA 3.0, SKA 4.0, SKA 5.0, SK1, SK2, SK3, SK4, SK5 SK-1.1, SK-1.2, & SK-1.3, Revised Sheet M2.1
2. Electrical Addendum No. 1, 4 pages. Sketches ESK-1, ESK-2, ESK-3, ESK-4, ESK-5 & ESK-6.
3. Specification Section 275118 – Gym Sound System
4. Specification Section 275200 – Classroom Audio System

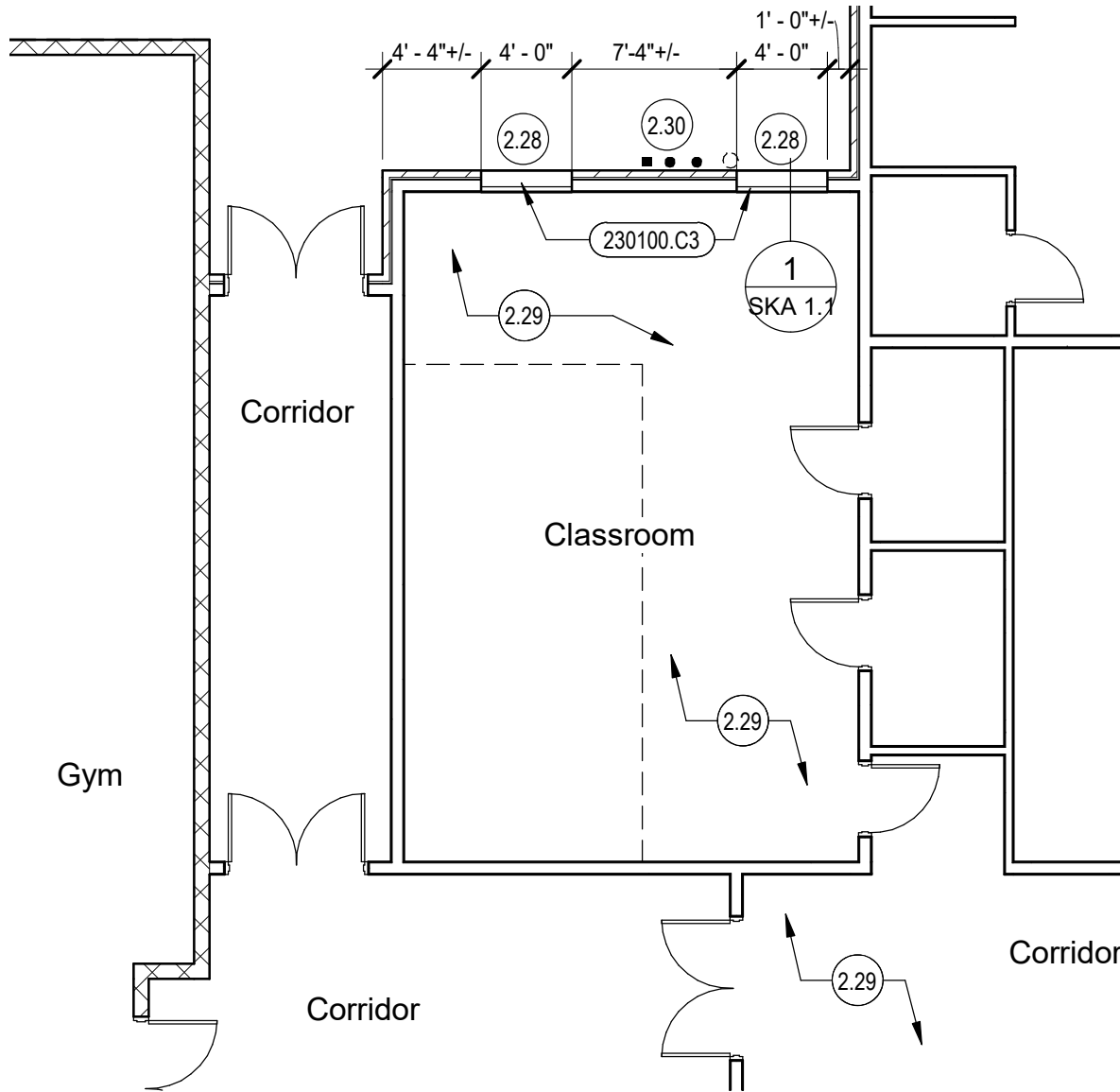
- End of Addendum No. 1 -

230100.C3 NEW EXTERIOR WALL LOUVER. SEE MECHANICAL SKETCHES SK-1.1, SK-1.2, & SK-1.3

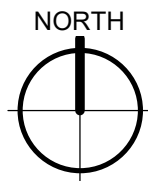
2.28 SAWCUT AT MORTAR JOINTS FOR NEW INTAKE LOUVER OPENINGS. FIELD VERIFY EXACT DIMENSIONS AND REQUIRED ROUGH OPENINGS FOR LOUVERS & DUCTWORK.

2.29 REMOVE EXISTING CEILING TILES & LIGHT FIXTURES AS NECESSARY AND DISASSEMBLE CEILING GRID AS REQUIRED FOR NEW DUCT INSTALLATION. RETAIN AND RE-INSTALL TO ORIGINAL CONDITION. FIELD VERIFY EXTENTS WITH REQUIREMENTS OF NEW MECHANICAL WORK.

2.30 EXISTING DOWNSPOUT AND CONDUITS TO REMAIN. RELOCATE SECURITY CAMERA AS REQUIRED.



1 Floor Plan - Classroom
1/8" = 1'-0"



Horizon Elementary School Addition

Jerome School District, Jerome, ID

REFERENCE: A3.1

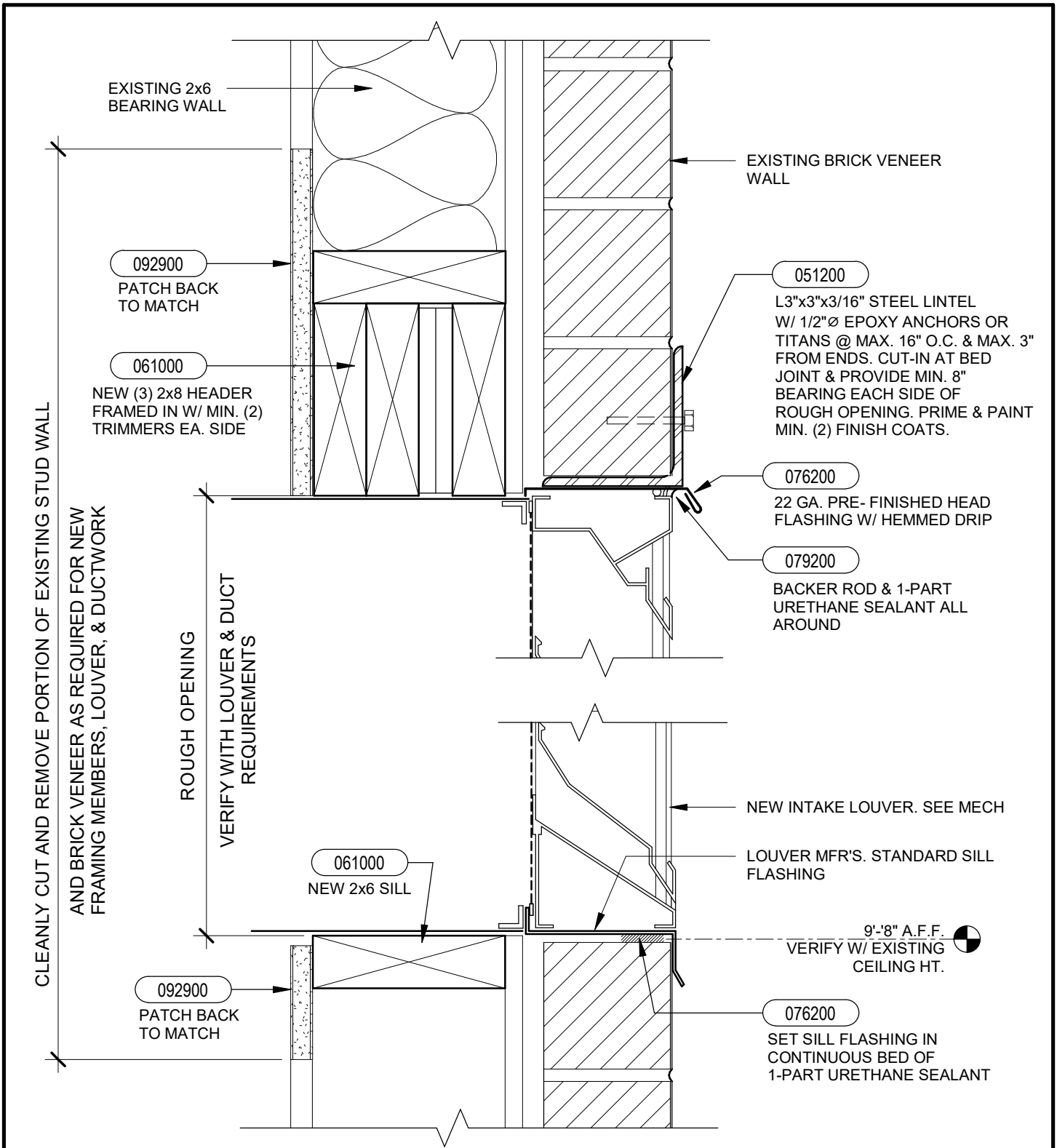
REVISION: Δ Addendum #1 2/18/22

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PROJECT NO.: 2122

SKA 1.0

DATE: 2/18/22



1 Louver Head / Sill
3" = 1'-0"



Horizon Elementary School Addition
Jerome School District, Jerome, ID

REFERENCE:
PROJECT NO.: 2122
DATE: 2/18/22

REVISION: **1** Addendum #1 2/18/22

DRAWING NO.
SKA 1.1

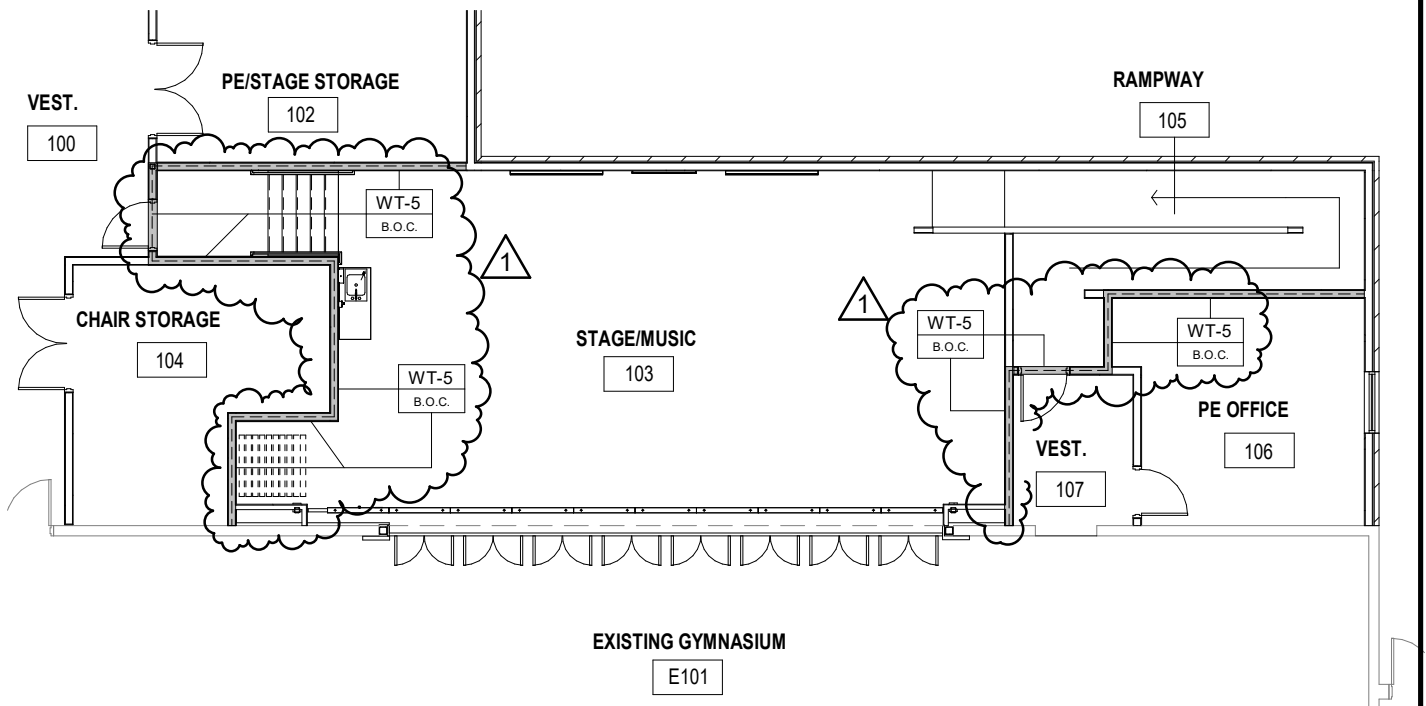


WT-5
B.O.C.

WALL TYPE 5: 1 HOUR FIRE BARRIER I.A.W. IBC 707. 2x6 STUD WALL FRAMING @ 16" O.C. W/ (1) LAYER 5/8" TYPE 'X' GYP. BD EA. SIDE W/ 2-1/4" TYPE 'S' DRYWALL SCREWS @ 12" O.C. MAXIMUM. INSULATED W/ R-21 FIBERGLASS BATTS.

- SEE SPECIFICATION 078413 PENETRATON FIRESTOPPING AND 078446 FIRE RESISTIVE JOINT SYSTEMS.

- SEE REVISED MECHANICAL SHEET M2.1 HVAC PLAN.



Stage Floor Plan

N.T.S.



Horizon Elementary School Addition

Jerome School District, Jerome, ID

REFERENCE: A3.1

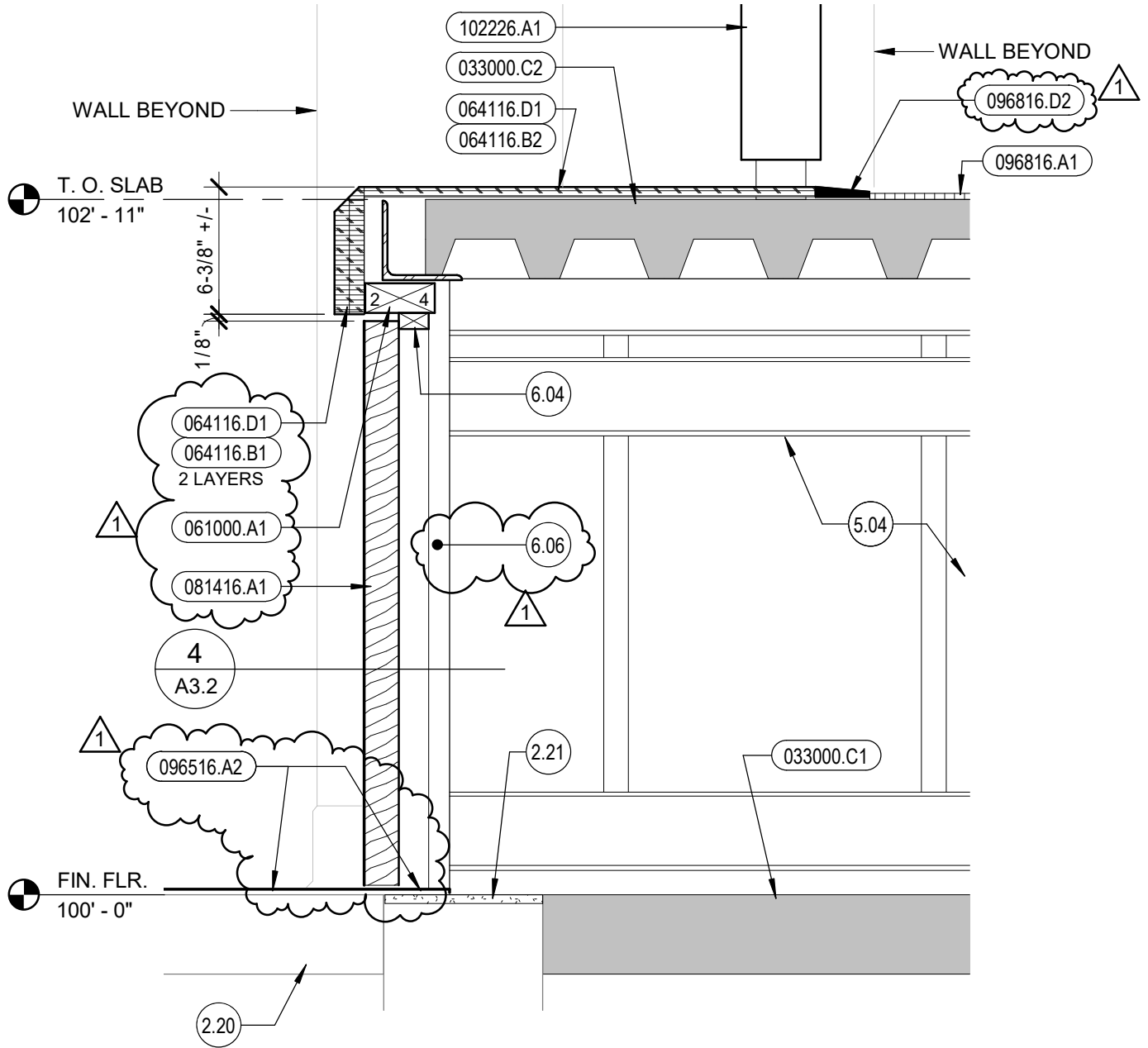
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PROJECT NO.: 2122

DATE: 2/18/22

DRAWING NO.

SKA 2.0



6 Under Stage Door Section
 1 1/2" = 1'-0"



Horizon Elementary School Addition

Jerome School District, Jerome, ID

REFERENCE: 6/A3.2

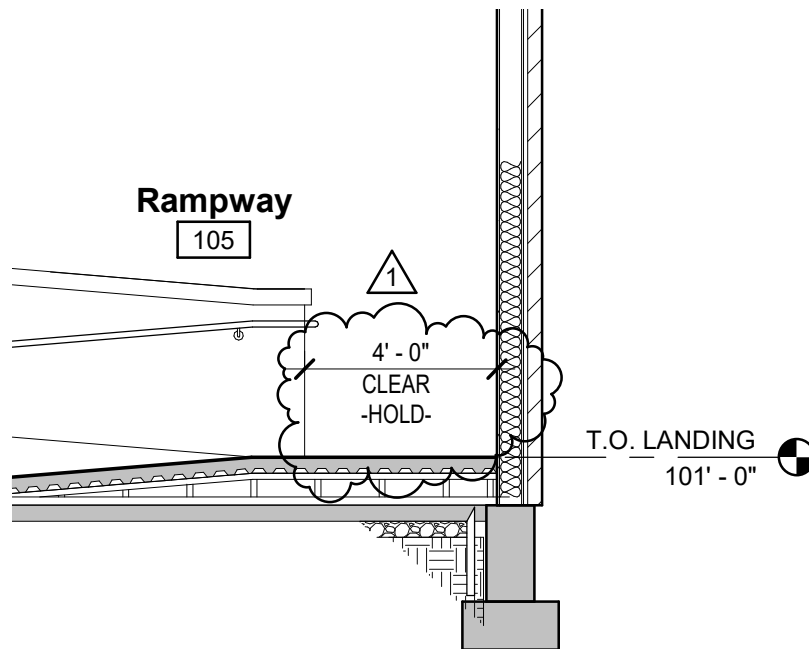
REVISION: **1** Addendum #1 2/18/22

DRAWING NO.

PROJECT NO.: 2122

SKA 3.0

DATE: 2/18/22



② Ramp Section

1/4" = 1'-0"



Horizon Elementary School Addition
Jerome School District, Jerome, ID

REFERENCE: 2/A3.3

REVISION: $\triangle 1$ Addendum #1 2/18/22

DRAWING NO.

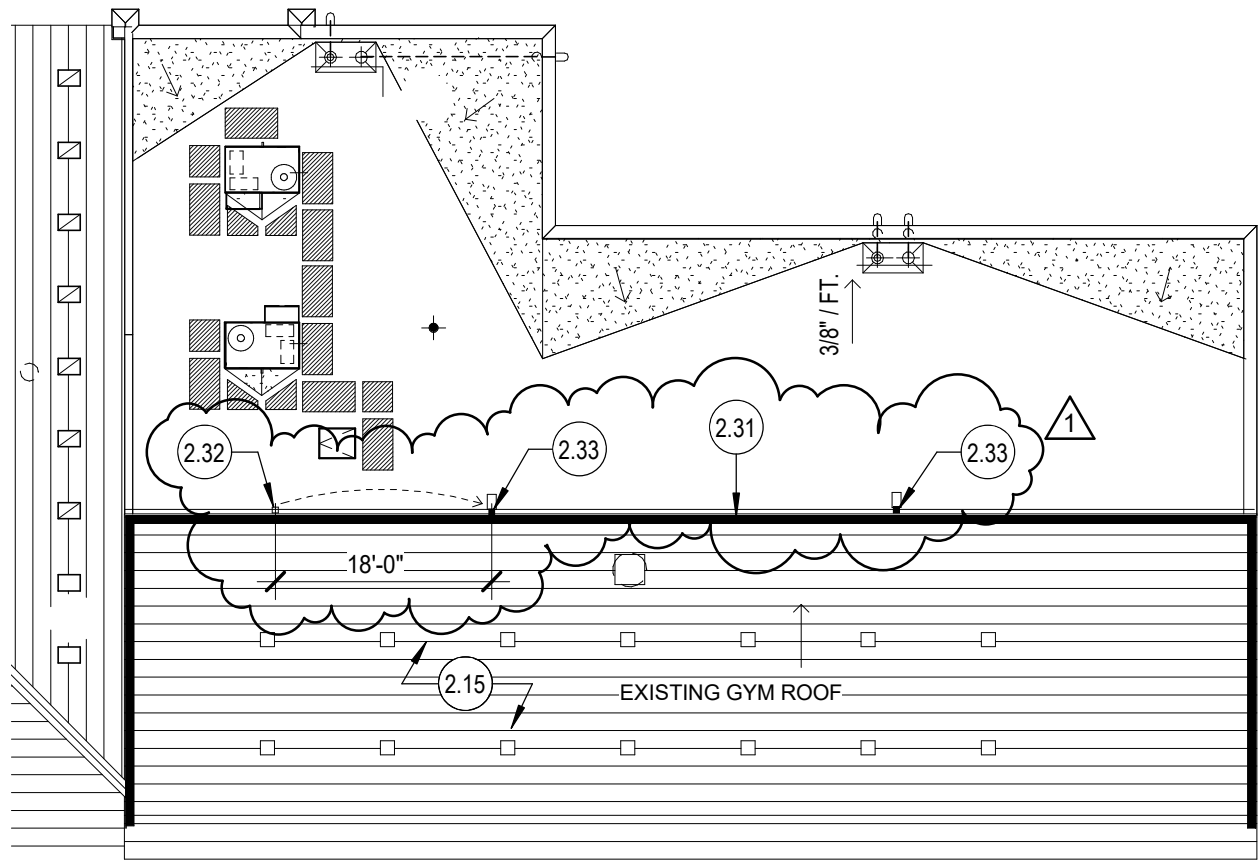
PROJECT NO.: 2122

SKA 4.0

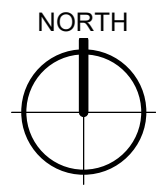
DATE: 2/18/22

REFERENCE NOTES ○

- 2.15 EXISTING ASPHALT SHINGLES TO REMAIN.
- 2.31 EXISTING GUTTER TO REMAIN.
- 2.32 REMOVE AND RELOCATE STEEL DOWNSPOUT TO NEW LOCATION INDICATED. PATCH AND SEAL EXISTING GUTTER DOWNSPOUT OPENING.
- 2.33 EXISTING STEEL DOWNSPOUT. REMOVE AND MODIFY LENGTH TO OCCUR 8" ABOVE NEW ROOF SURFACE WITH A 45 DEGREE WELDED STEEL EXTENSION. PRIME AND PAINT. PROVIDE NEW CONCRETE PRECAST SPLASHBLOCK SET ON ROOFING WALKTREAD MATERIAL.



① Roof Plan
1/16" = 1'-0"

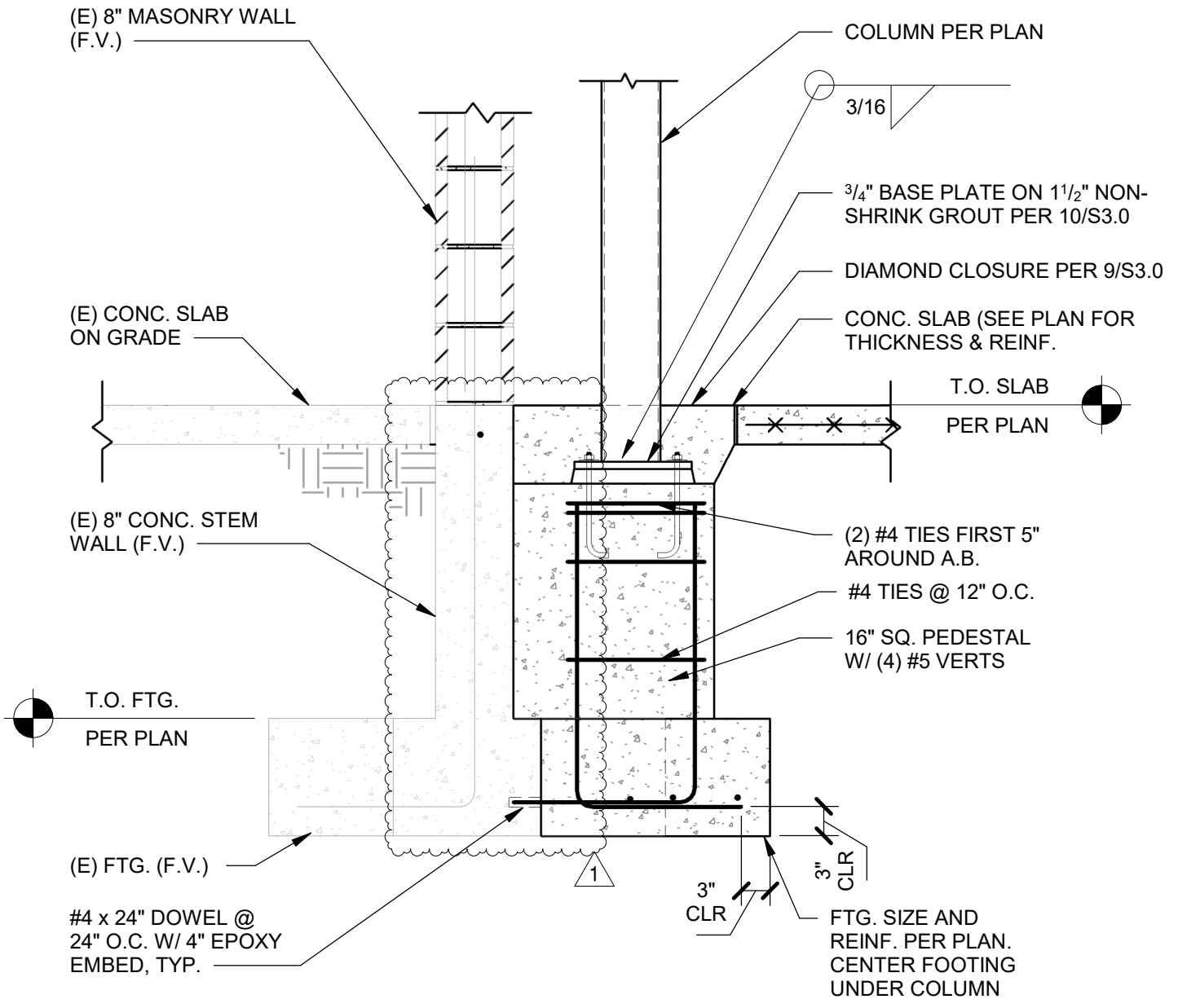


Horizon Elementary School Addition
Jerome School District, Jerome, ID

REFERENCE:	A6.1
PROJECT NO.:	2122
DATE:	2/18/22

REVISION: ① Addendum #1 2/18/22

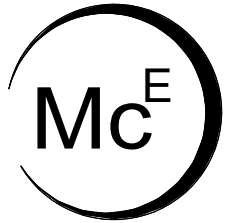
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SKA 5.0



SK1

FOOTING & PEDESTAL @ (E) MASONRY WALL

SCALE: 3/4" = 1'-0"

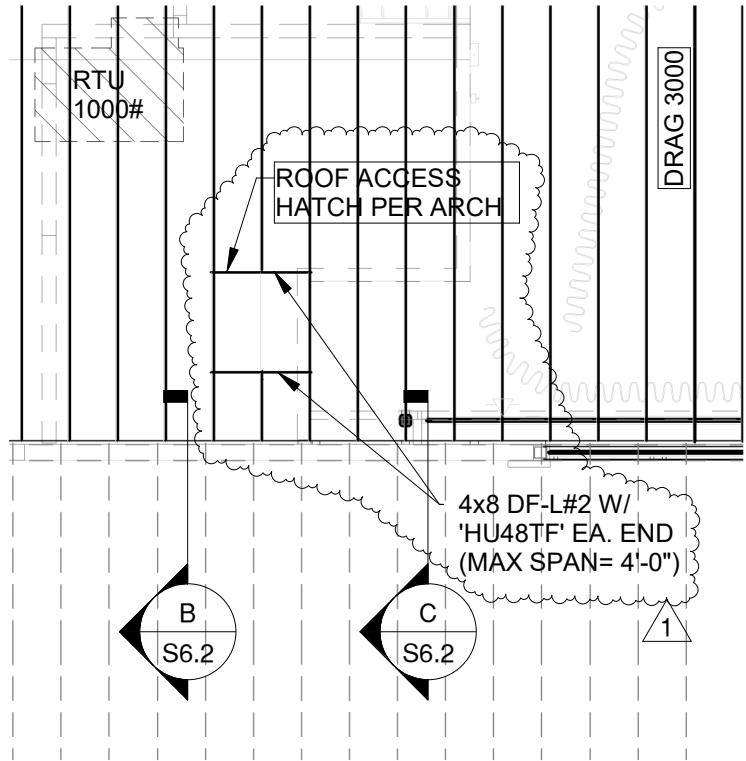


**McClendon
Engineering Inc**

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PROJECT: HORIZON ELEMENTARY ADD JEROME SCHOOL DISTRICT		
ADDENDUM 01 02/14/22		
DATE: 2/14/22	REF: L/S3.1	
BY: JM	CHK: SM	MCE JOB #: 1098.21



SK2

ROOF FRAMING PLAN

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

McClendon Engineering Inc

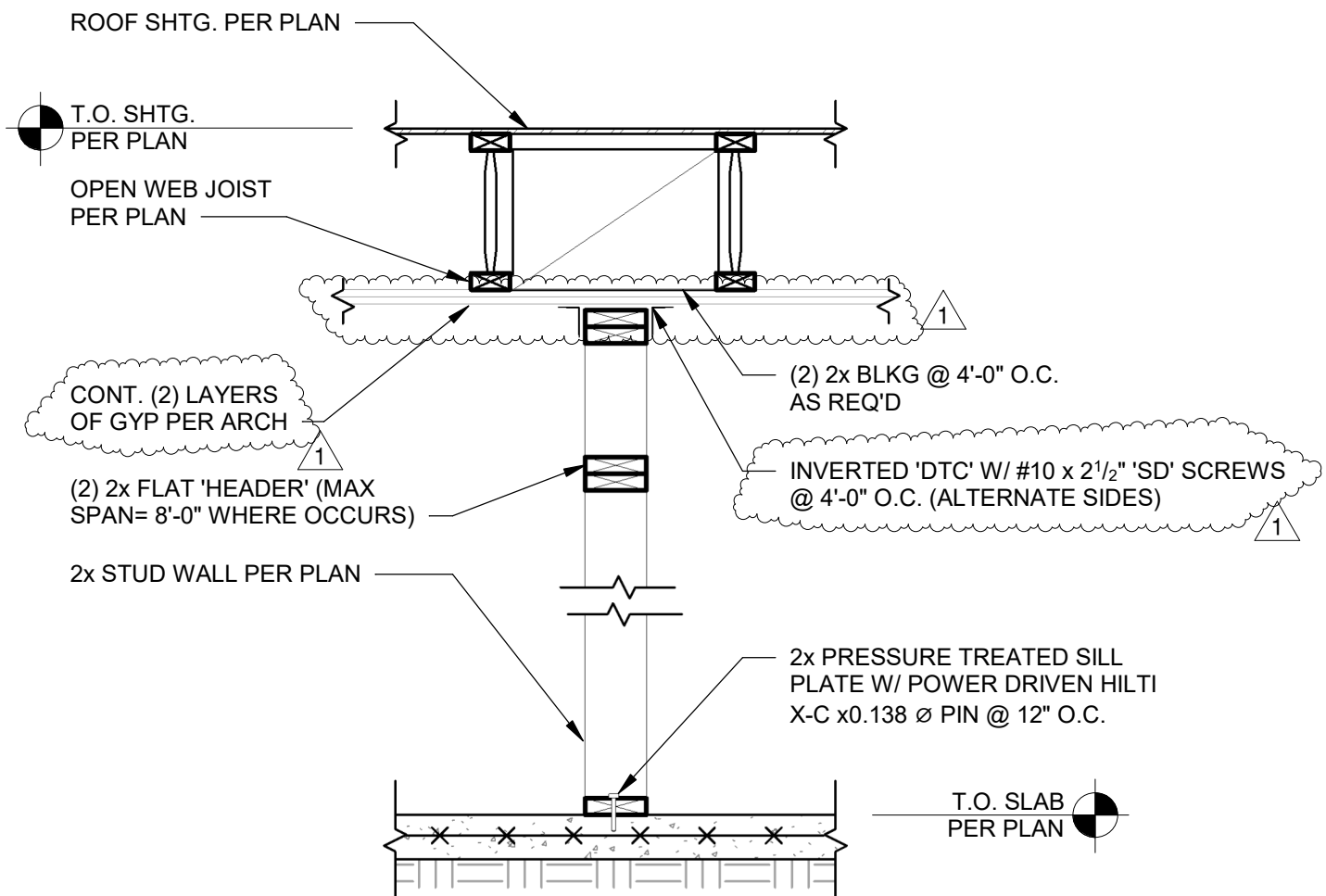
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Fax: 208.331.4568



PROJECT:
HORIZON ELEMENTARY ADD
JEROME SCHOOL DISTRICT

ADDENDUM 01 02/14/22

DATE: 2/14/22		REF: 1/S5.0
BY: JM	CHK: SM	MCE JOB #: 1098.21



SK3

DETAIL @ NON-LOAD BEARING/FULL HT. WALL

SCALE: 3/4" = 1'-0"

McClendon Engineering Inc

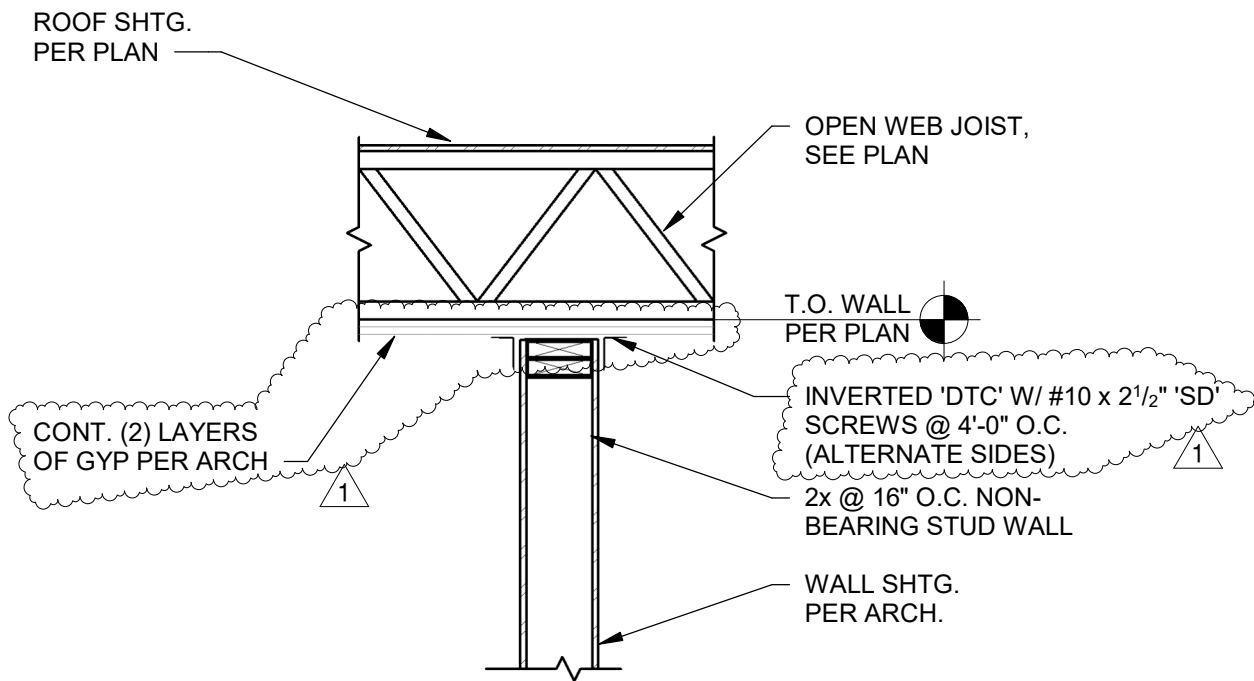
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PROJECT:
**HORIZON
ELEMENTARY ADD**
JEROME SCHOOL DISTRICT

ADDENDUM 01 02/14/22

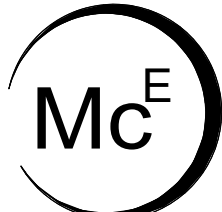
DATE: 2/14/22		REF: 6/S6.0
BY: JM	CHK: SM	MCE JOB #: 1098.21



SK4

TRUSS @ NON-BEARING WALL

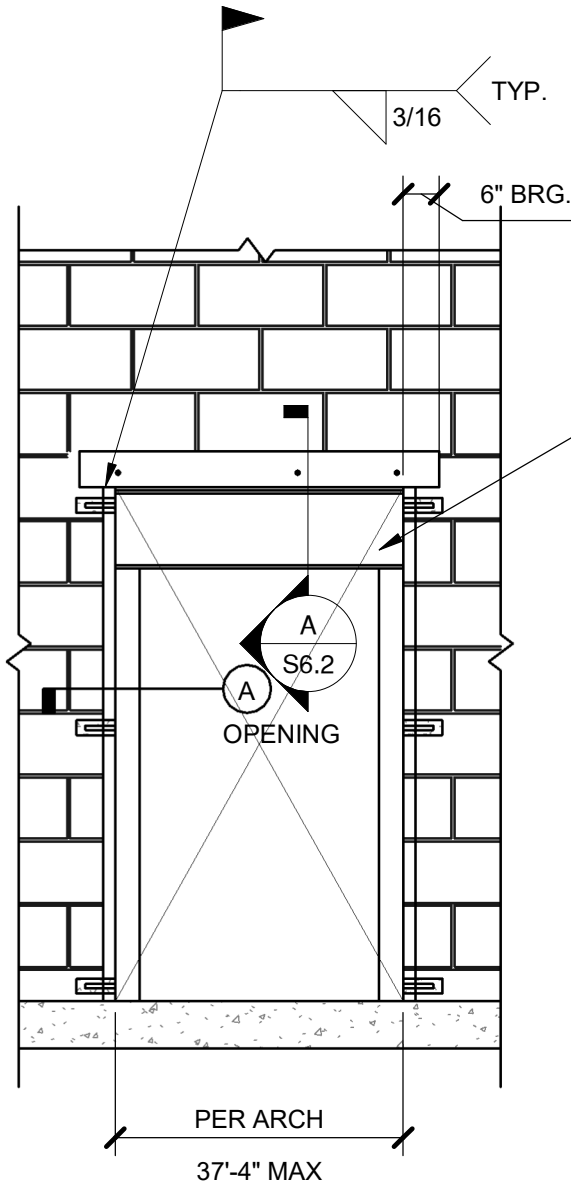
SCALE: 3/4" = 1'-0"



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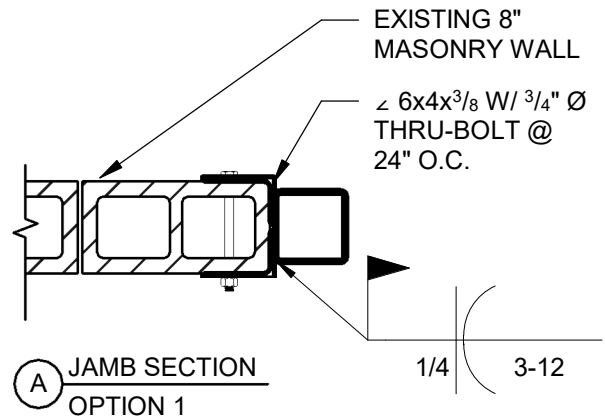


PROJECT: HORIZON ELEMENTARY ADD JEROME SCHOOL DISTRICT		
ADDENDUM 01 02/14/22		
DATE: 2/14/22	REF: 7/S6.0	
BY: JM	CHK: SM	MCE JOB #: 1098.21



NOTE:
 TEMPORARY SHORING DURING CONSTRUCTION IS OUTSIDE THE SCOPE OF THE STRUCTURAL ENGINEER AND THEREFORE, STABILITY OF THE STRUCTURE DURING CONSTRUCTION IS THE SOLE RESPONSIBILITY OF THE OWNER & THE CONTRACTOR.

'W' BEAM
 PER PLAN



(A) JAMB SECTION
 OPTION 1

1/4 3-12

SK5

NEW OPENING IN EXISTING CMU WALL

SCALE: N.T.S.

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PROJECT:
**HORIZON
 ELEMENTARY ADD**
 JEROME SCHOOL DISTRICT

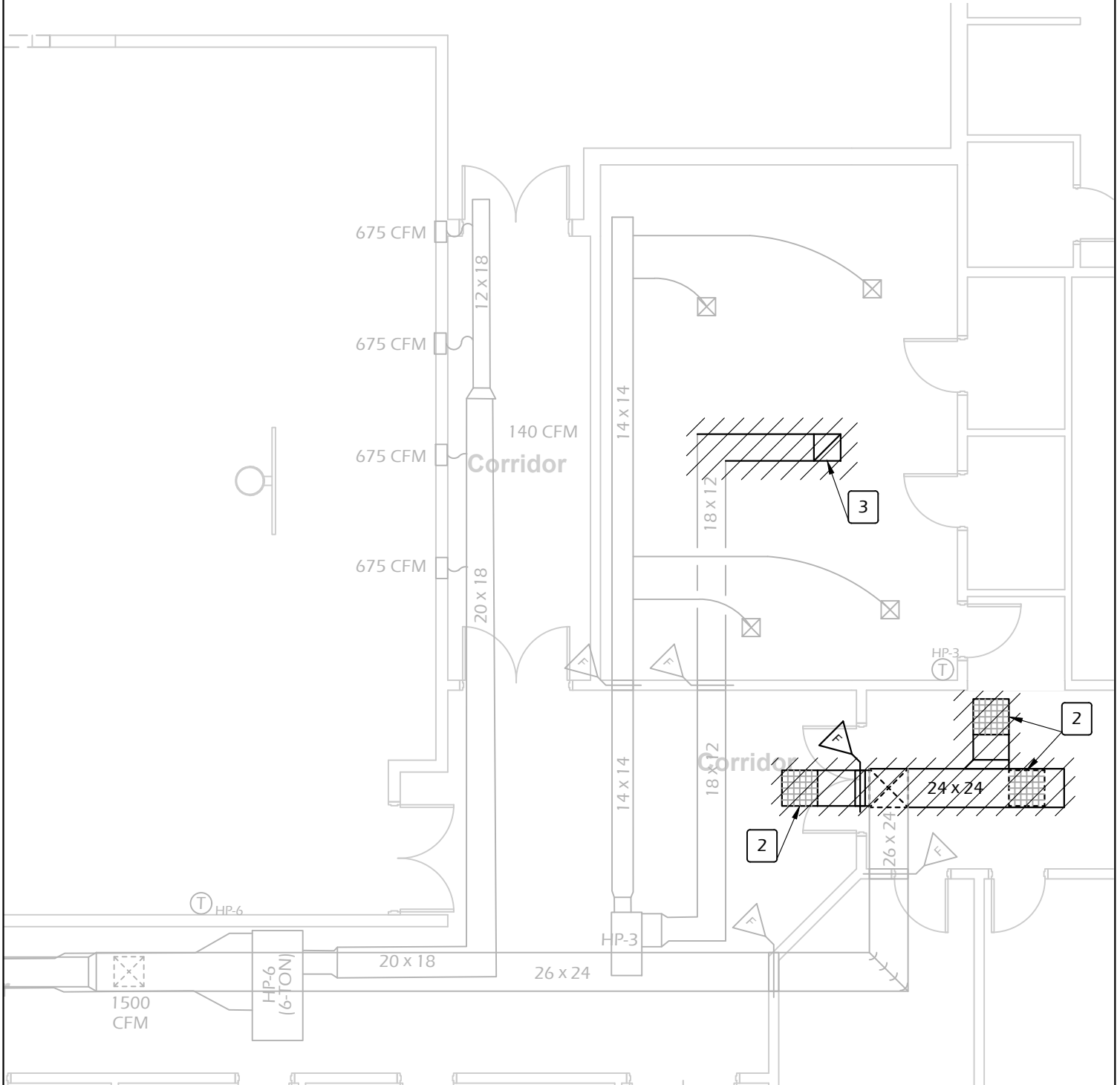
ADDENDUM 01 02/14/22

DATE: 2/14/22		REF: 8/S6.0
BY: JM	CHK: SM	MCE JOB #: 1098.21

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KEY NOTES:

- 2. EXISTING FRESH AIR GRILLE AND ALL ASSOCIATED FRESH AIR DUCTWORK TO BE REMOVED. EXISTING FRESH AIR DUCTWORK TO BE REMOVED UP TO MAIN BRANCH LINE AND CAPPED. REFERENCE SHEET M2.1_HVAC PLAN FOR NEW FRESH AIR ROUTING.
- 3. EXISTING RETURN AIR GRILLE AND ALL ASSOCIATED RETURN AIR DUCTWORK TO BE REMOVED AND REROUTED. REFERENCE SHEET M2.1_HVAC PLAN FOR NEW LOCATION OF RETURN AIR GRILLE AND DUCT ROUTING.



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A MECHANICAL CONSULTING FIRM
9384 W. Overland Rd. Phone: (208) 658-0218
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Horizon Elementary Gym and Cafeteria Addition

Gym Fresh Air Addition

DATE: 02-09-22

DRAWN: MM

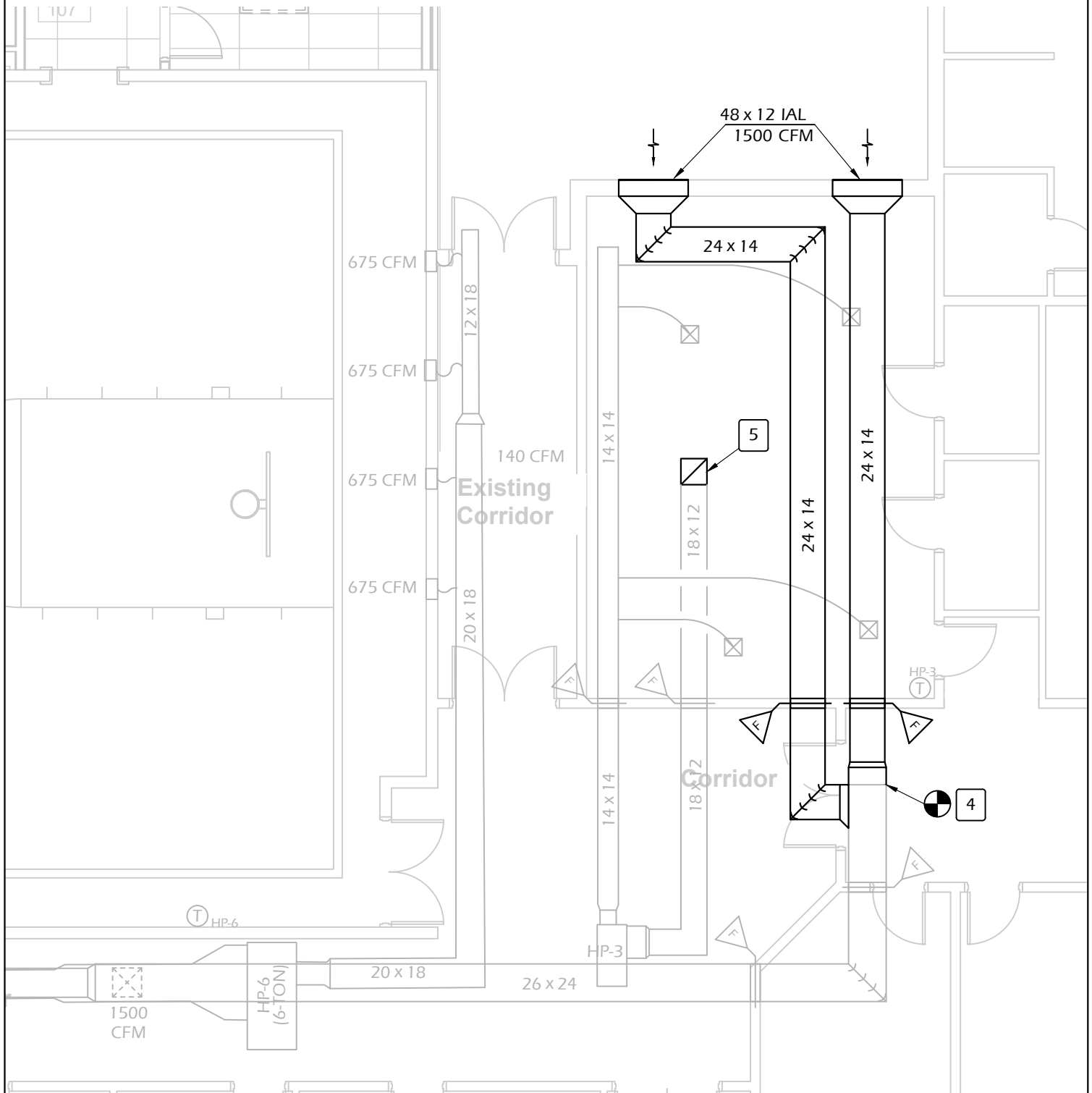
TE JOB# 21192.10

SKETCH NUMBER: SK-1.1 SHEET REFERENCE: M2.0

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KEY NOTES:

- 4. CONNECT NEW FRESH AIR DUCT TO EXISTING FRESH AIR DUCT MAIN AS REQUIRED. MECHANICAL CONTRACTOR TO VERIFY SIZE AND LOCATION OF EXISTING FRESH AIR DUCT MAIN PRIOR TO WORK COMMENCING.
- 5. LOCATION OF RELOCATED RETURN AIR GRILLE. RECONNECT TO EXISTING RETURN AIR DUCT AS REQUIRED.



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Horizon Elementary Gym and Cafeteria Addition

Gym Fresh Air Addition

DATE: 02-09-22

DRAWN: MM

TE JOB# 21192.10

SKETCH NUMBER: SHEET REFERENCE:

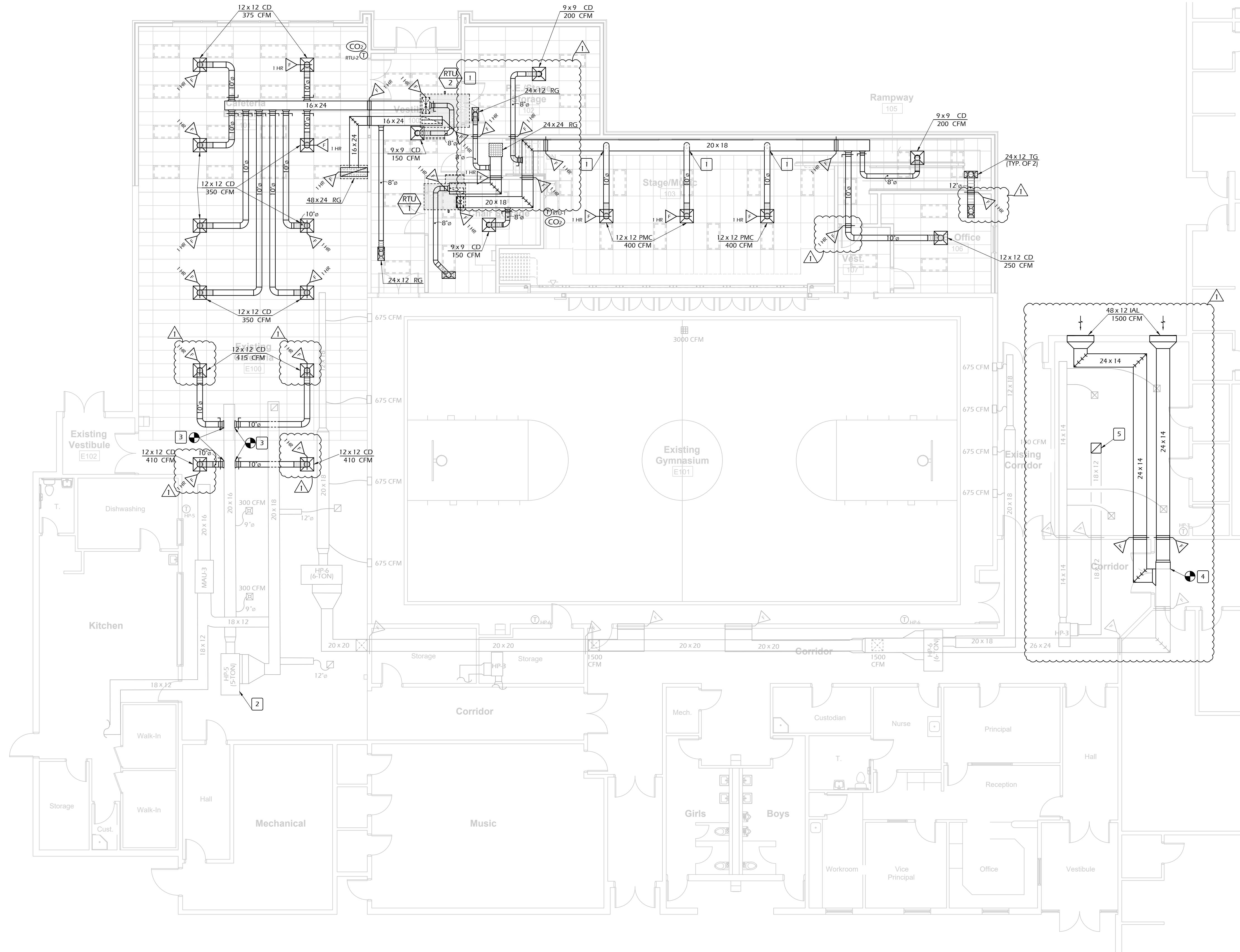
SK-1.2

M2.1

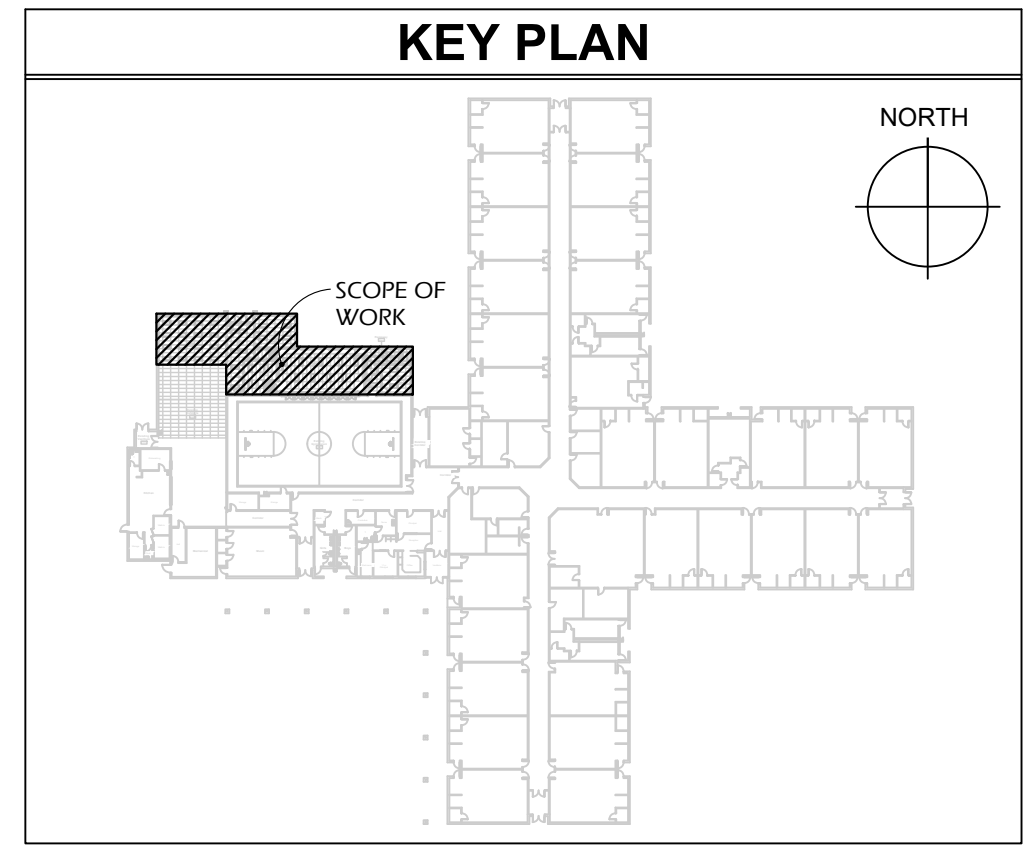
GRILLE AND REGISTER SCHEDULE

SYMBOL	DESCRIPTION	TYPE	FINISH
IAL	INTAKE AIR LOUVER	'RUSKIN' ELF 375DX	1

1 MECHANICAL CONTRACTOR TO COORDINATE COLOR/FINISH WITH ARCHITECT/OWNER PRIOR TO ORDER.



1 HVAC PLAN
 1/8" = 1'-0"
 8 | 6 | 4 | 2 | 0 8 16 24



- GENERAL NOTES:**
- COORDINATE EXACT LOCATION OF DIFFUSERS & GRILLES WITH REFLECTED CEILING & LIGHTING LAYOUTS.
 - FLEX DUCT RUN-OUTS LIMITED TO 5'-0" MAXIMUM.
 - COORDINATE HVAC EQUIPMENT WITH ALL OTHER TRADES AS REQUIRED.
 - ALL CEILING DIFFUSERS ARE TO BE 4-WAY UNLESS NOTED OTHERWISE.
 - LINE ALL SUPPLY & RETURN DUCT MAINS WITH 1-1/2" ACOUSTICAL LINING WITHIN 15'-0" OF ALL ROOFTOP UNITS.
 - ALL DUCT DIMENSIONS SHOWN ARE INTERIOR DIMENSIONS.
 - PROVIDE FACTORY FABRICATED ACCESS PANELS IN DUCT FOR EACH FIRE/SMOKE DAMPER AND SMOKE DETECTOR.
 - SEAL ALL MECHANICAL PENETRATIONS THROUGH FIRE-RATED ASSEMBLIES WITH U.L. APPROVED FIRE-RATED SYSTEM.
 - ROUND DUCT OR RECTANGULAR DUCT MAY BE SUBSTITUTED FOR DUCT SIZES SHOWN ON PLANS PROVIDED EQUIVALENT AIR PRESSURE DROPS ARE MAINTAINED.
 - WHERE DUCTWORK PENETRATES FIRE RATED FLOOR, CEILING, OR WALL, CLOSE OFF SPACE BETWEEN DUCT AND ADJACENT WORK WITH FIRESTOPPING INSULATION AND CAULK AIRTIGHT. PROVIDE CLOSE FITTING METAL COLLAR OR ESCUTCHEON COVERS AT BOTH SIDES OF PENETRATION.
 - PROVIDE CEILING RADIATION DAMPERS AT MEMBRANE PENETRATIONS IDENTIFIED ON ARCHITECTURAL PLANS.

- KEY NOTES:**
- MECHANICAL CONTRACTOR TO COORDINATE ALL DUCTWORK IN TRUSSES WITH TRUSS MANUFACTURER PRIOR TO WORK COMMENCING.
 - EXISTING UNIT, MECHANICAL CONTRACTOR TO FIELD VERIFY AND CLEAN/INSPECT TO ENSURE FULL OPERATION.
 - CONNECT NEW SUPPLY AIR DUCT TO EXISTING SUPPLY AIR DUCT MAIN AS REQUIRED. MECHANICAL CONTRACTOR TO VERIFY SIZE AND LOCATION OF EXISTING SUPPLY AIR DUCT MAIN PRIOR TO WORK COMMENCING.
 - CONNECT NEW FRESH AIR DUCT TO EXISTING FRESH AIR DUCT MAIN AS REQUIRED. MECHANICAL CONTRACTOR TO VERIFY SIZE AND LOCATION OF EXISTING FRESH AIR DUCT MAIN PRIOR TO WORK COMMENCING.
 - LOCATION OF RELOCATED RETURN AIR GRILLE. RECONNECT TO EXISTING RETURN AIR DUCT AS REQUIRED.

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PROFESSIONAL ENGINEER
 REGISTERED
 7009
 8-21-21
 STATE OF IDAHO
 ROBERT D. TIKKER

TIKKER ENGINEERING
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 Phone: (208) 333-2218
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 Job # 21192

Revisions	Date
Description	02-18-22
ADDENDUM #1	

An Addition to
Horizon Elementary School
 Jerome School District No. 261, Jerome, Idaho

DATE: 12/17/21
 LKV PROJECT #: 2122

DRAWN BY: UM
 CHECKED BY: BT

BID SET

DRAWING NO.:

M2.1
 HVAC PLAN



world wide web: e2co.com

800 s. industry way suite 350
meridian, idaho 83642
phone: 208.378.4450
fax: 208.378.4451

February 18, 2022

Greg Bush
LKV Architects
2400 East Riverwalk
Boise, Id 83706

Subject: Horizon Elementary School Addition - Jerome, ID.
Addendum 1 electrical (e2co) information

Dear Greg:

Please include the following information in your next addendum.

Modifications and Clarifications to the electrical design documents (plan view drawings and specifications):

Sheets with Modifications/Clarifications:

Sheet E2.0DA-DD

Add general note as follows:

Any any existing item being removed is to be disconnected and removed including the conduits and conductors unless the device is located in a location that doesn't allow for that to happen (block, brick, concrete walls). In that instance the contractor is required to furnish and install blank cover plates where the device was located. The conduit would then remain in place – but all conductors would need to be removed. In areas where removal occurs, the contractor is responsible for patching walls to finished conditions.

Sheet E2.0P

Add 120v dedicated circuit and quad receptacle at location of gym sound system cabinet.

See electrical sketch sheet ESK-1 for plan view information.

Sheet E2.0S

Add ceiling mounted data drop for wifi access point.
Add keynote 14 to sheet E2.0S.

14. FURNISH AND INSTALL CEILING MOUNTED DATA DROP FOR CONNECTION TO A WIFI TRANCEIVER (WAP - WIRELESS ACCESS POINT). THE TRANSCEIVER SHALL BE FURNISHED AND INSTALLED BY THE SCHOOL DISTRICT. FURNISH AND INSTALL 10' COIL OF CAT 6 CABLE AT THE LOCATION OF THE DATA DROP AND TERMINATE WITH RJ45 JACK.

See electrical sketch sheet ESK-3 for plan view information.

Add gym sound system in gym with headend equipment (cabinet) in PE office.
Add keynote 15 to sheet E2.0S.

15. FURNISH AND INSTALL A COMPLETE GYM SOUND SYSTEM. FURNISH AND INSTALL ALL COMPONENTS NOTED IN THE GYM SOUND SYSTEM SPECIFICATION. UTILIZE WALL MOUNTED CABINET AT THIS LOCATION. VERIFY ALL EQUIPMENT LOCATIONS WITH OWNER PRIOR TO ROUGH-IN.

See electrical sketch sheet ESK-2 for plan view requirements.

Add gym sound system speakers in gym area.
Add keynote 16 to sheet E2.0S

16. FURNISH AND INSTALL WALL MOUNTED GYM SOUND SYSTEM SPEAKER. FURNISH AND INSTALL ALL COMPONENTS NOTED IN THE GYM SOUND SYSTEM SPECIFICATION. VERIFY ALL EQUIPMENT LOCATIONS AND MOUNTING HEIGHTS WITH OWNER PRIOR TO ROUGH-IN.

See electrical sketch sheet ESK-2 for plan view requirements.
See s electrical ketch sheet ESK-3 for plan view requirements.

Add gym sound system volume control in gym area.
Add keynote 17 to sheet E2.0S

17. FURNISH AND INSTALL WALL MOUNTED GYM SOUND SYSTEM REMOTE VOLUME CONTROL. FURNISH AND INSTALL ALL COMPONENTS NOTED IN THE GYM SOUND SYSTEM SPECIFICATION. VERIFY ALL EQUIPMENT LOCATIONS AND MOUNTING HEIGHTS WITH OWNER PRIOR TO ROUGH-IN.

See electrical sketch sheet ESK-2 for plan view requirements.

Add security access control raceway system at exterior door.
Add keynote 18, 19, 20 to sheet E2.0S

18. FURNISH AND INSTALL RACEWAY SYSTEM AND CONDUCTORS FOR DOOR POSITION MONITORING AND DOOR RELEASE AT EXTERIOR MAN DOOR. JUNCTION BOX SHALL BE MOUNTED ON WALL ABOVE DOOR WITH CONDUIT ROUTED TO DOOR FRAME. PROVIDE CONDUIT HOME RUN ROUTED AT STRUCTURE TO ACCESSIBLE AREA. ENSURE A PATHWAY TO SECURITY HEAD END EQUIPMENT (PROVIDE ALL REQUIRED RACEWAY AND SLEEVES FROM/IN NON ACCESSIBLE LOCATIONS).
19. JUNCTION BOX FOR CARD READER/ACCESS CONTROL - COORDINATE JUNCTION BOX REQUIREMENTS WITH OWNER/SECURITY CONTRACTOR.
20. COORDINATE ALL WORK ASSOCIATED WITH THE SECURITY SYSTEM/DOOR HARDWARE WITH OWNER AND DOOR HARDWARE PROVIDER PRIOR TO ANY ROUGH-IN.

See electrical sketch sheet ESK-4 for plan view requirements.

Sheet E3.1

Updated load summary

See electrical sketch sheet ESK-5 for plan view information.

Updated Panel G Schedule

See electrical sketch sheet ESK-6 for plan view information.

Specification Additions/Clarifications:

(2) new specification sections were added:

- 275118 - Gym Sound System
- 275200 - Classroom Audio System

(1) Clarification is noted to the raceway and boxes and/or low voltage electrical power Conductors specifications for raceway installation/routing requirements.

All conduit and conductors are to be installed recessed in the wall or above the ceiling from the junction box the device is being installed on routed recessed (not surface mounted). This is the case for all sheet rock walls. In existing walls, cut in boxes shall be utilized and flex conduit or MC cable assembly shall be utilized to fish up wall to an accessible location.

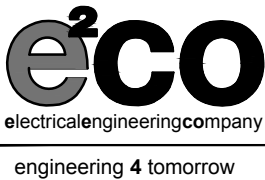
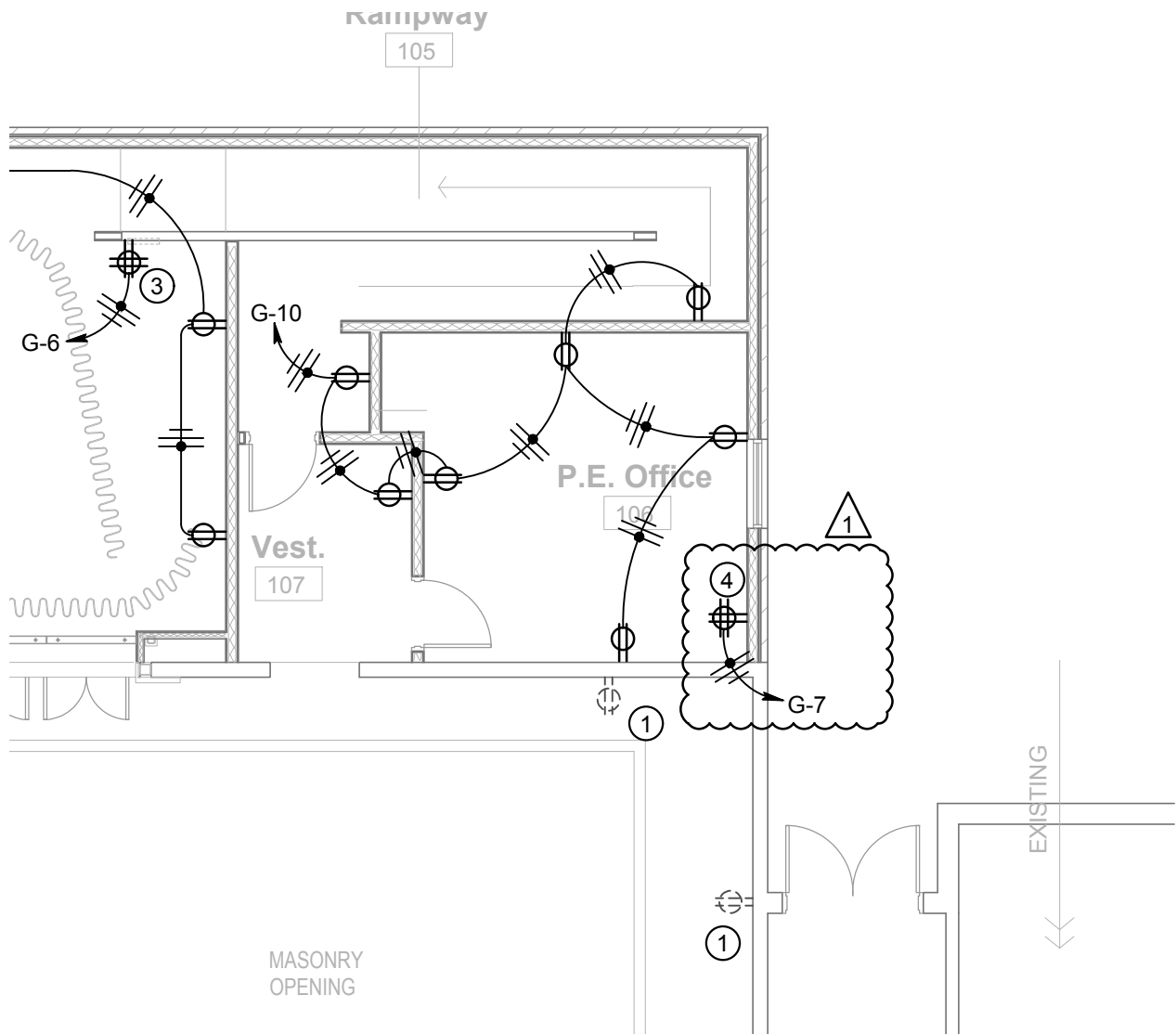
In areas where surface mounted devices are required to be installed (example: gym speaker locations – due to block/brick walls.) the conduit shall be routed up to structure (above accessible ceiling) and painted to match color of wall.

Please let me know if you have any questions or comments.

Thank you

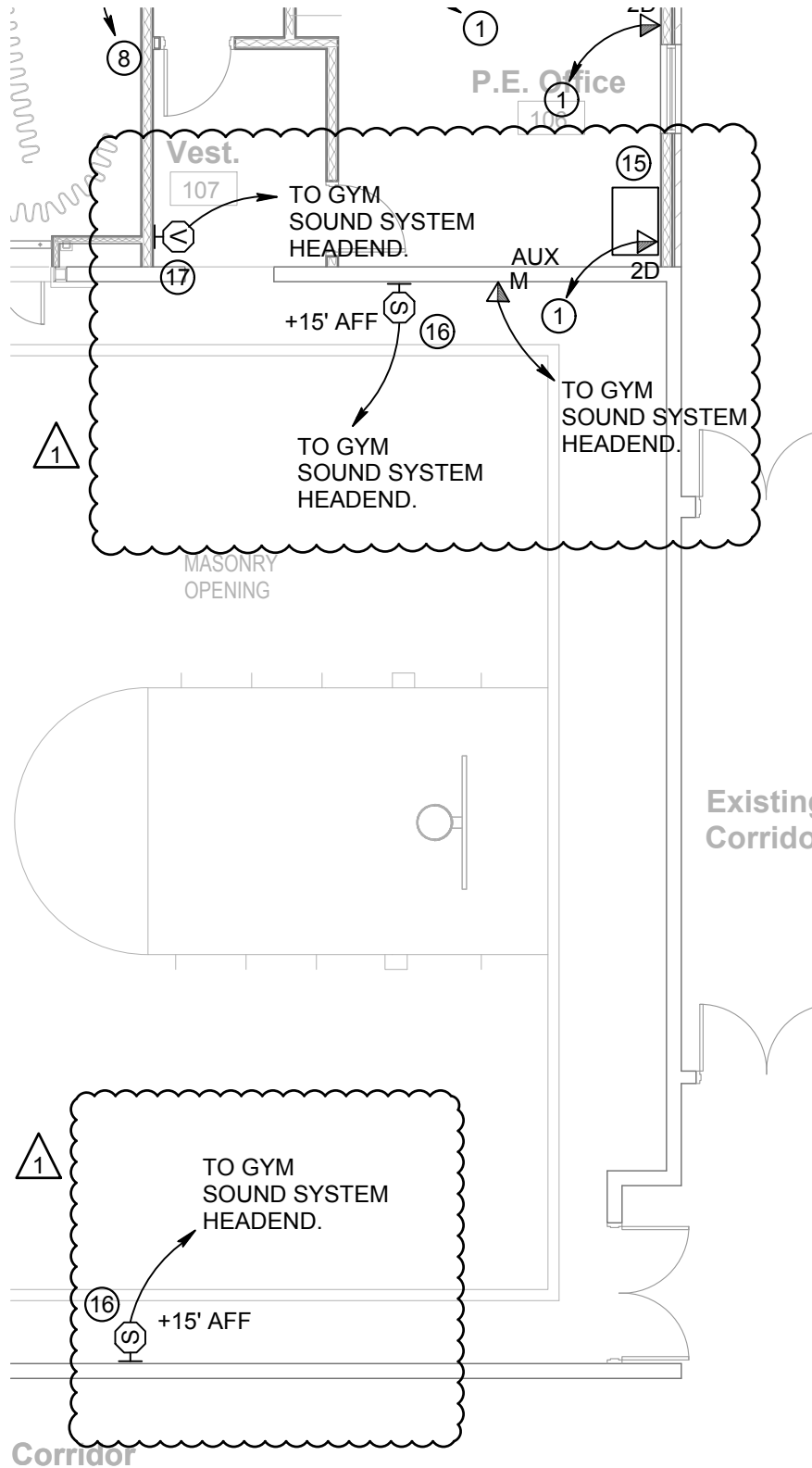
Jon Van Stone, PE, LC, LEED AP
Principal
Electrical Engineering Company

4. RECEPTACLE FOR GYM SOUND SYSTEM. RECEPTACLE TO BE MOUNTED WITHIN THE SOUND SYSTEM CABINET, COORDINATE MOUNTING WITH EQUIPMENT SUPPLIER.

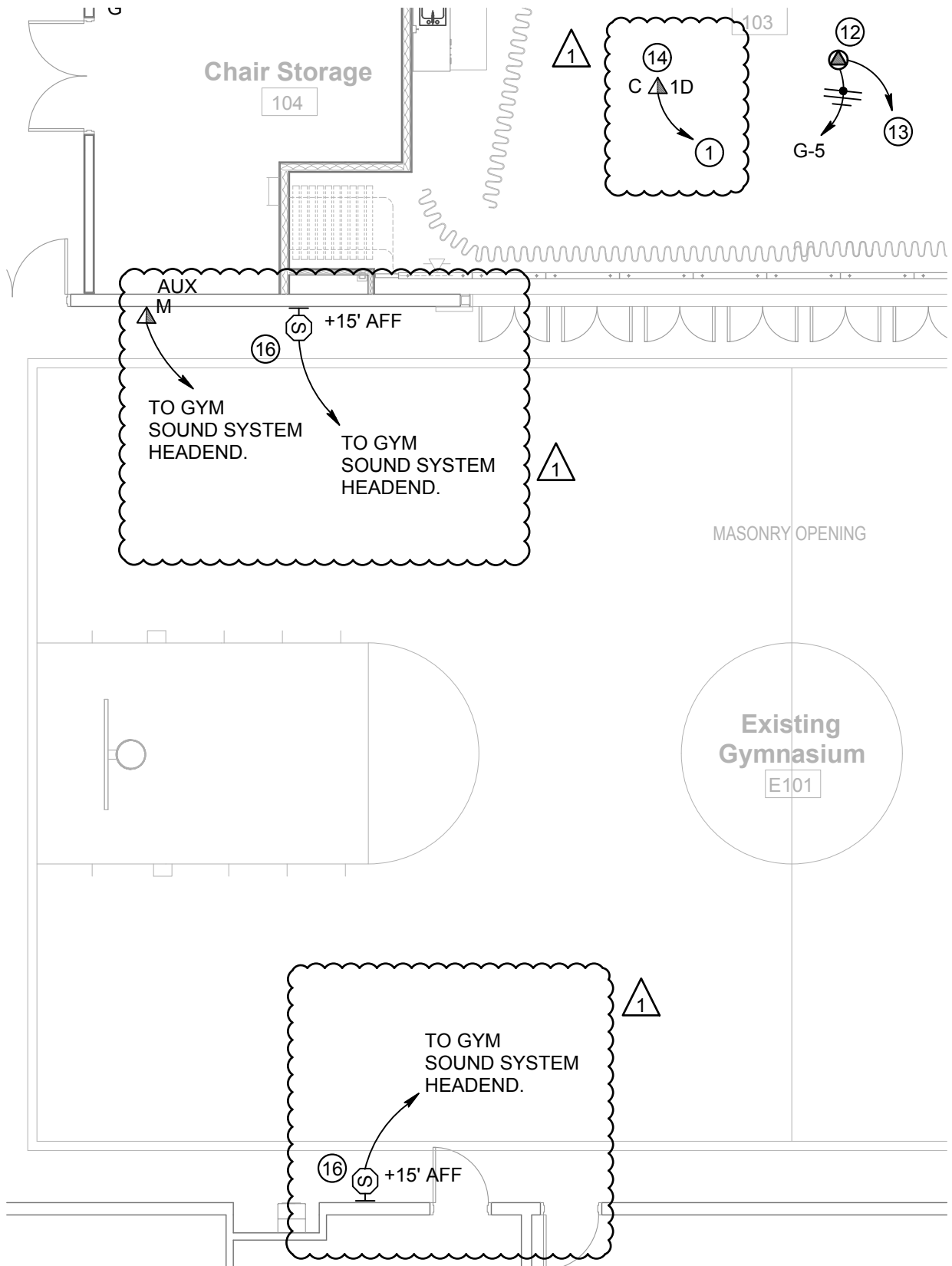


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POWER PLAN		ESK-1	
DRAWING NAME		SKETCH NO.	
SCALE: 1/8"=1'-0"	DATE 2/17/2022	SHEET REFERENCED	E2.0P



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SPECIAL SYSTEMS PLAN		ESK-2	
DRAWING NAME		SKETCH NO.	
SCALE: 1/8"=1'-0"	DATE 2/17/2022	SHEET REFERENCED	E2.0S



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SPECIAL SYSTEMS PLAN

ESK-3

DRAWING NAME

SKETCH NO.

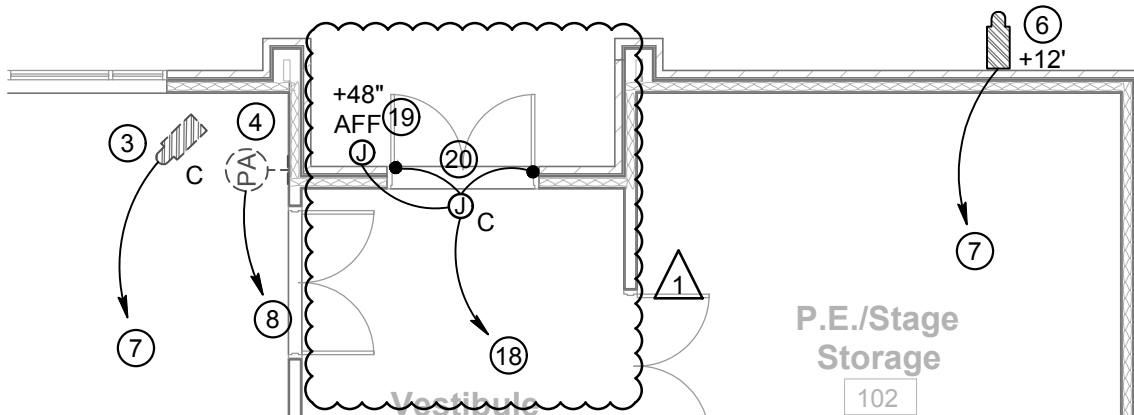
SCALE: 1/8"=1'-0"

DATE 2/17/2022

SHEET REFERENCED

E2.0S

13. FURNISH AND INSTALL CONNECTION TO THE FIRE ALARM SYSTEM FOR MUTING OF THE TOPCAT SYSTEM. THE FIRE ALARM INPUT IS INTERGRAL TO THE TOPCAT SYSTEM.SEE CLASSROOM SOUND SYSTEM SPECIFICATION FOR ADDITIONAL REQUIREMENTS.
14. FURNISH AND INSTALL CEILING MOUNTED DATA DROP FOR CONNECTION TO A WIFI TRANCEIVER (WAP - WIRELESS ACCESS POINT). THE TRANCEIVER SHALL BE FURNISHED AND INSTALLED BY THE SCHOOL DISTRICT. FURNISH AND INSTALL 10' COIL OF CAT 6 CABLE AT THE LOCATION OF THE DATA DROP AND TERMINATE WITH RJ45 JACK.
15. FURNISH AND INSTALL A COMPLETE GYM SOUND SYSTEM. FURNISH AND INSTALL ALL COMPONENTS NOTED IN THE GYM SOUND SYSTEM SPECIFICATION. UTILIZE WALL MOUNTED CABINET AT THIS LOCATION. VERIFY ALL EQUIPMENT LOCATIONS WITH OWNER PRIOR TO ROUGH-IN.
16. FURNISH AND INSTALL WALL MOUNTED GYM SOUND SYSTEM SPEAKER. FURNISH AND INSTALL ALL COMPONENTS NOTED IN THE GYM SOUND SYSTEM SPECIFICATION. VERIFY ALL EQUIPMENT LOCATIONS AND MOUNTING HEIGHTS WITH OWNER PRIOR TO ROUGH-IN.
17. FURNISH AND INSTALL WALL MOUNTED GYM SOUND SYSTEM REMOTE VOLUME CONTROL. FURNISH AND INSTALL ALL COMPONENTS NOTED IN THE GYM SOUND SYSTEM SPECIFICATION. VERIFY ALL EQUIPMENT LOCATIONS AND MOUNTING HEIGHTS WITH OWNER PRIOR TO ROUGH-IN.
18. FURNISH AND INSTALL RACEWAY SYSTEM AND CONDUCTORS FOR DOOR POSITION MONITORING AND DOOR RELEASE AT EXTERIOR MAN DOOR. JUNCTION BOX SHALL BE MOUNTED ON WALL ABOVE DOOR WITH CONDUIT ROUTED TO DOOR FRAME. PROVIDE CONDUIT HOME RUN ROUTED AT STRUCTURE TO ACCESSIBLE AREA. ENSURE A PATHWAY TO SECURITY HEAD END EQUIPMENT (PROVIDE ALL REQUIRED RACEWAY AND SLEEVES FROM/IN NON ACCESSIBLE LOCATIONS.
19. JUNCTION BOX FOR CARD READER/ACCESS CONTROL - COORDINATE JUNCTION BOX REQUIREMENTS WITH OWNER/SECURITY CONTRACTOR.
20. COORDINATE ALL WORK ASSOCIATED WITH THE SECURITY SYSTEM/DOOR HARDWARE WITH OWNER AND DOOR HARDWARE PROVIDER PRIOR TO ANY ROUGH-IN.



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SPECIAL SYSTEMS PLAN

ESK-4

DRAWING NAME

SKETCH NO.

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

DATE 2/17/2022

SHEET REFERENCED

E2.0S



ELECTRICAL LOAD SUMMARY - MSB (EXISTING)
HORIZON ELEMENTARY SCHOOL

PANEL AND/OR EQUIPMENT	VOLTAGE	ELECTRICAL LOAD (KVA)								CONNECTED LOAD		DEMAND LOAD	
		LIGHTING	REC.	MOTORS	KITCHEN	HVAC	NON-CONT.	ELEC. HEAT	CONT.	KVA	AMPS	KVA	AMPS
PANEL G (NEW)	208Y/120	2.11	5.04	-	-	38.28	5.50	-	-	50.9	141	50.9	141
PANEL MSP (EXISTING)	208Y/120	-	-	47.10	-	-	-	-	-	47.1	0	47.1	131
PANEL A (EXISTING)	208Y/120	15.50	7.60	-	-	-	2.70	-	-	25.8	72	25.8	72
PANEL B (EXISTING)	208Y/120	23.30	16.70	-	-	-	-	-	-	40.0	111	40.0	111
PANEL C (EXISTING)	208Y/120	23.10	13.30	-	-	-	-	-	-	36.4	101	36.4	101
PANEL D (EXISTING)	208Y/120	18.40	13.50	-	-	-	-	-	-	31.9	89	31.9	89
PANEL F (EXISTING)	208Y/120	16.60	10.60	-	-	-	-	-	-	27.2	75	27.2	75
PANEL PA (EXISTING)	208Y/120	-	-	-	-	30.80	-	-	-	30.8	85	30.8	85
PANEL PB (EXISTING)	208Y/120	-	-	-	-	41.20	-	-	-	41.2	114	41.2	114
PANEL PC (EXISTING)	208Y/120	-	-	-	-	34.00	-	-	-	34.0	94	34.0	94
PANEL PD (EXISTING)	208Y/120	-	-	-	-	35.40	-	-	-	35.4	98	35.4	98
PANEL PF (EXISTING)	208Y/120	-	-	-	-	33.90	-	-	-	33.9	94	33.9	94
PANEL PK (EXISTING)	208Y/120	-	-	-	137.00	-	-	-	-	137.0	380	89.1	247
PANEL PM (EXISTING)	208Y/120	-	-	-	-	33.30	-	-	-	33.3	92	33.3	92
PANEL COM (EXISTING)	208Y/120	-	3.20	-	-	-	-	-	-	3.2	9	3.2	9
PANEL - PORTABLE	208Y/120	3.00	2.30	-	-	5.50	-	-	-	10.8	30	10.8	30
TOTAL (NEW)		102	72	47	137	252	8	0	0	619	1718	565	1569

MAIN SERVICE DISCONNECT/EQUIPMENT RATING: 1600 AMPS

OCPD RATING
 STANDARD RATED

Fault Current at Service Equipment

***MAXIMUM AVAILABLE FAULT CURRENT TO BE FIELD MARKED ON SERVICE EQUIPMENT PER NEC 110.24(A).

AVAILABLE FAULT CURRENT AT TERMINALS OF MAIN DISCONNECT =
 MAIN SERVICE DISCONNECT AIC RATING:

EXISTING amperes
50 K

NEC DEMAND FACTORS

LOAD TYPE	CONNECTED LOAD (VA)	DEMAND FACTOR	DEMAND LOAD (VA)	
LIGHTING	102,006	125%	127,508	
RECEPTACLES	72,240	-	41,120	FIRST 10,000VA AT 100% + REMAINDER OVER 10,000VA AT 50%
MOTORS	47,100	-	47,100	125% OF LARGEST MOTOR + 100% OF ALL OTHER MOTORS
KITCHEN EQUIPMENT	137,000	65%	89,050	1-2 UNITS=100%, 3 UNITS=90%, 4 UNITS=80%, 5 UNITS=70%, >=6 UNITS=65%
HVAC EQUIPMENT	252,380	100%	252,380	
NON-CONTINUOUS LOADS	8,200	100%	8,200	
ELECTRIC HEAT	0	125%	0	
CONTINUOUS LOADS	0	125%	0	
TOTALS	618,926	91%	565,358	VA

*** SERIES RATED EQUIPMENT SHALL BE PROVIDED IN ACCORDANCE WITH N.E.C. , AND SERIES RATED COMBINATIONS SHALL BE LISTED BY UNDERWRITERS LABORATORIES***



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An Addition to
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ELECTRICAL SCHEDULES

ESK-5

DRAWING NAME

SKETCH NO.

SCALE: NO SCALE

DATE 2/17/2022

SHEET REFERENCED

E3.1

1

PANEL: PANEL G (NEW)		PROJECT: HORIZON ELEMENTARY SCHOOL		ENCLOSURE TYPE: NEMA 1, LOCKABLE					
VOLTAGE: 208Y/120		PHASE: 3		WIRE: 4		OC PD RATING: 200 AMPS		AIC RATING: 22K	
ENTRY: TOP		FED FROM: MSB		NEUTRAL RATING: 100%		MOUNTING: SURFACE			
		MAINS: LUGS				LOCATION: STORAGE ROOM			
REMARKS: IF CONTRACTOR UTILIZES MULTIWIRE BRANCH CIRCUITS THEN CONTRACTOR SHALL PROVIDE BREAKER TIES SO THAT ALL UNGROUNDED CONDUCTORS ARE SIMULTANEOUSLY DISCONNECTED PER SECTION 210.4(B) OF THE NEC									

LOAD TYPE	NOTES	CKT NO.	DESCRIPTION	AMPS/ POLES	LOAD (VA)	LOAD AMPS	WIRE SIZE	PHASE (VA)			WIRE SIZE	LOAD AMPS	LOAD (VA)	AMPS/ POLES	DESCRIPTION	CKT NO.	NOTES	LOAD TYPE
								A	B	C								
1		1	LIGHTING	20	1131	9.4	12	2391			12	10.5	1260	20	1	RECEPTACLES - CAFETERIA ADDITION	2	2
1		3	THEATRICAL LIGHTING STAGE (TRACK)	20	975	8.1	12		1875		12	7.5	900	20	1	RECEPTACLES - HALLWAY/STORAGE ROOMS	4	2
6		5	TOPCAT IN CEILING SOUND SYSTEM	20	100	0.8	12			1180	12	9.0	1080	20	1	RECEPTACLES - STAGE	6	2
6		7	GYM SOUND SYSTEM	20	1200	10.0	12	1560			12	3.0	360	20	1	RECEPTACLES - TEACHERS STATION	8	2
		9	SPARE	20	0.0	0.0	12		1080		12	9.0	1080	20	1	RECEPTACLES - PE OFFICE AND HALLWAY	10	2
		11	SPARE	20	0.0	0.0	12		0		12	0.0	0	20	1	SPARE	12	
		13	SPARE	20	0.0	0.0	12	0			12	0.0	0	20	1	SPARE	14	
		15	SPARE	20	0.0	0.0	12	0			12	0.0	0	20	1	SPARE	16	
		17	SPARE	20	0.0	0.0	12			360	12	3.0	360	20	1	ROOF RECEPTACLES	18	2
		19	SPARE	20	0.0	0.0	12	3960			6	33.0	3960	60	3	RTU-1	20	5
		21	SPARE	20	0.0	0.0	12	3960			6	33.0	3960	60	3	***	22	5
		23	SPARE	20	0.0	0.0	12	3960		3960	6	33.0	3960	60	3	***	24	5
		25	SPARE	20	0.0	0.0	12	2000			10	16.7	2000	30	3	RTU-2 (ECONOMIZER)	26	5
		27	SPARE	20	0.0	0.0	12	2000			10	16.7	2000	30	3	***	28	5
		29	SPARE	20	0.0	0.0	12	2000		2000	10	16.7	2000	30	3	***	30	5
		31	SPARE	20	0.0	0.0	12	4800			6	40.0	4800	60	3	RTU-2	32	5
		33	SPARE	20	0.0	0.0	12	4800		4800	6	40.0	4800	60	3	***	34	5
		35	SPARE	20	0.0	0.0	12	4800		4800	6	40.0	4800	60	3	***	36	5
		37	SPARE	20	0.0	0.0	12	2000			10	16.7	2000	30	3	RTU-2 (ECONOMIZER)	38	5
6	3	39	WATERHEATER	30	2100	17.5	10		4100		10	16.7	2000	30	3	***	40	5
6	3	41	***	30	2100	17.5	10		4100		10	16.7	2000	30	3	***	42	5

PHASE LOADING	16711	17815	16400	VA
	139	148	137	AMPS
% UNBALANCE	1.6%	4.9%	3.4%	

LOAD #	LOAD TYPE	CONNECTED LOAD (VA)	DEMAND FACTOR	DEMAND LOAD (VA)
1	LIGHTING	2,106	1.25	2,633
2	RECEPTACLE	5,040	"	5,040
3	MOTOR	0	"	0
4	KITCHEN EQUIP	0	0.00	0
5	HVAC	38,280	1.00	38,280
6	NON-CONTINUOUS	5,500	1.00	5,500
7	ELECTRIC HEAT	0	1.25	0
8	CONTINUOUS	0	1.25	0

0 UNITS

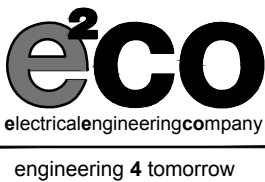
TOTAL:	50,926	1.01	51,453	VA
SIZE OF LARGEST MOTOR:	0.0	KVA		

PANEL ELECTRICAL LOAD DATA	
TOTAL CONNECTED LOAD:	50.9 KVA
	141 AMPS
TOTAL DEMAND LOAD:	51.5 KVA
	143 AMPS ✓

PANEL OCPD RATING
STANDARD RATED

DEMAND FACTOR NOTES
* FIRST 10,000VA AT 100%, REMAINING OVER 10,000VA AT 50%
** 125% OF LARGEST + 100% OF REMAINING MOTORS

PANEL NOTES	
1.	PROVIDE CLASS 'A' GFCI TYPE BREAKER
2.	BREAKER TO BE RED HANDED
3.	INSTALL LOCK ON DEVICE ON BREAKER (SET SCREW, NON-PADLOCK TYPE)
4.	ROUTE CIRCUIT TO LTG. RELAY CONTACTOR FOR CONTROL



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An Addition to
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ELECTRICAL SCHEDULES

ESK-6

DRAWING NAME		SKETCH NO.	
SCALE: NO SCALE	DATE: 2/17/2022	SHEET REFERENCED: E3.1	

SECTION 275118 - GYM SOUND SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

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

1.2 SUMMARY

- A. This Section includes equipment for the Gym Sound System.

1.3 DEFINITIONS

- A. Channels: Separate parallel signal paths, from sources to loudspeakers or loudspeaker zones, with separate amplification and switching that permit selection between paths for speaker alternative program signals.
- B. Zone: A separate group of loudspeakers and associated supply wiring that may be arranged for selective switching between different channels.

1.4 SYSTEM COMPONENTS

- A. Components as indicated on the plans, in section 2.3. This list on components for each system is not a complete list but a baseline for the major components. Provide additional components as required for complete and operational systems.
- B. Provide system components, installation and programming as required for complete sound systems in each area as outlined in the bid documents.

1.5 SUBMITTALS

- A. The submittal package shall include the following.
 - 1. Installer and supplier qualifications.
 - 2. A list of components and quantities for each piece of equipment.
 - 3. Product data for each piece of equipment in order matching the list of components.
 - 4. Indicate the specific product part number and options if more than one is listed in the data.
 - 5. Shop Drawings: Detail equipment assemblies and indicate dimensions, weights, required clearances, method of field assembly, components, and location of each field connection. Include control panel layouts, rack layouts and wiring diagrams for each system.
 - 6. Maintenance data, where applicable.
 - 7. Warranty information.

1.6 QUALITY ASSURANCE

- A. Installer and supplier Qualifications:
 - 1. The approved installer must be an authorized representative of equipment manufacturer for installation, programming, and maintenance of equipment required for this section.
 - 2. Installer to be able to provide factory and manufacturer programming certifications and be able to provide proof of certification prior to bid. (ie BSS, JBL, pro level Bose, etc.) and other listed manufacturers.

3. Must be able to provide as a company a minimum of 10 years' experience of designing, installing and equalization of sound systems of similar magnitude.
4. Proper licensing for public works.
- B. Electrical Components, Devices, and Accessories: Listed and labeled as defined in the NEC, Article 100, by a testing agency acceptable to authorities having jurisdiction.
- C. Comply with the NEC.
- D. Comply with UL 50.
- E. The contractor shall guarantee availability of service by factory-trained personnel of all specified equipment from an authorized distributor of all equipment specified under this section. On-the-premise warranty shall be provided at no cost to the owner for a period of one (1) year (parts and labor) from date of project acceptance. All electronic products shall be covered by a five (5) year parts warranty from the date of project acceptance. The warranty period shall begin on the date of acceptance by the owner.
- F. Equipment manufacture to provide a written 5-year parts warranty for all electronic equipment.
- G. Testing
 1. Instrumentation: The AV Contractor shall provide the following test equipment for use during initial tests and adjustments and during acceptance testing and final adjustment of the system:
 2. Sound Level Meter: Shall meet ANSI S1.4 specifications for Type I sound level meters. SMAART with a Type I microphone and calibrator is acceptable.
 3. Sine Wave Generator: Continuously variable from 20 Hz to 20,000 Hz within +1 dB with less than 0.5% THD.
 4. Pink Noise Generator: Generator shall produce at least 1-volt RMS of pink noise.
 5. AC Voltmeter: With frequency response of +1 dB from 20 to 20,000 Hz, 0.0001 volts to minimum input impedance of 0.1 megohm.
 6. Data Communications Cable Verifier: Fluke MicroScanner2 or equivalent.
 7. Polarity checker: Studio Six Digital AudioTools speaker polarity module or equivalent.
 8. All other equipment required to conduct tests, equipment setup and checkouts outlined in this specification.
- H. System compliance testing and documentation. The Contractor shall perform the following tests and provide a compliance document confirming the results of all tests prior to the final Consultant site visit.
 1. Audio System Tests:
 - a. Cabling:
 - i. Check each microphone and line level cable for continuity of all conductors. Verify connectors are terminated and grounds are isolated using heat shrink. Document compliance on each line.
 - ii. Check each loudspeaker line for continuity. Positive polarity shall be marked with red or white. Negative polarity shall be marked with black.
 - iii. Data communications cabling shall be tested with a cable verifier. Document compliance.
 - b. Loudspeaker Physical Alignment:
 - i. Verify the height, vertical angle, and horizontal angle of all loudspeakers with a laser inclinometer. Document the measured aiming angles.
 - c. Loudspeaker Line Impedance:
 - i. Measure and document the impedance of each loudspeaker and associated loudspeaker line. Using an audio impedance meter (not DC resistance).

- ii. Measure full range loudspeaker impedance at 200 Hz and 2000 Hz.
- iii. Measure subwoofer impedance at 50 Hz and 100 Hz. Measure high frequency driver impedance at 4000 Hz and 8000 Hz. A full range impedance sweep using a software impedance meter is also acceptable.
- d. Loudspeaker Polarity:
 - i. Perform polarity checks on all independent loudspeakers. Loudspeakers utilizing active crossovers shall have polarity checked on all individually amplified components. Results from all polarity checks shall be included in compliance documentation.
- e. Freedom from Buzzes, Rattles and Objectionable Distortion:
 - i. Apply a slow continuous sine wave sweep at a level 3 dB below rated power amplifier output voltage. Listen carefully for buzzes, rattles, and objectionable distortion. Correct any causes of these defects, unless the cause is clearly outside the sound amplification system equipment and installation, in which case, the cause shall be brought to the attention of the Consultant.
 - ii. Listen for audible buzzes or noise in the audio system. Coordinate the operation of other building equipment, including but not limited to dimmers, motors, stage lifts, and HVAC equipment to ensure that normal operation of such devices does not cause audible noise in the sound system.
- f. Gain Control Settings:
 - i. Establish tentative normal settings for all gain controls. All gain controls on rack-mounted equipment shall be adjusted for optimum signal-to-noise ratio and signal balance.

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

- A. Manufacturers: As listed in section 2.3 or pre-bid approved equal.

2.2 EQUIPMENT

- A. Coordinate features to form an integrated system. Match components and interconnections for optimum performance of specified functions. Provide all mounting and support hardware for all equipment and devices.
- B. Provide all power distribution/conditioning, remote power control, power sequencers and related equipment for each system.
- C. Equipment: Modular type, using solid-state components, fully rated for continuous duty, unless otherwise indicated. Select equipment for normal operation on input power usually supplied at 110 to 130 V, 60 Hz.
- D. Wireless Microphones: Provide all devices, power supplies, remote mount kits, pre-manufactured low loss antenna cables and all related devices and equipment for a complete installation.
- E. All Auxiliary Input Jacks shall be 3.5mm/1.8" with stereo connections. The jacks shall can accept stereo devices. Each system is a mono system, provide signal combiner for each aux jack and make connections as required between devices and equipment as required. The signal combiners shall be located in the corresponding rack. Provide power supplies as required.

- F. Record Out Jacks shall be 3.5mm/1/8” with stereo connections. The Record Out jack shall provide the same signal that is being recorded to allow the content to be recorded on a mobile device. The jacks shall be capable of sending a stereo signal but the Left and Right channels will be the mono source. Provide and install line level a signal amplifier for each record out jack and make connections as required between devices and equipment as required. The signal amplifiers shall be located in the corresponding rack. Provide power supplies as required.
- G. All sound system face plates shall be stainless steel.
- H. Assisted Listening devices indicated below are on a per system basis. Provide a separate channel for each system to prevent crossover between systems.

2.3 COMPONENTS

- A. Gym Sound System
 1. Components:

Quantity	Make	Part Number	Model	Description
1	BSS	BLU-100	BLU-100	Digital Signal Processor
1	BSS	EC-8BV-WH	EC-8BV-WH	Wall Control
1	BSS	CONTRIOSRVR-DVS	CONTRIOSRVR-DVS	Soundweb Contrio Soundcard Version
3	Crown	DCI 2/300		Power Amplifiers
1 per spkr	JBL	MTC-30U-WH (B)		Mounting brackets
As shown	JBL	Control 30-1		Speaker.
1	NMX-Enet-300-Mpp	NMX-Enet-300-Mpp	NMX-Enet-300-Mpp	AMX Ethernet Switch
1	Audio technica	10 PRO	ATW-1301	Lapel Wireless Microphone System
1	Audio technica	10 PRO	ATW-1302	Handheld Wireless Microphone System
1	Audio technical	10 PRO	ATM75	Headworn microphone
1	Listen	LS-54-072	LS-54-072	ALS System
AR	RDL	D-J3	D-J3	Mic/Aux Jack
AR	RDL	D-XLR2M	D-XLR2M	Dual Male Jack
1	Atterotech	unBT2A	unBT2A	Bluetooth system
1	Middle Atlantic	DWR-24-22	DWR-24-22	Wall Equipment Cabinet
1	Middle Atlantic	LVFD-24	LVFD-24	Front Door
1	Middle Atlantic	DWR-RR24	DWR-RR24	Rear Rack Rails
1	Middle Atlantic	PD-920R	PD-920R	Power Distribution
1	Middle Atlantic	EB1-CP12	EB1-CP12	Blank Panels Contractor Pack
1	Middle Atlantic	LBP-1R4	LBP-1R4	Lacing Bars
1	Middle Atlantic	LBP-1.5	LBP-1.5	Lacing Bars
1	Middle Atlantic	BR1	BR1	Brush Guard
1	Middle Atlantic	UPS-S1000R		Power Supply
2	AKG	D5S	D5S	Handheld Vocal Microphone

2	Whirlwind	MK450	MK450	50' Mic Cord
1	Middle Atlantic	IUQFP-2D	IUQFP-2D	Blower Panel
1	Middle Atlantic	PDT-1020C-NS	PDT-1020C-NS	Power management
AR	West Penn	25454	25454	Mic Line
AR	West Penn	254246	254246	Cat 6
AR	West Penn	25227	25227	Speaker Cable

2. The equipment rack shall be wall mounted and shall contain all rack mounted equipment for this system including storage drawers. Provide and install blank covers for all unused rack space.
3. Provide, install and program all required modules and system components for the digital sound system.
4. There shall be one mixer output for each amplifier channel. Provide equipment and programming as required to set the proper delays for each channel so the amplified audio is delivered in unison.
5. The remote antennas shall be protected with a wire guard. Provide and install a wire guard that is large enough to allow the antennas to be adjusted in any direction. The antennas shall be aimed to provide the widest range of coverage in the gym space. Set the amplifier gain structure as per industry standard.
6. Provide and install Microphone and Auxiliary Input jacks at the locations indicated on the plans for this system.
7. Assisted Listening Equipment. Provide at least 36 Assisted listening devices. A minimum of 9 of these devices shall be hearing-aid compatible per IBC 1108.2.6. Provide all required system components, amplifiers, transmitters, antennas, cabling, ect. as required for a fully operational system.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install equipment to comply with manufacturer's written instructions.
- B. Install the caster kit for the wall mounted racks to support the center section of the rack where indicated.
- C. Wiring Method: All speaker wiring shall be in separate conduit from all other cables. Provide flex connection to all speakers, coordinate flex connection to speakers and speaker back boxes. All microphone, aux input, remote volume controls, on/off control, record out, etc shall be in conduit. See Section 260533 for conduit requirements.
- D. Speaker Wiring: The quantity of speakers shall be balanced between the available channels on the amplifiers for each system. The systems are made up of 2 channel and 4 channel amplifiers. All channels on each amplifier shall be used.
- E. Balanced Wiring: All audio circuits shall be balanced throughout the system.
- F. Wiring within Enclosures: Bundle, lace, and train conductors to terminal points with no excess. Use lacing bars in cabinets.
- G. Control-Circuit Wiring: Install number and size of conductors as recommended by system manufacturer for control functions indicated.
- H. Separation of Wires: Separate speaker-microphone, line-level, speaker-level, and power wiring runs. Install in separate raceways or, where exposed or in same enclosure, separate conductors at least 12 inches for speaker microphones and adjacent parallel power and telephone wiring. Separate other intercommunication equipment conductors as recommended by equipment manufacturer.
- I. Splices, Taps, and Terminations: Make splices, taps, and terminations on numbered terminal strips in junction, pull, and outlet boxes; terminal cabinets; and equipment enclosures.

- J. Match input and output impedances and signal levels at signal interfaces. Provide matching networks where required.
- K. Identification of Conductors and Cables: Color-code conductors and apply wire and cable marking tape to designate wires and cables to identify media in coordination with system wiring diagrams.
- L. Wall-Mounting Outlets: Flush mounted.
- M. Line Matching Transformers: Adjust the transformer taps as required for optimal system performance.
- N. Testing: Contractor shall test each input channel individually and as a mix to ensure the proper settings are applied to the mixers, delays, amplifier gain.
- O. Manual Mixers: Contractor shall provide proper settings for each channel. The optimal level shall be labeled for each channel on the mixer.
- P. Digital Mixers: Contractor must be factory certified and shall provide programming for each input and output. Provide the optimal settings for each channel. Utilize manufactures software to program the equipment. Provide programming for the remote unit associated with each digital mixer. Install the Security cover over the digital mixer controls.
- Q. Wireless Systems: The contractor shall coordinate the programming of the wireless system bands and frequencies based on data from the manufacture for the local area.
- R. Handheld microphones, wireless microphones, transmitters, cables and related equipment to be stored in the equipment rack for each system.
- S. Provide blank plates for all un-used junction box gangs.
- T. Assisted listening devices to be stored in a separate drawer from the other equipment.
- U. Labeling: Engineered labels are required. All labels shall be machine printed with permanent black ink on white background.
 - 1. Digital Mixers: Label each input/output as to the source/destination.
 - 2. Digital Mixer Remote: Label each input fader as to the source, each volume control as to what speaker(s) it controls, each switch as to it specific function.
 - 3. Manual Mixers: Label each input/output as to the source and destination. Label each level control as to the source that is connected. Also, label each channel as to the proper setting for normal operation.
 - 4. Amplifiers: Label each amplifier as to the speakers or sets of speakers it supplies, label each amp channel as to the speakers it supplies. Label each adjustable dial as to the proper setting for normal operation.
 - 5. Provide engineered label for each wire as per engineered shop drawing, as to its source and destination for all systems.
 - 6. Label the drawers as to the contents and quantities stored in each drawer.
 - 7. Wireless Microphone Systems: Label each transmitter and receiver with the location and mic number. For the systems that have a handheld and a body pack tied to the same receiver, provide a label on the inside of the rack door that explains that only one of the microphones for receiver # may be used at a time.
 - 8. Label each key as to which system and component it is for.

3.2 GROUNDING

- A. Ground cable shields and equipment to eliminate shock hazard and to minimize ground loops, common-mode returns, noise pickup, cross talk, and other impairments.
- B. Signal Ground Terminal: Locate at main equipment cabinet. Isolate from power system and equipment grounding.
- C. Audio circuits shall also observe the grounding practices outlined in “Sound System Engineering”, Don Davis, 1987, SAM Press.

3.3 FIELD QUALITY CONTROL

- A. Operational Test: Perform tests that include originating program and page material at microphone outlets, preamplifier program inputs, and other inputs. Verify proper routing and volume levels and freedom from noise and distortion. Correct deficiencies and retest, if required.
- B. Inspection: Verify that units and controls are properly labeled and interconnecting wires and terminals are identified. Prepare a list of final tap settings of paging speaker-line matching transformers.

3.4 DEMONSTRATION

- A. Engage a factory-authorized service representative to train owner's maintenance personnel and the engineer to adjust, operate, and maintain equipment.
 - 1. Train owner's maintenance personnel on programming equipment for starting up and shutting down, troubleshooting, servicing, and maintaining equipment.
 - 2. Review data in maintenance manuals.

END OF SECTION 27 51 18

SECTION 275200 - CLASSROOM AUDIO SYSTEM

PART I – GENERAL

1.1 QUALITY ASSURANCE

A. Qualifications

1. Installer Qualifications: Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.
 - a. Certificate: when requested, submit certificate indicating qualification.
2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction, approving acceptable installer and approving application method.

B. Acceptable Manufacturers

1. Basis of Design: Lightspeed Technologies, “Top Cat”[™] 11509 SW Herman Road, Tualatin, OR 97062, PH 800-732-8999, FAX 503-684-3197

C. Manufacturer Testing: Manufacturer to provide quality assurance certification for each system and all of its components. A report for each system will be available upon request. Report will include serial numbers and pertinent testing data for all of the system functions.

D. Successful third-party installation (when needed) will be supplied with necessary training to allow for product installation certification by Manufacturer and will be installed according to Lightspeed recommendations.

1.2 SUBMITTALS

A. General: Submit listed submittals in accordance with “Conditions of the Contract”.

B. Manufacturer’s data on all products including but not limited to:

1. Catalog cut sheets
2. Installation instructions
3. Typical wiring diagrams
4. Drawings showing speaker locations
5. Operation and maintenance manuals
6. Manufacturer’s warranty documents
7. Manufacturer’s parts lists
8. Product serial numbers

1.3 WARRANTY

A. Warranty: Refer to “Conditions of the Contract” for warranty and repair provisions.

- B. Repair: Manufacturer shall offer repair service on all Classroom Audio components. Owner shall pre-pay shipping for all items returned to manufacturer for repair. The Manufacturer shall repair or replace system components as specified under warranty. Manufacturer shall ship repaired components within five (5) working days of receipt. Items returned to Owner are shipped via the same method in which they were received.
- C. Manufacturer's Warranty: All the major system components (transmitters, receiver-amplifier, sensor, and speakers) must be warranted for five years against defects occurring while used in normal classroom instruction. The warranty shall be equivalent to a Lightspeed Technologies' Five-Year Warranty.
 - 1. Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under the Contract Documents.

1.4 OVERALL SYSTEM DESCRIPTION

- A. The system must have specifications and features that are equivalent to the Lightspeed Topcat® In-Ceiling Classroom Audio System including the following:
 - 1. All-in-one, in-ceiling audio system with integrated amplifier, speakers and wireless audio receiver/transmitter
 - 2. Two-way hybrid speaker system with exciter technology sound panel and low frequency cone driver
 - 3. Cross over technology to deliver high speech intelligibility and full range sound with even distribution throughout the classroom
 - 4. Up to 2 microphones for whole room instruction, team-teaching or student sharing
 - 5. Pendant-style Flexmike® classroom microphone with audio input utilizing Access Technology (1.9 GHz) for transmission. IR not acceptable
 - 6. Wireless Media Connector utilizing Access Technology (1.9 GHz) to integrate with and wirelessly transmit all classroom multimedia to be played through the Topcat.
 - a. Includes 4 audio inputs with volume control
 - b. 2 audio outputs for ALD and/or recording with volume control
 - c. Tone control to remotely adjust bass/treble of Topcat
 - 7. Must have PageFirst emergency page priority with all Topcat installations
 - 8. In-Ceiling mounted
 - 9. Suitable for use in air-handling spaces (plenum-rated)
 - 10. Compatible with Flexcat speaker pods with 2-way audio communication.
- B. The system must produce high speech intelligibility and full-range multimedia quality sound with excellent distribution throughout a classroom.
- C. The system must be capable to be installed in a classroom with no wires installed in or on the walls. The system must be fully operational without speaker wires or sensor cables.
- D. The system must be compatible and expandable to operate with 2-way small group speaker pods allowing interoperability between both small group and whole group instruction.
- E. The system shall carry a "No Audio Dropout Guarantee" between the wireless microphone and the sound system. The guarantee applies to operation in any room up to its expected range of

200 feet (assuming no walls). The guarantee does not extend into other rooms separated by walls as this can limit transmission range significantly. Should any dropout in audio transmission occur, the manufacturer will correct it at no additional charge.

- F. The system shall carry a standard warranty equivalent to the Lightspeed 5-year Warranty.

1.5 OWNER INSTRUCTION

- A. Owner's Instruction: user-training will be performed by the manufacturer's local representative. The training will include the research and benefits of classroom amplification, system operation, simple troubleshooting guidelines, and incorporating the classroom amplification into teaching styles. The manufacturer will also provide additional training in trouble-shooting techniques and product return procedures to one specified person per campus. This service shall be rendered to the Owner at no additional cost.
- B. Instruction materials and detailed Owner's manual shall be provided to cover operational and basic maintenance procedures.

PART 2. PRODUCTS

2.1 IN-CEILING CLASSROOM AUDIO SYSTEM SPECIFICATIONS

- A. Overall System:
 - 1. Power output: 20 Watts rms
 - 2. Acoustic Frequency response: 60 Hz to 18 kHz -10dB
 - 3. AC Mains Power Input: 100-240V ~ 50/60Hz 1.5A
 - 4. DC Power Input: 24V/2.5A
 - 5. Signal-to-noise: 60 dB
 - 6. Total Harmonic Distortion: <1%, 10 W
 - 7. Wireless Communication: Access Technology (1.9 GHz + RF4CE)
 - 8. Automatic power down after 2 hour of inactivity
 - 9. Automatic power on when Flexmike is powered on and linked
 - 10. Dimensions (W x D x H): 24" x 12" x 3.7" (Removable side spacers to fit international ceiling grids; 595mm x 295mm x 94mm)
 - 11. Weight: 13.5 lbs (6.1 kg)
 - 12. Controls:
 - a. (1) Microphone volume control
 - b. (1) Tone control
 - c. (1) Audio input volume control
 - d. (1) PageFirst sensitivity adjustment
 - 13. Connections:
 - a. (1) Direct AC mains power input
 - b. (1) Optional DC Power Input
 - c. (1) Audio input
 - d. (1) Optional Page mute (PageFirst™) input (Euro-block)
 - 14. Device Registration: push button for transmitter(s), remote(s), speaker pods
 - 15. Wireless audio range: up to 200 feet

16. Integrated 2-Way Hybrid Speaker System:
 - a. Description: exciter technology sound panel plus low frequency cone driver
 - b. Integrated cross-over technology
 - c. Panel Size: 13.75" x 6.75"
 - d. Cone Driver Size: 5.25"
 - e. Overall Frequency Response: 60 Hz to 18 kHz -10dB
 - f. Impedance: 8 Ω
 - g. Power Handling: 25 W

- B. The in-ceiling classroom audio system shall use bi-directional wireless Access Technology to communicate with up to two wireless microphones.
- C. The in-ceiling classroom audio system shall use bi-directional wireless Access Technology to integrate with other audio sources in the classroom.
- D. The in-ceiling classroom audio system shall use bi-directional wireless Access Technology to send a mixed audio output to a media connector located at a convenient/student accessible location in the classroom.
- E. The in-ceiling classroom audio system shall use bi-directional wireless Access Technology to communicate with up to 6 optional tabletop speaker pods available to facilitate small group instruction.
- F. The all-in-one system must contain a Page mute function (PageFirst™) that passively detects the audio signal of a page coming through the PA system without compromising system performance or voiding warranties. As an audio signal is sent to the PA speaker, the PageFirst passive sensor clip detects that signal and immediately mutes the Topcat.

2.2 WIRELESS MEDIA CONNECTOR

- A. Description: Wireless audio transmitter/receiver to integrate with classroom audio sources and send/receive the wireless to the Topcat system in the ceiling.
- B. Wireless Communication: Access Technology (1.9 GHz)
- C. Audio Inputs: (4) 3.5mm stereo jacks connect to classroom audio sources.
- D. Audio Outputs: (2) 3.5mm jack with volume control
- E. (1) Microphone volume control
- F. (1) Audio input volume control
- G. (1) Audio output volume control
- H. (1) Power button with LED
- I. (1) Tone control
- J. (1) Registration button with Registration LED and linked LED

- K. Audio frequency response: 80 Hz to 7 kHz \pm 3 dB
- L. Audio distortion: <1%
- M. DC Power Input: USB 5V/0.2A (type micro-B)
- N. Mounting: table-top or wall
- O. Dimensions (W x D x H): 7.6"x 4.1"x 1.1" (193 x 104 x 28mm)

2.3 FLEXMIKE PENDANT-STYLE MICROPHONE / TRANSMITTER

- A. Description: the pendant-style wireless microphone
- B. Lanyard: adjustable length with magnetic clasp
- C. Wireless communication: bi-directional Access Technology (1.9 GHz)
- D. Audio distortion: <1%
- E. Integrated microphone type: uni-directional electret
- F. Audio input: 3.5mm
- G. Earbud output: 3.5mm (for to monitor optional Flexcat pods)
- H. Push button volume control: +/- 6dB (total range = 12 dB)
- I. Power: on/off/mute button
- J. Battery Power: 2.4V NiMH battery pack
- K. Battery run time: 8 hours (fully charged)
- L. Charging: 5V USB; type micro B connector
- M. Alkaline Charge Protection: Yes
- N. USB Audio: interface with computer USB audio while charging
- O. Registration: push button for registration with Topcat
- P. Dimensions (L x W x H): 2.9" x 1.1" x 1.0" (74 x 28 x 25mm)
- Q. Weight: 1.8 oz (51g)

2.4 OPTIONAL SHAREMIKE HANDHELD MICROPHONE / TRANSMITTER

- A. Description: handheld wireless microphone
- B. Wireless communication: Access Technology (1.9 GHz)

- C. Audio distortion: <1%
- D. Integrated microphone type: uni-directional electret
- E. Auxiliary Input: 3.5mm
- F. Power: on/off/mute button
- G. Battery Power: 2 AA NiMH rechargeable battery pack
- H. Battery run time: up to 8 hours (fully charged)
- I. Charging: 5V USB; 3.5mm DC jack
- J. Alkaline Charge Protection: Yes
- K. Registration: push button for registration with Topcat
- L. Dimensions (L x W x H): 8.25" x 1.3" x 1.3"
- M. Weight (with batteries): 7.9 oz

2.5 REGULATORY AND CERTIFICATIONS

- A. The classroom audio system and its components shall be manufactured using lead-free processes and free of other materials harmful to the environment (RoHS and WEEE compliant).
- B. The classroom audio system and its components shall be listed to UL/CUL standards and requirements for electrical safety by Underwriters Laboratories Inc.
- C. The classroom audio system must be suitable for use in air handling spaces and carry appropriate certifications (UL 2043).
- D. The classroom audio system and its components shall be CE Certified and conform with the essential requirements of the following European Union Directives: 2004/108/EC Electromagnetic Compatibility (EMC) and 2006/95/EC Low Voltage Directive (LVD).
- E. The classroom audio system and its components shall comply with Part 15 of the FCC rules as a Class B digital device (FCC Certified).

PART 3. EXECUTION

3.1 SYSTEM PERFORMANCE

- A. Install in accordance with Manufacturer's installation instructions.
- B. Final adjustment: Upon completion, the system shall be clean, adjusted and left in perfect operating condition. Transmitters shall be plugged in and charging and user manual should be left in a conspicuous place.

- C. Provisions: There shall be no audible components of hum, noise, or distortion.

3.2 INSTALLATION

- A. Provide and install Sound Reinforcement System in the locations shown on drawings as required.
- B. All equipment and enclosures described in this specification shall be permanently attached to the structure and held firmly in place. Supports shall be adequate to support their loads per manufacturers specifications.
- C. The process of testing the Audio Sound System may necessitate moving and adjusting certain component parts (ex. loud speakers). Contractor shall provide at no additional cost to the owner.
- D. Take precautions as necessary to prevent and guard against electromagnetic and electrostatic noise interference.
- E. Wireless Media Connector to be located per Owner's request. Contractor to ensure all Media Connectors are properly registered and all volume controls are set properly via a field test in every classroom. Ensure power is available for Media Connector.

3.3 INTEGRATING THE TOPCAT WITH OTHER AUDIO SOURCES

- A. The wireless Media Connector must have four audio inputs to allow other audio sources to be wirelessly transmitted and played through the Topcat system. Computers, DVD/VCR's, TV's, CD's, MP3's etc. may be connected into the Media Connector using appropriate patch cords. The Media Connector must also receive audio back from the Topcate to output the mixed audio signal of both microphone channels and multimedia for recording purposes and interface with assistive listening devices. See the systems integration chart below.

END OF SECTION 275200